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LIST RELEVANT TECH AREA(S) HERE.	LIST RELEVANT SWMU(S) HERE.	LIST RELEVANT ADS NO(S) HERE.	LIST RELEVANT STRUCTURE NO(S) HERE.
35	21-010(a)	1106	N/A
21		1129	
16		1082	

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[redacted]-DIVISION PROGRESS REPORT

[redacted] 20 - September 20, 1957

THIS DOCUMENT CONSISTS OF 15 PAGE(S)
NO 1 OF 1 COPIES, SERIES A

[redacted] H-267

Class.
H-1 - U
H-3 - U
H-5 - C RD
H-6 - OUO
H-7 - U

I. ADMINISTRATION ([redacted], Leader)

A. General

1. Beryllium

At the request of the U. S. Air Force and in collaboration with the Air Force representatives from Sandia Base, an experiment was carried out to determine whether or not the burning of a plane carrying a bomb containing significant amounts of beryllium might result in hazardous air or ground contamination with this material. A piece of beryllium was suspended above a large amount of jet engine fuel which was ignited. In the resulting fire the metal reached a temperature of 950°C but careful studies revealed no detectable beryllium in the smoke or deposited on the ground at various distances downwind.

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Joe Watts
(Person authorizing change in classification) (Date)
[illegible]
(Signature of person making the change) and date)

2. Respirators

Practically all of the commercially available filter-type and canister type respirators were designed for protection against materials of considerably less toxicity than plutonium and similar air contaminants. For these latter materials almost 100% protection is necessary. Those respirators which cover only the nose and mouth frequently fit imperfectly and leave much to be desired as far as comfort is concerned. Masks covering the entire face tend to be heavy and uncomfortable, have imperfect vision, and they cannot be worn effectively by an individual who wears spectacles. During recent months an intensive study of the advantages and disadvantages of all commercially available respirators has been under way in Group H-5. Careful evaluation of filter effectiveness and resistance, of face fit, and of comfort was made. The first phase of this study is now complete and it is interesting to note that the standard U. S. Air Force oxygen mask equipped with a suitable filter promises to be the most satisfactory of the lot. Coming as it does in three sizes it provides an effective and efficient fit to the great majority of faces and because of its design it can be worn with comparative comfort for relatively long periods of time. Inquiries are currently under way to determine whether or not the manufacturers may be permitted to adapt and produce this particular mask for commercial distribution.

[redacted]

57-46

[redacted]

3. Low Level Counting

The large sodium iodide crystal (7-1/2 x 4 in.) is now being used for

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Total Personnel

SM	65
Military	1
SCP	117
ASC	49

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*Includes [illegible] employees

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II. GROUP H-1, MONITORING (Dean D. Leper, Leader)

A. General

1. The following personnel went to NTS during this period: Bruce Riebe, Donald McKown, and Jack Richard on August 26; Joe Romero on September 3; and Morris Engelke on September 9.

2. Charles Blackwell, Leo Martinez, and Tony Montoya returned from NTS on August 26, and Donald McKown returned on September 9.

B. Incidents

At midnight on August 30, Group J-11 received some samples of plutonium in plastic bags for processing in ML Building. A monitor was requested and arrived on the scene shortly thereafter. Respirators were worn during the work performed in the hoods even though a subsequent air sample indicated only 7 d/m/m^3. Large quantities of plutonium contamination were dispersed over the floor, sink, and hood areas within three labs. Some activity was also tracked to J-2 Building hallway. The monitor was able to decontaminate J-2 Building and J-11 personnel assisted him in partially cleaning ML. During the following week the H-1 Decontamination crew made a concerted effort of completing the cleanup of ML without too much success on the floor areas. One spot was painted and covered with cardboard until the demolition of the building takes place some time in October. J-11 personnel received 7000 c/m on their faces. This was reduced to below tolerance.

C. Special Monitoring

1. Representatives from Boeing Aircraft were at Pajarito again on August 29 and 30. H-1 was present to issue dosimeters and film badges and to control as much as possible the presence of Boeing people in the Kiva area.

2. On September 5 the acid waste line leading from J-2 Building was found to be leaking on the edge of a playground area in back of a Finch Street apartment. The seeping water read 10 mrad/hr at contact and had a pH of 4. The spot was posted and later fenced. All of the dirt removed was transported in a contaminated truck to the dump. The line was then repaired.

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[illegible] September 9, Vernon Ove, SD-1, machinist at TD Site, slipped on [illegible] his back. The fall was attributed to a leaky [illegible] the [illegible] of conductive-soled shoes which have slick soles.

[illegible]

On September 7 a fire occurred at the Cafeteria Building at S Site. A fat fryer apparently had been accidentally switched on, left on over night, the thermostatic control failed and the grease ignited. The loss which included damage to the fat fryer, damage to the building and cleanup cost was $785.00.

D. Motor Vehicle Accidents	Jan. 1 to Sept. 1, 1957	1956
Miles Driven	1,100,638	1,829,960
Number of Accidents	12	20
Rate (Accidents per 100,000 Miles)	1.1	1.2
Total Cost	[illegible]	[illegible]
Accident Cost per 100,000 Miles	$58.00	$126.00

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(Formerly [illegible] change in classification) (Date)
By [illegible]
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There was one vehicle accident during August [illegible] This occurred when a driver backed into a loading dock.

E. General

1. Jim Stearns returned from the Nevada Test Site on August 24. Robert Penland was there from August 26 through September 10. Roy Reider arrived at NTS on September 10 and stayed through September 20.

2. Safety surveys were made in conjunction with Group Safety Committees of Groups GMX-5 (Bayo Canyon), GMX-6 (Ancho Canyon) and GMX-8 (Kappa Site). A resurvey was made of Group GMX-6. A survey was made of K-1, K-2 and CMB-DO-GS facilities at Ten Site.

3. A reorientation tour of DP facilities was conducted for the benefit of the AEC Security and Fire Department personnel. Notes in the Manual will be revised and distributed.

4. A meeting with representatives of K-1, K-2 and CMB-11 was held with respect to safe handling and storage of plutonium contaminated sodium.

5. Three safety films were shown to Ten Site and CMB-1 personnel.

IV. GROUP H-5, INDUSTRIAL HYGIENE (Harry F. Schulte, Leader)

A. Evaluation and Control Work

1. Routine Exposures

Routine air sampling was done on beryllium, cadmium and mercury; all samples collected in the breathing zones were well below permissible levels. The beryllium shop now has three men working full time on a crash program to make special beryllium pieces. As a result, there has been a distinct rise in the average

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beryllium concentration in the air of this shop; however, concentrations are still below permissible levels.

A program has been started in CMB-6 to find the best method of joining two pieces of beryllium and this involves a number of new techniques. A very large number of air samples have been collected during these operations but no breathing zone samples have been above tolerance. Detailed results have been obtained on these new operations which were carried out in the Fabrication and in the Physical Metallurgy Sections. Results of these studies are available in the files of H-5 and the work will be continued in subsequent months.

2. New Materials

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No new materials were encountered during this month but the operations of CMB-6 have involved the release of beryllium under many new conditions.

3. Ventilation

A great deal of work has been done in the field of ventilation during the month. Conferences have been held regarding ventilation projects at DP West, Sigma Building, Delta Building, S Site, R Site, TA-9 and TA-39. The DP West project is a particularly large one and has required numerous conferences with Eng-2 and CMB-11. It is expected that the engineering design phases of this project will be completed shortly.

The study of chemical fume hoods at Los Alamos is continuing and ten hoods were checked and found to be satisfactory, three hoods were found to be defective and are now being corrected.

Studies have been made on the various ventilation systems on the new Radiochemistry Building, but final acceptance has been held up because of the very unsatisfactory welding work that was found on the stainless steel parts of the exhaust system. Serious leaks were found and are now being repaired. Additional work will be done on this system after it is repaired.

E. Research and Development

1. The project regarding the determination of the possibility of beryllium contamination from a plane crash was completed during the month. The burning experiment undertaken by representatives of the Air Force and Group H-5 was performed at Beta Site. The beryllium metal reached a temperature of 870°C and, although air sampling was performed in the smoke cloud and at various distances downwind, no detectable quantity of beryllium was found. Twenty-four fallout trays distributed in the area also showed no detectable beryllium. A report on this experiment is being written.

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additional tests will be performed on one of these where a hazard might exist.

A noise survey was made at the tool grinding shop in the main shop building. This followed installation of noise control equipment and the results showed that a lowering of the overall noise level of about 6 decibels had been achieved. This represents a very substantial improvement. An octave band analysis as well as a simple noise survey was made at this installation.

The cyanogen process at TA-9 has been reinspected and the operations there were found to be under satisfactory control. An all-plastic suit has been recommended for use during certain of these operations.

Advice has been given to numerous groups regarding proper respiratory equipment to be used for specific operations. Supplied air masks have been provided to the Zia painters and to Zia sheet metal workers for certain difficult jobs.

Some "fallout" was encountered during the month, although the levels were not alarming and did not interfere with any operations. This "fallout" was unusual in that it did not accumulate on the ground and could only be detected by means of air sampling. Plots of the decay rate indicated that it came from a particular Nevada shot from which local "fallout" had been predicted by the Weather Section.

Dr. Lloyd Setter of the U. S. Public Health Service and Dr. Robert Fisher of the Eaton Research and Development Company visited the Group during the month to discuss technical problems.

D. Statistical Summary

1. Air samples collected or field tests made for

Beryllium (Air)	215
" (Cascade impactor)	2
" (Fallout trays)	24
" (Swipes)	19
Mercury (labs)	4
TNT	4
Cadmium	5
Noise levels	2 operations

2. Plans approved 6

3. Sanitation

Water samples collected 47

4. Analyses completed

Air

BERYLLIUM	196
Cadmium	5

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By [illegible] (Date)
By [illegible] and date)

[redacted] program for [redacted] the spectrum from a constant potential [redacted] as a function of [redacted] and filtration has been used to derive the [redacted] voltage [redacted] and for various thicknesses of copper [redacted] has also been [redacted] to calculate the fluorescence intensity from [redacted] irradiated by [redacted] for Z numbers from 29 to 92.

d. A 704 program designed to calculate film response resulting from several neutralizing filters has been modified to consider also the fluorescence from these filter materials. The present program requires about 10 minutes of machine time at each energy. An attempt at reducing this time is being made.

B. Meteorology Section

1. Work in Progress

a. Work has continued on machine analysis and forecasting.

b. The work on data reduction has continued.

C. Nuclear Field Test Section (W. R. Kennedy)

1. General

William Kennedy and Jack Aeby were at NTS for the entire report period. Ellis Graham was at NTS from September 3 to 9.

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(Person authorizing change in classification) (Date)
By
(Signature of person making the change, and date)

VI. GROUP H-7, INDUSTRIAL WASTE DISPOSAL (C. Christenson, Leader)

A. Plant Operation

1. TA-45, Tech Area

An additional booster pump was installed in the lines between settling tanks and filters. The new pump provides a greater degree of control overflow distribution through the two settling tanks and much more efficient settling. The output of the booster pumps is variable because they are sensitive to minor variations in head. However, this difficulty will be eliminated when raw feed flow controllers are installed on each of the pump discharge lines.

Effluent quality has been satisfactory throughout the period.

2. TA-21, DP West

Operations were generally routine. Effluent quality was satisfactory except for that of about 15,000 gallons which were discharged to the tile field. Average daily flow was about 15,000 gallons.

The raw feed sampling device was found to be flooding during periods of high flow. This condition resulted in excessively large samples and considerable doubt as to whether the samples collected could be considered representative. The sampler was modified and now appears to be collecting representative samples.

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Water level electrodes in the raw waste sump have not been properly controlling the sump pumps. The difficulty appears to be that the electrode well extends too far down toward the bottom of the sump and becomes clogged to the extent that water levels in the well and in the sump equalize very slowly. The result is frequent overflow from the sump to the tile field due to failure of pumps to operate at the proper liquid levels. A work order has been submitted for revision of the electrode well to permit rapid equalization of water levels and more satisfactory pump operation.

3. TA-35, Ten Site

One treatment run through the resin columns at Ten Site was completed, during which 61,560 gallons of waste were treated. Another run was started but was not completed during this period.

Conduit for revised wiring of the Faratron control was installed.

A new sump pump for installation in the tank farm has been received. This pump will be installed in T-4 and its installation will present distinct advantages. At the present time the existing sump pump in T-6 is used for pumping wastes to the ion exchange columns. Since wastes from T-6 are also pumped to the capillary air filter units, it is necessary to keep adding wastes from T-3, T-4, and T-5 to T-6 in order to maintain a certain level. Because of this the chemical, physical and radiological qualities of the wastes in T-6 are constantly changing. The installation of an additional pump in T-4 will permit treatment of a waste of uniform quality, at least until the contents of one tank have been emptied, rather than wastes of extremely variable quality such as we have been treating from T-6. With the addition of more sump pumps in the tank farm and some piping changes we eventually hope to provide a de-ionized liquid for use in the capillary air filter units.

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B. Research and Development

1. Plant Operation

a. TA-35, Ten Site. By _____
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Experimental work with laboratory scale ion exchange columns has been carried on routinely in order to determine causes of operating deficiencies of the Ten Site plant and/or to indicate methods of improving the treatment efficiency of the plant. Latest work has concerned the relationship of effluent quality to ionic concentration as indicated by conductivity measurements. A series of tests using tap water spiked with Sr^{90} indicated, within specific limits, that effluent quality improved with increasing ion concentration. Nitric acid was used to adjust conductivity. Similar tests using Ten Site waste as raw feed did not

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