



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

September 10, 1997

Dr. B. John Garrick, Chairman
Advisory Committee on Nuclear Waste
U.S. Nuclear Regulatory Commission
Washington, DC 20555

SUBJECT: COMMENTS ON THE U.S. NUCLEAR REGULATORY COMMISSION PROGRAM
TO PREDICT RISK FROM IGNEOUS ACTIVITY AT THE PROPOSED HIGH-
LEVEL WASTE REPOSITORY AT YUCCA MOUNTAIN, NEVADA

Dear Chairman Garrick:

We wish to thank the Advisory Committee on Nuclear Waste (ACNW) for its review of the U.S. Nuclear Regulatory Commission program on igneous activity at the proposed high-level waste (HLW) repository at Yucca Mountain. The continued support of ACNW in this subject area over the years has been extremely beneficial. In particular, we believe that the working group meeting of April 22, 1997, helped to focus attention on outstanding concerns.

The ACNW comments discuss the need to: (1) develop criteria to close the issue regarding the effects of igneous activity on a repository at Yucca Mountain; (2) provide the necessary documentation; and (3) communicate these results to the U.S. Department of Energy (DOE). As was noted in your letter and discussed at the working group meeting, the staff plans on using the Issue Resolution Status Report (IRSR) as the main vehicle to accomplish these goals. One section of this report will specifically list and discuss the criteria by which the staff will determine the applicability and defensibility of the resultant probability values used in performance assessment, and a separate section will contain the technical bases for the criteria. Although the technical basis section will focus on documentation of the technical rationale, this section will also discuss and evaluate, as applicable, the various estimates provided by such groups as DOE, the State of Nevada, the Electric Power Research Institute, and the results presented in the DOE-sponsored "Probabilistic Volcanic Hazard Assessment." The staff is presently finalizing the first version of this document, which will be focusing on the probability of igneous activity. This version of the IRSR is scheduled to be completed in the Fall of 1997 and will be transmitted to DOE upon completion. During fiscal year (FY) 1998, the staff will be updating the IRSR, to include a similar listing of criteria with documentation pertaining to the consequences of igneous activity. The updated version of the IRSR is planned to be completed by the Fall of 1998. Completion of this second version of the IRSR will effectively mark the conclusion of major NRC activities in the area of igneous activity.

9709240095 970910
PDR WASTE
WM-11

PDR

IRC FILE CENTER COPY

REC'D WASTE DTD 9709240108 970910



WM-11
102

97192

1/1 WM16

In addition, the Center for Nuclear Waste Regulatory Analyses (CNWRA) is documenting the scientific results of the ongoing investigations in peer-reviewed journals. This has resulted in numerous publications in such places as the *Journal of Geophysical Research*, the *Geologic Society of America Bulletin*, *EOS*, and *Geology*. In addition, the results of CNWRA activity have been presented during international volcanological meetings, and Dr. Brittain Hill, of the CNWRA staff, has been invited to speak at the Colima Conference, to discuss the work that CNWRA performed at Cerro Negro. As ACNW is aware, this analog work has provided the calibration necessary for the ash dispersion model, "Ashplume," which has been incorporated into the NRC Total System Performance Assessment (TSPA) code. Therefore, not only is the technical basis of the work being documented, but it is also undergoing the scrutiny and acceptance of the international community. It is worth noting that DOE has requested, and has been supplied with, a copy of the code. DOE has indicated that it intends to incorporate this code into its TSPA of Yucca Mountain.

ACNW noted the ground magnetic work that the CNWRA has performed. The results of this work, in addition to providing volcanological information, have provided significant information concerning the tectonic and structural development of the Yucca Mountain area. Staff considers that the insights gained from these activities have been significant. The results of these surveys will be documented in a deliverable product planned for early FY1998, which will include a CD ROM disk containing ARC/INFO coverages of the geophysical data collected at all survey sites, maps, and an explanation of the data processing. This information will be forwarded to DOE for consideration in its work related to igneous activity and structural geology/tectonics.

ACNW repeatedly emphasizes the need for maintaining staff expertise in igneous activity throughout the HLW licensing process, after "closure" of the program in late 1998. Staff agrees that numerous programmatic developments indicate the need for precicensing and licensing support in this area. Igneous activity has been a high-profile issue for all stakeholders in the HLW program. The upcoming resolution of key issues with DOE will lessen disagreement in many previously contentious areas. Staff expertise, however, will be continuously needed to critically assess DOE precicensing and licensing documents, evaluate performance assessments, examine new data and emerging scientific concepts regarding igneous activity, and review input from other stakeholders in the HLW program that may not regard this issue as closed. This can only be achieved by staff maintaining an appropriate level of recognized professional activity, which includes independent technical investigation and presentations to the scientific community. Staff is keenly aware of the programmatic and fiscal conditions governing the NRC HLW program. Programmatically relevant and fiscally conservative investigations, such as those outlined in the ACNW letter, can be realistically implemented after planned closure of the issue, in late 1998.


In summary, staff agrees with the recommendations contained within the ACNW letter and is actively pursuing a program of developing criteria to close issues and to document the technical bases for these decisions. Staff agrees that communications with DOE have needed improvement. With the planned IRSR, the peer-reviewed journals, and other forms

B. Garrick

3

of documentation and communication listed above, there has been significant improvement. Again, we thank ACNW for its comments and insight into the igneous activity area, and we believe that the program is progressing in the direction suggested.

Sincerely,


L. Joseph Callan
Executive Director
for Operations

cc: Chairman Jackson
Commissioner Dicus
Commissioner Diaz
Commissioner McGaffigan
SECY
CFO
CIO

of documentation and communication listed above, there has been significant improvement. Again, we thank ACNW for its comments and insight into the igneous activity area, and we believe that the program is progressing in the direction suggested.

Sincerely,

Original Signed by

L. J. Callan

L. Joseph Callan
Executive Director
for Operations

cc: Chairman Jackson
Commissioner Dicus
Commissioner Diaz
Commissioner McGaffigan
SECY CFO CIO

DISTRIBUTION: G970590
SECY-CRC-97-0820

Central File	PNorry	JBlaha	AThadani	SBurns
ACNW r/f	DRoss/AEOD	JMitchell/OEDO	EMerschoff/RIV	PUBLIC
CPoland	PTressler	EDO r/f	JHolonich	MBell
JHickey	ENGB r/f	DWM r/f	NMSS Dir Off r/f	DWM t/f

CP/PROOFED/SEPTEMBER 3, 1997

DOCUMENT NAME: S:\DWM\ENGB\JST\G970590 (*See previous concurrence)

OFC	ENGB*		ENGB*		ENGB*		TECHED*	
NAME	JTrapp/eb ^{prt rd}		DBrooks		NKStablein		EKraus	
DATE	8/26/97		8/26/97		8/26/97		8/26/97	

OFC	DWM*		NMSS		DEDR		EDD	
NAME	MVFederline		CRaperiello		HTompson		LJCallan	
DATE	9/3/97		9/4/97		9/10/97		9/10/97	

ACNW: YES ☒ NO ☐
IG : YES ☐ NO ☒
LSS : YES ☒ NO ☐

Delete file after distribution: Yes ☐ No ☐

B. Garrick

3

of documentation and communication listed above, there has been significant improvement. Again, we thank ACNW for its comments and insight into the igneous activity area, and we believe that the program is progressing in the direction suggested.

Sincerely,

L. Joseph Callan
Executive Director
for Operations

cc: Chairman Jackson
Commissioner Dicus
Commissioner Diaz
Commissioner McGaffigan
SECY
CFO
CIO

DISTRIBUTION: G970590
SECY-CRC-97-0820

Central File	PNorry	JBlaha	AThadani	SBurns
ACNW r/f	DRoss/AEOD	JMitchell/OEDO	EMerschhoff/RIV	PUBLIC
CPoland	PTressler	EDO r/f	JHolonich	MBell
JHickey	ENGB r/f	DWM r/f	NMSS Dir Off r/f	DWM t/f

CP/PROOFED/SEPTEMBER 3, 1997

DOCUMENT NAME: S:\DWM\ENGB\JST\G970590 (*See previous concurrence)

OFC	ENGB*		ENGB*		ENGB*		TECHED*	
NAME	JTrapp/eb ^{prt rd}		DBrooks		NKStablein		EKraus	
DATE	8/26/97		8/26/97		8/26/97		8/26/97	

OFC	DWM*		NMSS		DEDR		EDO	
NAME	MVFederline		CPaperiello		HThompson		LJCallan	
DATE	9/3/97		/ /97		/ /97		/ /97	

ACNW: YES ☒ NO ☐
IG : YES ☐ NO ☒
LSS: YES ☒ NO ☐

Delete file after distribution: Yes ☐ No ☐

B. Garrick

3

of documentation and communication listed above, there has been significant improvement. Again, we thank ACNW for its comments and insight into the igneous activity area, and we believe that the program is progressing in the direction suggested.

Sincerely,

L. Joseph Callan
Executive Director
for Operations

cc: Chairman Jackson
Commissioner Dicus
Commissioner Diaz
Commissioner McGaffigan
SECY
CFO
CIO

TICKET #G970590

CRG #: 97-0820

DISTRIBUTION:

Central File	PNorry	Blaha	AThadani	SBurns
ACNW r/f	DRoss/AEOD	JMitchell/OEDO	EMerschoff/RIV	PUBLIC
CJPoland	PTressler	EDO r/f	JHolonich	MBell
JHickey	ENGB r/f	DWM r/f	NMSS Dir Off r/f	DWM t/f

DOCUMENT NAME: S:\DWM\ENGB\JST\G970590 (*See previous concurrence)

OFC	ENGB*		ENGB*		ENGB*		TECHED*	
NAME	JTrapp/eb ^{off rd} ✓		DBrooks		NKStablein		EKraus	
DATE	8/26/97		8/26/97		8/26/97		8/26/97	

OFC	DWM		NMSS		DEDO		EDO	
NAME	MVFederline		CPaperiello		HThompson		LJCallan	
DATE	9/3/97		/ /97		/ /97		/ /97	

ACNW: YES ☒ NO
IG : YES ☐ NO ☒
LSS: YES ☒ NO ☐

Delete file after distribution: Yes ☐ No ☐

by 8/29

4

of documentation and communication listed above, there has been significant improvement. Again, we wish to thank ACNW for its comments and insight into the igneous activity area, and we feel that the program is progressing in the direction suggested.

cc: Chairman Jackson
Commissioner Dicus
Commissioner Diaz
Commissioner McGaffigan
SECY

DISTRIBUTION: TICKET #G970590

Central File	PNorry	Blaha	AThadani	SBurns
ACNW r/f	DRoss/AEOD	JMitchell/OEDO	EMerschhoff/RIV	PUBLIC
CJPoland	PTressler	EDO r/f	JHolonich	MBell
JHickey	ENGB r/f	DWM r/f	DWM v/f	
NMSS Dir Off r/f				

DOCUMENT NAME: S:\DWM\ENGB\JSTIG970590

OFC	ENGB	ENGB	ENGB	TECHED
NAME	JTrapp/eb/ g/f	DBrooks	NKStablein	EKraus
DATE	1 / 197	1 / 197	1 / 197	8/14 / 197

OFC	DWM	NMSS	DEDO	EDO
NAME	MVFederline	CPaperiello	HThompson	LJCallan
DATE	1 / 197	1 / 197	1 / 197	1 / 197

ACNW: YES _ NO _

IG : YES _ NO _

LSS: YES _ NO _

Delete file after distribution: Yes _ No

(5)

YJB 8/26/97 due to DWM 9/2
JST CIPUS
due to
EPGB 8/26

ACTION

EDO Principal Correspondence Control

FROM:

DUE: 09/08/97

EDO CONTROL: G970590

DOC DT: 08/07/97

FINAL REPLY:

WML
102

B. John Garrick
ACNW

TO:

Chairman Jackson

FOR SIGNATURE OF :

** GRN **

CRC NO: 97-0820

EDO

DESC:

ACNW

COMMENTS ON THE NRC PROGRAM TO PREDICT RISK FROM
IGNEOUS ACTIVITY AT THE PROPOSED HIGH-LEVEL WASTE
REPOSITORY AT YUCCA MOUNTAIN, NEVADA

ROUTING:

Callan
Thadani
Thompson
Norris
Blaha
Burns
Ross, AEOD
Merschhoff, RIV
Mitchell, OEDO
ACNW File

DATE: 08/11/97

ASSIGNED TO:

CONTACT:

NMSS

Paperiello

SPECIAL INSTRUCTIONS OR REMARKS:

Prepare response to ACNW for EDO signature. Add
Commissioners and SECY as cc's (shown on original
reply).

USE SUBJECT LINE IN RESPONSE.

ACTION: Stefano

Due to DWM

Director's Office: 9-2-97

<p><u>DWM Action</u></p> <p>Due to NMSS Director's Office</p> <p>By <u>9/3/97</u></p> <p><u>uid 8/12/97</u></p>

8/13

Received 8/14 pm from DWM:cc

OFFICE OF THE SECRETARY
CORRESPONDENCE CONTROL TICKET

PAPER NUMBER: CRC-97-0820 LOGGING DATE: Aug 8 97
ACTION OFFICE: EDO
AUTHOR: B. JOHN GARRICK
AFFILIATION: ADVISORY COMMITTEE ON NUCLEAR WASTE
ADDRESSEE: CHAIRMAN JACKSON
LETTER DATE: Aug 7 97 FILE CODE: OM-7 ACRS
SUBJECT: COMMENS ON THE NRC PROGRAM TO PREDICT RISK FROM
IGENOUS ACTIVITY AT THE PRO HLW REPOSITORY AT YUCCA
MOUNTAIN, NEVADA
ACTION: Appropriate
DISTRIBUTION: CHAIRMAN, RF
SPECIAL HANDLING: NONE
CONSTITUENT:
NOTES:
DATE DUE:
SIGNATURE: DATE SIGNED:
AFFILIATION: