

HIGH-LEVEL WASTE MANAGEMENT PROGRAM PLAN FY 1992 - 1996

FEBRUARY 20, 1991

ADD A PP UP FRONT
INDICATING ASSUMPTION OF MAINTAINING
INDEPENDENT RES PROGRAM. PLAN SHOWS HOW
THIS PROGRAM TIES INTO OR SUPPORTS EACH
PROGRAM ACTIVITIES A MAJOR

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HIGH-LEVEL WASTE MANAGEMENT PROGRAM PLAN

FY 1992-1996

I. Introduction/Purpose

The High-Level Waste Management (HLWM) Program Plan identifies and describes NRC's program activities conducted by the Office of Nuclear Material Safety and Safeguards (NMSS) and by the Office of Nuclear Regulatory Research (RES) during the five-year period, FY92-96, to prepare for licensing a deep geologic repository. This effort is supported by the Center for Nuclear Waste Regulatory Analyses (CNWRA), a Federally-Funded Research and Development Center established in FY88 to ensure long-term contractual support continuity and freedom from conflict of interest.

doesn't do this

The purpose of this plan is to clearly show the interrelationships of the various organizations and their respective roles in the overall HLWM Program to better prepare the NRC staff to develop the FY92-96 Five-Year Plan and budget estimate.

Revise purpose to say what really is in this plan - summary of NMSS + Res activities set into the framework of the 5 NMSS-FYP activities.

II. Goals/Assumptions

The HLWM Program goal, as expressed in the current NRC Five-Year Plan, is to: "Conduct a high-level waste repository regulatory program that provides DOE with necessary guidance; identifies and resolves major licensing issues, as early as possible; and enables the Commission to carry out its responsibilities contained in the NWSA, the NWPA, and any subsequent legislation."

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Key planning factors for NRC's program are the recommendations of the NRC HLW Strategic Planning Panel in April 1990 that NRC should "plan the development of guidance for a repository and associated research so that they are completed by 1998...", that "this guidance should be pursued independently of DOE's future schedule for a deep geological repository", and that "...rulemakings are generic and that other guidance is primarily generic and supplemented as necessary with site- or media-specific work."

NRC's HLWM Program activities can be categorized either as "proactive" or "reactive". Pre-licensing activities to develop guidance for DOE and the NRC staff's capability to review a license application are "proactive" and are ^{not dependent on} ~~largely independent of~~ DOE activities. "Reactive" activities, however, respond to or are directly linked to DOE actions, such as reviewing DOE document submittals and observing DOE Quality Assurance audits. NRC's

~~current regulatory strategy for the proactive part of the HLWM Program is~~ contained in SECY 90-207, dated June 1990, which describes the regulatory framework, strategies for identifying and reducing uncertainties, and schedules for potential rulemakings and guidance documents for reducing these uncertainties. Uncertainties are identified by the Systematic Regulatory Analysis (SRA) process (see below), pre-licensing reviews of DOE documents, preliminary Performance Assessments, NMSS and RES technical work, and staff consideration of actions or suggestions by DOE, State of Nevada, and others.

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This HLWM Program Plan is based on several underlying assumptions which will govern program activities during the five-year period. The following sections show the major planning assumptions for each category of activity, proactive and reactive.

A. General Assumptions

1. The DOE high-level waste program will proceed as specified in DOE's draft Project Decision Schedule (PDS), Revision 1, dated August 1990, as modified by the delay in obtaining access to the Yucca Mountain site to January 1992. A summary of DOE's major milestones in the draft PDS is ⁱⁿ ~~at~~ Table 1.
2. DOE will issue a Mission Plan Amendment in early FY92 which will formally advise Congress of program adjustments and include a mission implementation plan.

B. Proactive Assumptions Related to Proactive Work

- late*
1. The NRC must develop the regulatory framework and guidance necessary to resolve licensing issues by FY98, including the appropriate reduction of regulatory, institutional, and technical uncertainties. Issues most important to DOE site characterization and to NRC meeting the mandated three-year licensing review should be given the highest scheduling priority.

TABLE 1

CURRENT DOE PROGRAM SCHEDULE*

<u>DATE</u>	<u>EVENT</u>
December 1991	Obtain necessary permits for surface-based testing
January 1992	Begin new surface-based testing
October 1992	Obtain necessary permits for exploratory shaft construction
November 1992	Begin exploratory shaft construction
July 1993	Begin MRS Title II design
June 1994	Issue MRS Draft EIS
July 1995	Submit MRS License Application to NRC
September 1995	Begin repository in-situ testing
June 1996	Begin License Application design
October 1999	Issue repository draft EIS
April 2001	DOE issues Site Recommendation Report to the President
May 2001	President makes recommendation to Congress
July 2001	Site designation effective unless State submits notice of disapproval
October 2001	DOE submits License Application to NRC
October 2004	If License Application approved, NRC issues construction authorization

*Based on DOE's draft Project Decision Schedule, Revision 1, dated August 1990.

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2. Rulemakings and other guidance will be primarily generic and supplemented by media or site-specific guidance, as necessary.
3. Several rulemakings and Staff Technical Positions will be initiated prior to FY96 based on the results of Systematic Regulatory Analysis (SRA) and other technical reviews.
4. The Environmental Protection Agency (EPA) will continue to develop a generally applicable environmental standard for high-level waste disposal and will promulgate the standard in late FY91. This revised standard is not expected to have a significant impact on NRC's HLWM Program.
5. Materials that are high-level waste for licensing purposes under the Energy Reorganization Act of 1974 will also be regarded as high-level waste under the Nuclear Waste Policy Act of 1982 (NWPAA), as amended. This includes primary reprocessing waste streams at DOE facilities.
6. The NRC will develop a performance assessment methodology and supporting analytical capability by FY98 ^{to support technical reviews of} ~~for evaluating~~ ^{DOE's} ~~compliance with the~~ ^{overall system} (EPA high-level waste disposal standard) and ^{subsystem performance objectives.}

7. The NRC will assign high-level waste research projects to the CNWRA and other critical contractors using the approach described in SECY 89-225 for making such determinations.
8. The NRC staff will be required to interact with the Office of the Nuclear Waste Negotiator and the Nuclear Waste Technical Review Board.
9. The Center for Nuclear Waste Regulatory Analyses (CNWRA) will continue to support the NRC HLWM Program during the planning period.

C. Reactive Assumptions Related to Reactive Work

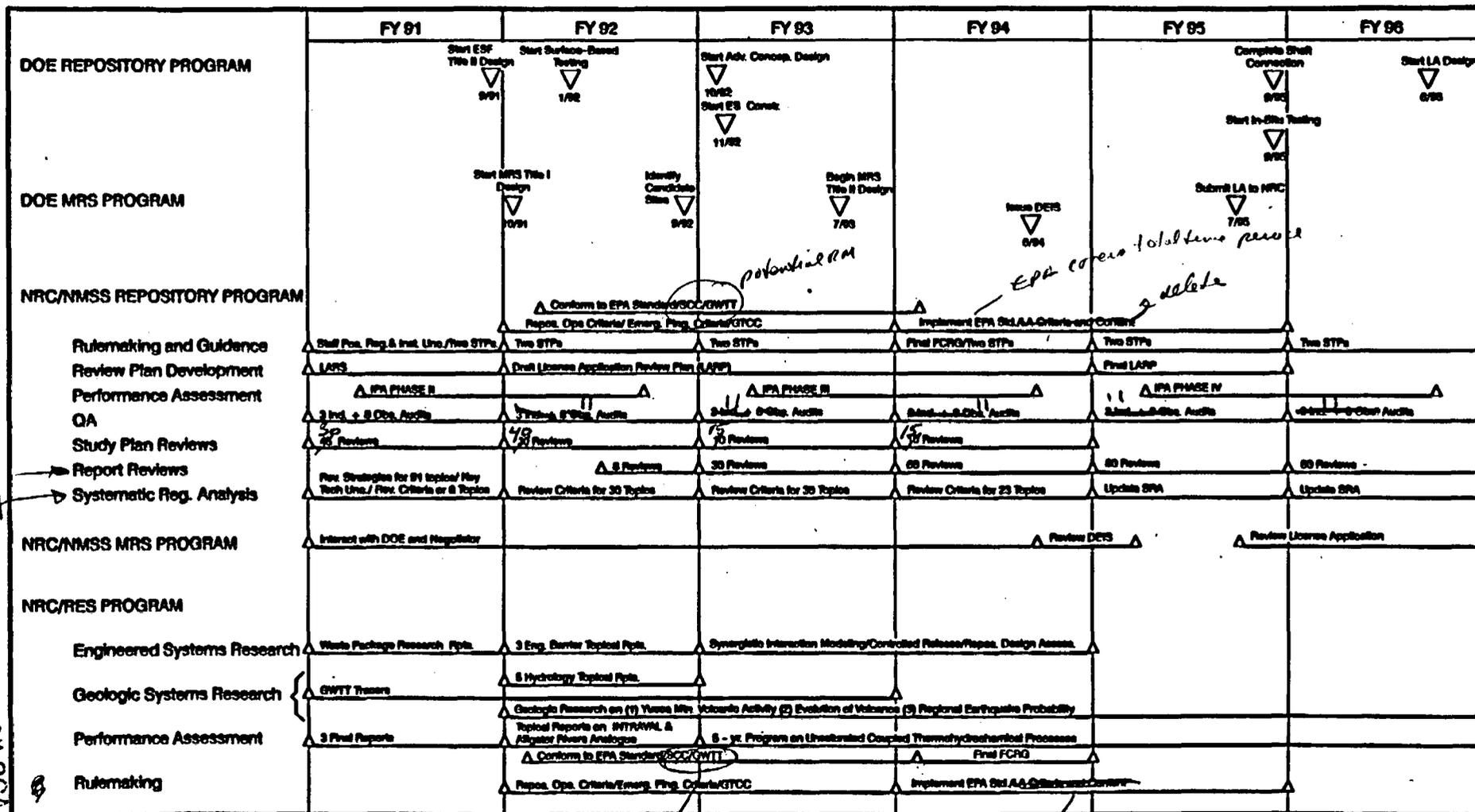
1. The high-level waste repository program will proceed according to the basic process established by the Nuclear Waste Policy Act of 1982 (NWSA) as amended, under which DOE issues periodic Site Characterization Plan (SCP) progress reports, study plans, and other reports for NRC and State review in an iterative process leading to a decision on whether to proceed with the Yucca Mountain repository development.

2. The NRC will continue to conduct preapplication reviews of the DOE high-level waste program based on DOE's schedule to ensure that it provides timely regulatory guidance on technical issues and timely identification and resolution of issues.
3. DOE's early evaluations at the Yucca Mountain site will concentrate on site suitability.
4. The Monitored Retrievable Storage (MRS) facility will be sited through the efforts of the Nuclear Waste Negotiator, and Congress will modify the Nuclear Waste Policy Amendments Act linkages between the MRS facility and the repository.
5. DOE will submit an MRS facility Draft Environmental Impact Statement (DEIS) to the NRC in FY94 and a license application in FY95.

III. Planned Activities

NRC's activities during FY92-96 are based on DOE's schedules for developing the geologic repository and the MRS. Figure 1 shows the current DOE major milestones for the repository and MRS programs, along with the planned NRC activities during the same time period.

HIGH-LEVEL WASTE MANAGEMENT PROGRAM SCHEDULE



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will need to revise after C-3 is final

Figure 1
 potential RAM
 Check completeness of RES timelines. Human intervention reports in 93-95 are not included
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NRC's activities planned for FY92-96 are grouped below in categories which are logical sets of tasks and also relate to the NRC Five-Year Plan (FYP) structure for ease in conversion for the next FYP update. There are five repository activity categories, three proactive and two reactive. With the proactive activities listed first, they are: (1) Systematic Regulatory Analysis of 10 CFR 60; (2) Development of Regulatory Requirements and Technical Guidance; (3) Development of a Technical Assessment Capability for Conducting Repository Licensing Reviews; (4) Quality Assurance; and (5) Pre-Licensing Reviews of DOE's Program. NRC's MRS program activities are included in one separate category entitled Monitored Retrievable Storage Licensing.

A. Systematic Regulatory Analysis of 10 CFR 60

Systematic Regulatory Analysis (SRA) ^{Part} is the process by which the regulatory requirements of 10 CFR-60 are analyzed in a comprehensive, systematic, structured manner that is controlled by Technical Operating Procedures. In general, SRA ^{is the framework for regulatory analysis that} identifies regulatory, institutional, and technical uncertainties; prepares the technical bases to support the reduction of uncertainties; and develops the review criteria and methods for reviewing DOE's site characterization program and License Application.

The SRA process has grouped the 10 CFR ^{part} 60 regulatory requirements into ~~the~~ ^{logical} topics of similar subject matter and has analyzed these topics to identify regulatory and institutional uncertainties. In FY92, SRA will be primarily concerned with identifying, for each topic, key technical uncertainties ^(i.e., those most significant to repository performance), methods of uncertainty reduction, and ~~a strategy for conducting both pre-licensing and License Application reviews~~ ^{strategy} ~~(Compliance Determination Strategies)~~ ^{for each topic}. These review strategies will then guide the development of review criteria, review methods ^{including analytical methods} (Compliance Determination Methods), review information needs, and the necessary supporting technical bases for each topic. The SRA data base will be updated based on new information from DOE's site characterization activities and staff activities such as performance assessments and research.

delete - to detailed - see above simple definition

*A technical uncertainty is a lack of certitude as to: (1) how to demonstrate or determine compliance (high-order), (2) how to obtain the requisite information for either purpose (high-order), or (3) technical adequacy or completeness of required information (low-order). "Key" technical uncertainties are primarily a subset of the high-order uncertainties which, if not reduced, could result in non-compliance or inability to demonstrate/determine compliance with a performance objective.

The results of SRA will: (1) form the basis for developing the rule-
makings and staff ^{technical} positions needed to reduce regulatory and technical
uncertainties; (2) provide the review strategies, criteria, and methods,
that will comprise the technical substance of the License Application
Review Plan (LARP), which will be the primary document used by the
NRC staff for reviewing DOE's License Application and site characteriz-
ation reports (e.g., ~~study plans~~, repository and waste package
designs, technical reports, topical reports, and issue resolution
reports); and (3) ^{will contribute to reviewing} develop ~~technical review components~~ and review and
information needs, which will be incorporated into the License
Application Format and Content Regulatory Guide (FCRG) and the LARP.

A key feature of the SRA is that it is supported by a computer-based
system and data base, and that SRA activities are computer-assisted.
The principal ^{capabilities of the} ~~factors that necessitate a~~ computer-based system are:
(1) ~~the complexity of the repository program;~~ (2) ^{storage of large} ~~the volume of~~
technical and regulatory information that must be evaluated; (3) ~~the~~
~~need to develop and display~~ ^{the} logical interrelationships among the
technical data and regulatory information; (4) ^{for the various repository systems; and} ~~the need to technically~~
~~integrate the guidance and the staff review capability;~~ (5) ~~the need~~
~~to frequently and efficiently update~~ information to reflect a rapidly
changing program; and (6) ~~the need to rapidly and accurately~~ access ^{to}
information to support planning, coordination, and conducting ^{all of} the
staff's work and decision-making.

(7)

In addition to its SRA role, the

in particular the technical and legal
work during licensing.

and to provide computer based technical exchange
between the NRC and CNWRA staff. ^{of technical} information

computer-based system is used by the CNWRA to integrate its project management and office automation functions with the activities of the technical staff. The computer assistance feature also allows direct development of the data base as well as archival storage and retrieval functions.

SRA activities involve NMSS, CNWRA, and RES with CNWRA playing a large role, slightly more than twice the NMSS staffing effort.

1. NMSS Activities

a. In FY92, SRA will complete the development of review strategies

(Compliance determination) strategies

for all ~~the~~ regulatory topics, and the identification of key and other high-order technical uncertainties. ^{Also in FY92 an initial identification of} During FY92-94, ^{will be completed.}

~~Review strategies~~
~~Compliance determination~~
~~of the~~
~~uncertainties~~

^{review} compliance determination methods, review criteria and their supporting bases will be developed ^{following the staff's prioritization} to reduce technical

* will revise after C.

~~uncertainties for the remaining approximately 50 regulatory~~

~~topics, with the focus being on high-order uncertainties in~~

~~FY92. Most low-order technical uncertainties will be~~

~~identified during the development of specific compliance~~

~~determination methods and reduced during the data develop-~~

~~ment and review process. During FY92-96, SRA will be~~

~~updated to incorporate new information from DOE's site~~

~~characterization activities and NRC's performance~~

~~assessment and research results.~~ ^{reflect revisions to} review strategies, methods, criteria and key technical uncertainties.

b. During FY92-96, SRA system development, and data base operation and maintenance will continue at the CNWRA at approximately the same level each year. This includes data quality control and data entry. This effort is almost entirely CNWRA with some NMSS staff input.

c. The NRC will continue to sponsor the CNWRA as a Federally-Funded Research and Development Center (FFRDC) during FY92-96, which includes providing for the administrative, management, and quality assurance procedures and practices, necessary to operate an FFRDC.

2. RES Activities

in support of FSRD

(2) assure sufficient independent understanding of the basic physical processes, etc.

~~HLWM confirmatory and exploratory research will be essential components of NRC's reviews to determine compliance with some regulatory requirements.~~ ^{an} ~~Exploratory research may be needed to develop or define a review method that is necessary to~~

the licensing task and technical basis

NRC the staff would use to

~~demonstrate or determine compliance.~~ ~~Confirmatory research will be used to verify the method DOE proposes or uses to demonstrate compliance, or to confirm certain data or performance parameters.~~ ^{determination} ~~Specific compliance demonstration~~

~~methods defining how to review a regulatory requirement will be the primary means to identify research requirements for the HLWM Program.~~ ^{the staff will} ^{where} ^{support is needed} ^{and} ^{include} ~~These requirements will be documented at least annually in a "User Needs Letter" from NMSS to RES.~~

identified using the SRA where appropriate

- b. Other rulemakings will be initiated to reduce uncertainties as the need is identified through the SRA process during FY92-96. Potential near-term rulemaking candidates are:
(1) Substantially Complete Containment and (2) Groundwater Travel Time.

2. Guidance Documents

- a. During FY92-96, NRC will prepare two guidance documents, primarily staff technical positions (STPs), each year based on the need identified through the SRA process. STPs are used to address some key technical uncertainties, ~~to provide needed clarification to DOE. The contents of these guidance documents will be incorporated into the~~

~~LARP.~~ *and give guidance to DOE on acceptable standards for demonstrating compliance.*

- b. In FY94, ~~after a joint NMSS/RES development effort,~~ *using information from the SRA* NRC will issue a final standard format and content regulatory guide (FCRG) for DOE's use in preparation of a license application for the HLW repository. *and interactions with DOE and other parties*

Mission Plan and PDS Revisions

- 3. During FY92-96, NRC will continue to review and comment on DOE's amendments to the Mission Plan, Project Decision Schedule (PDS) revisions, and other programmatic documents, as required. DOE issues revised program documentation when-

ever significant program changes occur. A Mission Plan Amendment is expected to be issued in early FY92, ~~to reflect changes outlined in DOE's November 1989 Report to Congress,~~ and another revised PDS will likely be issued in late FY92.

what is the source of the date

Since

- 4. NRC will continue to submit Quarterly Progress Reports to the Commission that summarize progress on key program actions, and *update the regulatory strategy as needed. Not well done* will support the Nuclear Waste Technical Review Board and the Nuclear Waste Negotiator, as required.



C. Development of a Technical Assessment Capability for Conducting Repository Licensing Reviews

These activities include the development of: (1) review plans to ensure compliance with NRC regulations and for NRC staff use in reviewing DOE repository-related documents; (2) methodologies, models, and codes for *subsystem performance objectives and* specific topics identified by SRA; and (3) an overall HLW repository system performance assessment capability.

Performance assessment development is a joint NMSS/RES effort, ~~and with CNWRA staff participation, is approximately half the NMSS staff~~

~~effort.~~ *Research primarily supports development of technical assessment capability by developing independent methodologies, such as models or by collecting data to develop an independent understanding of important phenomena or testing methods.*

1. NMSS Activities

and ESF Review Plan

- a. In FY92, the Waste Acceptance Process Review Plan will be completed.

Individual compliance strategies developed by SRA each of the regulatory requirement topics.

b. A ~~License Application Review Strategy (LARS)~~ will be completed in ~~1991~~ ² ~~FY92~~, ~~and~~ ^{the} ~~Development of License Application Review Plan (LARP)~~ will continue until it is completed in FY9⁵~~4~~. It will be updated, as necessary, each year thereafter.

Staff technical positions, compliance determination methods, and review criteria developed through SRA will be incorporated into the LARP and its revisions. The LARP will be the primary document used by the NRC staff for reviewing not only DOE's License Application but also ^{will contribute to} ~~also~~

site characterization ^{reviews}

~~license documents such as Site Characterization Plan (SCP), semiannual progress reports, study plans, design reports, technical reports, topical reports, and issue resolution reports.~~

c. NMSS and RES ^{jointly} ~~jointly~~ will continue development of an independent modeling capability for evaluating engineered barrier system (EBS) regulatory requirements during FY92-94. Also, in FY92 development will begin of ~~the~~ analysis methods and models for groundwater travel time/disturbed zone and the specific waste form part of the EBS. ^{Analysis methods will also be developed for} ~~Other topics identified by SRA will be modeled~~ during FY92-96 and incorporated into the repository performance assessment model.

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with CNWRA support

d. NMSS and RES [^] jointly will continue to develop NRC's performance assessment* capability during FY92-96. The first phase of this work, which was completed in FY90, demonstrated the staff's ability to conduct a rudimentary performance assessment of the total repository system. Phase II ~~will~~ ^{will} begin in FY91 and ^{will} continue, for approximately 18 months *into FY92.* It will expand on the Phase I work with active participation from all technical disciplines, including CNWRA staff, to establish a multidisciplinary understanding of both total system and subsystem performance assessments. Each subsequent phase is expected to take approximately 18 months, ~~and there will be an approximate six-month planning period between phases.~~ This performance assessment capability will be used to identify repository conditions that have a high degree of technical uncertainty ^(i.e., technical uncertainties) in relation to performance, as well as to determine compliance with performance objectives. As performance assessment models become more fully developed, they will be used to further evaluate and refine compliance determination strategies and methods. ~~Flow, geochemical transport, geologic stability, and human intrusion, disruptive events, and scenarios will be identified and significant factors evaluated.~~

*"Performance assessment" in this plan means quantitative post-closure estimates of the repository's isolation capability called for in relevant regulations, primarily 10 CFR 60 and 40 CFR 191.

2. RES Activities

Suggest Research add reference to NMS research needs statement.

a. In FY92, RES will:

- (1) Issue a topical report assessing the effects of long-term exposure ^{of} DOE candidate container materials to a simulated repository environment;
- (2) Issue a final report on waste-package-scale unsaturated-zone experiments on the effects of heat on fluid flow and contaminant transport;
- (3) Issue a topical report assessing the capabilities of DOE geochemical models to predict the changes in time of fluid (water and vapor) chemistry, tuff mineralogy, and engineered component stability;
- (4) Issue a topical report on climate change which will be used: (a) to evaluate the conservatism of DOE groundwater recharge parameters, and (b) to establish input ranges for NRC performance assessments;
- (5) Issue a topical report on hydrologic field testing in unsaturated, fractured tuff similar to Yucca Mountain, and of infiltration and percolation parameter measurement methods;

- (6) Issue a final report on laboratory studies of a large block of fractured tuff that was used to test models of unsaturated flow and transport;
- (7) Issue a topical report on a laboratory study confirming thermodynamic data for two Yucca Mountain zeolite minerals, which are key data in determining rock stability and the mobility of radionuclides at Yucca Mountain;
- (8) Develop a geologic research capability with the CNWRA, and begin a five-year research program on the following three geologic issues, which are perceived by the State of Nevada and others to be potentially fatal flaws of the Yucca Mountain site: (a) the probability nature of volcanism, and the associations with tectonic features such as faults in the region around Yucca Mountain; (b) the evolution of individual volcanoes in the Yucca Mountain region -- their multiple episodes of eruption and interpretation of ages of events; and (c) the probability and possible magnitudes of earthquakes in the region;

reword -
Sounds like DOE work

(d) uncertainty in fault hazard analysis and assessment of future behavior of faults
(e) uncertainty in radiometric & isotopic age determination methodologies of rocks at ~~Yucca Mountain~~

(9) Issue topical reports on two international studies to test and confirm radionuclide transport models for HLW performance assessment: (a) the INTRAVAL project which compares the results of performance assessment models and methods applied to natural analog and other test cases, and (b) the Alligator Rivers Analogue project (an INTRAVAL test case) which is an international effort on model testing and confirmation that compares a number of process models that are used in performance assessment with uranium ore body field data on radionuclide transport; and

(10) Issue topical reports needed for evaluation of Yucca Mountain whole system performance on performance assessment methods for assessing coupled processes, and unsaturated flow and transport.

b. During FY92-93, RES will continue a research program on the effectiveness of natural hydrogeochemical tracers to assist in determining groundwater travel times and in understanding flow in unsaturated, fractured rock.

c. During FY92-95, RES will:

- (1) Continue a large-scale heater field test to assess the effects of heating on flow and transport in unsaturated, fractured welded tuff similar to Yucca Mountain;
- (2) Conduct research on the chemical behavior of geologic systems that are similar to Yucca Mountain with respect to geochemical processes to test DOE models of radionuclide transport and chemical interactions; and
- (3) Assess DOE and alternative literature-based approaches to modeling ion exchange and absorption reactions, which could perform as the dominant barrier to the transport of actinide and transuranic elements in actual site performance and in long-term performance assessment calculations.

d. In FY93, RES will:

- (1) Initiate modeling of the effects on system performance of synergistic interaction between waste forms, packages, engineered components, and the repository environment;

- (2) Begin to assess DOE models of the thermodynamics of the controlled release of uranium and transuranic (TRU) elements from the engineered barrier system, and will obtain preliminary results from a review of DOE data base adequacy in FY94;
- (3) Issue a topical report on the capabilities of computer codes to represent the fundamental dynamics of jointed (fractured) rock to establish which codes can predict jointed rock behavior to an acceptable engineering tolerance;
- (4) When DOE releases its advanced conceptual design, begin long-term experiments and modeling of long-term degradation mechanisms on DOE-selected materials and designs;
- (5) Begin a five-year program to evaluate: (a) DOE conceptual designs of the engineered facility with respect to three-dimensional structural performance, and (b) the long-term geochemical stability of DOE proposed sealing materials in welded and non-welded tuff;

- (6) Issue a topical report which will evaluate and confirm: (a) the applicability of natural hydrochemical tracers to groundwater travel time determinations, and (b) the calibration of hydrologic parameters to long periods of time; and
- (7) Initiate a five-year research program on unsaturated coupled thermohydrochemical processes and performance confirmation.

e. During FY93-95, RES will conduct research on the likelihood of human intrusion resulting from prospecting or mining for gold at Yucca Mountain.

mineral, water, hydrocarbon and geothermal resources

f. In FY94, RES will:

- (1) Issue a final report on confirmation and validation of the fully qualified codes, based upon comparison of calculated response of excavations and groundwater in jointed rock, with physical model studies and field performance of dynamically loaded excavations;
- (2) Issue results of research assessing the effects of seismicity on underground openings and repository safety;

*reword - sounds like
DOE work, NRC
ROLE WOULD BE TO
DEVELOP A METHOD FOR
EVALUATING WHAT DOE HAS
DONE OR DEVELOP
CRITERIA FOR AN
"ACCEPTABLE" METHODOLOGY*

- (3) Publish a final report on core heater tests on samples of unsaturated, fractured tuff which will confirm or invalidate DOE models of the coupled flow of water and water vapor in unsaturated, fractured media;
- (4) Issue topical reports on: (1) modeling the reactions in the thermally affected part of the repository for containment and radionuclide release rate assessments, and (b) modeling the geochemical interactions that act as a primary barrier to radionuclide migrations, for whole system performance assessments; and
- (5) Issue topical reports on the results of large-scale field tests in fractured tuff similar to Yucca Mountain tuff which will help to define the uncertainties in DOE field characterization methods. These reports will determine dispersion and hydrologic parameters and will calculate groundwater travel times.

g. In FY95, RES will:

- (1) Begin a three-year program to assess the release of C-14 and other radionuclides in the vapor phase; and

IF THIS WORK
START IN '85
RESULTS WILL
BE AVAILABLE
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EVAL SITE
CHARACT

(2) Begin assessing DOE plans for in-situ experiments.

D. Quality Assurance

This activity consists of NRC's evaluation and oversight of DOE's quality assurance (QA) programs for site characterization activities, including conducting audits of DOE and DOE contractor QA programs. The objective of the audits is to identify and resolve concerns with DOE's repository QA program ~~before significant data collection activities begin during site characterization.~~ This activity is performed jointly by NMSS and CNWRA staff, ~~with the ratio being approximately 4:1 NMSS staff.~~

implementation and auditing

1. During FY92-96, NMSS will update the Quality Assurance Review Plan, ~~and~~ technical positions, ^{and audit/surveillance positions} as needed, to incorporate experience gained through reviews of DOE's program.
2. NMSS will also review DOE's ^{and a sample of DOE's} management control documents. QA plan revisions
3. The oversight of the DOE's HLN program and the audit of DOE and DOE contractor QA programs for site characterization will continue each year to evaluate the implementation of DOE's QA program.

~~During FY92-96, NMSS will observe, eight DOE QA audits of its HLW repository program each year, and also will conduct three independent audits each year. NMSS also will conduct on-site QA visits and surveillances each year to evaluate in detail the implementation of DOE's program in specific technical areas and to better choose the topics for NRC audits.~~

conduct up to 11
(either observation audit or independent audit.)

E. Pre-Licensing Reviews of DOE's Program

~~This activity includes the review of updates to DOE's Characterization Plan (SCP) for the Yucca Mountain site and associated study plans, and the review of technical data collected during investigations of the Yucca Mountain site, and reviews of DOE actions that resolve SCA concerns. An important aspect of these pre-licensing reviews is to help identify any site characterization activities that would inadvertently result in disqualifying the site from a licensing perspective. This activity is performed jointly by NMSS and CNWRA staff, with the ratio being approximately 3:1 NMSS staff,~~

pre-licensing reports for the Yucca Mountain site such as
Semi-Annual Progress Reports

major design reports, technical reports as well as on-site reviews of

collected for

is needed for DOE to prepare a complete and acceptable License Application.

1. During FY92-96, NMSS will review DOE's Site Characterization Plan (SCP) semiannual progress reports twice each year.

These reviews will focus on: (1) new information about the site, designs, and performance estimates; (2) new issues and plans to resolve them; (3) changes to the original plans and schedules; and (4) DOE's progress toward resolving potential licensing issues.

2. DOE is expected to issue approximately ⁴⁰~~30~~ study plans in FY92, ¹⁵~~10~~ in FY93, and ¹⁵~~10~~ in FY94. These study plans are the detailed plans and procedures that implement the SCP. NMSS will conduct a screening review of all study plans issued by DOE and will conduct detailed technical reviews of approximately 20 percent of the plans. CNWRA staff will participate only in the detailed technical reviews, *and in these only in selected areas.*
3. During FY92-96, NMSS will review major ~~repository design~~ ^(repository, waste package, and exploratory shaft facilities) reports, and DOE ~~site/repository~~ technical reports which document the detailed results of DOE's site characterization work. Reviews of DOE topical reports, position papers, and issue resolution reports, which integrate technical information into topics or issues important to licensing, will begin in FY9²~~3~~ and continue through FY96.
4. During FY93-96, NMSS will conduct a limited number of on-site reviews of selected DOE testing and exploratory shaft facility construction activities and data collected by DOE. [^]
(which includes drill core and geologic maps)

5. During FY92-96, NMSS will continue the site liaison at the Yucca Mountain site in Nevada to facilitate direct exchange of information with DOE and the State of Nevada and to provide QA and technical oversight of data, documents, and activities related to site characterization.

F. Monitored Retrievable Storage Licensing

The Monitored Retrievable Storage (MRS) facility involves the receipt, handling, packaging, and storage of spent fuel and HLW in a facility that permits continuous monitoring and ready retrieval for subsequent shipment to a permanent repository. Under the NWPA, the NRC is responsible for licensing an MRS facility developed by DOE. This activity is performed by NMSS staff only with no CNWRA or RES support.

1. In FY92, DOE plans to complete the MRS Title I design, identify candidate sites, plan for the development of Topical Reports, and begin preparation of a License Application. NRC interactions with DOE are expected to increase each year during FY92-94 as DOE continues preparation of the MRS facility License Application.

2. NRC interaction with the Nuclear Waste Negotiator is expected to increase during FY92 as he intensifies his efforts to identify volunteer sites for an MRS facility.

3. DOE will submit a Draft Environmental Impact Statement (DEIS) for NRC's review in FY94 and will submit an MRS facility License Application in FY95.