rec'd May 16, 1986 as an attachment to 4/10/86 ltr Revised Plan for Dev. of NNWSI 102

(Rev. 1 - 3/28/86) ENCLOSURE 1

REVISED PREPARATION PLAN:

NEVADA NUCLEAR WASTE STORAGE INVESTIGATIONS PROJECT SEISMIC/TECTONIC POSITION PAPER

1.0 INTRODUCTION

An annotated outline for a position paper on seismic/tectonic considerations for siting a repository for high-level nuclear waste at Yucca Mountain, Nevada, has been prepared by an ad hoc committee comprised of members of the Nevada Nuclear Waste Storage Investigations (NNWSI) Project participants. This outline was reviewed by the Nuclear Regulatory Commission (NRC) at a December 1985 workshop, and was considered acceptable for determining the seismic/tectonic investigations to be conducted by the Department of Energy (DOE) during site chacterization. The NRC also supported the conceptual approach that has been developed to assess specific scenarios for licensing consideration. Invitation to participate in the development of that position paper was originally extended to all NNWSI Project participating organizations. The purpose of the issuance of this preparation plan is to formally outline the preparation process and the revised schedule for that position paper, and to provide a vehicle for assigning organizational responsibilities subject to agreements and concurrences between the Project Manager and the participating Technical Project Officers.

The requirements of the position paper are reflected in the revised annotated outline dated March 17, 1986, which is included as Section 3 of this preparation plan. These requirements are summarized briefly in Section 2 of this preparation plan. The implementation of the NNWSI Project Seismic/Tectonic Position Paper involves a methodology wherein the content of the position paper developed by the Project is reviewed by external consultants who are reputable in the fields of seismicity, tectonics, and seismic design. The position paper then will be used by the NNWSI Project as a basis for discussions with the NRC staff about proposed field studies described in the Site Characterization Plan (SCP), their relevance to necessary design information, the evolution of design criteria, and the seismic/tectonic aspects of surface and subsurface design of a repository and its facilities at Yucca Mountain.

2.0 REQUIREMENTS

The requirements for the NNWSI Project position paper on seismic/tectonic considerations for siting a repository at Yucca Mountain are to outline

and document a methodology to demonstrate regulatory compliance with respect to seismic/tectonic considerations of 10 CFR 60, 40 CFR 191, 10 CFR 960, and other identified requirements for both pre- and postclosure time frames. It is noted and emphasized that the primary purpose of this exercise is to provide a controlled approach to resolving licensing issues related to seismic/tectonic considerations. It is explicitly expected that, as information about the site becomes available through site characterization studies, certain aspects of the methodology will be redefined. The purpose of preparing a position paper describing the methodology is twofold: (1) the methodology described in the position paper provides a comprehensive description of the logic underlying the project approach to identifying and resolving seismic/tectonic issues that can be reviewed by external parties, notably the NRC staff; and (2) the position paper provides a mechanism for project management that enables a change-control board to effectively integrate all studies relevant to seismic/tectonic issues and efficiently manage project direction in response to NRC interactions and new information that becomes available from field studies.

The strategy of the position paper on seismic/tectonic considerations is to identify all such considerations that are relevant to the demonstration of compliance with applicable regulations. Implicit in this strategy is the identification of the applicable regulations themselves and the manner in which seismic/tectonic considerations are relevant. The manner by which the NNWSI Project identifies and tracks this information is through the use of an issue hierarchy and issue resolution strategy. The position paper is intended to document the technical rationale behind the inclusion of seismic/tectonic related issues in the hierarchy. It is further expected that the position paper will aid in the definition of the parameters which comprise a specific issue or information need. The position paper is thus expected to provide documentation of the rationale that supports the inclusion of specific field programs in the NNWSI Project SCP. The position paper strategy goes beyond the SCP, however. It is also intended to outline the methodology whereby a demonstration that the risks of not meeting specified requirements and performance standards within acceptable limits can be accomplished.

Developing the position paper relies on performance-oriented judgements to identify pertinent processes and events. Scenarios will be developed considering repository performance objectives and the behavior of the radionuclide migration field. The probability of occurrence of a given scenario will be estimated, followed by an assessment of consequences in terms of quantities of radionuclides released to the accessible environment. Finally, the approach focuses upon an evaluation of the uncertainties involved in the preceeding assessments.

The desired attributes of the methodology outlined in the position paper are that it be complete, objective, and scientifically sound. Further, it must be timely and acceptable to both NRC and DOE. In this manner, the position paper will help establish the basic requirements of the provision of reasonable assurance required for issue resolution.

3.0 ANNOTATED OUTLINE: RATIONALE FOR SEISMIC/TECTONIC INVESTIGATIONS FOR LICENSING A NUCLEAR WASTE REPOSITORY

3.1 Introduction

o Purpose: To develop and articulate an approach to resolve seismic and tectonic issues that is consistent with the requirements of 40 CFR 191, 10 CFR 60, and 10 CFR 960. The approach is to be used to guide the preliminary decisions, recognizing existing uncertainties, that are necessary to document the rationale for the planned program described in the SCP.

o General Framework: The Site Characterization Plan (SCP) is the document that will define the information needed, and the approach to obtaining that information, for ultimate use in the demonstration of compliance. The applicable regulations provide a framework of concepts to be addressed in the demonstration of compliance with the regulations but do not provide specific guidance as to their implementation. The implementation of the regulations requires an analytic exercise wherein the postclosure and preclosure aspects of the regulations are examined in light of possible scenarios, site characteristics and known data to determine, in a preliminary fashion, those aspects of the site which could impact the eventual compliance demonstration. This information is used in the development of plans to acquire data during site characterization. This information also provides the base for the ongoing reevaluation of the approach to demonstrate compliance. It is expected that, as data from site characterization become available, scenario probabilities will be defined and necessitate redirection of field activities. One aspect of the above described process is concerned with seismic/tectonic phenomena. This paper will provide an approach and rationale for the seismic/tectonic investigations to be described in detail in Chapter 8 of the SCP; the content of the paper will be incorporated in or referenced by the SCP. General requirements for site characterization will be included in Chapter VII of this paper. The Safety Analysis Report (SAR) will demonstrate that the information obtained during site characterization and the methods and assumptions used to perform safety analyses reflect reasonable assurance that performance objectives of 10 CFR 60 and radionuclide release standards of 40 CFR 191 have been met.

o Approach: The approach to resolve seismic/tectonic issues must result in a repository site and design that is safe, environmentally acceptable, cost effective, and located such that credible seismic/tectonic phenomena will not degrade system performance below acceptable limits. Performance assessment, safety analyses, and repository performance confirmation monitoring are the means by which this is demonstrated. Specific distinctions should be made regarding the period of performance; repository preclosure considerations involve both surface and underground facilities during a relatively short operational period, whereas postclosure considerations involve only the underground facilities and geologic setting, but for a much

longer isolation time frame. It is envisioned that early interaction with NRC will be required during the preparation of this paper to assure that the developed framework is acceptable.

3.2 Applicable Regulations and Definitions

A. Regulatory Framework

This section will provide a discussion of, and establish the hierarchy for, the application of currently existing regulations relative to seismic/tectonic considerations in the licensing process. The Nuclear Waste Policy Act (NWPA) will be included to establish the procedural baseline for the regulatory process. The three remaining regulations with direct applicability, 40 CFR 191, 10 CFR 60, and 10 CFR 960 (and other incorporated regulations), will be reviewed and summarized, with focus on citation of those sections containing seismic/tectonic criteria, or with seismic/tectonic implications.

B. Definitions

This section will provide a glossary of applicable definitions. Definitions that will be developed should be consistent with those already in existence, such as those found in 10 CFR 60, 10 CFR 960, and 40 CFR 191. If current wording is unclear for some definitions in existence (for example "active fault" in 10 CFR 960), an interpretation of the intent of the definition is necessary. Those definitions not found in the above regulations will be developed as appropriate. Inconsistencies will be identified and resolutions proposed.

A provisional list of definitions to be included follows:

Definitions

Accessible Environment
Active Fault
Annual Probability
Anticipated Event
Aquifer
Candidate Area
Class I Structure
Conservation Approach
Controlled Area
Complimentary Cumulative Distribution Function (CCDF)
Design Earthquake
Design Events
Design Ground Motion
Design Spectra
Design UNE (Underground Nuclear Explosion)
Deterministic Analysis

Disturbed Zone
Exceedance Probability
Expected Respository Performance
Geologic Setting
Important To Safety
Isolation
Likely Consequence of Failure
Maximum consequence of failure
Mean Return Period
Mitigation
Performance Assessment
Performance Objective or Standard
Postclosure Earthquake (PCE)
Probabilistic Analysis
Probabilistic Safety Assessment (Formerly Probabilistic Risk Assessment)
Reasonably Forseeable Event
Reasonable Assurance
Remnant Stress
Residual Stress
Response Spectrum
Retrieval
Scenario
Seismicity
Seismogenic Province
Significant Source of Groundwater
Significant Tectonic Event
Site
Subsurface (Underground) Facilities
Surface Facilities
Tectonic Event
Tectonic Phenomenon
Tectonic Process
Unanticipated Event
Unrestricted Area
Unsaturated Zone

For definitions which are not included in 10 CFR 60, 10 CFR 960, and 40 CFR 191, use will be made, to the extent possible, of equivalent geological, industrial, and mathematical terms.

3.3 Conceptual Approach to Seismic/Tectonic Assessments for Licensing

A. Identification of Significant Processes and Phenomena

(1) This section will address the identification of seismic/tectonic processes and significant seismic/tectonic phenomena which may influence safety considerations for the HLW repository regarding its total life cycle. Seismic/tectonic processes which should be considered include: (a) volcanism,

(b) faulting, (c) folding, and (d) regional crustal movements and related strain (stress) accumulation. Significant seismic/tectonic phenomena are those phenomena which, in light of tectonic history and other characteristics of the site, must be considered in evaluating compliance of the repository with the performance objectives of 10 CFR 60. Phenomena which may be considered include human-induced ground motion, earthquake ground motion, and surface fault rupture. Preclosure and postclosure performance objectives, with respect to near-surface and subsurface, will require recognition of different sets of seismic/tectonic processes and phenomena.

(2) This section will address the formulation of probability based criteria to be used for identifying significant seismic/tectonic phenomena to be considered for preclosure analyses. The development of criteria and any decisions based upon such criteria will be subject to review by the NRC, States, and Tribes, utilizing site specific considerations. On a preliminary basis it will identify seismic/tectonic phenomena which may be important with respect to these analyses. It will provide the rationale as to why certain phonemenon should be included or excluded, based on either probability or consequences. Further, it will evaluate the potential impact of the relevant phenomena on preclosure performance objectives, identify relevant seismic/tectonic processes and phenomena, and reevaluate impact on repository design.

(3) This section will identify those seismic/tectonic phenomena that are indicated by preliminary analyses to be of importance with respect to the postclosure analyses. It will provide the rationale as to why some phenomena should be included or excluded. For each relevant phenomena it will evaluate potential impact, both direct and indirect, of this process on each postclosure performance objective. This section will identify controlling seismic/tectonic events including their magnitude, and reevaluate impact on repository design and performance.

B. Identification of Those Issues That Need to be Resolved

This section will identify key issues from the current conceptual models and understanding of site behavior which require seismic/tectonic considerations for their resolution. It will provide the rationale for including and/or excluding certain issues.

Using the established hierarchy, the section will identify the issues that may require seismic/tectonic input. This section is to include: (1) performance assessment issues, (2) design issues, and (3) site characterization issues, and provide the rationale for including and/or excluding certain issues.

For each pertinent issue, the section will identify seismic/tectonic processes and phenomena that must be considered in order to resolve

the issue properly. It will provide the rationale and evaluate the potential design and performance impacts.

C. Events and Release Scenarios

This section will evaluate the phenomena that have been identified for consideration and discuss the selection of specific events to be used in the analysis of release scenarios. An example of an event would be an earthquake of specific magnitude occurring on a specific fault with an identified probability of occurrence. The construction of release scenarios using the identified events or sequences of events will then be discussed. The release scenarios will encompass all credible scenarios where significant tectonic events affect release rates. The numerical modeling and calculations used to evaluate the consequences of the scenarios will be discussed. The comparison of release rates calculated from the scenarios with regulatory requirements will be reviewed.

D. Issue Resolution Methodology

The resolution of preclosure and postclosure seismic and tectonic issues may require different experimental and analytical techniques because of the different health and safety concerns and the different time periods involved.

(1) Preclosure issues will involve health and safety during operations and retrieval over periods of time up to 100 years. This section will identify specific techniques used for safety analysis, including seismic safety analysis. It will identify specific seismic/tectonic events which, at this time, are considered for the analysis and identify uncertainties and assumptions used in analyses.

The approach to demonstrating compliance could include the following steps:

(a) Identify the set of release scenarios for anticipated seismic/tectonic events and phenomena that might affect safety during operation and retrieval.

(b) Conduct failure mode analysis of structures, systems and components important to safety, using event probabilities and seismic design parameters determined according to procedures outlined in Chapter IV, C. and Chapter V, B.

(c) Determine likely and maximum consequences of failure with respect to radiological safety, considering ranges of parameters that affect these consequences.

(d) Analysis of (c) and degree of compliance with release limits.

(e) Consideration of uncertainty involved in analyses and effect on (d). Evaluation of impact on design of structures, systems, and components important to safety, and implications regarding design of structures to resist failure.

(2) Postclosure issues will involve health and safety concerns for a period up to 10,000 years. Significant postclosure releases arising from seismic/tectonic phenomena must be included in the total system performance assessment that leads to the construction of the empirical Complimentary Cumulative Distribution Function (CCDF) described in 40 CFR 191. This approach to demonstrating compliance could include the following steps:

(a) Identify the set of release scenarios, including scenarios involving seismic/tectonic events and phenomena for both anticipated and, as appropriate, unanticipated events.

(b) Construct mathematical models of each class of scenario; the models predict cumulative release of radioactivity from each class of scenario for the first 10,000 years after closure.

(c) Assign probability distributions to the uncertain parameters that appear in the models of the scenarios; these distributions should be based on data pertaining to site tectonics and seismicity as much as possible.

(d) Combine mathematical models in a single model, capable of time-dependent simulation, that gives sample values of the total cumulative release to the accessible environment 10,000 years after closure.

(e) Exercise the model formed in (d) above to obtain statistics sufficient to construct the CCDF mentioned in 40 CFR 191.

Additionally, issues will involve other 10 CFR 60 postclosure performance objectives. These are release rates from engineered barriers, and life of waste package. Resolution of these issues may require seismic/tectonic consideration. The paper will identify those issues and corresponding seismic/tectonic phenomena. It will identify the analytical techniques to be used; specific seismic/tectonic events which, at this time, are considered in this analysis; and assumptions and uncertainties.

3.4 Approach for Identifying Significant Seismic/Tectonic Phenomena

A. General

Preliminary scoping analyses should be performed to identify some or all of the significant seismic/tectonic events. These scoping

evaluations should be made in accordance with "B", "C", "D," and "E" below.

B. Summary of Existing Data Base Related to Seismic/Tectonic Phenomena

This action will present a synopsis of the current data base; it will also present sets of field observations which (1) are subject to alternative interpretations, and/or (2) may have a significant impact on waste containment and isolation. Included are the following topics:

(1) Preclosure (10 CFR 960.5-2-11)

(a) Historical patterns of seismicity (including relationship to known surface features; indications of stress state).

(b) Relief and accumulation of tectonic stress and its effect on emplacement or retrieval operations.

(c) Fault displacement and its effects on: surface and subsurface facilities judged important to safety; operations; and retrieval.

(d) Effects of vibratory ground motion, natural or man induced, on surface or subsurface facilities that are judged important to safety.

(2) Postclosure (10 CFR 960.4-2-7)

(a) Tectonic stress (its nature; i.e., tectonic, remnant, residual and gravitational components; orientation and magnitude temporal and spatial variability).

(b) Fault displacement (location, length of surface rupture, movement style and history, amount of slip, secondary effects).

(c) Vibratory ground motion; acceleration and response spectra; time history; relationship to (a) and (b).

(d) Volcanism (composition, volume, time-space trends, tectonic setting, relationship to seismicity, geophysical data, eruptive mechanisms, secondary effects).

(e) Human-induced seismicity and ground motion (size and characteristics of the effect from UNE testing, fluid injection, fluid withdrawal, impoundment, and mining).

(f) Secondary effects of seismic/tectonic events (groundwater movement, secondary slip and fracturing, landslides, liquifaction, and erosion).

(g) Regional crustal movements and effects on waste isolation (folding, subsidence, uplift, diapirism).

The limitations of the ground motion models and asociated distribution functions will be identified.

C. Assessment of Significance

Based on professional judgment, including case histories from the region, and performance assessment calculations if available, this section will evaluate significance of the above topics in the context of each performance objective of 10 CFR 60. It will consider the preclosure time-frame; i.e., operational releases and retrievability; and postclosure; i.e., compliance with 40 CFR 191 release standard, travel time, life of waste package and release rates from engineered barrier.

For the preclosure time-frame, considerations could include, but are not limited to, the following:

(1) Relief and accumulation of tectonic stress and its effect on mining, mine openings, and waste package emplacement and retrieval operations.

(2) Fault displacement and its effects on waste handling facilities or other critical structures, and waste handling or retrieval operations.

(3) Vibratory ground motion and its effects on transportation, waste handling facilities, and underground operations.

For the postclosure time frame considerations include, but are not limited to:

(1) Relief and accumulation of tectonic stress and its effects on fracture conductivity, permeability, and pore pressure, waste-package integrity, and possible deterioration of seal performance.

(2) Fault displacement and its effects on the permeability, fracture, conductivity and pore pressure, waste-package integrity, and disruption of seals.

(3) Effects of vibratory ground motion on permeability, fracture conductivity, pore pressure, and water movement.

(4) Magmatic intrusion or extrusion into the repository proper.

(5) Magmatic intrusion or extrusion into the hydrologic system up and down-gradient of the repository and its affect on

compliance with 10 CFR 60 performance objectives, and compliance with 40 CFR 191 release standards.

D. Uncertainty Considerations

Assessments of safety must consider the extent of uncertainty that exists throughout any analysis and determine its effects on the conclusion reached in that analyses. Potential sources of uncertainty arise from: understanding of basic phenomena; formulation of constitutive relationships and conceptual models of features events and processes; formulation and execution of mathematical models; and data and data analysis. This section will address the manner by which uncertainty will be characterized in the following arrangement:

(1) Conceptual uncertainty.

Characterize conceptual uncertainties (i.e., fidelity of models to physical reality) through concensus opinion and through consideration of alternative hypotheses, if significant effect on results is shown.

(2) Natural uncertainty.

Characterize natural uncertainties through the use of site-specific data and concensus opinion. Appropriate numerical and analytical models will be used.

(3) Interpretative uncertainty.

Discuss how interpretative uncertainty can be characterized by addressing validation of formulae and codes; this is the focus of software QA programs advocated by NRC and DOE.

E. Relevance of Expected Events During Preclosure and Postclosure Time Frames and Impacts on Repository Design and Performance

A comparative evaluation of the significant effects will be provided to offer a perspective on the most important aspects with respect to radiological safety and cost.

3.5 Strategy for Issue Resolution and/or Mitigation

A. General

This section will describe the licensing strategy to be employed in resolution of issues related to seismic/tectonic characteristics of the site. It will consider: (1) procedures to be used in developing the seismic design parameters; (2) engineering design measures; and (3) recognition and integration of uncertainties. These measures involve in-depth consideration of possible means of adding confidence in the resolution of issues.

B. Seismic Design Parameters

This section will address procedures used to develop seismic design parameters.

Preclosure - Identify procedures which are judged to be proper for use in developing seismic design parameters. The section will consider vibratory ground motion and surface rupture. It will discuss implementation of the scheme or procedure for classification of structures, systems and components deemed important to safety, and consider alternate approaches for defining seismic design input. The section will discuss the rationale, alternatives and procedures used for equivalent considerations in other industries.

Postclosure - This section will ascertain the sensitivity of the closed repository to vibratory ground motion and fault displacement, including secondary effects. It will consider sealing, waste package, and other engineered and natural barriers. It will present procedures which could be used to develop seismic design parameters for postclosure.

C. Engineering

For certain seismic/tectonic events and phenomena, a demonstration of compliance with some performance objectives could be achieved through conservative engineering design. This section will identify, in a preliminary fashion, these events and phenomena and the performance objectives corresponding to them. With respect to mitigation of undesired effects of each seismic/tectonic phenomena and event it will identify available technology, engineering strategy and cost considerations. The discussion will consider allowable thermal loading and relate it to the size of the disturbed zone, mode of emplacement, clearance for tunnels, shafts and emplacement boreholes, etc., location of surface facilities, and design parameters for vibratory ground motion, including support considerations. The section will discuss the iterative aspects assessing compliance and refining design.

D. Recognition and Mitigation of Uncertainties

This section will discuss the manner in which the following topics are treated:

(1) Assessment of uncertainties in event scenarios, conceptual models, mathematical models, and data.

Sources of uncertainty in each category will be identified as considered in analyses, because these will detract from the demonstration of reasonable assurance.

(2) Enhance understanding of potentially adverse and favorable site conditions.

The extent to which potentially adverse and favorable site conditions exist will be evaluated with respect to safety, environment, and cost. The reasonable assurance concept will be employed in judging if sufficient information exists to make decisions leading to licensing. Where information is shown to be inadequate, additional site characterization will be required.

(3) Cost impacts as a function of variability.

An assessment will be performed to evaluate the impact of variability in the estimated or calculated value of seismic loadings on the total cost of the repository. This section will consider appropriate variability of frequency and response spectra within an acceleration range; high frequency and low frequency ground motion will be considered. This section will also consider the cost increments for designing and constructing surface and underground facilities against failure induced by surface rupture.

(4) Institute conservatism in operating procedures.

This section will identify and discuss the operating procedures that may be developed to mitigate the impacts of seismic/tectonic hazards. It will evaluate the effectiveness of these procedures.

(5) Institute Performance Confirmation Monitoring Program.

This section will describe the monitoring and evaluation for specific performance parameters that will validate conclusions and assumptions made in the SAR. It will discuss how results will lend confidence to decisions, especially the possible requirement for retrieval.

3.6 Seismic/Tectonic Events and Radionuclide Release Scenarios

A. General

For each significant seismic/tectonic event as determined in Chapter IV, and with reference to the corresponding performance objective, present results of preliminary performance computations and plans for the final performance assessment. Consider both preclosure and postclosure time-frames.

B. Preclosure

For preclosure the analysis shall include:

(1) Scenario identification and analysis;

(2) Failure Mode Analysis and design sensitivity;

(3) Likely and maximum consequence determination;

(4) Analysis of safety and compliance with release limits; and

(5) Uncertainty assessment.

C. Postclosure

For postclosure, the analysis shall include:

(1) Scenario identification analysis, emphasizing all aspects of hydrology and radionuclide travel;

(2) Likely and maximum consequence determination;

(3) Analysis of compliance with release limits; and

(4) Uncertainty assessment.

The identification of postclosure-release scenarios involving a seismic/tectonic phenomena should proceed by examining the effects of such phenomena on three things: the hydrology and radionuclide transport aspects of the site; the integrity of the waste package; and the integrity of the engineered-barrier system, including, as appropriate, boreholes, shafts, and seals.

The magnitude and consequences of the effects identified above should be used to further screen release scenarios; this may require calculations of likely and bounding consequences in terms of release from the barriers (waste package, engineered-barriers and the site) to establish their significance.

Special-purpose mathematical models of the significant classes of scenarios identified above should be constructed and combined with the model for expected releases to form a total systems model that can be used to simulate the behavior of the site/repository system under all anticipated, significant events and processes for the next 10,000 years.

3.7 Requirements for Site Characterization Including Methodology and Criteria Appropriate for Resolution of Seismic and Tectonic Issues.

A. Types of Issues and Relationship to Repository Development Schedule

The complete set of characterization issues for the project has been derived from considerations of performance and design (10 CFR 60) as well as consideration of siting criteria in 10 CFR 960. This issues hierarchy is an essential prerequisite in identifying data and information needs to be provided during the site characterization

process. The site characterization plan (SCP) is being developed to be compatible with the data and information needs. The data and information must be obtained in a timely manner in order to meet the DOE repository development schedule as required by NWPA.

Within the overall issue hierarchy, some issues specifically address seismic/tectonic concerns, an example is Mission Plan Issue 4.5 relating to the tectonic compatibility of the site with repository construction, operation, and closure. Conversely, there are a number of issues in which the influence of seismic/tectonic events or phenomena is indirect but is important to resolution.

This section will identify data and information needs related to seismic/tectonic events or phenomena which, at this time, are judged to be required for satisfactory resolution of each pertinent issue. It will consider all aspects of the issue resolution process, including: (1) site characterization; (2) engineering design; (3) performance assessment; and (4) performance confirmation monitoring.

For each issue requiring seismic/tectonic considerations, this section will identify when, in relation to the DOE's repository development schedule, evaluation of this issue should be completed.

B. Data and Information Needs

(1) Site Characterization

Seismic/tectonic data and information needs to be satisfied during the site characterization process pertain to three broad categories. These are: (a) for each seismic/tectonic process, estimates of probabililty of occurrence of a given tectonic event; (b) impact of this event on containment and isolation; and (c) parameters; i.e., physical properties and boundary conditions, which are required in order to quantify impact of this event on a given performance objective. Identify data and information needs as they pertain to these categories and each applicable site characterization issue. Consider both preclosure and postclosure performance objectives.

(2) Performance Assessment

The performance assessment aspect of the issue resolution process will require its own set of data and information needs related to seismic/tectonic conditions. These may be related to (a) evaluating significance of a given tectonic phenomena to waste containment and isolation; e.g., phenomenological understanding of impact of basaltic intrusion and/or faulting on groundwater travel time and/or postclosure releases of radioactivity; (b) identification of parameters; i.e., properties and boundary conditions, required for quantification of impact of a given tectonic phenomena with respect to a given performance objective; (c) evaluating relationship between impact and size

of a given seismic/tectonic event; and (d) constitutive relation and model validation. Identify data and information needs for each pertinent performance issue. Consider both preclosure and postclosure time spans and performance objectives.

The process is iterative in that preliminary models, codes and scenario are used to identify information needed for licensing; as data becomes available from site characterization, models will be refined, codes will become more sophisticated and scenario probabilities will be defined. This could lead to the redefinition of information needed from site characterization. The process results in a defensible performance assessment of the site which forms the basis for demonstration of compliance with the applicable regulations.

(3) Design

Identify elements of conceptual design which require seismic/tectonic consideration. Identify range of design options and discuss licensing and cost implications. Identify data and information needs related to seismic/tectonics and which are required in order to demonstrate that a given design decision is adequate. This decision may include: design parameters, method of construction, location, and material. Consider preclosure and postclosure aspects of repository design and performance.

3.8 Conclusions and Recommendations

Based on analysis and interpretations performed in order to develop this position paper, identify perceived seismic/tectonic events or phenomena, if any, which represent areas of significant concern in the licensing process. Recommend areas and methods of investigation leading to resolution.

4.0 PREPARATION SEQUENCE

The formal recognition of a need for a Seismic/Tectonic Position Paper can be traced to a recommendation of a meeting on Geotechnical Activities and Repository Design held in Las Vegas on January 11, 1985 (WMPO:MBB-585). An initial Working Group meeting was held February 8, 1985, also in Las Vegas. Each Project participant was requested to designate up to two key representatives. From the assembled Working Group, an informal ad hoc committee assumed the responsibility to prepare an Annotated Outline (AO) for review by the Working Group. Several drafts of the AO were prepared and provided for review to NNWSI Project participants, DOE/HQ, Weston, and representatives of other projects. Upon receipt of comments provided at an April 3, 1985, workshop attended by NNWSI Project participants and representatives of Weston, DOE/HQ, and BWIP, a site-specific AO was finalized and provided to DOE/HQ, Weston (WMPO:JSS-811) and the NNWSI Project (WMPO:JSS-1562). The distribution to the NNWSI Project was accompanied by a request to identify a single individual from each

participating organization to serve on the Working Group to prepare the position paper. These individuals are: J. Neal, SNL; B. Crowe, Los Alamos; D. Emerson, LLNL; B. Myers, USGS (observer only); and M. Voegele, SAIC. The AO was reviewed by Alan Jelacic, DOE Headquarters (DOE/HQ), and a generic outline was prepared that was acceptable to DOE/HQ. At his request, this AO was furnished to the other projects for review (WMPO: JSS-845). It was the desire of the HQ staff to meet with the NRC and discuss generic aspects of the AO and position paper. On December 3 and 4, 1985, such a generic workshop was held. The minutes from that workshop were distributed as an enclosure to a letter from Vieth to the NNWSI Project Technical Project Officers (WMPO:JSS-865). Because the NRC staff supported the AO as appropriate for its purpose, a new production sequence and associated schedule was developed. The cover letter for this enclosure (WMPO:MBB-579) contains the elements of the new preparation plan. The elements of the preparation plan are summarized below:

a.	Distribution of revised preparation plan to Working Group.	March 31, 1986
b.	The following to be distributed to the Working Group for review: -Draft topical report on seismic and faulting hazards at Yucca Mountain -Draft of relationship of tectonic processes and hydrology (SNL) -Draft of proposed methodology for seismic risk assessment and parametric analysis (SNL)	April 18, 1986
c.	Working Group review meeting on items included in (b).	April 29-30, 1986
d.	Similar working sessions to review draft contributions and prepare for NRC Workshop.	May-September, 1986
e.	Proposed NRC Workshop	July 1986
f.	Working session to assess results of NRC Workshop, reassign and redefine work elements as necessary to complete abridged version of position paper.	August 1986
g.	Abridged version of position paper to Project and consultant panel for review.	September 1986
h.	All comments on abridged version of position paper due.	October 15, 1986
i.	Final abridged Seismic/Tectonic Position Paper submitted to WMPO.	November 15, 1986
j.	Start work on complete position paper as outlined in the AO.	November 16, 1986

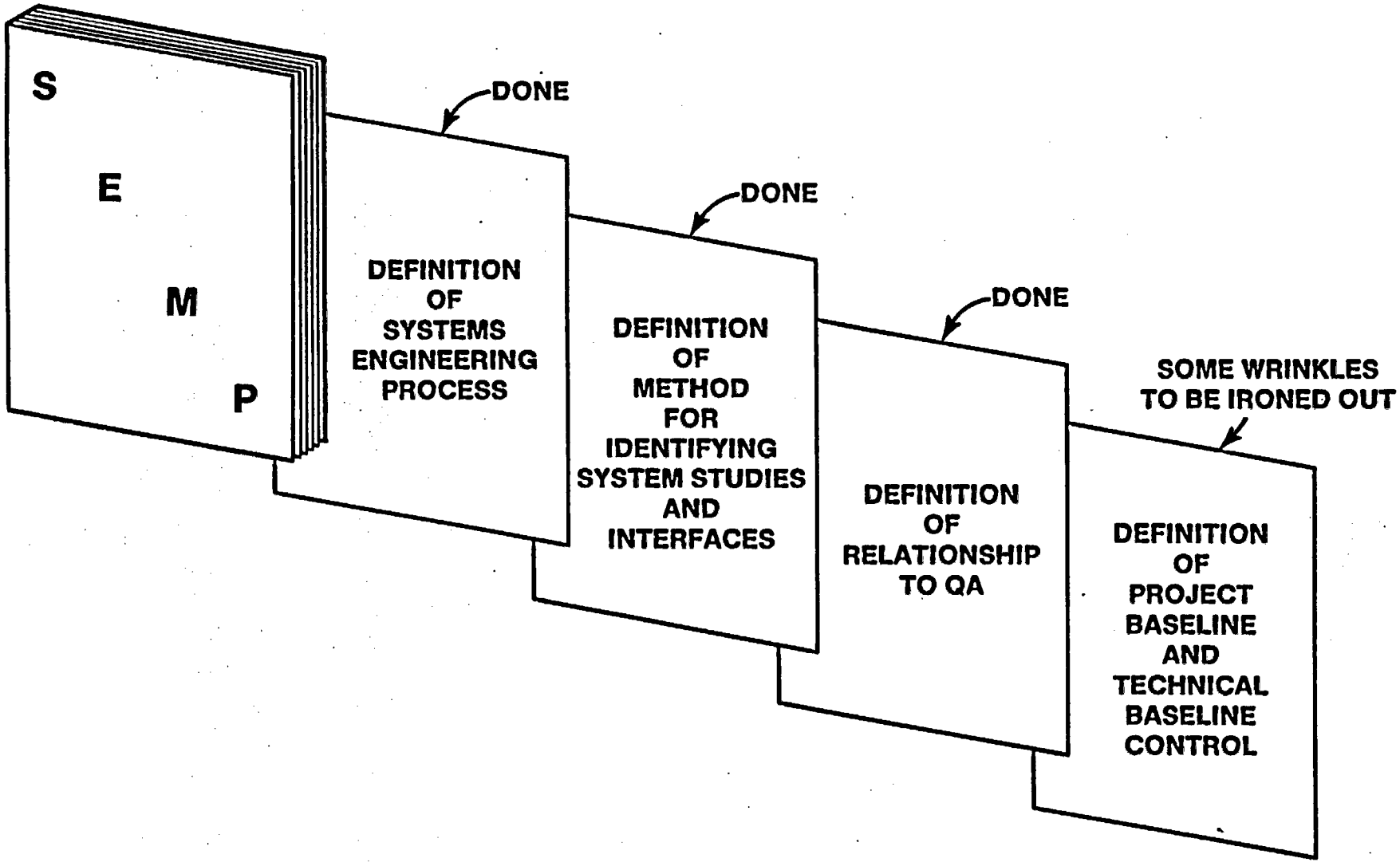
5.0 PREPARATION RESPONSIBILITIES

The cover letter for this plan (WMPO:MBB-579) indicates current responsibilities for development and production of the abridged version of the NNWSI Project Seismic/Tectonic Position Paper. The secton numbers indicated below are keyed to the complete annotated outline contained in Section 3 of this preparation plan. Not all of the topics below will be thoroughly developed in the abridged version of the position paper, although the general responsibilities are still applicable.

3.1	Introduction	SAIC
3.2	Applicable Regulations	----
3.2(A)	Regulatory Framework	SAIC
3.2(B)	Definitions	SAIC
3.3	Conceptual Approal	----
3.3(A)	Significant Processes	SAIC
3.3(B)	Issues to be Resolved	SAIC
3.3(C)	Events and Release Scenarios	SNL
3.3(D)	Resolution Methodology	SNL/SAIC
3.4	Approach for Identifying Significant Phenomena	----
3.4(A)	General	USGS
3.4(B)	Data Base	SAIC/SNL/USGS/LANL/LLNL
3.4(C)	Significance	SAIC/SNL/USGS/LANL/LLNL
3.4(D)	Uncertainty	SAIC/SNL/USGS/LANL/LLNL
3.4(E)	Relevance	SAIC/SNL/USGS/LANL/LLNL
3.5	Strategy for Issue Resolution	----
3.5(A)	General	SNL
3.5(B)	Seismic Design	SNL
3.5(C)	Engineering	SNL
3.5(D)	Mitigation	SNL
3.6	Release Scenarios	----
3.6(A)	General	SNL
3.6(B)	Preclosure	SNL
3.6(C)	Postclosure	SNL
3.7	Site Characterization Requirements	----
3.7(A)	Issues	SAIC
3.7(B)	Data and Information Needs	SAIC
3.8	Conclusions and Recommendations	All

Introduction and Objectives

STATUS OF THE SEMP



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NNWSI PROJECT SYSTEMS ENGINEERING

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Question: How do we integrate the technical disciplines and activities?

Answer: All technical activities shall be planned, performed, and documented on the basis of the same organizing principles.

OBJECTIVES OF NNWSI PROJECT SYSTEMS ENGINEERING

- **Satisfy the DOE/OCRWM/OGR requirements for systems engineering**
- **Establish and adhere to additional requirements to improve the efficiency and quality of the prospective Yucca Mountain Mined Geologic Disposal System**
- **Integrate the organizing principles that have been developed for the**
  - **— Site Characterization Plan (SCP)**
  - **— Design activities**
  - **— Performance assessment**
  - **— QA**
  - **— Licensing and Regulatory Compliance**
  - **— Systems Engineering**
  - **— Project planning and scheduling**

NNWSI PROJECT SYSTEMS ENGINEERING

Systems Engineering Process

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NNWSI PROJECT PHASES

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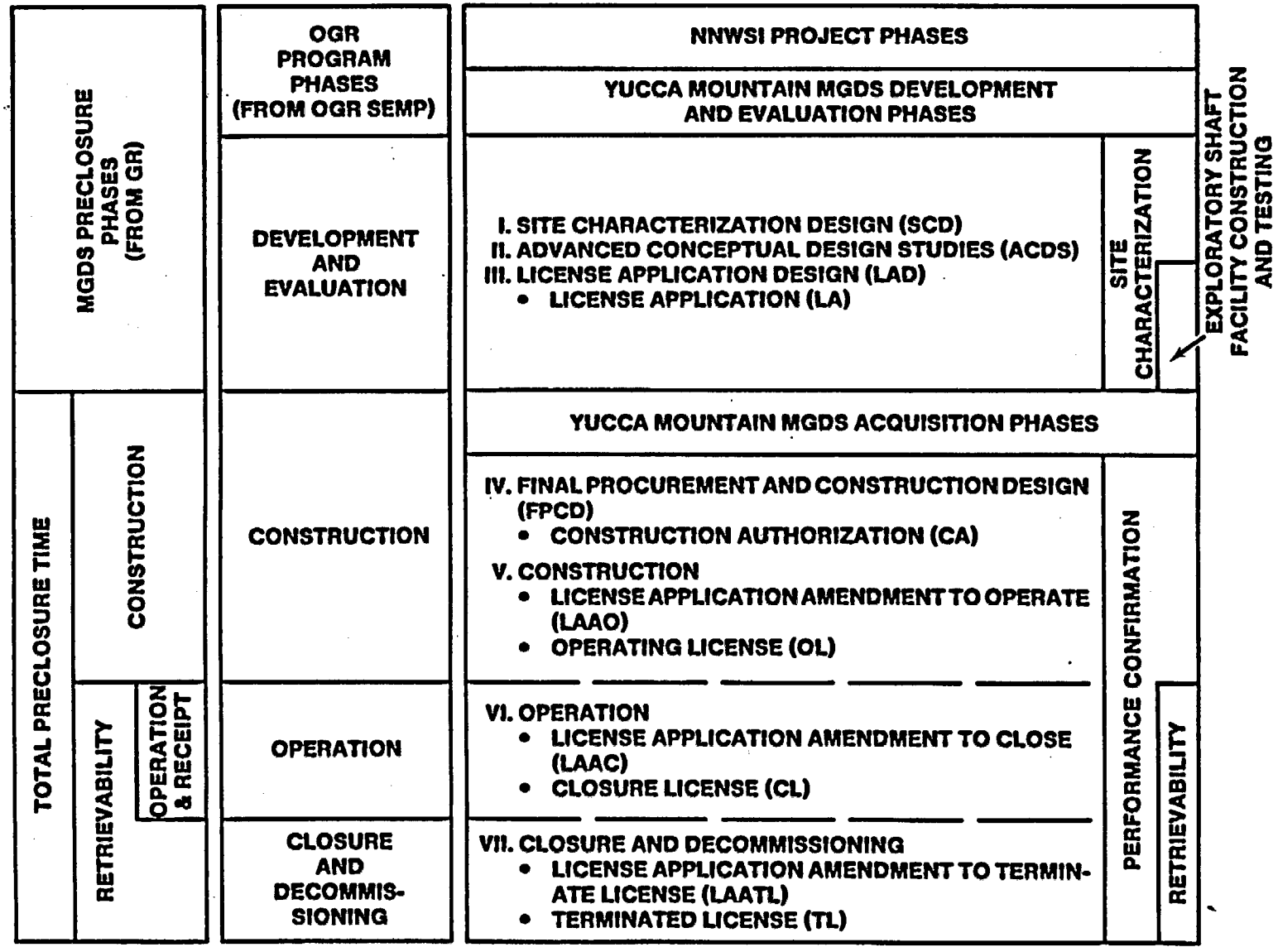

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NNWSI SYSTEMS ENGINEERING PROCESS

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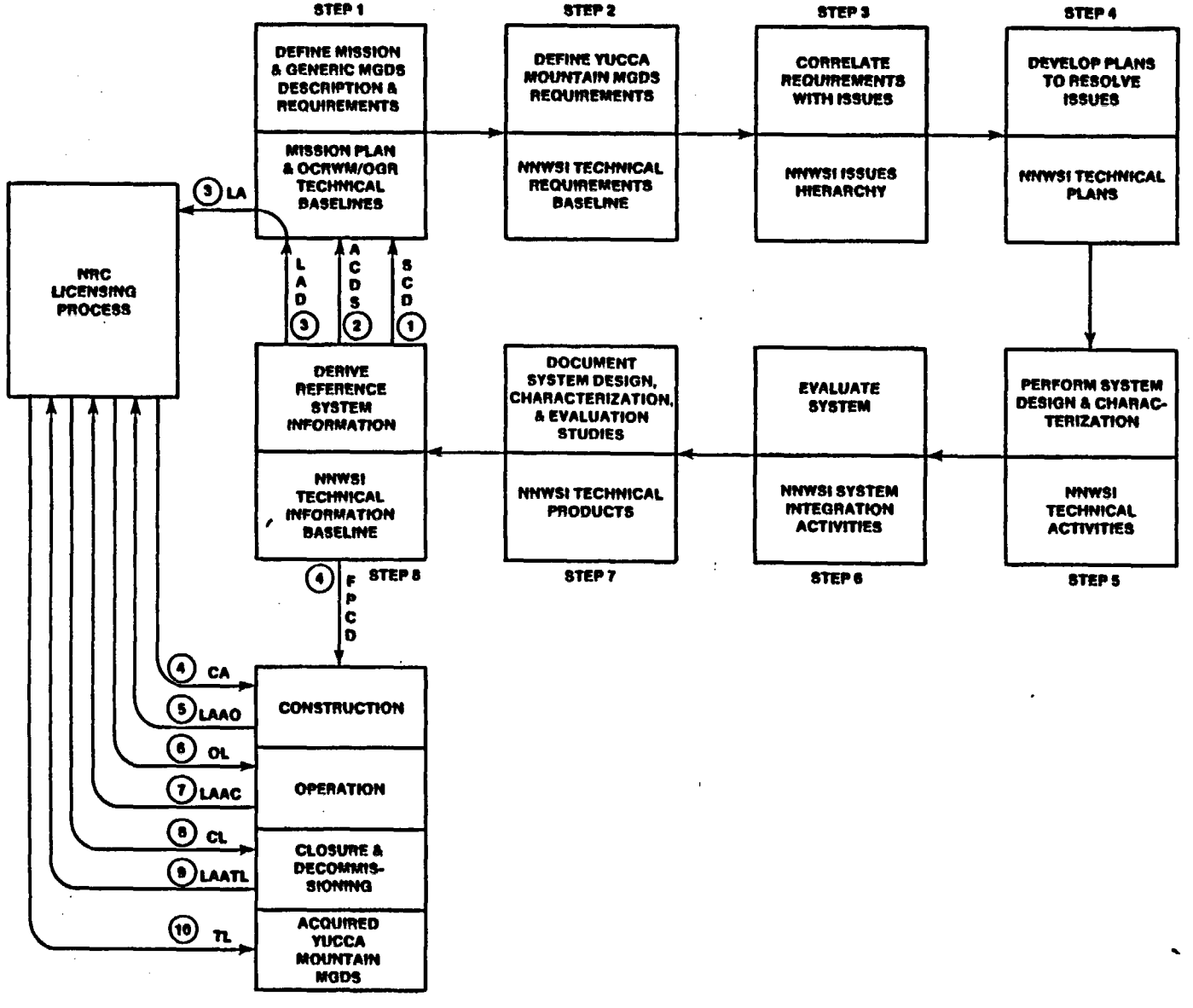

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The Role of the Issues Hierarchy and the Issue Resolution Strategy in the Systems Engineering Process

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ISSUE RESOLUTION STRATEGY

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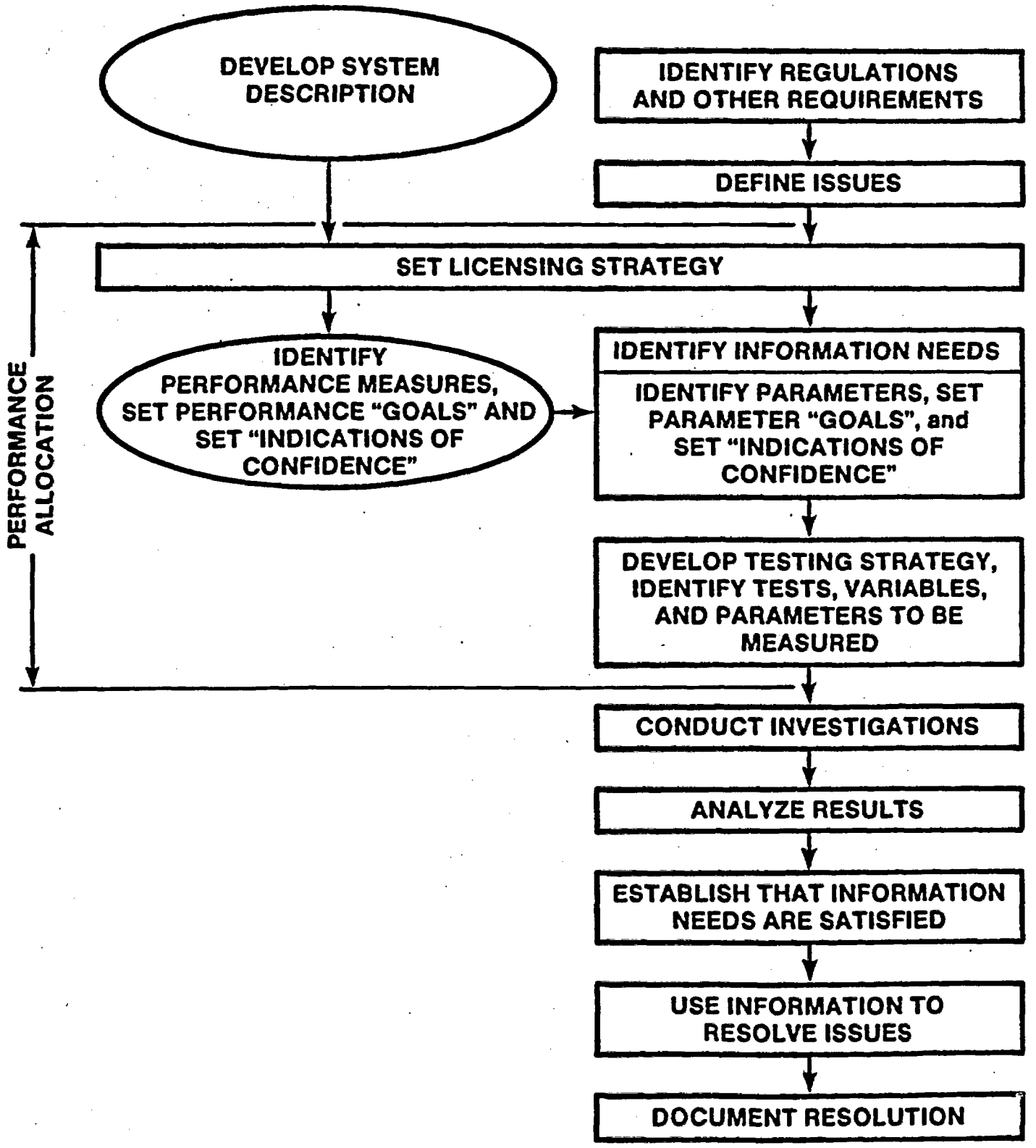

RELATIONSHIP BETWEEN THE SYSTEMS ENGINEERING PROCESS AND THE ISSUES RESOLUTION STRATEGY

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ISSUE RESOLUTION STRATEGY FOR PERFORMANCE AND DESIGN ISSUES													
IDENTIFY SYSTEM REQUIREMENTS FROM LAWS, REGULATIONS, ORDERS, ETC.	STATE THE ISSUES FROM THE ISSUES HIERARCHY	IDENTIFY ALL SYSTEM ELEMENTS THAT COULD FUNCTION FOR THIS ISSUE (FROM SR)	DEVELOP ISSUE RESOLUTION APPROACH e.g., DEFINE SYSTEM ELEMENTS, PROCESSES TO RELY ON	DEFINE PERFORMANCE MEASURES FOR EACH ELEMENT	DEFINE PERFORMANCE OR DESIGN GOALS AND INDICATIONS OF CONFIDENCE	DERIVE & PRIORITIZE SITE OR DESIGN PARAMETERS, GOALS & IND. OF CONFIDENCE	DEFINE TESTS OR ANALYSES	EVALUATE TESTS & ANALYSES AGAINST GOALS NEGOTIATE CONSISTENCY WITH GOALS	INTEGRATE TESTS & ANALYSES	PERFORM TESTS & ANALYSES	EVALUATE RESULTS	DOCUMENT RESULTS OF TESTS & ANALYSES	DERIVE REFERENCE SYSTEM INFO & SHOW ISSUE RESOLUTION OR REITERATE
STEPS 1 & 2	STEP 3	STEP 4						STEPS 5 & 6				STEP 7	STEP 8

STEPS OF THE SYSTEMS ENGINEERING PROCESS

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CORRELATION OF SYSTEM REQUIREMENTS AND ISSUES

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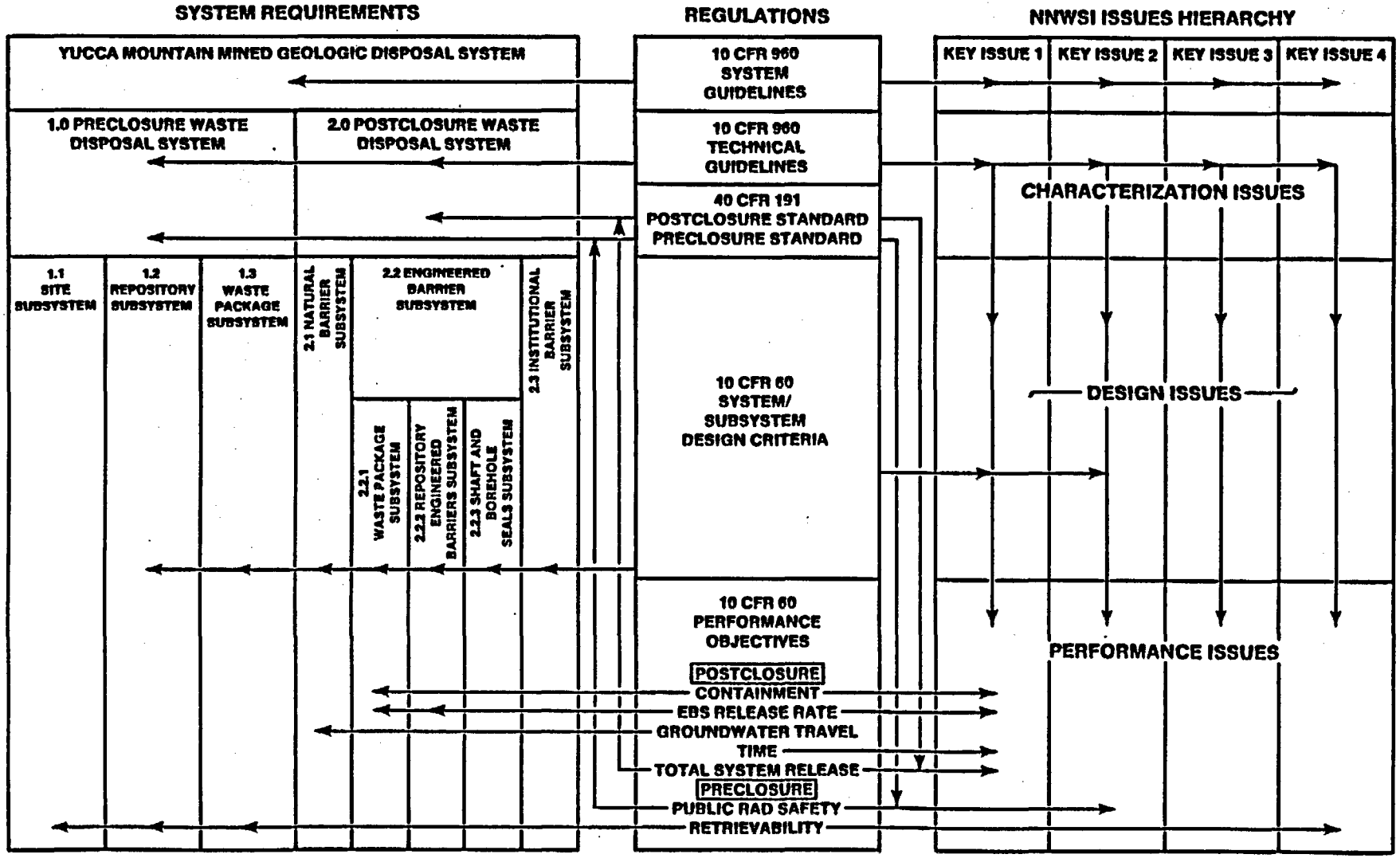

PHASED APPROACH TO ISSUE RESOLUTION RESOLUTION AND SYSTEMS ENGINEERING

Site Characterization Design Phase

To guide site characterization activities, design and performance goals are allocated for those requirements that are involved in licensing and require information about the site for a demonstration of compliance.

Advanced Conceptual Design Studies Phase

To further guide site characterization activities and to define design requirements for the license application design, design and performance goals are allocated and system trade-off studies are performed for all requirements that are involved in licensing.

License Application Design Phase

To guide the completion of site characterization and the license application design and to define design requirements for the final procurement and construction design, design and performance goals are allocated and system trade-off studies are performed for all requirements.

Final Procurement and Construction Design Phase

Information obtained and developed in earlier phases is used in system studies to translate design and performance goals into requirements and specifications for construction, operation, and closure and decommissioning.

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NNWSI PROJECT SYSTEMS ENGINEERING

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Identification of Interfaces and System Studies

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THE ROLE OF SYSTEM STUDIES IN ISSUE RESOLUTION

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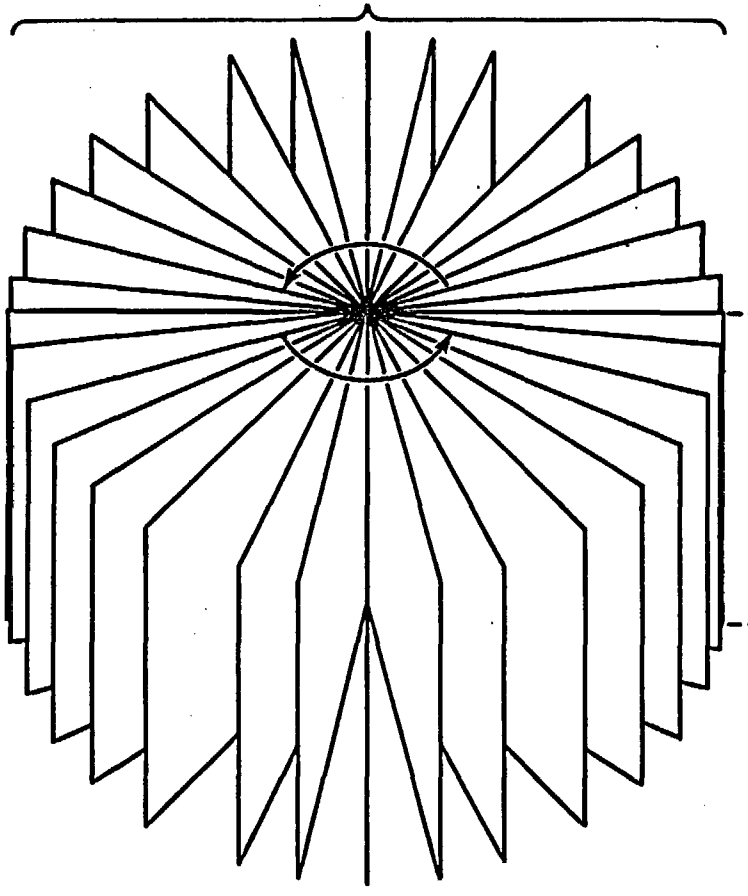
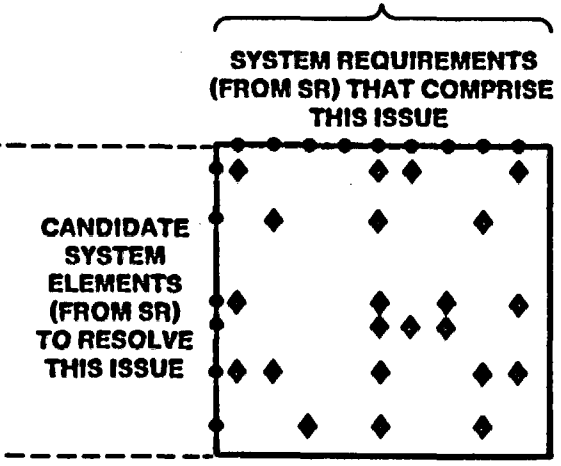
SYSTEM STUDIES BALANCE ALLOCATION OF PERFORMANCE/DESIGN GOALS FOR EACH SYSTEM ELEMENT ACROSS ALL ISSUES AND BALANCE ALLOCATION ACROSS SYSTEM ELEMENTS FOR EACH ISSUE.



ALL DESIGN AND PERFORMANCE ISSUES

SYSTEM STUDIES BALANCE ALLOCATION FOR EACH SYSTEM ELEMENT ACROSS ALL REQUIREMENTS AND BALANCE ALLOCATION ACROSS ELEMENTS FOR EACH REQUIREMENT.



◆ = PERFORMANCE/DESIGN GOALS ALLOCATED TO SELECTED SYSTEM ELEMENTS TO ACHIEVE COMPLIANCE WITH SYSTEM REQUIREMENTS AND THUS RESOLVE THIS ISSUE — ALLOCATION IS DEVELOPED THROUGH SYSTEM STUDIES

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Role and Integration of Quality Assurance in Issue Resolution and the Systems Engineering Process

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GOALS

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Goal of:

System Engineering -

An efficient, high-quality system

Quality Assurance -

An efficient, high-quality system

OBJECTIVES

Quality Assurance functions are aimed at:

- **Achievement of Quality**
  - **Conformance to requirements**
  - **"Customer satisfaction", i.e., licensability**
- **Evidence of that achievement of quality**
  - **Retained and retrievable documentation**

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PHASES OF ISSUES RESOLUTION STRATEGY

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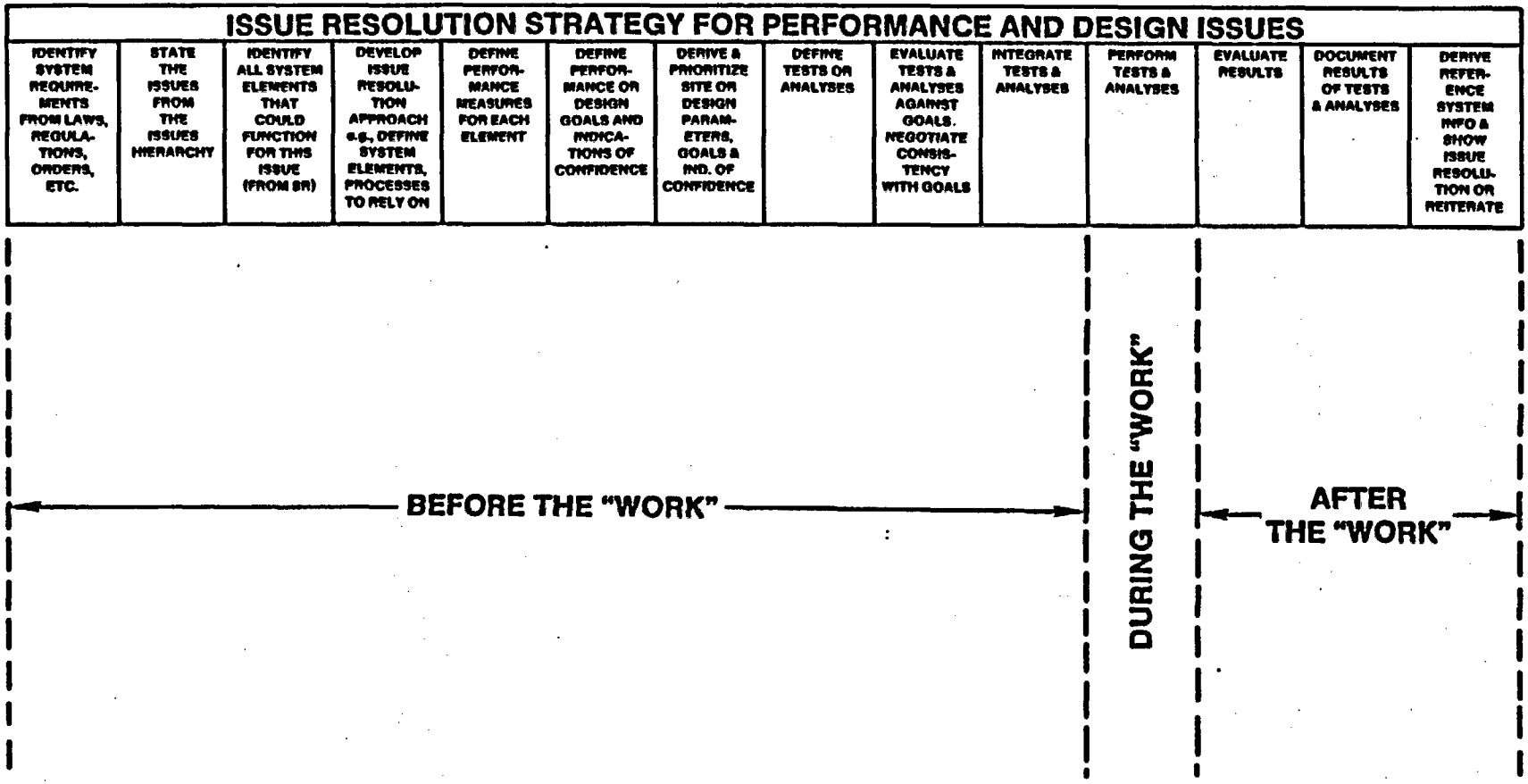

PHASES OF QUALITY ASSURANCE

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QA functions are exercised:

- **During work performance:**

  (supervisory overviews, audits, peer observations, adherence to procedures, etc.)

- **After performance of work:**

  (verification activities - peer reviews, inspection: Did we achieve what was required?)

- **But most importantly, before work performance:**

  (planning, organizing, generating spec's and procedures, training, etc.)

PRE-"WORK" QA

IRS: STEPS 1 - 10 SE: STEPS 1 - 4

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Design: Generation of design basis & inputs
- Application of established procedure for this activity
- Baseline control
- Reviews of design planning documents, design bases, etc.

Testing: Generation of test/experiment. plans & procedures
- Application of procedure to do so
- Qualification of procedure to do so
- Qualification of test equipment, procedure, personnel
- Training
- Instrumentation calibration
- Review of documents

Analysis:
- Definition of problem & related facts/constraints
- Identification of applicable model
- Software QA
- Reviews of Documents

QA DURING WORK

IRS: STEP 11

SE: STEP 5

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During design:

- **Adherence to design control procedures**
- **Application of interface control**
- **Configuration control**

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QA DURING WORK

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During testing/experimentation:

- Adherence to test/experiment procedures
- Nonconformance control
- Application of hold points
- Verification of critical controlled parameters
- Use of trained personnel
- Control of data recording
- Supervisory/technical overchecks
- Document control
- Surveillances/audits

QA DURING WORK

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During analytical activities:

- **Adherence to analysis guidelines**
- **Supervisory/technical overchecks**
- **Use of qualified personnel & software**

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QA FOLLOWING WORK

IRS: STEPS 12 - 14

SE: STEPS 6 - 8

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Design:

- **Design reviews**
- **Calculational verification**
- **Testing**

Testing:

- **Peer/technical review of results**
- **Control of data as records**
- **Post-test instrumentation calibration**

Analysis:

- **Peer/technical review**
- **Comparison with alternate analyses**

NNWSI PROJECT SYSTEMS ENGINEERING

Use of the Q-List Methodology in the Issue Resolution Strategy to develop the NNWSI Project Q-List

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Q-LIST METHODOLOGY

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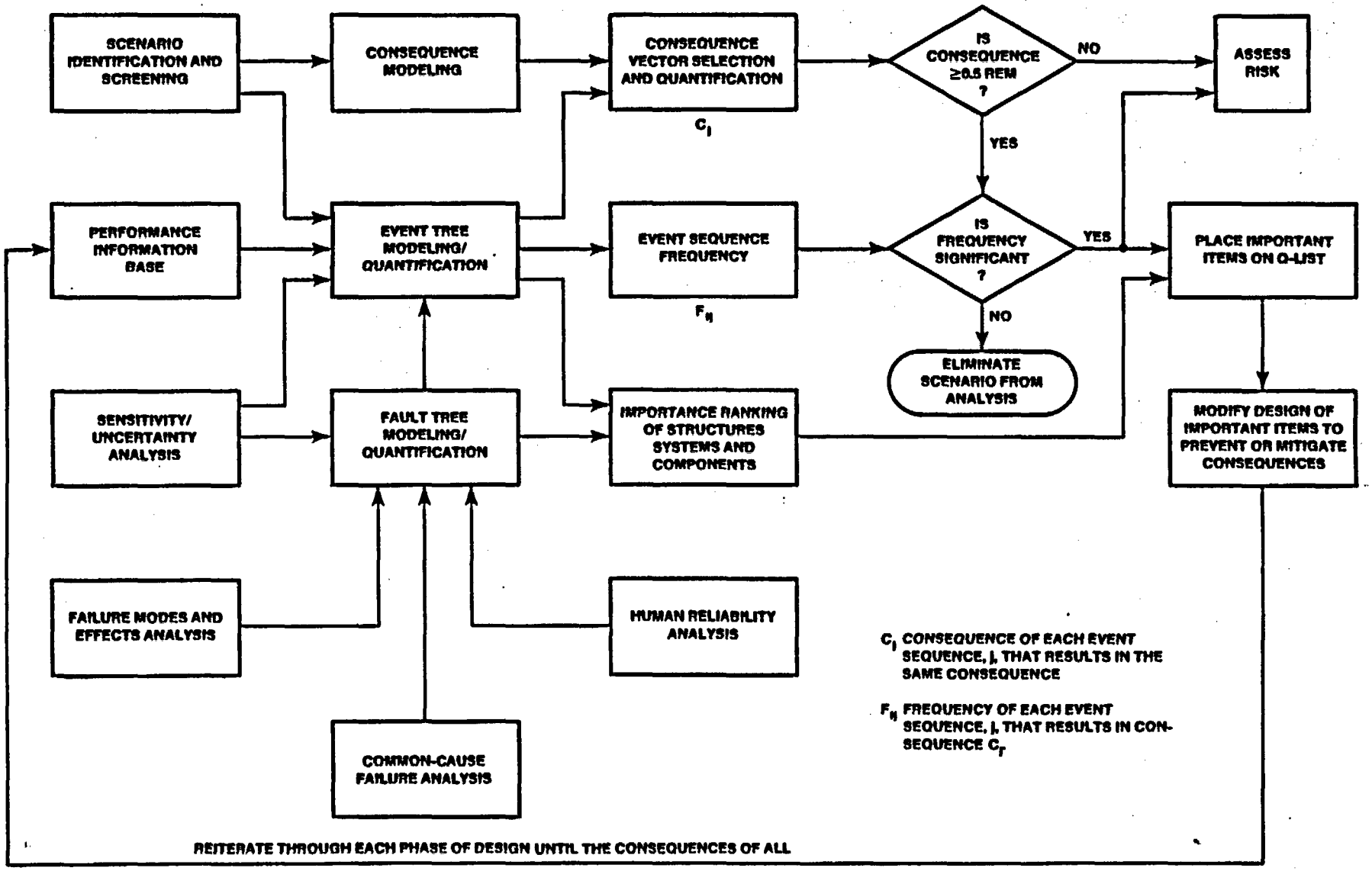

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USE OF THE Q-LIST METHODOLOGY IN THE ISSUE RESOLUTION STRATEGY

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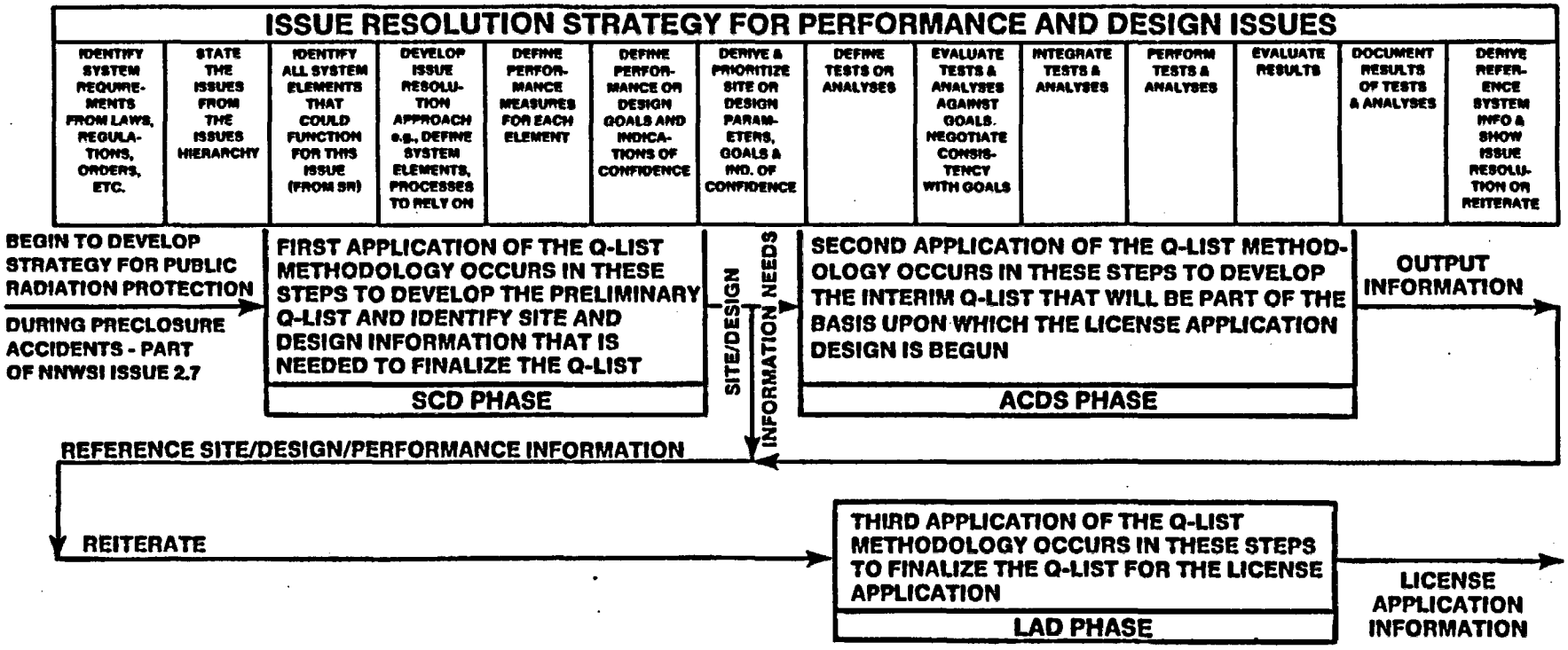
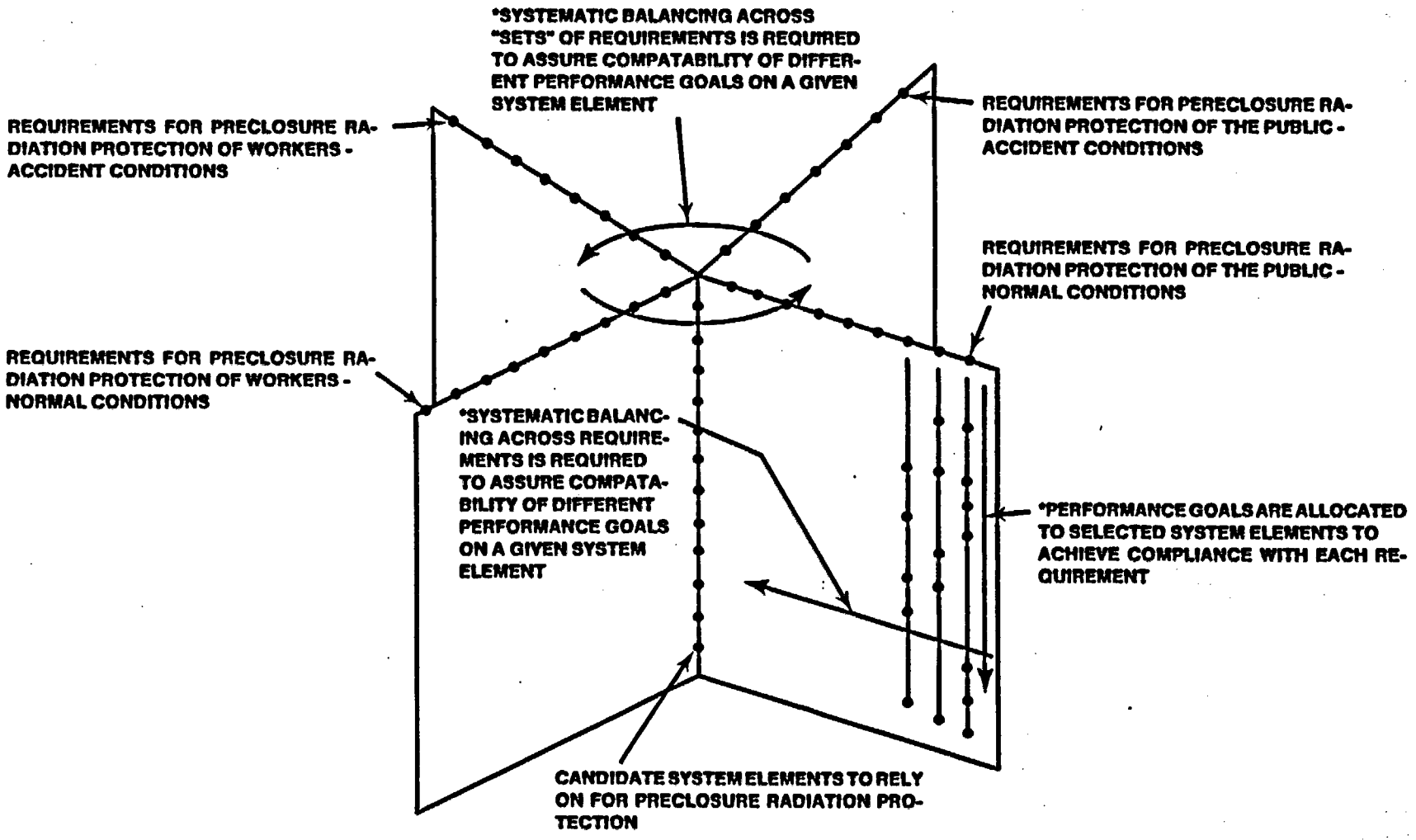


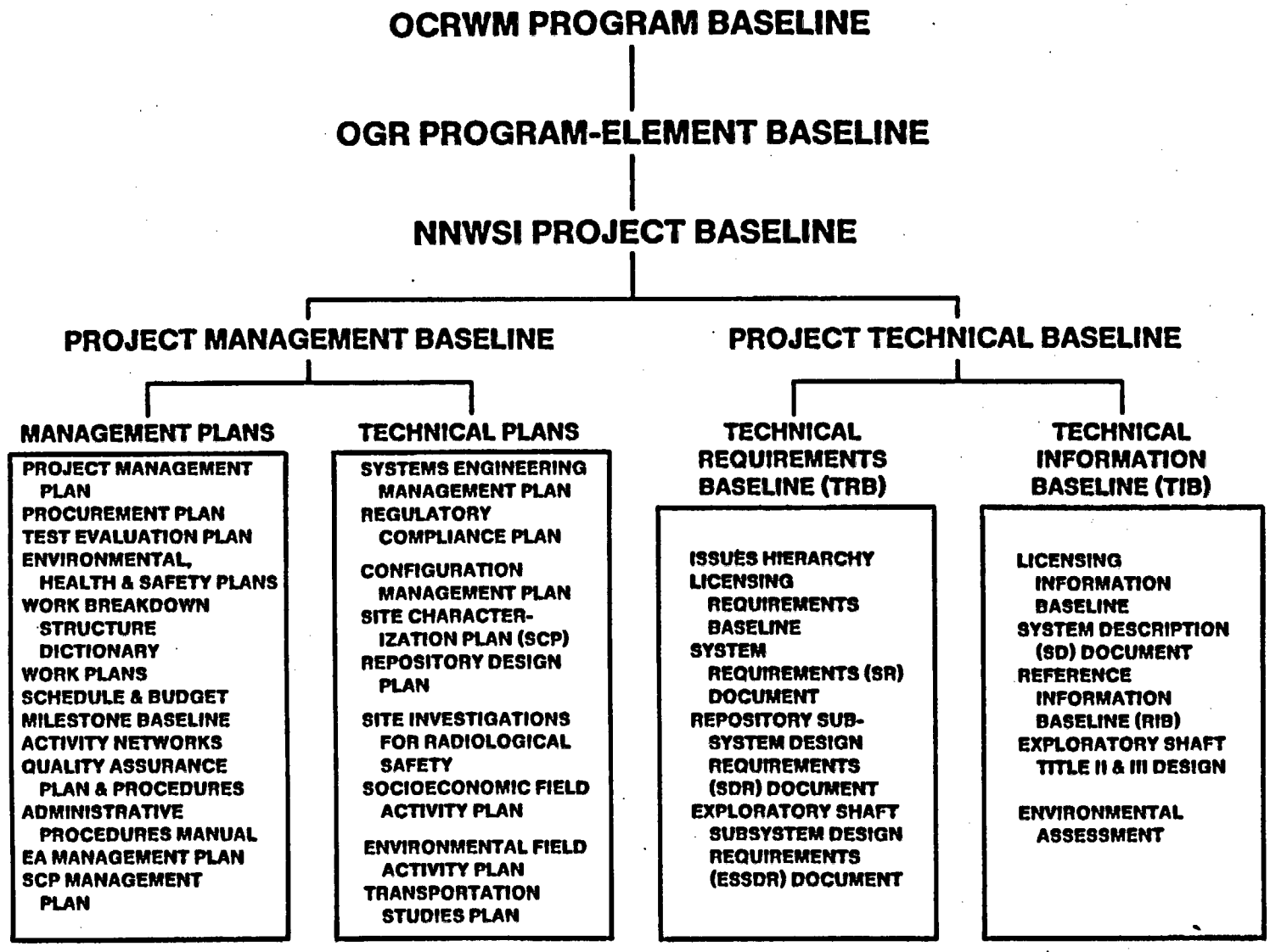
ASSIGNMENT OF ITEMS TO THE Q-LIST MUST BE BALANCED WITH OTHER PERFORMANCE ALLOCATIONS



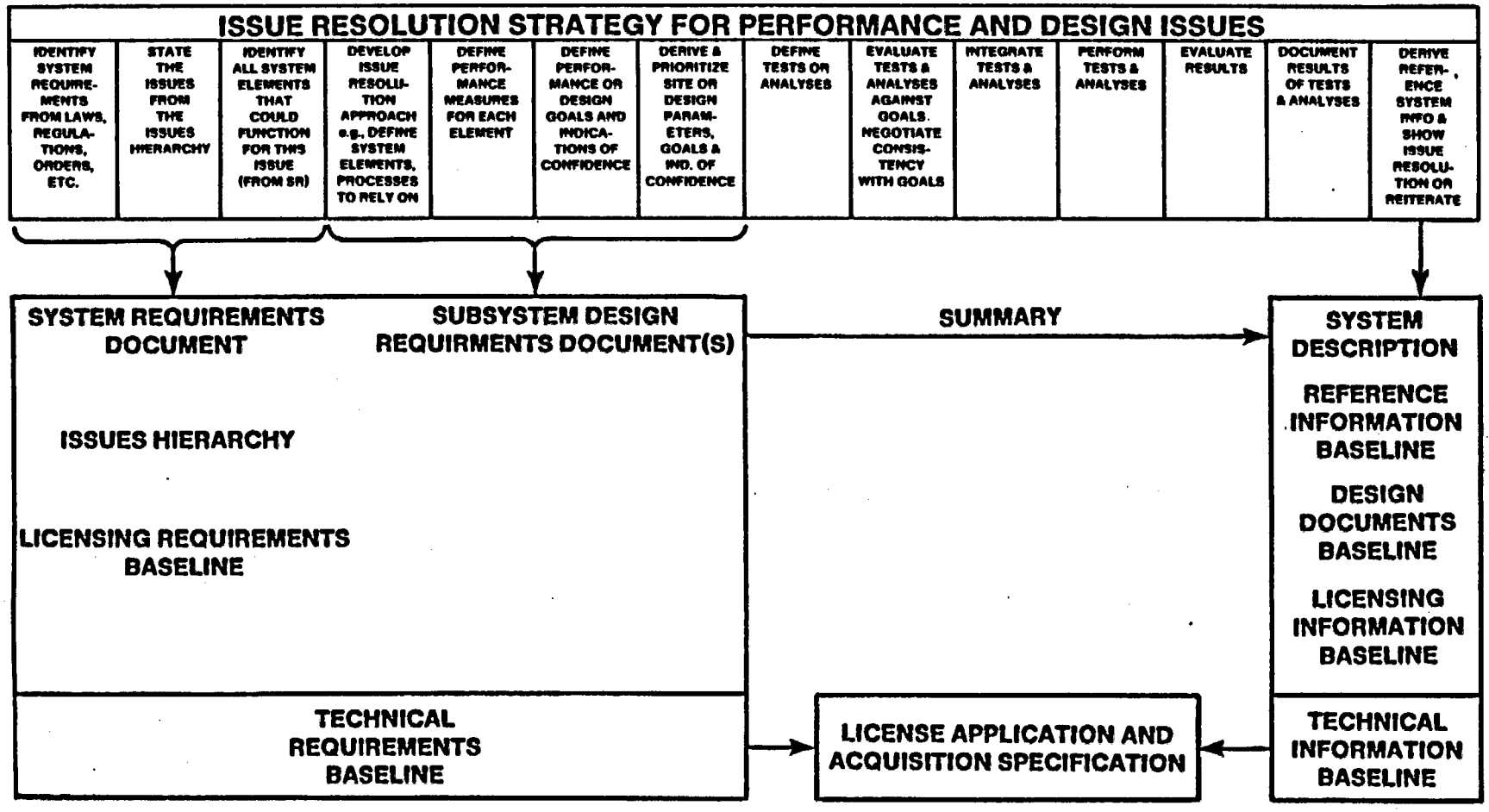
*THESE EFFORTS ARE SYSTEM STUDIES AND ARE THE EFFECTIVE MEANS OF IDENTIFYING INTERFACES AND DETAILED SYSTEM STUDIES THAT ARE NEEDED

NNWSI Project Baseline and Technical Baseline Controls

NNWSI PROJECT BASELINE



DEVELOPMENT OF THE NNWSI TECHNICAL BASELINE FROM ISSUE RESOLUTION AND THE SYSTEMS ENGINEERING PROCESS



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ASSIGNMENT OF ISSUE RESOLUTION STRATEGIES TO TECHNICAL PLANS

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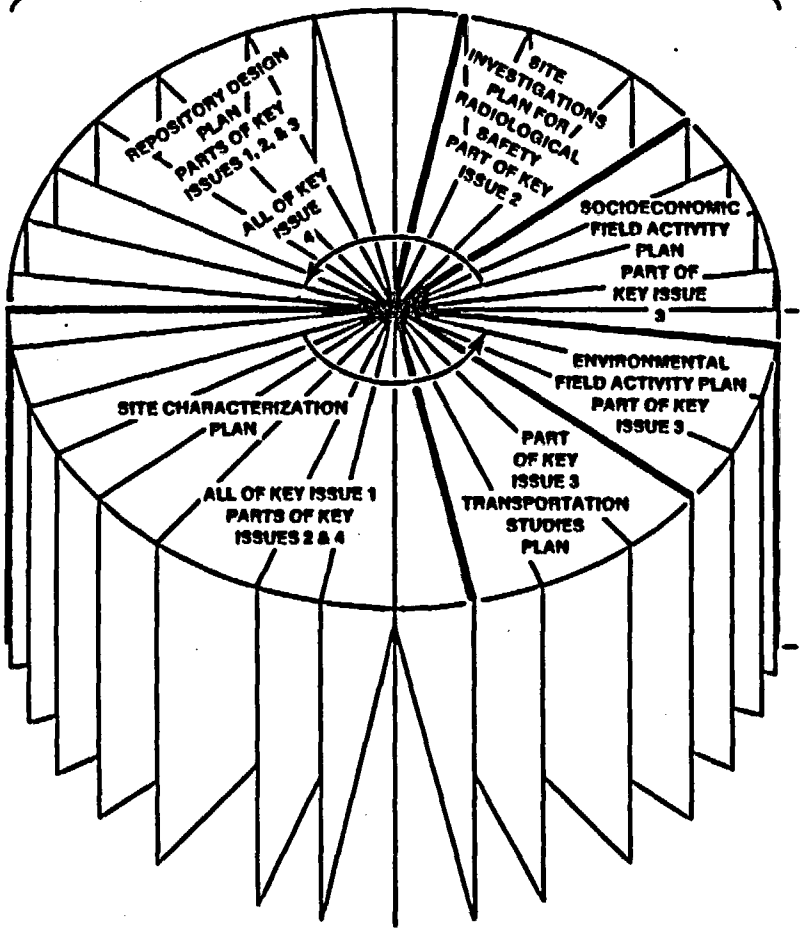
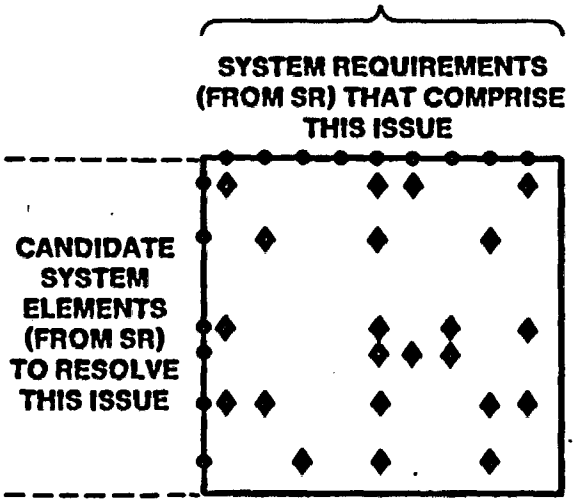
SYSTEM STUDIES BALANCE ALLOCATION OF PERFORMANCE/DESIGN GOALS FOR EACH SYSTEM ELEMENT ACROSS ALL ISSUES AND BALANCE ALLOCATION ACROSS SYSTEM ELEMENTS FOR EACH ISSUE.



ALL DESIGN AND PERFORMANCE ISSUES

SYSTEM STUDIES BALANCE ALLOCATION FOR EACH SYSTEM ELEMENT ACROSS ALL REQUIREMENTS AND BALANCE ALLOCATION ACROSS ELEMENTS FOR EACH REQUIREMENT.



◆ = **PERFORMANCE/DESIGN GOALS ALLOCATED TO SELECTED SYSTEM ELEMENTS TO ACHIEVE COMPLIANCE WITH SYSTEM REQUIREMENTS AND THUS RESOLVE THIS ISSUE — ALLOCATION IS DEVELOPED THROUGH SYSTEM STUDIES**

CORRELATION OF ISSUES WITH PROJECT DOCUMENTS THAT ADDRESS THEM

ISSUE *	PLAN CONTAINING ISSUE RESOLUTION STRATEGY (IRS) **	DETAIL OF IRS (P=partial, C=complete)
Key Issue 1. Postclosure Performance	SCP	C
Issue 1.1 Geohydrology	SCP	C
Issue 1.2 Geochemistry	SCP	C
Issue 1.3 Rock Characteristics	SCP	C
Issue 1.4 Future Climatic Conditions	SCP	C
Issue 1.5 Future Erosion	SCP	C
Issue 1.6 Rock Dissolution	SCP	C
Issue 1.7 Future Tectonic Processes	SCP	C
Issue 1.8 Human Interference	SCP	C
Issue 1.9 Waste Package Design	SCP RDP	C C
Issue 1.10 Underground Facility Design	SCP RDP	C C
Issue 1.11 Seals Design	SCP RDP	C C
Issue 1.12 Effects of Repository on Site	SCP	C
Issue 1.13 Waste Package Containment Time	SCP	C
Issue 1.14 Engineered Barrier Performance	SCP	C
Issue 1.15 Groundwater Travel Time	SCP	C
Issue 1.16 Releases to Environment	SCP	C
Issue TBD Postclosure Public Exposures	SCP	C
Issue TBD Groundwater Protection	SCP	C
Issue 1.17 Favorable & Adverse Conditions	SCP	C
Issue 1.18 Higher-Level Findings	SCP	C

CORRELATION OF ISSUES WITH PROJECT DOCUMENTS THAT ADDRESS THEM

ISSUE *	PLAN CONTAINING ISSUE RESOLUTION STRATEGY (IRS) **	DETAIL OF IRS (P=partial, C=complete)
Key Issue 2. Preclosure Radiological Safety	RDP	C
	SIRS	P
Issue 2.1 Population Density & Distribution	SIRS	C
Issue 2.2 Land Ownership and Control	SIRS	C
Issue 2.3 Meteorology	SIRS	C
Issue 2.4 Offsite Installations & Ops.	SIRS	C
Issue TBD Rad. Cond. of Water/Soil/Biota	SIRS	C
Issue 2.5 Waste Package Design	SCP	C
	RDP	C
Issue 2.6 Repository Design	SCP	P
	RDP	C
Issue 2.7 Rad. Exposures & Releases	SCP	P
	RDP	C
Issue 2.8 Higher-Level Findings	SCP	P
	SIRS	C
Issue TBD Favorable & Adverse Conditions	SCP	P
	SIRS	C

CORRELATION OF ISSUES WITH PROJECT DOCUMENTS THAT ADDRESS THEM

ISSUE *	PLAN CONTAINING ISSUE RESOLUTION STRATEGY (IRS) **	DETAIL OF IRS (P=partial, C=complete)
Key Issue 3. Env., Socioecon., & Trans.	EFAP	C
	SFAP	P
	TSP	P
Issue 3.1 Environmental Conditions	EFAP	C
Issue 3.2 Socioeconomic Conditions	SFAP	C
Issue 3.3 Transportation Conditions	TSP	C
Issue 3.4 Repository Design - Env.	EFAP	C
	RDP	C
Issue 3.5 Repository Design - Socioecon.	SFAP	C
	RDP	C
Issue 3.6 Repository Design - Trans.	TSP	C
	RDP	C
Issue 3.7 Environmental Impacts	EFAP	C
Issue 3.8 Socioeconomic Impacts	SFAP	C
Issue 3.9 Impacts of Transportation	TSP	C
Issue 3.10 Env. Impacts - not mitigated	EFAP	C
Issue 3.11 Higher-Level Findings	EFAP	C
	SFAP	P
	TSP	P
Issue TBD Favorable & Adverse Conditions	EFAP	C
	SFAP	P
	TSP	P

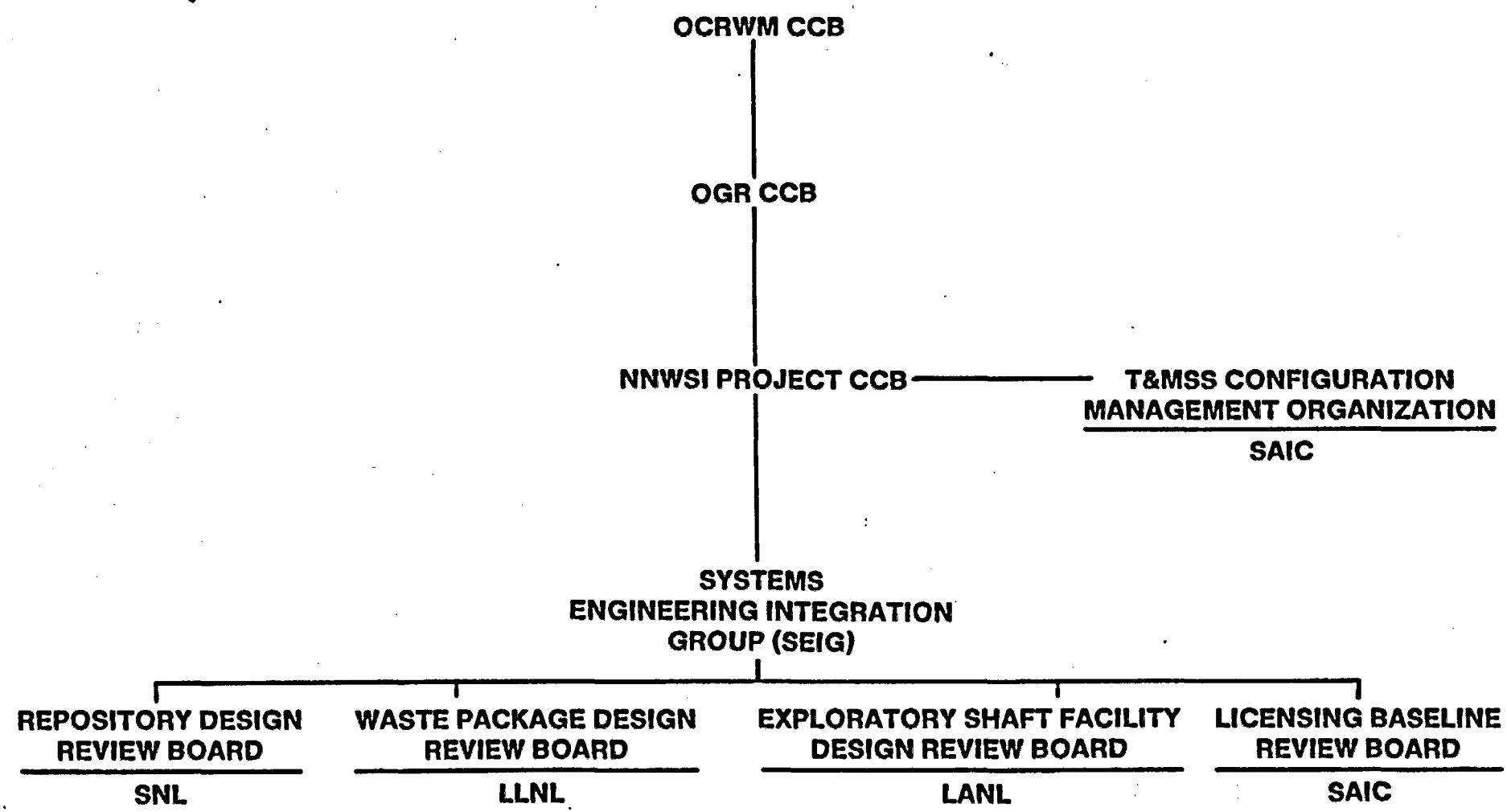
CORRELATION OF ISSUES WITH PROJECT DOCUMENTS THAT ADDRESS THEM

ISSUE *	PLAN CONTAINING ISSUE RESOLUTION STRATEGY (IRS) **	DETAIL OF IRS (P=partial, C=complete)
Key Issue 4. Feasibility and Cost	RDP	C
Issue 4.1 Surface Conditions	SCP	C
Issue 4.2 Host Rock Characteristics	SCP	C
Issue 4.3 Hydrology	SCP	C
Issue 4.4 Tectonic & Igneous Activity	SCP	C
Issue 4.5 Waste Package Feasibility	SCP RDP	C C
Issue 4.6 Non-rad Health and Safety	SCP RDP	P C
Issue 4.7 Repository Feasibility	SCP RDP	P C
Issue 4.8 Cost	RDP	C
Issue 4.9 Retrievability	SCP RDP	C C
Issue 4.10 Higher-Level Findings	SCP RDP	C C
Issue TBD Favorable & Adverse Conditions	SCP RDP	C C

* Except for Issues that are labeled TBD, the Issue numbers and descriptive titles are taken from the January 24, 1986 version of the NNWSI Issues Hierarchy in the letter from Maxwell B. Blanchard (WMPO) to distribution on that same date.

** SCP = Site Characterization Plan
RDP = Repository Design Plan
SIRS = Site Investigations Plan for Resolution of Preclosure Radiological Safety Issues (proposed title in text of this letter)
EFAP = Envronmental Field Activity Plan (see reference letter)
SFAP = Socioeconomic Field Activity Plan (see reference letter)
TSP = Transportation Studies Plan (see reference letter)

HIERARCHY OF TECHNICAL BASELINE APPROVAL AND MANAGEMENT GROUPS



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NNWSI PROJECT TECHNICAL BASELINE APPROVAL LEVELS

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ALL INPUTS/CHANGES THAT ARE APPROVED AT EACH LEVEL ARE REPORTED UP THE LINE MONTHLY

OCRWM CCB	LEVEL I INPUTS/CHANGES	AFFECT OCRWM BASELINE, OTHER PROGRAM-ELEMENTS, AND/OR OCRWM TECHNICAL POLICY OR POSITIONS
OGR CCB	LEVEL II INPUTS/CHANGES	AFFECT OGR BASELINE, OTHER PROJECTS, AND/OR OGR TECHNICAL POLICY OR POSITIONS
NNWSI CCB	LEVEL III INPUTS/CHANGES	AFFECT PROJECT COST OR SCHEDULE, WORK PLANS OF OTHER PARTICIPANTS, AND/OR NNWSI PROJECT TECHNICAL POLICY OR POSITIONS
SEIG*	LEVEL IV INPUTS/CHANGES	AFFECT SUBSYSTEM INTERFACES FOR SUBSYSTEMS UNDER DEVELOPMENT BY DIFFERENT PROJECT PARTICIPANTS
REVIEW BOARDS	LEVEL V INPUTS/CHANGES	AFFECT SUBSYSTEMS AND/OR SUBSYSTEM INTERFACES UNDER DEVELOPMENT BY A SINGLE PROJECT PARTICIPANT

*IN ADDITION TO REVIEW AND APPROVAL OF LEVEL IV INPUTS/CHANGES, THE SEIG REVIEWS ALL HIGHER LEVEL INPUTS/CHANGES AND PROVIDES RECOMMENDATIONS FOR APPROVAL OR DISAPPROVAL (WITH JUSTIFICATION) UP THE LINE

ROLE OF THE T&MSS CONFIGURATION MANAGEMENT ORGANIZATION

- **All input/change requests are submitted to the T&MSS Configuration Management Organization for classification, documentation, and issuance to the appropriate group(s) for review and approval, as designated by the Director of the WMPO or his delegate.**

- **Analyses of input/change requests and approval/disapproval decisions and documentation are returned to the T&MSS Configuration Management Organization for documentation and distribution of approved inputs/changes to the controlled copies of the Technical Baseline documents.**

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SITE INTEGRATION GROUP
PRESENTATION TO PM/TPO MEETING

MARCH 24, 1986

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RESULTS OF SITE NETWORK REVIEW

PROBLEM	EXAMPLE
1. MILESTONES THAT ARE SCHEDULED FOR COMPLETION TOO LATE ACCORDING TO HQ DEADLINES	FINAL REPORT ON SOLUBILITY (SCHEDULED 6/93) (P. 23A)
2. MILESTONES THAT CANNOT BE TRACKED TO ISSUES HIERARCHY	ADDITIONAL PAVEMENT STUDIES (P. 28A)
3. MILESTONES THAT CANNOT BE EVALUATED DUE TO LACK OF CRITERIA	ALMOST ALL LEVEL 3 AND 4 MILESTONES
4. ACTIVITIES/MILESTONES THAT ARE MISSING FROM THE NETWORKS	IN SITU STRESS HOLES (P. 37A)

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RESULTS OF SITE NETWORK REVIEW (CONT)

PROBLEM	EXAMPLE
5. ACTIVITIES CONTINUING FOR MORE THAN ONE YEAR WITH NO MILESTONES OR DELIVERABLES	REFRACTION STUDIES (P. 29A)
6. TWO OR THREE WORD TITLE NOT INFORMATIVE	P. 22B - C326
7. TOO FEW CONNECTIONS SHOWN - OFF-NETWORK CONNECTORS - WITHIN NETWORKS	P. 26A - R346, R315 P. 28A - STRATIGRAPHY INVESTIGATION
8. NO NETWORK EXISTS	SNL - SITE GEOLOGY LOS ALAMOS - TECTONICS & VOLCANISM USGS - ISOTOPE GEOLOGY

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SITE INTEGRATION GROUP (SIG)

WBS	WMPO	SAIC
1.2.3.1 MANAGEMENT & INTEGRATION	BLANCHARD	JORGENSON
1.2.3.2 GEOLOGY		
1.2.3.2.1 GEOLOGIC INVESTIGATIONS	ROTERT	JONES
1.2.3.2.2 GEOPHYSICAL INVESTIGATIONS	ROTERT	HARDIN
1.2.3.2.3 SITE SUITABLITY	ROTERT	JONES
1.2.3.3 HYDROLOGY	D'LUGOSZ	MATTHUSEN
1.2.3.4 GEOCHEMISTRY	LIVINGSTON	MATTSON
1.2.3.5 DRILLING	D'LUGOSZ	HARDIN
1.2.3.6 ENVIRONMENT	JANKUS	BROWN
1.2.3.7 SOCIOECONOMICS	JANKUS	BROWN
1.2.3.8 PERFORMANCE ASSESSMENT	LIVINGSTON	PARK
1.2.3.9 DEFERRED SITE CLOSE OUT	JANKUS	BROWN

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OCRWM OGR — Nevada Nuclear Waste Storage Investigations PROJECT — YUCCA MOUNTAIN

SIG OPERATION

1. PREPARE SITE INTEGRATION MANAGEMENT PLAN (SIMP)

2. ACCOMMODATE NEED FOR SURFACE BASED TEST PLAN
   - DETAILS IN CHAPTER 8.3 OF SCP
   - SUMMARY IN SIMP (NETWORK AND MINIMAL TEXT)
     - IDENTIFY DRILL HOLES, TRENCHES, PAVEMENTS, ETC.
     - GIVE LOCATIONS
     - STATE PURPOSE OF ACTIVITY
     - IDENTIFY PI
     - STATE KEY DATES (QLAS, CRITERIA LETTERS, STARTING, COMPLETION)

3. COMPILE DRILLING NETWORK
   - SIG RESPONSIBILITY
   - INFORMATION WILL BE ACQUIRED AT LEAST QUARTERLY AT SITE INTEGRATION MEETING
   - UPDATED BASED ON WPAS GUIDANCE FROM MARCH 4 MEETING

4. MILESTONE TRACKING
   - USE PROJECT PARTICIPANTS MONTHLY REPORTS
   - REQUEST THAT ALL PARTICIPANTS PROVIDE STATUS OF LEVEL 3 & 4 MILESTONES

U.S. DEPARTMENT OF ENERGY

OCRWM

Nevada Nuclear Waste Storage Investigations PROJECT

YUCCA MOUNTAIN

OGR

NEXT STEPS

1. POSTPONE SITE INTEGRATION MEETING TENTATIVELY SCHEDULED FOR MARCH 27
   - RESCHEDULED DURING WEEK OF MARCH 31
   - PURPOSE WILL BE TO RESOLVE WPAS DISCONNECTS

2. DETERMINE PROCEDURE FOR WMPO ACCEPTANCE OF MILESTONES
   - ONE SUGGESTION IS TO INCLUDE A REGULATORY REVIEW OF REPORTS SUBMITTED TO WMPO IN ORDER TO DETERMINE WHETHER THE INFORMATION CONTAINED IN THE REPORT IS ADEQUATE FOR ISSUE RESOLUTION

TPO-PM Meeting 3-24-86

PERFORMANCE ALLOCATION ---STATUS

- PROJECT-WIDE WORKSHOP HELD ON FEB 20-21, L986
- WORKING GROUPS WERE FORMED
  - I. HIGHER LEVEL FINDINGS & SITE CRITERIA
  - II. GROUNDWATER TRAVEL TIME
  - III. RELEASES TO ACCESSIBLE ENVIRONMENT & EFFECTS OF REPOSITORY ON SITE CHARACTERISTICS
  - IV. REPOSITORY AND WASTE PACKAGE DESIGN
  - V. WASTE PACKAGE & EBS RELEASE
- WORKSHOP SCHEDULE WAS DEVELOPED

SCP PERFORMANCE ALLOCATION WORKSHOP SCHEDULE

3-24-86

ISSUE(S)	DATE(S)	HOST	LEAD ORGANIZATION
HIGHER LEVEL FINDINGS AND SITE CRITERIA			
1.17, 1.18, 2.8, 4.10	✓ 3/7 Held ~~3/27-28~~ Cancelled 4/22-24	SAIC USGS USGS	SAIC/SNL
	~~rescheduled 3/31 & 4/1~~ Cancelled rescheduled – 4/3 – SNL		
GROUNDWATER TRAVEL TIME			
1.15	✓ 3/11-12 Held ~~3/26 (as necessary)~~ ~~Cancelled~~	USGS USGS	SNL
	rescheduled 3/25 Denver		
RELEASES TO ACCESSIBLE ENVIRONMENT AND EFFECTS OF REPOSITORY ON SITE CHARACTERISTICS			
1.16, 1.12	✓ 3/13-14 Held ~~4/2-3 Cancelled~~ 4/17-18	SNL ~~Los Alamos~~ SNL	SNL
	rescheduled – 4/4 – SNL		
REPOSITORY AND WASTE PACKAGE DESIGN			
1.10, 1.11, 4.9, 4.5, 4.6, 4.7, 2.5, 2.6, 2.7	✓ 3/~~18-20~~ 19-21 Held 4/8-10	SNL SNL	SNL/LLNL
WASTE PACKAGE AND EBS RELEASE			
1.9, 1.13, 1.14	~~4/15~~ may be postponed?	LLNL	LLNL

PERFORMANCE ALLOCATION -- STATUS

MARCH 7 -- HIGHER LEVEL FINDINGS/SITING CRITERIA (ISSUES 1.17 & 1.18)

MEETING SUMMARY SENT TO PARTICIPANTS 3-19-86

DISCUSSION TOPICS: TERMINOLOGY PROBLEMS; CREDIBILITY-TYPE INFORMATION NEEDS AND HOW TO DEAL WITH THEM; REVISIONS TO INFORMATION NEEDS/ISSUES; 960 vs. 60 REQUIREMENTS

SAIC/SNL WORKING TOGETHER -- WILL PROVIDE WRITTEN ISSUE RESOLUTION STRATEGIES TO PARTICIPANTS BEFORE NEXT FULL MEETING (APRIL 22-24)

WORKING SESSION SCHEDULED FOR 4-3-86, SNL

MARCH 11-12 -- GROUNDWATER TRAVEL TIME (ISSUE 1.15)

MEETING SUMMARY SENT TO PARTICIPANTS 3-21-86

DISCUSSION TOPICS: ROLE OF LATERAL FLOW; DEFINITION OF "PATHWAY", AS REFLECTED IN NRC-DTP; "FASTEST PATH OF LIKELY RADIONUCLIDE TRAVEL" ; MATRIX PATHWAYS VS. FRACTURE PATHWAYS: CHARACTERIZATION OF CALICO HILLS

PARAMETER/DATA LIST WAS PROVIDED

2ND WORKSHOP SCHEDULED FOR 3-25-86 TO REACH AGREEMENT THAT PARAMETER/DATA LIST IS COMPLETE

PERFORMANCE ALLOCATION -- STATUS

MARCH 13-14 RELEASES TO ACCESSIBLE ENVIRONMENT (ISSUE 1.16)

REPOSITORY EFFECTS ON SITE CHARACTERISTICS (ISSUE 1.12)

MEETING SUMMARY WILL BE AVAILABLE IN NEXT COUPLE DAYS

GENERAL TOPICS COVERED: ISSUE 1.12

ISSUE IMPORTANT FOR DEFINITION OF DISTURBED ZONE; ISSUE WILL RECEIVE DESIGN & PERFORMANCE GOALS FROM OTHER ISSUES; IT IS VIEWED AS A "POLICEMAN" ISSUE

GENERAL TOPICS COVERED: ISSUE 1.16

DISAGREEMENT OVER APPROPRIATE PERFORMANCE MEASURE FOR THIS ISSUE LED TO MUCH DISCUSSION; WORKING GROUP HAS ACTION ITEMS TO COMPLETE PRIOR TO NEXT MEETING TO ATTEMPT TO RESOLVE SOME OF DIFFERENCES OF OPINION

WORKING SESSION SCHEDULED FOR 4-4-86, SNL
NEXT FULL MEETING 4-17/18-86

PERFORMANCE ALLOCATION -- STATUS

MARCH 19-20 REPOSITORY AND WASTE PACKAGE DESIGN
ISSUES 1.10, 1.11, 4.9, 4.5, 4.7, 2.5, 2.6, 2.7

MEETING SUMMARY IN PREPARATION

DISCUSSION TOPICS: ADAPTATIONS OF PERFORMANCE ALLOCATION STRATEGY TO FIT DESIGN/PERFORMANCE ISSUES; NEEDED PLACE FOR DESIGN & ANALYSIS TRADE-OFF STUDIES; ACTION ITEM FOR LLNL/SNL TO DEFINE "LOAD ENVELOPE" FOR CONTAINER; IMPACTS OF NATURAL CONDITIONS - I.E. SEISMIC RISKS ETC. WHERE DO THEY FIT IN PERFORMANCE ALLOCATION? DISCUSSIONS FOCUSED ON NEED TO CONSIDER BOTH "+" AND "-" CONTRIBUTIONS TO PERFORMANCE; R.A.T. -- DISCUSSION OF WHAT GOES IN THIS ISSUE

NEXT MEETING IS APRIL 8-10

GEOPHYSICS AND DRILLING

I. Milestones scheduled too late according to guidance.

WBS	Milestone	Description
1.2.3.2.2.2	B715	Report: Subsurface Structure South & West Level 3, 03MAR89; based on refraction surveys South & West, this report should be available for Issue 1.7 information needs in FY88.

III. Activities or Milestones missing from networks.

WBS	Activity	Description
1.2.3.5.2	All drilling	Criteria letter approval, QLAS approval, and signed work order requirements for all drilling both on- and off-NTS.
1.2.3.2.1	Grav & Magnetics	Conductivity or telluric sounding proposed over FY87-FY90 in USGS FY88 WPAS.
1.2.3.5.2	Drilling in situ stress holes.	Need milestones to track drilling, testing and reporting in FY87-88.
1.2.3.5.2.	Drilling infiltration exp. holes.	Need milestones to track drilling in FY87-8
1.2.3.5.2	Drilling SZ test holes.	Need milestones to track drilling and completion of C1,2 & 3 in FY87.
1.2.3.5.2	Drilling UZ test holes	Need milestones to track drilling & completion of UZ-96.
1.2.3.5.2.	Drilling SZ test holes	Need milestones to track drilling of WT hol drilled in FY86-88.
1.2.3.5.2	Drilling SZ test holes.	Need milestones to track drilling & completion of wells in the "Southern Tracer complex".
1.2.3.5.2.	Drilling for Surface Facilities.	Need milestones to track drilling of 203 holes to 500', E & M.

III Missing Activities, cont.

1.2.3.5.2	Geologic Pavements	Need milestones to track preparation of pavements for (123211G) in FY87-89
1.2.3.5.2.	Trenches, tectonic	Need milestones to track approx. (10) trenches per year over FY87-89, for (123231G).
1.2.3.5.2.	Trenches, paleohydrologic	Need milestones to track (6) trenches planned for FY86-87, in support of (123352G).
1.2.3.5.2.	Trenches, surface facilities	Need milestones to track (4) trenches for (123211S).
1.2.3.2.2.2.G	Deep Seismic Line	Need milestone dates to track deliverables and drilling and permitting requirements.

IV. Activities continuing for >1 year without deliverables.

WBS	Activity	Description
1.2.3.2.1	Gravity Interpretation	"Interpret Calicute Gravity sheets," feeding B116 "Issue Report: Calicute Sheet Gravity."
1.2.3.2.1	Gravity & Mag. Interpretation	"Continue Followup Investigation of Fortymile Wash Based on Previous Results" feeding B157 "Report: Final Fortymile Wash Gravity & Magnetics".
1.2.3.2.2.	Seismic	"Refraction South & West" feeds B715 "Report: Subsurface Structure South & West
1.2.3.2.2.	Seismic	"Refraction Survey / Subsurface East" feeding B733 "Report: Subsurface Structure East".
1.2.3.2.3	Rock Properties	"Large Volume Core Sample Rock Properties G-1 & G-2" feeding R138 "Issue Report: Rock Properties USW G-1, G-2"
1.2.3.2.3	Rock Properties	"Investigate Rock Property / Borehole Logging Correlation GU-3/GU-4" feeding R155 "Issue Report: Rock Properties From Laboratory & Logging USW G-3/G-4"
1.2.3.2.3	Rock Properties	"Continue Borehole Geophysical Logging" feeding R609 "Complete Geophysical Logging".
1.2.3.5.2 (or 1.2.3.2.3.3.G)	Drilling, Completion & Testing	"Drill & Test (10) in situ Stress Holes in FY87

V. Milestones which cannot be evaluated due to need for better criteria.

WBS	Milestone	Description
1.2.3.5.2.	A060 (July 1988)	"Complete Drilling Hydrologic Test Holes". Specify which holes and the WBS designated activity which they support.

Additional Info Needed:

WT-hole map, existing & planned holes BY NAME.

Current trenches / pavements map, existing & planned BY NAME.

In situ stress hole location BY NAME. (Since some of these are off-NTS)

Location of 40 Mile boreholes, or explanation of this term.

SITE GEOLOGY
TECTONICS & VOLCANISM
SEISMICITY

I. Milestones scheduled too late according to HQ guidance

WBS	Milestone	Description
1.2.3.2.3.1.G	M 395	Report: Quaternary history of Yucca Mtn. may not be issued
	M 892	Final 1:100,000 surface deposit map scheduled 3/88; may be needed for tectonics report 3/87
	T329	Report/map: geomorphology of Yucca Mt. scheduled 6/87; may be needed for tectonics report 3/87
	T147	Report: Regional crustal structure via deep seismic study; scheduled for 3/89; may be needed for tectonics reports 3/87 and 8/88.
1.2.3.2.3.3.G	P107	Report: Southern Great Basin seismotectonics; scheduled 1/89; may be need earlier in FY88
	M387	Report: Final seismic hazard update scheduled 12/88; may be needed earlier

II. Milestones/activities that cannot be tracked to Issues Hierarchy

WBS	Milestone	Description
1.2.3.2.1.1.G	Pavement studies	Additional pavement studies need to be justified in terms of Issues Hierarchy.

III. Activities or milestones that are missing from networks

WBS	Milestone	Description
1.2.3.2.1.1.S	—	No network
1.2.3.2.1.2.G	D234	Scheduled for FY 1987; no funding
	D243	in WPAS after FY 1986.
1.2.3.2.3.1.A	—	No network
1.2.3.2.3.1.G	—	No in situ stress studies
1.2.3.2.3.2.G	—	No network
1.2.3.2.3.3.G	new	Conduct 1986 trilateration survey
	new	Trilateration survey report
	T509	Seismic data report for 1982 - 1983; add to summary network

IV. Activities continuing for more than one year with no deliverables

WBS	Milestone	Description
1.2.3.2.1.1.G	G619	Investigate lateral stratigraphic variation (10/84 to 12/87)
	G393	Investigate fractures from aerial photos (10/84 to 11/86)
	G113	Investigate Yucca Mtn. fracture distribution (4/86 - 12/87)
	G155 G159	Investigate drillhole stratigraphy and structure. Conclusion from summary network is that there are no milestones from FY 1985 through FY 1989. This is due to inadequate connections on to detail network.
1.2.3.2.3.1.G	T127	Preliminary tectonic model (3 years)
	T147	Investigate crustal structure per deep seismic study (4 years)
	M891	Final fault data and map (2 years)
	T261	Final site map (2 years)
1.2.3.2.3.3.G	P107	Report: Southern Great Basin seismo-tectonics & hazard assessment (4 years
	M387	Report: Final seismic hazard update (3 years)

II. Milestones that cannot be evaluated due to need for better criteria

WBS	Milestone	Description
1.2.3.2.1.1.G	M368	Surface facility geology defined (has no criteria)
1.2.3.2.3.1.G	M899	Surficial geologic mapping completed (has no criteria)
	M890	Final Soil Study Evaluation (has no criteria)
	M383	Complete tectonic model (has no criteria)
1.2.3.2.3.3.G	M363	Complete seismic hazards and risks update (has no criteria)
	P108	Report: SGB Acceleration Attenuation Function (has no criteria)
	M375	Complete regional seismic network monitoring (has no criteria)
	M387	Issue Final Seismic Hazard Update (has no criteria)
	P107	Issue report: SGB Seismotectonic (has no criteria)

HYDROLOGY

I MILESTONES SCHEDULED TOO LATE ACCORDING TO HQ GUIDAN

WBS	MILESTONE	DESCRIPTION
1.2.3.3.1	F331	SCHEDULED 24 MAR 89, NEEDED 12/88 (ISSUE 4.3)
1.2.3.3.2	P105	SCHEDULED 17 MAR 89, NEEDED 12/88 (ISSUE 1.1)
1.2.3.3.2	S641	SCHEDULED 24 APR 89, NEEDED 12/88 (ISSUE 1.1)
1.2.3.3.2	S316	SCHEDULED 15 SEP 89, NEEDED 12/88 (ISSUE 1.1)
1.2.3.3.2	S326	SCHEDULED 15 SEP 89, NEEDED 12/88 (ISSUE 1)
1.2.3.3.2	S661	SCHEDULED 15 SEP 89, NEEDED 12/88 (ISSUE 1.1)
1.2.3.3.3	M389	SCHEDULED 15 SEP 89, NEEDED 12/88 (ISSUE 1
1.2.3.3.5.1	P104	SCHEDULED 30 MAR 90, NEEDED 12/88 (ISSUE 1.

II Milestones That Can Not Be Traced Into The Issue Hierarchy

WBS	Milestone	Description
1.2.3.3.5.1	C256	Milestone C256 is entitled "Issue Report; Synoptic Climate of Yucca Mountain." Issue Hierarchy does not call for a climate study over a broad area.

III ACTIVITIES OR MILESTONES THAT ARE MISSING FROM THE NETWORK

WBS	MILESTONE	DESCRIPTION
1.2 3.3	MOST	LEVEL 4 MILESTONES DO NOT APPEAR ON THE SUMMARY NETWORK HOWEVER THEY DO APPER ON THE MASTER NETWORKS FOR THE 5TH AND 6TH ORDER WBS NUM

IV Activities Continuing For More Than One Year With No Deliverables

WBS	Milestone	Description
1.2.3.3.1	F331	No Deliverables Scheduled Between 9/86 And 3/89
1.2.3.3.2	S122	No Deliverables Scheduled Between 10/84 And 3/87
1.2.3.3.2	S241	No Deliverables Scheduled Between 1/86 And 12/87
1.2.3.3.2	S255	10/84 To 8/86
1.2.3.3.2	S316	4/85 To 9/89
1.2.3.3.2	S326	10/83 To 9/89
1.2.3.3.2	S707	5/84 To 10/86
1.2.3.3.2	P105	10/86 To 3/89
1.2.3.3.2	S641	9/87 To 5/89
1.2.3.3.2	S661	1/86 To 9/89
1.2.3.3.2	S421	10/88 To 4/86
1.2.3.3.2	S440	10/83 To 1/87
1.2.3.3.3	M389	4/88 9/89
1.2.3.3.4	H193	3/87 6/88
1.2.3.3.4	M036	3/87 1/90

Note: A Lack Of Interconnec... In The Net Of 1.2.3.3.2 May Be Responsible For Activ... Without Appr... Deliverabl...

IV (CONTINUED)

WBS	MILESTONE	DESCRIPTION
1.2.3.3.5.1	C112	NO DELIVERABLES SCHEDULED BETWEEN 6/84 TO 11/87
1.2.3.3.5.1	C306	9/86 TO 3/89
1.2.3.3.5.1	C256	6/85 TO 11/88
1.2.3.3.5.1	P104	11/88 TO 4/90
1.2.3.3.5.1	C186	12/85 TO 7/88
1.2.3.3.5.1	C210	10/83 TO 3/87
1.2.3.3.5.2	F111	10/83 TO 5/86

V MILESTONES THAT CANNOT BE EVALUATED DUE TO NEED OF BETTER CRITERIA.

ALL MILESTONES UNDER WBS 1.2.3.3 LACK CRITERIA.

VI BUDGETARY PROBLEMS WITHIN THE WPAS

WBS	DESCRIPTION
1.2.3.3.1	LAST DELIVERABLE IS F331, DUE 3/89. FULL BUDGET IS REQUESTED FOR FY89 AND FY90.
1.2.3.3.2	LAST DELIVERABLES ARE S316, S326, AND S66; ALL DUE 9/89. FULL BUDGET IS REQUESTED FOR FY90.
1.2.3.3.3	LAST DELIVERABLE IS M389, DUE 9/89. FULL BUDGET IS REQUESTED FOR FY90.
1.2.3.3.5.2	LAST DELIVERABLE IS F111, DUE 5/86. FULL BUDGET IS REQUESTED THROUGH FY90

I. MILESTONES SCHEDULED TOO LATE ACCORDING TO HQ GUIDANCE

GROUND WATER GEOCHEMISTRY

1.2.4.1.1.A

ISOTOPE GEOCHEMISTRY
2.3.4.1.2

Milestone R3 8 (Jan 88) "Report: Uranium Series Disequilibrium at Yucca Mountain" might contain the necessary information?

HYDROTHERMAL GEOCHEMISTRY
2.3.4.1.3

GUIDANCE COMPLIED WITH ACCORDING TO LANAL 3/20/86
New MILESTONE NOV 88

SOLUBILITY
2.3..4.1.4

M377 Report: Final report on solubility

Interim report may be nesscessary for 1.2, 1.16, and 1.23.

SORPTION AND PRECIPITATION
2.3.4.15

NEW Report: Effects of CO2 Enriched Atomosphere on Sorpton Coefficients (9/30/89)

May need interim report

DYNAMIC TRANSPORT
2.3.4.1.6

CGUIDANCE COMPLIED WITH ACCORDING TO LANAL 3/20/86
BY NEW MILESTONES

RETARDATION SENSITIVITY ANALYSIS
2.3.4.1.7. A

MINERALOGY AND PETROLOGY
2.3..4..2.A

GUIDANCE COMPLIED WITH ACCORDING TO LANAL 3/20/86

II. MILESTONES NOT TRACKED INTO ISSUES HIERARCHY

GROUND WATER GEOCHEMISTRY
2.3.4.1.1.A

NATURAL ISOTOPE GEOCHEMISTRY
2.3.4.1.2

NEW (Sept. 87) Report: on feasibility of ^{36}Cl measurement b conventional Mass Spectrometry

HYDROTHERMAL GEOCHEMISTRY
2.3.4.1.3

SOLUBILITY
2.3.4.1.4

SORPTION AND PRECIPITATION
2.3.4.1.5

DYNAMIC TRANSPORT
2.3.4.1.6

R313, R375, R341 and three new proposed milestones: Experiments an milestones involving crushed tuff need to be re-evaluated an justification given as to their pertinence in light of the NRC technica position on "Determination of Raddionuclide Sorption, for High Leve Nuclear Waste Repositories" (Jan. 86).

MINERALOGY AND PETROLOGY
2.3.4.2.A

III. Milestones Missing from Networks

GROUND WATER GEOCHEMISTRY
2.3.4.1.1.A

NATURAL ISOTOPE GEOCHEMISTRY
2.3.4.1.2

R388 "Report: Uranium Series Disequilibrium at Yucca Mountain" (Mar 90)

in the old network was after....

M305 "Final: Report on Uranium Series Disequilibrium Measurements a Yucca Mountain" (Sept 89)

In the new proposed network they have reversed positions in tim (i.e. R388 (Jan. 88) and M305 (May 89))

HYDROTHERMAL GEOCHEMISTRY
2.3.4.1.3

The folowing milestones have been left off the new proposed network:

R355 Report: On K-felspar Thermodynamics Model

R351 Report: On Thermodynamic Model for Mordenite

R356 Report: On Effects of Silica Activity on Mineral Stability

SOLUBILITY
2.3.4.1.4

SORPTION AND PRECIPITATION
2.3.4.1.5

DYNAMIC TRANSPORT
2.3.4.1.6

Summary report on Dynamic Transport Processes for Issue 1.2 and tim frame two

MINERALOGY AND PETROLOGY
2.3.4.2.A

IV. Activities cont. for > 1yr. with no deliverables

GROUND WATER GEOCHEMISTRY
2.3.4.1.1.A

M302 Report: Updated Model O Eh and pH Bufferinf Capacity (Sept87)

New Report: Modeling Results of Variations in Pore and Ground Wate Compositions (Aug. 89)

R395 Report: Particulate Content of Yucca Mountain

NATURAL ISOTOPE GEOCHEMISTRY
2.3.4.1.2

R337 Report: ^{99}Tc Infiltration and Transport relative to ^{36}Cl

New Summary Report: On Measurement of Infiltration Rates Using Natura Isotopes

HYDROTHERMAL GEOCHEMISTRY
2.3.4.1.3

R355 Report: On K-felspar Thermodynamics Model

R351 Report: On Thermodynamic Model for Mordenite

R356 Report: On Effects of Silica Activity on Mineral Stability

R353 Report: Model for Analcime Thermodynamics

R359 Report: Preliminary Conceptual Model for Mineral Evolution at Yucca Mountain

R350 Thermodynamic Model for Cinoptilolite/heulandite

R358 Report; Kinetics of Silica Activity Evolution at Yucca Mtn.

R360 Report: Conceptual model for Mineral Evolution and Tuff Wate Reactions at Yucca Mtn.

SOLUBILITY
2.3.4.1.4

R388 Report: Final on Measured Solubilities of ra, Ni, and Zr

R389 Report: Final on other solubility Measurements

R391 Report: EQ 3/6 Data Base

R394 Report: other speciation Measurements

M367 Report: Colloid Stability and Characterization

R393 Report: Final on Pu(IV) Carbonate Speciation

SORPTION AND PRECIPITATION
2.3.4.1.5

R381 Report: Sorption of Tc and I on Anion Exchanges

R382 Report: Sorption on Particulates

DYNAMIC TRANSPORT
2.3.4.1.6

R375 Report: Speciation and Transport in Crushed Tuff Columns

New Report: Kinetics of Non-Actinide Tracers and Colloid Sorption or Crushed Tuff Columns

M320 Report: Transport and Retardation by Diffusion

R378 Report: Retardation by Diffusion

New Summary: Report on Filtration by Yucca Mtn Tuff

New Preliminary Report on Transport of Colloids Through Fractured and Unfractured Tuff

MINERALOGY AND PETROLOGY
2.3.4.2.A

M336 Report on History of Chemical Alteration of Yucca Mtn.

M337 Final Report Prec. Accurrances and Alteration Interpretation for Models of Mineralogy/petrology Along Transport pathways

M339 Final: Report on Precision, Accuracy and Limits of Variations in Models

RETARDATION SENSITIVITY ANALYSIS

M 390 FINAL GEOCHEMICAL/GEOPHYSICAL MODEL
R 343 " "
R 344 " "
M 388 " "

THERE SEVEN NEW MILESTONES THAT EXTEND BEYOND 1YR.
R370 FINAL REPORT ON TRANSPORT SENSITIVITY/....
R366 FINAL INTEGRATED TRANSPORT CALCULATIONS
R342 FINAL REPORT ON TRACR3D

V. Milestone needs Criteria

GROUND WATER GEOCHEMISTRY
2.3.4.1.1.A

All Level two and three milestones have no descriptions or criterias.

R395 Report: Particulate Content of Yucca Mtn Waters

R399 Report: Estimate Particulate Transport with Respect to Radiologica Releases to the Accessible Environment

Eight new proposed milestones have no descriptions

NATURAL ISOTOPE GEOCHEMISTRY
2.3.4.1.2

Seven new proposed milestones need descriptions

R337 Report: ^{99}Tc Infiltration and Transport relative to ^{36}Cl

R388 "Report: Uranium Series Disequilibrium at Yucca Mountain" (Mar 90)

in the old network was after....

M305 "Final: Report on Uranium Series Disequilibrium Measurements a Yucca Mountain" (Sept 89)

HYDROTHERMAL GEOCHEMISTRY
2.3.4.1.3

R353 Report: Model for Analcime Thermodynamics

R359 Report: Preliminary Conceptual Model for Mineral Evolution at Yucca Mountain

R350 Thermodynamic Model for Cinoptilolite/heulandite

R358 Report; Kinetics of Silica Activity Evolution at Yucca Mtn.

R360 Report: Conceptual model for Mineral Evolution and Tuff Wate Reactions at Yucca Mtn.

SOLUBILITY
2.3.4.1.4

R388 Report: Final on Measured Solubilities of ra, Ni, and Zr

R389 Report: Final on other solubility Measurements

R391 Report: EQ 3/6 Data Base

R394 Report: other speciation Measurements

M367 Report: Colloid Stability and Characterization

R393 Report: Final on Pu(IV) Carbonate Speciation

SORPTION AND PRECIPITATION
2.3.4.1.5

Thirteen new milestones have been proposed and need descriptions.

R381 Report: Sorption of Tc and I on Anion Exchanges

R382 Report: Sorption on Particulates

~~M315 Report: Sortion Isotherms~~

R383 Summary: Report on Sorption of radionuclides By Microbes

R384 Report: Staistical Evaluation of Sorption Data

R385 Sortion Model Complete

R396 Report on Effects of Microial Activity on Retardation

DYNAMIC TRANSPORT
2.3.4.1.6

Twelve new milestones need descriptions.

R375 Report: Speciation and Transport in Crushed Tuff Columns

R378 Report: Retardation by Diffusion

R341 Summary: Kinetics of Sorption

R340 Report: Undersaturated Flow Column Experiments:Summary

MINERALOGY AND PETROLOGY
2.3.4.2.A

One new proposed milestone needs description

M336 Report on History of Chemical Alteration of Yucca Mtn.

RETARDATION SENSITIVITY ANALYSIS
2.3.4.1.7.A

M390 FINAL GEOCHEMICAL/GEOPHYSICAL MODEL
R343 "
R344 "
R342 FINAL REPORT ON TRACR3D
R370 FINAL REPORT ON TRANSPORT SENSITIVITY . . .
R366 FINAL INTERGRATED TRANSPORT CALCULATIONS
R362 INTERGRATED TRANSPORT CALCULATIONS . . . .
19 NEW MILESTONES THAT NEED DESCRIPTIONS

Science Applications International Corporation

L86-PMSD-JHF-077

March 17, 1986

TO: Distribution

SUBJECT: March 1986 PM-TPO Meeting

Enclosed is an agenda for the March Project Manager-Technical Project Officers meeting which will be held on March 24-25 in Room 450 at SAIC, 101 Convention Center Drive (Valley Bank Center). Please note that this will be two-day meeting.

The agenda is subject to change. Technical presentations scheduled for March have been postponed to the April meeting.

Mini-agendas will be posted during the meeting for some selected items as noted in the agenda.

SCIENCE APPLICATIONS
INTERNATIONAL CORPORATION

Joy H. Fiore, Manager
Project Services Branch

JHF:md

Enclosure:
Agenda

AGENDA

LOCATION: SAIC 101 Convention Center Dr., Room 450
Las Vegas, NV

DATE: March 24-25, 1986

NNWSI PROJECT MANAGER-TECHNICAL PROJECT OFFICER MEETING

TIME	WHAT	HOW	WHO	EXPECTED OUTCOME	REF MATERIAL & COMMENTS
Monday March 24					
7:30-7:40	Introductions/Roles	Introductions around the room	Joy/All	Understand roles	Agenda sent 3/17/86
7:40-7:50	Agenda/Outcomes	Review day's agenda and expected outcome	Joy/Don/TPOs	Agree to agenda and expected outcomes.	
7:50-8:00	February Minutes/Action Items Review	Approve minutes, identify status of action items.	Joy/Don/TPOs	Agree to approve minutes; understand status of action items.	
8:00-11:30	Network Status Review	Review 1.2.6 and 1.2.3 networks; identify what still needs to be done	Don/TPOs/ Planners/ Schedules	Understand status of networks and milestones, and integration of activities	
11:30-1:00	Lunch				
1:00-2:30	SEMP Presentation	Present status of SEMP, discuss how problem areas will be presented in SEMP. Discuss plans being prepared by Project and their role in SEMP.	Clint/Don/ TPOs	Understand status. Agree to proposed approach to handle problem areas.	
2:30-3:30	SCP/Performance Allocation	Mini-agenda to come	Mike/Jean/Max		
3:30-3:45	Break				
3:45-4:15	Fuel Consolidation Issue	Present aspects of fuel consolidation issue as they affect Project.	Tom		

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LOCATION: SAIC 101 Convention Center Dr., Room 450
Las Vegas, NV

DATE: March 24-25, 1986

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LOCATION: 101 Convention Center Dr., Room 450
Las Vegas, NV

DATE: March 24-25, 1986

NNWSI PROJECT MANAGER-TECHNICAL PROJECT OFFICER MEETING

TIME	WHAT	HOW	WHO	EXPECTED OUTCOME	REF MATERIAL & COMMENTS
1:15-3:30	FYI'S, OPEN ITEMS	To be announced			
3:30-3:40	Action items	Review action items generated during meeting	Joy/Don/TPO's	Understand who does what and when it's due.	
3:40-3:45	April Agenda	Review April agenda	Joy/Don/TPOs	Agree to items listed for next meeting.	
3:45-4:00	Meeting Evaluation	How did we do? How have we been doing in the last few meetings?	Joy/Don/TPOs	Understand what needs to be done to improve meetings.	

U.S. DEPARTMENT OF ENERGY

OCRWM

Nevada Nuclear Waste Storage Investigations PROJECT

YUCCA MOUNTAIN

OGR

LICENSING UPDATE

TPO PRESENTATION

3/25/86

M. A. GLORA/D. M. DAWSON

U.S. DEPARTMENT OF ENERGY

OCRWM OGR

Nevada Nuclear Waste Storage Investigations PROJECT

YUCCA MOUNTAIN

LICENSING UPDATE
TOPICS

- o STATUS OF NRC INTERACTIONS
  - MANAGEMENT MEETING
  - FUTURE TECHNICAL MEETINGS
- o NRC/NNWSI PROJECT MEETINGS
  - INTERACTION STATUS
  - PROCEDURES
- o LICENSING COMMITTMENT/ACTION ITEM STATUS
- o FUTURE ACTIVITIES

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MANAGEMENT MEETINGS

- MORGAN/DAVIS AGREEMENT REQUIRES QUARTERLY MEETINGS: NEXT MEETING - MAY

FUTURE TECHNICAL MEETINGS

- LETTER TO NRC MARCH 19, 1986

ISSUES HIERARCHY	- MAY
PERFORMANCE ALLOCATION	- JUNE
SEISMIC/TECTONICS	- JULY
EXPLORATORY SHAFT DESIGN/CONSTRUCTION	- SEPTEMBER
ESTP	- OCTOBER
HYDROLOGY/GEOLOGY	- TBD

(REQUEST CONFIRMATION BY MARCH 31, 1986)

- SCP DESCOPING MEETING - DOE/HQ-NRC APRIL 10, 1986
- ISSUE RESOLUTION STRATEGY - DOE/HQ-NRC APRIL 21, 1986
- LICENSE SUPPORT SYSTEM REQUIREMENTS APRIL 22, 1986
  NO PROJECT INVOLVEMENT REQUESTED

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STATUS OF NRC/NNWSI PROJECT MEETING COMMITMENTS

- WASTE PACKAGE MEETING - JULY 1985

  NNWSI 0/0 OPEN ITEMS
  NRC 1/3 OPEN ITEMS

  - REVIEW OF "INTERACTION TEST PROCEDURE/RESULTS" ANL-84-81 SENT TO TPO'S ON MARCH 21, 1986

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OCRWM — Nevada Nuclear Waste Storage Investigations PROJECT — YUCCA MOUNTAIN — OGR

STATUS OF NRC/NNWSI PROJECT MEETING COMMITMENTS

- EXPLORATORY SHAFT DESIGN AND CONSTRUCTION AUGUST 1985
  - 1983 LETTER
    NNWSI: 2/19 OPEN ITEMS*
  - AUGUST 1985 MEETING
    NNWSI: 4/20 OPEN ITEMS*
    NRC: 6/8 OPEN ITEMS**

* LETTER TO HUNTER/OAKLEY MARCH 10, 1986; RESPONSE REQUESTED BY MARCH 14, 1986 - NO RESPONSE YET.

LETTER TO LINEHAN MARCH 4, 1986 - TRANSMITTED THREE TECHNICAL REPORTS
LETTER TO LINEHAN MARCH 11, 1986 - TRANSMITTED VIEWGRAPHS

** LETTER TO TPO'S THIS WEEK - TRANSMITTED INFORMATION ON: LANDSLIDE AREAS; REPRESENTATIVENESS; INSITU STRESS MEASUREMENTS.

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Nevada Nuclear Waste Storage Investigations PROJECT

YUCCA MOUNTAIN

NRC/NNWSI PROJECT MEETINGS INTERACTION PROCEDURES

INTERACTION PROCEDURES

- NNWSI PROJECT ADMINISTRATIVE PROCEDURES
  - SCHEDULING/PREPARATION FOR MANAGEMENT MEETINGS WITH NRC
  - SCHEDULING/PREPARATION FOR TECHNICAL MEETINGS WITH NRC
  - CONDUCTING/DOCUMENTING NRC MEETINGS
  - ATTENDING OTHER PROJECT'S MEETINGS
  - COMMUNICATIONS WITH NRC
  - OTHERS
- COORDINATION WITH DOE REGULATORY AND LICENSING DIVISION
  - OGR CONSIDERING MEETING TO DEVELOP PROJECT/HQ INTERFACE PROCEDURES
- IMPLEMENT MORGAN/DAVIS AND SITE SPECIFIC AGREEMENTS AND DESIGNATE PROJECT/NRC TECHNICAL CONTACTS.

U.S. DEPARTMENT OF ENERGY

OCRWM OGR — Nevada Nuclear Waste Storage Investigations PROJECT — YUCCA MOUNTAIN

COMMITMENT/ACTION ITEM STATUS
AS OF 3/21/86

- 10CFR20 COMMENTS - WMPO 86-756
  - WMPO:JSS-646 (3/3/86)
  - COMMENTS DUE 4/1 TO WMPO
  - PRELIMINARY COMMENTS TO WMPO FOR TRANSMITTAL TO OGR - 3/19/86

- EA REFERENCES TO NRC/STATE - WMPO 86-803
  - ESTIMATE COMPLETE 3/25/86

- NRC TECHNICAL POSITION REVIEW
  - WMPO:JSS-894
  - HQ REQUEST FOR PROGRAMMATIC & TECHNICAL IMPACT COMMENTS
  - INCLUDES: IN-SITU TESTING; DESIGN INFORMATION NEEDS; RADIONUCLIDE SORPTION; DISTURBED ZONE; GWTT; WASTE PACKAGE RELIABILITY
  - COMMENTS TO DOE/HQ DUE 4/14/86

COMMITMENTS/ACTION ITEM STATUS CONT

o REVIEW GTP ON W.P. RELIABILITY ANALYSIS	- WMP086-675 - SAIC ACTION - WMPO:DLV-656 NOTE: ALSO INCLUDED IN PRECEEDING TIME
o E/S DESIGN/CONSTRUCTION MEETING OPEN ITEMS	- WMPO:DLV-694 (3/10/86) - RESPONSE DUE 3/14
o RESPONSE TO 16 POINTS IN LINEHAN LETTER OF 11/18/85	- NO DATE ASSIGNED BUT REQUIRED ASAP
o NRC REQUEST FOR DOCUMENTS/ REPORTS (LINEHAN/ABRAMS) (1/21/86)	- 86-593 - REQUEST DEVELOPED BY ABRAMS BASED ON AUGUST/SEPTEMBER PROJECT MONTHLY REPORTS - CLARIFIED REQUEST BY TELECON - LETTER TO USGS BEING DRAFTED

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Nevada Nuclear Waste Storage Investigations PROJECT

YUCCA MOUNTAIN

FUTURE ACTIVITIES

- PRESENTATION BY E. HILL TO TPO MEETING
  - ASLBP ADMINISTRATIVE LAW JUDGE
  - EXTENSIVE NRC HEARING EXPERIENCE
  - PLANS BEING FINALIZED FOR PRESENTATION AT MAY 27-29 MEETING

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YUCCA MOUNTAIN

OGR

FUTURE ACTIVITIES

- NRC QUALITY ASSURANCE PRESENTATION TO TPO'S
  - TENTATIVELY PLANNED FOR APRIL MEETING
  - LETTER IDENTIFYING TOPICS MUST BE TRANSMITTED TO WMPO ASAP
    - POSSIBLE INTEREST TO OTHER PROJECTS AND DOE/HQ
  - PLAN TO FINALIZE
    - DRAFT LETTER DEVELOPED BASED ON DISCUSSIONS WITH TPO'S AND QA
    - OBTAIN TPO INPUT BY 3/25
    - TRANSMIT TO NRC BY 3/28

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Nevada Nuclear Waste Storage Investigations PROJECT

YUCCA MOUNTAIN

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RECOMMENDED TOPICS FOR NRC PRESENTATION

- REQUIREMENTS/ACCEPTABLE PRACTICE FOR SAMPLE DOCUMENTATION/CONTROL
- GRADED QA APPROACH
- APPLICATION OF QA TO R & D AND NEW TECHNOLOGY DEVELOPMENT
- TECHNICAL AUDIT CONCEPT
- DEFINITION OF "SPECIAL PROCESSES" IN TERMS OF EARTH SCIENCE ACTIVITIES
- NRC PLANS FOR QA AUDIT REVIEW (PRE-SCP AND SITE CHARACTERIZATION)
- APPLICATION OF QA TO SOFTWARE DEVELOPMENT
- EQ 3/6 CODE USE AND DATA QUALIFICATION
- NRC PLANS FOR QA RELATED POSITION DEVELOPMENT

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Nevada Nuclear Waste Storage Investigations PROJECT

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EA UPDATE

ROADMAP

- FINAL EA STATUS
- TASKS TO COMPLETE
- HQ & NNWSI SCHEDULE
- REMAINING UNCERTAINTIES

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Nevada Nuclear Waste Storage Investigations PROJECT

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EA UPDATE

FINAL EA STATUS

- REVISIONS PER HQ AUDIT COMMENTS MAILED TO HQ FEB 20
- "CAMERA READY" MASTER COPY IS IN NNWSI POSSESSION
- HQ CONCURRENCE REVIEW EXTENDED FROM 3-21 TO 4-2
- FEW REFERENCES STILL TO BE OBTAINED
- MEETING WITH STATES TO EXPLAIN DECISION METHODOLOGY 3-21
- NAS COMMENTS RECEIVED 3-24, 25, 26

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EA UPDATE

TASKS TO COMPLETE

- REVISE PER HQ CONCURRENCE COMMENTS?
- PREPARE FINAL TRANSMITTAL LETTER FROM CLARK TO PURCELL
- REFERENCE VERIFICATION
- EA INDEX
- REFERENCE DISTRIBUTION
- ADMINISTRATIVE RECORD
  - -CRD UPDATES
  - -REFERENCES
  - -WHPO LETTERS REVIEW
- "LESSONS LEARNED" WORKSHOP
- PROVIDE SUPPORT AT BRIEFINGS/HEARINGS

U.S. DEPARTMENT OF ENERGY

OCRWM OGR Nevada Nuclear Waste Storage Investigations PROJECT

EA UPDATE

HQ & NNWSI SCHEDULE

	EA	CSRR
EH, GC, CP STAFF-LEVEL CONCURRENCE REVIEW	MARCH 14-31	MARCH 24-APRIL 9
EH-1, GC-1, CP-1 FORMAL CONCURRENCE	APRIL 1-2	APRIL 10-11
RW AND POs MAKE REQUIRED CONCURRENCE REVIEW CHANGES	MARCH 31-APRIL 9	APRIL 9-14
RW-1 DECISION TO PRINT	APRIL 11	APRIL 14
PRINTING	APRIL 11-25	APRIL 14-25
RW-1 SIGNS AND TRANSMITS ACTION MEMO (WITH CONCURRENCES) TO S-1	APRIL 23	

UPON S-1 APPROVAL OF DECISIONS:

- S-1 SIGNS FEDERAL REGISTER NOTICES
- S-1 SIGNS AND TRANSMITS CANDIDATE SITE RECOMMENDATION LETTER TO THE PRESIDENT
- PHONE CALLS TO AFFECTED GOVERNORS AND INDIAN TRIBAL LEADERS
- BRIEFINGS FOR AFFECTED PARTIES AND CONGRESS

REMAINING UNCERTAINTIES

- REFERENCE DISTRIBUTION PROCEDURE
- WHEN'S THE PARTY?

U.S. DEPARTMENT OF ENERGY

OCRWM OGR — Nevada Nuclear Waste Storage Investigations PROJECT — Yucca Mountain

STATUS OF SCP CHAPTERS

CHAPTER 2 - GEOENGINEERING
- ALMOST COMPLETE
- AWAITING DOCUMENTATION RELATED TO RESOLUTION OF OCRWM COMMENTS

CHAPTER 8.6 - QUALITY ASSURANCE
- OCRWM REVIEW WAS HELD; FEW COMMENTS RESULTED
- GUIDANCE PENDING ON NUMBER OF QA LEVELS AND POTENTIAL FOR SCP TO BECOME A LEVEL 1 (STEIN'S LETTER ON QA FOR SCP)

SECTION 8.4, 8.7 - SITE PREPARATION AND D.& D.
- IRC COMMENT RESPONSES BEING FINALIZED
- MINI-REVIEW FOR 8.4 BEING CONSIDERED, BASED ON CHANGES DUE TO ESF DESIGN

CHAPTER 6 - REPOSITORY DESIGN
- INFORMAL GUIDANCE PROVIDED
- FINAL GUIDANCE PENDING--<u>SHOULDN'T</u> BE SIGNIFICANTLY DIFFERENT FROM OUR PRESENT UNDERSTANDING

STATUS OF SCP CHAPTERS (CONT)

CHAPTER 4 - GEOCHEMISTRY
- "INFORMAL" OCRWM REVIEW HELD; MANY COMMENTS RESULTED (SOME TECHNICAL, MANY TO REDUCE SIZE)
- FORMAL OCRWM REVIEW FORTHCOMING

CHAPTER 5 - CLIMATOLOGY AND METEOROLOGY
- IRC AND MINI-REVIEW COMMENTS BEING RESOLVED

CHAPTER 7 - WASTE PACKAGE DESIGN
- FINAL GUIDANCE PENDING
- TO BE MADE CONSISTENT WITH CHAPTER 6
- SCHEDULE "FLOATING"

CHAPTER 3 - HYDROLOGY
- MINI-REVIEW FOR SATURATED ZONE HYDROLOGY HELD
- SAIC REVIEWERS TO OFFER ASSISTANCE TO JIM ROBISON
- CONCERN WITH SCHEDULE FOR UNSATURATED ZONE HYDROLOGY

U.S. DEPARTMENT OF ENERGY

OCRWM — Nevada Nuclear Waste Storage Investigations PROJECT — OGR

STATUS OF SCP CHAPTERS (CONT)

CHAPTER 1 - GEOLOGY

- BEING PREPARED BY USGS TASK FORCE UNDER LEADERSHIP OF DAVE SCHLEICHER
- REQUEST TO HAVE SNL PREPARE 1.4.2.2, CHARACTERISTICS OF SEISMIC WAVE TRANSMISSION AT THE SITE

SECTIONS 8.3.2, 8.3.3, 8.3.4, 8.3.5, 8.1, 8.2, 8.3.1, 8.5

- ALL THESE SECTIONS ARE DEPENDANT ON COMPLETION OF PERFORMANCE ALLOCATION

PRODUCTION AND REVIEW CONCERNS

- NO OFFICIAL REVIEWS FOR MANY SECTIONS OF CHAPTER 8 AND FOR CHAPTER 1
- LIMITED IRC AND OCRWM COMMENT RESPONSE PERIODS FOR MOST SECTIONS AND CHAPTERS
- EXTREMELY TIGHT PRODUCTION PERIODS FOR MOST SECTIONS AND FOR COMPLETE DOCUMENT
- STAGGERED PRODUCTION PROCESS HAS BEEN FORFEITED

March 19, 198
11:30 a.m.

SCP SCHEDULE

Chapter/ Section	Draft Input	Internal Review Distr.	Mtg.	CRP 1	HQ Review Distr.	Mtg.	CRP 2
2	done	done	done	done	done	done	started - 4/25
8.6 G.P.	done	done	done	done	done	done	started - 4/28
8.4, 8.7	done	done	done	started 4/25	4/28	5/8-9	5/12 - 6/27
6 G.P.	done	done	done	started 5/23	5/26	6/5-6	6/9 - 7/18
4	done	done	done	started 6/6	6/9	6/16-17	6/23 - 8/1
5	4/11	4/21	4/30	5/5 - 6/6	6/9	6/18	6/23 - 8/1
7 G.P.	done	done	done	started 6/6	6/9	6/19-20	6/23 - 8/1
3 D.P.	4/11	4/21	5/1-2	5/5 - 6/6	6/9	6/19-20	6/23 - 8/1
1 D.P.	5/2	5/19	5/27-29	6/2 - 8/1			
8.3.2, 8.3.3	5/30	6/9	6/23-27**	6/30 - 8/8			
8.3..4	5/30	6/9	6/23-27**	6/30 - 8/8			
8.3.5	5/30	6/9	6/23-27**	6/30 - 8/8			
8.1, 8.2	6/6	6/16	6/30	7/7 - 8/8			
8.3.1,8.5 D.P.	6/9	6/16	7/1-4	7/7 - 8/15			

Note:
- No separate HQ review
- Limited CR period
- IRC and HQ reviews must be combined

5 wd	Total Document Consolidation	8/11 - 8/15
5 wd	HQ/Internal Review Begins	8/18
5 wd	Comment Consolidation Meeting	8/25 - 8/29
10 wd	Comment Resolution	9/1 - 9/12
5 wd	HQ Review and Approval of Resolutions	9/15 - 9/19
15 wd	Production	9/22 - 10/10
5 wd	HQ Concurrence	10/13 - 10/17
25 wd	Final Camera Ready Production	10/20 - 11/21
20 wd	Final Reproduction	11/24 - 12/19
	Delivery to NRC	12/22/86

** These sections will be reviewed during the week of 6/23-27.

G. P. - Guidance Pending

D. P. - Delivery Problem

w. d. - Working Days

Texas may be out of running as nuclear dump site

Friday, May 9, 1986 LAS VEGAS SUN 3A

By MARY MANNING
SUN Staff Writer

Department of Energy hearings last year kindled speculation that the state of Texas was using "political muscle" to avoid becoming the nation's nuclear dumping ground.

Those fires were fueled by the revelation Thursday that required scientific quality assurance programs progressing at potential Nevada and Washington state sites may have pushed Texas out of the running, since the Lone Star State has not started such a program in Deaf Smith County.

Quality assurance is necessary for Nuclear Regulatory Commission licensing.

The NRC confirmed that only Nevada's Yucca Mountain and Hanford, Wash. — prime candidates for the nation's first high-level nuclear repository — are far enough along on site work for quality assurance audits.

Quality assurance work means scientists write down detailed reports on every aspect of field studies. NRC spokesman Greg Cooke said it was a step in the prelicensing process NRC will use to open the nation's first nuclear repository in 1998.

The U.S. Department of Energy has issued a stop-work order to the U.S. Geological Survey team working in up to 40 holes dug at Yucca Mountain, 60 miles northwest of Las Vegas, until that federal agency documents its research, DOE's Nevada nuclear manager Dr. Donald Vieth said earlier this week.

Vieth said actual scientific, field work would be delayed four to five months while scientists write down details on their research to date.

DOE spokesman Chris West said quality assurance work began about a month ago at Yucca Mountain so detailed records could be made for NRC licensing when it comes in five to 10 years.

State officials criticized DOE's five years of research at Yucca this week, claiming mislabeled core samples could throw a shadow of doubt on federal research to date.

But Cooke said quality assurance programs were being done to meet prelicensing requirements.

"It is not unusual to stop and correct a problem, once it's found," Cooke said.

"There is only one other site far enough along for a DOE quality assurance audit — Hanford," Cooke added.

A site is scheduled to be selected by the president of the United States by 1990. It will take three years to license it through NRC and then five years to build, DOE estimates.

However, DOE has watched deadlines slip in the past two years. Final environmental assessments are expected to be released in mid-May. DOE officials have delayed that release six times.

DOE spokesman Michael Talbot in Richland, Wash., said the basalt site at Hanford has been under stop-work orders for the past six weeks. There are no major problems in research data already collected, he added.

DOE contractor Rockwell Hanford decided to refocus work at the Washington site to prepare for intensive government studies, "if we are chosen," Talbot said.

The choice of sites for extensive research, called site characterization, awaits the release of the draft environmental assessments, Talbot added.

"I would assume everybody is moving in the appropriate directions," he said, when he learned that Yucca Mountain and Hanford are the only sites doing quality assurance audits. "I don't know about any other site at this time."

Bryan takes step to close Beatty dump

CARSON CITY (UPI) — Gov. Richard Bryan said Thursday he has taken a first step towards eventual closure of the low-level nuclear waste dump in Central Nevada.

Bryan said he has joined with Govs. Richard Riley of South Carolina and W. Booth Gardner of Washington state in serving notice on other states without burial grounds that penalties will be imposed starting in July if they don't start developing their own disposal sites.

Congress recently enacted a law which directs the states to either develop their own disposal grounds or join with other states in a compact. The states must meet a series of deadlines between July 1986 and 1992. One of the penalities that could be imposed is denial of access to the Nevada site in Beatty.

"I fully intend to aggressively impose these penalities on each and every state that fails to meet the predesignated requirements," said Bryan.

The three states have the only low-level commercial nuclear dumps in the nation. Nevada has already joined in a compact with other western states and Colorado to open a regional dump in the early 1990s.

Sferrazza raps Vucanovich stand on dump

Review-Journal Capital Bureau

CARSON CITY — Democratic congressional candidate Pete Sferrazza said Thursday the latest problems at Yucca Mountain are further evidence why Rep. Barbara Vucanovich should oppose putting a nuclear waste dump in Nevada.

Sferrazza, the mayor of Reno, said the problems should convince Vucanovich, R-Nev., to "think twice" before trusting the state's safety to the U.S. Department of Energy.

Earlier this week, the Energy Department announced it was discontinuing further geological tests at Yucca Mountain, 100 miles northwest of Las Vegas, because of "quality assurance" problems. Energy Department officials contend the problem is not serious, but one that requires improvements in paper work.

Yucca Mountain is one of three primary sites under consideration for the nation's first high-level nuclear repository.

Sferrazza has been a critic of federal attempts to place the repository in Nevada.

He contended Vucanovich has "contradicted herself" repeatedly on the nuclear waste repository issue over the last year.

"She wants people to believe she is both for and against the dump site," he said. "She can't have it both ways. She can't court the support of the nuclear waste industry and at the same time claim to represent the people of Nevada on this important issue."

In response, spokesmen said Vucanovich has asked President Reagan to halt further studies at Yucca Mountain until the Department of Energy ensures additional sites will be considered for the repository.

"She thinks they are trying to zero in on Yucca Mountain and not consider other sites," spokesman Stephanie Hanna said.

Vucanovich also has said she will withhold final judgment on the acceptability of the repository until geological tests are completed. Those tests could take as long as five years.

Vucanovich represents a congressional district that includes Yucca Mountain and every county in the state, including portions of North Las Vegas in Clark County.

LAS VEGAS REVIEW-JOURNAL

Friday, May 9, 1986

State toughens nuke code

Governor: Nevada may charge shippers double

Review-Journal Capital Bureau

CARSON CITY — Nevada will impose penalties on states that do not comply with a federal law governing burial of wastes at the nuclear dump near Beatty, Gov. Richard Bryan said Thursday.

Starting in July, Nevada may require some shippers to pay double the normal surcharge for burying wastes at the low-level nuclear waste facility operated by US Ecology.

A new federal law allows Nevada to increase the surcharge from $10 to $20 per cubic foot to states that have not made a strong effort to develop their own nuclear dumps.

Nevada, however, probably will not receive much additional revenue when the penalty surcharge is imposed July 1, said Jerry Griepentrog, state Human Resources director.

Until last week, no nuclear waste at all had been shipped this year to the Beatty dump, he said.

"We expect almost everybody will comply," Griepentrog added. "We have a couple of brokers who collect waste from several states. They may have to pay penalties."

Only about 70,000 cubic feet of wastes was buried last year in the Beatty facility. Both the Washington and South Carolina dumps accepted more than 1 million cubic feet of wastes.

Griepentrog said that fewer than a dozen of the 50 states have not yet joined with other states in regional compacts to dispose of nuclear wastes.

The federal law stipulates that states in each region must develop

Please see BEATTY/4A

Beatty

From 1A

their own nuclear dumps by the end of 1992. At that time, Nevada, South Carolina and Washington, the only states with waste sites for non-government nuclear wastes, then may close their facilities.

In addition to closing the three current dumps, the new law also requires non-dump states to meet specific timetables toward construction of their own regional dumps. By July 1, all states must sign regional compact agreements or pay twice the normal surcharges for burying wastes in Nevada, South Carolina or Washington.

Then after Jan. 1, Nevada and the two other states can shut their dumps to states that still have not joined in regional compacts.

"I fully intend to aggressively impose these penalties on each and every state that fails to meet the predesignated requirements," Bryan said.

For years Bryan and other state officials have been trying to close the dump, operated since 1962 on 40 acres of state land south of Beatty.

Nevada itself produces very little nuclear wastes. It is a member of a Rocky Mountain radioactive-waste compact with New Mexico, Colorado and Wyoming.

The compact requires Colorado to begin accepting nuclear wastes from the other members after 1992.

LAS VEGAS REVIEW-JOURNAL
Thursday, January 16, 1986

Nuke shipment thwarted

New legislation enables four-state panel to reject dirt

By Vaughn Roche
Review-Journal

Nevada officials, using powers quietly written into federal legislation signed into law Wednesday, say they have thwarted New Jersey's plan to ship 7,300 tons of radioactive-contaminated dirt to a dump near Beatty.

Making the announcement only hours after President Reagan signed the legislation, Gov. Richard Bryan said the law's passage was a conclusive victory for officials who feared the shipments would endanger residents as Union Pacific trains carried cannisters of the dirt through Las Vegas.

Bryan said the law's passage could hold greater meaning for the future if Nevada's four congressmen unite as they did behind the low-level radioactive issue and oppose the possible selection of Yucca Mountain as a site for the nation's first high-level nuclear waste repository.

The law, having the effective date of Jan. 1, grants congressional recognition to a regional compact composed of Nevada and three other states and enables its four-member governing board to block the dumping of low-level nuclear waste of the kind lying beneath 200 New Jersey homes.

Please see NUKE/4A

nuke

From 1A

The dirt was contaminated with radioactive material discarded by a company which used it to manufacture clocks and watches with luminous dials. More than 30 years ago, before the danger of radioactivity was fully understood, the soil was laid as foundation for homes.

Now the castoff material emits potentially cancer-causing radon gas.

Bryan said Jerry Griepentrog, Nevada's director of human resources and chairman of the compact governing board, would meet Thursday in Denver with board members from Colorado, Wyoming and New Mexico to formally reject the New Jersey shipments. He said board members already had agreed informally to refuse the shipments.

New Jersey officials, fearing for the health of their own residents, have filed suit before the U.S. Supreme Court in an effort to force Nevada to accept the dirt for disposal at US Ecology's dump near Beatty. The dump is the only one of its kind in the compact's four-state region and one of only three in the nation.

Bryan said the law's passage may make the legal question moot. New Jersey's attorney general could not be reached for comment Wednesday afternoon, and Nevada's attorney general declined comment until the law can be reviewed.

The compact's power to refuse radioactive shipments was subtly written into a law which most notably provides funds for the operation of the Beatty dump and two other low-level radioactive dumps in South Carolina and Washington.

"We have been aware of this for some time, but didn't want to make an announcement until the legislation was signed," Bryan said. He said he was unaware of whether New Jersey officials knew of the provision.

The bill also permits Nevada to charge non-compact states $10 per cubic foot of waste disposed at the dump. The fee will rise to $40 a cubic foot before the radioactive portion of the Beatty dump is closed in 1992.

Bryan estimated that the fee would produce about $27 million in revenue.

After learning of the proposed shipments in July, state, Las Vegas and Clark County officials attempted to block them by passing restrictive regulations. New Jersey's suit challenges the measures as unconstitutional, claiming they conflict with federal regulations governing the transportation of hazardous waste.

Nevada's primary concern was for the safety of Las Vegans as trains carrying cannisters of the radioactive dirt passed through the center of the city.

Associated Press

SIGNS BILL - President Reagan signed legislation Wednesday to provide about $320 million to South Carolina, Washington and Nevada to prevent them from closing the country's only authorized low-level nuclear waste dumps. The bill, passed in the closing days of the last session of Congress, also establishes penalties that could eventually reach into the tens of millions of dollars for states that fail to arrange for the disposal of low-level radioactive waste.

Radioactive disaster averted at Nevada Test Site

LAS VEGAS SUN

Friday

Home May 2, 1986

Dump site state officials attack DOE methods

By CHRIS CHRYSTAL
United Press International

WASHINGTON — Officials of five states considered for the nation's first high-level nuclear waste dump sharply criticized the Energy Department Thursday for withholding documents and shutting them out of the site selection process.

They told sympathetic members of a House Energy subcommittee that the Energy Department hasn't given the states or Indian tribes copies of documents dealing with methods used to pick a dump site that were reviewed and approved by the National Academy of Sciences.

However, the academy said it was "disappointed" the Energy Department didn't accept its recommendation to allow independent experts to review the process.

Sites in Washington, Nevada, Texas, Utah and Mississippi are being considered for the burial site of highly radioactive waste in a repository that will store the material safely for 400 generations, or 10,000 years.

The Energy Department is expected to recommend three sites to President Reagan in about two weeks.

Nevada's Robert Loux, director of the state's nuclear waste project office, told the panel Yucca Mountain, 60 miles northwest of Las Vegas and at the edge of the Nevada Test Site, should be disqualified because the soil doesn't meet minimum standards for preventing waste from spreading and could threaten the water supply of Las Vegas and all Southern Nevada.

Loux also cited movement along ecological faults, potential volcanic activity, and interference with nearby nuclear weapons testing as reasons to disqualify Yucca Mountain.

Nevada "has borne the brunt of DOE arrogance in this regard," Loux said. Nevada went to court to uphold its right under the Nuclear Waste Policy Act for federal funds for independent studies at Yucca Mountain, Loux said, but while the court ordered the funds paid, DOE has refused to give Nevada the money.

Loux said he was "dumbfounded" that Massachusetts — a state mentioned as a possible second site state — received a federal grant, while Nevada can't get its funds, even with a court order.

This is "a graphic example of the arrogant manner of DOE," he added.

Steve Frishman, representing Texas Gov. Mark White, urged that Congress halt the site selection process and revise it to guarantee the states and public will be consulted before a final choice is made.

James Palmer, a nuclear waste specialist for Mississippi Gov. William Allain, said the Energy Department's attitude toward the states is "ride the

(See NUCLEAR, Page 7A)

Nuclear dump site state officials criticize DOE methods

(Continued from Page 1A)

train, sit in the caboose, and keep your mouth shut."

Palmer cited the Soviet nuclear plant disaster as an example of a flawed system, and compared dealing with the Energy Department to associating with the Russians.

"We meet, we greet, we even eat, and then they cheat," Palmer said.

Terry Husseman, director of Washington state's nuclear waste management office, said Congress should pass laws providing federal liability and compensation for injuries caused by transportation, storage and disposal of waste.

In ranking nine potential sites in six states two years ago, the Energy Department picked Hanford, Wash., Yucca Mountain, Nev., and Deaf Smith, Texas, ahead of Richton Dome, Miss., and Davis Canyon, Utah.

The Mississippi and Utah sites are considered likely to be nominated, but not recommended.

Rep. Al Swift, D-Wash., presiding over the hearing, said the Energy Department "is not living up to the Nuclear Waste Policy Act, which requires it to work with the states as partners," and treats Congress the same way.

Swift accused the Energy Department of reneging on a promise to supply the Energy Committee with the site selection documents as soon as the National Academy of Sciences finished its review, which occurred last month.

Ben Rusche, director of the Energy Department's waste program, told the panel the agency doesn't plan to deliver the documents to Congress until it has made some conclusions.

Swift asked if the panel would have to subpoena the papers, and an Energy Department lawyer said, "You might have to consider that" if the committee doesn't choose to wait for delivery.

"This corroborates everything we have seen from the Energy Department so far, that they're stonewalling everything," Rep. Ron Wyden, D-Ore., said.

Swift and Wyden, as Northwestern congressmen, are concerned that the dump might be located at Hanford Nuclear Reservation in southeastern Washington, which is crossed by the Columbia River.

One fourth of Oregon's population lives downstream from Hanford, Wyden said.

"Hanford is the path of least resistance to the government, but Hanford may be the worst place on the list for a repository," Wyden said. "It's a tremendous mistake, an error of enormous proportions, to move all the nation's nuclear waste near a major water supply."

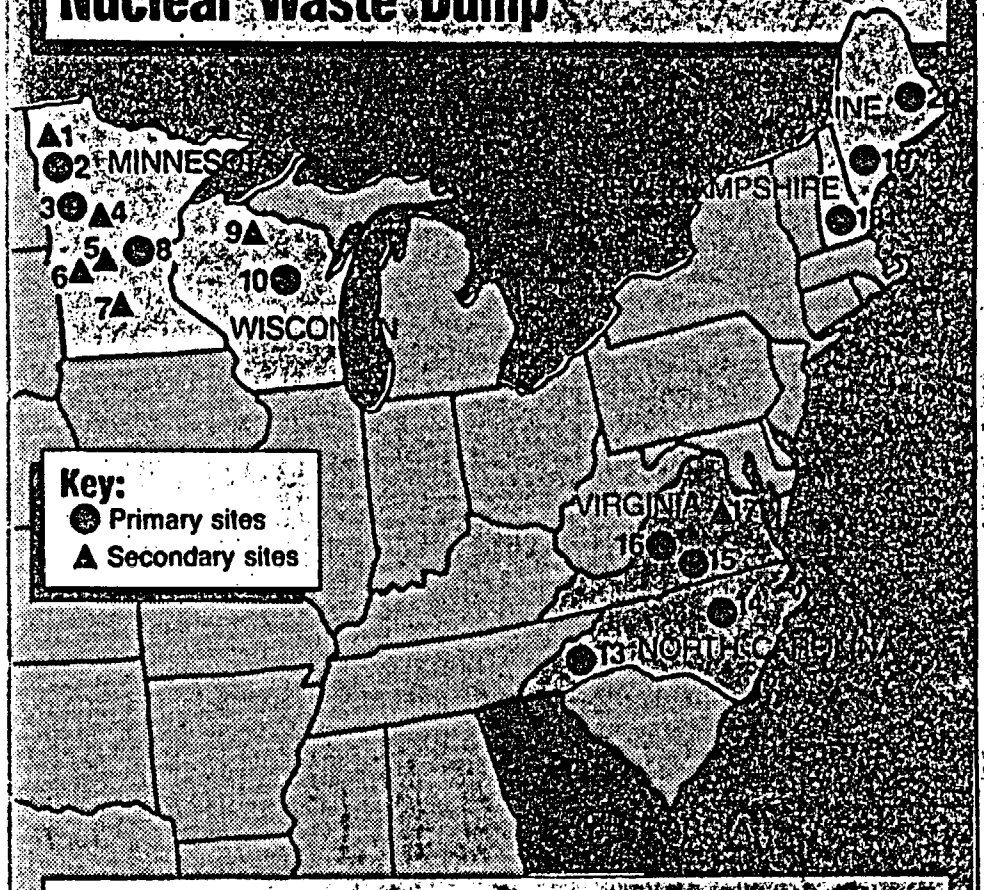
Rusche denied "stonewalling" Congress, arguing he had testified about the dump site selection before a number of committees. He said the Energy Department was "sensitive to the needs of the states."

Patrick Spurgin, head of Utah's high-level waste office, said the state preferred constructive recommendations to criticism, and suggested giving the states a chance to evaluate the information and make recommendations before plans become final.

LAS VEGAS SUN

Monday, March 31, 1986

Areas Proposed for Second U.S. Nuclear Waste Dump



Proposed sites, listed by county:

Minnesota:
1. Marshall
2. Marshall, Pennington, Polk, & Red Lake
3. Norman & Polk
4. Becker, Clearwater, & Mahonomen
5. Pope, Stearns, & Todd
6. Big Stone, Stevens, & Swift
7. McLeod, Nicollet, Renville, & Sibley
8. Benton, Mille Lacs, Morrison, & Sherburne

Wisconsin:
9. Ashland, Bayfield, & Sawyer
10. Langlade, Menominee, Oconto, Shawano, Marathon, Portage, & Waupaca

Georgia:
11. Lamar, Monroe, & Upson
12. Gwinnett & Walton

North Carolina:
13. Buncombe, Haywood, & Madison
14. Franklin, Johnson, & Wake

Virginia:
15. Halifax & Pittsylvania
16. Bedford
17. Goochland, Hanover, & Louisa

New Hampshire:
18. Cheshire, Hillsborough, Merrimack, & Sullivan

Maine:
19. Androscoggin, Cumberland, & Oxford
20. Hancock, Penobscot, & Washington

Source: U.S. Department of Energy

Second high-level site

Maine citizens say 'no' to nuclear waste dump

(Editor's note: Although Nevada and Maine area appear far apart, citizens and public officials of both states face the prospect of becoming sites for high-level nuclear waste dumps. Maine is a primary site for the nation's second high-level repository. Yucca Mountain in Nevada is already regarded as one of three finalists for the first such repository.)

By MATTHEW L. WALD
New York Times

PORTLAND, Me. — Six hearing officers from the Department of Energy were in town last week to gather opinion on the possibility of storing highly radioactive nuclear waste here, but if they had any question it was answered on the way in from the airport. Utility poles are covered with signs reading "No!"

Similar sentiments have become common in several cities in the eastern half of the country in recent weeks as the Energy Department, which for years has been studying sites in salt beds and volcanic formations in the West, has begun to focus on a dozen Eastern underground granite structures.

The reaction, from here to Minnesota, is that the selection process is flawed, that the Department of Energy's computer has made a mistake and that there may be a safe way to dispose of the waste, "but not here."

The department is establishing sites for the storage of tens of thousands of tons of wastes from nuclear reactors and nuclear bomb factories that will be dangerously radioactive for thousands of years. On Jan. 16 it listed 12 areas as "potentially acceptable sites" — two in Maine and one in New Hampshire, two each in North Carolina and Virginia and one in Georgia, three in Minnesota and one in Wisconsin. Last week it began hearings to gather public comments.

"We're the forgotten state, but for this nuclear dump we're the first to be thought of," said Mary-Rose Starr, a Portland artist testifying in a City Hall auditorium draped with the "No!" signs. The state has high unemployment and low wages, she said, and if one of the two sites here is eventually chosen, "even the vacation people won't come to Maine."

According to Gov. Joseph E. Brennan, "There has been nothing like it since the Vietnam War."

One of the Maine areas, an underground granite structure of 385 square miles designated the Sebago Lake Batholith, supplies 25 percent of the state's drinking water, he said, and is such a bad choice that "I think the DOE must be embarrassed." But he added that simply being considered for nuclear waste had depressed real estate values.

Outside, protesters wearing yellow plastic bags labeled "radioactive wastes" held plastic cups of water with flashlights pointed into their bases, so they glowed in the dark.

In Minnesota, with three proposed sites and four more back-ups, a state commission has been working for months to find holes in the department's work. "Our geological survey says we don't know if there's granite down there, and we don't believe the Department of Energy knows, either," said Thomas J. Kalitowski, chairman of the Minnesota Governor's Nuclear Waste Council.

(See SPEAKERS, Page 2B)

Speakers at Maine hearings aware of provincial attitudes

(Continued from Page 1B)

Even some of the speakers in a nine-hour hearing, recognized the problem of provinciality. "If we should manage to elude DOE's flying fickle finger of fate, I don't think we should congratulate ourselves on shifting the risk to someone else's community, someone else's children," said Sharon Osborne, a guitar maker from Damariscotta. Anyone who thinks the disposal technology is safe enough for another area, she said, "should have to have the stuff under their own bed."

In fact, in addition to selecting the right kind of rock, the design of the repository and the form of packaging are still undetermined. This has not reassured the crowds at hearings.

Both Maine and Minnesota have applied unsuccessfully for an extension on the 60 days they were allowed to comment on the department's proposed sites. The list of the 12 Eastern sites on which field work will be done is to be issued in final form this fall, and work would probably not start before 1988.

In Washington, the department says it is not surprised by the reactions.

"The activity and the interest has been predictably negative, and very intense," said Ginger King, spokesman for the Office of Civilian Radioactive Waste Management. A series of informational hearings drew crowds of up to 4,000 people, she said, often in sparsely populated areas.

The department is in the early stages of a complicated search process by which it is supposed to find two sites and build on one of them by the end of the century. The Nuclear Waste Policy Act of 1982 requires a vote by Congress before work is started at a second location but also limits the capacity of the first repository to a level that appears to assure that a second site will be needed.

It was 30 years ago that the federal government began investigating the suitability of several sites in the West, and three of them are now leading candidates in a "first round" group. They are Hanford, Wash., where the government already has extensive nuclear facilities; an area adjacent to the Nevada test site where nuclear bombs are detonated, and an area in Deaf Smith County in northwestern Texas.

The 12 announced on Jan. 16 are part of the second round, although this group might produce the first site, if all the first-round sites are ruled unacceptable. More probable, according to experts, is that one of the first-round sites will be chosen for a repository and the others will go into a pool with the second-round sites for selection of a second location.

Insight

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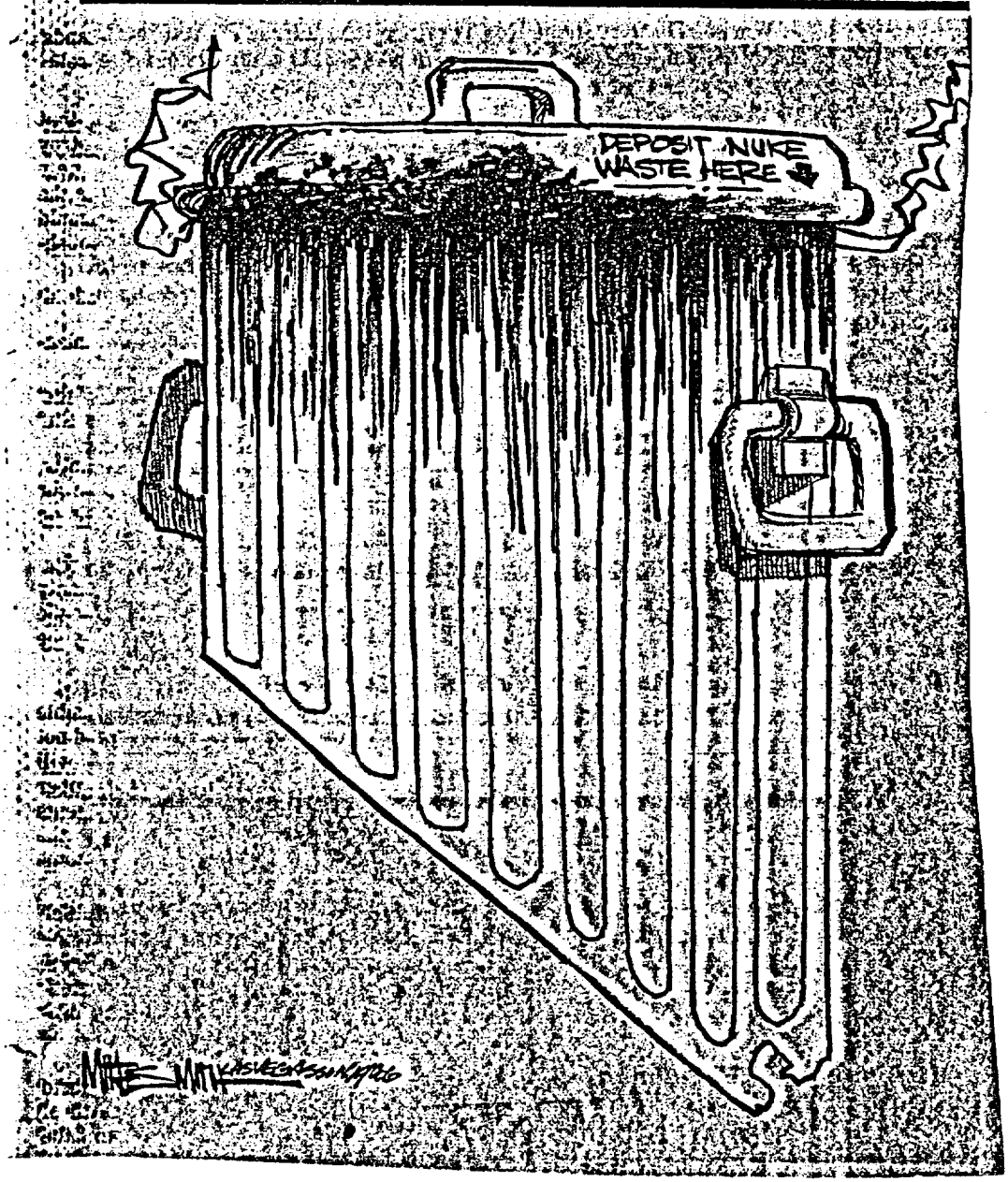


All that nuke waste — let's dump it in the West!

Eastern and midwestern congressmen, solidly opposed to a second nuclear waste repository in their backyards, have introduced a bill to stop federal efforts for another radioactive dump.

That action is a slap in the face to anyone living in the West.

While eastern and midwestern nuclear reactors produce most of the radioactive garbage heading for the first repository in the West, those same easterners refuse to take the responsibility for contaminated wastes actively radioactive for thousands of years.

It's time Nevada's entire congressional delegation stand up against those eastern lawmakers with their heads buried in sand and explain the facts of nuclear life to them.

Nevadans, Texans and Washingtonians don't want that highly radioactive junk anymore than those easterners and midwesterners. But they produced it and it's time for them to care for it responsibly in their own states.

Nevada, whose claim to nuclear fame remains the nation's nuclear weapons proving ground at the Nevada Test Site, has no nuclear power reactors and no plans to build any.

A threat to our water

Burying nuclear wastes in Yucca Mountain or Washington or Texas threatens water, the West's lifeblood. Easterners crying about groundwater contamination should have been thinking about the basics when they accepted nuclear power.

Nevada's Sens. Paul Laxalt and Chic Hecht, both R-Nev., and Reps. Harry Reid, D-Nev., and Barbara Vucanovich, R-Nev., sent a letter to President Reagan last week — on Laxalt's stationery — asking him to delay the Department of Energy's decision on candidate sites.

While DOE plans to study only Nevada, Texas and Washington, the Nuclear Waste Policy Act provided five sites for "characterization," a term for intensive scientific studies of soil, groundwater, earthquake faults and volcanic activity.

The SUN thinks that letter is a step in the right direction, but Nevada's representatives need to ask tougher questions — and get some answers — from DOE.

Why is Nevada a target?

Why has DOE targeted Nevada with the nuclear dump? Is it because Yucca Mountain sits central to the nation's nuclear weapons laboratories: Los Alamos, Livermore and the Test Site?

If DOE plans to turn uranium and plutonium enrichment over to private industry, will the fine line separating commercial nuclear power and atomic bombs for 40 years finally be crossed?

With nuclear wastes stored at Yucca Mountain, the latest government technology being developed in those labs could be available to the nuclear power industry in exchange for turning over its enriched uranium and plutonium to atomic bombs.

Why does DOE want to risk radioactive shipments over 3,000 miles, in some cases, to put nuclear waste in a western repository? The more miles traveled, the greater the risk for accidents, according to Department of Transportation statistics.

How can DOE reassure Nevadans with groundwater studies at the test site that are nearing 20 years old?

Besides, Yucca Mountain is not part of the nuclear research grounds, only next to it. If Yucca Mountain is chosen, will it act as a buffer zone for bigger nuclear experiments, such as the Strategic Defense Initiative, better known as "Star Wars"?

Will DOE release studies showing Yucca Mountain's groundwater does not drain into the same closed basin as the test site? Instead, it flows into California's Amargosa Valley.

This is the time for Nevada's congressional delegates to oppose the dump in southern Nevada with a single voice, against the chorus of eastern and midwestern representatives who want to turn their backs on nuclear wastes they made.

LAS VEGAS SUN — Tuesday, May 6, 1986

The state in brief

Compiled from SUN wire services

Loux retains nuke waste post

CARSON CITY — Gov. Richard Bryan says he will keep Robert Loux as director of Nevada's Nuclear Waste Project office.

Loux has been in charge since the inception of the office in 1983. The 1985 Legislature reorganized the office, putting a Commission on Nuclear Projects in charge.

The commission conducted a search for a director and then recommended three names to Bryan. Loux earns $41,340 a year.

LV Sun 1-10-84

Builders fail to bridge gap

BECKLEY, W.Va. (UPI) — State highways officials say they did not realize until too late they were building a two-lane bridge for a three-lane section of the West Virginia Turnpike.

"It sounds a lot worse than it is," said Department of Highways representative John Gallagher. "It was an error on the part of our designers. It was something we could not see until it was actually constructed. And then, it was too late."

Gallagher said the original plan called for two lanes of traffic on the expressway but officials decided later to add a third lane for trucks and slower traffic.

The bridge has a 12-foot shoulder in addition to the two traffic lanes so it will be able to accommodate three lanes while plans are under way to add 6 feet to the bridge's width, he said.

"I don't know why this error occurred," Gallagher said. "But we make mistakes occasionally. Human error."

LAS VEGAS SUN — Tuesday, April 1, 1986

Hecht stand mystifies 2 officials

CARSON CITY (UPI) — Two commission chairmen said Monday they are mystified why Sen. Chic Hecht, R-Nev., voted for legislation to limit the liability of the federal government in nuclear waste accidents.

Former Gov. Grant Sawyer, chairman of the state Commission on Nuclear Projects, said Hecht disregarded recommendations of the Nevada Legislature, Gov. Richard Bryan and the nuclear commission, who all favor unlimited liability to compensate those injured in an accident.

"I cannot understand why a senator from Nevada would support limited recovery for Nevadans who might be the victims of a nuclear accident," said Sawyer, a Democrat.

Sen. Thomas Hickey, D-North Las Vegas, chairman of the Legislative Committee on Nuclear Waste, said the issue is of "great concern to Nevada because we have so much nuclear research and possible future activity."

Hecht voted with the majority last Wednesday in a 13-3 vote of the Senate Energy and Natural Resources Committee to restrict liability to Nevada and others.

A Nuclear Projects Office spokesman said Reps. Harry Reid, D-Nev., and Barbara Vucanovich, R-Nev., and Sen. Paul Laxalt, R-Nev., all support unlimited liability.

Nevada is one of three prime sites under consideration for a high level nuclear dump.

Bryan, also a Democrat, has called on Congress to enact legislation that the federal government must be held strictly liable for any accidents, victims would be fully compensated, the method of compensation must be simple and fast and state and local governments would be held harmless.

High-level nuke facility draws opposition

By Bob Fulkerson

Readers Write

The excuses many Nevada politicians are using to justify their ambivalent positions on the high level nuke waste issue are paving the way for the nuclear waste to come to Nevada.

"I'm going to wait until all the facts are in," says one fence-sitter, as if all the facts would be in before the final site is chosen in 1990. "We must be assured of absolute safety and security," says another. The simple fact is that the Department of Energy (DOE) does not have the knowledge or credibility to make such assurances.

Congress, in passing the Nuclear Waste Policy Act of 1982, was not convinced it had identified the best mechanism for managing the high-level waste program, and directed the Secretary of Energy to conduct a study on "Alternate Methods of Financing and Management." The Energy Secretary appointed his own blue-ribbon panel to make recommendations on the program. Last April, the panel concluded that DOE management lacks the stability and continuity to effectively implement the program outlined in NWPA. The panel recommended removing DOE for the siting and management of the program.

The Utility Nuclear Waste Management Group, an association of 46 nuclear utilities, commissioned the Creighton and Creighton consulting firm to assess DOE's nuclear waste management performance. The August, 1985 report stated "...there continue to be basic research questions that are unanswered, and like all basic research, the possibility remains that fresh discoveries may occur which will fundamentally alter the definition of the problem."

Ironically, the DOE policy is not to find the technically best site to bury nuclear waste. At a November legislative hearing in Pahrump, officials from DOE headquarters repeatedly refused to state that a final selection would be based on the "best" site. Ed Kay, deputy director of DOE's Office of Civilian Radioactive Waste Management, admitted under questioning from Sen. Tom Hickey that comparable costs and veto sustainability (the ability of Congress to override state veto) would be major selection factors.

Clearly, the cheapest and most politically expedient site is the best site, according to DOE.

The potential for water wars in Southern Nevada will be exacerbated by the siting of a waste dump at Yucca Mountain. In the Yucca Mountain Draft Environmental Assessment, DOE significantly downplayed major water issues:

— "Groundwater withdrawn during Construction, Operation, Retrievability, and Decommissioning may cause regional drawdown...Residual Impacts: None."

— "Immigration of workers would result in increased demand on the water systems of Beatty and Pahrump...Residual Impacts: Potentially significant if water supply systems are not upgraded or expanded."

— Radionuclide release during operation and decommissioning phases...may cause contamination of groundwater...Residual Impacts: None."

These estimates of increased water demand are based on increased population, and ignore water demand for construction (concrete). Moreover, no reference is made to a United States Geological Survey report which found that water levels declined as much as 27 feet in two areas of Amargosa Valley between 1962 and 1967.

The Environmental Protection Agency is being sued by the state of Texas because EPA standards for storage of high level nuclear waste are not designed to protect groundwater supplies in sparsely populated areas. This may be why DOE has indicated that a controlled area within which groundwater exploitation would be prohibited, may be necessary.

According to the Nuclear Regulatory Commission, additional controls outside of the controlled area could also prohibit any future granting of water rights, if for example, future groundwater withdrawals could lead to migration of radionuclides to the accessible environment. Perhaps this is why the Yucca Mountain Draft Environmental Assessment stated a 50,000 acre land withdrawal would be required for Yucca Mountain.

Considering the historical record of earthquake activity in southern Nevada, potential for water wars and the hazards of around-the-clock nuclear waste shipments, the proposed nuke waste dump spells disaster. Several Nevada leaders, local governments, and civic organizations have openly resisted the attempt by DOE to make Nevada the pay-toilet for the nation. They deserve recognition in the following "Honor Roll of Opposition:" Gov. Richard Bryan; Congressman Harry Reid; Gov. Grant Sawyer; Frank Fahrenkopf; Nevada PTA; the cities of Reno, Las Vegas, Lovelock, and Boulder City; Legislative Committee on Public Lands; Western Shoshone National Council; Nevada Tourism Commission.

As more join the list, DOE will be forced to recognize that the path of least resistance does not lead to Yucca Mountain. Citizen Alert welcomes the opportunity to speak to organizations, classrooms and other interested groups.

Bob Fulkerson is executive Director of Citizen Alert, a statewide non-profit, activist organization based in Reno.

2-9-86 LAS VEGAS, NV, SUN

RADIOACTIVE WASTE'S NTS

Nevadans demand secret nuke dump data

By MARY MANNING
SUN Staff Writer

The Nuclear Projects Commission asked local U.S. Department of Energy officials Friday to permit Nevada access to "secret" criteria used to determine whether Yucca Mountain is a top choice as the nation's high level nuclear dump.

"It seems incredulous to me that the federal government is forming criteria and won't even let the state look at the material," former Gov. Grant Sawyer, commission chairman, told Dr. Donald Vieth, chief of Nevada's DOE Nuclear Waste Project office.

The state's nuclear waste project manager, Robert Loux, said Nevada has been asking to see criteria used to rank top sites — including Yucca Mountain in Southern Nevada, Deaf Smith County in Texas and Hanford, Wash. — for 2½ years.

Vieth told the commission, created by the 1985 Legislature to lead state policy on high-level nuclear waste issues, that DOE relations with Loux and his staff were good.

However, Vieth said not even he has access to information locked in Washington, D.C., DOE headquarters and the National Academy of Sciences.

Sawyer asked Vieth if Nevada was in the top three.

"I have no access to that information for the final three sites," Vieth said.

"If I was a betting man in Las Vegas, I wouldn't mind betting on it," he added.

However, Vieth said he has been misquoted previously over ranking Yucca Mountain first among the trio.

"I am very cautious about saying this is the best site," Vieth said.

When asked if he had seen the criteria, the DOE administrator said he had not tried to look at it.

Sawyer complained that Nevada had been repeatedly denied access to "secret criteria" and that all information should be released in a spirit of cooperation and coordination on DOE's part.

"It seems the consultation and cooperation is one-sided," Las Vegas Councilman Ron Lurie, a commission member, said.

Vieth replied that Lurie's assessment was "an inaccurate characterization."

"It (criteria) will be held cloistered," Vieth said. "Maybe that isn't the right term."

"That's the right term," Sawyer replied.

DOE's nuclear waste repository program has fallen behind a rigid schedule set down in the 1982 Nuclear Waste Policy Act, Vieth said.

Final environmental assessments will not be released until April 20 at the earliest, after six delays, he added.

To streamline procedures, DOE officials in Washington decided to pick three sites for extensive scientific studies at the time final environmental assessments are released.

DOE's nuclear waste budget fell under the Gramm-Rudman ax, Vieth said, although nuclear users fund the program with a tax. Nevada's original $116 million dropped $8 million under proposed cuts for 1986.

The total $500 million nuclear waste program was slashed $22 million under Gramm-Rudman cuts, Vieth said, but delays in the repository schedule hurt more than fewer dollars.

The commission approved three resolutions at its second meeting in Las Vegas Friday.

The commission agreed with Gov. Richard Bryan and Attorney General Brian McKay that if only three sites are chosen for extensive scientific testing, Nevada will sue the federal government, and that DOE should take full responsibility for any nuclear waste accident and federal funds should be available to the state for judicial interpretation of a federal-state dispute.

Nevada has sued DOE for nearly $2 million to conduct independent studies at Yucca Mountain, but the federal government said the state's grant application must be reviewed. Vieth said if the state doesn't contest DOE criteria, it could have the money by the end of February.

LAS VEGAS SUN - TUESDAY, 4/1/86

Bill creates Arizona low-level nuke waste site

PHOENIX (UPI) — A disposal site for low-level radioactive waste could wind up in Arizona under a bill pushed through the state House of Representatives Monday.

Rep. Jim Hartdegen, R-Casa Grande, complained that the bill, already approved by the state Senate, does not deal with where the site will be.

He said the University of Arizona has illegally dumped low-level radioactive waste from its test reactor in a dump in his Pinal County and state reporting and monitoring there have been weak.

Hartegen claimed the bill at least should have named the Legislature as the party responsible for determining where the site will be.

The House approved the measure on a 48-8 vote just minutes after passing it on a preliminary voice vote.

The measure sets up the legal authority for the state to enter a low-level readioactive waste disposal compact with South Dakota.

Since that state has no operating nuclear reactors and none planned, Arizona would be the host for such a site.

Arizona has a larger population and soon will have operating the $9.3 billion Palo Verde Nuclear Generating Station 40 miles west of Phoenix.

Without the South Dakota compact possibilty, however, Arizona could find itself the site for low-level radioactive waste dumping by many states.

Arizona two years ago approved a bill enabling it to enter a compact with California, which would become the host state for a site, but that state's Legislature has been quarreling over site location.

As a result, it has not passed a law to enable California to enter a compact with Arizona. Nor has it passed a law to enable the state to enter a compact with South Dakota.

Minding your business

A survey of money, business and consumer trends

Benign neglect is not the biggest U.S. economic sin

Louis Rukeyser

NEW YORK--The real question for the U.S. economy in 1985 is whether we are going to have another year of benign neglect.

Oddly--and discouragingly for moralists--it has not always turned out to be the worst possible economic policy. One reason the economy continues routinely to confound its gloomier forecasters is that we have failed to embrace many of the draconian proposals put forward to "cure" our perceived ills. The slower growth of late 1984 is likely to be followed by a pickup in 1985 precisely because we infuriated the Washington activists by letting nature take its course.

Consider the status of two of our most talked-about economic problems:

(1) The budget deficit.

By virtually any measurement, the gap between the federal government's expenditures and receipts is scandalously large. But acknowledging this (as Washington has, quite belatedly, got around to doing) and dealing with it sensibly are two entirely different things. Benign neglect has been vastly better than tax-happy foolery.

To understand why, it's important to recognize why the deficit got so big-- and why it threatens to balloon so much larger in the years ahead. The reason is clearly not that U.S. tax rates are too low. The federal government is now taking about 19 percent of the country's total output. That happens to be every bit as much as Washington was taking a generation ago, when we were able to balance budgets and create occasional surpluses.

Even by the most primitive Old Math, it becomes evident, then, that the deficit problem has been created exclusively by excessive government spending. Nor is it difficult to isolate the area that has exploded most dramatically, and is scheduled to continue to do so; it is the area of transfer, benefit and "entitlement" programs. But this is scarcely where anybody on the scene is talking of taking serious action.

Instead, we hear endless oratory about "slashing" military spending--an area where both major 1984 Presidential candidates, both parties in Congress and any rational student of international affairs will agree, at least privately, that some increases are inevitable unless and until the Soviets change their spots.

Instead, too, we hear recurrent talk of tax increases--which, history tells us unmistakably, would in fact slow the economy, reduce government revenues, increase the necessity for social-welfare spending and actually widen the deficit they were supposed to be reducing.

Dumb, dumb, dumb--and until we get somebody smart enough and brave enough to attack the deficit problem where it really lives, it may indeed transpire that 1984-style benign neglect was not the worst of policies.

(2) The trade deficit.

Here, again, is a genuine--and, eventually, unavoidable--American problem. But in the short run, it too may be less serious than it would have been if we had tried energetically to "deal" with it in the wrong way.

The problem is brutally simple: November marked the 101st straight month in which Americans bought more abroad than we were able to sell to foreigners. Though many Americans have been seriously hurt by this, there have been some economic benefits, too, and as a nation we have been getting away with it primarily because the dollar continues so strong (a tribute to the remarkable vigor of the U.S. recovery and to the renewed perception of this country as the globe's safest haven for investment).

The only authentic solution is to improve U.S. productivity and competitiveness--a process that has finally, and dramatically, begun. The solution clearly is not to adopt the much-urged short-term tactic of erecting a protectionist wall around the U.S. and keeping all those durn foreigners at bay. (That way lies, inexorably, deep recession.)

In sum, the American way is to neglect problems until they hit us in the face--and while that is not always the smartest of procedures, in these two cases our natural indolence has kept us from rushing into some of the dumbest. In 1985, let's hope, we'll take a deep breath and start attacking these problems the right way: by strengthening the private economy, not the bureaucrats' empire. That's the route to real--and truly benign--economic progress in America.

Las Vegas Review-Journal

Tuesday, January 14, 1986

Judge to hear nuke soil suit

By David Koenig
Review-Journal Washington Bureau

WASHINGTON — The U.S. Supreme Court on Monday appointed a retired judge and former Carter administration official to hear New Jersey's lawsuit against Nevada concerning a stalled shipment of radioactive soil.

The judge, called a "special master" in legal parlance, has the authority to subpoena witnesses and hold hearings. He then makes a report, including a decision, to the Supreme Court.

The special judge's report can be appealed only to the Supreme Court.

The court picked Wade H. McCree Jr., a retired federal appeals court judge who served as solicitor general under President Carter. McCree is a law professor at the University of Michigan.

New Jersey sued Nevada, the state Public Service Commission and the city of Las Vegas last year after Nevada required New Jersey to get additional permits before it could bury more than 7,000 tons of radioactive soil at the radioactive waste dump at Beatty.

New Jersey's attorney general argued his state received a disposal permit from Nevada in May, and should have been allowed to go ahead with the train shipment of soil. He charged Nevada with superceding two federal laws and interfering with interstate commerce — in this case, the cross-country shipment of radon-contaminated soil.

The soil was excavated from under houses in three northern New Jersey communities but state officials halted the work — and blamed Nevada for the stoppage. Unable to go home, the residents are being housed in motels at New Jersey's expense, according to state officials.

Nevada Attorney General Brian McKay responded in December to the suit with a Supreme Court brief denying all of New Jersey's chief accusations. The PSC and the city of Las Vegas filed similar briefs.

McKay told the court Nevada's regulations regarding shipments of low-level radioactive waste are "in full compliance with all relevant provisions of the Constitution of the United States and federal and state laws and regulations relative to the issuance of a permit to dispose of low-level radioactive waste at the Beatty, Nev., repository ...

"Further, Nevada's regulatory scheme does not seek to prevent the shipment of low-level radioactive waste" to Beatty, McKay said in the brief, filed Dec. 19.

Further, McKay said the stoppage of excavation in New Jersey was a voluntary decision by local authorities because the contaminated soil could be stored on a temporary basis "for substantial periods of time, which could even be years."

Las Vegas City Attorney William Kockenmeister said the city should be dismissed as a defendant because the city ordinance in question is aimed at shippers of hazardous waste, and New Jersey is not the shipper.

Kockenmeister said if anyone can sue to invalidate the ordinance, which requires shippers to get a special permit, it is the Union Pacific Railroad that will ship the soil.

LAS VEGAS SUN- WEDNESDAY, 2/12/86

NJ gets deadline for reaction to low-level waste law

By MARY MANNING
SUN Staff Writer

A hearing officer Tuesday gave New Jersey until March 15 to file a supplemental complaint on a new law for burying low-level radioactive wastes, as its Supreme Court battle to ship 7,200 tons of contaminated soil to Nevada's commercial dump slowed down further.

Nevada Attorney General Brian McKay said Nevada will have 30 days or more to respond to New Jersey's concerns after the deadline set by Special Master Wade H. McCree Jr.

The preliminary hearing between the two states was held in Ann Arbor, Mich., after the U.S. Supreme Court appointed McCree in January.

"The preliminary meeting was so the judge could look both parties in the eye," McKay said from his Las Vegas office.

Deputy Attorney General William Isaeff represented Nevada.

New Jersey claimed that President Reagan's signature on a regional low-level nuclear disposal compact bill doesn't affect tons of radioactive contaminated soil removed from New Jersey homes.

However, at Tuesday's hearing Nevada said it no longer has an obligation to accept the five proposed trainloads of radium-contaminated dirt.

Currently, 8,000 barrels filled with the dirt, contaminated with potentially harmful radon gas, wait behind a locked fence with "No Trespassing" signs and labels saying, "Radioactive ... Unstable," in tree-lined New Jersey neighborhoods.

Eventually, 120,000 cubic yards of that dirt will be dug up at 231 identified sites in Montclair, N.J., and the nearby towns of Glen Ridge and West Orange.

Radon is an odorless, colorless radioactive gas produced by radium. The gas has been linked to lung cancer, if it is inhaled, decades after exposure.

New Jersey health officials maintain there is no danger from exposure to potential radon gas in open air. In an enclosed space, such as a house, it could sow cancer's seeds.

Traces of radioactive gamma rays have been discovered in some of the homes where the radium-laced soils have been removed, indicating radium or uranium in the contaminated fill dirt.

The exposure levels to this new radioactive source are reported low, equal to several X-rays a year. Yet gamma rays can penetrate floors and walls, something radon gas cannot do.

Under federal and state environmental laws, materials emitting gamma radiation need a permanent, secure storage area.

New Jersey first negotiated an $8 million contract with Union Pacific Railroad to haul the soil, contaminated by radium paint used on airplane dials in World War II, to Beatty's commercial dump.

The city of Las Vegas, Clark County and the state issued hazardous material regulations. The railroad refused to apply for a state permit.

Then New Jersey asked the U.S. Department of Energy for use of its sites, but the federal government said it was a state problem.

Finally, New Jersey hunted within its own backyard. A plutonium-contaminated site at McGuire Air Force Base was ruled out because the state didn't want to mix high-level (plutonium) with low-level (contaminated soils) radiation.

Neighbors in West Orange and Glen Ridge effectively blocked moves to put it in their towns.

The state stopped removing contaminated dirt in October, while Union Pacific pursues a state transportation permit in Nevada and the Supreme Court hears the case.

New Jersey had another idea: Mix the radium-laced dirt with clean soils to drop radiation levels down to background, or acceptable, levels.

A large secure mixing area was discovered at an Army research center known as Picatinny Arsenal, but 6,000 employees have already said they are afraid of radioactive exposure.

Hazardous waste transport seen as alarming for Nevada

By CY RYAN
United Press International

CARSON CITY — The transportation of hazardous waste across Nevada is a growing problem but no one knows how big it is, state officials testified Tuesday.

They asked a legislative study committee to consider new laws to license the shipments and to upgrade the training of those in rural counties who must repond when there is a spill or other emergency.

Captain Ray Sparks of the Nevada Highway Patrol told the committee it should consider some type of licensing or permit system for trucks hauling the chemical or hazardous waste. And he said there should be a requirement that all spills or accidents be reported to the state.

Sparks said a licensing program would identify the number of vehicles and the type of hazardous materials that were being shipped through the state. This could be tied into a mandatory vehicle inspection program for these vehicles to be regularly checked for safety features.

He also suggested studies on possible routing for these vehicles in an effort to skirt the metropolitan areas. And there should be safe rest stops set aside for the vehicles to be parked, he said.

Robert Andrews, director of the state Emergency Management Division, said his agency has probably only "20 percent of the picture" of how many shipments go through the state since there is nothing to require reports.

Sparks, Andrews and others testified there was a need for training those who respond first to any emergency. In some cases, particularly in rural Nevada, there is not even the protective clothing available.

Sparks said his troopers, sometimes first on the scene of a chemical spill, must wait for hours in rural Nevada for work to begin to diagnose and clean up the spill.

Don Dehne, assistant director for plans and programs in the emergency management agency, said there are 300 daily shipments of hazardous waste across Interstate 80 in Northern Nevada daily and about 100 shipments on Interstate 15 in Southern Nevada.

Most of the shipments in Northern Nevada are between Fernley and Reno and in Southern Nevada between Las Vegas and the California border, said Dehne. And there is a signficant problem in Lincoln County, said Dehne, noting the number of recent derailments of trains.

Reba Chappell, who heads the state's emergency medical training program, said that outside the greater Las Vegas and Reno areas, most of those responding to such things as chemical spills are volunteer firemen.

The rural counties, she said, "Don't have a lot of resources to provide training programs and protective gear.

"This puts a tremendous burden on them," she told the committee.

Sen. Lawrence Jacobsen, R-Minden, a subcommittee member, urged fire and emergency response officials to write Congress to push for opening of a western training center at Stewart south of Carson City.

The Federal Emergency Management Agency has committed $2.7 million for rehabilitation of the facilities at Stewart. But Jacobsen noted there will be reductions in the budget of the agency and the training program may not get off the ground.

Jacobsen said this training was vital to the western states.

Las Vegas SUN

LAS VEGAS, NEVADA, JANUARY 15, 1986

Wednesday

NJ nuke dirt stalled at least 1 year

By MARY MANNING
SUN Staff Writer

Union Pacific trains carrying the 7,200 tons of low-level nuclear waste that New Jersey wants to ship to Nevada will be delayed at least a year until the U.S. Supreme Court hears the case, Chief Deputy Attorney General William Isaeff said Tuesday.

The hearing probably won't be held until October or later, Isaeff explained, because the high court normally hears oral arguments from October through April each year and it will take months to prepare the case.

The court named Wade H. McCree Jr. on Monday as a special master to preside and submit his recommendations.

Such a special master, Isaeff said, can subpeona witnesses and hold hearings. Then he must prepare a written report, including a decision, to the Supreme Court.

McCree is a law professor at the University of Michigan and a retired federal appeals judge. He was solicitor general under President Carter.

"There's been no time frame set," Isaeff said.

New Jersey filed suit in the Supreme Court last year, challenging Nevada's regulations governing trains carrying hazardous and radioactive wastes. New Jersey attorneys claim the federal transportation regulations pre-empt any state from taking such action.

(See NUCLEAR, Page 7A)

Nuclear waste shipment stalled by court

(Continued from Page 1A)

Nevada's Gov. Richard Bryan, along with Clark County Commission Chairwoman Thalia Dondero and Las Vegas Councilman Ron Lurie, led the fight to halt New Jersey's shipments of radium-laced soil to Beatty's commercial low-level waste dump with a detour through Las Vegas.

"Now it is like going before a U.S. District trial court, before Judge McCree," Isaeff said. "And I'm honored to be appearing before such a distinguished judge."

In order to prepare the case, hold meetings with each state, prepare the case and then write a summary, McCree will need weeks, even months to do it, Isaeff said.

Then either side can request oral arguments and Isaeff said he expects one or the other to ask for them before the high court.

"The Supreme Court has never before accepted a case under the Hazardous Waste Transportation Act," Isaeff said. "Apparently, they want to make some kind of ruling."

Radioactive soils were shoveled into thousands of 55-gallon drums last year under expensive New Jersey homes when high levels of radium were found in their basements. Radium produces radon gas, a radioactive isotope that causes lung cancer.

New Jersey blamed Nevada and its rule formed by the Public Service Commission governing all shipments of hazardous wastes for stopping the removal process. Residents are living in motels.

Currently, Union Pacific railroad officials, who won an $8 million shipping contract with New Jersey to remove the dirt, are applying for a Nevada permit from the PSC to ship the soils to Nevada, stopping in Las Vegas to change crews before unloading truckloads of the soil-packed drums for the trip to Beatty.

Las Vegas SUN
Wednesday LAS VEGAS, NEVADA, JANUARY 15, 1986

Lowest-ranked bidder gets Calif. nuke dump

By SUN STAFF and
United Press International

Despite a California panel's critical review of U.S. Ecology as the lowest-ranked bidder for building the state's first low-level nuclear waste dump, officials had no choice but to do business with the Louisville, Ky., firm.

U.S. Ecology, which operates Beatty's commercial low-level radioactive repository, 100 miles northwest of Las Vegas, was the only firm left after California's first three choices dropped out, all pleading that potential financial and legal risks were too great.

California tried to restart the bidding process, modifying conditions enough for another company to step in, but court action by an original bidder blocked that attempt.

U.S. Ecology officials admitted problems at their other waste dumps in Illinois, Kentucky, Nevada and Washington.

Beatty's dump led to the only fine U.S. Ecology has paid, after it pled no contest in U.S. District Court in Nevada during 1977 and was fined $10,000 for failing to prevent employees from using a cement mixer and other tools — all radioactive — outside the dump.

Beatty workers had removed contaminated plywood for their homes, patios, sheds and playhouses, federal investigators discovered.

In addition, Beatty's nuclear shipments of low-level radioactive materials, contaminated clothing and equipment strayed to casino parking lots in leaky containers and were involved in fires during the late 1970s.

However, as operator of two out of the three active commercial low-level repositories in the nation, William E. Prachar, president of American Ecology — U.S. Ecology's parent company — pointed to its 30-year experience in burying both radioactive and chemical wastes.

Most of the company's past problems, including contamination spreading from dump sites, occurred prior to 1980, before more modern methods were discovered to bury nuclear wastes, company officials told a California Health Department committee.

That committee issued a report in August 1984, evaluating firms bidding for the dump at an unselected site.

The committee's report cited U.S. Ecology's past history, saying it "casts doubts on their ability to perform future activities."

The report said the company showed "repeatedly" it was only willing to do the minimum to keep operating.

On Dec. 24, the Health Department chose U.S. Ecology, saying it met requirements, ranking it by the lowest standard.

California officials said a 1983 state law requires such jobs go to qualified bidders in the order they are ranked.

California was caught in its own regulations, according to state officials. The 1983 state statute that authorized the dump set up procedures so California would license such a company, instead of contracting with the company.

Without a written contract, other companies backed away from California, Ralph DiSibio, special programs manager for Westinghouse Electric Co. in Pittsburgh and former Nevada Human Resources director, said. Westinghouse was California's first choice in July 1984.

Westinghouse places radioactive barrels in concrete containers that discourage leaks and make recovery easier.

In fact, Westinghouse urged this method to encapsulate plutonium-laced soils at Maxey Flats, Ky., one of the troubled U.S. Ecology sites closed in 1977.

Once Westinghouse refused California's offer, Chem-Nuclear — operator of the Barnwell, S.C., low-level repository — sued the health department, demanding the state first rank the bidders and then choose the best one.

Chem-Nuclear won its suit and health officials picked Morrison-Knudsen of Boise, Idaho, and Pacific Nuclear Systems from Washington state, while U.S. Ecology ranked last.

Both Morrison-Knudsen and Chem-Nuclear withdrew their applications in early December, leaving U.S. Ecology.

The company has accepted the job, paid a $1 million performance fee and the first $250,000 annual license fee.

U.S. Ecology faces closing its Beatty site in 1991, when the current low-level regional waste burial contracts become effective. After that date, California's wastes will no longer be welcome in Nevada — although 90 percent of its low-level radioactive materials go to Hanford, Wash.'s commercial dump.

The firm expects to be operating in 1989 in California at an unknown site, possibly in one of the desert areas of Riverside, San Bernardino, Imperial or Inyo counties.

Thursday, January 9, 1986

LAS VEGAS SUN

PSC members will tour unloading sites for NJ nuke train

By MARY MANNING
SUN Staff Writer

The Nevada Public Service Commission set the ground rules Wednesday for hearing a request by Union Pacific railroad to ship 7,200 tons of low-level radioactive soil into Las Vegas from New Jersey.

Although no dates were scheduled at the pre-hearing conference in Las Vegas, commissioners plan to tour Arden, 15 miles southwest of Las Vegas, and four other possible stations for unloading the dirt before hearing Union Pacific's case.

"Rather than sitting in this room and listening to a bunch of experts give their first-hand impressions, we'd like to get our own impressions," PSC Chairman Scott Craigie said.

UP counsel Joe Gray of Sacramento asked that the commission consider a one-year shipping permit under an emergency regulation, rather than the permanent order effective this month.

Craigie noted that the state's permanent rule, General Order 52, became effective Jan. 2.

"I haven't received that order yet," Gray replied.

The railroad's application asks the commission for a one-year permit to ship any hazardous or radioactive substance anywhere in Nevada, Gray said.

Craigie asked if UP was considering any other dangerous shipment besides the 7,200 tons of soil removed from under expensive homes in New Jersey.

"I have no idea what's going to happen anywhere else," Gray said, but added no other contracts had been signed, to his knowledge.

Under the PSC application, Gray said UP asked for permission to unload the New Jersey shipment either at Arden or in Las Vegas, in case some emergency developed at the isolated site in Arden.

(See PSC, Page 3B)

PSC slates ground rules for nuke train

(Continued from Page 1B)

Union Pacific originally planned to unload five trainloads of 35 boxcars each in downtown Las Vegas, behind Union Plaza Hotel, and store it there for five days until trucks could haul it to Beatty's commercial repository.

However, state, Clark County, Las Vegas and North Las Vegas officials balked at the idea of trainloads of radioactive materials shipped and stored in Las Vegas.

Gov. Richard Bryan signed the PSC's emergency order into law in August, then the railroad challenged it.

"We filed application under protest, and I defy anyone to prove the shipments are dangerous," Gray said after the Wednesday hearing. He also said the railroad reserves the right to go to court after the PSC makes a decision.

Nevada and New Jersey are locked into a U.S. Supreme Court battle awaiting a hearing over the soil shipments.

Randy Jackson, PSC director of transportation, requested the railroad provide the commission with a detailed map of Arden, a list of all construction from the Utah border to Arden since 1980, an emergency plan and a list of emergency responders in case of accident.

In addition, Deputy City Attorney Teresita Ponticello asked for a proposed route by rail and road in Southern Nevada and deramping procedures in Las Vegas.

In turn, Gray requested any information from the PSC, Las Vegas or North Las Vegas that there is a safety hazard from this shipment.

Craigie said a hearing date will be issued by the commission after the tour, about mid-month.

Under the permanent hazardous materials rule for railroads, the PSC may charge $200 for a permit and require security for the cargo, in addition to independent inspections of dangerous shipments.

LAS VEGAS SUN - WEDNESDAY 4/2/86

Only Nevadan against unlimited proposal

Hecht accused of 'sellout' on nuke liability vote

By CARYN SHETTERLY
SUN Staff Writer

The chairmen of two nuclear study committees said Tuesday that Sen. Chic Hecht, R-Nev., destroyed efforts to protect Nevada from catastrophe when he voted against unlimited federal government liability in nuclear waste accidents.

In a 13-3 vote March 26, the Senate Energy and Natural Resources Committee rejected an amendment making Energy Department contractors liable for nuclear accidents caused through their negligence.

Grant Sawyer, chairman of the Nevada Commission on Nuclear Projects, and state Sen. Thomas Hickey, D-NLV, said they cannot understand Hecht's vote. They called it a "sellout" of Nevada, which is likely to be the site of a high-level nuclear waste repository.

Nevada, along with Washington and Texas, are in the running for a high-level dump, and the Department of Energy will narrow the selection to one site by 1989. Nevada is considered the likely choice.

Sawyer and Hickey said Hecht had been influenced by officials from the Department of Energy and utility companies, who are fighting the amendment to the 1957 Price-Anderson Act, the nation's foremost law limiting the liability of the nuclear industry.

Hickey, chairman of the Legislative Committee on Nuclear Waste, said Hecht went against the best interests of his own state, as well as the legislative positions of the "first-round" repository states of Utah, Louisiana, Mississippi, Washington and Texas.

Nevada Reps. Barbara Vucanovich, R-Nev., and Harry Reid, D-Nev., support unlimited liability, and Sen. Paul Laxalt, R-Nev., has said he supports "liability sufficient to cover any major accident."

Hecht spokesman Mike Miller said the senator voted against the amendment because it would raise a $500 million cap to $2.4 billion, what he considers an extravagant federal expenditure.

"There were a number of reasons he voted against unlimited liability, including the fact we're in the middle of a liability insurance crisis," Miller said. "He thought it would be irresponsible to vote for unlimited liability."

Enactment of unlimited liability would benefit only trial attorneys who would encourage litigation on claims for their own benefit, Hecht said, according to Miller.

The Price-Anderson Act was used during the Three Mile Island accident in Pennsylvania, when about $25 million in damages was paid. The $2.4 billion cap is unnecessary even if an accident causes 10 times the damage of TMI, another Hecht spokesman said.

Sawyer, a former Democratic governor, said the issue had nothing to do with the national problems of obtaining private liability insurance.

Hickey blasted Hecht's TMI logic.

"If there's no fear of a catastrophic nuclear accident, then why isn't the Senate supporting unlimited liability?" he asked.

"That very argument (that there never will be an accident) is why there should be unlimited coverage."

State mulls action on hazardous shipments via railroad

By MARY MANNING
SUN Staff Writer

The Public Service Commission regulation to protect public health and safety from all hazardous rail shipments became effective Tuesday, but neither national railroad going through Nevada had filed an application for a state permit.

The PSC huddled with its staff and legal advisers most of Monday and Tuesday, deciding on enforcement action, Chairman Scott Craigie said.

Neither Union Pacific nor Southern Pacific railroads had applied for permits or challenged the state's General Order 52 in court, Craigie said, so the state will take enforcement action.

Union Pacific primarily serves Southern Nevada and Southern Pacific uses central and northern state routes.

The PSC approved an emergency order last September to protect residents from a proposed shipment of 7,300 tons of radioactive soils from New Jersey destined for Beatty but to be temporarily stored in Las Vegas rail yards.

However, the permanent order — including explosives, poisons and flammable solids — did not become effective until April 1, Craigie explained.

"It is our intent to take enforcement action, not our intent to shut the railroads down, but to get the railroads into compliance," he said.

Exactly what steps will be taken by the commission had not been fully defined, Craigie said.

However, the U.S. Supreme Court refused to stop the commission from enforcing its regulations last year, he noted.

New Jersey filed suit against Nevada for blocking shipment of the soils, first taking the case to a federal District Court in Las Vegas. However, U.S. District Judge Howard McKibben ruled the states' battle belonged in the U.S. Supreme Court.

The high court agreed to hear the dispute and appointed a hearing master in Michigan. Legal experts estimate it will take two years for the Supreme Court to process the case.

At a pre-hearing conference before the PSC last week on Union Pacific's request for a permit to ship and store the New Jersey soils at Beatty's commercial low-level nuclear repository, railroad attorney Joe Gray said Union Pacific didn't have its state hazardous materials permit because storms in Northern California prevented rail staff from gathering necessary information.

Asked after the hearing if the railroad would continue shipping hazardous materials through Las Vegas, the only major link between East and West for Union Pacific, Gray said transportation would continue.

Further, Union Pacific's Las Vegas attorney, James Pico, told McKibben on Monday the railroad ships 29,000 tons a year of hazardous materials through Las Vegas and would continue to do so. Such dangerous substances as solvents, ink and paint thinners are included in the federal lists.

The railroad sought and won Monday an indefinite preliminary injunction against the city of Las Vegas ordinance regulating hazardous shipments through the city, effectively blocking the local government's enforcement actions.

McKibben said the Supreme Court will make the ultimate decision on constitutional rights, but the city's ordinance was inconsistent and posed a threat to interstate shipping.

The judge said the city's ordinance did not contain proposed actions by the Las Vegas Fire Department.

"I don't understand how the railroad can understand the language in the ordinance," McKibben said. "I don't see how any railroad in the country can comply."

Las Vegas SUN

LAS VEGAS, NEVADA, APRIL 1, 1986

Tuesday

Union Pacific granted injunction from LV hazard materials ordinance

Railroad granted injunction from LV hazard ordinance

By MARY MANNING
SUN Staff Writer

U.S. District Judge Howard McKibben granted Union Pacific Railroad a preliminary injunction Monday, barring the city of Las Vegas from enforcing its new hazardous materials ordinance.

The court order indefinitely halts the city from imposing misdemeanor criminal penalties, a $1,000 fine, against the railroad.

McKibben said the city's ordinance has "grave constitutional problems" with sweeping effects on interstate commerce and threatens constitutional rights of shippers.

The judge noted the city enacted the ordinance after Union Pacific announced its intent last June to ship 7,300 tons of radium-laced soils from New Jersey to Beatty, through its Las Vegas rail yards.

Besides inconsistencies, the ordinance has not been reviewed by the U.S. Department of Transportation, the judge noted.

Deputy City Attorney John Roethel said the ordinance does not affect regular shippers such as the railroad, only "occasional" transporters.

However, Union Pacific's attorney, James Pico, said the ordinance could ban such common, but hazardous, substances as paint, solvents and thinners, even newspaper ink.

Union Pacific has shipped about 29,000 tons of such substances, including ex-

(Continued from Page 1A)

plosives, through Las Vegas in the past, Pico said.

If the judge upheld the city's ordinance, up to 2,000 communities along Union Pacific's route could enact their own rules, Pico argued.

McKibben termed the ordinance a "serious" threat to interstate commerce, possibly shutting down the railroad if it failed to notify the city 60 days in advance of a shipment.

The city could act within 48 hours to start criminal proceedings if a shipper violated the ordinance, the judge noted.

The city could also stop a shipment on its way because of foul weather, road conditions or traffic, or if emergency training and equipment was not available, McKibben said.

McKibben left the preliminary injunction in place at his discretion, noting the constitutional issue raised by recent state and local rules governing hazardous waste will be decided in the U.S. Supreme Court.

McKibben presided over a hearing in September when New Jersey brought Nevada to court over allowing the radioactive soils to be shipped here.

The judge ruled in favor of Nevada, which argued the case properly belonged at the high court level as a dispute between two states.

The Supreme Court agreed to hear the case and set it before a hearing master.

The railroad has argued that the local and state laws enacted in the past year are overruled by federal laws allowing quick, uniform regulations for transporting even hazardous substances.

McKibben ordered Union Pacific to post a nominal bond of $1,000.

The judge said he will consider any further action after the Supreme Court decides the state legal fight.

Legal experts say the high court's hearing process could take up to two years.

WHEN DO YOU ASSIGN QA LEVELS?

- ONLY TO THE ACTIVITY, UNTIL SUCH A TIME IN THE DESIGN THAT DISCRETE ITEMS ARE IDENTIFIED THAT WILL BECOME A PHYSICAL PART OF THE FACILITY.
- ASSIGN QA LEVELS TO THE ITEM ITSELF. ANY ACTIVITY ASSOCIATED WITH THE ITEM IS CONTROLLED BY THE ITEMS QA LEVEL.

QA PLANNING

THE QA PLANNING DOCUMENT SHALL INCLUDE DISCUSSION OR REFERENCE TO THE FOLLOWING AREAS:

- A DESCRIPTION OF THE OVERALL OBJECTIVES OF THE ACTIVITIES
- THE RELATIONSHIP THE ACTIVITY HAS WITH THE ISSUES HIERARCHY, INFORMATION NEEDS, AND WBS ELEMENT
- THE APPLICATION OF THE RESULTS OF THE ACTIVITY (WHERE WILL THE RESULTS BE USED)
- THE RELATIONSHIP THE ACTIVITY HAS TO ANY HIGHER LEVEL PLANNING DOCUMENT
- A DESCRIPTION OF THE WORK WHICH IS TO BE PERFORMED, INCLUDING BUT NOT LIMITED TO, IDENTIFICATION OF THE SPECIFIC SCIENTIFIC TESTS, EXPERIMENTS, RESEARCH, OR DESIGN STUDIES WHICH WILL SUPPORT THE OVERALL OBJECTIVE OF THE ACTIVITY
- A BRIEF DESCRIPTION OF ANY PREVIOUS WORK WHICH WILL BE USED IN SUPPORT OF THE PRESENT WORK, INCLUDING THE IDENTIFICATION OF THE QA LEVELS OR CIRCUMSTANCES UNDER WHICH THAT PREVIOUS WORK WAS PERFORMED. IF NO QA LEVEL WAS APPLIED TO THE PREVIOUS WORK, A DESCRIPTION OF THE QA CONTROLS WHICH WERE APPLIED TO THIS WORK SHALL BE PROVIDED.

THE DESCRIPTION OF THE ACTIVITY WILL INCLUDE OR REFERENCE TO:

- o THE TECHNICAL PROCEDURES WHICH WILL BE USED
- o THE INSTRUMENTATION, AND THE INSTALLATION, CALIBRATION AND CHECK-OUT PROCEDURES FOR THAT INSTRUMENTATION
- o THE DATA ACQUISITION PROCEDURES
- o THE DATA REDUCTION AND/OR DATA PROCESSING PROCEDURES
- o THE DESIGN STUDY PROCEDURES
- o THE INTERPRETATION PROCEDURES
- o IDENTIFICATION OF ANY SPECIAL PROCESSES.
- o THE QUALITY ASSURANCE OR QUALITY CONTROL PROCEDURES WHICH MUST BE USED FOR THE WORK
- o LISTING OF THE COMPUTER CODES UTILIZED
- o A DESCRIPTION OF THE PORTION OF WORK THAT WILL BE PERFORMED BY ANOTHER. NNWSI PROJECT PARTICIPANT THAT WILL SUPPORT THE OVERALL RESULTS OF THE ACTIVITY.
- o THE REPORT WHICH WILL BE PRODUCED, IF APPLICABLE.

EXAMPLE

QA LEVEL ASSIGNMENT PLANNING

Reference QALAS No(s) SNL-1
SNL-2
SNL-3
SNL-4
SNL-5

PI: _____
Activity: Water - Migration Analysis
WBS: 2.4.1.2.4

Objectives and Issues Addressed

The objectives are (1) to determine the hydrologic properties of tuffaceous rock from Yucca Mountain, (2) to determine the mechanisms of water movement when the repository is under a thermal load due to the waste, and (3) to evaluate water fluxes and pathways in support of radionuclide-transport analyses.

The information needs addressed by this subtask are as follows:

- Estimates of, and bounds on, the flow of steam, air, and water in the waste-package environment.
- Estimates of, and bounds on, hydrologic flow paths, fluxes, water velocities, and travel times in the unsaturated zone.
- Estimates of, and bounds on, the effects of the repository-induced thermal pulse and rock excavations on rock-mass properties and the resulting effects on the permeability and degree of saturation in the unsaturated and the saturated zones.

Statement of Work

A. The hydrologic properties for tuffaceous rocks from Yucca Mountain will be experimentally determined for use in the modeling of water movement and pathway assessment. From the laboratory data and theoretical considerations, rock-mass properties will be estimated. These data are required for use in computer modeling. Investigations are performed to determine the following:

- Permeabilities and water-retention characteristics of the tuff rock matrix.
- The relative permeability of tuff matrix to water at various saturation levels. Because of the low permeability of tuff, its relative permeability to water as a function of saturation has not previously been measured.
- The effects of temperature on the permeability of densely welded tuff from the proposed repository horizon.

- The rates at which water moves through fractures and the interactive effects of fractures and matrix on the movement of water.

B. Laboratory experiments will be designed and performed to investigate the mechanism of thermally induced water migration and obtain data for use in code validation. The following is a listing of the experiments identified to date and the associated technical procedures:

- Measurement of saturation as a function of pressure head and temperature
  SNL-NNWSI-XYZ - Title
  SNL-NNWSI-XYA - Title
  SNL-NNWSI-XYB - Title

- Laboratory measurement of permeabilities of fractured core samples as a function of stress
  SNL-NNWSI-ABX - Title
  SNL-NNWIS-ABY - Title
  SNL-NNWSI-ABZ - Title

- Laboratory hydrologic/hydrothermal investigation using Gamma-Beam instrumentation
  SNL-NNWSI-BAZ - Title
  SNL-NNWSI-BAY - Title
  SNL-NNWSI-BAW - Title
  SNL-NNWSI-BAU - Title

- Laboratory investigation of water movement through discrete samples
  SNL-NNWSI-ZYB - Title
  SNL-NNWSI-ZYA - Title

C. A model of thermally induced water migration will be developed, using properties representative of the proposed repository location, to determine water fluxes and pressure and temperature gradients.

- Water migration analysis/modeling procedures
  SNL-NNWSI-KLM - Title
  SNL-NNWSI-KLN - Title
  SNL-NNWSI-KLO - Title
  SNL-NNWSI-KLP - Title
  SNL-NNWSI-KLQ - Title

- Computer codes
  NORIA
  SAGUARO
  PETROS

OA Procedures

The SNL QA Administrative Procedures associated with the QA elements selected on the QALAS will be applied.

NNWSI Project Participant Support

Hydrologic property data from field experiments are needed for determining rock-mass properties and for modeling. The data will be obtained as available from the U. S. Geological Survey under WBS 2.4.A.B.C and from field experiments performed in G-Tunnel at the Nevada Test site by SNL under WBS 2.4.2.1.2. QA requirements for these activities can be found in their respective QALASs. Tuff core samples are required for laboratory testing and are obtained through the U. S. Geological Survey as approved by the SOC.

Application of Results

The results obtained under this subtask will be incorporated into the technical data base (WBS 2.1.3.1). They will be used by LLNL to support the determination of the waste-package environment and by SNL to support the water-flux and pathway assessment in WBS 2.1.4.1, and the certification of computer codes in WBS 2.1.4.3.

A draft SNL technical report on the estimation of rock-mass hydrologic properties of tuffaceous materials from Yucca Mountain will be developed describing the estimation of the relative conductivity curve for a rock mass, incorporating both fracture and matrix effects.

A draft SNL technical report on the hydrologic properties of tuffaceous materials from Yucca Mountain will be developed describing the results of laboratory tests on the hydrologic properties of tuffaceous materials.

A draft SNL technical report on near-field hydrologic conditions will be developed describing modeling analyses of the near-field hydrologic conditions resulting from thermally induced water migration.

NNWSI QUALITY ASSURANCE LEVEL ASSIGNMENT SHEET

NO: SNL-1
Rev: 0

OVERALL ACTIVITY: Water Hydrates Analyses
WBS NO.: 2.4.6.2.4

QUALITY ASSURANCE ELEMENTS 1, 2, 5, 6, 15, 16, 17, AND 18 APPLY TO ALL WORK DONE AT QUALITY ASSURANCE LEVEL I OR II.

SUBDIVISION: Measurement of Saturation as a Function of Pressure Head and Temperature QA LEVEL: I

TECHNICAL JUSTIFICATION: (CITE "YES" ITEMS FROM LOGIC DIAGRAM) 3
This activity will provide laboratory data to be used in predicting the post-emplacement environment in the rock mass around the waste package

ADDITIONAL SHEET ATTACHED N/A

QA ELEMENT	APPLIES	JUSTIFICATION FOR EXCLUSION OF QA ELEMENT
3.0 DESIGN & S.C. CONTROL	Yes	Pertains to Site Investigations only
4.0 PROCUREMENT DOCUMENT CONTROL	Yes	
7.0 CONTROL OF PUR MATERIALS	Yes	
8.0 I.D. & CONTROL OF MATERIALS	Yes	Pertains to Rock samples
9.0 CONTROL OF PROCESSES	Yes	
10.0 INSPECTION	No	No inspections are required on this activity
11.0 TEST/EXAM CONTROL	Yes	
12.0 CONTROL OF M & T EQUIPMENT	Yes	
13.0 HANDLING, STORAGE & SHIPPING	Yes	
14.0 INSPECTION TEST & OPER. STAT.	No	

APPROVALS: PI _____ WMPO (TECH.) _____
PQA _____ WMPO (PQM) _____
TPO _____

NNWSI QUALITY ASSURANCE LEVEL ASSIGNMENT SHEET

NO: SNL-2
Rev 0

OVERALL ACTIVITY: Water Hydrology Analyses
WBS NO.: 2.4.1.2.4

QUALITY ASSURANCE ELEMENTS 1, 2, 5, 6, 15, 16, 17, AND 18 APPLY TO ALL WORK DONE AT QUALITY ASSURANCE LEVEL I OR II.

SUBDIVISION: Laboratory Measurement of Permeabilities of Fractured Core Samples as a Function of Stress QA LEVEL: II

TECHNICAL JUSTIFICATION: (CITE "YES" ITEMS FROM LOGIC DIAGRAM) 8

This activity will provide laboratory data to be used in the determination of Rock mass Thermomechanical parameters to support Analyses of repository openhole stability, and to be used in the evaluation of hydrologic models of water movement in fractured porous media

ADDITIONAL SHEET ATTACHED n/a

QA ELEMENT	APPLIES	JUSTIFICATION FOR EXCLUSION OF QA ELEMENT
3.0 DESIGN & Sch CONTROL	Yes	Pertains to scientific investigation only
4.0 PROCUREMENT DOCUMENT CONTROL	Yes	
7.0 CONTROL OF PUR MATERIALS	Yes	
8.0 I.D. & CONTROL OF MATERIALS	Yes	Pertains to Rock Samples
9.0 CONTROL OF PROCESSES	Yes	
10.0 INSPECTION	No	No inspection on natural Rocks activity
11.0 TEST/Equipment CONTROL	Yes	
12.0 CONTROL OF M & T EQUIPMENT	Yes	
13.0 HANDLING, STORAGE & SHIPPING	Yes	Pertains to Rock Samples
14.0 INSPECTION TEST & OPER. STAT.	No	

APPROVALS: PI _____ WMPO (TECH.) _____
PQA _____ WMPO (PQM) _____
TPO _____

NNWSI QUALITY ASSURANCE LEVEL ASSIGNMENT SHEET

NO: SNL-3
Rev: 0

OVERALL ACTIVITY: Water Migration Analyses

WBS NO.: 2.4.4.2.4

QUALITY ASSURANCE ELEMENTS 1, 2, 5, 6, 15, 16, 17, AND 18 APPLY TO ALL WORK DONE AT QUALITY ASSURANCE LEVEL I OR II.

SUBDIVISION: Laboratory Hydrology/Hydrothermal investigations using Gamma-Beam Instrumentation QA LEVEL: II

TECHNICAL JUSTIFICATION: (CITE "YES" ITEMS FROM LOGIC DIAGRAM) B
This Activity will provide data to be used in evaluating alternative hydrologic models of ambient-temperature and above-ambient temperature water movement in fractured porous media. The data will also be used to evaluate results of computer codes employing these models.

ADDITIONAL SHEET ATTACHED N/A

QA ELEMENT	APPLIES	JUSTIFICATION FOR EXCLUSION OF QA ELEMENT
3.0 DESIGN CONTROL -Sci	Yes	Pertains to scientific investigation only
4.0 PROCUREMENT DOCUMENT CONTROL	Yes	
7.0 CONTROL OF PUR MATERIALS	Yes	
8.0 I.D. & CONTROL OF MATERIALS	Yes	Pertains to Rock Samples
9.0 CONTROL OF PROCESSES	Yes	
10.0 INSPECTION	No	No inspections are required for this activity
11.0 TEST/Experiment CONTROL	Yes	
12.0 CONTROL OF M & T EQUIPMENT	Yes	
13.0 HANDLING, STORAGE & SHIPPING	Yes	Pertains to Rock Samples
14.0 INSPECTION TEST & OPER. STAT.	No	

APPROVALS: PI ______ WMPO (TECH.) ______
PQA ______ WMPO (PQM) ______
TPO ______

NNWSI QUALITY ASSURANCE LEVEL ASSIGNMENT SHEET

NO: SNL-4
Rev: 0

OVERALL ACTIVITY: Waste Migration Analyses
WBS NO.: 1.4.1.2.4

QUALITY ASSURANCE ELEMENTS 1, 2, 5, 6, 15, 16, 17, AND 18 APPLY TO ALL WORK DONE AT QUALITY ASSURANCE LEVEL I OR II.

SUBDIVISION: Laboratory investigations of waste movement through discrete fractures QA LEVEL: III

TECHNICAL JUSTIFICATION: (CITE "YES" ITEMS FROM LOGIC DIAGRAM) 11
The activity will investigate phenomena involved with waste movement in a partially-saturated fracture to describe understanding of the physical processes involved

ADDITIONAL SHEET ATTACHED N/A

QA ELEMENT	APPLIES	JUSTIFICATION FOR EXCLUSION OF QA ELEMENT
3.0 DESIGN & Site CONTROL	NO	QA level III requires no formal QA controls (typ.)
4.0 PROCUREMENT DOCUMENT CONTROL	No	
7.0 CONTROL OF PUR MATERIALS	No	
8.0 I.D. & CONTROL OF MATERIALS	Yes	
9.0 CONTROL OF PROCESSES	No	
10.0 INSPECTION	No	
11.0 TEST/[illegible] CONTROL	Yes	
12.0 CONTROL OF M & T EQUIPMENT	Yes	
13.0 HANDLING, STORAGE & SHIPPING	Yes	
14.0 INSPECTION TEST & OPER. STAT.	No	

APPROVALS: PI _____ WMPO (TECH.) _____
PQA _____ WMPO (PQM) _____
TPO _____

NNWSI QUALITY ASSURANCE LEVEL ASSIGNMENT SHEET

NO: SNL-5

Rev: 0

OVERALL ACTIVITY: Water Migration Analyses

WBS NO.: 2.4.1.2.4

QUALITY ASSURANCE ELEMENTS 1, 2, 5, 6, 15, 16, 17, AND 18 APPLY TO ALL WORK DONE AT QUALITY ASSURANCE LEVEL I OR II.

SUBDIVISION: Water Migration Analyses/Modeling QA LEVEL: I

TECHNICAL JUSTIFICATION: (CITE "YES" ITEMS FROM LOGIC DIAGRAM) 3

This activity will support the evaluation of hydrologic models required to determine the post emplacement, near field hydrologic environment. Performance assessment modeling studies will be supported by the estimation of rock mass hydrologic properties and analyses of experimental data

ADDITIONAL SHEET ATTACHED n/a

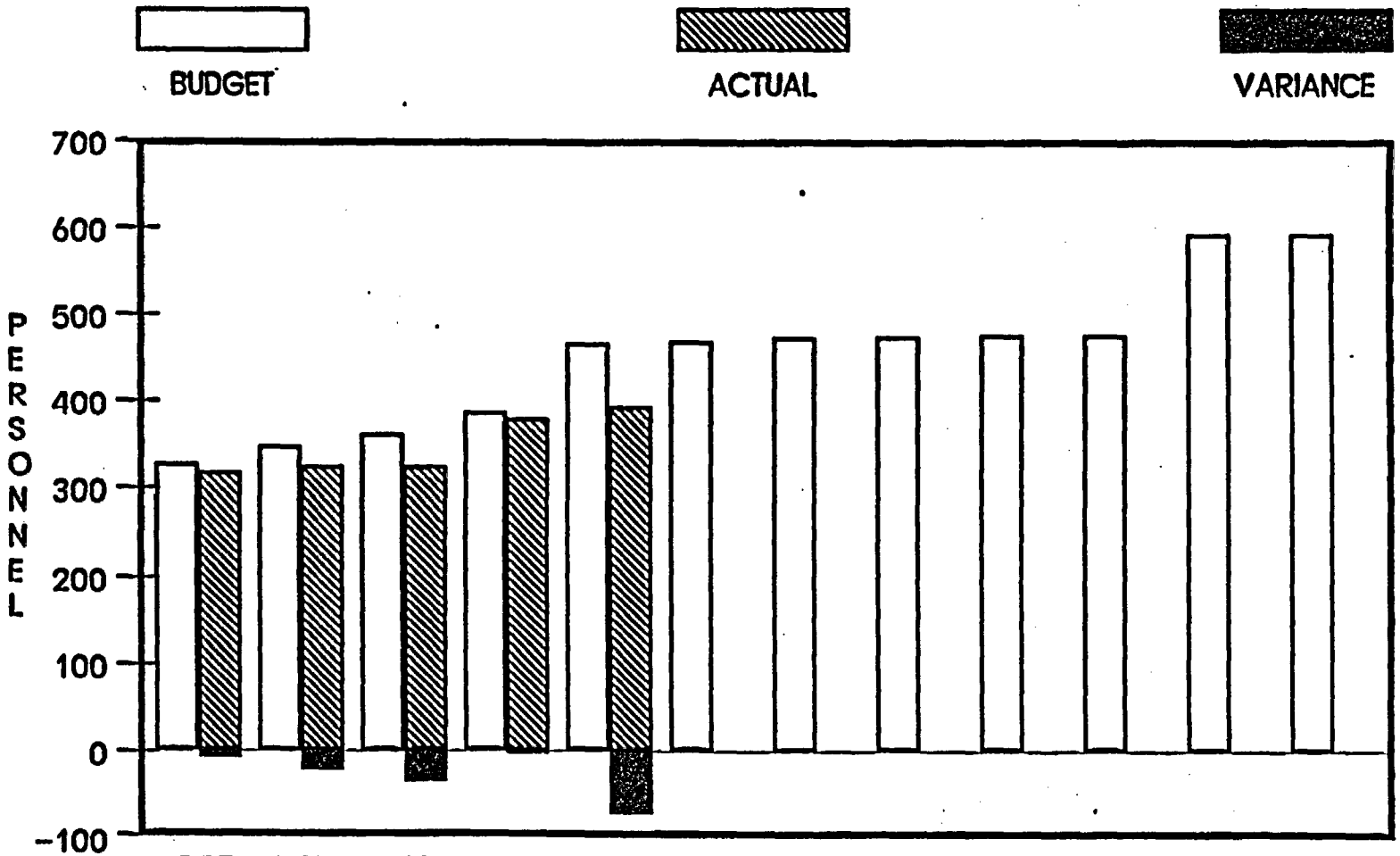
QA ELEMENT	APPLIES	JUSTIFICATION FOR EXCLUSION OF QA ELEMENT
3.0 DESIGN +S.A CONTROL	Yes	Pertains to the disposable computer model.
4.0 PROCUREMENT DOCUMENT CONTROL	No	There are no procurements for this activity
7.0 CONTROL OF PUR MATERIALS	No	There are no procurements for this activity
8.0 I.D. & CONTROL OF MATERIALS	No	Not applicable
9.0 CONTROL OF PROCESSES	No	Not applicable
10.0 INSPECTION	No	Not applicable
11.0 TEST/Exper. CONTROL	No	Not applicable
12.0 CONTROL OF M & T EQUIPMENT	No	Not applicable
13.0 HANDLING, STORAGE & SHIPPING	Yes	Pertains to Computer Codes only
14.0 INSPECTION TEST & OPER. STAT.	No	Not applicable

APPROVALS: PI ______ WMPO (TECH.) ______

PQA ______ WMPO (PQM) ______

TPO ______

NNWSI PROJECT STAFFING*
FISCAL YEAR 1986



	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
B	327	347	361	386	466	468	473	474	476	476	593	593
A	317	324	324	379	393							
V	-10	-23	-37	-7	-73							

*These budgeted and actual amounts reflect input from six project participants: F&S, Los Alamos, UNLV, REECo, SAIC, and SNL.

PLANNED NNWSI PROJECT FIELD ACTIVITIES
FOR APRIL 1986

Participant	Activity	Location	Planned Day	Planned Time
LLNL	Drilling	G-Tunnel	Days to be determined (contact Jesse Yow or Abe Ramirez for definite days and times)	
Los Alamos	Looking for carbonate and silica minerals	South end of Yucca Mountain and Crater Flat and Oasis Valley	April 15-17	Daylight
SAIC	Meteorological Monitoring	Yucca Mountain	Field site technician maintains equipment weekly, 3 days per week.	
USGS	Hydrologic and seismic monitoring	NTS	Continues throughout April	

All other field activities suspended indefinitely.

Science Applications International Corporation

L86-GEO-SRM-043

April 14, 1986

TO: Distribution

Subject: Meeting Notice on Workshop on Calcite-Silica Deposits

This letter is a reminder of the letter from Maxwell Blanchard (WMPO:MBB-976 dated March 31, 1986) announcing the upcoming workshop on Calcite-Silica Deposits. The workshop is to be held on Monday April 28, 1986, at SAIC, Las Vegas in Room 450 beginning at 8:30 a.m.

The purpose of the workshop is to finalize the strategy for resolving the remaining problems and questions about the calcite-silica deposits. The list of potential activities for resolving the questions covered at the end of the February 28, 1986, meeting included: determining oxygen, hydrogen, carbon, and strontium/lead isotopes; assessing the regional distribution, geography, and ages of the deposits; determining the origin of "silica plates" in the deposits; investigating trace elements occurring in minerals from these deposits and possible analog deposits; determining vertical extent of deposits; investigating trace elements occurring in minerals from these deposits and possible analog deposits; determining vertical extent of deposits; investigating use of radiogenic isotopes and/or stable isotopes for determining sources; determining extent of mineral segregations; considering possible hydromechanical mechanisms; expanding fluid inclusion studies; expanding field studies by deepening Trench 14A, and constructing a new trench between 14 and 14A; evaluating literature with regard to analog deposits; revisiting Wahmonie deposits to (a) compare characteristics, (b) determine ages, and (c) determine the depth to the water table; focusing attention on geologic mapping, field occurrence,and time relationships; detailing mapping to match laminae across zones within the faults; drilling slant hole at Trench 14; obtaining samples of spring deposits at Oasis Valley for comparison; mapping slickensides in Trench 14 for stress analysis; comparing bedrock silica cements to silica cements in soils; and removing surface material between Trenches 14 and 14A to expose fault trace for investigations of lateral continuity of deposits.

We expect to limit attendance to two or three key individuals from each organization who have the responsibility for reaching preliminary agreement on plans for resolving the remaining questions.

If you have any questions, please contact Steve Mattson (SAIC) at 295-1764 or FTS 575-1764.

Sincerely,

SCIENCE APPLICATIONS
INTERNATIONAL CORPORATION

Michael Voegele

Michael D. Voegele
Technical Director
Technical Programs Division

Las Vegas Review-Journal

Tuesday, May 6, 1986

DOE problems halt research at test site on nuke repository

By Laura Wingard
Review-Journal

Major research on the proposed site in Nevada for the nation's first high-level nuclear waste repository has been stopped because of problems with the Department of Energy's quality-control program, a state official said Monday.

Bob Loux, executive director of the state's Nuclear Waste Project Office, said the U.S. Geological Survey has been ordered to stop doing geologic and hydrologic studies at Yucca Mountain on the edge of the Nevada Test Site until the problems are resolved.

Reynolds Electrical and Engineering Co. Inc., which has been drilling the holes into the desert ground to recover cores for the U.S. Geological Survey to study, also may be orderd to stop work, Loux said.

DOE spokesman Chris West confirmed that record keeping and quality assurance issues have forced work by the U.S. Geological Survey to stop and that REECo might be in the same situation soon. However, West said he was not familiar with the specific issues surrounding the stop work orders.

Loux said the DOE and Nuclear Regulatory Commission have been discussing the quality assurance program at Yucca Mountain for several months. The DOE is expected this month to announce that Yucca Mountain and sites in Texas and Washington will be studied further as potential sites for the nation's first waste repository for spent fuel from nuclear power plants.

But the Nuclear Regulatory Commission, which must license the waste repository, has found defects in the DOE's quality-control program, Loux said.

He said the department has known since the research work began in 1978 that the Nuclear Regulatory Commission would require the DOE prove it had gathered "good information," but somehow that has not occurred.

Quotable

"It's a sad commentary on the federal government."

— Bob Loux

"It calls into question whether all the hydrologic and geologic data collected is going to be usable," he said.

Between 80 and 100 holes have been drilled at Yucca Mountain, with the DOE spending between $60 million and $80 million annually to do the research, Loux said.

"It's a sad commentary on the federal government," he said.

Furthermore, the DOE's tight schedule for getting a high-level nuclear waste dump operating also could be in jeopardy because of this latest setback, Loux said.

Under a congressional act, the repository is to be operating by 1998, with the DOE to choose a site by 1990. It will take the Nuclear Regulatory Commission three years to license the facility, Loux said, with another three to four years to construct it.

There is no room for mistakes or delays such as this latest problem, he said.

Bob Fulkerson, a spokesman for Citizen Alert, a statewide group opposed to the dump being built in Nevada, also criticized the DOE for not taking care of the quality-control

Please see NUCLEAR/4A

Nuclear

From 1A

problems before now.

"It confirms our suspicion that the work being done down there is real shoddy," Fulkerson said.

Loux said the quality-control issue also calls into question the DOE's refusal to give Nevada $1 million so the state can do independent research on the Yucca Mountain site.

"Maybe they're afraid of what we'll find out," he said.

The $1 million would fund one year of studies that would include seismic testing, groundwater sampling and potential volcanic activity, he said. The state also wants $1.5 million for a second year of year study with additional funds in future years, he said.

For 2½ years the DOE in Washington has had the funding request "under evaluation," Loux said.

"We have maintained all along that our effort can only help them out," he said.

DOE defends

Las Vegas Review-Journal

Yucca Mountain research

By Laura Wingard
Review-Journal

Remarks from a state official suggesting inferior research work has been done on a Nevada site in the running to be the nation's first high-level nuclear waste repository were called "highly inaccurate and inflammatory" Tuesday by a Department of Energy official.

Don Vieth, DOE's director of the waste management project, said the technical work done at Yucca Mountain, the proposed location for the repository on the edge of the Nevada Test Site, has been excellent.

However, the DOE discovered flaws earlier this year in the "paper trail" that would prove the quality of the research and steps have been taken to improve the documentation, Vieth said.

Bob Loux, executive director of Nevada's Nuclear Waste Project Office, said Monday that defects in the DOE's quality assurance program had forced major research work at Yucca Mountain to be stopped.

Loux said the problems place doubt on the hydrologic and geologic studies done at Yucca Mountain since the late 1970s — work that cost between $60 million and $80 million annually to conduct.

But Vieth said, "We don't feel the quality of the technical work is compromised."

Instead, he said, "We want to make sure there is good paper work to back up good technical work."

Vieth said he issued a stop work order April 28 to the U.S. Geological Survey when a DOE audit showed the paper work accompanying the research was not detailed enough to pass the Nuclear Regulatory Commission's licensing standards.

Another stop work order also might be issued to Reynolds Electrical and Engineering Co. Inc., which has been drilling holes into the desert ground to recover cores for the U.S. Geological Survey to study, he said.

The U.S. Geological Survey has been told to improve its paper work standards — a process that could delay research at Yucca Mountain four to five months, Vieth said.

An example of the type of documentation in question is whether photographs of the cores taken at the site should be done instead at the library on the test site where the cores are stored, he said.

Procedures also need to be developed that require personnel sign documents every time a core changes hands, Vieth said.

Although the stop work order will delay the project by a few months, Vieth said he would rather improve

Please see NUCLEAR/6B

From 1B

the documentation now than go before the Nuclear Regulatory Commission without sufficient paper work to back up the research.

The commission must license the waste repository. Yucca Mountain and sites in Texas and Washington are expected to be named by the DOE later this month for further studies as potential locations for the nation's first repository to store spent fuel from nuclear power plants.

A final site is scheduled to be named in 1990, with the plant due to be operating in 1998.

Vieth said he expects the licensing process, which would likely occur sometime after 1990, to be "suspicious, contentious and thorough."

"We will be challenged on many fronts to prove our case," he said.

Nuclear Regulatory Commission officials also recommended the DOE improve its record keeping before further studies are done at Yucca Mountain, Vieth said.

Paul Prestholt, the commission's senior on-site licensing representative in Nevada, said the quality assurance standards for the repository had been revised four times and the stop work order issued by Vieth is not "an isolated case."

"There have been growing pains in developing the quality assurance program at each of the sites," Prestholt said.

He said the steps taken by Vieth do not detract from the quality of work done so far.

"We have not identified any area of poor work that we feel is serious," Prestholt said.

Furthermore, the decision to halt work rather than proceed without proper documentation should be viewed as a "positive thing," he said.

"It means Don Vieth is not going to stand for shoddy work and the work is going to have to meet regulatory standards," he said.

Wednesday, May 7, 1986 LAS VEGAS SUN

Metro

Errors possible with research at Yucca Mountain

By MARY MANNING
SUN Staff Writer

State nuclear project officials insisted Tuesday that research at the nation's first high-level nuclear waste repository site in Nevada has been stopped because soil cores weren't labeled properly, but Department of Energy experts said quality assurance delays were routine.

Bob Loux, executive director of the state's Nuclear Waste Project Office, said the U.S. Geological Survey had ordered a stop to work on some holes at Yucca Mountain, 60 miles northwest of Las Vegas, until standards are met.

"This may call into question all hydrological and geological data USGS has collected," Loux said.

Some core samples from about 40 holes dug at Yucca Mountain had been gathered over the past seven years by Reynolds Electric and Engineering Co.

Loux said the Nuclear Regulatory Commission, the federal agency in charge of licensing any nuclear repository or reactor in this country, had discovered unlabeled core samples and missing data in a routine quality assurance audit of DOE contractors.

DOE spokesman Chris West said quality assurance work was started by DOE about a month ago for making detailed records to help NRC licensing when it comes in five to 10 years.

Yucca Mountain is one of three prime sites for the nation's first high-level nuclear repository scheduled to open in 1998. Two other sites include Hanford, Wash., and Deaf Smith County, Texas.

"We want to be dead sure we have everything for the licensing process," West said.

DOE nuclear waste project manager Donald Vieth said meeting quality assurance standards may take scientists away from work they love to the drudgery of filling in details, but documents must be there for NRC licensing.

The nature of technical work and competence of people with the ability to document what's been done is crucial for nuclear scientists, Vieth said. "And for

(See RESEARCH, Page 2B)

-SEE OVER-

Research in Nevada halted for nuke site

(Continued from Page 1B)

the nuclear business, that is an arduous business."

DOE expects to conduct extensive studies at the three sites in Nevada, Texas and Washington this year. Studies could take more than 10 years before a site is chosen.

Writing and reviewing quality assurance takes about five months, Vieth said.

"We said stop paying attenion to science and pay more attention to the administration of the program," he said.

"Sometimes people get overenthusiastic about what they like to do and ignore things they need to do," he added.

What many scientists forget, Vieth noted, is that licensing of nuclear reactors or repositories is done before an administrative law board with the power to force proof of every detail.

"But those are the rules of the game," he said. "We want to make sure good science is not ignored because of poor documentation."

Apparently, the Nuclear Regulatory Commission ordered USGS to do quality assurance or it would take action, Joe Strollin of Nevada's Nuclear Waste Project office said.

Core samples removed from their holes without labels was a prime offender.

"We may have to go and upgrade data gathered five years ago, but it is nothing out of the ordinary," Vieth insisted.

NRC senior on-site licensing representative Paul Prestholt of Las Vegas said DOE had to lay "a very formal paper trail."

Since scientists may leave the agency, die or retire, DOE needs excruciatingly detailed documentation, Prestholt said.

"Our whole procedure is a very positive one," he said.

DOE's quality assurance work is being prepared for pre-licensing reviews, anticipating its extensive experiments at Yucca Mountain, due to begin in December, Prestholt said. "But we don't expect it," he added, noting DOE deadlines have slipped.

DOE has missed six deadlines in producing its environmental assessments. These reports are now due in mid-May.

"DOE is not going to put up with laxity," he said. "They'll put quality assurance in place."

LAS VEGAS SUN

Thursday

Home May 8, 1986

...da's Largest Morning Newspaper

Where I Stand

Editor's note: The meeting referred to in the following letter is of such importance to citizens of Southern Nevada that we are printing the message to alert SUN readers.

Dear Hank:

On May 15, Ben Rusche, director of the Office of Civilian Radioactive Waste Management, U.S. Dept. of Energy, will be in Las Vegas. He will be speaking at a meeting arranged by the Nevada Nuclear Projects Office, chaired by Grant Sawyer.

This meeting is extremely important. During the last year or so, Ben Rusche has been speaking to audiences across the country and he's been to Las Vegas once before. When Mr. Rusche came to Las Vegas last year, he spoke to the Nevada Legislature's Committee On High Level Radioactive Waste, chaired by Tom Hickey. I was at that meeting and I can tell you firsthand that he was warmly received. Each member of the committee welcomed Mr. Rusche individually and bent over backwards to not only make him feel like an honored guest, but some members of the committee even jumped in to protect Mr. Rusche from having to be faced with tough questions. We were all told that that was why he was here.

In the other states where Mr. Rusche has appeared to present and explain his office's plan for nuclear waste the story has been very different. In several of the states under consideration for a second repository site, the citizens were so outraged that their state and "nuclear waste" were even mentioned in the same sentence they refused to let the meetings take place. The meeting halls were overflowing with local residents who didn't trust the DOE, didn't want to listen to Ben Rusche, and didn't want to hear about nuclear waste storage. They just hollored and chanted "No" until the DOE and Mr. Rusche gave up and went home.

(See WHERE I STAND, Page 2A)

(Continued from Page 1A)

After a series of this sort of meetings the DOE announced that they had taken a new look at some of their numbers and it appeared that they overestimated the expected total amounts of high level waste. That revelation led to proposals by Eastern legislators and governors to change the plan and just go with one repository — here in the West.

I've attended almost every meeting in Las Vegas concerning nuclear waste. One of the unfortunate things that happens is that average Las Vegans either become intimidated or don't attend because they feel that they don't understand all the scientific data or can't deal on equal footing with DOE officials. Las Vegas business people are timid because they see this as a political issue. Well, those folks in Minnesota, Vermont, New Hampshire, etc., weren't conservative, liberal, Republican, or Democrat. They just didn't want a waste dump. As a matter of fact it is the ski industry in Colorado that has led the fight against Colorado being a corridor transportation state. And the arguments weren't scientific.

We don't have to be scientists either. When the DOE admits that selling this thing politically is tougher than passing the technical tests — that's not scientific. When they say, as Don Vieth did, that "You always jump all over us when we guess wrong, but no one pats us on the back when our predictions are right," that's not scientific. We're not talking about a horse race or roulette wheel. You don't establish averages concerning nuclear waste. One bad wrong guess can't be evened out by ANY number of right predictions when you're dealing with plutonium.

Don Vieth talks about the department being carefully operated under strict guidelines. Much later on we learn that guidelines are not enforceable. They are arbitrary parameters devised by the department itself and can be changed at any time. Definitions, too, can be rewritten — and they frequently are.

Recently high level radioactive waste was redefined. To qualify as high level, the substance must be retrievable — thus eliminating all the leaking barrels at Hanford, Wash. If we are to be hosts of a waste dump, this set of variables puts us on pretty shaky ground. There are many, many examples of illogical and erroneous information that the DOE either states or insinuates, and certainly not all is technical or scientific. Las Vegans must realize that they need to express their views just as the the non-scientific public in the East and Midwest does.

Those people in other places who are refusing to discuss nuclear waste are the same folks we try to attract as tourists. I doubt that they would be inclined to follow those nuclear waste trucks here when they plan a vacation.

In the play "Rosencrans & Guildenstern Are Dead," based upon Shakespeare's "Hamlet", Rosencrans and Guildenstern have spied upon Hamlet for Hamlet's stepfather, the king. Forces are set in motion that could have been called back, up to a point. But that time for repentance was passed. Eventually Hamlet, the king, the queen, and others are all dead. No one wanted or intended the result. In the final scene, Rosencrans and Guildenstern are in a boat heading across the North Sea and, they think, safety. (Actually, the letter of "safe conduct" that they carry directs that they be put to death.) The two are not particularly bad men, though not overly burdened with brains or moral sensitivity; their acts seem quite minor compared with the consequences that resulted from the events which they set in motion and did not recall in time. Rosencrans turns to Guildenstern and expresses what could be the epitaph for Nevada and, perhaps, for our country: or, alternatively, the rallying point for those who want a change of direction while that choice remains ours: "There must have been a time, somewhere near the beginning, when we could have said, 'No.'"

Please urge everyone to attend the May 15 meeting.

JUDY FREICHEL

Bryan praises states' vote rejecting radioactive dirt

Associated Press

CARSON CITY — Representatives of Nevada and three other Rocky Mountain Nuclear Waste Compact states voted Tuesday against a request by New Jersey to dump 7,200 tons of radioactive dirt at a dump near Beatty.

Gov. Richard Bryan said the unanimous action by representatives of Nevada, Colorado, Wyoming and New Mexico, at a meeting in Denver, provides more assurance that this state will be able to block the shipment of the contaminated dirt.

The compact's decision followed Energy Secretary John Herrington's agreement with Nevada's position that it does not have to accept the radium-contaminated earth.

Bryan said Herrington wrote New Jersey Sen. Bill Bradley last month and concurred with Nevada's position that an interstate compact passed earlier this year by Congress allows Nevada to refuse the shipment.

Bryan called Herrington's letter "good news for Southern Nevada."

Bryan claimed earlier this year that the new compact gave the state the option to refuse the dirt, but New Jersey has continued to press its suit before the U.S. Supreme Court.

The governor also said efforts by Union Pacific Railroad to get a permit from the state Public Service Commission to haul the dirt are a waste of time because Nevada will refuse the shipment.