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Date: June 20, 2003
Refer to: RRES-GPP-03-075

Mr. Mat Johansen
National Nuclear Security Administration
Department of Energy, MS A316
Los Alamos Site Operations
Los Alamos, NM 87545

SUBJECT: **CHARACTERIZATION WELL R-32 COMPLETION REPORTS**

Dear Mat:

Enclosed are two copies of the Characterization Well R-32 Completion Report. This report documents work completed under the Hydrological Work Plan.

If you have questions, please call me at (505) 665-4681.

Sincerely,

Charles R. Nylander

Charles Nylander, Program Manager
Groundwater Protection Program

CN/th

Enclosure: Characterization Well R-32 Completion Report (ER2003-0415/GPP-03-071)

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JUN 2003

TA-36 (Pajarito Canyon, Hydrogeologic Workplan, Groundwater, TA-54)

Remediation Program

RRES

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GPP-03-071

Characterization Well R-32 Completion Report

Los Alamos
NATIONAL LABORATORY
Los Alamos NM 87545

Produced by the Groundwater Protection Program, Risk Reduction & Environmental Stewardship Division

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List of Acronyms and Abbreviations

AITH	Array Induction Tool, Version H
ASTM	American Society for Testing and Materials
bgs	below ground surface
CMR™	Combinable Magnetic Resonance
CNTG™	Compensated Neutron Tool, Model G
DR	dual rotary
ECS™	Elemental Capture Sonde
EES	Earth and Environmental Sciences
GEL	General Engineering Laboratories
GPS	global positioning system
GR	gamma radiation
hp	horse power
HSA	hollow-stem auger
ICPES	inductively coupled plasma emission spectroscopy
ICPMS	inductively coupled plasma mass spectrometry
ID	inner diameter
LANL	Los Alamos National Laboratory
MDA	material disposal area

NGS	Natural Gamma Spectroscopy
NMED	New Mexico Environment Department
NTU	nephelometric turbidity unit
OD	outer diameter
psi	pounds per square inch
RC	reverse circulation
RRES	Risk Reduction and Environmental Stewardship
SAP	sampling and analysis plan
TA	technical area
TD	total depth
TLD™	Triple detector LithoDensity
UDR	universal drill rig
UR-DTH	under-reaming down-the-hole
VOC	volatile organic compound
WCSF	waste characterization strategy form
WGII	Washington Group International, Inc.
XRD	x-ray diffraction
XRF	x-ray fluorescence

Metric to US Customary Unit Conversions

Multiply SI (Metric) Unit	by	To Obtain US Customary Unit
kilometers (km)	0.622	miles (mi)
kilometers (km)	3281	feet (ft)
meters (m)	3.281	feet (ft)
meters (m)	39.37	inches (in.)
centimeters (cm)	0.03281	feet (ft)
centimeters (cm)	0.394	inches (in.)
millimeters (mm)	0.0394	inches (in.)
micrometers or microns (µm)	0.0000394	inches (in.)
square kilometers (km^2)	0.3861	square miles (mi^2)
hectares (ha)	2.5	acres
square meters (m^2)	10.764	square feet (ft^2)
cubic meters (m^3)	35.31	cubic feet (ft^3)
kilograms (kg)	2.2046	pounds (lb)
grams (g)	0.0353	ounces (oz)
grams per cubic centimeter (g/cm^3)	62.422	pounds per cubic foot (lb/ft^3)
milligrams per kilogram (mg/kg)	1	parts per million (ppm)
micrograms per gram (µg/g)	1	parts per million (ppm)
liters (L)	0.26	gallons (gal.)
milligrams per liter (mg/L)	1	parts per million (ppm)
degrees Celsius (°C)	9/5 + 32	degrees Fahrenheit (°F)

CHARACTERIZATION WELL R-32 COMPLETION REPORT

ABSTRACT

Characterization well R-32 was installed as part of Los Alamos National Laboratory's hydrogeologic work plan under the direction of the Laboratory's Risk Reduction and Environmental Stewardship Division. Washington Group International, Inc., was subcontracted by Los Alamos National Laboratory to carry out drilling activities. The well is located in Pajarito Canyon, within Technical Area (TA)-36 on the north side of Pajarito Road and southwest of Material Disposal Area G in TA-54. The primary purpose of this well is to provide hydrogeologic and water-quality data for regional groundwater near potential contaminant release sites at TA-54.

Hydrologic, geologic, geochemical, and geophysical information obtained during well completion and subsequent sampling at well R-32 will provide data for the Laboratory hydrologic and geologic conceptual models and contribute to implementing a Laboratory-wide groundwater monitoring system. Monitoring this network of wells supports the Laboratory's Groundwater Protection Management Program plan and will help characterize the regional aquifer in this area.

Borehole R-32 was drilled to a total depth of 1008 ft using both fluid-assisted reverse-circulation air-rotary drilling and conventional mud-rotary drilling methods. Well installation included placement of three screens within the regional aquifer. The well was completed on August 12, 2002, and the Westbay™ multiport system was installed on November 16, 2002.

Geologic strata encountered during drilling operations included the following in descending order: alluvial sediments; the lower Tshirege Member of the Bandelier Tuff; Cerro Toledo sediments; ash flows of the Otowi Member of the Bandelier Tuff; the Guaje Pumice Bed of the Bandelier Tuff; lavas, scoria, and interflow units of the Cerros del Rio volcanic field; and suspected fanglomerates of the Puye Formation.

Perched groundwater was encountered in alluvium at a depth of 22 ft. No other perched zones were identified in deeper geologic units. The regional zone of saturation was first penetrated in Cerros del Rio basalt. A composite depth for the regional water table in the Cerros del Rio basalt, measured after well construction and before Westbay™ installation, was 783.4 ft below ground surface.

Following well development activities, three groundwater samples were taken, one from each screened interval at depths of 871, 933, and 977 ft, primarily to determine if potential contaminants were present in the regional aquifer. Major potential contaminants of concern at well R-32 include mobile solutes such as nitrate, perchlorate, uranium, and tritium. Based on analytical results for the samples, contamination from Laboratory discharges does not appear to be present in the regional aquifer at this well site.

1.0 INTRODUCTION

This well completion report for characterization well R-32 summarizes the preparation, drilling, well construction, well development, and site completion activities conducted from July 3 to July 9, 2002. Well R-32 is located in Pajarito Canyon within Technical Area (TA)-36 of Los Alamos National Laboratory (LANL or the Laboratory) on the north side of Pajarito Road and southwest of Material Disposal Area (MDA) G, which is located in TA-54 (Figure 1.0-1). The well was installed as part of the "Hydrogeologic Workplan," in support of the Laboratory's "Groundwater Protection Management Program Plan" (LANL 1998, 59599; LANL 1996, 70215).

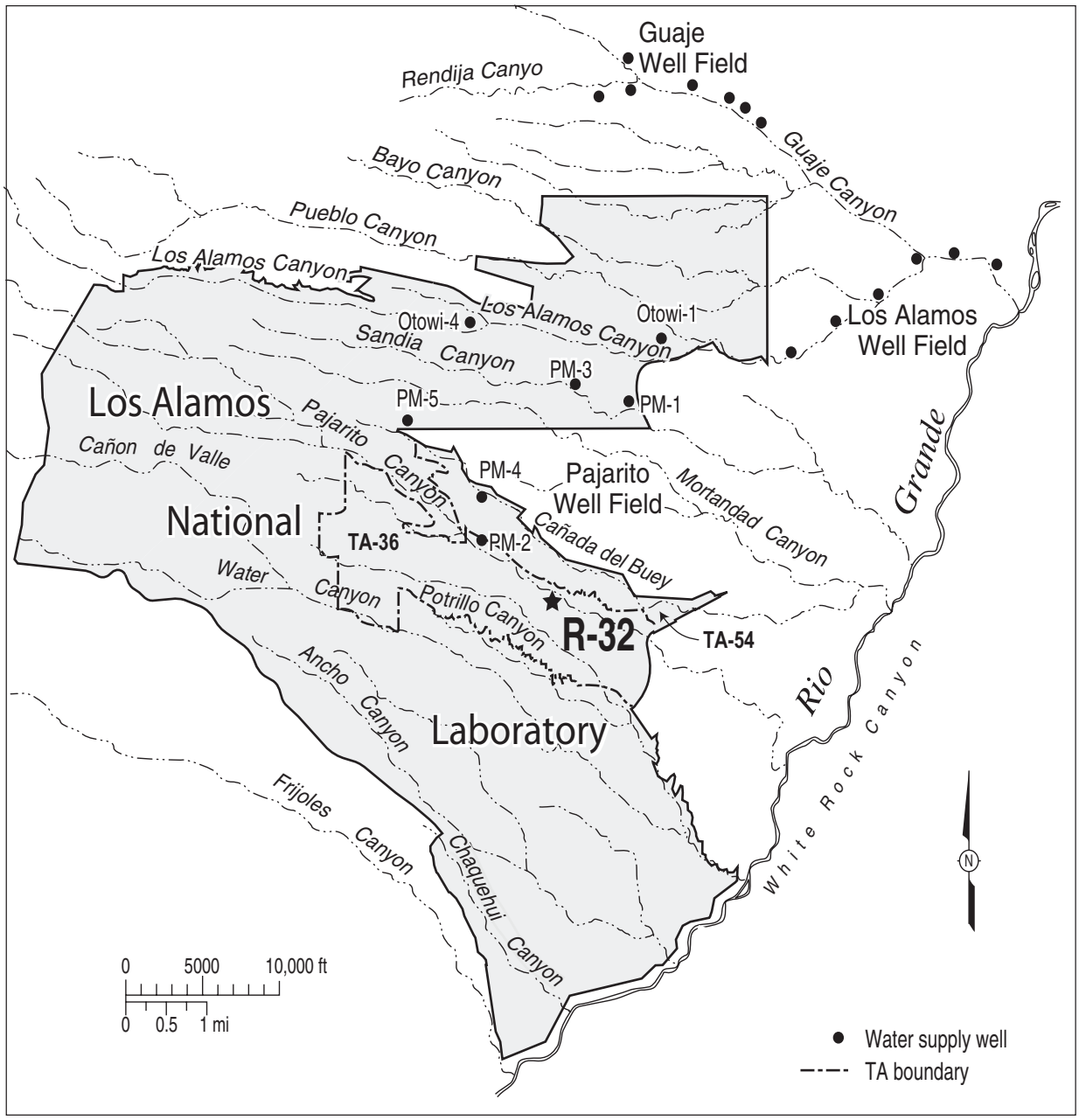


Figure 1.0-1. Location map, characterization well R-32

The project was funded by the Nuclear Weapons Infrastructure, Facilities, and Construction Program, and the well was installed by the Laboratory's Risk Reduction and Environmental Stewardship (RRES) Division. Washington Group International, Inc. (WGII), under contract to the Laboratory, was responsible for executing drilling activities.

The primary function of this well is to investigate the nature and extent of impacts to regional groundwater that resulted from Laboratory activities in the Pajarito Canyon watershed. Water-quality, geochemical, hydrologic, and geologic information gathered during well completion will augment knowledge of regional subsurface characteristics and the distribution of possible contaminants downgradient of Laboratory activities. Data will support on-going performance assessments at MDA G, provide a basis for groundwater monitoring at TA-54, and be used to update sitewide hydrologic and geologic conceptual models for the Laboratory.

This well completion report describes operational activities associated with the drilling, sampling, and completion of characterization well R-32. Information presented in this report was compiled from field reports and activity summaries generated by Laboratory and subcontractor personnel. Geophysical data provided by Schlumberger, Inc. (Schlumberger), and geodetic survey results are included as well. Detailed analysis and interpretation of geologic, geochemical, geophysical, and hydrologic data will be included in separate technical documents to be prepared by the Laboratory.

2.0 PRELIMINARY ACTIVITIES

Preliminary activities at R-32 included administrative functions and site preparation. Appendix A compares the activities planned in the "Sampling and Analysis Plan (SAP) for the Drilling of Characterization Wells R-16, R-20, R-21, R-23, and R-32 in the Vicinity of TA-54" with work performed (LANL 2002, 73390).

WGII received contractual authorization to start administrative preparation tasks for well R-32 on June 6, 2002. As part of this preparation, WGII developed a modification to existing site-specific health and safety plan No. 271 to include well R-32. WGII also prepared the R-32 waste characterization strategy form (WCSF). The Laboratory prepared a sampling and analysis plan (SAP) to guide field personnel in the execution of field activities. The host facility, Facility Management Unit 80, signed a Facility Tenant Agreement to provide area access and security control for R-32 activities.

A readiness review meeting was held on July 1, 2002, to discuss all administrative agreements, documents, permits, and plans pertaining to the project. The Groundwater Investigations Focus Area project leader signed the readiness review checklist on July 1, 2002, giving authorization to begin work.

K. R. Swerdfeger Construction, Inc., was subcontracted by WGII to prepare the site for drilling, including clearing the site, grading and compacting for the drill pad area, and constructing a lined cuttings-containment area. Site preparation was completed between July 3 and 9, 2002.

The R-32 site initially was cleared of small trees and vegetation. The drill pad was constructed by leveling a 100-ft by 150-ft area and then grading and compacting base-course gravel across the site to complete the drill pad. To store drilling fluids and cuttings, a containment area approximately 80 ft long by 25 ft wide by 12-ft deep was excavated along the boundary of the north pad. A berm, roughly 3 ft high, was constructed around the cuttings-containment area, and the entire excavation area was lined with a 6-mil polyethylene liner. A secondary containment area was bermed and lined with 6-mil polyethylene to accommodate two 20,000-gal.-tank trailers that were used to store drilling fluids. Silt fences were constructed as needed around the site, and safety barriers and signs were installed around the cuttings-

containment area and other appropriate areas. Office and supply trailers, generators, and safety lighting equipment were moved to the site when drilling equipment was mobilized.

3.0 SUMMARY OF DRILLING ACTIVITIES

Drilling activities at the R-32 site were completed in two phases by Dynatec Drilling Company, Inc. (Dynatec), during July and August 2002. Phase I drilling and core sampling was performed using a Foremost™ universal drill rig (UDR)-1000 equipped with a wire-line core-retrieval system and a 5-ft long core barrel that was used to collect 2.5-in.-diameter core samples. Phase II drilling was performed using a Foremost™ dual-rotary (DR)-24 drill rig, equipped with reverse-circulation (RC) drilling rods, tricone bits, down-the-hole (DTH) hammer bits, and support equipment. Drill-fluid mixing and circulation equipment included a mixing tank and pump assembly, a generator to power the mixing unit, a shaker unit to remove solids from the discharged drilling fluids, and an auxiliary pump. Equipment and fabrication support for drilling activities was provided by RRES Division's Field Support Facility.

The borehole was drilled using both fluid-assisted RC air-rotary and conventional mud-rotary drilling techniques with open-hole or casing-advance methods, as determined by changing geologic and drilling conditions. Additives were mixed with municipal water to improve borehole stability, minimize fluid loss, and facilitate cuttings removal from the borehole. Air-rotary drilling was assisted with a foam mixture consisting of municipal water mixed with soda ash, QUICK-GEL® (bentonite), LIQUI-TROL® (polymer), and QUICK-FOAM® (surfactant). The fluid mixture used to assist mud-rotary drilling at R-32 typically consisted of municipal water mixed with QUICK-GEL® and LIQUI-TROL®. During drilling operations, lost circulation material (Magma-Fiber® and N-seal®) was used to help maintain or regain circulation within the borehole. Appendix B contains a list of drill additives used at well R-32. Table 3.0-1 summarizes the quantities of additives and fluids used to drill this well.

Table 3.0-1
Fluid Additives Used, Characterization Well R-32

Additive	Amount	Unit of Measure
Interval Drilled (0–792 ft)		
Water	53,000	gal.
QUICK-GEL®	20,000	lb
LIQUI-TROL®	175	gal.
QUICK-FOAM®	550	gal.
Soda ash	400	lb
Interval Drilled (792–1008 ft)		
Water	45,000	gal.
QUICK-GEL®	25,000	lb
EZ-Mud®	25.5	gal.
LIQUI-TROL®	5	gal.
Pac-L®	50	lb
N-seal®	800	lb
Magma Fiber®	800	lb

The objective of Phase I drilling was to collect continuous rock core samples to characterize geologic units encountered and to determine moisture, anion, stable isotope, radionuclide, metals, and tritium distributions in the upper section of the borehole. Planned total depth (TD) for Phase I drilling was 344 ft below ground surface (bgs) or approximately 50 ft into the Cerros del Rio basalt. Groundwater samples were to be collected during Phase I if significant perched water was encountered in bedrock units. Phase II objectives were to collect cuttings of geologic formations encountered, collect water samples from perched and regional groundwater zones, and provide a borehole for geophysical measurements and the installation of a multiple-screen well in the regional aquifer. The planned depth for Phase II drilling was approximately 1356 ft bgs.

Figure 3.0-1 summarizes well data and depicts groundwater and geologic conditions encountered in well R-32. Figure 3.0-2 shows the drilling chronology and other on-site activities. Sections 3.1 and 3.2 discuss Phase I and Phase II drilling activities, respectively.

3.1 Phase I Drilling

On July 11, 2002, Dynatec mobilized the UDR-1000 drill rig and support equipment at the R-32 site, performed routine maintenance activities the following day, and began coring on July 13, 2002. To stabilize alluvial sediments, Dynatec installed a 5-in.-diameter steel surface casing from the surface to 16 ft bgs. Coring proceeded to 66 ft bgs with repeated caving of the borehole wall and persistently poor core recovery. This borehole instability can be attributed to the presence of alluvial groundwater at 22 ft bgs and Dynatec's inability to adequately seal off this zone from deeper drilling. Thus, the Laboratory decided to plug and abandon the first borehole on July 14, 2002. Dynatec relocated the UDR-1000 to a new site 10 ft to the east and cored from the surface to 50.5 ft bgs, where a 6.125-in. temporary surface casing was landed in the Tshirege Member of the Bandelier Tuff at 59.1 ft bgs on July 15, 2002. Coring then resumed through Otowi Member ash flows of the Bandelier Tuff, through the underlying Guaje Pumice Bed, and 32 ft into Cerros del Rio basalt to a TD of 318 ft bgs. Coring was terminated at this depth because large voids were encountered in the basalt that threatened to compromise the alignment of the borehole and adversely impact further drilling operations. Coring objectives generally had been met because samples had been collected from the Bandelier Tuff and from the top of the Cerros del Rio basalt. Phase I drilling operations concluded on July 18, 2002, and the UDR-1000 drill rig was demobilized.

3.2 Phase II Drilling

On July 18, 2002, Dynatec mobilized the Foremost™ DR-24 drill rig and support equipment to the R-32 drill site. The DR-24 was positioned over the previously cored hole, and the 6.125-in. temporary surface casing was removed from the borehole. On July 19, 2002, Dynatec reamed and landed an 18-in. surface casing from the surface to 57 ft bgs using a 16-in. tricone bit. The leading edge of the 18-in. casing was modified with a hardened cutting surface to advance further into the borehole behind the 16-in. tricone bit. While the drill stem was being tripped out, the drill bit encountered an obstruction in the 18-in. casing. After several attempts to free the bit, Dynatec removed the drill string and surface casing. It was discovered that the formation materials had split open the surface casing. This borehole was plugged and abandoned on July 20, 2002.

Location: In Pajarito Canyon, south of TA-54, along the north side of Pajarito Rd.

Survey coordinates (brass marker in NW corner of R-32 cement pad):
x: 1640798 E y: 1757730 N (NAD 83)
z: 6637.6 ft asl (NGVD 29)

Drilling: air rotary core w/ wireline retrieval, conventional mud drilling.
R-32 Start date: 07/13/02.
R-32 End date: 08/7/02.

Borehole R-32 drilled to 1008 ft. bgs. (T.D.).

Data collection:
Hydrologic properties: Field hydraulic test: Constant Rate Injection Test on screen #1 and screen #3
Cores/cuttings submitted for geochemical and contaminant characterization: (13)
Groundwater samples submitted for geochem and contaminant characterization: (3)
Geologic properties: (7) Mineralogy, petrography, and chemistry.
Borehole logs from R-32:
Lithologic: 0-915.5 ft.
Caliper (LANL): 0-1008 ft.
Video (LANL tool): 0-720 ft.
Natural gamma + Induction (LANL tool): 0-808 ft. and 0-1008 ft.
Schlumberger Logs: 0-54.5 ft. (cased), 54.5-808 ft. (open hole): Epithermal Neutron, Litho density, Induction, Combinable Magnetic Resonance, Elemental Capture, Spectral Gamma.

Contaminants Detected in R-32 Water Samples: none

Well construction:
Drilling Completed: 08/07/02
Contract Geophysics: 07/31/02
Well Constructed : 08/09/02 - 08/12/02
Well Developed : 8/18/02 - 11/10/02
Westbay Installed : 11/11/02 - 11/17/02

Casing: 4.5-in I.D. stainless steel with external couplings.

Number of Screens: 3
4.5-in I.D. pipe based, s.s. wire-wrapped with 0.010-in slots.

Screen (perforated pipe interval):
Screen #1 - 867.5 - 875.2 ft. bgs.
Screen #2 - 931.8 - 934.9 ft. bgs.
Screen #3 - 972.9 - 980.6 ft. bgs.

Well development consisted of wire brushing, bailing, chemical treatments, surging, and pumping.

Static water level measured on November 11, 2002, at 783.4 ft in completed and developed well.

Groundwater samples collected from packed off screen intervals after well development.

Geologic contacts for R-32 were determined by examination of cuttings and interpretation of geophysical logs. Contacts may be refined by petrographic, geochemical, or mineralogic analysis of geologic samples.

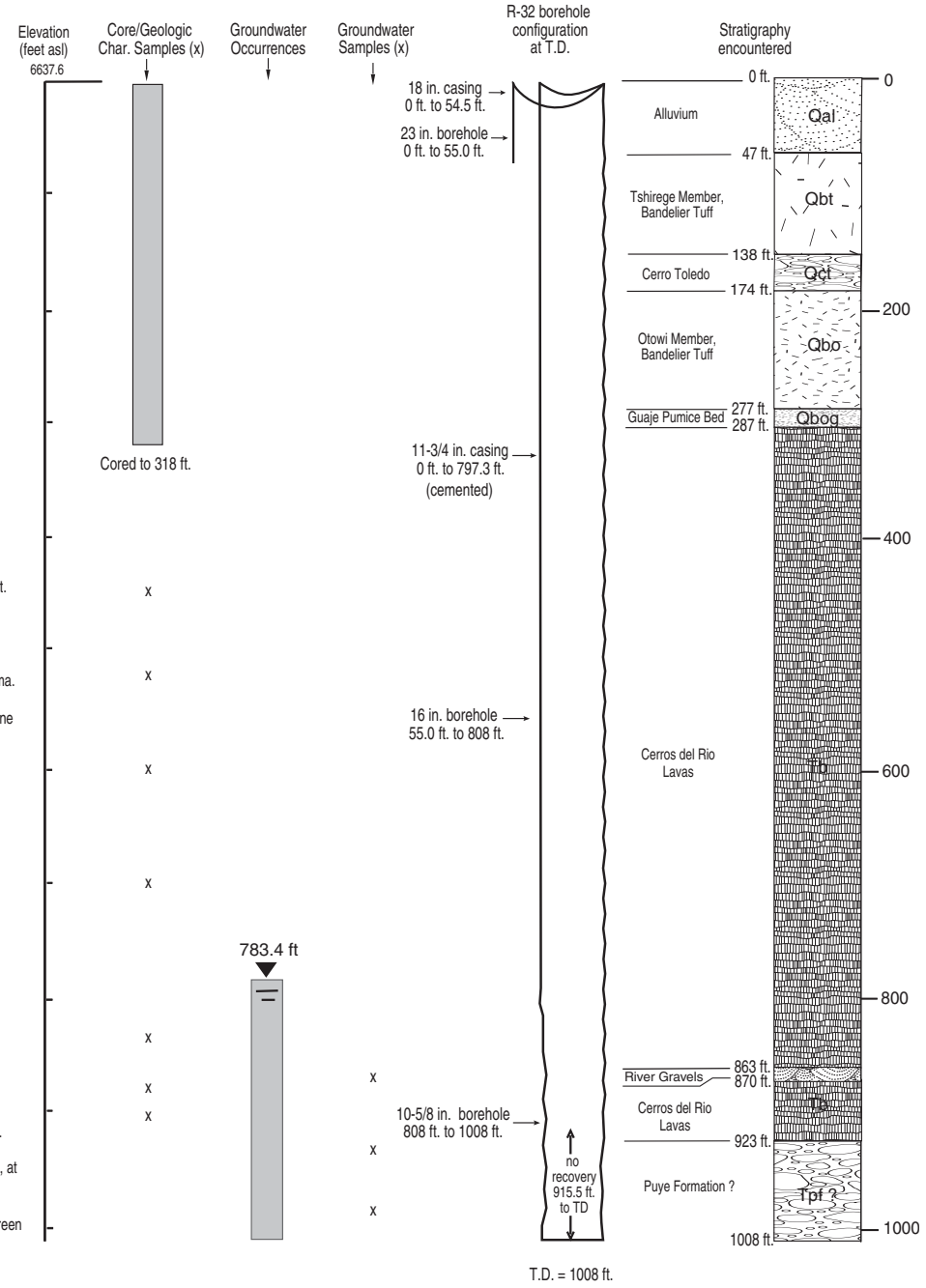


Figure 3.0-1. Well data summary sheet, characterization well R-32

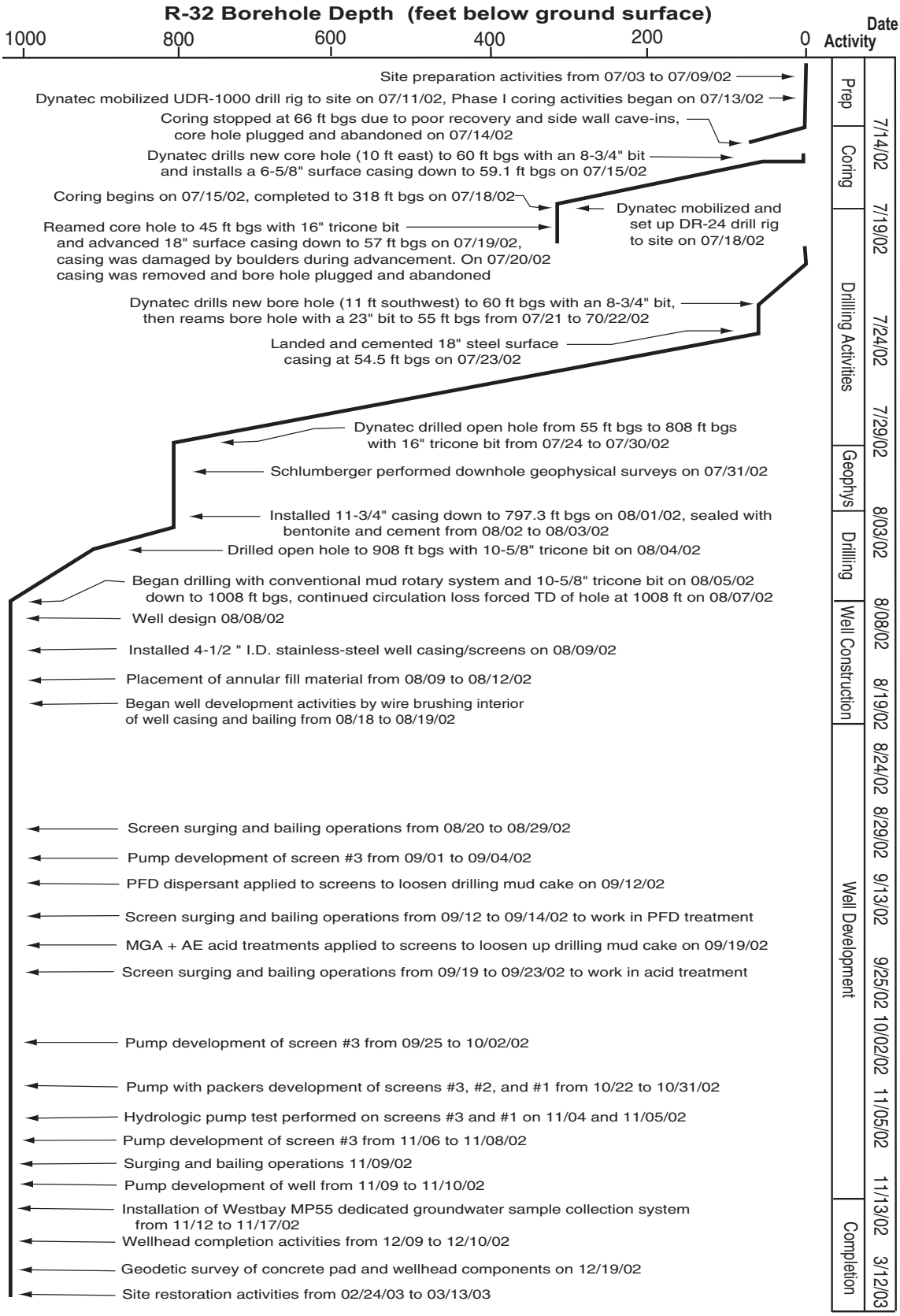


Figure 3.0-2. Operations chronology diagram, characterization well R-32

On July 21, 2002, Dynatec moved the DR-24 drill rig to a new location approximately 11 ft southwest of the abandoned borehole. Dynatec began drilling a new borehole with an 8.75-in. tricone bit from the surface to 60 ft bgs and then with a 23-in. quadcone reamer drill bit from the surface to 55 ft bgs. An 18-in. surface casing then was installed and landed at 54.5 ft bgs and cemented in place. On July 24, 2002, Dynatec began open-hole drilling with a 16-in. tricone drill bit from 55 ft bgs using fluid-assisted air-rotary drilling methods. Drilling continued for the next several days and reached 808 ft bgs on July 30, 2002. On August 1, 2002, following geophysical logging, the water level was measured at 726.9 ft bgs. While drilling in the above interval, Dynatec added lost circulation materials (N-Seal® and Magma Fiber®) to improve circulation.

Open-borehole geophysics surveys were conducted on July 31, 2002, while 11.75-in. thin-walled steel conductor casing was mobilized to the site. After the borehole stabilized, the water level was measured at 726.9 ft bgs.

After the geophysical surveys were complete, the 11.75-in. conductor casing was installed and landed at 797.3 ft bgs. The annulus was grouted from the bottom of the casing to 644.5 ft bgs with cement, backfilled from 644.5 to 70 ft bgs with Hole-Plug® bentonite chips, and filled with cement grout from 70 ft to the surface. Open-hole drilling continued on August 4, 2002, from 808 to 908 ft bgs using a 10.625-in. tricone drill bit. On August 5, 2002, Dynatec switched to the conventional mud-rotary system. The borehole then was advanced open-hole to 1008 ft bgs, where drilling at R-32 was terminated because drilling-mud circulation could not be re-established. On August 7, 2002, the borehole was reamed to 1008 ft bgs TD to prepare for borehole geophysical surveys and well installation.

4.0 SAMPLING AND ANALYSIS OF DRILL CORE AND GROUNDWATER

Core samples were collected from R-32 and analyzed for anions using ion chromatography and radionuclides using counting techniques. Thirteen core samples were collected from the vadose zone during drilling from 19.0 to 302.0 ft bgs. Approximately 500 to 1000 g of core or cuttings samples were placed in appropriate sample jars in protective plastic bags before they were analyzed by Earth and Environmental Sciences (EES)-6 and General Engineering Laboratories (GEL). The samples were used also to prepare a lithologic log (Appendix C).

Alluvial groundwater was encountered at 22 ft bgs. No samples were collected and analyzed for inorganic and organic chemicals and radionuclides. No perched intermediate groundwater was encountered at well R-32 during fluid-assisted drilling. A composite static water level was measured at 783.4 ft in the completed, developed well on November 11, 2002. Three regional aquifer water samples were collected from the developed well and analyzed for a limited suite of constituents. These samples were collected from screen 1 (867.5–875.2 ft), screen 2 (931.8–934.9 ft), and screen 3 (972.9–980.6 ft). The samples were collected at depths of 871, 933, and 977 ft primarily to determine if potential contaminants were present in the regional aquifer. Major potential contaminants of concern at R-32 include mobile solutes such as nitrate, perchlorate, uranium, and tritium.

Geochemistry of Sampled Waters

Groundwater samples analyzed for inorganic and organic chemicals, tritium, and other radionuclides were collected by using a submersible pump and packers. Temperature, turbidity, pH, alkalinity, and specific conductance were determined on the site. Both filtered (metal, trace-element, and major cation and anion) and nonfiltered (radionuclide, organic-compound, and stable-isotope) samples were collected for chemical and radiochemical analyses. Aliquots of the samples were filtered through a 0.45-µm Gelman filter. Samples were acidified with analytical-grade nitric acid to a pH of 2.0 or less for metal and major ion analyses. All groundwater samples collected in the field were stored at 4°C until they were analyzed.

Alkalinity was determined in the laboratory using standard titration techniques, which may approximate field conditions because of sample degassing, including carbon dioxide gas.

Groundwater samples were analyzed by EES-6 using techniques specified in the US Environmental Protection Agency SW-846 manual (LANL 2000, 71233). Ion chromatography was the analytical method used for bromide, chloride, fluoride, nitrate, nitrite, oxalate, perchlorate, phosphate, and sulfate. Mercury was analyzed by cold vapor atomic absorption. Inductively coupled (argon) plasma emission spectroscopy (ICPES) was the analytical method used for calcium, magnesium, potassium, silica, and sodium. Aluminum, antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, iron, lead, manganese, nickel, selenium, silver, thallium, vanadium, uranium, and zinc were analyzed by inductively coupled (argon) plasma mass spectrometry (ICPMS).

Radionuclide activity in groundwater was determined by electrolytic enrichment for tritium; alpha spectrometry for plutonium and uranium isotopes; gas proportional counting for strontium-90; liquid scintillation for technetium-99; and gamma spectrometry for cesium-137, americium-241, and other gamma-emitting isotopes. Volatile organic compounds (VOCs) were analyzed by gas chromatography-mass spectrometry. Contract laboratories performing this work were GEL (radionuclides and VOCs) and the University of Miami (low-level tritium). Stable isotopes of oxygen (oxygen-18 and oxygen-16, $\delta^{18}O$) and hydrogen (hydrogen and deuterium, δD) were analyzed by Geochron Laboratories (Cambridge, Massachusetts) using isotope ratio mass spectrometry.

The precision limits (analytical error) for major ions and trace elements generally were less than ±10% using ICPES and ICPMS.

Results of screening analyses for the three groundwater samples collected from the Cerros del Rio basalt in R-32 are provided in Tables 4.1-1 and 4.1-2. Detected VOCs are also provided in Table 4.1-2. Based on analytical results for the samples, contamination from Laboratory discharges does not appear to be present in the regional aquifer at this well site.

Table 4.1-1
Hydrochemistry of Regional Aquifer Samples, Characterization Well R-32

Parameter and Analyte	Cerros del Rio Basalt Screen 1 (871 ft bgs) 10/31/02	Cerros del Rio Basalt Screen 2 (933 ft bgs) 10/30/03	Cerros del Rio Basalt Screen 2 (977 ft bgs) 10/28/03
Parameter			
pH	6.88	6.75	6.75
Temperature (ºC)	24.4	23.6	22.4
Specific conductance (μS/cm)	251	143	97
Turbidity (NTU)	3.73	3.34	1.91
Analyte			
Alkalinity (mg $CaCO_3$/L)	86	53	61
Al (mg/L)	0.006	0.011	0.009
Sb (mg/L)	[0.0001], U	0.0002	0.0003
As (mg/L)	0.0010	0.0012	0.0010

Table 4.1-1 (continued)

Parameter and Analyte	Cerros del Rio Basalt Screen 1 (871 ft bgs) 10/31/02	Cerros del Rio Basalt Screen 2 (933 ft bgs) 10/30/03	Cerros del Rio Basalt Screen 2 (977 ft bgs) 10/28/03
Ba (mg/L)	0.052	0.023	0.043
Be (mg/L)	[0.001], U	[0.001], U	[0.001], U
Br (mg/L)	0.10	0.09	0.09
Cd (mg/L)	[0.001], U	[0.001], U	[0.001], U
Ca (mg/L)	19.1	9.65	11.4
Cl (mg/L)	7.67	2.70	3.90
ClO_4 (mg/L)	[0.002], U	[0.002], U	[0.002], U
Cr (mg/L)	0.0025	0.0019	0.0011
Co (mg/L)	0.0070	0.0012	0.0035
Cu (mg/L)	0.0028	0.0041	0.0048
F (mg/L)	0.25	0.60	0.41
Fe (mg/L)	0.67	0.41	0.31
Pb (mg/L)	0.0002	0.0004	0.0003
Mg (mg/L)	5.83	2.80	3.16
Mn (mg/L)	0.73	0.86	0.68
Hg (mg/L)	[0.00005], U	[0.00005], U	0.00027
Mo (mg/L)	0.0047	0.0021	0.0021
Ni (mg/L)	0.011	0.0048	0.0060
NO_3 (mg/L) (as N)	0.02	0.58	0.05
NO_2 (mg/L) (as N)	[0.005], U	[0.005], U	[0.005], U
C_2O_4 (mg/L) (oxalate)	[0.02], U	[0.02], U	[0.02], U
PO_4 (mg/L) (as P)	0.23	1.53	1.31
K (mg/L)	2.08	1.82	1.82
Se (mg/L)	[0.001], U	[0.001], U	[0.001], U
Ag (mg/L)	[0.001], U	[0.001], U	[0.001], U
Na (mg/L)	20.1	12.4	13.8
SiO_2 (mg/L)	63.3	68.3	69.6
Sr (mg/L)	0.094	0.046	0.063
SO_4 (mg/L)	11.7	4.20	3.62
Tl (mg/L)	[0.001], U	[0.001], U	[0.001], U
U (mg/L)	0.0007	0.0003	0.0004
V (mg/L)	0.002	0.004	0.003
Zn (mg/L)	0.43	0.67	0.78
TDS (mg/L) (calculated)	238	176	188

Notes: 1. U = not detected.
2. Silica concentrations were calculated from measured silicon (ICPES).
3. NTU = nephelometric turbidity unit.
4. Filtered samples analyzed by EES-6.

Table 4.1-2
Radiochemistry of Regional Aquifer Samples, Characterization Well R-32

Analyte	Cerros del Rio Basalt (871 ft bgs) Screen 1 10/31/02)	Cerros del Rio Basalt (933 ft bgs) Screen 2 10/30/02	Cerros del Rio Basalt (977 ft bgs) Screen 3 10/28/02
Tritium (pCi/L)	[0.39], U	[-0.03], U	[0], U
Am-241 (pCi/L)	[4.73], U	[7.15], U	[-1.71], U
Cs-137 (pCi/L)	[-0.108], U	[-0.177], U	[-0.242], U
Gross alpha (pCi/L)	[-0.118], U	[-0.29], U	[-0.214], U
Gross beta (pCi/L)	[1.55], U	[0.652], U	[1.86], U
Pu-238 (pCi/L)	[0.003], U	[-0.004], U	[-0.005], U
Pu-239,240 (pCi/L)	[-0.005], U	[-0.031], U	[-0.003], U
Sr-90 (pCi/L)	[-0.013], U	[0.010], U	[-0.102], U
Tc-99 (pCi/L)	[1.35], U	[0.665], U	[0.854], U
U-234 (pCi/L)	0.474	0.234	0.201
U-235 (pCi/L)	[0.0154], U	[0.0239], U	[0.0195], U
U-238 (pCi/L)	0.228	0.0998	0.121
TOC (mg/L C)	10.1	10.7	5.77
Acetone (μg/L)	2020	31.0	74.9
Benzene (μg/L)	[1], U	1.4	[1], U
δD (‰)	-86	-86	—
$\delta^{18}O$ (‰)	-10.9	-11	—

Notes: 1. U = not detected.
2. Dash = "not analyzed."
3. ‰ = permil.
4. TOC = total organic carbon.
5. Americium-241 was analyzed by gamma spectroscopy.
6. Nonfiltered samples analyzed by GEL, Geochron Laboratories, and University of Miami.
7. Standard deviation is 1 sigma.

5.0 BOREHOLE GEOPHYSICS

LANL and Schlumberger provided geophysical logging services at R-32. Table 5.0-1 lists borehole and well logging surveys conducted.

Table 5.0-1
Borehole and Well Logging Surveys Conducted, Characterization Well R-32

Surveyor	Date	Method	Cased Footage	Open-Hole Interval (ft bgs)	Remarks
WGII/LANL	July 18, 2002	Video	0–59.1	59.1–318	Conducted in borehole at completion of Phase I drilling (coring)
WGII/LANL	July 31, 2002	Video, natural gamma, and induction	0–54.5	54.5–808	Conducted in borehole prior to installation of 11.75-in. thin-walled conductor casing
Schlumberger	July 31, 2002	Logging suite[a,b]	0–54.5	54.5–808	Conducted in borehole prior to installation of 11.75-in. thin-walled conductor casing
WGII/LANL	August 7, 2002	Natural gamma, induction, and caliper	0–797.3	797.3–1008	Conducted prior to well design and installation
WGII/LANL	November 5, 2002	Video, natural gamma	0–1002	NA[c]	Document and verify condition of well screen intervals and interior of well. Natural gamma tool was run to verify backfill placement.
WGII/LANL	November 8, 2002	Video	0–1002	NA	Document and verify condition of well screen intervals and interior of well
WGII/LANL	November 10, 2002	Video	0–1002	NA	Document and verify condition of well screen intervals and interior of well prior to installation of Westbay™ system

[a] Schlumberger's suite of borehole logging surveys included array induction, combinable magnetic resonance, triple lithodensity, elemental capture, natural gamma ray spectroscopy, thermal\epithermal compensated neutron log, and natural gamma.

[b] The combinable magnetic resonance log was run only in the open portion of the borehole.

[c] NA = Not applicable; logs were run inside the well casing.

5.1 Laboratory-Supported Geophysical Logging

Natural gamma logs have proven successful in discriminating between geologic units that contain varying concentrations of uranium, thorium, and potassium. The induction tool has been useful in distinguishing between formation conductivity and resistivity. The three-armed caliper measures unevenness of the borehole wall, and the data are useful during well design and construction. On six different dates, natural gamma, induction, video, and/or caliper logs were run in either the borehole or the installed well at R-32 using down-hole logging tools provided by the Laboratory. Three natural gamma logs were run. The first two provided lithologic and stratigraphic information to complement data gathered from cuttings, and the third verified well installation details. An induction log was run in conjunction with the first two natural gamma logs. Additionally, a caliper log was collected for the open portion of the borehole to TD. Six video logs were collected to record lithologic and hydrogeologic features and to observe and document the condition of the interior of the well near the end of development. Subcontractor personnel trained to use Laboratory-owned tools performed the down-hole logging. The video log tapes of the open borehole are presented in Appendix D (see CD attached to the inside back cover of this report).

The first gamma log and induction logs were run in conjunction with the first induction log, prior to installation of the 11.75-in. thin-walled steel-conductor casing. At that time, an 18-in. surface casing was in place from the surface to 54.5 ft bgs, and the borehole was open from 54.5 to 808 ft bgs. The second gamma log was also run in conjunction with an induction log. At that time, the 18-in. surface casing was still in place, and logging was conducted inside the 11.75-in. conductor casing from ground surface to 797.3 ft bgs and in the open borehole from 797.3 to 1008 ft bgs The third gamma log was run inside the installed well to a depth of 1002 ft bgs to verify placement of annular backfill materials and to document features of the constructed well. For all gamma logs, measurements of natural gamma activity were obtained every 0.1 ft as the logging tool was raised in the hole at a rate of about 15 ft/min.

The first video log was run through the entire depth of the Phase I borehole to document sidewall features after coring operations were complete. The borehole was cased from the surface to 59.1 ft bgs and open from 59.1 to 318 ft bgs. The next two video logs were run in the Phase II borehole before each of the natural gamma logs to evaluate sidewall stability before deploying the natural gamma and induction logging tools (Table 5.0-1). This video logging also was run to record stratigraphic, geologic, and hydrologic features visible in the open portion of the borehole. Three additional video logs were run in the completed well as a quality control procedure to verify well construction and inspect the condition of casing and screens. In addition, a video log was run to assess water clarity in the well during development but before the Westbay™ multiport system was installed.

5.2 Schlumberger Geophysical Logging

Schlumberger conducted borehole geophysical logging on July 31, 2002, in R-32 (Table 5.0-1). The entire suite of logging surveys was run prior to installation of the 11.75-in., thin-walled, steel-conductor casing. At that time, 18-in. surface casing extended from the surface to 54.5 ft bgs, and the borehole was open from 54.5 to 808 ft bgs.

The primary purpose of the Schlumberger logging was to (1) characterize conditions in the hydrogeologic units that were penetrated by the borehole in order to determine moisture distribution in the vadose zone and porosity in the regional aquifer, (2) provide data to aid in identifying transmissive zones, and (3) obtain lithologic and stratigraphic data. Secondary objectives included evaluating borehole geometry and the degree of drilling fluid invasion along the borehole wall.

The Schlumberger suite of geophysical logging tools included the following:

- Array Induction Tool, Version H (AITH™) measures electrical resistivity of the formation, assesses borehole fluid resistivity, evaluates drilling fluid invasion into the formation, and aids in detecting moist zones far from the borehole wall.
- Combinable Magnetic Resonance (CMR™) measures the nuclear magnetic resonance response of the formation, evaluates total and effective water-filled porosity of the host rack near the borehole wall, and estimates size distribution of water-filled pores and hydraulic conductivity of saturated intervals.
- Triple detector LithoDensity (TLD™) measures total porosity and bulk density of a formation, assesses photoelectric effects, measures borehole diameter, and assists in characterizing lithology.
- Thermal/Epithermal Compensated Neutron Tool, Model G (CNTG™) assists in characterizing volumetric water content beyond the casing to evaluate formation moisture content and porosity.

- Natural Gamma Spectroscopy (NGS™) measures gross natural and spectral gamma ray activity (including potassium, thorium, and uranium concentrations) in open- and cased-hole conditions to help characterize geology and lithology.
- Elemental Capture Sonde (ECS™) measures elemental weight concentrations of a variety of elements to aid in characterizing formation mineralogy, lithology, and water content.

Additionally, a calibrated natural gamma tool was used to record gross natural gamma activity with every logging method (except NGS™) to correlate depth runs between each survey conducted.

The Schlumberger logging summary report and montage files for borehole R-32 are presented in Appendix E (on a CD attached to the inside back cover of this report).

6.0 LITHOLOGY AND HYDROGEOLOGY

A preliminary assessment of the hydrogeologic features encountered during drilling of borehole R-32 is presented below, including a description of the geologic units identified during characterization of core and cuttings. Groundwater occurrences are discussed based on drilling evidence and Schlumberger summaries of geophysical logging.

6.1 Stratigraphy and Lithologic Logging

Rock units and stratigraphic relationships, interpreted primarily from visual examination of drilling samples and interpretation of geophysical data, are discussed briefly in order of younger to older units encountered. These interpretations may be refined upon further analysis of petrographic, geochemical, mineralogical, and geophysical logging data. Core samples were examined to describe the interval from ground surface to 318 ft bgs, and drill cuttings were examined to describe the interval from 318 ft to 915.5 ft bgs. Because of drilling-fluid circulation loss, no cuttings were recovered from 915.5 ft bgs to the borehole TD of 1008 ft bgs. A field-generated lithology log is attached as Appendix C.

Alluvium (0 to 47 ft bgs)

Unconsolidated tuffaceous gravels and sands with a clayey matrix were noted in the interval from 0 to 47 ft bgs. Gravel, up to cobble size, consists predominantly of Tshicoma-type dacites. Sand-sized detritus, mostly quartz and sanidine crystal grains, are derived from the Bandelier Tuff. These sediments represent alluvial deposits in the Pajarito Canyon stream channel.

Bandelier Tuff (47 to 287 ft bgs)

Quaternary-age Bandelier Tuff was encountered in the interval from 47 to 287 ft bgs. Units of the Bandelier Tuff included the Tshirege and Otowi Members. Volcaniclastic sedimentary deposits of the Cerro Toledo interval are intercalated between two members of the Bandelier Tuff.

Tshirege Member of the Bandelier Tuff (47 to 138 ft bgs)

The Tshirege Member of the Bandelier Tuff was encountered in the interval from 47 to 138 ft bgs. Core samples indicate that this section of the Tshirege Member is pumice-rich, with pumice lapilli up to 4 cm long, making up approximately 25 to 50% of the rock by volume. Pumices generally have a fibrous texture but include varieties with a sugary texture in areas of devitrification. Phenocrysts of quartz and sanidine occur in abundances up to 12% of the tuff by volume, and volcanic xenoliths (mostly dacite) make up less

than 2% of the tuff. The tuff matrix is nonwelded and consists of ash, pumice, crystals, glass shards, and xenoliths.

Cerro Toledo Interval (138 to 174 ft bgs)

The Cerro Toledo interval was encountered from 138 to 174 ft bgs in R-32. Core samples show that the Cerro Toledo is composed of pumiceous gravels and sands. Subangular to subrounded cobble-sized clasts of dacite were noted. Sand-sized detritus is composed predominantly of quartz and sanidine crystal grains, with lesser pumice and volcanic lithic fragments.

Ash Flows of the Otowi Member of the Bandelier Tuff (174 to 277 ft bgs)

Pale yellowish-brown nonwelded to slightly welded rhyolite ash-flow tuff of the Otowi Member of the Bandelier Tuff was encountered from 174 to 277 ft bgs. Core samples indicate that this section of the Otowi Member is pumice-rich. Pumices are generally glassy with a fibrous texture, but become altered in the lower part of the section. Black-to-red lithic fragments, mostly dacitic, make up approximately 20% of the tuff by volume, and phenocrysts of quartz and sanidine occur in abundances up to approximately 15% of the tuff. The tuff matrix is composed of nonwelded to slightly welded vitric ash containing numerous glass shards.

Guaje Pumice Bed of the Otowi Member, Bandelier Tuff (277 to 287 ft bgs)

The Guaje Pumice Bed was encountered from 277 to 287 ft bgs. Core samples from this interval show that the unit is locally nonwelded and composed of approximately 75% glassy, somewhat fibrous, and partly altered pumice. Small black, gray, and red dacite lithic fragments and quartz and sanidine crystals make up approximately 5% of this unit by volume. The pumice, crystals, and lithics are enclosed in a nonwelded matrix of vitric ash and glass shards. A moderately brown silty sand containing scoriaceous basalt gravel underlies the base of the Guaje Pumice Bed. This layer is interpreted as a paleosol that formed above the underlying basalt.

Cerros del Rio Basalt and Associated Deposits (287 to 923 ft bgs)

The R-32 borehole intersected basaltic lavas, scoria deposits, and volcaniclastic sediments of the Cerros del Rio volcanic field from 287 to 915.5 ft bgs. Because of fluid circulation loss during drilling, no sample cuttings were produced from 915.5 to 1008 ft bgs. Preliminary interpretation of geophysical logging data indicates that the base of the Cerros del Rio basalt section lies at 923 ft bgs.

Cuttings samples suggest that the upper part of the Cerros del Rio basalt section, from 287 to 658 ft bgs, consists of a series of massive basalt lavas separated by intervals of highly vesicular to scoriaceous basalt. Six or more individual flows, some up to 75 ft thick, may be present. Intercalated intervals of reddish-colored scoria are as much as 20 ft thick. Basalt lavas exhibit sparsely porphyritic textures with an aphanitic groundmass and contain up to 5% phenocrysts of olivine and minor plagioclase. The groundmass, in both massive and vesicular basalt, is partially to pervasively altered. Olivine in the scoriaceous intervals generally is oxidized or replaced by iddingsite, whereas olivine in the massive basalts is mostly unaltered. Secondary clays, abundant in the scoriaceous basalt, are confined to coatings on fractures or to the linings of vesicles in the massive basalt.

The lower part of the Cerros del Rio basalt section, from 658 to 923 ft bgs, is made up of basalt lava flows, basaltic scoria, and interbedded clastic sediments. Discrete lava flows are poorly defined. Cuttings samples frequently contain both basalt chips and sedimentary detritus. Basalt in this section is sparsely

porphyritic, containing only minor olivine as phenocrysts, or phenocrysts are absent altogether. Sedimentary clasts derived from varied lithologies include quartzite, potassium feldspar, granite, and diverse volcanic lithics, as well as significant amounts (up to 50%) of limonite-stained volcaniclastic sandstone fragments, were noted in cuttings samples from 863 to 915.5 ft bgs. Many clasts exhibited some degree of rounding, indicating the presence of possible sedimentary units in this interval. The interval from 863 to 870 ft bgs has been interpreted as deposits of river gravel.

Puye Formation (923 to 1008 ft bgs)

The Puye Formation is composed of alluvial-fan deposits (Griggs and Hem 1964, 0313) that are widely distributed in the investigation area. These sediments are dominantly composed of intermediate-composition volcanic rock debris shed from the Jemez Mountains but also can include, to varying degrees, detrital quartzite and other lithics derived from Precambrian sources.

Because drilling-fluid circulation was lost, no cuttings were returned from about 916 ft to TD at 1008 ft bgs. The geophysical logging data, however, suggest that the Puye Formation occurs from 923 to 1008 ft bgs in R-32.

6.2 Groundwater Occurrence and Characteristics

Perched zones of saturation were anticipated at R-32. This includes both water perched at shallow depth in the alluvium forming the canyon floor and water perched at intermediate depth in various geologic units between the surface and the regional water table. Water was encountered during drilling in the alluvium at a depth of 22 ft bgs. This water is perched atop the less-permeable Tshirege Member of the Bandelier Tuff, which underlies the alluvium. No intermediate-depth perched water was identified. However, drilling in the vadose zone was conducted by the air-rotary method with foam additives. This method substantially reduces the ability to detect local perched zones of saturation, unless they are thick and unusually productive.

The regional water table, which was predicted to occur at approximately 856 ft bgs (LANL 2002, 73390), was first encountered in the open borehole and measured on August 1, 2002, at 738.5 ft bgs in the Cerros del Rio basalt after the borehole had been drilled to 808 ft bgs and the water level was allowed to stabilize. When the measurement was made, only the surface casing was in place to 54.5 ft bgs. The static water level was measured at 725.6 ft bgs on August 8, 2002, after the borehole had been drilled to 1008 ft bgs and allowed to stabilize. On November 12, 2002, after well development was completed but before installation of the Westbay™ system, a composite static water level in the completed well was measured at 783.4 ft bgs.

7.0 WELL DESIGN AND CONSTRUCTION

Sections 7.1 and 7.2 describe the R-32 well design and construction, respectively.

7.1 Well Design

The R-32 well design was completed jointly by the Laboratory and WGII, in consultation with the US Department of Energy and the New Mexico Environment Department (NMED). Geophysical logs, video logs, borehole geologic samples, water-level data, field water-quality data, and drillers' observations were reviewed by the Groundwater Integration Team to plan screen placement intervals for the well.

The final well design specified three screens to monitor water levels, determine vertical hydraulic gradients, and characterize water quality in the regional aquifer. The planned and actual screen intervals are given in Table 7.1-1.

Table 7.1-1
Summary of Well Screen Information, Characterization Well R-32

Screen	Planned Depth (ft)	Actual Depth (ft)	Geologic/Hydrologic Setting
1	867.7–874.5	867.5–875.2	Within the regional aquifer in river gravels above Cerros del Rio basalt
2	930.7–933.5	931.8–934.9	Within the uppermost part of the Puye Formation in the regional aquifer
3	970.8–977.6	972.9–980.6	Within the deepest part of the Puye Formation that was penetrated by the borehole

7.2 Well Construction

Well casing and pipe-based screens for well R-32 were manufactured using 4.5-in. inner diameter (ID)/5.0-in. outer diameter (OD), type 304 stainless steel fabricated to American Society for Testing and Materials (ASTM) standard A554. External couplings were also type 304 stainless steel fabricated to ASTM standards A312 and A511, both of which exceed the tensile strength of the threaded casing ends. The pipe-based screens were modified from 10-ft sections of blank well casing by drilling 0.5-in.-diameter holes (168 holes/ft) and then welding a stainless steel wire-wrap (with 0.010-in. spacing) over the perforated interval. The final OD of the screened sections was 5.56 in.

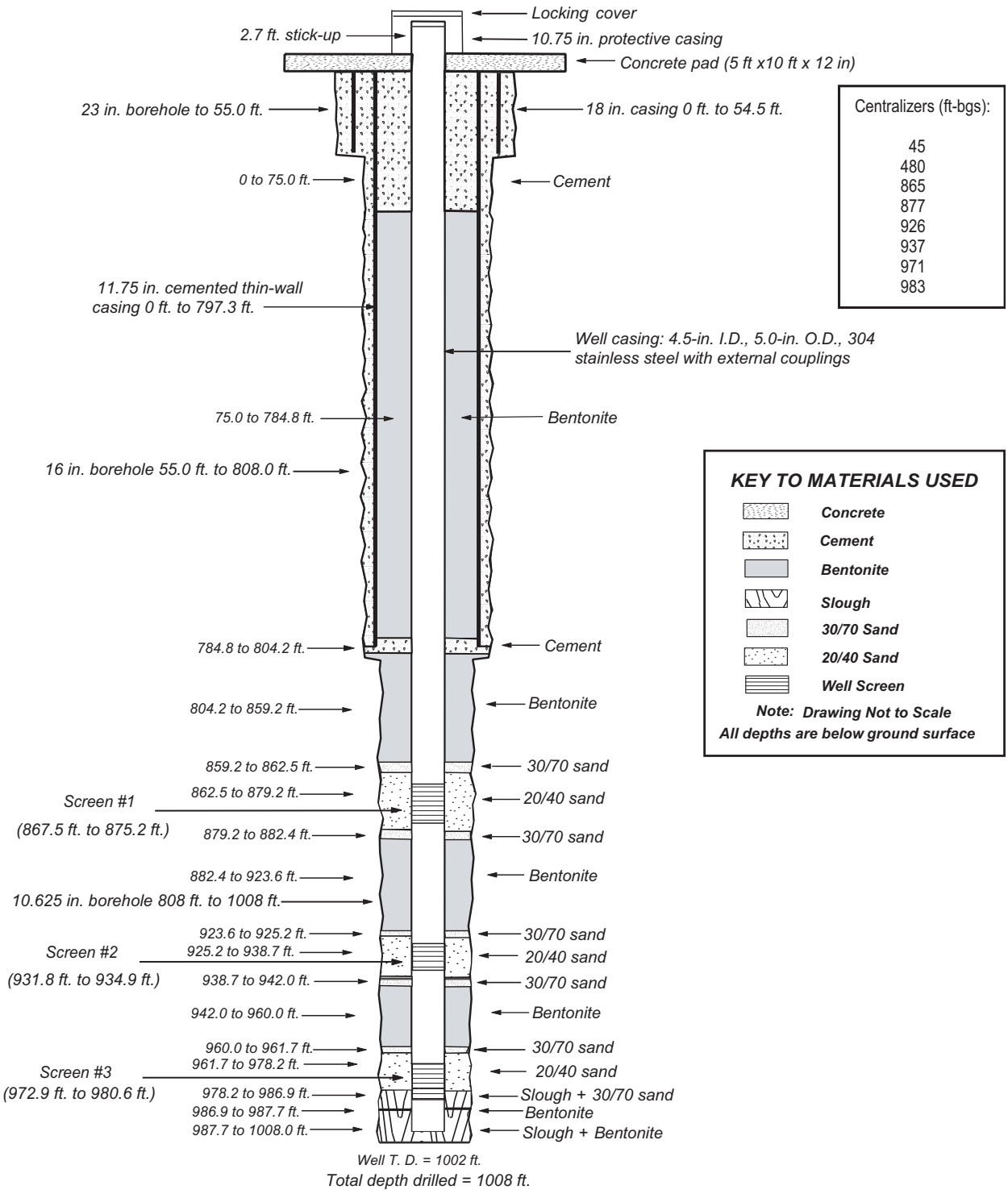
All stainless steel well components were cleaned at the well site using a steam cleaner and scrub brushes. All annular fill materials were placed in the well casing/borehole annulus through a tremie pipe. Well construction activities were completed between August 8 and 12, 2002 (Figure 3.0-2).

7.2.1 Well Steel Installation

Dynatec installed the R-32 well casing and screens on August 9, 2002. Figure 7.2-1 shows the as-built well casing configuration and indicates the depths of the various well components from ground surface. Well steel installation consisted of connecting joints of stainless steel well casing and screen sections by means of threaded couplings. The bottom of the well was set at 1002 ft bgs. Stainless steel centralizers were installed above and below each screen and in several locations above the zone of regional saturation to centralize the well within the borehole during and after backfill placement operations.

7.2.2 Annular Fill Placement

Placement of annular fill consisted of using a steel tremie pipe to deliver annular materials to the specified depths (Figure 7.2-1). Filter packs across screened intervals consisted of silica sand materials mixed with municipal water. Bentonite materials were placed between screened intervals to seal the annular space and isolate the water-bearing zones. Portland® cement (mixed at a ratio of 5 gal. of water to each bag of cement) was used to provide a foundation for the annular fill above the regional aquifer and to protect the annular space around the wellhead in the upper 75 ft of the borehole. Approximately 12,200 gal. of municipal water were used during placement of annular fill material.



Note: 1. Each screen interval lists the footage of the pipe perforations, not the top and bottom of screen joints.
2. The interval of slough probably consist of sands and gravel of the Puye Formation.
3. Westbay multiport sampling system (MP-55) casing not shown.
4. Pipe-based screen: 4.5-in. I.D., 5.563-in. O.D., 304 stainless steel with s.s. wire wrap; 0.010-in. slot.
5. Well sump interval: 980.6 to 1002 ft.

Figure 7.2.1. As-built well configuration diagram, characterization well R-32

Dynatec performed placement activities from August 9 through 12, 2002. Table 7.2-1 summarizes the annular fill materials used. The final configuration of annular materials is shown in Figure 7.2-1.

Table 7.2-1
Annular Fill Materials, Characterization Well R-32

Material	Use/Function	Amount	Unit*
20/40 sand (medium-grained)	To pack screen intervals	47	bag
30/70 sand (fine-grained)	To separate filter packs from bentonite seals	16	bag
QUICK-GROUT®	High-solids bentonite grout used for seals	80	bag
Pelplug® bentonite (0.25 in. by .375 in., refined elliptical pellets)	To provide borehole annular seal below the water table	95	bucket
Portland® cement (mixed with municipal water at a ratio of 5 gal. water to 1 bag)	To provide annular support and surface seal on the upper portion of the borehole	44	bag

*Sand bag = 50 lb ea, bentonite bag/bucket = 50 lb ea, cement bag = 94 lb ea.

8.0 WELL DEVELOPMENT AND HYDROLOGIC TESTING

Well development and hydrologic testing activities at R-32 were conducted between August 15 and November 10, 2002 (Figure 3.0-2). Well development procedures included wire-brushing, surging, bailing, chemical treatment of well screens, and development pumping. Development activities were followed by hydrologic tests conducted at screens 1 and 3.

8.1 Well Development

Well development was carried out using a variety of methods. The initial stage consisted of wire brushing the well interior, surging to draw fine sediment from the constructed filter packs, and bailing to remove unwanted solid materials from the well. In addition, the well was pumped to remove any remaining fines from the filter pack and adjacent formation. As part of development, chemical treatments were applied to the well screens to break up borehole wall filter cake and disperse particulate matter that resulted from adding drilling fluids during conventional mud-rotary drilling.

Well-development criteria were based on selected field water-quality parameters (turbidity, specific conductance, pH, and temperature). To monitor progress during development, samples of purged groundwater were collected periodically and the parameters were measured. A primary objective of well development was to remove suspended sediment from the water until turbidity decreased to a value less than 5 nephelometric turbidity units (NTUs) for three consecutive samples. Similarly, other measured parameters were required to stabilize before development could be terminated. The well was declared sufficiently developed when the required criteria were met or could not be improved with continued pumping. Table 8.1-1 presents pumping and water-quality parameter measurements recorded at the beginning and end of selected well development methods.

Table 8.1-1
Development of Characterization Well R-32

Method	Water Produced (gal.)	Range of Parameters[a]			
		pH	Temperature (°C)	Specific Conductance (µS/cm)[b]	Turbidity (NTU)
Preliminary bailing/wire brushing/surging	8240	9.0–8.6	22.6–20.5	656–215	>1000–110
Pump	6015	7.6–8.2	16.9–21.4	302–185	109–11.4
Chemical treatment (400 gal. of AQ-PFD)	+400	—[c]	—	—	—
Surging/bailing	1160	9.7–8.8	18.8–20.2	1390–236	90.1–132
Chemical treatment (330 gal. AQ-MGA[d] and -AE[e] to well)	+330	—	—	—	—
Surging/bailing	1900	2–7	19.6	341	12
Pump	66,110	7.2–6.8	21.2–21.2	306–172	19–2.4
Pumping screen 3 w/packers	24,810	6.8–6.8	23.1–22.4	103–97	2.4–1.9
Pumping at screen 2 w/packers	3015	7.2–6.8	19.9–23.6	110–143	42.2–3.3
Pumping at screen 1 w/packers	4450	7.3–6.9	22.7–24.4	115–251	5.7–3.7
TOTAL	114,970				

[a] Parameters presented as value at beginning followed by value at end of development method.
[b] Specific conductance reported in microsiemens per centimeter (µS/cm).
[c] — = No samples collected.
[d] MGA = modified granular acid.
[e] AE = acid enhancer.

Development of the R-32 well began on August 18, 2002. The casing and screens were cleaned using a wire-brush system to remove any materials that may have been introduced into the well interior during construction. Surging techniques then were used across all three screens with a wire-line-controlled surge block for rapid upward-downward strokes. Between August 18 and 29, 2002, the well screens were surged repeatedly, followed by periods of bailing. Water turbidity exceeded 1000 NTU during early surging/bailing procedures and decreased to 110 NTU after an estimated 8240 gal. of water were bailed (Table 8.1-1).

Development by pumping began on September 1, 2002. Pumping initially was conducted from all screens without the assistance of inflatable packers. A 10-horsepower (hp) submersible pump was lowered to the bottom of screen 3 and on/off cyclic pumping was conducted with approximately 30-min. periods of nonpumping to allow water levels in the well to recover. A total of 6015 gal. of groundwater was removed. Initially turbidity was measured at 109 NTU and decreased to 11.4 NTU during the pumping phase.

Well development was assisted by chemical treatments of the screens to break up and remove drilling-mud filter-cake build-up on the borehole wall during conventional mud-rotary drilling. Chemical treatments, along with surge/bail procedures, were performed between September 12 and 23, 2002. Initially, a mixture of 1 gal. of AQUACLEAR™-PFD (phosphate-free dispersant) and 400 gal. of municipal

water were pumped into the well and surged into all three screens. Following surging and bailing, a solution containing 90 lb of AQUA-CLEAR™- MGA (modified granular acid) and 9 gal. of AQUA-CLEAR™-AE (acid enhancer) and 330 gal. of municipal water were mixed on the site, pumped into the well, and surged into all three screens. Development pumping on screen 3 resumed from September 25 to October 2, 2002. Pumping with packers positioned above and below each screen to isolate the water-bearing zone was carried out from October 22 to October 31, 2002. As indicated in Table 8.1-1, turbidity measurements decreased to less than 5 NTU at each screen interval at the end of the pumping periods for each screen. Approximately 144,600 gal. of water were purged during development.

8.2 Hydrologic Testing

On November 4 and 5, 2002, the Laboratory conducted injection tests of saturated materials behind screens 1 and 3 in well R-32. The injection assembly, consisting of two inflatable packers separated by a perforated pipe, was positioned around each screen. For a given screen, the water-level response to injecting municipal water at different rates for different periods of time was monitored with a pressure transducer. Specifically, three tests were conducted at screens 1 and 3. During testing, 990 gal. of water were injected into the well. Following testing, 28,920 gal. of water were purged from the well. Results of these tests, as well as details of their design, implementation, and analysis, will be presented in a separate Laboratory report.

8.3 Installation of Westbay™ Monitoring System

A Westbay™ sampling system was installed inside the stainless steel well casing after development procedures were completed. The base of the multiport casing was set at 998.5 ft bgs. The system was set in place using a series of packers inflated with deionized water and positioned to target each well screen with a set of valved ports. The R-32 system contains six ports used to monitor and test nine packers. Screens 1 and 3 are accessed by two measurement ports and screen 2 by one measurement port. Measurement zones 1 and 3 also contain a pumping port. Quarterly sampling of Westbay™-equipped wells was done using a Laboratory-owned sampling trailer equipped with a MOSDAX® sampling system (controller, sampler probe, and sample bottle train) and a motorized winch and boom system. The Westbay™ summary MP casing log provides details of the installed system (Appendix F).

9.0 WELLHEAD COMPLETION AND SITE RESTORATION

After completion of Westbay™ installation, finish work commenced on the wellhead area. Well components were surveyed, and the site underwent final cleanup and restoration.

9.1 Wellhead Completion

The surface completion for well R-32 involved construction of a reinforced (3000 pounds per square inch [psi]) concrete pad, 5-ft-wide by 10-ft-long by 12-in.-thick, around the well casing to ensure the long-term structural integrity of the well (Figure 9.1-1). The concrete pad was poured on December 12, 2002. A brass survey cap was installed in the northwest corner of the pad. The pad was designed to be slightly elevated, with base-course gravel graded up around the pad to allow drainage. A 10.75-in.-diameter steel casing with locking lid was installed to protect the well riser. Four 4-in.-diameter steel bollards were placed around the pad, one next to each side. One bollard can is removable to allow access to the well for sampling and maintenance.

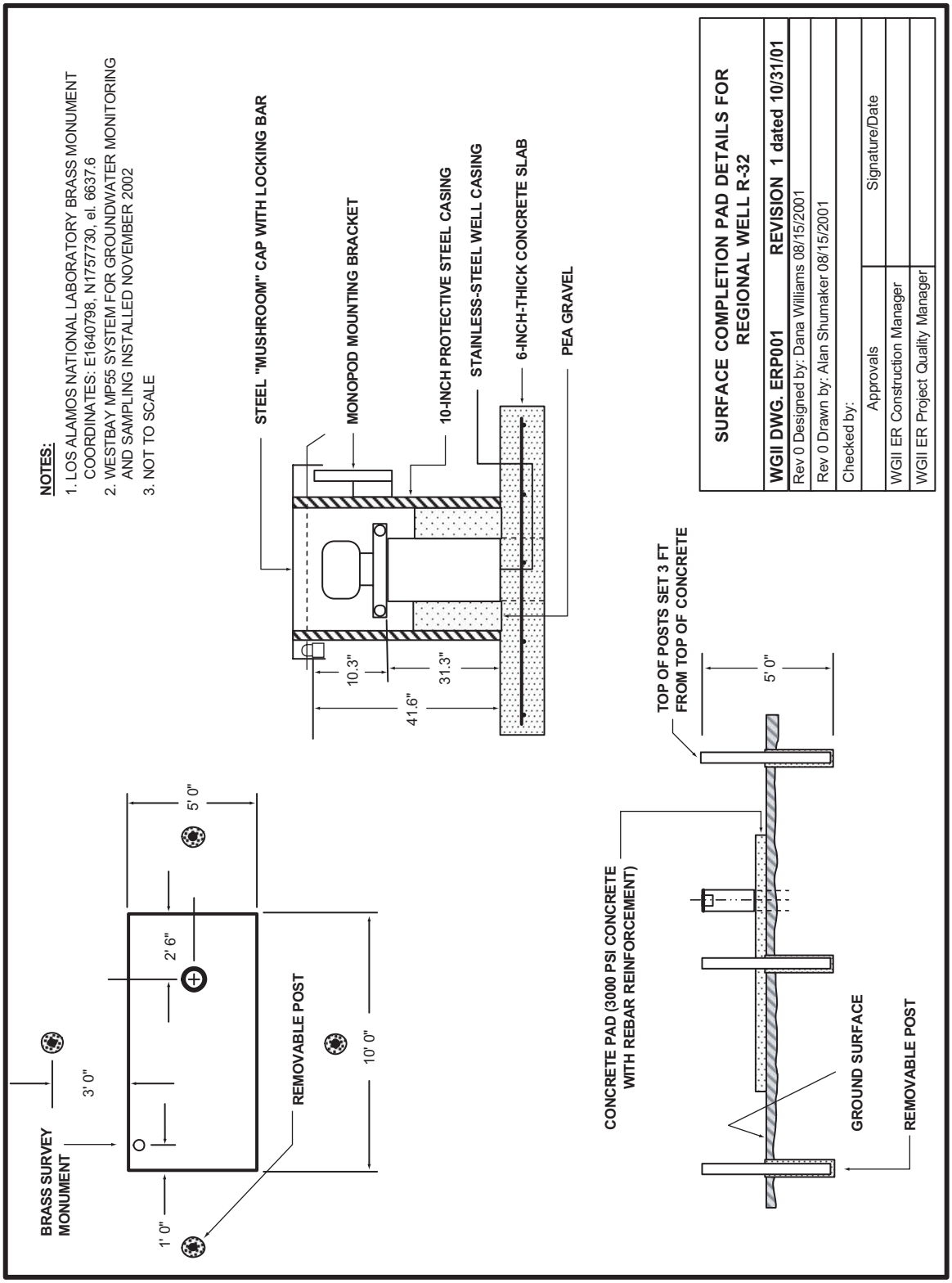


Figure 9.1-1. Surface completion configuration diagram, characterization well R-32

9.2 Geodetic Survey

Southwest Mountain Surveys, Inc. (NMPLS #6998) conducted a geodetic survey of well R-32 on December 19, 2002, using a global positioning satellite (GPS) system. The GPS system uses National Geodetic Vertical Datum of 99/96 for vertical computations and the datum for the horizontal control network is North American Datum 1983 (NAD 83). The survey located the brass monument in the northwest corner of the concrete pad and measured location and elevation at the top of the steel protective casing, the top of the Westbay™ cap, and the top of the Westbay™ plate (Table 9.2-1). The coordinates shown are in New Mexico State Plane coordinates, Central Zone (NAD 83) expressed in feet. To be consistent with current Laboratory standards, elevations are expressed in feet above mean sea level and referenced to the National Geodetic Vertical Datum of 1929 (NGVD29).

Table 9.2-1
Geodetic Data, Characterization Well R-32

Description	East	North	Elevation
Brass cap in R-32 pad	1640797.67	1757730.25	6637.63
Top of protective steel well casing	1640797.66	1757728.50	6640.47
Top of Westbay™ cap	1640797.84	1757728.48	6640.88
Top of Westbay™ plate	1640797.58	1757728.70	6641.18

9.3 Site Restoration

Site restoration activities at R-32 were conducted by K. R. Swerdfeger Construction, Inc., from February 24 to March 6, 2003 (Figure 3.0-2). Prior to and along with restoration, waste management activities were also performed. Waste materials were removed from the site as specified in the WCSF. Drilling activity media included drilling fluids, cuttings, and development water, that were sampled for contaminant analysis (Appendix G). After the Laboratory and NMED reviewed the test data, the fluids were approved for land application. The drill cuttings were used to help backfill the cuttings-containment area; the drilling fluids and development water were applied around the site with a 3-in.-pipe irrigation system as specified in the Notice of Intent. Waste streams from minor spill cleanup included petroleum-contaminated soils and absorbent materials used during cleanup. After the Laboratory approved the waste profile forms, the waste streams were disposed of as New Mexico Special Waste. Before the site was graded, the cuttings-containment area was excavated and the plastic lining was removed. The cuttings-containment area then was backfilled with drill cuttings and dirt that had been bermed during pad construction and the area was regraded. Base-course gravel was also regraded and compacted across the site to form a smaller pad. The site was re-seeded with a blend of native grasses mixed with fertilizer to facilitate regrowth of ground cover.

10.0 DEVIATIONS FROM THE R-32 SAP

- *Planned depth.* Well R-32 was drilled to 1008 ft bgs rather than to the planned depth of 1356 ft bgs. The decision to terminate drilling was based on the potential loss of the borehole if circulation could not be re-established The final depth maintained the original goal of drilling to 100 to 500 ft beneath the regional water level.
- *Laboratory tests of hydraulic properties.* Core samples were not selected for hydraulic property tests because of poor core quality and insufficient core size for meaningful test results.

11.0 ACKNOWLEDGEMENTS

Dynatec Drilling Company provided rotary drilling services.

Tetra-Tech EM, Inc.; D. B. Stephens and Associates, Inc.; and S. M. Stoller provided support for well-site geology, sample collection, and hydrologic testing.

Southwest Mountain Surveys, Inc. (NMPLS #6998), provided the final geodetic survey of finished well components.

D. Thompson and C. Schultz of PMC Technologies (Exton, Pennsylvania) and P. Schuh, E. Tow, and R. Lawrence of Tetra-Tech EM, Inc. (Albuquerque, New Mexico), contributed to the preparation of this report.

R. Bohn and E. Louderbough of Los Alamos National Laboratory reviewed this report for classification and legal purposes, respectively.

D. Broxton, P. Longmire, S. Pearson, W. Stone, and D. Vaniman, of Los Alamos National Laboratory, prepared this report.

Schlumberger Integrated Water Solutions provided processing and interpretation of borehole geophysical data.

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Appendix A

Activities Planned for R-32 Compared with Work Performed

Activity	"Hydrogeologic Workplan" (LANL 1998, 59599)	R-32 Sampling and Analysis Plan (LANL 2002, 73390)	R-32 Actual Work
Planned Depth	100 to 500 ft into the regional aquifer	Estimated depth of 1356 ft below ground surface (bgs)	Total drill depth 1008 ft bgs
Drilling Method	Methods may include, but are not limited to hollow-stem auger (HAS), air-rotary/Odex, air-rotary/Barber rig, and mud-rotary drilling	Stiff-foam, air-rotary, air rotary, mud rotary, flooded-reverse circulation, and fluid-assist air-rotary with casing-advance	Air-rotary core with wire-line retrieval and conventional mud rotary
Amount of Core	10% of the borehole	Continuous core from surface to estimated depth of 344 ft, but no deeper than 400 ft bgs	Continuous core from surface to 318 ft bgs
Lithologic Log	Log to be prepared from core, cuttings, and drilling performance data	Log to be prepared from core, cuttings, geophysical logs, and drilling performance data	Log prepared from core, cuttings, geophysical logs, and drilling performance data
Number of Water Samples Collected for Contaminant Analysis	A water sample may be collected from each saturated zone, five zones assumed. The number of sampling events after well completion is not specified.	If perched water is encountered within the bedrock units of the unsaturated zone, one groundwater-screening sample will be collected within up to three perched zones. Groundwater-screening samples will be collected within the regional aquifer at the regional water table and at the total depth (TD) of the borehole.	No perched water was identified during drilling
Water Sample Analysis	Initial sampling: radiochemistry I, II, and III, tritium, general inorganics, stable isotopes, volatile organic compounds (VOCs), and metals. Saturated zones: radionuclides (tritium, ^{90}Sr, ^{137}Cs, ^{241}Am, plutonium isotopes, uranium isotopes, gamma spectrometry, and gross alpha, beta, and gamma), stable isotopes (hydrogen, oxygen, and in special cases nitrogen), major ions (cations and anions), trace metals, and trace elements	Metals (dissolved), anions (dissolved), VOCs, ^{99}Tc, gamma spec, ^{241}Am, ^{137}Cs, ^{238}Pu, ^{239,240}Pu, ^{234}U, ^{235}U, ^{238}U, ^{90}Sr, stable isotopes (^{18}O/^{16}O, D/H, ^{15}N/^{14}N), tritium, tritium (low level or direct counting), radiological screening (gross-alpha, beta, gamma)	At the start of well development a groundwater sample was bailed from the bottom of the well and analyzed for metals (dissolved) including total U and anions (dissolved). Following well completion and development, groundwater samples, from screens 1, 2, and 3 were analyzed for metals (dissolved), anions (dissolved), VOCs, gamma spectrometry, radionuclides (^{99}Tc, ^{241}Am, ^{238}Pu, ^{239,240}Pu, ^{234}U, ^{235}U, ^{238}U, ^{90}Sr), stable isotopes (^{18}O/^{16}O, D/H, ^{15}N/^{14}N), tritium, tritium (low level or direct counting), U-total, perchlorate, alkalinity, and radiological screening (gross-alpha, beta, gamma)
Water Sample Field Measurements	Alkalinity, pH, specific conductance, temperature, turbidity	Alkalinity, pH, specific conductance, temperature, turbidity	pH, specific conductance, temperature, turbidity

Activity	"Hydrogeologic Workplan" (LANL 1998, 59599)	R-32 Sampling and Analysis Plan (LANL 2002, 73390)	R-32 Actual Work
Number of Core/Cuttings Samples Collected for Contaminant Analysis	Twenty samples of core or cuttings to be analyzed for potential contaminant identification in each borehole.	A minimum of two core/cuttings samples will be collected for geochemical and contaminant characterization within water-bearing zones, if possible, encountered during drilling.	Thirteen core/cuttings samples submitted for analysis
Core/Cuttings Sample Analytes	Upper-most core or cuttings sample to be analyzed for a full range of compounds; deeper samples will be analyzed for the presence of radiochemistry I, II, and III analytes, tritium (low- and high-detection levels), and metals. Four samples to be analyzed for VOCs.	Analytical suite for cuttings samples includes anions, stable isotopes, VOCs, tritium profiles, perchlorate, radionuclides (^{241}Am, ^{238}Pu,' ^{239,240}Pu, ^{234}U, ^{235} U, ^{238}U, ^{90}Sr) gamma spectroscopy, radiological screening (gross alpha, beta, and gamma), radionuclides, and metals.	Analytical suite for core samples included anions, stable isotopes, tritium profiles, radionuclides (^{241}Am, ^{238}Pu, ^{239,240}Pu, ^{234}U, ^{235}U, ^{238}U, ^{90}Sr,) gamma spectroscopy, radiological screening (gross alpha, beta, and gamma), and metals.
Laboratory Hydraulic-Property Tests	Physical properties analyses will be conducted on 5 core samples and will typically include moisture content, porosity, particle density, bulk density, saturated hydraulic conductivity, and water retention characteristics.	Physical properties analyses will be conducted on core sample for moisture content.	No analyses were performed.
Geology	Ten samples of core or cuttings will be collected for petrographic, X-ray fluorescence (XRF) and X-ray diffraction (XRD) analyses.	Analytical testing of samples may include mineralogy by XRD, petrography by modal analysis of thin sections, by electron microprobe, and/or by scanning electron microscope, and geochemistry by XRF.	Samples were collected for mineralogic, petrographic, and chemical analysis at a later date.

Activity	"Hydrogeologic Workplan" (LANL 1998, 59599)	R-32 Sampling and Analysis Plan (LANL 2002, 73390)	R-32 Actual Work
Geophysics	In general, open-hole geophysics includes caliper, electromagnetic induction, natural gamma, magnetic susceptibility, borehole color videotape (axial and side scan), fluid temperature (saturated), fluid resistivity (saturated), single-point resistivity (saturated), and spontaneous potential (saturated). In general, cased-hole geophysics includes gamma-gamma density, natural gamma, and thermal neutron.	The number and types of logs will vary as function of borehole condition, the presence or absence of drill or well casing. In general, open-hole geophysics includes caliper, array induction, triple lithodensity, combinable magnetic resonance, natural gamma, natural gamma ray spectrometry, epithermal compensated neutron, mechanical sidewall coring tool, fullbore formation microimager, and borehole color videotape (axial and side scan). In general, cased-hole geophysics includes: triple lithodensity, natural gamma ray spectrometry, natural gamma, and epithermal compensated neutron.	LANL tools: 0–54.5 ft bgs (cased), 54.5–-720 ft bgs (open hole): Video; 0–-54.5 ft bgs (cased), 54.5–-1008 ft (open hole): caliper, natural gamma, and induction; 0-1002 ft (within the well): video, natural gamma Schlumberger: geophysics: 0–54.5 ft bgs (cased), 54.5–808 ft bgs (open hole): array induction, combinable magnetic resonance, triple litho density, spectral gamma, elemental capture, and thermal-epithermal neutron
Water-Level Measurements	Procedures and methods not specified in hydrogeologic work plan.	Water levels will be determined for each saturated zone by water-level meter or by pressure transducer.	Water-level meter used to determine static water levels at the regional aquifer.
Field Hydraulic-Property Tests	Tests to be conducted not specified in hydrogeologic work plan.	Straddle-packer/injection tests will be performed in all screens completed below the regional water table.	Constant rate injection tests were conducted on screens 1 and 3.
Surface Casing	Approximately 20-in. outer diameter (OD), extends from land surface to 10-ft depth in underlying competent layer and grouted in place.	Install 18-in. or 20-in.-OD steel casing to approximately 60 ft.	18-in. OD steel casing set at 54.5 ft bgs, cemented in place
Conductor Casing	Unless other technical methods are applied, a temporary steel casing, up to 14-in.-OD, will be advanced to total depth of borehole.	Install 11.75-in. OD steel casing from 0 to ~700 to 800 ft bgs, or approximately 100 ft above anticipated regional water level, or; set thin-wall casing over problem zone(s) and seal off casing using standard regulatory procedures.	11.75-in. OD drill casing from 0 to 797.3 ft bgs, cemented in place
Minimum Well Casing Size	6.625-in. OD	5-in. OD	5-in.-OD x 4.5-in. inner diameter (ID) stainless steel casing w/ external couplings

Activity	"Hydrogeologic Workplan" (LANL 1998, 59599)	R-32 Sampling and Analysis Plan (LANL 2002, 73390)	R-32 Actual Work
Well Screen	Machine-slotted (0.01-in.), stainless steel screens with flush-jointed threads; number and length of screens to be determined on a site-specific basis and proposed to the New Mexico Environment Department (NMED).	Well screen shall be constructed with multiple sections of 5.5-in.-OD stainless steel pipe with wire wrap (0.010-in. slot opening).	Screened intervals constructed of 5.56-in.-OD (4.5-in. ID) pipe based, stainless steel, wire-wrapped, 0.010-in. slotted screen
Filter Material	>90% silica sand, properly sized for the 0.010-in. slot size of the well screen; extends 2 ft above and below the well screen.	Filter pack shall extend at least 5 ft and no more than 10 ft above and below each well screen. No distinction was made between primary and secondary filter packs.	Screen 3: Primary filter pack consisted of 20-40 silica sand placed 11.2 ft above screen. Secondary filter pack consisted of 30-70 silica sand in a layer 1.7-ft-thick above and mixed with slough in a layer 8.7-ft-thick across the bottom 1.4 ft of the screen and below. Screen 2: Primary filter pack consisted of 20-40 silica sand placed 3.8 ft below and 6.6 ft above screen. Secondary filter pack consisted of 30-70 silica placed in a layer 3.3-ft-thick below and 1.6-ft-thick above. Screen 1: Primary filter pack consisted of 20/40 silica sand placed 4 ft below and 5 ft above screen . Secondary filter pack of 30/70 silica sand placed in a layer 3.2-ft thick below and 3.3-ft thick above.
Backfill Material (exclusive of filter materials)	Uncontaminated drill cuttings below sump and bentonite above sump	Bentonite and cement in borehole or well annulus	Slough and bentonite in borehole and annulus below and around sump from TD to 5.3 ft below top of screen 3. Bentonite seal above screen 3 filter pack and above and below screens 2 and 1 filter packs. Cement plug from 784.8 to 804.2 ft bgs. Cement-bentonite grout from surface to 75 ft bgs.
Sump	Stainless steel casing with an end cap	Not specified	5-in. diameter stainless steel casing, 20.53-ft long, with an end cap
Bottom Seal	Bentonite	Bentonite	Bentonite

Appendix B

Drill-Additive Product Specifications
(CD attached to inside back cover)

QUIK-GEL®

Viscosifier

Description

QUIK-GEL is an easy-to-mix, finely ground (200-mesh), premium-grade, high-yielding Wyoming sodium bentonite. QUIK-GEL imparts viscosity, fluid loss control and gelling characteristics to freshwater-based drilling fluids.

Applications/Functions

- Mix with fresh water to form a low-solids drilling flluid for general drilling applications
- Viscosify water-based drilling fluids
- Reduce filtration by forming a thin filter cake with low permeability
- Improve hole-cleaning capability of drilling fluids
- Mix with foaming agents to make "gel/foam" drilling fluids for air/foam drilling applications

Advantages

- ANSI/NSF Standard 60 certified
- Single-sack product and cost effective
- Provides lubricity for drilling fluids
- Mixes easily and quickly reaches maximum viscosity
- Yields more than twice as much mud of the same viscosity as an equal weight of API oilfield grades of bentonite

Typical Properties

Appearance	Grey to tan powder
Bulk density, lb/ft^3	68 to 72 (compacted)
pH (3% solution)	8.9

Recommended Treatment

Mix slowly through a jet mixer or sift slowly into the vortex of a high-speed stirrer.

Approximate Amounts of QUIK-GEL Added to Freshwater			
Application/Desired Result	**lb/100 gal**	**lb/bbl**	**kg/m^3**
Normal Drilling Conditions	15-25	6-10	18-30
Unconsolidated Formations	35-50	15-21	42-60
Make-Up For Gel/Foam Systems	12-15	5-7	14-18

- 1 bbl = 42 U.S. gallons

Additional Information

***Note*:**

- For optimum yield, pre-treat make-up water with 1-2 pounds of soda ash per 100 gallons of water (1.2-2.4 kg/m^3).

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Rev. 6/2001 · IDP 009

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Packaging QUIK-GEL® is packaged in 50-lb (22.7-kg) multiwall paper bags.

Availability QUIK-GEL can be purchased through any Baroid Industrial Drilling Products Distributor. To locate the Baroid IDP distributor nearest you contact the Customer Service Department in Houston or your area IDP Sales Representative.

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Houston, TX 77032

Customer Service	(800) 735-6075 Toll Free	(281) 871-4612
Technical Service	(877) 379-7412 Toll Free	(281) 871-4613

QUIK-FOAM®

High Performance Foaming Agent

Description

QUIK-FOAM, a proprietary blend of alcohol ethoxy sulfates (AES) which are biodegradable, is an effective foaming agent. QUIK-FOAM can be added to fresh, brine, or brackish water for air/foam, air/gel-foam, or mist drilling applications.

Applications/Functions

- Enhance the rate of cuttings removal
- Increase the ability of lifting large volumes of water
- Improve hole-cleaning capability of the airstream
- Reduce the sticking tendencies of wet clays, thereby eliminating mud rings and wall packing
- Reduce erosion of poorly consolidated formations
- Provide a technique for drilling in zones with lost circulation
- Increase borehole stability
- Reduce air-volume requirement
- Suppress dust during air drilling operation

Advantages

- ANSI/NSF Standard 60 Certified
- High quality, high expansion foam with a consistency similar to shaving foam
- High stability with excellent retention time
- Versatile and compatible with various types of make-up water
- Readily undergoes primary and ultimate (>99%) biodegradation
- Proven product for multi-discipline application

Typical Properties

Appearance	Light yellow, transparent liquid
Specific gravity	1.03
pH (0.5% solution)	7.1
Flash point, PMCC °F, °C	82, (28)
Pour point, °F, °C	0, (-18)

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Rev. 6/2001 · IDP 010

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Recommended Treatment

Approximate Amounts of QUIK-FOAM® Added to Injection Water			
Application	**Amount/100 gal**	**Amount/bbl**	**Liters/m^3**
Dry-air drilling (as a dust suppressant)	0.5 - 1 pints	0.2 - 0.5 pints	0.5 - 1.5
Mud-mist drilling in sticky clays	1 - 2 quarts	1 - 2 pints	2.5 - 5
Foam and gel-foam drilling	0.5 - 2 gallons	1.5 - 7 pints	5 - 20
As a slug to clean the annulus	1 pint*	0.5 pints*	0.5**

* in drill pipe, followed by 3 to 5 gallons of water; ** followed by 20 liters of water

Note:

Close product container immediately after use to avoid gelation of remaining QUIK-FOAM.

Product Make-ups for Air Drilling Injection Slurries				
Main Ingredient of Injection Slurry	**Water (gallons)**	**QUIK-GEL® viscosifier (pounds)**	**QUIK-TROL® polymer (pounds)**	**QUIK-FOAM foaming agent (% by volume)**
Foam Drilling System	100	…	…	0.02 - 3.0
Mixing/Injection Procedure Add QUIK-FOAM to injection water. Inject into the air stream at a rate necessary to maintain hole stability and penetration rate. Increase amount of QUIK-FOAM as required to compensate for downhole water dilution				
Firm-Foam Drilling System	100	…	0.5 - 1	0.1 - 2.0
Mixing/Injection Procedure Mix polymer with water before adding QUIK-FOAM. 1-2 pints of EZ MUD® may be used as a substitute for QUIK-TROL. Inject into the air stream at a rate necessary to maintain hole stability and penetration rate.				
Mud-Mist Drilling System	100	25	…	0.3 - 1.0
Mixing/Injection Procedure Mix viscosifier with water before adding QUIK-FOAM. Inject into the air stream at a rate necessary to maintain hole stability and penetration rate. Resulting viscosity is 32-40 sec/qt as measured by Marsh Funnel.				
Gel-Foam Drilling System	100	12 - 15	1	0.3 - 1.0
Mixing/Injection Procedure Mix viscosifier and polymer with water before adding QUIK-FOAM. Inject into the air stream at a rate necessary to maintain hole stability and penetration rate. Resulting viscosity is 32-40 sec/qt as measured by Marsh Funnel.				

Note:

In some states, it is illegal to discharge any foreign substance into the water shed due to potential contamination of ground water. After use, the foam mixture must be localized in an earthen pit or some type of containment and allowed to biodegrade naturally.

Packaging QUIK-FOAM® is packaged in 5-gal (19-liter) plastic containers or in 55-gal (208 liter) drums.

Availability QUIK-FOAM can be purchased through any Baroid Industrial Drilling Products Distributor. To locate the Baroid IDP distributor nearest you contact the Customer Service Department in Houston or your area IDP Sales Representative.

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Houston, TX 77032

Customer Service	(800) 735-6075 Toll Free	(281) 871-4612
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PAC™-L

Modified Natural Cellulosic Polymer

Description

PAC-L, modified natural cellulosic polymer, provides filtration control in most water-based drilling fluids without substantially increasing viscosity. PAC-L, when added to a QUIK-GEL® or BORE-GEL™ slurry, yields a drilling mud system suitable for drilling in sandy formation. PAC-L can be added to vegetable or mineral oil to provide an oil-based fluid suspension, which can be poured into drill string directly.

Applications/Functions

- Provide filtration control in fresh or brackish water-based drilling fluids
- Reduce fluid loss without significantly increasing fluid viscosity
- Encapsulate shale to prevent swelling and disintegration
- Promote borehole stability in water sensitive formations
- Minimize rod chatter, rotational torque and circulating pressure
- Improve hole cleaning and core recovery

Advantages

- Effective in fresh water, salt water and brackish water-based drilling fluids
- Effective in small quantities for filtration control
- Non-fermenting
- Compatible with other Baroid drilling fluid additives
- Resistant to harsh environments and contaminants

Typical Properties

Appearance	White, free-flowing powder
pH (1% aqueous solution)	7.75

Recommended Treatment

- Using a Venturi Mixer, or into vortex of a high-speed stirrer, add slowly and uniformly to the entire circulating system.

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BORE-GEL and PAC are trademarks of Halliburton Energy Services, Inc.

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Recommended Treatment

Approximate Amounts of PAC™-L Added to Water Based Fluids		
Desired Condition/Result		
Added to fresh or salt water	**lb/100 gal**	**kg/m^3**
Ÿ To stabilize water sensitive formation	3 – 7	4 – 8.5
Ÿ To reduce torque and lower circulating pressure	0.5 - 2	0.6 – 2.4
Added to QUIK-GEL® slurry (25 lb/100 gallons) or (30 kilograms per m^3)	**lb/100 gal**	**kg/m^3**
Ÿ To reduce filtration rate and improve borehole stability	0.5 - 2.0	0.6 – 2.4
Added to BORE-GEL™ slurry (35 lb/100 gallons) or (42 kilograms per m^3)	**lb/100 gal**	**kg/m^3**
Ÿ To reduce filtration rate and improve borehole stability	0.5 – 2.0	0.6 – 2.4

Note:
Very salty waters may require twice as much PAC-L as fresh water. Preferably, PAC-L should be mixed in fresh water before it is added to very salty water.

Packaging

PAC-L is packaged in 50-lb (22.7 kg) bags.

Availability

PAC-L can be purchased through any Baroid Industrial Drilling Products Distributor. To locate the Baroid IDP distributor nearest you contact the Customer Service Department in Houston or your area IDP Sales Representative.

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N-SEAL™

Lost Circulation Material

Description

N-SEAL, acid soluble lost circulation material, is specially formulated extrusion spun mineral fiber. Due to its solubility in weak acids, N-SEAL is easily removed from production zones.

Applications/Functions

N-SEAL can be used in concentrations of up to 70 lb/100 gallons (86 kg/m^3) in slug treatments or as additive to entire system.

Advantages

- Acid soluble
- Easily-wetted
- Inorganic and non-fermenting

Typical Properties

Appearance	Gray white fiber
Specific gravity	2.6

Recommended Treatment

N-SEAL can be added directly through the hopper.

- For normal treatment to the active system, add 5-20 lb/100 gallons drilling fluid (6-24 kg/m^3)
- As a pill, add 20-70 lb/100 gallons of drilling fluid (24-86 kg/m^3)

N-SEAL is 95% acid soluble. To dissolve 1 lb of N-SEAL, treat with either

- 1-2 lb AQUA-CLEAR™ MGA (1-2 kg/kg)

  or
- 0.5-1 gal of 10% HCl/5% Acetic acid blend (1-2 liters/kg)

Packaging

N-SEAL is packaged in 30-lb (13.6 kg) multiwall paper bags.

Availability

N-SEAL can be purchased through any Baroid Industrial Drilling Products Distributor. To locate the Baroid IDP distributor nearest you contact the Customer Service Department in Houston or your area IDP Sales Representative.

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LIQUI-TROL™

Modified Cellulosic Polymer Suspension

Description

LIQUI-TROL is a free-flowing, liquid suspension of a modified natural cellulosic polymer, in an ultra-clean oil. LIQUI-TROL, when added to a QUIK-GEL® or BORE-GEL™ slurry, yields a drilling mud system suitable for drilling in water sensitive formations.

Applications/Functions

- Provide filtration control in fresh or brackish water-based drilling fluids
- Promote borehole stability in water sensitive formations
- Pour a slug of concentrate into drill string directly to sweep the hole
- Minimize rotational torque and circulating pressure
- Improve hole cleaning and core recovery
- Stiffen the foam to improve cuttings transport in air/gel-foam drilling
- Reduce air requirements, uphole velocity and borehole annulus pressure

Advantages

- Effective in fresh water, salt water and brackish water-based drilling fluids
- Effective in small quantities for filtration control
- Non-fermenting
- Compatible with other Baroid drilling fluid additives
- Resistant to harsh environments and contaminants

Typical Properties

Appearance	Off-white, free-flowing, viscous fluid
Specific gravity	0.98
pH (0.3% solution)	9.0
Flash point, PMCC °F (°C)	185, (85)
Pour point, °F (°C)	35, (1.7)
Freeze point, °F (°C)	-40, (-40)

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Recommended Treatment

- Using Venturi Mixer, or into vortex of a high-speed stirrer, add slowly and uniformly to entire circulating system.
- Used to slug down the rods to produce a high viscosity hole-cleaning sweep.

Approximate Amounts of LIQUI-TROL™ Added to Water-Based Fluids		
Desired Condition/Result		
Added to fresh or salt water	**qt/100 gal**	**liters/m^3**
• To stabilize water sensitive formation	4-6	10-15
• To reduce torque and lower circulating pressure	2-4	5-10
Added to QUIK-GEL® slurry (25 pounds per 100 gallons) (30 kilograms per m^3)	**qt/100 gal**	**liters/m^3**
• To enhance drilling mud fluid properties	1-2	2.5-5
• To improve drilling mud suspension and stabilization capabilities	2-4	5-10
Added to injection liquid in air/foam drilling	**qt/100 gal**	**liters/m^3**
• To improve foam performance and hole cleaning	1-4	2.5-10

Note:

Salt water may require twice as much LIQUI-TROL as fresh water. Preferably, LIQUI-TROL should be mixed in freshwater before it is added to salty water.

Packaging

LIQUI-TROL is packaged in 5-gal (19-liter) metal pails with an integrated, resealable pour spout.

Availability

LIQUI-TROL can be purchased through any Baroid Industrial Drilling Products Distributor. To locate the Baroid IDP distributor nearest you contact the Customer Service Department in Houston or your area IDP Sales Representative.

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HOLEPLUG®

Graded Sodium Bentonite

Description

HOLEPLUG is a naturally occurring Wyoming sodium bentonite clay that is a sized and graded chip material used to seal and plug earthen boreholes.

HOLEPLUG is available in two particle size grades:

- HOLEPLUG 3/4" (100% of particles pass through 3/4" screen; all particles retained on 3/8" screen)
- HOLEPLUG 3/8" (100% of particles pass through 3/8" screen; all particles retained on 1/4" screen)

Applications/Functions

- Highly recommended for use in grouting annulus in all types of wells, particularly environmental monitoring well applications
- Seal above gravel packs
- Plug decommissioned boreholes
- Stemming shotholes
- Seal around conductor pipe
- Seal lost circulation zones
- Shut off artesian flow

Advantages

- Prevents entry of surface water into boreholes
- High swelling potential
- In situ swelling to provide a superior seal with excellent casing stabilization
- Easier to apply than pellets
- Cost effective
- Simple to apply, mixing not required
- Prevents vertical movement of fluids in the hole between porous zones
- Forms a permanent, flexible downhole seal
- Allows hole re-entry
- Rehydratable
- ANSI/NSF Standard 60 certified

Typical Properties

Volume of 50-lb (22.7 kg) sack	
HOLEPLUG 3/4"	0.73 ft^3 or 0.027 yd^3 or 0.021 m^3
HOLEPLUG 3/8"	0.70 ft^3 or 0.026 yd^3 or 0.020 m^3
Permeability	1.5×10^{-9} cm/sec (in fresh water)
Appearance	Beige to tan chips

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Recommended Treatment

Plugging and Stemming Drill Holes

Due to shipping and handling, a small amount of fine bentonite particles may be present. For optimum results, HOLEPLUG® should be poured over a mesh or screen with ¼" (6.4 mm) openings to "sift out" the smaller particles. The screen should be large enough (approx.1 yd^2 or $1m^2$) to be folded into a "V" shape to allow sifting while the product is being poured into the hole. Also, HOLEPLUG should be poured slowly. Allow approximately two minutes to pour a 50-lb (22.7 kg) bag.

1. Position the screen with the lower end placed over the borehole
2. Slowly pour HOLEPLUG down the "V" so that fine particles fall through the screen before the larger particles fall into the borehole
3. Fill hole as required (above static water level or to ground level)
4. Observe all regulatory specifications

Stopping loss of circulation and stabilizing unconsolidated formations

1. Pull drill pipe out of hole
2. Pour HOLEPLUG into hole to fill above problem zone
3. Drill ahead slowly with reduced pump pressure

Plugging flowing wells

Pour HOLEPLUG into hole until water flow subsides or hole is filled to surface.

Treatment Considerations

§ Adequate annular space should be present to allow for the placement of HOLEPLUG into the area of concern without bridging. It is recommended that a minimum annular space of two inches on either side of the outside dimension of the casing be present. This will facilitate the placement of tremie lines and reduce the potential of the HOLEPLUG bridging during pouring operations. The use of this product should always correspond with applicable federal, state and local well construction guidelines.

Application Amounts

Amounts of HOLEPLUG® Required for Plugging Applications				
Hole Diameter (inches)	Hole Volume (ft^3/ft)	Pounds HOLEPLUG Needed to Fill One Foot	Feet Filled by One Bag HOLEPLUG	Bags HOLEPLUG Needed to Fill 100 ft
2	0.022	1.6	32.6	3.2
2.5	0.034	2.4	20.5	5.0
3	0.049	3.5	14.3	7.0
3.5	0.067	4.8	10.4	9.6
4	0.087	6.3	7.9	12.6
4.5	0.110	7.9	6.3	15.8
5	0.136	9.8	5.1	19.6
5.5	0.165	11.9	4.2	23.8
6	0.196	14.1	3.5	28.2
6.5	0.230	16.6	3.0	33.2
7	0.267	19.2	2.6	38.4
7.5	0.307	22.1	2.3	44.2
8	0.349	25.1	2.0	50.2
8.5	0.394	28.4	1.8	56.8
9	0.442	31.8	1.6	63.6
9.5	0.492	35.4	1.4	70.8
10	0.545	39.2	1.3	78.4
11	0.660	47.5	1.1	95.0
12	0.785	56.5	0.89	113.0
15	1.227	88.3	0.57	176.6
18	1.767	127.2	0.39	254.4
20	2.182	157.1	0.32	314.2
25	3.409	245.4	0.20	490.8
30	4.909	353.4	0.14	706.8

Application Amounts (metric equivalents)

Amounts of HOLEPLUG® Required for Plugging Applications				
Hole Diameter (mm)	Hole Volume (m^3/m)	Kilograms HOLEPLUG Needed to Fill One Meter	Meters Filled by One Bag HOLEPLUG	Bags HOLEPLUG Needed to Fill 10 meters
51	0.002	2.3	9.87	1.0
64	0.003	3.6	6.31	1.6
76	0.005	5.2	4.38	2.3
89	0.006	7.0	3.22	3.1
102	0.008	9.2	2.47	4.1
114	0.010	11.6	1.95	5.1
127	0.013	14.4	1.58	6.3
140	0.015	17.4	1.30	7.7
152	0.018	20.7	1.10	9.1
165	0.021	24.3	0.93	10.7
178	0.025	28.2	0.81	12.4
191	0.029	32.4	0.70	14.3
203	0.032	36.8	0.62	16.2
216	0.037	41.6	0.55	18.2
229	0.041	46.6	0.49	20.5
241	0.046	51.9	0.44	22.9
254	0.051	57.5	0.39	25.3
279	0.061	69.6	0.33	30.7
305	0.073	82.8	0.27	36.5
381	0.114	129.4	0.18	57.0
457	0.164	186.4	0.12	82.1
508	0.203	230.1	0.10	101.4
635	0.317	359.5	0.06	158.4
762	0.456	517.7	0.04	228.1

Packaging

HOLEPLUG graded bentonite is packaged in 50-lb (22.7 kg) multiwall paper bags.

Availability

HOLEPLUG can be purchased through any Baroid Industrial Drilling Products Distributor. To locate the Baroid IDP distributor nearest you contact the Customer Service Department in Houston or your area IDP Sales Representative.

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EZ-MUD®

Polymer Emulsion

Description

EZ-MUD, a liquid polymer emulsion containing partially hydrolyzed polyacrylamide/polyacrylate (PHPA) copolymer, is used primarily as a borehole stabilizer to prevent reactive shale and clay from swelling and sloughing. EZ-MUD is also added to low-solids drilling fluids to increase lubricity, fluid viscosity, and to improve carrying capacity of air/foam injection fluids.

Applications/Functions

- Stabilize reactive shale and clay formations
- Improve borehole stability
- Enhance slurry rheological properties
- Alleviate mud rings, bit balling and booting-off in clay formations
- Reduce drill pipe torque and pumping pressure
- Minimize rod chatter in diamond core drilling
- Create "stiff-foam" and maintain foam integrity
- Flocculate non-reactive solids in reserve pit at low concentrations

Advantages

- Mixes easily with minimum shear in fresh water
- Provides effective clay and shale stabilization with lower viscosity
- Imparts high degree of lubricity
- Non-fermenting
- Breaks down chemically with bleach (sodium hypochlorite)
- ANSI/NSF Standard 60 Certified

Typical Properties

Appearance	Thick, opaque white liquid
Density	8.5 lb/gal (1.02 g/cm^3)
pH (1 quart per 100 gallons water)	8.5
Flash point, PMCC °F, °C	>200 (>93.3)
Thermal stability, °F, °C	250 (121)

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Recommended Treatment

Approximate Amounts of EZ-MUD® Added to Drilling Fluid System			
Drilling Application/Desired Property	**Quarts/ 100 gal**	**Pints/bbl**	**Liters/m^3**
Added to fresh water (To formulate a clay-free drilling fluid)			
• To stabilize reactive clay and shale	0.5 - 2.0	0.5 - 1.75	1.25 - 5.0
• To retard rod vibration, reduce torque and pumping pressure	1.0 - 2.0	1.0 - 1.75	2.5 - 5.0
Added to QUIK-GEL® or BORE-GEL™ Drilling Fluids			
• To retard reactive shale and clay and enhance lubricity	0.5 - 1.0	0.5 - 1.0	1.25 - 2.5
Added to injection liquid in air/foam drilling applications			
• To improve foam performance and hole conditions	0.5 - 1.0	0.5 - 1.0	1.25 - 2.5

Notes:

- Make-up water used to mix EZ-MUD should meet the following quality:
  total chloride less than 1500 ppm (mg/L)
  total hardness less than 150 ppm as calcium
  total chlorine less than 50 ppm
  water pH between 8.5-9.5
- Reduce total hardness of make-up water by adding soda ash (sodium carbonate) at 0.5 to 1 pound per 100 gallons (0.6 - 1.2 kg/m^3) of make-up water.
- EZ-MUD can be chemically broken down with liquid bleach in regular household concentration (5% sodium hypochlorite). Use one gallon of liquid bleach per 100 gallons (10 liters/m^3) of fluid formulated with EZ-MUD. Do not use perfumed liquid bleach or solid calcium hypochlorite.

Packaging

EZ-MUD is packaged in 5-gal (19-liter) and 1-gal (3.8-liter) plastic containers.

Availability

EZ-MUD can be purchased through any Baroid Industrial Drilling Products Distributor. To locate the Baroid IDP distributor nearest you contact the Customer Service Department in Houston or your area IDP Sales Representative.

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BENSEAL®

Sealing and Plugging Agent

Description

BENSEAL is a granular (8-mesh), natural Wyoming sodium bentonite for use in sealing and grouting well casings and earthen structures. BENSEAL is not recommended for use as a drilling mud.

Applications/Functions

- Seal or grout plastic or steel casings in monitor and water well construction
- Seal or plug abandoned boreholes
- Seal leaking ponds, ditches and dams
- Soil stabilization
- Prepare BENSEAL/EZ-MUD® grouting system
- Aid in controlling loss of circulation

Advantages

- High swelling capacity
- Uniform particle size
- No heat of hydration
- Prevents commingling of aquifers and contamination from surface
- Forms a flexible seal to protect casing from corrosive contaminants
- Allows for hole re-entry
- ANSI/NSF Standard 60 certified

Typical Properties

Appearance	Bluish to gray granules
Dry screen analysis	85% of 8 mesh
Volume, ft^3/sack	0.7 (as packaged)
Specific gravity	2.6
Permeability	less than 1×10^{-8} cm/sec (in fresh water)

Recommended Treatment

As a casing drill and drive operation:

1. Dig a cone-shaped depression around casing. Depression should be 6 - 8 inches (152-203 mm) larger than the outside diameter of the casing and 2 - 3 feet (60-75 cm) deep.
2. Keep cone-shaped depression filled with dry BENSEAL while driving the casing.

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Recommended Treatment (continued)

Note:

When drilling and driving a 4" (102mm) pipe, expect to use 2.5 pounds of BENSEAL® per foot of hole or 3.7 kilograms of BENSEAL per meter of hole.

Sealing ponds or earthen structures:

Depending on the native soil, disc in or mix 3 to 5 pounds of BENSEAL per square foot (14-24 kg/m^2) uniformly over the area to be sealed so that a 6-inch (~152 mm) blanket of soil and BENSEAL is formed. Do not neglect the edges of the dam or the sides/walls of the pond. This sealing blanket should then be compacted in place and as a further protection to the sealing blanket, 2 to 4 inches (51-102 mm) of local soil or sand should cover the sealing blanket and be compacted.
If the leaking area can be identified and isolated, an attempt can be made to broadcast BENSEAL uniformly at 4 to 6 pounds of BENSEAL per square foot (20-30 kg/m^2) of surface area into the water over the area of concern.
Note*:* Bentonite is more effective as a sealing agent when confined. Therefore, every effort should be made to cover the BENSEAL after it is broadcast with a 2-3 inch (51-76 mm) layer of sand. This will reduce the potential for dispersion into the water and un-yielded bentonite particles interfering with the gill action of fish.

Lost returns (moderate):

1. Begin with the pit full of mud.
2. Raise the pump suction off bottom and place a shovel next to it and slightly under suction.
3. Pour dry BENSEAL slowly into the space between shovel and suction and pump it down the hole.

Packaging

BENSEAL is packaged in 50-lb (22.7 kg) multiwall paper bags, containing 0.7 ft^3 (0.02 m^3).

Availability

BENSEAL can be purchased through any Baroid Industrial Drilling Products Distributor. To locate the Baroid IDP distributor nearest you contact the Customer Service Department in Houston or your area IDP Sales Representative.

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AQUA-CLEAR™ PFD

Phosphate-Free Dispersant

Description

AQUA-CLEAR PFD is a concentrated liquid polymer dispersant that provides superior mud and sediment removal from the producing formation and gravel pack. This product is also a highly effective mud thinner. AQUA-CLEAR PFD contains no phosphates.

Applications/Functions

- Disperse mud, sediment and clay from the producing formation and gravel pack in the screened interval.
- Reduce viscosity and gel strength of drilling fluids

Advantages

- ANSI/NSF Standard 60 certified
- Reduces development time
- Increases well yield and capacity
- Safe to use on most plastics, rubber and metals
- Non-fermenting
- Reduces pumping costs

Typical Properties

Appearance	straw colored liquid
Specific gravity	1.2 to 1.4
pH (neat)	6.5 to 7.5

Recommended Treatment

As a Well Development Aid

- Determine volume of water in screen area and double the calculated volume to account for water in gravel pack and formation interface ***or*** determine the static volume of water and add 50% excess.
- Once the water volume is determined, calculate the required treatment volume of AQUA-CLEAR PFD by the following formula:

  AQUA-CLEAR PFD (gal or L) = 0.002 x Water Volume (gal or L)

This equates to one gallon of AQUA-CLEAR PFD for every 500 gallons of water (0.2% by volume) or 2.0 liters of AQUA-CLEAR PFD for every cubic meter of water.

- Mix thoroughly before introducing into well.
- The preferable application method utilizes a tremie line with the product applied into the screened area.
- If necessary, the AQUA-CLEAR PFD/water solution may be poured into the well.
- Mixture should be thoroughly blended in well, then agitated using a surge

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Recommended Treatment (continued)

and swab, jetting, or other developmental technique repeatedly every two hours for a period of up to 24 hours.

- Pump to waste until turbidity clears up and then connect well to distribution system.

As a Mud Thinner

- Start by adding one pint of AQUA-CLEAR™ PFD to 500 gallons of mud. Increase concentration until desired viscosity is achieved.

Well Capacity Chart (Gallons per Foot)					
Well Diameter (Inches)	**Well Capacity in Gallons/ft**	**Well Diameter (Inches)**	**Well Capacity in Gallons/ft**	**Well Diameter (Inches)**	**Well Capacity in Gallons/ft**
2	0.2	12	5.9	24	23.5
4	0.7	14	8.0	26	27.6
6	1.5	18	13.2	30	36.7
8	2.6	20	16.3	36	52.9
10	4.1	22	19.7	48	94.0

Well Capacity Chart (Liters per Meter)					
Well Diameter (millimeters)	**Well Capacity Liters/meter**	**Well Diameter (millimeters)**	**Well Capacity Liters/meter**	**Well Diameter (millimeters)**	**Well Capacity Liters/meter**
51	2.0	305	73.0	610	292.0
102	8.1	356	99.3	660	342.6
152	18.3	457	164.2	762	456.1
203	32.4	508	202.7	914	656.8
254	50.7	559	245.3	1219	1167.7

Note: The volumes in these tables show only the volume of water in a 1 foot or 1 meter section of a given size of screen. Excess volume must be included to account for water present in the formation interface and gravel pack.

Packaging

AQUA-CLEAR PFD is packaged in a 5-gal (19-liters) plastic pail or 1-gal (3.8-liter) plastic container.

Availability

AQUA-CLEAR PFD can be purchased through any Baroid Industrial Drilling Products Distributor. To locate the Baroid IDP distributor nearest you, contact the Customer Service Department in Houston or your area IDP Sales Representative.

Baroid Industrial Drilling Products

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Customer Service	(800) 735-6075 Toll Free	(281) 871-4612
Technical Service	(877) 379-7412 Toll Free	(281) 871-4613

AQUA-CLEAR™ MGA

Modified Granular Acid

Description

AQUA-CLEAR MGA is a dry blend of granular acid and additives used in the removal of iron, manganese and carbonate scale. It retains strength longer than most liquid acids, which increases its cleaning capability.

Applications/Functions

- Disperse scale and incrustation
- Remove scale and incrustation from the water well screen, casing, gravel pack and pumping equipment
- Restore well production
- AQUA-CLEAR MGA can be used in combination with AQUA-CLEAR AE to remove more difficult scale and incrustation

Advantages

- ANSI/NSF Standard 60 certified
- Safe to use on all plastics, rubber and metals
- No harmful vapors
- Improves water quality (color, taste and appearance)
- Reduces equipment and piping failures due to scale build-up and corrosion
- Reduces pumping costs

Typical Properties

Appearance	Free-flowing, off-white granules
Specific gravity	2.00
pH (10% solution)	0.9
Solubility in water	Complete with slight to hazy turbidity

Recommended Treatment

- Record initial well water pH
- The preferred application method is to apply a solution of AQUA-CLEAR MGA into the screened interval through a tremie pipe.

Recommended Treatment (continued)

- Mix AQUA-CLEAR™ MGA with water at ½ - 1 pound per gallon of water or 0.06 - 0.12 kilograms per liter of water and apply directly into screened interval with a tremie pipe. When utilizing this method, calculate the volume of water in the screened area and double the calculated volume to account for the water in the gravel pack and formation interface.

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Note: The previous concentration of* AQUA-CLEAR™ MGA *is recommended for a complete reconditioning of an existing well.

- Calculation for volume in well:
- Gallons per foot = (diameter, inches)^2 x 0.042
- Liter per meter = (diameter, millimeters)^2 x 0.0008
- Displace solution into the well screen and formation, then surge, swab, agitate or jet well through screen and gravel pack for 20-30 minutes.
- Allow to stand in well for up to two hours and then repeat activity approximately every two hours for a period of 24 hours.
- Pump well to waste until well water pH is within 0.5 of original well pH.

  Note: Wastewater can be neutralized by adding soda ash or lime

- Chlorinate well and reconnect to water distribution system.

  Caution: Never mix chlorine and* AQUA-CLEAR MGA *in well.

- If necessary, AQUA-CLEAR MGA may be poured directly into well as per treatment table, but results will not be as good as if applied in a dissolved form via a tremie pipe. The undissolved form will require more mechanical agitation.

Note:

- ***In heavily encrusted wells, it is desirable to brush or scrape the casing and screen, then pump or airlift the debris to waste prior to treating with acid.***

The following charts recommend a concentration of* AQUA-CLEAR MGA *that is suitable for a typical maintenance treatment of an existing well.

AQUA-CLEAR MGA Application Amounts per 10 Feet of Standing Water					
Well Diameter (Inches)	**Pounds of Product**	**Well Diameter (Inches)**	**Pounds of Product**	**Well Diameter (Inches)**	**Pounds of Product**
2	0.35	12	12.73	24	50.94
4	1.41	14	17.33	26	59.78
5	2.21	16	22.64	28	69.33
6	3.18	18	28.65	30	79.60
8	5.66	20	35.37	36	114.61
10	8.84	22	42.80	48	203.75

Recommended Treatment (continued)

AQUA-CLEAR™ MGA Application Amounts per 10 Meters of Standing Water					
Well Diameter (millimeters)	**Kilograms of Product**	**Well Diameter (millimeters)**	**Kilograms of Product**	**Well Diameter (millimeters)**	**Kilograms of Product**
51	0.53	305	18.97	610	75.90
102	2.11	356	25.83	660	89.10
127	3.29	406	33.73	711	103.31
152	4.74	457	42.69	762	118.60
203	8.43	508	52.71	914	170.77
254	13.18	559	63.78	1219	303.60

Note: The concentrations of* AQUA-CLEAR MGA *shown in the previous tables do not take into account the 100% excess volume required to compensate for the water present in the formation interface and gravel pack. The previous tables only account for the product concentration required for the volume of water occupying a 10 foot or 10 meter section of a given size of screen.

For other diameters:

- Gallons per foot = (diameter, inches)^2 x 0.042
- Liter per meter = (diameter, millimeters)^2 x 0.0008
- Pounds of AQUA-CLEAR MGA = (gallons per foot x 8.34) x 0.026
- Kilograms of AQUA-CLEAR MGA = (liters per meter) x 0.026
- Double the calculated volume in order to take into account the water present in the gravel pack and formation interface.
- AQUA-CLEAR AE can be used with AQUA-CLEAR MGA for iron bacteria treatment. When used together, utilize one gallon of AQUA-CLEAR AE for every 10 pounds of AQUA-CLEAR MGA or 0.84 liters of AQUA-CLEAR AE for every kilogram of AQUA-CLEAR MGA.

Safety

- AQUA-CLEAR MGA is safe to handle when in dry form, but when mixed with water it should be handled in accordance with recognized standard practices for handling corrosive and acidic materials (refer to Material Safety Data Sheet).
- Avoid skin and eye contact – flush with water
- Do not ingest and avoid prolonged inhalation
- When disposing of waste fluid make sure to comply with all federal, state and local regulations as applicable.

Packaging

AQUA-CLEAR™ MGA is packaged in 5-gal (19-liter) pails containing 50 pounds (22.7 kg) and in 1-gallon (3.8-liter) plastic jars containing 10 pounds (4.5 kg).

Shipping

The following are required for commercial transport:

- Insurance policy must include an endorsement for transporting hazardous cargo.
- Vehicle driver must have a Hazmat endorsement on his/her Commercial Drivers License.
- Hazardous Materials Certificate of Registration issued by the U.S. Department of Transportation (renewable annually) is required.
- Consult the state in which operating for any additional requirements that may exist.
- No hazardous materials placard is required for shipments less than 1000 pounds.

Availability

AQUA-CLEAR MGA can be purchased through any Baroid Industrial Drilling Products Distributor. To locate the Baroid IDP distributor nearest you contact the Customer Service Department in Houston or your area IDP Sales Representative.

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AQUA-CLEAR™ AE

Acid Enhancer/Antifoulant

Description

AQUA-CLEAR AE is a liquid blend of acids and acid enhancers formulated to control bacterial slime contamination due to the presence of iron-related and sulphate-reducing bacteria.

Applications/Functions

- Remove the bio-mass matrix caused by bacterial fouling
- Reduce sulphur taste and odor in water
- Clean up well screens, pumps and distribution system
- Restore well productivity and reduce power and maintenance costs
- AQUA-CLEAR AE can be used in combination with AQUA-CLEAR MGA and other acids such as, hydrochloric (muriatic), phosphoric and sulfamic to enhance their effectiveness and to remove more difficult scale and incrustation

Advantages

- ANSI/NSF Standard 60 certified
- Safe to use on all plastics, rubber and metals
- Cost effective, efficient extended life treatment
- Improves water quality and renews well production rate
- Mitigates corrosion and equipment failure
- Reduces pumping costs

Typical Properties

Appearance	Light amber colored liquid
Specific gravity	1.08
pH of solution	1.1

Recommended Treatment

To treat bacteria fouling

- Record initial well water pH
- The preferred application method is to apply a solution of AQUA-CLEAR AE into the screened interval through a tremie pipe.

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Recommended Treatment (continued)

- Mix AQUA-CLEAR™ AE with water at 6 - 12 ounces per gallon of water or 47 - 94 ml per liter of water and apply directly into screened interval with a tremie pipe. When utilizing this method, calculate the volume of water in the screened area and double the calculated volume to account for the water in the gravel pack and formation interface.

Note: The above concentration of* AQUA-CLEAR AE *is recommended for a complete reconditioning of an existing well.

- Calculation for volume in well:
- Gallons per foot = (diameter, inches)^2 x 0.042
- Liter per meter = (diameter, millimeters)^2 x 0.0008
- Displace solution into the well screen and formation, then surge, swab, agitate or jet well through screen and gravel pack for 20-30 minutes.
- Allow to stand in well for up to two hours and then repeat activity approximately every two hours for a period of 24 hours.
- Pump well to waste until at least 23 well volumes have been removed and well water pH is within 0.5 of original well pH.

Note: Wastewater can be neutralized by adding soda ash or lime.

- Chlorinate well and reconnect to water distribution system.

Caution: Never mix chlorine and* AQUA-CLEAR AE *in well.

- If necessary, AQUA-CLEAR AE may be poured directly into well as per treatment table, but results will not be as good as if applied via a tremie pipe.

Notes:

- ***In heavily encrusted wells, it is desirable to brush or scrape the casing and screen, then pump or airlift the debris to waste prior to treating with acid.***
- ***The following charts recommend a concentration of* AQUA-CLEAR AE *that is suitable for a typical maintenance treatment of an existing well.***

AQUA-CLEAR AE Application Amounts per 10 Feet of Standing Water					
Well Diameter (Inches)	**Gallons of Product**	**Well Diameter (Inches)**	**Gallons of Product**	**Well Diameter (Inches)**	**Gallons of Product**
2	0.04	12	1.27	24	5.10
4	0.14	14	1.73	26	6.00
5	0.22	16	2.26	28	6.93
6	0.32	18	2.87	30	7.96
8	0.57	20	3.54	36	11.46
10	0.88	22	4.28	48	20.40

AQUA-CLEAR™ AE Application Amounts per 10 Meters of Standing Water					
Well Diameter (millimeters)	**Liters of Product**	**Well Diameter (millimeters)**	**Liters of Product**	**Well Diameter (millimeters)**	**Liters of Product**
51	0.49	305	17.60	610	70.35
102	1.95	356	23.94	660	82.57
127	3.05	406	31.27	711	95.76
152	4.40	457	39.57	762	109.93
203	7.82	508	48.86	914	158.29
254	12.21	559	59.12	1219	281.41

Recommended Treatment (continued)

Note: The concentrations of* AQUA-CLEAR AE *shown in the previous tables do not take into account the 100% excess volume required to compensate for the water present in the formation interface and gravel pack. The previous tables only account for the product concentration required for the volume of water occupying a 10 foot or 10 meter section of a given size of screen.

For other diameters:

- Gallons per foot = (diameter, inches)^2 x 0.042
- Liter per meter = (diameter, millimeters)^2 x 0.0008
- Gallons of AQUA-CLEAR AE = (gallons per foot x 8.34) x 0.0026
- Liters of AQUA-CLEAR AE = (liters per meter) x 0.0241
- Double the calculated volume in order to take into account the water present in the gravel pack and formation interface.

Treating Severe bio-fouling and scaling

- AQUA-CLEAR AE is used as an enhancer when mixed in the well with AQUA-CLEAR MGA
- One gallon of AQUA-CLEAR AE to every 10 pounds of AQUA-CLEAR MGA
- 3.8 liters of AQUA-CLEAR AE to every 4.5 kilograms of AQUA-CLEAR MGA

Safety

- Use recognized standard practices for handling corrosive and acidic materials (refer to Material Safety Data Sheet)
- Avoid skin and eye contact – flush with water
- Do not ingest and avoid prolonged inhalation
- When disposing of waste fluid make sure to comply with all federal, state and local regulations as applicable.

Packaging

AQUA-CLEAR™ AE is packaged in 1-gallon (3.8-liter) and 5-gallon (19-liter) plastic containers.

Shipping

- The following are required for commercial transport:
- Insurance policy must include an endorsement for transporting hazardous cargo.
- Vehicle driver must have a Hazmat endorsement on his/her Commercial Drivers License.
- Hazardous Materials Certificate of Registration issued by the U.S. Department of Transportation (renewable annually) is required.
- Consult the state in which operating for any additional requirements that may exist.
- No hazardous materials placard is required for shipments less than 1000 pounds.

Availability

AQUA-CLEAR AE can be purchased through any Baroid Industrial Drilling Products Distributor. To locate the Baroid IDP distributor nearest you, contact the Customer Service Department in Houston or your area IDP Sales Representative.

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Appendix C

Lithology Log

Geologic Unit	Lithologic Description	Sample Interval (ft bgs)	Elevation Range (ft above msl)
Qal, Alluvium	Unconsolidated sediments, sand (SW) with silt, grayish-brown (5YR 3/2), silt to pebble gravel; 10% silt; 88% very fine to fine-grained sand; 2% gravel; poorly sorted, angular grains, unconsolidated. Top 0.6 ft of interval consists of drill pad construction base-course gravel. No core recovered from 0.8 to 1.5 ft bgs. Note: The R-32 borehole was cored from 0 to 318 ft bgs, and lithologic descriptions are from recovered core in this interval. Core recovery was sporadic. Lost core intervals are indicated in the text. Where noted, supplemental samples of drill cuttings were collected and used to characterize the formation in lieu of lost core.	0–1.5	6637.6–6636.1
	Only 0.4 ft of core recovered from this interval.	1.5–4	6636.1–6633.6
	Unconsolidated sediments, gravel (GW) with sand. Cobbles and gravel of rounded dacite (up to 7.0 cm), probably reworked Tschicoma dacite; unconsolidated, dry. No core recovered from 4.2 to 5.0 ft bgs.	4–5	6633.6–6632.6
	Unconsolidated sediments, gravel (GW) with sand. Cobbles and gravel of rounded dacite (up to 6.0 cm), probably reworked Tschicoma dacite, unconsolidated. No core recovered from 5.4 to 9.5 ft bgs.	5–9.5	6632.6–6628.1
	Unconsolidated sediments, gravel (GW) with sand. Rounded gray dacite gravel (up to 5.0 cm), probably reworked Tschicoma dacite, unconsolidated. No core recovered from 10.0 to 11.5 ft bgs.	9.5–11.5	6628.1–6626.1
	No core recovery from this interval.	11.5–18	6626.1–6619.6
	Unconsolidated sediments, gravel (GW) with clay and sand, pale brown (5YR 5/2), clay to 5.0 cm dacite gravel, poorly sorted; sand very fine to medium-grained, angular to rounded sand and gravel; fines have moderate plasticity; unconsolidated, saturated. No core recovered from 19.5 to 22.0 ft bgs.	18–22	6619.6–6615.6
	No core recovery in this interval.	22–26	6615.6–6611.6
	Unconsolidated sediments, gravel (GW) with clay and sand, moderate yellowish-brown (10YR 5/4), clay with cobbles to 7.0 cm, poorly sorted; 10% clay; 20% sand with very fine to coarse-grained, angular grains; 70% rounded to subrounded gravel and cobbles, mostly dacite; unconsolidated, wet. No core recovered from 27.5 to 31.0 ft bgs.	26–31	6611.6–6606.6
	Unconsolidated sediments, gravel (GW) with sand, moderate yellowish-brown (10YR 5/4), clay with cobbles to 7.0 cm, poorly sorted; 3% clay; 20% sand, very fine to coarse-grained; 77% rounded to subangular gravel and cobbles, mostly dacite, possibly some basalt; unconsolidated, damp to moist. No core recovered from 32.3 to 36.0 ft bgs.	31–36	6606.6–6601.6
	Only 0.2 ft recovered in this interval.	36–44	6601.6–6593.6
	Unconsolidated sediments, gravel (GW) with sand. A single rounded dacite cobble (6.0 cm) plugged the core barrel. No core recovered between 44–46 ft bgs.	44–46	6593.6–6591.6

Geologic Unit	Lithologic Description	Sample Interval (ft bgs)	Elevation Range (ft above msl)
Qbt, Tshirege Member, Bandelier Tuff (Undivided)	No core recovered from this interval. At 48 ft bgs the rock became softer and the drilling rate increased. : Qal/Qbt contact estimated at 47 ft bgs.	46–51	6591.6–6586.6
	Rhyolite tuff, identified from cuttings as no core recovered from this interval. Supplemental cuttings sample (from 50 to 55 ft bgs) contained rhyolite tuff, light brown (5YR 5/6),. 30% pumice (up to 1.0 cm), very pale orange (10YR 8/2), fibrous; 5% phenocrysts (up to 2 mm), mostly quartz with some sanidine, phenocrysts larger in pumices; 1–2% lithic fragments (up to 5 mm), gray to reddish-brown; glassy ash matrix, nonwelded, streaks of orange staining, some devitrification.	51–56	6586.6–6581.6
	Rhyolite tuff, identified from cuttings as no core recovered from this interval. Supplemental cuttings sample from (55 to 59.5 ft bgs) contains rhyolite tuff, light brown (5YR 6/4),. 35% pumice (up to 1.2 cm), fibrous, partially devitrified but mostly glassy; 10% phenocrysts (up to 2 mm) of quartz with some sanidine, phenocrysts larger in pumices; 1–2% dark gray lithic fragments (up to 2 mm); 58% glassy ash matrix, glass shards evident, nonwelded, moist.	56–61	6581.6–6576.6
	Only core recovered from this interval were a few dacite clasts plugging end of core barrel. Because of formation instability, the borehole was abandoned. Drillling and sampling continued at 63 ft bgs in a new drill hole nearby.	61–66	6576.6–6571.6
	Core recovered in this interval submitted for laboratory analysis prior to examination. Core interval from new hole location overlaps that of the first borehole.	63–66	6574.6–6571.6
	Rhyolite tuff, light pink.	66–71	6571.6–6566.6
	Rhyolite tuff, grayish-orange pink (5YR 7/2). 30% pumice (up to 1.5 cm), mostly sugary but with some fibrous texture; 10% phenocrysts (up to 2 mm), quartz and sanidine, < 1% lithic fragments (up to 5 mm), dark gray; 60% glassy ash matrix, glass shards evident, nonwelded, damp.	71–76	6566.6–6561.6
	Rhyolite tuff, grayish-orange pink (5YR 7/2). 35% fibrous pumice (up to 1.8 cm), sugary texture present, some alteration; 10% phenocrysts (up to 2 mm), quartz and sanidine, 1% lithic fragments (up to 5 mm), gray, 55% ash matrix, glassy shards evident, matrix partially devitrified, nonwelded, damp.	76–81	6561.6–6556.6
	Rhyolite tuff, grayish-orange pink (5YR 7/2). 35% fibrous pumice (up to 1.8 cm), sugary texture present, some alteration; 10% phenocrysts (up to 2 mm), quartz and sanidine, 1% lithic fragments (up to 5 mm), gray, 55% ash matrix, glassy shards evident, matrix partially devitrified, nonwelded, damp.	81–86	6556.6–6551.6
	Rhyolite tuff, grayish-orange pink (5YR 7/2). 25% fibrous pumice (up to 1.2 cm), some alteration evident, 12% phenocrysts (up to 2 mm), quartz and sanidine, < 1% lithic fragments (up to 5 mm), brown, 63% glassy ash matrix, glassy shards evident, nonwelded, damp.	86–91	6551.6–6546.6

Geologic Unit	Lithologic Description	Sample Interval (ft bgs)	Elevation Range (ft above msl)
Qbt, Tshirege Member, Bandelier Tuff (Undivided)	Rhyolite tuff, very pale orange (10YR 8/2). 50% pumice (up to 3.0 cm), some alteration evident; 5% phenocrysts (up to 3 mm), mostly quartz, some sanidine, <1% lithic fragments (up to 1 mm), gray to reddish-brown; 45% glassy ash matrix, glass shards evident, nonwelded, damp.	91–96	6546.6–6541.6
	Rhyolite tuff, grayish orange pink (5YR 7/2). 45% fibrous pumice (up to 3.0 cm); 7% phenocrysts (up to 2 mm), quartz and sanidine < 1% lithic fragments (up to 2 mm), gray; 48% glassy ash matrix, glass shards evident, nonwelded, damp.	96–101	6541.6–6536.6
	Rhyolite tuff, very pale orange (10YR 8/2). 55% fibrous pumice (up to 2.0 cm) some alteration evident; 7% phenocrysts (up to 3 mm), mostly quartz, some sanidine; <1% lithic fragments (up to 2 mm), mostly dark gray; 38% glassy ash matrix, glass shards evident, nonwelded, moist.	101–106	6536.6–6531.6
	Rhyolite tuff, very pale orange (10YR 8/2). 50% fibrous pumice (up to 4.0 cm) some alteration, 10% phenocrysts (up to 2 mm) of quartz and sanidine, 2–3% lithic fragments, gray, dacite (up to 2.0 cm); 38% glassy ash matrix, glass shards evident, nonwelded, damp.	106–111	6531.6–6526.6
	Rhyolite tuff, very pale orange (10YR 8/2). 40% fibrous pumice (up to 2.0 cm), some alteration evident; 10% phenocrysts (up to 3 mm), mostly quartz, some sanidine, <1% lithic fragments (up to 1.0 cm), gray; 50% glassy ash matrix, glass shards evident, nonwelded, damp.	111–116	6526.6–6521.6
	Rhyolite tuff, very pale orange (10YR 8/2). 40% fibrous pumice (up to 1.5 cm) some alteration evident; 7% phenocrysts (up to 3 mm) of quartz and sanidine <1% lithic fragments (up to 3 mm), mostly gray, some brown; 53% glassy ash matrix, glass shards evident, nonwelded, damp to moist.	116–121	6521.6–6516.6
	Rhyolite tuff, very pale orange (10YR 8/2). 50% fibrous pumice (up to 2.0 cm), some alteration evident; 5% phenocrysts (up to 2 mm) of quartz and sanidine, <1% lithic fragments (up to 2 mm), mostly gray, some black and red; 40% glassy ash matrix, glass shards evident, nonwelded, damp.	121–126	6516.6–6511.6
	Rhyolite tuff, very pale orange (10YR 8/2). 50% fibrous pumice (up to 3.0 cm) some alteration evident; 5% phenocrysts (up to 1 mm) of quartz and sanidine, <1% lithic fragments (up to 5 mm), gray, black, and light brown; 45% glassy ash matrix, glass shards evident, nonwelded, damp.	126–131	6511.6–6506.6
	Rhyolite tuff, very pale orange (10YR 8/2). 40% fibrous pumice (up to 2.0 cm) some alteration evident; 5% phenocrysts (up to 2 mm) of euhedral quartz and sanidine; <1% lithic fragments (up to 5 mm), gray, black, and red; 55% glassy ash matrix, abundant glass shards, nonwelded, damp with dark orange staining near 135 ft. No core recovery from 135 to 136 ft bgs.	131–136	6506.6–6501.6

Geologic Unit	Lithologic Description	Sample Interval (ft bgs)	Elevation Range (ft above msl)
Qct, Cerro Toledo Interval	Rhyolite tuff, grayish-orange (10YR 7/4). 40% slightly fibrous, mostly devitrified pumice (up to 1.0 cm); 15% phenocrysts (up to 2 mm), anhedral to euhedral quartz and sanidine; 1-2% lithic fragments (up to 4 mm), gray, black, and red; 40% glassy ash matrix, glass shards evident, nonwelded, iron oxide staining present, damp. Note: Qbt/Qct interval estimated at 138 ft bgs.	136–141	6501.6–6496.6
	Volcaniclastic sediments, sand (SW), moderate yellowish-brown (10YR 5/4), fine to medium-grained, subangular to rounded sand grains. 35% quartz, 35% sanidine, 25% pumice; 5% lithic fragments; granular, oxidized, moist.	141–146	6496.6–6491.6
	Volcaniclastic sediments, sand (SW) with gravel, moderate yellowish-brown (10YR 5/4) with light bluish-gray (5B 5/4) epiclastic pumice, subangular to subrounded clasts. 35% quartz; 35% sanidine; 25% pumice; 5% lithic fragments; granular, pumices have iron-oxide staining (limonite), trace of dacite gravel, moist. No core recovered from 150 to 151 ft bgs.	146–151	6491.6–6486.6
	No core recovered from this interval.	151–153.5	6486.6–6484.1
	No core recovered from this interval. Supplemental cuttings sample contains volcaniclastic sediments, gravel (GW) with sand, dacite gravel and cobbles, medium gray (N5); fine-grained sand, moderate yellowish-brown (10YR 5/4), crystals of sanidine, pyroxene, anhedral quartz, and plagioclase present.	153.5–156	6484.1–6481.6
	No core recovered from this interval.	156–161	6481.6–6476.6
	No core recovered. Lithologic description from cuttings. Supplemental cuttings sample contains volcaniclastic sediments, gravel (GW) with sand, dacite sand and gravel, medium gray (N5), subrounded clasts (up to 5.0 cm), fine matrix; +10F: 80% anhedral quartz and sanidine crystals; 10% pumice; 5–10% volcanic lithic fragments, iron oxide staining (limonite). +35F: subangular to subrounded grains. No core recovered from 162 to 164 ft bgs.	161–164	6476.6–6473.6
	No core recovered from 164–168 ft bgs..	164–168	6473.6–6469.6
	No core recovered from this interval except material plugging end of core barrel. Lithologic description from cuttings. Supplemental cuttings sample contains volcaniclastic sediments, gravel (GW) with sand, moderate brown (5YR 4/4) to medium-dark gray (N4), angular to rounded clasts, mostly of porphyritic dacite or latite with anhedral phenocrysts of plagioclase, sanidine, hornblende in an aphanitic groundmass; unconsolidated, moist.	168–170.5	6469.6–6467.1
	No core recovered from this interval. Note: Qct/Qbo contact estimated at 174 ft bgs.	170.5–174	6467.1–6463.6
Qbo, Otowi Member, Bandelier Tuff	Core recovered in this interval consisted of material plugging end of core barrel. Volcaniclastic sediment, silty sand (SM) and tuff, grayish-orange (10YR 7/4), tuffaceous, ash-rich, glassy, nonwelded, possible weak calcite cementation, moist to wet.	174–176	6463.6–6461.6

Geologic Unit	Lithologic Description	Sample Interval (ft bgs)	Elevation Range (ft above msl)
Qbo, Otowi Member, Bandelier Tuff	No core recovered from this interval. At approximately 181 ft bgs drilling became easier, suggesting softer rock formation.	176–181	6461.6–6456.6
	No core recovered from this interval except material plugging end of core barrel. Lithologic description from cuttings. Supplemental cuttings sample consisted of rhyolite tuff, very pale orange (10YR 8/2), lithic-rich, nonwelded. +10F: 30–40% dark colored lithic fragments (up to 2.0 cm), mostly dacite and andesite 10–20% quartz and sanidine crystals (up to 3 mm); 10% pumice fragments; 20% ash.	181–186	6456.6–6451.6
	No core recovered from this interval.	186–201	6451.6–6436.6
	Rhyolite tuff, pale yellowish-brown (10YR 6/2), poorly welded. 60% fibrous pumices (up to 4 mm); 15% quartz and sanidine phenocrysts (up to 4 mm); < 5% lithic fragments (up to 3 mm); 20% glassy ash matrix, glass shards evident. No core recovered from 201.5 to 206.0 ft bgs.	201–206	6436.6–6431.6
	Rhyolite tuff, pale yellowish-brown (10YR 6/2), poorly welded. 30% pumice (up to 2.0 cm), some fibrous; 10% quartz and sanidine phenocrysts (up to 5 mm); 20% lithic fragments (up to 1.5 cm), mostly dacite with some mafic phenocrysts; 50% glassy ash matrix. No core recovered from 208.0 to 211.0 ft bgs.	206–211	6431.6–6426.6
	Rhyolite tuff, pale yellowish-brown (10YR 6/2), poorly welded. 30% pumice (up to 2.0 cm), some fibrous; 10% quartz and sanidine phenocrysts (up to 5 mm); 20% lithic fragments (up to 1.5 cm), mostly dacite with some mafics; 50% glassy ash matrix. No core recovered from 211.7 to 216.0 ft bgs.	211–216	6426.6–6421.6
	Rhyolite tuff, pale yellowish-brown (10YR 6/2), poorly welded. 30% pumice, some fibrous (up to 2.0 cm); 10% quartz and sanidine phenocrysts (up to 5 mm); 20% lithic fragments, mostly dacite with some mafic phenocrysts (up to 1.5 cm); 50% glassy ash matrix. No core recovered between 216.7–221.0 ft bgs.	216–221	6421.6–6416.6
	Very poor core recovery in this interval. Tan-colored lithic-rich tuff. No core recovered from 221.1 to 224.5 ft bgs.	221–224.5	6416.6–6413.1
	Rhyolite tuff, pale yellowish-brown (10YR 6/2), lithic-rich, poorly welded. 40% dark volcanic lithic fragments (up to 1.5 cm), mostly dacite and andesite; 50% glassy ash matrix, with quartz, sanidine and pumice fragments (up to 4 mm), some fibrous, some devitrified. No core recovered from 224.7 to 226.0 ft bgs.	224.5–226	6413.1–6411.6
	No core recovery from this interval.	226–231	6411.6–6406.6
	Rhyolite tuff, grayish-orange pink (5YR 7/2), lithic-rich, poorly welded. 30% fibrous pumice (up to 1.5 cm); 10% quartz and sanidine phenocrysts (up to 4 mm); 15% dark lithic fragments (up to 1.6 cm) of dacite and andesite. 45% glassy ash matrix, glass shards evident, perlitic texture. No core recovered from 234.5 to 236.0 ft bgs.	231–236	6406.6–6401.6

Geologic Unit	Lithologic Description	Sample Interval (ft bgs)	Elevation Range (ft above msl)
Qbo, Otowi Member, Bandelier Tuff	Rhyolite tuff, grayish-orange pink (5YR 7/2), lithic-rich, poorly welded. 30% fibrous pumice (up to 1.5 cm); 10 % quartz and sanidine phenocrysts (up to 4 mm); 15% dark lithic fragments (up to 1.6 cm), dacite and andesite. 45% glassy ash matrix, glass shards evident, perlitic texture. No core recovered from 239.0 to 241.0 ft bgs.	236–241	6401.6–6396.6
	No core recovered from this interval.	241–242	6396.6–6395.6
	Rhyolite tuff, pale yellowish-brown (10YR 4/2), nonwelded. 25% pumice (up to 1.5 cm); 5% quartz and sanidine phenocrysts (up to 2 mm); 15% lithic fragments (up to 3 mm), red to black; 55% glassy ash matrix, glass shards evident. No core recovered between 243.0–244.0 ft bgs.	242–244	6395.6–6393.6
	No core recovered from this interval.	244–251	6393.6–6386.6
	Rhyolite tuff, pale yellowish-brown (10YR 6/2). 40% fibrous pumice (up to 1.0 cm), some alteration evident; 5% anhedral quartz and sanidine phenocrysts (up to 2 mm); 10% lithic fragments (up to 3 mm) red, orange, gray, and black, mostly dacite; 45% glassy ash matrix, glass shards evident.	251–253.5	6386.6–6384.1
	No core recovered from 253.6 to 261.0 ft bgs.	253.5–261	6384.1–6376.6
	Rhyolite tuff, pale yellowish-brown (10YR 6/2). 35% fibrous pumice (up to 1.0 cm), some devitrified; 5% subhedral to anhedral quartz and sanidine phenocrysts (up to 2 mm); 5% lithic fragments (up to 2 mm), red, gray, and black; 55% glassy ash matrix, glass shards evident, damp. No core recovered from 265.0 to 266.0 ft bgs.	261–266	6376.6–6371.6
	Rhyolite tuff, pale yellowish-brown (10YR 6/2). 35% fibrous pumice (up to 1.0 cm) some devitrified; 5% subhedral to anhedral quartz and sanidine phenocrysts (up to 2 mm); 5% lithic fragments (up to 2 mm), red, gray, and black; 55% glassy ash matrix, glass shards evident, damp. No core recovered from 270.5 to 271.0 ft bgs.	266–271	6371.6–6366.6
	No core recovered from this interval except material plugging end of core barrel. Rhyolite tuff, pale yellowish-brown (10YR 6/2). 20% glassy pumice (up to 1.0 cm) some devitrified; 5% subhedral to anhedral quartz and sanidine phenocrysts (up to 2 mm); 25% lithic fragments, medium gray (N5) rounded dacite cobbles and gravel with oxidation present in voids and vugs; 50% glassy ash matrix, glass shards evident.	271–276	6366.6–6361.6
	Rhyolitic tephra, moderate yellowish-brown (10YR 5/4). 75% mostly fibrous pumice (up to 1.0 cm), some devitrified; 5% quartz and sanidine phenocrysts (up to 2 mm); 5% lithic fragments (up to 3 mm); 15% ash and glassy shards; damp. Note: Qbo/Qbog contact estimated at 277 ft bgs.	276–281	6361.6–6356.6
Qbog, Guaje Pumice Bed	Tephra deposit, moderate yellowish-brown (10YR 5/4). 75% mostly fibrous pumice lapilli (up to 1.0 cm) with some alteration; 5% quartz and sanidine phenocrysts (up to 2 mm); 5% lithic fragments (up to 3 mm); 15% ash and glassy shards; damp. No core recovered from 285.3 to 286.0 ft bgs.	281–286	6356.6–6351.6

Geologic Unit	Lithologic Description	Sample Interval (ft bgs)	Elevation Range (ft above msl)
Tb4, Cerros del Rio Basalt	Volcaniclastic sediments, silty sand (SM) with gravel, moderate brown (5YR 4/4). 60% subrounded fine-grained sand; 25% subangular scoriaceous basalt gravel, 15% silt; moist, possible paleosol developed on top of basalt. No core recovered between 286.7–291.0 ft bgs. Note: Qbog/Tb4 contact estimated at 287 ft bgs.	286–291	6351.6–6346.6
	No core recovered from 291–301.	291–301	6346.6–6336.6
	Only core recovered from this interval is vesicular basalt material plugging end of core barrel.	301–302	6938.6–6335.6
	Basalt. No core recovered from 303.0 to 306.0 ft bgs.	302–306	6335.6–6331.6
	Basalt. No core recovered from 306.5 to 308.0 ft bgs.	306–308	6331.6–6329.6
	Basalt. No core recovered from 310.3 to 311.0 ft bgs.	308–311	6329.6–6326.6
	Basalt. No core recovered from 311.9 to 312.0 ft bgs.	311–312	6326.6–6325.6
	Basalt. No core recovered from 312.2 to 314.0 ft bgs.	312–314	6325.6–6323.6
	Basalt, black, vesicular. No core recovered from 314.7 to 316.0 ft bgs.	314–316	6323.6–6321.6
	No core recovered from this interval. Possible void(s) or cavity in basalt. Note: End of core sampling. The reminder of the lithological descriptions (318 – 923 ft bgs) are from cuttings samples.	316–318	6321.6–6319.6
	Basalt, medium-dark gray (N4), porphyritic with aphanitic groundmass, few vesicles. +10F: phenocrysts of yellowish-brown, euhedral pyroxene, subhedral plagioclase. Pervasive clay alteration of groundmass, rare clay nodules, reddish oxidation pits, clay and iron oxide lining of fracture and vesicle surfaces; rare pumice fragments.	318–333	6319.6–6304.6
	Basalt, medium-dark gray (N4), vesicular, slightly porphyritic with aphanitic to fine-grained groundmass. +10F: phenocrysts (5–7%) of yellowish-brown to transparent euhedral pyroxene and green olivine; pervasive alteration of groundmass, rare reddish oxidation pits; 15% clear to white quartz; rare pumice fragments.	333–343	6304.6–6294.6
	Basalt, dark gray (N3), massive, porphyritic with aphanitic to fine-grained groundmass. +10F: phenocrysts (up to 5 mm) of anhedral olivine and subhedral plagioclase; slightly oxidized, local iron-oxide and clay coating fractures; groundmass pervasively altered.	343–348	6294.6–6289.6
	Basalt, medium gray (N5), slightly porphyritic with aphanitic to fine-grained groundmass, massive to slighty vesicular, angular chips. +10F: phenocrysts (3–5%) of plagioclase, and green to amber olivines that are unaltered to slightly oxidized; groundmass strongly altered.	348–363	6289.6–6274.6
	Basalt, medium-dark gray (N4) to brownish-gray (5YR 4/1), massive to scoriaceous, slightly porphyritic with aphanitic groundmass. +10F: basalt contains phenocrysts of altered olivine, plagioclase and hornblende; groundmass altered; white clay coating fractures and filling vesicles, fine acicular crystals of possible zeolite(?) evident, moderate amounts of iron oxide in vesicles; 3–5% altered pumice.	363–368	6274.6–6269.6

Geologic Unit	Lithologic Description	Sample Interval (ft bgs)	Elevation Range (ft above msl)
Tb 4, Cerros del Rio Basalt	Basalt, dark gray (N3), porphyritic with aphanitic groundmass, abundant vesicles to scoriaceous texture. Phenocrysts (5–7%, up to 2mm) of highly altered olivine; 2–3% generally unaltered plagioclase phenocrysts (up to 3 mm), rare altered pumice; white clay, iron oxide, possible zeolite (?) and calcite coating fractures and filling vesicles. Pervasive alteration of the groundmass.	368–383	6269.6–6254.6
	Basalt, medium-dark gray (N4), porphyritic with aphanitic groundmass, slighty vesicular to massive. +10F: phenocrysts (2–3% up to 2mm) of unaltered to strongly oxidized olivine; strong alteration of groundmass.	383–388	6254.6–6249.6
	No cuttings returned and no samples collected from this interval.	388–393	6249.6–6244.6
	Basalt, medium-light gray (N6), porphyritic with aphanitic groundmass, vesicular to massive. +10F: phenocrysts (up to 2 mm) of oxidized olivine, pervasive alteration of the groundmass, limonite in fractures and vesicles; 1–2% subrounded dacite lithics; minor altered pumice. WR sample is clayey.	393–403	6244.6–6234.6
	Basalt, medium-dark gray (N4), porphyritic with aphanitic groundmass, massive to partly vesicular. +10 F: phenocrysts (up to 2 mm) of unaltered, pale green olivine and phenocrysts (up to 3 mm) of plagioclase. Minor scoria with strong iron-oxide staining.	403–413	6234.6–6224.6
	Basalt, medium gray (N5), mostly scoria with some massive basalt. WR sample contains white clay chips. +10F: strongly oxidized scoria, olivine phenocrysts completely replaced by iron oxide; vesicles iron-oxide stained and/or lined with white clay; groundmass strongly altered.	413–428	6224.6–6209.6
	Basalt, medium-light gray (N6), porphyritic with aphanitic groundmass, mostly massive, locally vesicular. WR sample contains moderate to abundant clay-coated chips. +10F: 2-3% unaltered, pale green olivine phenocrysts (up to 1 mm); pervasive alteration of groundmass; local iron-oxide coating on vesicles.	428–448	6209.6–6189.6
	Basalt, medium-dark gray (N4), massive, slightly porphyritic with aphanitic to microcrystalline groundmass. WR sample contains moderate amounts of clay. +10F: phenocrysts (up to 1 mm) of unaltered, pale green olivine and phenocrysts of plagioclase (up to 2 mm); pervasive alteration of the groundmass.	448–458	6189.6–6179.6
	Basalt, medium gray (N5), vesicular, porphyritic with aphanitic to microcrystalline groundmass. WR sample contains chips coated with moderate amounts of white clay and silt. +10F: unaltered olivine phenocrysts (3–5%, up to 3 mm) are pale green; vesicles commonly coated with yellowish-brown limonite; pervasive alteration of the groundmass.	458–473	6179.6–6164.6

Geologic Unit	Lithologic Description	Sample Interval (ft bgs)	Elevation Range (ft above msl)
Tb 4, Cerros del Rio Basalt	Basalt, medium gray (N5), porphyritic with aphanitic to microcrystalline groundmass, massive to vesicular. WR sample contains chips coated with moderate amounts of white clay. +10F: phenocrysts (3–6%, up to 3mm) of green to brown, euhedral olivine; plagioclase phenocrysts (up to 2 mm); moderate to pervasive alteration of the groundmass.	473–488	6164.6–6149.6
	Basalt, medium gray (N5), porphyritic with aphanitic groundmass, massive. +10F: olivine phenocrysts (2–3%, up to 2mm) mostly unaltered, green to brown; moderate to pervasive alteration of the groundmass.	488–493	6149.6–6144.6
	Basalt, medium gray (N5), massive porphyritic with aphanitic groundmass. WR sample contains chips coated with moderate amounts of white clay. +10F: dark olivine phenocrysts (2–4%, up to 1mm) that have been oxidized or totally replaced by iddingsite; moderate to pervasive alteration of the groundmass; 5–7% reddish brown oxidized scoria.	493–503	6144.6–6134.6
	Basalt, medium gray (N5) to brick red (5R 4/6), approximately equal portions of gray massive basalt and red scoriaceous basalt. Massive basalt is porphyritic with aphanitic groundmass, olivine-rich. +10F: massive basalt contains 3–5% olivine phenocrysts (up to 2 mm) partly to wholly replaced by iddingsite; groundmass pervasively altered; scoriaceous basalt is limonite-stained; gypsum crystals (up to 5 mm) evident. +35F (i.e., plus No. 35 size sieved sample fraction) contains 60–80% oxidized scoria.	503–513	6134.6–6124.6
	Basalt, medium gray (N5), porphyritic with aphanitic groundmass, mostly massive with few vesicles, trace of scoria. +10F: 3–5% coarse brown olivine phenocrysts partly to wholly replaced by iddingsite, pervasive alteration of the groundmass. 10–15% reddish scoria.	513–528	6124.6–6109.6
	Basalt, medium gray (N5), massive, porphyritic with aphanitic groundmass. +10F: olivine phenocrysts (2–4%, up to 2 mm), green to brown, unaltered to partly replaced by iddingsite, some plagioclase phenocrysts; groundmass bleached and pervasively altered; 5–10% brick-red scoria.	528–548	6109.6–6089.6
	Basalt, medium gray (N5), porphyritic with aphanitic groundmass, massive. +10F: platy chips of basalt, phenocrysts (up to 3 mm) of olivine (2–4%) that are partly to entirely replaced by iddingsite, phenocrysts of plagioclase; groundmass strongly altered.	548–558	6089.6–6079.6
	Basalt, medium-dark gray (N4), massive to scoriaceous, porphyritic with aphanitic groundmass, olivine-rich. +10F: equal proportions of gray massive and pinkish scoriaceous basalt chips; phenocrysts (up to 1mm) of olivine (2–3% by volume) that are mostly replaced by iddingsite and commonly cumulophyric; groundmass strongly altered; scoriaceous basalt generally iron-oxide stained.	558–573	6079.6–6064.6
	Basalt, medium-dark gray (N4), massive, porphyritic with aphanitic groundmass. +10F: phenocrysts (2–4% by volume) of anhedral olivine (up to 2 mm) that are mostly replaced by iddingsite; pervasive alteration of groundmass.	573–588	6064.6–6049.6

Geologic Unit	Lithologic Description	Sample Interval (ft bgs)	Elevation Range (ft above msl)
Tb 4, Cerros del Rio Basalt	Basalt, medium-dark gray (N4), scoriaceous and massive, porphyritic with aphanitic groundmass. +10F: mostly gray massive basalt and lesser oxidized scoria; phenocrysts (2-4%, up to 2mm) anhedral olivine that are mostly replaced by iddingsite; pervasive alteration of groundmass; vesicular basalt is iron-oxide stained; vesicles commonly lined with yellow to tan clay; scoria is dominant between 593–598 ft.	588–598	6049.6–6039.6
	Basalt, medium-dark gray (N4), scoriaceous, porphyritic with aphanitic groundmass. WR/+10F: predominantly scoria, olivine phenocrysts (up to 2 mm), replaced by iddingsite and pervasively stained by reddish iron oxide; fractured surfaces and vesicles commonly coated with yellow clay; some limonitic siltstone; rare round nodules of yellow clay.	598–613	6039.6–6024.6
	Basalt, medium-light gray (N6), massive and scoriaceous, porphyritic with aphanitic groundmass. +10F: mixture of light gray massive basalt and pale reddish scoria; light gray massive basalt has olivine phenocrysts (up to 1 mm) that are generally unaltered; intense clay alteration of groundmass; fine-grained salt and pepper texture from remnant fine-grained magnetite crystals. Scoriaceous basalt is reddish, iron-oxide stained; yellowish clay coating fractures and vesicles; groundmass bleached.	613–628	6024.6–6009.6
	Basalt, medium-light gray (N6), mostly massive, porphyritic with very fine-grained crystalline groundmass. +10F: olivine phenocrysts (3–5%, up to 1 mm) are pale green, unaltered to slightly oxidized; pervasively altered groundmass is bleached; 1% white clay nodules present; 5–15% limonite-stained, fine-grained volcanic sandstone clasts; 10% reddish scoria at 638–643 ft.	628–643	6009.6–5994.6
	Basalt, medium-light gray (N6), massive, porphyritic with very fine-grained crystalline groundmass. +10F: olivine phenocrysts (up to 1 mm) are pale green, unaltered to slightly oxidized; pervasively altered groundmass; 1% white clay nodules; 25% red scoria; 20–25% fragments of limonite-cemented, fine-grained volcanic sandstone clasts. +35F: 55–60% limonite-cemented fine-grained sandstone clasts.	643–648	5994.6–5989.6
	Basalt, varicolored, medium gray (N5) to pale red (5R 6/6), mixture of gray massive basalt and reddish scoria, fine-grained crystalline groundmass. +10F: 20–40% gray massive basalt contains pale green olivine phenocrysts (up to 1 mm), unaltered to slightly oxidized; pervasively altered groundmass; 50 – 80% reddish basalt scoria ranges from unaltered to some clay alteration present, orange to reddish-brown iron-oxide staining; vesicles commonly lined with white clay; 10–20% rounded fragments of orange to red, fine-grained volcanic sandstone. +35 F: 80–90% orange to red, fine-grained volcanic sandstone.	648–658	5989.6–5979.6
	Basalt/volcaniclastic sediments, varicolored, reddish-brown (10R 6/6) to medium dark gray (N4). +10F: 30–50% orange to tan, fine-grained volcanic sandstone, grains of quartz, feldspar, and mafic lithic fragments, limonite- and clay-cemented; 10–30% black scoriaceous basalt; 10–20% gray, oxidized, massive basalt with white clay coating on chips.	658–668	5979.6–5969.6

Geologic Unit	Lithologic Description	Sample Interval (ft bgs)	Elevation Range (ft above msl)
Tb4, Cerros del Rio Basalt	Basalt/volcaniclastic sediments, varicolored, reddish-brown (10R 6/6) to medium dark gray (N4). +10F: 35–45% orange-brown to tan, fine-grained volcanic sandstone clasts, limonite- and clay-cemented; 50–60% black, aphanitic, angular scoriaceous basalt chips, vesicles commonly lined with whitish clay; 5–7% subrounded siliceous volcanic clasts (dacite).	668–678	5969.6–5959.6
	Basalt/volcaniclastic sediments, grayish-black (N2) to light orange-tan (5YR 8/4). +10F: 70–80% angular black scoriaceous basalt chips, aphanitic, minor whitish clay lining vesicles; 10–20% subrounded to rounded orange-tan, fine-grained volcanic sandstone chips.	678–688	5959.6–5949.6
	Basalt, varicolored, grayish-black (N2) to pale tan (10YR 8/2). +10F: 80–90% angular black scoriaceous basalt chips, aphanitic, abundant white amygdaloidal clay; 10–15% pale tan clay; 2–3% subrounded volcanic sandstone chips.	688–698	5949.6–5939.6
	Basalt, grayish-black (N2), scoriaceous, slightly porphyritic, aphanitic groundmass. +10F: 80–90% black scoriaceous basalt, pale tan clay lining vesicles; 10–15% angular pale tan clay fragments; 5–7% volcanic sandstone.	698–708	5939.6–5929.6
	Basalt, medium-dark gray (N4), aphyric, aphanitic groundmass, slightly vesicular. +10F: mixed dark gray scoriaceous basalt and light gray massive basalt; massive basalt has moderate to strongly altered groundmass, trace of pyroxene and olivine phenocrysts; 3–7% pale tan clay chips; 1–3% fine-grained volcanic sandstone.	708–718	5929.6–5919.6
	Basalt, medium-dark gray (N4), slightly porphyritic with aphanitic groundmass. +10F: 85–90% massive to vesicular basalt, 1–2% unaltered pale green olivine phenocrysts (up to 1 mm), partially altered groundmass; 10–15% pale tan clay chips.	718–728	5919.6–5909.6
	Basalt, medium-dark gray (N4), aphyric, aphanitic groundmass +10F: 90% massive basalt, partially altered groundmass; 10% subangular pale tan clay chips.	728–738	5909.6–5899.6
	No cuttings returned and no samples collected in this interval.	738–743	5899.6–5894.6
	Basalt, medium-dark gray (N4), aphyric, aphanitic groundmass. +10F: 90–95% massive to slightly vesicular basalt, partially altered groundmass, pale tan clay lining some vesicles; 5–10% subangular pale tan clay chips.	743–758	5894.6–5879.6
	Basalt, varicolored, medium-dark gray (N4) to pale tan (10YR 8/2), aphyric, aphanitic groundmass, slightly vesicular. +10F: 85–90% basalt chips, partially altered groundmass; 10–15% pale tan clay chips.	758–773	5879.6–5864.6
	Basalt, varicolored, medium-dark gray (N4) to pale tan (10YR 8/2), aphyric, aphanitic groundmass, slightly vesicular. +10F: 85–90% basalt chips, partially altered groundmass; 10–15% pale tan clay chips.	773–788	5864.6–5849.6

Geologic Unit	Lithologic Description	Sample Interval (ft bgs)	Elevation Range (ft above msl)
Tb4, Cerros del Rio Basalt	Basalt, varicolored, medium-dark gray (N4) to pale tan (10YR 8/2), aphyric, aphanitic groundmass, partly vesicular to scoriaceous. +10F: 90–95% basalt chips, light tan clay coating most chips and lining vesicles; 10–15% light tan clay nodules.	788–798	5849.6–5839.6
	Basalt, varicolored, medium-dark gray (N4) to pale tan (10YR 8/2), slightly porphyritic with aphanitic groundmass, scoriaceous. +10F: 90–95% scoria, trace black opaque olivine phenocrysts (up to 2 mm), rare iddingsite replacement, rare plagioclase, abundant light tan amygdaloidal clay; 5–10% light tan clay nodules.	798–808	5839.6–5829.6
	Basalt, medium-light gray (N6) slightly porphyritic with aphanitic groundmass, massive, abrupt change in color and alteration at 808 ft. +10F: platy chips of massive basalt with 5–10% scoria, trace unaltered pale green olivine phenocrysts (up to 1 mm), groundmass pervasively altered and moderately bleached, chips commonly coated with clay.	808–823	5829.6–5814.6
	Basalt, medium-light gray (N6) slightly porphyritic with aphanitic groundmass, massive. +10F: monolithic basalt, trace unaltered pale green olivine phenocrysts (up to 1 mm), groundmass pervasively altered and bleached, chips have dusty white appearance.	823–838	5814.6–5799.6
	Basalt, medium-light gray (N6) slightly porphyritic with aphanitic groundmass, massive. WR/+10F: monolithic basalt, trace unaltered pale green olivine (up to 1 mm), groundmass partially altered and bleached.	838–858	5799.6–5779.6
	Basalt, medium-dark gray (N4), slightly porphyritic with aphanitic groundmass, massive. WR/+10F: basalt contains minor unaltered pale green olivine phenocrysts (up to 1 mm), groundmass pervasively altered and bleached.	858–863	5779.6–5774.6
Tb4, Interbedded River Gravels	Basalt/clastic sediments, varicolored, medium-dark gray (N4) to orange-pink (10R 7/4). +10F: 85–90% angular basalt chips, slightly porphyritic with aphanitic groundmass, trace olivine phenocrysts (up to 1 mm), groundmass partially altered; 10–15% sedimentary clasts of varying lithologies, fragments of quartzite, granitic rocks, potassium feldspar, and very fine-grained sandstone and/or siltstone, clasts mostly broken with some rounded edges. River gravels interpreted to occur from 863 to 870 ft bgs.	863–873	5774.6–5764.6
	Basalt/clastic sediments, varicolored, medium-dark gray (N4) to orange-pink (10R 7/4). +10F: 80–85% basalt, massive to vesicular, aphyric, aphanitic groundmass variably altered; 15–20% coarse gravel clasts of varying lithologies, including fragments of very fine-grained sandstone and/or siltstone, quartzite, orthoclase, rhyolite, and granitic rock, clasts exhibit subrounded to rounded surfaces; trace of silty clay.	873–883	5764.6–5754.6

Geologic Unit	Lithologic Description	Sample Interval (ft bgs)	Elevation Range (ft above msl)
Tb4, Interbedded River Gravels	Basalt/clastic sediments, varicolored, medium-dark gray (N4) to orange-pink (10R 7/4). +10F: 80–85% angular basalt, aphyric, aphanitic, groundmass partially altered; 15–20% broken clasts of varying lithologies, fragments of quartzite, potassium feldspar, granitic rock, and siltstone, subrounded surfaces indicate probably coarse gravel clasts; some silty clay.	883–888	5754.6–5749.6
	No cuttings returned and no samples collected in this interval.	888–894	5749.6–5743.6
	Volcaniclastic sediments, sand (SP), pale yellowish-brown. WR sample contains fine-grained sand, subangular grains of quartz, feldspar, and volcanic lithics, probable tuffaceous source; 2–3% silt and/or clay.	894–895	5743.6–5742.6
	No cuttings returned and no samples collected in this interval.	895–908	5742.6–5729.6
	Basalt/clastic sediments, varicolored, medium-dark gray (N4) to pale orange-tan (10YR 8/2). +10F: 60–70% angular basalt, slightly porphyritic, aphanitic groundmass, olivine phenocrysts (up to 1 mm), groundmass unaltered to very slightly altered; 30–40% broken clasts of varying lithologies, fragments mostly of quartzite and granitic rock, some very fine-grained sandstone and siltstone, subrounded to rounded surfaces indicate probable gravel clasts.	908–913	5729.6–5724.6
	Basalt/clastic sediments, varicolored, medium-dark gray (N4) to pale orange-tan (10YR 8/2). +10F: 50–60% angular basalt, slightly porphyritic, aphanitic groundmass, olivine phenocrysts (up to 1 mm), groundmass unaltered to slightly altered; 40–50% rounded clasts of varying lithologies (up to 1 cm), clasts of very fine-grained sandstone and siltstone, quartzite, potassium feldspar, and granitic rock.	913–915.5	5724.6–5722.1
	No cuttings returned and no samples collected in this interval.	915.5–923	5722.1–5714.6
Tpf, Puye Formation	No cuttings returned and no samples collected in this interval. Loss of drilling fluid circulation inhibited sample collection. Note: Tb4/Tpf contact estimated at 923 ft bgs as interpreted from geophysical logs.	923–1008	5714.6–5629.6
	R-32 BOREHOLE COMPLETED AT 1008 FT BGS TOTAL DEPTH.		

Notes:

1. American Society for Testing Materials (ASTM) standards (D 2488-90: Standard Practice and Identification of Soils [Visual-Manual Procedure]) were used to describe the texture of drill chip samples for sedimentary rocks such as alluvium and the Puye Formation. ASTM method D 2488-90 incorporates the Unified Soil Classification System (USCS) as a standard for field examination and description of soils. The following standard USCS symbols were used in the R-32 lithologic log:

   SW = Well-graded sand SM = Silty gravel CH = Clay, high plasticity
   GW = Well-graded gravel GM = Silty gravel
   GP = Poorly graded gravel GC = Silt

2. Cuttings were collected at nominal 5-ft intervals and divided into three sample splits: (1) unsieved, or whole rock (WR) sample; (2) +10F sieved fraction (No. 10 sieve equivalent to 2.0 mm); and (3) +35F sieved fraction (No. 35 sieve equivalent to 0.50 mm).
3. The term *percent,* as used in the above descriptions, refers to percent by volume for a given sample component.
4. Color designations such as hue, value, and chroma (e.g., 5YR 5/2) are from the Geological Society of America's Rock Color Chart.

Appendix D

LANL Borehole Video Log
(CD attached to inside back cover)

TO VIEW THE VIDEO THAT ACCOMPANIES THIS DOCUMENT, PLEASE CALL THE HAZARDOUS WASTE BUREAU AT 505-476-6000 TO MAKE AN APPOINTMENT

Appendix E

Schlumberger Geophysical Report/Montage
(CD attached to inside back cover)

Geophysical Logging Report

Schlumberger Water Services
February 2003

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1.0 ABSTRACT

This report describes the borehole geophysical logging measurements acquired in characterization well R-32 by Schlumberger, logged in July 2002 just prior to well completion. It also presents the final processed results from these measurements and discusses the interpretation of these results. The logs were acquired in open hole drilled with a 16 in diameter bit size. The primary purpose of the geophysical logging was to characterize the geologic/hydrogeologic section intersected by the well with emphasis on determining moisture content, perched groundwater zones, capacity for flow, and the stratigraphy/mineralogy of geologic units. A secondary purpose of the geophysical logging was to evaluate the borehole conditions such as borehole diameter versus depth and degree of drilling fluid invasion. These objectives were accomplished by measuring, nearly continuously, along the length of the well: (1) total and effective water-filled porosity and pore size distribution, from which an estimate of hydraulic conductivity is made, (2) bulk density (sensitive to total water- plus air-filled porosity) and photoelectric effect (sensitive to lithology), (3) bulk electrical resistivity at multiple depths of investigation, (4) bulk concentrations of a number of elements, (5) spectral natural gamma ray, including potassium, thorium, and uranium concentrations, and (6) borehole diameter.

Preliminary results of these measurements were generated in the logging truck at the time the geophysical services were performed and are documented in field logs provided on-site. However, the measurements presented in the field results are not corrected for borehole casing and fluid conditions and are provided as separate, individual logs. The field results were reprocessed by Schlumberger to (1) correct/improve the measurements, as best as possible, for borehole/formation environmental conditions, (2) perform an integrated analysis of the log measurements so that they are all coherent, and (3) combine the logs in a single presentation, enabling integrated interpretation. The reprocessed log results provide better quantitative property estimates that are consistent for all applicable measurements, as well as estimates of properties that otherwise could not be reliably estimated from the single measurements alone (e.g. total porosity inclusive of all water and air present, water saturation, mineralogy).

Most of the geophysical log measurements from Well R-32 provide good quality results that are consistent with each other through much of the borehole, although the quality of some measurements was degraded across certain intervals where the borehole contains large washouts. While much of the open hole section of the well at the time of logging is washed out, the greatest log quality issue is in the interval 300–600 ft where the severity of borehole washouts and hole rugosity is greatest. The measurements most affected by the adverse borehole conditions were ones that have a shallow depth of investigation and require close contact to the borehole wall—the bulk density, photoelectric effect, and the porosity measurements. The greatest impact on the log processing was erroneously high estimated air-filled porosity in the problem zones. While the quality of some of the water content measurements was degraded due to the borehole conditions, generally at least one water content measurement was of good quality throughout. Through the integrated analysis and interpretation of all the logs, the individual shortcomings of the specific measurements are reduced. Thus, the integrated log analysis results (e.g. the optimized water-filled porosity log) are the most robust single representation of the geophysical log results—providing a wealth of valuable high resolution information on the geologic and hydrogeologic environment of the R-32 locale.

Important results from the processed geophysical logs in R-32 include the following.

1. The estimated water saturation (fraction of pore space filled with water) remains below 75% through most of the logged section with no significant fully saturated intervals. These results, interpreted independent of other data sources, suggest that the regional aquifer groundwater level lies

somewhere below the bottom of the log interval (800 ft) and that there are no significant perched water zones within the logged section.

2. The measured near wellbore water-filled porosity is less than 20% of total formation volume through most of the logged section, ranging from a low of 3% to a high of 40%. The highest water-filled porosities (greater than 20%) occur in the zones 145–149 ft, 276–286 ft, 403–415 ft, 449–480 ft, 646–654 ft, 660–664 ft, and 722–800 ft. The bottom moist zone, which corresponds with the water-filled section of the borehole at the time of the logging, has the highest estimated water saturation of these zones (averaging about 75%).

3. Effective water-filled porosity (moveable water) is less than 3% through most of the logged section, ranging from a low of 0% to a high of 30%. Correspondingly, the estimated hydraulic conductivity is generally very low. The highest effective water-filled porosities (greater than 10%) occur in the zones 145–149 ft, 276–286 ft, and 722–800 ft. The top two zones are likely within the Bandelier Tuff sequence (the second likely corresponding to the Guaje Pumice Bed) and, from the integrated log analysis, appear to be directly underlain by clays that likely inhibit downward flow and cause the accumulation of moisture above. The bottom zone coincides with the water-filled section of the borehole that also contains significant washouts; it is likely that the measured moveable water content is unrepresentative of true formation conditions (reading too high) due to the measuring of water-filled washouts. As would be expected, estimated hydraulic conductivity is highest in these zones, especially in the interval 726–748 ft.

4. The integrated log analysis shows a mafic-mineral rich and quartz/silica glass deficient zone from 290–800 ft, that likely corresponds to a basalt lava flow sequence. The zone from 290–654 ft is very dense (matrix grain density of 2.8-3.0 g/cc) and heavy-mafic-mineral rich with intervals of low total porosity interspersed with a number of fractured and altered zones. The zone from 654–800 ft is less dense, contains significant amounts of clay, and has higher porosity—likely highly fractured and altered basalt. The washed out, high porosity zones in both intervals likely correspond to fractured, broken-up altered zones, possibly “rubble” zones.

5. A volcanic tuff sequence (likely the Bandelier Tuff) in the upper half of the logged interval (55–286 ft) is clearly distinguished by the logs and is characterized by

    - very high total porosity (70%) and high water content (20%) in the bottom 10 ft (276–286 ft), which likely corresponds to the Guaje Pumice Bed;

    - lower, but still high, porosity (40–45%) and consistently decreasing water content in the uphole direction (ranging from 8–14%) from 172–276;

    - a distinct drop in the gross gamma log and bulk density across the zone 135–174 ft, for which the integrated log analysis shows decreased total porosity (20-30%), increased amounts of clay and augite, and higher water content (10–22%);

    - very high total porosity (48–56%) and consistently decreasing water content in the uphole direction (ranging from 10–15%) in the interval 54–135 ft.

6. The borehole was largely washed out throughout the log interval, the diameter ranging from 16 in (the bit size) to greater than 20 in. Many of the washouts are abrupt, possibly cavities. The shallow-reading log measurements, predominantly the bulk density, were adversely affected in zones with high rugosity.

2.0 INTRODUCTION

Geophysical logging services were performed in characterization well R-32 by Schlumberger in July 2002, prior to initial well completion. The purpose of these services was to acquire in situ measurements that help characterize the borehole, near-borehole, and abutting geologic formation environment. The primary objective of the geophysical logging was to provide in situ evaluation of formation properties (hydrogeology and geology) intersected by the well. This information was (and is) used by scientists, engineers, and project managers in the Los Alamos Characterization and Monitoring Well Project to design the well completion, better understand subsurface site conditions, and assist in overall decision-making.

The primary geophysical logging services performed by Schlumberger in well R-32 were the

- Combinable Magnetic Resonance (CMR*) tool to measure the nuclear magnetic resonance response of the formation, which is used to evaluate total and effective water-filled porosity of the shallow formation and to estimate pore size distribution and in situ hydraulic conductivity;
- Compensated Neutron Tool, model G (CNTG*) to measure volumetric water content of the formation, which is used to evaluate moist/porous zones;
- Triple detector Litho-Density (TLD*) tool to measure formation bulk density, which is used to estimate total porosity;
- Array Induction Tool, version H, (AITH*) to measure formation electrical resistivity at five depths of investigation, which is used to evaluate drilling fluid invasion into the formation, presence of moist zones far from the borehole wall, and presence of clay-rich zones;
- Natural Gamma Spectroscopy (NGS) tool to measure gross natural gamma and spectral natural gamma ray activity, including potassium, thorium, and uranium concentrations, which is used to evaluate geology/lithology, particularly the amount of clay and potassium-bearing minerals;
- Elemental Capture Spectroscopy (ECS*) tool to measure elemental weight percent concentrations of a number of elements – used to characterize mineralogy and lithology of the formation.

In addition, calibrated gross gamma ray (GR) was recorded with every service except the NGS, for the purpose of depth matching the logging runs to each other. Table 2.1 summarizes the geophysical logging runs performed in R-32.

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* Mark of Schlumberger

Table 2.1
Geophysical logging services, their combined tool runs and intervals logged, as performed by Schlumberger in borehole R-32

Date of Logging	Borehole Status	Run #	Tool 1	Tool 2	Tool 3	Depth Interval (ft)
31-July-2002	Open hole below 55 ft Bit size of 16 in. Surface casing above 55 ft Casing OD of 18 in.	1	CNTG	TLD	GR	34–805 ft
Same	Same	2	AITH	GR		100–790 ft
Same	Same	3	CMR	GR		62–806 ft
Same	Same	4	ECS	GR		56–801 ft
Same	Same	5	NGS	GR		36–800.5 ft

2.1 Technology Description

Geophysical logging represents mature, yet constantly evolving, technologies employed as the principal methods of borehole analysis in subsurface characterization. Geophysical logs have a long history of use in the groundwater industry for aquifer delineation and basic characterization. More recently, advanced logging technologies, developed for the petroleum industry, are being applied for characterizing a wide range of groundwater-related physical properties.

Wireline geophysical logging systems consist of three components (Figure 2.1):

1. downhole instrument (or sonde) introduced into a borehole that measures one or more physical properties of the formation (a logging “tool” is usually defined as the sonde plus required accompanying electronic cartridges;
2. cable that connects the sonde to the surface, conducting power downhole and transmitting data uphole; and
3. logging truck that controls sonde location, provides power and houses a computer that controls sonde operation, as well as processes and displays data in real time. The resulting data are shown on a continuous strip chart commonly called a log.

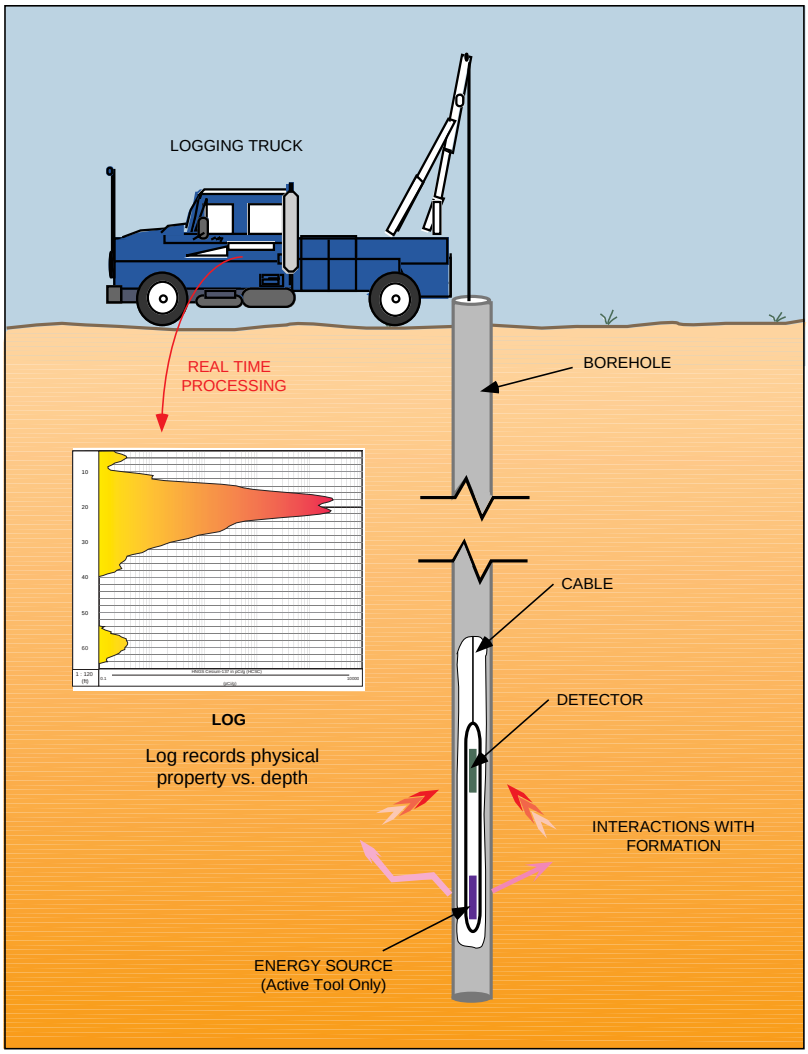

Figure 2.1: Schematic diagram of a wireline logging system in operation.

Geophysical logging systems are designed to give an accurate and precise in situ measurement of formation properties. Formation parameters commonly measured include porosity, moisture content, bulk geochemistry, hydraulic conductivity, orientation of bedding and fractures, identification and quantification of specific radionuclides and other elements, and many others. Similarly, logging systems provide accurate and precise measurements of completed well parameters, such as casing geometry, casing thickness, cement bond, and annular fill composition. Logging systems can also be used for downhole sampling and testing.

The integration of multiple logging technologies plus other data types (e.g., geologist's log, core analyses, surface geophysics, hydrologic test analyses) can lead to a fairly comprehensive picture of the subsurface. The precision of the measurements, in concert with the potential to measure the same volume repeatedly (i.e., re-enter the same borehole), enhances the use of logging systems for monitoring.

2.1.1 Compensated Neutron Tool, Model G (CNTG)

The CNTG tool measures the hydrogen index (HI), which is usually closely related to hydrogen concentration and water volume and can be employed in either open or cased, water or air filled boreholes. The HI measurement is made by emitting high-energy neutrons from a 16-Ci Americium-Beryllium neutron source, which collide with atoms in the volume surrounding the tool and are slowed to epithermal and thermal energy levels. The number of slowed neutrons returning to a set of detectors is then measured. The CNTG contains two He-3 thermal detectors, spaced 37.8 cm (15 in.) and 62 cm (24.7 in.) above the neutron source, as well as two He-3 epithermal neutron detectors spaced 11.6 in. and 20.5 in. below the source. This model of the CNT makes an HI measurement from epithermal neutrons in addition to one from thermal neutrons. The detectors count the neutrons that have been reduced to thermal/epithermal energy level. Measured count rates from the detectors are used to compute a ratio that varies primarily with the hydrogen concentration, or HI, of the media, and is related to formation water-filled porosity. Environmental effects are reduced using the ratio of the two count rates from the two detectors, which are affected in a similar manner by the environment. Residual environmental effects can be corrected with offsite processing. While the HI measurement is calibrated to provide a volumetric water content estimate, it is affected by lithology; it measures all hydrogen in clays, including that in hydroxyl molecules, as well as other oddball neutron absorbers, typically resulting in an elevated porosity in clays.

The CNTG provides two different porosity measurements, thermal and epithermal. The advantage of the epithermal measurement is that it provides a measurement in air-filled boreholes (not possible with the thermal measurement) and is relatively insensitive to thermal neutron absorbers (such as chlorine in salt water and the rare earth elements in shale). However, because of less efficient detection and of the relatively brief time spent by the neutrons in the epithermal energy band, epithermal count rates are lower than thermal count rates, under identical conditions in water-filled boreholes, by a factor of ten.

The measurements are calibrated in open and cased boreholes, albeit the measurement will be affected by the annular fill between the casing and the formation. The median depth of investigation is approximately 7 in. and vertical resolution approximately 18 in., although the thermal measurement can be resolution-enhanced to 8 in.

Basic measurement specifications for the CNTG are shown below.

Range of Measurement (water content):	0 to 60 %
Repeatability (Precision) (1 standard deviation or σ):	0– 20% = <1% porosity 20 to 30% = ± 2% porosity above 45% = ± 5% porosity

2.1.2 Combinable Magnetic Resonance (CMR)

The CMR makes pulse-echo nuclear magnetic resonance (NMR) measurements that are sensitive to the hydrogen nuclei (protons) contained in the pore space of the formation. These measurements contain information relating to both pore water volume and pore size. The pore size information can be used to partition the formation porosity into bound and free fluid volumes. This information can, in turn, be used to estimate formation hydraulic conductivity and water producibility. The pore size information also can be used to extrapolate relative grain size. The pore size information is unique to NMR logging devices.

The CMR log uses a compact magnet and antenna sensor package mounted in a pad-like skid that is pressed against the borehole wall. The tool has a vertical resolution of 6 in. (15 cm) and a median depth

of investigation of 1.5 in. (4 cm). Since the CMR makes a shallow measurement that requires good borehole wall-to-pad contact, disruption of contact between the skid and the wall because of borehole washout or hole rugosity affects data quality, resulting in erroneously high/low total and free water content in water/air-filled hole. The measurement also can be significantly affected by a sizeable presence of iron-bearing minerals, such as magnetite.

Basic measurement specifications for the CMR and a schematic diagram of the tool and sensor section are shown below and in Figure 2.2, respectively. The measurement specifications assume good logging conditions, good contact between the CMR pad and the borehole wall, and the absence of large amounts of magnetic material in the borehole environment.

Repeatability (σ):	Total water-filled porosity	1%
	Effective water-filled porosity:	0.5%
Total margin of error:	2%	

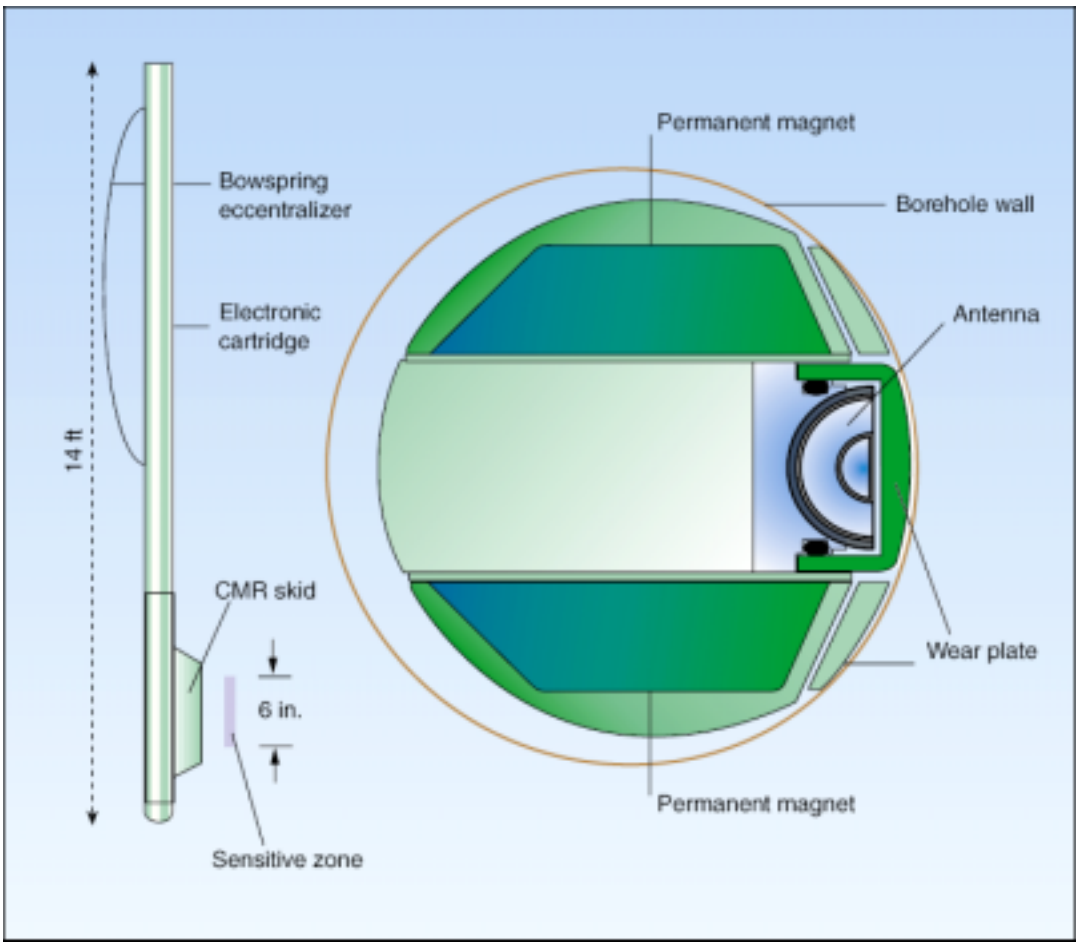

Figure 2.2. Schematic diagram of CMR tool with an enlarged cross-section of the sensor section

2.1.3 Triple Detector Litho-Density Tool (TLD)

The TLD tool is a triple-detector gamma-gamma (gamma ray source and gamma ray detectors) system for measuring compensated bulk density and formation photoelectric factor (P_e). Formation bulk density is

a function of porosity, rock matrix density, and pore fluid density, and P_e is a measure of the average atomic number of the formation that corresponds to formation chemistry and lithology. The tool uses a focused gamma source (1.5-curie ^{137}Cs) to emit a large flux of gamma rays into the formation and measures the resulting gamma intensity in dual near and far detectors. From these spectral measurements, a robust, environmentally corrected calculation of bulk density is made. True matrix porosity can be calculated based on bulk density, an estimation of matrix grain density (aided by the P_e measurement) and fluid densities. This porosity is unaffected by bound hydrogen in clays, as is porosity from neutron devices. The detectors, like the source, are highly focused because of their small size and heavy shielding and thus produce a high-resolution measurement.

The TLD also employs a third backscatter detector that improves the environmental correction for borehole washouts and rugosity, improves the dynamic range of the P_e, and has higher count rates and, thus, better measurement statistics, in hard rocks.

The TLD tool has a vertical resolution as high as 1.2 in. (3 cm) and a depth of investigation of 4 in. (10 cm). The tool is sensitive to changes in bulk density down to 0.01 g/cm3 and can be run in open hole and certain types of cased hole completions, and in both saturated and unsaturated formations.

The TLD uses a pad-like skid that is pressed against the borehole wall. Because the tool has a relatively shallow depth of investigation, it can be severely affected by borehole washouts and rugosity.

A schematic diagram of a TLD-type sensor system is shown in Figure 2.3.

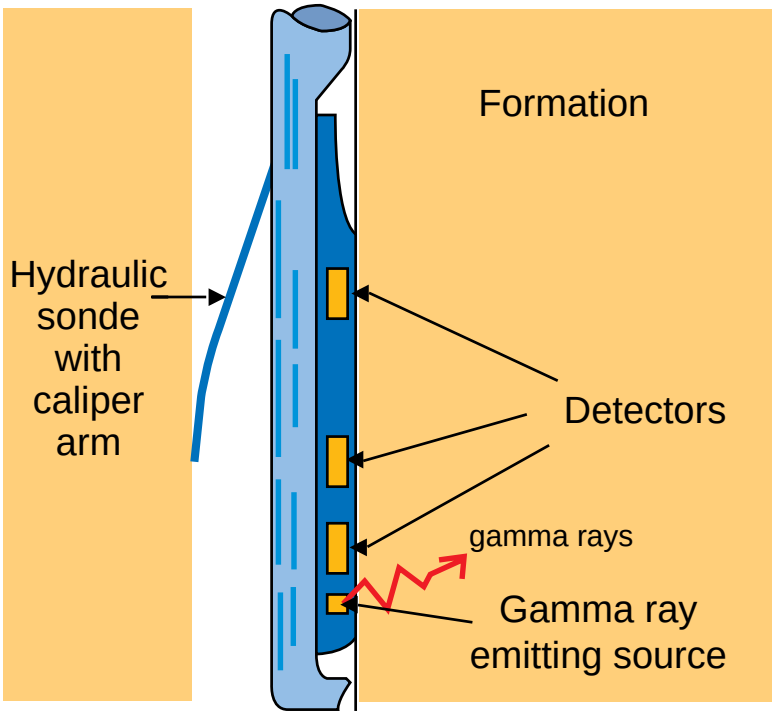

Figure 2.3. Schematic diagram of TLD-type density logging system.

2.1.4 Micro Cylindrically Focused Log (MCFL*)

With the Platform Express*, the MCFL measurements are integrated with the density sensors (TLD) in a single pad that presses against the formation. Consequently, the MCFL micro-resistivity measurement investigates the same volume of formation as the density measurement, with a vertical resolution of 2 in (5 cm). This high vertical resolution allows for enhanced thin bed analysis and fracture identification. The MCFL can be readily correlated and compared with the FMI* Formation Micro Imager high-resolution results. The MCFL measurements are based on three different depths of investigation, providing a highly focused micro-resistivity that is automatically corrected for standoff and mudcake during data acquisition.

The MCFL passes an electrical current into the borehole wall and, thus, requires water in the borehole and cannot be operated in cased hole. The MCFL uses a pad-like skid that is pressed against the borehole wall. Because the tool has a relatively shallow depth of investigation it can be severely affected by borehole washouts and rugosity.

Basic measurement specifications for the MCFL are shown below.

Range of measurement:	0.2–2000 Ohm.m
Repeatability (precision):	5% of measurement
Total measurement error:	20% from 0.2 to 2 Ohm.m
	5% from 0.2 to 200 Ohm.m
	20% from 200 to 2000 Ohm.m
Min/Max. hole size:	4.75 in./20 in.
Vertical Resolution:	2 in (5 cm); 8 in (20 cm) and 18 in (46 cm)
Depth of Investigation:	2 in. (5 cm.)

2.1.5 Natural Gamma Ray Spectroscopy (NGS) Tool

The NGS tool is a passive gamma ray measuring sonde that can be used in either open or cased boreholes. The tool measures the natural gamma activity energy spectrum with two sodium-iodide crystal detectors and uses a spectral weighted-least squares processing algorithm to resolve the three most common components of naturally occurring radiation—potassium, thorium, and uranium. The tool is designed for continuous logging and provides a depth/time averaged continuous log of the three elemental components in relative wt%. In addition, the standard gamma ray and gamma ray minus uranium are computed. The spectral gamma measurements are useful for evaluating clay content and clay type, especially when integrated with other types of log measurements.

Basic specifications for the NGS and a schematic diagram of the measurement sensor are shown below and in Figure 2.4, respectively.

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Range of measurement:	GR	0 to >750 API units;
	K	0 to ~50%;
	Th	0 to ~10,000 ppm;
	U	0 to ~10,000 ppm
Statistical precision (σ):	Th–1.5 ppm; U–0.9 ppm; K–0.25%	
Min./Max. hole size:	4.5 in. / 24 in.	
Depth of Investigation:	9.5 in (24 cm)	

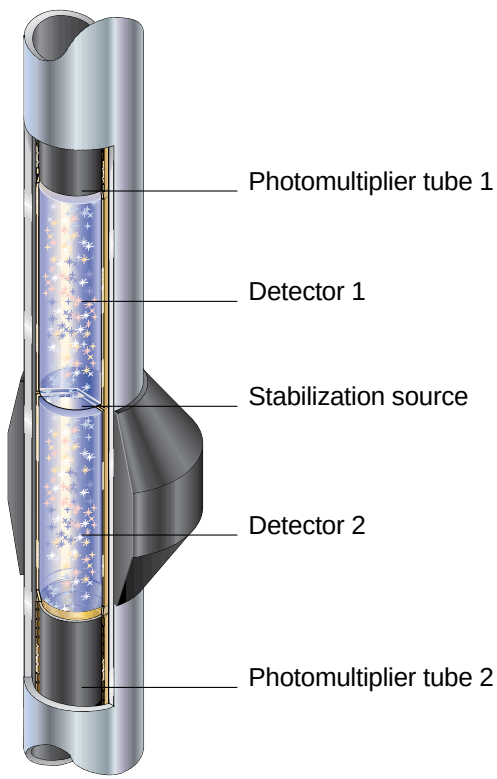

Figure 2.4. Schematic diagram of NGS sensor

2.1.6 Elemental Capture Spectrometer (ECS)

The ECS geophysical logging tool provides accurate measurements of the relative weight % concentrations of specific elements in the formation (such as Si, Ca, Fe, S, Ti, and Gd). The

measurements have sensitivities as low as 1% dry weight concentration or less (dependent on which element and the logging speed).

The ECS actively emits a large flux of neutrons into the region surrounding the probe using a 16-Ci Americium-Beryllium chemical neutron source. The neutrons collide and interact with atomic nuclei, prompting the release of gamma rays having characteristic energies, depending on the specific element and type of interaction. These induced gamma rays are measured by the tool's scintillation gamma ray detector, resulting in a total gamma energy spectrum measurement when the sum of gamma rays generated from all neutron-element interactions is considered. A weighted least squares algorithm is used to decompose the gamma ray contributions from specific elements based on a known detector spectral response, or standard, for each important constituent. The relative spectral contribution of the elements, or relative elemental yields, are converted to relative elemental dry weight % based on measurement characteristics of the tool type and an assumed mineralogical assemblage (oxide closure model).

The ECS employs a large shielded BGO spectral gamma ray detector that has very good measurement statistics. Because of the large detector, the ECS has a 5 in (127 mm) diameter.

The ECS works in either open or cased hole, and is relatively insensitive to borehole conditions, since the measurement is a dry matrix measurement (fluid contributions to the measurement are removed in the standard processing) and the radius of investigation is about 1 ft (30 cm). Thus, the ECS provides robust direct concentration measurements of important mineral-forming elements and provides robust mineralogical/lithologic control, very useful for developing a continuous mineralogy model along the borehole section when integrated with other wireline logs and core analysis results.

The statistical precision of the ECS measurement, for the standard suite of elements it measures, is shown in Table 2.2.

Table 2.2
ECS elemental weight % statistical precision at 100 ft/hr (30 m/hr) logging speed and 1.5 ft (0.46 m) depth average

Element	Weight % Precision (1 σ)
Si	0.63
Fe	0.07
S	0.27
Ca	0.57
Ti	0.03
Gd (ppm)	0.65
H	0.12

2.1.7 Array Induction Tool, Version H (AITH)

The AITH is a focused electrical induction probe that measures electrical conductivity/resistivity at multiple depths of investigation and vertical resolutions. The measurement is made by emitting an

electromagnetic field that induces a current in the formation, subsequently creating a secondary electromagnetic field that is measured by the tool. The tool measures R- and X-signals from eight arrays, six of which operate at two frequencies simultaneously. The surface acquisition unit processes these raw measurements into five resistivity logs in real-time, each with matched vertical resolution and with median depths of investigation ranging from 10 to 90 in (25–230 cm). These depths of investigation change minimally over the entire range of formation conductivities. Each set of five logs is available in vertical resolution widths of 4, 2, and 1 ft (120, 60 and 30.5 cm).

From these measurements the AITH provides quantitative estimates of the following.

- True bulk formation resistivity–Formation resistivity is a function of water content, water salinity, and clay content.
- Drilling fluid invasion–In instances where the borehole fluid and formation fluid possess contrasting conductivity values, the depth of invasion of filtrate can be mapped and the zones with higher permeability can be identified.

The results are also useful for stratigraphic correlation. Vertical resolutions down to 1 ft (30.5 cm) show laminations and other formation structures with minimal environmental effects.

Since a current is not directly emitted into the formation, the measurement does not require water in the borehole and is accurate in the sub-saturated zone above the water table.

The AITH is largely insensitive to borehole environmental conditions since it has a deep depth of investigation.

Basic measurement specifications for the AITH are shown below and a schematic diagram of the basic tool setup in Figure 2.5.

Range of measurement:	0.2–2000 Ohm.m
Total measurement error:	2% of measurement
Min/Max. hole size:	4.75 in./20 in.
Vertical Resolution:	1 ft (30.5 cm), 2 ft (61 cm), 4 ft (122 cm)
Depth of Investigation:	10, 20, 30, 60 and 90 in. (median response) (25, 51, 76, 153, and 229 cm)

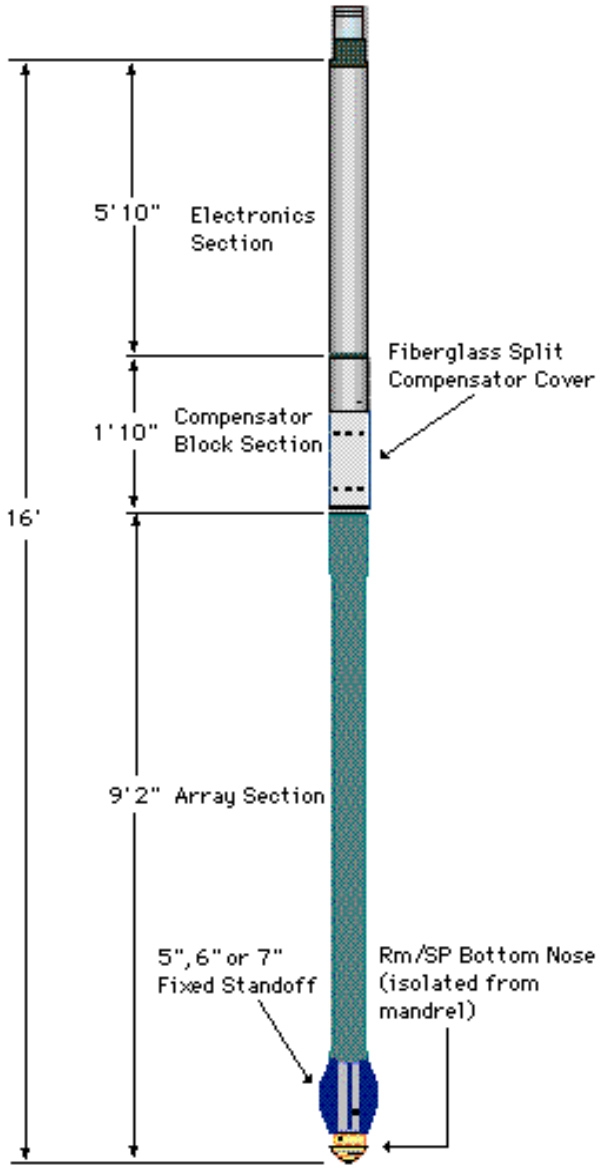

Figure 2.5. Schematic diagram of AIT tool, showing component lengths and standard logging setup.

3.0 METHODOLOGY

This section describes the methods employed by Schlumberger for performed geophysical logging services in Well R-32, including the following stages/tasks:

- Measurement acquisition at the well site
- Quality assessment of logs
- Reprocessing of field data

3.1 Acquisition procedure

Once the well drilling project team notified Schlumberger that each well was ready for geophysical well logging, the Schlumberger district in Farmington, NM, mobilized a wireline logging truck, the appropriate wireline logging tools and associated equipment, and crew to the job site. Upon arriving at the LANL site, the crew completed site entry paperwork and received site-specific safety training.

After arriving at the well site, the crew proceeded to rig up the wireline logging system, including

1. parking and stabilizing the logging truck in a position relative to the borehole that is best for performing the surveys;
2. performing any required environmental protection procedures (e.g., covering the ground with plastic liner, where the tools will be assembled, and around the well) as specified in the work order;
3. setting up a lower and an upper sheave wheel (the latter attached to, and hanging above, the borehole from the drilling rig/mast truck);
4. threading the wireline cable through the sheaves; and
5. attaching the appropriate sonde(s) for the first run to the end of the cable.

Next, pre-logging checks and any required calibrations were performed on the logging sondes and the tool string was lowered into the borehole. If any of the tools required active radioactive sources (in this case a neutron and gamma source for the CNTG/ECS and TLD, respectively) just prior to lowering the tool string, the sources were taken out of their carrying shields and placed in the appropriate tool source-holding locations using special source handling tools. The tool string was lowered to the bottom of the borehole and brought up at the appropriate logging speed as measurements were made. At least two logging runs (one main and one repeat) were made with each tool string.

Upon reaching the surface any radioactive sources were removed from the tools and returned to their appropriate storage shields, thus eliminating any radiation hazards. The tool string was cleaned as it was pulled out of the hole.

The second tool string was attached to the cable for another suite of logging runs.

After completion of the surveys, any post-logging measurement checks were performed. Before departure, the engineer printed the field logs (including calibration summaries) for on site distribution and sent the data via satellite to the Schlumberger data archiving center in Sedalia, CO. The Schlumberger data processing center was alerted that the data were ready for initial post-acquisition processing.

3.2 Log Quality Control and Assessment

Schlumberger has a thorough set of procedures and protocols for ensuring that the geophysical logging measurements are of very high quality. This includes careful calibration of tools when they are first built, regular recalibrations and tool measurement/maintenance checks, and real-time monitoring of log quality as measurements are made. Indeed, one of the primary responsibilities of the logging engineer is to ensure, before and during acquisition, that the log measurements meet prescribed quality criteria.

CNTG

The calibration and verification methodology for the CNTG consists of an initial base calibration and verification, monthly shop verification, and a wellsite before and after verification. The initial base calibration constitutes the development of a measurement to moisture content algorithm for a certain set of environmental conditions. The calibration is based on Monte Carlo computer modeling and measurements in the Schlumberger EECF calibration models in Houston, TX. This initial base calibration only has to be performed once for a certain set of conditions.

Schlumberger also performs what is called a “master calibration,” which is actually a verification of water-filled borehole conditions where the CNTG measurements are checked in a water tank with known saturated porosity. In addition, detector and neutron generator electronics are checked, and detector plateau voltages are set.

Detector electronics verifications are also performed before and after every logging run of the CNTG, constituting the well site before and after verifications.

NGS

The Schlumberger calibration and verification methodology for the NGS, similar to the CNTG, consists of an initial base calibration and verification, routine shop verification, and a wellsite before and after verification. The initial base calibration constitutes the development of measurement to gross gamma activity and spectral gamma activity algorithms, accounting for environmental conditions that influence the measurements. The initial base calibration only has to be performed once for a certain set of conditions.

The NGS gross gamma measurement in API units is made by taking a linear combination of U, Th, and K gamma activity yields to determine total count rates and then converting total count rates to API units. The coefficients of the linear combination and the API conversion are determined from the NGS response in the API test pits at the University of Houston (the API calibration standard) and calibration facilities at the Schlumberger Environmental Effects Calibration Facility (EECF) in Houston, which are tied to the API test pits.

In order to calibrate the spectral gamma activity measurements the response function of the NGS to each radioactive isotope of interest must be determined. The response function is the spectrum that would be observed by the tool for a given detector resolution and gain if just the one element were present and evenly distributed in the formation in a certain concentration. Such a spectrum is called a spectral standard. For natural gamma ray logging Th, U and K standards are used. Test formations with known concentrations of radionuclides at the API test pits and EECF are used to determine the NGS spectral standards.

The routine shop verification, referred to as a “master calibration” by Schlumberger, consists of measuring the NGS response to a thorium blanket with known Th activity and a background check. During the background check the detector response to an internal 22Na stabilization source is measured. In addition, detector electronics checks are performed. The primary task of the shop verification is to set the electronic gain ratios properly so that the Th and 22Na gamma peaks occur at the correct energy levels.

NGS response to the stabilization source and detector electronics verifications are also performed before and after every logging run of the NGS, constituting the wellsite before and after verifications.

ECS

The Schlumberger calibration and verification methodology for the ECS, similar to the NGS, consists of an initial base calibration and verification, routine shop verification, and a well site before and after verification. The initial base calibration constitutes the development of gamma ray energy elemental spectral standards for each of the elements the tool measures, accounting for environmental and tool design-specific conditions that influence the measurements. The initial base calibration only has to be performed once for all ECS tools produced to develop a tool response catalog for individual elements that the ECS is sensitive to.

The routine shop verification consists of taking measurements in a specially designed water tank to verify correct identification of the spectral hydrogen peak and performing detector electronic gain checks using the small cesium internal check source.

Well site before and after checks consist of background internal electronic checks.

TLD

Similar to the CNTG and NGS, the calibration and verification methodology for the TLD consists of an initial base calibration and verification, monthly shop verification, and a well site before and after verification. The initial base calibration constitutes the development of a measurement to bulk density algorithm for a certain set of environmental conditions. The calibration is based on Monte Carlo computer modeling and measurements in the Schlumberger EECF calibration models. This initial base calibration only has to be performed once for a certain set of conditions.

The routine shop verification consists of checking the TLD bulk density measurement for uncased borehole conditions by making the measurement in materials with known densities. In addition, a background check with the gamma source removed from the tool is performed to verify that the system response to the 622 keV ^{137}Cs stabilization source located on each of the two detectors is accurate.

The background check is also performed before and after every logging run of the TLD, constituting the well site before and after verifications.

AITH

The Schlumberger calibration and verification methodology for the AITH consists of an initial base calibration and verification, routine shop verification, and a well site before and after electronics verification. The initial base calibration constitutes the determination of electronic gains and offsets and hardware adjustments for each individual tool so that the tool electrical induction response can be used to generate accurate electrical resistivity measurements. The initial base calibration has to be performed only once for all AITH tools produced to develop a tool specific response catalog for electronic gains and offsets.

The routine shop verification consists of taking measurements with specially designed calibration sleeves to verify correct measurement response as well as internal electronic gain checks.

Well site before and after checks consist of internal electronic checks.

CMR

After an initial base calibration and intensive measurement and electronic system checks performed at the time of tool production, the CMR calibration and verification methodology consists of a routine shop (or master) calibration and well site before and after survey calibration/verification.

The shop calibration consists of a one-point calibration in which the signal amplitude at 100% water-filled porosity is found by placing a calibration jig filled with water in front of the tool sensor section. In addition, an electronic calibration of system gain is performed using an internal test loop located on the tool's antenna. The measured amplitude and electronic gain are saved as a lookup table in the internal memory of the individual CMR tool to be used when logging in the field for the calculation of CMR porosities.

The well site before survey calibration covers two procedures for tuning the sensor antenna to the magnetic resonance frequency of water (known as the Larmor Frequency), performed at the surface and downhole in the vicinity of the logging interval. This tuning procedure compensates the sensor response for the well specific effects of pressure, temperature, and metallic debris in the hole. In addition, a check of system noise is made.

At the completion of the CMR logging, one of the tuning procedures is repeated: the system search for the Larmor Frequency to verify that the log was run "in tune." This procedure constitutes the well site after survey verification.

3.3 Processing Procedure

After the geophysical logging job was completed in the field and the data archived, the data were downloaded to the Schlumberger processing center. There the data were processed, in the stated order to (1) correct the measurements for near-wellbore environmental conditions and redo the raw measurement field processing for certain tools using better processing algorithms, (2) depth match and merge the log curves from different logging runs, and (3) model the near-wellbore substrate lithology/mineralogy and pore fluids through integrated log analysis. Afterwards an integrated log montage was built to combine and compile all the processed log results.

Environmental Corrections and Raw Measurement Reprocessing

If required, the field log measurements were processed to correct for conditions in the well, including fluid type (water or air), presence of steel casing, and (to a much lesser extent) pressure and temperature. Basically these environmental corrections entail subtracting from the measurement response the known influences of the set of prescribed borehole conditions. In R-32 the log measurements requiring these corrections are the CNTG porosity and NGS spectral gamma ray logs.

The CNTG epithermal neutron moisture content measurement in air-filled hole is derived using an entirely different processing algorithm than applied in water-filled hole; this processing is performed in the field.

The NGS spectral gamma ray are affected by the material (fluid, air, casing) in the borehole because different types and amounts of these materials have different gamma ray shielding properties; the NGS measures incoming gamma rays emitted by radioactive elements in the formation surrounding the borehole. The processing algorithms try to correct for the damping influence (or lack thereof) of the borehole material.

The measurements cannot be corrected for borehole washouts, rugosity, and the annulus material (if any) between casing and the formation; thus, the effects of these conditions should be accounted for in the interpretation of the log results.

Depth-Matching

Once the logs were environmentally corrected for the conditions in the wellbore and the raw measurement reprocessing was completed, the logs from different logging runs were depth-matched to each other using the AIT tool run as the base reference. Gamma ray was used as the common correlation log measurement for depth-matching the different runs.

Integrated Log Analysis

This analysis was performed using the Elemental Log Analysis (ELAN*) program. ELAN is a petrophysical interpretation program (Mayer and Sibbit, 1980; Quieren et al, 1986) designed for quantitative formation evaluation of cased and open-hole logs level by level. Evaluation is done by optimizing simultaneous equations described by one or more interpretation models.

The primary purpose of ELAN is solving the inverse problem in which log measurements, or tools, and response parameters are used together in response equations to compute volumetric results for formation components. This relationship is often presented in the triangular diagram below (Figure 3.1).

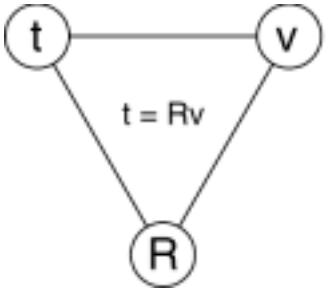

Figure 3.1. Schematic diagram of ELAN mathematical model

In this figure, t represents the tool vector—all logging instrument data and synthetic curves. The v is the volume vector, the volumes of formation components. R is the response matrix, containing the parameter values for what each tool would read, given 100% of each formation component. Given the data represented by any two corners of the triangle, ELAN can determine the third.

Additionally, ELAN includes methods by which individual models can be mixed and spliced to provide a combined model for more complex environments and large borehole extents. Each individual model is specified in a separate “Solve” process. The final result is produced by mixing and splicing the results from individual models in a “Combine” process.

The quality of the ELAN results can be assessed by reconstructing the individual geophysical logging curves from the solution and comparing them to the original data. However, a “good” fit does not

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* Mark of Schlumberger

necessarily mean the correct ELAN, as the answer is non-unique. The degree of match between input and output curves is summarized as an error curve.

ELAN requires an a priori specification of the volume components present within the formation—fluids, minerals, and rocks. For each component, the relevant parameters for each tool are also required. For example, if one assumes that quartz is a volume component and the bulk density tool is used, then the bulk density parameter for this mineral is usually assumed to be 2.65 g/cc.

A key point in properly using ELAN is the input of the most representative parameter values possible. For certain minerals (e.g., quartz) most parameter values are fairly constant and easy to select; other mineral (e.g., clays) present the potential for wide variability in many parameters due to compaction (sonic slowness, bulk density) and minor changes in chemistry (Th, K, Fe, Al, H). Estimation of parameters, or their changes with depth, can be a major limitation to ELAN. Geochemical logs (acquired in R-32) are particularly helpful measurements for ELAN since they provide abundances of a number of important mineral forming elements.

ELAN simultaneously solves for multiple volume components using different tools. Some tools are highly influenced by parameters other than mineralogy and pore fluid (e.g., sonic), including geomechanical properties and borehole environmental conditions that cannot be corrected for in pre-processing. The dependency of the tool measurements on these conditions depends on the specific tool type and measurement. Including log measurements that are being highly influenced by these properties in the ELAN can significantly affect the solution, since variations in the logs are not only due to changes in mineralogy or pore fluid—what ELAN is trying to estimate. For example, if some of the logs are sensitive to washouts ELAN will try to match the log response in washed out zones by increasing the amount of porosity in the model, possibly at the expense of matching other log measurements used in the analysis that are not as sensitive to washouts (although the latter can be rectified by assigning more weight to the better logs). If some of the logs are affected by borehole conditions, or other properties not explicitly accounted for in the model (e.g. formation water salinity), while the others are not, often there is a poor match between modeled and actual log measurements in intervals where there are variations in these unaccounted for properties. Sometimes the solution can also become unstable—the model results change significantly due to only minor variations in log responses. In such cases it may be better to not include such measurements in the ELAN. In short, ELAN results are only as accurate at depicting true formation mineralogy and fluid content as the input logs are sensitive to the formation components included in the model—and insensitive to components/properties not included.

The tool measurements, volume components and parameters used in the ELAN analysis for R-32 are provided in Table 3.1; the final results of the analysis, showing the optimized mineral-fluid volume model along with calculated versus measured logs and mineral matrix/fluid properties, are provided as two summary logs in Appendices ** and **. To make best use of all the measurement data and to perform the analysis across as much of the well interval as possible (36–804 ft), as many as possible of the processed logs were included in the analysis, with less weighting applied to less robust logs. Not all the tool measurements shown in these tables are used for the entire interval analyzed, as not all the measurements are available, or of good quality, across certain sections of the borehole.

The ELAN analysis was performed with as few constraints or prior assumptions as possible. A considerable effort was made to choose a set of minerals or mineral types for the model that is representative of Los Alamos area's geology and it's volcanic origins. No prior assumption is made about water saturation—where the boundary between saturated (if any) and unsaturated zones lies (e.g. the depth to the top of the regional aquifer or perched zones). Thus, the presence and amount of air in the pore space is unconstrained. Total porosity and water-filled porosity are also left unconstrained

throughout the analysis interval. It was felt that the ELAN analysis should be performed with as few constraints as possible—even though the resulting model may show the effects of washouts and drilling foam invasion (as elevated porosity and water content)—in order to guard against presumptions that the results are conclusive when in fact they may not be. Thus, interpretations should be made from the ELAN results with the understanding that the mineral-fluid model represents a mathematically optimized solution that is not necessarily a physically accurate representation of the native geologic formation, although in R-32 the results appear very well behaved. Within this context, the ELAN model is a robust estimate of the bulk mineral-fluid composition that accounts for the combined response from all the geophysical measurements.

Table 3.1
Tool measurements, volumes, and respective parameters used in the R-32 ELAN analysis.

Volume / Tool Measurement	Air	Capillary Bound Water	Water	Hornblende	Hypersthene	Labradorite	Silica Glass	Heavy Mafic Minerals	Augite	Montmorillinite	Pyrite	Orthoclase	Quartz
Bulk density (g/cc)	–0.19	1.00	1.00	3.11	3.55	2.65	2.2	4.0	3.08	2.02	4.99	2.58	2.64
Epithermal neutron porosity (ft^3/ ft^3)	-0.02	1.00	1.00	0.05	0.01	-0.01	0.0	0.02	-0.01	0.6	0.17	-0.01	0.0
Volumetric photoelectric effect	0	0	0.40	12	20.2	7	4.2	65.00	23.8	4.4	82.1	7.3	4.8
Total CMR water-filled porosity (ft^3/ ft^3)	0	1.0	1.0	0	0	0	0	0	0	0.425	0	0	0
CMR free fluid volume (ft^3/ ft^3)	0	0	1.0	0	0	0	0	0	0	0	0	0	0
Resistivity (ohm-m)	Very high	20	20	Very high	Very high	Very high	Very high	Very high	Very high	1.37	Very high	Very high	Very high
Dry weight silicon (lbf / lbf)	0.0	0.0	0.0	0.21	0.24	0.24	0.47	0.18	0.23	0.26	0	0.3	0.47
Dry weight calcium (lbf / lbf)	0.0	0.0	0.0	0.09	0.0	0.09	0.0	0.0	0.10	0.01	0.0	0.0	0.0
Dry weight iron (lbf / lbf)	0.0	0.0	0.0	0.07	0.20	0.0	0.0	0.22	0.11	0.02	0.47	0.0	0.0
Dry weight sulfur (lbf / lbf)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.53	0.0	0.0
Dry weight titanium (lbf / lbf)	0.0	0.0	0.0	0.005	0.01	0.0	0.0	0.0	0.048	0.0	0.0	0.0	0.0
Wet weight potassium (lbf / lbf)	0.0	0.0	0.0	0.01	0.0	0.0	0.0	0.0	0.003	0.005	0.0	0.102	0.0
Weight water (lbf / lbf)	0.0	1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.18	0.0	0.0	0.0
Wet weight thorium (ppm)	0.0	0.0	0.0	50	25	3	2	4	20	24	0	5.5	2

4.0 RESULTS

This section describes the final log results from the borehole geophysical logging performed by Schlumberger in R-32. These results have been processed, if required, to correct for the well environment and depth-match the logs from different tool runs in the well. Also, some of the results are not directly measured logs but are instead logs generated from integrated analysis of measured logs. In the following description of the results, an attempt is made to organize the discussion based on the evaluation needs addressed by the logs instead of describing each log independently.

The log results are presented as continuous curves of the processed measurement versus depth and are displayed as (1) summary log displays for selected directly related sets of measurements and (2) an integrated log montage that contains all the final log curves, on depth and side by side. The summary log displays address specific characterization needs, such as moisture content. The purpose of the integrated log montage is to present, side by side, all the most salient reprocessed logs and log-derived models, depth-matched to each other, so that correlations and relationships between the logs can be identified.

First the R-32 final processed log results are presented as a number of useful summary logs and described according to specific evaluation needs addressed by the geophysical logs. Next, the integrated log montage is described track by track.

4.1 Water-Filled Porosity

One of the primary objectives of the geophysical logging was to evaluate volumetric water content (water-filled porosity) to identify wet and porous water-producing zones. The CNTG neutron porosity, which measures water content in both open and cased hole above and below the borehole water level, was the primary service run for this purpose. The CMR was run to measure the water-filled pore size distribution and, most importantly, the amount of moveable water (effective water-filled porosity), which, in turn, provides valuable information on formation flow capacity (hydraulic conductivity). The TLD bulk density measurement provides useful information about total porosity—the sum of water-filled and air-filled porosity. The ECS geochemical measurement provides secondary information on water content through non-standard processing to obtain hydrogen weight fraction. In Well R-32 the CNTG neutron porosity and ECS hydrogen weight fraction appear to be somewhat adversely impacted by drilling foam that was present in the well at the time of logging—possibly yielding elevated water content values across some sections of the logged interval. While standing water in the borehole has a large affect on these measurements, it is easily corrected for. The problem with the drilling foam is that it varies somewhere between air and water with regards to how the measurements respond and, thus, cannot be quantitatively corrected for. The CMR and TLD measurements are much less impacted by the foam filling the borehole because they are pad type tools that is pushed against the formation; however, they are shallow reading measurements and could be affected by invasion of the foam—whether it acts to wet or dry the near wellbore formation. It appears the CMR and TLD measurements are of good quality and not significantly affected by drilling foam invasion. However, these measurements are affected by washouts and hole rugosity that are prevalent in R-32 throughout the logged interval.

The best estimate of true formation water content is obtained from the ELAN integrated log analysis, since none of these measurements actually directly measures volumetric water content. This analysis accounts for the individual measurement response to each matrix and pore volume constituent, as well as the relative uncertainty in the measurements, in solving for a single matrix-pore volume model at each depth that best accounts for the processed measurements results. To account for the possibly erroneous

CNTG neutron porosity and ECS hydrogen weight fraction values discussed above much greater weight was given to the CMR total water-filled porosity in the R-32 ELAN analysis.

The ELAN water-filled porosity results for R-32 are shown as part of the summary logs in Figure 4.1 (solid dark blue curve and blue shading in the second track from the right), and in expanded form, as part of the integrated log montage provided in Appendix E of the LANL R-32 Well Completion Report (compressed form shown in Figure 4.4). The summary log also displays

- ELAN moveable water volume fraction, or “effective porosity” (solid cyan curve and cyan shading in second track from right);
- ELAN bound water volume fraction (dotted blue shading in second track from right);
- ELAN total (water- and air-filled) porosity (red hashed curve in second track from right);
- Air-filled porosity (dotted red shading in second track from right);
- ELAN water saturation (dotted light blue curve in second track from right);
- CMR estimated tapered Timur-Coates equation hydraulic conductivity (solid blue curve and blue shading in first track from right);
- Gross gamma ray (solid brown curve in first track from left); and
- Caliper with measured washouts (dashed black curve with washouts shown by pink shading).

Borehole water level in R-32 at the time of the July 2002 geophysical logging was 722 ft (depth referenced to the AITH tool run). There is uncertainty in determining whether 100% saturation of the virgin geologic formation occurs from the geophysical logs (corresponding to conditions within the regional aquifer or in perched zones above, where the entire pore space is filled with water)—due to the unknown effects of the drilling foam and introduced water on the formation directly adjacent to the borehole and, ultimately, the log measurements. In addition, the borehole has significant washouts and hole rugosity throughout, which can adversely affect the log measurements by elevating their response to the fluid/air filling the washouts. Even without such borehole conditions, the water saturation estimate from the geophysical logs is very sensitive to the matrix grain density.

Despite these measurement and water saturation processing difficulties, the ELAN integrated log analysis results clearly indicate unsaturated conditions across the entire depth section, with estimated water saturation values mostly below 85% and no substantial zones containing 100% saturation. The highest water saturations occur below the borehole water level (722 ft) where there is a jump in estimated water saturation that correlates with a significant increase in water-filled porosity, as well as CMR moveable water content and hydraulic conductivity. It is likely that much of the water the log measurements are sensing across this interval (including CMR moveable water) invaded the formation and large washouts present here during drilling as water accumulated in the borehole. (It should be noted that the large washouts across this interval might be indicative of naturally occurring high porosity/permeability rubble zones.) These results, interpreted independent of other information and data types, suggest that the regional aquifer groundwater level lies below the bottom of the log interval (800 ft) and that there are no significant perched water zones.

The highest water content (greater than 15% of total matrix and pore space volume) occurs in the following zones (from bottom to top):

- 722–800 ft (maximum 40%)—As mentioned above, the estimated water content is likely elevated due to washouts filled with borehole water. However, from the processed logs, this

zone appears to be a fractured, altered basalt flow that naturally has fairly high porosity and intrinsic permeability.

- 646–654 ft and 660–664 ft (maximum 28%)—These adjacent zones are coincident with large washouts and the inferred mineralogy from the ELAN analysis includes large amounts of montmorillonite (40% by weight). The clay is driving the elevated water content since all the water is shown to be bound within the wet clay. The processed logs and ELAN results indicate a formation change at 660 ft marked by a decrease in heavy mafic minerals below that likely corresponds to the contact between two different basalt flows, the one above more massive and the one below more altered, with the contact zone possibly being the most fractured and altered – facilitating the formation of clays.

- 449–480 ft (maximum 30%)—This zone contains washouts and the ELAN results indicate the presence of clays from 460–490 ft, possibly inhibiting downward flow and causing the collection of water in this zone. The CMR logs show that most of the water is bound to the rock matrix and unable to flow.

- 403–415 ft (maximum 32%)—This zone is coincident with a large washout and is shown to contain clay on top and bottom, possibly preventing movement of the water. Again, most of the water is bound. The zone also correlates with a change in the inferred mineralogy, with heavy mafic minerals present above and below being replaced by increased hypersthene content. The lithology in this section is likely basalt, with the change in mineralogy possibly corresponding to separate lava flows.

- 362–364 ft (maximum 27%)—This spike correlates directly with a thin clay-rich bed in the ELAN model.

- 334–336 ft (maximum 17%)—This thin zone is coincident with a large narrow washout and could be the result of the accumulation of drilling fluid in the washout.

- 276–286 ft (maximum 22%)—This pronounced high water content zone contains 12% moveable water and, thus, relatively high hydraulic conductivity. The total porosity is very high (60%) and, thus, the water saturation is low (20%). The zone is directly underlain by a substantial clay bed, likely acting as a barrier to downward flow. Matching all the geophysical log features observed in other Los Alamos wells, this zone likely corresponds to the Guaje Pumice Bed, above which lies the Bandelier Tuff sequence.

- 145–149 ft (maximum 22%)—This zone contains almost 10% moveable water and is bounded within an interval containing clays in the ELAN model.

- 36–46 ft (maximum 50%)—The very high water content within this zone is an artifact of the ELAN processing within the surface casing and can be discounted.

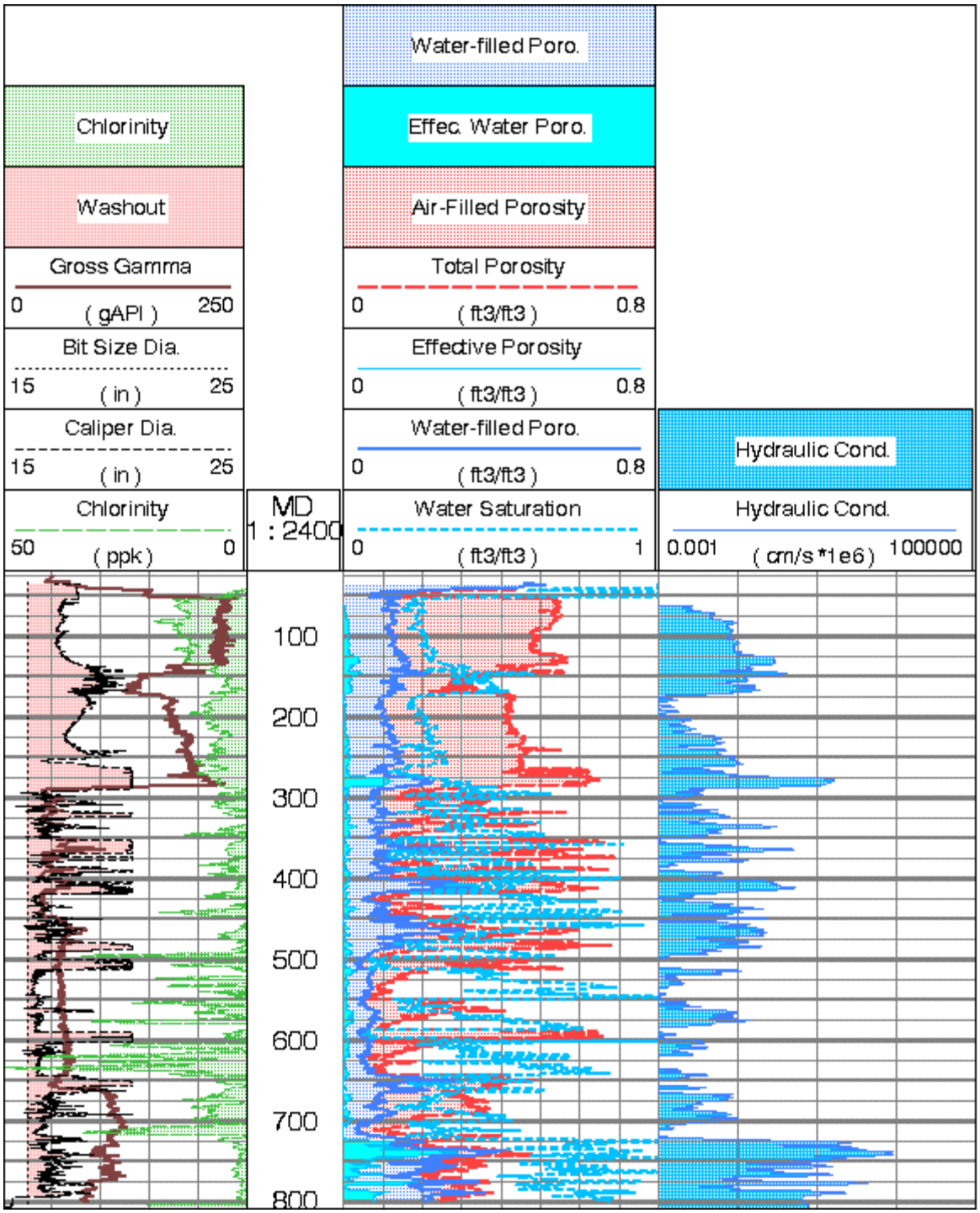

Figure 4.1. Summary porosity logs in R-32 borehole from processed geophysical logs, interval 36–800 ft, with caliper, gross gamma, apparent chlorinity, and water saturation logs. Porosity and water saturation logs are derived from the ELAN integrated log analysis.

4.2 Density

Bulk density and P_e log measurements, obtained from the TLD geophysical tool in R-32, provide information about the formation total porosity (water plus air) and lithology, respectively. The bulk density is the only measurement in the suite of logs run in R-32 (and most geophysical log measurements) that is directly sensitive to all formation components: air-filled porosity, water-filled porosity, and rock matrix. Total air plus water-filled porosity in the vadose zone can be estimated from density porosity when it is computed in conjunction with a water content measurement (e.g., neutron porosity or CMR total water-filled porosity) and an independent measurement/assumption of grain density. The processed bulk density and P_e curves (the latter referred to as “Pef” for photoelectric effect), as well as the apparent grain density derived from the ELAN analysis, are displayed as part of the summary logs (third track from left) for R-32 in Figure 4.2. Other applicable curves in the summary log are gross gamma ray (for stratigraphic correlation) and caliper (for identifying borehole washouts), shown in the farthest left track.

The bulk density and P_e measurements have a shallow depth of investigation and, thus, the measurements can be severely affected by borehole washouts and standoff from the formation, that is, measuring water/air density and P_e instead of the formation. The bulk density measurement is made using a focused gamma ray source and three detectors in a sensor pad that is pushed against the borehole wall with a strong caliper arm. The tool tries to compensate for differences in the near and far detector response—usually caused by pad standoff—by performing an internal processing correction, which is shown on logs as a density correction curve, flagged when it goes above/below quality cutoff thresholds. This flag is used as an indication when the TLD measurement quality may be compromised, but not necessarily if the large measurement correction properly accounts for the standoff. In R-32 the density correction is flagged intermittently across many intervals of the log section, generally directly correlating with large washouts. The bulk density measurement, and sometimes P_e, exhibit sharp drops across many of the flagged intervals, indicating the measurement is likely being adversely affected by the washout by measuring borehole fluid/air instead of the true formation. However, the measurements are not necessarily erroneous in all flagged zones. In some of the flagged zones the density and P_e measurements appear to be reasonable and consistent with the other geophysical log measurements, suggesting the measurements have properly corrected for environmental conditions within these zones, despite the corrections being quite large. Also it is possible that some of the washouts correspond to naturally occurring “rubble”/“breccia” zones in the volcanic geologic section—in which case the lowered bulk density measurement (and higher derived porosity) is actually representative of the natural conditions.

Zones in the R-32 log interval were the bulk density, total porosity (since it is derived primarily from bulk density), and possibly P_e are likely comprised by washout-induced standoff from formation—as evidenced by the density correction flag and sharp measurement anomalies that are unreasonably low (bulk density, P_e) and high (total porosity) values for natural geologic formations—include: 240–243 ft, 264–286 ft, 296–301 ft, 302–311 ft, 315–325 ft, 332–343 ft, 349–358 ft, 360–370 ft, 371–379 ft, 384–392 ft, 402–419 ft, 460–439 ft, 499–513 ft, 550–566 ft, and 587–599 ft. In these intervals the bulk density measurement likely is not representative of true formation bulk density and, consequently, the estimated total porosity estimate is erroneously high. In addition, the measurements are suspect across the intervals 645–694 ft and 717–792 ft at the bottom of the log section, although the lower and highly variable bulk density may be representative of highly fractured and heterogeneous geologic conditions—likely an altered basaltic lava flows based on the ELAN analysis results.

Total porosity was computed from the ELAN integrated analysis of all the log measurements, including bulk density as a crucial input, as displayed in the first track from the right on the summary log (Figure 4.2) and the second track from the right on the integrated log montage (inclusive of the depth track). In

this analysis no constraints were placed on air or water-filled porosity through the entire depth section. As can be seen on the summary logs, the ELAN total porosity mimics bulk density since bulk density is the primary measurement providing information on air-filled porosity. The estimated total porosity is likely not accurate in the intervals noted above due to the influence borehole washouts on the bulk density measurement. The total porosity estimate appears to be good quality and valid for quantitative interpretation across the remainder of the depth section.

The P_e measurement is a good indicator of lithologic changes. In this geologic setting, an increase in P_e above 3 is a good indicator of the presence of heavy, probably mafic, minerals; an increase to 5 is an indicator of a very heavy mineral-rich bed ("heavy" most likely corresponding to iron), such as a massive basalt lava flow. P_e is consistently above 3 (except in some severe washouts) across the entire section below 288 ft.; in the interval 290–654 ft P_e reaches close to 5. The optimized ELAN mineral model results (see the integrated log montage, fourth track from the right) indicate that most of this section contains at least small amounts of heavy, iron-rich mafic minerals (such as magnetite and olivine), with significantly higher concentrations in the upper interval (15-20% dry weight fraction, matrix grain density of 2.8-3.0 g/cc) and less consistent, lower concentrations in the lower interval (1-10%, matrix grain density of about 2.75 g/cc). The entire section is probably a sequence of basaltic lava flows—the upper interval a massive, low porosity basalt and the lower interval a less massive, significantly altered basalt. The washed out, high porosity zones in both intervals likely correspond to fractured, broken-up altered zones, possibly "rubble" zones, that contain relatively significant clay concentrations.

Above the high P_e zone is a low P_e interval, averaging just above 2.5, that extends to the surface casing: 55–288 ft. The bulk density is very low across this interval as well, resulting in a very high ELAN total porosity. This section likely corresponds to a Guaje Pumice Bed (at the bottom) and Bandelier Tuff sequence, with large amounts of silica glass / quartz, orthoclase, and hornblende in the ELAN mineral model results indicative of a silica-rich volcanic tuff deposit. The ELAN results also indicate varying amounts of montmorillonite, as high as 20% dry weight fraction, particularly in the interval 133–152 ft. In addition, the ELAN model shows a clay-rich bed (284–292 ft) separating the Guaje Pumice from the basalts below—a feature that is characteristic of the processed log results for most of the Los Alamos wells containing this contact.

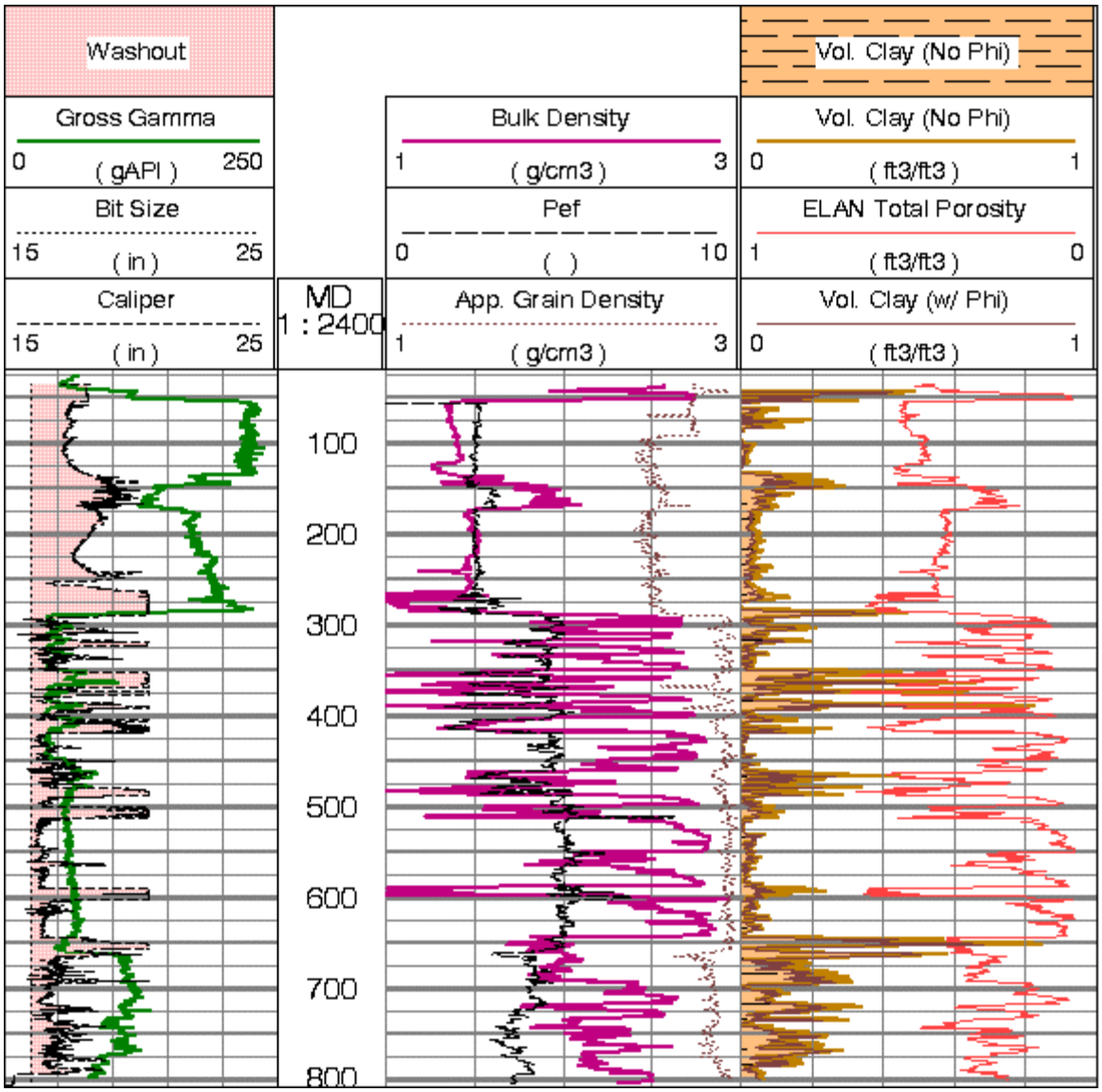

Figure 4.2. Summary bulk density and volume clay logs in R-32 borehole from processed geophysical logs, interval 40–805 ft. Also shown– caliper, gross gamma, apparent grain density, and total porosity logs.

4.3 Volume of Clay

Volume of clay is of interest particularly because clay can have a large influence on hydraulic conductivity as well as the groundwater geochemistry. Unfortunately, there is no way to directly measure volume of clay from geophysical logging. It can only be derived indirectly from other log measurements, preferably a combination of measurements. Of the logging services run in R-32, the one that provides the most information about clay content is the NGS spectral gamma ray, since thorium and potassium are often

associated with clays. However, because of the complex geologic history of the Los Alamos area, including many periods of volcanic activity, the geologic section contains numerous minerals other than clays that produce similar spectral gamma (and gross gamma) responses. This fact greatly complicates the estimate of clay volume directly from gamma ray measurements. The ECS provides important information about the collection of all minerals present since it measures the concentration of a number of important mineral-forming elements. Unfortunately, it cannot directly measure aluminum—the most important clay-forming element—although an indirect geochemical-derived estimate of aluminum can be made that is valid in siliciclastic rocks. The P_e measurement from the TLD provides additional information about bulk mineralogy, since it is sensitive to changes in the atomic number of mineral-forming elements, but it doesn't provide any specific information about clay minerals. The AIT resistivity measurement is sensitive to clay since clay has a low bulk resistivity; however, the measurement is also sensitive to pore water salinity and porosity. In addition, the CMR measures clay-bound water, which can be considered an indirect indicator of clay.

Considering the above-mentioned circumstances, the most robust way to estimate clay volume from the geophysical logs is to use all the logs together to solve for the full mineral and fluid volumetric composition of the formation. This type of analysis constitutes an inverse problem and can be performed using the ELAN program. Clay volume, along with the remaining matrix and fluid volumes, was estimated using the ELAN integrated log analysis approach with a fairly comprehensive mineral/fluid model containing montmorillonite, silica glass/quartz, orthoclase (representative of alkali feldspars), labradorite (representative of plagioclase feldspars), hypersthene, hornblende, augite, an analog representative of heavy mafic minerals (such as magnetite and olivine), water, and air. This set of volume constituents was chosen to provide a representative cross-section of possible major minerals in the R-32 geologic environment.

The ELAN volume model result, as well as the dry wt% model result, is also shown as part of the integrated log montage, provided in Appendix E of the LANL R-32 Well Completion Report (and in Figure 4.4 in compressed form).

The volume of clay derived from these ELAN results for R-32, presented both as (1) fraction of the total (matrix plus pore space) volume and (2) fraction of just the matrix volume (pore space subtracted out), are shown as part of the summary logs (farthest track to the right) in Figure 4.2. The analysis predicts at least minor amounts of clay (montmorillonite) throughout much of the logged section—generally never reaching more than 50% by volume (except in two thin zones) and mostly staying at less than 20%. The highest clay content (maximum 85%, but mostly 40-50%) occurs as two adjacent beds at 645–655 ft and 659–667 ft that lie at the transition between the massive and less massive basalt zones. Overall, the lower in depth, less massive basalt interval (654–800 ft) is inferred to have substantially more clay than the upper massive basalt interval (288–654 ft); the lower interval contains variably 10-30% volume clay and the upper interval contains less than 5% in the massive, low porosity zones, although the washed out high porosity intervals have inferred clay volumes as high as 80% (especially concentrated in the intervals 350–395 ft and 460–490 ft).

Above the inferred basalt sequence, a prominent clay-rich bed occurs at 284–292 ft (maximum 45% volume clay), lying just below the Guaje Pumice Bed (as interpreted from the ELAN results). The clay bed is feature of the processed log results for most of the Los Alamos wells containing this contact and appears to act as a impediment to downward flow, evidenced by high water content in the very porous pumice bed directly above and generally decreasing water content upwards into the tuff sequence above (as inferred for the ELAN results). Most of the tuff sequence contains 5% volume clay or less, but there is a zone with higher clay content from 133–175 ft, coincident with a drop in total porosity and the addition of small amounts of augite in the ELAN mineral model, possibly corresponding to an altered zone.

Relatively high clay volume occurs in ELAN model within the cased section (44–55 ft), but is probably an artifact of the processing within the casing, in which several of the measurements could not be used.

4.4 Spectral Natural Gamma Ray

Natural gamma ray spectroscopy logs were acquired in R-32 for the purpose of

- identifying geologic/lithologic layer boundaries,
- correlating geologic/lithologic units with other wells, and
- helping in the evaluation of mineralogy, including clay content.

The processed spectral gamma log results are shown as summary logs in Figure 4.3 and in expanded form as part of the integrated log montage in Appendix E of the LANL R-32 Well Completion Report (shown compressed in Figure 4.4). On the summary log, gross gamma and gross gamma minus the uranium contribution are displayed in the first track (from left), useful radioisotope ratios are displayed in the third track, and the individual radioisotope concentrations–potassium (K), thorium (Th), and uranium (U)–are displayed in the fourth track.

The NGS spectral gamma measurements are of good quality throughout the log interval, valid for the purpose of interpretation. The raw field measurements were preprocessed to correct for borehole environmental conditions–mainly the lack of water in the well. The K and Th spectral components were used as valuable input to the ELAN analysis in R-32. If possible, it is not recommended to use U as an input to the ELAN model, because it can vary significantly for a particular mineral component due to independent processes (e.g. water flow, geochemical conditions); U was not used in the R-32 ELAN.

The R-32 spectral gamma ray logs have a number of distinct characteristics, which are described below:

- Overall across the logged interval there are a number of general trends that can be defined as distinct zones with very different K, Th, and U characteristics (listed from bottom to top):
  - 661–800 ft (bottom of log interval)—medium (for this well) natural gamma activity (2.0 to 3.5 wet weight% K, 10 to 15 ppm Th, and 0 to 3 ppm U), likely corresponding to a non-massive basalt lava flow sequence that is significantly fractured and altered (based on the ELAN analysis results)
  - 448–661 ft—lower natural gamma (0.5 to 1.0 wet weight% K, 2 to 4 ppm Th, and 0 to 2 ppm U), likely corresponding to a massive basalt flow
  - 288–481 ft—lowest natural gamma activity in the log interval, but also quite variable (0.75 to 1.75 wet weight% K, 1.5 to 4 ppm Th, and 0 to 5.5 ppm U), likely corresponding to a massive basalt flow sequence that is interspersed with a number of fractured and altered zones
  - 174–288 ft—high natural gamma activity (2.75 to 4.5 wet weight% K, 12 to 25 ppm Th, and 4 to 9 ppm U) with Th and U steadily decreasing and K steadily increasing in the uphole direction, likely corresponding to a volcanic pumice-tuff sequence (based on the ELAN results and comparison to the log response in other Los Alamos wells)

    - 135–174 ft—decrease in gamma activity (2.8 to 3.4 wet weight% K, 10 to 23 ppm Th, and 3 to 7 ppm U) with Th and U steadily increasing and K varying up and down in the uphole direction, possibly corresponding to an altered zone in the volcanic tuff sequence
    - 54–135 ft—highest gamma activity in the log interval (3.5 to 4.75 wet weight% K, 22 to 28 ppm Th, and 7 to 9 ppm U), likely corresponding to a continuation of the tuff sequence, but a higher porosity tuff possibly resulting in higher gamma activity (greater pore space reduces gamma ray adsorption)
    - 26–54 ft—low gamma activity (1.0 to 2.8 wet weight% K, 3 to 16 ppm Th, and 2 to 5 ppm U) that rapidly decreases in the uphole direction, possibly resulting from the surface completion which could not be properly corrected for (steel casing, some annular material, and increased bit size significantly impedes incoming gamma rays from the formation)
- A distinct peak in gross gamma, Th, U, and Th/K across the zone 274–286 ft, which likely corresponds to the Guaje Pumice Bed (based on comparison to the log response in other Los Alamos wells)
- A slight decrease in gamma activity (all three elements) from 776–800 ft, relative to the zone above, that possibly corresponds to a slight change in the mineral composition (decrease in orthoclase) of the inferred basalt flow sequence (based on the ELAN results)

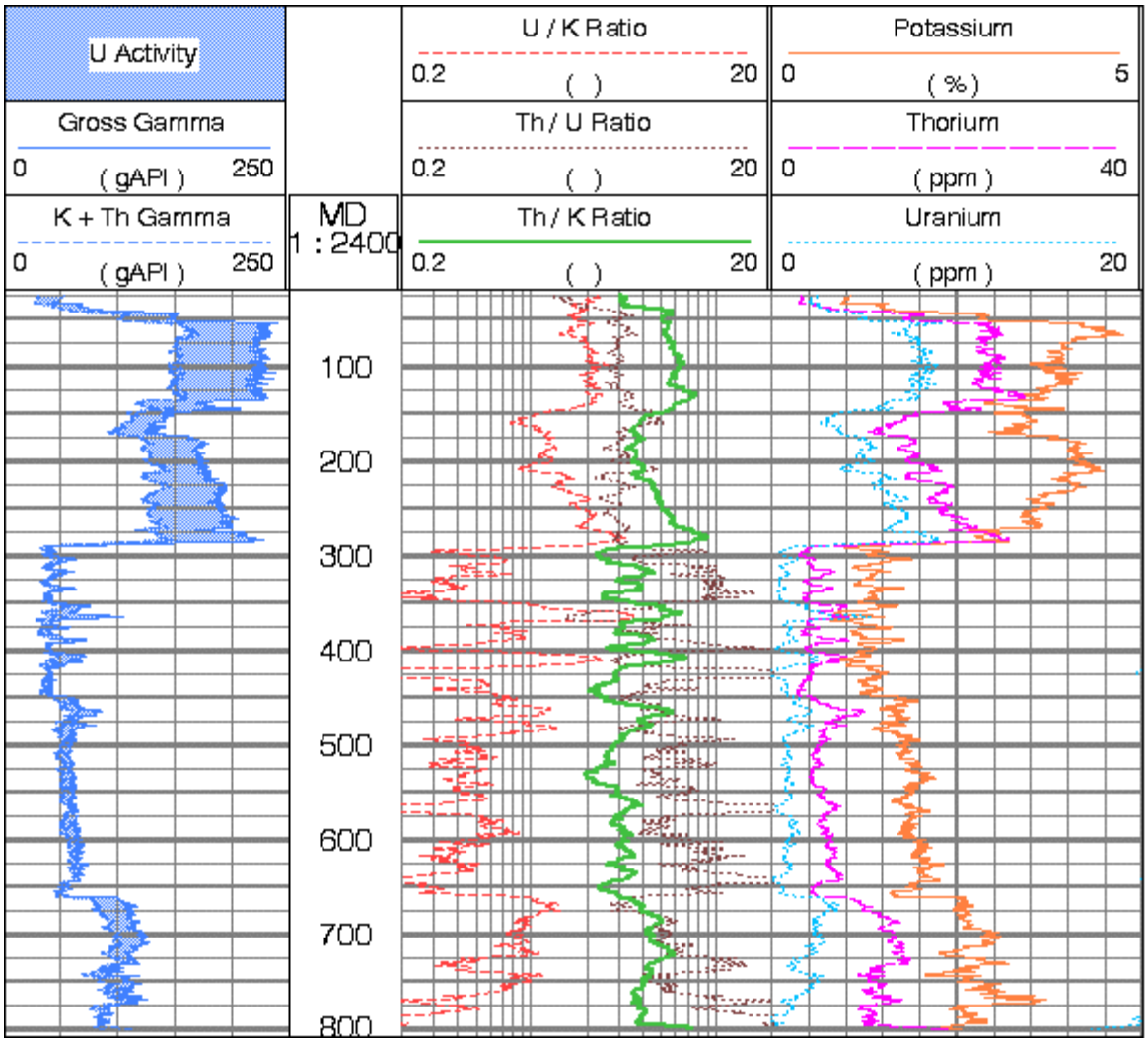

Figure 4.3. Summary spectral natural gamma ray logs from R-32 borehole, interval 28-764 ft

4.5 Integrated Log Montage

This section describes the integrated geophysical log montage for R-32: It includes a discussion of (1) what each log curve represents and how it was derived and (2) what are some of the most notable features in the displayed logs. The montage is provided in Appendix E of the LANL R-32 Well Completion Report and is shown compressed in Figure 4.4. A description of each log curve in the montage follows—organized under the heading of each track, starting from track 1 on the left-hand side of the montage. Note that the descriptions in this section focus on what the curves are and how they are displayed; the specific characteristics and interpretations of the R-32 geophysical logs are provided in the previous section.

Track 1–Depth

The first track on the left contains the depth below ground surface in units of feet, as measured by the geophysical logging system during the AITH logging run. All the geophysical logs are depth-matched to the gross gamma measurement run with the AITH.

Track 2–Basic Logs

The second track on the left (inclusive of the depth track) presents basic curves:

- gamma ray (thick black), recorded in API units and displayed on a scale of 0 to 250 API units;
- caliper (thin solid black) with bit size as a reference (dashed black) to show washout (pink shading), recorded in inches and displayed on a scale of 12 to 22 in;
- spontaneous potential or SP (dashed red – valid only below the borehole water level), recorded in millivolts and displayed on a relative scale of -1600 to -1100 millivolts; and
- bulk chlorinity (dashed green with green shading), recorded in parts per thousand (ppk) and displayed on a scale of 50 to 0 ppk (left to right).

Two gamma ray curves from the NGS are presented:

- total gross gamma (thick solid black curve) and
- gross gamma minus the contribution of uranium (dashed black).

Gross gamma measurements are sensitive to radioactive elements in the near wellbore environment, which are potassium, thorium, and uranium—assuming the gamma activity is from naturally occurring sources. The response of the gross gamma curves is the result of the formation chemical makeup, including lithology/mineralogy. The gross gamma curve from the NGS is depth-matched to the gamma ray measurement from the AITH tool run.

The caliper curve is from the TLD tool, the single arm that is used to press the tool sensor against the borehole wall. It has been depth-matched to the AITH tool run using gross gamma ray as a reference. The caliper shows a significant amount of borehole enlargement and washout throughout, with borehole diameters larger as 20 in (limit of caliper used)—well beyond the 16 in bit size. Many of the washouts are abrupt and sharp (i.e. the hole is rugose, containing cavities in a number of locations). Hole rugosity has the greatest negative impact on shallow-reading tools since it prevents the sensor section of the tool from contacting the borehole wall; “smooth” washouts do not cause this problem. Consequently, the log quality of the shallow-reading tools, particularly the TLD, was compromised in large washouts and highly rugose zones, as evidenced by sudden decreases in bulk density and the estimated total porosity (Tracks 5 and 4, respectively).

The SP log is measured with the AITH and is only valid in the open hole section (below 722 ft). It does not exhibit much response in R-32.

The bulk chlorinity log is estimated from the ECS and is considered an experimental measurement of average water chlorine content seen by the tool—assuming all the chlorine is dissolved in water.

Track 3–Resistivity

The third track displays the resistivity measurements from the AITH, most of the open hole section, and the MCFL, valid in the water-filled open hole section. All the resistivity logs are recorded in units of ohmmeters and displayed on a logarithmic scale of 2 to 2000 ohm-m.

Six electrical resistivity logs from the AITH are displayed:

- Borehole fluid resistivity (solid orange curve)
- Bulk electrical resistivity at five median depths of investigation–10 in. (black solid), 20 in. (long-dashed blue), 30 in. (short-dashed red), 60 in. (dashed-dotted green), and 90 in. (solid purple)–each having a two-foot vertical resolution.

The area between the 10 in. and 90 in. resistivity curves, representing radial variations in bulk resistivity (potentially from invasion of drilling fluids), is shaded:

- blue when the 10 in. resistivity is greater than the 90 in. resistivity (labeled “resistive invasive”) and
- yellow when the 90 in. resistivity is greater than the 10 in. resistivity (labeled “conductive invasive”).

The resistivity logs vary between 8 and 2000 ohm-m (the upper limit of the AITH), exhibiting a lot of character up and down the borehole. Zones where all the resistivity logs shift left significantly, corresponding to relative low resistivity readings, are likely associated with intervals where clay is present in the formation; in general, the lower resistivities correlate quite well with increases in the CMR clay-bound moisture measurement. Conversely, zones where the resistivity logs shift right significantly, corresponding to relative high resistivity readings, are likely associated with intervals where clay is not present in significant amounts and the average pore size is larger or there is not much moisture present in the pore space.

Track 4–Porosity

The fourth track displays the primary porosity log results. All the porosity logs are recorded in units of volumetric fraction and displayed on a linear scale of 0.75 (left side) to negative 0.1 (right side). Specifically, these logs consist of

- CNTG water-filled epithermal neutron porosity (dashed sky blue curve)–epithermal neutron porosity processed for air-filled hole;
- CNTG water-filled thermal neutron porosity (dashed light blue curve at bottom)–thermal neutron porosity valid (and visible) only in the water-filled borehole (below 689 ft)
- Geochemical estimated water-filled porosity derived from the ECS hydrogen weight % measurement (dotted purple);
- CMR total water-filled porosity (solid black), which is probably the best estimate of this property in R-32;
- CMR effective water-filled porosity (dashed green);
- CMR bound water porosity (light blue area shading)–representing by the area between the CMR total and effective water-filled porosities; and

- Total porosity derived from bulk density and neutron porosity using 2.65 g/cc grain density (thick long dashed red), 2.25 g/cc (thin dashed red), and 3.05 g/cc (thin dotted red)–with red shading between the 2.25 g/cc and 3.05 g/cc curves; and
- ELAN total water and air-filled porosity (dashed-dotted cyan)–derived from the ELAN integrated analysis of all log curves to estimate optimized matrix and pore volume constituents.

The CNTG logs are environmentally corrected for borehole conditions–particularly borehole fluid (water versus air)–as is the ECS porosity. The ELAN results are based on fully corrected logs. All the porosity logs are depth matched to the AITH log using the gross gamma ray measurement obtained in every logging run.

Track 5–Density

The fifth track displays the:

- bulk density (thick solid maroon curve) on a scale of 1 to 3 grams per cubic centimeter (g/cc);
- P_e (long-dashed black curve) on a scale of 0 to 10 non-dimensional units;
- density correction (dashed orange curve) on a scale of -0.75 to 0.25 g/cc; and
- apparent grain density (dashed-dotted brown curve), derived from the ELAN analysis, on a scale of 2 to 4 g/cc.

Grey area shading is shown where the P_e increases above 3 (indicating the presence of heavy, possibly mafic, minerals) and orange shading is shown where the density correction is greater than the absolute value of 0.25 (indicating the density processing algorithm had to perform a major correction to the bulk density calculation). These logs have been depth matched to the AITH using gross gamma ray.

Track 6–NGS Spectral Gamma

The sixth track from the left displays the spectral components of the NGS measurement results as wet weight concentrations:

- potassium (solid green curve) in units of percent and on a scale of –10 to 10 percent;
- thorium (dashed brown) in units of parts per million (ppm) and on a scale of 50 to –50 ppm; and
- uranium (dotted blue) in units of parts per million (ppm) and on a scale of 20 to -20 ppm.

The log results are environmentally corrected for borehole conditions (particularly borehole size and fluid properties). Potassium and thorium are presented in such a way that they increase to the right and the left from the center of the track, respectively, with gray shading between the two curves to qualitatively show changes in both concentration values. Uranium is plotted increasing to the left from the middle.

Track 7–CMR Porosity

Track 7 displays various CMR water-filled porosities along with measurement quality flags. The porosity and measurement quality logs are presented on a scale of 0.5 to zero volume fraction and discrete blocks originating from the left side, respectively. Specifically, the CMR logs shown in this track are

- Total water-filled porosity (solid black curve)–representing the total water volume fraction measured by the CMR;
- Three millisecond (ms) porosity (short-dashed brown)–representing the water volume fraction corresponding to the portion of the CMR measured T2 distribution that is above 3 ms, a cutoff that is considered to be representative of the break between clay-bound water (less than 3 ms) and all other types of water (greater than 3 ms);
- Effective water-filled, or free fluid, porosity (solid pink)–representing the water volume fraction that is moveable (can flow), based on a 33 ms T2 distribution cutoff that is considered representative of the break between bound water (less than 33 ms) and moveable water (greater than 33 ms) in clastic rocks;
- Clay-bound water (brown area shading between total and 3 ms porosity logs)–representing the water volume fraction that is bound within clays;
- Capillary-bound water (pink area shading between 3 ms and effective porosity logs)–representing the water volume fraction that is bound within matrix pores by capillary forces;
- CMR wait-time flag (red area shading)–activates when there is significant measurement response at late T2 times, corresponding to large amounts of completely free ("bathtub") water and often associated with washouts or very large pores;
- CMR measurement noise flag (yellow and orange area shading)–activates when there is potentially detrimental amounts of measurement noise detected by the tool, at moderate (yellow) and high (orange) levels.

All these CMR logs have been reprocessed from the field measurements to ensure proper and consistent processing algorithms are applied. The reprocessed logs are depth matched to the AITH tool run using gross gamma.

The CMR logs exhibit variability throughout the measured interval, indicating hydrogeologic heterogeneity (variability in pore-size distribution).

Track 8 –Pore Size Distribution

Track 8 displays the water-filled pore size distribution as determined by the CMR–shown as binned water-filled porosities. The binned porosity logs are presented on a scale of 0.5 to zero volume fraction with colored area shading corresponding to the different bins:

- Clay-bound water–brown area shading;
- Micro pore and small pore water (the sum comprising capillary-bound water)–gray and blue area shading, respectively;
- Medium pore, large pore, and late decay (the sum comprising effective water-filled porosity)–yellow, red, and green area shading, respectively.

In addition, an estimate of clay hydroxyl hydrogen volume fraction is plotted in the water-filled bottom section of the borehole (diagonal hatched purple area shading)–defined by the difference between the CNTG neutron porosity and the CMR total water-filled porosity.

Track 9–CMR T2 Distribution (Waveforms)

The CMR T2 distribution is displayed in Track 9 as green waveform traces at discrete depths. The horizontal axis, corresponding to relaxation time in milliseconds, is on a logarithmic scale from 0.3 to 3000 ms. Also plotted are the:

- T2 logarithmic mean (solid blue curve) and
- T2 cutoff time used for differentiating between bound and free water (solid red line)–a constant 33 ms in this case.

Track 10–CMR T2 Distribution (Heated Amplitude)

Track 10 displays the T2 distribution in another way–on a heated color scale where progressively “hotter” color (green to yellow to red) corresponds to increasing T2 amplitude. The remaining aspects of the display are the same as in Track 9, except that the T2 logarithmic mean is shown as a solid white curve and the T2 cutoff is not displayed.

Track 11–CMR Hydraulic Conductivity

Track 11 displays several estimates of hydraulic conductivity (K) from the CMR measurements, as well as one derived from the ELAN analysis, presented on a logarithmic scale of 10^{-3} to 10^{7} centimeters per second (cm/s) multiplied by 10^{6}:

- A K versus depth estimate derived from using the SDR permeability equation, converted to hydraulic conductivity (dashed purple curve);
- A K versus depth estimate derived from using the Timur-Coates permeability equation applied to a tapered T2 cutoff, converted to hydraulic conductivity (solid blue curve); and
- An intrinsic K versus depth estimate (assuming full saturation) derived from the ELAN analysis, converted to hydraulic conductivity (dotted pink).

The hydraulic conductivity values have been multiplied by 10^{6} to reduce the number of significant figures, since in cm/s the values are very small. Thus, when using these hydraulic conductivity estimates for quantitative analysis, the values should be divided by10^{6} or converted to other units.

Area color shading has been applied from the left side of the track up to the Timur-Coates equation K estimate, with different colors corresponding to ranges of K with representative clastic grain sizes:

- Grey–Clay K range (10^{-9} to 10^{-7} cm/s)
- Brown–silt K range (10^{-7} to 10^{-5} cm/s)
- Orange–silty-sand K range (10^{-5} to 10^{-3} cm/s)
- Yellow–clean sand K range (10^{-3} to 10^{-1} cm/s)
- Blue–gravel K range (10^{-1} to 10 cm/s)

Tracks 12 to 16– Geochemical Elemental Measurements

The narrow tracks 12 to 16 present the geochemical measurements iron (Fe) and silicon (Si), sulfur (S) and calcium (Ca), potassium (K) and estimated aluminum (Al), titanium (Ti) and gadolinium (Gd), and hydrogen (H) and bulk chlorinity (Cl) —from left to right respectively, in units of dry matrix weight fraction

(except H and K in wet weight fraction, Cl in ppk). All these measurements were obtained from the ECS except K, which is from the NGS. All these measurements are depth matched to the AITH.

Track 17–ELAN Mineralogy Model Results (Dry Weight Fraction)

Track 17 displays the results from the ELAN integrated log analysis (the matrix portion)–presented as dry weight fraction of mineral types chosen in the model:

- Montmorillonite clay (brown/tan)
- Quartz (yellow with small black dots)
- Silica glass (orange)
- Orthoclase or other potassium feldspar (lavender)
- Labradorite or other plagioclase feldspar (pink)
- Hypersthene (purple)
- Hornblende (forest green)
- Augite (maroon)
- Heavy mafic/ultramafic minerals, such as magnetite or olivine (dark green)
- Pyrite (cross-hatched red).

Track 18–ELAN Mineralogy-Pore Space Model Results (Wet Volume Fraction)

Track 18 displays the results from the ELAN integrated log analysis–presented as wet mineral and pore fluid volume fractions:

- Montmorillonite clay (brown/tan)
- Clay-bound water (checkered gray-black)
- Quartz (yellow with small black dots)
- Silica glass (yellow with large black dots)
- Orthoclase or other potassium feldspar (lavender)
- Labradorite or other plagioclase feldspar (pink)
- Pyrite (tan with large black squares).
- Hypersthene (purple)
- Hornblende (forest green)
- Augite (maroon)
- Heavy mafic minerals, such as magnetite (dark army green)
- Air (red)
- Moveable water (white)
- Capillary-bound water (light blue).

Track 19–Summary Logs

Track 17, the second track from the right, displays several summary logs that describe the fluid and air-filled volume measured by the geophysical tools, including water saturation:

- Optimized estimate of total volume fraction water from the ELAN analysis (solid dark blue curve and area shading);
- Optimized estimate of total volume fraction of air-filled porosity from the ELAN analysis (solid red curve and dotted red area shading);
- Optimized estimate of water saturation (percentage of pore space filled with water) from the ELAN analysis (dashed-dotted purple curve);
- Water saturation as calculated directly from the bulk density and geochemical estimated porosity using a grain density of 3.05 g/cc (dotted light blue curve), 2.65 g/cc (long-dashed light blue curve), and 2.25 g/cc (dashed light blue curve)–with light blue shading between the 2.25 and 3.05 g/cc saturation curves to show the range;
- Potential for water flow indicator from the CMR log (block green cross-hatched shading coming from the right-hand side of the track).

The water and porosity curves scale from 0 to 0.5 volume fraction, left to right; the water saturation scales from 0 to 1, from left to right. The flow indicator is a binary-valued flag that rises to halfway through the first division from the right on the x-axis when the CMR measurement indicates a potential for flow.

Track 20–Depth

The final track on the right, same as the first track on the left, displays the depth below ground surface in units of feet, as measured by the geophysical logging system during the AITH logging run.

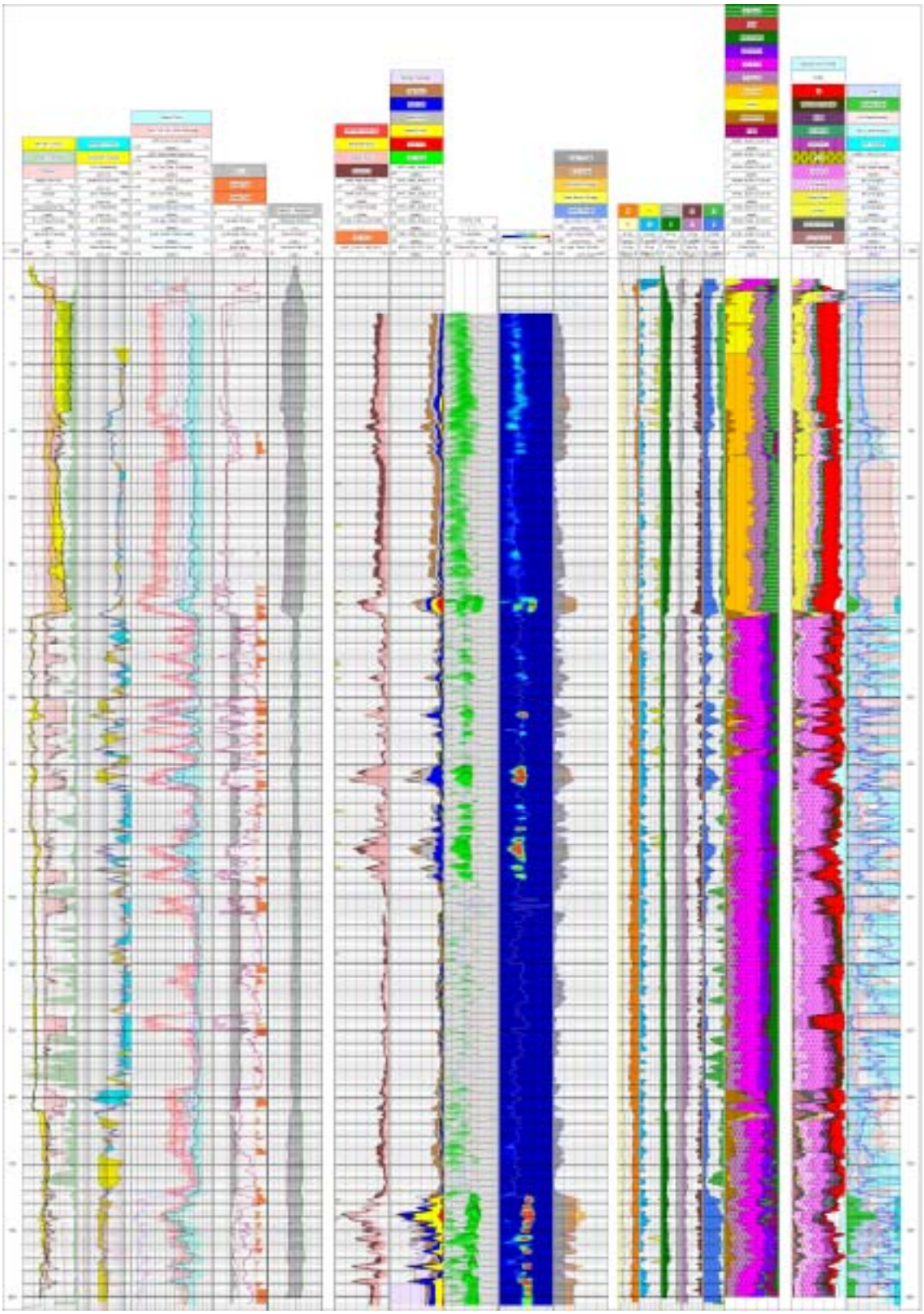

Figure 4.4. Geophysical log montage showing a compressed composite of all processed logs, including ELAN models, from borehole R-32.

5.0 REFERENCES

Kenyon, B., R. Kleinberg, C. Straley, G. Gubelin, and C. Morris: 1995. “Nuclear Magnetic Resonance Imaging— Technology for the 21st Century.” Oilfield Review, v. 7, n. 3, p. 19–33.

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Schlumberger, Log Interpretation Charts 1998 (SMP-7006).

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Schlumberger, Log Quality Control Manual. 1997

Schlumberger

GEOFRAME PROCESSED INTERPRETATION

Integrated Log Well Montage

Processed Wireline Geophysics Data

* = Mark of Schlumberger

Using the following logs: CMR*, ECS*, NGT
AIT*, TLD*, CNTG*

COMPANY: Washington Group
WELL: R-32
FIELD: Los Alamos Monitoring Well Network
COUNTY: Los Alamos
STATE: New Mexico
COUNTRY: U.S.
Date Logged: 31-July-2002 Date Processed:22-Jan-2002
Well Location:

Elevations: KB: DF: GL:
API Number: None Available Job Number:

FOLD HERE The well name, location, licence reference data were furnished by the customer.

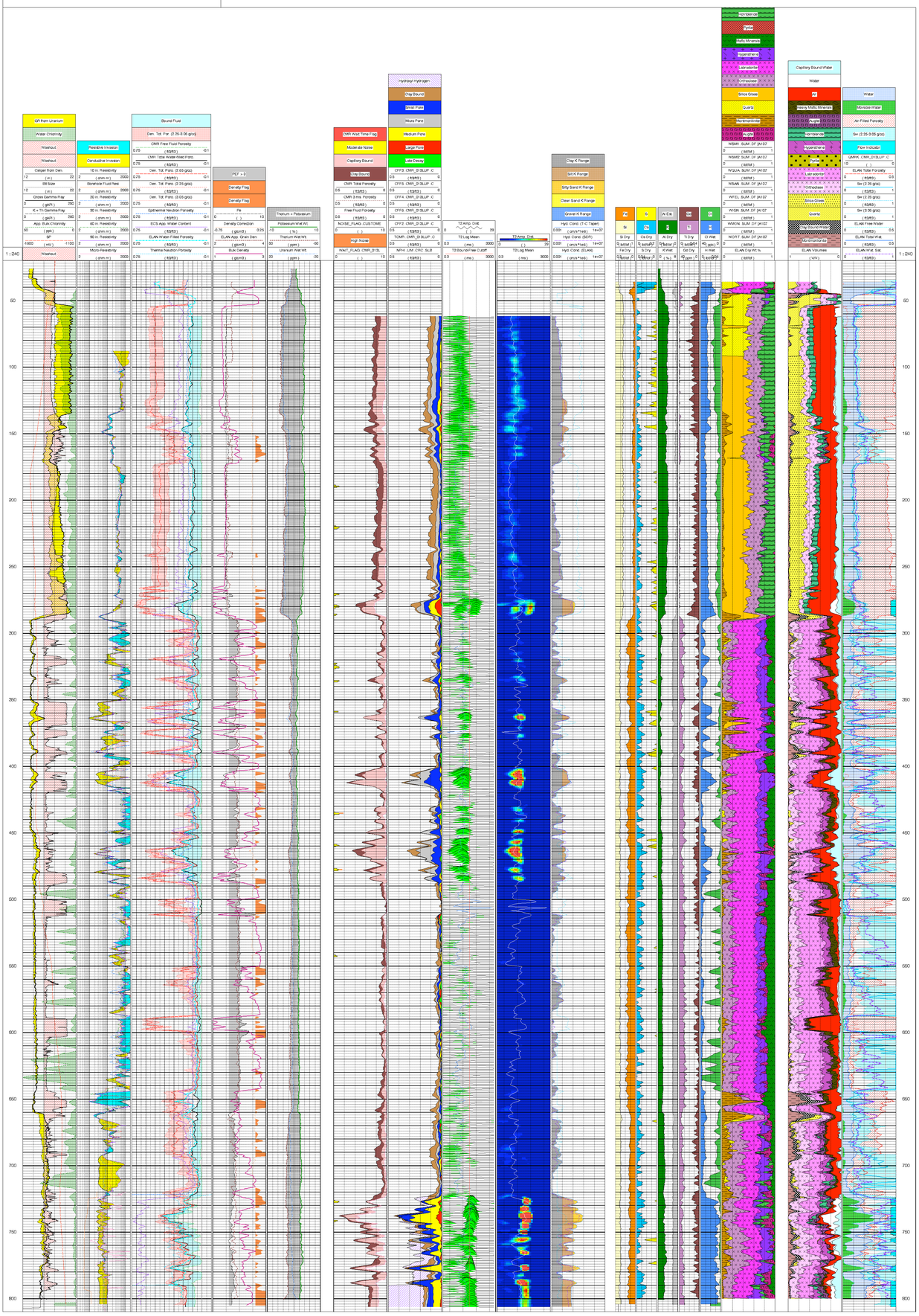
All interpretations are opinions based on inferences from electrical or other measurements and we cannot, and do not guarantee the accuracy or correctness of any interpretation, and we shall not be liable for the consequences of such interpretations. We do not guarantee or warrant the productiveness of any well or sand or the commercial value or profitability of any well or property in connection with which such interpretation is used or relied upon. Any interpretations are also subject to Clause 4 of our General Terms and Conditions as set out in our current price schedule.

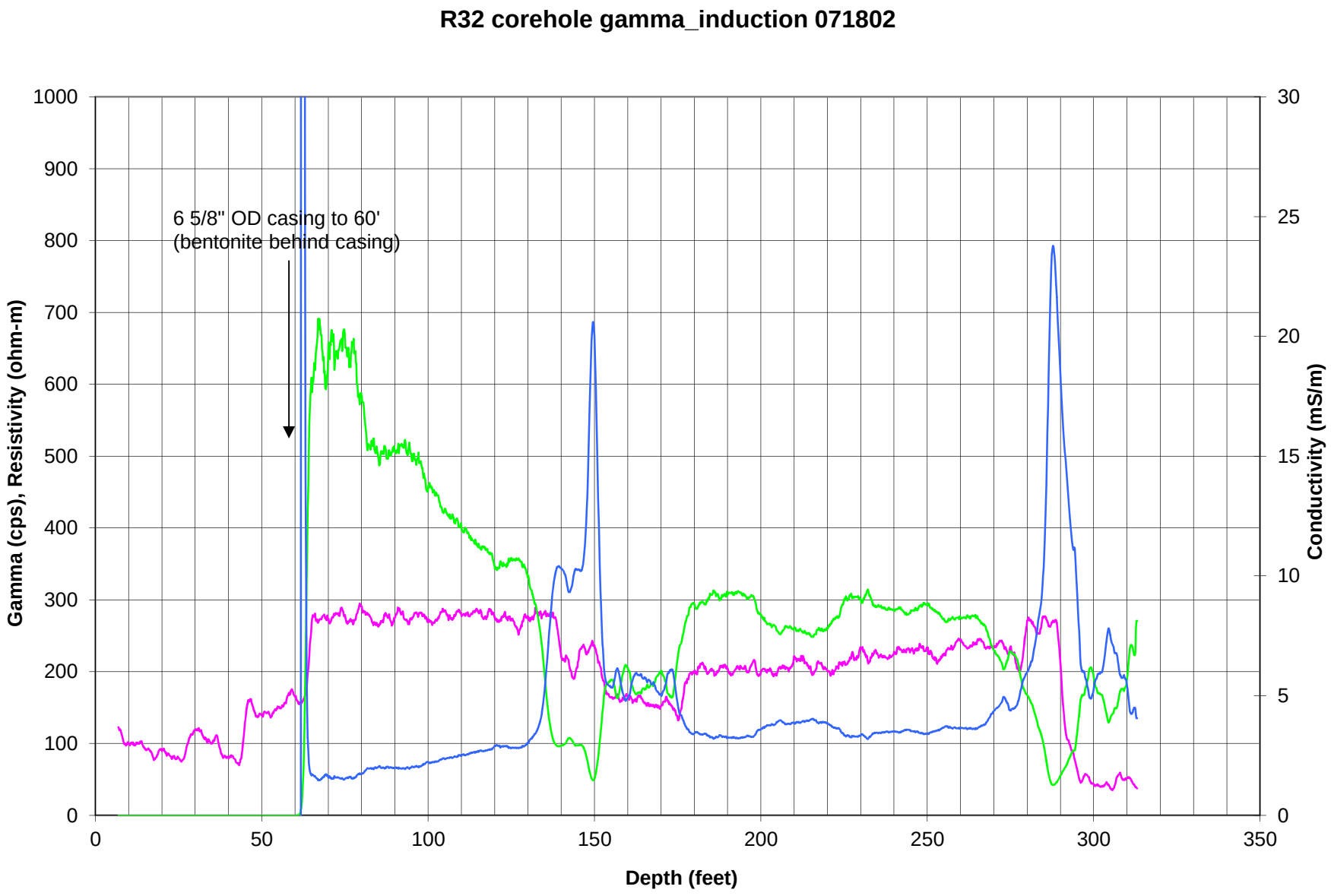
Field Recording:	Location:	Farmington	Software Version:	10C0-306	Engineer: Meg Sosbowicz
Office Recording:	ICS Center:	SKS Sacramento	Baseline:	GF3.6.1	Log Analyst: Ned Clayton

Mud and Borehole Measurements:

Rm @ Measured temperature:	4.620 ohm.m @ 70 degF	BHT	NA	Bitsize:	16 in.
Rmf @ Measured temperature:	@	Type Fluid in Hole		Air/Foam/Water	
Rmc @ Measured temperature:	@	Mud Density:			

Remarks:
AIT induction tool run used as primary depth reference.
Neutron porosity affected by drilling foam. Density affected by washouts, especially above well water level.
ELAN* integrated log analysis performed with no porosity or water saturation constraints.
Well water level at 722' at time of logging.




R32 corehole gamma_induction 071802
6 5/8" OD casing to 60'
(bentonite behind casing)
Gamma (cps), Resistivity (ohm-m)
Conductivity (mS/m)
Depth (feet)
0
100
200
300
400
500
600
700
800
900
1000
0
5
10
15
20
25
30
0
50
100
150
200
250
300
350

```
~VERSION INFORMATION
VERS                    .2.0                                    :CWLS LOG ASCII STANDARD-VERSION 2.0
WRAP                    .NO                                     :ONE LINE PER DEPTH STEP
~WELL INFORMATION
STRT                    .FT                             7.90675 :START DEPTH
STOP                    .FT                              6.9225 :STOP DEPTH
STEP                    .FT                                   0 :STEP
NULL                    .                               -999.25 :NULL VALUE
COMP                    .           WGII                        :COMPANY
WELL                    .                                       :WELL
FLD                     .                                       :FIELD
LOC                     .           TA-36 Pajarito   Canyon     :LOCATION
PROV                    .           N/A                         :PROVINCE
SRVC                    .           N/A                         :SERVICE COMPANY
DATE                    .                            7/18/2002  :DATE
UWI                     .           N/A                         :UNIQUE WELL ID
~CURVE INFORMATION
DEPT                    .FT                                     :DEPTH
COND                    .MS/M                                   :Cond.
GAMM                    .CPS                                    :Gamma
I__R                    .OHM-M                                  :I. Res.
~PARAMETER INFORMATION
ELEV                    .                                       :ELEVATION
STE                     .                                       :STE
DENS                    .                                       :DENSITY
CASI                    .           60 feet                     :CASING TO1
OPER                    .                                       :OPERATING RIG TIME
WGT1                    .                                       :WGT1
CASI                    .           6.125 inch                  :CASING SIZE1
CASI                    .                                       :CASING TO2
WGT2                    .                                       :WGT2
CASI                    .                                       :CASING SIZE2
WELL                    .           R-32                        :WELL ID
CASI                    .                                       :CASING TO3
K.B.                    .                                       :K.B.
WGT3                    .                                       :WGT3
TYPE                    .           Gamma/Induction             :TYPE LOG
CASI                    .                                       :CASING SIZE3
CASI                    .                                       :CASING TO4
SALI                    .                                       :SALINITY
TITL                    .                                       :TITLE
WGT4                    .                                       :WGT4
TOP                     .                                       :TOP LOGGED INTERVAL
CASI                    .                                       :CASING SIZE4
WITN                    .           Mark Everett                :WITNESSED BY
CASI                    .                                       :CASING TO5
DRIL                    .                                       :DRILLING MEAS. FROM
WGT5                    .                                       :WGT5
CASI                    .                                       :CASING SIZE5
CTY                     .                                       :CTY
WGT6                    .                                       :WGT6
CASI                    .                                       :CASING SIZE6
MAX.                    .                                       :MAX. REC. TEMP.
D.F.                    .                                       :D.F.
CASI                    .                                       :CASING TO6
OTHE                    .                                       :OTHER SERVICES
BIT1                    .           8.75 inche                  :BIT1
DEPT                    .           318.0 feet                  :DEPTH-DRILLER
BIT2                    .           4.5 inches                  :BIT2
RUN                     .                                       :RUN No
RUN1                    .                                       :RUN1
BIT3                    .                                       :BIT3
RUN2                    .                                       :RUN2
PERM                    .                                       :PERMANENT DATUM
TWP                     .                                       :TWP
BIT4                    .                                       :BIT4
LOG                     .                                       :LOG MEAS. FROM
BIT                     .                                     0 :BIT FROM1
RUN3                    .                                       :RUN3
BIT5                    .                                       :BIT5
CASI                    .           0 feet                      :CASING FROM1
TYPE                    .                                       :TYPE FLUID IN HOLE
RUN4                    .                                       :RUN4
FLD                     .                                       :FLD
BIT6                    .                                       :BIT6
BIT                     .           60 feet                     :BIT TO1
CASI                    .                                       :CASING FROM2
BIT                     .                                    60 :BIT FROM2
CO                      .                                       :CO
RGE                     .                                       :RGE
BIT                     .           318 feet                    :BIT TO2
DEPT                    .           314.5 feet                  :DEPTH-LOGGER
CASI                    .                                       :CASING FROM3
BIT                     .                                       :BIT FROM3
RUN5                    .                                       :RUN5
SEC                     .                                       :SEC
BIT                     .                                       :BIT TO3
G.L.                    .                                       :G.L.
CASI                    .                                       :CASING FROM4
BIT                     .                                       :BIT FROM4
RUN6                    .                                       :RUN6
BIT                     .                                       :BIT TO4
BTM                     .                                       :BTM LOGGED INTERVAL
CASI                    .                                       :CASING FROM5
BIT                     .                                       :BIT FROM5
STAT                    .                                       :STATE
BIT                     .                                       :BIT TO5
LEVE                    .                                       :LEVEL
CASI                    .                                       :CASING FROM6
BIT                     .                                       :BIT FROM6
COUN                    .                                       :COUNTRY
RECO                    .           James Jordan                :RECORDED BY
FILI                    .                                       :FILING No
BIT                     .                                       :BIT TO6
~OTHER
~A
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                9.38311    -2584.83          110.379                          -0.386873
                9.54715    -2584.83          113.055                          -0.386873
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36.7778	-2584.83	138.125	-0.386873
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41.2069	-2584.83	76.375	-0.386873
41.371	-2584.83	94.75	-0.386873
41.535	-2584.83	88.1563	-0.386873
41.6991	-2584.83	69.6016	-0.386873
41.8631	-2584.83	100.973	-0.386873
42.0271	-2584.83	96.3594	-0.386873
42.1912	-2584.83	79.0508	-0.386873
42.3552	-2584.83	91.8945	-0.386873
42.5193	-2584.83	79.6016	-0.386873
42.6833	-2584.83	94.4766	-0.386873
42.8473	-2584.83	83.7695	-0.386873
43.0114	-2584.83	76.9102	-0.386873
43.1754	-2584.83	60.3867	-0.386873
43.3395	-2584.83	81.4375	-0.386873
43.5035	-2584.83	67.168	-0.386873
43.6675	-2584.83	92.1211	-0.386873
43.8316	-2584.83	85.1172	-0.386873
43.9956	-2584.83	72.7891	-0.386873
44.1597	-2584.83	64.9023	-0.386873
44.3237	-2584.83	65.5664	-0.386873
44.4877	-2584.83	75.0117	-0.386873
44.6518	-2584.83	48.6758	-0.386873
44.8158	-2584.83	63.6953	-0.386873
44.9799	-2584.83	61.6152	-0.386873
45.1439	-2584.83	77.5703	-0.386873
45.3079	-2584.83	98.9688	-0.386873
45.472	-2584.83	87.8281	-0.386873
45.636	-2584.83	91.6484	-0.386873
45.8001	-2584.83	97.6992	-0.386873
45.9641	-2584.83	101.645	-0.386873
46.1281	-2584.83	82.3477	-0.386873
46.2922	-2584.83	166.344	-0.386873
46.4562	-2584.83	146.406	-0.386873
46.6203	-2584.83	141.797	-0.386873
46.7843	-2584.83	165.492	-0.386873
46.9484	-2584.83	153.289	-0.386873
47.1124	-2584.83	170.047	-0.386873
47.2764	-2584.83	153.742	-0.386873
47.4405	-2584.83	178.156	-0.386873
47.6045	-2584.83	121.883	-0.386873
47.7686	-2584.83	174.25	-0.386873
47.9326	-2584.83	150.992	-0.386873

48.0966	-2584.83	169.016	-0.386873
48.2607	-2584.83	166.273	-0.386873
48.4247	-2584.83	134.875	-0.386873
48.5888	-2584.83	142.281	-0.386873
48.7528	-2584.83	173.211	-0.386873
48.9168	-2584.83	147.789	-0.386873
49.0809	-2584.83	135.273	-0.386873
49.2449	-2584.83	158.57	-0.386873
49.409	-2584.83	148.313	-0.386873
49.573	-2584.83	132.141	-0.386873
49.737	-2584.83	123.828	-0.386873
49.9011	-2584.83	138.844	-0.386873
50.0651	-2584.83	145.008	-0.386873
50.2292	-2584.83	108.863	-0.386873
50.3932	-2584.83	121.621	-0.386873
50.5572	-2584.83	165.719	-0.386873
50.7213	-2584.83	168.844	-0.386873
50.8853	-2584.83	162.992	-0.386873
51.0494	-2584.83	133.625	-0.386873
51.2134	-2584.83	152.617	-0.386873
51.3774	-2584.83	153.055	-0.386873
51.5415	-2584.83	140.734	-0.386873
51.7055	-2584.83	173.758	-0.386873
51.8696	-2584.83	110.211	-0.386873
52.0336	-2584.83	156.484	-0.386873
52.1976	-2584.83	117.41	-0.386873
52.3617	-2584.83	138.594	-0.386873
52.5257	-2584.83	127.25	-0.386873
52.6898	-2584.83	138.945	-0.386873
52.8538	-2584.83	130.5	-0.386873
53.0178	-2584.83	135.313	-0.386873
53.1819	-2584.83	141.867	-0.386873
53.3459	-2584.83	146.781	-0.386873
53.51	-2584.83	167.875	-0.386873
53.674	-2584.83	159.828	-0.386873
53.838	-2584.83	156.547	-0.386873
54.0021	-2584.83	151.688	-0.386873
54.1661	-2584.83	124.309	-0.386873
54.3302	-2584.83	138.492	-0.386873
54.4942	-2584.83	121.277	-0.386873
54.6582	-2584.83	165.164	-0.386873
54.8223	-2584.83	157.125	-0.386873
54.9863	-2584.83	162.758	-0.386873
55.1504	-2584.83	131.391	-0.386873
55.3144	-2584.83	161.023	-0.386873
55.4784	-2584.83	114.586	-0.386873
55.6425	-2584.83	148.391	-0.386873
55.8065	-2584.83	142.891	-0.386873
55.9706	-2584.83	138.344	-0.386873
56.1346	-2584.83	169.242	-0.386873
56.2987	-2584.83	120.688	-0.386873
56.4627	-2584.83	147.68	-0.386873
56.6267	-2584.83	108.754	-0.386873
56.7908	-2584.83	135.516	-0.386873
56.9548	-2584.83	137.078	-0.386873
57.1189	-2584.83	132.586	-0.386873
57.2829	-2584.83	155.805	-0.386873
57.4469	-2584.83	148.414	-0.386873
57.611	-2584.83	136.086	-0.386873
57.775	-2584.83	144.359	-0.386873
57.9391	-2584.83	187.664	-0.386873
58.1031	-2584.83	114.363	-0.386873
58.2671	-2584.83	147.531	-0.386873
58.4312	-2584.83	166.344	-0.386873
58.5952	-2584.83	138.125	-0.386873
58.7593	-2584.83	171.523	-0.386873
58.9233	-2584.83	152.461	-0.386873
59.0873	-2584.83	151.516	-0.386873
59.2514	-2584.83	167.82	-0.386873
59.4154	-2584.83	170.492	-0.386873
59.5795	-2584.83	121.883	-0.386873
59.7435	-2584.83	148.727	-0.386873
59.9075	-2584.83	140.633	-0.386873
60.0716	-2584.83	155.398	-0.386873
60.2356	-2584.83	135.125	-0.386873
60.3997	-2584.83	194.922	-0.386873
60.5637	-2584.83	167.281	-0.386873
60.7277	-2584.83	158.141	-0.386873
60.8918	-2584.83	172.688	-0.386873
61.0558	-2584.83	149.195	-0.386873
61.2199	-2584.83	186.227	-0.386873
61.3839	-2584.83	163.992	-0.386873
61.5479	-2584.83	192.875	-0.386873
61.712	-2584.83	189.094	-0.386873
61.876	-2584.83	139.867	-0.386873
62.0401	-2584.83	142.477	-0.386873
62.2041	-2584.83	199.656	-0.386873
62.3681	-2584.83	153.258	-0.386873
62.5322	-2584.83	139.367	-0.386873
62.6962	883.358	146.938	1.13204
62.8603	-27.4348	152.336	-36.4501
63.0243	-0.573377	189.734	-1744.05
63.1883	119.248	127.105	8.38592
63.3524	254.706	152.789	3.9261
63.5164	181.7	183.195	5.50357
63.6805	100.732	138.938	9.92729
63.8445	60.2485	180.633	16.5979
64.0085	37.896	184.336	26.388
64.1726	26.8636	184.547	37.2251
64.3366	21.3954	112.418	46.739
64.5007	17.3662	162.063	57.5832
64.6647	15.6394	178.313	63.9411
64.8288	14.4882	161.461	69.0218
64.9928	12.8573	123.293	77.7767
65.1568	12.5695	185.82	79.5576
65.3209	12.4736	201.805	80.1695
65.4849	12.0898	215.93	82.714
65.649	11.898	212.422	84.0479
65.813	11.3224	234.953	88.3207
65.977	11.5142	299.75	86.8489
66.1411	11.802	274.031	84.7311
66.3051	11.898	250.914	84.0479
66.4692	11.802	304.313	84.7311
66.6332	11.802	279.734	84.7311
66.7972	11.5142	304.828	86.8489
66.9613	11.1305	248.484	89.8431
67.1253	11.5142	318.094	86.8489

67.2894	11.2264	286.797	89.0754
67.4534	10.6508	274.406	93.8893
67.6174	11.3224	227.914	88.3207
67.7815	10.8427	321.906	92.2279
67.9455	10.6508	267.578	93.8893
68.1096	10.2671	293.953	97.3984
68.2736	10.6508	241.336	93.8893
68.4376	10.363	291.016	96.4968
68.6017	10.363	273.453	96.4968
68.7657	10.1712	295.141	98.3171
68.9298	10.363	253.234	96.4968
69.0938	10.2671	256.156	97.3984
69.2578	9.88337	235.938	101.18
69.4219	10.1712	274.484	98.3171
69.5859	10.363	233.469	96.4968
69.75	10.1712	255.227	98.3171
69.914	9.97931	230.891	100.207
70.078	10.2671	254.141	97.3984
70.2421	10.1712	258.078	98.3171
70.4061	9.88337	246.484	101.18
70.5702	10.1712	291.875	98.3171
70.7342	9.69151	288.859	103.183
70.8982	9.88337	294.391	101.18
71.0623	9.88337	262.031	101.18
71.2263	9.88337	287.25	101.18
71.3904	9.97931	290.438	100.207
71.5544	9.59557	278.094	104.215
71.7184	9.88337	255.703	101.18
71.8825	9.69151	293.484	103.183
72.0465	9.69151	244.875	103.183
72.2106	9.69151	244.695	103.183
72.3746	9.40371	326.609	106.341
72.5386	9.21184	324.25	108.556
72.7027	9.40371	268.125	106.341
72.8667	9.88337	234.367	101.18
73.0308	9.01997	273.297	110.865
73.1948	9.01997	264.328	110.865
73.3588	9.30777	335.594	107.437
73.5229	9.59557	250.609	104.215
73.6869	9.59557	273.891	104.215
73.851	9.30777	288.563	107.437
74.015	9.30777	265.219	107.437
74.1791	9.21184	287.75	108.556
74.3431	9.40371	284.344	106.341
74.5071	9.21184	264.031	108.556
74.6712	9.01997	264.516	110.865
74.8352	9.01997	259.141	110.865
74.9993	9.40371	272.922	106.341
75.1633	9.01997	313.625	110.865
75.3273	8.73217	290.813	114.519
75.4914	9.01997	282.078	110.865
75.6554	9.21184	264.844	108.556
75.8195	9.21184	249.516	108.556
75.9835	9.21184	257.422	108.556
76.1475	9.21184	264.016	108.556
76.3116	8.63624	301.406	115.791
76.4756	8.63624	307.109	115.791
76.6397	8.44437	272.797	118.422
76.8037	8.63624	264.234	115.791
76.9677	8.73217	289.703	114.519
77.1318	9.21184	276.75	108.556
77.2958	9.21184	247.008	108.556
77.4599	8.73217	254.563	114.519
77.6239	8.73217	288.203	114.519
77.7879	8.73217	245.539	114.519
77.952	8.63624	270.469	115.791
78.116	8.73217	316.844	114.519
78.2801	8.44437	271.031	118.422
78.4441	8.44437	237.531	118.422
78.6081	8.34844	283.547	119.783
78.7722	8.73217	263.109	114.519
78.9362	8.63624	261.016	115.791
79.1003	8.44437	268.859	118.422
79.2643	8.44437	231.422	118.422
79.4283	8.44437	269.188	118.422
79.5924	8.44437	306.172	118.422
79.7564	8.44437	269.438	118.422
79.9205	8.73217	290.734	114.519
80.0845	8.44437	268.656	118.422
80.2485	8.63624	335.469	115.791
80.4126	8.34844	270.813	119.783
80.5766	8.44437	257.828	118.422
80.7407	8.44437	254.992	118.422
80.9047	8.73217	295.078	114.519
81.0687	8.73217	243.531	114.519
81.2328	8.73217	281.266	114.519
81.3968	8.73217	237.266	114.519
81.5609	8.63624	269.656	115.791
81.7249	8.63624	302.875	115.791
81.8889	8.44437	264.641	118.422
82.053	8.63624	275.594	115.791
82.217	8.73217	251.328	114.519
82.3811	8.63624	281.922	115.791
82.5451	8.34844	235.164	119.783
82.7091	8.25251	296.5	121.175
82.8732	8.34844	269.078	119.783
83.0372	8.73217	295.594	114.519
83.2013	8.63624	224.547	115.791
83.3653	8.73217	333.203	114.519
83.5294	8.73217	287.078	114.519
83.6934	8.06064	292.344	124.06
83.8574	8.25251	285.672	121.175
84.0215	8.73217	294.234	114.519
84.1855	8.25251	237.031	121.175
84.3496	8.06064	269.859	124.06
84.5136	8.44437	309.5	118.422
84.6776	8.44437	302.031	118.422
84.8417	8.25251	232.648	121.175
85.0057	8.25251	260.422	121.175
85.1698	8.25251	257.719	121.175
85.3338	8.44437	266.781	118.422
85.4978	8.06064	258.547	124.06
85.6619	8.63624	298	115.791
85.8259	8.63624	303.609	115.791
85.99	8.73217	248.531	114.519
86.154	8.63624	276.281	115.791
86.318	8.63624	308.672	115.791

86.4821	8.34844	286.656	119.783
86.6461	8.63624	295.328	115.791
86.8102	8.92404	264.641	112.057
86.9742	8.63624	247.156	115.791
87.1382	8.34844	315.172	119.783
87.3023	8.73217	290.469	114.519
87.4663	8.63624	314.344	115.791
87.6304	8.73217	280.688	114.519
87.7944	8.34844	240.531	119.783
87.9584	8.34844	279.922	119.783
88.1225	8.34844	275.828	119.783
88.2865	8.44437	300	118.422
88.4506	8.44437	266.469	118.422
88.6146	8.44437	300.594	118.422
88.7786	9.01997	330.188	110.865
88.9427	8.73217	277.5	114.519
89.1067	8.63624	258.594	115.791
89.2708	8.92404	281.375	112.057
89.4348	8.44437	296.297	118.422
89.5988	8.06064	293.203	124.06
89.7629	8.44437	352.234	118.422
89.9269	8.25251	300.391	121.175
90.091	8.63624	274.25	115.791
90.255	8.73217	286.578	114.519
90.419	8.34844	266.578	119.783
90.5831	8.34844	272.359	119.783
90.7471	8.73217	306.109	114.519
90.9112	8.73217	313.078	114.519
91.0752	8.34844	306.984	119.783
91.2392	8.73217	243.57	114.519
91.4033	8.63624	291.766	115.791
91.5673	8.44437	274.063	118.422
91.7314	8.63624	251.359	115.791
91.8954	8.34844	256.922	119.783
92.0595	8.63624	297.203	115.791
92.2235	8.63624	255.109	115.791
92.3875	8.34844	270.313	119.783
92.5516	8.73217	274.938	114.519
92.7156	8.34844	300.813	119.783
92.8796	8.25251	284.813	121.175
93.0437	8.44437	291.719	118.422
93.2077	8.34844	285.688	119.783
93.3718	8.63624	269.328	115.791
93.5358	8.63624	296.625	115.791
93.6999	8.73217	304.219	114.519
93.8639	8.34844	258.891	119.783
94.0279	8.73217	275.828	114.519
94.192	8.63624	266.313	115.791
94.356	8.25251	297.078	121.175
94.5201	8.44437	316.094	118.422
94.6841	8.63624	252.461	115.791
94.8481	8.73217	329.453	114.519
95.0122	8.34844	297.047	119.783
95.1762	8.25251	262.734	121.175
95.3403	8.25251	260.188	121.175
95.5043	8.44437	273	118.422
95.6683	8.63624	235.734	115.791
95.8324	8.44437	256.625	118.422
95.9964	8.34844	294.422	119.783
96.1605	9.01997	243.891	110.865
96.3245	8.44437	343.516	118.422
96.4885	8.44437	310.922	118.422
96.6526	8.34844	288.969	119.783
96.8166	8.44437	274.25	118.422
96.9807	8.73217	278.594	114.519
97.1447	8.34844	289.125	119.783
97.3087	8.73217	265.172	114.519
97.4728	8.25251	287.156	121.175
97.6368	8.63624	267.656	115.791
97.8009	8.44437	263.969	118.422
97.9649	8.34844	291.984	119.783
98.1289	8.34844	266.797	119.783
98.293	8.63624	284.875	115.791
98.457	8.63624	300.656	115.791
98.6211	8.63624	295.563	115.791
98.7851	8.44437	301.281	118.422
98.9491	8.34844	253.68	119.783
99.1132	8.92404	255.383	112.057
99.2772	8.44437	291.391	118.422
99.4413	8.44437	251.563	118.422
99.6053	8.44437	312.672	118.422
99.7693	9.01997	280.016	110.865
99.9334	8.73217	232.25	114.519
100.097	8.44437	270.016	118.422
100.261	8.34844	301.422	119.783
100.426	8.92404	278.219	112.057
100.59	8.44437	251.758	118.422
100.754	8.63624	288.922	115.791
100.918	8.63624	290.609	115.791
101.082	8.44437	306.266	118.422
101.246	8.63624	272.203	115.791
101.41	8.34844	286.078	119.783
101.574	8.73217	266.797	114.519
101.738	8.63624	242.43	115.791
101.902	8.34844	307.406	119.783
102.066	8.34844	275.906	119.783
102.23	8.34844	296.891	119.783
102.394	8.63624	297.484	115.791
102.558	8.63624	279.703	115.791
102.722	8.34844	279.344	119.783
102.886	8.44437	247.359	118.422
103.05	8.63624	247.805	115.791
103.214	9.01997	298.094	110.865
103.378	8.73217	284.672	114.519
103.542	8.44437	261.234	118.422
103.706	8.73217	270.156	114.519
103.87	8.63624	268.922	115.791
104.034	8.63624	335.328	115.791
104.198	8.73217	271.766	114.519
104.362	8.73217	302.016	114.519
104.527	8.92404	278.922	112.057
104.691	8.92404	320.297	112.057
104.855	8.34844	326.313	119.783
105.019	8.34844	259.125	119.783
105.183	8.34844	265.141	119.783
105.347	8.73217	269.5	114.519
105.511	8.44437	252.406	118.422

105.675	8.34844	253.367	119.783
105.839	8.34844	324.766	119.783
106.003	8.73217	289.109	114.519
106.167	8.63624	279.828	115.791
106.331	8.63624	270.344	115.791
106.495	8.44437	253.82	118.422
106.659	8.73217	305.375	114.519
106.823	8.63624	322.125	115.791
106.987	8.25251	306.781	121.175
107.151	8.34844	272.469	119.783
107.315	8.44437	266.516	118.422
107.479	8.63624	260.344	115.791
107.643	8.34844	298.047	119.783
107.807	8.63624	287.063	115.791
107.971	8.44437	267.891	118.422
108.135	8.44437	278.531	118.422
108.299	8.44437	263.25	118.422
108.463	8.63624	256.313	115.791
108.628	8.44437	298.734	118.422
108.792	8.73217	279.891	114.519
108.956	8.63624	268.047	115.791
109.12	8.92404	267.859	112.057
109.284	8.63624	244.672	115.791
109.448	8.25251	266.078	121.175
109.612	8.06064	291.359	124.06
109.776	8.25251	290.5	121.175
109.94	8.06064	251.57	124.06
110.104	8.63624	297.563	115.791
110.268	8.63624	274.719	115.791
110.432	8.73217	327.969	114.519
110.596	8.34844	281.094	119.783
110.76	8.25251	294.391	121.175
110.924	8.44437	306.047	118.422
111.088	8.34844	319.5	119.783
111.252	8.25251	327.922	121.175
111.416	8.63624	296.109	115.791
111.58	8.73217	326.078	114.519
111.744	8.44437	270.203	118.422
111.908	8.34844	296.625	119.783
112.072	8.34844	286.109	119.783
112.236	8.06064	254.117	124.06
112.4	8.44437	266.906	118.422
112.564	8.06064	305.359	124.06
112.729	8.44437	303.094	118.422
112.893	8.44437	276.172	118.422
113.057	8.34844	319.031	119.783
113.221	8.44437	296.906	118.422
113.385	8.63624	280.781	115.791
113.549	8.44437	314.234	118.422
113.713	8.73217	288.141	114.519
113.877	8.63624	274.422	115.791
114.041	8.44437	273.563	118.422
114.205	8.73217	292.344	114.519
114.369	8.34844	284.734	119.783
114.533	8.73217	287.703	114.519
114.697	8.44437	274.75	118.422
114.861	8.44437	277.078	118.422
115.025	8.34844	263.922	119.783
115.189	8.25251	280.594	121.175
115.353	8.25251	269.25	121.175
115.517	8.34844	277.063	119.783
115.681	8.63624	275.125	115.791
115.845	8.44437	249.07	118.422
116.009	8.44437	294.141	118.422
116.173	8.34844	288.875	119.783
116.337	8.63624	286.453	115.791
116.501	8.63624	284.828	115.791
116.666	8.44437	237.602	118.422
116.83	8.44437	305.453	118.422
116.994	8.25251	270.953	121.175
117.158	8.25251	267.453	121.175
117.322	8.34844	268.438	119.783
117.486	8.34844	222.078	119.783
117.65	8.25251	274.547	121.175
117.814	8.25251	318.547	121.175
117.978	8.25251	335.609	121.175
118.142	8.25251	332.953	121.175
118.306	8.06064	298.422	124.06
118.47	8.25251	302.188	121.175
118.634	7.9647	261.391	125.554
118.798	8.06064	242.93	124.06
118.962	7.9647	328.609	125.554
119.126	8.25251	285.172	121.175
119.29	8.34844	248.867	119.783
119.454	8.34844	244.453	119.783
119.618	8.34844	268.563	119.783
119.782	8.06064	300.469	124.06
119.946	8.25251	244.32	121.175
120.11	8.25251	269.203	121.175
120.274	8.06064	286.063	124.06
120.438	8.06064	295	124.06
120.602	8.34844	248.867	119.783
120.767	8.44437	280.922	118.422
120.931	7.9647	303.484	125.554
121.095	8.34844	284.969	119.783
121.259	8.34844	259	119.783
121.423	8.34844	265.328	119.783
121.587	8.25251	280.406	121.175
121.751	8.25251	273.453	121.175
121.915	8.25251	244.516	121.175
122.079	8.25251	289.484	121.175
122.243	8.34844	304.375	119.783
122.407	8.25251	255.273	121.175
122.571	8.34844	229.891	119.783
122.735	8.06064	225.242	124.06
122.899	7.9647	269.219	125.554
123.063	8.06064	245.789	124.06
123.227	8.06064	267.984	124.06
123.391	8.34844	254.242	119.783
123.555	7.9647	290.297	125.554
123.719	7.9647	280.719	125.554
123.883	8.34844	247.367	119.783
124.047	8.25251	310.703	121.175
124.211	7.77284	294.969	128.653
124.375	8.06064	289.484	124.06
124.539	7.77284	252.563	128.653
124.703	8.06064	279.25	124.06

124.868	8.06064	244.617	124.06
125.032	8.06064	307.375	124.06
125.196	7.9647	247.258	125.554
125.36	7.9647	259.047	125.554
125.524	8.34844	241.133	119.783
125.688	8.34844	266.906	119.783
125.852	7.9647	314.547	125.554
126.016	7.77284	281.719	128.653
126.18	8.06064	277.969	124.06
126.344	7.9647	271.594	125.554
126.508	8.06064	239.656	124.06
126.672	7.9647	280.844	125.554
126.836	7.77284	294.734	128.653
127	8.06064	270.656	124.06
127.164	8.34844	242.609	119.783
127.328	7.9647	264.625	125.554
127.492	7.9647	254.969	125.554
127.656	8.06064	235.977	124.06
127.82	7.6769	268.938	130.261
127.984	8.06064	270.828	124.06
128.148	7.77284	289.484	128.653
128.312	7.6769	265.406	130.261
128.476	7.6769	261.938	130.261
128.64	7.9647	264.75	125.554
128.804	7.77284	222.055	128.653
128.969	7.77284	303.078	128.653
129.133	8.06064	256.156	124.06
129.297	7.9647	297.891	125.554
129.461	7.9647	272.984	125.554
129.625	8.06064	239.234	124.06
129.789	7.6769	246.016	130.261
129.953	7.6769	254.008	130.261
130.117	7.77284	281.547	128.653
130.281	7.77284	233.938	128.653
130.445	7.77284	247.672	128.653
130.609	7.9647	295.063	125.554
130.773	8.06064	269.531	124.06
130.937	7.9647	289.938	125.554
131.101	8.25251	282.766	121.175
131.265	7.77284	298.859	128.653
131.429	7.6769	248.172	130.261
131.593	7.9647	274.344	125.554
131.757	7.9647	289.641	125.554
131.921	8.25251	279.078	121.175
132.085	7.9647	293.047	125.554
132.249	8.25251	314.891	121.175
132.413	8.25251	298.141	121.175
132.577	8.34844	331.563	119.783
132.741	7.77284	286.641	128.653
132.906	7.77284	271.188	128.653
133.07	7.9647	296.328	125.554
133.234	8.06064	274.25	124.06
133.398	8.44437	219.203	118.422
133.562	8.34844	252.297	119.783
133.726	8.25251	294.438	121.175
133.89	8.34844	230.828	119.783
134.054	8.25251	268.703	121.175
134.218	8.25251	282.219	121.175
134.382	8.44437	249.078	118.422
134.546	8.44437	237.016	118.422
134.71	8.25251	261.406	121.175
134.874	8.63624	271.453	115.791
135.038	8.92404	262.859	112.057
135.202	8.73217	270.938	114.519
135.366	9.01997	271.906	110.865
135.53	8.92404	322.859	112.057
135.694	9.59557	290.031	104.215
135.858	9.30777	284.484	107.437
136.022	9.40371	281.531	106.341
136.186	10.1712	294.375	98.3171
136.35	10.1712	289.078	98.3171
136.514	10.5549	271.156	94.7426
136.678	10.5549	232.383	94.7426
136.842	11.2264	314.922	89.0754
137.007	10.9386	291.063	91.419
137.171	11.5142	258.516	86.8489
137.335	11.802	302.5	84.7311
137.499	12.3776	281.609	80.7908
137.663	12.5695	257.266	79.5576
137.827	13.0492	299.75	76.6332
137.991	13.4329	333.578	74.444
138.155	13.1451	257.844	76.0739
138.319	13.5288	234.82	73.9161
138.483	13.7207	260.734	72.8825
138.647	13.7207	257.234	72.8825
138.811	14.2963	300.328	69.9481
138.975	14.4882	242.07	69.0218
139.139	14.3922	284.313	69.4818
139.303	15.2557	284.453	65.5495
139.467	14.776	256.938	67.6774
139.631	15.0638	274.438	66.3844
139.795	15.2557	268.484	65.5495
139.959	15.2557	259.203	65.5495
140.123	14.9678	245.047	66.8099
140.287	15.2557	251.188	65.5495
140.451	14.776	219.234	67.6774
140.615	15.2557	250.07	65.5495
140.779	14.9678	268.063	66.8099
140.943	14.9678	206.695	66.8099
141.108	14.776	224.773	67.6774
141.272	15.3516	240.313	65.1399
141.436	15.0638	246.875	66.3844
141.6	14.9678	211.055	66.8099
141.764	15.0638	234.438	66.3844
141.928	14.68	209.188	68.1197
142.092	14.68	181.758	68.1197
142.256	14.68	183.375	68.1197
142.42	14.776	217.953	67.6774
142.584	14.776	214.445	67.6774
142.748	14.4882	216.477	69.0218
142.912	14.1044	206.531	70.8996
143.076	14.3922	211.648	69.4818
143.24	14.1044	230.992	70.8996
143.404	13.8166	215.25	72.3765
143.568	13.4329	222.648	74.444
143.732	13.337	197.938	74.9795
143.896	13.1451	237.664	76.0739

144.06	13.337	255.109	74.9795
144.224	14.0085	232.391	71.3852
144.388	13.8166	152.086	72.3765
144.552	14.2963	168.164	69.9481
144.716	14.776	208.953	67.6774
144.88	14.68	198.078	68.1197
145.044	14.776	181.789	67.6774
145.209	15.3516	219.883	65.1399
145.373	14.68	210.523	68.1197
145.537	15.0638	202.922	66.3844
145.701	14.776	199.523	67.6774
145.865	15.3516	198.25	65.1399
146.029	14.9678	200.648	66.8099
146.193	14.3922	232.898	69.4818
146.357	14.68	190.172	68.1197
146.521	14.9678	210.992	66.8099
146.685	14.4882	231.375	69.0218
146.849	14.68	253.469	68.1197
147.013	14.4882	184.438	69.0218
147.177	14.3922	239.367	69.4818
147.341	14.776	207.617	67.6774
147.505	14.9678	261.953	66.8099
147.669	14.2963	232.414	69.9481
147.833	14.2963	220.039	69.9481
147.997	14.68	299.125	68.1197
148.161	14.9678	232.031	66.8099
148.325	15.3516	241.672	65.1399
148.489	16.0231	252.602	62.4098
148.653	16.215	252.563	61.6713
148.817	16.6947	206.063	59.8994
148.981	17.2703	209.516	57.903
149.145	17.5581	217.078	56.9539
149.31	18.1337	168.008	55.1461
149.474	18.9011	246.563	52.9069
149.638	20.1483	235.586	49.6321
149.802	21.1076	256.375	47.3763
149.966	22.3547	237.195	44.7333
150.13	23.8897	267.313	41.8591
150.294	25.6165	223.906	39.0374
150.458	26.1921	266.188	38.1795
150.622	26.8636	233.898	37.2251
150.786	27.0555	252.773	36.9611
150.95	26.288	206.227	38.0402
151.114	25.8083	208.031	38.7472
151.278	24.849	281.234	40.2431
151.442	23.3141	219.047	42.8926
151.606	22.3547	236.93	44.7333
151.77	21.4913	266.234	46.5304
151.934	20.7239	230.484	48.2536
152.098	19.093	213.898	52.3752
152.262	17.654	244.906	56.6444
152.426	16.4069	229.719	60.9501
152.59	15.2557	217.336	65.5495
152.754	14.3922	228.461	69.4818
152.918	13.337	198.156	74.9795
153.082	12.5695	210.867	79.5576
153.247	11.3224	197.367	88.3207
153.411	11.802	190.859	84.7311
153.575	11.6102	179.844	86.1313
153.739	10.9386	217.75	91.419
153.903	10.5549	158.07	94.7426
154.067	10.6508	182.258	93.8893
154.231	10.1712	166.094	98.3171
154.395	10.1712	174.703	98.3171
154.559	9.97931	166.492	100.207
154.723	9.59557	136.75	104.215
154.887	9.30777	154.078	107.437
155.051	9.30777	139.711	107.437
155.215	9.97931	165.391	100.207
155.379	9.59557	149.461	104.215
155.543	9.21184	178.547	108.556
155.707	9.01997	165.227	110.865
155.871	9.40371	184.383	106.341
156.035	9.59557	139.984	104.215
156.199	9.01997	176.328	110.865
156.363	9.59557	185.969	104.215
156.527	9.59557	180.43	104.215
156.691	9.30777	167.523	107.437
156.855	9.30777	179.055	107.437
157.019	9.30777	165.133	107.437
157.183	9.30777	161.539	107.437
157.348	9.59557	133.867	104.215
157.512	10.1712	158.883	98.3171
157.676	10.2671	173.531	97.3984
157.84	10.2671	181.57	97.3984
158.004	10.2671	138.094	97.3984
158.168	10.8427	162.992	92.2279
158.332	10.1712	163.68	98.3171
158.496	9.69151	125.23	103.183
158.66	9.88337	162.281	101.18
158.824	9.97931	179.297	100.207
158.988	9.69151	155.195	103.183
159.152	9.40371	167.719	106.341
159.316	9.40371	143.102	106.341
159.48	9.21184	156.398	108.556
159.644	8.73217	176.906	114.519
159.808	8.73217	188.102	114.519
159.972	8.73217	177.539	114.519
160.136	8.63624	191.734	115.791
160.3	9.01997	178.57	110.865
160.464	9.21184	162.891	108.556
160.628	8.92404	161.008	112.057
160.792	9.01997	166.797	110.865
160.956	8.92404	144.094	112.057
161.12	8.34844	215.953	119.783
161.284	8.25251	180.125	121.175
161.449	8.92404	162.07	112.057
161.613	9.21184	178.531	108.556
161.777	9.30777	158.016	107.437
161.941	9.30777	176.352	107.437
162.105	9.40371	190.102	106.341
162.269	9.59557	158.594	104.215
162.433	9.40371	177.727	106.341
162.597	9.97931	150.289	100.207
162.761	9.88337	135.477	101.18
162.925	9.59557	144.703	104.215
163.089	9.69151	156.828	103.183

163.253	9.69151	177.477	103.183
163.417	9.97931	156.492	100.207
163.581	9.97931	145.031	100.207
163.745	9.69151	157.992	103.183
163.909	9.59557	185.117	104.215
164.073	9.69151	150.039	103.183
164.237	9.30777	144.93	107.437
164.401	9.59557	165.305	104.215
164.565	9.01997	149.891	110.865
164.729	9.21184	145.938	108.556
164.893	9.01997	165.195	110.865
165.057	9.40371	156.484	106.341
165.221	9.59557	175.969	104.215
165.385	9.97931	125.719	100.207
165.55	10.1712	167.125	98.3171
165.714	9.59557	143.875	104.215
165.878	9.40371	142.523	106.341
166.042	9.30777	179.203	107.437
166.206	8.25251	173.117	121.175
166.37	8.44437	178.43	118.422
166.534	9.01997	156.57	110.865
166.698	9.21184	173.156	108.556
166.862	8.73217	115.246	114.519
167.026	9.59557	175.609	104.215
167.19	9.97931	172.453	100.207
167.354	9.59557	185.094	104.215
167.518	9.59557	157.766	104.215
167.682	9.59557	146.289	104.215
167.846	8.92404	153.805	112.057
168.01	8.63624	151.539	115.791
168.174	8.92404	193.172	112.057
168.338	8.92404	147.703	112.057
168.502	9.40371	124.773	106.341
168.666	9.69151	177.57	103.183
168.83	9.40371	166.188	106.341
168.994	9.59557	173.727	104.215
169.158	8.92404	137.203	112.057
169.322	9.21184	161.875	108.556
169.486	8.92404	165.938	112.057
169.651	8.63624	169.406	115.791
169.815	8.44437	136.398	118.422
169.979	8.73217	158.063	114.519
170.143	8.25251	170.219	121.175
170.307	8.06064	176.227	124.06
170.471	8.44437	144.461	118.422
170.635	8.06064	149.211	124.06
170.799	8.92404	130.773	112.057
170.963	9.21184	116.672	108.556
171.127	8.92404	183.5	112.057
171.291	8.63624	152.875	115.791
171.455	8.44437	135.289	118.422
171.619	8.34844	196.281	119.783
171.783	8.44437	137.281	118.422
171.947	8.44437	156.602	118.422
172.111	8.92404	162.414	112.057
172.275	9.30777	140.359	107.437
172.439	9.40371	168.914	106.341
172.603	9.21184	150.016	108.556
172.767	9.21184	147.828	108.556
172.931	9.40371	130.648	106.341
173.095	9.21184	147.406	108.556
173.259	9.21184	147.422	108.556
173.423	9.88337	156.422	101.18
173.588	9.59557	142.289	104.215
173.752	9.59557	146.906	104.215
173.916	9.69151	123.578	103.183
174.08	9.40371	147.898	106.341
174.244	9.59557	143.055	104.215
174.408	9.30777	129.844	107.437
174.572	9.01997	141.039	110.865
174.736	9.01997	132.617	110.865
174.9	8.73217	133.656	114.519
175.064	9.01997	170.133	110.865
175.228	9.30777	161.898	107.437
175.392	9.21184	143.781	108.556
175.556	8.63624	142.984	115.791
175.72	7.9647	136.453	125.554
175.884	7.6769	160.813	130.261
176.048	7.3891	139.203	135.334
176.212	7.48504	149.188	133.6
176.376	7.00537	129.336	142.748
176.54	6.8135	145.414	146.767
176.704	7.29317	141.773	137.115
176.868	7.48504	151.906	133.6
177.032	7.6769	158.625	130.261
177.196	7.00537	159.625	142.748
177.36	7.1013	191.141	140.819
177.524	7.3891	130.383	135.334
177.689	7.29317	161.844	137.115
177.853	7.1013	168.914	140.819
178.017	7.1013	183.82	140.819
178.181	6.5257	189.813	153.24
178.345	6.5257	206.82	153.24
178.509	7.00537	178.82	142.748
178.673	6.8135	184.18	146.767
178.837	6.5257	183.555	153.24
179.001	6.5257	202.141	153.24
179.165	6.8135	198.195	146.767
179.329	6.5257	186.906	153.24
179.493	6.71757	182.359	148.863
179.657	6.71757	196.664	148.863
179.821	6.42977	195.883	155.527
179.985	6.42977	186.969	155.527
180.149	6.14197	207.641	162.814
180.313	6.14197	197.313	162.814
180.477	6.14197	216.016	162.814
180.641	6.04603	200.453	165.398
180.805	6.42977	181.281	155.527
180.969	6.42977	168.773	155.527
181.133	6.33384	216	157.882
181.297	6.04603	184.953	165.398
181.461	6.14197	202.641	162.814
181.625	6.14197	202.891	162.814
181.79	6.04603	198.039	165.398
181.954	6.42977	202.305	155.527
182.118	6.14197	189.305	162.814
182.282	6.42977	190.391	155.527

182.446	6.14197	203.477	162.814
182.61	6.14197	203.656	162.814
182.774	5.85417	190.883	170.818
182.938	6.14197	250.539	162.814
183.102	6.04603	193.109	165.398
183.266	6.33384	221.766	157.882
183.43	5.85417	196.492	170.818
183.594	6.04603	216.086	165.398
183.758	6.14197	201.609	162.814
183.922	5.85417	204.766	170.818
184.086	5.85417	180.414	170.818
184.25	6.04603	171.391	165.398
184.414	5.56637	196.281	179.65
184.578	5.56637	224.516	179.65
184.742	5.56637	235.969	179.65
184.906	5.56637	201.781	179.65
185.07	5.85417	202.789	170.818
185.234	5.85417	193.781	170.818
185.398	5.85417	196.648	170.818
185.562	5.56637	208.328	179.65
185.726	5.47043	197.344	182.801
185.891	5.75823	212.195	173.664
186.055	5.3745	198.867	186.064
186.219	5.47043	160.453	182.801
186.383	6.14197	196.727	162.814
186.547	5.85417	214.586	170.818
186.711	5.75823	215.18	173.664
186.875	5.75823	203.539	173.664
187.039	5.47043	222.852	182.801
187.203	5.47043	200.82	182.801
187.367	6.04603	191.758	165.398
187.531	5.56637	207.805	179.65
187.695	5.47043	197.961	182.801
187.859	5.47043	219.773	182.801
188.023	5.56637	229.523	179.65
188.187	5.56637	193.109	179.65
188.351	6.04603	171.813	165.398
188.515	5.3745	208.344	186.064
188.679	5.75823	221.539	173.664
188.843	5.3745	184.133	186.064
189.007	5.18263	207.68	192.952
189.171	5.56637	176.938	179.65
189.335	5.56637	184.055	179.65
189.499	5.56637	202.047	179.65
189.663	5.75823	210.117	173.664
189.828	5.47043	187.68	182.801
189.992	5.18263	202.594	192.952
190.156	5.47043	217.719	182.801
190.32	5.3745	218.578	186.064
190.484	5.47043	203.234	182.801
190.648	5.56637	226.469	179.65
190.812	5.3745	198.352	186.064
190.976	5.75823	193.914	173.664
191.14	5.75823	211.75	173.664
191.304	5.75823	172.461	173.664
191.468	5.47043	192.273	182.801
191.632	5.47043	246.148	182.801
191.796	5.47043	191.086	182.801
191.96	5.56637	190.266	179.65
192.124	5.56637	206.266	179.65
192.288	5.56637	220.18	179.65
192.452	5.75823	249.648	173.664
192.616	5.75823	212.977	173.664
192.78	5.47043	217.82	182.801
192.944	5.75823	193.172	173.664
193.108	5.47043	197.508	182.801
193.272	5.56637	171.805	179.65
193.436	5.56637	196.883	179.65
193.6	5.56637	177.57	179.65
193.764	5.56637	221.297	179.65
193.929	5.47043	208.664	182.801
194.093	5.47043	233.398	182.801
194.257	5.47043	201.648	182.801
194.421	5.18263	239.891	192.952
194.585	5.3745	220.672	186.064
194.749	5.0867	193.117	196.591
194.913	5.18263	185.734	192.952
195.077	5.3745	199.609	186.064
195.241	5.18263	221.398	192.952
195.405	5.47043	229.867	182.801
195.569	5.47043	191.859	182.801
195.733	5.3745	207.563	186.064
195.897	5.47043	229.633	182.801
196.061	5.56637	216.422	179.65
196.225	5.18263	170.195	192.952
196.389	5.47043	199.547	182.801
196.553	5.3745	231.5	186.064
196.717	5.56637	227.977	179.65
196.881	5.0867	208.297	196.591
197.045	5.56637	227.719	179.65
197.209	5.47043	180.711	182.801
197.373	5.56637	187.688	179.65
197.537	5.3745	169.641	186.064
197.701	5.0867	217.547	196.591
197.865	5.56637	232.328	179.65
198.03	5.3745	170.25	186.064
198.194	5.56637	190.672	179.65
198.358	5.75823	184.813	173.664
198.522	5.56637	216.867	179.65
198.686	5.56637	218.906	179.65
198.85	5.56637	170.234	179.65
199.014	5.47043	204.977	182.801
199.178	5.47043	160.961	182.801
199.342	5.56637	200.102	179.65
199.506	5.0867	243.594	196.591
199.67	5.56637	164.773	179.65
199.834	5.56637	198.25	179.65
199.998	6.14197	240.07	162.814
200.162	5.56637	190.391	179.65
200.326	5.85417	215.016	170.818
200.49	5.56637	149.711	179.65
200.654	5.75823	209.289	173.664
200.818	5.47043	167.016	182.801
200.982	5.56637	186.961	179.65
201.146	5.56637	221.477	179.65
201.31	5.85417	204.273	170.818
201.474	5.75823	207.102	173.664

201.638	6.14197	228.883	162.814
201.802	5.85417	204.023	170.818
201.966	5.75823	176.023	173.664
202.131	5.85417	200.773	170.818
202.295	5.75823	222.086	173.664
202.459	5.85417	156.93	170.818
202.623	5.85417	219.789	170.818
202.787	6.04603	194.156	165.398
202.951	6.04603	207.547	165.398
203.115	6.14197	170.867	162.814
203.279	5.85417	184.078	170.818
203.443	6.14197	223.875	162.814
203.607	5.85417	251.031	170.818
203.771	5.75823	232.016	173.664
203.935	5.75823	226.953	173.664
204.099	5.85417	184.883	170.818
204.263	5.85417	181.969	170.818
204.427	5.85417	172.93	170.818
204.591	5.75823	214.219	173.664
204.755	5.85417	238.336	170.818
204.919	6.33384	185.766	157.882
205.083	5.85417	226.156	170.818
205.247	5.85417	207.445	170.818
205.411	6.33384	227.68	157.882
205.575	6.04603	197.117	165.398
205.739	5.75823	210.586	173.664
205.903	5.85417	219.641	170.818
206.067	5.85417	175.523	170.818
206.232	5.75823	219.023	173.664
206.396	5.85417	181.672	170.818
206.56	6.33384	193.484	157.882
206.724	6.14197	203.063	162.814
206.888	6.04603	195.078	165.398
207.052	6.33384	187.367	157.882
207.216	6.33384	242.023	157.882
207.38	5.85417	196.25	170.818
207.544	6.14197	193.031	162.814
207.708	6.42977	213.727	155.527
207.872	6.04603	175.906	165.398
208.036	6.04603	222.5	165.398
208.2	6.04603	190.641	165.398
208.364	5.75823	215.766	173.664
208.528	6.04603	214.211	165.398
208.692	6.5257	186.758	153.24
208.856	6.14197	159.242	162.814
209.02	6.14197	202.977	162.814
209.184	6.33384	208.664	157.882
209.348	6.33384	227.977	157.882
209.512	6.14197	209.703	162.814
209.676	6.33384	197.055	157.882
209.84	6.33384	174.508	157.882
210.004	5.85417	213.234	170.818
210.169	5.85417	196.383	170.818
210.333	6.14197	180.789	162.814
210.497	6.14197	223.359	162.814
210.661	6.14197	197.625	162.814
210.825	6.14197	203.93	162.814
210.989	6.33384	254.578	157.882
211.153	5.85417	221.063	170.818
211.317	6.14197	248.406	162.814
211.481	5.85417	218.086	170.818
211.645	5.85417	188.148	170.818
211.809	6.33384	204.219	157.882
211.973	6.14197	259.547	162.814
212.137	6.04603	218.031	165.398
212.301	6.14197	216.039	162.814
212.465	6.33384	197.625	157.882
212.629	6.14197	225.5	162.814
212.793	6.42977	202.414	155.527
212.957	6.14197	212.758	162.814
213.121	6.04603	243.453	165.398
213.285	5.85417	201.906	170.818
213.449	6.33384	180.813	157.882
213.613	6.42977	229.086	155.527
213.777	6.04603	228.734	165.398
213.941	5.56637	208.773	179.65
214.105	5.85417	242.156	170.818
214.27	5.85417	183.344	170.818
214.434	6.04603	191.742	165.398
214.598	6.04603	218.602	165.398
214.762	6.33384	208.664	157.882
214.926	6.33384	234.18	157.882
215.09	6.33384	219.023	157.882
215.254	6.33384	193.922	157.882
215.418	6.42977	239.586	155.527
215.582	6.14197	220.297	162.814
215.746	6.42977	175.633	155.527
215.91	6.33384	215.586	157.882
216.074	6.04603	207.594	165.398
216.238	6.33384	190.836	157.882
216.402	6.14197	180.32	162.814
216.566	6.14197	227.328	162.814
216.73	5.85417	222.164	170.818
216.894	6.14197	216.344	162.814
217.058	6.42977	234.18	155.527
217.222	6.04603	182.828	165.398
217.386	6.5257	216.289	153.24
217.55	6.04603	218.922	165.398
217.714	6.42977	175.211	155.527
217.878	5.85417	206.352	170.818
218.042	6.04603	260.672	165.398
218.206	6.33384	208.633	157.882
218.371	6.04603	223.203	165.398
218.535	6.33384	243.266	157.882
218.699	6.33384	213.133	157.882
218.863	6.33384	213.594	157.882
219.027	6.14197	183.656	162.814
219.191	6.42977	233.367	155.527
219.355	6.04603	220.32	165.398
219.519	6.14197	207.539	162.814
219.683	6.04603	212.172	165.398
219.847	6.5257	205.602	153.24
220.011	6.14197	209.414	162.814
220.175	6.42977	247.492	155.527
220.339	6.5257	241.078	153.24
220.503	6.42977	213.016	155.527
220.667	6.33384	199.859	157.882

220.831	6.14197	201.188	162.814
220.995	6.14197	229.641	162.814
221.159	6.14197	212.07	162.814
221.323	6.42977	181.5	155.527
221.487	6.04603	205.281	165.398
221.651	6.04603	229.219	165.398
221.815	6.14197	202.125	162.814
221.979	6.14197	176.75	162.814
222.143	6.14197	219.023	162.814
222.307	6.42977	221.57	155.527
222.472	5.85417	229.461	170.818
222.636	5.75823	242.633	173.664
222.8	5.85417	199.086	170.818
222.964	6.04603	213.25	165.398
223.128	6.33384	199.633	157.882
223.292	6.33384	157.352	157.882
223.456	6.33384	184.797	157.882
223.62	6.42977	164.828	155.527
223.784	6.42977	218.188	155.527
223.948	6.14197	219.531	162.814
224.112	6.04603	197.492	165.398
224.276	6.04603	221.945	165.398
224.44	6.33384	182.078	157.882
224.604	6.33384	260.563	157.882
224.768	6.04603	207.336	165.398
224.932	5.75823	212.602	173.664
225.096	6.42977	208.531	155.527
225.26	6.42977	208.063	155.527
225.424	6.04603	218.813	165.398
225.588	6.33384	178.766	157.882
225.752	5.85417	207.203	170.818
225.916	5.85417	243.164	170.818
226.08	5.56637	212.586	179.65
226.244	6.04603	266	165.398
226.409	5.85417	203.547	170.818
226.573	5.85417	205.148	170.818
226.737	6.04603	205.133	165.398
226.901	5.85417	200.57	170.818
227.065	6.04603	225.398	165.398
227.229	5.18263	231.641	192.952
227.393	5.56637	246.945	179.65
227.557	6.04603	222.438	165.398
227.721	5.85417	212.422	170.818
227.885	5.75823	179.891	173.664
228.049	5.75823	207.305	173.664
228.213	5.85417	236.133	170.818
228.377	5.47043	213.617	182.801
228.541	6.14197	236.258	162.814
228.705	5.75823	230.961	173.664
228.869	6.04603	221.141	165.398
229.033	5.47043	219.688	182.801
229.197	5.3745	218.805	186.064
229.361	6.04603	207.68	165.398
229.525	5.56637	199.031	179.65
229.689	6.04603	229.172	165.398
229.853	5.47043	253.203	182.801
230.017	5.47043	229.305	182.801
230.181	5.47043	216.656	182.801
230.345	5.75823	234.68	173.664
230.51	5.47043	247.727	182.801
230.674	5.75823	226.648	173.664
230.838	6.04603	218.914	165.398
231.002	5.56637	211.148	179.65
231.166	5.56637	213.016	179.65
231.33	6.04603	243.961	165.398
231.494	5.47043	253.953	182.801
231.658	5.56637	194.328	179.65
231.822	5.75823	195.805	173.664
231.986	5.47043	256.625	182.801
232.15	5.56637	235.523	179.65
232.314	5.75823	230.961	173.664
232.478	5.75823	245.828	173.664
232.642	5.85417	194.563	170.818
232.806	5.56637	253.695	179.65
232.97	5.75823	255.539	173.664
233.134	5.3745	230.391	186.064
233.298	5.56637	217.531	179.65
233.462	5.85417	273.031	170.818
233.626	5.47043	225.594	182.801
233.79	5.85417	217.391	170.818
233.954	5.75823	193.648	173.664
234.118	5.75823	217.641	173.664
234.282	5.75823	212.953	173.664
234.446	6.04603	247.008	165.398
234.611	5.56637	237.195	179.65
234.775	5.75823	225.609	173.664
234.939	5.85417	241.961	170.818
235.103	5.56637	199.117	179.65
235.267	5.75823	226.391	173.664
235.431	5.85417	238.82	170.818
235.595	5.75823	212.406	173.664
235.759	6.04603	240.117	165.398
235.923	5.85417	236.414	170.818
236.087	5.85417	223.594	170.818
236.251	5.85417	193.82	170.818
236.415	6.14197	180.164	162.814
236.579	6.04603	251.68	165.398
236.743	5.56637	249.828	179.65
236.907	6.04603	199.164	165.398
237.071	5.75823	239.375	173.664
237.235	5.85417	227.094	170.818
237.399	5.75823	239.469	173.664
237.563	5.85417	217.852	170.818
237.727	6.04603	244.813	165.398
237.891	6.14197	232.125	162.814
238.055	6.04603	204.195	165.398
238.219	6.14197	241.547	162.814
238.383	6.04603	217.93	165.398
238.547	5.56637	191.055	179.65
238.712	5.47043	266.078	182.801
238.876	6.04603	240.695	165.398
239.04	5.56637	213.953	179.65
239.204	6.04603	252.719	165.398
239.368	5.85417	237.031	170.818
239.532	6.04603	227.32	165.398
239.696	5.75823	239.102	173.664
239.86	5.75823	229.773	173.664

240.024	5.85417	199.008	170.818
240.188	5.75823	210.172	173.664
240.352	5.75823	204.016	173.664
240.516	5.85417	225.047	170.818
240.68	5.85417	234.742	170.818
240.844	5.75823	282.109	173.664
241.008	5.75823	205.523	173.664
241.172	5.75823	230.992	173.664
241.336	5.85417	273.813	170.818
241.5	5.85417	188.93	170.818
241.664	5.85417	221.977	170.818
241.828	5.56637	236.461	179.65
241.992	5.75823	226.258	173.664
242.156	6.04603	245.734	165.398
242.32	6.04603	202.18	165.398
242.484	5.56637	219.117	179.65
242.648	5.56637	277.281	179.65
242.813	5.85417	223.047	170.818
242.977	5.85417	207.773	170.818
243.141	5.56637	236.781	179.65
243.305	6.04603	187.43	165.398
243.469	6.14197	198.438	162.814
243.633	5.75823	250.008	173.664
243.797	6.04603	224.75	165.398
243.961	6.14197	224.828	162.814
244.125	5.75823	191.547	173.664
244.289	6.04603	218.273	165.398
244.453	6.04603	228.32	165.398
244.617	5.75823	187.719	173.664
244.781	5.85417	176.672	170.818
244.945	5.85417	245.992	170.818
245.109	6.33384	222.805	157.882
245.273	5.75823	196.336	173.664
245.437	5.85417	259.953	170.818
245.601	5.75823	196.953	173.664
245.765	5.56637	211.383	179.65
245.929	5.75823	214.352	173.664
246.093	5.75823	184.93	173.664
246.257	5.75823	223.75	173.664
246.421	5.75823	229.016	173.664
246.585	5.85417	198.719	170.818
246.75	5.75823	236.016	173.664
246.914	5.47043	183.266	182.801
247.078	5.3745	173.836	186.064
247.242	5.75823	237.063	173.664
247.406	5.85417	210.531	170.818
247.57	5.85417	230.578	170.818
247.734	5.75823	207.227	173.664
247.898	6.04603	214.758	165.398
248.062	5.85417	195.109	170.818
248.226	5.85417	240.75	170.818
248.39	6.04603	228.383	165.398
248.554	5.56637	242.75	179.65
248.718	5.47043	232.727	182.801
248.882	5.47043	208.484	182.801
249.046	5.75823	229.711	173.664
249.21	5.75823	239.336	173.664
249.374	5.75823	236.406	173.664
249.538	5.85417	232.492	170.818
249.702	5.75823	210.578	173.664
249.866	5.56637	192.016	179.65
250.03	5.85417	226.133	170.818
250.194	5.85417	242.305	170.818
250.358	5.56637	224.602	179.65
250.522	6.04603	250.188	165.398
250.686	5.56637	237.086	179.65
250.851	5.75823	244.922	173.664
251.015	5.75823	207.906	173.664
251.179	5.47043	204.188	182.801
251.343	6.04603	208.586	165.398
251.507	5.56637	221.594	179.65
251.671	5.56637	217.727	179.65
251.835	6.04603	218.984	165.398
251.999	5.75823	272.25	173.664
252.163	5.56637	207.93	179.65
252.327	5.75823	225.43	173.664
252.491	5.56637	205.539	179.65
252.655	5.56637	213.516	179.65
252.819	5.56637	215.438	179.65
252.983	5.56637	242.039	179.65
253.147	6.04603	234.078	165.398
253.311	5.85417	237.813	170.818
253.475	5.56637	195.883	179.65
253.639	5.47043	263.438	182.801
253.803	5.47043	250.383	182.801
253.967	5.75823	209.336	173.664
254.131	5.85417	193.313	170.818
254.295	5.85417	262.031	170.818
254.459	5.75823	251	173.664
254.623	5.3745	254.875	186.064
254.787	5.56637	233.563	179.65
254.952	5.47043	209.602	182.801
255.116	6.14197	242.375	162.814
255.28	5.75823	236.406	173.664
255.444	5.56637	233.016	179.65
255.608	6.04603	244.25	165.398
255.772	6.14197	222.477	162.814
255.936	5.85417	263.141	170.818
256.1	5.75823	204.945	173.664
256.264	5.85417	245.102	170.818
256.428	6.04603	253.828	165.398
256.592	5.75823	242.453	173.664
256.756	5.85417	206.539	170.818
256.92	6.14197	243.75	162.814
257.084	6.04603	235.328	165.398
257.248	5.85417	206.328	170.818
257.412	6.04603	210.07	165.398
257.576	6.04603	270.094	165.398
257.74	5.85417	239.078	170.818
257.904	6.04603	235.68	165.398
258.068	5.75823	223.789	173.664
258.232	5.85417	218.242	170.818
258.396	5.85417	228.469	170.818
258.56	5.85417	226.359	170.818
258.724	5.85417	226.75	170.818
258.888	6.04603	219.508	165.398
259.053	5.85417	255.516	170.818

259.217	5.75823	204.922	173.664
259.381	6.04603	241.516	165.398
259.545	5.85417	222.141	170.818
259.709	5.75823	252.992	173.664
259.873	5.75823	248.633	173.664
260.037	5.47043	219.438	182.801
260.201	5.3745	193.734	186.064
260.365	5.47043	240.125	182.801
260.529	5.75823	242.273	173.664
260.693	5.56637	253.859	179.65
260.857	5.85417	209.445	170.818
261.021	5.75823	236.305	173.664
261.185	5.85417	238.672	170.818
261.349	5.47043	221.531	182.801
261.513	5.75823	267.563	173.664
261.677	5.75823	215.125	173.664
261.841	5.47043	253.383	182.801
262.005	5.47043	213.313	182.801
262.169	5.85417	258.297	170.818
262.333	5.47043	204.555	182.801
262.497	5.3745	247.227	186.064
262.661	6.04603	266.859	165.398
262.825	5.75823	239.602	173.664
262.99	5.47043	258.422	182.801
263.154	5.47043	239.273	182.801
263.318	5.56637	260.922	179.65
263.482	5.75823	227.93	173.664
263.646	5.47043	235.313	182.801
263.81	5.3745	220.594	186.064
263.974	5.0867	255.156	196.591
264.138	5.75823	226.461	173.664
264.302	5.56637	245.734	179.65
264.466	5.56637	248.5	179.65
264.63	5.75823	230	173.664
264.794	5.85417	216.43	170.818
264.958	5.3745	224.414	186.064
265.122	5.3745	233.188	186.064
265.286	5.56637	223.352	179.65
265.45	5.3745	228.281	186.064
265.614	5.56637	228.109	179.65
265.778	5.3745	202.203	186.064
265.942	5.18263	216.195	192.952
266.106	5.0867	213.359	196.591
266.27	5.56637	241.391	179.65
266.434	5.18263	249.992	192.952
266.598	5.56637	256.344	179.65
266.762	5.56637	212.25	179.65
266.926	5.56637	227.898	179.65
267.091	5.47043	223.742	182.801
267.255	5.56637	239.102	179.65
267.419	5.85417	210.5	170.818
267.583	5.56637	234.773	179.65
267.747	5.47043	240.383	182.801
267.911	5.75823	207.078	173.664
268.075	5.18263	245.398	192.952
268.239	5.3745	244.734	186.064
268.403	5.75823	244.008	173.664
268.567	5.47043	203.672	182.801
268.731	6.04603	210.703	165.398
268.895	5.75823	209.109	173.664
269.059	6.14197	235.188	162.814
269.223	5.56637	228.383	179.65
269.387	6.14197	210.367	162.814
269.551	5.56637	208.977	179.65
269.715	6.14197	227.695	162.814
269.879	6.04603	213.922	165.398
270.043	6.33384	224.883	157.882
270.207	6.04603	216.82	165.398
270.371	6.04603	213.781	165.398
270.535	6.14197	288.109	162.814
270.699	5.85417	232.102	170.818
270.863	6.14197	198.867	162.814
271.027	6.14197	243.211	162.814
271.192	6.04603	214.977	165.398
271.356	6.04603	250.25	165.398
271.52	6.04603	244.633	165.398
271.684	5.75823	251.258	173.664
271.848	5.85417	219.75	170.818
272.012	5.85417	211.914	170.818
272.176	6.33384	218.523	157.882
272.34	6.33384	209.055	157.882
272.504	6.14197	219.195	162.814
272.668	6.14197	237.938	162.814
272.832	6.33384	235.344	157.882
272.996	6.5257	211.594	153.24
273.16	6.42977	218.133	155.527
273.324	6.33384	203.422	157.882
273.488	6.14197	243.313	162.814
273.652	6.8135	267.859	146.767
273.816	6.42977	249.648	155.527
273.98	6.42977	196.984	155.527
274.144	6.5257	201.703	153.24
274.308	6.14197	223.828	162.814
274.472	6.5257	204.633	153.24
274.636	6.8135	248.359	146.767
274.8	7.00537	230.617	142.748
274.964	5.85417	249.102	170.818
275.128	6.33384	229.406	157.882
275.293	6.04603	246.328	165.398
275.457	6.04603	239.18	165.398
275.621	5.75823	224.219	173.664
275.785	5.75823	256.828	173.664
275.949	5.85417	217.297	170.818
276.113	5.85417	211.234	170.818
276.277	6.33384	231.813	157.882
276.441	5.75823	215.016	173.664
276.605	5.85417	224.289	170.818
276.769	5.75823	219.719	173.664
276.933	6.14197	217.938	162.814
277.097	6.04603	222.289	165.398
277.261	6.04603	221.672	165.398
277.425	5.85417	235.195	170.818
277.589	5.75823	223.227	173.664
277.753	5.85417	167.695	170.818
277.917	5.56637	203.445	179.65
278.081	6.04603	227.242	165.398
278.245	6.04603	200.336	165.398

278.409	5.85417	213.125	170.818
278.573	6.42977	201.867	155.527
278.737	7.00537	189.484	142.748
278.901	6.5257	238.461	153.24
279.065	6.8135	193.555	146.767
279.23	7.29317	208.289	137.115
279.394	7.29317	232.898	137.115
279.558	7.3891	195.477	135.334
279.722	7.00537	230.281	142.748
279.886	7.00537	193.914	142.748
280.05	7.29317	189.477	137.115
280.214	7.48504	201.359	133.6
280.378	7.6769	228.133	130.261
280.542	7.77284	255.719	128.653
280.706	7.6769	260.156	130.261
280.87	7.3891	275.422	135.334
281.034	7.77284	291.547	128.653
281.198	7.77284	278.203	128.653
281.362	7.6769	264.75	130.261
281.526	7.9647	274.672	125.554
281.69	7.6769	263.125	130.261
281.854	7.77284	307.063	128.653
282.018	7.9647	269.344	125.554
282.182	7.77284	324.203	128.653
282.346	7.3891	236.781	135.334
282.51	8.06064	250.719	124.06
282.674	8.06064	257.516	124.06
282.838	8.25251	288.719	121.175
283.002	8.44437	235.883	118.422
283.166	8.44437	249.703	118.422
283.331	8.73217	268.703	114.519
283.495	8.92404	274.469	112.057
283.659	9.01997	275.891	110.865
283.823	8.92404	267.141	112.057
283.987	9.21184	256.734	108.556
284.151	9.88337	246.32	101.18
284.315	9.30777	284.703	107.437
284.479	9.59557	290.422	104.215
284.643	9.88337	277.063	101.18
284.807	10.1712	234.516	98.3171
284.971	10.363	294.313	96.4968
285.135	10.5549	240.883	94.7426
285.299	10.2671	295.906	97.3984
285.463	10.2671	267.063	97.3984
285.627	10.9386	273.141	91.419
285.791	10.8427	276.219	92.2279
285.955	11.2264	294.313	89.0754
286.119	11.5142	329.953	86.8489
286.283	11.802	325.453	84.7311
286.447	12.3776	303.672	80.7908
286.611	13.7207	313.797	72.8825
286.775	14.4882	264.453	69.0218
286.939	15.3516	285.078	65.1399
287.103	16.5987	288.313	60.2456
287.267	18.5174	274.328	54.0033
287.432	19.7645	282.297	50.5957
287.596	20.532	246.852	48.7045
287.76	21.6832	327.984	46.1187
287.924	23.2181	280.266	43.0698
288.088	23.9856	291.203	41.6917
288.252	24.6571	267.938	40.5562
288.416	25.3287	282.703	39.481
288.58	26.4799	311.031	37.7645
288.744	26.4799	293.313	37.7645
288.908	26.7677	304.453	37.3585
289.072	25.6165	289.75	39.0374
289.236	25.5205	298.469	39.1841
289.4	23.9856	267.016	41.6917
289.564	23.6019	294.297	42.3695
289.728	22.7385	309.625	43.9783
289.892	22.4507	251.727	44.5421
290.056	21.1076	266.047	47.3763
290.22	21.7791	301.203	45.9155
290.384	22.9303	299.938	43.6104
290.548	20.7239	230.773	48.2536
290.712	20.8198	233.242	48.0312
290.876	21.1076	273.766	47.3763
291.04	19.4767	253.883	51.3433
291.204	17.8459	216.836	56.0354
291.368	18.1337	201.008	55.1461
291.533	17.2703	174.297	57.903
291.697	16.8865	152.789	59.2188
291.861	17.2703	157.695	57.903
292.025	16.6947	137.578	59.8994
292.189	16.9825	100.023	58.8843
292.353	15.7353	113.574	63.5513
292.517	15.7353	141.992	63.5513
292.681	16.3109	156.648	61.3086
292.845	15.4475	124.336	64.7353
293.009	15.3516	130.328	65.1399
293.173	14.9678	84.7617	66.8099
293.337	15.2557	109.078	65.5495
293.501	14.68	70.7773	68.1197
293.665	13.8166	83.2422	72.3765
293.829	13.8166	95.582	72.3765
293.993	12.7614	93.1719	78.3614
294.157	11.3224	69.4727	88.3207
294.321	11.3224	86.1758	88.3207
294.485	13.5288	118.52	73.9161
294.649	13.1451	95.7227	76.0739
294.813	12.1858	66.1992	82.0629
294.977	12.4736	72.6133	80.1695
295.141	12.3776	73.0586	80.7908
295.305	11.2264	69.418	89.0754
295.47	11.3224	75.3242	88.3207
295.634	12.4736	53.9805	80.1695
295.798	11.6102	59.9004	86.1313
295.962	11.802	57.3105	84.7311
296.126	12.3776	59.3242	80.7908
296.29	9.88337	43.0293	101.18
296.454	8.25251	49.1543	121.175
296.618	7.6769	26.4912	130.261
296.782	6.8135	38.5059	146.767
296.946	6.42977	34.3848	155.527
297.11	6.42977	30.5322	155.527
297.274	7.3891	52.8789	135.334
297.438	7.6769	50.7656	130.261

297.602	7.77284	36.459	128.653
297.766	7.1013	56.7188	140.819
297.93	7.6769	63.3984	130.261
298.094	7.29317	76.957	137.115
298.258	6.8135	64.6211	146.767
298.422	6.71757	82.8906	148.863
298.586	5.85417	60.8535	170.818
298.75	6.42977	67.75	155.527
298.914	6.8135	63.8613	146.767
299.078	6.33384	53.4512	157.882
299.242	6.14197	53.4355	162.814
299.406	6.14197	53.9609	162.814
299.571	5.85417	50.3359	170.818
299.735	6.33384	48.4414	157.882
299.899	6.8135	37.8066	146.767
300.063	6.14197	37.2637	162.814
300.227	5.18263	32.9648	192.952
300.391	5.47043	28.7637	182.801
300.555	5.47043	32.8984	182.801
300.719	5.85417	45.0977	170.818
300.883	5.56637	42.7188	179.65
301.047	7.00537	44.5703	142.748
301.211	6.5257	30.8975	153.24
301.375	6.14197	36.7129	162.814
301.539	7.00537	52.9824	142.748
301.703	7.00537	32.4297	142.748
301.867	6.71757	46.623	148.863
302.031	7.1013	38.5859	140.819
302.195	7.1013	36.6602	140.819
302.359	7.00537	42.4727	142.748
302.523	6.5257	36.3125	153.24
302.687	6.71757	26.166	148.863
302.851	6.5257	42.7148	153.24
303.015	6.5257	30.8096	153.24
303.179	7.1013	22.6943	140.819
303.343	6.8135	30.8721	146.767
303.507	7.00537	55.4551	142.748
303.672	7.00537	32.8359	142.748
303.836	7.29317	31.2393	137.115
304	7.1013	31.4268	140.819
304.164	7.48504	37.5781	133.6
304.328	7.29317	33.2402	137.115
304.492	8.06064	51.5879	124.06
304.656	8.44437	45.5098	118.422
304.82	8.63624	51.7109	115.791
304.984	8.92404	39.0879	112.057
305.148	8.63624	38.8887	115.791
305.312	8.92404	36.8027	112.057
305.476	9.01997	32.6543	110.865
305.64	9.30777	30.8125	107.437
305.804	8.73217	34.7656	114.519
305.968	8.92404	34.5273	112.057
306.132	8.44437	22.3281	118.422
306.296	8.06064	38.5313	124.06
306.46	7.48504	32.4941	133.6
306.624	7.29317	41.1758	137.115
306.788	6.5257	26.3359	153.24
306.952	6.33384	40.3008	157.882
307.116	7.00537	50.5313	142.748
307.28	8.34844	22.499	119.783
307.444	9.21184	38.7793	108.556
307.608	9.01997	51.0371	110.865
307.773	8.44437	50.7891	118.422
307.937	8.92404	36.9688	112.057
308.101	7.9647	43.4316	125.554
308.265	7.1013	60.5039	140.819
308.429	7.1013	73.0547	140.819
308.593	7.3891	54.2012	135.334
308.757	7.1013	70.9258	140.819
308.921	7.00537	68.918	142.748
309.085	5.56637	64.5	179.65
309.249	3.16803	43.5527	315.654
309.413	4.2233	52.8281	236.782
309.577	4.7989	50.4336	208.381
309.741	4.60703	65.125	217.059
309.905	4.60703	53.9375	217.059
310.069	7.77284	57.9531	128.653
310.233	7.29317	36.4141	137.115
310.397	7.6769	31.4785	130.261
310.561	7.77284	52.0859	128.653
310.725	7.77284	41.0098	128.653
310.889	6.71757	46.3887	148.863
311.053	6.14197	49.9258	162.814
311.217	5.56637	62.5918	179.65
311.381	5.0867	58.4258	196.591
311.545	5.0867	73.7422	196.591
311.71	4.60703	67.1563	217.059
311.874	4.60703	59.7344	217.059
312.038	4.60703	76.0273	217.059
312.202	4.41517	58.1289	226.492
312.366	4.2233	40.2422	236.782
312.53	4.60703	59.1543	217.059
312.694	4.60703	66.7578	217.059
312.858	4.7989	49.4727	208.381
313.022	5.0867	49.75	196.591
313.186	5.3745	29.5928	186.064
313.35	4.5111	42.2773	221.675
313.514	5.0867	39.666	196.591
313.678	4.89483	40.709	204.297
313.842	5.3745	46.1582	186.064
314.006	5.85417	51.9141	170.818
314.17	5.47043	46.0918	182.801
	Conductivity	Gamma	Resistivity
314.334	4.41517	32.3906	226.492
314.498	2.88023	32.3359	347.195
314.334	1.72903	37.0625	578.36
314.17	3.45583	37.8906	289.366
314.006	3.83956	41.2891	260.446
313.842	4.5111	33.168	221.675
313.678	4.60703	45.4199	217.059
313.514	4.89483	39.9531	204.297
313.35	4.89483	27.3428	204.297
313.186	4.7989	47.4883	208.381
313.022	4.5111	39.334	221.675
312.858	4.5111	40.2031	221.675
312.694	4.5111	47.4258	221.675
312.53	4.2233	34.9141	236.782

312.366	4.2233	45.2656	236.782
312.202	3.83956	73.2422	260.446
312.038	3.9355	36.959	254.097
311.874	4.12736	47.8359	242.285
311.71	3.9355	51.8086	254.097
311.545	4.12736	56.0254	242.285
311.381	4.60703	50.6934	217.059
311.217	4.5111	64.7734	221.675
311.053	4.89483	52.8145	204.297
310.889	5.3745	52.0879	186.064
310.725	6.33384	48.3223	157.882
310.561	6.42977	50.9277	155.527
310.397	6.71757	61.2168	148.863
310.233	6.33384	47.3301	157.882
310.069	6.14197	40.2031	162.814
309.905	5.18263	45.6738	192.952
309.741	5.85417	37.5527	170.818
309.577	4.7989	64.3086	208.381
309.413	4.89483	46.0781	204.297
309.249	5.3745	49.707	186.064
309.085	6.42977	48.3438	155.527
308.921	5.3745	61.7773	186.064
308.757	6.14197	42.8223	162.814
308.593	6.5257	75.3555	153.24
308.429	6.42977	58.9902	155.527
308.265	6.42977	70.8477	155.527
308.101	6.04603	68.5859	165.398
307.937	5.85417	66.418	170.818
307.773	5.75823	47.7578	173.664
307.608	7.1013	34.1426	140.819
307.444	7.29317	46.1543	137.115
307.28	7.6769	38.6855	130.261
307.116	7.48504	41.7168	133.6
306.952	7.6769	33.9902	130.261
306.788	6.8135	42.6465	146.767
306.624	6.5257	19.2412	153.24
306.46	6.14197	42.0176	162.814
306.296	6.42977	38.6055	155.527
306.132	7.00537	36.9395	142.748
305.968	7.3891	35.4141	135.334
305.804	7.3891	29.6641	135.334
305.64	7.9647	29.6904	125.554
305.476	8.25251	47.6348	121.175
305.312	8.44437	38.6055	118.422
305.148	8.34844	44.5859	119.783
304.984	8.73217	51.957	114.519
304.82	7.9647	47.9453	125.554
304.656	7.3891	51.25	135.334
304.492	7.00537	55.6719	142.748
304.328	6.42977	30.1328	155.527
304.164	5.47043	55.8262	182.801
304	5.47043	36.4512	182.801
303.836	6.33384	50.2832	157.882
303.672	6.5257	21.2129	153.24
303.507	6.14197	36.0508	162.814
303.343	6.33384	32.8906	157.882
303.179	6.33384	32.9609	157.882
303.015	6.04603	54	165.398
302.851	6.04603	32.8184	165.398
302.687	5.75823	54.9043	173.664
302.523	5.3745	41.2168	186.064
302.359	5.47043	45.5547	182.801
302.195	5.47043	41.3652	182.801
302.031	5.85417	41.6211	170.818
301.867	6.14197	29.5684	162.814
301.703	6.5257	39.9863	153.24
301.539	6.04603	45.8691	165.398
301.375	6.04603	40.0762	165.398
301.211	6.14197	41.7246	162.814
301.047	5.18263	52.6133	192.952
300.883	4.5111	50.3047	221.675
300.719	5.18263	32.6816	192.952
300.555	5.18263	43.3008	192.952
300.391	4.60703	30.002	217.059
300.227	4.60703	46.4004	217.059
300.063	4.5111	52.5938	221.675
299.899	4.7989	51.3848	208.381
299.735	5.0867	42.7852	196.591
299.571	5.3745	47.5195	186.064
299.406	5.0867	35.2129	196.591
299.242	4.60703	57.5273	217.059
299.078	4.60703	66.0977	217.059
298.914	5.3745	55.6973	186.064
298.75	5.56637	60.166	179.65
298.586	5.47043	68.9336	182.801
298.422	6.33384	54.9102	157.882
298.258	6.04603	54.5391	165.398
298.094	5.85417	69.3945	170.818
297.93	6.5257	51.9395	153.24
297.766	6.8135	47.5762	146.767
297.602	5.18263	45.9746	192.952
297.438	5.75823	56.2598	173.664
297.274	6.42977	44.3887	155.527
297.11	6.14197	47.4551	162.814
296.946	5.3745	47.5391	186.064
296.782	6.04603	29.6426	165.398
296.618	5.75823	44.4238	173.664
296.454	6.33384	34.0469	157.882
296.29	7.1013	55.3965	140.819
296.126	8.34844	44.9121	119.783
295.962	10.363	73.1055	96.4968
295.798	11.5142	56.4688	86.8489
295.634	10.9386	79.9648	91.419
295.47	11.1305	87.4258	89.8431
295.305	10.6508	87.0078	93.8893
295.141	10.363	84.332	96.4968
294.977	10.8427	71.8555	92.2279
294.813	11.5142	72.5273	86.8489
294.649	10.9386	66.3438	91.419
294.485	11.802	93.832	84.7311
294.321	12.1858	77.5898	82.0629
294.157	11.2264	106.656	89.0754
293.993	10.2671	108.82	97.3984
293.829	11.3224	111.156	88.3207
293.665	12.5695	81.543	79.5576
293.501	13.0492	96.3633	76.6332
293.337	13.0492	109.313	76.6332

293.173	13.5288	95.7422	73.9161
293.009	13.7207	107.676	72.8825
292.845	14.3922	100.84	69.4818
292.681	14.776	98.0078	67.6774
292.517	14.776	124.633	67.6774
292.353	14.776	121.398	67.6774
292.189	14.9678	109.609	66.8099
292.025	15.3516	119.363	65.1399
291.861	15.4475	115.184	64.7353
291.697	15.3516	132.977	65.1399
291.533	16.4069	169.586	60.9501
291.368	16.6947	168.258	59.8994
291.204	16.3109	195.68	61.3086
291.04	18.3255	194.172	54.5687
290.876	18.2296	189.555	54.8559
290.712	18.3255	218.242	54.5687
290.548	19.2849	244.977	51.8542
290.384	20.7239	258.406	48.2536
290.22	20.4361	245.703	48.9331
290.056	20.7239	289.047	48.2536
289.892	20.8198	261.078	48.0312
289.728	21.0117	244.125	47.5926
289.564	21.7791	267.297	45.9155
289.4	22.2588	275.703	44.9261
289.236	22.7385	287.547	43.9783
289.072	23.6019	278.031	42.3695
288.908	24.6571	287.359	40.5562
288.744	24.849	293.234	40.2431
288.58	25.1368	262.313	39.7823
288.416	24.9449	243.891	40.0883
288.252	24.5612	265.016	40.7146
288.088	23.8897	252.656	41.8591
287.924	22.9303	260.516	43.6104
287.76	21.971	275.188	45.5146
287.596	21.0117	249.797	47.5926
287.432	19.7645	287.938	50.5957
287.267	18.1337	244.719	55.1461
287.103	16.8865	274.219	59.2188
286.939	15.4475	270.922	64.7353
286.775	14.3922	262.75	69.4818
286.611	13.4329	253.422	74.444
286.447	12.4736	265.516	80.1695
286.283	11.6102	294.516	86.1313
286.119	10.9386	287.5	91.419
285.955	10.1712	298.703	98.3171
285.791	9.69151	258.266	103.183
285.627	9.40371	323.734	106.341
285.463	9.30777	259.531	107.437
285.299	8.92404	270.938	112.057
285.135	9.01997	261.797	110.865
284.971	9.01997	253.602	110.865
284.807	9.01997	269.719	110.865
284.643	8.44437	249.234	118.422
284.479	8.25251	239.734	121.175
284.315	8.06064	238.125	124.06
284.151	7.9647	245.648	125.554
283.987	7.77284	231.563	128.653
283.823	7.9647	265.109	125.554
283.659	7.9647	256.25	125.554
283.495	7.48504	272.516	133.6
283.331	7.3891	260.047	135.334
283.166	6.8135	260.781	146.767
283.002	6.5257	261.859	153.24
282.838	6.8135	244.867	146.767
282.674	6.5257	290.188	153.24
282.51	6.5257	275.906	153.24
282.346	6.5257	263.766	153.24
282.182	6.71757	237.367	148.863
282.018	6.33384	276.516	157.882
281.854	6.33384	274.031	157.882
281.69	6.14197	314.219	162.814
281.526	6.04603	234.82	165.398
281.362	6.14197	284.391	162.814
281.198	6.42977	288	155.527
281.034	5.85417	257.688	170.818
280.87	5.75823	280.609	173.664
280.706	5.85417	272.188	170.818
280.542	5.85417	297.203	170.818
280.378	6.04603	251.797	165.398
280.214	5.75823	239.266	173.664
280.05	5.85417	266.734	170.818
279.886	5.85417	230.445	170.818
279.722	5.75823	202.25	173.664
279.558	5.85417	201.859	170.818
279.394	5.3745	238.016	186.064
279.23	5.47043	207.242	182.801
279.065	5.18263	182.633	192.952
278.901	5.3745	197.688	186.064
278.737	5.18263	202.359	192.952
278.573	4.89483	193.031	204.297
278.409	4.89483	216.805	204.297
278.245	4.60703	221.063	217.059
278.081	4.89483	163.781	204.297
277.917	4.60703	197.336	217.059
277.753	4.60703	241.727	217.059
277.589	4.2233	175.992	236.782
277.425	4.41517	227.344	226.492
277.261	4.41517	211.359	226.492
277.097	4.41517	195.063	226.492
276.933	4.60703	205.086	217.059
276.769	4.60703	248.656	217.059
276.605	4.5111	250.789	221.675
276.441	4.41517	264.359	226.492
276.277	4.41517	220.367	226.492
276.113	4.60703	252.273	217.059
275.949	4.2233	201.781	236.782
275.785	4.5111	202.305	221.675
275.621	4.2233	230.656	236.782
275.457	4.41517	221.203	226.492
275.293	4.12736	223.563	242.285
275.128	4.2233	273.203	236.782
274.964	4.5111	238.547	221.675
274.8	4.60703	229.922	217.059
274.636	4.60703	196.805	217.059
274.472	5.75823	198.297	173.664
274.308	5.3745	248.656	186.064
274.144	5.0867	209.078	196.591

273.98	4.60703	242.539	217.059
273.816	5.0867	246.977	196.591
273.652	4.5111	243.5	221.675
273.488	4.89483	247.5	204.297
273.324	4.89483	245.453	204.297
273.16	4.7989	250.977	208.381
272.996	4.7989	262.141	208.381
272.832	4.5111	222.289	221.675
272.668	4.60703	227.742	217.059
272.504	4.60703	246.945	217.059
272.34	4.5111	239.141	221.675
272.176	4.41517	235.867	226.492
272.012	4.60703	247.313	217.059
271.848	4.2233	249.336	236.782
271.684	4.5111	236.547	221.675
271.52	4.41517	230.875	226.492
271.356	4.60703	234.664	217.059
271.192	4.41517	250.242	226.492
271.027	4.5111	205.711	221.675
270.863	4.41517	251	226.492
270.699	4.5111	196.664	221.675
270.535	4.12736	244.063	242.285
270.371	4.12736	232.906	242.285
270.207	4.2233	255.133	236.782
270.043	4.2233	230.641	236.782
269.879	4.12736	236.055	242.285
269.715	4.2233	248.148	236.782
269.551	3.9355	226.789	254.097
269.387	4.2233	243.609	236.782
269.223	4.41517	217.773	226.492
269.059	3.9355	253.625	254.097
268.895	3.83956	197.766	260.446
268.731	3.6477	211.078	274.146
268.567	3.83956	257.297	260.446
268.403	3.9355	247.305	254.097
268.239	3.6477	230.18	274.146
268.075	3.6477	248.359	274.146
267.911	3.83956	229.508	260.446
267.747	3.83956	233.711	260.446
267.583	3.6477	224.703	274.146
267.419	3.9355	228.461	254.097
267.255	3.83956	260.609	260.446
267.091	3.6477	239.523	274.146
266.926	3.83956	232.445	260.446
266.762	3.6477	280.531	274.146
266.598	3.6477	252.297	274.146
266.434	3.55176	237.492	281.55
266.27	3.83956	242.195	260.446
266.106	3.6477	263.063	274.146
265.942	3.55176	240.508	281.55
265.778	3.45583	221.438	289.366
265.614	3.9355	223.984	254.097
265.45	3.6477	243.164	274.146
265.286	3.55176	260.672	281.55
265.122	3.45583	227.375	289.366
264.958	3.45583	248.461	289.366
264.794	3.6477	212.703	274.146
264.63	3.9355	260.766	254.097
264.466	3.26396	240.078	306.376
264.302	3.83956	238.359	260.446
264.138	3.55176	235.992	281.55
263.974	3.55176	244.086	281.55
263.81	3.83956	240.539	260.446
263.646	3.55176	200.461	281.55
263.482	3.55176	239.453	281.55
263.318	3.55176	228.797	281.55
263.154	3.6477	245.883	274.146
262.99	3.9355	229.039	254.097
262.825	3.55176	242.273	281.55
262.661	3.55176	228.578	281.55
262.497	3.6477	228.031	274.146
262.333	3.45583	246.023	289.366
262.169	3.55176	230.648	281.55
262.005	3.55176	231.688	281.55
261.841	3.83956	214.68	260.446
261.677	3.9355	251.57	254.097
261.513	3.55176	241.766	281.55
261.349	3.45583	246.742	289.366
261.185	3.9355	235.344	254.097
261.021	3.55176	250.922	281.55
260.857	3.55176	236.156	281.55
260.693	3.6477	256.594	274.146
260.529	3.6477	245.781	274.146
260.365	3.55176	244.492	281.55
260.201	3.55176	248.758	281.55
260.037	3.6477	232.383	274.146
259.873	3.6477	232.367	274.146
259.709	3.6477	261.484	274.146
259.545	3.9355	246.664	254.097
259.381	3.55176	252.586	281.55
259.217	3.6477	233.031	274.146
259.053	3.55176	215.102	281.55
258.888	3.6477	256.578	274.146
258.724	3.6477	234.148	274.146
258.56	3.6477	234.336	274.146
258.396	3.83956	219.469	260.446
258.232	3.6477	208.398	274.146
258.068	3.6477	224.008	274.146
257.904	3.45583	236.695	289.366
257.74	3.6477	239.078	274.146
257.576	3.45583	233.273	289.366
257.412	3.9355	255.93	254.097
257.248	3.6477	254.891	274.146
257.084	3.6477	225.82	274.146
256.92	3.83956	211.695	260.446
256.756	3.83956	235.5	260.446
256.592	3.55176	221.719	281.55
256.428	3.55176	220.297	281.55
256.264	3.83956	229.508	260.446
256.1	3.9355	226.805	254.097
255.936	3.55176	216.578	281.55
255.772	3.6477	230.422	274.146
255.608	3.83956	226.703	260.446
255.444	3.6477	204.563	274.146
255.28	3.55176	229.305	281.55
255.116	3.55176	239.039	281.55
254.952	3.55176	205.391	281.55

254.787	3.6477	231.063	274.146
254.623	3.55176	223.555	281.55
254.459	3.6477	190.383	274.146
254.295	3.55176	216.117	281.55
254.131	3.55176	238.938	281.55
253.967	3.55176	188.148	281.55
253.803	3.45583	209.203	289.366
253.639	3.45583	215.641	289.366
253.475	3.45583	220	289.366
253.311	3.83956	215.672	260.446
253.147	3.26396	209.758	306.376
252.983	3.6477	192.727	274.146
252.819	3.55176	233.711	281.55
252.655	3.45583	252.664	289.366
252.491	3.55176	238.742	281.55
252.327	3.55176	199.57	281.55
252.163	3.26396	236.211	306.376
251.999	3.6477	175.703	274.146
251.835	3.26396	221.766	306.376
251.671	3.45583	230.859	289.366
251.507	3.55176	236.703	281.55
251.343	3.45583	253.133	289.366
251.179	3.45583	230.578	289.366
251.015	3.45583	244.32	289.366
250.851	3.45583	243.859	289.366
250.686	3.26396	197.18	306.376
250.522	3.16803	197.648	315.654
250.358	3.55176	242.258	281.55
250.194	3.26396	266.828	306.376
250.03	3.55176	228.188	281.55
249.866	3.45583	228.539	289.366
249.702	3.55176	210.328	281.55
249.538	3.26396	228.398	306.376
249.374	3.45583	228.258	289.366
249.21	3.45583	242.477	289.366
249.046	3.26396	246.82	306.376
248.882	3.26396	220.117	306.376
248.718	3.55176	245.258	281.55
248.554	3.45583	241	289.366
248.39	3.6477	243.969	274.146
248.226	3.55176	233.25	281.55
248.062	3.16803	236.727	315.654
247.898	3.55176	230.57	281.55
247.734	3.45583	258.578	289.366
247.57	3.55176	181.547	281.55
247.406	3.55176	204.242	281.55
247.242	3.6477	234.148	274.146
247.078	3.45583	246.586	289.366
246.914	3.55176	225.844	281.55
246.75	3.16803	224.344	315.654
246.585	3.6477	277.969	274.146
246.421	3.45583	223.453	289.366
246.257	3.55176	222.133	281.55
246.093	3.45583	222.281	289.366
245.929	3.6477	212.008	274.146
245.765	3.45583	228.563	289.366
245.601	3.55176	210.977	281.55
245.437	3.6477	265.375	274.146
245.273	3.55176	219.852	281.55
245.109	3.45583	228.391	289.366
244.945	3.6477	222.867	274.146
244.781	3.55176	236.648	281.55
244.617	3.6477	262.125	274.146
244.453	3.6477	243.188	274.146
244.289	3.55176	230.578	281.55
244.125	3.55176	201.773	281.55
243.961	3.55176	217.984	281.55
243.797	3.6477	218.992	274.146
243.633	3.26396	212.398	306.376
243.469	3.83956	244.328	260.446
243.305	3.45583	217.805	289.366
243.141	3.26396	217.688	306.376
242.977	3.55176	272.953	281.55
242.813	3.55176	222.344	281.55
242.648	3.45583	245.156	289.366
242.484	3.45583	226.852	289.366
242.32	3.45583	235.43	289.366
242.156	3.55176	218.766	281.55
241.992	3.26396	227.992	306.376
241.828	3.45583	204.555	289.366
241.664	3.55176	272.422	281.55
241.5	3.45583	222.523	289.366
241.336	3.45583	229.141	289.366
241.172	3.6477	246.797	274.146
241.008	3.55176	242.219	281.55
240.844	3.55176	191.219	281.55
240.68	3.45583	184.813	289.366
240.516	3.45583	226.305	289.366
240.352	3.55176	240.742	281.55
240.188	3.55176	221.711	281.55
240.024	3.26396	229.188	306.376
239.86	3.45583	230.383	289.366
239.696	3.55176	211.859	281.55
239.532	3.45583	220.469	289.366
239.368	3.55176	236.539	281.55
239.204	3.55176	229.93	281.55
239.04	3.45583	193.195	289.366
238.876	3.55176	203.422	281.55
238.712	3.45583	234.445	289.366
238.547	3.26396	195.188	306.376
238.383	3.55176	235.195	281.55
238.219	3.45583	218.68	289.366
238.055	3.6477	212.82	274.146
237.891	3.55176	220.117	281.55
237.727	3.45583	237.242	289.366
237.563	3.45583	234.18	289.366
237.399	3.45583	233.016	289.366
237.235	3.26396	215.414	306.376
237.071	3.6477	204.164	274.146
236.907	3.26396	212.219	306.376
236.743	3.45583	220.453	289.366
236.579	3.45583	209.266	289.366
236.415	3.55176	223.047	281.55
236.251	3.45583	222.375	289.366
236.087	3.26396	254.766	306.376
235.923	3.55176	215.484	281.55
235.759	3.55176	235.352	281.55

235.595	3.45583	212.273	289.366
235.431	3.16803	202.953	315.654
235.267	3.45583	237.063	289.366
235.103	3.45583	232.875	289.366
234.939	3.55176	239.234	281.55
234.775	3.45583	203.32	289.366
234.611	3.6477	255.281	274.146
234.446	3.16803	245.852	315.654
234.282	3.45583	231.734	289.366
234.118	3.45583	217.102	289.366
233.954	3.55176	202.359	281.55
233.79	3.16803	205.156	315.654
233.626	3.26396	174.273	306.376
233.462	2.97616	270.656	336.003
233.298	3.26396	185.477	306.376
233.134	3.26396	222.883	306.376
232.97	3.16803	208.633	315.654
232.806	3.26396	194.492	306.376
232.642	3.26396	245.047	306.376
232.478	3.16803	215.258	315.654
232.314	2.97616	199.516	336.003
232.15	3.26396	229.531	306.376
231.986	3.26396	252.289	306.376
231.822	3.45583	218.141	289.366
231.658	3.45583	248.508	289.366
231.494	3.45583	227.867	289.366
231.33	3.16803	214.508	315.654
231.166	3.55176	244.484	281.55
231.002	3.55176	235.367	281.55
230.838	3.26396	217.102	306.376
230.674	3.55176	236.438	281.55
230.51	3.26396	251.484	306.376
230.345	3.26396	223.492	306.376
230.181	3.26396	225.508	306.376
230.017	2.97616	249.281	336.003
229.853	3.26396	247.367	306.376
229.689	3.26396	191.43	306.376
229.525	3.45583	168.641	289.366
229.361	3.26396	191.031	306.376
229.197	3.26396	209.977	306.376
229.033	3.45583	234.852	289.366
228.869	3.45583	244.023	289.366
228.705	3.26396	198.852	306.376
228.541	3.26396	229.148	306.376
228.377	3.26396	244.148	306.376
228.213	2.97616	236.016	336.003
228.049	3.45583	227.281	289.366
227.885	3.26396	227.867	306.376
227.721	3.26396	234.07	306.376
227.557	3.55176	214.055	281.55
227.393	3.26396	195.156	306.376
227.229	2.97616	203.18	336.003
227.065	3.16803	186.563	315.654
226.901	3.45583	214.727	289.366
226.737	3.45583	234.75	289.366
226.573	3.26396	198.828	306.376
226.409	3.45583	221.281	289.366
226.244	3.55176	230.68	281.55
226.08	3.45583	189.578	289.366
225.916	3.26396	224.281	306.376
225.752	3.16803	214.734	315.654
225.588	2.97616	198.102	336.003
225.424	3.26396	186.719	306.376
225.26	3.45583	213.203	289.366
225.096	3.26396	245.539	306.376
224.932	3.83956	208.641	260.446
224.768	3.9355	199.867	254.097
224.604	3.55176	233.086	281.55
224.44	3.55176	174.234	281.55
224.276	3.83956	241.109	260.446
224.112	3.45583	209.813	289.366
223.948	3.6477	201.945	274.146
223.784	3.45583	203.68	289.366
223.62	3.83956	215.391	260.446
223.456	3.45583	196.016	289.366
223.292	3.55176	159.969	281.55
223.128	3.83956	248.461	260.446
222.964	3.55176	195.703	281.55
222.8	3.83956	221.484	260.446
222.636	3.6477	190.016	274.146
222.472	3.6477	190.445	274.146
222.307	3.83956	194.563	260.446
222.143	3.55176	196.484	281.55
221.979	3.6477	203.5	274.146
221.815	3.6477	162.711	274.146
221.651	3.83956	199.289	260.446
221.487	3.6477	222.414	274.146
221.323	3.83956	202.867	260.446
221.159	4.12736	188.438	242.285
220.995	3.83956	184.734	260.446
220.831	3.83956	217.438	260.446
220.667	3.9355	217.172	254.097
220.503	3.6477	210.969	274.146
220.339	3.9355	190.641	254.097
220.175	3.83956	210.008	260.446
220.011	3.9355	163.227	254.097
219.847	3.6477	223.328	274.146
219.683	4.12736	229.086	242.285
219.519	3.83956	203.727	260.446
219.355	3.9355	206.953	254.097
219.191	4.12736	197.664	242.285
219.027	3.6477	200.664	274.146
218.863	4.12736	197.023	242.285
218.699	3.83956	222.969	260.446
218.535	3.83956	228.781	260.446
218.371	3.45583	213.977	289.366
218.206	3.83956	210.008	260.446
218.042	4.12736	224.555	242.285
217.878	3.9355	220.891	254.097
217.714	3.9355	198.117	254.097
217.55	3.6477	212.32	274.146
217.386	3.83956	204.508	260.446
217.222	4.12736	227.43	242.285
217.058	4.12736	190.859	242.285
216.894	3.83956	201.813	260.446
216.73	4.12736	149.32	242.285
216.566	4.12736	201.969	242.285

216.402	3.83956	188.258	260.446
216.238	4.12736	214.375	242.285
216.074	3.9355	207.75	254.097
215.91	4.12736	181.141	242.285
215.746	4.12736	186.313	242.285
215.582	3.83956	216.68	260.446
215.418	4.12736	210.813	242.285
215.254	3.9355	225.617	254.097
215.09	3.9355	203.008	254.097
214.926	3.83956	247.008	260.446
214.762	3.83956	184.289	260.446
214.598	3.83956	178.75	260.446
214.434	3.83956	206.203	260.446
214.27	4.12736	253.898	242.285
214.105	3.9355	188.914	254.097
213.941	4.12736	178.609	242.285
213.777	4.12736	257.75	242.285
213.613	3.9355	213.93	254.097
213.449	3.83956	230.938	260.446
213.285	3.6477	207.211	274.146
213.121	3.6477	227.898	274.146
212.957	4.2233	241.5	236.782
212.793	3.9355	211.156	254.097
212.629	3.83956	229.82	260.446
212.465	3.83956	180.563	260.446
212.301	3.9355	220.438	254.097
212.137	3.9355	219.516	254.097
211.973	3.9355	210.266	254.097
211.809	3.6477	183.844	274.146
211.645	3.9355	234.445	254.097
211.481	3.83956	234.914	260.446
211.317	3.9355	229.68	254.097
211.153	3.83956	219.711	260.446
210.989	4.12736	223.742	242.285
210.825	3.9355	199.453	254.097
210.661	3.83956	223.797	260.446
210.497	3.6477	214.688	274.146
210.333	3.55176	222.602	281.55
210.169	3.83956	237.992	260.446
210.004	3.83956	196.82	260.446
209.84	3.9355	174.781	254.097
209.676	4.12736	187.297	242.285
209.512	3.83956	206.219	260.446
209.348	3.83956	194.18	260.446
209.184	3.9355	225.328	254.097
209.02	3.6477	183.578	274.146
208.856	3.6477	203.32	274.146
208.692	3.6477	222.359	274.146
208.528	3.83956	225.633	260.446
208.364	3.83956	183.055	260.446
208.2	3.83956	236.672	260.446
208.036	3.9355	184.875	254.097
207.872	3.83956	196.094	260.446
207.708	3.83956	212.289	260.446
207.544	3.83956	193.484	260.446
207.38	3.83956	195.25	260.446
207.216	3.83956	214.859	260.446
207.052	4.12736	219.516	242.285
206.888	3.83956	223.477	260.446
206.724	3.9355	197.141	254.097
206.56	3.83956	224.813	260.446
206.396	4.2233	194.742	236.782
206.232	4.12736	182.539	242.285
206.067	4.12736	214.641	242.285
205.903	3.9355	185.438	254.097
205.739	3.83956	216.602	260.446
205.575	3.83956	199.445	260.446
205.411	3.6477	199.867	274.146
205.247	3.83956	209.805	260.446
205.083	3.6477	183.352	274.146
204.919	3.83956	182.555	260.446
204.755	3.83956	174.117	260.446
204.591	3.6477	193.266	274.146
204.427	3.83956	215.852	260.446
204.263	3.83956	195.063	260.446
204.099	3.83956	192	260.446
203.935	3.6477	197.453	274.146
203.771	3.83956	186.055	260.446
203.607	3.83956	242.039	260.446
203.443	3.9355	193.008	254.097
203.279	3.9355	212.133	254.097
203.115	3.45583	200.969	289.366
202.951	3.55176	206.219	281.55
202.787	3.83956	209.961	260.446
202.623	3.55176	200.258	281.55
202.459	3.83956	177.75	260.446
202.295	3.9355	198.461	254.097
202.131	3.6477	201.336	274.146
201.966	3.9355	186.602	254.097
201.802	3.83956	200.195	260.446
201.638	3.55176	219.156	281.55
201.474	3.6477	205.578	274.146
201.31	3.45583	219.563	289.366
201.146	3.45583	222.969	289.366
200.982	3.26396	208.172	306.376
200.818	3.9355	204.273	254.097
200.654	3.6477	179.313	274.146
200.49	3.55176	185.633	281.55
200.326	3.83956	196.102	260.446
200.162	3.45583	181	289.366
199.998	3.6477	170	274.146
199.834	3.55176	191.523	281.55
199.67	3.45583	189.508	289.366
199.506	3.45583	225.25	289.366
199.342	3.26396	202.664	306.376
199.178	3.45583	214.922	289.366
199.014	3.6477	210.758	274.146
198.85	3.26396	204.094	306.376
198.686	3.16803	222.156	315.654
198.522	3.16803	236.672	315.654
198.358	3.16803	223.023	315.654
198.194	3.26396	230.617	306.376
198.03	3.26396	218.813	306.376
197.865	3.16803	187.008	315.654
197.701	3.26396	209.031	306.376
197.537	3.26396	184.516	306.376
197.373	3.45583	195.008	289.366

197.209	3.45583	192.773	289.366
197.045	3.26396	189.039	306.376
196.881	3.45583	215.953	289.366
196.717	3.26396	208.875	306.376
196.553	3.26396	188.148	306.376
196.389	3.26396	216.531	306.376
196.225	3.16803	203.031	315.654
196.061	3.45583	202.305	289.366
195.897	3.26396	192.391	306.376
195.733	3.16803	200.773	315.654
195.569	3.16803	204.438	315.654
195.405	3.26396	254.602	306.376
195.241	3.26396	202.32	306.376
195.077	3.26396	203.57	306.376
194.913	3.45583	176.648	289.366
194.749	2.97616	185.539	336.003
194.585	3.26396	219.688	306.376
194.421	3.45583	206.758	289.366
194.257	3.16803	209.07	315.654
194.093	3.26396	203.188	306.376
193.929	2.97616	220.672	336.003
193.764	3.26396	208.125	306.376
193.6	3.16803	192.906	315.654
193.436	3.16803	226.492	315.654
193.272	3.16803	206.711	315.654
193.108	3.45583	192.727	289.366
192.944	3.16803	199.938	315.654
192.78	3.45583	210.242	289.366
192.616	3.16803	179.922	315.654
192.452	3.26396	195.836	306.376
192.288	3.26396	198.563	306.376
192.124	3.16803	204.297	315.654
191.96	3.45583	188.648	289.366
191.796	2.88023	187.695	347.195
191.632	3.55176	215.125	281.55
191.468	2.97616	178.836	336.003
191.304	3.16803	208.086	315.654
191.14	3.26396	188.094	306.376
190.976	3.55176	197.141	281.55
190.812	3.16803	216.188	315.654
190.648	3.26396	185.563	306.376
190.484	3.16803	220.352	315.654
190.32	3.16803	199.648	315.654
190.156	3.55176	217.18	281.55
189.992	3.16803	229.484	315.654
189.828	2.97616	207.125	336.003
189.663	3.45583	213.875	289.366
189.499	3.55176	178.984	281.55
189.335	2.88023	225.516	347.195
189.171	3.55176	215.352	281.55
189.007	3.16803	195.391	315.654
188.843	3.55176	195.977	281.55
188.679	3.16803	182.141	315.654
188.515	3.26396	226.859	306.376
188.351	3.26396	223.531	306.376
188.187	3.45583	215.313	289.366
188.023	3.45583	193.742	289.366
187.859	3.26396	237.234	306.376
187.695	3.55176	170.898	281.55
187.531	3.16803	188.031	315.654
187.367	2.97616	185.711	336.003
187.203	2.97616	193.344	336.003
187.039	3.26396	170.789	306.376
186.875	3.16803	202.328	315.654
186.711	3.45583	202.305	289.366
186.547	3.45583	197.109	289.366
186.383	2.97616	209.25	336.003
186.219	3.26396	206.398	306.376
186.055	3.26396	209.414	306.376
185.891	3.26396	232.57	306.376
185.726	3.16803	209.805	315.654
185.562	3.45583	186.023	289.366
185.398	3.16803	205.781	315.654
185.234	3.16803	182.477	315.654
185.07	3.26396	182.547	306.376
184.906	3.45583	217.148	289.366
184.742	3.26396	177.57	306.376
184.578	3.55176	196.328	281.55
184.414	3.45583	195.969	289.366
184.25	3.16803	194.406	315.654
184.086	3.55176	225.352	281.55
183.922	3.45583	199.023	289.366
183.758	3.26396	213.68	306.376
183.594	3.6477	214.375	274.146
183.43	3.45583	232.898	289.366
183.266	3.16803	212.398	315.654
183.102	3.55176	180.391	281.55
182.938	3.26396	212.836	306.376
182.774	3.26396	216.336	306.376
182.61	3.26396	226.477	306.376
182.446	3.26396	204.148	306.376
182.282	3.45583	200.477	289.366
182.118	3.55176	214.141	281.55
181.954	3.45583	205.07	289.366
181.79	3.45583	215.516	289.366
181.625	3.55176	175.594	281.55
181.461	3.55176	205.398	281.55
181.297	3.55176	206.266	281.55
181.133	3.55176	200.25	281.55
180.969	3.45583	150.906	289.366
180.805	3.45583	181.938	289.366
180.641	3.16803	202.305	315.654
180.477	3.55176	232.781	281.55
180.313	3.45583	205.711	289.366
180.149	3.16803	237.523	315.654
179.985	2.97616	198.281	336.003
179.821	3.45583	183.656	289.366
179.657	3.6477	183.055	274.146
179.493	3.45583	211.672	289.366
179.329	3.6477	166.141	274.146
179.165	3.6477	178.477	274.146
179.001	3.55176	176.125	281.55
178.837	3.55176	213.148	281.55
178.673	3.55176	217.859	281.55
178.509	3.6477	198.82	274.146
178.345	3.83956	192.461	260.446
178.181	3.55176	157.789	281.55

178.017	3.55176	197.109	281.55
177.853	3.6477	174.602	274.146
177.689	3.9355	149.273	254.097
177.524	4.2233	190.383	236.782
177.36	3.9355	156.398	254.097
177.196	4.12736	178.078	242.285
177.032	4.12736	159.617	242.285
176.868	4.12736	132.758	242.285
176.704	4.41517	147.266	226.492
176.54	4.5111	129.75	221.675
176.376	4.12736	132.07	242.285
176.212	4.2233	119.336	236.782
176.048	4.2233	126.641	236.782
175.884	4.2233	137.633	236.782
175.72	4.41517	131.477	226.492
175.556	4.2233	152.234	236.782
175.392	4.7989	112.387	208.381
175.228	5.3745	132.234	186.064
175.064	5.85417	134.75	170.818
174.9	6.04603	201.164	165.398
174.736	6.14197	149.227	162.814
174.572	5.75823	135.641	173.664
174.408	6.04603	163.031	165.398
174.244	6.33384	161.477	157.882
174.08	6.14197	130.469	162.814
173.916	6.14197	166.266	162.814
173.752	6.14197	127.613	162.814
173.588	6.14197	129.992	162.814
173.423	6.14197	149.836	162.814
173.259	6.14197	158.828	162.814
173.095	5.56637	208.531	179.65
172.931	5.75823	150.578	173.664
172.767	6.33384	157.773	157.882
172.603	5.56637	173.078	179.65
172.439	5.47043	148.703	182.801
172.275	6.04603	176.414	165.398
172.111	6.14197	155.117	162.814
171.947	5.47043	154.07	182.801
171.783	4.7989	158.25	208.381
171.619	4.60703	175.492	217.059
171.455	4.60703	154.789	217.059
171.291	5.0867	139.477	196.591
171.127	4.7989	152.422	208.381
170.963	5.18263	153.719	192.952
170.799	5.18263	175.273	192.952
170.635	5.18263	142.438	192.952
170.471	5.3745	127.813	186.064
170.307	5.3745	152.148	186.064
170.143	4.7989	162.828	208.381
169.979	4.60703	143.07	217.059
169.815	5.18263	152.781	192.952
169.651	4.89483	127.824	204.297
169.486	4.89483	156.055	204.297
169.322	5.47043	172.203	182.801
169.158	5.47043	169.469	182.801
168.994	5.56637	142.273	179.65
168.83	5.3745	151.453	186.064
168.666	5.56637	142.75	179.65
168.502	5.75823	173.172	173.664
168.338	5.75823	138.852	173.664
168.174	5.56637	161	179.65
168.01	5.47043	118.254	182.801
167.846	5.75823	158.781	173.664
167.682	5.47043	159.375	182.801
167.518	4.7989	177.297	208.381
167.354	5.18263	149.211	192.952
167.19	5.3745	152.828	186.064
167.026	5.75823	147.727	173.664
166.862	5.85417	163.992	170.818
166.698	6.71757	144.875	148.863
166.534	6.04603	153.75	165.398
166.37	5.75823	146.016	173.664
166.206	5.56637	162.188	179.65
166.042	5.47043	163.195	182.801
165.878	4.5111	154.82	221.675
165.714	5.3745	139.711	186.064
165.55	6.04603	153.609	165.398
165.385	6.04603	181.203	165.398
165.221	5.85417	164.352	170.818
165.057	6.04603	154.305	165.398
164.893	6.04603	147.961	165.398
164.729	6.04603	163.648	165.398
164.565	5.75823	172.445	173.664
164.401	5.85417	185.742	170.818
164.237	5.85417	168.367	170.818
164.073	5.85417	155.094	170.818
163.909	5.56637	175.867	179.65
163.745	5.75823	164.977	173.664
163.581	5.56637	160.5	179.65
163.417	6.04603	185.563	165.398
163.253	6.04603	160.531	165.398
163.089	6.14197	126.289	162.814
162.925	6.04603	149.961	165.398
162.761	6.42977	149.023	155.527
162.597	6.14197	141.109	162.814
162.433	5.75823	175.297	173.664
162.269	5.56637	194.766	179.65
162.105	5.18263	146.578	192.952
161.941	5.18263	170.273	192.952
161.777	5.18263	162.93	192.952
161.613	5.18263	162.781	192.952
161.449	5.18263	140.539	192.952
161.284	5.56637	179.961	179.65
161.12	5.0867	165.828	196.591
160.956	4.7989	161.008	208.381
160.792	4.60703	165.109	217.059
160.628	4.41517	178.664	226.492
160.464	4.60703	139.773	217.059
160.3	5.0867	149.148	196.591
160.136	4.89483	192.883	204.297
159.972	4.41517	178.766	226.492
159.808	4.89483	177.797	204.297
159.644	5.0867	168.523	196.591
159.48	4.89483	172.773	204.297
159.316	4.89483	155.352	204.297
159.152	5.47043	135.852	182.801
158.988	5.0867	130.344	196.591

158.824	5.18263	169.32	192.952
158.66	5.56637	147.023	179.65
158.496	6.04603	171.781	165.398
158.332	5.56637	160.75	179.65
158.168	6.04603	160.375	165.398
158.004	6.04603	184.188	165.398
157.84	6.42977	163.969	155.527
157.676	6.33384	155.297	157.882
157.512	6.5257	178.453	153.24
157.348	6.42977	153.586	155.527
157.183	6.33384	179.234	157.882
157.019	6.04603	179.164	165.398
156.855	5.75823	166.867	173.664
156.691	5.56637	137.242	179.65
156.527	5.18263	155.852	192.952
156.363	4.60703	169.891	217.059
156.199	4.7989	161.758	208.381
156.035	4.7989	156.664	208.381
155.871	5.0867	163.008	196.591
155.707	5.47043	165.875	182.801
155.543	5.56637	147.445	179.65
155.379	5.75823	200.492	173.664
155.215	6.04603	175.297	165.398
155.051	6.04603	179.867	165.398
154.887	5.47043	134.641	182.801
154.723	5.3745	153.961	186.064
154.559	5.0867	170.164	196.591
154.395	4.7989	181.469	208.381
154.231	5.0867	185.609	196.591
154.067	5.3745	162.719	186.064
153.903	5.47043	170.984	182.801
153.739	5.85417	155.711	170.818
153.575	6.14197	182.172	162.814
153.411	6.8135	228	146.767
153.247	7.00537	185.977	142.748
153.082	7.3891	201.828	135.334
152.918	7.77284	211.406	128.653
152.754	8.34844	193.43	119.783
152.59	8.92404	183.992	112.057
152.426	9.69151	220.594	103.183
152.262	10.5549	192.18	94.7426
152.098	11.5142	208.25	86.8489
151.934	13.0492	240.828	76.6332
151.77	14.4882	215.414	69.0218
151.606	15.6394	239.375	63.9411
151.442	16.5987	237.266	60.2456
151.278	17.654	212.133	56.6444
151.114	18.8052	195.492	53.1768
150.95	19.8605	266.625	50.3513
150.786	21.0117	229.047	47.5926
150.622	21.971	231.539	45.5146
150.458	22.6425	251.281	44.1647
150.294	22.6425	238.93	44.1647
150.13	22.2588	242.18	44.9261
149.966	21.2035	257.406	47.162
149.802	20.0523	239.414	49.8695
149.638	18.5174	228.984	54.0033
149.474	17.1743	261.563	58.2265
149.31	15.9272	224.695	62.7857
149.145	14.68	221.594	68.1197
148.981	14.3922	209.266	69.4818
148.817	13.5288	216.234	73.9161
148.653	13.337	235.352	74.9795
148.489	12.7614	207.883	78.3614
148.325	11.802	236.102	84.7311
148.161	11.6102	216	86.1313
147.997	11.1305	234.047	89.8431
147.833	10.6508	243.859	93.8893
147.669	10.2671	218.789	97.3984
147.505	10.363	229.773	96.4968
147.341	9.97931	250.836	100.207
147.177	9.97931	248.563	100.207
147.013	10.2671	254.469	97.3984
146.849	10.2671	235.086	97.3984
146.685	10.363	247.555	96.4968
146.521	10.1712	211.25	98.3171
146.357	10.2671	203.984	97.3984
146.193	9.97931	234.109	100.207
146.029	10.363	214.844	96.4968
145.865	10.363	221.352	96.4968
145.701	10.2671	224.422	97.3984
145.537	10.363	228.914	96.4968
145.373	10.2671	203.336	97.3984
145.209	10.2671	152.922	97.3984
145.044	10.2671	207.805	97.3984
144.88	10.1712	164.992	98.3171
144.716	10.2671	206.563	97.3984
144.552	10.363	188.305	96.4968
144.388	10.2671	190.586	97.3984
144.224	9.97931	171.438	100.207
144.06	9.88337	175.125	101.18
143.896	9.40371	201.805	106.341
143.732	8.92404	225.328	112.057
143.568	8.63624	215.023	115.791
143.404	8.73217	174.883	114.519
143.24	8.92404	205.32	112.057
143.076	9.21184	241.078	108.556
142.912	9.59557	230.672	104.215
142.748	9.69151	186.203	103.183
142.584	9.59557	216.414	104.215
142.42	9.88337	233.859	101.18
142.256	9.97931	241.984	100.207
142.092	9.97931	220.813	100.207
141.928	10.363	233.703	96.4968
141.764	10.1712	228.547	98.3171
141.6	10.2671	200.719	97.3984
141.436	10.2671	214.711	97.3984
141.272	10.1712	196.352	98.3171
141.108	10.1712	178.602	98.3171
140.943	10.363	208.773	96.4968
140.779	10.363	233.875	96.4968
140.615	10.2671	238.055	97.3984
140.451	10.2671	221.25	97.3984
140.287	10.363	248.461	96.4968
140.123	10.5549	236.18	94.7426
139.959	10.5549	273.703	94.7426
139.795	10.2671	263.734	97.3984

139.631	10.5549	282.688	94.7426
139.467	10.363	238.594	96.4968
139.303	10.5549	237.781	94.7426
139.139	10.2671	287.516	97.3984
138.975	10.1712	310.391	98.3171
138.811	10.2671	261.484	97.3984
138.647	9.69151	277.078	103.183
138.483	9.40371	310.172	106.341
138.319	9.59557	287.234	104.215
138.155	9.30777	276.703	107.437
137.991	9.30777	263.125	107.437
137.827	8.92404	269.531	112.057
137.663	8.44437	260.141	118.422
137.499	8.06064	302.578	124.06
137.335	7.9647	269.734	125.554
137.171	7.48504	264.641	133.6
137.007	7.29317	282.141	137.115
136.842	6.8135	322.297	146.767
136.678	6.5257	295.75	153.24
136.514	6.14197	253.406	162.814
136.35	6.04603	264.625	165.398
136.186	5.85417	270.359	170.818
136.022	5.47043	282.266	182.801
135.858	5.3745	282.094	186.064
135.694	4.7989	261.969	208.381
135.53	4.60703	268.516	217.059
135.366	4.5111	298.359	221.675
135.202	4.2233	332.094	236.782
135.038	4.41517	305.031	226.492
134.874	3.9355	267.578	254.097
134.71	4.2233	241.648	236.782
134.546	3.9355	270.844	254.097
134.382	3.55176	252.953	281.55
134.218	3.83956	273.328	260.446
134.054	3.6477	242.25	274.146
133.89	3.55176	335.5	281.55
133.726	3.6477	305.094	274.146
133.562	3.55176	285.156	281.55
133.398	3.55176	316.75	281.55
133.234	3.55176	268.438	281.55
133.07	3.26396	260.5	306.376
132.906	3.45583	296.047	289.366
132.741	3.26396	252.539	306.376
132.577	3.26396	293.344	306.376
132.413	3.16803	308.969	315.654
132.249	3.16803	255.828	315.654
132.085	3.55176	239.289	281.55
131.921	3.45583	295.828	289.366
131.757	2.97616	258.078	336.003
131.593	3.26396	268.531	306.376
131.429	2.97616	293.359	336.003
131.265	3.26396	278.797	306.376
131.101	2.88023	260.906	347.195
130.937	3.16803	253.672	315.654
130.773	3.16803	309.063	315.654
130.609	2.88023	256.297	347.195
130.445	2.88023	280.328	347.195
130.281	2.68836	276.125	371.974
130.117	2.97616	253.641	336.003
129.953	3.26396	321.484	306.376
129.789	2.68836	243.75	371.974
129.625	2.97616	288.125	336.003
129.461	2.68836	283.547	371.974
129.297	2.88023	284.438	347.195
129.133	2.97616	280.234	336.003
128.969	2.88023	286.063	347.195
128.804	2.68836	236.445	371.974
128.64	2.97616	240.797	336.003
128.476	2.97616	248.453	336.003
128.312	2.88023	256.703	347.195
128.148	2.68836	249.547	371.974
127.984	2.59243	258.109	385.739
127.82	2.97616	252.656	336.003
127.656	2.68836	252.953	371.974
127.492	2.68836	276.094	371.974
127.328	2.97616	251.656	336.003
127.164	2.68836	242.555	371.974
127	2.88023	277.422	347.195
126.836	2.97616	287.078	336.003
126.672	2.97616	260.031	336.003
126.508	2.68836	276.125	371.974
126.344	2.88023	251.023	347.195
126.18	2.68836	281.578	371.974
126.016	2.88023	262	347.195
125.852	2.59243	293.641	385.739
125.688	2.68836	288	371.974
125.524	3.16803	263.5	315.654
125.36	2.68836	270.891	371.974
125.196	2.88023	276.844	347.195
125.032	2.68836	260.719	371.974
124.868	2.97616	256.875	336.003
124.703	2.88023	285.094	347.195
124.539	2.97616	306.266	336.003
124.375	2.88023	262.188	347.195
124.211	2.4965	275.734	400.562
124.047	3.16803	276.75	315.654
123.883	2.97616	250.813	336.003
123.719	2.88023	305.344	347.195
123.555	3.16803	257.688	315.654
123.391	2.68836	301.313	371.974
123.227	2.59243	278.453	385.739
123.063	2.97616	315.063	336.003
122.899	2.97616	251.805	336.003
122.735	2.97616	266.938	336.003
122.571	2.59243	274.063	385.739
122.407	2.88023	257.359	347.195
122.243	2.97616	275.328	336.003
122.079	2.97616	253.227	336.003
121.915	2.68836	248.797	371.974
121.751	2.88023	279.25	347.195
121.587	2.97616	275.313	336.003
121.423	3.16803	282.078	315.654
121.259	2.88023	295.063	347.195
121.095	2.97616	260.844	336.003
120.931	2.97616	290.641	336.003
120.767	2.88023	246.273	347.195
120.602	2.88023	279.844	347.195

120.438	2.88023	302.031	347.195
120.274	2.68836	236.883	371.974
120.11	2.88023	266.984	347.195
119.946	2.59243	307.359	385.739
119.782	2.68836	298.547	371.974
119.618	2.88023	315.75	347.195
119.454	2.59243	280.797	385.739
119.29	2.59243	281.906	385.739
119.126	2.68836	257.891	371.974
118.962	2.97616	294.578	336.003
118.798	2.88023	306.906	347.195
118.634	2.68836	282.609	371.974
118.47	2.88023	269.141	347.195
118.306	2.68836	265.922	371.974
118.142	2.59243	263.469	385.739
117.978	2.68836	287.953	371.974
117.814	2.4965	250.719	400.562
117.65	2.59243	281.422	385.739
117.486	2.68836	243.102	371.974
117.322	2.68836	288.797	371.974
117.158	2.68836	309.016	371.974
116.994	2.97616	281.531	336.003
116.83	2.4965	270.547	400.562
116.666	2.97616	262.703	336.003
116.501	2.59243	276.188	385.739
116.337	2.59243	280.5	385.739
116.173	2.68836	299.484	371.974
116.009	2.88023	318.953	347.195
115.845	2.4965	297.609	400.562
115.681	2.59243	259.188	385.739
115.517	2.68836	271.813	371.974
115.353	2.59243	270.469	385.739
115.189	2.59243	299.578	385.739
115.025	2.88023	275.953	347.195
114.861	2.68836	291.984	371.974
114.697	2.4965	279.547	400.562
114.533	2.68836	298.891	371.974
114.369	2.4965	280.375	400.562
114.205	2.4965	295.781	400.562
114.041	2.97616	284.938	336.003
113.877	2.4965	282.266	400.562
113.713	2.4965	256.813	400.562
113.549	2.59243	276.906	385.739
113.385	2.4965	278.547	400.562
113.221	2.88023	253.234	347.195
113.057	2.4965	296.281	400.562
112.893	2.68836	286.844	371.974
112.729	2.30463	278.125	433.91
112.564	2.59243	260.406	385.739
112.4	2.59243	292.813	385.739
112.236	2.59243	288.922	385.739
112.072	2.30463	288.797	433.91
111.908	2.59243	306.625	385.739
111.744	2.59243	269.078	385.739
111.58	2.30463	268.125	433.91
111.416	2.59243	259.047	385.739
111.252	2.4965	262.594	400.562
111.088	2.59243	280.516	385.739
110.924	2.4965	296.047	400.562
110.76	2.88023	272.922	347.195
110.596	2.4965	283.234	400.562
110.432	2.59243	287.672	385.739
110.268	2.20869	278.188	452.756
110.104	2.59243	290.563	385.739
109.94	2.01683	304.688	495.828
109.776	2.59243	285.625	385.739
109.612	2.4965	259.922	400.562
109.448	2.59243	298.5	385.739
109.284	2.68836	291.922	371.974
109.12	2.4965	281.109	400.562
108.956	2.30463	258.109	433.91
108.792	2.30463	294.031	433.91
108.628	2.4965	277.016	400.562
108.463	2.30463	271.578	433.91
108.299	2.59243	258.172	385.739
108.135	2.30463	278.641	433.91
107.971	2.4965	297.625	400.562
107.807	2.4965	257.047	400.562
107.643	2.20869	254.859	452.756
107.479	2.4965	285.703	400.562
107.315	2.30463	260.938	433.91
107.151	2.4965	285.438	400.562
106.987	2.4965	273.703	400.562
106.823	2.4965	291.5	400.562
106.659	2.30463	284.5	433.91
106.495	2.20869	293.953	452.756
106.331	2.59243	262.656	385.739
106.167	2.30463	238.703	433.91
106.003	2.4965	319.016	400.562
105.839	2.20869	274.391	452.756
105.675	2.30463	276.906	433.91
105.511	2.30463	276.328	433.91
105.347	2.30463	319.094	433.91
105.183	2.30463	300.516	433.91
105.019	2.4965	287.469	400.562
104.855	2.59243	276.031	385.739
104.691	2.30463	288.25	433.91
104.527	2.4965	292.031	400.562
104.362	2.30463	254.625	433.91
104.198	2.30463	271.25	433.91
104.034	2.01683	271.688	495.828
103.87	2.30463	276.438	433.91
103.706	2.30463	276.766	433.91
103.542	2.01683	278.531	495.828
103.378	2.20869	284.813	452.756
103.214	2.20869	248.836	452.756
103.05	2.30463	288.844	433.91
102.886	2.30463	267.219	433.91
102.722	2.4965	264.734	400.562
102.558	2.20869	263.578	452.756
102.394	2.20869	262.047	452.756
102.23	2.20869	283.703	452.756
102.066	2.30463	246.719	433.91
101.902	2.01683	254.656	495.828
101.738	1.92089	289.063	520.591
101.574	2.30463	275.297	433.91
101.41	2.30463	255.516	433.91

101.246	2.01683	252.305	495.828
101.082	2.30463	298.391	433.91
100.918	2.30463	287.813	433.91
100.754	2.30463	267.031	433.91
100.59	2.20869	272.75	452.756
100.426	1.92089	261.047	520.591
100.261	2.59243	259.875	385.739
100.097	2.01683	286.219	495.828
99.9334	2.30463	245	433.91
99.7693	2.30463	280.922	433.91
99.6053	2.20869	288.625	452.756
99.4413	1.92089	289.625	520.591
99.2772	1.92089	286.141	520.591
99.1132	2.01683	278.797	495.828
98.9491	2.20869	302.422	452.756
98.7851	1.92089	297	520.591
98.6211	2.20869	242.219	452.756
98.457	2.20869	272.984	452.756
98.293	1.72903	266.625	578.36
98.1289	2.30463	276.375	433.91
97.9649	2.01683	303.469	495.828
97.8009	2.01683	287.5	495.828
97.6368	2.01683	290.625	495.828
97.4728	1.92089	274.953	520.591
97.3087	2.01683	284.219	495.828
97.1447	1.63309	273.766	612.335
96.9807	2.20869	266.094	452.756
96.8166	2.30463	283.906	433.91
96.6526	2.30463	282.609	433.91
96.4885	2.01683	283.984	495.828
96.3245	2.01683	262.734	495.828
96.1605	2.01683	308.938	495.828
95.9964	1.92089	285.422	520.591
95.8324	1.72903	281.891	578.36
95.6683	1.92089	238.508	520.591
95.5043	2.01683	274.719	495.828
95.3403	2.01683	249.164	495.828
95.1762	2.20869	274.281	452.756
95.0122	2.01683	256.266	495.828
94.8481	2.01683	301.219	495.828
94.6841	2.01683	282.375	495.828
94.5201	1.72903	235.609	578.36
94.356	1.72903	254.633	578.36
94.192	2.20869	277.734	452.756
94.0279	1.92089	281.813	520.591
93.8639	2.20869	288.453	452.756
93.6999	1.92089	267.609	520.591
93.5358	2.01683	278.703	495.828
93.3718	1.92089	269.797	520.591
93.2077	1.63309	250.406	612.335
93.0437	1.92089	314.563	520.591
92.8796	2.30463	282.078	433.91
92.7156	1.92089	254.375	520.591
92.5516	1.72903	310.156	578.36
92.3875	2.01683	325.266	495.828
92.2235	2.01683	256.734	495.828
92.0595	2.01683	270.547	495.828
91.8954	2.01683	261.859	495.828
91.7314	2.01683	304.359	495.828
91.5673	1.92089	294.234	520.591
91.4033	1.72903	293.891	578.36
91.2392	2.30463	284.516	433.91
91.0752	1.72903	315.313	578.36
90.9112	2.20869	267.906	452.756
90.7471	1.92089	239.969	520.591
90.5831	1.92089	297.375	520.591
90.419	2.20869	240.664	452.756
90.255	1.92089	272.156	520.591
90.091	2.01683	232.781	495.828
89.9269	1.92089	273.969	520.591
89.7629	1.72903	299.547	578.36
89.5988	2.01683	254.82	495.828
89.4348	2.01683	253.563	495.828
89.2708	1.92089	281.813	520.591
89.1067	2.30463	256.906	433.91
88.9427	2.01683	288.188	495.828
88.7786	2.01683	315.656	495.828
88.6146	2.20869	261.016	452.756
88.4506	1.72903	299.406	578.36
88.2865	1.92089	293.016	520.591
88.1225	1.92089	250.031	520.591
87.9584	2.20869	272.609	452.756
87.7944	2.01683	269.031	495.828
87.6304	2.01683	268.078	495.828
87.4663	1.92089	289.781	520.591
87.3023	1.72903	289.781	578.36
87.1382	1.92089	287.875	520.591
86.9742	1.92089	276	520.591
86.8102	2.20869	275.625	452.756
86.6461	2.20869	228.852	452.756
86.4821	1.92089	247.32	520.591
86.318	1.92089	254.914	520.591
86.154	2.01683	294.031	495.828
85.99	2.01683	261.422	495.828
85.8259	2.01683	268.234	495.828
85.6619	2.20869	249.234	452.756
85.4978	2.20869	290.266	452.756
85.3338	2.01683	263.25	495.828
85.1698	1.63309	262.578	612.335
85.0057	2.01683	268.953	495.828
84.8417	2.01683	263.297	495.828
84.6776	1.72903	247.773	578.36
84.5136	1.72903	279.625	578.36
84.3496	2.30463	254.953	433.91
84.1855	2.20869	284.172	452.756
84.0215	1.92089	282.172	520.591
83.8574	2.01683	261.734	495.828
83.6934	1.63309	252.875	612.335
83.5293	2.01683	252.398	495.828
83.3653	2.01683	303.094	495.828
83.2013	2.01683	273.859	495.828
83.0372	1.72903	290.016	578.36
82.8732	1.92089	279.594	520.591
82.7092	2.01683	290.375	495.828
82.5451	2.01683	280.125	495.828
82.3811	2.20869	281.031	452.756
82.217	1.92089	311.375	520.591

82.053	1.92089	260.75	520.591
81.8889	1.92089	252.219	520.591
81.7249	2.01683	279.969	495.828
81.5609	1.63309	277.141	612.335
81.3968	1.63309	285.078	612.335
81.2328	1.44123	272.203	693.853
81.0687	1.72903	330.844	578.36
80.9047	1.72903	282.703	578.36
80.7407	1.63309	286.563	612.335
80.5766	1.72903	294.453	578.36
80.4126	1.92089	282.281	520.591
80.2485	1.92089	264.266	520.591
80.0845	1.72903	340.469	578.36
79.9205	1.72903	291.719	578.36
79.7564	1.63309	272.047	612.335
79.5924	1.63309	284.391	612.335
79.4283	1.92089	313.922	520.591
79.2643	1.44123	276.625	693.853
79.1003	1.63309	250.352	612.335
78.9362	1.72903	279.781	578.36
78.7722	1.34529	244.305	743.332
78.6081	1.72903	268.406	578.36
78.4441	1.24936	246.398	800.41
78.2801	1.63309	289.438	612.335
78.116	1.34529	262.266	743.332
77.952	1.72903	269.156	578.36
77.7879	1.63309	288.703	612.335
77.6239	1.34529	270.609	743.332
77.4599	1.63309	254.055	612.335
77.2958	1.63309	310.844	612.335
77.1318	1.63309	266.484	612.335
76.9677	1.72903	254.297	578.36
76.8037	1.72903	257.281	578.36
76.6397	1.72903	286.406	578.36
76.4756	1.34529	269.141	743.332
76.3116	1.63309	239.805	612.335
76.1475	1.34529	269.25	743.332
75.9835	1.34529	271.656	743.332
75.8195	1.63309	254.148	612.335
75.6554	1.63309	289.656	612.335
75.4914	1.34529	291.094	743.332
75.3273	1.63309	294.344	612.335
75.1633	1.72903	307.172	578.36
74.9993	1.34529	295.266	743.332
74.8352	1.44123	263.5	693.853
74.6712	1.34529	283.391	743.332
74.5071	1.72903	298.125	578.36
74.3431	1.63309	284.484	612.335
74.1791	1.72903	290.844	578.36
74.015	1.24936	282.219	800.41
73.851	1.72903	286.406	578.36
73.6869	1.34529	256.578	743.332
73.5229	1.72903	252.586	578.36
73.3588	1.92089	261.141	520.591
73.1948	1.44123	298.969	693.853
73.0308	1.44123	301.063	693.853
72.8667	1.63309	273.875	612.335
72.7027	1.63309	294.844	612.335
72.5386	1.44123	296.453	693.853
72.3746	1.72903	287.156	578.36
72.2106	1.34529	286.688	743.332
72.0465	1.92089	258.281	520.591
71.8825	1.72903	251.516	578.36
71.7184	1.05749	275.438	945.633
71.5544	1.44123	230	693.853
71.3904	1.72903	271.141	578.36
71.2263	1.34529	310.031	743.332
71.0623	1.34529	254.133	743.332
70.8982	1.72903	272.844	578.36
70.7342	2.01683	266.063	495.828
70.5702	1.63309	274.422	612.335
70.4061	2.01683	272.625	495.828
70.2421	1.34529	277.109	743.332
70.078	1.63309	299.531	612.335
69.914	1.72903	263.5	578.36
69.75	1.92089	297.359	520.591
69.5859	1.63309	243.789	612.335
69.4219	1.72903	269.594	578.36
69.2578	1.44123	287.875	693.853
69.0938	1.63309	265.219	612.335
68.9298	1.34529	296.953	743.332
68.7657	1.72903	302.156	578.36
68.6017	1.34529	261.922	743.332
68.4376	1.44123	269.938	693.853
68.2736	1.34529	287.906	743.332
68.1096	1.63309	255.617	612.335
67.9455	1.34529	263.109	743.332
67.7815	1.63309	238.672	612.335
67.6174	1.44123	275.953	693.853
67.4534	1.34529	285.297	743.332
67.2894	1.44123	258.234	693.853
67.1253	1.72903	268.734	578.36
66.9613	1.34529	282.313	743.332
66.7972	1.92089	266.859	520.591
66.6332	1.72903	316.5	578.36
66.4692	1.63309	267.797	612.335
66.3051	1.72903	255.078	578.36
66.1411	1.72903	314.422	578.36
65.977	2.01683	297.25	495.828
65.813	1.24936	244.977	800.41
65.6489	1.72903	270.969	578.36
65.4849	1.72903	268.891	578.36
65.3209	1.72903	279.75	578.36
65.1568	1.72903	218.133	578.36
64.9928	1.34529	191.719	743.332
64.8288	2.20869	179.703	452.756
64.6647	1.92089	189.055	520.591
64.5007	2.88023	168.93	347.195
64.3366	3.26396	152.922	306.376
64.1726	4.2233	175.625	236.782
64.0085	6.04603	160.703	165.398
63.8445	8.63624	177.453	115.791
63.6805	13.1451	160.297	76.0739
63.5164	21.2035	166.523	47.162
63.3524	34.4424	165.797	29.034
63.1883	64.0858	142.695	15.6041
63.0243	129.896	180.008	7.69846

62.8603	257.584	152.57	3.88223
62.6962	523.224	144.836	1.91123
62.5322	614.936	151.492	1.62619
62.3681	495.019	146.07	2.02012
62.2041	648.321	155.336	1.54245
62.0401	1700.9	157.102	0.587923
61.876	-2577.58	172.273	-0.387961
61.712	-2584.83	156.906	-0.386873
61.5479	-2584.83	155.492	-0.386873
61.3839	-2584.83	154.656	-0.386873
61.2199	-2584.83	155.984	-0.386873
61.0558	-2584.83	159.344	-0.386873
60.8918	-2584.83	178.414	-0.386873
60.7277	-2584.83	158.734	-0.386873
60.5637	-2584.83	152.688	-0.386873
60.3997	-2584.83	178.914	-0.386873
60.2356	-2584.83	203.125	-0.386873
60.0716	-2584.83	159.344	-0.386873
59.9075	-2584.83	163.109	-0.386873
59.7435	-2584.83	174.766	-0.386873
59.5795	-2584.83	168.289	-0.386873
59.4154	-2584.83	193.5	-0.386873
59.2514	-2584.83	172.773	-0.386873
59.0873	-2584.83	205.797	-0.386873
58.9233	-2584.83	137.758	-0.386873
58.7593	-2584.83	155.43	-0.386873
58.5952	-2584.83	138.773	-0.386873
58.4312	-2584.83	174.68	-0.386873
58.2671	-2584.83	190.563	-0.386873
58.1031	-2584.83	155.883	-0.386873
57.9391	-2584.83	147.07	-0.386873
57.775	-2584.83	158.289	-0.386873
57.611	-2584.83	163.734	-0.386873
57.4469	-2584.83	145.383	-0.386873
57.2829	-2584.83	148.469	-0.386873
57.1189	-2584.83	148.289	-0.386873
56.9548	-2584.83	145.102	-0.386873
56.7908	-2584.83	143.383	-0.386873
56.6267	-2584.83	144.523	-0.386873
56.4627	-2584.83	165.125	-0.386873
56.2986	-2584.83	157.578	-0.386873
56.1346	-2584.83	164.422	-0.386873
55.9706	-2584.83	127.871	-0.386873
55.8065	-2584.83	147.547	-0.386873
55.6425	-2584.83	146.625	-0.386873
55.4785	-2584.83	147.914	-0.386873
55.3144	-2584.83	172.008	-0.386873
55.1504	-2584.83	132.969	-0.386873
54.9863	-2584.83	147.203	-0.386873
54.8223	-2584.83	157.57	-0.386873
54.6582	-2584.83	132.398	-0.386873
54.4942	-2584.83	162.461	-0.386873
54.3302	-2584.83	132.953	-0.386873
54.1661	-2584.83	138.484	-0.386873
54.0021	-2584.83	152.258	-0.386873
53.838	-2584.83	129.844	-0.386873
53.674	-2584.83	134.75	-0.386873
53.51	-2584.83	142.156	-0.386873
53.3459	-2584.83	140.133	-0.386873
53.1819	-2584.83	132.813	-0.386873
53.0178	-2584.83	116.012	-0.386873
52.8538	-2584.83	132.18	-0.386873
52.6898	-2584.83	144.281	-0.386873
52.5257	-2584.83	158.75	-0.386873
52.3617	-2584.83	156.477	-0.386873
52.1976	-2584.83	171.844	-0.386873
52.0336	-2584.83	156.133	-0.386873
51.8696	-2584.83	129.578	-0.386873
51.7055	-2584.83	138.133	-0.386873
51.5415	-2584.83	128.977	-0.386873
51.3774	-2584.83	132.93	-0.386873
51.2134	-2584.83	125.184	-0.386873
51.0494	-2584.83	139.375	-0.386873
50.8853	-2584.83	153.375	-0.386873
50.7213	-2584.83	149.586	-0.386873
50.5572	-2584.83	137.102	-0.386873
50.3932	-2584.83	126.305	-0.386873
50.2292	-2584.83	151.078	-0.386873
50.0651	-2584.83	158.422	-0.386873
49.9011	-2584.83	131.492	-0.386873
49.737	-2584.83	144.484	-0.386873
49.573	-2584.83	136.906	-0.386873
49.409	-2584.83	131.867	-0.386873
49.2449	-2584.83	132.453	-0.386873
49.0809	-2584.83	113.922	-0.386873
48.9168	-2584.83	140.203	-0.386873
48.7528	-2584.83	151.523	-0.386873
48.5888	-2584.83	120.18	-0.386873
48.4247	-2584.83	149.156	-0.386873
48.2607	-2584.83	162.492	-0.386873
48.0966	-2584.83	179.555	-0.386873
47.9326	-2584.83	148.156	-0.386873
47.7686	-2584.83	162.461	-0.386873
47.6045	-2584.83	155.023	-0.386873
47.4405	-2584.83	168.875	-0.386873
47.2764	-2584.83	138.867	-0.386873
47.1124	-2584.83	156.648	-0.386873
46.9484	-2584.83	189.992	-0.386873
46.7843	-2584.83	167.977	-0.386873
46.6203	-2584.83	147.922	-0.386873
46.4562	-2584.83	159.133	-0.386873
46.2922	-2584.83	148.234	-0.386873
46.1282	-2584.83	158.25	-0.386873
45.9641	-2584.83	171.953	-0.386873
45.8001	-2584.83	124.957	-0.386873
45.636	-2584.83	124.23	-0.386873
45.472	-2584.83	87.3242	-0.386873
45.3079	-2584.83	104.395	-0.386873
45.1439	-2584.83	88.0547	-0.386873
44.9799	-2584.83	98.8555	-0.386873
44.8158	-2584.83	61.0293	-0.386873
44.6518	-2584.83	65.9258	-0.386873
44.4877	-2584.83	79.8633	-0.386873
44.3237	-2584.83	80.4492	-0.386873
44.1597	-2584.83	69.0234	-0.386873
43.9956	-2584.83	72.4805	-0.386873
43.8316	-2584.83	59.5762	-0.386873

43.6675	-2584.83	78.6406	-0.386873
43.5035	-2584.83	59.6016	-0.386873
43.3395	-2584.83	72.957	-0.386873
43.1754	-2584.83	66.7656	-0.386873
43.0114	-2584.83	78.0078	-0.386873
42.8473	-2584.83	82.8516	-0.386873
42.6833	-2584.83	81.0313	-0.386873
42.5193	-2584.83	80.9375	-0.386873
42.3552	-2584.83	73.1875	-0.386873
42.1912	-2584.83	94.957	-0.386873
42.0271	-2584.83	88.5898	-0.386873
41.8631	-2584.83	85.8672	-0.386873
41.6991	-2584.83	64.082	-0.386873
41.535	-2584.83	83.4961	-0.386873
41.371	-2584.83	85.2969	-0.386873
41.2069	-2584.83	91.9336	-0.386873
41.0429	-2584.83	82.7695	-0.386873
40.8789	-2584.83	88.3242	-0.386873
40.7148	-2584.83	51.9063	-0.386873
40.5508	-2584.83	94.1563	-0.386873
40.3867	-2584.83	81.5	-0.386873
40.2227	-2584.83	78.9609	-0.386873
40.0587	-2584.83	67.6445	-0.386873
39.8946	-2584.83	77.6953	-0.386873
39.7306	-2584.83	94.3359	-0.386873
39.5665	-2584.83	86.1641	-0.386873
39.4025	-2584.83	74.3594	-0.386873
39.2385	-2584.83	98.1406	-0.386873
39.0744	-2584.83	90.5078	-0.386873
38.9104	-2584.83	71.7891	-0.386873
38.7463	-2584.83	87.9336	-0.386873
38.5823	-2584.83	60.8867	-0.386873
38.4183	-2584.83	70.4688	-0.386873
38.2542	-2584.83	92.832	-0.386873
38.0902	-2584.83	97.6367	-0.386873
37.9261	-2584.83	110.91	-0.386873
37.7621	-2584.83	91.3359	-0.386873
37.598	-2584.83	133.172	-0.386873
37.434	-2584.83	121.215	-0.386873
37.27	-2584.83	106.863	-0.386873
37.1059	-2584.83	114.16	-0.386873
36.9419	-2584.83	129.805	-0.386873
36.7778	-2584.83	111.953	-0.386873
36.6138	-2584.83	107.586	-0.386873
36.4498	-2584.83	104.047	-0.386873
36.2857	-2584.83	94.2422	-0.386873
36.1217	-2584.83	86.7305	-0.386873
35.9576	-2584.83	83.0352	-0.386873
35.7936	-2584.83	87.4297	-0.386873
35.6296	-2584.83	106.832	-0.386873
35.4655	-2584.83	123.031	-0.386873
35.3015	-2584.83	85.25	-0.386873
35.1374	-2584.83	111.121	-0.386873
34.9734	-2584.83	107.496	-0.386873
34.8094	-2584.83	109.547	-0.386873
34.6453	-2584.83	119.449	-0.386873
34.4813	-2584.83	100.051	-0.386873
34.3172	-2584.83	97.75	-0.386873
34.1532	-2584.83	108.301	-0.386873
33.9892	-2584.83	97.5391	-0.386873
33.8251	-2584.83	103.652	-0.386873
33.6611	-2584.83	73.2461	-0.386873
33.497	-2584.83	107.938	-0.386873
33.333	-2584.83	139.164	-0.386873
33.169	-2584.83	128.367	-0.386873
33.0049	-2584.83	115.898	-0.386873
32.8409	-2584.83	93.0039	-0.386873
32.6768	-2584.83	127.406	-0.386873
32.5128	-2584.83	96.293	-0.386873
32.3488	-2584.83	127.086	-0.386873
32.1847	-2584.83	123.629	-0.386873
32.0207	-2584.83	119.285	-0.386873
31.8566	-2584.83	105.188	-0.386873
31.6926	-2584.83	126.348	-0.386873
31.5286	-2584.83	122.035	-0.386873
31.3645	-2584.83	130.016	-0.386873
31.2005	-2584.83	140.406	-0.386873
31.0364	-2584.83	117.988	-0.386873
30.8724	-2584.83	92.8867	-0.386873
30.7084	-2584.83	116.805	-0.386873
30.5443	-2584.83	104.379	-0.386873
30.3803	-2584.83	138.18	-0.386873
30.2162	-2584.83	123.563	-0.386873
30.0522	-2584.83	93.5859	-0.386873
29.8882	-2584.83	118.152	-0.386873
29.7241	-2584.83	128.938	-0.386873
29.5601	-2584.83	112.871	-0.386873
29.396	-2584.83	108.082	-0.386873
29.232	-2584.83	97.3906	-0.386873
29.068	-2584.83	106.379	-0.386873
28.9039	-2584.83	99.1953	-0.386873
28.7399	-2584.83	117.762	-0.386873
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28.4118	-2584.83	93.9766	-0.386873
28.2477	-2584.83	92.25	-0.386873
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27.9197	-2584.83	93.3281	-0.386873
27.7556	-2584.83	98.2734	-0.386873
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26.2793	-2584.83	80.8672	-0.386873
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24.8029	-2584.83	92.3984	-0.386873
24.6389	-2584.83	69.5273	-0.386873

24.4748	-2584.83	60.7852	-0.386873
24.3108	-2584.83	65.7656	-0.386873
24.1467	-2584.83	88.6563	-0.386873
23.9827	-2584.83	83.2227	-0.386873
23.8187	-2584.83	95.6836	-0.386873
23.6546	-2584.83	97.3477	-0.386873
23.4906	-2584.83	81.2109	-0.386873
23.3265	-2584.83	82.7344	-0.386873
23.1625	-2584.83	73.1563	-0.386873
22.9985	-2584.83	66.6953	-0.386873
22.8344	-2584.83	95.5664	-0.386873
22.6704	-2584.83	71.5547	-0.386873
22.5063	-2584.83	70.5313	-0.386873
22.3423	-2584.83	99.293	-0.386873
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21.8502	-2584.83	103.98	-0.386873
21.6861	-2584.83	62.7441	-0.386873
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18.5694	-2584.83	63.8027	-0.386873
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9.71119	-2584.83	115.492	-0.386873
9.54715	-2584.83	77.6875	-0.386873
9.38311	-2584.83	87.8125	-0.386873
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8.56291	-2584.83	108.891	-0.386873
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7.74271	-2584.83	108.773	-0.386873
7.57866	-2584.83	117.441	-0.386873
7.41462	-2584.83	127.086	-0.386873
7.25058	-2584.83	96.4102	-0.386873
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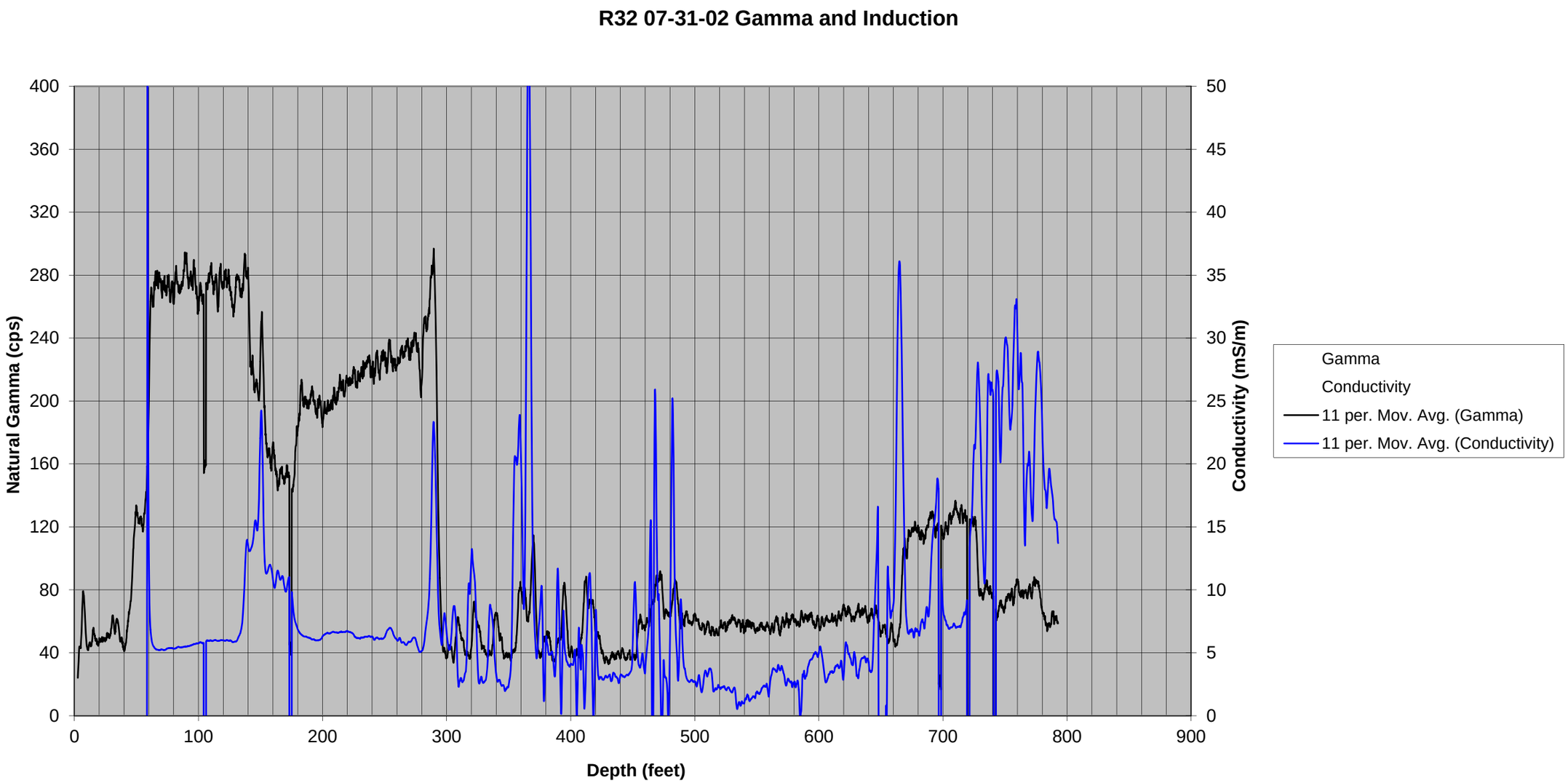
R32 07-31-02 Gamma and Induction
Natural Gamma (cps)
Conductivity (mS/m)
Depth (feet)
0
40
80
120
160
200
240
280
320
360
400
0
5
10
15
20
25
30
35
40
45
50
0
100
200
300
400
500
600
700
800
900
Gamma
Conductivity
11 per. Mov. Avg. (Gamma)
11 per. Mov. Avg. (Conductivity)

```
~VERSION INFORMATION
VERS                    .2.0                        :CWLS LOG ASCII STANDARD-VERSION 2.0
WRAP                    .NO                         :ONE LINE PER DEPTH STEP
~WELL INFORMATION
STRT                    .FT                 -29.0904 :START DEPTH
STOP                    .FT                  2.82149 :STOP DEPTH
STEP                    .FT                        0 :STEP
NULL                    .                    -999.25 :NULL VALUE
COMP                    .          WGII              :COMPANY
WELL                    .                            :WELL
FLD                     .                            :FIELD
LOC                     .                            :LOCATION
PROV                    .          N/A               :PROVINCE
SRVC                    .          N/A               :SERVICE COMPANY
DATE                    .                7/31/2002 :DATE
UWI                     .          N/A               :UNIQUE WELL ID
~CURVE INFORMATION
DEPT                    .FT                          :DEPTH
COND                    .MS/M                        :Cond.
GAMM                    .CPS                         :Gamma
I__R                    .OHM-M                       :I. Res.
~PARAMETER INFORMATION
ELEV                    .                            :ELEVATION
STE                     .                            :STE
DENS                    .                            :DENSITY
CASI                    .                            :CASING TO1
OPER                    .                            :OPERATING RIG TIME
WGT1                    .                            :WGT1
CASI                    .          18 in OD          :CASING SIZE1
CASI                    .                            :CASING TO2
WGT2                    .                            :WGT2
CASI                    .                            :CASING SIZE2
WELL                    .          R-32              :WELL ID
CASI                    .                            :CASING TO3
K.B.                    .                            :K.B.
WGT3                    .                            :WGT3
TYPE                    .          gammm/induction   :TYPE LOG
CASI                    .                            :CASING SIZE3
CASI                    .                            :CASING TO4
SALI                    .                            :SALINITY
TITL                    .                            :TITLE
WGT4                    .                            :WGT4
TOP                     .                            :TOP LOGGED INTERVAL
CASI                    .                            :CASING SIZE4
WITN                    .                            :WITNESSED BY
CASI                    .                            :CASING TO5
DRIL                    .                            :DRILLING MEAS. FROM
WGT5                    .                            :WGT5
CASI                    .                            :CASING SIZE5
CTY                     .                            :CTY
WGT6                    .                            :WGT6
CASI                    .                            :CASING SIZE6
MAX.                    .                            :MAX. REC. TEMP.
D.F.                    .                            :D.F.
CASI                    .                            :CASING TO6
OTHE                    .                            :OTHER SERVICES
BIT1                    .          20 in             :BIT1
DEPT                    .                            :DEPTH-DRILLER
BIT2                    .          16 in             :BIT2
RUN                     .                            :RUN No
RUN1                    .                            :RUN1
BIT3                    .                            :BIT3
RUN2                    .                            :RUN2
PERM                    .                            :PERMANENT DATUM
TWP                     .                            :TWP
BIT4                    .                            :BIT4
LOG                     .                            :LOG MEAS. FROM
BIT                     .                        0 :BIT FROM1
RUN3                    .                            :RUN3
BIT5                    .                            :BIT5
CASI                    .                        0 :CASING FROM1
TYPE                    .                            :TYPE FLUID IN HOLE
RUN4                    .                            :RUN4
FLD                     .                            :FLD
BIT6                    .                            :BIT6
BIT                     .          55 ft             :BIT TO1
CASI                    .                            :CASING FROM2
BIT                     .          55 ft             :BIT FROM2
CO                      .                            :CO
RGE                     .                            :RGE
BIT                     .          808 ft            :BIT TO2
DEPT                    .                            :DEPTH-LOGGER
CASI                    .                            :CASING FROM3
BIT                     .                            :BIT FROM3
RUN5                    .                            :RUN5
SEC                     .                            :SEC
BIT                     .                            :BIT TO3
G.L.                    .          0 ft              :G.L.
CASI                    .                            :CASING FROM4
BIT                     .                            :BIT FROM4
RUN6                    .                            :RUN6
BIT                     .                            :BIT TO4
BTM                     .                            :BTM LOGGED INTERVAL
CASI                    .                            :CASING FROM5
BIT                     .                            :BIT FROM5
STAT                    .                            :STATE
BIT                     .                            :BIT TO5
LEVE                    .                            :LEVEL
CASI                    .                            :CASING FROM6
BIT                     .                            :BIT FROM6
COUN                    .                            :COUNTRY
RECO                    .          Mark Everett      :RECORDED BY
FILI                    .                            :FILING No
BIT                     .                            :BIT TO6
~OTHER
~A
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8.23483	-234.526	80.7773	-4.26392
8.39887	-234.526	73.2227	-4.26392
8.56291	-234.526	83.7148	-4.26392
8.72695	-234.526	68.793	-4.26392
8.89099	-234.526	71.8398	-4.26392
9.05503	-234.526	80.7578	-4.26392
9.21907	-234.526	76.0742	-4.26392
9.38311	-234.526	51.2168	-4.26392

9.54715	-234.526	46.6836	-4.26392
9.71119	-234.526	55.8887	-4.26392
9.87523	-234.526	58.7715	-4.26392
10.0393	-234.526	48.0703	-4.26392
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10.3674	-234.526	33.9805	-4.26392
10.5314	-234.526	49.6797	-4.26392
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13.4841	-234.526	37.0371	-4.26392
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13.9762	-234.526	32.7012	-4.26392
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31.6926	-234.526	72.8594	-4.26392
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32.0207	-234.526	67.9805	-4.26392
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32.6768	-234.526	66.0703	-4.26392
32.8409	-234.526	51.0547	-4.26392
33.0049	-234.526	46.4043	-4.26392
33.169	-234.526	60.834	-4.26392
33.333	-234.526	91.5977	-4.26392
33.497	-234.526	71.0352	-4.26392
33.6611	-234.526	76.6875	-4.26392
33.8251	-234.526	46.4668	-4.26392
33.9892	-234.526	61.2891	-4.26392
34.1532	-234.526	112.234	-4.26392
34.3172	-234.526	55.9414	-4.26392
34.4813	-234.526	50.7813	-4.26392
34.6453	-234.526	25.7285	-4.26392
34.8094	-234.526	51.2891	-4.26392
34.9734	-234.526	45.7129	-4.26392
35.1374	-234.526	40.6484	-4.26392
35.3015	-234.526	51.543	-4.26392
35.4655	-234.526	56.6035	-4.26392
35.6296	-234.526	78.4297	-4.26392
35.7936	-234.526	30.8564	-4.26392
35.9576	-234.526	36.377	-4.26392
36.1217	-234.526	41.8633	-4.26392
36.2857	-234.526	46.8496	-4.26392
36.4498	-234.526	20.8848	-4.26392
36.6138	-234.526	41.3203	-4.26392
36.7778	-234.526	45.9102	-4.26392
36.9419	-234.526	65.9688	-4.26392
37.1059	-234.526	50.9004	-4.26392
37.27	-234.526	40.6797	-4.26392
37.434	-234.526	46.2344	-4.26392
37.598	-234.526	76.8594	-4.26392
37.7621	-234.526	50.5879	-4.26392
37.9261	-234.526	65.8125	-4.26392
38.0902	-234.526	25.457	-4.26392
38.2542	-234.526	30.7363	-4.26392
38.4183	-234.526	61.2773	-4.26392
38.5823	-234.526	55.6133	-4.26392
38.7463	-234.526	35.6035	-4.26392
38.9104	-234.526	71.1797	-4.26392
39.0744	-234.526	51.2676	-4.26392
39.2385	-234.526	35.9336	-4.26392
39.4025	-234.526	30.6514	-4.26392
39.5665	-234.526	60.9414	-4.26392
39.7306	-234.526	81.5742	-4.26392
39.8946	-234.526	56.7461	-4.26392
40.0587	-234.526	56.8594	-4.26392
40.2227	-234.526	36.3516	-4.26392
40.3867	-234.526	51.4766	-4.26392
40.5508	-234.526	46.2676	-4.26392
40.7148	-234.526	46.8418	-4.26392
40.8789	-234.526	63.3789	-4.26392
41.0429	-234.526	57.4473	-4.26392
41.2069	-234.526	57.1211	-4.26392
41.371	-234.526	86.9648	-4.26392
41.535	-234.526	40.9219	-4.26392
41.6991	-234.526	81.3828	-4.26392
41.8631	-234.526	71.418	-4.26392
42.0271	-234.526	30.3926	-4.26392
42.1912	-234.526	30.4297	-4.26392
42.3552	-234.526	55.9375	-4.26392
42.5193	-234.526	40.9727	-4.26392
42.6833	-234.526	46.123	-4.26392
42.8473	-234.526	35.8301	-4.26392
43.0114	-234.526	66.0742	-4.26392
43.1754	-234.526	81.2031	-4.26392
43.3395	-234.526	50.7773	-4.26392
43.5035	-234.526	71.457	-4.26392
43.6675	-234.526	50.9512	-4.26392
43.8316	-234.526	40.8301	-4.26392
43.9956	-234.526	35.3594	-4.26392
44.1597	-234.526	30.2754	-4.26392
44.3237	-234.526	71.3477	-4.26392
44.4877	-234.526	66.6992	-4.26392
44.6518	-234.526	51.5566	-4.26392
44.8158	-234.526	72.2695	-4.26392
44.9799	-234.526	46.4004	-4.26392
45.1439	-234.526	36.3008	-4.26392
45.3079	-234.526	72.75	-4.26392
45.472	-234.526	52.1914	-4.26392
45.636	-234.526	72.9141	-4.26392
45.8001	-234.526	41.4004	-4.26392
45.9641	-234.526	71.9375	-4.26392
46.1282	-234.526	71.5391	-4.26392
46.2922	-234.526	61.002	-4.26392
46.4562	-234.526	81.7813	-4.26392
46.6203	-234.526	111.34	-4.26392
46.7843	-234.526	50.875	-4.26392
46.9484	-234.526	77.1172	-4.26392
47.1124	-234.526	107.965	-4.26392
47.2764	-234.526	101.203	-4.26392
47.4405	-234.526	131.586	-4.26392
47.6045	-234.526	110.914	-4.26392
47.7686	-234.526	101.672	-4.26392

47.9326	-234.526	112.406	-4.26392
48.0966	-234.526	97.2148	-4.26392
48.2607	-234.526	142.891	-4.26392
48.4247	-234.526	101.563	-4.26392
48.5888	-234.526	173.484	-4.26392
48.7528	-234.526	137.203	-4.26392
48.9168	-234.526	153.984	-4.26392
49.0809	-234.526	112.52	-4.26392
49.2449	-234.526	87.1953	-4.26392
49.409	-234.526	102.445	-4.26392
49.573	-234.526	107.898	-4.26392
49.737	-234.526	109.285	-4.26392
49.9011	-234.526	134.727	-4.26392
50.0651	-234.526	149.703	-4.26392
50.2292	-234.526	165.672	-4.26392
50.3932	-234.526	119.492	-4.26392
50.5572	-234.526	114.801	-4.26392
50.7213	-234.526	92.918	-4.26392
50.8853	-234.526	81.0586	-4.26392
51.0494	-234.526	121.051	-4.26392
51.2134	-234.526	111.816	-4.26392
51.3774	-234.526	168.539	-4.26392
51.5415	-234.526	98.2695	-4.26392
51.7055	-234.526	132.313	-4.26392
51.8696	-234.526	96.2305	-4.26392
52.0336	-234.526	102.473	-4.26392
52.1976	-234.526	111.934	-4.26392
52.3617	-234.526	138.063	-4.26392
52.5257	-234.526	153.719	-4.26392
52.6898	-234.526	132.547	-4.26392
52.8538	-234.526	90.7695	-4.26392
53.0178	-234.526	122.16	-4.26392
53.1819	-234.526	193.484	-4.26392
53.3459	-234.526	112.883	-4.26392
53.51	-234.526	111.848	-4.26392
53.674	-234.526	117.242	-4.26392
53.838	-234.526	164.234	-4.26392
54.0021	-234.526	165.203	-4.26392
54.1661	-234.526	129.758	-4.26392
54.3302	-234.526	129.844	-4.26392
54.4942	-234.526	149.406	-4.26392
54.6582	-234.526	139.477	-4.26392
54.8223	-234.526	140.867	-4.26392
54.9863	-234.526	172.359	-4.26392
55.1504	-234.526	135	-4.26392
55.3144	-234.526	168.25	-4.26392
55.4785	-234.526	111.328	-4.26392
55.6425	-234.526	151.609	-4.26392
55.8065	-234.526	96.7656	-4.26392
55.9706	-234.526	118.063	-4.26392
56.1346	-234.526	118.219	-4.26392
56.2986	-234.526	97.1758	-4.26392
56.4627	-234.526	126.461	-4.26392
56.6267	-234.526	122.723	-4.26392
56.7908	-234.526	117.125	-4.26392
56.9548	-234.526	138.602	-4.26392
57.1189	-234.526	106.715	-4.26392
57.2829	-234.526	141.32	-4.26392
57.4469	-234.526	107.391	-4.26392
57.611	-234.526	196.75	-4.26392
57.775	-234.526	122.367	-4.26392
57.9391	-234.526	168.922	-4.26392
58.1031	-234.526	131.016	-4.26392
58.2671	-234.526	112.469	-4.26392
58.4312	-155.886	185.422	-6.41495
58.5952	191.631	184.727	5.21836
58.7593	120.746	201.781	8.28188
58.9233	80.7238	202.18	12.3879
59.0873	56.5844	169.289	17.6727
59.2514	42.0145	155.656	23.8013
59.4154	32.5599	236.117	30.7127
59.5795	26.0269	115.652	38.4218
59.7435	21.1032	171.523	47.3862
59.9075	17.9996	226.711	55.5569
60.0716	15.9688	147.594	62.6222
60.2356	14.1966	193.469	70.4393
60.3997	12.8555	285.828	77.7874
60.5637	11.936	253.148	83.7805
60.7277	11.1313	218.969	89.8368
60.8918	10.6332	146.914	94.0452
61.0558	9.92433	286.031	100.762
61.2199	9.44537	282.531	105.872
61.3839	9.2921	317.016	107.618
61.5479	8.89936	254.531	112.368
61.712	8.67904	259.484	115.22
61.876	8.48746	299.953	117.821
62.0401	8.07555	287.906	123.831
62.2041	7.91271	348.109	126.379
62.3681	7.88397	269.75	126.84
62.5322	7.64449	224.547	130.813
62.6962	7.66365	288.344	130.486
62.8603	7.5008	335.656	133.319
63.0243	7.3188	242.563	136.634
63.1883	7.22301	229.523	138.446
63.3524	7.19427	283.469	138.999
63.5164	7.26133	285.188	137.716
63.6805	7.34754	267.625	136.1
63.8445	7.41459	314.406	134.869
64.0085	7.02185	282.5	142.413
64.1726	7.18469	276.422	139.185
64.3366	7.02185	285.594	142.413
64.5007	7.11764	267.375	140.496
64.6647	7.15595	261.422	139.744
64.8288	7.3188	245.523	136.634
64.9928	7.41459	243.258	134.869
65.1568	7.48165	226.75	133.66
65.3209	7.56786	247.883	132.138
65.4849	7.5487	281.016	132.473
65.6489	7.57744	251.133	131.971
65.813	7.45291	298.719	134.176
65.977	7.5008	225.766	133.319
66.1411	7.57744	217.547	131.971
66.3051	7.40501	302.906	135.044
66.4692	7.30922	215.727	136.813
66.6332	7.44333	232.305	134.348
66.7972	7.60617	296.609	131.472
66.9613	7.45291	282.578	134.176

67.1253	7.40501	283.422	135.044
67.2894	7.5008	265.094	133.319
67.4534	7.34754	304.344	136.1
67.6174	7.12722	256.578	140.307
67.7815	7.25175	267.75	137.898
67.9455	7.05058	295.047	141.832
68.1096	7.21343	322.328	138.63
68.2736	7.05058	297.5	141.832
68.4376	7.06974	286.141	141.448
68.6017	7.06974	269.844	141.448
68.7657	6.97395	200.016	143.391
68.9298	6.80153	208.297	147.026
69.0938	6.96437	302.734	143.588
69.2578	6.71531	303.859	148.913
69.4219	6.84942	307.422	145.998
69.5859	6.86858	191.758	145.591
69.75	6.81111	248.594	146.819
69.914	6.70573	297.281	149.126
70.078	6.96437	201.758	143.588
70.2421	6.65784	309.75	150.199
70.4061	6.74405	233.586	148.279
70.5702	6.80153	233.547	147.026
70.7342	6.86858	240.297	145.591
70.8982	7.06016	266.688	141.64
71.0623	7.02185	201.398	142.413
71.2263	7.00269	299.813	142.802
71.3904	6.93563	239.5	144.183
71.5544	6.86858	247.852	145.591
71.7184	7.05058	329.297	141.832
71.8825	7.3188	257.719	136.634
72.0465	7.24217	217.141	138.08
72.2106	7.06016	278.641	141.64
72.3746	7.11764	308	140.496
72.5386	6.97395	224.078	143.391
72.7027	6.96437	240.305	143.588
72.8667	6.89732	265.688	144.984
73.0308	7.06016	233.039	141.64
73.1948	7.25175	264.75	137.898
73.3588	7.06016	270.281	141.64
73.5229	7.22301	273.75	138.446
73.6869	7.26133	249.914	137.716
73.851	7.22301	318.563	138.446
74.015	7.15595	278.203	139.744
74.1791	7.06016	242.406	141.64
74.3431	6.84942	278.25	145.998
74.5071	7.06016	282.688	141.64
74.6712	6.87816	250.32	145.388
74.8352	7.05058	294.969	141.832
74.9993	6.97395	318.891	143.391
75.1633	6.80153	235.117	147.026
75.3273	6.86858	321.391	145.591
75.4914	6.70573	314.656	149.126
75.6554	6.83026	298.875	146.407
75.8195	6.70573	239.844	149.126
75.9835	6.71531	300.516	148.913
76.1475	6.64826	235.008	150.415
76.3116	6.65784	316.641	150.199
76.4756	6.73447	248.82	148.49
76.6397	6.92605	272	144.382
76.8037	6.73447	313.922	148.49
76.9677	6.81111	355.359	146.819
77.1318	6.71531	409.375	148.913
77.2958	6.86858	237.242	145.591
77.4599	6.70573	304.203	149.126
77.6239	6.89732	294.734	144.984
77.7879	6.99311	338.328	142.998
77.952	6.89732	267	144.984
78.116	6.95479	303.594	143.786
78.2801	6.86858	294.109	145.591
78.4441	6.92605	246.406	144.382
78.6081	6.93563	320.813	144.183
78.7722	7.05058	361.578	141.832
78.9362	6.95479	351.406	143.786
79.1003	6.96437	328.391	143.588
79.2643	7.00269	263.781	142.802
79.4283	6.86858	214.914	145.591
79.5924	7.03143	250.375	142.219
79.7564	7.21343	311.922	138.63
79.9205	7.18469	318.828	139.185
80.0845	7.24217	297.281	138.08
80.2485	7.24217	276.094	138.08
80.4126	6.84942	286.688	145.998
80.5766	7.19427	273.625	138.999
80.7407	7.29006	298.719	137.173
80.9047	7.15595	197.266	139.744
81.0687	7.05058	231.555	141.832
81.2328	7.06974	221.773	141.448
81.3968	7.06016	300.109	141.64
81.5609	7.00269	285.938	142.802
81.7249	7.0889	270.438	141.066
81.8889	6.96437	341.797	143.588
82.053	7.06016	316.031	141.64
82.217	6.84942	229.07	145.998
82.3811	6.74405	264.953	148.279
82.5451	6.86858	262.078	145.591
82.7092	6.677	274.016	149.768
82.8732	6.73447	242.875	148.49
83.0372	6.83984	310.047	146.202
83.2013	6.71531	296.031	148.913
83.3653	6.84942	280.328	145.998
83.5293	7.03143	283.328	142.219
83.6934	6.81111	240.609	146.819
83.8574	6.63868	242.273	150.632
84.0215	6.71531	334.703	148.913
84.1855	6.89732	231.688	144.984
84.3496	6.83026	276.703	146.407
84.5136	6.78237	259.406	147.441
84.6776	6.73447	369.5	148.49
84.8417	6.84942	230.727	145.998
85.0057	6.9069	292.594	144.783
85.1698	6.89732	281.25	144.984
85.3338	7.06016	235.938	141.64
85.4978	7.06974	221.148	141.448
85.6619	6.86858	318.156	145.591
85.8259	6.97395	254.766	143.391
85.99	7.0889	265.063	141.066
86.154	7.0889	341.828	141.066

86.318	6.97395	279.547	143.391
86.4821	7.03143	348.219	142.219
86.6461	7.15595	296.641	139.744
86.8102	7.0889	291.109	141.066
86.9742	6.92605	270.031	144.382
87.1382	6.9069	271.344	144.783
87.3023	6.92605	272.484	144.382
87.4663	7.33796	266.703	136.278
87.6304	6.97395	255.773	143.391
87.7944	6.78237	301.609	147.441
87.9584	6.99311	290.719	142.998
88.1225	7.09848	308.125	140.875
88.2865	7.05058	228.055	141.832
88.4506	7.06016	294.781	141.64
88.6146	6.9069	271.438	144.783
88.7786	6.96437	238.773	143.588
88.9427	7.03143	294.609	142.219
89.1067	7.15595	299.172	139.744
89.2708	6.89732	200.742	144.984
89.4348	6.9069	259.156	144.783
89.5988	6.77279	301.922	147.65
89.7629	6.677	306.219	149.768
89.9269	6.80153	300.984	147.026
90.091	7.06016	236.781	141.64
90.255	6.59078	253.031	151.727
90.419	6.677	249.969	149.768
90.5831	6.83984	247.539	146.202
90.7471	6.70573	301.984	149.126
90.9112	6.75363	276.969	148.069
91.0752	6.56205	247.281	152.391
91.2392	6.80153	251.406	147.026
91.4033	6.74405	221.75	148.279
91.5673	6.75363	242.789	148.069
91.7314	6.99311	246.477	142.998
91.8954	6.84942	355.063	145.998
92.0595	6.77279	325.234	147.65
92.2235	6.83026	305.25	146.407
92.3875	6.77279	258.594	147.65
92.5516	7.05058	293.953	141.832
92.7156	6.97395	224.461	143.391
92.8796	7.03143	337.047	142.219
93.0437	7.24217	361.578	138.08
93.2077	7.21343	261.188	138.63
93.3718	7.28048	253.523	137.354
93.5358	7.16553	303.938	139.557
93.6999	7.02185	311.063	142.413
93.8639	7.06016	348.594	141.64
94.0279	6.92605	255.07	144.382
94.192	7.00269	204.789	142.802
94.356	7.26133	259.188	137.716
94.5201	7.35712	197.602	135.923
94.6841	7.26133	281.922	137.716
94.8481	7.28048	288.578	137.354
95.0122	7.09848	324.297	140.875
95.1762	7.16553	244.086	139.557
95.3403	7.0889	313.109	141.066
95.5043	7.03143	255.93	142.219
95.6683	7.0889	249.734	141.066
95.8324	7.12722	228.305	140.307
95.9964	7.11764	282.344	140.496
96.1605	6.92605	297.469	144.382
96.3245	6.81111	312.984	146.819
96.4885	7.06974	265.047	141.448
96.6526	6.93563	325.313	144.183
96.8166	6.93563	283.75	144.183
96.9807	7.03143	290.375	142.219
97.1447	6.96437	306.938	143.588
97.3087	6.96437	297.078	143.588
97.4728	6.95479	324.875	143.786
97.6368	6.78237	275.344	147.441
97.8009	6.75363	304.984	148.069
97.9649	6.80153	329.125	147.026
98.1289	6.84942	241.422	145.998
98.293	6.87816	281.688	145.388
98.457	6.83026	271.031	146.407
98.6211	6.68658	311.5	149.553
98.7851	6.87816	349.188	145.388
98.9491	6.9069	316.672	144.783
99.1132	6.9069	278.016	144.783
99.2772	7.03143	216.945	142.219
99.4413	6.86858	260.734	145.591
99.6053	6.86858	255.313	145.591
99.7693	6.78237	319.188	147.441
99.9334	7.03143	277.563	142.219
100.097	6.96437	305.297	143.588
100.261	7.11764	238.078	140.496
100.426	7.06974	223.617	141.448
100.59	7.22301	265.609	138.446
100.754	7.14638	240.375	139.931
100.918	7.06974	261.75	141.448
101.082	7.25175	251.672	137.898
101.246	7.25175	276.281	137.898
101.41	7.40501	320.344	135.044
101.574	7.25175	169.219	137.898
101.738	7.28048	329.313	137.354
101.902	7.41459	314.578	134.869
102.066	7.38585	239.313	135.394
102.23	7.21343	265.594	138.63
102.394	7.29006	220.914	137.173
102.558	7.33796	267.422	136.278
102.722	7.15595	296.656	139.744
102.886	7.11764	319.063	140.496
103.05	7.06016	322.828	141.64
103.214	7.11764	210.633	140.496
103.378	7.22301	276.5	138.446
103.542	7.11764	287.125	140.496
103.706	7.11764	322.875	140.496
103.87	7.00269	276.25	142.802
104.034	7.00269	251.852	142.802
104.198	7.14638	258.047	139.931
104.362	6.99311	281.734	142.998
104.527	6.89732	287.766	144.984
104.691	6.99311	270.391	142.998
104.855	7.09848	329.313	140.875
105.019	7.12722	281	140.307
105.183	6.97395	285.078	143.391
105.347	6.95479	218.211	143.786

105.511	6.99311	274.844	142.998
105.675	7.16553	326.266	139.557
105.839	6.99311	282.469	142.998
106.003	6.95479	224.703	143.786
106.167	7.11764	259.313	140.496
106.331	6.95479	276	143.786
106.495	7.09848	226.648	140.875
106.659	7.06016	242.898	141.64
106.823	7.06974	353.813	141.448
106.987	7.16553	304.969	139.557
107.151	7.0889	257.172	141.066
107.315	7.06016	260.719	141.64
107.479	7.14638	233.789	139.931
107.643	7.3188	248.32	136.634
107.807	7.24217	251.984	138.08
107.971	7.19427	311.906	138.999
108.135	7.30922	317.328	136.813
108.299	7.25175	310.234	137.898
108.463	7.22301	281.875	138.446
108.628	7.37627	293.047	135.57
108.792	7.38585	312.672	135.394
108.956	7.35712	272.75	135.923
109.12	7.48165	320.484	133.66
109.284	7.37627	312.813	135.57
109.448	7.40501	288.031	135.044
109.612	7.18469	318.438	139.185
109.776	7.29006	273.297	137.173
109.94	7.29006	296.453	137.173
110.104	7.33796	337.391	136.278
110.268	7.45291	265.484	134.176
110.432	7.26133	250.773	137.716
110.596	7.34754	286.578	136.1
110.76	7.15595	287.156	139.744
110.924	7.29006	221.875	137.173
111.088	7.21343	313.984	138.63
111.252	7.28048	272.766	137.354
111.416	7.35712	276.734	135.923
111.58	7.22301	220.266	138.446
111.744	7.26133	229.641	137.716
111.908	7.30922	248.563	136.813
112.072	7.19427	312.5	138.999
112.236	7.12722	338.266	140.307
112.4	7.22301	288.781	138.446
112.564	7.25175	276.25	137.898
112.729	7.24217	333.125	138.08
112.893	7.21343	265.531	138.63
113.057	7.16553	249.023	139.557
113.221	7.03143	205.336	142.219
113.385	7.00269	312.5	142.802
113.549	7.06016	336.406	141.64
113.713	7.05058	281.328	141.832
113.877	7.14638	319.922	139.931
114.041	7.22301	294.641	138.446
114.205	7.02185	265.281	142.413
114.369	6.92605	274.844	144.382
114.533	7.0889	224.203	141.066
114.697	6.92605	290.609	144.382
114.861	7.14638	313.438	139.931
115.025	7.05058	333.828	141.832
115.189	7.24217	285.094	138.08
115.353	7.14638	263	139.931
115.517	7.02185	268.781	142.413
115.681	7.12722	370.844	140.307
115.845	7.24217	251.008	138.08
116.009	7.19427	297.844	138.999
116.173	7.26133	290.797	137.716
116.337	7.09848	326.391	140.875
116.501	7.28048	229.477	137.354
116.666	7.22301	248.477	138.446
116.83	7.19427	288.078	138.999
116.994	7.33796	263.516	136.278
117.158	7.33796	349.594	136.278
117.322	7.34754	242.32	136.1
117.486	7.45291	206.016	134.176
117.65	7.16553	262.719	139.557
117.814	7.34754	328.484	136.1
117.978	7.24217	226.227	138.08
118.142	7.19427	246.016	138.999
118.306	7.37627	281.813	135.57
118.47	7.35712	351.844	135.923
118.634	7.22301	261.531	138.446
118.798	7.15595	266.906	139.744
118.962	7.30922	253.977	136.813
119.126	7.30922	348.078	136.813
119.29	7.16553	304.609	139.557
119.454	7.16553	273.813	139.557
119.618	7.06016	225.984	141.64
119.782	7.12722	388.266	140.307
119.946	7.15595	229.094	139.744
120.11	7.16553	257.563	139.557
120.274	7.03143	246.07	142.219
120.438	7.09848	265	140.875
120.602	7.14638	299.984	139.931
120.767	7.15595	254.844	139.744
120.931	7.14638	219	139.931
121.095	7.06016	290.109	141.64
121.259	6.86858	315.125	145.591
121.423	6.89732	239.789	144.984
121.587	7.0889	229.836	141.066
121.751	7.19427	239.906	138.999
121.915	7.14638	229.352	139.931
122.079	7.09848	386.188	140.875
122.243	7.06974	231.445	141.448
122.407	6.74405	268.266	148.279
122.571	7.06016	268.281	141.64
122.735	6.96437	224.648	143.588
122.899	6.73447	296.234	148.49
123.063	7.05058	192.047	141.832
123.227	6.87816	346.766	145.388
123.391	7.06974	264	141.448
123.555	7.26133	248.164	137.716
123.719	7.14638	263.438	139.931
123.883	7.09848	256.344	140.875
124.047	7.0889	269.203	141.066
124.211	7.24217	241.141	138.08
124.375	7.22301	228.164	138.446
124.539	7.26133	262.313	137.716

124.703	7.18469	324.625	139.185
124.868	7.30922	274.094	136.813
125.032	7.12722	285.563	140.307
125.196	7.11764	263.375	140.496
125.36	7.15595	256.656	139.744
125.524	7.19427	224	138.999
125.688	7.25175	289.047	137.898
125.852	7.05058	299.172	141.832
126.016	6.9069	246.141	144.783
126.18	7.06016	366	141.64
126.344	7.15595	238.57	139.744
126.508	7.09848	312.5	140.875
126.672	7.03143	245.68	142.219
126.836	6.93563	216.273	144.183
127	6.92605	274.719	144.382
127.164	6.95479	300.938	143.786
127.328	6.97395	290.828	143.391
127.492	6.92605	208.766	144.382
127.656	6.83984	265.766	146.202
127.82	6.81111	264.141	146.819
127.984	6.80153	258.719	147.026
128.148	6.93563	273.328	144.183
128.312	6.93563	291.094	144.183
128.476	7.06974	265.484	141.448
128.64	7.00269	267.266	142.802
128.804	6.70573	318.141	149.126
128.969	6.86858	266.203	145.591
129.133	6.89732	335.641	144.984
129.297	6.68658	225.281	149.553
129.461	6.84942	251.203	145.998
129.625	6.9069	243.57	144.783
129.789	6.78237	252.117	147.441
129.953	6.93563	223.336	144.183
130.117	6.59078	221.586	151.727
130.281	6.65784	254.328	150.199
130.445	6.87816	301.641	145.388
130.609	6.63868	247.961	150.632
130.773	7.05058	274.219	141.832
130.937	6.96437	256.844	143.588
131.101	6.83984	247.617	146.202
131.265	6.95479	244.75	143.786
131.429	6.95479	314.984	143.786
131.593	6.87816	330.172	145.388
131.757	6.9069	239.945	144.783
131.921	7.02185	264.672	142.413
132.085	6.97395	247.57	143.391
132.249	7.14638	267.313	139.931
132.413	7.21343	293.203	138.63
132.577	7.16553	202.172	139.557
132.741	7.34754	281.469	136.1
132.906	7.44333	306.188	134.348
133.07	7.40501	252.664	135.044
133.234	7.5008	314.828	133.319
133.398	7.52954	293.719	132.81
133.562	7.51038	349.688	133.149
133.726	7.57744	292.281	131.971
133.89	7.72112	245.336	129.515
134.054	7.94144	331.641	125.922
134.218	7.70197	284.563	129.837
134.382	8.01808	229.039	124.718
134.546	7.95102	377.594	125.77
134.71	7.91271	240.898	126.379
134.874	7.76902	296.5	128.716
135.038	8.13303	219.383	122.955
135.202	7.98934	218.086	125.167
135.366	8.08513	380.297	123.684
135.53	8.27672	308.75	120.821
135.694	8.53535	263.297	117.16
135.858	8.51619	304.156	117.423
136.022	8.59283	270.734	116.376
136.186	8.9281	334.281	112.006
136.35	9.10052	306.984	109.884
136.514	9.44537	252.563	105.872
136.678	9.73275	317.969	102.746
136.842	10.2021	299.297	98.0188
137.007	10.3937	315.766	96.2121
137.171	10.6523	313.5	93.876
137.335	11.2271	274.875	89.0702
137.499	11.5145	317.156	86.8473
137.663	11.9647	280.781	83.5793
137.827	12.3383	279.578	81.0486
137.991	12.664	316.75	78.9642
138.155	13.0088	246.664	76.871
138.319	13.4016	313.375	74.6182
138.483	13.7368	273.313	72.797
138.647	14.1679	251.914	70.5821
138.811	14.2445	241.008	70.2024
138.975	14.666	261.891	68.1849
139.139	15.0875	363.953	66.2801
139.303	14.9534	262.781	66.8745
139.467	15.0779	274.484	66.3222
139.631	15.212	287.797	65.7375
139.795	15.1354	292.188	66.0703
139.959	15.1545	268.266	65.9868
140.123	14.9438	242.977	66.9174
140.287	14.7235	250.281	67.9187
140.451	14.5702	260.531	68.6332
140.615	14.3212	291.828	69.8268
140.779	14.0913	289.375	70.966
140.943	14.0625	256.5	71.111
141.108	14.0529	268.719	71.1595
141.272	13.9284	251.914	71.7957
141.436	14.0625	217.688	71.111
141.6	14.1679	242.539	70.5821
141.764	14.1679	207.57	70.5821
141.928	14.1679	261.266	70.5821
142.092	14.3882	212.836	69.5013
142.256	14.5415	181.969	68.7688
142.42	14.484	223.586	69.0417
142.584	14.4074	293.422	69.4089
142.748	14.5032	231.859	68.9505
142.912	14.4553	206.359	69.1789
143.076	14.4074	191.656	69.4089
143.24	14.4361	239.023	69.2707
143.404	14.4361	168.453	69.2707
143.568	14.417	182.953	69.3628
143.732	14.5319	205.57	68.8141

143.896	14.6947	226.148	68.0515
144.06	14.8193	221.352	67.4797
144.224	14.8193	231.445	67.4797
144.388	14.7905	195.547	67.6108
144.552	14.8576	221.297	67.3057
144.716	15.2695	207.203	65.4901
144.88	15.2024	176.352	65.7789
145.044	15.2982	171.898	65.367
145.209	15.5377	204.102	64.3595
145.373	15.7772	315.969	63.3826
145.537	16.1412	211.281	61.9533
145.701	16.4573	187.523	60.7633
145.865	16.6681	200.555	59.995
146.029	16.8213	266.609	59.4484
146.193	16.8405	228.852	59.3807
146.357	17.0321	198.875	58.7128
146.521	16.7638	286.922	59.6522
146.685	16.5723	225.195	60.3418
146.849	16.4765	212.664	60.6926
147.013	16.1987	181.703	61.7335
147.177	15.758	252.758	63.4597
147.341	15.4994	183.609	64.5187
147.505	15.4228	201.781	64.8392
147.669	15.4036	180.047	64.9199
147.833	15.0492	140.648	66.4488
147.997	15.1545	280.172	65.9868
148.161	15.4228	239.156	64.8392
148.325	15.6239	219.406	64.0044
148.489	15.6622	209.695	63.8478
148.653	16.0933	189.789	62.1377
148.817	16.6968	230.305	59.8918
148.981	17.1183	186.938	58.4171
149.145	17.5302	202.945	57.0445
149.31	18.3252	196.313	54.5695
149.474	18.967	239.414	52.723
149.638	19.6951	235.43	50.7741
149.802	20.7105	252.227	48.2848
149.966	21.7258	271.625	46.0281
150.13	22.655	243.055	44.1403
150.294	23.7949	204.977	42.0257
150.458	24.6858	186.234	40.5091
150.622	25.5575	261.563	39.1275
150.786	26.4675	280.719	37.7822
150.95	26.8507	295.109	37.243
151.114	26.9848	335.984	37.0579
151.278	26.7262	252.531	37.4165
151.442	26.1897	188.727	38.1829
151.606	25.2318	233.602	39.6325
151.77	24.1589	275.578	41.3925
151.934	23.1052	194.234	43.2802
152.098	21.6109	203.023	46.273
152.262	20.471	217.961	48.8497
152.426	19.4173	204.688	51.5006
152.59	18.2103	217.648	54.914
152.754	16.9554	208.195	58.9782
152.918	16.0741	188.781	62.2117
153.082	15.2982	222.523	65.367
153.247	14.4457	224.578	69.2248
153.411	13.756	183.438	72.6956
153.575	13.2387	197.445	75.536
153.739	12.8939	299.766	77.5563
153.903	12.6352	240.281	79.1438
154.067	12.5682	217.844	79.5661
154.231	12.4341	165.328	80.4242
154.395	12.3766	234.508	80.7977
154.559	12.3479	140.773	80.9857
154.723	12.1467	171.203	82.3269
154.887	12.3095	161.555	81.2378
155.051	12.3766	174.57	80.7977
155.215	12.2425	157.828	81.6828
155.379	12.3095	167.188	81.2378
155.543	12.2904	135.766	81.3645
155.707	12.3383	180.563	81.0486
155.871	12.4341	214.172	80.4242
156.035	12.3383	149.016	81.0486
156.199	12.2425	177.258	81.6828
156.363	12.1563	175.016	82.2621
156.527	12.2137	99.5313	81.875
156.691	12.3383	220.688	81.0486
156.855	12.3479	193.078	80.9857
157.019	12.5107	139.617	79.9316
157.183	12.5778	245.125	79.5055
157.348	12.4724	193.086	80.1771
157.512	12.6927	188.883	78.7854
157.676	12.9418	153.305	77.2692
157.84	12.9801	197.914	77.0411
158.004	12.9226	162.555	77.3838
158.168	13.1812	176.719	75.8654
158.332	13.1046	139.195	76.309
158.496	13.0471	164.266	76.6452
158.66	13.1046	174	76.309
158.824	12.9705	179.359	77.098
158.988	12.9418	149.383	77.2692
159.152	13.0759	131.109	76.4768
159.316	13.1429	156.727	76.0866
159.48	13.1333	161.266	76.1421
159.644	12.6352	196.93	79.1438
159.808	12.4149	211.727	80.5483
159.972	12.3383	126.379	81.0486
160.136	12.2137	182.18	81.875
160.3	12.118	155.227	82.5222
160.464	12.118	163.719	82.5222
160.628	11.8306	142.984	84.5267
160.792	11.7827	167.805	84.8703
160.956	11.5815	153.695	86.3444
161.12	11.2079	130.016	89.2225
161.284	11.1409	227.398	89.7595
161.449	11.2654	192.148	88.7673
161.613	11.1121	162.859	89.9916
161.777	11.1409	179.414	89.7595
161.941	11.1313	130.078	89.8368
162.105	11.0355	139.266	90.6166
162.269	11.0642	176.336	90.3812
162.433	11.1409	163.445	89.7595
162.597	11.2654	157.727	88.7673
162.761	11.3804	178.961	87.8707
162.925	11.3612	168.742	88.0189

163.089	11.8018	162.57	84.7325
163.253	11.936	172.977	83.7805
163.417	11.9264	115.168	83.8478
163.581	11.8689	151.367	84.2538
163.745	12.185	121.723	82.0681
163.909	12.4149	161.82	80.5483
164.073	12.6544	166.508	79.024
164.237	12.5299	126.824	79.8094
164.401	12.4628	121.672	80.2388
164.565	12.4724	187.953	80.1771
164.729	12.5011	145.047	79.9928
164.893	12.3383	156.844	81.0486
165.057	12.1754	172.75	82.1326
165.221	12.2137	172.898	81.875
165.385	12.118	158.875	82.5222
165.55	11.9072	169.914	83.9827
165.714	11.8114	164.461	84.6638
165.878	11.7348	163.148	85.2167
166.042	11.7731	154.297	84.9394
166.206	11.6773	174.273	85.6361
166.37	11.5432	158.688	86.6311
166.534	11.6103	133.875	86.1307
166.698	11.8976	137.984	84.0503
166.862	11.9838	118.543	83.4457
167.026	12.0988	158.625	82.6529
167.19	12.003	139.766	83.3125
167.354	11.8976	114.133	84.0503
167.518	12.0222	113.535	83.1797
167.682	11.8018	157.461	84.7325
167.846	11.8881	205.75	84.1181
168.01	11.8881	121.48	84.1181
168.174	12.1467	120.758	82.3269
168.338	11.9264	205.055	83.8478
168.502	12.003	126.059	83.3125
168.666	11.7731	116.184	84.9394
168.83	11.524	168.852	86.7751
168.994	11.7731	136.766	84.9394
169.158	11.7827	150.484	84.8703
169.322	11.6773	119.777	85.6361
169.486	11.6103	143.352	86.1307
169.651	11.3899	154.469	87.7968
169.815	11.5145	143.352	86.8473
169.979	11.3516	206.766	88.0931
170.143	11.16	138.375	89.6054
170.307	10.9685	158.5	91.1705
170.471	10.9685	113.66	91.1705
170.635	10.729	153.883	93.2055
170.799	10.8248	177.867	92.3807
170.963	10.6044	107.891	94.3
171.127	10.7481	158.727	93.0394
171.291	10.7577	134.141	92.9565
171.455	10.6236	209.602	94.13
171.619	10.7769	143.422	92.7913
171.783	10.729	210.82	93.2055
171.947	10.729	118.215	93.2055
172.111	10.8822	119.02	91.8928
172.275	11.2079	159.531	89.2225
172.439	11.5432	155.594	86.6311
172.603	11.8881	115.688	84.1181
172.767	11.9072	151.391	83.9827
172.931	11.8689	192.039	84.2538
173.095	11.8976	115.832	84.0503
173.259	11.7827	178.633	84.8703
173.423	11.6869	136.664	85.5659
173.588	11.6103	145.648	86.1307
173.752	11.6677	179.727	85.7064
173.916	11.8976	119.375	84.0503
174.08	11.9551	128.703	83.6462
174.244	11.7061	183.25	85.4259
174.408	11.6773	147.602	85.6361
174.572	11.4762	98.6211	87.1372
174.736	11.3229	166.133	88.3167
174.9	11.2271	179.68	89.0702
175.064	11.0642	127.695	90.3812
175.228	10.796	152.852	92.6266
175.392	10.6044	147.125	94.3
175.556	10.6523	128.766	93.876
175.72	10.4991	173.305	95.2465
175.884	9.99138	108.539	100.086
176.048	9.92433	206.586	100.762
176.212	9.86685	207.188	101.349
176.376	9.74232	153.195	102.645
176.54	9.54116	164.602	104.809
176.704	9.28253	139.461	107.729
176.868	9.34958	139.555	106.957
177.032	9.12926	159.984	109.538
177.196	8.9281	166.211	112.006
177.36	8.89936	141.625	112.368
177.524	8.72694	167.203	114.588
177.689	8.81315	202.492	113.467
177.853	8.72694	156.57	114.588
178.017	8.62156	91.5586	115.988
178.181	8.56409	213.258	116.767
178.345	8.48746	201.18	117.821
178.509	8.42998	187.508	118.624
178.673	8.62156	177.227	115.988
178.837	8.33419	247.492	119.988
179.001	8.30545	163.969	120.403
179.165	8.30545	184.344	120.403
179.329	8.2384	169.555	121.383
179.493	8.32461	196.688	120.126
179.657	8.18092	157.195	122.236
179.821	8.0085	223.063	124.867
179.985	7.92229	188.805	126.226
180.149	7.83607	204.609	127.615
180.313	7.75944	222.828	128.875
180.477	7.85523	142.648	127.304
180.641	7.64449	192.195	130.813
180.805	7.48165	203.828	133.66
180.969	7.51038	208.25	133.149
181.133	7.79776	183.172	128.242
181.297	7.56786	182.43	132.138
181.461	7.35712	210.094	135.923
181.625	7.52954	221.305	132.81
181.79	7.69239	167.758	129.999
181.954	7.52954	182.594	132.81
182.118	7.28048	176.914	137.354

182.282	7.34754	187.977	136.1
182.446	7.26133	172.961	137.716
182.61	7.26133	198.953	137.716
182.774	7.29006	180.531	137.173
182.938	7.25175	218.523	137.898
183.102	7.5008	143.219	133.319
183.266	7.24217	281.969	138.08
183.43	7.16553	235.391	139.557
183.594	7.26133	215.695	137.716
183.758	7.0889	188.828	141.066
183.922	7.18469	212.664	139.185
184.086	7.21343	182.789	138.63
184.25	7.06016	189.328	141.64
184.414	7.28048	139.078	137.354
184.578	7.25175	265.063	137.898
184.742	7.19427	148.031	138.999
184.906	7.37627	192.883	135.57
185.07	7.38585	188.617	135.394
185.234	7.28048	129.352	137.354
185.398	7.24217	207.602	138.08
185.562	7.33796	228.086	136.278
185.726	7.38585	183.359	135.394
185.891	7.37627	159.695	135.57
186.055	7.35712	145.523	135.923
186.219	7.28048	246.984	137.354
186.383	7.15595	190.305	139.744
186.547	7.35712	200.57	135.923
186.711	7.16553	217.688	139.557
186.875	7.16553	182.398	139.557
187.039	7.19427	229.867	138.999
187.203	7.38585	191.32	135.394
187.367	7.25175	213.563	137.898
187.531	7.38585	223.273	135.394
187.695	7.28048	174.055	137.354
187.859	7.52954	164.602	132.81
188.023	7.43375	257.031	134.522
188.187	7.40501	231.922	135.044
188.351	7.28048	173.719	137.354
188.515	7.34754	209.836	136.1
188.679	7.03143	213.461	142.219
188.843	7.22301	242.75	138.446
189.007	7.41459	169.445	134.869
189.171	7.12722	206.93	140.307
189.335	7.29006	212.844	137.173
189.499	7.37627	189.117	135.57
189.663	7.0889	199.313	141.066
189.828	7.18469	299.109	139.185
189.992	7.09848	206.117	140.875
190.156	7.16553	182.477	139.557
190.32	7.19427	149.313	138.999
190.484	7.06974	204.453	141.448
190.648	7.00269	285.625	142.802
190.812	7.26133	174.938	137.716
190.976	7.09848	222.594	140.875
191.14	7.09848	193.711	140.875
191.304	6.89732	240.273	144.984
191.468	6.86858	170.961	145.591
191.632	6.77279	191.758	147.65
191.796	6.80153	234.469	147.026
191.96	6.80153	233.172	147.026
192.124	6.9069	139.242	144.783
192.288	6.83026	162.523	146.407
192.452	6.87816	212.641	145.388
192.616	6.95479	198.414	143.786
192.78	6.9069	199.789	144.783
192.944	6.83026	205.461	146.407
193.108	6.83026	179.055	146.407
193.272	7.0889	162.508	141.066
193.436	7.0889	182.422	141.066
193.6	6.81111	237.883	146.819
193.764	6.73447	188.617	148.49
193.929	6.80153	244.164	147.026
194.093	6.81111	196.148	146.819
194.257	7.06016	221.828	141.64
194.421	6.92605	194.898	144.382
194.585	6.92605	198.313	144.382
194.749	6.93563	188.859	144.183
194.913	6.95479	233.328	143.786
195.077	6.96437	199.844	143.588
195.241	7.06974	225.461	141.448
195.405	6.9069	167.352	144.783
195.569	7.06016	293.5	141.64
195.733	6.89732	238.82	144.984
195.897	6.9069	181.18	144.783
196.061	6.87816	192.367	145.388
196.225	6.81111	217.102	146.819
196.389	6.87816	216.297	145.388
196.553	7.05058	194.984	141.832
196.717	6.95479	212.953	143.786
196.881	6.95479	211.625	143.786
197.045	7.18469	213.922	139.185
197.209	7.02185	139.148	142.413
197.373	7.05058	234.055	141.832
197.537	7.06016	197.414	141.64
197.701	6.95479	202.016	143.786
197.865	6.93563	142.773	144.183
198.03	7.12722	194.898	140.307
198.194	7.25175	223.227	137.898
198.358	7.19427	173.516	138.999
198.522	7.12722	207.422	140.307
198.686	7.09848	133.227	140.875
198.85	7.33796	189.914	136.278
199.014	7.26133	233.625	137.716
199.178	7.19427	231.641	138.999
199.342	7.21343	207.492	138.63
199.506	7.24217	159.484	138.08
199.67	7.30922	209.961	136.813
199.834	7.25175	201.055	137.898
199.998	7.41459	232.547	134.869
200.162	7.37627	146.055	135.57
200.326	7.30922	248.398	136.813
200.49	7.18469	254.992	139.185
200.654	7.28048	193	137.354
200.818	7.33796	141.508	136.278
200.982	7.29006	202.789	137.173
201.146	7.52954	128.367	132.81
201.31	7.29006	187.719	137.173

201.474	7.43375	233.508	134.522
201.638	7.11764	184.68	140.496
201.802	7.3188	179.125	136.634
201.966	7.57744	193.273	131.971
202.131	7.66365	189.5	130.486
202.295	7.64449	197.273	130.813
202.459	7.69239	218.922	129.999
202.623	7.89355	236.797	126.686
202.787	7.83607	221.25	127.615
202.951	7.98934	191.578	125.167
203.115	7.98934	198.719	125.167
203.279	7.60617	173.688	131.472
203.443	7.57744	227.789	131.971
203.607	7.62533	271.234	131.142
203.771	7.67323	181.797	130.323
203.935	7.75944	245.031	128.875
204.099	7.7307	216.289	129.354
204.263	7.5487	216.477	132.473
204.427	7.63491	201.672	130.977
204.591	7.79776	160.492	128.242
204.755	7.94144	233.055	125.922
204.919	7.64449	224.914	130.813
205.083	7.78818	238.453	128.4
205.247	7.5966	218.602	131.638
205.411	7.67323	189.352	130.323
205.575	7.67323	212.344	130.323
205.739	7.69239	249.773	129.999
205.903	7.75944	184.148	128.875
206.067	7.74028	193.477	129.194
206.232	7.53912	187.477	132.641
206.396	7.7307	212.719	129.354
206.56	7.7307	188.656	129.354
206.724	7.67323	224.5	130.323
206.888	7.75944	177.352	128.875
207.052	7.63491	201.336	130.977
207.216	7.70197	167.859	129.837
207.38	7.67323	242.93	130.323
207.544	7.75944	209.188	128.875
207.708	7.60617	256.828	131.472
207.872	7.97976	201.703	125.317
208.036	7.83607	176.383	127.615
208.2	7.76902	236.039	128.716
208.364	7.7307	197.734	129.354
208.528	7.92229	215.516	126.226
208.692	7.85523	220.031	127.304
208.856	7.81692	230.172	127.928
209.02	7.75944	161.938	128.875
209.184	7.79776	238.648	128.242
209.348	7.95102	221.141	125.77
209.512	7.95102	238.227	125.77
209.676	7.82649	200.641	127.771
209.84	7.79776	196.148	128.242
210.004	8.04682	245.031	124.273
210.169	7.98934	263.719	125.167
210.333	7.75944	238.055	128.875
210.497	7.88397	157.359	126.84
210.661	8.14261	178.617	122.811
210.825	8.20966	180.078	121.808
210.989	8.15219	184.383	122.666
211.153	8.04682	178.68	124.273
211.317	8.08513	143.734	123.684
211.481	8.04682	210.453	124.273
211.645	8.03724	201.75	124.421
211.809	7.88397	193.063	126.84
211.973	7.94144	198.906	125.922
212.137	7.9606	221.531	125.619
212.301	7.95102	240.93	125.77
212.465	7.98934	246.953	125.167
212.629	7.74028	203.648	129.194
212.793	8.04682	227.508	124.273
212.957	7.88397	243.516	126.84
213.121	8.10429	233.602	123.391
213.285	7.83607	209.852	127.615
213.449	7.7307	197.109	129.354
213.613	7.91271	197.805	126.379
213.777	8.04682	171.578	124.273
213.941	8.18092	146.484	122.236
214.105	7.92229	171.703	126.226
214.27	7.88397	197.063	126.84
214.434	7.94144	226.445	125.922
214.598	7.83607	163.656	127.615
214.762	8.01808	144.203	124.718
214.926	7.92229	207.305	126.226
215.09	7.76902	203.266	128.716
215.254	7.98934	194.594	125.167
215.418	8.24798	256.156	121.242
215.582	8.0085	158.367	124.867
215.746	7.98934	227.375	125.167
215.91	8.15219	201.219	122.666
216.074	7.97976	194.281	125.317
216.238	8.0085	189.164	124.867
216.402	8.08513	237.266	123.684
216.566	8.18092	210.977	122.236
216.73	8.34377	178.07	119.85
216.894	8.20966	232.523	121.808
217.058	8.22882	173.57	121.524
217.222	8.2384	201.523	121.383
217.386	8.20966	201.813	121.808
217.55	8.11387	237.57	123.246
217.714	8.24798	236.727	121.242
217.878	8.4204	248.438	118.759
218.042	8.27672	166.758	120.821
218.206	8.11387	157.109	123.246
218.371	7.98934	177.719	125.167
218.535	8.17134	218.32	122.379
218.699	8.04682	167.336	124.273
218.863	7.88397	130.961	126.84
219.027	8.22882	232.805	121.524
219.191	8.03724	217.016	124.421
219.355	7.9606	261.438	125.619
219.519	8.33419	169.219	119.988
219.683	8.29587	144.195	120.542
219.847	8.32461	235.016	120.126
220.011	8.29587	208.352	120.542
220.175	8.13303	238.227	122.955
220.339	8.07555	217.641	123.831
220.503	8.22882	203.555	121.524

220.667	8.20008	202.039	121.95
220.831	8.20008	231.969	121.95
220.995	8.4683	206.242	118.087
221.159	8.33419	197.602	119.988
221.323	8.13303	298.719	122.955
221.487	7.97976	227.711	125.317
221.651	8.17134	227.891	122.379
221.815	8.10429	231.695	123.391
221.979	8.08513	282.531	123.684
222.143	8.2384	236.719	121.383
222.307	8.10429	166.898	123.391
222.472	8.36293	185.266	119.575
222.636	8.13303	205.578	122.955
222.8	8.04682	176.914	124.273
222.964	8.08513	178.578	123.684
223.128	8.18092	172.844	122.236
223.292	8.08513	176.023	123.684
223.456	8.07555	224.438	123.831
223.62	8.03724	193.711	124.421
223.784	8.10429	214.141	123.391
223.948	7.91271	163.445	126.379
224.112	7.89355	232.672	126.686
224.276	7.86481	187.008	127.149
224.44	8.10429	192.258	123.391
224.604	8.11387	243.75	123.246
224.768	8.08513	237.727	123.684
224.932	7.97976	261.547	125.317
225.096	7.86481	161.391	127.149
225.26	7.85523	187.578	127.304
225.424	7.94144	258.172	125.922
225.588	7.98934	217.82	125.167
225.752	7.9606	297.813	125.619
225.916	7.86481	191.844	127.149
226.08	8.10429	280.125	123.391
226.244	7.98934	207.109	125.167
226.409	8.08513	119.375	123.684
226.573	8.01808	219.125	124.718
226.737	7.88397	200.203	126.84
226.901	7.88397	240.148	126.84
227.065	7.95102	208.563	125.77
227.229	7.74028	172.68	129.194
227.393	7.86481	168.352	127.149
227.557	7.86481	233.922	127.149
227.721	7.98934	201.32	125.167
227.885	8.07555	265.813	123.831
228.049	7.75944	213.922	128.875
228.213	7.66365	178.469	130.486
228.377	7.92229	228.289	126.226
228.541	7.69239	202.328	129.999
228.705	7.66365	242.258	130.486
228.869	7.92229	213.82	126.226
229.033	7.67323	210.453	130.323
229.197	7.52954	219.469	132.81
229.361	7.5966	200.688	131.638
229.525	7.60617	205.906	131.472
229.689	7.7307	191.289	129.354
229.853	7.66365	252.445	130.486
230.017	7.66365	187.719	130.486
230.181	7.69239	249.047	129.999
230.345	7.88397	201.938	126.84
230.51	7.97976	236.688	125.317
230.674	8.27672	203.055	120.821
230.838	8.30545	248.836	120.403
231.002	8.39166	228.906	119.166
231.166	8.30545	208.273	120.403
231.33	8.05639	249.938	124.125
231.494	8.4204	212.703	118.759
231.658	8.2384	208.32	121.383
231.822	8.33419	264.719	119.988
231.986	7.82649	217.844	127.771
232.15	7.88397	176.508	126.84
232.314	7.85523	166.602	127.304
232.478	7.86481	177.063	127.149
232.642	7.85523	204.945	127.304
232.806	7.75944	153.016	128.875
232.97	7.76902	162.906	128.716
233.134	7.89355	238	126.686
233.298	7.91271	233.43	126.379
233.462	7.75944	154.414	128.875
233.626	7.95102	177.844	125.77
233.79	8.0085	216.992	124.867
233.954	7.79776	211.703	128.242
234.118	7.95102	198.461	125.77
234.282	7.88397	237.711	126.84
234.446	7.9606	222.141	125.619
234.611	7.74028	245.93	129.194
234.775	7.86481	241.219	127.149
234.939	7.97976	227.188	125.317
235.103	8.18092	242.875	122.236
235.267	8.08513	215.883	123.684
235.431	8.13303	216.508	122.955
235.595	8.20008	257.141	121.95
235.759	8.17134	245.445	122.379
235.923	8.10429	187.43	123.391
236.087	8.0085	228.047	124.867
236.251	8.07555	227.664	123.831
236.415	7.95102	289.141	125.77
236.579	7.83607	275.125	127.615
236.743	7.83607	228.258	127.615
236.907	7.94144	206.656	125.922
237.071	7.85523	228.492	127.304
237.235	7.78818	237.711	128.4
237.399	8.01808	198.586	124.718
237.563	8.17134	217.984	122.379
237.727	8.0085	179.641	124.867
237.891	7.88397	264.328	126.84
238.055	7.83607	227.578	127.615
238.219	7.89355	232.773	126.686
238.383	8.0085	232.875	124.867
238.547	8.03724	198.906	124.421
238.712	7.94144	182.203	125.922
238.876	7.85523	248.734	127.304
239.04	8.05639	226.031	124.125
239.204	8.14261	182.711	122.811
239.368	8.04682	242.922	124.273
239.532	8.03724	232.625	124.421
239.696	7.97976	281.188	125.317

239.86	8.10429	212.391	123.391
240.024	7.97976	213.859	125.317
240.188	8.2384	260.234	121.383
240.352	8.30545	307.422	120.403
240.516	8.42998	300.859	118.624
240.68	8.4683	285.875	118.087
240.844	8.63114	258.813	115.86
241.008	8.61199	249.047	116.117
241.172	8.34377	218.492	119.85
241.336	8.43956	251.641	118.49
241.5	8.53535	249.445	117.16
241.664	8.40124	252.813	119.03
241.828	8.20008	263.734	121.95
241.992	8.03724	169.016	124.421
242.156	7.88397	257.109	126.84
242.32	7.64449	266.438	130.813
242.484	7.81692	187.398	127.928
242.648	7.72112	200.539	129.515
242.813	7.67323	243.789	130.323
242.977	7.60617	241.063	131.472
243.141	7.45291	196.359	134.176
243.305	7.48165	218.578	133.66
243.469	7.48165	191.547	133.66
243.633	7.43375	203.938	134.522
243.797	7.48165	232.742	133.66
243.961	7.63491	216.578	130.977
244.125	7.33796	240.883	136.278
244.289	7.33796	196.414	136.278
244.453	7.57744	216.945	131.971
244.617	7.72112	229.711	129.515
244.781	7.62533	223.75	131.142
244.945	7.5966	226.211	131.638
245.109	7.83607	277.547	127.615
245.273	7.85523	234.469	127.304
245.437	7.72112	224.602	129.515
245.601	8.0085	162.305	124.867
245.765	7.91271	180.281	126.379
245.929	8.14261	224.852	122.811
246.093	8.27672	268.797	120.821
246.257	8.18092	282.297	122.236
246.421	8.05639	208.797	124.125
246.585	8.10429	166.695	123.391
246.75	8.33419	311	119.988
246.914	8.07555	193.586	123.831
247.078	8.01808	199.688	124.718
247.242	8.01808	155.43	124.718
247.406	7.81692	255.445	127.928
247.57	7.88397	215.367	126.84
247.734	7.85523	226.703	127.304
247.898	7.66365	207.883	130.486
248.062	7.67323	212.68	130.323
248.226	7.78818	231.383	128.4
248.39	7.9606	255.109	125.619
248.554	7.95102	210.859	125.77
248.718	7.9606	165.617	125.619
248.882	7.82649	276.938	127.771
249.046	7.75944	198.695	128.875
249.21	8.0085	263.844	124.867
249.374	7.95102	225.383	125.77
249.538	7.9606	212.477	125.619
249.702	7.62533	188.109	131.142
249.866	7.70197	171.203	129.837
250.03	7.85523	212.039	127.304
250.194	7.94144	215.773	125.922
250.358	8.29587	186.68	120.542
250.522	8.34377	176.703	119.85
250.686	8.2384	244.164	121.383
250.851	8.01808	246.406	124.718
251.015	7.92229	231.711	126.226
251.179	7.98934	205.672	125.167
251.343	8.14261	253.422	122.811
251.507	8.2384	213.758	121.383
251.671	8.22882	241.578	121.524
251.835	8.30545	236.461	120.403
251.999	8.56409	176.234	116.767
252.163	8.40124	211.742	119.03
252.327	8.52577	218.313	117.291
252.491	8.6503	231.32	115.603
252.655	8.82273	250.992	113.344
252.819	8.80357	181.445	113.59
252.983	8.82273	172.586	113.344
253.147	9.00473	199.398	111.053
253.311	8.94726	225.977	111.766
253.475	9.04305	255.648	110.582
253.639	8.96641	224.734	111.527
253.803	9.2921	260.344	107.618
253.967	8.9281	288.578	112.006
254.131	8.90894	219.352	112.247
254.295	8.77483	241.039	113.962
254.459	8.99515	242.688	111.171
254.623	9.11968	244.766	109.653
254.787	9.21547	218.648	108.513
254.952	9.33042	196.688	107.176
255.116	9.2921	213.359	107.618
255.28	9.50285	210.563	105.232
255.444	9.42621	246.398	106.087
255.608	9.2921	188.25	107.618
255.772	9.22505	188.703	108.4
255.936	9.21547	258.938	108.513
256.1	8.82273	232.289	113.344
256.264	8.62156	197.914	115.988
256.428	8.67904	203.063	115.22
256.592	8.9281	265.859	112.006
256.756	8.77483	200.797	113.962
256.92	8.58325	161.672	116.506
257.084	8.55451	225.695	116.897
257.248	8.72694	206.867	114.588
257.412	8.75567	271.234	114.212
257.576	8.71736	240.867	114.714
257.74	8.74609	212.453	114.337
257.904	8.85146	196.492	112.976
258.068	8.74609	179.406	114.337
258.232	8.39166	226.602	119.166
258.396	8.33419	225.828	119.988
258.56	8.29587	220.945	120.542
258.724	8.17134	170.641	122.379
258.888	8.24798	248.688	121.242

259.053	8.36293	225.023	119.575
259.217	8.24798	213.414	121.242
259.381	8.10429	159.242	123.391
259.545	7.92229	230.734	126.226
259.709	8.15219	241.602	122.666
259.873	8.42998	203.023	118.624
260.037	8.20966	209.18	121.808
260.201	8.22882	237.867	121.524
260.365	8.24798	225.422	121.242
260.529	8.18092	178.086	122.236
260.693	8.56409	322.797	116.767
260.857	8.30545	202.844	120.403
261.021	8.10429	265.891	123.391
261.185	8.13303	229.586	122.955
261.349	8.10429	295.547	123.391
261.513	7.98934	227.016	125.167
261.677	8.04682	187.656	124.273
261.841	8.01808	241.008	124.718
262.005	7.98934	205.109	125.167
262.169	8.08513	190.391	123.684
262.333	8.08513	251.203	123.684
262.497	8.37251	277.125	119.439
262.661	8.37251	195.211	119.439
262.825	8.20966	288.969	121.808
262.99	8.2384	244.359	121.383
263.154	8.0085	227.32	124.867
263.318	7.69239	183.016	129.999
263.482	7.78818	316.578	128.4
263.646	7.64449	283.938	130.813
263.81	7.5008	205.125	133.319
263.974	7.75944	279.359	128.875
264.138	7.63491	218.703	130.977
264.302	7.62533	224.188	131.142
264.466	7.60617	227.898	131.472
264.63	7.57744	220.922	131.971
264.794	7.40501	216.109	135.044
264.958	7.40501	149.563	135.044
265.122	7.5966	205.781	131.638
265.286	7.47207	237.586	133.832
265.45	7.45291	246.32	134.176
265.614	7.30922	181.445	136.813
265.778	7.45291	261.391	134.176
265.942	7.56786	236.75	132.138
266.106	7.5487	230.359	132.473
266.27	7.57744	296.484	131.971
266.434	7.45291	195.898	134.176
266.598	7.24217	172	138.08
266.762	7.40501	169.031	135.044
266.926	7.5008	163.547	133.319
267.091	7.38585	273	135.394
267.255	7.34754	219.391	136.1
267.419	7.12722	164.328	140.307
267.583	7.25175	282.344	137.898
267.747	7.37627	264.625	135.57
267.911	7.34754	213.211	136.1
268.075	7.19427	220.656	138.999
268.239	6.95479	261.531	143.786
268.403	7.0889	210.766	141.066
268.567	6.9069	220.656	144.783
268.731	6.9069	213.758	144.783
268.895	6.89732	207.234	144.984
269.059	7.30922	257.094	136.813
269.223	7.29006	203.516	137.173
269.387	7.28048	248.461	137.354
269.551	7.41459	233.859	134.869
269.715	7.37627	248.461	135.57
269.879	7.21343	191.625	138.63
270.043	7.37627	246.617	135.57
270.207	7.5487	226.516	132.473
270.371	7.5008	184.461	133.319
270.535	7.30922	220.938	136.813
270.699	7.60617	195.039	131.472
270.863	7.89355	220.609	126.686
271.027	7.81692	298.797	127.928
271.192	7.94144	262.016	125.922
271.356	8.26714	182.172	120.961
271.52	8.24798	231.578	121.242
271.684	8.03724	246.898	124.421
271.848	7.97976	252.148	125.317
272.012	7.76902	212.313	128.716
272.176	7.88397	212.484	126.84
272.34	7.40501	263.078	135.044
272.504	7.26133	293.625	137.716
272.668	7.38585	232.719	135.394
272.832	7.26133	267.344	137.716
272.996	7.57744	250.047	131.971
273.16	7.67323	207.336	130.323
273.324	7.57744	236.211	131.971
273.488	7.91271	221.828	126.379
273.652	8.0085	278.563	124.867
273.816	7.92229	203.633	126.226
273.98	7.85523	300.047	127.304
274.144	7.67323	223.617	130.323
274.308	7.52954	253.984	132.81
274.472	7.56786	263.672	132.138
274.636	7.5008	172.922	133.319
274.8	7.62533	256.531	131.142
274.964	7.67323	224.023	130.323
275.128	7.81692	171.734	127.928
275.293	7.78818	236.227	128.4
275.457	8.07555	187.164	123.831
275.621	8.26714	271.109	120.961
275.785	8.11387	252.508	123.246
275.949	7.91271	201.805	126.379
276.113	7.41459	229.25	134.869
276.277	7.16553	221.328	139.557
276.441	7.16553	263.141	139.557
276.605	7.26133	214.922	137.716
276.769	7.28048	256.766	137.354
276.933	7.12722	207.188	140.307
277.097	7.11764	217.039	140.496
277.261	6.92605	242.563	144.382
277.425	7.21343	220.75	138.63
277.589	7.34754	199.211	136.1
277.753	7.19427	296.984	138.999
277.917	7.0889	255.336	141.066
278.081	6.86858	236.898	145.591

278.245	6.64826	177.586	150.415
278.409	6.55247	284.547	152.614
278.573	6.64826	256.703	150.415
278.737	6.56205	228.891	152.391
278.901	6.45668	249.57	154.878
279.065	6.86858	258.422	145.591
279.23	6.83984	205.813	146.202
279.394	7.02185	166.344	142.413
279.558	6.93563	191.633	144.183
279.722	6.9069	276.75	144.783
279.886	6.78237	251.523	147.441
280.05	6.81111	190.125	146.819
280.214	6.81111	243	146.819
280.378	6.677	206.711	149.768
280.542	6.60994	191.914	151.287
280.706	6.80153	242.945	147.026
280.87	7.18469	221.414	139.185
281.034	6.96437	280.891	143.588
281.198	7.00269	200.805	142.802
281.362	7.3188	224.891	136.634
281.526	7.64449	232.484	130.813
281.69	7.26133	222.703	137.716
281.854	7.63491	257.797	130.977
282.018	7.75944	271.891	128.875
282.182	7.79776	214.711	128.242
282.346	8.18092	228.938	122.236
282.51	7.95102	264.359	125.77
282.674	8.05639	306.656	124.125
282.838	8.08513	286.891	123.684
283.002	8.07555	249.367	123.831
283.166	8.20008	289.125	121.95
283.331	8.68862	285.016	115.093
283.495	9.04305	242.359	110.582
283.659	8.8802	280.172	112.61
283.823	9.48369	205.875	105.444
283.987	9.55074	206.992	104.704
284.151	9.55074	263.922	104.704
284.315	9.95307	307.406	100.472
284.479	9.92433	214.656	100.762
284.643	9.71359	216.961	102.949
284.807	9.63695	273.453	103.767
284.971	9.79022	207.859	102.143
285.135	10.0105	257.359	99.8947
285.299	9.89559	243.531	101.055
285.463	10.3362	255.695	96.7471
285.627	10.5087	216.172	95.1596
285.791	10.5949	229.93	94.3853
285.955	11.0642	255.109	90.3812
286.119	11.1888	258.266	89.3753
286.283	11.3612	262.938	88.0189
286.447	11.4953	252.969	86.992
286.611	11.8306	278.531	84.5267
286.775	12.2425	280.766	81.6828
286.939	12.5299	227.273	79.8094
287.103	13.1812	264.859	75.8654
287.267	13.6506	239.055	73.2568
287.432	14.0338	253.852	71.2566
287.596	14.9917	305.766	66.7036
287.76	15.9688	274.828	62.6222
287.924	16.7159	212.813	59.8231
288.088	17.808	261.281	56.1546
288.252	18.5264	269.094	53.977
288.416	19.2257	228.078	52.0138
288.58	20.3369	262.859	49.1718
288.744	21.1224	240.492	47.3432
288.908	22.9999	300.781	43.4785
289.072	23.8716	325.031	41.8908
289.236	24.8295	284.328	40.2747
289.4	25.3372	309.406	39.4677
289.564	25.5479	268.016	39.1421
289.728	25.433	257.109	39.319
289.892	25.4617	267.172	39.2747
290.056	25.7682	247.086	38.8075
290.22	26.1801	280.922	38.1969
290.384	25.7778	258.5	38.793
290.548	24.9253	234.875	40.1199
290.712	23.7183	227.195	42.1615
290.876	22.8849	255.641	43.6969
291.04	21.8983	269.656	45.6657
291.204	22.2814	255.133	44.8804
291.368	21.9174	255.156	45.6258
291.533	20.9978	239.625	47.624
291.697	20.471	252.789	48.8497
291.861	19.7525	213.586	50.6264
292.025	18.1145	215.414	55.2044
292.189	17.08	171.211	58.5482
292.353	16.6968	224.93	59.8918
292.517	15.7868	138.891	63.3442
292.681	14.7426	123.824	67.8305
292.845	14.2445	159.695	70.2024
293.009	13.8997	169.742	71.9441
293.173	12.7023	163.688	78.726
293.337	11.7635	104.566	85.0085
293.501	11.0642	113.648	90.3812
293.665	10.3458	153.992	96.6575
293.829	10.2021	151.953	98.0188
293.993	10.6236	136.531	94.13
294.157	9.45495	99.4375	105.765
294.321	9.41663	68.1445	106.195
294.485	9.69443	88.5195	103.152
294.649	9.45495	103.203	105.765
294.813	8.68862	51.7617	115.093
294.977	8.84188	82.9375	113.098
295.141	8.4204	82.0313	118.759
295.305	8.26714	67.8047	120.961
295.47	7.95102	57.2676	125.77
295.634	8.22882	47.3691	121.524
295.798	8.67904	54.0918	115.22
295.962	8.51619	50.6074	117.423
296.126	8.05639	60.5508	124.125
296.29	7.62533	60.4922	131.142
296.454	7.14638	40.7344	139.931
296.618	6.89732	43.9316	144.984
296.782	6.96437	20.0674	143.588
296.946	7.11764	36.6953	140.496
297.11	7.62533	20.2236	131.142
297.274	7.88397	26.9063	126.84

297.438	8.20966	30.2949	121.808
297.602	8.89936	33.4453	112.368
297.766	9.6178	40.0313	103.974
297.93	10.9493	26.8057	91.3301
298.094	11.0738	43.6621	90.303
298.258	10.3171	43.9199	96.9267
298.422	10.729	30.709	93.2055
298.586	10.5949	57.8633	94.3853
298.75	10.0297	40.8945	99.7039
298.914	9.83812	30.9834	101.645
299.078	10.365	34.6211	96.4788
299.242	10.6811	24.3652	93.6235
299.406	10.9972	37.6719	90.9323
299.571	10.9972	47.7285	90.9323
299.735	9.93391	16.9639	100.665
299.899	8.58325	50.6641	116.506
300.063	8.4683	50.7188	118.087
300.227	8.30545	43.5098	120.403
300.391	8.03724	36.7266	124.421
300.555	7.76902	43.7988	128.716
300.719	7.48165	37.373	133.66
300.883	7.41459	68.0391	134.869
301.047	7.53912	23.5352	132.641
301.211	7.52954	49.834	132.81
301.375	7.28048	36.2871	137.354
300.719	7.62533	43.8125	131.142
300.555	7.85523	33.2559	127.304
300.391	8.03724	42.7305	124.421
300.227	8.29587	43.6367	120.542
300.063	8.59283	40.1543	116.376
299.899	8.65988	42.2422	115.475
299.735	8.85146	49.5117	112.976
299.571	9.23463	35.4375	108.288
299.406	10.3458	32.0078	96.6575
299.242	10.911	37.5	91.6508
299.078	10.7194	33.4746	93.2888
298.914	10.4703	61.0645	95.5079
298.75	10.9397	43.7695	91.41
298.586	9.91475	33.3047	100.86
298.422	9.7998	46.1289	102.043
298.258	10.2021	37.7988	98.0188
298.094	10.3362	46.6738	96.7471
297.93	9.88601	38.0879	101.153
297.766	10.3458	36.2832	96.6575
297.602	10.2979	38.0039	97.107
297.438	9.31126	50.7949	107.397
297.274	8.53535	33.4082	117.16
297.11	8.03724	33.4688	124.421
296.946	7.67323	42.9141	130.323
296.782	7.33796	28.3057	136.278
296.618	6.95479	44.3887	143.786
296.454	6.83026	30.3408	146.407
296.29	6.68658	36.8105	149.553
296.126	6.75363	46.1836	148.069
295.962	7.03143	31.7178	142.219
295.798	7.45291	41.4434	134.176
295.634	7.56786	57.5781	132.138
295.47	8.10429	49.5645	123.391
295.305	8.70778	82.8633	114.84
295.141	8.77483	73.5742	113.962
294.977	8.90894	64.5078	112.247
294.813	8.70778	61.9883	114.84
294.649	9.02389	92.9727	110.817
294.485	8.67904	79.2813	115.22
294.321	8.49704	85.2617	117.688
294.157	9.11968	106.215	109.653
293.993	9.6178	111.43	103.974
293.829	9.76148	106.652	102.443
293.665	9.79022	111.18	102.143
293.501	10.3171	119.93	96.9267
293.337	10.5949	145.656	94.3853
293.173	11.1696	134.859	89.5286
293.009	11.8593	158.492	84.3219
292.845	12.5778	138.773	79.5055
292.681	13.5261	155.609	73.9312
292.517	14.8672	169.047	67.2623
292.353	15.4994	174.977	64.5187
292.189	16.2561	166.289	61.5152
292.025	17.0225	235.063	58.7459
291.861	18.2582	225.813	54.7699
291.697	18.7467	214.563	53.3426
291.533	19.6663	217.922	50.8483
291.368	20.835	211.82	47.9962
291.204	21.6971	256.922	46.0891
291.04	21.7354	243.602	46.0079
290.876	21.9557	262.594	45.5462
290.712	22.3006	256.047	44.8419
290.548	23.0478	297.297	43.3882
290.384	24.4367	283.984	40.922
290.22	25.615	268.344	39.0397
290.056	26.0556	260.422	38.3794
289.892	25.864	295.328	38.6637
289.728	25.5192	323.156	39.1862
289.564	25.2031	284.203	39.6777
289.4	25.2605	285.891	39.5874
289.236	25.2605	253.406	39.5874
289.072	24.8486	274.641	40.2436
288.908	24.3409	243.156	41.083
288.744	23.3926	252.242	42.7485
288.58	21.9845	291.438	45.4866
288.416	20.4327	265.469	48.9413
288.252	19.5131	307.266	51.2477
288.088	18.5839	287.281	53.8101
287.924	17.7792	259.797	56.2454
287.76	17.0608	277.031	58.6139
287.596	16.2178	265.938	61.6605
287.432	15.4611	232.539	64.6785
287.267	14.7331	265.609	67.8746
287.103	13.9572	261.609	71.6479
286.939	13.3537	274.75	74.8858
286.775	12.913	277.063	77.4412
286.611	12.4724	253.305	80.1771
286.447	12.1563	261.75	82.2621
286.283	11.7827	285	84.8703
286.119	11.4283	239.961	87.5024
285.955	11.2079	236.078	89.2225
285.791	11.093	234.648	90.1471

285.627	10.796	248.063	92.6266
285.463	10.4895	254.945	95.3334
285.299	10.5278	218.336	94.9865
285.135	10.2117	258.922	97.9269
284.971	9.95307	224.242	100.472
284.807	9.91475	239.648	100.86
284.643	9.91475	237.813	100.86
284.479	9.67527	252.508	103.356
284.315	9.80938	227.594	101.943
284.151	10.0584	279.469	99.419
283.987	9.69443	257.953	103.152
283.823	9.25379	259.406	108.064
283.659	9.22505	270.391	108.4
283.495	8.80357	254.953	113.59
283.331	8.53535	233.211	117.16
283.166	8.81315	264.516	113.467
283.002	8.62156	282.922	115.988
282.838	8.2384	266.141	121.383
282.674	8.10429	271.297	123.391
282.51	8.20008	268.484	121.95
282.346	7.82649	280.047	127.771
282.182	7.88397	243.703	126.84
282.018	7.76902	229.477	128.716
281.854	7.75944	261.953	128.875
281.69	7.5008	253.414	133.319
281.526	7.34754	249.383	136.1
281.362	7.53912	275.984	132.641
281.198	7.37627	280.625	135.57
281.034	7.30922	220.336	136.813
280.87	7.33796	251.406	136.278
280.706	7.29006	233.406	137.173
280.542	7.12722	257.719	140.307
280.378	7.0889	239.984	141.066
280.214	6.63868	214.477	150.632
280.05	6.80153	207.367	147.026
279.886	6.80153	189.82	147.026
279.722	6.71531	204.266	148.913
279.558	6.65784	199.781	150.199
279.394	6.87816	210.063	145.388
279.23	6.77279	190.883	147.65
279.065	6.84942	211.57	145.998
278.901	6.81111	207.773	146.819
278.737	6.63868	181.141	150.632
278.573	6.60994	207.336	151.287
278.409	6.68658	209.648	149.553
278.245	6.58121	210.969	151.948
278.081	6.52373	237.586	153.287
277.917	6.677	209.805	149.768
277.753	6.64826	243.836	150.415
277.589	6.97395	206.148	143.391
277.425	7.12722	223.398	140.307
277.261	7.28048	262.875	137.354
277.097	7.21343	224.961	138.63
276.933	7.45291	245.156	134.176
276.769	7.66365	271.031	130.486
276.605	7.30922	215.609	136.813
276.441	7.25175	224.75	137.898
276.277	7.11764	237.664	140.496
276.113	7.29006	215.875	137.173
275.949	7.48165	238.195	133.66
275.785	7.62533	234.18	131.142
275.621	7.92229	240.594	126.226
275.457	8.0085	217.82	124.867
275.293	8.15219	227.344	122.666
275.128	8.27672	254.586	120.821
274.964	8.14261	244.648	122.811
274.8	7.92229	214.602	126.226
274.636	7.64449	245.367	130.813
274.472	7.48165	233.563	133.66
274.308	7.34754	240.125	136.1
274.144	7.45291	245.211	134.176
273.98	7.5966	249.055	131.638
273.816	7.74028	247.234	129.194
273.652	7.81692	212.922	127.928
273.488	7.89355	196.227	126.686
273.324	7.97976	239.945	125.317
273.16	7.86481	230.672	127.149
272.996	7.74028	202.867	129.194
272.832	7.62533	216.094	131.142
272.668	7.47207	198.25	133.832
272.504	7.29006	203.711	137.173
272.34	7.40501	217.258	135.044
272.176	7.40501	246.984	135.044
272.012	7.43375	248.719	134.522
271.848	7.70197	226.633	129.837
271.684	7.94144	213.492	125.922
271.52	7.92229	227.945	126.226
271.356	8.08513	233.141	123.684
271.192	8.39166	215.703	119.166
271.027	8.13303	225.594	122.955
270.863	7.85523	221.203	127.304
270.699	7.76902	247.539	128.716
270.535	7.79776	204.789	128.242
270.371	7.64449	239.758	130.813
270.207	7.57744	214.391	131.971
270.043	7.5966	236.508	131.638
269.879	7.56786	222.758	132.138
269.715	7.44333	226.992	134.348
269.551	7.33796	209.391	136.278
269.387	7.43375	219.414	134.522
269.223	7.47207	218.555	133.832
269.059	7.22301	221.867	138.446
268.895	7.26133	235.266	137.716
268.731	7.0889	210.742	141.066
268.567	7.06016	259.328	141.64
268.403	6.92605	246.102	144.382
268.239	6.97395	212.297	143.391
268.075	7.00269	237.094	142.802
267.911	7.06974	256.266	141.448
267.747	7.06016	215.117	141.64
267.583	7.16553	244.664	139.557
267.419	7.28048	238.961	137.354
267.255	7.26133	230.211	137.716
267.091	7.28048	240.07	137.354
266.926	7.34754	250.969	136.1
266.762	7.38585	254.938	135.394
266.598	7.09848	260.563	140.875

266.434	7.25175	222.375	137.898
266.27	7.21343	232.805	138.63
266.106	7.18469	235.977	139.185
265.942	7.26133	253.258	137.716
265.778	7.29006	186.961	137.173
265.614	7.45291	256.641	134.176
265.45	7.51038	190.133	133.149
265.286	7.34754	224.203	136.1
265.122	7.47207	204.539	133.832
264.958	7.56786	232.961	132.138
264.794	7.5487	217.805	132.473
264.63	7.67323	224.188	130.323
264.466	7.66365	165.836	130.486
264.302	7.67323	240.609	130.323
264.138	7.64449	236.273	130.813
263.974	7.69239	231.875	129.999
263.81	7.63491	254.055	130.977
263.646	7.66365	261.469	130.486
263.482	7.57744	229.586	131.971
263.318	7.5487	235.367	132.473
263.154	7.5487	226.906	132.473
262.99	7.60617	241.938	131.472
262.825	7.82649	246.023	127.771
262.661	8.18092	254.094	122.236
262.497	8.43956	235.867	118.49
262.333	8.36293	249.547	119.575
262.169	8.27672	248.383	120.821
262.005	8.24798	200.406	121.242
261.841	8.13303	193.469	122.955
261.677	8.03724	244.609	124.421
261.513	8.0085	210.891	124.867
261.349	8.15219	227.945	122.666
261.185	7.9606	250.914	125.619
261.021	7.74028	254.344	129.194
260.857	7.97976	224.727	125.317
260.693	8.26714	221.805	120.961
260.529	8.36293	217.547	119.575
260.365	8.24798	214.344	121.242
260.201	8.2384	230.891	121.383
260.037	8.51619	268.828	117.423
259.873	8.33419	183.852	119.988
259.709	8.11387	228.383	123.246
259.545	7.97976	205.703	125.317
259.381	8.20966	215.281	121.808
259.217	8.37251	228.242	119.439
259.053	8.24798	210.813	121.242
258.888	8.29587	197.063	120.542
258.724	8.4683	217.617	118.087
258.56	8.39166	261.469	119.166
258.396	8.4204	238.609	118.759
258.232	8.30545	223.477	120.403
258.068	8.34377	210.172	119.85
257.904	8.32461	218.414	120.126
257.74	8.52577	222.625	117.291
257.576	8.6503	194.922	115.603
257.412	8.77483	205.148	113.962
257.248	8.67904	250.188	115.22
257.084	8.71736	197.703	114.714
256.92	9.02389	227.148	110.817
256.756	8.77483	220.297	113.962
256.592	8.81315	241.859	113.467
256.428	8.63114	237.688	115.86
256.264	8.85146	276.766	112.976
256.1	8.84188	219.383	113.098
255.936	9.03347	214.578	110.699
255.772	9.12926	193.289	109.538
255.608	8.94726	239.5	111.766
255.444	9.03347	219.641	110.699
255.28	9.18673	232.258	108.853
255.116	9.13884	246.977	109.423
254.952	9.00473	235.703	111.053
254.787	9.00473	271.906	111.053
254.623	9.32084	216.727	107.286
254.459	9.23463	241.141	108.288
254.295	8.97599	207.883	111.408
254.131	9.00473	203.492	111.053
253.967	9.09094	230.891	110
253.803	8.99515	247.008	111.171
253.639	8.96641	242.727	111.527
253.475	8.90894	247.859	112.247
253.311	8.90894	232.563	112.247
253.147	8.9281	215.078	112.006
252.983	9.04305	217.391	110.582
252.819	8.90894	223.844	112.247
252.655	8.78441	265.531	113.838
252.491	8.90894	232.539	112.247
252.327	8.89936	251.18	112.368
252.163	8.8802	273.422	112.61
251.999	8.78441	209.539	113.838
251.835	8.72694	213.953	114.588
251.671	8.80357	225.672	113.59
251.507	8.58325	229.5	116.506
251.343	8.32461	211.516	120.126
251.179	8.10429	203.547	123.391
251.015	7.92229	220.828	126.226
250.851	7.81692	224.344	127.928
250.686	7.98934	168.695	125.167
250.522	8.01808	205.836	124.718
250.358	8.03724	212.508	124.421
250.194	8.14261	228.242	122.811
250.03	7.95102	250.523	125.77
249.866	7.7307	246.383	129.354
249.702	7.88397	228.625	126.84
249.538	7.76902	221.328	128.716
249.374	7.76902	207.719	128.716
249.21	7.66365	219.078	130.486
249.046	7.91271	197.547	126.379
248.882	7.81692	191.008	127.928
248.718	7.85523	239.703	127.304
248.554	7.81692	222.703	127.928
248.39	7.88397	200.375	126.84
248.226	7.92229	250.531	126.226
248.062	7.89355	205.539	126.686
247.898	8.04682	211.234	124.273
247.734	7.86481	196.469	127.149
247.57	7.97976	217.93	125.317
247.406	8.18092	223.742	122.236

247.242	8.26714	224.523	120.961
247.078	8.33419	233.063	119.988
246.914	8.32461	191.813	120.126
246.75	8.33419	232.664	119.988
246.585	8.36293	223.82	119.575
246.421	8.08513	201.5	123.684
246.257	8.27672	225.406	120.821
246.093	8.17134	258.125	122.379
245.929	8.18092	228.969	122.236
245.765	8.18092	236.07	122.236
245.601	7.97976	228.781	125.317
245.437	8.03724	202.641	124.421
245.273	8.10429	202.461	123.391
245.109	8.01808	253.266	124.718
244.945	7.82649	203.086	127.771
244.781	7.82649	236.313	127.771
244.617	7.76902	266.547	128.716
244.453	7.78818	224.633	128.4
244.289	7.66365	206.836	130.486
244.125	7.69239	200.477	129.999
243.961	7.5966	222.32	131.638
243.797	7.40501	215.195	135.044
243.633	7.60617	241.781	131.472
243.469	7.47207	218.508	133.832
243.305	7.53912	199.023	132.641
243.141	7.57744	220.234	131.971
242.977	7.40501	211.336	135.044
242.813	7.51038	218.648	133.149
242.648	7.66365	219.547	130.486
242.484	7.70197	227.398	129.837
242.32	8.05639	223.438	124.125
242.156	7.86481	179.352	127.149
241.992	7.91271	227.555	126.379
241.828	7.83607	209.492	127.615
241.664	7.98934	221.906	125.167
241.5	8.01808	218.219	124.718
241.336	8.04682	229.344	124.273
241.172	8.26714	215.805	120.961
241.008	8.33419	225.867	119.988
240.844	8.4204	263.375	118.759
240.68	8.40124	245.125	119.03
240.516	8.51619	215.664	117.423
240.352	8.39166	210.5	119.166
240.188	8.40124	210.477	119.03
240.024	8.42998	238.688	118.624
239.86	8.14261	262.906	122.811
239.696	7.82649	218.789	127.771
239.532	7.85523	202.844	127.304
239.368	7.86481	219.414	127.149
239.204	7.98934	215.672	125.167
239.04	8.03724	175.867	124.421
238.876	7.9606	232.516	125.619
238.712	8.0085	204.07	124.867
238.547	8.13303	194.328	122.955
238.383	8.18092	202.984	122.236
238.219	8.05639	277.234	124.125
238.055	8.24798	218.859	121.242
237.891	8.15219	227.641	122.666
237.727	8.05639	235.703	124.125
237.563	8.03724	231.422	124.421
237.399	8.11387	201.852	123.246
237.235	8.13303	212.109	122.955
237.071	8.03724	236.367	124.421
236.907	8.27672	220.938	120.821
236.743	8.13303	265.109	122.955
236.579	7.95102	263.359	125.77
236.415	7.94144	244.164	125.922
236.251	8.0085	231.328	124.867
236.087	8.03724	232.383	124.421
235.923	7.97976	199.922	125.317
235.759	8.0085	226.5	124.867
235.595	8.04682	201.367	124.273
235.431	8.05639	239.859	124.125
235.267	8.07555	262.719	123.831
235.103	8.15219	212.867	122.666
234.939	7.91271	211.984	126.379
234.775	7.91271	211.664	126.379
234.611	8.20008	204.008	121.95
234.446	8.14261	229.891	122.811
234.282	7.85523	239.727	127.304
234.118	7.94144	255.836	125.922
233.954	8.03724	217.727	124.421
233.79	7.95102	282.125	125.77
233.626	7.98934	226.477	125.167
233.462	8.08513	232.906	123.684
233.298	7.89355	252.453	126.686
233.134	7.82649	203.602	127.771
232.97	8.0085	226.18	124.867
232.806	7.88397	226.703	126.84
232.642	7.86481	207.008	127.149
232.478	7.95102	191.719	125.77
232.314	7.95102	225.016	125.77
232.15	7.95102	226.938	125.77
231.986	8.0085	199.594	124.867
231.822	8.0085	227.281	124.867
231.658	8.08513	201.258	123.684
231.494	7.92229	257.094	126.226
231.33	8.04682	201.813	124.273
231.166	8.01808	224.391	124.718
231.002	7.91271	212.781	126.379
230.838	7.82649	209.602	127.771
230.674	7.78818	243.75	128.4
230.51	7.91271	203.602	126.379
230.345	8.04682	191.938	124.273
230.181	8.03724	236.719	124.421
230.017	8.03724	185.641	124.421
229.853	7.81692	235.641	127.928
229.689	7.88397	204.508	126.84
229.525	7.78818	227.508	128.4
229.361	7.60617	221.875	131.472
229.197	7.74028	220.57	129.194
229.033	7.85523	235.211	127.304
228.869	7.98934	219.727	125.167
228.705	7.83607	226.047	127.615
228.541	7.82649	233.922	127.771
228.377	7.70197	233.992	129.837
228.213	7.79776	203.414	128.242

228.049	7.89355	241.258	126.686
227.885	7.76902	233.227	128.716
227.721	7.5487	209.047	132.473
227.557	7.78818	218.68	128.4
227.393	7.79776	224.969	128.242
227.229	7.97976	218.711	125.317
227.065	7.78818	213.352	128.4
226.901	7.81692	244.32	127.928
226.737	7.72112	207.445	129.515
226.573	7.69239	226.07	129.999
226.409	7.76902	224.578	128.716
226.244	7.81692	231.813	127.928
226.08	7.74028	214.117	129.194
225.916	7.92229	236.227	126.226
225.752	8.04682	213.414	124.273
225.588	7.91271	238.328	126.379
225.424	8.10429	227.008	123.391
225.26	8.10429	215.875	123.391
225.096	7.92229	246.125	126.226
224.932	8.01808	224.133	124.718
224.768	8.13303	199.117	122.955
224.604	8.13303	226.648	122.955
224.44	8.05639	191.734	124.125
224.276	8.07555	221.844	123.831
224.112	8.17134	187.688	122.379
223.948	8.13303	205.875	122.955
223.784	8.10429	213.445	123.391
223.62	8.07555	240.156	123.831
223.456	8.01808	204.453	124.718
223.292	8.26714	207.617	120.961
223.128	8.05639	221.539	124.125
222.964	8.20008	247.656	121.95
222.8	8.29587	258.484	120.542
222.636	8.24798	221.539	121.242
222.472	8.15219	220.031	122.666
222.307	8.20966	207.359	121.808
222.143	8.13303	210.008	122.955
221.979	8.2384	184.055	121.383
221.815	8.14261	223.633	122.811
221.651	8.14261	238.844	122.811
221.487	8.18092	222.891	122.236
221.323	8.10429	224.711	123.391
221.159	8.18092	202.75	122.236
220.995	8.13303	243.32	122.955
220.831	8.29587	232.125	120.542
220.667	8.22882	205	121.524
220.503	8.20008	219.375	121.95
220.339	8.18092	220.625	122.236
220.175	8.13303	178.828	122.955
220.011	8.10429	211.18	123.391
219.847	8.07555	213.273	123.831
219.683	8.10429	185.375	123.391
219.519	8.14261	194.156	122.811
219.355	8.11387	241.828	123.246
219.191	8.14261	237.844	122.811
219.027	8.10429	198.18	123.391
218.863	7.95102	208.125	125.77
218.699	7.98934	181.789	125.167
218.535	8.07555	233.016	123.831
218.371	7.97976	243.992	125.317
218.206	7.9606	213.984	125.619
218.042	8.01808	185.273	124.718
217.878	7.91271	215.469	126.379
217.714	7.98934	187.914	125.167
217.55	8.10429	217.516	123.391
217.386	8.10429	210.172	123.391
217.222	7.94144	215.75	125.922
217.058	7.83607	210.008	127.615
216.894	7.89355	229.203	126.686
216.73	7.94144	216.063	125.922
216.566	8.0085	191.016	124.867
216.402	8.01808	237.055	124.718
216.238	7.9606	199.758	125.619
216.074	7.98934	183.578	125.167
215.91	7.94144	193.195	125.922
215.746	7.9606	227.094	125.619
215.582	8.13303	220.422	122.955
215.418	7.86481	204.969	127.149
215.254	7.91271	229.453	126.379
215.09	7.88397	204.281	126.84
214.926	7.89355	206.977	126.686
214.762	7.95102	176.289	125.77
214.598	7.92229	209.656	126.226
214.434	7.91271	199.609	126.379
214.27	7.85523	211.266	127.304
214.105	7.94144	183.586	125.922
213.941	7.83607	184.648	127.615
213.777	7.86481	191.469	127.149
213.613	7.94144	163.906	125.922
213.449	7.74028	240.945	129.194
213.285	7.66365	211.563	130.486
213.121	7.79776	212.789	128.242
212.957	7.60617	209.813	131.472
212.793	7.70197	227.977	129.837
212.629	7.74028	200.93	129.194
212.465	7.62533	217.617	131.142
212.301	7.72112	200.219	129.515
212.137	7.81692	202.023	127.928
211.973	7.67323	234.773	130.323
211.809	7.66365	229.5	130.486
211.645	7.74028	230.641	129.194
211.481	7.70197	196.438	129.837
211.317	7.66365	191.406	130.486
211.153	7.70197	225.609	129.837
210.989	7.64449	190.953	130.813
210.825	7.79776	207.031	128.242
210.661	7.85523	165.242	127.304
210.497	7.69239	217.273	129.999
210.333	7.63491	199.992	130.977
210.169	7.66365	211.625	130.486
210.004	7.67323	208.969	130.323
209.84	7.69239	187.992	129.999
209.676	7.51038	199.422	133.149
209.512	7.66365	192.797	130.486
209.348	7.63491	211.617	130.977
209.184	7.70197	186.727	129.837
209.02	7.69239	193.266	129.999

208.856	7.56786	207.539	132.138
208.692	7.62533	195.188	131.142
208.528	7.63491	191.367	130.977
208.364	7.69239	209.102	129.999
208.2	7.47207	171.445	133.832
208.036	7.48165	201.648	133.66
207.872	7.72112	173.516	129.515
207.708	7.56786	226.852	132.138
207.544	7.57744	201.578	131.971
207.38	7.52954	201.93	132.81
207.216	7.64449	209.953	130.813
207.052	7.66365	180.664	130.486
206.888	7.51038	209.859	133.149
206.724	7.53912	198.492	132.641
206.56	7.57744	235.578	131.971
206.396	7.5966	190.383	131.638
206.232	7.44333	191.32	134.348
206.067	7.41459	198.305	134.869
205.903	7.3188	193.805	136.634
205.739	7.30922	196.305	136.813
205.575	7.28048	198.359	137.354
205.411	7.3188	211.188	136.634
205.247	7.44333	216.469	134.348
205.083	7.51038	190.602	133.149
204.919	7.44333	213.547	134.348
204.755	7.45291	216.273	134.176
204.591	7.48165	232.625	133.66
204.427	7.60617	207.797	131.472
204.263	7.47207	196.742	133.832
204.099	7.40501	223.32	135.044
203.935	7.33796	215.125	136.278
203.771	7.26133	208.297	137.716
203.607	7.44333	211.547	134.348
203.443	7.38585	202.273	135.394
203.279	7.34754	200.078	136.1
203.115	7.44333	229.578	134.348
202.951	7.37627	192.547	135.57
202.787	7.52954	214.813	132.81
202.623	7.45291	191.742	134.176
202.459	7.44333	172.766	134.348
202.295	7.48165	206.352	133.66
202.131	7.3188	213.352	136.634
201.966	7.3188	198	136.634
201.802	7.3188	187.484	136.634
201.638	7.38585	206.711	135.394
201.474	7.19427	214.055	138.999
201.31	7.06016	223.656	141.64
201.146	7.29006	209.148	137.173
200.982	7.30922	216.398	136.813
200.818	7.12722	223.828	140.307
200.654	7.15595	207.875	139.744
200.49	7.14638	188.305	139.931
200.326	7.16553	189.422	139.557
200.162	7.28048	203.188	137.354
199.998	7.12722	234.781	140.307
199.834	7.15595	170.031	139.744
199.998	7.06016	193.992	141.64
200.162	7.06974	195.063	141.448
200.326	7.16553	200.672	139.557
200.49	7.29006	217.781	137.173
200.654	7.21343	193.078	138.63
200.818	7.15595	197.734	139.744
200.982	7.15595	167.586	139.744
201.146	7.12722	203.32	140.307
201.31	7.11764	202.844	140.496
201.474	7.29006	173.133	137.173
201.638	7.12722	232.445	140.307
201.802	7.06974	209.25	141.448
201.966	7.12722	153.734	140.307
202.131	7.09848	204.633	140.875
202.295	7.21343	213.828	138.63
202.459	7.48165	175.313	133.66
202.623	7.5487	182.383	132.473
202.787	7.53912	188.133	132.641
202.951	7.35712	205.68	135.923
203.115	7.37627	235.109	135.57
203.279	7.0889	144.422	141.066
203.443	7.29006	210.375	137.173
203.607	7.47207	202.594	133.832
203.771	7.33796	112.492	136.278
203.935	7.40501	151.859	135.044
204.099	7.35712	190.125	135.923
204.263	7.51038	187.25	133.149
204.427	7.38585	198.016	135.394
204.591	7.5008	176	133.319
204.755	7.43375	198.492	134.522
204.919	7.18469	182.023	139.185
205.083	7.40501	164.188	135.044
205.247	7.37627	230.211	135.57
205.411	7.35712	190.664	135.923
205.575	7.47207	229.094	133.832
205.739	7.30922	170.344	136.813
205.903	7.51038	254.914	133.149
206.067	7.45291	208.945	134.176
206.232	7.5487	157.508	132.473
206.396	7.38585	161.844	135.394
206.56	7.09848	219.648	140.875
206.724	7.25175	186.047	137.898
206.888	7.43375	173.273	134.522
207.052	7.51038	203.211	133.149
207.216	7.44333	229.992	134.348
207.38	7.64449	180.75	130.813
207.544	7.57744	206.203	131.971
207.708	7.51038	208.445	133.149
207.872	7.47207	187.328	133.832
208.036	7.47207	229.945	133.832
208.2	7.56786	237.477	132.138
208.364	7.64449	199.609	130.813
208.528	7.57744	193.766	131.971
208.692	7.74028	186.484	129.194
208.856	7.47207	191.148	133.832
209.02	7.47207	168.422	133.832
209.184	7.52954	228.648	132.81
209.348	7.64449	207.086	130.813
209.512	7.5966	162.43	131.638
209.676	7.5966	223.508	131.638
209.84	7.5966	191.422	131.638

210.004	7.63491	248.688	130.977
210.169	7.66365	201.773	130.486
210.333	7.5966	192.773	131.638
210.497	7.63491	187.617	130.977
210.661	7.45291	222.75	134.176
210.825	7.52954	206.039	132.81
210.989	7.51038	233.305	133.149
211.153	7.72112	225.172	129.515
211.317	7.85523	250.109	127.304
211.481	7.75944	167.859	128.875
211.645	7.67323	192.125	130.323
211.809	7.64449	172.789	130.813
211.973	7.78818	234.586	128.4
212.137	7.5008	161.367	133.319
212.301	7.70197	149.336	129.837
212.465	7.69239	202.688	129.999
212.629	7.70197	239.367	129.837
212.793	7.70197	166.008	129.837
212.957	7.85523	231.367	127.304
213.121	7.60617	201.781	131.472
213.285	7.72112	170.141	129.515
213.449	7.92229	125.887	126.226
213.613	7.63491	200.766	130.977
213.777	7.5487	165.484	132.473
213.941	7.83607	208.352	127.615
214.105	7.86481	215.516	127.149
214.27	7.72112	196.828	129.515
214.434	7.70197	180.906	129.837
214.598	7.75944	162.438	128.875
214.762	7.92229	146.57	126.226
214.926	7.72112	242.789	129.515
215.09	7.76902	237.609	128.716
215.254	7.83607	213.367	127.615
215.418	7.85523	206.438	127.304
215.582	7.95102	227.797	125.77
215.746	7.92229	134.789	126.226
215.91	7.69239	191.211	129.999
216.074	7.83607	179.906	127.615
216.238	7.86481	187.844	127.149
216.402	7.94144	161.219	125.922
216.566	7.75944	179.461	128.875
216.73	7.76902	223.094	128.716
216.894	7.72112	180.914	129.515
217.058	7.86481	189.305	127.149
217.222	7.75944	257.391	128.875
217.386	7.63491	213.664	130.977
217.55	7.5966	185.227	131.638
217.714	7.5966	245.883	131.638
217.878	7.74028	195.938	129.194
218.042	7.72112	210.086	129.515
218.206	7.74028	180.82	129.194
218.371	7.66365	236.211	130.486
218.535	7.74028	213.125	129.194
218.699	7.72112	220.727	129.515
218.863	7.69239	239.883	129.999
219.027	7.72112	163.008	129.515
219.191	7.67323	202.734	130.323
219.355	7.81692	195.547	127.928
219.519	7.79776	219.805	128.242
219.683	7.83607	209.625	127.615
219.847	7.85523	197.5	127.304
220.011	7.92229	228.055	126.226
220.175	7.74028	172.969	129.194
220.339	7.81692	220.555	127.928
220.503	7.81692	162.023	127.928
220.667	7.79776	177.281	128.242
220.831	7.88397	253.602	126.84
220.995	8.14261	203.617	122.811
221.159	8.07555	222.828	123.831
221.323	8.01808	184.992	124.718
221.487	7.95102	226.836	125.77
221.651	7.94144	196.844	125.922
221.815	7.94144	221.43	125.922
221.979	7.79776	188.539	128.242
222.143	7.92229	134.156	126.226
222.307	7.86481	206.188	127.149
222.472	8.10429	257.953	123.391
222.636	7.91271	166.445	126.379
222.8	7.82649	191.586	127.771
222.964	7.91271	213.273	126.379
223.128	7.67323	219.648	130.323
223.292	7.89355	207.188	126.686
223.456	7.78818	255.977	128.4
223.62	7.70197	189.008	129.837
223.784	7.69239	248.109	129.999
223.948	7.74028	179.867	129.194
224.112	7.81692	178.438	127.928
224.276	7.78818	206.93	128.4
224.44	7.74028	236.648	129.194
224.604	7.91271	243.164	126.379
224.768	7.76902	213.352	128.716
224.932	7.57744	217.977	131.971
225.096	7.81692	196.719	127.928
225.26	7.70197	142.836	129.837
225.424	7.82649	192.336	127.771
225.588	7.76902	193.352	128.716
225.752	7.92229	218.703	126.226
225.916	7.88397	242.281	126.84
226.08	7.70197	167.336	129.837
226.244	7.72112	177.602	129.515
226.409	7.81692	228.281	127.928
226.573	7.64449	189.484	130.813
226.737	7.5966	175.453	131.638
226.901	7.5966	180.258	131.638
227.065	7.53912	207.883	132.641
227.229	7.69239	183.594	129.999
227.393	7.53912	193.445	132.641
227.557	7.51038	203.695	133.149
227.721	7.45291	264.406	134.176
227.885	7.24217	219.727	138.08
228.049	7.14638	235.172	139.931
228.213	7.26133	209.102	137.716
228.377	7.48165	193.734	133.66
228.541	7.69239	182.867	129.999
228.705	7.44333	257.047	134.348
228.869	7.5966	183.586	131.638
229.033	7.70197	211.313	129.837

229.197	7.69239	189.742	129.999
229.361	7.86481	237.414	127.149
229.525	7.88397	220.688	126.84
229.689	7.66365	191.313	130.486
229.853	7.56786	231.734	132.138
230.017	7.45291	268.313	134.176
230.181	7.25175	166.961	137.898
230.345	7.30922	221.023	136.813
230.51	7.64449	251.828	130.813
230.674	7.41459	233.32	134.869
230.838	7.43375	229.172	134.522
231.002	7.52954	224.188	132.81
231.166	7.51038	198.797	133.149
231.33	7.37627	240.219	135.57
231.494	7.53912	191.898	132.641
231.658	7.5487	182.469	132.473
231.822	7.5966	205.398	131.638
231.986	7.7307	217.844	129.354
232.15	7.67323	212.133	130.323
232.314	7.3188	236.469	136.634
232.478	7.5008	209.539	133.319
232.642	7.70197	214.375	129.837
232.806	7.57744	253.148	131.971
232.97	7.45291	206.578	134.176
233.134	7.69239	269.109	129.999
233.298	7.7307	143.641	129.354
233.462	7.5008	209.383	133.319
233.626	7.56786	243.211	132.138
233.79	7.63491	217	130.977
233.954	7.75944	221.016	128.875
234.118	7.78818	247.422	128.4
234.282	7.62533	194.305	131.142
234.446	7.81692	218.266	127.928
234.611	7.63491	221.406	130.977
234.775	7.69239	250.398	129.999
234.939	7.48165	246.906	133.66
235.103	7.53912	223.063	132.641
235.267	7.5487	212.977	132.473
235.431	7.53912	225.813	132.641
235.595	7.38585	227.07	135.394
235.759	7.47207	173.844	133.832
235.923	7.5008	253.578	133.319
236.087	7.35712	228.359	135.923
236.251	7.69239	167.289	129.999
236.415	7.47207	279.234	133.832
236.579	7.57744	213.414	131.971
236.743	7.70197	254.086	129.837
236.907	7.72112	254.305	129.515
237.071	7.74028	239.633	129.194
237.235	7.83607	213.906	127.615
237.399	7.98934	237.453	125.167
237.563	7.88397	243.32	126.84
237.727	7.81692	258.859	127.928
237.891	7.81692	250.68	127.928
238.055	7.88397	207.992	126.84
238.219	7.79776	199.031	128.242
238.383	7.76902	228.148	128.716
238.547	7.5487	224.125	132.473
238.712	7.52954	292.328	132.81
238.876	7.53912	235.352	132.641
239.04	7.48165	288.094	133.66
239.204	7.47207	182.922	133.832
239.368	7.48165	158.023	133.66
239.532	7.53912	249.617	132.641
239.696	7.44333	272.625	134.348
239.86	7.38585	216.266	135.394
240.024	7.72112	198.508	129.515
240.188	7.78818	260.578	128.4
240.352	7.64449	261.453	130.813
240.516	7.94144	172.195	125.922
240.68	8.0085	261.125	124.867
240.844	8.15219	156.703	122.666
241.008	8.08513	198.984	123.684
241.172	8.0085	207.523	124.867
241.336	8.01808	233.602	124.718
241.5	8.13303	150.422	122.955
241.664	8.01808	224.648	124.718
241.828	7.69239	208.641	129.999
241.992	7.43375	199.75	134.522
242.156	7.64449	243.477	130.813
242.32	7.29006	217.883	137.173
242.484	7.63491	255.75	130.977
242.648	7.5487	269.813	132.473
242.813	7.38585	214.945	135.394
242.977	7.33796	252.383	136.278
243.141	7.0889	235.82	141.066
243.305	6.95479	197.711	143.786
243.469	7.25175	275.625	137.898
243.633	7.05058	234.148	141.832
243.797	6.96437	207.93	143.588
243.961	7.03143	257.219	142.219
244.125	7.25175	182.828	137.898
244.289	7.05058	225.25	141.832
244.453	7.29006	217.359	137.173
244.617	7.26133	243.961	137.716
244.781	7.18469	239.18	139.185
244.945	7.30922	201.242	136.813
245.109	7.40501	211.133	135.044
245.273	7.44333	203.383	134.348
245.437	7.72112	261.609	129.515
245.601	7.70197	193.109	129.837
245.765	7.76902	135.883	128.716
245.929	7.63491	240.195	130.977
246.093	7.62533	214.234	131.142
246.257	7.67323	219.18	130.323
246.421	7.75944	148.727	128.875
246.585	7.62533	256.531	131.142
246.75	7.74028	206.836	129.194
246.914	7.62533	173.891	131.142
247.078	7.48165	203.906	133.66
247.242	7.51038	216.086	133.149
247.406	7.76902	208.383	128.716
247.57	7.72112	235.523	129.515
247.734	7.5008	196.391	133.319
247.898	7.35712	172.82	135.923
248.062	7.33796	258.563	136.278
248.226	7.33796	211.961	136.278

248.39	7.38585	244.43	135.394
248.554	7.40501	196.391	135.044
248.718	7.5008	230.516	133.319
248.882	7.5966	183.164	131.638
249.046	7.41459	189.008	134.869
249.21	7.22301	233.219	138.446
249.374	7.40501	200.609	135.044
249.538	7.21343	196.844	138.63
249.702	7.33796	218.188	136.278
249.866	7.41459	192.57	134.869
250.03	7.52954	212.344	132.81
250.194	7.70197	242.375	129.837
250.358	7.74028	257.359	129.194
250.522	7.70197	227.406	129.837
250.686	7.51038	199.422	133.149
250.851	7.76902	174.211	128.716
251.015	7.56786	202.148	132.138
251.179	7.5966	225.5	131.638
251.343	7.28048	243.578	137.354
251.507	7.18469	282.688	139.185
251.671	7.44333	297.641	134.348
251.835	7.69239	231.844	129.999
251.999	7.81692	279.031	127.928
252.163	7.97976	201.938	125.317
252.327	7.97976	273.219	125.317
252.491	8.24798	261.844	121.242
252.655	8.45872	162.734	118.221
252.819	8.49704	157.641	117.688
252.983	8.42998	212.266	118.624
253.147	8.62156	188.102	115.988
253.311	8.80357	212.914	113.59
253.475	8.59283	266.125	116.376
253.639	8.53535	267.938	117.16
253.803	8.72694	249.563	114.588
253.967	8.48746	161.461	117.821
254.131	8.52577	204.281	117.291
254.295	8.51619	202.086	117.423
254.459	8.65988	276.719	115.475
254.623	8.52577	229.555	117.291
254.787	8.49704	188.336	117.688
254.952	8.74609	228.023	114.337
255.116	8.6503	239.586	115.603
255.28	8.75567	254.953	114.212
255.444	8.74609	260.641	114.337
255.608	8.63114	193.43	115.86
255.772	8.68862	273.391	115.093
255.936	8.51619	204.531	117.423
256.1	8.27672	182.891	120.821
256.264	8.27672	222.867	120.821
256.428	8.26714	184.023	120.961
256.592	8.08513	284.797	123.684
256.756	7.86481	187.219	127.149
256.92	7.91271	245.242	126.379
257.084	7.91271	215.133	126.379
257.248	8.13303	215.922	122.955
257.412	8.40124	217.094	119.03
257.576	8.43956	221.633	118.49
257.74	8.30545	212.641	120.403
257.904	8.33419	191.844	119.988
258.068	8.24798	178.07	121.242
258.232	8.20966	216.805	121.808
258.396	8.01808	221.047	124.718
258.56	7.81692	256.703	127.928
258.724	7.70197	161	129.837
258.888	7.72112	181.203	129.515
259.053	7.7307	230.469	129.354
259.217	7.91271	228.883	126.379
259.381	7.75944	230.57	128.875
259.545	7.76902	241	128.716
259.709	7.69239	208.641	129.999
259.873	7.64449	207.148	130.813
260.037	7.60617	225.25	131.472
260.201	7.75944	203.5	128.875
260.365	7.91271	247.344	126.379
260.529	8.03724	230.734	124.421
260.693	8.05639	188.102	124.125
260.857	8.0085	263.844	124.867
261.021	7.64449	268.313	130.813
261.185	7.79776	303.25	128.242
261.349	7.44333	241.75	134.348
261.513	7.51038	206.539	133.149
261.677	7.60617	188.57	131.472
261.841	7.66365	237.313	130.486
262.005	7.75944	219.984	128.875
262.169	7.78818	210.227	128.4
262.333	7.75944	196.375	128.875
262.497	7.98934	233.039	125.167
262.661	7.72112	264.359	129.515
262.825	7.89355	249.383	126.686
262.99	7.83607	229.383	127.615
263.154	7.5008	181.258	133.319
263.318	7.12722	223.875	140.307
263.482	7.09848	225.219	140.875
263.646	7.37627	193.633	135.57
263.81	7.15595	247.242	139.744
263.974	7.16553	254.711	139.557
264.138	7.24217	224.711	138.08
264.302	7.38585	259.219	135.394
264.466	7.43375	243.344	134.522
264.63	7.02185	232.836	142.413
264.794	6.84942	234.859	145.998
264.958	7.12722	154.125	140.307
265.122	7.02185	226.047	142.413
265.286	7.25175	219.047	137.898
265.45	7.21343	173.258	138.63
265.614	7.03143	240.492	142.219
265.778	6.97395	231.07	143.391
265.942	6.86858	247.055	145.591
266.106	6.9069	167.375	144.783
266.27	6.96437	249.18	143.588
266.434	6.83026	245.203	146.407
266.598	6.78237	205.914	147.441
266.762	6.58121	287.375	151.948
266.926	6.77279	288.969	147.65
267.091	6.81111	243.789	146.819
267.255	6.93563	198.711	144.183
267.419	7.02185	244.086	142.413

267.583	6.9069	180.828	144.783
267.747	6.96437	254.445	143.588
267.911	6.92605	299.953	144.382
268.075	6.59078	171.164	151.727
268.239	6.38962	216.555	156.504
268.403	6.36089	200.945	157.211
268.567	6.10225	261.141	163.874
268.731	6.46626	215.414	154.649
268.895	6.54289	241.984	152.838
269.059	6.48541	203.789	154.192
269.223	6.77279	198.727	147.65
269.387	6.84942	242.57	145.998
269.551	6.78237	254.094	147.441
269.715	6.89732	249.641	144.984
269.879	6.96437	251.813	143.588
270.043	6.92605	197.453	144.382
270.207	7.11764	256.188	140.496
270.371	7.14638	223.57	139.931
270.535	7.21343	188.25	138.63
270.699	7.24217	238.281	138.08
270.863	7.25175	235.891	137.898
271.027	7.44333	282.094	134.348
271.192	7.64449	178.813	130.813
271.356	7.67323	236.672	130.323
271.52	7.83607	217.102	127.615
271.684	7.53912	247.164	132.641
271.848	7.48165	230.406	133.66
272.012	7.15595	237.266	139.744
272.176	7.30922	212.742	136.813
272.34	7.16553	238.023	139.557
272.504	6.99311	300.281	142.998
272.668	6.84942	211.664	145.998
272.832	6.70573	197.688	149.126
272.996	6.93563	276.5	144.183
273.16	7.00269	243.313	142.802
273.324	7.09848	232.469	140.875
273.488	7.24217	251.695	138.08
273.652	7.38585	242.922	135.394
273.816	7.43375	159.234	134.522
273.98	7.3188	216.633	136.634
274.144	7.19427	233.563	138.999
274.308	7.09848	194.492	140.875
274.472	6.77279	169.133	147.65
274.636	6.77279	218.43	147.65
274.8	6.89732	266.656	144.984
274.964	7.00269	244.898	142.802
275.128	7.12722	236.047	140.307
275.293	7.33796	274.859	136.278
275.457	7.5487	193.188	132.473
275.621	7.5008	196.852	133.319
275.785	7.41459	208.25	134.869
275.949	7.24217	166.953	138.08
276.113	7.12722	223.734	140.307
276.277	6.97395	251.617	143.391
276.441	6.92605	247.125	144.382
276.605	6.93563	221.297	144.183
276.769	6.83984	190.586	146.202
276.933	6.81111	231.891	146.819
277.097	7.19427	193.008	138.999
277.261	6.95479	258.984	143.786
277.425	6.75363	211	148.069
277.589	6.65784	244.406	150.199
277.753	6.46626	194.211	154.649
277.917	6.14056	264.719	162.851
278.081	6.06393	199.414	164.91
278.245	6.03519	227.219	165.695
278.409	5.65203	245.539	176.928
278.573	5.63287	177.039	177.529
278.737	5.78614	200.297	172.827
278.901	5.57539	215.133	179.359
279.065	5.44129	230.5	183.78
279.23	5.85319	186.242	170.847
279.394	5.76698	243.078	173.401
279.558	5.89151	197	169.736
279.722	5.86277	218.477	170.568
279.886	5.86277	251.75	170.568
280.05	5.82445	242.305	171.69
280.214	5.96814	156.977	167.556
280.378	6.01604	221.047	166.222
280.542	6.03519	313.781	165.695
280.706	6.1693	164.461	162.093
280.87	6.30341	213.484	158.644
281.034	6.48541	225.352	154.192
281.198	6.41836	262.328	155.803
281.362	6.58121	300.25	151.948
281.526	6.81111	276.297	146.819
281.69	6.84942	248.148	145.998
281.854	6.60994	231.133	151.287
282.018	6.51415	210.031	153.512
282.182	6.78237	264.594	147.441
282.346	6.99311	257.984	142.998
282.51	7.0889	262.109	141.066
282.674	7.19427	251.359	138.999
282.838	7.40501	226.547	135.044
283.002	7.51038	224	133.149
283.166	7.29006	300.063	137.173
283.331	7.64449	282.25	130.813
283.495	7.78818	211.047	128.4
283.659	7.7307	326.875	129.354
283.823	7.92229	254.969	126.226
283.987	8.08513	260.141	123.684
284.151	8.17134	271.531	122.379
284.315	8.26714	225.609	120.961
284.479	8.63114	184.727	115.86
284.643	8.82273	255.523	113.344
284.807	8.99515	197.758	111.171
284.971	9.158	277.469	109.194
285.135	9.18673	299.547	108.853
285.299	9.23463	232.977	108.288
285.463	9.28253	270.125	107.729
285.627	9.522	212.398	105.02
285.791	9.79022	269.688	102.143
285.955	9.83812	278.172	101.645
286.119	10.1255	303.813	98.7606
286.283	10.3171	267.203	96.9267
286.447	10.6332	271.203	94.0452
286.611	10.796	278.156	92.6266

286.775	11.1984	294.438	89.2988
286.939	11.3229	281.656	88.3167
287.103	11.8114	265.109	84.6638
287.267	12.2425	286.453	81.6828
287.432	12.8843	274.453	77.6139
287.596	13.6602	241.648	73.2054
287.76	14.5127	242.258	68.905
287.924	15.212	281.625	65.7375
288.088	16.2178	252.602	61.6605
288.252	17.3194	206.148	57.7386
288.416	17.8463	311.813	56.0341
288.58	18.6414	301.094	53.6442
288.744	19.6663	238.039	50.8483
288.908	20.9116	282.953	47.8203
289.072	22.6646	301.734	44.1217
289.236	23.3639	267.781	42.8011
289.4	24.1302	315.094	41.4418
289.564	24.226	218.914	41.278
289.728	24.59	328.922	40.6669
289.892	24.5038	301.531	40.81
290.056	24.8199	264.391	40.2902
290.22	25.2989	333.781	39.5275
290.384	25.1456	319.438	39.7684
290.548	24.4655	296.453	40.8739
290.712	23.4501	212.008	42.6438
290.876	21.8695	323.906	45.7257
291.04	20.5859	271.953	48.5769
291.204	20.7105	216.352	48.2848
291.368	21.2277	311.344	47.1082
291.533	20.2794	208.195	49.3111
291.697	19.8579	249.984	50.3578
291.861	19.3789	211.359	51.6024
292.025	17.9229	238.172	55.7945
292.189	16.0646	225.594	62.2488
292.353	15.6622	172.906	63.8478
292.517	15.212	212.586	65.7375
292.681	13.9763	168.273	71.5496
292.845	13.1429	157.125	76.0866
293.009	12.9513	195.063	77.2121
293.173	12.185	133.195	82.0681
293.337	11.3995	149.32	87.723
293.501	10.5566	139.516	94.7279
293.665	10.1542	148.109	98.4811
293.829	9.59864	114.754	104.181
293.993	9.23463	106.879	108.288
294.157	8.65988	78.7227	115.475
294.321	8.22882	146.313	121.524
294.485	8.87062	116.555	112.732
294.649	9.10052	107.977	109.884
294.813	8.15219	69.1641	122.666
294.977	7.15595	64.2383	139.744
295.141	7.0889	117.949	141.066
295.305	6.96437	77.7461	143.588
295.47	6.14056	57.8027	162.851
295.634	6.63868	53.2949	150.632
295.798	7.52954	53.3906	132.81
295.962	7.98934	53.3926	125.167
296.126	7.57744	28.8857	131.971
296.29	7.11764	57.5059	140.496
296.454	6.45668	57.9648	154.878
296.618	5.66161	58.1543	176.628
296.782	5.67119	82.0117	176.33
296.946	6.14056	23.873	162.851
297.11	6.52373	76.3438	153.287
297.274	6.61952	43.4375	151.068
297.438	7.02185	62.7031	142.413
297.602	7.5487	28.6729	132.473
297.766	8.15219	71.6211	122.666
297.93	9.50285	28.7207	105.232
298.094	10.729	47.9453	93.2055
298.258	10.0105	38.5313	99.8947
298.422	9.67527	43.9375	103.356
298.586	9.91475	53.3652	100.86
298.75	9.45495	38.9473	105.765
298.914	8.55451	29.3926	116.897
299.078	9.16758	49.5742	109.08
299.242	9.7998	54.7754	102.043
299.406	9.71359	49.3945	102.949
299.571	9.80938	53.627	101.943
299.735	9.50285	43.8223	105.232
299.899	8.24798	29.0098	121.242
300.063	7.92229	33.875	126.226
300.227	7.74028	81.8359	129.194
300.391	7.26133	47.6426	137.716
300.555	6.75363	28.9189	148.069
300.719	6.52373	33.9668	153.287
300.883	6.3992	43.834	156.269
301.047	6.45668	48.3027	154.878
301.211	6.4471	52.5078	155.109
301.375	6.58121	43.002	151.948
301.539	6.77279	38.5449	147.65
301.703	6.36089	38.5098	157.211
301.867	6.1693	38.4785	162.093
302.031	6.11183	19.0244	163.617
302.195	5.94898	42.793	168.096
302.359	6.29383	67.3242	158.886
302.523	6.45668	58.4141	154.878
302.687	6.37046	48.3965	156.974
302.851	6.17888	48.416	161.842
303.015	6.38962	73.25	156.504
303.179	6.58121	49.2773	151.948
303.343	7.37627	59.4414	135.57
303.507	7.02185	39.3828	142.413
303.672	6.80153	39.1035	147.026
303.836	7.05058	39.373	141.832
304	7.83607	29.375	127.615
304.164	8.10429	19.5293	123.391
304.328	8.0085	24.3359	124.867
304.492	8.81315	48.2578	113.467
304.656	9.25379	62.6328	108.064
304.82	8.74609	52.9297	114.337
304.984	8.81315	28.8242	113.467
305.148	9.16758	14.5483	109.08
305.312	9.63695	38.6621	103.767
305.476	9.80938	23.8379	101.943
305.64	10.1542	38.1367	98.4811
305.804	10.0872	48.0195	99.1358

305.968	9.89559	14.4004	101.055
306.132	10.0297	52.748	99.7039
306.296	10.2117	23.9502	97.9269
306.46	9.96265	47.9785	100.375
306.624	10.0584	48.2324	99.419
306.788	10.25	23.9707	97.5608
306.952	10.5374	62.2324	94.9001
307.116	10.2021	38.6055	98.0188
307.28	9.76148	38.9785	102.443
307.444	9.60822	39.2695	104.078
307.608	9.32084	54.2871	107.286
307.773	9.04305	29.7393	110.582
307.937	9.158	83.8086	109.194
308.101	8.99515	88.7148	111.171
308.265	8.13303	39.4102	122.955
308.429	7.75944	98.957	128.875
308.593	7.37627	48.5059	135.57
308.757	6.15972	71.8164	162.345
308.921	4.54085	66.9609	220.223
309.085	4.32053	81.8945	231.453
309.249	3.48714	58.2539	286.768
309.413	3.07524	48.2344	325.178
309.577	3.36261	81.7188	297.388
309.741	3.78409	52.8926	264.264
309.905	3.85115	72.3672	259.663
310.069	3.84157	48.2246	260.31
310.233	3.77451	28.6709	264.935
310.397	3.21892	66.7734	310.663
310.561	3.40093	61.8594	294.037
310.725	4.32053	47.9141	231.453
310.889	3.23808	67.0586	308.825
311.053	2.42385	67.2969	412.566
311.217	3.11355	38.2109	321.176
311.381	3.4584	76.8516	289.151
311.545	2.48133	29.1777	403.01
311.71	3.34345	54.1758	299.092
311.874	4.54085	73.457	220.223
312.038	3.85115	58.7598	259.663
312.202	4.10021	54.2168	243.89
312.366	4.10978	49.4512	243.322
312.53	4.06189	29.8633	246.191
312.694	3.56377	44.4375	280.601
312.858	3.78409	58.3555	264.264
313.022	3.71704	38.9063	269.031
313.186	3.33387	38.6035	299.951
313.35	3.00818	33.9023	332.427
313.514	3.87031	24.1523	258.377
313.678	4.66538	81.5703	214.345
313.842	4.85696	57.7578	205.89
314.006	4.49295	19.3057	222.571
314.17	3.78409	48.1563	264.264
314.334	3.52546	57.6602	283.651
314.498	3.64999	47.4668	273.974
314.662	3.59251	38.2891	278.357
314.826	3.64999	43.332	273.974
314.99	4.4259	33.8027	225.943
315.154	4.76117	38.5938	210.033
315.318	4.71327	52.5723	212.167
315.482	4.54085	9.49609	220.223
315.646	5.04854	62.166	198.077
315.811	4.51211	38.5547	221.626
315.975	3.82241	39.0313	261.615
316.139	4.45463	34.0313	224.485
316.303	5.81487	33.9844	171.973
316.467	6.17888	4.87744	161.842
316.631	7.28048	39.7539	137.354
316.795	8.0085	64.7148	124.867
316.959	7.95102	19.8457	125.77
317.123	7.11764	34.5293	140.496
317.287	7.37627	48.6172	135.57
317.451	7.74028	29.2051	129.194
317.615	8.34377	24.3428	119.85
317.779	9.5699	48.0625	104.494
317.943	12.185	47.9082	82.0681
318.107	14.6947	14.4106	68.0515
318.271	13.3728	43.4863	74.7785
318.435	11.457	44.2422	87.2829
318.599	11.7827	33.6172	84.8703
318.763	11.4762	66.6523	87.1372
318.927	10.6044	38.2793	94.3
319.091	10.6523	57.5176	93.876
319.255	10.729	57.9238	93.2055
319.419	9.10052	67.5117	109.884
319.583	9.12926	47.582	109.538
319.747	10.5087	47.959	95.1596
319.912	12.1946	38.2852	82.0036
320.076	13.641	43.5	73.3082
320.24	14.4553	9.69189	69.1789
320.404	14.4744	34.0371	69.0874
320.568	14.7331	14.5156	67.8746
320.732	14.7235	49.2988	67.9187
320.896	14.7905	58.9531	67.6108
321.06	15.0588	44.7871	66.4066
321.224	15.2024	69.043	65.7789
321.388	14.2445	44.166	70.2024
321.552	13.7464	48.9004	72.7463
321.716	13.0663	49.0098	76.5328
321.88	13.2675	77.4492	75.3724
322.044	13.8135	57.8691	72.3931
322.208	13.1621	86.9297	75.9758
322.372	12.5299	57.8496	79.8094
322.536	12.3095	68.1172	81.2378
322.7	12.4436	106.301	80.3623
322.864	11.2846	72.1055	88.6166
323.028	10.8248	43.2012	92.3807
323.192	11.9647	57.416	83.5793
323.356	12.913	62.5352	77.4412
323.52	11.7348	77.3711	85.2167
323.684	10.4129	72.6719	96.035
323.848	9.33042	71.9414	107.176
324.013	8.89936	52.4043	112.368
324.177	8.08513	67.5117	123.684
324.341	6.95479	58.084	143.786
324.505	7.35712	57.7188	135.923
324.669	7.33796	47.7656	136.278
324.833	6.10225	29.0967	163.874
324.997	5.88193	68.5977	170.012

325.161	5.24012	69.3086	190.835
325.325	3.99483	49.2656	250.323
325.489	2.51965	49.2578	396.881
325.653	2.96029	74.4961	337.805
325.817	3.19977	19.79	312.523
325.981	3.11355	49.3418	321.176
326.145	2.78786	67.9023	358.698
326.309	3.36261	67.3516	297.388
326.473	3.64999	66.8633	273.974
326.637	3.90862	62.7109	255.845
326.801	3.20934	58.0977	311.59
326.965	3.94694	38.7031	253.361
327.129	3.94694	57.5625	253.361
327.293	3.29556	67.4648	303.439
327.457	3.36261	67.5352	297.388
327.621	4.04273	33.8125	247.358
327.785	3.64999	43.3516	273.974
327.949	4.00441	52.7168	249.724
328.114	4.70369	38.3926	212.599
328.278	4.15768	43.293	240.519
328.442	4.18642	62.832	238.868
328.606	4.29179	33.6387	233.003
328.77	4.22473	19.0557	236.701
328.934	3.72662	63.3281	268.34
329.098	3.75536	58.0762	266.286
329.262	3.74578	34.2344	266.967
329.426	3.63083	29.5059	275.419
329.59	3.67872	34.291	271.833
329.754	3.71704	34.3105	269.031
329.918	3.75536	19.7813	266.286
330.082	3.62125	59.6426	276.148
330.246	3.89904	4.948	256.473
330.41	3.6883	43.9531	271.127
330.574	3.77451	38.8848	264.935
330.738	3.79367	38.709	263.597
330.902	4.12894	43.7422	242.193
331.066	3.9661	19.3828	252.137
331.23	4.10021	48.2012	243.89
331.394	4.10978	38.0918	243.322
331.558	4.18642	48.1621	238.868
331.722	3.67872	29.1064	271.833
331.886	3.49672	57.9004	285.982
332.05	3.81283	28.6875	262.272
332.215	4.196	43.0176	238.322
332.379	4.196	14.3057	238.322
332.543	4.26305	43.5137	234.574
332.707	4.51211	43.6426	221.626
332.871	4.22473	52.9492	236.701
333.035	4.57916	33.6406	218.381
333.199	4.48337	28.7891	223.046
333.363	4.67495	33.7051	213.906
333.527	5.22097	48.7129	191.535
333.691	5.89151	53.6074	169.736
333.855	5.94898	24.2324	168.096
334.019	5.15391	49.2559	194.027
334.183	5.71908	19.9521	174.853
334.347	7.37627	39.8945	135.57
334.511	8.36293	39.8379	119.575
334.675	9.19631	24.5117	108.739
334.839	10.796	29.3926	92.6266
335.003	10.9685	24.2588	91.1705
335.167	10.5087	9.646	95.1596
335.331	10.6619	38.6348	93.7917
335.495	10.6907	38.2793	93.5396
335.659	10.796	24.1162	92.6266
335.823	10.6907	38.7285	93.5396
335.987	10.5949	63.2676	94.3853
336.151	10.4033	38.6523	96.1235
336.316	9.63695	38.416	103.767
336.48	8.32461	28.668	120.126
336.644	7.14638	62.3496	139.931
336.808	6.96437	14.4883	143.588
336.972	7.91271	14.4736	126.379
337.136	8.49704	52.6348	117.688
337.3	8.42998	47.6035	118.624
337.464	8.13303	19.1768	122.955
337.628	7.91271	24.2061	126.379
337.792	7.76902	19.3232	128.716
337.956	7.95102	24.3105	125.77
338.12	7.56786	43.9453	132.138
338.284	7.35712	44.25	135.923
338.448	6.95479	59.2207	143.786
338.612	6.52373	69.5977	153.287
338.776	5.38381	49.4199	185.742
338.94	5.56582	29.5801	179.668
339.104	6.42794	63.7949	155.571
339.268	5.79572	108.008	172.541
339.432	5.3455	78.0117	187.073
339.596	5.22097	58.248	191.535
339.76	4.30137	48.1484	232.484
339.924	3.01776	33.6777	331.371
340.088	4.10978	62.959	243.322
340.253	4.15768	48.5332	240.519
340.417	4.13852	82.3086	241.632
340.581	4.18642	66.7305	238.868
340.745	4.61748	71.6289	216.568
340.909	3.37219	53.1074	296.543
341.073	3.01776	77.1289	331.371
341.237	2.91239	77.3359	343.36
341.401	2.97945	86.2578	335.633
341.565	3.30514	52.8867	302.559
341.729	3.62125	48.1797	276.148
341.893	3.9182	72	255.219
342.057	3.63083	43.2813	275.419
342.221	3.82241	33.5469	261.615
342.385	3.99483	48.1797	250.323
342.549	3.77451	34.3203	264.935
342.713	3.81283	44.1875	262.272
342.877	3.94694	34.3984	253.361
343.041	4.41632	34.5469	226.433
343.205	3.9661	44.4082	252.137
343.369	3.99483	54.584	250.323
343.533	4.04273	34.8262	247.358
343.697	3.6883	48.7441	271.127
343.861	3.58293	53.0098	279.101
344.025	3.4584	52.9395	289.151
344.189	3.46798	43.3027	288.352

344.354	3.07524	58.3613	325.178
344.518	3.20934	43.541	311.59
344.682	3.5063	19.2559	285.201
344.846	3.46798	38.7598	288.352
345.01	3.48714	43.1211	286.768
345.174	2.97945	48.2188	335.633
345.338	3.02734	38.6895	330.323
345.502	2.8645	48.0645	349.102
345.666	2.8645	28.6846	349.102
345.83	3.36261	28.6982	297.388
345.994	3.42967	38.3516	291.574
346.158	3.53504	67.5352	282.883
346.322	3.63083	43.3633	275.419
346.486	3.46798	43.1699	288.352
346.65	3.56377	28.9805	280.601
346.814	2.98902	34.2754	334.557
346.978	3.15187	19.6455	317.272
347.142	3.0465	29.1885	328.246
347.306	3.6883	39.1777	271.127
347.47	2.96029	44.2012	337.805
347.634	3.5063	49.8184	285.201
347.798	4.10978	29.6348	243.322
347.962	3.37219	24.5703	296.543
348.126	1.90658	24.2461	524.499
348.29	2.03111	19.1807	492.342
348.455	2.32806	33.9121	429.542
348.619	2.23227	24.3848	447.974
348.783	2.51007	28.9521	398.396
348.947	3.56377	28.9697	280.601
349.111	4.04273	43.5234	247.358
349.275	3.56377	38.5781	280.601
349.439	3.55419	33.9531	281.358
349.603	3.21892	52.6016	310.663
349.767	2.56754	52.459	389.478
349.931	2.56754	28.8467	389.478
350.095	2.91239	29.2295	343.36
350.259	3.40093	14.5142	294.037
350.423	3.0465	43.2422	328.246
350.587	3.58293	38.2246	279.101
350.751	3.89904	52.5879	256.473
350.915	4.09063	43.4648	244.461
351.079	4.01399	29.1035	249.128
351.243	3.87989	38.9785	257.74
351.407	3.85115	63.2363	259.663
351.571	4.10021	14.6309	243.89
351.735	4.06189	59.5137	246.191
351.899	3.71704	29.8457	269.031
352.063	4.06189	49.6777	246.191
352.227	4.03315	49.4141	247.945
352.391	4.79948	38.9316	208.356
352.556	5.30718	24.1104	188.424
352.72	5.72866	43.6953	174.561
352.884	6.04477	24.1396	165.432
353.048	6.60994	28.9795	151.287
353.212	7.21343	62.2051	138.63
353.376	8.59283	43.0332	116.376
353.54	10.1542	38.9375	98.4811
353.704	11.936	33.8926	83.7805
353.868	13.3537	33.5449	74.8858
354.032	15.3749	52.7734	65.0412
354.196	17.444	23.9902	57.3264
354.36	18.9383	33.7852	52.803
354.524	20.4327	38.7559	48.9413
354.688	21.7067	9.60498	46.0688
354.852	22.2814	23.9453	44.8804
355.016	21.1894	48.0117	47.1934
355.18	20.72	38.5195	48.2625
355.344	22.9999	29.2959	43.4785
355.508	25.3372	38.7266	39.4677
355.672	25.3372	53.0801	39.4677
355.836	22.952	48.8926	43.5692
356	19.7909	54.4238	50.5284
356.164	20.471	34.584	48.8497
356.328	24.7624	29.7012	40.3838
356.493	27.8182	49.1855	35.9477
356.657	28.1535	48.9844	35.5196
356.821	26.1514	58.9863	38.2389
356.985	23.7375	63.1738	42.1275
357.149	23.2393	48.4336	43.0305
357.313	23.7087	24.0781	42.1786
357.477	23.9961	53.0293	41.6734
357.641	22.6646	77.457	44.1217
357.805	20.6626	48.5098	48.3967
357.969	20.0112	28.8516	49.9721
358.133	21.3906	52.4199	46.7496
358.297	23.929	14.291	41.7902
358.461	25.3659	67.2031	39.423
358.625	24.2739	58.2266	41.1965
358.789	22.2335	57.6406	44.9771
358.953	23.316	96.0625	42.889
359.117	24.5325	81.543	40.7622
359.281	24.7337	86.7773	40.4307
359.445	24.2068	87.1289	41.3106
359.609	23.2585	86.7461	42.995
359.773	22.5305	81.4961	44.3843
359.937	21.8025	101.617	45.8664
360.101	20.9978	87.9063	47.624
360.265	20.2123	92.9844	49.4747
360.429	21.6684	93.5469	46.1502
360.594	21.5055	88.8281	46.4997
360.758	18.3061	74.3906	54.6266
360.922	18.4306	54.3789	54.2576
361.086	18.0187	98.6289	55.4979
361.25	14.8576	49.4199	67.3057
361.414	12.185	67.5234	82.0681
361.578	14.6468	52.6973	68.2741
361.742	13.938	53.0137	71.7463
361.906	12.9897	62.8125	76.9843
362.07	13.0184	67.5508	76.8144
362.234	11.3516	57.9004	88.0931
362.398	9.28253	62.834	107.729
362.562	8.07555	81.8203	123.831
362.726	7.60617	53.2871	131.472
362.89	7.28048	62.4121	137.354
363.054	7.38585	81.5586	135.394
363.218	8.20008	86.2188	121.95
363.382	9.37832	81.9453	106.629

363.546	11.1026	57.8379	90.0693
363.71	13.0854	101.16	76.4208
363.874	15.4611	71.8008	64.6785
364.038	18.421	52.6211	54.2858
364.202	21.1224	48.2578	47.3432
364.366	23.6417	58.6113	42.2982
364.53	26.1323	54.166	38.2669
364.695	29.1209	83.5234	34.3395
364.859	33.1059	78.1523	30.2061
365.023	37.1004	69.3555	26.9539
365.187	40.8841	59.5684	24.4594
365.351	45.0702	39.834	22.1876
365.515	49.3904	54.123	20.2468
365.679	53.6819	67.7383	18.6283
365.843	56.6418	111.391	17.6548
366.007	58.6151	34.1855	17.0604
366.171	59.0749	77.4727	16.9276
366.335	58.0404	63.043	17.2294
366.499	56.6897	62.6133	17.6399
366.663	54.8889	52.9707	18.2186
366.827	52.9347	62.9004	18.8912
366.991	52.6378	67.3633	18.9978
367.155	54.3907	43.2656	18.3855
367.319	57.0537	52.9629	17.5273
367.483	57.4178	96.0508	17.4162
367.647	55.5402	38.8477	18.005
367.811	51.3446	67.9141	19.4763
367.975	46.2197	86.793	21.6358
368.139	41.9666	67.3711	23.8285
368.303	37.7134	81.3359	26.5157
368.467	33.9201	91.6406	29.481
368.631	30.2992	67.9258	33.0042
368.796	27.2051	92.0781	36.7578
368.96	23.8333	102.094	41.9582
369.124	21.2565	112.066	47.0445
369.288	19.6951	93.4141	50.7741
369.452	17.7792	134.836	56.2454
369.616	15.4323	135.023	64.799
369.78	13.3728	153.453	74.7785
369.944	12.3095	148.32	81.2378
370.108	11.2079	121.648	89.2225
370.272	10.0584	140.875	99.419
370.436	9.47411	116.309	105.551
370.6	9.13884	125.359	109.423
370.764	8.49704	96.3516	117.688
370.928	8.05639	120.777	124.125
371.092	7.30922	116.789	136.813
371.256	6.65784	107.473	150.199
371.42	6.1693	82.1797	162.093
371.584	6.07351	76.1719	164.649
371.748	6.20762	111.031	161.092
371.912	6.20762	82.543	161.092
372.076	6.10225	58.082	163.874
372.24	5.7574	38.5918	173.69
372.404	5.65203	71.9648	176.928
372.568	5.53708	76.5508	180.601
372.732	5.09644	87.0977	196.216
372.897	4.90485	67.4219	203.88
373.061	4.92401	43.582	203.086
373.225	5.17307	44.0352	193.309
373.389	4.90485	44.0566	203.88
373.553	5.62329	54.2871	177.832
373.717	5.9873	59.2402	167.02
373.881	6.19804	24.7334	161.341
374.045	6.58121	19.7578	151.948
374.209	6.63868	44.2891	150.632
374.373	6.3992	44.127	156.269
374.537	7.21343	34.1563	138.63
374.701	8.18092	48.4668	122.236
374.865	8.77483	53.3379	113.962
375.029	9.33042	38.793	107.176
375.193	10.3458	33.9805	96.6575
375.357	10.183	33.8418	98.2032
375.521	10.2404	48.6523	97.652
375.685	10.1063	47.9473	98.9479
375.849	9.33042	43.3281	107.176
376.013	8.63114	19.3184	115.86
376.177	9.40705	53.3535	106.303
376.341	10.1446	38.7148	98.5741
376.505	10.6044	24.2793	94.3
376.669	10.9493	48.0059	91.3301
376.834	11.457	28.7881	87.2829
376.998	11.9551	33.9453	83.6462
377.162	12.3479	43.6992	80.9857
377.326	12.367	33.6602	80.8603
377.49	11.9072	38.5273	83.9827
377.654	11.1696	33.9902	89.5286
377.818	10.2117	54.1074	97.9269
377.982	8.49704	39.5195	117.688
378.146	6.41836	39.5332	155.803
378.31	5.14433	34.5586	194.389
378.474	3.65956	54.5938	273.257
378.638	1.51384	19.9443	660.574
378.802	0.565499	49.3574	1768.35
378.966	0.00032945	62.8535	3.04E+06
379.13	0.00032945	43.4961	3.04E+06
379.294	0.0865418	57.6289	11555.1
379.458	0.977403	38.7773	1023.12
379.622	3.42967	43.4805	291.574
379.786	5.59455	28.957	178.745
379.95	6.07351	38.5391	164.649
380.114	5.27844	53.1602	189.45
380.278	4.45463	57.9277	224.485
380.442	3.40093	73.0547	294.037
380.606	1.90658	53.0078	524.499
380.77	1.38931	28.8271	719.784
380.935	2.83576	53.2578	352.639
381.099	3.59251	57.7852	278.357
381.263	4.13852	87.457	241.632
381.427	4.29179	33.7695	233.003
381.591	4.09063	42.9805	244.461
381.755	4.03315	48.4512	247.945
381.919	3.52546	48.8047	283.651
382.083	3.43924	63.5215	290.762
382.247	3.63083	14.7817	275.419
382.411	4.57916	63.8008	218.381
382.575	3.65956	34.3574	273.257

382.739	2.56754	54.7148	389.478
382.903	2.09816	74.4609	476.607
383.067	3.30514	39.584	302.559
383.231	2.67291	73.3477	374.124
383.395	2.26101	38.5176	442.28
383.559	3.24766	19.3691	307.914
383.723	5.0198	68.0078	199.211
383.887	3.99483	53.6191	250.323
384.051	3.43924	62.6855	290.762
384.215	3.21892	28.792	310.663
384.379	3.10397	33.7051	322.168
384.543	3.15187	53.248	317.272
384.707	3.6883	14.4805	271.127
384.871	3.87031	38.4355	258.377
385.036	3.94694	24.0488	253.361
385.2	3.94694	48.0781	253.361
385.364	4.13852	24.2559	241.632
385.528	4.35884	43.75	229.419
385.692	3.72662	38.4121	268.34
385.856	3.2764	28.8789	305.213
386.02	3.19977	62.7676	312.523
386.184	3.21892	43.5938	310.663
386.348	3.77451	29.335	264.935
386.512	3.65956	19.54	273.257
386.676	3.60209	43.957	277.617
386.84	4.00441	29.3428	249.724
387.004	4.00441	79.5586	249.724
387.168	3.2764	25.0957	305.213
387.332	2.3089	29.7646	433.106
387.496	2.09816	49.168	476.607
387.66	1.41804	39.1602	705.197
387.824	1.68626	19.501	593.028
387.988	1.90658	72.7383	524.499
388.152	2.64417	33.877	378.19
388.316	3.02734	62.5547	330.323
388.48	3.40093	28.6592	294.037
388.644	4.22473	53.7363	236.701
388.808	5.00065	19.5049	199.974
388.972	5.85319	48.2969	170.847
389.137	7.25175	38.7559	137.898
389.301	8.62156	33.6914	115.988
389.465	10.4991	57.5898	95.2465
389.629	12.3191	33.9961	81.1747
389.793	13.6889	33.7656	73.0517
389.957	14.8001	81.4844	67.567
390.121	14.8289	48.1504	67.4361
390.285	14.5702	28.8086	68.6332
390.449	13.9093	53.3652	71.8946
390.613	12.7214	48.2441	78.6074
390.777	11.7827	34.0117	84.8703
390.941	10.0297	63.5332	99.7039
391.105	6.78237	64.2617	147.441
391.269	4.56958	74.168	218.838
391.433	4.90485	54.8789	203.88
391.597	7.25175	44.4375	137.898
391.761	9.07178	93.9648	110.232
391.925	9.11968	54.3262	109.653
392.089	6.59078	73.4883	151.727
392.253	3.56377	48.6016	280.601
392.417	2.73997	83.0195	364.968
392.581	3.24766	33.6875	307.914
392.745	3.59251	77.0781	278.357
392.909	1.41804	58.2051	705.197
393.074	-2.5573	53.5938	-391.037
393.238	-3.41943	33.8301	-292.447
393.402	-0.0763038	57.4746	-13105.5
393.566	4.98149	67.082	200.743
393.73	9.41663	58.2324	106.195
393.894	10.5374	58.2324	94.9001
394.058	11.2558	57.9609	88.8428
394.222	10.1446	96.2734	98.5741
394.386	8.17134	91.793	122.379
394.55	5.17307	77.5586	193.309
394.714	5.12517	96.8242	195.115
394.878	5.3455	67.082	187.073
395.042	5.28802	72.3594	189.107
395.206	5.18265	107.07	192.951
395.37	5.21139	103.016	191.887
395.534	5.82445	98.9414	171.69
395.698	5.40297	58.75	185.083
395.862	6.04477	108.168	165.432
396.026	5.00065	74.4219	199.974
396.19	4.99107	94.6367	200.358
396.354	5.33592	84.457	187.409
396.518	6.15972	108.344	162.345
396.682	4.56958	67.5391	218.838
396.846	4.8378	72.75	206.706
397.01	5.12517	87.5469	195.115
397.175	4.68453	106.598	213.468
397.339	3.99483	72.5234	250.323
397.503	4.8378	81.5352	206.706
397.667	5.37423	43.834	186.073
397.831	5.22097	67.7773	191.535
397.995	4.95275	48.6738	201.908
398.159	4.73243	62.6836	211.308
398.323	4.52169	58.2637	221.156
398.487	4.29179	38.3242	233.003
398.651	4.47379	67.1719	223.524
398.815	4.85696	34.0195	205.89
398.979	4.85696	43.5195	205.89
399.143	4.8378	33.7285	206.706
399.307	4.87612	14.4575	205.081
399.471	4.55043	53.1055	219.76
399.635	4.26305	34.3789	234.574
399.799	4.12894	58.9453	242.193
399.963	3.89904	34.3926	256.473
400.127	3.75536	34.291	266.286
400.291	4.20558	44.3281	237.78
400.455	4.64622	29.8672	215.229
400.619	4.85696	45.0898	205.89
400.783	4.78033	63.9102	209.191
400.947	4.96233	77.4609	201.518
401.111	5.0198	62.6641	199.211
401.276	5.12517	58.3418	195.115
401.44	5.18265	38.8711	192.951
401.604	5.49876	29.1025	181.859
401.768	5.19223	77.3594	192.596

401.932	4.76117	38.6094	210.033
402.096	4.96233	19.4102	201.518
402.26	4.74201	19.4756	210.881
402.424	4.48337	38.625	223.046
402.588	4.52169	19.1963	221.156
402.752	4.52169	43.1094	221.156
402.916	4.33011	48.8555	230.941
403.08	4.76117	48.8281	210.033
403.244	5.46044	19.3682	183.135
403.408	5.86277	38.416	170.568
403.572	6.52373	28.7598	153.287
403.736	6.86858	48.6133	145.591
403.9	6.77279	53.2871	147.65
404.064	6.70573	29.3281	149.126
404.228	6.95479	34.0918	143.786
404.392	7.09848	53.8574	140.875
404.556	6.19804	39.5605	161.341
404.72	6.41836	34.9336	155.803
404.884	6.07351	34.8984	164.649
405.048	3.90862	29.75	255.845
405.212	0.919928	24.4512	1087.04
405.377	-1.17791	29.1387	-848.964
405.541	-3.4769	24.3535	-287.612
405.705	-4.69345	38.8848	-213.063
405.869	-3.68764	38.3438	-271.176
406.033	-0.833057	43.2051	-1200.4
406.197	2.41428	47.8047	414.203
406.361	6.14056	43.7871	162.851
406.525	9.07178	43.7969	110.232
406.689	10.6523	57.8633	93.876
406.853	10.8248	48.3477	92.3807
407.017	10.7481	9.68066	93.0394
407.181	10.4129	43.5371	96.035
407.345	9.71359	53.3418	102.949
407.509	9.02389	38.4219	110.817
407.673	7.81692	52.7441	127.928
407.837	5.49876	33.8613	181.859
408.001	2.11732	58.125	472.295
408.165	0.565499	38.709	1768.35
408.329	4.35884	53.832	229.419
408.493	7.53912	48.5039	132.641
408.657	7.25175	78.2344	137.898
408.821	5.94898	14.8833	168.096
408.985	5.43171	34.625	184.104
409.149	4.33011	74.1523	230.941
409.314	3.82241	59.1289	261.615
409.478	4.87612	39.4355	205.081
409.642	7.05058	63.9316	141.832
409.806	9.06221	44.2324	110.348
409.97	10.3458	38.8965	96.6575
410.134	9.73275	28.8662	102.746
410.298	7.78818	43.3965	128.4
410.462	5.63287	53.0137	177.529
410.626	4.06189	82.5039	246.191
410.79	3.37219	62.7129	296.543
410.954	3.5063	67.4219	285.201
411.118	3.82241	72.2773	261.615
411.282	3.29556	72.0352	303.439
411.446	2.4047	116.348	415.853
411.61	1.08277	140.188	923.554
411.774	0.412233	124.551	2425.81
411.938	0.144017	67.5391	6943.64
412.102	1.38931	63.0957	719.784
412.266	2.3089	135.156	433.106
412.43	3.12313	67.8633	320.191
412.594	5.5275	91.1445	180.914
412.758	6.52373	86.875	153.287
412.922	6.30341	63.7832	158.644
413.086	6.22678	69.207	160.597
413.25	6.78237	79.0625	147.441
413.415	7.52954	83.6055	132.81
413.579	8.6503	104.734	115.603
413.743	8.74609	89.1094	114.337
413.907	7.66365	103.98	130.486
414.071	6.41836	83.582	155.803
414.235	7.06016	38.9375	141.64
414.399	9.26337	76.918	107.952
414.563	12.6927	67.457	78.7854
414.727	14.7331	82.3164	67.8746
414.891	15.4707	48.2402	64.6385
415.055	15.2024	67.2148	65.7789
415.219	14.666	53.1895	68.1849
415.383	13.8997	72.3867	71.9441
415.547	12.664	116.898	78.9642
415.711	11.7061	53.5488	85.4259
415.875	10.3171	77.0508	96.9267
416.039	9.23463	71.6133	108.288
416.203	8.93768	81.4922	111.886
416.367	10.6044	57.8301	94.3
416.531	13.2962	33.9648	75.2095
416.695	14.7331	43.2246	67.8746
416.859	14.8193	43.1758	67.4797
417.023	13.641	91.6328	73.3082
417.187	12.3383	67.9414	81.0486
417.351	10.2692	64.1094	97.3788
417.516	8.26714	64.1797	120.961
417.68	5.24012	58.8711	190.835
417.844	2.37596	64.0664	420.883
418.008	-0.411574	74.1836	-2429.7
418.172	0.239808	89.8047	4170
418.336	1.68626	44.709	593.028
418.5	3.52546	43.9238	283.651
418.664	5.02938	91.8711	198.832
418.828	4.22473	112.313	236.701
418.992	3.07524	92.2969	325.178
419.156	0.757082	33.6602	1320.86
419.32	-1.92508	81.8398	-519.459
419.484	-2.90215	62.7695	-344.572
419.648	-0.938427	48.6914	-1065.61
419.812	2.8645	48.6328	349.102
419.976	7.26133	62.5273	137.716
420.14	8.99515	86.4688	111.171
420.304	10.5566	52.7832	94.7279
420.468	10.6523	24.0635	93.876
420.632	10.7002	68.1406	93.4558
420.796	10.0105	67.8438	99.8947
420.96	9.21547	29.0352	108.513

421.124	8.20008	43.1094	121.95
421.288	7.51038	52.6406	133.149
421.453	6.54289	82.4609	152.838
421.617	5.14433	43.9277	194.389
421.781	5.04854	39.0176	198.077
421.945	5.22097	68.6797	191.535
422.109	4.93359	73.4688	202.692
422.273	4.52169	34.6465	221.156
422.437	4.85696	54.7793	205.89
422.601	4.64622	49.6172	215.229
422.765	4.18642	39.2441	238.868
422.929	4.09063	34.3789	244.461
423.093	4.26305	29.1436	234.574
423.257	4.196	48.7129	238.322
423.421	3.9182	53.002	255.219
423.585	4.28221	43	233.524
423.749	4.38758	52.2559	227.916
423.913	4.378	52.1543	228.415
424.077	4.18642	76.2656	238.868
424.241	3.9661	66.8516	252.137
424.405	4.87612	37.666	205.081
424.569	4.89528	37.6836	204.279
424.733	4.58874	28.627	217.925
424.897	4.6079	28.6719	217.019
425.061	4.87612	42.8125	205.081
425.225	4.18642	23.6953	238.868
425.389	3.43924	33.1094	290.762
425.554	3.79367	38.0137	263.597
425.718	3.75536	28.9258	266.286
425.882	3.90862	24.3359	255.845
426.046	4.10021	53.3965	243.89
426.21	4.30137	44.5059	232.484
426.374	4.4259	14.772	225.943
426.538	4.57916	44.4492	218.381
426.702	4.51211	34.5898	221.626
426.866	4.41632	24.4932	226.433
427.03	4.56958	34.541	218.838
427.194	4.29179	24.6445	233.003
427.358	4.13852	9.7749	241.632
427.522	4.45463	19.5371	224.485
427.686	4.196	38.4727	238.322
427.85	4.30137	24.1299	232.484
428.014	4.10978	38.2813	243.322
428.178	4.23431	57.4082	236.166
428.342	4.25347	14.2495	235.102
428.506	4.34926	37.7832	229.924
428.67	4.63664	37.8867	215.674
428.834	4.63664	4.74121	215.674
428.998	4.378	38.0195	228.415
429.162	4.56958	33.2031	218.838
429.326	4.30137	23.8994	232.484
429.49	4.56958	43.0332	218.838
429.655	4.57916	52.5215	218.381
429.819	4.32053	23.8467	231.453
429.983	4.18642	47.5039	238.868
430.147	4.48337	57.5332	223.046
430.311	4.378	48.2188	228.415
430.475	4.58874	34.1289	217.925
430.639	4.77075	29.6582	209.611
430.803	4.87612	19.7578	205.081
430.967	4.77075	29.3105	209.611
431.131	4.77075	49.3301	209.611
431.295	4.82822	9.92725	207.116
431.459	4.85696	15.0479	205.89
431.623	4.93359	19.7539	202.692
431.787	4.61748	33.9219	216.568
431.951	4.66538	47.9453	214.345
432.115	4.58874	33.7852	217.925
432.279	4.77075	24.0293	209.611
432.443	4.90485	47.7012	203.88
432.607	4.79948	28.3057	208.356
432.771	4.48337	28.3418	223.046
432.935	4.39716	56.9238	227.42
433.099	4.06189	47.6953	246.191
433.263	3.64999	33.3164	273.974
433.427	3.5063	42.7148	285.201
433.591	3.41051	33.1309	293.212
433.756	3.6883	62.0508	271.127
433.92	4.33011	47.9883	230.941
434.084	4.98149	42.9609	200.743
434.248	5.17307	42.832	193.309
434.412	5.18265	37.9141	192.951
434.576	5.0198	48.2578	199.211
434.74	4.28221	44.2891	233.524
434.904	4.20558	19.749	237.78
435.068	4.33011	24.5908	230.941
435.232	4.32053	34.3301	231.453
435.396	4.25347	39.2871	235.102
435.56	4.33011	44.707	230.941
435.724	4.44506	44.709	224.969
435.888	4.47379	29.457	223.524
436.052	4.64622	48.8809	215.229
436.216	4.92401	38.8281	203.086
436.38	4.95275	48.3184	201.908
436.544	4.96233	43.6406	201.518
436.708	4.67495	24.0293	213.906
436.872	4.89528	37.7559	204.279
437.036	5.24012	52.2637	190.835
437.2	5.63287	52.1719	177.529
437.364	5.21139	23.7441	191.887
437.528	4.54085	47.4453	220.223
437.693	3.81283	42.2051	262.272
437.857	3.9661	37.8223	252.137
438.021	3.82241	38.1211	261.615
438.185	3.78409	19.2031	264.264
438.349	4.39716	62.0469	227.42
438.513	5.05812	38.0254	197.702
438.677	4.77075	28.5391	209.611
438.841	4.70369	33.5547	212.599
439.005	4.73243	39.0098	211.308
439.169	4.18642	58.6816	238.868
439.333	3.59251	34.2539	278.357
439.497	3.30514	14.6797	302.559
439.661	3.6883	29.6055	271.127
439.825	3.9182	24.8428	255.219
439.989	4.23431	65.0664	236.166
440.153	4.56958	39.3398	218.838

440.317	4.20558	44.0352	237.78
440.481	3.99483	24.46	250.323
440.645	4.49295	43.8438	222.571
440.809	4.56958	48.168	218.838
440.973	4.58874	66.7656	217.925
441.137	4.67495	52.1016	213.906
441.301	4.71327	52.248	212.167
441.465	4.73243	23.7881	211.308
441.629	4.56958	66.8633	218.838
441.794	4.57916	47.3262	218.381
441.958	4.49295	70.9414	222.571
442.122	4.70369	23.7041	212.599
442.286	4.58874	19.0342	217.925
442.45	4.18642	28.6426	238.868
442.614	4.32053	37.9941	231.453
442.778	4.90485	71.0117	203.88
442.942	4.87612	33.2598	205.081
443.106	4.47379	57.3359	223.524
443.27	4.55043	52.8359	219.76
443.434	4.74201	29.1006	210.881
443.598	4.4259	48.627	225.943
443.762	4.35884	54.4492	229.419
443.926	4.25347	39.8184	235.102
444.09	4.378	49.4453	228.415
444.254	4.55043	34.6094	219.76
444.418	4.6079	39.4063	217.019
444.582	4.54085	29.5938	220.223
444.746	4.51211	59.3184	221.626
444.91	4.47379	29.3633	223.524
445.074	4.54085	19.2422	220.223
445.238	4.55043	14.5107	219.76
445.402	4.38758	47.5254	227.916
445.566	4.41632	33.4375	226.433
445.73	4.63664	14.3701	215.674
445.895	4.61748	37.9551	216.568
446.059	4.74201	51.7832	210.881
446.223	4.66538	42.4824	214.345
446.387	5.02938	23.7002	198.832
446.551	4.98149	62.125	200.743
446.715	4.82822	19.001	207.116
446.879	4.8378	47.3613	206.706
447.043	4.6079	33.3867	217.019
447.207	4.54085	28.8301	220.223
447.371	4.51211	52.5234	221.626
447.535	4.85696	33.3184	205.89
447.699	4.57916	47.7637	218.381
447.863	4.35884	48.3496	229.419
448.027	4.66538	49.5449	214.345
448.191	4.87612	0	205.081
448.355	4.73243	53.9766	211.308
448.519	4.6079	24.5605	217.019
448.683	4.61748	69.0469	216.568
448.847	4.378	34.8457	228.415
449.011	4.55043	44.9434	219.76
449.175	4.54085	44.041	220.223
449.339	4.77075	43.5195	209.611
449.503	5.0198	47.9063	199.211
449.667	5.1156	28.8105	195.481
449.831	5.09644	52.9785	196.216
449.996	4.92401	43.0488	203.086
450.16	4.92401	66.1016	203.086
450.324	5.21139	47.2383	191.887
450.488	5.17307	57.459	193.309
450.652	5.67119	47.582	176.33
450.816	6.1693	38.1445	162.093
450.98	7.24217	47.4941	138.08
451.144	8.61199	33.1855	116.117
451.308	9.89559	42.8125	101.055
451.472	11.3899	23.9111	87.7968
451.636	13.6602	57.2148	73.2054
451.8	15.6622	33.1211	63.8478
451.964	14.9917	66.8633	66.7036
452.128	13.9955	63.1133	71.4517
452.292	13.7081	54.1523	72.9496
452.456	12.5969	44.5117	79.3845
452.62	10.3937	44.2188	96.2121
452.784	9.66569	39.0996	103.459
452.948	9.69443	29.5996	103.152
453.112	8.65988	59.6914	115.475
453.276	9.31126	39.6641	107.397
453.44	10.1255	9.82666	98.7606
453.604	9.158	58.0117	109.194
453.768	7.76902	33.623	128.716
453.933	8.07555	43.6152	123.831
454.097	7.38585	62.5117	135.394
454.261	6.4471	28.7598	155.109
454.425	6.14056	33.3828	162.851
454.589	5.50834	23.6221	181.543
454.753	4.79948	52.3457	208.356
454.917	5.2497	52.3672	190.487
455.081	5.53708	71.3281	180.601
455.245	5.30718	61.7617	188.424
455.409	5.86277	85.0703	170.568
455.573	5.79572	52.4648	172.541
455.737	5.38381	86.832	185.742
455.901	4.99107	57.459	200.358
456.065	5.28802	56.7715	189.107
456.229	5.91066	57.5254	169.186
456.393	5.65203	57.9688	176.928
456.557	5.94898	43.8555	168.096
456.721	6.08309	58.5723	164.39
456.885	6.04477	87.918	165.432
457.049	5.66161	73.5469	176.628
457.213	5.4796	84.4141	182.495
457.377	5.49876	44.7988	181.859
457.541	5.63287	74.5586	177.529
457.705	6.25551	64.168	159.859
457.869	6.29383	82.8867	158.886
458.034	5.9873	73.1602	167.02
458.198	6.11183	43.3125	163.617
458.362	6.42794	77.0117	155.571
458.526	6.64826	66.707	150.415
458.69	6.80153	57.0801	147.026
458.854	7.03143	56.6484	142.219
459.018	6.89732	42.9277	144.984
459.182	6.99311	56.8906	142.998
459.346	5.72866	61.9648	174.561

459.51	4.93359	71.2617	202.692
459.674	4.16726	100.285	239.966
459.838	4.20558	66.918	237.78
460.002	4.32053	57.3203	231.453
460.166	4.57916	47.4551	218.381
460.33	5.38381	33.5488	185.742
460.494	5.38381	38.3105	185.742
460.658	4.95275	61.998	201.908
460.822	5.12517	38.7129	195.115
460.986	5.40297	82.3945	185.083
461.15	5.60413	102.738	178.44
461.314	5.81487	39.3574	171.973
461.478	6.17888	79.3633	161.842
461.642	6.33215	24.7773	157.924
461.806	7.12722	44.3438	140.307
461.97	8.20966	88.8438	121.808
462.135	8.4683	73.6523	118.087
462.299	8.70778	44.1348	114.84
462.463	8.6503	92.2227	115.603
462.627	7.91271	67.3633	126.379
462.791	7.86481	52.8965	127.149
462.955	7.5008	72.2109	133.319
463.119	7.21343	71.8008	138.63
463.283	7.62533	71.1133	131.142
463.447	8.24798	80.1758	121.242
463.611	8.20966	85.0039	121.808
463.775	9.02389	57.1992	110.817
463.939	9.71359	38.2148	102.949
464.103	10.0584	61.5156	99.419
464.267	10.6236	61.75	94.13
464.431	12.3479	61.8164	80.9857
464.595	14.9917	62.248	66.7036
464.759	18.9	67.5391	52.9101
464.923	21.6109	76.6406	46.273
465.087	22.1473	56.5898	45.1522
465.251	20.3656	84.5664	49.1024
465.415	18.3827	52.0273	54.3989
465.579	17.5972	67.043	56.8271
465.743	17.1757	81.1602	58.2216
465.907	15.1066	62.0898	66.196
466.071	9.85727	76.7266	101.448
466.236	0.632553	43.9258	1580.89
466.4	-9.74167	96.8047	-102.652
466.564	-17.3379	47.752	-57.677
466.728	-19.7998	89.7031	-50.5056
466.892	-15.0773	78.9609	-66.3251
467.056	-8.027	107.313	-124.58
467.22	1.46594	70.5508	682.156
467.384	10.729	97.0508	93.2055
467.548	16.5148	77.8867	60.5518
467.712	19.8962	73.7266	50.2608
467.876	22.952	92.4648	43.5692
468.04	23.7375	79.0781	42.1275
468.204	24.4655	60.373	40.8739
468.368	27.3584	64.5	36.5519
468.532	29.9064	78.0586	33.4376
468.696	31.8127	92.0938	31.434
468.86	32.1384	84.3281	31.1154
469.024	30.7111	69.4336	32.5615
469.188	30.0693	68.707	33.2565
469.352	29.1593	60.4707	34.2944
469.516	26.5058	118.359	37.7275
469.68	21.4864	105.41	46.5411
469.844	15.5569	120.555	64.2803
470.008	10.3458	100.305	96.6575
470.173	6.89732	100.199	144.984
470.337	4.45463	121.438	224.485
470.501	4.55043	92.2969	219.76
470.665	8.85146	106.305	112.976
470.829	14.2828	85.1016	70.0141
470.993	15.9688	135.664	62.6222
471.157	15.3365	94.2695	65.2037
471.321	13.8135	52.3848	72.3931
471.485	11.0738	83.8477	90.303
471.649	8.33419	100.789	119.988
471.813	8.08513	55.3594	123.684
471.977	8.4683	120.84	118.087
472.141	7.97976	92.3906	125.317
472.305	7.03143	87.1758	142.219
472.469	7.3188	59.8047	136.634
472.633	7.37627	69.375	135.57
472.797	6.42794	96.7773	155.571
472.961	6.45668	116.734	154.878
473.125	5.60413	83.8125	178.44
473.289	4.15768	74.0742	240.519
473.453	2.80702	78.2031	356.25
473.617	1.41804	88.3672	705.197
473.781	-0.919269	94.9688	-1087.82
473.945	-4.30071	104.371	-232.52
474.109	-7.32772	99.9727	-136.468
474.274	-6.71465	147.563	-148.928
474.438	-3.32364	81.7031	-300.875
474.602	0.258966	91.9258	3861.5
474.766	3.05608	77.2656	327.217
474.93	5.91066	71.8789	169.186
475.094	7.3188	71.4805	136.634
475.258	6.07351	66.1211	164.649
475.422	5.59455	75.5625	178.745
475.586	5.50834	84.1523	181.543
475.75	5.91066	78.9922	169.186
475.914	5.57539	60.0352	179.359
476.078	5.27844	78.8711	189.45
476.242	4.93359	87.9258	202.692
476.406	4.55043	55.5469	219.76
476.57	4.03315	115.086	247.945
476.734	4.23431	50.8867	236.166
476.898	4.07147	74.0742	245.612
477.062	3.40093	60.4219	294.037
477.226	3.4584	55.8301	289.151
477.39	4.44506	106.059	224.969
477.554	5.28802	91.9102	189.107
477.718	5.59455	55.748	178.745
477.882	4.98149	60.9121	200.743
478.046	4.44506	80.293	224.969
478.21	4.00441	75.8906	249.724
478.375	3.62125	57.3496	276.148
478.539	3.46798	52.9648	288.352

478.703	5.94898	48.2578	168.096
478.867	7.15595	62.2637	139.744
479.031	6.37046	72.2109	156.974
479.195	4.93359	52.5176	202.692
479.359	3.37219	66.6094	296.543
479.523	0.690028	66.207	1449.22
479.687	-2.26035	41.8848	-442.409
479.851	-3.69722	41.6738	-270.473
480.015	-1.01506	32.8027	-985.163
480.179	4.03315	65.3398	247.945
480.343	7.98934	83.7695	125.167
480.507	9.83812	59.3242	101.645
480.671	10.6332	36.6797	94.0452
480.835	10.4608	55.6973	95.5953
480.999	8.74609	64.5742	114.337
481.163	7.03143	36.9355	142.219
481.327	8.05639	83.4883	124.125
481.491	11.936	55.832	83.7805
481.655	17.4727	55.5	57.2321
481.819	22.6646	60.4707	44.1217
481.983	26.1993	46.3848	38.169
482.147	25.6725	46.5586	38.9523
482.311	24.0153	46.8418	41.6402
482.476	24.3409	66.5391	41.083
482.64	26.8603	62.6934	37.2297
482.804	30.1938	52.8086	33.1194
482.968	31.7169	61.8066	31.5289
483.132	31.3529	62.666	31.895
483.296	29.4466	67.4727	33.9597
483.46	26.6974	96.6992	37.4568
483.624	23.0286	95.8164	43.4243
483.788	19.2832	51.4922	51.8587
483.952	15.7197	92.375	63.6144
484.116	12.664	98.0703	78.9642
484.28	11.1409	102.582	89.7595
484.444	10.1063	79.3086	98.9479
484.608	9.59864	63.9434	104.181
484.772	8.75567	45.6953	114.212
484.936	8.4683	64.9258	118.087
485.1	8.08513	92.3008	123.684
485.264	7.83607	60.0449	127.615
485.428	8.03724	74.0391	124.421
485.592	8.85146	78.707	112.976
485.756	8.75567	60.4063	114.212
485.92	8.01808	106.93	124.718
486.084	6.96437	69.4336	143.588
486.248	6.04477	59.7109	165.432
486.412	4.85696	41.7285	205.89
486.577	5.18265	71.5547	192.951
486.741	5.43171	67.543	184.104
486.905	4.77075	86.4414	209.611
487.069	4.6079	71.2734	217.019
487.233	4.68453	47.9688	213.468
487.397	3.60209	76.9648	277.617
487.561	2.85492	68.3438	350.273
487.725	3.19977	43.1523	312.523
487.889	4.09063	47.1602	244.461
488.053	5.78614	65.6992	172.827
488.217	8.2384	70.3711	121.383
488.381	9.54116	46.9746	104.809
488.545	10.7769	51.5313	92.7913
488.709	11.524	69.4219	86.7751
488.873	12.1275	41.1211	82.457
489.037	12.5969	83.2227	79.3845
489.201	13.3249	78.5742	75.0473
489.365	13.8422	50.1797	72.2428
489.529	13.5261	59.7109	73.9312
489.693	11.3995	78.5547	87.723
489.857	9.74232	51.0938	102.645
490.021	8.17134	88.1289	122.379
490.185	6.77279	41.8125	147.65
490.349	6.07351	78.7227	164.649
490.513	6.14056	73.8125	162.851
490.678	6.87816	32.752	145.388
490.842	8.24798	57.3184	121.242
491.006	8.52577	57.1699	117.291
491.17	7.56786	57.1367	132.138
491.334	6.87816	86.1094	145.388
491.498	6.37046	48.0645	156.974
491.662	7.19427	38.9727	138.999
491.826	5.72866	68.1289	174.561
491.99	5.33592	81.1133	187.409
492.154	5.53708	56.959	180.601
492.318	6.04477	61.7871	165.432
492.482	4.68453	51.8867	213.468
492.646	5.26886	32.6426	189.794
492.81	6.27467	55.0273	159.371
492.974	5.91066	46.0527	169.186
493.138	5.41255	60.7305	184.756
493.302	5.60413	78.5391	178.44
493.466	5.50834	45.7266	181.543
493.63	5.21139	36.8711	191.887
493.794	5.36465	50.9922	186.405
493.958	5.17307	60.2598	193.309
494.122	4.76117	41.4961	210.033
494.286	4.70369	83.6211	212.599
494.45	4.58874	36.9551	217.925
494.614	4.64622	64.3047	215.229
494.779	4.61748	32.3984	216.568
494.943	4.90485	60.9648	203.88
495.107	4.77075	98.9063	209.611
495.271	4.64622	52.4141	215.229
495.435	4.73243	43.2461	211.308
495.599	4.8378	76.9766	206.706
495.763	4.57916	57.8945	218.381
495.927	4.63664	43.4629	215.674
496.091	4.86654	67.1797	205.485
496.255	5.37423	77.1758	186.073
496.419	5.30718	52.4375	188.424
496.583	5.24012	60.9785	190.835
496.747	5.50834	67.8555	181.543
496.911	5.60413	48.7715	178.44
497.075	5.00065	42.8301	199.974
497.239	4.51211	66.7852	221.626
497.403	4.34926	59.4141	229.924
497.567	4.41632	58.666	226.433
497.731	4.378	49.6719	228.415

497.895	4.28221	58.377	233.524
498.059	4.23431	81.3555	236.166
498.223	4.6079	50.5957	217.019
498.387	4.66538	68.3867	214.345
498.551	4.66538	50.9277	214.345
498.715	4.67495	56.4629	213.906
498.88	4.64622	48.6348	215.229
499.044	5.09644	45.6484	196.216
499.208	5.7574	63.7051	173.69
499.372	5.49876	74.9102	181.859
499.536	4.98149	34.1484	200.743
499.7	4.54085	50.3887	220.223
499.864	4.80906	65.3789	207.941
500.028	4.77075	70.5703	209.611
500.192	4.29179	73.8086	233.003
500.356	4.38758	53.2148	227.916
500.52	4.12894	39.9355	242.193
500.684	4.4259	78.6914	225.943
500.848	4.66538	48.9805	214.345
501.012	4.70369	43.6348	212.599
501.176	4.63664	77.1094	215.674
501.34	5.66161	59.1484	176.628
501.504	6.27467	93.7617	159.371
501.668	5.67119	42.8418	176.33
501.832	5.44129	55.625	183.78
501.996	6.11183	56.3496	163.617
502.16	5.85319	42.9082	170.847
502.324	4.95275	48.8281	201.908
502.488	4.29179	65.8633	233.003
502.652	4.39716	46.5977	227.42
502.816	4.28221	54.2148	233.524
502.981	4.04273	68.8828	247.358
503.145	4.16726	63.4941	239.966
503.309	4.49295	70.8086	222.571
503.473	4.4259	47.2656	225.943
503.637	4.30137	60.418	232.484
503.801	3.90862	48.3281	255.845
503.965	3.9661	58.4785	252.137
504.129	4.26305	63.0547	234.574
504.293	4.80906	75.8516	207.941
504.457	4.85696	56.3184	205.89
504.621	4.8378	58.9355	206.706
504.785	4.51211	65.7852	221.626
504.949	4.10021	29.8818	243.89
505.113	3.89904	54.5605	256.473
505.277	3.62125	62.3535	276.148
505.441	3.43924	62.4434	290.762
505.605	3.10397	57.1816	322.168
505.769	2.98902	44.5488	334.557
505.933	3.01776	69.6406	331.371
506.097	3.0465	62.4395	328.246
506.261	3.05608	32.332	327.217
506.425	3.19977	59.2891	312.523
506.589	3.26682	41.8066	306.108
506.753	3.36261	39.4805	297.388
506.917	3.56377	64.5586	280.601
507.082	3.71704	62.6152	269.031
507.246	3.63083	59.3633	275.419
507.41	3.87989	63.9551	257.74
507.574	3.87989	54.2109	257.74
507.738	4.15768	45.1387	240.519
507.902	4.4259	45.084	225.943
508.066	4.61748	59.9414	216.568
508.23	4.92401	58.0762	203.086
508.394	5.0198	70.7695	199.211
508.558	4.93359	40.8379	202.692
508.722	5.0198	53.9043	199.211
508.886	4.63664	71.25	215.674
509.05	4.25347	60.7832	235.102
509.214	4.20558	72.918	237.78
509.378	4.92401	57.2422	203.086
509.542	5.3455	49.7207	187.073
509.706	5.41255	56.8828	184.756
509.87	5.21139	59.2793	191.887
510.034	4.82822	59.4082	207.116
510.198	5.33592	57.0078	187.409
510.362	5.33592	71.9688	187.409
510.526	5.02938	51.8613	198.832
510.69	4.90485	41.9316	203.88
510.854	4.54085	62.0605	220.223
511.019	5.26886	52.2441	189.794
511.183	4.95275	59.5	201.908
511.347	4.35884	69.1484	229.419
511.511	3.9182	59.1289	255.219
511.675	3.4584	59.2129	289.151
511.839	3.53504	54.6973	282.883
512.003	4.78033	44.7715	209.191
512.167	5.69992	52.3281	175.441
512.331	5.33592	40.2969	187.409
512.495	5.31676	78.5898	188.085
512.659	5.92024	76.2188	168.912
512.823	5.9394	66.4375	168.367
512.987	5.66161	53.3477	176.628
513.151	5.66161	58.3711	176.628
513.315	5.92024	58.2441	168.912
513.479	5.9394	52.6953	168.367
513.643	5.67119	57.2402	176.33
513.807	5.18265	69.3867	192.951
513.971	4.68453	79.3555	213.468
514.135	4.55043	62.1836	219.76
514.299	4.41632	62.3867	226.433
514.463	4.13852	84.457	241.632
514.627	3.89904	39.2266	256.473
514.791	3.84157	46.7461	260.31
514.955	3.17103	47.0703	315.355
515.12	3.42967	72.082	291.574
515.284	3.87031	39.457	258.377
515.448	3.84157	41.6855	260.31
515.612	3.24766	59.0313	307.914
515.776	3.56377	49.4531	280.601
515.94	3.67872	64.6797	271.833
516.104	3.71704	71.7695	269.031
516.268	2.61544	59.3945	382.345
516.432	2.91239	44.8594	343.36
516.596	3.40093	50.3105	294.037
516.76	3.62125	63.5762	276.148
516.924	3.01776	55.7031	331.371

517.088	3.93736	68.168	253.977
517.252	4.10978	68.7461	243.322
517.416	4.30137	30.9473	232.484
517.58	4.10021	78.8828	243.89
517.744	4.23431	45.2754	236.166
517.908	3.84157	59.377	260.31
518.072	3.49672	66.9922	285.982
518.236	3.5063	59.6035	285.201
518.4	3.63083	74.6172	275.419
518.564	3.79367	66.6406	263.597
518.728	3.90862	61.707	255.845
518.892	4.13852	76.168	241.632
519.056	4.30137	84.5352	232.484
519.221	4.12894	69.7891	242.193
519.385	3.42967	62.0156	291.574
519.549	2.91239	36.959	343.36
519.713	3.2764	36.7441	305.213
519.877	3.75536	41.8945	266.286
520.041	3.60209	44.6387	277.617
520.205	3.58293	51.6602	279.101
520.369	4.48337	48.9902	223.046
520.533	4.378	49.3164	228.415
520.697	3.9182	67.6836	255.219
520.861	3.01776	43.0332	331.371
521.025	3.17103	63.1973	315.355
521.189	3.30514	68.0586	302.559
521.353	3.41051	35.5078	293.212
521.517	3.59251	43.5137	278.357
521.681	3.59251	56.4043	278.357
521.845	3.46798	50.8281	288.352
522.009	3.52546	50.041	283.651
522.173	3.84157	56.9043	260.31
522.337	3.89904	54.7109	256.473
522.501	3.55419	75.668	281.358
522.665	3.63083	54.7617	275.419
522.829	3.46798	46.8848	288.352
522.993	3.24766	49.3574	307.914
523.157	3.62125	52.1973	276.148
523.322	3.46798	67.1367	288.352
523.486	3.43924	49.2402	290.762
523.65	3.65956	56.5215	273.257
523.814	3.56377	51.834	280.601
523.978	3.65956	46.9688	273.257
524.142	3.74578	49.7266	266.967
524.306	3.89904	61.6328	256.473
524.47	3.43924	73.8477	290.762
524.634	3.14229	51.8848	318.239
524.798	3.31472	57.0059	301.685
524.962	3.39135	52.4199	294.868
525.126	3.18061	80.375	314.405
525.29	3.33387	60.207	299.951
525.454	3.67872	55.4277	271.833
525.618	3.53504	48.1738	282.883
525.782	3.39135	56.1445	294.868
525.946	3.4584	69.1094	289.151
526.11	3.43924	68.375	290.762
526.274	3.31472	80.5352	301.685
526.438	3.31472	65.0508	301.685
526.602	3.42967	62.1406	291.574
526.766	3.53504	54.5879	282.883
526.93	3.36261	56.9688	297.388
527.094	3.56377	52.0605	280.601
527.259	3.39135	49.8223	294.868
527.423	3.20934	56.9336	311.59
527.587	3.15187	47.1152	317.272
527.751	3.11355	51.9434	321.176
527.915	2.97945	76.5977	335.633
528.079	3.11355	84.0781	321.176
528.243	3.26682	44.8281	306.108
528.407	3.21892	44.3828	310.663
528.571	3.10397	51.4961	322.168
528.735	3.30514	83.6641	302.559
528.899	3.39135	46.9629	294.868
529.063	3.24766	42.2246	307.914
529.227	3.24766	39.8535	307.914
529.391	3.23808	57.5391	308.825
529.555	3.18061	86.2695	314.405
529.719	3.2764	66.2539	305.213
529.883	3.23808	68.6641	308.825
530.047	3.36261	60.7188	297.388
530.211	3.36261	38.0723	297.388
530.375	3.10397	50.6992	322.168
530.539	3.2764	60.5742	305.213
530.703	3.19977	69.8086	312.523
530.867	2.91239	54.1621	343.36
531.031	3.07524	69.1602	325.178
531.195	3.0465	72.1992	328.246
531.36	3.21892	60.0254	310.663
531.524	3.33387	59.9531	299.951
531.688	3.34345	61.8594	299.092
531.852	3.34345	49.0684	299.092
532.016	3.31472	61.9238	301.685
532.18	3.19977	57.0449	312.523
532.344	3.36261	74.5156	297.388
532.508	3.63083	46.7539	275.419
532.672	3.48714	51.752	286.768
532.836	3.21892	44.9531	310.663
533	3.48714	51.9785	286.768
533.164	3.4584	69.082	289.151
533.328	3.39135	51.9512	294.868
533.492	3.2764	57.168	305.213
533.656	3.14229	57.6895	318.239
533.82	3.02734	70.957	330.323
533.984	2.67291	55.6328	374.124
534.148	2.70165	78.4336	370.144
534.312	2.15564	63.4844	463.9
534.476	1.81079	79.1289	552.246
534.64	1.2073	71.7617	828.293
534.804	1.10193	63.3984	907.497
534.968	0.986982	54.625	1013.19
535.132	1.24562	64.125	802.814
535.296	1.51384	34.7188	660.574
535.461	2.1269	47.3945	470.168
535.625	2.32806	42.375	429.542
535.789	2.57712	64.2617	388.03
535.953	2.5388	56.4355	393.886
536.117	2.60586	34.6289	383.751

536.281	2.28975	54.6074	436.73
536.445	1.96406	42.3008	509.151
536.609	2.13648	76.5273	468.06
536.773	1.99279	64.2227	501.808
536.937	1.897	69.4688	527.148
537.101	1.62878	82.1797	613.955
537.265	1.49468	51.8984	669.041
537.429	1.42762	49.1543	700.465
537.593	1.38931	54.1055	719.784
537.757	1.42762	59.8574	700.465
537.921	1.52341	35.6602	656.42
538.085	1.59047	43.1563	628.746
538.249	1.93532	73.1836	516.711
538.413	1.64794	65.6094	606.817
538.577	1.32225	71.5117	756.285
538.741	1.41804	64.1016	705.197
538.905	1.93532	50.8867	516.711
539.069	2.57712	72.5469	388.03
539.233	2.57712	44.5801	388.03
539.397	3.10397	54.707	322.168
539.562	2.97945	57.6602	335.633
539.726	2.64417	42.3965	378.19
539.89	1.67668	56.9863	596.416
540.054	1.53299	59.373	652.319
540.218	1.30309	57.0254	767.404
540.382	1.61921	42.0918	617.587
540.546	2.04069	49.4316	490.031
540.71	2.73997	51.6855	364.968
540.874	2.96029	56.5586	337.805
541.038	3.14229	64.1367	318.239
541.202	2.95071	44.7031	338.902
541.366	2.56754	64.3242	389.478
541.53	2.67291	59.1348	374.124
541.694	2.22269	61.6016	449.905
541.858	2.21311	57.0371	451.852
542.022	2.31848	32.5137	431.316
542.186	2.25143	45.2422	444.162
542.35	1.81079	55.5215	552.246
542.514	2.13648	55.5527	468.06
542.678	2.28975	83.8125	436.73
542.842	2.22269	33.2324	449.905
543.006	2.51007	43.3945	398.396
543.17	2.79744	53.5273	357.47
543.334	3.07524	50.3828	325.178
543.499	3.02734	69.9961	330.323
543.663	2.88365	59.998	346.782
543.827	2.88365	67.1172	346.782
543.991	2.28017	69.1641	438.564
544.155	2.5388	69.168	393.886
544.319	1.97363	57.0605	506.679
544.483	2.03111	54.6699	492.342
544.647	2.00237	44.6875	499.408
544.811	2.3089	76.3516	433.106
544.975	2.28975	66.5352	436.73
545.139	1.74373	69.4648	573.482
545.303	1.83953	52.2441	543.618
545.467	2.00237	73.7539	499.408
545.631	2.09816	66.3633	476.607
545.795	1.65752	36.8223	603.31
545.959	1.82037	49.4453	549.339
546.123	2.11732	54.5098	472.295
546.287	2.18438	52.1133	457.797
546.451	2.32806	49.7305	429.542
546.615	2.48133	58.2246	403.01
546.779	2.51965	55.9668	396.881
546.943	2.18438	48.6738	457.797
547.107	2.34722	61.0313	426.036
547.271	1.90658	48.2461	524.499
547.435	2.13648	60.7188	468.06
547.6	2.09816	53.1953	476.607
547.764	1.99279	75.4453	501.808
547.928	1.78205	59.7188	561.151
548.092	2.54838	54.2871	392.406
548.256	2.47175	50.1016	404.572
548.42	2.1269	87.2188	470.168
548.584	2.60586	47.2148	383.751
548.748	2.48133	69.4453	403.01
548.912	1.92574	36.9883	519.281
549.076	1.715	54.3984	583.091
549.24	2.21311	64.2539	451.852
549.404	1.93532	52.1113	516.711
549.568	2.13648	41.7422	468.06
549.732	2.28017	66.5977	438.564
549.896	2.22269	39.5352	449.905
550.06	2.1269	44.7012	470.168
550.224	2.13648	59.5703	468.06
550.388	2.22269	24.6377	449.905
550.552	2.45259	64.207	407.732
550.716	2.89323	72.2422	345.634
550.88	3.60209	60.6719	277.617
551.044	3.60209	71.3008	277.617
551.208	3.18061	55.6387	314.405
551.372	2.73997	50.3867	364.968
551.536	2.28017	30.5205	438.564
551.701	2.23227	76.4766	447.974
551.865	2.4047	55.8457	415.853
552.029	2.3568	60.084	424.304
552.193	2.57712	57.207	388.03
552.357	2.71123	57.123	368.836
552.521	2.34722	47.5176	426.036
552.685	2.61544	34.8203	382.345
552.849	3.0465	86.8359	328.246
553.013	2.70165	68.8984	370.144
553.177	2.73039	69.0313	366.248
553.341	2.95071	57.5137	338.902
553.505	2.47175	57.2715	404.572
553.669	2.19395	88.6289	455.798
553.833	2.26101	41.7402	442.28
553.997	2.51007	79.0586	398.396
554.161	2.18438	69.6094	457.797
554.325	2.6346	39.6602	379.565
554.489	3.12313	58.9063	320.191
554.653	3.63083	48.9902	275.419
554.817	3.34345	57.1738	299.092
554.981	3.33387	45.1094	299.951
555.145	3.52546	68.3555	283.651
555.309	2.7687	55.5117	361.18

555.473	2.4047	78.4766	415.853
555.637	3.00818	55.9883	332.427
555.802	2.93155	66.4609	341.117
555.966	2.78786	45.7656	358.698
556.13	2.88365	67.7695	346.782
556.294	3.67872	74.2461	271.833
556.458	3.0465	59.4902	328.246
556.622	3.40093	62.4102	294.037
556.786	2.89323	62.4258	345.634
556.95	2.97945	61.9336	335.633
557.114	2.61544	56.9082	382.345
557.278	2.38554	62.0664	419.193
557.442	2.3568	54.5449	424.304
557.606	2.4047	62.1445	415.853
557.77	2.50049	53.9414	399.922
557.934	2.48133	51.8418	403.01
558.098	2.60586	24.6719	383.751
558.262	2.51965	44.5703	396.881
558.426	2.96029	86.8945	337.805
558.59	2.97945	54.5352	335.633
558.754	2.91239	76.1094	343.36
558.918	3.21892	78.793	310.663
559.082	3.12313	52.4258	320.191
559.246	2.92197	60.0781	342.235
559.41	2.5388	52.6016	393.886
559.574	2.80702	52.6953	356.25
559.738	2.75912	60.9395	362.434
559.903	2.22269	51.0508	449.905
560.067	1.86826	61.1738	535.256
560.231	1.72458	48.2715	579.853
560.395	1.93532	55.2227	516.711
560.559	1.97363	50.1191	506.679
560.723	2.03111	54.8242	492.342
560.887	3.01776	62.1797	331.371
561.051	3.26682	86.5859	306.108
561.215	2.73997	64.1836	364.968
561.379	2.4047	56.8887	415.853
561.543	3.02734	59.4258	330.323
561.707	3.41051	76.6523	293.212
561.871	3.12313	49.1465	320.191
562.035	3.87031	49.1348	258.377
562.199	4.58874	62.0957	217.925
562.363	4.77075	67.1797	209.611
562.527	4.33011	56.8496	230.941
562.691	3.94694	66.3047	253.361
562.855	3.53504	46.7227	282.883
563.019	3.4584	66.8945	289.151
563.183	3.85115	52.0723	259.663
563.347	4.71327	57.0078	212.167
563.511	5.22097	59.5684	191.535
563.675	5.27844	73.543	189.45
563.84	5.19223	58.2344	192.596
564.004	5.19223	66.1367	192.596
564.168	5.14433	68.8438	194.389
564.332	4.87612	68.5898	205.081
564.496	4.71327	42.957	212.167
564.66	4.85696	55.5547	205.89
564.824	4.70369	54.9746	212.599
564.988	4.76117	62.1387	210.033
565.152	4.74201	59.3555	210.881
565.316	4.73243	52.2734	211.308
565.48	4.73243	44.7891	211.308
565.644	5.24012	44.9277	190.835
565.808	5.5275	59.4063	180.914
565.972	5.41255	51.4063	184.756
566.136	5.27844	63.8125	189.45
566.3	5.04854	71.6289	198.077
566.464	4.74201	44.5352	210.881
566.628	4.29179	51.8359	233.003
566.792	4.15768	46.5332	240.519
566.956	4.18642	51.457	238.868
567.12	4.32053	59.4395	231.453
567.284	4.74201	69.6055	210.881
567.448	5.18265	61.7227	192.951
567.612	5.28802	81.8164	189.107
567.776	5.33592	54.627	187.409
567.941	5.50834	68.4219	181.543
568.105	5.60413	63.4707	178.44
568.269	5.53708	35.4395	180.601
568.433	5.28802	68.3164	189.107
568.597	5.09644	58.3164	196.216
568.761	4.86654	58.916	205.485
568.925	4.85696	68.8906	205.89
569.089	4.4259	54.9121	225.943
569.253	4.06189	54.3828	246.191
569.417	4.26305	77.1094	234.574
569.581	4.41632	44.9336	226.433
569.745	4.32053	74.9688	231.453
569.909	4.80906	51.7754	207.941
570.073	5.31676	71.1602	188.085
570.237	5.1156	56.6113	195.481
570.401	5.30718	79.4063	188.424
570.565	5.28802	47.1816	189.107
570.729	5.50834	71.6797	181.543
570.893	5.00065	34.5313	199.974
571.057	4.80906	34.416	207.941
571.221	4.76117	37.0332	210.033
571.385	4.66538	39.4609	214.345
571.549	4.61748	73.7461	216.568
571.713	4.47379	41.7559	223.524
571.877	4.70369	46.8887	212.599
572.042	4.47379	40.0313	223.524
572.206	4.4259	57.9453	225.943
572.37	4.44506	48.1016	224.969
572.534	4.30137	80.8359	232.484
572.698	4.33011	78.9063	230.941
572.862	4.16726	63.9316	239.966
573.026	4.10978	61.3223	243.322
573.19	3.42967	60.4277	291.574
573.354	3.48714	59.9082	286.768
573.518	3.26682	71.9766	306.108
573.682	3.23808	67.3125	308.825
573.846	3.07524	72.3516	325.178
574.01	3.55419	62.6113	281.358
574.174	2.92197	42.0137	342.235
574.338	3.14229	49.2461	318.239
574.502	2.80702	42.2383	356.25

574.666	2.78786	49.5762	358.698
574.83	2.83576	88.5859	352.639
574.994	2.8645	51.4883	349.102
575.158	3.05608	39.3223	327.217
575.322	3.40093	49.8047	294.037
575.486	3.31472	61.8652	301.685
575.65	3.52546	73.875	283.651
575.814	3.55419	71.3906	281.358
575.978	3.72662	76.6289	268.34
576.143	3.55419	29.9385	281.358
576.307	3.59251	74.9805	278.357
576.471	3.65956	72.457	273.257
576.635	3.63083	67.8047	275.419
576.799	3.53504	68.3164	282.883
576.963	3.55419	61.1035	281.358
577.127	3.31472	58.6816	301.685
577.291	3.24766	63.4395	307.914
577.455	3.14229	42.7969	318.239
577.619	3.19977	65.293	312.523
577.783	3.18061	42.543	314.405
577.947	3.21892	74.6836	310.663
578.111	3.30514	37.2637	302.559
578.275	3.46798	54.2246	288.352
578.439	3.5063	72.293	285.201
578.603	3.20934	74.4883	311.59
578.767	3.46798	49.582	288.352
578.931	3.40093	56.5273	294.037
579.095	3.48714	76.8242	286.768
579.259	3.08482	86.332	324.168
579.423	3.42967	54.627	291.574
579.587	3.71704	64.3789	269.031
579.751	2.82618	46.8711	353.835
579.915	1.70542	68.8555	586.366
580.08	2.13648	54.084	468.06
580.244	2.31848	71.5898	431.316
580.408	2.16522	54.623	461.847
580.572	3.05608	37.3008	327.217
580.736	4.55043	62.748	219.76
580.9	4.38758	58.168	227.916
581.064	3.90862	58.6211	255.845
581.228	3.55419	79.2188	281.358
581.392	2.92197	75.9297	342.235
581.556	2.28975	53.0625	436.73
581.72	2.04069	70.6758	490.031
581.884	2.38554	55.3105	419.193
582.048	2.82618	67.1289	353.835
582.212	3.10397	39.5156	322.168
582.376	3.12313	61.6875	320.191
582.54	3.02734	54.6895	330.323
582.704	2.89323	67.4414	345.634
582.868	2.73997	62.4121	364.968
583.032	2.93155	54.2871	341.117
583.196	2.98902	73.793	334.557
583.36	2.89323	51.8613	345.634
583.524	3.17103	72.1016	315.355
583.688	3.29556	71.4961	303.439
583.852	3.29556	51.6387	303.439
584.016	3.29556	46.7969	303.439
584.181	3.58293	52.3672	279.101
584.345	3.62125	67.1094	276.148
584.509	3.29556	54.1953	303.439
584.673	3.05608	54.0234	327.217
584.837	2.1269	50.0703	470.168
585.001	1.13067	70.4453	884.432
585.165	0.757082	48.1406	1320.86
585.329	1.01572	68.3594	984.524
585.493	1.23604	55.5352	809.035
585.657	1.24562	50.7695	802.814
585.821	-0.258308	73.9102	-3871.35
585.985	-1.78139	40.7168	-561.359
586.149	-1.97298	58.082	-506.849
586.313	-2.06877	52.1074	-483.38
586.477	-2.41362	78.8672	-414.316
586.641	-0.967165	64.5156	-1033.95
586.805	1.52341	44.8867	656.42
586.969	3.07524	61.9336	325.178
587.133	3.60209	69.0664	277.617
587.297	2.64417	61.5645	378.19
587.461	1.04446	39.4277	957.435
587.625	0.977403	59.5762	1023.12
587.789	1.70542	66.543	586.366
587.953	1.65752	56.7656	603.31
588.117	3.39135	41.9883	294.868
588.282	5.2497	74.043	190.487
588.446	5.21139	64.7227	191.887
588.61	4.63664	81.5273	215.674
588.774	4.34926	71.0938	229.924
588.938	3.20934	56.6973	311.59
589.102	1.81079	52.3555	552.246
589.266	1.65752	70.9531	603.31
589.43	1.51384	68.7695	660.574
589.594	2.15564	58.0332	463.9
589.758	2.66333	60.6875	375.469
589.922	3.59251	48.6406	278.357
590.086	3.24766	61.418	307.914
590.25	3.64999	65.8047	273.974
590.414	4.01399	57.2988	249.128
590.578	3.72662	59.584	268.34
590.742	2.89323	54.7012	345.634
590.906	2.60586	52.5332	383.751
591.07	3.41051	64.5156	293.212
591.234	3.46798	49.4023	288.352
591.398	3.71704	59.5	269.031
591.562	4.03315	54.6465	247.945
591.726	4.13852	54.4023	241.632
591.89	4.12894	68.918	242.193
592.054	4.33011	78.4414	230.941
592.218	4.41632	73.8867	226.433
592.383	4.54085	51.7891	220.223
592.547	4.66538	84.0234	214.345
592.711	5.07728	71.5469	196.956
592.875	5.40297	66.4023	185.083
593.039	5.47002	69.2227	182.815
593.203	5.38381	59.75	185.742
593.367	5.05812	67.3281	197.702
593.531	4.87612	67.9023	205.081
593.695	4.92401	42.8379	203.086

593.859	5.08686	38.0684	196.585
594.023	4.98149	48.584	200.743
594.187	5.30718	25.5527	188.424
594.351	5.63287	78.4102	177.529
594.515	5.84361	50.8867	171.127
594.679	5.76698	77.7969	173.401
594.843	5.71908	62.3535	174.853
595.007	5.3455	52.4941	187.073
595.171	4.89528	66.8945	204.279
595.335	5.0198	56.9473	199.211
595.499	5.09644	51.7441	196.216
595.663	5.53708	71.9453	180.601
595.827	5.50834	74.2969	181.543
595.991	5.69992	66.8555	175.441
596.155	5.81487	63.9941	171.973
596.32	5.94898	61.6992	168.096
596.484	6.19804	49.5547	161.341
596.648	6.29383	47.1152	158.886
596.812	5.74782	63.8125	173.979
596.976	5.53708	46.6016	180.601
597.14	5.85319	68.9922	170.847
597.304	5.88193	74.4414	170.012
597.468	5.81487	64.2422	171.973
597.632	6.14056	76.6602	162.851
597.796	6.23636	69.7344	160.35
597.96	5.63287	70.9375	177.529
598.124	5.92024	48.4785	168.912
598.288	5.71908	76.6953	174.853
598.452	5.66161	53.457	176.628
598.616	5.53708	60.8398	180.601
598.78	6.27467	68.0898	159.371
598.944	6.14056	75.9063	162.851
599.108	5.9873	54.9746	167.02
599.272	6.07351	56.8906	164.649
599.436	6.20762	49.4805	161.092
599.6	5.9394	59.8867	168.367
599.764	5.82445	47.4941	171.69
599.928	6.10225	64.3711	163.874
600.092	6.15972	46.7852	162.345
600.256	6.1693	61.7051	162.093
600.421	6.14056	56.8965	162.851
600.585	5.96814	49.5059	167.556
600.749	5.86277	66.6523	170.568
600.913	5.76698	61.4004	173.401
601.077	5.89151	63.7871	169.736
601.241	6.01604	56.9922	166.222
601.405	6.15972	57.0469	162.345
601.569	6.15972	74.5273	162.345
601.733	6.1693	61.8418	162.093
601.897	6.08309	59.2891	164.39
602.061	5.88193	57.4727	170.012
602.225	5.67119	53.0938	176.33
602.389	5.72866	83.8086	174.561
602.553	5.69034	50.6914	175.736
602.717	5.97772	43.0625	167.288
602.881	5.94898	84.8984	168.096
603.045	6.07351	59.9863	164.649
603.209	5.69992	73.668	175.441
603.373	5.47002	57.2012	182.815
603.537	5.37423	57.1211	186.073
603.701	4.89528	62.4453	204.279
603.865	4.35884	57.7656	229.419
604.029	4.49295	66.4336	222.571
604.193	4.78033	62.4004	209.191
604.357	4.28221	69.6016	233.524
604.522	4.15768	67.7695	240.519
604.686	4.55043	62.3984	219.76
604.85	4.6079	57.8965	217.019
605.014	3.37219	57.5273	296.543
605.178	3.62125	55.209	276.148
605.342	3.19977	48.7324	312.523
605.506	3.33387	75	299.951
605.67	3.10397	69.5547	322.168
605.834	3.37219	55.5977	296.543
605.998	2.67291	41.0664	374.124
606.162	3.24766	60.4023	307.914
606.326	3.08482	66.8008	324.168
606.49	2.83576	27.1445	352.639
606.654	2.57712	97.2578	388.03
606.818	2.64417	67.3711	378.19
606.982	2.45259	80.3203	407.732
607.146	2.34722	58.4082	426.036
607.31	2.08858	35.6543	478.793
607.474	2.16522	70.2461	461.847
607.638	2.3089	65.707	433.106
607.802	2.32806	61.291	429.542
607.966	2.22269	92.25	449.905
608.13	2.4047	56.8301	415.853
608.294	3.31472	47.832	301.685
608.458	3.42967	52.5742	291.574
608.623	3.29556	43.8633	303.439
608.787	3.15187	43.6523	317.272
608.951	3.07524	74.3398	325.178
609.115	2.73039	43.5137	366.248
609.279	2.69207	85.5195	371.461
609.443	2.48133	65.457	403.01
609.607	2.37596	23.3213	420.883
609.771	2.7687	46.6875	361.18
609.935	3.43924	51.6582	290.762
610.099	3.46798	60.3027	288.352
610.263	3.40093	74.3906	294.037
610.427	4.34926	81.3359	229.924
610.591	3.78409	89.9688	264.264
610.755	3.77451	56.6875	264.935
610.919	3.01776	52.2168	331.371
611.083	3.39135	81.9531	294.868
611.247	2.50049	53.6191	399.922
611.411	2.57712	101.641	388.03
611.575	2.26101	66.6797	442.28
611.739	2.51007	70.5625	398.396
611.903	2.96029	80.0313	337.805
612.067	3.40093	66.0313	294.037
612.231	3.29556	66	303.439
612.395	3.21892	55.8789	310.663
612.56	3.15187	60.1563	317.272
612.724	3.26682	75.5977	306.108
612.888	2.93155	74.7539	341.117

613.052	2.28975	60.3223	436.73
613.216	3.2764	59.9863	305.213
613.38	4.15768	51.3457	240.519
613.544	3.5063	66.2148	285.201
613.708	3.89904	46.6094	256.473
613.872	4.8378	97.5391	206.706
614.036	4.12894	65.3164	242.193
614.2	3.0465	46.4785	328.246
614.364	3.43924	51.4824	290.762
614.528	2.85492	70.4531	350.273
614.692	2.89323	51.6152	345.634
614.856	3.74578	71.2305	266.967
615.02	3.56377	91.3125	280.601
615.184	3.64999	81.2891	273.974
615.348	3.33387	52.9551	299.951
615.512	3.39135	67.3086	294.868
615.676	2.78786	95.8711	358.698
615.84	3.49672	57.6953	285.982
616.004	2.96029	47.584	337.805
616.168	3.26682	79.4141	306.108
616.332	3.56377	74.8672	280.601
616.496	3.75536	75.2383	266.286
616.661	3.33387	84.6523	299.951
616.825	3.15187	51.5742	317.272
616.989	2.6346	51.7559	379.565
617.153	2.28975	60.8945	436.73
617.317	2.23227	69.9531	447.974
617.481	2.59628	87.4492	385.167
617.645	2.16522	60.9316	461.847
617.809	2.22269	103.137	449.905
617.973	2.37596	69.4141	420.883
618.137	3.14229	101.344	318.239
618.301	2.66333	102.434	375.469
618.465	3.19977	79.6602	312.523
618.629	3.9661	60.9512	252.137
618.793	3.69788	46.623	270.425
618.957	3.18061	61.1914	314.405
619.121	3.75536	52.5215	266.286
619.285	4.25347	52.8086	235.102
619.449	4.378	43.1973	228.415
619.613	4.09063	76.3516	244.461
619.777	3.9182	86.0039	255.219
619.941	3.63083	115.598	275.419
620.105	3.15187	57.9941	317.272
620.269	2.42385	81.4648	412.566
620.433	1.39889	46.9141	714.855
620.597	1.01572	46.291	984.524
620.762	1.14983	61.3438	869.696
620.926	1.27436	118.852	784.71
621.09	1.4372	51.5352	695.796
621.254	2.66333	60.2793	375.469
621.418	3.24766	60.498	307.914
621.582	3.87031	107.793	258.377
621.746	3.97568	46.8359	251.53
621.91	4.13852	60.7441	241.632
622.074	3.9182	46.4746	255.219
622.238	4.04273	79.9453	247.358
622.402	4.28221	69.5078	233.524
622.566	4.57916	101.848	218.381
622.73	5.57539	70.3828	179.359
622.894	6.60994	79.25	151.287
623.058	6.36089	55.5137	157.211
623.222	5.18265	65.7266	192.951
623.386	5.3455	57.3047	187.073
623.55	4.93359	81.7266	202.692
623.714	3.58293	80.9531	279.101
623.878	3.55419	66.4258	281.358
624.042	4.6079	58.1934	217.019
624.206	4.4259	53.0332	225.943
624.37	4.57916	48.207	218.381
624.534	5.08686	80.75	196.585
624.698	5.33592	102.969	187.409
624.863	4.33011	55.9531	230.941
625.027	4.29179	51.9395	233.003
625.191	4.49295	89.6211	222.571
625.355	3.93736	56.6426	253.977
625.519	4.26305	55.748	234.574
625.683	4.90485	65.2852	203.88
625.847	4.96233	52.0273	201.518
626.011	4.44506	75.0547	224.969
626.175	4.41632	59.7402	226.433
626.339	3.97568	87.9336	251.53
626.503	3.60209	51.5566	277.617
626.667	3.37219	60.8027	296.543
626.831	3.24766	87.9922	307.914
626.995	3.23808	74.1445	308.825
627.159	3.42967	75.4805	291.574
627.323	3.72662	70.4727	268.34
627.487	3.39135	61.082	294.868
627.651	3.17103	66.0469	315.355
627.815	3.11355	71.4805	321.176
627.979	2.88365	71.5195	346.782
628.143	2.56754	52.5801	389.478
628.307	2.71123	76.7344	368.836
628.471	2.6346	57.3105	379.565
628.635	2.57712	23.9385	388.03
628.8	2.57712	81.0117	388.03
628.964	3.39135	61.2891	294.868
629.128	3.15187	89.4609	317.272
629.292	3.41051	65.5898	293.212
629.456	4.03315	65.8086	247.945
629.62	4.68453	56.2227	213.468
629.784	4.92401	74.5859	203.086
629.948	5.56582	56.4922	179.668
630.112	5.21139	61.0176	191.887
630.276	4.61748	50.9668	216.568
630.44	3.82241	79.3047	261.615
630.604	2.50049	74.8125	399.922
630.768	1.83953	37.5586	543.618
630.932	2.04069	14.0376	490.031
631.096	2.51965	96.8125	396.881
631.26	3.14229	60.2637	318.239
631.424	3.87989	80.1016	257.74
631.588	3.71704	56.123	269.031
631.752	2.89323	65.3984	345.634
631.916	2.28017	51.5234	438.564
632.08	2.1269	52.2422	470.168

632.244	1.9449	67.6602	514.166
632.408	1.82037	77.2539	549.339
632.572	2.08858	85.7031	478.793
632.736	2.28975	52.3789	436.73
632.901	2.82618	61.9922	353.835
633.065	3.48714	42.9531	286.768
633.229	3.20934	70.8555	311.59
633.393	3.17103	106.918	315.355
633.557	2.60586	51.3027	383.751
633.721	2.80702	65.5703	356.25
633.885	2.54838	56.3984	392.406
634.049	2.56754	65.8516	389.478
634.213	2.73997	79.5703	364.968
634.377	3.15187	37.5391	317.272
634.541	3.36261	74.2734	297.388
634.705	3.48714	65.3828	286.768
634.869	4.4259	102.5	225.943
635.033	4.196	107.379	238.322
635.197	4.03315	64.6367	247.945
635.361	3.71704	60.1172	269.031
635.525	3.20934	70.8516	311.59
635.689	2.78786	84.9375	358.698
635.853	2.73997	41.8418	364.968
636.017	2.91239	63.8145	343.36
636.181	2.98902	95.9297	334.557
636.345	3.21892	74.4219	310.663
636.509	3.12313	55.2754	320.191
636.673	3.29556	101.863	303.439
636.837	3.23808	60.7656	308.825
637.002	3.23808	51.1094	308.825
637.166	3.17103	64.6445	315.355
637.33	3.24766	111.559	307.914
637.494	3.08482	86.8594	324.168
637.658	3.48714	40.5547	286.768
637.822	3.60209	68.375	277.617
637.986	3.74578	87.2305	266.967
638.15	3.43924	63.1465	290.762
638.314	3.12313	54.3281	320.191
638.478	2.85492	81.2813	350.273
638.642	2.69207	103.977	371.461
638.806	2.85492	54.6641	350.273
638.97	3.0465	81.5234	328.246
639.134	2.95071	94.0742	338.902
639.298	2.73997	59.1719	364.968
639.462	2.69207	68.0039	371.461
639.626	2.64417	95.2617	378.19
639.79	3.59251	72.7617	278.357
639.954	4.13852	72.0625	241.632
640.118	4.48337	36.0957	223.046
640.282	5.02938	87.7305	198.832
640.446	4.33011	97.5156	230.941
640.61	3.89904	78.8242	256.473
640.774	3.82241	60.3281	261.615
640.938	3.0465	131.516	328.246
641.103	2.1269	84.7031	470.168
641.267	2.41428	59.8145	414.203
641.431	1.92574	68.8477	519.281
641.595	1.33183	72.8477	750.846
641.759	1.22646	26.9854	815.354
641.923	1.37015	41.3809	729.848
642.087	1.60963	50.5508	621.262
642.251	1.78205	31.4199	561.151
642.415	1.87784	59.1289	532.526
642.579	1.92574	73.0859	519.281
642.743	1.68626	58.4785	593.028
642.907	0.354758	54.3086	2818.82
643.071	0.67087	63.2578	1490.6
643.235	0.527183	31.1963	1896.88
643.399	0.508024	40.9238	1968.41
643.563	0.948665	103.434	1054.11
643.727	2.06943	54.2227	483.226
643.891	2.34722	58.9199	426.036
644.055	1.24562	72.1563	802.814
644.219	2.45259	68.668	407.732
644.383	3.19977	60.2129	312.523
644.547	3.6883	45.6465	271.127
644.711	4.01399	55.4414	249.128
644.875	2.64417	37.4004	378.19
645.04	2.04069	65.8828	490.031
645.204	2.89323	65.4219	345.634
645.368	4.07147	46.0254	245.612
645.532	4.99107	70.0508	200.358
645.696	8.55451	36.7246	116.897
645.86	10.796	72.5	92.6266
646.024	12.2712	68.7656	81.4915
646.188	10.7194	63.8457	93.2888
646.352	8.40124	49.4258	119.03
646.516	6.58121	68.6484	151.948
646.68	6.10225	59.0762	163.874
646.844	7.28048	49.459	137.354
647.008	10.4033	90.668	96.1235
647.172	13.4495	49.7305	74.3524
647.336	14.3403	58.7793	69.7335
647.5	14.6085	54.9863	68.4531
647.664	13.8135	62.9258	72.3931
647.828	12.5299	58.2285	79.8094
647.992	11.8593	67.8047	84.3219
648.156	12.367	49.8438	80.8603
648.32	13.7847	40.9023	72.5441
648.484	16.1604	86.7148	61.8798
648.648	18.4019	77.1523	54.3423
648.812	20.8829	37.0078	47.8861
648.976	23.5746	107.961	42.4185
649.141	24.6092	89.5781	40.6353
649.305	21.0649	46.5176	47.4724
649.469	8.4683	46.5117	118.087
649.633	-15.2401	41.875	-65.6164
649.797	-44.6385	59.7109	-22.4022
649.961	-65.9138	63.5762	-15.1713
650.125	-76.1922	77.582	-13.1247
650.289	-74.4297	45.123	-13.4355
650.453	-59.6299	63.4902	-16.7701
650.617	-32.7316	55.9277	-30.5515
650.781	-15.9394	54.4375	-62.7377
650.945	-10.7858	58.123	-92.7146
651.109	-15.9202	45.5508	-62.8132
651.273	-24.5223	63.3086	-40.7792

651.437	-34.4463	63.0762	-29.0307
651.601	-38.891	68.1367	-25.7129
651.765	-38.1343	53.6914	-26.2231
651.929	-34.4559	62.9902	-29.0226
652.093	-39.6382	45.5957	-25.2282
652.257	-51.8803	49.7969	-19.2751
652.421	-65.09	45.3535	-15.3633
652.585	-77.9548	68.2188	-12.8279
652.749	-88.7505	68.4258	-11.2675
652.913	-94.7806	64.6719	-10.5507
653.077	-100.317	93.6523	-9.96837
653.242	-109.863	23.3223	-9.10225
653.406	-119.94	59.9023	-8.33749
653.57	-118.575	65.3242	-8.43347
653.734	-95.1877	74.8828	-10.5056
653.898	-64.3716	64.2617	-15.5348
654.062	-33.6608	77.2266	-29.7081
654.226	-7.68215	69.082	-130.172
654.39	16.6489	58.9746	60.0641
654.554	14.484	40.959	69.0417
654.718	-2.62436	54.9805	-381.046
654.882	-20.6715	31.5957	-48.3758
655.046	-32.4443	45.0938	-30.8221
655.21	-30.1548	68.3242	-33.1622
655.374	-12.6537	45.2559	-79.0281
655.538	2.15564	45.5215	463.9
655.702	10.25	59.0039	97.5608
655.866	12.664	67.1328	78.9642
656.03	10.9206	59.1426	91.5704
656.194	9.16758	64.1289	109.08
656.358	8.26714	80.5781	120.961
656.522	8.03724	76.7617	124.421
656.686	8.11387	63.0801	123.246
656.85	8.55451	54.709	116.897
657.014	9.86685	27.6113	101.349
657.178	12.0317	31.9795	83.1135
657.343	12.4436	45.2168	80.3623
657.507	11.7348	68.4453	85.2167
657.671	10.8822	68.6484	91.8928
657.835	10.4991	36.4902	95.2465
657.999	9.74232	40.0801	102.645
658.163	9.158	39.916	109.194
658.327	9.10052	62.3594	109.884
658.491	8.87062	57.4238	112.732
658.655	8.72694	89.168	114.588
658.819	8.18092	48.6914	122.236
658.983	7.94144	48.1875	125.922
659.147	8.20008	57.8301	121.95
659.311	8.39166	31.2969	119.166
659.475	8.58325	48.2832	116.506
659.639	9.23463	44.1973	108.288
659.803	9.92433	44	100.762
659.967	10.3362	61.3613	96.7471
660.131	10.4895	48.9473	95.3334
660.295	10.8439	52.834	92.2175
660.459	11.3612	39.4629	88.0189
660.623	9.48369	71.2773	105.444
660.787	8.55451	57.293	116.897
660.951	8.62156	53.0098	115.988
661.115	8.97599	58.3047	111.408
661.279	7.86481	31.4072	127.149
661.444	9.67527	45.0254	103.356
661.608	11.0068	45.5117	90.8532
661.772	12.0988	50.1426	82.6529
661.936	11.7635	49.8438	85.0085
662.1	12.731	44.5352	78.5483
662.264	12.8747	49.0645	77.6717
662.428	13.5836	17.9375	73.6184
662.592	14.6947	66.3047	68.0515
662.756	15.9305	48.3184	62.7728
662.92	17.2236	52.8125	58.0597
663.084	18.5743	48.2461	53.8378
663.248	19.9729	75.1484	50.0679
663.412	21.6109	74.8906	46.273
663.576	22.9041	47.832	43.6603
663.74	24.7241	52.5859	40.4463
663.904	26.8028	30.9424	37.3095
664.068	28.7953	35.2539	34.7279
664.232	30.9314	57.3457	32.3296
664.396	32.4832	48.0723	30.7851
664.56	33.5848	52.3164	29.7753
664.724	34.332	35.4824	29.1273
664.888	34.878	75.4102	28.6714
665.052	35.2899	61.5762	28.3367
665.216	36.1808	35.4238	27.639
665.381	36.7459	57.959	27.2139
665.545	37.0716	54.2988	26.9748
665.709	37.7134	54.0625	26.5157
665.873	38.0296	54.0742	26.2953
666.037	38.3074	67.3438	26.1047
666.201	38.087	71.1914	26.2557
666.365	37.2728	84.4453	26.8292
666.529	36.4011	66.1211	27.4717
666.693	36.3532	91.2773	27.5079
666.857	35.6348	56.3184	28.0625
667.021	35.2899	92.5977	28.3367
667.185	34.8684	52.7637	28.6792
667.349	33.8818	126.762	29.5144
667.513	32.5503	104.914	30.7217
667.677	31.2763	86.4961	31.9731
667.841	29.5903	108.379	33.7948
668.005	27.9044	101.043	35.8367
668.169	26.6783	52.1895	37.4837
668.333	25.3947	121.168	39.3784
668.497	24.7529	69.2266	40.3994
668.661	24.3122	90.7617	41.1316
668.825	22.8562	135.836	43.7518
668.989	21.0936	127.031	47.4077
669.153	19.3502	122.012	51.679
669.317	17.6643	114.199	56.6114
669.482	15.8538	84.9531	63.0763
669.646	15.0588	85.1758	66.4066
669.81	13.8326	129.813	72.2929
669.974	13.0376	111.742	76.7015
670.138	12.8747	121.828	77.6717
670.302	12.3479	121.441	80.9857
670.466	11.093	134.336	90.1471

670.63	10.2692	110.68	97.3788
670.794	10.6907	109.027	93.5396
670.958	9.5699	108.602	104.494
671.122	7.81692	61.9629	127.928
671.286	7.34754	79.043	136.1
671.45	8.05639	82.7617	124.125
671.614	7.11764	125.824	140.496
671.778	6.86858	108.617	145.591
671.942	7.89355	87.207	126.686
672.106	8.34377	131.094	119.85
672.27	7.67323	109.289	130.323
672.434	7.02185	125.477	142.413
672.598	7.9606	113.637	125.619
672.762	7.41459	87.2461	134.869
672.926	6.74405	117.129	148.279
673.09	6.87816	147.172	145.388
673.254	7.75944	117.418	128.875
673.418	7.62533	92.1953	131.142
673.583	7.35712	132.859	135.923
673.747	7.41459	139.07	134.869
673.911	7.28048	146.664	137.354
674.075	6.86858	89.7109	145.591
674.239	7.06016	127.887	141.64
674.403	7.30922	103.906	136.813
674.567	6.59078	124.523	151.727
674.731	7.00269	140.32	142.802
674.895	7.52954	140.531	132.81
675.059	7.45291	118.867	134.176
675.223	8.65988	104.941	115.475
675.387	8.22882	162.328	121.524
675.551	6.36089	127.316	157.211
675.715	4.23431	96.0664	236.166
675.879	5.28802	118.508	189.107
676.043	5.97772	188.211	167.288
676.207	6.19804	90.9531	161.341
676.371	7.33796	121.641	136.278
676.535	9.158	134.305	109.194
676.699	9.47411	82.7305	105.551
676.863	7.48165	135.742	133.66
677.027	6.52373	112.809	153.287
677.191	5.92024	126.07	168.912
677.355	4.99107	131.508	200.358
677.519	4.8378	87.9297	206.706
677.684	5.91066	149.094	169.186
677.848	6.87816	128.805	145.388
678.012	7.02185	97.9063	142.413
678.176	7.06016	139.414	141.64
678.34	7.89355	113.223	126.686
678.504	8.32461	103.383	120.126
678.668	8.17134	110.66	122.379
678.832	8.45872	83.9961	118.221
678.996	8.4204	128.406	118.759
679.16	8.27672	93.1211	120.821
679.324	7.69239	109.746	129.999
679.488	7.69239	152.898	129.999
679.652	6.33215	100.578	157.924
679.816	6.00646	114.063	166.488
679.98	6.48541	122.777	154.192
680.144	8.08513	117.945	123.684
680.308	7.06974	125.16	141.448
680.472	8.13303	101.047	122.955
680.636	8.68862	127.613	115.093
680.8	7.74028	125.68	129.194
680.964	4.87612	126.27	205.081
681.128	6.93563	135.234	144.183
681.292	7.02185	147.82	142.413
681.456	6.59078	114.141	151.727
681.621	6.55247	95.7891	152.614
681.785	8.37251	109.031	119.439
681.949	7.47207	141.773	133.832
682.113	7.34754	112.324	136.1
682.277	7.38585	144.156	135.394
682.441	6.64826	158.602	150.415
682.605	5.89151	112.613	169.736
682.769	6.93563	174	144.183
682.933	7.5008	119.391	133.319
683.097	7.30922	128.352	136.813
683.261	8.07555	127.027	123.831
683.425	9.07178	121.922	110.232
683.589	9.19631	125.914	108.739
683.753	8.6503	97.1289	115.603
683.917	8.42998	96.5078	118.624
684.081	7.97976	95.957	125.317
684.245	7.38585	135.359	135.394
684.409	7.30922	161	136.813
684.573	8.24798	83.1094	121.242
684.737	7.88397	114.23	126.84
684.901	7.78818	134.141	128.4
685.065	8.27672	129.859	120.821
685.229	8.43956	122.199	118.49
685.393	8.94726	113.082	111.766
685.557	9.67527	110.648	103.356
685.722	9.33042	130.82	107.176
685.886	8.40124	156.547	119.03
686.05	8.48746	141.922	117.821
686.214	7.98934	112.582	125.167
686.378	7.75944	133.453	128.875
686.542	7.78818	111.816	128.4
686.706	8.15219	107.844	122.666
686.87	8.67904	116.793	115.22
687.034	9.40705	112.199	106.303
687.198	9.41663	101.332	106.195
687.362	9.41663	118.18	106.195
687.526	9.31126	118.539	107.397
687.69	9.12926	166.359	109.538
687.854	9.93391	114.684	100.665
688.018	10.1255	96.2148	98.7606
688.182	9.59864	120.992	104.181
688.346	9.158	121.473	109.194
688.51	9.66569	82.5977	103.459
688.674	9.13884	69.7188	109.423
688.838	8.51619	109.285	117.423
689.002	8.68862	129.891	115.093
689.166	8.90894	143.602	112.247
689.33	8.32461	96.7617	120.126
689.494	6.93563	99.8906	144.183
689.658	8.51619	108.539	117.423

689.823	8.13303	82.7813	122.955
689.987	7.70197	109.07	129.837
690.151	8.04682	92.7422	124.273
690.315	8.51619	107.02	117.423
690.479	8.6503	89.7969	115.603
690.643	9.522	156.5	105.02
690.807	10.5087	134.867	95.1596
690.971	10.7481	104.34	93.0394
691.135	11.3516	116.879	88.0931
691.299	9.7998	145.266	102.043
691.463	10.5949	95.7734	94.3853
691.627	10.9014	131.922	91.7313
691.791	10.9972	104.789	90.9323
691.955	11.1409	114.219	89.7595
692.119	13.5452	127.031	73.8266
692.283	13.3537	104.238	74.8858
692.447	12.7214	96.5078	78.6074
692.611	12.846	100.941	77.8454
692.775	13.6889	124.5	73.0517
692.939	12.2904	104.035	81.3645
693.103	12.9705	113.055	77.098
693.267	13.3728	121.422	74.7785
693.431	13.8422	144.391	72.2428
693.595	12.731	103.734	78.5483
693.759	13.641	107.73	73.3082
693.924	14.3403	126.625	69.7335
694.088	14.4553	87.5469	69.1789
694.252	14.5511	136.906	68.7235
694.416	15.7485	102.199	63.4983
694.58	14.963	133.57	66.8317
694.744	15.3078	93.6211	65.3261
694.908	15.0588	121.93	66.4066
695.072	13.6889	157.672	73.0517
695.236	13.8709	85.0977	72.0932
695.4	15.3078	96.793	65.3261
695.564	15.4994	111.66	64.5187
695.728	16.2178	119.707	61.6605
695.892	18.172	126.832	55.0298
696.056	18.4785	127.832	54.1169
696.22	18.1911	110.77	54.9718
696.384	17.9517	79.0703	55.7052
696.548	18.0091	110.547	55.5274
696.712	17.2236	123.348	58.0597
696.876	16.7447	117.066	59.7204
697.04	17.1278	96.4609	58.3844
697.204	17.6547	115.191	56.6421
697.368	17.8175	149.523	56.1244
697.532	17.808	105.613	56.1546
697.696	17.1183	139.555	58.4171
697.861	16.1891	112.965	61.77
698.025	15.4228	110.414	64.8392
698.189	14.7426	126.957	67.8305
698.353	13.8709	118.066	72.0932
698.517	13.4974	110.727	74.0886
698.681	13.2004	130.57	75.7553
698.845	12.9801	67.8516	77.0411
699.009	12.2521	131.859	81.6189
699.173	11.3325	122.484	88.2421
699.337	11.1984	72.2617	89.2988
699.501	11.1121	40.3047	89.9916
699.665	10.7865	133.797	92.7089
699.829	10.5566	98.332	94.7279
699.993	10.3745	127.172	96.3897
700.157	10.1446	96.5469	98.5741
700.321	9.03347	84.1641	110.699
700.485	9.16758	142.578	109.08
700.649	9.22505	70.3906	108.4
700.813	8.55451	122.672	116.897
700.977	7.60617	117.871	131.472
701.141	8.05639	105.41	124.125
701.305	7.47207	128.258	133.832
701.469	7.03143	130.531	142.219
701.633	7.12722	152.391	140.307
701.797	7.0889	83.4609	141.066
701.962	6.37046	123.238	156.974
702.126	6.11183	119.078	163.617
702.29	6.19804	109.719	161.341
702.454	7.33796	158.297	136.278
702.618	7.91271	114.922	126.379
702.782	7.43375	135.219	134.522
702.946	7.53912	180.563	132.641
703.11	7.14638	148.086	139.931
703.274	6.06393	158.047	164.91
703.438	5.69992	158.844	175.441
703.602	6.1693	121.402	162.093
703.766	6.14056	133.969	162.851
703.93	6.14056	115.289	162.851
704.094	6.51415	123.434	153.512
704.258	6.84942	151.109	145.998
704.422	6.84942	129.242	145.998
704.586	6.04477	123.633	165.432
704.75	6.32257	157.305	158.164
704.914	6.87816	114.23	145.388
705.078	6.73447	92.5313	148.49
705.242	6.70573	109.57	149.126
705.406	7.26133	88.6914	137.716
705.57	6.89732	149.602	144.984
705.734	6.78237	109.07	147.441
705.898	6.84942	105.809	145.998
706.063	7.06016	132.602	141.64
706.227	6.75363	112.953	148.069
706.391	6.58121	109.625	151.948
706.555	6.52373	139.891	153.287
706.719	6.55247	97.3086	152.614
706.883	6.45668	112.469	154.878
707.047	6.29383	139.719	158.886
707.211	6.17888	201.281	161.842
707.375	6.41836	136.5	155.803
707.539	6.55247	165.453	152.614
707.703	6.81111	140.117	146.819
707.867	6.83026	115.367	146.407
708.031	6.93563	132.664	144.183
708.195	6.96437	150.367	143.588
708.359	6.60994	167.695	151.287
708.523	6.97395	158.672	143.391
708.687	6.97395	101.336	143.391
708.851	6.677	144.563	149.768

709.015	6.70573	70.5625	149.126
709.179	6.70573	128.711	149.126
709.343	5.97772	114.445	167.288
709.507	5.55624	135.117	179.978
709.671	5.57539	125.809	179.359
709.835	6.08309	107.055	164.39
709.999	6.49499	107.457	153.965
710.164	6.92605	163.453	144.382
710.328	6.93563	110.07	144.183
710.492	7.16553	129.352	139.557
710.656	7.30922	211.539	136.813
710.82	7.37627	138.891	135.57
710.984	7.00269	86.9453	142.802
711.148	7.06016	131.539	141.64
711.312	6.87816	114.156	145.388
711.476	6.25551	109.938	159.859
711.64	6.30341	204.906	158.644
711.804	6.10225	115.559	163.874
711.968	5.96814	113.523	167.556
712.132	5.50834	95.3398	181.543
712.296	5.9394	139.406	168.367
712.46	6.46626	100.039	154.649
712.624	6.71531	171.664	148.913
712.788	6.4471	146.008	155.109
712.952	6.95479	124.621	143.786
713.116	6.80153	107.809	147.026
713.28	6.22678	175.961	160.597
713.444	6.30341	119.359	158.644
713.608	6.46626	170.219	154.649
713.772	6.677	137.93	149.768
713.936	6.55247	137.906	152.614
714.101	7.22301	163.32	138.446
714.265	7.60617	120.285	131.472
714.429	7.44333	132.313	134.348
714.593	7.63491	124.094	130.977
714.757	7.81692	107.715	127.928
714.921	7.12722	103.074	140.307
715.085	6.36089	142.102	157.211
715.249	6.4471	135.477	155.109
715.413	6.4471	145.938	155.109
715.577	6.06393	124.465	164.91
715.741	5.79572	158.125	172.541
715.905	6.64826	128.055	150.415
716.069	6.99311	96.6328	142.998
716.233	7.02185	118.617	142.413
716.397	6.48541	129.43	154.192
716.561	7.69239	107.395	129.999
716.725	7.25175	149.32	137.898
716.889	7.06016	137.25	141.64
717.053	7.69239	113.078	129.999
717.217	7.97976	90.6914	125.317
717.381	6.95479	132.227	143.786
717.545	6.99311	154.68	142.998
717.709	7.37627	152.945	135.57
717.873	7.40501	85.8789	135.044
718.037	7.15595	141.5	139.744
718.202	7.74028	123.438	129.194
718.366	7.86481	97.8789	127.149
718.53	6.63868	111.25	150.632
718.694	5.55624	153.648	179.978
718.858	6.17888	136.805	161.842
719.022	7.25175	128.125	137.898
719.186	7.34754	115.086	136.1
719.35	7.75944	130.914	128.875
719.514	8.27672	114.457	120.821
719.678	8.08513	108.91	123.684
719.842	6.96437	126.309	143.588
720.006	7.28048	131.336	137.354
720.17	7.5966	162.758	131.638
720.334	7.21343	78.5078	138.63
720.498	7.26133	112.531	137.716
720.662	7.83607	144.773	127.615
720.826	8.24798	149.742	121.242
720.99	7.75944	124.113	128.875
721.154	7.62533	107.441	131.142
721.318	8.17134	114.699	122.379
721.482	8.6503	139.164	115.603
721.646	9.22505	110.82	108.4
721.81	9.55074	102.473	104.704
721.974	10.7865	119.75	92.7089
722.138	11.936	142.555	83.7805
722.303	12.7023	142.477	78.726
722.467	12.3191	116.543	81.1747
722.631	13.277	126.301	75.318
722.795	14.7618	112.172	67.7424
722.959	13.8709	163.094	72.0932
723.123	13.2675	138.141	75.3724
723.287	15.2982	156.742	65.367
723.451	15.9305	122.875	62.7728
723.615	14.3499	93.8086	69.6869
723.779	15.0109	129.844	66.6184
723.943	16.6489	98.375	60.0641
724.107	15.5664	152	64.2407
724.271	14.599	98.8125	68.4981
724.435	15.145	119.762	66.0285
724.599	15.4611	181.656	64.6785
724.763	15.8826	139.914	62.9621
724.927	16.9937	109.176	58.8452
725.091	18.0762	133.586	55.3214
725.255	19.7525	133.258	50.6264
725.419	21.8599	101.383	45.7458
725.583	23.2393	111.445	43.0305
725.747	24.1589	118.707	41.3925
725.911	24.2452	110.473	41.2453
726.075	23.9195	126.434	41.807
726.239	23.1244	105.199	43.2444
726.404	21.6492	143.836	46.1911
726.568	21.0936	134.906	47.4077
726.732	21.448	80.2578	46.6243
726.896	21.4097	88.332	46.7077
727.06	21.7354	130.156	46.0079
727.224	21.745	119.059	45.9876
727.388	21.7642	137.422	45.9471
727.552	22.8083	123.578	43.8437
727.716	23.6225	111.363	42.3325
727.88	24.5421	133.547	40.7463
728.044	25.9981	78.5273	38.4643

728.208	27.4063	140.047	36.488
728.372	27.981	108.887	35.7385
728.536	28.6133	86.5781	34.9488
728.7	29.9543	145.594	33.3842
728.864	29.6286	98.332	33.7511
729.028	28.891	124.563	34.6128
729.192	28.5749	119.117	34.9957
729.356	28.2301	118.672	35.4232
729.52	28.096	110.34	35.5923
729.684	29.2072	89.7227	34.2382
729.848	27.9427	67.7188	35.7875
730.012	27.6458	101.395	36.1719
730.176	28.7953	46.1094	34.7279
730.341	27.7703	67.6094	36.0097
730.505	25.6725	64.3867	38.9523
730.669	25.4809	42.5703	39.2451
730.833	24.7337	75.3398	40.4307
730.997	23.2872	71.8984	42.942
731.161	23.0094	79.9648	43.4604
731.325	23.5459	59.2852	42.4703
731.489	23.7662	46.6348	42.0766
731.653	23.4214	68.8906	42.6961
731.817	23.2872	74.0547	42.942
731.981	21.5822	93.0156	46.3346
732.145	20.2985	71.6797	49.2646
732.309	18.9383	44.5313	52.803
732.473	17.8846	88.5703	55.914
732.637	17.2715	58.1348	57.8987
732.801	16.3519	62.3145	61.1548
732.965	15.7772	66.0273	63.3826
733.129	15.1066	39.3652	66.196
733.293	14.5798	43.4316	68.5881
733.457	13.6219	52.1934	73.4113
733.621	13.0376	43.8184	76.7015
733.785	12.3095	88.4023	81.2378
733.949	12.0892	82.7656	82.7183
734.113	12.0317	60.2383	83.1135
734.277	11.5432	65.3516	86.6311
734.442	11.2271	104.148	89.0702
734.606	10.6236	56.5215	94.13
734.77	10.3171	60.8164	96.9267
734.934	9.76148	103.809	102.443
735.098	10.3075	111.168	97.0168
735.262	10.8439	67.168	92.2175
735.426	12.0317	53.6816	83.1135
735.59	12.6735	71.2891	78.9045
735.754	14.0338	62.959	71.2566
735.918	14.7714	72.2422	67.6985
736.082	15.2791	63.9395	65.449
736.246	16.4286	87.6094	60.8696
736.41	18.7084	77.8594	53.4519
736.574	21.1894	99.8398	47.1934
736.738	23.5459	69.0117	42.4703
736.902	26.4484	97.168	37.8095
737.066	28.7761	91.1367	34.7511
737.23	28.9964	84.6055	34.487
737.394	28.345	71.582	35.2795
737.558	27.9619	72.2031	35.763
737.722	26.8603	75.9688	37.2297
737.886	26.2855	84.8594	38.0438
738.05	27.2147	80.4453	36.7449
738.214	27.5883	132.617	36.2473
738.378	27.7128	71.5234	36.0844
738.543	27.2817	62.543	36.6545
738.707	26.343	92.8086	37.9608
738.871	24.4751	66.9492	40.8579
739.035	23.0286	93.7617	43.4243
739.199	23.2298	84.8711	43.0482
739.363	23.4884	108.031	42.5742
739.527	24.6283	84.5977	40.6037
739.691	27.3296	57.168	36.5903
739.855	27.9427	76.4375	35.7875
740.019	25.864	68.207	38.6637
740.183	24.9253	67.7578	40.1199
740.347	24.0536	77.7266	41.5739
740.511	23.6225	69.5273	42.3325
740.675	23.6704	55.1953	42.2468
740.839	25.1935	59.7598	39.6928
741.003	26.1035	73.5078	38.309
741.167	26.3238	86.6641	37.9884
741.331	26.3143	71.6797	38.0022
741.495	26.0652	89.2539	38.3653
741.659	25.1073	81.1797	39.8291
741.823	25.1169	67.1367	39.8139
741.987	24.9732	101.773	40.043
742.151	24.2739	94.3984	41.1965
742.315	23.2393	66.4531	43.0305
742.479	23.5746	111.156	42.4185
742.644	24.1494	39.7754	41.409
742.808	24.3218	91.5859	41.1154
742.972	24.5134	78.8672	40.7941
743.136	24.59	71.1367	40.6669
743.3	24.6092	57.1289	40.6353
743.464	24.7624	79.25	40.3838
743.628	25.2318	74.7148	39.6325
743.792	25.9598	65.5547	38.5211
743.956	27.2147	57.7969	36.7449
744.12	28.46	89.9258	35.1371
744.284	28.891	75.8438	34.6128
744.448	28.891	67.8867	34.6128
744.612	28.4887	68.3945	35.1016
744.776	28.6037	59.6543	34.9605
744.94	28.6516	63.832	34.9021
745.104	28.4791	54.5293	35.1134
745.268	28.1056	108.617	35.5802
745.432	27.9331	98.8789	35.7998
745.596	26.3526	71.5742	37.947
745.76	26.707	53.5273	37.4434
745.924	27.4542	66.4219	36.4243
746.088	27.4542	83.8086	36.4243
746.252	26.8507	35.6914	37.243
746.416	26.161	75.6211	38.2249
746.58	25.8161	70.1836	38.7355
746.745	25.0402	44.1035	39.9357
746.909	24.2452	61.7168	41.2453
747.073	22.3102	53.1113	44.8226
747.237	19.1778	49.3301	52.1437

747.401	16.5244	57.3379	60.5167
747.565	16.1412	105.16	61.9533
747.729	15.9784	84.0156	62.5847
747.893	16.8884	61.6484	59.2123
748.057	20.356	66.3398	49.1255
748.221	23.9865	35.5898	41.6901
748.385	26.41	52.5371	37.8644
748.549	27.7703	26.3105	36.0097
748.713	28.2205	71.1523	35.4352
748.877	27.3584	62.7031	36.5519
749.041	27.2626	101.941	36.6803
749.205	27.186	110.668	36.7837
749.369	26.889	30.8516	37.1899
749.533	27.2051	61.2051	36.7578
749.697	27.5595	98.5703	36.2851
749.861	27.5691	85.293	36.2725
750.025	27.2434	72.7031	36.7061
750.189	27.6458	93.7539	36.1719
750.353	27.5691	89.7227	36.2725
750.517	28.1918	72.9609	35.4713
750.682	29.916	87.7852	33.4269
750.846	30.8931	96.2617	32.3697
751.01	31.4487	96.2695	31.7978
751.174	31.9851	66.7813	31.2645
751.338	32.694	61.7031	30.5867
751.502	32.8089	76.8047	30.4795
751.666	31.3146	112.188	31.934
751.83	29.916	76.7734	33.4269
751.994	29.6861	55.625	33.6858
752.158	29.6574	90.6914	33.7184
752.322	29.5424	90.4258	33.8496
752.486	29.7915	90.6875	33.5666
752.65	30.3567	79.3008	32.9417
752.814	31.0368	74.7813	32.2198
752.978	31.0847	74.1406	32.1702
753.142	30.4524	58.1953	32.8381
753.306	29.6191	85.8516	33.762
753.47	29.3125	54.7422	34.1151
753.634	28.4408	100.785	35.1607
753.798	28.4791	83.6836	35.1134
753.962	28.345	75.0391	35.2795
754.126	26.7549	79.0703	37.3763
754.29	25.0211	89.9453	39.9663
754.454	25.2989	86.1445	39.5275
754.618	24.6092	100.441	40.6353
754.783	22.9807	55.209	43.5148
754.947	22.9424	40.2578	43.5874
755.111	22.6933	87.4219	44.0658
755.275	21.8887	79.2773	45.6857
755.439	21.6013	79.5547	46.2935
755.603	22.2144	85.4961	45.0159
755.767	21.9653	101.902	45.5263
755.931	22.3293	63.2559	44.7842
756.095	23.6513	65.5195	42.2811
756.259	23.9865	77.6836	41.6901
756.423	24.6666	64.1641	40.5406
756.587	24.5613	87.7266	40.7145
756.751	24.3505	40.4668	41.0669
756.915	24.4367	87.6641	40.922
757.079	24.4367	83.5625	40.922
757.243	23.5746	53.8477	42.4185
757.407	23.4501	77.9531	42.6438
757.571	24.2547	69.9336	41.2291
757.735	26.2855	48.6172	38.0438
757.899	29.0252	63.25	34.4529
758.063	32.0234	49.957	31.2271
758.227	34.5906	83.8516	28.9096
758.391	35.9509	73.7227	27.8157
758.555	35.6731	81.9258	28.0323
758.719	33.8818	109.07	29.5144
758.884	31.7169	72.8867	31.5289
759.048	29.7149	76.25	33.6532
759.212	28.9485	90.5156	34.5441
759.376	30.5291	71.1484	32.7557
759.54	33.2975	107.008	30.0323
759.704	35.1558	80.5391	28.4448
759.868	36.2191	80.3633	27.6097
760.032	36.1233	67.9023	27.683
760.196	35.5773	64.0977	28.1078
760.36	34.332	67.3555	29.1273
760.524	32.8951	83.1914	30.3996
760.688	31.5445	87.625	31.7013
760.852	31.123	80.2969	32.1306
761.016	31.7361	45.877	31.5099
761.18	32.5311	96.2305	30.7398
761.344	31.1134	70.4414	32.1405
761.508	29.5999	89.3242	33.7839
761.672	29.1497	80.6172	34.3057
761.836	27.4254	43.9219	36.4625
762	23.8333	91.9531	41.9582
762.164	21.6779	64.9023	46.1298
762.328	21.8599	77.4648	45.7458
762.492	21.2948	73.6133	46.9599
762.656	22.1377	95.8789	45.1717
762.82	24.7241	75.3516	40.4463
762.985	28.5462	64.7813	35.0309
763.149	31.123	84.6563	32.1306
763.313	32.3395	91.2578	30.9219
763.477	32.0234	80.2773	31.2271
763.641	30.0789	70.5039	33.2459
763.805	27.186	60.3105	36.7837
763.969	25.2701	60.123	39.5724
764.133	24.5613	82.5391	40.7145
764.297	25.0498	79.8906	39.9205
764.461	27.5595	82.2305	36.2851
764.625	28.3929	67.3242	35.22
764.789	28.0385	61.8008	35.6652
764.953	27.2626	81.2344	36.6803
765.117	26.41	79.6914	37.8644
765.281	25.3947	55.1113	39.3784
765.445	25.5767	70.3164	39.0981
765.609	26.1514	66.793	38.2389
765.773	26.8507	63.9121	37.243
765.937	25.8066	64.2148	38.7498
766.101	23.0669	78.6563	43.3521
766.265	19.0054	106.645	52.6167
766.429	14.8193	81.5352	67.4797

766.593	11.5528	71.5039	86.5592
766.757	9.93391	76.1523	100.665
766.922	10.0872	85.7578	99.1358
767.086	10.9493	92.4844	91.3301
767.25	12.1754	120.164	82.1326
767.414	13.2579	89.5859	75.4269
767.578	14.3882	82.6367	69.5013
767.742	14.4361	66.3711	69.2707
767.906	14.6085	61.0508	68.4531
768.07	15.6622	92.9492	63.8478
768.234	17.5014	74.5977	57.1382
768.398	19.2257	67.5781	52.0138
768.562	21.1703	75.4297	47.2361
768.726	20.9595	79.5586	47.711
768.89	20.0495	65.2969	49.8766
769.054	20.3656	61.4727	49.1024
769.218	19.4173	47.7852	51.5006
769.382	17.9517	73.4922	55.7052
769.546	17.7792	80.3594	56.2454
769.71	18.6509	84.0859	53.6166
769.874	19.6663	89.0313	50.8483
770.038	19.8579	89.0703	50.3578
770.202	20.0878	76.2734	49.7814
770.366	20.3369	101.984	49.1718
770.53	20.3656	88.9805	49.1024
770.694	21.3427	72.1523	46.8545
770.858	22.2048	78.0977	45.0353
771.023	22.5305	70.4141	44.3843
771.187	22.406	75.168	44.631
771.351	21.2565	67.7383	47.0445
771.515	19.5035	79.8398	51.2729
771.679	16.7734	90.8203	59.6181
771.843	15.2312	82.3516	65.6548
772.007	15.145	87.0586	66.0285
772.171	15.1833	70.2656	65.8619
772.335	15.5856	52.0352	64.1618
772.499	15.5664	77.9063	64.2407
772.663	15.5856	76.1953	64.1618
772.827	15.6239	74.2734	64.0044
772.991	15.1162	71.5234	66.1541
773.155	14.3499	67.3672	69.6869
773.319	14.1583	68.5078	70.6299
773.483	13.938	101.18	71.7463
773.647	13.6123	74.4492	73.463
773.811	13.8039	89.0039	72.4434
773.975	14.4361	90.4219	69.2707
774.139	15.6239	97.7773	64.0044
774.303	17.0895	72.9258	58.5153
774.467	18.9383	80.8828	52.803
774.631	21.266	59.7793	47.0233
774.795	23.6704	110.539	42.2468
774.959	25.1743	95.6484	39.723
775.124	25.1169	81.3984	39.8139
775.288	25.2605	69.5508	39.5874
775.452	25.5767	115.168	39.0981
775.616	24.1589	90.0352	41.3925
775.78	23.2298	95.8164	43.0482
775.944	23.7375	71.5391	42.1275
776.108	24.1877	78.4609	41.3434
776.272	24.3505	92.3164	41.0669
776.436	26.9752	65.3828	37.0711
776.6	28.1726	76.3047	35.4955
776.764	28.1343	69.2383	35.5438
776.928	28.6037	96.7656	34.9605
777.092	30.0789	101.824	33.2459
777.256	29.2167	80.625	34.227
777.42	28.7761	66.8164	34.7511
777.584	29.2072	106.406	34.2382
777.748	29.4083	69.4961	34.004
777.912	28.096	91.2969	35.5923
778.076	28.2971	65.5938	35.3393
778.24	28.6707	72.3281	34.8788
778.404	28.1918	60.0234	35.4713
778.568	28.096	87.5625	35.5923
778.732	28.9964	66.5508	34.487
778.896	28.3929	95.6484	35.22
779.06	27.7894	70.1367	35.9849
779.225	27.6937	69.7773	36.1094
779.389	27.368	92.2305	36.5391
779.553	26.8219	76.6367	37.2829
779.717	26.7932	103.113	37.3229
779.881	27.0135	100.266	37.0185
780.045	26.7836	87.0586	37.3362
780.209	26.3143	76.3867	38.0022
780.373	26.4867	68.2383	37.7548
780.537	24.408	54.0723	40.9702
780.701	22.5401	58.3125	44.3654
780.865	23.9865	47.1563	41.6901
781.029	24.2452	85.7305	41.2453
781.193	23.7662	72.3008	42.0766
781.357	23.2298	49.9395	43.0482
781.521	22.3389	75.4023	44.7649
781.685	21.2277	58.0625	47.1082
781.849	20.4231	56.1309	48.9642
782.013	19.7621	103.188	50.6019
782.177	19.1778	86.1094	52.1437
782.341	18.3827	72.75	54.3989
782.505	17.2715	69.625	57.8987
782.669	16.8022	57.6699	59.5162
782.833	17.4631	98.3906	57.2635
782.997	17.3482	72.2344	57.643
783.162	17.9708	54.0039	55.6458
783.326	19.5993	74.418	51.0223
783.49	19.7909	60.7461	50.5284
783.654	19.1969	38.0938	52.0916
783.818	18.6414	78.3516	53.6442
783.982	17.7313	71.5117	56.3973
784.146	16.2561	49.6348	61.5152
784.31	15.6239	76.4492	64.0044
784.474	15.1737	67.3359	65.9035
784.638	15.5569	46.9883	64.2803
784.802	15.9496	80.9414	62.6974
784.966	15.2695	56.2559	65.4901
785.13	15.758	58.6738	63.4597
785.294	16.2657	58.9277	61.479
785.458	16.419	70.2031	60.9051
785.622	16.4094	71.3086	60.9406

785.786	18.1145	60.6426	55.2044
785.95	18.7371	62.9707	53.3699
786.114	19.0054	60.3672	52.6167
786.278	19.3502	64.8672	51.679
786.442	18.9096	72.6719	52.8833
786.606	18.4306	65.2695	54.2576
786.77	18.2007	60.373	54.9429
786.934	18.7659	88.8555	53.2882
787.098	18.6509	65.6328	53.6166
787.263	18.3252	72.8906	54.5695
787.427	18.4785	74.9453	54.1169
787.591	19.0916	67.0508	52.3791
787.755	19.3502	58.0625	51.679
787.919	19.1874	62.3848	52.1176
788.083	18.7084	84.918	53.4519
788.247	17.8271	76.2188	56.0943
788.411	17.2715	71.5234	57.8987
788.575	16.9267	71.5625	59.0783
788.739	16.9554	74.4688	58.9782
788.903	15.8442	63.2969	63.1144
789.067	17.2428	42.9453	57.9952
789.231	18.8617	67.1797	53.0176
789.395	18.6701	71.8594	53.5616
789.559	18.718	68.1133	53.4245
789.723	18.8617	55.3262	53.0176
789.887	18.3827	46.4336	54.3989
790.051	17.2524	67.1367	57.963
790.215	15.9975	58.1875	62.5097
790.379	14.7618	56.2676	67.7424
790.543	14.599	35.3477	68.4981
790.707	14.9534	67.75	66.8745
790.871	15.212	64.7617	65.7375
791.035	15.9496	54.5996	62.6974
791.199	16.4286	45.5156	60.8696
791.364	16.486	61.2129	60.6574
791.528	16.2945	65.4492	61.3705
791.692	15.8347	67.1992	63.1526
791.856	15.0588	71.6914	66.4066
792.02	14.4744	53.957	69.0874
792.184	14.2445	51.7676	70.2024
792.348	14.3116	58.0645	69.8735
792.512	14.6373	66.8906	68.3187
792.676	14.9151	89.7188	67.0463
792.84	15.4036	76.6211	64.9199
793.004	15.8538	74.5	63.0763
793.168	16.237	53.6328	61.5878
793.332	15.9784	71.4648	62.5847
793.496	15.4611	69.418	64.6785
793.66	14.3786	38.6719	69.5476
793.824	13.0376	78.625	76.7015
793.988	12.003	48.6875	83.3125
794.152	11.4187	60.3164	87.5758
794.316	11.7348	83.6641	85.2167
794.48	12.5586	56.1445	79.6267
794.644	13.7177	79.8398	72.8987
794.808	15.4898	44.2695	64.5586
794.972	17.5685	69.3281	56.9201
795.136	19.1203	43.6934	52.3004
795.3	20.5476	64.4609	48.6675
795.465	21.3618	67.8945	46.8125
795.629	21.3427	73.9727	46.8545
795.793	21.0649	60.6016	47.4724
795.957	21.0074	47.3457	47.6023
796.121	20.8733	51.6973	47.9081
796.285	20.5476	53.334	48.6675
796.449	20.5572	62.334	48.6448
796.613	20.835	51.418	47.9962
796.777	20.8446	65.1641	47.9741
796.941	20.8829	60.9336	47.8861
797.105	20.8062	63.6211	48.0625
797.269	20.6817	56.9941	48.3519
797.433	20.9308	51.7031	47.7765
797.597	20.902	61.707	47.8422
797.761	20.8158	61.0449	48.0404
797.925	20.9116	47.498	47.8203
798.089	20.7871	61.0938	48.1068
798.253	20.8158	62.9102	48.0404
798.417	20.72	71.2305	48.2625
798.581	20.7775	61.9395	48.129
798.745	20.72	60.6992	48.2625
798.909	20.6913	43.5488	48.3295
799.073	20.7775	62.7129	48.129
799.237	20.7583	68.7539	48.1734
798.909	20.5476	51.9961	48.6675
798.745	20.5572	49.6094	48.6448
798.581	20.5955	75.918	48.5543
798.417	20.5476	64.8516	48.6675
798.253	20.6626	76.1797	48.3967
798.089	20.7392	40.3047	48.2179
797.925	20.5859	56.8496	48.5769
797.761	20.5476	66.1758	48.6675
797.597	20.6242	49.5039	48.4866
797.433	20.4997	42.1836	48.7812
797.269	20.653	42.498	48.4192
797.105	20.6626	49.5488	48.3967
796.941	20.5955	52.4961	48.5543
796.777	20.6817	62.6191	48.3519
796.613	20.6817	51.9531	48.3519
796.449	20.5668	74.8516	48.6221
796.285	20.6242	75.1719	48.4866
796.121	20.4997	56.5313	48.7812
795.957	20.6626	76.9805	48.3967
795.793	20.7105	82.5586	48.2848
795.629	20.7488	69.5586	48.1956
795.465	20.7488	56.3125	48.1956
795.3	20.5668	50.4707	48.6221
795.136	20.5955	47.1504	48.5543
794.972	19.8866	52.2813	50.285
794.808	18.0474	58.1602	55.4095
794.644	16.4573	26.1348	60.7633
	Conductivity	Gamma	
794.48	14.6373	63.0527	68.3187
794.316	12.9801	53.9219	77.0411
794.152	11.8306	64.3398	84.5267
793.988	11.4474	66.8711	87.356
793.824	11.3612	46.6895	88.0189
793.66	12.3766	58.5449	80.7977

793.496	13.4016	48.7969	74.6182
793.332	14.5798	51.8496	68.5881
793.168	15.6527	76.1758	63.8869
793.004	16.3328	63.0098	61.2266
792.84	16.237	52.8965	61.5878
792.676	15.7772	62.3398	63.3826
792.512	15.4228	58.543	64.8392
792.348	15.0492	72.2891	66.4488
792.184	14.7043	55.5	68.0072
792.02	14.7426	60.8984	67.8305
791.856	14.9821	62.1289	66.7462
791.692	15.0109	59.3945	66.6184
791.528	15.394	74.6992	64.9603
791.364	15.9305	72.375	62.7728
791.199	16.486	49.1816	60.6574
791.035	16.5531	49.3223	60.4116
790.871	16.2178	53.1641	61.6605
790.707	15.8826	65.9102	62.9621
790.543	15.4419	66.7266	64.7588
790.379	14.9246	81.3281	67.0033
790.215	14.599	44.5586	68.4981
790.051	14.8576	54.0977	67.3057
789.887	15.5377	66.0117	64.3595
789.723	16.6106	56.3984	60.2026
789.559	16.9937	53.5801	58.8452
789.395	18.172	75.7227	55.0298
789.231	18.6701	76.5586	53.5616
789.067	18.8042	89.4102	53.1796
788.903	18.718	59.6211	53.4245
788.739	18.0379	55.6504	55.4389
788.575	17.0608	63.0527	58.6139
788.411	16.6489	58.9648	60.0641
788.247	16.7447	72.1172	59.7204
788.083	16.9937	68.5859	58.8452
787.919	17.6643	49.4648	56.6114
787.755	18.7371	47.2188	53.3699
787.591	19.6376	56.752	50.9228
787.427	19.8483	49.4219	50.3821
787.263	20.0495	59.6406	49.8766
787.098	19.9537	58.0898	50.116
786.934	19.2448	51.9844	51.962
786.77	18.8713	65.8711	52.9906
786.606	18.9958	51.0859	52.6433
786.442	19.0628	63.4844	52.4581
786.278	19.1778	65.3008	52.1437
786.114	19.8771	63.2168	50.3092
785.95	20.3943	53.166	49.0332
785.786	20.3752	59.5586	49.0793
785.622	19.8004	57.4102	50.5039
785.458	19.3119	44.9063	51.7816
785.294	17.7218	53.8125	56.4278
785.13	16.1891	51.8867	61.77
784.966	16.0262	67.0859	62.3976
784.802	15.5856	63.3008	64.1618
784.638	15.3078	47.0703	65.3261
784.474	15.9975	53.7148	62.5097
784.31	16.8309	47.6895	59.4145
784.146	16.7159	54.7734	59.8231
783.982	16.6393	48.4707	60.0986
783.818	16.8309	83.3086	59.4145
783.654	17.444	57.8691	57.3264
783.49	18.5264	63.0566	53.977
783.326	18.7084	59.3438	53.4519
783.162	18.9862	67.1172	52.6698
782.997	19.2736	47.5059	51.8845
782.833	18.9287	68.3164	52.8297
782.669	17.6547	48.1406	56.6421
782.505	17.3099	62.2441	57.7706
782.341	16.9842	67.6445	58.8784
782.177	16.9554	73.1367	58.9782
782.013	18.0762	60.9961	55.3214
781.849	19.2736	54.1133	51.8845
781.685	20.3369	78.6641	49.1718
781.521	21.2852	71.1992	46.981
781.357	21.4576	61.3398	46.6035
781.193	21.7929	71.9258	45.8865
781.029	22.8083	64.3867	43.8437
780.865	23.5459	52.9102	42.4703
780.701	23.8428	63.8086	41.9413
780.537	24.4655	67.7852	40.8739
780.373	24.5134	64.8945	40.7941
780.209	24.6666	73.9766	40.5406
780.045	25.6246	64.7031	39.0251
779.881	26.4771	80.3672	37.7685
779.717	26.6399	83.8633	37.5376
779.553	26.6687	73.7734	37.4972
779.389	27.3392	63.3945	36.5775
779.225	27.2626	76.8438	36.6803
779.06	27.4063	63.9043	36.488
778.896	27.8182	99.9531	35.9477
778.732	27.3967	73.1289	36.5007
778.568	28.2971	68.6328	35.3393
778.404	29.1497	79.2383	34.3057
778.24	28.6324	93.1602	34.9255
778.076	27.9427	88.6914	35.7875
777.912	28.6995	85.6523	34.8439
777.748	28.9868	83.7617	34.4984
777.584	27.4542	69.2188	36.4243
777.42	28.2971	84.6094	35.3393
777.256	29.3413	87.3477	34.0817
777.092	29.3413	86.0469	34.0817
776.928	28.8336	105.852	34.6818
776.764	30.9601	73.582	32.2996
776.6	29.7819	81.6992	33.5774
776.436	28.1247	76.9727	35.5559
776.272	27.3296	93.957	36.5903
776.108	26.6304	87.0547	37.5511
775.944	24.3409	76.9492	41.083
775.78	24.0153	89.5	41.6402
775.616	24.4655	80.2422	40.8739
775.452	24.1781	80.875	41.3597
775.288	24.705	86.2734	40.4777
775.124	25.5	105.508	39.2156
774.959	25.7682	85.875	38.8075
774.795	25.4809	88.3438	39.2451
774.631	25.0019	65.4883	39.9969
774.467	23.4788	77.0977	42.5916

774.303	21.2277	69.2188	47.1082
774.139	18.9862	99.2695	52.6698
773.975	17.2428	111.285	57.9952
773.811	16.0262	88.3398	62.3976
773.647	14.8193	76.918	67.4797
773.483	14.2158	101.738	70.3443
773.319	14.0721	63.1582	71.0626
773.155	14.5127	73.2188	68.905
772.991	15.1354	111.344	66.0703
772.827	15.4994	64.6172	64.5187
772.663	16.2274	73.6055	61.6241
772.499	16.2657	68.8438	61.479
772.335	16.5244	82.2852	60.5167
772.171	16.6776	59.123	59.9606
772.007	16.6106	85.1758	60.2026
771.843	16.0741	66.6797	62.2117
771.679	16.0933	70.2422	62.1377
771.515	16.9554	100.887	58.9782
771.351	17.2045	66.3047	58.1244
771.187	18.967	92.2578	52.723
771.023	20.6147	71.4648	48.5092
770.858	21.7067	88.8359	46.0688
770.694	22.4922	76.1445	44.4599
770.53	22.0515	98.6563	45.3483
770.366	21.3523	79.6992	46.8335
770.202	20.6147	78.625	48.5092
770.038	20.5476	86.2227	48.6675
769.874	20.8062	80.3672	48.0625
769.71	20.6913	73.2109	48.3295
769.546	20.4997	81.0859	48.7812
769.382	19.3694	72.4258	51.6279
769.218	18.1911	79.8086	54.9718
769.054	18.1624	65.9609	55.0588
768.89	19.0628	78.4531	52.4581
768.726	19.7238	86.9414	50.7002
768.562	20.8158	65.1836	48.0404
768.398	21.7067	75.4688	46.0688
768.234	21.2852	73.4375	46.981
768.07	20.1357	66.6563	49.663
767.906	18.5839	84.3203	53.8101
767.742	16.6489	75.3945	60.0641
767.578	15.2312	78.1289	65.6548
767.414	14.6373	94.4297	68.3187
767.25	14.5415	84.3984	68.7688
767.086	13.8805	80.8086	72.0434
766.922	13.6602	84.9727	73.2054
766.757	12.4149	78.7578	80.5483
766.593	11.4187	78.5977	87.5758
766.429	10.5566	65.8125	94.7279
766.265	11.3037	65.9531	88.4664
766.101	14.3882	78.582	69.5013
765.937	18.1624	69.3984	55.0588
765.773	21.6492	77.9531	46.1911
765.609	24.4655	89.8203	40.8739
765.445	25.7108	100.277	38.8942
765.281	25.9311	73.6445	38.5637
765.117	24.6092	69.6523	40.6353
764.953	24.3026	71.7695	41.1478
764.789	25.4904	58.0703	39.2304
764.625	26.9561	112.895	37.0974
764.461	27.8373	71.5039	35.923
764.297	28.5366	76.1836	35.0427
764.133	29.0252	76.2852	34.4529
763.969	27.4063	66.6133	36.488
763.805	25.4809	87.8008	39.2451
763.641	25.8066	82.9609	38.7498
763.477	27.2434	60.8301	36.7061
763.313	29.8106	93.4922	33.5451
763.149	31.2475	72.3867	32.0025
762.985	32.3874	72.7109	30.8762
762.82	31.2571	68.0352	31.9927
762.656	28.8336	77.3203	34.6818
762.492	25.9694	80.4258	38.5069
762.328	23.4884	72.8984	42.5742
762.164	21.927	79.7773	45.6059
762	22.2144	82.0117	45.0159
761.836	22.6933	83.7891	44.0658
761.672	23.4788	72.2305	42.5916
761.508	26.1514	98.2813	38.2389
761.344	29.5041	76.5273	33.8936
761.18	30.3183	72.8789	32.9833
761.016	30.577	111.629	32.7043
760.852	32.3395	90.7891	30.9219
760.688	32.3874	96.7617	30.8762
760.524	30.8356	73.5234	32.43
760.36	30.8931	93.2109	32.3697
760.196	31.7552	77.1641	31.4909
760.032	33.0388	83.8164	30.2674
759.868	34.1692	56.1445	29.2662
759.704	35.06	98.0273	28.5225
759.54	35.7785	79.3203	27.9498
759.376	35.0313	93.5352	28.5459
759.212	32.7131	72.4531	30.5688
759.048	30.3279	88.0117	32.9729
758.884	28.7665	103.031	34.7626
758.719	29.0443	73.0625	34.4301
758.555	30.2417	84.0781	33.0669
758.391	32.6844	73.9961	30.5956
758.227	34.4374	76.1172	29.0382
758.063	34.4565	59.7656	29.0221
757.899	32.9909	69.3516	30.3114
757.735	30.6057	69.8398	32.6736
757.571	28.2971	57.2734	35.3393
757.407	25.864	77	38.6637
757.243	24.2835	59.9961	41.1803
757.079	23.5459	84.625	42.4703
756.915	23.3351	75.8242	42.8538
756.751	23.6417	74.1523	42.2982
756.587	24.6092	67.207	40.6353
756.423	24.8103	95.4297	40.3058
756.259	24.8199	85.3359	40.2902
756.095	24.7624	81.9648	40.3838
755.931	24.1781	77.6523	41.3597
755.767	23.316	87.5859	42.889
755.603	22.3676	82.7813	44.7074
755.439	21.927	76.1719	45.6059
755.275	22.1856	69.2305	45.0742

755.111	22.1856	61.1855	45.0742
754.947	21.8599	64.4492	45.7458
754.783	22.3676	76.0273	44.7074
754.618	23.0478	69.3164	43.3882
754.454	23.134	70.9492	43.2265
754.29	23.201	73.1758	43.1015
754.126	24.7241	73.4531	40.4463
753.962	25.2701	95.9297	39.5724
753.798	25.4617	84.0625	39.2747
753.634	26.5633	79.7305	37.6459
753.47	28.5558	79.4141	35.0192
753.306	28.4217	74.7969	35.1844
753.142	28.7282	76.543	34.809
752.978	29.5424	67.4336	33.8496
752.814	30.7494	72.5664	32.521
752.65	29.9543	72.7891	33.3842
752.486	30.2992	73.957	33.0042
752.322	30.395	71.918	32.9002
752.158	29.9735	69.4336	33.3628
751.994	28.6995	82.4805	34.8439
751.83	28.5079	84.4336	35.078
751.666	28.8527	67.5586	34.6588
751.502	29.37	65.7422	34.0483
751.338	30.0501	72.1953	33.2777
751.174	30.8644	98.9922	32.3998
751.01	31.6594	68.1563	31.5862
750.846	31.3241	64.4727	31.9243
750.682	30.8739	63.998	32.3898
750.517	30.2609	70.9453	33.046
750.353	29.5999	50.1992	33.7839
750.189	28.5366	69.7852	35.0427
750.025	27.186	57.9746	36.7837
749.861	26.3813	74.3398	37.9056
749.697	26.1323	74.25	38.2669
749.533	25.9598	63.3262	38.5211
749.369	25.9311	70.8164	38.5637
749.205	26.1993	59.4355	38.169
749.041	25.9024	83.4063	38.6065
748.877	25.5192	59.5703	39.1862
748.713	25.7778	69.8281	38.793
748.549	26.1227	59.2988	38.2809
748.385	26.6687	85.3672	37.4972
748.221	26.7932	56.4668	37.3229
748.057	25.797	68.0469	38.7642
747.893	24.1781	77.7773	41.3597
747.729	21.9557	82.6641	45.5462
747.565	19.4077	63.8262	51.526
747.401	17.0129	72.2578	58.7789
747.237	15.873	59.6523	63.0001
747.073	16.1987	79.7383	61.7335
746.909	17.3003	81.3047	57.8026
746.745	19.3502	78.9961	51.679
746.58	21.5055	67.2461	46.4997
746.416	23.6704	69.3398	42.2468
746.252	24.887	71.3711	40.1817
746.088	25.7395	77.8281	38.8508
745.924	26.1897	67.9258	38.1829
745.76	26.5154	62.6777	37.7139
745.596	26.7836	49.7559	37.3362
745.432	26.6399	62.3008	37.5376
745.268	26.2185	78.5742	38.1411
745.104	26.4196	65.4492	37.8507
744.94	26.9848	61.0996	37.0579
744.776	27.5021	66.7109	36.3609
744.612	27.8661	71.8398	35.8859
744.448	27.7415	59.2051	36.047
744.284	27.3967	50.418	36.5007
744.12	27.5883	68.582	36.2473
743.956	27.8469	53.6465	35.9106
743.792	27.7894	73.043	35.9849
743.628	27.9044	60.9609	35.8367
743.464	26.7549	59.0684	37.3763
743.3	25.5192	42.7266	39.1862
743.136	24.5134	97.625	40.7941
742.972	23.4118	75.9805	42.7136
742.808	22.7221	85.4297	44.0101
742.644	22.7891	78.4961	43.8806
742.479	-999.25	-999.25	-999.25
742.315	23.6513	80.0352	42.2811
742.151	24.5708	66.5117	40.6986
741.987	24.705	99.1406	40.4777
741.823	24.2164	59.4863	41.2943
741.659	24.2068	64.6797	41.3106
741.495	24.7241	79.668	40.4463
741.331	24.4655	97.7891	40.8739
741.167	24.7912	81.4883	40.3369
741.003	25.4904	55.5605	39.2304
740.839	26.5058	68.2031	37.7275
740.675	26.9848	83.8086	37.0579
740.511	28.1535	78.1289	35.5196
740.347	27.5979	76.418	36.2347
740.183	26.228	69.3008	38.1271
740.019	25.3084	69.1875	39.5125
739.855	24.7337	70.2656	40.4307
739.691	24.226	103.98	41.278
739.527	25.1169	75.5742	39.8139
739.363	27.1668	72.3945	36.8096
739.199	28.0385	93.2227	35.6652
739.035	27.6937	68.2969	36.1094
738.871	26.2472	84.1641	38.0993
738.707	24.8103	74.0234	40.3058
738.543	23.1627	74.2031	43.1728
738.378	23.7087	98.9023	42.1786
738.214	25.7203	61.2559	38.8797
738.05	27.2722	100.695	36.6674
737.886	28.3546	88.9648	35.2676
737.722	28.642	77.8438	34.9138
737.558	28.6133	67.8711	34.9488
737.394	27.7703	51.4629	36.0097
737.23	26.8986	82.8828	37.1767
737.066	26.4771	76.5703	37.7685
736.902	26.4675	84.4023	37.7822
736.738	26.2568	107.184	38.0854
736.574	26.0556	76.5742	38.3794
736.41	24.4655	81.1211	40.8739
736.246	22.0898	97.7617	45.2697
736.082	19.561	79.668	51.1223

735.918	17.0895	74.5547	58.5153
735.754	14.7618	93.3008	67.7424
735.59	13.7368	86.0586	72.797
735.426	13.2004	82.9375	75.7553
735.262	12.6544	84.4883	79.024
735.098	11.9264	74.5	83.8478
734.934	10.7194	84.0781	93.2888
734.77	9.64653	64.2383	103.664
734.606	9.25379	99.2305	108.064
734.442	9.26337	86.4297	107.952
734.277	9.47411	87.5703	105.551
734.113	9.95307	75.9609	100.472
733.949	10.8822	70.9766	91.8928
733.785	11.0451	71.3594	90.538
733.621	11.3899	94.7773	87.7968
733.457	11.9647	56.3164	83.5793
733.293	12.731	75.7852	78.5483
733.129	13.7368	69.3906	72.797
732.965	14.005	71.5156	71.4028
732.801	14.5032	83.8477	68.9505
732.637	15.145	65.8594	66.0285
732.473	15.5186	83.1641	64.439
732.309	15.8059	66.3633	63.2674
732.145	15.9305	78.3828	62.7728
731.981	16.6968	71.4023	59.8918
731.817	17.7218	94.4805	56.4278
731.653	19.1012	83.0859	52.3529
731.489	20.6817	81.0859	48.3519
731.325	22.3485	79.6641	44.7458
731.161	23.1244	66.125	43.2444
730.997	23.2585	70.8008	42.995
730.833	23.2202	88.9141	43.066
730.669	22.952	92.0117	43.5692
730.505	23.6417	76.8047	42.2982
730.341	25.5	71.9023	39.2156
730.176	25.4809	82.1211	39.2451
730.012	25.3276	80.6875	39.4826
729.848	26.9273	61.1016	37.137
729.684	28.2684	66.3867	35.3752
729.52	27.7415	83.2305	36.047
729.356	28.2684	66.0742	35.3752
729.192	28.2684	77.9492	35.3752
729.028	27.8373	105.316	35.923
728.864	27.9714	105.098	35.7507
728.7	28.6324	95.1914	34.9255
728.536	28.1343	112.324	35.5438
728.372	28.3163	112.984	35.3154
728.208	28.1726	93.8281	35.4955
728.044	26.9848	105.773	37.0579
727.88	25.6246	130.133	39.0251
727.716	24.6283	114.141	40.6037
727.552	23.383	96.6328	42.766
727.388	21.9462	124.215	45.5661
727.224	20.6626	133.078	48.3967
727.06	20.2985	153.57	49.2646
726.896	20.653	106.578	48.4192
726.732	21.5438	128.391	46.417
726.568	20.9404	108.977	47.7547
726.404	20.6242	152.094	48.4866
726.239	21.0649	120.297	47.4724
726.075	21.4097	115.078	46.7077
725.911	21.8025	109.422	45.8664
725.747	22.2335	139.414	44.9771
725.583	22.6838	107.551	44.0844
725.419	22.6167	133.172	44.2151
725.255	21.2277	116.984	47.1082
725.091	19.6567	116.234	50.8731
724.927	17.7601	135.492	56.3061
724.763	16.7064	126.508	59.8574
724.599	15.9975	101.434	62.5097
724.435	15.6622	130.656	63.8478
724.271	14.8959	130.891	67.1325
724.107	15.1545	139.266	65.9868
723.943	15.1066	131.133	66.196
723.779	14.6373	130.227	68.3187
723.615	14.9151	106.344	67.0463
723.451	16.419	106.133	60.9051
723.287	16.0933	137.063	62.1377
723.123	15.5856	125.926	64.1618
722.959	16.0741	109.563	62.2117
722.795	15.758	124.77	63.4597
722.631	14.2541	114.258	70.1552
722.467	12.8172	112.699	78.02
722.303	12.8939	102.59	77.5563
722.138	12.5107	151.492	79.9316
721.974	12.0796	136.813	82.7839
721.81	12.0988	137.945	82.6529
721.646	11.6869	120.867	85.5659
721.482	11.1888	118.18	89.3753
721.318	-999.25	-999.25	-999.25
721.154	-999.25	-999.25	-999.25
720.99	9.55074	105.172	104.704
720.826	9.60822	123.059	104.078
720.662	9.22505	112.418	108.4
720.498	9.44537	141.492	105.872
720.334	9.88601	136.844	101.153
720.17	9.80938	134.07	101.943
720.006	9.22505	109.082	108.4
719.842	9.34958	125.328	106.957
719.678	9.3879	116.605	106.52
719.514	8.20966	131.188	121.808
719.35	7.14638	149.336	139.931
719.186	7.22301	112.309	138.446
719.022	7.48165	127.801	133.66
718.858	7.51038	111.543	133.149
718.694	8.11387	107.445	123.246
718.53	8.97599	142.07	111.408
718.366	8.94726	128.055	111.766
718.202	8.45872	136.344	118.221
718.037	8.26714	154.828	120.961
717.873	8.18092	137.305	122.236
717.709	8.04682	107.273	124.273
717.545	8.14261	121.617	122.811
717.381	7.69239	136.617	129.999
717.217	8.05639	114.457	124.125
717.053	7.35712	126.691	135.923
716.889	7.35712	109.691	135.923

716.725	7.63491	109.082	130.977
716.561	8.03724	134.828	124.421
716.397	7.79776	130.758	128.242
716.233	7.98934	124.188	125.167
716.069	8.03724	128.672	124.421
715.905	7.40501	123.699	135.044
715.741	6.97395	152.063	143.391
715.577	6.58121	153.141	151.948
715.413	6.77279	146.148	147.65
715.249	6.86858	128.484	145.591
715.085	6.97395	124.824	143.391
714.921	7.12722	126.371	140.307
714.757	7.40501	112.633	135.044
714.593	6.95479	125.68	143.786
714.429	7.02185	112.145	142.413
714.265	7.21343	144.977	138.63
714.101	7.37627	115.582	135.57
713.936	7.11764	134.805	140.496
713.772	7.09848	104.691	140.875
713.608	7.09848	115.438	140.875
713.444	7.06974	139.242	141.448
713.28	7.09848	145.813	140.875
713.116	6.75363	119.488	148.069
712.952	6.78237	129.477	147.441
712.788	6.9069	122.188	144.783
712.624	7.19427	137.203	138.999
712.46	7.34754	122.957	136.1
712.296	7.30922	146.797	136.813
712.132	7.19427	120.5	138.999
711.968	6.99311	117.738	142.998
711.804	6.87816	113.051	145.388
711.64	6.9069	151.703	144.783
711.476	7.05058	139.617	141.832
711.312	6.92605	130.555	144.382
711.148	6.83026	131.883	146.407
710.984	6.83026	134.141	146.407
710.82	6.96437	127.137	143.588
710.656	6.95479	144.469	143.786
710.492	7.11764	151.375	140.496
710.328	7.37627	151.648	135.57
710.164	7.57744	107.93	131.971
709.999	7.44333	132.547	134.348
709.835	7.38585	139.656	135.394
709.671	7.12722	131.977	140.307
709.507	7.24217	113.82	138.08
709.343	7.29006	113.805	137.173
709.179	7.52954	124.695	132.81
709.015	7.37627	134.602	135.57
708.851	7.0889	123.953	141.066
708.687	7.15595	133.82	139.744
708.523	6.96437	144.313	143.588
708.359	6.71531	136.469	148.913
708.195	6.86858	117.852	145.591
708.031	6.9069	130.766	144.783
707.867	6.86858	114.922	145.591
707.703	7.11764	121.539	140.496
707.539	6.99311	111.121	142.998
707.375	7.25175	121.434	137.898
707.211	7.18469	115.777	139.185
707.047	7.12722	146.898	140.307
706.883	7.0889	133.211	141.066
706.719	6.80153	95.5938	147.026
706.555	6.84942	130.828	145.998
706.391	7.06016	144.117	141.64
706.227	6.87816	146.172	145.388
706.063	6.87816	126.188	145.388
705.898	6.75363	127.992	148.069
705.734	6.78237	128.711	147.441
705.57	6.92605	97.1836	144.382
705.406	6.84942	116.184	145.998
705.242	6.86858	126.016	145.591
705.078	7.12722	137.422	140.307
704.914	7.19427	122.176	138.999
704.75	6.84942	105.449	145.998
704.586	7.06016	105.992	141.64
704.422	7.26133	126.574	137.716
704.258	7.29006	113.68	137.173
704.094	7.19427	106.406	138.999
703.93	7.41459	109.453	134.869
703.766	7.5966	138.789	131.638
703.602	7.43375	131.961	134.522
703.438	6.84942	120.492	145.998
703.274	6.92605	106.773	144.382
703.11	7.05058	124.992	141.832
702.946	7.30922	129	136.813
702.782	7.74028	113.602	129.194
702.618	8.27672	125.434	120.821
702.454	8.36293	106.262	119.575
702.29	7.95102	123.504	125.77
702.126	7.81692	132.695	127.928
701.962	7.5966	132.508	131.638
701.797	7.52954	98.9844	132.81
701.633	7.44333	118.621	134.348
701.469	7.88397	101.566	126.84
701.305	8.0085	99.4023	124.867
701.141	8.40124	111.289	119.03
700.977	8.03724	115.684	124.421
700.813	8.37251	103.613	119.439
700.649	8.61199	118.988	116.117
700.485	8.49704	105.82	117.688
700.321	8.72694	126.555	114.588
700.157	9.522	148.938	105.02
699.993	9.92433	110.809	100.762
699.829	10.4608	131.297	95.5953
699.665	10.729	88.9336	93.2055
699.501	11.16	118.461	89.6054
699.337	11.5432	121.996	86.6311
699.173	11.8689	95.207	84.2538
699.009	12.4053	136.859	80.6105
698.845	12.913	115.922	77.4412
698.681	13.4303	130.391	74.4585
698.517	13.9667	130.641	71.5987
698.353	-999.25	-999.25	-999.25
698.189	15.4036	137.289	64.9199
698.025	15.9305	127.262	62.7728
697.861	16.4477	117.051	60.7987
697.696	16.9937	122.867	58.8452

697.532	16.8022	135.359	59.5162
697.368	17.2811	126.574	57.8666
697.204	17.9517	96.3984	55.7052
697.04	18.3923	118.871	54.3706
696.876	18.6701	129.523	53.5616
696.712	19.7909	106.852	50.5284
696.548	20.107	112.984	49.734
696.384	19.925	127.801	50.1883
696.22	19.7525	114.23	50.6264
696.056	19.0533	142.43	52.4845
695.892	18.3923	134.305	54.3706
695.728	17.5589	115.168	56.9511
695.564	17.7601	135.531	56.3061
695.4	17.3194	97.7383	57.7386
695.236	15.9113	87.7734	62.8484
695.072	15.7293	118.922	63.5756
694.908	15.9784	133.508	62.5847
694.744	15.3461	114.039	65.163
694.58	15.212	106.508	65.7375
694.416	15.8442	104.172	63.1144
694.252	15.9305	112.188	62.7728
694.088	16.419	118.684	60.9051
693.924	16.3519	124.227	61.1548
693.759	15.9496	136.211	62.6974
693.595	14.9246	116.285	67.0033
693.431	14.7426	114.121	67.8305
693.267	14.2541	142.008	70.1552
693.103	14.3786	117.258	69.5476
692.939	14.3403	136.477	69.7335
692.775	14.5798	129.438	68.5881
692.611	14.3882	127.266	69.5013
692.447	14.7235	126.293	67.9187
692.283	15.0875	135.555	66.2801
692.119	14.666	127.539	68.1849
691.955	13.2387	139.078	75.536
691.791	13.2291	128.328	75.5907
691.627	13.0376	106.32	76.7015
691.463	12.5394	143.68	79.7484
691.299	11.639	129.688	85.9181
691.135	11.2271	120.18	89.0702
690.971	10.6044	109.496	94.3
690.807	11.0738	112.66	90.303
690.643	11.1026	132.398	90.0693
690.479	10.7769	140.633	92.7913
690.315	9.79022	126.664	102.143
690.151	8.52577	135.602	117.291
689.987	8.37251	143.391	119.439
689.823	8.45872	128.719	118.221
689.658	7.76902	108.406	128.716
689.494	6.3992	140.453	156.269
689.33	7.74028	107.715	129.194
689.166	7.63491	92.625	130.977
689.002	7.82649	128.336	127.771
688.838	8.04682	128.57	124.273
688.674	8.22882	125.75	121.524
688.51	8.2384	134.063	121.383
688.346	8.01808	111.895	124.718
688.182	8.39166	111.688	119.166
688.018	8.32461	127.008	120.126
687.854	8.67904	122.895	115.22
687.69	8.94726	141.148	111.766
687.526	9.45495	101.387	105.765
687.362	9.37832	98.0352	106.629
687.198	8.85146	116.477	112.976
687.034	8.53535	128.844	117.16
686.87	8.22882	125.809	121.524
686.706	7.63491	113.688	130.977
686.542	6.70573	113.418	149.126
686.378	6.54289	118.453	152.838
686.214	6.63868	120.512	150.632
686.05	6.83026	89.0938	146.407
685.886	6.70573	112.984	149.126
685.722	7.26133	110.25	137.716
685.557	7.14638	96.1797	139.931
685.393	6.54289	131.539	152.838
685.229	6.78237	100.777	147.441
685.065	7.30922	131.109	136.813
684.901	7.66365	101.867	130.486
684.737	8.24798	100.844	121.242
684.573	8.26714	114.52	120.961
684.409	7.63491	110.777	130.977
684.245	7.43375	145.18	134.522
684.081	7.38585	127.125	135.394
683.917	7.3188	94.7383	136.634
683.753	7.3188	99.8281	136.634
683.589	7.97976	143.75	125.317
683.425	7.76902	110.531	128.716
683.261	7.25175	120.902	137.898
683.097	7.21343	122.012	138.63
682.933	7.5008	101.121	133.319
682.769	7.5966	121.098	131.638
682.605	7.3188	98.1758	136.634
682.441	7.19427	117.805	138.999
682.277	6.52373	99.332	153.287
682.113	6.33215	126.008	157.924
681.949	6.36089	122.434	157.211
681.785	6.00646	115.84	166.488
681.621	5.36465	97.4766	186.405
681.456	6.60994	118.816	151.287
681.292	6.54289	114.102	152.838
681.128	5.49876	138.711	181.859
680.964	6.01604	104.996	166.222
680.8	8.27672	127.098	120.821
680.636	7.34754	132.844	136.1
680.472	6.89732	118.078	144.984
680.308	7.3188	108.586	136.634
680.144	7.72112	118.52	129.515
679.98	5.97772	129.234	167.288
679.816	5.82445	119.801	171.69
679.652	6.11183	107.852	163.617
679.488	6.58121	95.9297	151.948
679.324	6.46626	116.352	154.649
679.16	7.06016	115.324	141.64
678.996	7.03143	146.844	142.219
678.832	7.40501	122.617	135.044
678.668	7.19427	107.684	138.999
678.504	6.96437	121.852	143.588

678.34	6.97395	124.539	143.391
678.176	7.30922	117.715	136.813
678.012	7.22301	133.758	138.446
677.848	6.32257	124.176	158.164
677.684	5.81487	116.621	171.973
677.519	6.07351	125.473	164.649
677.355	5.89151	114.094	169.736
677.191	5.47002	93.8789	182.815
677.027	5.21139	116.961	191.887
676.863	5.94898	120.582	168.096
676.699	6.60994	132.492	151.287
676.535	6.36089	97.3828	157.211
676.371	7.45291	132.766	134.176
676.207	8.27672	125.355	120.821
676.043	8.08513	109.414	123.684
675.879	7.35712	117.504	135.923
675.715	6.81111	127.68	146.819
675.551	6.49499	124.711	153.965
675.387	5.88193	109.539	170.012
675.223	5.79572	111.227	172.541
675.059	5.9873	123.543	167.02
674.895	6.64826	106.203	150.415
674.731	7.03143	113.156	142.219
674.567	7.28048	113.066	137.354
674.403	7.48165	122.824	133.66
674.239	6.97395	101.355	143.391
674.075	6.80153	102.328	147.026
673.911	6.92605	131.945	144.382
673.747	6.63868	124.602	150.632
673.583	6.41836	102.504	155.803
673.418	6.35131	115.469	157.448
673.254	6.29383	129.922	158.886
673.09	6.22678	113.039	160.597
672.926	6.29383	136.539	158.886
672.762	6.22678	107.184	160.597
672.598	6.36089	107.48	157.211
672.434	6.83984	118.684	146.202
672.27	7.53912	110.391	132.641
672.106	6.95479	82.957	143.786
671.942	6.48541	96.2578	154.192
671.778	6.81111	111.977	146.819
671.614	7.16553	121.512	139.557
671.45	7.0889	64.2617	141.066
671.286	7.53912	108.305	132.641
671.122	8.37251	75.3906	119.439
670.958	8.26714	101.246	120.961
670.794	8.32461	107.125	120.126
670.63	8.52577	128.898	117.291
670.466	9.22505	130.938	108.4
670.302	9.95307	115.516	100.472
670.138	10.8727	97.2852	91.9738
669.974	11.7156	71.3398	85.3561
669.81	13.0088	118.707	76.871
669.646	14.2445	122.641	70.2024
669.482	15.1066	115.988	66.196
669.317	16.6489	112.117	60.0641
669.153	17.7505	117.129	56.3365
668.989	18.6797	110.621	53.5341
668.825	19.7238	76.3633	50.7002
668.661	20.653	110.473	48.4192
668.497	21.3235	106.547	46.8966
668.333	22.5018	98.4023	44.441
668.169	23.9003	80.8398	41.8405
668.005	25.2127	103.086	39.6626
667.841	26.5729	92.4531	37.6323
667.677	27.8182	108.277	35.9477
667.513	29.5233	80.8281	33.8716
667.349	30.7973	68.3242	32.4704
667.185	32.2437	61.6152	31.0138
667.021	33.1538	69.8281	30.1625
666.857	33.853	54.7539	29.5394
666.693	34.4757	56.1836	29.0059
666.529	35.1271	54.9551	28.4681
666.365	35.7401	69.0508	27.9797
666.201	36.3149	69.2383	27.5369
666.037	36.8417	39.0391	27.1431
665.873	37.2632	45.8887	26.8361
665.709	37.2441	63.4648	26.8499
665.545	36.6406	54.9082	27.2921
665.381	36.4682	63.9824	27.4212
665.216	35.7593	43.2441	27.9648
665.052	35.1367	59.6855	28.4603
664.888	34.4948	44.8008	28.9898
664.724	34.0542	53.082	29.3649
664.56	33.422	47.8418	29.9204
664.396	32.5503	36.25	30.7217
664.232	31.4678	49.6797	31.7785
664.068	30.1459	49.7188	33.172
663.904	28.46	56.3496	35.1371
663.74	26.2759	50.9043	38.0576
663.576	24.0632	36.0156	41.5573
663.412	22.3293	41.3691	44.7842
663.248	20.653	43.0781	48.4192
663.084	18.8425	39.6855	53.0715
662.92	17.7888	41.248	56.2151
662.756	16.7351	47.7441	59.7546
662.592	15.758	46.7012	63.4597
662.428	14.1296	46.998	70.7735
662.264	13.2675	48.6602	75.3724
662.1	12.1467	53.7363	82.3269
661.936	11.8976	45.8398	84.0503
661.772	10.6811	35.8555	93.6235
661.608	11.0355	32.3574	90.6166
661.444	10.6523	49.2266	93.876
661.279	10.183	52.2676	98.2032
661.115	7.41459	73.793	134.869
660.951	7.48165	41.7559	133.66
660.787	7.79776	46.2402	128.242
660.623	7.22301	43.0547	138.446
660.459	6.83026	46.2012	146.407
660.295	8.63114	52.7383	115.86
660.131	9.85727	44.8438	101.448
659.967	9.73275	47.8809	102.746
659.803	9.5699	75.7422	104.494
659.639	9.07178	64.125	110.232
659.475	8.56409	52.8281	116.767
659.311	7.70197	71.8281	129.837

659.147	7.34754	68.1719	136.1
658.983	7.05058	57.7734	141.832
658.819	6.83984	57.8691	146.202
658.655	7.05058	36.5352	141.832
658.491	7.29006	46.4043	137.173
658.327	7.83607	64.6445	127.615
658.163	8.45872	53.0469	118.221
657.999	8.55451	52.0566	116.897
657.835	8.53535	54.2559	117.16
657.671	9.13884	44.3711	109.423
657.507	10.1063	35.9297	98.9479
657.343	10.6332	57.7129	94.0452
657.178	11.639	37.3184	85.9181
657.014	12.5299	47.2188	79.8094
656.85	12.1467	46.7773	82.3269
656.686	10.7769	41.3262	92.7913
656.522	8.81315	47.4668	113.467
656.358	9.13884	62.5742	109.423
656.194	9.83812	39.8652	101.645
656.03	12.5299	46.4102	79.8094
655.866	13.6506	52.666	73.2568
655.702	15.6239	49.3281	64.0044
655.538	13.7464	34.9629	72.7463
655.374	8.40124	56.4023	119.03
655.21	-5.05746	38.1309	-197.728
655.046	-25.4802	59.25	-39.2461
654.882	-29.8675	72.6914	-33.4813
654.718	-19.4932	50.0762	-51.2998
654.554	-2.89257	49.8301	-345.713
654.39	15.3078	59.9512	65.3261
654.226	24.9444	58.0645	40.0891
654.062	3.77451	44.748	264.935
653.898	-25.4994	47.2324	-39.2167
653.734	-54.802	64.5352	-18.2475
653.57	-84.4638	56.0195	-11.8394
653.406	-114.7	64.3594	-8.71836
653.242	-119.222	69.5117	-8.38773
653.077	-109.805	52.498	-9.10701
652.913	-100.902	55.6895	-9.91064
652.749	-96.6868	51.5703	-10.3427
652.585	-92.7115	59.5762	-10.7862
652.421	-83.8316	51.3867	-11.9287
652.257	-70.0712	51.5898	-14.2712
652.093	-55.5587	46.3184	-17.999
651.929	-40.5482	68.9883	-24.662
651.765	-32.2527	58.8105	-31.0052
651.601	-35.2797	67.6641	-28.3449
651.437	-37.1955	44.791	-26.885
651.273	-35.2318	34.707	-28.3835
651.109	-24.6756	42.8906	-40.5259
650.945	-17.5678	65.5313	-56.9222
650.781	-9.99072	48.0879	-100.093
650.617	-10.1823	50.4727	-98.2096
650.453	-26.2657	51.5566	-38.0725
650.289	-55.3672	59.4805	-18.0612
650.125	-73.8262	54.6074	-13.5453
649.961	-79.9952	53.209	-12.5008
649.797	-74.3339	47.043	-13.4528
649.633	-56.1143	60.7813	-17.8208
649.469	-25.1066	49.0098	-39.8301
649.305	2.21311	58.0918	451.852
649.141	17.7218	71.8516	56.4278
648.976	23.7183	52.6973	42.1615
648.812	22.9999	70.6133	43.4785
648.648	20.4901	56.4922	48.804
648.484	18.239	77.875	54.8275
648.32	16.1316	49.7656	61.9901
648.156	13.9763	61.3633	71.5496
647.992	12.4149	54.3086	80.5483
647.828	11.6486	70.2969	85.8474
647.664	12.2425	67.5547	81.6828
647.5	13.1621	54.7168	75.9758
647.336	14.0529	71.2656	71.1595
647.172	14.1871	69.4219	70.4868
647.008	13.7081	79.0781	72.9496
646.844	11.6773	79.2773	85.6361
646.68	9.7998	56.3262	102.043
646.516	9.07178	71.0547	110.232
646.352	9.158	64.2305	109.194
646.188	8.56409	72.9922	116.767
646.024	9.77106	85.0352	102.343
645.86	10.6907	63.3145	93.5396
645.696	9.88601	51.8926	101.153
645.532	8.67904	69.1641	115.22
645.368	8.24798	58.9551	121.242
645.204	7.06974	59.8965	141.448
645.04	6.52373	51.2773	153.287
644.875	6.30341	69.6406	158.644
644.711	5.56582	60.4766	179.668
644.547	4.378	55.0859	228.415
644.383	4.12894	72.1523	242.193
644.219	3.84157	64.8516	260.31
644.055	3.55419	62.6797	281.358
643.891	3.9182	77.6641	255.219
643.727	4.196	51.0742	238.322
643.563	3.81283	65.9961	262.272
643.399	3.05608	62.5273	327.217
643.235	2.69207	65.7109	371.461
643.071	3.23808	78.8164	308.825
642.907	3.43924	69.3086	290.762
642.743	3.30514	76.168	302.559
642.579	3.85115	58.0195	259.663
642.415	3.30514	70.9961	302.559
642.251	3.4584	72.6719	289.151
642.087	3.72662	34.8984	268.34
641.923	4.04273	46.7578	247.358
641.759	3.87031	69.582	258.377
641.595	3.94694	74.625	253.361
641.431	3.24766	55.2461	307.914
641.267	3.12313	77.9414	320.191
641.103	3.15187	61.6641	317.272
640.938	3.42967	54.5078	291.574
640.774	4.33011	50.6074	230.941
640.61	5.0198	66.3984	199.211
640.446	5.27844	64.1445	189.45
640.282	5.30718	75.3203	188.424
640.118	5.66161	49.5195	176.628

639.954	5.28802	59.1309	189.107
639.79	4.54085	66.1016	220.223
639.626	4.10021	49.8359	243.89
639.462	3.60209	51.3652	277.617
639.298	3.31472	62.7109	301.685
639.134	3.64999	63.957	273.974
638.97	4.29179	79.3867	233.003
638.806	4.61748	66.2852	216.568
638.642	4.38758	62.8164	227.916
638.478	4.74201	74.1953	210.881
638.314	4.49295	65.9492	222.571
638.15	4.74201	69.6914	210.881
637.986	4.6079	74.7148	217.019
637.822	4.39716	67.668	227.42
637.658	4.78033	57.8438	209.191
637.494	4.79948	61.5938	208.356
637.33	4.85696	87.7656	205.89
637.166	4.85696	61.0098	205.89
637.002	4.67495	62.793	213.906
636.837	4.87612	50.7617	205.081
636.673	4.52169	85.8672	221.156
636.509	4.54085	64.2773	220.223
636.345	4.07147	62.1211	245.612
636.181	4.38758	56.623	227.916
636.017	4.28221	73.8984	233.524
635.853	4.54085	52.4316	220.223
635.689	4.82822	54.7813	207.116
635.525	5.02938	89.0234	198.832
635.361	4.71327	55.832	212.167
635.197	4.64622	57.3184	215.229
635.033	4.73243	100.047	211.308
634.869	4.55043	62.9316	219.76
634.705	4.32053	64.7617	231.453
634.541	3.94694	55.8203	253.361
634.377	4.20558	72.9492	237.78
634.213	4.07147	68.2422	245.612
634.049	4.10021	48.084	243.89
633.885	4.18642	61.6582	238.868
633.721	4.56958	50.9727	218.838
633.557	3.6883	60.8203	271.127
633.393	3.20934	57.875	311.59
633.229	3.18061	84.1719	314.405
633.065	3.30514	82.8203	302.559
632.901	3.26682	76.1445	306.108
632.736	3.39135	73.0781	294.868
632.572	3.4584	55.9863	289.151
632.408	3.26682	73.6523	306.108
632.244	2.51965	69.3672	396.881
632.08	2.08858	73.832	478.793
631.916	2.19395	75.3125	455.798
631.752	2.64417	47.7637	378.19
631.588	3.53504	58.0195	282.883
631.424	3.94694	69.6367	253.361
631.26	4.18642	81.1836	238.868
631.096	3.9182	52.3926	255.219
630.932	3.56377	67.8242	280.601
630.768	3.29556	57.9414	303.439
630.604	2.6346	76.8242	379.565
630.44	2.70165	68.1641	370.144
630.276	3.6883	65.7891	271.127
630.112	5.26886	61.2188	189.794
629.948	5.76698	65	173.401
629.784	6.37046	54.5684	156.974
629.62	6.89732	47.8027	144.984
629.456	6.27467	67.8477	159.371
629.292	4.73243	51.3809	211.308
629.128	3.85115	67.0273	259.663
628.964	4.16726	66.9023	239.966
628.8	4.13852	60.3242	241.632
628.635	3.93736	51.918	253.977
628.471	4.22473	66.3984	236.701
628.307	4.39716	71.9648	227.42
628.143	4.29179	76.5703	233.003
627.979	3.9661	55.0977	252.137
627.815	3.75536	60.252	266.286
627.651	3.72662	48.207	268.34
627.487	3.62125	65.2617	276.148
627.323	3.85115	61.4727	259.663
627.159	4.16726	59.4004	239.966
626.995	4.28221	66.0039	233.524
626.831	4.34926	62.9297	229.924
626.667	4.30137	61.0898	232.484
626.503	4.57916	62.5801	218.381
626.339	5.00065	55.6719	199.974
626.175	4.93359	60.9727	202.692
626.011	4.92401	81.8711	203.086
625.847	4.86654	69.9297	205.485
625.683	4.51211	59.3496	221.626
625.519	4.07147	62.9336	245.612
625.355	4.28221	70.375	233.524
625.191	4.86654	63.3066	205.485
625.027	4.63664	70.332	215.674
624.863	4.85696	86.9219	205.89
624.698	5.43171	52.8613	184.104
624.534	6.13099	74.0625	163.106
624.37	5.53708	64.5352	180.601
624.206	5.24012	59.9727	190.835
624.042	4.09063	57.8418	244.461
623.878	4.85696	77.918	205.89
623.714	4.39716	88.2422	227.42
623.55	4.77075	60.6016	209.611
623.386	5.57539	67.3828	179.359
623.222	6.97395	54.7402	143.391
623.058	6.56205	49.0352	152.391
622.894	6.73447	59.1855	148.49
622.73	6.73447	74.7969	148.49
622.566	5.81487	64.5859	171.973
622.402	4.96233	69.2656	201.518
622.238	4.92401	64.6016	203.086
622.074	5.08686	59.4277	196.585
621.91	5.31676	70.0273	188.085
621.746	5.49876	61.373	181.859
621.582	5.28802	72.8281	189.107
621.418	4.93359	59.2207	202.692
621.254	4.39716	66.1016	227.42
621.09	3.12313	88.9727	320.191
620.926	2.56754	60.1074	389.478

620.762	2.15564	61.3613	463.9
620.597	1.715	84.6445	583.091
620.433	1.84911	77.0273	540.802
620.269	2.37596	68.2266	420.883
620.105	2.64417	62.8145	378.19
619.941	3.0465	76.6953	328.246
619.777	3.46798	59.1992	288.352
619.613	3.97568	66.3047	251.53
619.449	4.63664	59.2598	215.674
619.285	4.82822	62.6582	207.116
619.121	4.28221	65.1875	233.524
618.957	4.58874	51.1543	217.925
618.793	4.56958	57.8164	218.838
618.629	4.04273	71.8594	247.358
618.465	3.97568	64.6719	251.53
618.301	4.51211	80.9414	221.626
618.137	4.39716	43.6758	227.42
617.973	4.03315	62.5566	247.945
617.809	4.23431	44.3711	236.166
617.645	3.49672	66.2383	285.982
617.481	3.07524	70.8867	325.178
617.317	3.4584	59.0527	289.151
617.153	3.59251	71.6289	278.357
616.989	3.58293	65.0586	279.101
616.825	3.60209	64.1367	277.617
616.661	4.23431	70.0508	236.166
616.496	4.22473	61.7832	236.701
616.332	4.06189	68.4727	246.191
616.168	4.23431	69.0938	236.166
616.004	4.09063	62.9297	244.461
615.84	4.26305	61.4316	234.574
615.676	3.75536	51.3301	266.286
615.512	4.03315	49.834	247.945
615.348	3.56377	77.2969	280.601
615.184	4.45463	41.248	224.485
615.02	3.87031	56.0352	258.377
614.856	3.94694	61.8984	253.361
614.692	3.33387	55.3789	299.951
614.528	4.20558	56.9941	237.78
614.364	4.10021	53.5215	243.89
614.2	4.26305	73.2891	234.574
614.036	4.15768	64.6914	240.519
613.872	3.53504	56.877	282.883
613.708	3.65956	77.2227	273.257
613.544	4.00441	68.4297	249.724
613.38	3.64999	64.793	273.974
613.216	3.15187	68.1641	317.272
613.052	3.75536	50.0801	266.286
612.888	3.77451	58.4746	264.935
612.724	3.14229	36.6328	318.239
612.56	2.78786	64.8594	358.698
612.395	3.29556	53.3965	303.439
612.231	3.62125	68.8594	276.148
612.067	3.48714	74.3008	286.768
611.903	3.60209	65.7656	277.617
611.739	3.43924	67.793	290.762
611.575	3.52546	49.4082	283.651
611.411	3.37219	65.668	296.543
611.247	3.72662	62.0938	268.34
611.083	3.34345	68.2852	299.092
610.919	3.6883	66.3203	271.127
610.755	3.56377	62.5703	280.601
610.591	3.72662	62.8262	268.34
610.427	3.46798	52.2676	288.352
610.263	3.11355	61.5234	321.176
610.099	3.23808	58.5254	308.825
609.935	3.24766	51.9453	307.914
609.771	3.43924	53.332	290.762
609.607	3.82241	61.9316	261.615
609.443	3.67872	64.9805	271.833
609.279	3.63083	68.0469	275.419
609.115	3.46798	61.6133	288.352
608.951	2.93155	58.5703	341.117
608.787	2.71123	67.3828	368.836
608.623	3.00818	55.2988	332.427
608.458	3.33387	53.2422	299.951
608.294	3.17103	61.9336	315.355
608.13	3.11355	47.0273	321.176
607.966	3.07524	67.1992	325.178
607.802	3.08482	58.5254	324.168
607.638	2.89323	68.8555	345.634
607.474	2.92197	59.416	342.235
607.31	2.73039	77.2461	366.248
607.146	2.56754	53.4238	389.478
606.982	2.75912	63.5605	362.434
606.818	2.42385	58.1797	412.566
606.654	2.32806	64.9219	429.542
606.49	2.57712	66.7227	388.03
606.326	2.59628	61.0371	385.167
606.162	2.73997	61.7324	364.968
605.998	2.98902	53.0371	334.557
605.834	2.83576	63.1523	352.639
605.67	2.45259	61.9141	407.732
605.506	2.7687	57.0332	361.18
605.342	2.92197	65.0195	342.235
605.178	3.30514	64.4805	302.559
605.014	3.42967	45.0605	291.574
604.85	4.04273	50.7246	247.358
604.686	3.71704	63.5215	269.031
604.522	4.18642	51.7363	238.868
604.357	4.33011	51.4883	230.941
604.193	4.20558	60.1914	237.78
604.029	4.49295	53.9883	222.571
603.865	4.64622	77.4453	215.229
603.701	4.32053	58.8164	231.453
603.537	4.54085	58.6699	220.223
603.373	4.57916	69.2344	218.381
603.209	4.52169	61.9004	221.156
603.045	4.79948	70.2188	208.356
602.881	5.26886	56.4863	189.794
602.717	5.24012	64.8789	190.835
602.553	5.55624	59.8691	179.978
602.389	5.47002	54.9121	182.815
602.225	5.59455	54.584	178.745
602.061	5.9394	57.0215	168.367
601.897	5.43171	51.7773	184.104
601.733	5.22097	43.4531	191.535

601.569	5.30718	43.6465	188.424
601.405	5.57539	58.6113	179.359
601.241	5.56582	71.6523	179.668
601.077	5.65203	46.4551	176.928
600.913	5.21139	59.9863	191.887
600.749	4.78033	53.4805	209.191
600.585	4.68453	65.25	213.468
600.421	4.58874	70.0625	217.925
600.256	4.52169	49.9316	221.156
600.092	4.61748	58.5254	216.568
599.928	4.4259	82.7813	225.943
599.764	4.55043	57.6406	219.76
599.6	4.63664	63.6465	215.674
599.436	4.55043	55.1133	219.76
599.272	4.92401	58.8223	203.086
599.108	4.92401	61.2246	203.086
598.944	4.95275	77	201.908
598.78	5.09644	61.5645	196.216
598.616	5.4796	51.4844	182.495
598.452	4.98149	53.5723	200.743
598.288	5.04854	51.7441	198.077
598.124	4.98149	58.2832	200.743
597.96	5.02938	40.6426	198.832
597.796	4.68453	65.4102	213.468
597.632	5.15391	43.5801	194.027
597.468	5.21139	70.2461	191.887
597.304	5.02938	63.3809	198.832
597.14	4.85696	51.4492	205.89
596.976	4.92401	69.6914	203.086
596.812	4.76117	45.2461	210.033
596.648	4.41632	70.7773	226.433
596.484	4.61748	61.7871	216.568
596.32	5.1156	58.375	195.481
596.155	4.98149	49.9121	200.743
595.991	5.00065	58.5391	199.974
595.827	4.64622	62.127	215.229
595.663	4.57916	43.5176	218.381
595.499	4.39716	75.3516	227.42
595.335	4.30137	65.2656	232.484
595.171	4.29179	55.6445	233.003
595.007	4.22473	62.2832	236.701
594.843	4.29179	67.7031	233.003
594.679	4.35884	77.2227	229.419
594.515	4.54085	79.0313	220.223
594.351	4.64622	56.7148	215.229
594.187	4.79948	46.6699	208.356
594.023	4.78033	68.6055	209.191
593.859	4.45463	68.0313	224.485
593.695	4.47379	52.75	223.524
593.531	4.28221	66.25	233.524
593.367	3.99483	45.623	250.323
593.203	4.00441	82.0547	249.724
593.039	4.18642	73.1914	238.868
592.875	4.29179	71.543	233.003
592.711	4.20558	58.582	237.78
592.547	4.16726	55.3301	239.966
592.383	4.33011	56.7852	230.941
592.218	3.97568	48.1816	251.53
592.054	3.79367	58.1855	263.597
591.89	3.81283	63.4297	262.272
591.726	3.64999	83.9219	273.974
591.562	3.29556	53.5996	303.439
591.398	3.49672	53.7207	285.982
591.234	3.79367	72.4414	263.597
591.07	3.2764	52.2676	305.213
590.906	2.89323	62.5078	345.634
590.742	2.89323	61.8809	345.634
590.578	3.12313	62.082	320.191
590.414	3.0465	57.9785	328.246
590.25	3.19977	65.6055	312.523
590.086	2.73997	74.5742	364.968
589.922	2.73039	58.3574	366.248
589.758	3.4584	61.3418	289.151
589.594	3.65956	70.4063	273.257
589.43	3.20934	60.2559	311.59
589.266	2.88365	72.8438	346.782
589.102	2.05985	45.2656	485.473
588.938	2.26101	81.4688	442.28
588.774	2.97945	56.707	335.633
588.61	3.23808	47.0898	308.825
588.446	4.35884	58.5723	229.419
588.282	5.65203	61.9277	176.928
588.117	5.47002	46.7188	182.815
587.953	3.23808	60.2188	308.825
587.789	2.31848	60.4453	431.316
587.625	1.9449	63.627	514.166
587.461	1.29351	83.1836	773.087
587.297	1.39889	66.4297	714.855
587.133	3.14229	70.5234	318.239
586.969	3.97568	50.7305	251.53
586.805	3.34345	64.0703	299.092
586.641	1.07319	76.8047	931.798
586.477	-1.49402	66.7578	-669.336
586.313	-2.06877	61.0898	-483.38
586.149	-2.33698	63.6953	-427.902
585.985	-2.39446	67.2969	-417.631
585.821	-1.65686	60.3184	-603.55
585.657	0.153596	70.0234	6510.59
585.493	0.986982	46.1309	1013.19
585.329	1.01572	53.125	984.524
585.165	1.00614	46.0703	993.897
585.001	0.737924	62.5762	1355.15
584.837	1.29351	43.6328	773.087
584.673	2.11732	53.3125	472.295
584.509	2.83576	68.793	352.639
584.345	3.19977	69.2891	312.523
584.181	3.18061	48.2109	314.405
584.016	3.17103	68.1172	315.355
583.852	3.07524	76.9375	325.178
583.688	2.78786	45.4043	358.698
583.524	2.59628	68.7383	385.167
583.36	2.47175	53.4063	404.572
583.196	2.47175	41.6641	404.572
583.032	2.44301	62.1836	409.331
582.868	2.60586	54.1035	383.751
582.704	2.42385	57.4473	412.566
582.54	2.42385	67.043	412.566

582.376	2.3568	53.3594	424.304
582.212	2.61544	61.9824	382.345
582.048	2.31848	62.8555	431.316
581.884	2.31848	59.7246	431.316
581.72	2.04069	70.3242	490.031
581.556	1.68626	63.2363	593.028
581.392	1.715	56.8574	583.091
581.228	2.23227	53.5234	447.974
581.064	2.8645	61.791	349.102
580.9	3.58293	66.2969	279.101
580.736	4.28221	47.1953	233.524
580.572	3.97568	62.2559	251.53
580.408	2.89323	62.0957	345.634
580.244	2.22269	50.0996	449.905
580.08	1.70542	66.5234	586.366
579.915	1.08277	66.5117	923.554
579.751	1.04446	70.2695	957.435
579.587	2.1269	68.793	470.168
579.423	2.73039	68.8555	366.248
579.259	3.00818	75.5703	332.427
579.095	2.93155	45.0605	341.117
578.931	2.79744	60.25	357.47
578.767	2.61544	68.8594	382.345
578.603	2.64417	68.9258	378.19
578.439	2.44301	40.2422	409.331
578.275	2.48133	68.793	403.01
578.111	2.85492	60.9199	350.273
577.947	2.8645	76.125	349.102
577.783	2.6346	45.6738	379.565
577.619	2.54838	57.9688	392.406
577.455	2.64417	78.832	378.19
577.291	2.61544	48.3574	382.345
577.127	2.67291	53.5391	374.124
576.963	2.73997	51.2617	364.968
576.799	2.60586	56.1094	383.751
576.635	2.93155	74.7383	341.117
576.471	3.01776	57.5195	331.371
576.307	2.89323	60.6816	345.634
576.143	2.95071	73.7617	338.902
575.978	3.08482	48.3828	324.168
575.814	3.05608	45.0156	327.217
575.65	3.10397	45.1406	322.168
575.486	3.07524	62.0039	325.178
575.322	2.88365	89.9063	346.782
575.158	2.78786	58	358.698
574.994	2.54838	63.3516	392.406
574.83	2.34722	53.6602	426.036
574.666	2.09816	70.6367	476.607
574.502	2.21311	53.5078	451.852
574.338	2.06943	65.0859	483.226
574.174	2.15564	64.1484	463.9
574.01	2.09816	77.9883	476.607
573.846	2.41428	59.1523	414.203
573.682	2.6346	45.3203	379.565
573.518	2.89323	60.627	345.634
573.354	3.17103	54.4902	315.355
573.19	3.30514	36.2832	302.559
573.026	3.05608	67.5	327.217
572.862	3.23808	62.166	308.825
572.698	3.39135	63.4551	294.868
572.534	3.42967	44.5	291.574
572.37	3.31472	70.1211	301.685
572.206	3.46798	57.707	288.352
572.042	3.41051	56.8887	293.212
571.877	3.41051	64.4609	293.212
571.713	3.48714	76.8516	286.768
571.549	3.55419	68.7852	281.358
571.385	3.99483	35.168	250.323
571.221	4.12894	51.6055	242.193
571.057	3.78409	81.7188	264.264
570.893	4.06189	50.1738	246.191
570.729	4.18642	75.8086	238.868
570.565	4.196	57.1035	238.322
570.401	3.90862	35.0723	255.845
570.237	4.09063	63.2578	244.461
570.073	4.00441	56.7539	249.724
569.909	3.64999	60.7266	273.974
569.745	3.20934	37.1563	311.59
569.581	3.24766	52.1738	307.914
569.417	3.15187	55.3184	317.272
569.253	3.05608	43.7852	327.217
569.089	3.21892	53.3652	310.663
568.925	3.82241	59.0957	261.615
568.761	4.15768	42.9785	240.519
568.597	4.04273	51.3086	247.358
568.433	4.45463	56.6875	224.485
568.269	4.38758	61.9063	227.916
568.105	4.04273	58.2461	247.358
567.941	4.01399	55.6172	249.128
567.776	4.07147	60.2793	245.612
567.612	3.89904	61.9316	256.473
567.448	3.77451	77.3633	264.935
567.284	3.79367	47.0313	263.597
567.12	3.56377	71.6797	280.601
566.956	3.49672	69.5469	285.982
566.792	3.14229	63.3945	318.239
566.628	2.88365	43.5977	346.782
566.464	2.93155	43.4609	341.117
566.3	3.20934	79.9609	311.59
566.136	3.56377	49.7969	280.601
565.972	3.90862	71.832	255.845
565.808	3.99483	77.7578	250.323
565.644	4.10021	48.9258	243.89
565.48	4.04273	65.4688	247.358
565.316	3.78409	63.6602	264.264
565.152	3.58293	53.7227	279.101
564.988	3.62125	61.0605	276.148
564.824	3.41051	47.7871	293.212
564.66	3.14229	46.1367	318.239
564.496	3.41051	68.6172	293.212
564.332	3.65956	43.1172	273.257
564.168	3.74578	34.5176	266.967
564.004	4.00441	63.5332	249.724
563.84	4.23431	54.834	236.166
563.675	4.25347	50.4531	235.102
563.511	4.13852	57.0918	241.632
563.347	3.9661	82.1641	252.137

563.183	3.58293	48.4902	279.101
563.019	3.18061	61.7559	314.405
562.855	2.79744	53.3086	357.47
562.691	2.69207	70.3906	371.461
562.527	3.10397	60.6289	322.168
562.363	2.78786	43.6152	358.698
562.199	2.73039	46.6367	366.248
562.035	3.31472	53.2441	301.685
561.871	3.62125	50.2305	276.148
561.707	3.4584	45.3477	289.151
561.543	3.31472	58.6797	301.685
561.379	3.53504	46.6953	282.883
561.215	2.23227	60.1543	447.974
561.051	1.46594	50.3242	682.156
560.887	1.29351	54	773.087
560.723	1.72458	61.0176	579.853
560.559	1.27436	59.5898	784.71
560.395	0.919928	63.4453	1087.04
560.231	1.04446	46.6152	957.435
560.067	1.19772	49.9902	834.917
559.903	1.34141	71.9844	745.484
559.738	1.68626	52.5957	593.028
559.574	2.48133	45.8047	403.01
559.41	2.88365	59.4219	346.782
559.246	2.89323	65.9102	345.634
559.082	2.61544	56.6641	382.345
558.918	2.60586	54.8652	383.751
558.754	2.59628	57.0059	385.167
558.59	2.45259	79.0547	407.732
558.426	2.48133	53.6699	403.01
558.262	2.3089	56.8438	433.106
558.098	2.37596	51.6602	420.883
557.934	2.28017	41.6406	438.564
557.77	2.15564	60.3301	463.9
557.606	2.16522	43.8184	461.847
557.442	2.15564	65.6758	463.9
557.278	2.05985	61.9063	485.473
557.114	2.06943	55.3887	483.226
556.95	2.71123	40.457	368.836
556.786	2.60586	60.6094	383.751
556.622	2.38554	60.2832	419.193
556.458	2.47175	57.1055	404.572
556.294	2.59628	49.3828	385.167
556.13	2.67291	58.6074	374.124
555.966	2.51007	63.7871	398.396
555.802	1.83953	46.3105	543.618
555.637	1.897	59.8477	527.148
555.473	2.28975	49.6621	436.73
555.309	2.1269	61.8672	470.168
555.145	2.11732	56.123	472.295
554.981	2.23227	48.7461	447.974
554.817	2.28975	52.9961	436.73
554.653	2.26101	74.5781	442.28
554.489	2.38554	48.5195	419.193
554.325	2.4047	69.125	415.853
554.161	2.1269	50.1738	470.168
553.997	1.82037	78.1992	549.339
553.833	1.81079	55.0195	552.246
553.669	1.4851	47.2188	673.356
553.505	1.36057	59.0898	734.987
553.341	1.45636	58.4336	686.643
553.177	1.84911	56.6816	540.802
553.013	1.72458	46.9238	579.853
552.849	2.16522	60.7383	461.847
552.685	2.15564	52.2949	463.9
552.521	1.75331	53.6504	570.349
552.357	1.61921	68.7852	617.587
552.193	1.92574	42.3301	519.281
552.029	1.46594	53.2793	682.156
551.865	1.49468	55.3301	669.041
551.701	1.87784	54.918	532.526
551.536	1.81079	51.1719	552.246
551.372	1.33183	61.3496	750.846
551.208	1.81079	53.1953	552.246
551.044	2.09816	51.25	476.607
550.88	2.5388	60.6074	393.886
550.716	2.34722	65.1172	426.036
550.552	2.18438	41.623	457.797
550.388	1.99279	58.8184	501.808
550.224	1.67668	56.9863	596.416
550.06	1.51384	51.7109	660.574
549.896	1.22646	53.3281	815.354
549.732	1.27436	56.8105	784.71
549.568	1.62878	51.8066	613.955
549.404	1.61921	55.1523	617.587
549.24	1.14025	44.9492	877.002
549.076	1.19772	58.2715	834.917
548.912	1.19772	48.623	834.917
548.748	1.14025	68.9727	877.002
548.584	1.59047	42.0586	628.746
548.42	1.97363	67.6406	506.679
548.256	1.82037	46.8066	549.339
548.092	1.51384	62.0547	660.574
547.928	1.9449	55.9961	514.166
547.764	1.74373	71.7305	573.482
547.6	1.29351	63.6191	773.087
547.435	1.26478	58.4414	790.653
547.271	1.56173	56.748	640.315
547.107	1.16899	51.7715	855.442
546.943	1.14025	49.6777	877.002
546.779	1.26478	62.9063	790.653
546.615	1.715	60.5391	583.091
546.451	1.45636	57.1035	686.643
546.287	1.46594	56.8828	682.156
546.123	1.59047	41.6777	628.746
545.959	1.33183	68.0352	750.846
545.795	1.13067	63.0879	884.432
545.631	1.2073	41.6426	828.293
545.467	1.2073	63.9297	828.293
545.303	0.977403	72.1445	1023.12
545.139	0.986982	64.9023	1013.19
544.975	1.16899	39.873	855.442
544.811	1.2073	50.2168	828.293
544.647	1.37015	72.3398	729.848
544.483	1.34141	46.8184	745.484
544.319	0.939086	69.9531	1064.87
544.155	1.14025	75.4141	877.002

543.991	1.49468	60.6797	669.041
543.827	1.4851	45.5625	673.356
543.663	1.96406	50.4844	509.151
543.499	2.11732	44.0898	472.295
543.334	1.78205	89.9844	561.151
543.17	1.81079	46.6875	552.246
543.006	1.92574	60.3145	519.281
542.842	1.61921	59.9121	617.587
542.678	1.23604	68.0547	809.035
542.514	1.58089	59.4277	632.555
542.35	1.58089	54.293	632.555
542.186	1.01572	43.9453	984.524
542.022	1.00614	62.0566	993.897
541.858	1.08277	68.1602	923.554
541.694	1.04446	53.1992	957.435
541.53	0.939086	58.5898	1064.87
541.366	1.32225	60.2305	756.285
541.202	1.68626	33.4023	593.028
541.038	2.09816	51.6387	476.607
540.874	1.897	58.0664	527.148
540.71	1.51384	45.2168	660.574
540.546	0.89119	60.2559	1122.09
540.382	0.498445	68.6016	2006.24
540.218	0.144017	68.8867	6943.64
540.054	-0.258308	41.9043	-3871.35
539.89	0.0482252	60.7813	20736
539.726	0.795399	45.5879	1257.23
539.562	1.45636	41.9414	686.643
539.397	1.65752	70.3867	603.31
539.233	2.21311	68.0898	451.852
539.069	2.03111	65.6523	492.342
538.905	1.33183	69.4766	750.846
538.741	1.00614	68.9336	993.897
538.577	0.661291	42.4492	1512.19
538.413	0.345179	42.498	2897.05
538.249	0.450549	48.2461	2219.51
538.085	0.527183	56.1484	1896.88
537.921	0.833715	65.4219	1199.45
537.757	0.919928	46.5645	1087.04
537.593	1.07319	44.8887	931.798
537.429	1.10193	70.5391	907.497
537.265	1.07319	58.7441	931.798
537.101	0.958244	46.793	1043.58
536.937	0.699607	63.5566	1429.37
536.773	0.632553	75.2617	1580.89
536.609	1.00614	65.6875	993.897
536.445	1.04446	60.4727	957.435
536.281	1.11151	64.9805	899.676
536.117	1.45636	53.1914	686.643
535.953	1.53299	63.5078	652.319
535.789	1.29351	47.1289	773.087
535.625	0.958244	59.168	1043.58
535.461	0.833715	56.8457	1199.45
535.296	0.546341	56.584	1830.36
535.132	-0.028408	69.3828	-35201.4
534.968	-0.267887	56.6875	-3732.92
534.804	-0.133779	62.3066	-7475.03
534.64	0.0290669	67.2305	34403.4
534.476	0.278125	51.4434	3595.51
534.312	0.862453	59.7695	1159.48
534.148	1.39889	44.4219	714.855
533.984	1.72458	40.9922	579.853
533.82	1.70542	55.6387	586.366
533.656	1.96406	60.4766	509.151
533.492	1.97363	73.5352	506.679
533.328	2.15564	68.8555	463.9
533.164	2.16522	69.0586	461.847
533	2.3568	50.3984	424.304
532.836	2.28975	77.8594	436.73
532.672	2.3568	61.7832	424.304
532.508	2.44301	68.9609	409.331
532.344	2.50049	50.3613	399.922
532.18	2.22269	44.998	449.905
532.016	2.09816	53.2031	476.607
531.852	1.96406	67.168	509.151
531.688	2.05985	54.0273	485.473
531.524	1.84911	89.4219	540.802
531.36	1.86826	58.7988	535.256
531.195	1.93532	56.916	516.711
531.031	1.78205	73.8086	561.151
530.867	1.78205	60.9453	561.151
530.703	1.897	63.3711	527.148
530.539	1.80121	63.4355	555.182
530.375	1.715	56.6289	583.091
530.211	1.75331	60.1797	570.349
530.047	1.97363	56.8965	506.679
529.883	1.897	55.0449	527.148
529.719	1.897	57.9023	527.148
529.555	2.05985	65.8398	485.473
529.391	2.05985	69.0938	485.473
529.227	2.04069	58.5645	490.031
529.063	2.08858	45.1172	478.793
528.899	2.1269	63.2109	470.168
528.735	2.04069	64.8594	490.031
528.571	2.00237	51.9648	499.408
528.407	2.22269	55.5449	449.905
528.243	2.08858	63.4961	478.793
528.079	2.31848	75.1563	431.316
527.915	2.37596	33.7305	420.883
527.751	2.47175	70.3711	404.572
527.587	2.50049	70.5234	399.922
527.423	2.38554	48.7129	419.193
527.259	2.32806	46.8828	429.542
527.094	2.04069	52.0508	490.031
526.93	2.04069	79.1563	490.031
526.766	1.87784	60.8613	532.526
526.602	2.04069	52.5293	490.031
526.438	2.09816	34.0703	476.607
526.274	1.90658	65.2461	524.499
526.11	2.09816	48.3887	476.607
525.946	2.06943	62.0664	483.226
525.782	1.90658	47.8555	524.499
525.618	1.86826	59.7969	535.256
525.454	2.23227	52.5664	447.974
525.29	2.41428	50.8398	414.203
525.126	2.28975	57.3301	436.73
524.962	1.97363	56.8262	506.679

524.798	2.16522	60.0977	461.847
524.634	2.28975	81.8828	436.73
524.47	2.41428	63.8398	414.203
524.306	2.25143	62.2227	444.162
524.142	2.73997	43.4199	364.968
523.978	2.47175	58.1797	404.572
523.814	2.50049	53.2539	399.922
523.65	2.3568	57.0332	424.304
523.486	2.25143	57.3828	444.162
523.322	2.15564	51.9629	463.9
523.157	2.03111	44.9316	492.342
522.993	1.897	51.9238	527.148
522.829	2.00237	64.5156	499.408
522.665	2.26101	72.625	442.28
522.501	2.48133	55.2656	403.01
522.337	2.32806	58.8945	429.542
522.173	2.57712	62.9375	388.03
522.009	2.47175	48.3496	404.572
521.845	2.56754	48.4707	389.478
521.681	2.18438	60.0293	457.797
521.517	2.05985	54.7266	485.473
521.353	1.74373	71.8789	573.482
521.189	1.56173	70.25	640.315
521.025	1.4851	47.5781	673.356
520.861	2.19395	58.7598	455.798
520.697	2.1269	41.3945	470.168
520.533	2.60586	54.9512	383.751
520.369	3.10397	56.8906	322.168
520.205	3.05608	48.7695	327.217
520.041	2.16522	56.6699	461.847
519.877	2.26101	49.8535	442.28
519.713	2.26101	58.5313	442.28
519.549	2.11732	45.4609	472.295
519.385	1.82037	45.4727	549.339
519.221	2.37596	50.252	420.883
519.056	2.64417	53.2891	378.19
518.892	2.59628	55.1289	385.167
518.728	2.23227	55.334	447.974
518.564	1.99279	52.1602	501.808
518.4	2.16522	46.9395	461.847
518.236	1.93532	50.2559	516.711
518.072	1.78205	60.8027	561.151
517.908	1.70542	65.1953	586.366
517.744	1.9449	62.7168	514.166
517.58	1.96406	53.4766	509.151
517.416	2.05985	52.9395	485.473
517.252	2.45259	51.3203	407.732
517.088	3.05608	44.7383	327.217
516.924	2.59628	41.2402	385.167
516.76	2.3568	60.9961	424.304
516.596	2.25143	43.5547	444.162
516.432	1.67668	38.4297	596.416
516.268	0.939086	46.9082	1064.87
516.104	1.14025	63.877	877.002
515.94	1.4372	63.5742	695.796
515.776	1.96406	53.2578	509.151
515.612	1.92574	59.8633	519.281
515.448	2.13648	48.5566	468.06
515.284	2.57712	68.5977	388.03
515.12	2.83576	53.3848	352.639
514.955	2.31848	58.2383	431.316
514.791	3.11355	36.8672	321.176
514.627	3.52546	65.9102	283.651
514.463	3.78409	40.3691	264.264
514.299	3.87989	50.3809	257.74
514.135	4.33011	56.9141	230.941
513.971	3.82241	70.6328	261.615
513.807	3.46798	69.5781	288.352
513.643	3.48714	51.2813	286.768
513.479	3.46798	39.5586	288.352
513.315	3.33387	39.4023	299.951
513.151	3.67872	39.6191	271.833
512.987	3.6883	55.002	271.127
512.823	3.77451	51.5234	264.935
512.659	4.06189	66.5859	246.191
512.495	4.22473	49.2637	236.701
512.331	3.72662	60.5234	268.34
512.167	3.53504	60.2891	282.883
512.003	4.09063	65.4219	244.461
511.839	3.6883	53.4316	271.127
511.675	3.17103	66.8242	315.355
511.511	2.89323	48.6719	345.634
511.347	2.51007	62.3086	398.396
511.183	2.41428	51.998	414.203
511.019	3.19977	66.9883	312.523
510.854	3.4584	56.7285	289.151
510.69	3.43924	63.6797	290.762
510.526	3.26682	60.7598	306.108
510.362	3.26682	63.7188	306.108
510.198	3.33387	50.123	299.951
510.034	3.21892	58.4277	310.663
509.87	3.2764	51.9004	305.213
509.706	3.29556	53.8477	303.439
509.542	3.62125	47.4688	276.148
509.378	3.64999	42.6328	273.974
509.214	3.85115	55.125	259.663
509.05	4.196	58.8184	238.322
508.886	3.89904	51.8262	256.473
508.722	3.58293	59.9219	279.101
508.558	3.53504	51.0508	282.883
508.394	3.11355	62.7422	321.176
508.23	2.80702	47.6543	356.25
508.066	2.7687	42.4375	361.18
507.902	2.60586	48.584	383.751
507.738	2.61544	81.4453	382.345
507.574	2.34722	70.1563	426.036
507.41	2.21311	61.0488	451.852
507.246	2.02153	58.9785	494.675
507.082	2.09816	55.1445	476.607
506.917	2.15564	46.6367	463.9
506.753	1.99279	63.4316	501.808
506.589	1.92574	48.6289	519.281
506.425	1.83953	57.3203	543.618
506.261	1.64794	53.7441	606.817
506.097	1.64794	52.0156	606.817
505.933	1.62878	65.4961	613.955
505.769	1.68626	48.7793	593.028

505.605	1.74373	50.543	573.482
505.441	2.21311	55.1582	451.852
505.277	2.47175	58.8105	404.572
505.113	2.8645	52.7734	349.102
504.949	3.00818	65.7852	332.427
504.785	2.98902	43.3008	334.557
504.621	3.11355	56.5781	321.176
504.457	3.14229	64.6914	318.239
504.293	3.24766	54.6582	307.914
504.129	3.05608	55.0996	327.217
503.965	3.21892	54.7676	310.663
503.801	3.46798	67.5391	288.352
503.637	3.62125	49.9766	276.148
503.473	3.53504	68.7969	282.883
503.309	3.18061	66.5547	314.405
503.145	2.51965	56.7734	396.881
502.981	1.93532	79.5664	516.711
502.816	1.715	54.5195	583.091
502.652	1.64794	54.4961	606.817
502.488	2.04069	64.7969	490.031
502.324	2.3568	53.4043	424.304
502.16	2.4047	54.2754	415.853
501.996	2.61544	64.0586	382.345
501.832	2.7687	54.623	361.18
501.668	2.56754	60.3105	389.478
501.504	2.83576	80.6133	352.639
501.34	3.18061	60.3535	314.405
501.176	2.51007	63.5957	398.396
501.012	2.25143	52.6348	444.162
500.848	2.79744	67.3516	357.47
500.684	2.91239	85.2578	343.36
500.52	2.71123	62.125	368.836
500.356	2.69207	57.9609	371.461
500.192	2.73997	64.5664	364.968
500.028	2.71123	60.0703	368.836
499.864	2.5388	53.1445	393.886
499.7	2.61544	72.7031	382.345
499.536	2.80702	63.1719	356.25
499.372	2.80702	54.502	356.25
499.208	2.96029	65.0859	337.805
499.044	2.57712	61.6387	388.03
498.88	2.45259	48.0723	407.732
498.715	2.85492	62.6934	350.273
498.551	2.78786	51.248	358.698
498.387	2.67291	56.5586	374.124
498.223	2.91239	56.125	343.36
498.059	2.98902	65.668	334.557
497.895	3.17103	57.3848	315.355
497.731	3.05608	52.9043	327.217
497.567	2.96029	54.7695	337.805
497.403	2.75912	85.1875	362.434
497.239	2.6346	52.0762	379.565
497.075	2.54838	56.6641	392.406
496.911	2.48133	62.3027	403.01
496.747	2.50049	51.1523	399.922
496.583	2.54838	58.5508	392.406
496.419	2.51965	58.584	396.881
496.255	2.69207	56.6484	371.461
496.091	3.08482	56.8691	324.168
495.927	2.8645	63.8711	349.102
495.763	2.73997	63.7246	364.968
495.599	2.73039	64.7227	366.248
495.435	2.89323	62.4531	345.634
495.271	2.69207	58.5313	371.461
495.107	2.60586	53.2227	383.751
494.943	2.71123	56.3457	368.836
494.779	2.73997	56.2031	364.968
494.614	2.8645	72.7695	349.102
494.45	2.89323	71.3359	345.634
494.286	2.95071	84.7305	338.902
494.122	3.19977	63.2734	312.523
493.958	3.12313	57.7656	320.191
493.794	3.21892	67.6602	310.663
493.63	3.17103	70.9492	315.355
493.466	2.97945	76.4414	335.633
493.302	3.29556	47.9668	303.439
493.138	3.4584	57.8164	289.151
492.974	3.39135	60.0313	294.868
492.81	3.31472	65.7734	301.685
492.646	4.33011	54.3047	230.941
492.482	4.01399	76.3789	249.128
492.318	4.49295	51.4492	222.571
492.154	4.57916	72.9453	218.381
491.99	4.15768	55.7207	240.519
491.826	2.83576	36.2969	352.639
491.662	3.48714	46.1953	286.768
491.498	3.49672	52.8848	285.982
491.334	4.04273	71.5781	247.358
491.17	4.54085	55.8203	220.223
491.006	5.14433	60.4531	194.389
490.842	5.88193	64.7813	170.012
490.678	6.75363	84.4961	148.069
490.513	7.52954	66.5039	132.81
490.349	8.48746	79.9727	117.821
490.185	8.71736	53.1309	114.714
490.021	8.81315	52.8398	113.467
489.857	8.81315	62.5938	113.467
489.693	8.96641	65.9805	111.527
489.529	9.57948	53.1016	104.39
489.365	10.1542	46.1777	98.4811
489.201	10.4608	57.6504	95.5953
489.037	10.2979	59.6152	97.107
488.873	9.35916	51.7695	106.847
488.709	8.07555	49.0742	123.831
488.545	7.22301	57.2266	138.446
488.381	5.67119	70.543	176.33
488.217	3.18061	67.5898	314.405
488.053	1.24562	70.0234	802.814
487.889	1.2073	79.9219	828.293
487.725	0.824136	65.6836	1213.39
487.561	1.32225	60.2441	756.285
487.397	2.60586	69.9883	383.751
487.233	3.6883	77.1758	271.127
487.069	3.81283	63.7734	262.272
486.905	4.39716	92.0625	227.42
486.741	4.16726	63.0273	239.966
486.577	4.04273	74.125	247.358

486.412	3.85115	88.0469	259.663
486.248	4.32053	87.0195	231.453
486.084	5.14433	75.0273	194.389
485.92	6.11183	82.7031	163.617
485.756	7.12722	94.375	140.307
485.592	7.35712	86.2852	135.923
485.428	7.25175	90.0117	137.898
485.264	7.19427	97.9727	138.999
485.1	7.33796	93.6211	136.278
484.936	7.5008	60.7109	133.319
484.772	8.07555	84.5742	123.831
484.608	9.03347	85.1992	110.699
484.444	10.0584	73.5664	99.419
484.28	11.2558	79.8477	88.8428
484.116	13.0376	98.9961	76.7015
483.952	16.1699	101.043	61.8432
483.788	19.5418	70.918	51.1724
483.624	23.4309	76.082	42.6786
483.46	26.5346	77.3516	37.6867
483.296	29.0252	70.1953	34.4529
483.132	30.2321	70.6328	33.0774
482.968	29.2359	84.2617	34.2045
482.804	26.343	80.1563	37.9608
482.64	22.9999	70.5547	43.4785
482.476	21.3523	61.5566	46.8335
482.311	22.5592	84.9531	44.3278
482.147	23.8333	59.9668	41.9582
481.983	21.7929	70.0313	45.8865
481.819	16.6106	65.2227	60.2026
481.655	11.5432	59.5254	86.6311
481.491	7.67323	63.0352	130.323
481.327	6.33215	56.4883	157.924
481.163	8.78441	75.9414	113.838
480.999	10.6619	54.4043	93.7917
480.835	9.96265	72.5742	100.375
480.671	7.56786	46.7402	132.138
480.507	5.08686	70.2617	196.585
480.343	1.45636	64.9414	686.643
480.179	-2.89257	66.7266	-345.713
480.015	-5.46937	65.3906	-182.837
479.851	-4.07081	55.8574	-245.651
479.687	-2.35614	65.0859	-424.423
479.523	-0.995902	63.5332	-1004.11
479.359	1.05404	66.9961	948.734
479.195	1.65752	84.0273	603.31
479.031	1.92574	51.5176	519.281
478.867	2.04069	50.0547	490.031
478.703	2.31848	70.5742	431.316
478.539	2.69207	66.3516	371.461
478.375	2.67291	58.8867	374.124
478.21	2.19395	68.5977	455.798
478.046	2.70165	76.3125	370.144
477.882	3.60209	67.7578	277.617
477.718	2.50049	71.1406	399.922
477.554	3.58293	59.8164	279.101
477.39	3.65956	75.0586	273.257
477.226	3.52546	71.3242	283.651
477.062	2.88365	54.3516	346.782
476.898	2.97945	67.6172	335.633
476.734	2.78786	70.0469	358.698
476.57	2.6346	62.9648	379.565
476.406	2.78786	59.7051	358.698
476.242	2.89323	62.9492	345.634
476.078	3.19977	59.7988	312.523
475.914	3.62125	55.1953	276.148
475.75	4.04273	57.2617	247.358
475.586	5.19223	56.0801	192.596
475.422	7.33796	71.875	136.278
475.258	7.52954	72.1758	132.81
475.094	5.84361	63.9238	171.127
474.93	3.59251	96.625	278.357
474.766	-0.382837	87.043	-2612.08
474.602	-6.39854	93.9336	-156.286
474.438	-10.1631	99.0859	-98.3947
474.274	-8.91786	69.6211	-112.135
474.109	-5.51726	72.8242	-181.249
473.945	-2.73931	74.6211	-365.056
473.781	-1.01506	104.035	-985.163
473.617	0.469708	84.457	2128.98
473.453	2.51007	109.902	398.396
473.289	3.39135	93.9492	294.868
473.125	3.67872	94.8594	271.833
472.961	4.86654	82.1211	205.485
472.797	5.78614	88.5391	172.827
472.633	5.71908	74.5234	174.853
472.469	6.37046	111	156.974
472.305	6.86858	84.543	145.591
472.141	6.677	82.6133	149.768
471.977	6.45668	94.3516	154.878
471.813	7.51038	83.7109	133.149
471.649	9.21547	89.8789	108.513
471.485	11.3899	73.6328	87.7968
471.321	13.6219	84.1914	73.4113
471.157	14.8959	76.793	67.1325
470.993	14.005	101.875	71.4028
470.829	9.33042	74.4492	107.176
470.665	4.378	89.1602	228.415
470.501	4.01399	98.7773	249.128
470.337	6.17888	82.1406	161.842
470.173	8.82273	89.2969	113.344
470.008	12.6065	75.2852	79.3242
469.844	18.1337	95.8828	55.1461
469.68	22.9137	115.172	43.6421
469.516	26.2472	75.5625	38.0993
469.352	28.4887	76.3047	35.1016
469.188	28.8527	108.273	34.6588
469.024	28.2971	64.7969	35.3393
468.86	28.3834	75.4805	35.2319
468.696	27.4063	62.7559	36.488
468.532	25.1456	73.0859	39.7684
468.368	23.134	84.2617	43.2265
468.204	23.2968	84.2266	42.9243
468.04	22.9711	70.7031	43.5329
467.876	18.6701	69.3555	53.5616
467.712	15.691	60.0098	63.7309
467.548	12.2137	71.5859	81.875
467.384	0.316441	79.8906	3160.14

467.22	-14.3492	70.2695	-69.6901
467.056	-23.2291	67.7383	-43.0494
466.892	-23.6985	80.625	-42.1968
466.728	-20.4607	62.3926	-48.8741
466.564	-13.3338	93.9219	-74.9971
466.4	-1.49402	54.3633	-669.336
466.236	8.43956	74.8984	118.49
466.071	13.6219	80.4414	73.4113
465.907	15.8442	57.8105	63.1144
465.743	16.2945	68.8086	61.3705
465.579	16.6489	72.3984	60.0641
465.415	19.1491	71.418	52.2219
465.251	21.0936	70.3164	47.4077
465.087	20.5859	66.7852	48.5769
464.923	16.8596	64.8633	59.3133
464.759	12.731	60.918	78.5483
464.595	9.59864	57.7266	104.181
464.431	8.10429	52.8477	123.391
464.267	7.69239	59.4844	129.999
464.103	7.56786	57.4004	132.138
463.939	7.81692	58.8516	127.928
463.775	7.89355	59.1426	126.686
463.611	6.96437	49.4453	143.588
463.447	6.01604	61.8945	166.222
463.283	5.66161	46.2227	176.628
463.119	5.07728	58.1953	196.956
462.955	5.40297	73.832	185.083
462.791	5.60413	69.7031	178.44
462.627	5.74782	58.0137	173.979
462.463	6.17888	65.1055	161.842
462.299	6.59078	56.3438	151.727
462.135	6.3992	54.5469	156.269
461.97	5.66161	60.1289	176.628
461.806	4.8378	56.3516	206.706
461.642	3.9661	69.6484	252.137
461.478	3.49672	62.3027	285.982
461.314	3.56377	57.8047	280.601
461.15	3.63083	50.998	275.419
460.986	3.84157	45.8066	260.31
460.822	3.9661	57.9336	252.137
460.658	3.65956	62.9922	273.257
460.494	3.71704	42.1582	269.031
460.33	3.31472	53.209	301.685
460.166	2.61544	63.459	382.345
460.002	2.13648	54.4883	468.06
459.838	2.88365	43.877	346.782
459.674	3.94694	69.4375	253.361
459.51	4.90485	74.8398	203.88
459.346	4.90485	51.1016	203.88
459.182	4.87612	59.2578	205.081
459.018	5.1156	54.4375	195.481
458.854	5.38381	47.9258	185.742
458.69	5.08686	53.4707	196.585
458.526	5.00065	57.2188	199.974
458.362	5.1156	60.8242	195.481
458.198	4.82822	42.1602	207.116
458.034	4.64622	58.5703	215.229
457.869	4.74201	56.9551	210.881
457.705	4.28221	63.6211	233.524
457.541	3.67872	85.7813	271.833
457.377	3.52546	74.9375	283.651
457.213	3.55419	48.9258	281.358
457.049	3.67872	56.0918	271.833
456.885	3.79367	67.7227	263.597
456.721	4.13852	58.2598	241.632
456.557	4.09063	55.957	244.461
456.393	3.9661	69.7422	252.137
456.229	3.75536	61.75	266.286
456.065	3.77451	65.6289	264.935
455.901	3.87989	46.0645	257.74
455.737	3.74578	64.3945	266.967
455.573	4.00441	47.4023	249.724
455.409	4.15768	66.332	240.519
455.245	4.10978	66.5391	243.322
455.081	4.378	63.0234	228.415
454.917	4.26305	52.7285	234.574
454.753	4.49295	56.416	222.571
454.589	4.77075	39.5488	209.611
454.425	4.96233	36.3086	201.518
454.261	5.04854	43.0254	198.077
454.097	5.62329	48.2773	177.832
453.933	6.3992	43.6543	156.269
453.768	7.28048	38.9004	137.354
453.604	8.62156	40.9746	115.988
453.44	9.89559	24.7588	101.055
453.276	10.183	36.6602	98.2032
453.112	10.0584	29.7031	99.419
452.948	11.2941	26.4854	88.5414
452.784	10.8727	49.5098	91.9738
452.62	10.2979	43.7754	97.107
452.456	10.4895	41.1836	95.3334
452.292	10.3171	27.166	96.9267
452.128	10.7769	35.709	92.7913
451.964	11.6869	42.6699	85.5659
451.8	10.9972	30.8174	90.9323
451.636	9.44537	39.1465	105.872
451.472	8.78441	30.5898	113.838
451.308	7.44333	44.2852	134.348
451.144	5.92024	44.3086	168.912
450.98	4.74201	32.4707	210.881
450.816	4.66538	47.627	214.345
450.652	4.39716	38.834	227.42
450.488	4.13852	39.2559	241.632
450.324	4.10021	37.8906	243.89
450.16	3.97568	43.0293	251.53
449.996	3.74578	30.9541	266.967
449.831	3.55419	44.8242	281.358
449.667	3.56377	15.7471	280.601
449.503	3.37219	28.3516	296.543
449.339	3.46798	33.8828	288.352
449.175	3.37219	47.8086	296.543
449.011	3.36261	47.4336	297.388
448.847	3.17103	29.7266	315.355
448.683	3.64999	35.3535	273.974
448.519	3.77451	40.6445	264.935
448.355	3.5063	36.6211	285.201
448.191	3.5063	41.375	285.201

448.027	3.37219	34.0938	296.543
447.863	3.12313	42.7578	320.191
447.699	3.11355	42.9453	321.176
447.535	3.17103	59.6992	315.355
447.371	3.17103	30.6318	315.355
447.207	3.11355	40.8594	321.176
447.043	3.23808	34.1465	308.825
446.879	3.29556	35.7383	303.439
446.715	3.24766	37.1152	307.914
446.551	3.23808	32.0215	308.825
446.387	3.30514	47.4727	302.559
446.223	3.18061	32.5234	314.405
446.059	3.26682	34.2539	306.108
445.895	3.33387	41.0801	299.951
445.73	3.26682	37.9453	306.108
445.566	3.18061	32.7793	314.405
445.402	3.30514	29.5244	302.559
445.238	3.17103	42.2129	315.355
445.074	3.19977	28.2178	312.523
444.91	3.05608	45.9375	327.217
444.746	3.0465	19.4639	328.246
444.582	3.0465	44.0938	328.246
444.418	3.07524	40.6973	325.178
444.254	2.95071	42.4316	338.902
444.09	3.12313	31.668	320.191
443.926	3.02734	33.0586	330.323
443.762	3.0465	43.1855	328.246
443.598	3.12313	41.0645	320.191
443.434	2.85492	34.002	350.273
443.27	3.12313	33.8418	320.191
443.106	3.36261	42.5781	297.388
442.942	3.19977	46.2129	312.523
442.778	3.39135	41.0313	294.868
442.614	3.21892	49.3672	310.663
442.45	3.14229	47.4863	318.239
442.286	2.75912	44.0781	362.434
442.122	2.93155	40.8887	341.117
441.958	3.05608	37.5527	327.217
441.794	3.26682	44.4375	306.108
441.629	3.15187	42.5625	317.272
441.465	3.48714	37.5684	286.768
441.301	3.72662	31.1084	268.34
441.137	3.59251	43.3418	278.357
440.973	3.41051	34.9277	293.212
440.809	3.31472	38.5	301.685
440.645	3.34345	28.2949	299.092
440.481	2.80702	37.4277	356.25
440.317	2.64417	26.7959	378.19
440.153	2.92197	45.9297	342.235
439.989	2.70165	40.3516	370.144
439.825	2.1269	33.3086	470.168
439.661	2.22269	40.3438	449.905
439.497	2.67291	45.4805	374.124
439.333	2.26101	37.9766	442.28
439.169	2.54838	47.8184	392.406
439.005	2.73997	35.793	364.968
438.841	2.73039	44.5234	366.248
438.677	2.85492	27.4707	350.273
438.513	3.30514	49.7109	302.559
438.349	3.59251	49.2012	278.357
438.185	3.37219	27.0234	296.543
438.021	3.17103	45.9141	315.355
437.857	3.21892	35.7773	310.663
437.693	2.97945	39.123	335.633
437.528	2.47175	33.8828	404.572
437.364	2.5388	40.877	393.886
437.2	3.08482	39.6465	324.168
437.036	3.15187	38.2324	317.272
436.872	3.2764	36.3242	305.213
436.708	3.31472	25.9727	301.685
436.544	3.21892	33.041	310.663
436.38	3.48714	45.9141	286.768
436.216	3.34345	41.0234	299.092
436.052	3.26682	49.791	306.108
435.888	3.31472	29.9756	301.685
435.724	3.52546	31.666	283.651
435.56	3.34345	24.6221	299.092
435.396	3.30514	35.3164	302.559
435.232	3.31472	42.3945	301.685
435.068	3.42967	48.7637	291.574
434.904	3.43924	35.7188	290.762
434.74	3.5063	45.9668	285.201
434.576	3.58293	46.3047	279.101
434.412	3.55419	36.0801	281.358
434.248	3.24766	30.8438	307.914
434.084	2.48133	37.2988	403.01
433.92	2.02153	39.2285	494.675
433.756	1.87784	44.418	532.526
433.591	2.1269	37.5098	470.168
433.427	2.28975	35.6426	436.73
433.263	2.66333	53.9453	375.469
433.099	3.26682	32.1465	306.108
432.935	3.34345	25.7588	299.092
432.771	3.30514	39.7227	302.559
432.607	3.49672	27.5049	285.982
432.443	3.2764	34.3691	305.213
432.279	3.18061	50.0371	314.405
432.115	3.14229	19.4063	318.239
431.951	3.29556	35.8203	303.439
431.787	3.18061	40.9199	314.405
431.623	3.29556	35.3906	303.439
431.459	3.21892	31.5996	310.663
431.295	3.12313	24.7207	320.191
431.131	3.05608	37.1133	327.217
430.967	3.26682	38.4805	306.108
430.803	3.0465	39.7734	328.246
430.639	3.12313	22.3018	320.191
430.475	2.78786	34.2656	358.698
430.311	2.96029	30.8398	337.805
430.147	2.91239	35.8633	343.36
429.983	2.80702	39.3008	356.25
429.819	2.92197	37.5938	342.235
429.655	3.26682	42.5996	306.108
429.49	3.19977	37.627	312.523
429.326	3.14229	45.877	318.239
429.162	3.11355	37.1113	321.176
428.998	3.30514	28.7471	302.559

428.834	3.40093	37.3965	294.037
428.67	3.39135	37.793	294.868
428.506	3.19977	34.4375	312.523
428.342	3.20934	36.1074	311.59
428.178	2.73997	30.9492	364.968
428.014	2.80702	27.7432	356.25
427.85	2.7687	29.708	361.18
427.686	2.70165	31.7051	370.144
427.522	2.92197	35.3164	342.235
427.358	2.73997	36.9844	364.968
427.194	2.96029	42.3867	337.805
427.03	3.00818	47.4492	332.427
426.866	2.91239	33.5059	343.36
426.702	2.85492	52.8281	350.273
426.538	2.92197	31.3291	342.235
426.374	2.98902	39.8906	334.557
426.21	2.89323	53.4961	345.634
426.046	2.54838	35.8223	392.406
425.882	2.69207	35.625	371.461
425.718	2.95071	43.9902	338.902
425.554	3.17103	40.9082	315.355
425.389	2.97945	37.6699	335.633
425.225	3.34345	30.7588	299.092
425.061	3.48714	35.6348	286.768
424.897	3.40093	52.2578	294.037
424.733	3.15187	52.8125	317.272
424.569	3.24766	54.6758	307.914
424.405	2.75912	45.9609	362.434
424.241	2.71123	47.7129	368.836
424.077	2.66333	56.3301	375.469
423.913	2.98902	46.498	334.557
423.749	2.97945	41.6602	335.633
423.585	2.96029	66.0391	337.805
423.421	2.88365	42.1328	346.782
423.257	2.91239	52.9043	343.36
423.093	2.88365	42.5898	346.782
422.929	2.91239	40.9492	343.36
422.765	3.18061	72.3867	314.405
422.601	3.69788	36.7832	270.425
422.437	4.00441	64.6875	249.724
422.273	3.62125	48.8574	276.148
422.109	3.71704	61.2852	269.031
421.945	4.89528	57.2969	204.279
421.781	5.44129	49.875	183.78
421.617	6.07351	39.5039	164.649
421.453	7.18469	43.0781	139.185
421.288	8.33419	38.2227	119.988
421.124	10.3362	47.0977	96.7471
420.96	11.1313	67.4805	89.8368
420.796	11.7827	46.4941	84.8703
420.632	11.6869	53.3711	85.5659
420.468	10.1159	55.2871	98.8542
420.304	5.62329	66.0938	177.832
420.14	1.72458	69.3555	579.853
419.976	-2.22203	53.6914	-450.038
419.812	-4.9042	50.168	-203.907
419.648	-5.05746	59.0645	-197.728
419.484	-2.91173	83.5078	-343.438
419.32	-0.583999	87.0078	-1712.33
419.156	1.14983	60.6406	869.696
418.992	2.31848	68.3281	431.316
418.828	2.15564	67.5469	463.9
418.664	1.56173	82.3477	640.315
418.5	1.11151	76.5703	899.676
418.336	-0.670211	66.875	-1492.07
418.172	0.958244	77.0664	1043.58
418.008	3.37219	61.8867	296.543
417.844	4.86654	70.6445	205.485
417.68	7.18469	90.7891	139.185
417.516	9.02389	59.2383	110.817
417.351	10.9206	81.543	91.5704
417.187	11.9838	68.8398	83.4457
417.023	12.5299	58.0137	79.8094
416.859	12.5586	85.2188	79.6267
416.695	11.3612	77.9023	88.0189
416.531	9.12926	78.4141	109.538
416.367	8.4204	68.1367	118.759
416.203	9.69443	64	103.152
416.039	10.7769	70.0859	92.7913
415.875	11.3995	77.4023	87.723
415.711	12.6927	78.6367	78.7854
415.547	13.3632	69.8555	74.8321
415.383	12.8172	74.6523	78.02
415.219	12.1754	68.1484	82.1326
415.055	11.8689	58.4473	84.2538
414.891	9.85727	70.6602	101.448
414.727	8.40124	73.3789	119.03
414.563	7.57744	56.9395	131.971
414.399	6.54289	52.541	152.838
414.235	6.56205	76.3945	152.391
414.071	7.26133	90.3281	137.716
413.907	6.56205	75.7813	152.391
413.743	6.51415	89.9727	153.512
413.579	6.27467	99.5195	159.371
413.415	6.06393	87.7148	164.91
413.25	5.74782	78.6133	173.979
413.086	5.08686	83.2031	196.585
412.922	3.89904	88.4336	256.473
412.758	2.3568	93.3906	424.304
412.594	0.78582	93.0117	1272.56
412.43	-0.382837	92.6602	-2612.08
412.266	-1.40781	74.9453	-710.325
412.102	-1.21622	67.5039	-822.218
411.938	-0.478628	88.3984	-2089.31
411.774	-0.0475663	86.3125	-21023.3
411.61	0.939086	87.707	1064.87
411.446	1.67668	82.8711	596.416
411.282	1.87784	83.4883	532.526
411.118	2.06943	59.668	483.226
410.954	2.38554	56.416	419.193
410.79	3.81283	59.1523	262.272
410.626	5.53708	46.2422	180.601
410.462	7.53912	69.0625	132.641
410.298	9.158	43.8984	109.194
410.134	8.45872	60.457	118.221
409.97	7.05058	45.6797	141.832
409.806	4.55043	49.0293	219.76

409.642	2.45259	57.4668	407.732
409.478	1.897	55.7266	527.148
409.314	4.10021	37.666	243.89
409.149	4.49295	56.748	222.571
408.985	5.02938	41.9609	198.832
408.821	7.19427	50.2813	138.999
408.657	6.59078	40.2461	151.727
408.493	1.36057	52.8984	734.987
408.329	-0.287045	47.8867	-3483.77
408.165	2.79744	36.5898	357.47
408.001	5.55624	41.582	179.978
407.837	6.60994	35.5098	151.287
407.673	7.15595	45.0488	139.744
407.509	7.43375	43.377	134.522
407.345	8.36293	23.9414	119.575
407.181	9.77106	38.373	102.343
407.017	10.3362	20.9658	96.7471
406.853	9.51243	30.6514	105.126
406.689	7.00269	43.2246	142.802
406.525	2.45259	57.4531	407.732
406.361	-2.13582	38.2207	-468.204
406.197	-4.42524	54.707	-225.977
406.033	-4.99999	43.3965	-200.001
405.869	-3.94628	40.2637	-253.403
405.705	-2.62436	29.376	-381.046
405.541	-0.861794	42.7031	-1160.37
405.377	1.75331	34.6738	570.349
405.212	3.00818	42.8887	332.427
405.048	3.79367	37.5625	263.597
404.884	5.22097	47.0449	191.535
404.72	6.06393	40.4883	164.91
404.556	6.25551	40.3965	159.859
404.392	6.59078	38.7656	151.727
404.228	6.29383	30.4785	158.886
404.064	5.65203	30.3008	176.928
403.9	5.04854	52.582	198.077
403.736	4.68453	52.8398	213.468
403.572	4.06189	32.4512	246.191
403.408	3.9182	46.6699	255.219
403.244	3.87031	44.6875	258.377
403.08	4.10021	28.6846	243.89
402.916	4.22473	33.6621	236.701
402.752	4.10978	30.5859	243.322
402.588	4.09063	43.3086	244.461
402.424	4.16726	25.665	239.966
402.26	3.89904	43.3457	256.473
402.096	3.85115	45.0254	259.663
401.932	3.93736	32.1992	253.977
401.768	4.196	54.5391	238.322
401.604	4.06189	47.9336	246.191
401.44	4.07147	48.2461	245.612
401.276	4.18642	48.9316	238.868
401.111	3.94694	43.0488	253.361
400.947	4.20558	39.4922	237.78
400.783	4.20558	35.7715	237.78
400.619	4.22473	46.8242	236.701
400.455	4.378	35.7344	228.415
400.291	4.00441	32.748	249.724
400.127	4.01399	27.666	249.128
399.963	3.93736	46.4551	253.977
399.799	3.78409	36.623	264.264
399.635	3.48714	51.0742	286.768
399.471	3.56377	28.835	280.601
399.307	3.4584	27.2832	289.151
399.143	3.78409	54.3125	264.264
398.979	4.378	44.6719	228.415
398.815	4.44506	32.0977	224.969
398.651	4.64622	43.3301	215.229
398.487	4.378	49.7832	228.415
398.323	4.34926	61.1836	229.924
398.159	4.10978	43.2285	243.322
397.995	3.67872	59.2305	271.833
397.831	3.4584	57.9102	289.151
397.667	4.52169	62.7832	221.156
397.503	4.378	83.1016	228.415
397.339	4.10021	58.8867	243.89
397.175	4.68453	60.752	213.468
397.01	5.08686	62.0313	196.585
396.846	4.61748	72.6445	216.568
396.682	5.02938	75.543	198.832
396.518	4.92401	91.7109	203.086
396.354	4.96233	82.7109	201.518
396.19	5.07728	89.5039	196.956
396.026	5.26886	76.5195	189.794
395.862	4.99107	82.7734	200.358
395.698	4.82822	86.5938	207.116
395.534	5.2497	74.9258	190.487
395.37	5.57539	95.4883	179.359
395.206	6.61952	89.6094	151.068
395.042	7.67323	80.0859	130.323
394.878	9.54116	79.8984	104.809
394.714	10.3171	73.5234	96.9267
394.55	11.524	81.7188	86.7751
394.386	12.2137	81.8789	81.875
394.222	10.9493	79.8945	91.3301
394.058	7.41459	68.1875	134.869
393.894	2.09816	55.5938	476.607
393.73	-2.67225	57.9004	-374.216
393.566	-5.67053	43.627	-176.35
393.402	-6.20696	57.7129	-161.109
393.238	-4.59766	41.5	-217.502
393.074	-2.38488	54.2227	-419.309
392.909	-0.871373	41.8711	-1147.61
392.745	3.89904	61.375	256.473
392.581	5.30718	40.6484	188.424
392.417	5.21139	47.4492	191.887
392.253	7.5008	45.6895	133.319
392.089	5.47002	54.1074	182.815
391.925	5.89151	49.1484	169.736
391.761	5.05812	36.0156	197.702
391.597	4.93359	61.9473	202.692
391.433	6.32257	42.0664	158.164
391.269	8.59283	54.7617	116.376
391.105	10.432	54.6973	95.8587
390.941	11.6773	43.291	85.6361
390.777	12.7023	46.1445	78.726
390.613	13.2387	57.209	75.536

390.449	13.8135	39.8535	72.3931
390.285	13.9284	41.832	71.7957
390.121	13.4016	59.6289	74.6182
389.957	11.9551	38.2988	83.6462
389.793	10.3075	52.6797	97.0168
389.629	8.61199	23.9727	116.117
389.465	7.26133	53.2051	137.716
389.301	5.81487	48.5566	171.973
389.137	4.8378	49.8535	206.706
388.972	4.12894	35.1211	242.193
388.808	3.9182	36.6816	255.219
388.644	3.34345	40.0586	299.092
388.48	2.8645	27.332	349.102
388.316	2.3089	24.2617	433.106
388.152	2.3568	29.2344	424.304
387.988	2.28975	37.6719	436.73
387.824	2.67291	24.7822	374.124
387.66	2.98902	26.5752	334.557
387.496	3.53504	57.123	282.883
387.332	3.84157	50.4199	260.31
387.168	4.01399	37.2578	249.128
387.004	4.10021	24.3398	243.89
386.84	4.35884	45.3008	229.419
386.676	5.04854	28.8496	198.077
386.512	5.04854	28.7217	198.077
386.348	4.89528	31.998	204.279
386.184	4.92401	32.0918	203.086
386.02	4.93359	37.1309	202.692
385.856	5.00065	40.207	199.974
385.692	5.17307	35.0996	193.309
385.528	5.00065	43.0098	199.974
385.364	5.18265	38.252	192.951
385.2	5.30718	41.8047	188.424
385.036	5.37423	35.4238	186.073
384.871	5.14433	57.6563	194.389
384.707	5.18265	38.2969	192.951
384.543	4.77075	25.6738	209.611
384.379	4.34926	62.8809	229.924
384.215	4.71327	35.4355	212.167
384.051	4.22473	60.8691	236.701
383.887	4.54085	53.2031	220.223
383.723	4.82822	44.002	207.116
383.559	5.36465	65.9492	186.405
383.395	4.66538	37.916	214.345
383.231	5.31676	50.627	188.085
383.067	5.14433	69.9219	194.389
382.903	5.53708	34.1426	180.601
382.739	4.95275	35.9395	201.908
382.575	4.57916	60.2598	218.381
382.411	4.10021	71.1602	243.89
382.247	5.56582	49.3379	179.668
382.083	5.36465	47.6504	186.405
381.919	5.57539	44.9492	179.359
381.755	6.677	51.4844	149.768
381.591	6.46626	73.8008	154.649
381.427	6.95479	36.7344	143.786
381.263	6.1693	36.6953	162.093
381.099	6.13099	75.5273	163.106
380.935	5.89151	43.4629	169.736
380.77	5.7574	44.793	173.69
380.606	6.22678	41.5684	160.597
380.442	7.03143	49.5352	142.219
380.278	6.59078	35.2949	151.727
380.114	5.05812	62.709	197.702
379.95	3.29556	40.0059	303.439
379.786	1.10193	47.7637	907.497
379.622	-1.25454	49.5391	-797.105
379.458	-2.29867	64.6406	-435.035
379.294	-2.17414	49.375	-459.952
379.13	-1.40781	42.9746	-710.325
378.966	-0.0954621	62.209	-10475.4
378.802	1.52341	44.0586	656.42
378.638	3.33387	44.1367	299.951
378.474	5.53708	45.7617	180.601
378.31	7.52954	27.7109	132.81
378.146	8.96641	36.9414	111.527
377.982	10.1542	44.6055	98.4811
377.818	10.9206	51.1777	91.5704
377.654	11.3612	30.5156	88.0189
377.49	11.3804	36.8223	87.8707
377.326	10.911	43.2598	91.6508
377.162	10.9206	44.9414	91.5704
376.998	10.729	38.6309	93.2055
376.834	10.2692	36.8926	97.3788
376.669	9.44537	33.6328	105.872
376.505	8.52577	38.3379	117.291
376.341	7.33796	42.9941	136.278
376.177	7.34754	36.9629	136.1
376.013	8.05639	27.5098	124.125
375.849	8.32461	48.4316	120.126
375.685	8.26714	38.5391	120.961
375.521	8.04682	36.7383	124.273
375.357	8.01808	24.0352	124.718
375.193	7.21343	46.7148	138.63
375.029	6.96437	37.3652	143.588
374.865	6.59078	58.5273	151.727
374.701	6.36089	35.9102	157.211
374.537	5.76698	50.6875	173.401
374.373	5.65203	34.3398	176.928
374.209	5.26886	42.4395	189.794
374.045	4.90485	34.1641	203.88
373.881	4.64622	55.2402	215.229
373.717	3.97568	40.3984	251.53
373.553	3.87031	49.7793	258.377
373.389	4.23431	57.5781	236.166
373.225	4.18642	59.0762	238.868
373.061	4.39716	74.6211	227.42
372.897	4.64622	65.0781	215.229
372.732	4.78033	82.043	209.191
372.568	5.05812	62.7188	197.702
372.404	5.79572	76.9883	172.541
372.24	6.14056	71.5273	162.851
372.076	6.78237	85.8047	147.441
371.912	7.15595	99.7773	139.744
371.748	7.21343	81.5117	138.63
371.584	7.16553	133.305	139.557
371.42	7.14638	124.473	139.931

371.256	7.41459	105.027	134.869
371.092	7.81692	115.445	127.928
370.928	8.40124	116.051	119.03
370.764	9.26337	117.41	107.952
370.6	10.2213	107.395	97.8351
370.436	11.4474	113.012	87.356
370.272	12.4628	97.3516	80.2388
370.108	13.5452	100.684	73.8266
369.944	14.8959	131.031	67.1325
369.78	16.3903	92.4023	61.0119
369.616	18.3348	103.086	54.541
369.452	20.2985	96.8047	49.2646
369.288	22.588	80.8086	44.2714
369.124	24.954	97.7891	40.0737
368.96	28.2301	95.1719	35.4232
368.796	31.8606	96.7422	31.3867
368.631	35.9605	93.1172	27.8083
368.467	40.4531	70.9766	24.72
368.303	43.3747	59.7598	23.0549
368.139	48.308	65.543	20.7005
367.975	50.856	63.4355	19.6633
367.811	51.5362	66.8281	19.4039
367.647	56.0096	55.8594	17.8541
367.483	51.996	80.0859	19.2323
367.319	54.8601	64.3828	18.2282
367.155	52.1684	57.7461	19.1687
366.991	54.3045	65.5625	18.4147
366.827	53.8735	70.8867	18.562
366.663	57.2549	65.9102	17.4658
366.499	59.0271	74.207	16.9414
366.335	58.05	43.2441	17.2265
366.171	57.5806	63.373	17.367
366.007	54.9655	46.1348	18.1932
365.843	51.7469	47.7598	19.3248
365.679	47.2639	57.3008	21.1578
365.515	43.0682	84.7344	23.219
365.351	38.0296	64.9922	26.2953
365.187	31.7648	57.1211	31.4814
365.023	26.5058	68.4609	37.7275
364.859	23.3926	58.0195	42.7485
364.695	21.1319	71.6758	47.3217
364.53	19.1299	73.0938	52.2742
364.366	17.3673	90.6602	57.5794
364.202	15.4707	93.0742	64.6385
364.038	13.277	63.9551	75.318
363.874	10.6236	97.2734	94.13
363.71	8.71736	74.7422	114.714
363.546	7.43375	89.3242	134.522
363.382	6.56205	95.0273	152.391
363.218	5.9394	73.8203	168.367
363.054	5.97772	68.668	167.288
362.89	6.84942	76.7773	145.998
362.726	7.97976	85.0742	125.317
362.562	8.99515	51.4336	111.171
362.398	10.9014	96.0273	91.7313
362.234	13.21	70.1211	75.7004
362.07	14.3595	72.0508	69.6404
361.906	15.3078	56.6973	65.3261
361.742	17.2811	50.7227	57.8666
361.578	17.5014	90.0039	57.1382
361.414	17.4727	63.9395	57.2321
361.25	18.3827	79.0859	54.3989
361.086	19.2927	104.461	51.833
360.922	18.3827	103.133	54.3989
360.758	19.5418	78.1719	51.1724
360.594	21.381	82.2461	46.7705
360.429	22.9041	82.9961	43.6603
360.265	23.8045	76.6523	42.0088
360.101	23.9195	67.2656	41.807
359.937	24.226	69.2773	41.278
359.773	25.1743	76.8594	39.723
359.609	25.6437	97.4414	38.9959
359.445	25.2127	97.5703	39.6626
359.281	24.2739	78.418	41.1965
359.117	23.4884	84.5938	42.5742
358.953	22.7221	80.9141	44.0101
358.789	21.199	69.7109	47.1721
358.625	20.8733	75.2422	47.9081
358.461	20.174	75.75	49.5687
358.297	19.8196	70.6484	50.4551
358.133	19.6567	49.6602	50.8731
357.969	19.4843	75.0273	51.3233
357.805	20.0399	51.1602	49.9004
357.641	19.561	49.9473	51.1223
357.477	21.7067	61.6934	46.0688
357.313	20.2985	44.0117	49.2646
357.149	20.8637	58.6504	47.9301
356.985	18.5935	34.2324	53.7824
356.821	19.3789	42.6504	51.6024
356.657	19.7717	52.4297	50.5774
356.493	20.9978	44.1973	47.624
356.328	20.9691	41.918	47.6892
356.164	20.9595	40.0254	47.711
356	21.3906	37.1152	46.7496
355.836	20.7871	54.5801	48.1068
355.672	20.4901	27.1074	48.804
355.508	20.1644	39.8262	49.5923
355.344	20.4901	39.8301	48.804
355.18	20.7392	43.4277	48.2179
355.016	20.1453	50.041	49.6394
354.852	18.9575	35.2051	52.7497
354.688	17.626	36.6797	56.7345
354.524	15.8347	41.3652	63.1526
354.36	13.4878	46.459	74.1412
354.196	11.9934	37.1992	83.379
354.032	10.9972	45.0059	90.9323
353.868	9.00473	42.9141	111.053
353.704	7.81692	44.4785	127.928
353.54	6.83984	35.084	146.202
353.376	5.5275	40.1191	180.914
353.212	4.96233	33.7559	201.518
353.048	4.47379	45.1523	223.524
352.884	3.6883	35.8008	271.127
352.72	3.41051	26.2744	293.212
352.556	3.60209	32.9336	277.617
352.391	3.33387	32.9941	299.951
352.227	3.33387	32.5566	299.951

352.063	3.43924	50.1855	290.762
351.899	3.02734	20.957	330.323
351.735	3.01776	32.2637	331.371
351.571	2.80702	43.2891	356.25
351.407	2.71123	44.7578	368.836
351.243	2.51007	46.3047	398.396
351.079	2.51965	41.4395	396.881
350.915	2.56754	48.2305	389.478
350.751	2.54838	29.0557	392.406
350.587	2.51965	43.4609	396.881
350.423	2.28975	30.165	436.73
350.259	2.16522	31.8838	461.847
350.095	1.83953	47.9805	543.618
349.931	1.715	22.5615	583.091
349.767	1.67668	41.9023	596.416
349.603	2.38554	35.2266	419.193
349.439	2.34722	36.8438	426.036
349.275	2.54838	51.4922	392.406
349.111	2.95071	35.541	338.902
348.947	2.71123	38.5664	368.836
348.783	2.11732	41.7559	472.295
348.619	2.08858	45.3945	478.793
348.455	1.72458	42.5859	579.853
348.29	1.23604	27.9834	809.035
348.126	1.4372	36.1426	695.796
347.962	1.93532	47.1699	516.711
347.798	1.93532	25.9463	516.711
347.634	1.87784	42.4102	532.526
347.47	2.42385	27.7969	412.566
347.306	2.25143	32.2988	444.162
347.142	2.48133	47.8633	403.01
346.978	2.19395	34.9766	455.798
346.814	2.69207	52.8359	371.461
346.65	2.31848	28.8887	431.316
346.486	2.4047	32.0215	415.853
346.322	2.64417	33.5547	378.19
346.158	2.37596	39.873	420.883
345.994	2.4047	51.2754	415.853
345.83	2.51007	48.0879	398.396
345.666	2.21311	38.3145	451.852
345.502	2.37596	48.1758	420.883
345.338	2.50049	35.5215	399.922
345.174	2.37596	43.2813	420.883
345.01	2.3089	72.2813	433.106
344.846	2.28975	49.875	436.73
344.682	2.32806	59.2461	429.542
344.518	2.32806	62.4063	429.542
344.354	2.3568	40.4141	424.304
344.189	2.73997	42.6387	364.968
344.025	2.80702	37.8906	356.25
343.861	2.70165	50.9121	370.144
343.697	3.0465	37.5762	328.246
343.533	3.05608	58.9063	327.217
343.369	3.00818	63.7344	332.427
343.205	3.00818	32.6016	332.427
343.041	2.75912	69.3281	362.434
342.877	2.92197	47.9023	342.235
342.713	2.78786	42.9785	358.698
342.549	2.57712	60.8242	388.03
342.385	2.67291	56.0352	374.124
342.221	2.66333	57.7539	375.469
342.057	2.75912	63.7676	362.434
341.893	2.60586	65.625	383.751
341.729	2.67291	59.2988	374.124
341.565	2.60586	80.2813	383.751
341.401	2.64417	57.3359	378.19
341.237	2.91239	74.6289	343.36
341.073	2.79744	62.3281	357.47
340.909	3.19977	64.7109	312.523
340.745	3.33387	53.2676	299.951
340.581	3.6883	78.4531	271.127
340.417	3.53504	52.6602	282.883
340.253	3.87989	62.4141	257.74
340.088	3.34345	68.3359	299.092
339.924	3.99483	60.2305	250.323
339.76	4.4259	68.3164	225.943
339.596	4.39716	75.0898	227.42
339.432	4.48337	62.2813	223.046
339.268	5.07728	62.459	196.956
339.104	5.27844	65.9141	189.45
338.94	5.67119	42.5391	176.33
338.776	6.15972	48.8184	162.345
338.612	6.64826	56.4668	150.415
338.448	7.21343	57.7773	138.63
338.284	7.81692	41.7676	127.928
338.12	7.98934	46.4492	125.167
337.956	7.51038	41.3438	133.149
337.792	7.81692	46.1582	127.928
337.628	8.34377	48.0195	119.85
337.464	8.42998	35.3555	118.624
337.3	7.60617	30.3584	131.472
337.136	6.99311	42.8672	142.998
336.972	7.44333	49.1934	134.348
336.808	8.14261	41.7246	122.811
336.644	8.56409	38.8984	116.767
336.48	9.21547	35.4961	108.513
336.316	9.55074	20.7998	104.704
336.151	9.64653	50.9043	103.664
335.987	9.06221	27.1719	110.348
335.823	8.49704	49.7988	117.688
335.659	8.61199	51.6406	116.117
335.495	8.42998	24.3213	118.624
335.331	8.39166	50.502	119.166
335.167	8.6503	35.9629	115.603
335.003	8.42998	44.5547	118.624
334.839	7.5008	49.8223	133.319
334.675	6.84942	39.3047	145.998
334.511	6.10225	32.459	163.874
334.347	4.96233	35.6289	201.518
334.183	4.07147	35.5879	245.612
334.019	3.74578	38.5996	266.967
333.855	3.94694	31.9971	253.361
333.691	3.58293	44.6094	279.101
333.527	3.74578	43.1621	266.967
333.363	3.49672	44.8418	285.982
333.199	3.37219	28.9014	296.543
333.035	3.14229	35.1191	318.239

332.871	3.00818	38.0273	332.427
332.707	2.80702	39.6133	356.25
332.543	2.89323	44.6348	345.634
332.379	2.80702	44.9551	356.25
332.215	2.56754	35.3047	389.478
332.05	2.56754	38.3145	389.478
331.886	2.59628	33.3984	385.167
331.722	2.71123	43.3379	368.836
331.558	2.85492	46.7813	350.273
331.394	2.96029	40.2227	337.805
331.23	2.91239	54.6367	343.36
331.066	2.82618	37.2148	353.835
330.902	2.70165	32.7676	370.144
330.738	2.61544	44.4609	382.345
330.574	2.41428	37.7559	414.203
330.41	2.48133	52.3594	403.01
330.246	2.31848	64.9961	431.316
330.082	2.38554	32.6523	419.193
329.918	2.48133	42.3555	403.01
329.754	2.67291	33.8594	374.124
329.59	2.71123	43.1699	368.836
329.426	2.92197	54.2051	342.235
329.262	3.20934	33.3965	311.59
329.098	2.91239	51.3203	343.36
328.934	3.02734	25.6514	330.323
328.77	3.19977	41.4941	312.523
328.606	3.26682	52.5332	306.108
328.442	3.14229	54.2012	318.239
328.278	3.53504	41.7539	282.883
328.114	3.24766	52.9941	307.914
327.949	2.88365	62.4824	346.782
327.785	2.71123	44.9238	368.836
327.621	2.34722	60.7109	426.036
327.457	2.23227	60.8477	447.974
327.293	2.1269	53.0488	470.168
327.129	2.42385	62.4902	412.566
326.965	2.16522	46.3066	461.847
326.801	2.66333	41.9082	375.469
326.637	2.6346	65.2031	379.565
326.473	2.83576	52.5215	352.639
326.309	2.96029	64.1367	337.805
326.145	3.20934	68.8125	311.59
325.981	3.02734	55.6699	330.323
325.817	3.33387	54.2305	299.951
325.653	3.60209	54.0723	277.617
325.489	4.45463	52.0098	224.485
325.325	5.59455	68.7852	178.745
325.161	6.33215	44.4805	157.924
324.997	6.65784	67.4336	150.199
324.833	7.82649	66.2734	127.771
324.669	8.45872	62.3496	118.221
324.505	8.87062	62.2832	112.732
324.341	8.84188	67.1328	113.098
324.177	8.8802	67.9258	112.61
324.013	9.06221	54.4805	110.348
323.848	10.0776	62.1406	99.23
323.684	10.6811	65.3125	93.6235
323.52	11.7731	68.8047	84.9394
323.356	12.3191	80.7695	81.1747
323.192	12.4341	66.3047	80.4242
323.028	11.6773	70.6094	85.6361
322.864	11.3995	91.293	87.723
322.7	11.1984	84.7734	89.2988
322.536	10.7769	64.4453	92.7913
322.372	10.5661	74.5586	94.642
322.208	10.9685	68.5664	91.1705
322.044	11.7348	61.9766	85.2167
321.88	12.3862	60.2324	80.7352
321.716	13.2579	41.0957	75.4269
321.552	13.5644	51.0742	73.7224
321.388	13.4207	50.8027	74.5117
321.224	13.3632	45.4004	74.8321
321.06	13.4495	59.8047	74.3524
320.896	13.9667	45.0371	71.5987
320.732	13.9093	33.7441	71.8946
320.568	14.005	48.1816	71.4028
320.404	12.6256	25.625	79.2038
320.24	11.1026	49.3672	90.0693
320.076	9.70401	36.6309	103.05
319.912	8.33419	25.6445	119.988
319.747	7.63491	44.8613	130.977
319.583	8.77483	44.498	113.962
319.419	10.183	31.6953	98.2032
319.255	9.91475	33.3945	100.86
319.091	10.1446	30.6182	98.5741
318.927	9.83812	43.9551	101.645
318.763	9.85727	30.2842	101.448
318.599	10.9397	39.6816	91.41
318.435	12.4436	41.543	80.3623
318.271	12.7981	32.1563	78.1368
318.107	11.6486	50.0117	85.8474
317.943	9.22505	37.2344	108.4
317.779	7.76902	45.418	128.716
317.615	6.92605	34.3984	144.382
317.451	5.72866	34.666	174.561
317.287	4.38758	42.9004	227.916
317.123	3.93736	39.4023	253.977
316.959	3.53504	40.625	282.883
316.795	3.5063	50.0742	285.201
316.631	3.26682	27.5361	306.108
316.467	3.62125	30.5469	276.148
316.303	3.85115	39.9277	259.663
316.139	3.78409	47.4648	264.264
315.975	3.37219	39.6016	296.543
315.811	3.53504	35.1699	282.883
315.646	3.37219	32.0625	296.543
315.482	3.02734	47.8184	330.323
315.318	3.30514	41.3008	302.559
315.154	3.20934	44.3086	311.59
314.99	3.01776	38.1699	331.371
314.826	2.88365	54.4551	346.782
314.662	2.78786	35.2031	358.698
314.498	2.73997	41.4199	364.968
314.334	2.6346	41.4766	379.565
314.17	2.57712	60.7754	388.03
314.006	2.38554	41.8164	419.193
313.842	2.38554	64.3008	419.193

313.678	2.97945	61.4043	335.633
313.514	2.92197	41.9375	342.235
313.35	2.96029	48.6992	337.805
313.186	2.93155	37.8086	341.117
313.022	2.61544	56.0527	382.345
312.858	2.28017	35.8984	438.564
312.694	2.54838	50.4023	392.406
312.53	2.83576	44.0938	352.639
312.366	2.97945	44.2656	335.633
312.202	3.00818	51.875	332.427
312.038	3.46798	68.6953	288.352
311.874	3.52546	54.1504	283.651
311.71	3.52546	57.3809	283.651
311.545	3.33387	57.5371	299.951
311.381	2.83576	60.6797	352.639
311.217	2.37596	50.9648	420.883
311.053	1.64794	42.8203	606.817
310.889	1.99279	57.1934	501.808
310.725	2.25143	47.7969	444.162
310.561	2.16522	57.6953	461.847
310.397	2.56754	79.9453	389.478
310.233	2.56754	64.1133	389.478
310.069	2.11732	60.7598	472.295
309.905	2.15564	62.7285	463.9
309.741	2.51965	73.793	396.881
309.577	3.07524	66.9531	325.178
309.413	4.378	69.9922	228.415
309.249	5.15391	48.1543	194.027
309.085	5.63287	40.7129	177.529
308.921	6.06393	63.9434	164.91
308.757	6.59078	47.3887	151.727
308.593	7.12722	63.6797	140.307
308.429	7.56786	60.7188	132.138
308.265	7.9606	35.9297	125.619
308.101	8.40124	50.543	119.03
307.937	8.58325	51.7949	116.506
307.773	8.68862	51.0879	115.093
307.608	8.43956	34.9238	118.49
307.444	8.71736	44.8125	114.714
307.28	8.62156	41.5918	115.988
307.116	8.89936	36.8477	112.368
306.952	8.77483	31.793	113.962
306.788	8.80357	36.5234	113.59
306.624	8.80357	36.7207	113.59
306.46	8.77483	36.7129	113.962
306.296	8.65988	39.8008	115.475
306.132	8.67904	28.5303	115.22
305.968	8.48746	27.127	117.821
305.804	8.6503	27.3252	115.603
305.64	8.11387	27.2842	123.246
305.476	7.7307	43.0391	129.354
305.312	7.53912	43.2109	132.641
305.148	7.28048	49.5254	137.354
304.984	6.71531	38.6074	148.913
304.82	6.07351	45.4629	164.649
304.656	6.14056	50.3984	162.851
304.492	5.82445	45.4512	171.69
304.328	5.56582	50.4629	179.668
304.164	5.63287	32.6836	177.529
304	5.82445	44.4121	171.69
303.836	5.66161	39.3105	176.628
303.672	5.44129	37.4043	183.78
303.507	5.27844	46.707	189.45
303.343	5.15391	43.2832	194.027
303.179	4.82822	30.5703	207.116
303.015	4.77075	58.0059	209.611
302.851	4.90485	44.5762	203.88
302.687	5.15391	49.2559	194.027
302.523	5.28802	49.3496	189.107
302.359	5.43171	51.0703	184.104
302.195	5.53708	39.9434	180.601
302.031	5.66161	34.9785	176.628
301.867	5.65203	43.0137	176.928
301.703	5.97772	36.8008	167.288
301.539	6.10225	37.1602	163.874
301.375	6.14056	51.6738	162.851
301.211	6.06393	35.1152	164.91
301.047	6.17888	17.4727	161.842
300.883	6.3992	39.8555	156.269
300.719	6.45668	38.5547	154.878
300.555	6.49499	32.2539	153.965
300.391	6.59078	48.5566	151.727
300.227	6.96437	29.0098	143.588
300.063	8.08513	43.8086	123.684
299.899	8.49704	26.4336	117.688
299.735	8.20966	42.9434	121.808
299.571	8.36293	47.3418	119.575
299.406	8.6503	48.793	115.603
299.242	7.45291	29.1104	134.176
299.078	7.37627	43.7051	135.57
298.914	7.97976	54.6641	125.317
298.75	8.32461	36.6309	120.126
298.586	7.78818	38.1914	128.4
298.422	8.56409	51.0547	116.767
298.258	8.39166	28.7373	119.166
298.094	7.34754	54.4316	136.1
297.93	6.80153	38.3594	147.026
297.766	6.32257	44.5352	158.164
297.602	5.89151	36.4082	169.736
297.438	5.63287	35.1582	177.529
297.274	5.41255	46.6309	184.756
297.11	5.22097	38.6582	191.535
296.946	4.98149	51.1738	200.743
296.782	5.05812	74.5898	197.702
296.618	5.30718	56.1816	188.424
296.454	5.69992	59.5117	175.441
296.29	5.86277	72.4844	170.568
296.126	6.29383	77.0859	158.886
295.962	6.89732	65.9414	144.984
295.798	6.93563	63.1719	144.183
295.634	6.71531	75.3711	148.913
295.47	6.65784	85.3203	150.199
295.305	6.80153	81.5	147.026
295.141	6.58121	106.871	151.948
294.977	6.75363	85.5781	148.069
294.813	7.00269	71.6016	142.802
294.649	7.70197	131.484	129.837

294.485	7.83607	119.648	127.615
294.321	8.2384	151.195	121.383
294.157	8.59283	120.695	116.376
293.993	9.12926	118.191	109.538
293.829	9.51243	146.797	105.126
293.665	10.0489	139.273	99.5138
293.501	11.0164	161.094	90.7742
293.337	12.2137	174.734	81.875
293.173	13.4495	170.789	74.3524
293.009	14.2158	183.898	70.3443
292.845	14.7618	225.398	67.7424
292.681	15.7197	237.055	63.6144
292.517	16.7638	259.016	59.6522
292.353	17.1566	244.438	58.2867
292.189	18.2295	233.758	54.8563
292.025	19.4077	258.797	51.526
291.861	20.0112	240.492	49.9721
291.697	20.107	245.602	49.734
291.533	20.1644	271.297	49.5923
291.368	20.5859	258.438	48.5769
291.204	21.5151	314.813	46.479
291.04	22.7125	291.969	44.0286
290.876	23.929	294.969	41.7902
290.712	24.1781	299.891	41.3597
290.548	23.9578	299.797	41.7401
290.384	23.9195	301.406	41.807
290.22	23.5555	272.984	42.453
290.056	23.4597	279.656	42.6263
289.892	23.4501	297.281	42.6438
289.728	23.1723	309.969	43.155
289.564	22.6263	302.625	44.1964
289.4	21.7737	257.516	45.9269
289.236	20.0878	266.281	49.7814
289.072	18.6222	266.375	53.6994
288.908	17.4152	255.602	57.421
288.744	16.6968	286.406	59.8918
288.58	15.9688	291.156	62.6222
288.416	15.212	286.781	65.7375
288.252	14.3786	316.828	69.5476
288.088	13.5548	287.688	73.7745
287.924	12.7598	329.531	78.3714
287.76	12.0605	233.813	82.9154
287.596	11.5911	242.906	86.2731
287.432	11.0738	262.75	90.303
287.267	10.5278	277.016	94.9865
287.103	10.25	245.992	97.5608
286.939	9.95307	230.109	100.472
286.775	9.6178	257.281	103.974
286.611	9.26337	234.156	107.952
286.447	9.04305	310.828	110.582
286.283	8.78441	275.656	113.838
286.119	8.4683	239.914	118.087
285.955	8.20966	275.688	121.808
285.791	8.08513	230.406	123.684
285.627	8.01808	262.031	124.718
285.463	8.04682	231.039	124.273
285.299	7.81692	260.984	127.928
285.135	7.75944	222.703	128.875
284.971	7.70197	225.406	129.837
284.807	7.72112	244.898	129.515
284.643	7.25175	253.68	137.898
284.479	7.26133	252.68	137.716
284.315	7.0889	244.875	141.066
284.151	7.28048	283.828	137.354
283.987	7.03143	229.609	142.219
283.823	6.86858	236.781	145.591
283.659	6.54289	255.484	152.838
283.495	6.36089	254.578	157.211
283.331	6.30341	236.172	158.644
283.166	6.17888	267.047	161.842
283.002	5.97772	277.547	167.288
282.838	5.92024	221.609	168.912
282.674	5.78614	237.977	172.827
282.51	5.62329	260.828	177.832
282.346	5.33592	288.234	187.409
282.182	5.18265	248.555	192.951
282.018	5.33592	232.875	187.409
281.854	5.21139	248.719	191.887
281.69	5.5275	222.031	180.914
281.526	5.22097	228.047	191.535
281.362	5.22097	214.188	191.535
281.198	5.2497	266.281	190.487
281.034	5.08686	193.422	196.585
280.87	4.98149	199.5	200.743
280.706	5.09644	206.172	196.216
280.542	5.2497	190.328	190.487
280.378	5.0198	197.008	199.211
280.214	5.00065	218.945	199.974
280.05	5.17307	190.727	193.309
279.886	5.05812	213.594	197.702
279.722	5.08686	219.648	196.585
279.558	5.19223	199.219	192.596
279.394	5.04854	196.961	198.077
279.23	5.05812	210.977	197.702
279.065	4.93359	226.578	202.692
278.901	4.98149	222.828	200.743
278.737	4.99107	228.625	200.358
278.573	4.95275	239.867	201.908
278.409	5.0198	263.813	199.211
278.245	5.24012	198.203	190.835
278.081	5.31676	217.875	188.085
277.917	5.49876	259.016	181.859
277.753	5.5275	227.242	180.914
277.589	5.57539	245.156	179.359
277.425	5.60413	238.281	178.44
277.261	5.60413	222.266	178.44
277.097	5.46044	207.758	183.135
276.933	5.55624	287.609	179.978
276.769	5.38381	211.625	185.742
276.605	5.56582	227.227	179.668
276.441	5.67119	227.344	176.33
276.277	5.9873	229.188	167.02
276.113	6.20762	223.359	161.092
275.949	6.3992	242.383	156.269
275.785	6.48541	273.688	154.192
275.621	6.41836	244.492	155.803
275.457	6.11183	234.023	163.617

275.293	6.14056	273.422	162.851
275.128	6.06393	236.328	164.91
274.964	5.96814	244.844	167.556
274.8	5.96814	214.484	167.556
274.636	6.22678	255.445	160.597
274.472	6.1693	226.031	162.093
274.308	6.29383	230.641	158.886
274.144	6.41836	239.492	155.803
273.98	6.35131	278.047	157.448
273.816	6.41836	223.492	155.803
273.652	6.22678	221.461	160.597
273.488	6.07351	220.844	164.649
273.324	6.06393	230.523	164.91
273.16	6.01604	242.648	166.222
272.996	5.96814	226.008	167.556
272.832	5.76698	275.703	173.401
272.668	5.88193	236.195	170.012
272.504	6.17888	225.5	161.842
272.34	6.11183	205.938	163.617
272.176	5.86277	232.492	170.568
272.012	5.89151	232.672	169.736
271.848	5.84361	248.633	171.127
271.684	5.92024	256.141	168.912
271.52	5.76698	220.445	173.401
271.356	5.72866	225.922	174.561
271.192	5.84361	213.953	171.127
271.027	5.79572	217.078	172.541
270.863	5.85319	237.938	170.847
270.699	5.94898	194.117	168.096
270.535	5.86277	224.391	170.568
270.371	5.94898	274.984	168.096
270.207	5.82445	256	171.69
270.043	5.88193	224.344	170.012
269.879	6.04477	197.828	165.432
269.715	5.78614	249.914	172.827
269.551	5.92024	221.141	168.912
269.387	5.86277	254.32	170.568
269.223	5.66161	248.672	176.628
269.059	5.57539	228.961	179.359
268.895	5.53708	238.664	180.601
268.731	5.55624	244.43	179.978
268.567	5.59455	220.211	178.745
268.403	5.55624	259.109	179.978
268.239	5.72866	221.648	174.561
268.075	5.66161	221.461	176.628
267.911	5.44129	232.57	183.78
267.747	5.66161	251.773	176.628
267.583	5.72866	217.727	174.561
267.419	5.69034	233.297	175.736
267.255	5.65203	225.695	176.928
267.091	5.69034	228.055	175.736
266.926	5.63287	235.945	177.529
266.762	5.67119	257.719	176.33
266.598	5.74782	233.188	173.979
266.434	5.85319	214.016	170.847
266.27	5.97772	213.414	167.288
266.106	5.9394	223.516	168.367
265.942	5.9394	225.023	168.367
265.778	5.92024	235.68	168.912
265.614	5.84361	234.336	171.127
265.45	5.79572	242.648	172.541
265.286	5.7574	217.484	173.69
265.122	5.82445	228.398	171.69
264.958	5.76698	231.664	173.401
264.794	5.66161	239.648	176.628
264.63	5.7574	220.938	173.69
264.466	5.84361	249.023	171.127
264.302	5.78614	247.789	172.827
264.138	5.92024	239.141	168.912
263.974	5.88193	232.07	170.012
263.81	5.79572	205.633	172.541
263.646	5.91066	260.203	169.186
263.482	5.9873	218.477	167.02
263.318	6.25551	199.602	159.859
263.154	6.48541	223.891	154.192
262.99	6.35131	227.227	157.448
262.825	6.33215	252.25	157.924
262.661	6.37046	196.617	156.974
262.497	6.29383	228.398	158.886
262.333	6.1693	231.375	162.093
262.169	5.91066	224.836	169.186
262.005	5.9394	234.961	168.367
261.841	5.88193	226.266	170.012
261.677	5.72866	216.211	174.561
261.513	5.82445	212.836	171.69
261.349	5.82445	245.188	171.69
261.185	6.01604	230.383	166.222
261.021	5.96814	219.727	167.556
260.857	6.13099	235.547	163.106
260.693	6.01604	189.734	166.222
260.529	6.19804	223.492	161.341
260.365	6.03519	220	165.695
260.201	6.04477	230.703	165.432
260.037	6.06393	222.188	164.91
259.873	6.13099	214.586	163.106
259.709	6.07351	221.477	164.649
259.545	6.17888	228.75	161.842
259.381	6.26509	220.211	159.615
259.217	6.19804	205.188	161.341
259.053	6.22678	236.305	160.597
258.888	6.15972	214.266	162.345
258.724	6.30341	214.914	158.644
258.56	6.25551	272.531	159.859
258.396	6.33215	245.359	157.924
258.232	6.35131	208.68	157.448
258.068	6.52373	195.391	153.287
257.904	6.48541	214.609	154.192
257.74	6.56205	229.789	152.391
257.576	6.36089	214.656	157.211
257.412	6.65784	201.391	150.199
257.248	6.83026	267.125	146.407
257.084	6.64826	233.211	150.415
256.92	6.677	188.266	149.768
256.756	7.06016	207.883	141.64
256.592	6.86858	252.297	145.591
256.428	6.80153	231.523	147.026
256.264	6.9069	200.555	144.783

256.1	6.84942	257.359	145.998
255.936	6.96437	235.367	143.588
255.772	6.96437	216.5	143.588
255.608	7.02185	224.891	142.413
255.444	7.05058	221.336	141.832
255.28	6.93563	245.734	144.183
255.116	7.06016	236.281	141.64
254.952	6.99311	224.547	142.998
254.787	6.99311	253.016	142.998
254.623	7.00269	253.461	142.802
254.459	6.89732	256.828	144.984
254.295	6.92605	233.703	144.382
254.131	6.86858	245.359	145.591
253.967	7.00269	228.594	142.802
253.803	6.77279	230.719	147.65
253.639	6.80153	220.531	147.026
253.475	6.84942	226.477	145.998
253.311	6.78237	230.617	147.441
253.147	6.70573	181.813	149.126
252.983	6.75363	235.836	148.069
252.819	6.73447	203.289	148.49
252.655	6.9069	240.438	144.783
252.491	6.83026	212.633	146.407
252.327	6.677	229.633	149.768
252.163	6.65784	196.961	150.199
251.999	6.51415	230.578	153.512
251.835	6.27467	206.125	159.371
251.671	6.35131	233.836	157.448
251.507	6.3992	268.547	156.269
251.343	6.23636	243.281	160.35
251.179	6.30341	200.789	158.644
251.015	6.46626	219.508	154.649
250.851	6.30341	200.57	158.644
250.686	6.1693	212.484	162.093
250.522	6.15972	288.094	162.345
250.358	6.06393	237.664	164.91
250.194	6.06393	223.43	164.91
250.03	6.10225	188.719	163.874
249.866	6.14056	241.078	162.851
249.702	6.23636	256.031	160.35
249.538	6.07351	221.195	164.649
249.374	6.15972	208.047	162.345
249.21	6.19804	223.047	161.341
249.046	6.04477	240.328	165.432
248.882	6.04477	227.953	165.432
248.718	6.07351	217.953	164.649
248.554	6.11183	231.719	163.617
248.39	6.1693	254.563	162.093
248.226	6.06393	203.992	164.91
248.062	5.94898	261.75	168.096
247.898	6.03519	237.602	165.695
247.734	6.33215	203.188	157.924
247.57	6.4471	200.609	155.109
247.406	6.35131	238.977	157.448
247.242	6.03519	220.672	165.695
247.078	5.97772	200.969	167.288
246.914	5.92024	203.867	168.912
246.75	5.96814	231.859	167.556
246.585	6.04477	220.273	165.432
246.421	6.20762	195.164	161.092
246.257	5.9873	215.586	167.02
246.093	6.03519	216.367	165.695
245.929	6.23636	223.172	160.35
245.765	6.20762	216.352	161.092
245.601	6.1693	262.297	162.093
245.437	6.23636	219.141	160.35
245.273	6.23636	191.633	160.35
245.109	6.19804	226.008	161.341
244.945	6.07351	232.773	164.649
244.781	6.17888	242.039	161.842
244.617	6.17888	235.008	161.842
244.453	6.13099	245.078	163.106
244.289	6.30341	220.734	158.644
244.125	6.17888	237.578	161.842
243.961	6.49499	240.391	153.965
243.797	6.06393	212.055	164.91
243.633	6.13099	237.164	163.106
243.469	6.13099	211.227	163.106
243.305	6.15972	218.398	162.345
243.141	6.14056	224.125	162.851
242.977	6.01604	216.734	166.222
242.813	5.9873	185.43	167.02
242.648	5.94898	203.203	168.096
242.484	5.89151	211.344	169.736
242.32	5.97772	244.172	167.288
242.156	5.94898	211.055	168.096
241.992	6.07351	264.359	164.649
241.828	6.07351	200.789	164.649
241.664	6.17888	187.398	161.842
241.5	6.14056	205.078	162.851
241.336	6.25551	190.094	159.859
241.172	6.48541	238.648	154.192
241.008	6.48541	214.945	154.192
240.844	6.42794	244.945	155.571
240.68	6.37046	275.375	156.974
240.516	6.25551	214.922	159.859
240.352	6.1693	226.813	162.093
240.188	6.22678	176.43	160.597
240.024	6.23636	192.828	160.35
239.86	6.10225	222.18	163.874
239.696	6.23636	200.508	160.35
239.532	6.22678	212.469	160.597
239.368	6.19804	241.547	161.341
239.204	6.41836	232.047	155.803
239.04	6.38962	240.742	156.504
238.876	6.20762	203.836	161.092
238.712	6.36089	245.93	157.211
238.547	6.45668	219.977	154.878
238.383	6.22678	216.609	160.597
238.219	6.3992	246.609	156.269
238.055	6.32257	205.492	158.164
237.891	6.23636	237.922	160.35
237.727	6.23636	228.859	160.35
237.563	6.32257	204.789	158.164
237.399	6.32257	254.555	158.164
237.235	6.41836	216.578	155.803
237.071	6.32257	206.867	158.164

236.907	6.20762	258.734	161.092
236.743	6.15972	213.797	162.345
236.579	6.15972	235.836	162.345
236.415	6.25551	203.961	159.859
236.251	6.27467	215.383	159.371
236.087	6.20762	221.945	161.092
235.923	6.23636	228.773	160.35
235.759	6.36089	227.5	157.211
235.595	6.27467	208.422	159.371
235.431	6.52373	224.234	153.287
235.267	6.38962	233.273	156.504
235.103	6.26509	230.836	159.615
234.939	6.22678	222.906	160.597
234.775	6.03519	220.438	165.695
234.611	6.14056	214.328	162.851
234.446	6.27467	192.984	159.371
234.282	6.15972	243.68	162.345
234.118	6.33215	248.141	157.924
233.954	6.33215	203.391	157.924
233.79	6.38962	224.367	156.504
233.626	6.22678	197.023	160.597
233.462	6.04477	197	165.432
233.298	6.15972	212.508	162.345
233.134	6.06393	216.742	164.91
232.97	6.1693	220.969	162.093
232.806	6.1693	282.297	162.093
232.642	6.20762	233.789	161.092
232.478	6.32257	165.773	158.164
232.314	6.29383	203.906	158.886
232.15	6.25551	228.227	159.859
231.986	6.11183	252.172	163.617
231.822	6.13099	209.414	163.106
231.658	6.15972	211.172	162.345
231.494	6.25551	213.594	159.859
231.33	6.25551	216.656	159.859
231.166	6.25551	215.953	159.859
231.002	6.13099	236.336	163.106
230.838	6.03519	217.648	165.695
230.674	6.11183	181.898	163.617
230.51	5.9873	212.898	167.02
230.345	5.9394	219.594	168.367
230.181	6.06393	201.602	164.91
230.017	6.26509	244.18	159.615
229.853	6.3992	224.805	156.269
229.689	6.41836	208.773	155.803
229.525	6.20762	217.328	161.092
229.361	6.32257	205.148	158.164
229.197	6.08309	210.5	164.39
229.033	6.11183	230.719	163.617
228.869	5.88193	211.625	170.012
228.705	6.10225	234.414	163.874
228.541	6.1693	200.273	162.093
228.377	6.14056	198.227	162.851
228.213	6.22678	186.109	160.597
228.049	6.3992	195.086	156.269
227.885	6.27467	201.734	159.371
227.721	6.27467	260.391	159.371
227.557	6.19804	201.211	161.341
227.393	6.17888	206.141	161.842
227.229	6.04477	225.609	165.432
227.065	6.23636	207.992	160.35
226.901	6.36089	213.695	157.211
226.737	6.26509	211.859	159.615
226.573	6.30341	211.484	158.644
226.409	6.33215	213.898	157.924
226.244	6.22678	259.828	160.597
226.08	6.41836	207.164	155.803
225.916	6.45668	242.844	154.878
225.752	6.51415	204.203	153.512
225.588	6.49499	211.758	153.965
225.424	6.58121	207.992	151.948
225.26	6.61952	238.922	151.068
225.096	6.61952	228.969	151.068
224.932	6.58121	193.484	151.948
224.768	6.54289	205.953	152.838
224.604	6.55247	213.148	152.614
224.44	6.45668	199.867	154.878
224.276	6.4471	232.438	155.109
224.112	6.63868	187.813	150.632
223.948	6.56205	220.352	152.391
223.784	6.74405	203.086	148.279
223.62	6.73447	232.883	148.49
223.456	6.60994	210.609	151.287
223.292	6.71531	224.625	148.913
223.128	6.59078	202.43	151.727
222.964	6.59078	194.352	151.727
222.8	6.58121	227.508	151.948
222.636	6.61952	185.484	151.068
222.472	6.74405	221.484	148.279
222.307	6.61952	207.953	151.068
222.143	6.64826	239.242	150.415
221.979	6.78237	219.07	147.441
221.815	6.55247	206.281	152.614
221.651	6.61952	200.969	151.068
221.487	6.74405	220.914	148.279
221.323	6.74405	208.578	148.279
221.159	6.64826	195.805	150.415
220.995	6.55247	199.5	152.614
220.831	6.80153	237.664	147.026
220.667	6.83984	200.102	146.202
220.503	6.73447	220.141	148.49
220.339	6.77279	216.531	147.65
220.175	6.92605	217.18	144.382
220.011	6.58121	211.359	151.948
219.847	6.70573	210.953	149.126
219.683	6.59078	231.195	151.727
219.519	6.64826	228.484	150.415
219.355	6.677	204.242	149.768
219.191	6.59078	191.07	151.727
219.027	6.56205	202.664	152.391
218.863	6.70573	209	149.126
218.699	6.74405	208.898	148.279
218.535	6.60994	176.516	151.287
218.371	6.65784	196.57	150.199
218.206	6.74405	207.617	148.279
218.042	6.65784	208.086	150.199
217.878	6.677	219.359	149.768

217.714	6.60994	207.875	151.287
217.55	6.70573	204.688	149.126
217.386	6.59078	189.922	151.727
217.222	6.51415	213.664	153.512
217.058	6.60994	205.523	151.287
216.894	6.73447	234.68	148.49
216.73	6.71531	242.727	148.913
216.566	6.55247	213.664	152.614
216.402	6.64826	200.258	150.415
216.238	6.75363	193.5	148.069
216.074	6.677	188.258	149.768
215.91	6.61952	188.438	151.068
215.746	6.52373	204.047	153.287
215.582	6.77279	218.57	147.65
215.418	6.74405	214.172	148.279
215.254	6.75363	236.75	148.069
215.09	6.58121	205.984	151.948
214.926	6.64826	209.641	150.415
214.762	6.71531	236.898	148.913
214.598	6.48541	225.984	154.192
214.434	6.61952	197.063	151.068
214.27	6.58121	220.813	151.948
214.105	6.75363	201.648	148.069
213.941	6.54289	216.945	152.838
213.777	6.51415	171.266	153.512
213.613	6.677	210.734	149.768
213.449	6.54289	188.328	152.838
213.285	6.58121	208.039	151.948
213.121	6.56205	217	152.391
212.957	6.64826	206.203	150.415
212.793	6.64826	223.102	150.415
212.629	6.54289	199.781	152.838
212.465	6.59078	190.492	151.727
212.301	6.59078	196.859	151.727
212.137	6.56205	194.664	152.391
211.973	6.70573	207.164	149.126
211.809	6.61952	233.43	151.068
211.645	6.68658	171.156	149.553
211.481	6.58121	176.117	151.948
211.317	6.60994	194.195	151.287
211.153	6.59078	209.906	151.727
210.989	6.677	201.523	149.768
210.825	6.59078	223.742	151.727
210.661	6.56205	214.445	152.391
210.497	6.58121	164.805	151.948
210.333	6.65784	192.781	150.199
210.169	6.61952	224.828	151.068
210.004	6.63868	213.859	150.632
209.84	6.677	241.375	149.768
209.676	6.68658	189.383	149.553
209.512	6.677	215.719	149.768
209.348	6.74405	204.195	148.279
209.184	6.68658	208.711	149.553
209.02	6.68658	175.898	149.553
208.856	6.65784	172.078	150.199
208.692	6.64826	176.844	150.415
208.528	6.56205	216.016	152.391
208.364	6.677	219.484	149.768
208.2	6.63868	190.57	150.632
208.036	6.59078	171.531	151.727
207.872	6.4471	230.984	155.109
207.708	6.60994	211.438	151.287
207.544	6.61952	179.609	151.068
207.38	6.60994	200.727	151.287
207.216	6.677	193.352	149.768
207.052	6.49499	215.367	153.965
206.888	6.65784	175.336	150.199
206.724	6.42794	180.578	155.571
206.56	6.46626	239.008	154.649
206.396	6.48541	183.563	154.192
206.232	6.49499	169.859	153.965
206.067	6.52373	189.82	153.287
205.903	6.63868	205.891	150.632
205.739	6.42794	204.273	155.571
205.575	6.59078	215.648	151.727
205.411	6.4471	188.406	155.109
205.247	6.58121	206.008	151.948
205.083	6.68658	185.82	149.553
204.919	6.58121	177.82	151.948
204.755	6.60994	202.203	151.287
204.591	6.56205	209.602	152.391
204.427	6.58121	213.445	151.948
204.263	6.70573	195.414	149.126
204.099	6.41836	191.07	155.803
203.935	6.54289	172.07	152.838
203.771	6.46626	198.805	154.649
203.607	6.54289	200.844	152.838
203.443	6.48541	161.594	154.192
203.279	6.55247	195.844	152.614
203.115	6.55247	186.242	152.614
202.951	6.46626	206.063	154.649
202.787	6.48541	214.789	154.192
202.623	6.46626	207.648	154.649
202.459	6.37046	178.945	156.974
202.295	6.38962	192.414	156.504
202.131	6.46626	208.461	154.649
201.966	6.33215	215.391	157.924
201.802	6.33215	208.195	157.924
201.638	6.55247	181.25	152.614
201.474	6.46626	184.961	154.649
201.31	6.3992	157.18	156.269
201.146	6.3992	189.305	156.269
200.982	6.29383	184.336	158.886
200.818	6.22678	187.813	160.597
200.654	6.22678	166.875	160.597
200.49	6.22678	187.969	160.597
200.326	6.26509	194.414	159.615
200.162	6.14056	181.586	162.851
199.998	6.1693	201.211	162.093
199.834	6.10225	211.031	163.874
199.67	6.07351	182.008	164.649
199.506	6.06393	179.844	164.91
199.342	5.94898	202.117	168.096
199.178	6.03519	205.078	165.695
199.014	6.01604	211.078	166.222
198.85	6.04477	198.711	165.432
198.686	6.11183	201.656	163.617

198.522	6.03519	206.641	165.695
198.358	6.07351	202.867	164.649
198.194	5.86277	187.164	170.568
198.03	6.04477	199.5	165.432
197.865	5.9873	189.016	167.02
197.701	6.04477	231.813	165.432
197.537	5.9394	205.625	168.367
197.373	5.96814	187.82	167.556
197.209	5.97772	172.836	167.288
197.045	5.97772	168.125	167.288
196.881	5.94898	200.016	168.096
196.717	5.96814	210.844	167.556
196.553	6.01604	218.234	166.222
196.389	6.01604	207.156	166.222
196.225	6.06393	221.766	164.91
196.061	6.04477	156.164	165.432
195.897	5.9394	153.234	168.367
195.733	5.97772	187.484	167.288
195.569	5.91066	185.797	169.186
195.405	5.91066	216.961	169.186
195.241	5.96814	189.289	167.556
195.077	6.06393	193.711	164.91
194.913	5.88193	195.297	170.012
194.749	6.03519	201.297	165.695
194.585	6.08309	224.281	164.39
194.421	5.97772	216.742	167.288
194.257	6.03519	167.922	165.695
194.093	6.07351	186.5	164.649
193.929	6.19804	203.633	161.341
193.764	5.94898	208.68	168.096
193.6	6.04477	193.188	165.432
193.436	6.04477	184.07	165.432
193.272	6.17888	220.688	161.842
193.108	6.15972	197.008	162.345
192.944	6.15972	201.883	162.345
192.78	5.94898	227.945	168.096
192.616	5.9394	205.813	168.367
192.452	6.03519	230.422	165.695
192.288	6.00646	196.203	166.488
192.124	6.10225	197.141	163.874
191.96	6.17888	213.211	161.842
191.796	5.9873	209.547	167.02
191.632	6.07351	203.422	164.649
191.468	6.00646	201.859	166.488
191.304	6.20762	183.813	161.092
191.14	6.22678	204.969	160.597
190.976	6.26509	191.836	159.615
190.812	6.17888	227.008	161.842
190.648	6.13099	198.805	163.106
190.484	6.22678	216.352	160.597
190.32	6.17888	192.445	161.842
190.156	6.04477	178.844	165.432
189.992	6.22678	182.914	160.597
189.828	6.22678	199.672	160.597
189.663	6.17888	204.906	161.842
189.499	6.20762	195.703	161.092
189.335	6.23636	220.242	160.35
189.171	6.14056	178.414	162.851
189.007	6.25551	187.125	159.859
188.843	6.22678	211.148	160.597
188.679	6.20762	194.766	161.092
188.515	6.1693	222.344	162.093
188.351	6.29383	188.828	158.886
188.187	6.25551	186.125	159.859
188.023	6.27467	196.102	159.371
187.859	6.26509	193.445	159.615
187.695	6.23636	223.875	160.35
187.531	6.30341	167.094	158.644
187.367	6.30341	225.906	158.644
187.203	6.27467	200.094	159.371
187.039	6.33215	193.508	157.924
186.875	6.36089	210.117	157.211
186.711	6.37046	195.219	156.974
186.547	6.27467	185.688	159.371
186.383	6.19804	239.188	161.341
186.219	6.29383	187.461	158.886
186.055	6.20762	170.055	161.092
185.891	6.1693	222.063	162.093
185.726	6.3992	201.578	156.269
185.562	6.26509	203.914	159.615
185.398	6.38962	181.813	156.504
185.234	6.30341	197.164	158.644
185.07	6.36089	204.828	157.211
184.906	6.35131	164.102	157.448
184.742	6.37046	230	156.974
184.578	6.41836	201.203	155.803
184.414	6.41836	190.984	155.803
184.25	6.38962	217.305	156.504
184.086	6.33215	211.641	157.924
183.922	6.36089	233.453	157.211
183.758	6.4471	234.648	155.109
183.594	6.55247	242.094	152.614
183.43	6.52373	193.656	153.287
183.266	6.41836	191.656	155.803
183.102	6.42794	202.586	155.571
182.938	6.60994	190.602	151.287
182.774	6.51415	186.133	153.512
182.61	6.59078	207.148	151.727
182.446	6.61952	200.898	151.068
182.282	6.56205	192.414	152.391
182.118	6.56205	193.625	152.391
181.954	6.68658	170.633	149.553
181.79	6.64826	178.102	150.415
181.625	6.68658	183.867	149.553
181.461	6.80153	209.641	147.026
181.297	6.78237	190.758	147.441
181.133	6.84942	148.016	145.998
180.969	6.75363	210.945	148.069
180.805	6.89732	187.586	144.984
180.641	6.93563	179.18	144.183
180.477	7.00269	170.883	142.802
180.313	6.92605	195.313	144.382
180.149	7.00269	159.602	142.802
179.985	7.0889	153.82	141.066
179.821	7.21343	177.93	138.63
179.657	7.25175	199.555	137.898
179.493	7.26133	172.938	137.716

179.329	7.37627	217.07	135.57
179.165	7.33796	158.922	136.278
179.001	7.41459	157.398	134.869
178.837	7.5008	139.305	133.319
178.673	7.43375	156.117	134.522
178.509	7.5487	193.961	132.473
178.345	7.76902	154.5	128.716
178.181	7.52954	133.367	132.81
178.017	7.66365	158.438	130.486
177.853	7.82649	143.813	127.771
177.689	8.01808	165.93	124.718
177.524	8.13303	129.633	122.955
177.36	8.24798	144.695	121.242
177.196	8.39166	144.461	119.166
177.032	8.68862	132.016	115.093
176.868	8.8802	144.25	112.61
176.704	9.04305	160.516	110.582
176.54	9.19631	145.203	108.739
176.376	9.41663	143.656	106.195
176.212	9.59864	143.055	104.181
176.048	9.82854	123.063	101.745
175.884	10.0201	155.625	99.7992
175.72	10.2788	152.055	97.288
175.556	10.4129	136.438	96.035
175.392	10.6044	136.438	94.3
175.228	10.8152	143.445	92.4625
175.064	-999.25	-999.25	-999.25
174.9	10.8727	146.969	91.9738
174.736	10.978	143.891	91.091
174.572	11.0451	148.977	90.538
174.408	11.0451	161.578	90.538
174.244	10.9972	160.547	90.9323
174.08	11.0355	150.391	90.6166
173.916	11.0738	150.844	90.303
173.752	10.9972	167.359	90.9323
173.588	10.9206	140.938	91.5704
173.423	11.16	122.852	89.6054
173.259	10.9685	183.406	91.1705
173.095	10.9397	136.836	91.41
172.931	10.7577	149.352	92.9565
172.767	10.6236	176.734	94.13
172.603	10.4608	134.828	95.5953
172.439	10.3937	156.141	96.2121
172.275	10.1446	164.969	98.5741
172.111	10.1063	166.172	98.9479
171.947	9.95307	133.805	100.472
171.783	9.88601	174.43	101.153
171.619	9.79022	169.852	102.143
171.455	9.60822	163.438	104.078
171.291	9.70401	162.102	103.05
171.127	9.79022	138.453	102.143
170.963	9.76148	138.242	102.443
170.799	9.86685	121.602	101.349
170.635	9.85727	161.398	101.448
170.471	9.9818	146.836	100.182
170.307	10.0297	153.859	99.7039
170.143	10.3171	145.398	96.9267
169.979	10.2021	175.32	98.0188
169.815	10.4895	147.867	95.3334
169.651	10.6236	164.461	94.13
169.486	10.5853	134.398	94.4707
169.322	10.7194	148.188	93.2888
169.158	11.0068	120.074	90.8532
168.994	11.0164	163.609	90.7742
168.83	11.1026	146.016	90.0693
168.666	11.3612	151.25	88.0189
168.502	11.3325	159.656	88.2421
168.338	11.3229	165.109	88.3167
168.174	11.2654	175.586	88.7673
168.01	11.0738	144.563	90.303
167.846	11.0355	150.75	90.6166
167.682	10.7865	153.539	92.7089
167.518	10.8248	163.07	92.3807
167.354	10.6907	167.57	93.5396
167.19	10.5853	158.258	94.4707
167.026	10.7194	129.82	93.2888
166.862	10.796	152.305	92.6266
166.698	10.8152	143.68	92.4625
166.534	10.9397	192.805	91.41
166.37	10.7769	136.211	92.7913
166.206	10.8535	154.961	92.1361
166.042	10.911	147.422	91.6508
165.878	11.0451	154.492	90.538
165.714	11.1984	183.203	89.2988
165.55	11.2079	120.156	89.2225
165.385	11.2654	138.828	88.7673
165.221	11.5432	135.453	86.6311
165.057	11.4283	108.199	87.5024
164.893	11.7348	174.648	85.2167
164.729	11.8018	152.984	84.7325
164.565	11.8402	134.281	84.4583
164.401	11.639	153.563	85.9181
164.237	11.5911	157.859	86.2731
164.073	11.4283	136.32	87.5024
163.909	11.3325	162.086	88.2421
163.745	11.093	136.633	90.1471
163.581	10.9685	158.438	91.1705
163.417	10.8727	157.359	91.9738
163.253	10.5853	164.602	94.4707
163.089	10.4703	158.188	95.5079
162.925	10.2979	187.898	97.107
162.761	10.2117	137.594	97.9269
162.597	10.1542	127.234	98.4811
162.433	10.0776	178.984	99.23
162.269	9.91475	159.438	100.86
162.105	9.93391	144.656	100.665
161.941	9.95307	155.805	100.472
161.777	10.2021	175.586	98.0188
161.613	10.0201	204.008	99.7992
161.449	10.3937	170.688	96.2121
161.284	10.5374	180.625	94.9001
161.12	10.5853	163.75	94.4707
160.956	10.7865	160.539	92.7089
160.792	11.0068	163.727	90.8532
160.628	11.0451	176.938	90.538
160.464	11.1984	205.086	89.2988
160.3	11.3804	154.313	87.8707

160.136	11.4187	156.102	87.5758
159.972	11.6198	163.203	86.0597
159.808	11.5815	182.539	86.3444
159.644	11.5911	170.867	86.2731
159.48	11.8402	135.648	84.4583
159.316	11.8689	158.492	84.2538
159.152	11.8976	141.016	84.0503
158.988	11.9072	136.648	83.9827
158.824	12.0222	164.773	83.1797
158.66	12.0796	148.102	82.7839
158.496	12.118	175.359	82.5222
158.332	12.0796	152.977	82.7839
158.168	12.0222	204.117	83.1797
158.004	12.0605	174.336	82.9154
157.84	11.9551	181.133	83.6462
157.676	11.8881	175.352	84.1181
157.512	11.8593	169.266	84.3219
157.348	11.7156	154.469	85.3561
157.183	11.7731	166.75	84.9394
157.019	11.5432	154.195	86.6311
156.855	11.5815	162.508	86.3444
156.691	11.4187	165.305	87.5758
156.527	11.3995	161.539	87.723
156.363	11.2941	185.375	88.5414
156.199	11.3325	159.766	88.2421
156.035	11.1888	160.945	89.3753
155.871	11.3325	183.086	88.2421
155.707	11.3325	150.758	88.2421
155.543	11.2367	174.648	88.9943
155.379	11.3612	175.773	88.0189
155.215	11.16	169.219	89.6054
155.051	11.2846	175.898	88.6166
154.887	11.2654	209.781	88.7673
154.723	11.2846	151.977	88.6166
154.559	11.5815	191.898	86.3444
154.395	11.6103	203.141	86.1307
154.231	11.9264	184.477	83.8478
154.067	12.2521	173.867	81.6189
153.903	12.5682	198.984	79.5661
153.739	13.0759	215.102	76.4768
153.575	13.7177	217.227	72.8987
153.411	14.3499	209.57	69.6869
153.247	15.3749	212.117	65.0412
153.082	16.5531	194.469	60.4116
152.918	17.4919	211.664	57.1695
152.754	18.8904	262.422	52.9369
152.59	20.0782	282.297	49.8052
152.426	21.2852	227.297	46.981
152.262	22.4347	245.398	44.5738
152.098	23.383	243.867	42.766
151.934	24.4176	250.063	40.9541
151.77	25.1456	244.977	39.7684
151.606	25.6437	276.016	38.9959
151.442	25.6916	282.016	38.9232
151.278	25.5	263.313	39.2156
151.114	24.8582	245.078	40.2281
150.95	24.2547	217.703	41.2291
150.786	23.2393	240.258	43.0305
150.622	22.1377	244.281	45.1717
150.458	21.1894	202.305	47.1934
150.294	20.2315	195.82	49.4279
150.13	19.2832	210.797	51.8587
149.966	18.3923	189.898	54.3706
149.802	17.7218	184.367	56.4278
149.638	17.2045	205.266	58.1244
149.474	16.4094	185.875	60.9406
149.31	15.873	193.328	63.0001
149.145	15.3078	196.219	65.3261
148.981	14.9438	223.438	66.9174
148.817	14.666	213.898	68.1849
148.653	14.5702	209.25	68.6332
148.489	14.4074	197.922	69.4089
148.325	14.3212	224.516	69.8268
148.161	14.4457	209.625	69.2248
147.997	14.5319	193.313	68.8141
147.833	14.6373	219	68.3187
147.669	14.9151	196.898	67.0463
147.505	14.9917	223.414	66.7036
147.341	15.3078	215.781	65.3261
147.177	15.6239	217.055	64.0044
147.013	15.6335	206.586	63.9652
146.849	15.8059	241.445	63.2674
146.685	15.9688	204.008	62.6222
146.521	16.0262	190.961	62.3976
146.357	15.6239	220.273	64.0044
146.193	15.4323	185.922	64.799
146.029	15.3078	197.133	65.3261
145.865	14.9917	195.25	66.7036
145.701	14.7331	225.82	67.8746
145.537	14.4361	188.289	69.2707
145.373	14.1583	203.906	70.6299
145.209	14.12	262.344	70.8215
145.044	13.8614	201.203	72.143
144.88	13.8039	202.195	72.4434
144.716	13.8135	250.008	72.3931
144.552	13.5931	256.984	73.5665
144.388	13.5644	201.055	73.7224
144.224	13.5931	201.516	73.5665
144.06	13.4878	228.188	74.1412
143.896	13.5165	245.086	73.9836
143.732	13.4303	225.828	74.4585
143.568	13.3537	244.82	74.8858
143.404	13.1812	202.18	75.8654
143.24	13.1812	201.391	75.8654
143.076	13.3345	213.547	74.9934
142.912	13.2291	206.68	75.5907
142.748	13.2291	213.023	75.5907
142.584	13.0759	214.406	76.4768
142.42	13.1429	249.906	76.0866
142.256	12.9801	233.914	77.0411
142.092	12.9513	254.742	77.2121
141.928	13.0088	243.984	76.871
141.764	12.9801	206.633	77.0411
141.6	12.9801	314.359	77.0411
141.436	13.0471	265.344	76.6452
141.272	13.0854	244.555	76.4208
141.108	13.1812	271.219	75.8654

140.943	13.3058	299.516	75.1554
140.779	13.5836	295.125	73.6184
140.615	13.7177	296.781	72.8987
140.451	13.8997	306.453	71.9441
140.287	14.0625	289.297	71.111
140.123	14.1966	289.75	70.4393
139.959	14.1966	260.344	70.4393
139.795	14.3595	267.766	69.6404
139.631	14.2254	252.016	70.297
139.467	14.1487	267.391	70.6777
139.303	13.8709	277.5	72.0932
139.139	13.459	253.492	74.2995
138.975	13.1812	317.75	75.8654
138.811	12.5969	323.094	79.3845
138.647	12.2521	290.953	81.6189
138.483	11.9264	298.422	83.8478
138.319	11.3899	262.078	87.7968
138.155	10.911	320.094	91.6508
137.991	10.5566	316.484	94.7279
137.827	10.2021	293.719	98.0188
137.663	9.74232	265.031	102.645
137.499	9.6178	281.656	103.974
137.335	9.18673	261.219	108.853
137.171	8.81315	290.797	113.467
137.007	8.45872	302.297	118.221
136.842	8.10429	257.578	123.391
136.678	7.95102	264.828	125.77
136.514	7.66365	244.258	130.486
136.35	7.41459	275.344	134.869
136.186	7.38585	253.828	135.394
136.022	7.25175	275.703	137.898
135.858	7.0889	265.484	141.066
135.694	7.03143	307.125	142.219
135.53	6.92605	281.469	144.382
135.366	6.84942	235.406	145.998
135.202	6.73447	289.328	148.49
135.038	6.73447	269.391	148.49
134.874	6.80153	226.633	147.026
134.71	6.56205	274.313	152.391
134.546	6.41836	283.109	155.803
134.382	6.42794	278.391	155.571
134.218	6.49499	245.188	153.965
134.054	6.42794	268.406	155.571
133.89	6.3992	275.906	156.269
133.726	6.29383	289.594	158.886
133.562	6.42794	276.172	155.571
133.398	6.42794	283.219	155.571
133.234	6.23636	280.391	160.35
133.07	6.20762	294.313	161.092
132.906	6.30341	256.5	158.644
132.741	6.17888	291.25	161.842
132.577	6.06393	305.063	164.91
132.413	6.08309	247.852	164.39
132.249	6.01604	250.039	166.222
132.085	5.9873	280.328	167.02
131.921	6.01604	298.594	166.222
131.757	5.89151	288.125	169.736
131.593	5.91066	279.641	169.186
131.429	5.81487	264.703	171.973
131.265	5.82445	295.594	171.69
131.101	5.92024	283.984	168.912
130.937	5.89151	269.5	169.736
130.773	5.91066	284.813	169.186
130.609	5.89151	258.406	169.736
130.445	5.88193	264.406	170.012
130.281	5.82445	255.133	171.69
130.117	5.86277	248.633	170.568
129.953	5.9394	294.5	168.367
129.789	5.89151	226.789	169.736
129.625	5.94898	259.953	168.096
129.461	5.85319	262.328	170.847
129.297	5.91066	262.938	169.186
129.133	5.84361	263.188	171.127
128.969	5.74782	253.539	173.979
128.804	5.81487	260.578	171.973
128.64	5.79572	231.617	172.541
128.476	5.7574	271.219	173.69
128.312	5.81487	257.328	171.973
128.148	5.88193	240.313	170.012
127.984	5.92024	273.188	168.912
127.82	5.88193	276.313	170.012
127.656	5.85319	281.438	170.847
127.492	5.86277	267.047	170.568
127.328	6.03519	241.43	165.695
127.164	5.86277	266.594	170.568
127	6.07351	297.438	164.649
126.836	6.10225	247.68	163.874
126.672	6.04477	255.672	165.432
126.508	5.88193	275.953	170.012
126.344	5.92024	281.594	168.912
126.18	5.88193	262.672	170.012
126.016	6.07351	258.781	164.649
125.852	5.9873	302.938	167.02
125.688	5.92024	290.422	168.912
125.524	5.92024	258.578	168.912
125.36	5.9873	258.453	167.02
125.196	5.86277	279.75	170.568
125.032	5.9394	294.391	168.367
124.868	5.91066	311.734	169.186
124.703	5.9873	277.016	167.02
124.539	6.07351	273.969	164.649
124.375	6.00646	259.719	166.488
124.211	5.9873	312.125	167.02
124.047	5.9873	266.141	167.02
123.883	5.9873	230.25	167.02
123.719	6.06393	275.328	164.91
123.555	5.96814	263.875	167.556
123.391	5.96814	296.547	167.556
123.227	6.11183	253.406	163.617
123.063	5.9873	296.375	167.02
122.899	5.91066	265.813	169.186
122.735	5.89151	322.781	169.736
122.571	6.03519	277.797	165.695
122.407	6.04477	298.078	165.432
122.243	5.74782	287.766	173.979
122.079	5.9394	282.063	168.367
121.915	6.00646	259.688	166.488

121.751	5.96814	256.859	167.556
121.587	5.97772	261.703	167.288
121.423	5.86277	301.688	170.568
121.259	6.07351	279.297	164.649
121.095	6.03519	277.172	165.695
120.931	6.01604	260.156	166.222
120.767	5.9873	278.109	167.02
120.602	6.06393	251.727	164.91
120.438	5.89151	288.344	169.736
120.274	5.88193	274.094	170.012
120.11	5.97772	301.953	167.288
119.946	6.04477	259.703	165.432
119.782	6.00646	246.539	166.488
119.618	5.92024	266.531	168.912
119.454	6.11183	282.016	163.617
119.29	6.00646	283.641	166.488
119.126	5.97772	276.719	167.288
118.962	6.07351	267.375	164.649
118.798	5.96814	265.531	167.556
118.634	6.00646	298.344	166.488
118.47	5.9394	286.656	168.367
118.306	5.89151	309.063	169.736
118.142	6.01604	303.953	166.222
117.978	6.04477	319.828	165.432
117.814	5.84361	250.148	171.127
117.65	6.06393	272.219	164.91
117.486	5.91066	281.875	169.186
117.322	5.94898	275.828	168.096
117.158	5.9394	241.625	168.367
116.994	5.94898	258.703	168.096
116.83	5.96814	260.406	167.556
116.666	5.94898	250.656	168.096
116.501	5.94898	246.32	168.096
116.337	5.89151	261.188	169.736
116.173	5.94898	258.813	168.096
116.009	5.85319	251.078	170.847
115.845	6.03519	285.828	165.695
115.681	5.89151	233.586	169.736
115.517	5.9394	287.578	168.367
115.353	5.9394	271.203	168.367
115.189	6.04477	292.063	165.432
115.025	6.03519	299.406	165.695
114.861	5.94898	307.656	168.096
114.697	6.06393	300.281	164.91
114.533	6.03519	279.938	165.695
114.369	6.00646	264.75	166.488
114.205	5.9394	263.453	168.367
114.041	6.07351	273.859	164.649
113.877	6.01604	229.164	166.222
113.713	6.04477	264.688	165.432
113.549	6.01604	284.641	166.222
113.385	5.96814	260.672	167.556
113.221	5.91066	309.094	169.186
113.057	5.91066	305.813	169.186
112.893	6.06393	241.117	164.91
112.729	6.00646	290.203	166.488
112.564	5.9394	274.203	168.367
112.4	5.81487	258.313	171.973
112.236	5.9394	227.852	168.367
112.072	5.89151	278.391	169.736
111.908	5.9394	301.141	168.367
111.744	6.00646	264.828	166.488
111.58	5.89151	267.875	169.736
111.416	5.84361	329.109	171.127
111.252	5.92024	301.734	168.912
111.088	6.07351	277.734	164.649
110.924	5.96814	281.672	167.556
110.76	6.14056	273.453	162.851
110.596	5.96814	308.5	167.556
110.432	6.01604	280.703	166.222
110.268	5.96814	254.992	167.556
110.104	6.00646	260.547	166.488
109.94	5.89151	277.625	169.736
109.776	5.86277	296.031	170.568
109.612	5.9873	280.469	167.02
109.448	5.9873	296.484	167.02
109.284	5.9394	269.438	168.367
109.12	5.88193	296.188	170.012
108.956	5.9394	275.359	168.367
108.792	5.92024	252.016	168.912
108.628	5.82445	268.75	171.69
108.463	6.15972	295.875	162.345
108.299	5.9873	282.563	167.02
108.135	6.10225	267.156	163.874
107.971	5.94898	267.734	168.096
107.807	5.88193	276.172	170.012
107.643	5.97772	275.969	167.288
107.479	6.03519	232.992	165.695
107.315	6.08309	285.359	164.39
107.151	5.86277	287.703	170.568
106.987	5.92024	260.859	168.912
106.823	5.9394	294.094	168.367
106.659	5.78614	286.016	172.827
106.495	5.78614	281.656	172.827
106.331	5.7574	272.953	173.69
106.167	5.86277	271.609	170.568
106.003	-999.25	-999.25	-999.25
105.839	5.88193	280.766	170.012
105.675	5.72866	246.398	174.561
105.511	5.76698	301.672	173.401
105.347	5.63287	240.07	177.529
105.183	5.84361	300.109	171.127
105.019	5.9394	265.766	168.367
104.855	5.74782	258.391	173.979
104.691	5.60413	288.422	178.44
104.527	5.88193	253	170.012
104.362	5.76698	260.828	173.401
104.198	5.76698	245.969	173.401
104.034	5.67119	286.109	176.33
103.87	5.69034	228.539	175.736
103.706	5.79572	262.297	172.541
103.542	5.86277	263.516	170.568
103.378	5.82445	265.609	171.69
103.214	5.7574	305.297	173.69
103.05	5.72866	256.031	174.561
102.886	5.85319	270.484	170.847
102.722	5.79572	290	172.541

102.558	5.96814	266.359	167.556
102.394	5.78614	277.766	172.827
102.23	5.89151	252.484	169.736
102.066	5.89151	292.234	169.736
101.902	5.84361	260.406	171.127
101.738	5.88193	282.688	170.012
101.574	5.7574	272.438	173.69
101.41	5.72866	273.719	174.561
101.246	5.78614	271.688	172.827
101.082	5.72866	223.086	174.561
100.918	5.69992	254.039	175.441
100.754	5.69992	272.906	175.441
100.59	5.71908	244.398	174.853
100.426	5.74782	244.273	173.979
100.261	5.74782	231.141	173.979
100.097	5.74782	260.859	173.979
99.9334	5.74782	288.734	173.979
99.7693	5.74782	247.344	173.979
99.6053	5.78614	288.875	172.827
99.4413	5.69992	252.82	175.441
99.2772	5.78614	316.25	172.827
99.1132	5.71908	283.172	174.853
98.9491	5.69034	254.484	175.736
98.7851	5.72866	247.883	174.561
98.6211	5.78614	275.609	172.827
98.457	5.67119	274.594	176.33
98.293	5.69992	272.438	175.441
98.1289	5.50834	234.852	181.543
97.9649	5.81487	292.25	171.973
97.8009	5.69992	295.484	175.441
97.6368	5.71908	280.141	174.853
97.4728	5.67119	339.156	176.33
97.3087	5.60413	332.766	178.44
97.1447	5.72866	281.344	174.561
96.9807	5.69992	251.031	175.441
96.8166	5.71908	253.469	174.853
96.6526	5.67119	253.984	176.33
96.4885	5.67119	300.984	176.33
96.3245	5.69034	306.078	175.736
96.1605	5.62329	275.781	177.832
95.9964	5.56582	224.547	179.668
95.8324	5.65203	247.164	176.928
95.6683	5.56582	288.125	179.668
95.5043	5.56582	315.203	179.668
95.3403	5.59455	259.469	178.745
95.1762	5.66161	299.125	176.628
95.0122	5.5275	284.203	180.914
94.8481	5.71908	276.359	174.853
94.6841	5.60413	259.313	178.44
94.5201	5.5275	273.922	180.914
94.356	5.57539	286.109	179.359
94.192	5.5275	288.844	180.914
94.0279	5.49876	262.266	181.859
93.8639	5.60413	302.047	178.44
93.6999	5.53708	298.641	180.601
93.5358	5.55624	256.703	179.978
93.3718	5.49876	265.672	181.859
93.2077	5.5275	290.016	180.914
93.0437	5.55624	259.875	179.978
92.8796	5.60413	275.156	178.44
92.7156	5.41255	244.141	184.756
92.5516	5.57539	268.469	179.359
92.3875	5.47002	286.688	182.815
92.2235	5.4796	260.5	182.495
92.0595	5.49876	280.766	181.859
91.8954	5.59455	332.625	178.745
91.7314	5.50834	288.813	181.543
91.5673	5.59455	281.609	178.745
91.4033	5.38381	278.625	185.742
91.2392	5.53708	268.828	180.601
91.0752	5.33592	304.25	187.409
90.9112	5.55624	260.031	179.978
90.7471	5.49876	315.891	181.859
90.5831	5.4796	286.578	182.495
90.419	5.53708	337.203	180.601
90.255	5.5275	273.188	180.914
90.091	5.44129	284.141	183.78
89.9269	5.43171	285.156	184.104
89.7629	5.50834	266.234	181.543
89.5988	5.5275	283.984	180.914
89.4348	5.5275	298.938	180.914
89.2708	5.5275	320.813	180.914
89.1067	5.44129	287	183.78
88.9427	5.43171	269.344	184.104
88.7786	5.43171	266.469	184.104
88.6146	5.44129	271	183.78
88.4506	5.62329	277.75	177.832
88.2865	5.3455	283.063	187.073
88.1225	5.36465	291.922	186.405
87.9584	5.4796	242.844	182.495
87.7944	5.46044	252.086	183.135
87.6304	5.43171	298.859	184.104
87.4663	5.40297	284.656	185.083
87.3023	5.43171	280.359	184.104
87.1382	5.4796	253.859	182.495
86.9742	5.40297	298.422	185.083
86.8102	5.44129	253.781	183.78
86.6461	5.49876	293.813	181.859
86.4821	5.50834	243.688	181.543
86.318	5.30718	279.906	188.424
86.154	5.46044	256.484	183.135
85.99	5.38381	271.797	185.742
85.8259	5.37423	286.906	186.073
85.6619	5.38381	265.844	185.742
85.4978	5.43171	259.203	184.104
85.3338	5.56582	264.594	179.668
85.1698	5.46044	281.063	183.135
85.0057	5.44129	268.188	183.78
84.8417	5.4796	272.891	182.495
84.6776	5.49876	289.578	181.859
84.5136	5.36465	245.219	186.405
84.3496	5.53708	279.313	180.601
84.1855	5.60413	297.828	178.44
84.0215	5.43171	237.055	184.104
83.8574	5.46044	266.984	183.135
83.6934	5.37423	306.547	186.073
83.5293	5.4796	267.766	182.495

83.3653	5.31676	287.625	188.085
83.2013	5.38381	283.672	185.742
83.0372	5.37423	275.141	186.073
82.8732	5.47002	271.844	182.815
82.7092	5.28802	257.281	189.107
82.5451	5.30718	293.125	188.424
82.3811	5.31676	327.781	188.085
82.217	5.40297	266.563	185.083
82.053	5.38381	308.094	185.742
81.8889	5.40297	277.703	185.083
81.7249	5.30718	255.852	188.424
81.5609	5.28802	282.766	189.107
81.3968	5.28802	269.375	189.107
81.2328	5.36465	250.789	186.405
81.0687	5.30718	227.219	188.424
80.9047	5.2497	267.891	190.487
80.7407	5.30718	259.328	188.424
80.5766	5.26886	260.156	189.794
80.4126	5.38381	261.266	185.742
80.2485	5.36465	280.641	186.405
80.0845	5.47002	262.938	182.815
79.9205	5.36465	289.469	186.405
79.7564	5.41255	256.047	184.756
79.5924	5.27844	288.453	189.45
79.4283	5.26886	290.375	189.794
79.2643	5.36465	312.266	186.405
79.1003	5.43171	255.125	184.104
78.9362	5.44129	275.859	183.78
78.7722	5.41255	264.547	184.756
78.6081	5.38381	252.68	185.742
78.4441	5.47002	282.297	182.815
78.2801	5.3455	230.594	187.073
78.116	5.21139	251.961	191.887
77.952	5.26886	261.578	189.794
77.7879	5.47002	272.141	182.815
77.6239	5.37423	264.313	186.073
77.4599	5.36465	279.219	186.405
77.2958	5.4796	266.266	182.495
77.1318	5.37423	267.328	186.073
76.9677	5.40297	273.266	185.083
76.8037	5.3455	328.781	187.073
76.6397	5.31676	274.203	188.085
76.4756	5.37423	260.359	186.073
76.3116	5.30718	288.328	188.424
76.1475	5.36465	288.984	186.405
75.9835	5.36465	291	186.405
75.8195	5.3455	247.203	187.073
75.6554	5.33592	281.672	187.409
75.4914	5.31676	256.375	188.085
75.3273	5.3455	274.547	187.073
75.1633	5.36465	285.156	186.405
74.9993	5.31676	270.719	188.085
74.8352	5.30718	246.719	188.424
74.6712	5.30718	274.047	188.424
74.5071	5.2497	240.391	190.487
74.3431	5.14433	280.203	194.389
74.1791	5.07728	279.922	196.956
74.015	5.2497	281.031	190.487
73.851	5.31676	292.531	188.085
73.6869	5.09644	282.375	196.216
73.5229	5.24012	257.172	190.835
73.3588	5.26886	280.953	189.794
73.1948	5.22097	247.258	191.535
73.0308	5.28802	274.656	189.107
72.8667	5.2497	256.172	190.487
72.7027	5.21139	341.203	191.887
72.5386	5.19223	268.25	192.596
72.3746	5.15391	255.461	194.027
72.2106	5.19223	263.156	192.596
72.0465	5.14433	251.617	194.389
71.8825	5.27844	283.609	189.45
71.7184	5.3455	261.969	187.073
71.5544	5.28802	282.375	189.107
71.3904	5.28802	255.883	189.107
71.2263	5.27844	280.516	189.45
71.0623	5.33592	295.781	187.409
70.8982	5.2497	229.977	190.487
70.7342	5.24012	260.094	190.835
70.5702	5.17307	275.828	193.309
70.4061	5.27844	279.109	189.45
70.2421	5.3455	264.313	187.073
70.078	5.15391	289.188	194.027
69.914	5.27844	303.813	189.45
69.75	5.1156	297.406	195.481
69.5859	5.26886	272.047	189.794
69.4219	5.12517	285.547	195.115
69.2578	5.1156	271.969	195.481
69.0938	5.19223	254.969	192.596
68.9298	5.24012	251.086	190.835
68.7657	5.21139	304.453	191.887
68.6017	5.19223	251.289	192.596
68.4376	5.28802	317.141	189.107
68.2736	5.30718	283.859	188.424
68.1096	5.21139	267.719	191.887
67.9455	5.31676	283.188	188.085
67.7815	5.26886	257.203	189.794
67.6174	5.18265	244.07	192.951
67.4534	5.19223	308.406	192.596
67.2894	5.17307	284.234	193.309
67.1253	5.26886	284.984	189.794
66.9613	5.30718	277.125	188.424
66.7972	5.21139	302.891	191.887
66.6332	5.24012	283.031	190.835
66.4692	5.28802	262.703	189.107
66.3051	5.31676	219.961	188.085
66.1411	5.24012	290.844	190.835
65.977	5.36465	286.797	186.405
65.813	5.38381	296.984	185.742
65.6489	5.41255	315.281	184.756
65.4849	5.44129	286.344	183.78
65.3209	5.43171	262.609	184.104
65.1568	5.27844	272.078	189.45
64.9928	5.36465	264.078	186.405
64.8288	5.46044	253.727	183.135
64.6647	5.57539	228.797	179.359
64.5007	5.62329	274.719	177.832
64.3366	5.43171	267.891	184.104

64.1726	5.71908	245.063	174.853
64.0085	5.56582	262.344	179.668
63.8445	5.57539	265.219	179.359
63.6805	5.7574	262.391	173.69
63.5164	5.78614	293.281	172.827
63.3524	5.74782	256.609	173.979
63.1883	5.79572	247.867	172.541
63.0243	6.00646	267.297	166.488
62.8603	6.10225	286.844	163.874
62.6962	6.19804	276.281	161.341
62.5322	6.15972	278.984	162.345
62.3681	6.60994	250.563	151.287
62.2041	6.71531	296.031	148.913
62.0401	7.03143	275.359	142.219
61.876	7.06016	264.781	141.64
61.712	7.3188	245.188	136.634
61.5479	7.69239	250.844	129.999
61.3839	8.29587	202.617	120.542
61.2199	8.77483	211.68	113.962
61.0558	9.55074	207.734	104.704
60.8918	10.6332	210.508	94.0452
60.7277	11.7156	227.008	85.3561
60.5637	13.3728	126.742	74.7785
60.3997	15.8155	177.648	63.2291
60.2356	18.9287	179.109	52.8297
60.0716	23.4884	168.859	42.5742
59.9075	30.0789	166.102	33.2459
59.7435	40.0603	149.258	24.9623
59.5795	55.4828	152.508	18.0236
59.4154	79.4211	161.773	12.5911
59.2514	118.217	148.25	8.45905
59.0873	181.324	151.742	5.51499
58.9233	-16.6387	145.031	-60.101
58.7593	-234.526	145.375	-4.26392
58.5952	-234.526	124.906	-4.26392
58.4312	-234.526	130.422	-4.26392
58.2671	-234.526	110.094	-4.26392
58.1031	-234.526	140.656	-4.26392
57.9391	-234.526	142.492	-4.26392
57.775	-234.526	162.047	-4.26392
57.611	-234.526	124.945	-4.26392
57.4469	-234.526	137.742	-4.26392
57.2829	-234.526	133.023	-4.26392
57.1189	-234.526	129.43	-4.26392
56.9548	-234.526	110.082	-4.26392
56.7908	-234.526	117.789	-4.26392
56.6267	-234.526	103.621	-4.26392
56.4627	-234.526	112.633	-4.26392
56.2986	-234.526	142.961	-4.26392
56.1346	-234.526	131.367	-4.26392
55.9706	-234.526	107.188	-4.26392
55.8065	-234.526	111.648	-4.26392
55.6425	-234.526	131.18	-4.26392
55.4785	-234.526	98.2305	-4.26392
55.3144	-234.526	119.734	-4.26392
55.1504	-234.526	112.699	-4.26392
54.9863	-234.526	135.117	-4.26392
54.8223	-234.526	115.281	-4.26392
54.6582	-234.526	115.93	-4.26392
54.4942	-234.526	159.703	-4.26392
54.3302	-234.526	120.734	-4.26392
54.1661	-234.526	146.523	-4.26392
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53.838	-234.526	121.945	-4.26392
53.674	-234.526	118.871	-4.26392
53.51	-234.526	104.047	-4.26392
53.3459	-234.526	117.41	-4.26392
53.1819	-234.526	145.117	-4.26392
53.0178	-234.526	97.3242	-4.26392
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52.3617	-234.526	128.875	-4.26392
52.1976	-234.526	126.711	-4.26392
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51.8696	-234.526	126.25	-4.26392
51.7055	-234.526	95.457	-4.26392
51.5415	-234.526	151.203	-4.26392
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49.573	-234.526	110.961	-4.26392
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49.2449	-234.526	98.7617	-4.26392
49.0809	-234.526	139.797	-4.26392
48.9168	-234.526	89.6484	-4.26392
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48.5888	-234.526	112.758	-4.26392
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47.9326	-234.526	85.7148	-4.26392
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47.6045	-234.526	88.3672	-4.26392
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47.2764	-234.526	93.793	-4.26392
47.1124	-234.526	64.668	-4.26392
46.9484	-234.526	80.5547	-4.26392
46.7843	-234.526	80.5625	-4.26392
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46.1282	-234.526	74.793	-4.26392
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45.636	-234.526	58.3711	-4.26392
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45.3079	-234.526	63.6211	-4.26392
45.1439	-234.526	63.041	-4.26392

44.9799	-234.526	67.5117	-4.26392
44.8158	-234.526	67.7969	-4.26392
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44.4877	-234.526	63.5566	-4.26392
44.3237	-234.526	64.6797	-4.26392
44.1597	-234.526	52.3652	-4.26392
43.9956	-234.526	73.3516	-4.26392
43.8316	-234.526	57.6758	-4.26392
43.6675	-234.526	52.9629	-4.26392
43.5035	-234.526	49.8398	-4.26392
43.3395	-234.526	42.332	-4.26392
43.1754	-234.526	74.5508	-4.26392
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42.8473	-234.526	67.5234	-4.26392
42.6833	-234.526	51.2559	-4.26392
42.5193	-234.526	39.1582	-4.26392
42.3552	-234.526	61.3613	-4.26392
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41.8631	-234.526	43.9375	-4.26392
41.6991	-234.526	26.4043	-4.26392
41.535	-234.526	41.7441	-4.26392
41.371	-234.526	60.4395	-4.26392
41.2069	-234.526	32.7402	-4.26392
41.0429	-234.526	53.6172	-4.26392
40.8789	-234.526	38.2051	-4.26392
40.7148	-234.526	25.8594	-4.26392
40.5508	-234.526	58.1563	-4.26392
40.3867	-234.526	34.2813	-4.26392
40.2227	-234.526	40.7734	-4.26392
40.0587	-234.526	39.4707	-4.26392
39.8946	-234.526	48.0293	-4.26392
39.7306	-234.526	39.2012	-4.26392
39.5665	-234.526	52.543	-4.26392
39.4025	-234.526	57.5645	-4.26392
39.2385	-234.526	42.7051	-4.26392
39.0744	-234.526	51.2832	-4.26392
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38.5823	-234.526	60.5703	-4.26392
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38.0902	-234.526	47.8574	-4.26392
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36.2857	-234.526	58.9023	-4.26392
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35.9576	-234.526	51.2773	-4.26392
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35.6296	-234.526	58.3809	-4.26392
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35.3015	-234.526	56.3945	-4.26392
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33.9892	-234.526	56.0195	-4.26392
33.8251	-234.526	51.4707	-4.26392
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32.5128	-234.526	62.6992	-4.26392
32.3488	-234.526	69.0938	-4.26392
32.1847	-234.526	65.8125	-4.26392
32.0207	-234.526	65.9727	-4.26392
31.8566	-234.526	69.1367	-4.26392
31.6926	-234.526	68.6797	-4.26392
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31.3645	-234.526	54.9316	-4.26392
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31.0364	-234.526	65.0625	-4.26392
30.8724	-234.526	63.043	-4.26392
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30.5443	-234.526	61.5566	-4.26392
30.3803	-234.526	39.2949	-4.26392
30.2162	-234.526	47.8359	-4.26392
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29.8882	-234.526	48.9648	-4.26392
29.7241	-234.526	47.6426	-4.26392
29.5601	-234.526	47.5859	-4.26392
29.396	-234.526	42.498	-4.26392
29.232	-234.526	62.043	-4.26392
29.068	-234.526	56.377	-4.26392
28.9039	-234.526	55.9375	-4.26392
28.7399	-234.526	54.1621	-4.26392
28.5758	-234.526	47.8184	-4.26392
28.4118	-234.526	39.0449	-4.26392
28.2477	-234.526	39.373	-4.26392
28.0837	-234.526	54.9414	-4.26392
27.9197	-234.526	49.7109	-4.26392
27.7556	-234.526	64.6914	-4.26392
27.5916	-234.526	50.1582	-4.26392
27.4275	-234.526	53.9688	-4.26392
27.2635	-234.526	46.2969	-4.26392
27.0995	-234.526	51.7305	-4.26392
26.9354	-234.526	50.0996	-4.26392
26.7714	-234.526	51.7051	-4.26392
26.6073	-234.526	59.9219	-4.26392
26.4433	-234.526	46.1504	-4.26392
26.2793	-234.526	42.043	-4.26392
26.1152	-234.526	52.6309	-4.26392
25.9512	-234.526	32.4785	-4.26392

25.7871	-234.526	58.3555	-4.26392
25.6231	-234.526	40.9199	-4.26392
25.4591	-234.526	40.6973	-4.26392
25.295	-234.526	57.1406	-4.26392
25.131	-234.526	56.3848	-4.26392
24.9669	-234.526	49.8438	-4.26392
24.8029	-234.526	42.498	-4.26392
24.6389	-234.526	70.0625	-4.26392
24.4748	-234.526	38.9297	-4.26392
24.3108	-234.526	39	-4.26392
24.1467	-234.526	44.1934	-4.26392
23.9827	-234.526	51.1016	-4.26392
23.8187	-234.526	42.543	-4.26392
23.6546	-234.526	54.3984	-4.26392
23.4906	-234.526	54.8848	-4.26392
23.3265	-234.526	55.5742	-4.26392
23.1625	-234.526	41.8145	-4.26392
22.9985	-234.526	52.1914	-4.26392
22.8344	-234.526	41.4355	-4.26392
22.6704	-234.526	54.9277	-4.26392
22.5063	-234.526	43.0391	-4.26392
22.3423	-234.526	58.5078	-4.26392
22.1783	-234.526	39.3984	-4.26392
22.0142	-234.526	44.5371	-4.26392
21.8502	-234.526	37.0215	-4.26392
21.6861	-234.526	54.6973	-4.26392
21.5221	-234.526	49.2363	-4.26392
21.3581	-234.526	51.8711	-4.26392
21.194	-234.526	59.8965	-4.26392
21.03	-234.526	38.8359	-4.26392
20.8659	-234.526	38.9961	-4.26392
20.7019	-234.526	49.2578	-4.26392
20.5379	-234.526	52.6641	-4.26392
20.3738	-234.526	40.9805	-4.26392
20.2098	-234.526	59.3438	-4.26392
20.0457	-234.526	47.3359	-4.26392
19.8817	-234.526	27.208	-4.26392
19.7177	-234.526	41.0195	-4.26392
19.5536	-234.526	42.7051	-4.26392
19.3896	-234.526	51.8711	-4.26392
19.2255	-234.526	37.0742	-4.26392
19.0615	-234.526	59.4023	-4.26392
18.8974	-234.526	47.7969	-4.26392
18.7334	-234.526	54.3125	-4.26392
18.5694	-234.526	50.4844	-4.26392
18.4053	-234.526	38.2754	-4.26392
18.2413	-234.526	48.5723	-4.26392
18.0772	-234.526	56.9805	-4.26392
17.9132	-234.526	48.7773	-4.26392
17.7492	-234.526	45.0918	-4.26392
17.5851	-234.526	51.6289	-4.26392
17.4211	-234.526	34.0977	-4.26392
17.257	-234.526	45.6133	-4.26392
17.093	-234.526	56.3184	-4.26392
16.929	-234.526	65.1094	-4.26392
16.7649	-234.526	46.041	-4.26392
16.6009	-234.526	61.2969	-4.26392
16.4368	-234.526	45.4551	-4.26392
16.2728	-234.526	62.6836	-4.26392
16.1088	-234.526	57.7402	-4.26392
15.9447	-234.526	44.5918	-4.26392
15.7807	-234.526	60.9414	-4.26392
15.6166	-234.526	59.9082	-4.26392
15.4526	-234.526	55.125	-4.26392
15.2886	-234.526	50.9336	-4.26392
15.1245	-234.526	44.2793	-4.26392
14.9605	-234.526	55.502	-4.26392
14.7964	-234.526	33.5684	-4.26392
14.6324	-234.526	33.4121	-4.26392
14.4684	-234.526	40.3848	-4.26392
14.3043	-234.526	39.3125	-4.26392
14.1403	-234.526	46.0605	-4.26392
13.9762	-234.526	46.2539	-4.26392
13.8122	-234.526	45.2559	-4.26392
13.6482	-234.526	52.8477	-4.26392
13.4841	-234.526	49.6289	-4.26392
13.3201	-234.526	59.5039	-4.26392
13.156	-234.526	38.5859	-4.26392
12.992	-234.526	45.4512	-4.26392
12.828	-234.526	39.7793	-4.26392
12.6639	-234.526	41.5078	-4.26392
12.4999	-234.526	48.4785	-4.26392
12.3358	-234.526	39.6855	-4.26392
12.1718	-234.526	47.043	-4.26392
12.0078	-234.526	42.0977	-4.26392
11.8437	-234.526	42.166	-4.26392
11.6797	-234.526	48.3438	-4.26392
11.5156	-234.526	40.2227	-4.26392
11.3516	-234.526	37.666	-4.26392
11.1876	-234.526	31.1191	-4.26392
11.0235	-234.526	46.1582	-4.26392
10.8595	-234.526	45.0332	-4.26392
10.6954	-234.526	41.6055	-4.26392
10.5314	-234.526	46.2188	-4.26392
10.3674	-234.526	50.5098	-4.26392
10.2033	-234.526	53.4258	-4.26392
10.0393	-234.526	44.2949	-4.26392
9.87523	-234.526	63.3848	-4.26392
9.71119	-234.526	57.293	-4.26392
9.54715	-234.526	52.7363	-4.26392
9.38311	-234.526	66.668	-4.26392
9.21907	-234.526	66.2578	-4.26392
9.05503	-234.526	74.2148	-4.26392
8.89099	-234.526	52.6328	-4.26392
8.72695	-234.526	81.4023	-4.26392
8.56291	-234.526	87.0664	-4.26392
8.39887	-234.526	73.3242	-4.26392
8.23483	-234.526	87.8906	-4.26392
8.07079	-234.526	85.1914	-4.26392
7.90675	-234.526	78.4219	-4.26392
7.74271	-234.526	87.0977	-4.26392
7.57866	-234.526	69.5156	-4.26392
7.41462	-234.526	78.7773	-4.26392
7.25058	-234.526	77.1523	-4.26392
7.08654	-234.526	65.3008	-4.26392
6.9225	-234.526	74	-4.26392
6.75846	-234.526	52.6953	-4.26392

6.59442	-234.526	37.8008	-4.26392
6.43038	-234.526	48.7109	-4.26392
6.26634	-234.526	42.8828	-4.26392
6.1023	-234.526	42.416	-4.26392
5.93826	-234.526	22.5986	-4.26392
5.77422	-234.526	34.6992	-4.26392
5.61018	-234.526	48.5488	-4.26392
5.44614	-234.526	51.6328	-4.26392
5.2821	-234.526	52.877	-4.26392
5.11806	-234.526	37.6895	-4.26392
4.95402	-234.526	57.6875	-4.26392
4.78998	-234.526	43.2266	-4.26392
4.62594	-234.526	49.7773	-4.26392
4.4619	-234.526	38.8262	-4.26392
4.29786	-234.526	35.498	-4.26392
4.13382	-234.526	33.1523	-4.26392
3.96978	-234.526	27.9482	-4.26392
3.80574	-234.526	25.0469	-4.26392
3.6417	-234.526	26.4727	-4.26392
3.47766	-234.526	10.2139	-4.26392
3.31362	-234.526	21.3721	-4.26392
3.14957	-234.526	12.8145	-4.26392
2.98553	-234.526	19.2559	-4.26392
2.82149	-234.526	14.0737	-4.26392

Appendix F

Westbay™ Multi-Level Sampling Diagram
(CD attached to inside back cover)

Summary MP Casing Log

Company: Los Alamos National Lab
Well: R32
Site: LANL
Project: Hydrogeology Study

Job No: WB777
Author: GG/DL

Well Information

Reference Datum: Ground Level
Elevation of Datum: 0.00 ft.
MP Casing Top: 0.00 ft.
MP Casing Length: 998.45 ft.

Borehole Depth: 1002.00 ft.
Borehole Inclination: vertical
Borehole Diameter: 5.00 in.

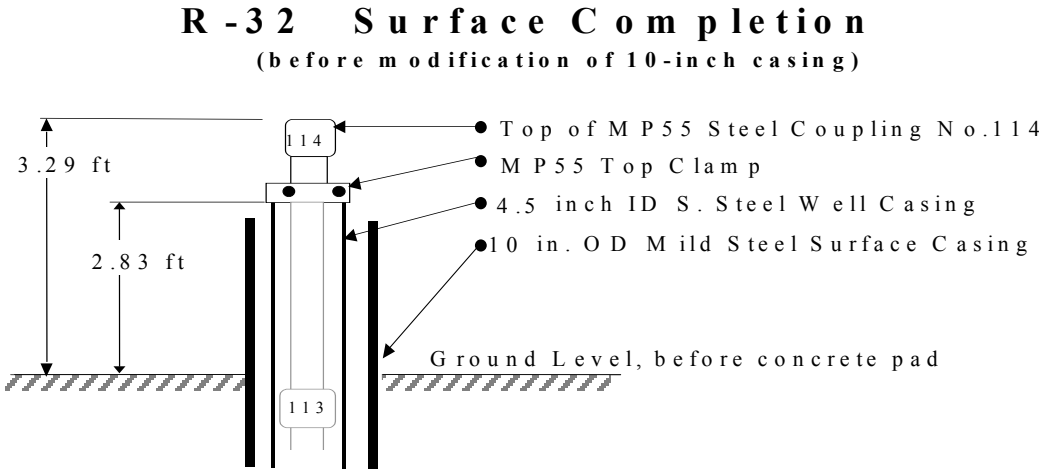
Well Description:
Plastic MP55
Other References:
Pipe-based wire-wrapped screens.
BF and screens after LANL 09/30/02
All depths from meas'd lengths

File Information

File Name: R32.WWD
Report Date: Mon Feb 03 09:52:33 2003

File Date: Jan 20 10:09:17 2003

Sketch of Wellhead Completion



Legend

(Qty) MP Components

(Library - WD Library 7/27/00)

(2) 0603 - MP55 End Plug

(12) 0601M15 - MP55 Casing, 1.5 m, PVC

(90) 0601M30 - MP55 Casing, 3.0 m, PVC

(9) 0612 - MP55 Packer, Stiffened, SS

(3) 0601M10 - MP55 Casing, 1.0 m, PVC

(103) 0602 - MP55 Regular Coupling

(11) 0605 - MP55 Measurement Port

(2) 0607 - MP55 Hydraulic Pumping Port

(6) 0608 - MP55 Magnetic Location Collar

Geology

Backfill/Casing

Concrete

Bentonite

Sand Fine

Sand Coarse

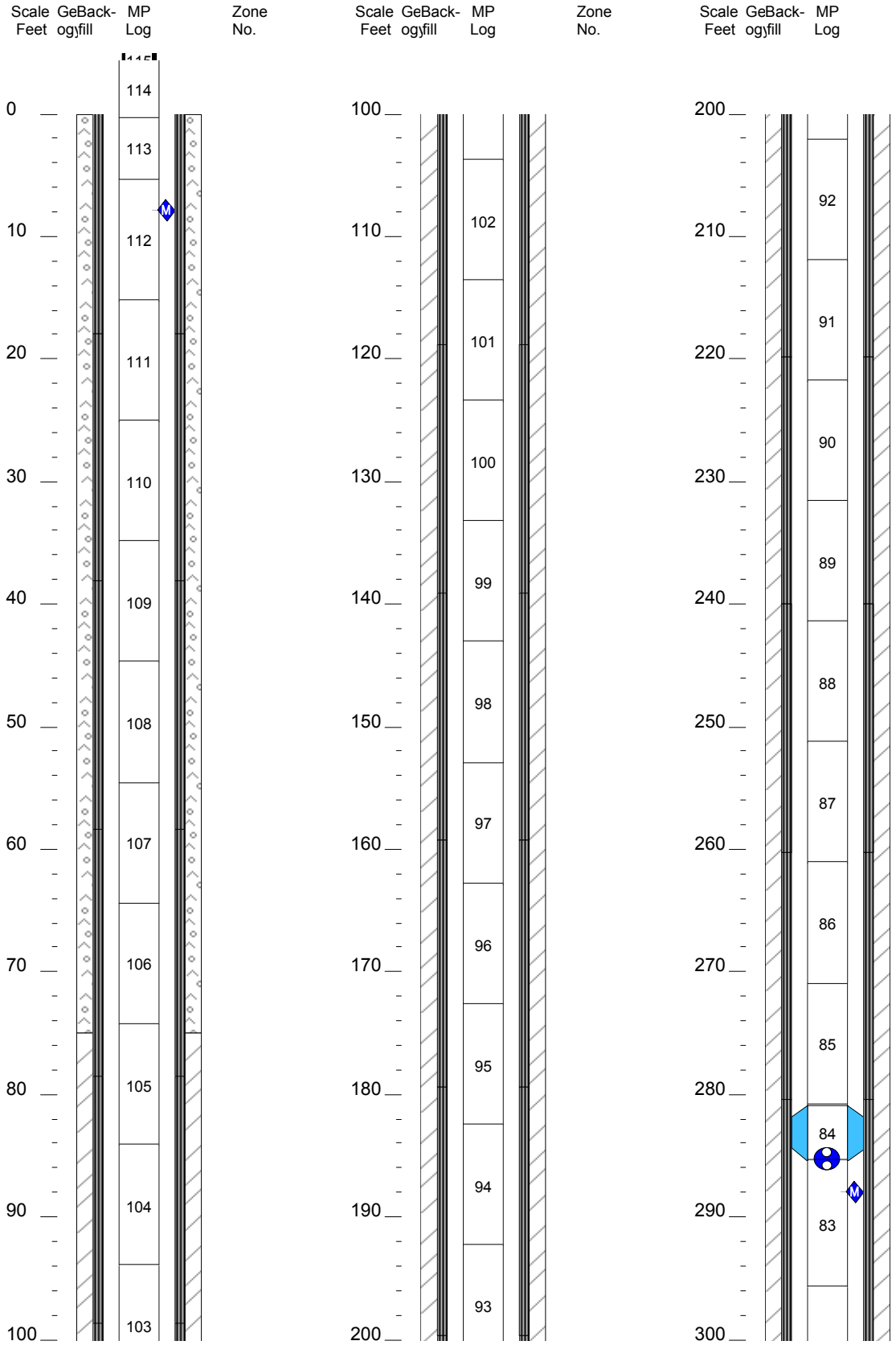
Native / Cave

Stainless Steel

Well Screen

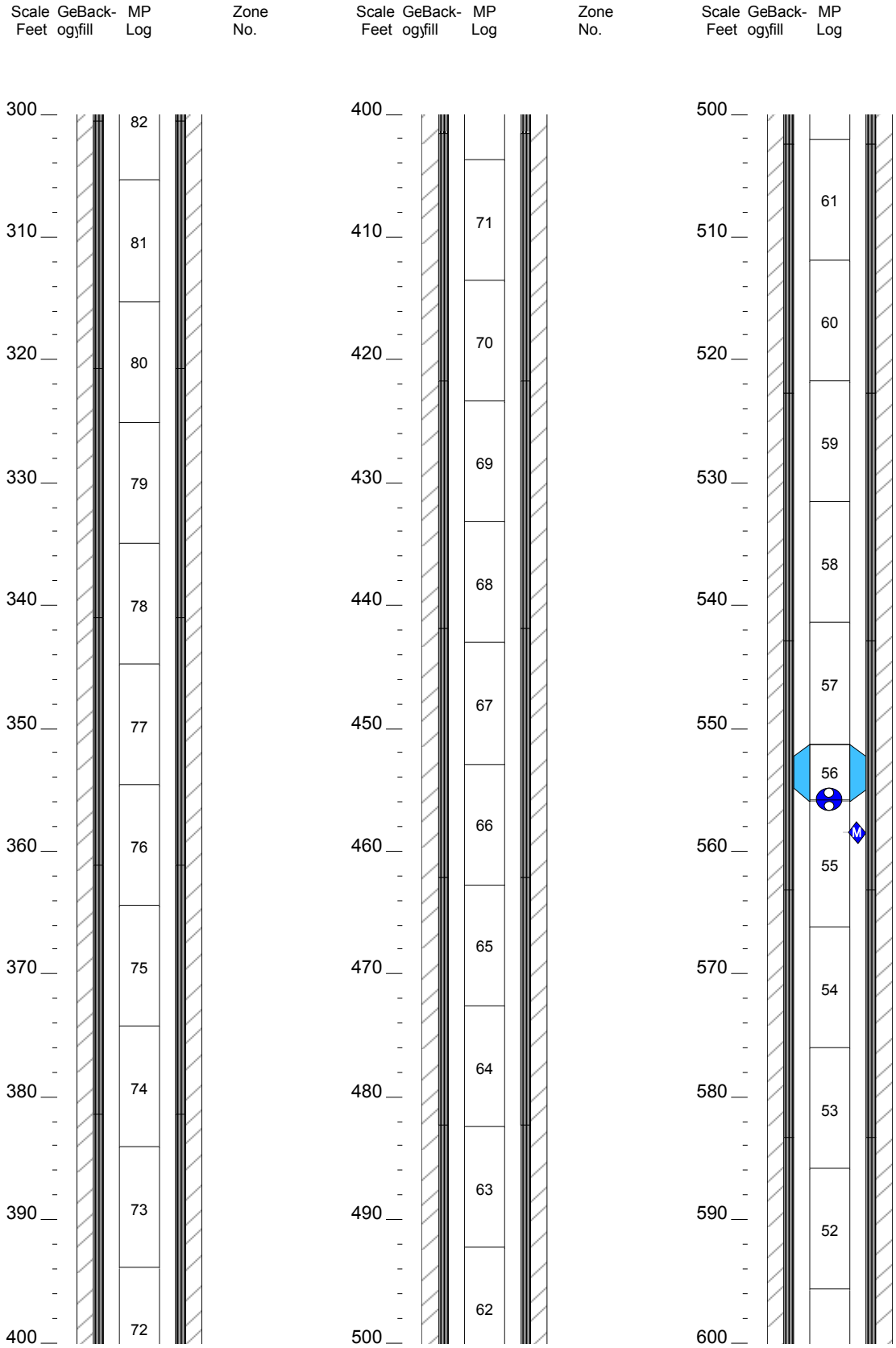
Summary MP Casing Log
Los Alamos National Lab

Job No: WB777
Well: R32



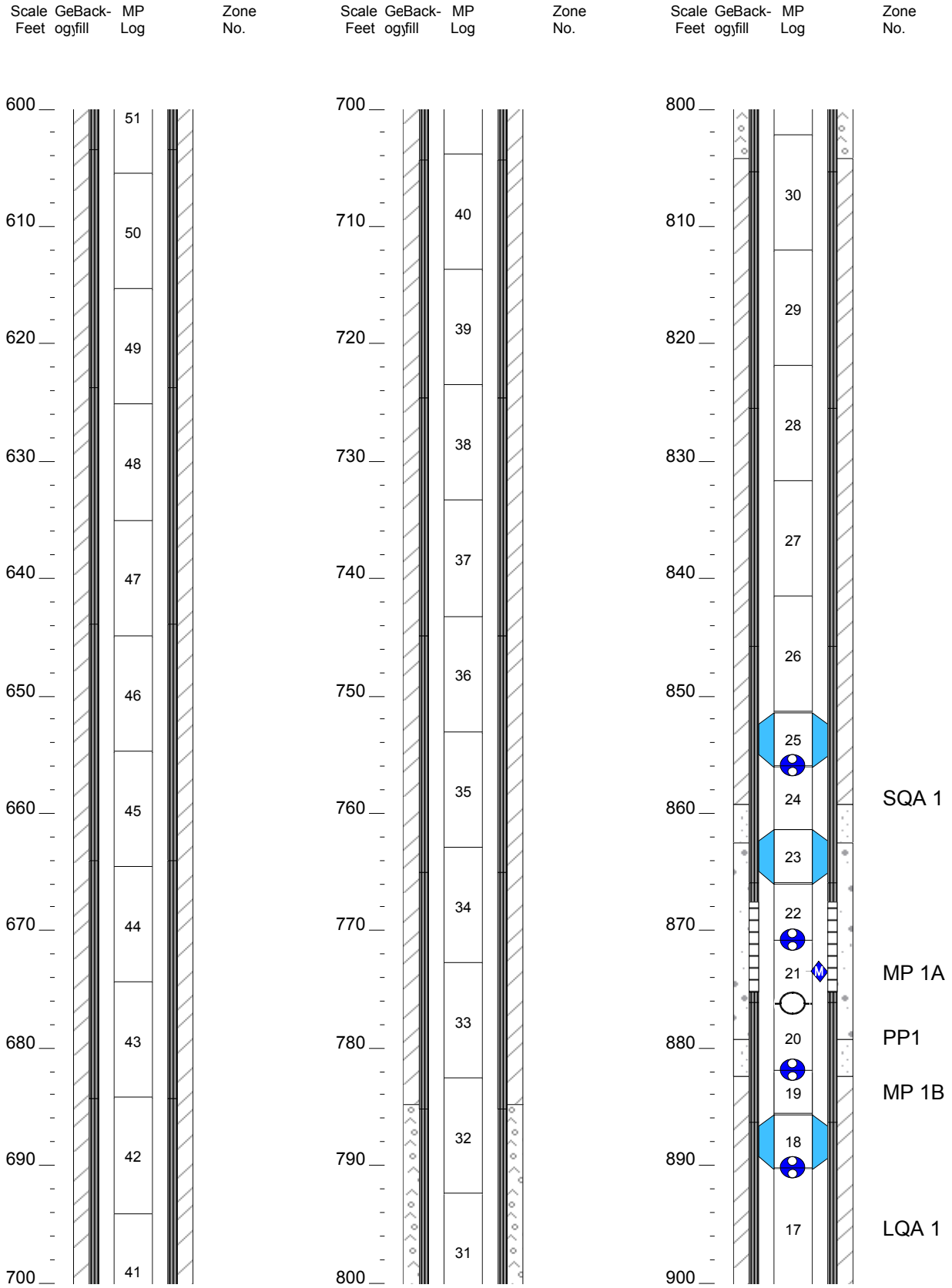
Summary MP Casing Log
Los Alamos National Lab

Job No: WB777
Well: R32



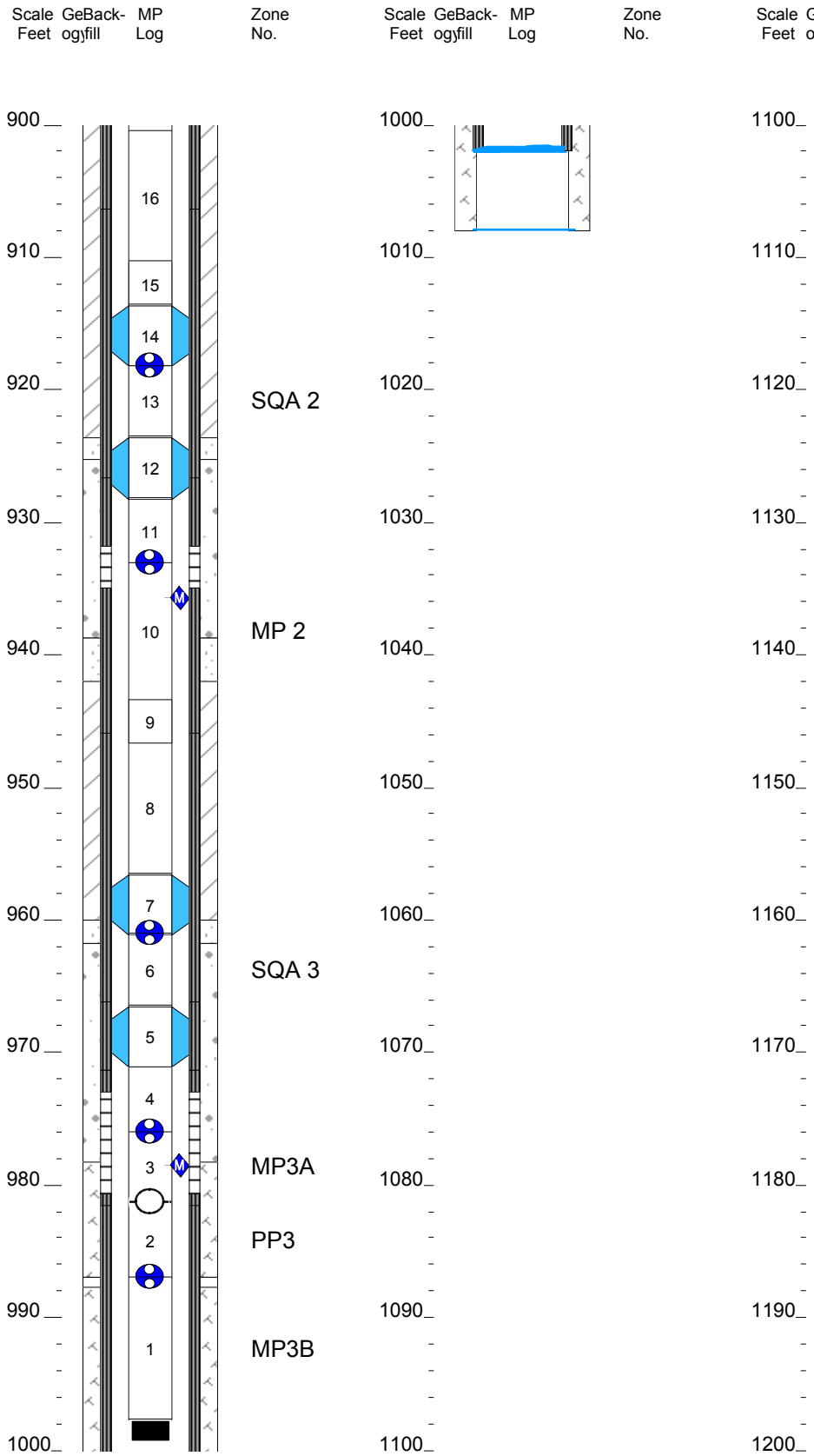
Summary MP Casing Log
Los Alamos National Lab

Job No: WB777
Well: R32



Summary MP Casing Log
Los Alamos National Lab

Job No: WB777
Well: R32



Appendix G

Waste Characterization Data

Los Alamos
NATIONAL LABORATORY

Risk Reduction & Environmental Stewardship Division
Water Quality & Hydrology Group (RRES-WQH)
PO Box 1663, MS K497
Los Alamos, New Mexico 87545
(505) 667-7969/Fax: (505) 665-9344

Date: October 8, 2002
Refer to: RRES-WQH: 02-372

Mr. John Young
Hazardous Materials Bureau
New Mexico Environment Department
P.O. Box 26110
Santa Fe, New Mexico 87502

Mr. Curt Frischkorn
Ground Water Quality Bureau
New Mexico Environment Department
P.O. Box 26110
Santa Fe, New Mexico 87502

SUBJECT: NOTICE OF INTENT TO DISCHARGE, HYDROGEOLOGIC WORKPLAN WELL R-32

Dear Mr. Young and Mr. Frischkorn:

On October 4, 2002, your agency concurred with Los Alamos National Laboratory's proposal to land apply approximately 100,000 gallons of ground water produced during the development of Hydrogeologic Workplan Well R-32 (personal communication, Mr. Roy Bohn, Los Alamos National Laboratory, and Mr. John Young, New Mexico Environment Department, October 4, 2002). The Laboratory's proposal to discharge development water from Workplan Well R-32 was made in accordance with the requirements of the Hydrogeologic Workplan Notice of Intent (NOI) submitted to your agency on August 2, 2001, and subsequently revised on July 16, 2002. Under the Hydrogeologic Workplan NOI, when development water produced from a Hydrogeologic Workplan Well exceeds a New Mexico Water Quality Control Commission (NM WQCC) Regulation 3103 ground water standard or a RCRA regulatory limit the Laboratory will coordinate disposal with the NMED. Since the drilling fluids produced from Workplan Well R-32 exceeded the NM WQCC Regulation 3103 ground water standard for manganese (Mn), your agency's concurrence was requested.

The Laboratory has containerized approximately 80,000 gallons of ground water produced during the development of Workplan Well R-32. It is expected that an additional 20,000 gallons of development water will be produced within the next week as well development is completed. Workplan Well R-32 is located along Pajarito Road southeast of Technical Area (TA)-18. In accordance with our proposal, all development water from Workplan Well R-32 will be land applied adjacent to the drill site. As required by the Workplan NOI, no ponding, pooling, or run-off of the discharged water will be permitted. Information regarding the quality of the development water is provided below.

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Printed on Recycled Paper

Mr. Young and Mr. Frischkorn - 2 - October 8, 2002
RRES-WQH:02-372

Water Quality Data

The enclosed Table 1.0 is a summary of water quality data (metals, general chemistry, perchlorate, nitrate, tritium, and high explosives) for the approximately 80,000 gallons of containerized development water from Workplan Well R-32. Attachment 1.0 contains copies of the analytical reports. All samples were filtered prior to analysis. Sample results were compliant with all NM WQCC Regulation 3103 ground water standards with the exception of manganese (Mn).

Contaminant	Max. Result (mg/L)	Min. Result (mg/L)	WQCC ground water standard (mg/L)
Mn	3.89	0.74	0.2

Cobalt exceeded the NM WQCC ground water standard of 0.05 mg/L in one of the three development water samples collected; however, the average cobalt concentration of 0.036 mg/L was less than the NM WQCC ground water standard. No perchlorate, tritium, or high explosives were detected in the Workplan Well R-32 development water at concentrations greater than the analytical laboratory's Method Detection Limits (MDLs). Nitrate/nitrite (as N) was detected at a maximum concentration of 0.43 mg/L.

Please call me at (505) 667-6969 or Roy Bohn of the Laboratory's Environmental Restoration Project (RRES-R) at (505) 665-5138 if additional information is required.

Sincerely,

Bob Beers
Water Quality & Hydrology Group

BB/tml

Enclosures: a/s

Cy: J. Davis, NMED/SWQB, Santa Fe, NM, w/ enc.
J. Vozella, DOE/OLASO, w/ enc., MS A316
G. Turner, DOE/OLASO, w/ enc., MS A316
M. Johansen, DOE/OLASO, w/ enc., MS A316
J. Holt, ADO, w/o enc., MS A104
B. Ramsey, RRES-DO, w/o enc., MS J591
K. Hargis, RRES-DO, w/o enc., MS J591
D. Stavert, RRES-EP, w/enc., MS J978
S. Rae, RRES-WQH, w/enc., MS K497
D. Rogers, RRES-WQH, w/o enc., MS K497
M. Saladen, RRES-WQH, w/enc., MS K497
R. Bohn, RRES-R, w/enc., MS M992
D. McInroy, RRES-R, w/o enc., MS M992
RRES-WQH File, w/enc., MS K497
IM-5, w/enc., MS A150

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Table 1.0. Screening Results, R-32 Development Water. Filtered Samples.

Analyte	R-32 Results GW32-02-47655 (mg/L)	R-32 Results GW32-02-47999 (mg/L)	R-32 Results GW32-02-49619 (mg/L)	R-32 Results R-32 10-02-02 (mg/L)	NM WQCC 3103 Standards (mg/L)
Ag	<0.0002	<0.0002	<0.0002		0.05
Al	0.17	0.12	0.041		5.0
As	0.0031	0.0055	0.0017		0.1
Ba	0.11	0.17	0.068		1.0
B	0.04	0.03	0.18		0.75
Cl	26.1	46.0	10.6	7.71	250
ClO4	<0.005	<0.005	<0.002		
Co	0.011	0.084	0.014		0.05
Cd	<0.001	<0.001	<0.001		0.01
Cr	0.009	0.010	0.0024		0.05
Cu	0.019	0.015	0.0046		1.0
F	0.55	0.50	0.67	0.69	1.6
Fe	1.04	0.78	0.46		1.0
^{3}H (pCi/L)		<111.23			
HE			<0.01		
Hg (filtered)	0.00009	0.00007	0.00009		0.002[1]
Mn	1.77	3.89	0.91	0.74	0.2
Mo	0.0070	0.0033	0.0031		1.0
NO3	0.13	<0.2	<0.2	0.43	10.0
Ni	0.077	0.11	0.020		0.2
Pb	0.0010	0.0007	<0.0002		0.05
Se	0.0011	0.0017	<0.001		0.05
SO4	12.3	10.2	8.07	7.29	600
U	<0.0002	<0.0002	0.0003		5.0
Zn	0.012	0.024	0.005		10.0

[1]Total Hg

Los Alamos
National Laboratory

10/7/2002

ATTACHMENT 1.0

ANALYTICAL REPORTS

SCREENING RESULTS

HYDROGEOLOGIC WORKPLAN WELL R-32

DEVELOPMENT WATER

- **Tritium**
- **HE**
- **Metals**
- **General Inorganics**
- **Perchlorate**

ARS
AMERICAN RADIATION SERVICES OF
NEW MEXICO

1903 Central Ave. • Los Alamos, New Mexico 87544
(505) 663-0363 • Fax (505) 663-0365

ARSNM Tracking Number:	ARSNM-02-0112	**COC Number:**	48402
Client I.D.:	GW32-02-47999	**ARSNM Sample I.D.:**	ARSNM-02-0742
Date Sampled:	09/27/02	**Date Received:**	09/27/02
Time Sampled:	1340	**Time Received:**	1435
Type of Sample:	liquid	**Date of Report:**	10/03/02
Contact Person:	R.Evans	**Charge Code:**	REPEATED

Analysis Description	Analysis Result	Analysis Error ±2 σ %	Detection Limit	Analysis Units	Analysis Test Method	Analysis Date & Time	Analysis Technician
Tritium	BDL	N/A	111.23	pCi/l	EPA 906.0M	09/28/02 0758	bz
Gross Alpha	BDL	N/A	190.77	pCi/l	EPA 900M	10/03/02 1025	bz
Gross Beta	BDL	N/A	506.87	pCi/l	EPA 900M	10/03/02 1025	bz
Gross Gamma	913.79	127.47	283.54	pCi/l	EPA 901.1M	09/27/02 1942	bz

B. Zelenay
Barbara Zelenay

Cost per sample:

Notes: American Radiation Services of New Mexico assumes no liability for the use or interpretation of any analytical results provided other than the cost of the performed analysis itself. Reproduction of this report in less than full requires the written consent of the client.

Page 2 of 3

ER

ER WATER SAMPLES

SAMPLE ID	DESCRIPTION	DATE MM/DD/YY	ER Req#	Temp °C	Ag ppm	Al ppm
GW32-02-49619	R-32, 1320', (TIC/TOC) 10/2/02	09/30/02	1291S	22.1	<0.0002	0.041

Page 1

ER

SAMPLE ID	Std.D. +/-	Alk(Lab) ppm CaCO3	As ppm	Std.D. +/-	B ppm	Std.D. +/-	Ba ppm	Std.D. +/-	Be ppm	Br ppm
GW32-02-49619	0.001	53.7	0.0017	0.0001	0.18	0.01	0.068	0.001	<0.001	0.19

Page 2

ER

SAMPLE ID	C TIC ppm	C TOC ppm	Ca ppm	Std.D. +/-	Cd ppm	Cl ppm	ClO3 ppm	ClO4 ppm	Co ppm	Std.D. +/-
GW32-02-49619	18.6(17.6)	9.32(7.70)	17.6	0.1	<0.001	10.6	<0.02	<0.002	0.014	0.001

Page 3

ER

SAMPLE ID	CO3 ppm	Cond.(F) µS/cm	Cr ppm	Std.D. +/-	Cs ppm	Cu ppm	Std.D. +/-	F ppm	Fe ppm	Std.D. +/-
GW32-02-49619	0	221	0.0024	0.0001	<0.001	0.0046	0.0001	0.67	0.46	0.01

Page 4

ER

SAMPLE ID	Hardness CaCO3 ppm	HCO3 ppm	Hg ppm	Std.D. +/-	K ppm	Std.D. +/-	Li ppm	Std.D. +/-	Mg ppm	Std.D. +/-	M pp
GW32-02-49619	65.2	65.5	0.00009	0.00001	1.95	0.02	0.035	0.001	5.17	0.03	0.9

Page 5

ER

SAMPLE ID	Std.D. +/-	Mo ppm	Std.D. +/-	Na ppm	Std.D. +/-	Ni ppm	Std.D. +/-	NO2 ppm	NO3 ppm	Oxalate ppm	Pb ppm
GW32-02-49619	0.04	0.0031	0.0001	21.1	0.2	0.020	0.001	<0.02	<0.02	<0.02	<0.0002

Page 6

ER

SAMPLE ID	pH Field	pH Lab	PO4 ppm	Rb ppm	Std.D. +/-	Sb ppm	Se ppm	Si ppm	Std.D. +/-	SiO2 ppm calc
GW32-02-49619	6.82	6.67	7.39	0.005	0.001	<0.001	<0.001	33.5	0.6	71.7

Page 7

ER

SAMPLE ID	SO4 ppm	Sn ppm	Sr ppm	Std.D. +/-	Th ppm	Ti ppm	Tl ppm	U ppm	Std.D. +/-	V ppm	std.D. +/-
GW32-02-49619	8.07	<0.001	0.093	0.001	<0.001	<0.001	<0.001	0.0003	0.0001	0.005	0.001

Page 8

ER

SAMPLE ID	Zn ppm	Std.D. +/-	TDS ppm	HMX ppm	RDX ppm	1.3.5-TNB ppm	1,3-DNB ppm	TNT ppm
GW32-02-49619	0.005	0.001	211.8	<0.01	<0.01	<0.01	<0.01	<0.01

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SAMPLE ID	NB ppm	2a-4,6-DNT ppm	2,4-DNT ppm	Acetate ppm	Formate ppm
GW32-02-49619	<0.01	<0.01	<0.01	++	++

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