

MEETING NOTICE 10/26/89

OCT 12 1989

- 1 -

MEMORANDUM FOR: John J. Linehan, Director  
Repository Licensing and Quality Assurance  
Project Directorate  
Division of High-Level Waste Management

THRU: Joseph J. Holonich, Section Leader  
Repository Licensing and Quality Assurance  
Project Directorate  
Division of High-Level Waste Management

FROM: Brian E. Thomas, Project Manager  
Repository Licensing and Quality Assurance  
Project Directorate  
Division of High-Level Waste Management

SUBJECT: FORTHCOMING TECHNICAL EXCHANGE WITH THE DEPARTMENT OF ENERGY (DOE)

DATE & TIME: October 26, 1989  
9:00 a.m. - 4:00 p.m.

LOCATION: One White Flint North  
11555 Rockville Pike  
Rockville, Maryland  
Room 2-F-11

PURPOSE: For NRC and DOE to discuss issues surrounding the selection  
of container materials. The agenda is enclosed.

PARTICIPANTS:

|                                   |                         |
|-----------------------------------|-------------------------|
| <u>NRC</u>                        | <u>DOE</u>              |
| J. Bunting                        | J. Hale                 |
| R. Weller                         | A. Berusch              |
| B. Thomas                         | M. Cloninger            |
| M. Silberberg, et.al.             | D. Stahl                |
|                                   | B. Clarke               |
| <u>STATE OF NEVEDA</u>            | B. Halsey               |
| R. Loux                           | J. Farmer               |
| C. Johnson, et.al.                | D. McCright             |
| <u>AFFECTED LOCAL GOVERNMENTS</u> | <u>NRC CONTRACTORS</u>  |
| D. Bechtel, Clark County          | C. Interrante (NIST)    |
| S. Bradhurst, Nye County          | P. Nair, et.al, (CNWRA) |
| M. Baughman, Lincoln County       |                         |

**Original Signed by**

Brian E. Thomas, Project Manager  
Repository Licensing and Quality  
Assurance Project Directorate  
Division of High-Level Waste Management

\*\*Meetings between NRC technical staff and the Department of Energy are open for interested members of the public, petitioners, intervenors, or other parties to attend as observers pursuant to the spirit of "Open Meeting Statement of NRC Staff Policy", 43 Federal Register 28058, 6/28/78 which details the open meeting policy for applicants and licensees.

DISTIRBUTION AND CONCURRENCE: SEE NEXT PAGE102  
WM-11  
NH/118910160062 891012  
PDR WASTE PDC  
WM-11

DISTRIBUTION:

Central File  
LSS  
CNWRA  
LPDR

B. J. Youngblood  
J. Linehan  
NMSS R/F  
ACNW

R. E. Browning  
R. Ballard  
HLPD R/F  
PDR

J. Bunting  
On-Site Reps  
J. Holonich  
B. Thomas

|                |            |           |           |   |   |   |
|----------------|------------|-----------|-----------|---|---|---|
| OFC :HLPD      | :HLPD      | :HLEX     | :HLPD     | : | : | : |
| NAME: BThomas  | :JHolonich | :JBunting | :JLinehan | : | : | : |
| DATE: 10/12/89 | :10/12/89  | :10/12/89 | :10/ /89  | : | : | : |

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ENCLOSURE

AGENDA  
NRC/DOE TECHNICAL EXCHANGE - CONTAINER MATERIALS

OCTOBER 26, 1989  
9:00 A.M. - 4:00 P.M.

INTRODUCTION

U. S. Nuclear Regulatory Commission (NRC)  
U. S. Department of Energy (DOE)  
State of Nevada  
Affected Units-of-Local-Governments

SPECIFIC TOPICS

DOE PRESENTATION

- A. OVERVIEW OF WASTE PACKAGE CONTAINER MATERIAL SELECTION, TESTING, AND MODELING
  - 1. Objectives of Container Materials Effort
  - 2. Candidate Materials
  - 3. Inputs to Materials Selection
  - 4. Selection Strategy
  - 5. Overview Schedule
- B. MATERIAL SELECTION
  - 1. Process
  - 2. Selection Criteria
  - 3. Pass/Fail Ranking
  - 4. Independent Peer Reviews
- C. TEST METHODS
  - 1. Development of Test Methods
  - 2. Use of Standardized Tests
  - 3. Need for Non-standard Methods
  - 4. State-of-art Equipment and Methods
- D. EVALUATION OF SELECTED MATERIALS(S)
  - 1. Long Term Tests
  - 2. Short Term Tests
  - 3. Tests in Progress
  - 4. Results to Date

NRC PRESENTATION

- E. NRC WASTE PACKAGE RESEARCH
  - 1. General Scope of the Program
  - 2. Materials Evaluated
  - 3. Roles of the Various Organizations
  - 4. Specific Workscope

G. DEGRADATION MECHANISMS, TEST METHODS, AND PROCEDURES UNDER EVALUATION BY THE NRC

1. Long Term Tests
2. Short Term Tests
3. Tests in Progress
4. Results to Date

H. NRC PEER REVIEW CONSIDERATIONS

Attached is a set of questions which detail the areas of discussion covered by the above agenda items for this technical exchange.

QUESTIONS

## A. FUNDAMENTAL UNDERLYING PROGRAMMATIC ASSUMPTIONS

1. WHAT TECHNICAL/ENGINEERING QUANTATIVE CRITERIA IS THE LAB CURRENTLY USING (PARAMETERS AND/OR NUMBERS) FOR DEGREE OF CONTAINMENT TO BE ACHIEVED SO AS TO GUIDE THEM IN THE MATERIALS SELECTION PROGRAM?
2. WHAT ARE THE MOST ADVERSE EXTERNAL CONDITIONS (RANGE OF CONDITIONS FOR EACH PARAMETER, FOR INSTANCE MOISTURE, WET, DRY, EPISODIC?)
3. WHAT ARE THE MOST ADVERSE INTERNAL CONDITIONS (RANGE)?
4. GIVEN THE CURRENT QUANTITATIVE CRITERIA AND ASSUMPTIONS, WHAT ARE THE EXPECTED DEGRADATION MODES (BOTH EXTERNAL AND INTERNAL) THAT MUST BE ACCOMMODATED BY THE MATERIAL SELECTED?
5. WHAT ARE THE ASSUMPTIONS ABOUT THE NATURE AND EXTENT OF TESTS REQUIRED TO SUPPORT THE MATERIALS SELECTION DECISION (E. G., VARIABILITY IN MATERIAL COMPOSITION AND FABRICATION, ENVIRONMENT, DURATION, AND EMPIRICAL DATA VERSUS MECHANISTIC UNDERSTANDING TO PREDICT MATERIAL ALTERATION, STATISTICAL VALIDITY) FOR THE PURPOSE OF SUPPORTING THE LICENSE APPLICATION?
6. WHAT ARE THE ASSUMPTIONS ABOUT THE NEED TO RELY ON A BROAD PROBABILITY DISTRIBUTION OF CONTAINER FAILURES (NOT WASTE PACKAGE) TO MEET THE POST CONTAINMENT RELEASE RATE REQUIREMENT, AS OPPOSED TO (OR IN CONJUNCTION WITH) PLACING RELIANCE ON THE WASTE FORM? IN WHAT WAY WOULD THIS AFFECT THE QUANTITATIVE CRITERIA/SAFETY FACTOR AND TEST PROGRAM TO SUPPORT THE MATERIALS SELECTION DECISION?

## B. CONTAINER MATERIAL SELECTION

1. THE SCP LISTS FOUR QUALITATIVE CRITERIA FOR MATERIAL SELECTION, NONE OF WHICH INCLUDES A "CONTAINMENT" REQUIREMENTS, NOR ADDRESSES VARIOUS DEGREES OF UNCERTAINTY IN PERFORMANCE. HOW DO YOU PLAN TO RECONCILE THESE QUALITATIVE CRITERIA WITH THE REQUIREMENT TO DEMONSTRATE COMPLIANCE WITH CONTAINMENT?
2. WHAT IS THE SCHEDULE FOR THE MATERIALS SELECTION DECISION AND HOW IS THAT INTEGRATED WITH THE SCHEDULE FOR OBTAINING SITE SPECIFIC ENVIRONMENTAL DATA?

## C. WASTE PACKAGE RESEARCH AND TESTING. WOULD LIKE TO BETTER UNDERSTAND THE SCOPE OF THE TEST PROGRAM TO INCLUDE OVERALL THRUST, ROLES OF VARIOUS

ORGANIZATIONS (ARGONE, LIVERMORE, ETC) AND WHO IS DOING OR IS INTENDED TO DO WHAT, SPECIFICALLY ADDRESSING THE FOLLOWING:

1. CONTAINER

- A. WHAT ARE THE CURRENT CANDIDATE MATERIALS FOR THE CONTAINER AND HOW IS THEIR SELECTION AS CANDIDATES SUPPORTED BY THE FUNDAMENTAL ASSUMPTIONS IN "A" (EXPECTED DEGRADATION MODES)
- B. ALTERNATIVE CONTAINER MATERIALS