



10/12/95

FINAL AGENDA
52ND WIPP Quarterly Review Meeting
October 19, 1995

Environmental Evaluation Group
7007 Wyoming Blvd. NE, Suite F-2
Albuquerque, NM 87109

8:15 AM	Introduction and Opening Remarks	5 min., M. Silva EEG
8:20 AM	DOE: Status/Activity Report Including SEIS II, FSAR, DCCA Supplement	25 min., G. Dials DOE/CAO
8:45 AM	EEG: Status/Activity Report	20 min., R. Neill EEG
9:05 AM	N.M. Environment Department: Status/Activity Report Including RCRA Part B Technical Review & WIPP Site Activity Report	20 min., B. Hoditscheck , <i>Steve Zapp</i> K. McKamey NMED
9:25 AM	N.M. Radioactive Waste Task Force: Status/Activity Report	20 min., C. Wentz, Task Force
9:45 AM	FSAR Update	20 min., B. Bartlett, EEG
10:05 AM	BREAK	
10:20 AM	RH System Assessment Report	30 min., M. ^{ke} Brown, DOE/CAO
10:50 PM	Engineered Alternative Study	30 min., J. Maes DOE/CAO
11:20 AM	Status of Baseline Inventory Report	25 min., R. Bisping
11:45 AM	LUNCH	



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1:00 PM	Status Report on the Final PA Conceptual Models	20 min., J. Mewhinney DOE/CAO
1:20 PM	FEPS Screening Report	20 min., J. Mewhinney DOE/CAO
1:40 PM	Open Discussion of 40 CFR 194 Issues	70 min.
2:50 PM	"Action Items" Commitments	10 min. M. Silva EEG
3:00 PM	ADJOURN	

10/19/95

52nd Quarterly

George
Dicks
DOE

- Accomplished - final models to PA
- New DDP - looked at process to identify where things could be sped up. Moved final CCA to 10/96.
- EPA says they need 1 year to make determination. Sched. doesn't reflect skeen bill
- RH study to be completed this month. Shaft sealing systems - upper/lower component, clay concrete, seal, asphalt. Conceptual, not Title 1 or 2. Will be distributed widely. Attempts to address concerns by Bill Genter.
- BIR rev 2 published 12/19/95, rev 3 to be published 6/96
- Pushing for RCRA permit issued 8/96!
- SERS II activities, accelerated schedule.

Bob Neill
EEG

- SIRA incorporated in controlled doc 11/30/95
- Skeen Bill ~~passed~~ ^{issued} out of frustration. RCRA ^{NMV} protection appears unnecessary, even by EPA admission. Nobody wants DOE self regulation. Real reason WIPP isn't open is DOE hasn't shown compliance to 191, not EPA's ability to review documents. Emphasized need for engineered barriers
- Critique of DCCA by EEG will be delivered a little later (10/31/95). Biennial Env. Compliance section should include DOE as a regulatory agency.

NMED

- see handouts. Discussed need to coordinate all sampling activities between NMED, WID, EEG, CEMRC. What can be done to pool all data by all groups

Christwente

- Task Force meeting upcoming in Carlsbad. Participated in NACEPT mtg. Meeting to involve state PIC's with all others in DOE, EPA, etc to provide central source →

in event of accident. Funds released end of Sept

for hypresses. Sending 40 doctors to Oak Ridge for

rd training. Intend to establish a NM training

facility, may serve as a regional center - may

be done at SEM Tech & Training center funded by DOE.

Met/April - ramp up public information effort. Meetings

run 1-9 on a monthly basis along with DOE. Apr 96

Heimat exercise in Alb, now in Las Vegas.

Bill Ruppert ES&E update - Disposal phase SRR (draft released 10/25/95)

DOE done adequate analysis of highest risk events.

- EEC concerns - limiting risks to workers/public

(exclude a small # of drums that exceed rad limits) to DOE.

Do calculations on worker dose (ITRI) above ground (EEG). Tied into

fire potential of drums, containment system. Employment issues

include roof stability, backfill, ventilation, RH issues (not in draft).

North end closures (not to be backfilled, but will have a permanent

barrier). Radiation monitoring - fixed air samples (RAS)

for env. compliance, and continuous air monitors (CAMS)

for worker safety. Station air monitors at exhaust shaft

control discuss thru HEPA filters. Backfilling activities impact

filter self loading on CAMS. Looking at a solution to detect

filter loading. Mining operations will be similar to backfill

Mike Brown - RH TRU waste system assessment. Get RH to WIPP scanner.

Identify RH clean methods & technology. RDA capability limited to

Intend to modify WIPP w/ specific section for RH waste.

Schedule shows permit change FY 98, NMEC approval end of

3

Jim Newhenny ^{Alternatives} Engineered ~~Barriers~~ Study - relative to assurance requirement
EPA Task Force (published in 91) - 111 alternatives. Documented
in WIPP/WD-95-2043. Screen to emphasize critical performance
parameters + most feasible technologies. Sought public input via
focus groups (10 in total, 8 in Alb, 10 in South). Underwent value
analysis (long term performance, reduce uncertainty in PA, etc.)
EPA Tech Exchange scheduled for Dec/Jan - no
conclusion drawn in study. (look for scoping + screening
reports)

Kurt Hunter BIR - Rev 2 will include wastes not destined for WIPP,
but all TRU waste (buried, non defense + commercial,
classified wastes). Additional data ~~available~~ ^{sets} included.
Will be published 12/95. Rev 3 will be released
6/30/96 to support PA

Jim Newhenny - Final PA models. Repository Model is not considering
backfill at this time, just for baseline calculations. blah b.
Finalized 9/29/95, will be topic for EPA Tech Exchange
Jan/Feb 96

" FEPS (topic for Nov 7 - 9^{mtg} in Wash DC). 38 FEPS
screened in for undisturbed performance by Sept 29, 95.
Currently have 18 screened in, 72 total still under
evaluation.

Bob Neill - See Mandant for discussions

52nd WIPP QUARTERLY REVIEW MEETING

October 19, 1995

Environmental Evaluation Group
7007 Wyoming Blvd. NE, Suite F-2
Albuquerque, NM 87109

ATTENDANCE SHEET

Name/Affiliation	Address	Phone/Fax
ROBERT H NEILL	NM EEG	828-1003
George E. Dials	DOE/CAO	234-7300
Michael H. McFadden	DOE/CAO	234-7496
DENNIS HURTI	DOE/CAO	234-7327
CARIS WENTZ	DOE State of NM	828-5950
LINDSAY LOVEJOY	NM ATTY GEN OFF	505-6675 505-4938
MIKE IRWIN	P.O. Box 5200	846-0884
Kent Hunter	CAO	234-7456
Sarah Bigger	CAO	234-7324
John Parker	NMED	828-1536
Jim Kenney	EEG	(505) 885-9675
Michael R. Brown	DOE/CAO	234-7476
WILLIAM W. L. LEE	EEG	828-1023
Ben WALKER	EEG	505-885-9675
TOM CLEMO	EEG	828-1003
AUSON MINER	DOE/CAO	234-7321
MEL MARIETTA	SNL/CNM	234-0054/006
PATRICIA KILGORE	DOE/CAO/PP	505-234-7302/887-5419
Betsy Kraus	EEG	505/828-1003 828-1062
Keith McKamey	NMED/DOE-OB/WIPP	234-8984 887-5871
JIM MEWHINNEY	CAO	834-7480 234-7341

WIPP 52nd QUARTERLY REVIEW



**George Dials, Manager
Carlsbad Area Office**

October 19, 1995

Compliance - noun

Webster definition:

- 1. The act or process of complying to a desire, demand, or proposal or to coercion**
- 2. Conformity in fulfilling official requirements**

Carlsbad Area Office definition:

- 1. Meeting or exceeding prescribed regulations**
- 2. Ensuring safety of the public and the environment**
- 3. Doing the right thing**



DDP MILESTONES

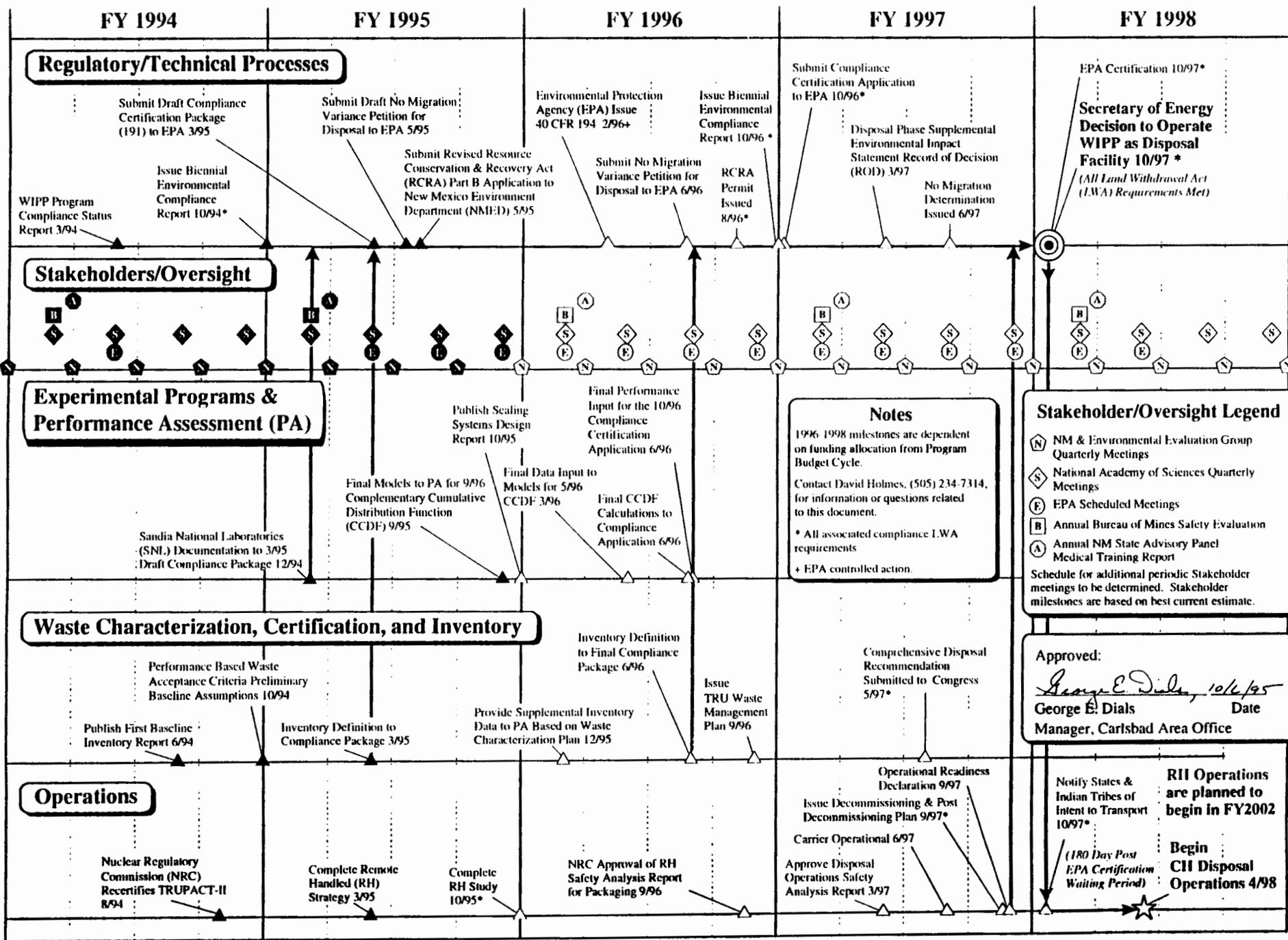
- **Completed DDP milestones since last quarter**
 - **Final models to PA** **9/95**

- **Upcoming DDP milestones**
 - **Remote-handled study** **10/95**
 - **Sealing systems design report** **10/95**
 - **Provide supplemental inventory data to PA based on waste characterization** **12/95**



WIPP Disposal Decision Plan

Revision 2
October 6, 1995



PERFORMANCE ASSESSMENT CODES AND MODELS

- All models have been submitted to PA
- Twenty-four PA codes have been developed to QA level
- Final data input to models 3/96
 - Shaft seals and rock mechanics
 - Non-Salado flow and transport
 - Actinide source term and colloids



REMOTE-HANDLED HIGHLIGHTS

- **Remote-handled transuranic waste study (required by WIPP Land Withdrawal Act, Section 6(c)(2)(b))**
 - **Complete 10/95**
- **Remote-handled systems assessment**
 - **Complete 10/95**
- **RH-72B cask safety analysis report for packaging being reviewed by DOE Headquarters prior to transmittal to NRC**



WIPP SHAFT SEALING SYSTEM REPORTS

- **WIPP Sealing System Design Report**
 - Completed 10/95
- **Shaft seal design concept incorporates technology development**
- **Improved modeling of creep, fracture, and crushed salt consolidation**
- **PA calculations provide guidance**
- **Small-scale field tests show low permeability (less than 10^{-18} m^2)**



WIPP SHAFT SEALING SYSTEM REPORTS

(cont.)

- **Shaft sealing system materials**
 - **Salt-saturated concrete**
 - **Asphalt**
 - **Clay**
 - **Salt**

- **Shaft seal design approaches**
 - **Multiple, common materials with low permeabilities**
 - **Demonstrated a compaction technology for construction processes**
 - **Multiple components to perform intended function**
 - **Entire length of shaft to effect seal system**



WIPP SHAFT SEALING SYSTEM REPORTS

Design Features

- **Permanent/long-term seal**
 - **Over 500 feet of compacted crushed salt barriers along with over 400 feet of clay barriers providing long-term seal**
- **Limited short-term brine inflow**
 - **Clay barrier within the Rustler Formation and combination of over 500 feet of asphalt, clay, and concrete barriers within Salado Formation**
- **Retard short-term gas flow**
 - **Combination of rigid concrete barrier (enhanced by asphalt component) and by a compacted clay barrier over 100 feet in length**



WIPP SEALING SYSTEM DESIGN REPORT, DOE/WIPP 95-3117

- **Has been completed and is being issued to CAO regulators and stakeholders**
- **Forms the basis for the shaft seal system detailed design**
- **8/96 publish the WIPP Shaft Seal System Compliance Submittal Design Report**
 - **Will be used to incorporate the WIPP shaft seal system design in the compliance certification application submittal to the EPA, 10/96**



TRU WASTE BASELINE INVENTORY REPORT (TWBIR) SCHEDULE

- TWBIR, Rev. 2, data call 3/15/95
- Draft Rev. 2, for CAO review 10/17/95
- DOE and stakeholder review 11/7/95
- Comments due back 12/7/95
- Publication of WTWBIR, Rev. 2 12/19/95
- TWBIR, Rev. 3, data call 1/11/96
 - Certifiability data
 - Inventory of cement and chelating agent
 - Remainder of small-quantity sites
 - Rocky Flats waste volumes converted to reflect residues processed for waste disposal
- TWBIR, Rev. 3 publication 6/30/96



NO-MIGRATION VARIANCE PETITION

40 CFR 268.6 Land Disposal Restrictions

- **Draft petition submitted 5/95**
- **Final petition will be submitted 6/96**
- **Expect EPA decision 6/97**



RESOURCE CONSERVATION AND RECOVERY ACT PART B APPLICATION

40 CFR 264 Operating Standards

- **Order issued by New Mexico Environment Department Secretary, 9/2/94**
- **Final application submitted to New Mexico Environment Department on 5/31/95**
- **Permit issuance expected 8/96**



COMPLIANCE CERTIFICATION APPLICATION

- **Draft compliance certification application submitted 3/95**
- **Draft compliance certification augmented application submitted 7/95**
- **Final compliance certification application will be submitted 10/96**
- **Expect EPA compliance certification by 10/97**



COMMENTS ON THE DCCA

- **EPA will submit comments**
 - **General comments 10/31/95**
 - **Detailed comments 1/31/96**

- **CAO requests stakeholders follow EPA lead of timely reviews**

- **Responses will be general with specific references**
 - **Responses to general comments 12/31/95**
 - **Responses to detailed comments 3/30/96**



NACEPT

September 6-7, 1995

- **Three questions posed:**
 - 1. Should there be credit for passive institutional controls?**
 - 2. What activities should be subject to peer reviews?**
 - 3. At what time should the curie content of the waste be calculated for purposes of determining release limits?**



DOE POSITIONS

- **Passive institutional controls**
 - **Credit should be allowed because some aspect of PICs will remain effective**
 - **Inadvertent intrusions should be limited to exploratory drilling only**

- **Peer review**
 - **DOE's existing QA program includes peer reviews, independent reviews, and internal technical reviews**
 - **Program areas covered by the QA program should not be peer reviewed**

- **Release limits**
 - **Should be calculated based upon existing waste inventory knowledge**
 - **Includes assay data and process knowledge from waste generators**



NACEPT COMMITTEE

Conclusions Summarized

- **Passive institutional controls**
 - **Markers increase advertent intrusion, decrease inadvertent**
 - **No quantitative way to estimate credit**
 - **No credit is not totally consistent with 191 and 194 basis of drilling rates**
 - **If credit given, PICs delay onset of intrusion rather than reduce frequency**



NACEPT COMMITTEE

Conclusions Summarized (cont.)

- **Peer review**
 - **Sensitivity analysis useful in establishing areas requiring peer review**
 - **Appropriate aspects of PA to be reviewed**
 - **DOE to document past peer reviews**
 - **NUREG-1297 not applied retroactively**
 - **Peer review of QA programs and plans not necessary**

- **Release limits**
 - **No strong opinion; magnitude of difference small compared to overall uncertainty of waste inventory**



WIPP SEIS SCHEDULE

- **Schedule was accelerated to comply with Secretary's NEPA policy and in consideration of the Skeen bill**
- **Accelerated schedule would complete the SEIS in 17 months, close to secretarial target of 15 months for environmental impact statements**
- **Record of Decision in March 1997, instead of October 1997**



SEIS-II

- **Six scoping meetings held in September and October**
 - **Carlsbad**
 - **Santa Fe**
 - **Albuquerque**
 - **Denver (2)**
 - **Boise**
- **"Information fair" format based on stakeholder input**
- **Largest turnout - Denver; smallest turnout - Santa Fe**



WIPP SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT ACCELERATED SCHEDULE KEY DATES

- Notice of Intent published in Federal Register 8/95
- Public scoping meetings 9 - 10/95
- Draft Supplemental Environmental Impact Statement distributed 4/96
- Public hearings on the draft Supplemental Environmental Impact Statement 6/96
- Final draft Supplemental Environmental Impact Statement distributed 1/97
- Record of Decision issued 3/97



WIPP SAFETY ANALYSIS REPORT

- **Complete draft 1995 SAR** **10/30/95**
 - Released for external stakeholder review **10/15/95**
- **Final report** **4/30/96**
- **Approve 1995 SAR for incorporation into WIPP controlled documentation** **11/30/95**
- **External review comments submitted** **1/15/96**
- **Resolution of all review comments on the 1995 SAR** **4/15/96**



LAND WITHDRAWAL AMENDMENTS ACT

- **H.R. 1663 voted out of the House Commerce Committee unamended, 9/95**
- **H.R. 1663 included in budget reconciliation package**
- **Possible Senate bill sponsored by generator site states' senators**



WIPP: One valuable safe step toward solution of the national nuclear waste disposal problem

- **WIPP is focused and on schedule**
- **Remaining critical areas for continued research have been identified**
- **Path to regulatory compliance identified**
- **Disposal operations will begin 1998**



WIPP Quarterly Review

October 19, 1995

Activities Update for NMED's RCRA Permits Program

1. RCRA Part B Permit Application - Administrative Completeness
 - Conducted administrative completeness review prior to finalization of contract with A.T. Kearney.
 - HRMB issued a letter of determination of completeness to DOE on July 25, 1995.
 - Review did not address technical adequacy of application.

2. RCRA Part B Permit Application - Technical Review Method
 - HRMB established a revised schedule for technical review activities.
 - Alternative strategies suggested by contractor were either consecutive chapter reviews or simultaneous chapter reviews.
 - Settled on a "semi-simultaneous" review of multiple chapters, starting with the more substantial chapters and ending with less controversial chapters.
 - Continuing informal discussions with DOE, requesting clarifying information which provides iterative feedback during the technical review process.
 - Anticipate issuing a formal Notice of Deficiency (**NOD**) in mid-December for all unresolved issues.

3. Development of Draft Permit
 - Assuming no delays in DOE response to NOD, draft permit development to begin in mid-January.
 - Projected issuance of draft permit for public comment is mid-1996.
 - The impact of DOE submitting final No-Migration Variance Petition when draft permit issuance is scheduled is currently under study.
 - Remaining schedule is tenuous due to uncertainties surrounding public comment process (requests for public hearing, extension of comment period, etc).

DOE/EEG/NMED QUARTERLY MEETING: OCTOBER 19, 1995
(Status Report since July 13, 1995)

NEW MEXICO ENVIRONMENT DEPARTMENT/DOE OVERSIGHT BUREAU/WIPP

I. Oversight:

- A) Commented on the 40 CFR 194 and the NACEPT Issue of Peer Review.
- B) Requested missing borehole information from Sandia and Westinghouse.
- C) Submitted comments on Supplemental Environmental Impact Statement
- D) Witnessed the closing of the Northeast Experimental Area of the Geologic Repository
- E) Inspected a subsidence fracture at WIPP-28, concluded that it had little relevance to WIPP but recommended calculations be done to determine relationships of extracted rock vs. propagating fractures. DOE has informed us that this has been done in the "Backfill Engineering Analysis Report"
- F) Collected Bond Logs within 16-section boundary from Sandia/Alb. - Commend cooperation
- G) Met with State Engineers office to determine if WIPP is conforming with Plugging Rules and Regulations for boreholes
- H) Attended Biological Monitoring and Habitat Assessment Workshop and currently assessing application to playa lakes surrounding WIPP

II. Monitoring/Sampling:

- A) Biotics - Pecos River Catfish, Vegetation NM-1
- B) Groundwater - H-14, WQSP 1, 2, 3, 4, 5, 6, 6a
- C) Surface Water - Indian Tank, Pierce Canyon, U. Pecos, Carlsbad, Brantley, Facility West
- D) Sediment - Indian Tank, Pierce Canyon, U. Pecos, Carlsbad, Brantley,
- E) Soils - H-14 SWMU
- F) Misc.- Liquid Influent (WIPP Inlet)

III. Outreach and Public Relations:

- A) KOAT Interview - Sampling Catfish to establish natural background radiation levels
- B) Eastern New Mexico Fair Booth: (104,000 exposure)
 - 1) Slide Presentation - NMED/WIPP activities
 - 2) Speaker sign-up sheet
 - 3) WIPP Comments:
 - a) (43%) - Spent enough money, do something with it!
 - b) (22%) - Keep waste in the state where it is produced!
 - c) (7%) - Not aware of any benefits from environmental groups
 - d) (28%) - Miscellaneous - do something about smoke from spontaneous burning on Seven Rivers feed lot manure pile
- C) Spoke to Lions Club of Artesia

**EEG/NMED/NMEMNRD
52nd Quarterly Meeting
RH-TRU WASTE SYSTEM
ASSESSMENT**



Michael R. Brown

**National TRU Program
Carlsbad Area Office**

October 19, 1995

ELEMENTS OF SUCCESSFUL RH-TRU WASTE PROGRAM

- **Develop and implement system-wide solutions**
- **Address generator site concerns**
- **Maintain communication and coordination to prepare, store, and dispose of RH-TRU waste**
- **WIPP disposal**
 - **Begin RH-TRU waste disposal by 2002**
 - **Provide for disposal of 7080m³**
 - **Sustain RH-TRU waste throughput**



RH-TRU SYSTEM ASSESSMENT FOCUS

- **Identify alternatives that get RH-TRU waste to WIPP earlier**
- **Identify alternatives that enable us to reach the current authorized disposal limit of RH-TRU waste at WIPP**
- **Refine and improve inventory data**
- **Identify characterization methods and technology for RH**
- **Minimize resources**
- **Make best use of existing facilities**



RH-TRU WASTE SYSTEM ASSESSMENT CRITERIA

- **Risk/safety**
- **Cost**
- **Throughput and volume of RH-TRU
waste disposed of**



RH-TRU WASTE SYSTEM ASSESSMENT

- **Covers six general areas**
 - **Generation and inventory**
 - **Storage**
 - **Characterization**
 - **Treatment**
 - **Packaging and transportation**
 - **Disposal**

- **Based on information from BIR Rev. 1**



RH-TRU SYSTEM ASSESSMENT

- **New look at RH disposal system**
 - **All types of alternatives considered**
 - **Top alternatives from general areas were combined and system alternatives developed**
- **Provides input for RH portion of TRU waste computer model**



PRELIMINARY CONCLUSIONS

- **Current baseline will not meet the RH-TRU limit of 7080 m³ (RH-72B cask, using 10-foot-long welded canister placed in underground horizontal borehole on 8-foot centers)**
- **Several alternatives offered greater potential for meeting the current authorized disposal limit for RH-TRU waste**
- **Limited commercial Type B packaging available for RH-TRU waste**



PRELIMINARY CONCLUSIONS

(cont.)

- **Nondestructive assay characterization ability is limited**
- **RH-TRU waste inventory exceeds WIPP authorized disposal limit**
- **RH-TRU system baseline has opportunities for improvement and cost savings**



WHERE RH-TRU PROGRAM GOES FROM HERE

- **Obtain additional inventory data**
 - **What portion of the inventory can sites characterize**
 - **How much RH-TRU waste has acceptable knowledge records**
 - **What portion of the inventory is between 100-1000 rem/hr (LWA limits WIPP to 5 percent of RH between 100-1000 rem/hr)**

- **Select characterization technology/alternatives to pursue for RH**

- **Select disposal alternatives**



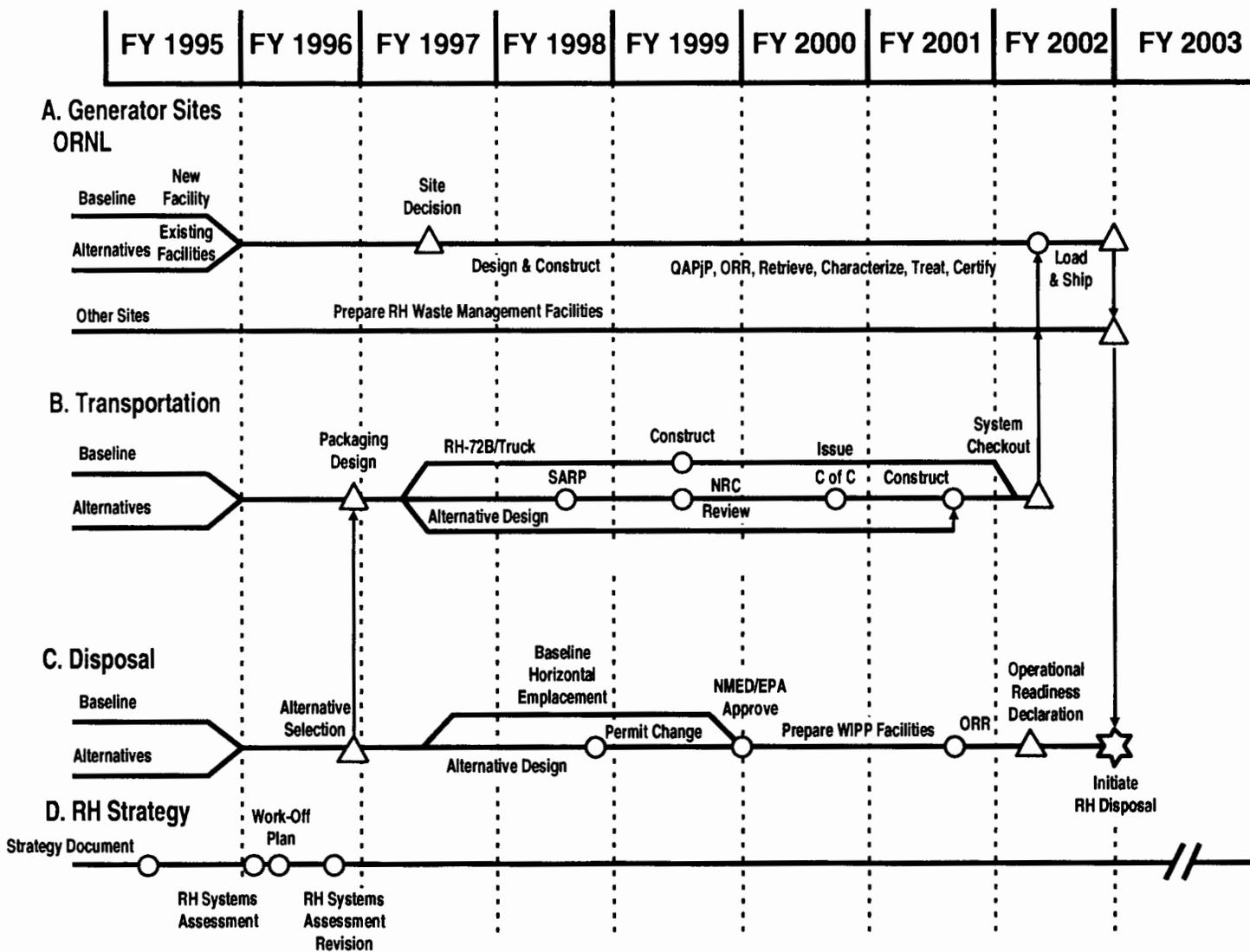
WHERE RH-TRU PROGRAM GOES FROM HERE

(cont.)

- **Select packaging and transportation alternatives to the RH-72B**
 - RH-72B SARP in review
- **Modify QAPP with specific section for RH-TRU waste**
- **Develop guidance for sites to modify QAPjPs for RH-TRU waste**
- **Define work-off plan, identify specific waste coming to WIPP**
- **Hold future meeting to discuss specifics of RH system assessment**



SCHEDULE



Engineered Alternatives Cost/Benefit Study

Summary of Study

Jim Mewhinney
Office of Regulatory Compliance
Carlsbad Area Office

October 19, 1995



Contents

- Purpose
- Scope
- Screening
- Public Process
- Benefit Analysis
- Other Analyses
- General Results
- Plans
- Summary



Purpose

- Provide a basis for a decision relative to Engineered Alternatives for assurance
 - Assessed risks, costs, and feasibility of technologies
 - Satisfies proposed 40 CFR 194 study requirements



Scope

- 111 alternatives originally considered
 - Past EA study (EATF, 1991)
 - Systems Prioritization Methodology
 - Proposed 40 CFR 194 technologies
 - Suggestions from the Public
- Documented in *Scoping Report*
(WIPP/WID-95-2093)



Screening of Alternatives

- 111 alternatives screened to 54
 - Definition of Engineered Alternative
 - Availability of Technology
 - Regulatory Permits
- Documented in *Screening Report*
(WIPP/WID-95-2104)



Screening of Alternatives

- Screening by CAO
 - Similar EAs screened out
 - Emphasis upon critical performance parameters
 - » radionuclide transport
 - » solubility
 - Most feasible technologies
- Resulted in 18 EAs for full analysis



Public Process

- Public received Scoping and Screening Reports
- Focus Group meetings
 - Carlsbad
 - Albuquerque
 - Santa Fe



Analyses

- Long-Term Performance
- Uncertainty in Compliance Assessment
- Worker and Public Risk
- Waste Removability
- Transportation Risk
- Public Confidence
- Total DOE Cost and Schedule
- Impact upon other DOE programs



Performance Factor

Baseline= Sealed repository with no additional barriers

- Estimate releases for Baseline case
- Estimate releases for cases with EA's
- Compare each EA case with baseline



Performance Factor

- Measure of Relative Effectiveness (MRE)

MRE = releases using EA / baseline releases

- Smaller MRE = Increased Benefit



Risk Factor

- Radiation Impacts
- Carcinogenic Chemicals
- Toxic Chemicals
- Industrial Accidents

For Workers and the Public at
Generators and at WIPP



General Results

- Treatment Options
 - high additional risk
 - provide performance benefits
- Backfill Options
 - low additional risk
 - provide performance benefits



Plans

- Final report available to the public
- Discuss analyses at Technical Exchange with EPA (December/January)
- Balance performance, risk, and need for additional barriers in decision-making



Summary

- Study follows proposed 40 CFR 194 guidelines
- Involved the Public
- Evaluated existing technologies
- Assessed worker and public risks
- Examined performance benefits



WIPP TRANSURANIC WASTE BASELINE INVENTORY REPORT

**Kent Hunter
Department Of Energy
Carlsbad Area Office/National TRU Program**

**Presentation to
Environmental Evaluation Group
Quarterly Meeting
October 19, 1995**



TRANSURANIC WASTE BASELINE INVENTORY REPORT

ACCOMPLISHMENTS/MILESTONES

- **Rev. 0 of the WIPP TRU Waste Baseline Inventory Report (WTWBIR) published in June 1994; first attempt to report TRU waste data at the waste stream level**
- **Data in Rev. 0 were compiled from existing DOE databases and considered to be preliminary (not reviewed by the DOE sites)**
- **Rev. 1 published in February 1995 relied on data collected directly from the sites and incorporated site review comments on Rev. 0**
- **WIPP Transuranic Waste Baseline Inventory Database (WTWBID) established and distributed with Rev. 1**
- **Additional data compilation and review currently in progress with the goal of publishing Rev. 2 in December 1995**



TRANSURANIC WASTE BASELINE INVENTORY REPORT

DATA REQUIREMENT DRIVERS FOR THE WTWBIR REVISION 2

- **WIPP Performance Assessment (40 CFR Parts 191 and 194 [DRAFT])**
- **Disposal No-Migration Variance Petition (40 CFR 268.6)**
- **WIPP RCRA Part B Permit Application**
- **Updates of WIPP FSAR**
- **Updates of WIPP SEIS**
- **WIPP Land Withdrawal Act**
- **WIPP transportation studies**



TRANSURANIC WASTE BASELINE INVENTORY REPORT

DATA CONSOLIDATION EFFORTS IN THE DOE TRU SYSTEM

- **WTWBIR, MWIR, and IDB data updates have already been consolidated into one data call in March 1995**
- **Volume data in the Rev. 1 WTWBIR data update has been used as the input into the 1995 IDB.**
- **Inconsistencies between the IDB summary volumes and the WTWBIR rollups has been resolved since the 1995 IDB is derived from the WTWBIR**
- **The yearly update of the radionuclide inventory requested as part of the IDB data updates has been consolidated in the WTWBIR Rev. 2 data update**
- **Work with "1995 Baseline Environmental Management Report" (BEMR) to achieve consistency with TWBIR Rev. 3**



TRANSURANIC WASTE BASELINE INVENTORY REPORT

SCHEDULE FOR PUBLICATION OF 1995 TWBIR (REVISION 2)

- **TWBIR data update questionnaires distributed in mid-March 1995**
- **MWIR part distributed in mid-April 1995**
- **Data submittals due back from sites in mid-June 1995**
- **Still working with TRU sites making minor adjustments to data in 10/95**
- **TRU chapter of IDB sent July 31, 1995 to EM/ORNL**
- **Draft of TWBIR Rev. 2 due to CAO in mid November for review**
- **Finalization, printing, and publication of TWBIR Rev. 2 in December 1995**



TRANSURANIC WASTE BASELINE INVENTORY REPORT

SCHEDULE FOR PUBLICATION OF 1996 TWBIR (REVISION 3)

- **Organization of data call during November/December 1995**
- **New data sets requested by NTP of TRU waste sites will be kept to the "minimum" required in support of compliance packages**
- **Work with DOE-HQ to allow separate TRU data call, which will be consistent with other data calls from DOE-HQ through a common set of "core" data requirements**
- **Issue 1996 TWBIR (Revision 3) data call during January 1996**
- **Work with sites to collect any additional data from Rev. 2 data call that was previously unavailable and any new Rev. 3 data sets**
- **Review of Rev. 3 draft document during late April to early June 1996**
- **Publication of Rev. 3 of TWBIR by June 30, 1996**



Final PA Conceptual Models *-Status Report-*

Jim Mewhinney

Office of Regulatory Compliance

Carlsbad Area Office

October 19, 1995



Conceptual Models

- General Modeling Geometry
- Repository Model
- Creep Closure
- Repository Flow



Conceptual Models

- Gas Generation
- Chemical Conditions in Waste
- Dissolved Actinide Source Term
- Colloidal Actinide Source Term



Conceptual Models

- Salado Flow and Transport
- Shaft Design
- Intrusion Borehole
- Castile Brine Reservoir



Conceptual Models

- Units above Salado
- Culebra Flow and Physical Transport
- Chemical Retardation in Culebra
- Colloidal Transport in Culebra



Status

- Finalized September 29, 1995
- Next Step: Data from experimental activities for use in PA modeling
- Technical Exchange with EPA: January/February 1996
- Final models outlined in final CCA



FEP Screening Update

Jim Mewhinney

Office of Regulatory Compliance

Carlsbad Area Office

October 19, 1995



Contents

- Definition of FEP
- Recent Work
- Upcoming Work
- Summary



Definition of FEP

- “Features, Events, and Processes” that are potentially relevant to the long-term performance of the WIPP repository.
 - Basic elements of scenario development
 - Relevant to conceptual model development



Screening Process

- Initially ~900 FEPs compiled from international projects and studies
- Screen FEPs that do not apply to WIPP
 - regulatory grounds
 - probability of occurrence
 - consequences

All screening criteria are based upon regulations



Recent Work

- Phase I screening
 - 38 FEPs identified as high priority for undisturbed performance modeling
 - Driver: NMVP
 - Potential to affect undisturbed performance modeling



Recent Work

- 38 Phase I + 15 Phase II
 - Gas Generation: 12
 - Disposal Room: 8
 - Salado Formation: 9
 - Seal Performance: 4
 - Non-Salado Units: 20
- 18 Screened In, 35 Screened Out



Recent Work

- Of the 35, six screened out purely upon regulatory grounds
 - near-miss boreholes
 - groundwater pumping FEPs
 - core drilling



On-Going Work

- 72 FEPs under evaluation
- Complete by January 31, 1996
- Technical Exchange meeting:
November 7-9 in Washington, DC
- Will be included in the final
Compliance Certification Application





ENVIRONMENTAL EVALUATION GROUP

AN EQUAL OPPORTUNITY / AFFIRMATIVE ACTION EMPLOYER

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OPEN DISCUSSION OF 40 CFR 194 ISSUES

52nd Quarterly Review Meeting

October 19, 1995 Albuquerque, NM

*Providing an independent technical analysis of the Waste Isolation Pilot Plant (WIPP),
a federal transuranic nuclear waste repository.*

OPEN DISCUSSION OF 40 CFR 194 ISSUES

- **Part A criteria**
- **Partial application**
- **Effects of mining and drilling**
- **Criteria to approve/dissapprove DOE Engineered Alternatives Study**
- **Credit for Passive Institutional Control**
- **Time for estimating inventory**
- **Drilling rates for Human Intrusion**
- **Phased Certification: Use of 5-Year determination to change conditions of certification**
- **Human Activity and Human Intrusion definitions**

PART A CRITERIA

40 CFR 194 Criteria apply only to Subpart B 40 CFR 191 for Disposal

EPA has not determined schedule for

- **Subpart A Criteria**
- **Subpart A CAG (Compliance Action Guide)**
- **Whether Criteria or Guides are needed**

PARTIAL APPLICATION

DOE	Yes
EPA	Yes, i.e. in Criteria
NMAG	No

EFFECTS OF MINING AND DRILLING

- **DOE contends effects of mining and repository integrity were not addressed in STDS. Therefore cannot be addressed in criteria.**

- **EEG contends:**
 - **Deliberate mining into Rep** **No**

 - **Potash Mining 400' above Rep** **Yes**

 - **Inadvertant intrusion onto repository by mining** **Yes**

CRITERIA TO APPROVE/DISAPPROVE DOE ENGINEERED ALTERNATIVE STUDY

- **Not out yet**
- **Benefit/Cost Analysis**
- **Increased confidence in containment requirements**

CREDIT FOR PASSIVE INSTITUTIONAL CONTROLS

- **PICs may not last 10^4 y. Perhaps few hundreds of years.**
- **1985 40 CFR 191 preamble stated that passive institutional controls would be required to provide adequate confidence that release limits will be met and because of the inherent uncertainties in disposal systems.**

40 CFR 194 would now allow credit in calculating compliance with release limits for meeting the PIC requirements.

- **WIPP is the only deep geological repository with extensive mineral deposits and has a high probability of drilling and mining for**
 - **Oil)**
 - **Gas) \$835 million**
 - **Potash)**

Note that the presence of \$10 million in Pt and 6.3 metric tons of Pu-239 may act an enticement rather than a deterrent for drilling.

Therefore EPA should not give credit for a reduction in probability of human intrusion but should require additional protection to compensate for this weakness in the repository site.

- **EEG recommends additional engineered barriers.**
 - **Backfill**
 - **Panel Seals**
 - **Fix yet-to-be-generated TRU Waste**
 - **Pursue INEL studies to fix existing TRU waste**

- **EPA never required an estimate of the long-term benefits of assurance requirements because they can't be quantified. Therefore it is illogical to give credit for such benefits elsewhere in the long-term analyses.**

- **New NAS HLW report questions ability to predict long-term drilling frequency. Hence, calculations for differences in frequencies become even less defensible.**

TRU ALPHA EMITTERS

Radionuclide	Half-Life (y)	Ci
Am-241	438	2.23 x 10⁵
Pu-238	87.7	1.89 x 10⁶
Pu-239	24000	3.85 x 10⁵
Pu-240	6580	7.24 x 10⁴
β Pu-241	14.3 y	* 1.01 x 10⁶
Pu-242	3.8 x 10⁵	1.27 x 10³
U-233	1.6 x 10⁵	2.24 x 10³
U-235	7 x 10⁸	8.54
Cm-244	17.6	1.61 x 10⁴
Total		25.9 x 10⁵

* Not included

From BIR, Rev. 1, Table 4-2

RELEASE LIMITS AT DIFFERENT TIMES

t_0	Pu-238 $\times 10^5$ Ci	All Other Alpha $\times 10^5$ Ci	Total $\times 10^5$ Ci	Release Limit Multiplier	Allowable Pu Release Ci
0 (1995)	18.9	7	25.9	2.6	260
1	18.7	7	25.7	2.6	260
2	18.6	7	25.6	2.6	260
5	18.2	7	25.2	2.5	250
10	17.5	7	24.5	2.5	250
20	16.1	7	23.1	2.3	230
30	14.9	7	21.9	2.2	220
a 35 (2030)	14.3	7	21.3	2.1	210
100	8.57	7	15.5	1.5	150
130	6.77	7	13.7	1.4	140
b 135 (2130)	6.5	7	13.5	1.4	140
1000	---	5.3	5.3	.5	50

a Closure

b Closure + 100 years

**RELEASE LIMITS STARTING TIME
SHOULD BE CLOSURE + 100 YEARS**

- **P.A. has used 100 years in calculations**
- **NRC calculates inventory at $t = 1000$ y for releases from 1000 year containers**
- **Active institutional control will prevent H.I. for first hundred years**
- **Pu-239 release limit of 210 Ci vs 140 Ci not that different with inventory in doubt**

**EFFECT OF DEFERRING DRILLING
ON FREQUENCY OF
30 BOREHOLES/10⁴-Km²**

<u>Delay in Drilling (years)</u>	<u>Drilling Frequency (Boreholes/10⁴y-Km²)</u>
0	30
100	29.7
200	29.4
400	28.8
1000	27
1600	25.2
1667	25
2000	24