RAS 5787 72-22-ISFSI - Staff Exhibit SS-Recd 6/6/02

March 19, 1999

Mr. Warren E. Bergholz
Acting Manager
Idaho Operations Office
U.S. Department of Energy
850 Energy Drive
Idaho Falls, ID 83401-1563

SUBJECT: ISSUANCE OF MATERIALS LICENSE SNM-2508 FOR THE THREE MILE ISLAND, UNIT 2, INDEPENDENT SPENT FUEL STORAGE INSTALLATION (TAC NOS. L22283 AND L22800)

Dear Mr. Bergholz:

I am enclosing Materials License SNM-2508 for the Three Mile Island, Unit 2 (TMI-2), Independent Spent Fuel Storage Installation (ISFSI), issued pursuant to 10 CFR Part 72. Issuance of this license constitutes authorization for a 20-year term to receive, possess, store, and transfer spent fuel and fuel debris, resulting from the TMI-2 accident, at an ISFSI located at the Idaho National Technology and Engineering Center (INTEC) compound.

The license contains conditions and technical specifications that have been discussed and reviewed with Mr. Charles Maggart of your staff. In connection with the issuance of this license, the staff issued an Environmental Impact Statement in March 1998.

Enclosed are copies of Materials License No. SNM-2508 and the Safety Evaluation Report. Also enclosed is a copy of the Notice of Issuance which has been transmitted to the Office of the Federal Register for publication.

All future communications regarding this license should refer to License No. SNM-2508, Docket No. 72-20. If you have any questions regarding issuance of this license, please contact me or Michael G. Raddatz of my staff at (301) 415-8544.

Sincerely,

Original signed by /s/
E. William Brach, Director
Spent Fuel Project Office
Office of Nuclear Material Safety
and Safeguards

Docket No. 72-20

Enclosures: 1. Materials License No. SNM-2508
2. Safety Evaluation Report
3. Federal Register Notice of Issuance

cc: Service List

DISTRIBUTION: (TAC No. L22283/Control No. 010S; TAC No. L22800/Control No. 020S)

Docket	NRC File Center	PUBLIC	NMSS R/F	SFPO R/F	ANorris (ltr)
TMadden, OCA	DMartin, EDO	CHaughney	WHodges	FSturz	VEverett, RIV
BSpitzberg, RIV	AChowdhury, CNWRA				

C:\MYFILES\BACKUP\wp{wp}.bk1 JPH 3/3/99

OFC:	SFPO	SFPO	OGC (no legal objection)	SFPO	SFPO	SFPO
NAME:	MRaddatz:jh	VLTharpe	NJensen	EJLeeds	SShankman	EWBrach
DATE:	3/11/99	3/11/99	3/17/99	3/18/99	3/19/99	3/19/99

Template = SECY-028 SECY-02

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

U.S. DEPARTMENT OF ENERGY
IDAHO OPERATIONS OFFICE
DOCKET NO. 72-20
TMI-2 INDEPENDENT SPENT FUEL STORAGE INSTALLATION
MATERIALS LICENSE NO. SNM-2508

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application filed by the Department of Energy, Idaho Operations Office (DOE-ID or applicant) for a materials license to receive, store, and transfer spent fuel and fuel debris (resulting from the Three Mile Island Unit-2 (TMI-2) accident) at an Independent Spent Fuel Storage Installation (ISFSI) located at the Idaho National Technology and Engineering Center (INTEC) compound, meets the standards and requirements of the Atomic Energy Act of 1954, as amended (Act), and the Commission's regulations set forth in 10 CFR Chapter I.

   B. The TMI-2 ISFSI will operate in conformity with the application, as amended, the provisions of the Act, and the rules and regulations of the Commission.

   C. The proposed site complies with the criteria in Subpart E of 10 CFR Part 72;

   D. The proposed ISFSI will not pose an undue risk to the safe operation of the Idaho National Engineering and Environmental Laboratory (INEEL).

   E. The applicant's proposed ISFSI design complies with the criteria in 10 CFR Part 72, Subpart F, with the exception of 72.124(b), for which an exemption is granted in the license.

   F. The applicant is qualified by reason of training and experience to conduct the operation covered by the regulation in 10 CFR Part 72.

   G. The applicant's plan for the conduct of operations complies with 10 CFR 72.24(h).

   H. The applicant's proposed Quality Assurance Program complies with 10 CFR Part 72, Subpart G.

   I. The applicant's proposed physical protection provisions comply with 10 CFR Part 72, Subpart H, and with the safeguards and physical security provisions identified in 10 CFR 72.24(o).

   J. The applicant's proposed personnel training program complies with 10 CFR Part 72, Subpart I.

K. The applicant's proposed Emergency Plan complies with 10 CFR 72.32.

L. There is reasonable assurance that (1) the activities authorized by this license can be conducted without endangering the health and safety of the public and (2) such activities will be conducted in compliance with the regulations of the Commission set forth in 10 CFR Chapter I.

M. The issuance of this license will not be inimical to the common defense and security.

N. The applicant's proposed decommissioning plan complies with 10 CFR 72.30.

2. Accordingly, based on the foregoing findings, Materials License SNM-2508 is hereby issued to the DOE-ID to read as follows:

LICENSE FOR INDEPENDENT STORAGE OF SPENT NUCLEAR FUEL AND HIGH-LEVEL RADIOACTIVE WASTE

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974 (Public Law 93-438), and Title 10, Code of Federal Regulations, Chapter I, Part 72, and in reliance on statements and representations heretofore made by the licensee, a license is hereby issued authorizing the licensee to receive, acquire, and possess the power reactor spent fuel and other radioactive materials associated with spent fuel storage designated below; to use such material for the purpose(s) and at the place(s) designated below; and to deliver or transfer such material to persons authorized to receive it in accordance with the regulations of the applicable Part(s). This license shall be deemed to contain the conditions specified in Section 183 of the Atomic Energy Act of 1954, as amended, and is subject to all applicable rules, regulations, and orders of the Nuclear Regulatory Commission now or hereafter in effect and to any conditions specified herein.

Licensee	
1. United States Department of Energy	3. License Number: SNM-2508
2. Idaho Operations Office 850 Energy Place Idaho Falls, Idaho 83401	4. Expiration Date: March 19, 2019
	5. Docket or Reference No.: 72-20

6. Byproduct, Source, and/or Special Nuclear Material	7. Chemical and/or Physical Form	8. Maximum Amount that Licensee May Possess at Any One Time Under This License
A) Radioactive material from the Three Mile Island Unit 2 (TMI-2) reactor core damaged by the March 28, 1979, reactor accident, including the remains of 177 Babcock and Wilcox 15x15 fuel assemblies with a maximum of 2.98% U-235 isotope, 61 control rod assemblies, and miscellaneous irradiated core and core basket material.	A) As debris consisting of significantly damaged fuel and control assemblies and non-fuel reactor components in the form of partially intact assemblies, conglomerate core material, previously molten materials, rubble, and fines.	A) 82,985.9 kg U initially contained in the fuel assemblies of the damaged TMI-2 reactor core, contained in roughly 139,293 kg of material removed from the TMI-2 reactor vessel.
B) Radioactive material related to receipt, storage, and transfer of the above radioactive material, including 265 fuel canisters, 12 knockout canisters, and 67 filter canisters used to confine the above TMI-2 core debris in the absence of intact fuel assembly cladding.		

9. Authorized Use: For use in accordance with the statements, representations, and conditions of the Technical Specifications and Safety Analysis Report (SAR). The materials identified in 6.A, 6.B, and 7.A above are authorized for receipt, possession, storage, and transfer.

10. Authorized Place of Use: The licensed material is to be received, possessed, transferred, and stored at the TMI-2 ISFSI located at the Idaho National Engineering and Environmental Laboratory within the perimeter of the Idaho Nuclear Technology and Engineering Center site in Scoville, Idaho.

11. The Secretary of Energy has delegated (Delegation Order No. 10CFR72.512.1) the Manager, Department of Energy, Idaho Operations Office, as the Secretary's authorized representative in all matters regarding this license and future amendments thereto and informed the Commission of this delegation in writing on October 31, 1996.

12. Pursuant to 10 CFR 72.7, the licensee is hereby exempted from the following:

    a) Requirements of 10 CFR 72.102(f)(1) related to the specified seismic design criteria of 10 CFR Part 100, Appendix A.

    b) Requirements of 10 CFR 20.1501(c) to use NVLAP accredited dosimetry and instead is authorized to use DOELAP dosimetry.

    c) Requirement of 10 CFR 72.124(b) that the design of the ISFSI shall provide for positive means to verify the continued efficacy of solid neutron absorbing materials.

    d) Requirements of 10 CFR 72.82(e) that a report of the preoperational test acceptance criteria and test results be submitted at least 30 days prior to loading the ISFSI.

13. The Technical Specifications contained in Appendix A attached hereto are incorporated into the license. The licensee shall operate the installation in accordance with the Technical Specifications in Appendix A.

14. For the duration of the license, the licensee shall inform the Director, NMSS, at least 90 days in advance, of the replacement of the entity contracted by DOE-ID to perform the management and operation (the M&O contractor) of the TMI-2 ISFSI.

    Within 180 days after the replacement of the M&O contractor, the licensee shall assess the performance of the M&O contractor and provide a statement to the NRC verifying that the replacement of the M&O contractor has had no effect on the execution of licensed responsibilities for the TMI-2 ISFSI.

LICENSE FOR INDEPENDENT STORAGE
OF SPENT NUCLEAR FUEL AND
HIGH-LEVEL RADIOACTIVE WASTE
SUPPLEMENTARY SHEET

License Number
SNM-2508

Docket or Reference Number
72-20

15. DOE-ID shall be responsible for requesting necessary funds from Congress to ensure compliance of TMI-2 ISFSI operations and decommissioning under this license. DOE-ID will notify the Nuclear Regulatory Commission, in writing, of any anticipated or forecasted budget shortfalls, as soon as they are known, along with a plan detailing the specific measures that will be taken by DOE-ID to obtain the required funding and/or prevent adverse impacts on ISFSI operations.

16. This license is effective as of the date of issuance shown below.

FOR THE U.S. NUCLEAR REGULATORY COMMISSION

E. William Brach, Director
Spent Fuel Project Office
Office of Nuclear Material Safety
and Safeguards
Washington, DC 20555

Date of Issuance: March 19, 1999

Attachment: Appendix A-Technical Specifications

SAFETY EVALUATION REPORT OF
THREE MILE ISLAND UNIT 2
INDEPENDENT SPENT FUEL STORAGE INSTALLATION
SAFETY ANALYSIS REPORT

the area and absent in others, it has been demonstrated that they have not been structurally disrupted. Their discontinuous distribution is due to pinching out of lavas that flowed into the Big Lost River valley from vents to the southeast and southwest. Surface faulting is further discussed in Section 2.5.6.3 of this Safety Evaluation Report (SER).

Engineering Evaluation of Geologic Features

In response to Round 1 RAI 2-6, DOE-ID provided a detailed description of the geological engineering characteristics, including type of rock or sediments, permeability, strength under cyclic loading, seismic wave velocities, and consolidation characteristics. These discussions were based on analysis of geophysical logs of wells, examination of drill cores from coreholes, chemical analyses of core samples, and radiometric age determinations of strata. A site-specific shear wave velocity profile is provided and mechanical properties such as strength characteristics of the surficial sediment and the uppermost basalt lava flow are given. The interlayering of unconsolidated and poorly consolidated sediments within the basalts has engineering significance to the facilities at INEEL. In particular: (i) because the interbedded sediments have low permeability and high absorption capabilities (Nace et al., 1975), they retard the downward migration of water and contaminants to the water table; (ii) the low permeability of the sedimentary interbeds commonly causes localized perched water zones beneath some INEEL infiltration ponds and natural infiltration/recharge zones; (iii) the interbeds act as confining or semi-confining layers in the aquifer and affect water flow directions; (iv) the alternating high and low seismic velocities associated with basalts and poorly consolidated sedimentary interbeds cause greater attenuation of earthquake ground motion (Woodward-Clyde Consultants, 1990, 1992a; Woodward-Clyde Federal Services, 1996a); and (v) the unconsolidated sands and clays intercalated within the hard, brittle basalts contribute to difficult drilling and downhole geophysical logging.

2.5.6.2 Vibratory Ground Motion

Earthquake ground motion is discussed in Section 2.6.2, Vibratory Ground Motion of the SAR, and corresponding responses to Round 1 RAIs 2-9 through 2-13 and Round 2 RAIs 2-2 through 2-6. In the SAR, vibratory ground motion is addressed through discussions of historical seismicity and procedures to determine the design earthquake (DE), including identification of potential seismic sources and their characteristics, correlation of earthquake activity with geologic structures, maximum earthquake potential, seismic wave transmission characteristics, and determination of DEs.

DOE (1996a) proposes to design the TMI-2 ISFSI based on seismic design criteria contained within the INEEL architectural engineering (AE) standards (U.S. Department of Energy, 1992). In the AE standards related to a reactor or similar higher risk facility, the peak design basis horizontal acceleration for the INTEC is 0.36 g, including effects of soil amplification. Although the SAR follows the NRC general guidelines in format and content (Nuclear Regulatory Commission, 1989), the current DOE seismic design value for the TMI-2 ISFSI is not supported by the most recent deterministic seismic hazard analyses (DSHA) results (Woodward-Clyde Federal Services, 1996b). It is supported, however, by the results of the recent probabilistic seismic hazard analyses (PSHA) (Woodward-Clyde Federal Services, 1996a). According to 10 CFR 72.122(b)(2), SSCs important to safety must be designed to withstand the effects of natural phenomena, such as earthquakes, without impairing their capability to perform safety

functions. For sites west of the Rocky Mountains, such as INEEL, 10 CFR Part 72 requires that seismicity be evaluated by techniques set forth in Appendix A of 10 CFR Part 100 for nuclear power plants. This appendix defines the safe shutdown earthquake (SSE) as the earthquake that produces the maximum vibratory ground motion at the site and requires that the SSCs be designed to withstand the ground motion produced by the SSE. This seismic design method implies use of a DSHA approach because it considers only the most significant event and it is a time-independent statement (i.e., it does not take into consideration the planned operating period of the facility). Also, 10 CFR 72.102(f)(1) requires that analyses using Appendix A methodology uses a design peak horizontal acceleration (PHA) equivalent to that of the SSE for a nuclear power reactor. Furthermore, NUREG–0800, Section 2.5.2.6 (Nuclear Regulatory Commission, 1997a) states the NRC preference of the 84th-percentile value of the ground motion spectrum be used to calculate a reactor SSE PHA.

Recognizing the significance of seismic design requirements to the TMI-2 ISFSI and complications with regard to DOE-proposed seismic design approach and the current applicable NRC regulations and standards, the staff conducted an independent investigation on seismic hazard evaluation at the INTEC to provide technical bases in commenting on the adequacy and acceptability of DOE seismic design approach for the TMI-2 ISFSI (Chen and Chowdhury, 1998). The objectives of this seismic investigation were threefold: (i) to conduct an independent review of existing seismic hazard investigations at INEEL, in particular, to identify seismic issues important to siting the TMI-2 storage facility; (ii) to evaluate the adequacy of DOE seismic design approach; and (iii) to make recommendations regarding DOE-proposed seismic design approach and design basis earthquake value. These objectives were accomplished mainly through a survey of state-of-the-art literature and analyses of current relevant NRC regulations. This Section of this SER summarizes information presented in the SAR, corresponding responses to Round 1 RAIs 2-9 through 2-13 and Round 2 RAIs 2-2 through 2-6, as well as those obtained from the staff independent investigation. A summary is included at the end of this section to list staff evaluations of the adequacy of DOE-proposed seismic design value for the TMI-2 ISFSI.

Geological and Seismotectonic Settings

As indicated in Section 2.5.6.1 of this SER, the four physiographic provinces in the region also correspond to tectonic or seismotectonic provinces: ESRP, northern Basin and Range, Yellowstone Plateau, and Idaho Batholith (Figure 2-1). Also, the ESRP is wrapped on its southeastern, eastern, and northern boundaries by two seismically active belts known as the Intermountain Seismic Belt and the Centennial Tectonic Belt. All these are important background zones that contribute to seismic ground motion at the ISFSI. Other features significant to seismic ground motion that need separate considerations in seismic hazard analyses include some active fault zones in the northern Basin and Range Province, and volcanic rift zones in the ESRP.

Historical Seismicity

More than 5,800 earthquakes with magnitudes of 2.5 or greater have been documented in the SAR and the adjacent Basin and Range Province since the first documented earthquake in 1884. The staff evaluated DOE analyses of historical seismicity by reviewing information

Table 2-1. Comparison of results from a few recent deterministic studies conducted for sites at or close to the Idaho National Technology and Engineering Center

Site and Site Condition	Horizontal Peak Acceleration (g)		Maximum Credible Earthquake MCE	Source to Site Distance (mi)	Studies
	50th Percentile	84th Percentile			
FPR Rock	0.13	0.196	$M_w = 6.9$	13.3	WCC (1990)
SIS Soil	0.197	0.297	$M_s = 7.3$	13.0	
NPR Rock	0.20	0.31	$M_w = 7.0$	13.2	WCC (1992a)
CPP Rock	0.17	0.28	$M_w = 7.1$	13.8	WCFS (1996a,b)
CPP Soil	0.34	0.56			

Probabilistic Seismic Hazard Analyses

The first PSHA at INEEL was conducted by Agbabian Associates[4] for the LOFT facility. This study suggested a lower bound PHA of 0.1g and an upper bound PHA of 0.4g at a probability of 0.01 percent.

Probabilistic analysis for the Argonne National Laboratory facility conducted by TERA Corporation (1984) indicated peak accelerations of 0.073g (return period 100 year), 0.14g (return period 1,000 year), and 0.24g (return period 10,000 year). It was interpreted by WCC (1992a) that the LOFT facility would be subjected to a peak acceleration of approximately 0.36g with a return period of 10,000 years according to the TERA Corporation (1984) hazard curves. Because both these sites are at considerable distances away from the TMI-2 ISFSI site, the studies have little reference value to the seismic hazard estimation for the ISFSI.

Results of bedrock PHAs from the WCC (1992a) probabilistic analyses for the NPR and WCFS (1996a,b) probabilistic analyses for the INTEC yielded quite similar results (Table 2-2), despite the fact that much more up-to-date information obtained from a few recent source characterization projects in the region, especially along the fault sources, was included in the 1996 study. The 1996 study, however, included sophisticated sensitivity analyses that isolated the contributions to the total seismic hazard produced by various potential seismic sources and evaluated the relative importance of various uncertainties associated with characterization of these seismic sources.

DOE current 0.36g horizontal design value for the TMI-2 ISFSI soil site bounds the 2,000-year return period probabilistic event (0.30g, Table 2-3).

Table 2-2. Comparison of bedrock peak horizontal accelerations from probabilistic assessments conducted by Woodward-Clyde Consultants (1992a) for the New Production Reactor and by the Woodward-Clyde Federal Services (1996a,b) for the Idaho National Technology and Engineering Center

Site and Conditions		(Mean) Horizontal Peak Acceleration (g) Annual Exceedance Probability (Return Period) 2×10^{-3} (500 yr)	1×10^{-3} (1,000 yr)	5×10^{-4} (2,000 yr)	1×10^{-4} (10,000 yr)	Studies
NPR Rock[1]		0.06	0.11	0.14	0.23	WCC (1992a)
INTEC	Rock	0.08	0.10	0.13	0.22	WCFS (1996a,b)
	Soil	–	0.23	0.30	0.47	

[1]Interpreted according to Woodward-Clyde Consultants (1992a) means PHA hazard curve

Table 2-3. Chemical processing plant soil and rock probabilistic peak accelerations (after Woodward-Clyde Federal Services, 1996a)

Return Period (yr)	Rock		Soil		Amplification Factors	
	PHA (g)	PVA (g)	PHA (g)	PVA (g)	PHA Soil / PHA Rock	PVA Soil / PVA Rock
1,000	0.10	0.06	0.23	0.16	2.3	2.7
2,000	0.13	0.08	0.30	0.21	2.3	2.6
10,000	0.22	0.13	0.47	0.33	2.1	2.5

Development of Design Basis Earthquake Parameters

To comply with DOE Standards 1020-94 and 1024-94 (U.S. Department of Energy, 1994a,b), and to be consistent with the NRC regulations, WCFS (1996b) developed design basis earthquake (DBE) ground motion parameters for the TMI-2 ISFSI site based mainly on the WCFS site-specific PSHA (Woodward-Clyde Federal Services, 1996a). These parameters are acceleration response spectra and time histories. The basis for the DBE response spectra is the mean uniform hazard spectra computed from the site-specific probabilistic analysis of the INTEC, adjusted for the dominant earthquakes at intermediate and long periods.

Following the steps outlined in DOE Standard 1024-94 (U.S. Department of Energy, 1994b), WCFS (1996b) computed the response spectral shapes of the dominant earthquakes at 0.1 and 1.0 sec by taking the weighted average of four empirical and one stochastic numerical modeling response spectra derived from the same attenuation relationships used in the 1996 WCFS probabilistic studies (Woodward-Clyde Federal Services, 1996a). These average spectra were then normalized according to the procedures in DOE Standard 1023-94, by the spectral acceleration at 0.1 or 1.0 sec and superimposed on the appropriate uniform hazard spectra (Woodward-Clyde Federal Services, 1996b). All spectra were then generally enveloped to obtain the DBE horizontal rock spectrum.

Because the proposed TMI-2 ISFSI is to be located on an alluvial soil consisting predominantly of sand and gravel that ranges in thickness from about 29.9 to 49.9 ft, soil response needs to be incorporated into the DBE horizontal rock spectrum. The soil response was evaluated by calculating power spectra derived by spectrally matching the DBE horizontal rock spectra and propagating them through the one-dimensional soil and shallow rock profile using a frequency-domain equivalent-linear formulation (Silva et al., 1996) similar to the computer program SHAKE.

Vertical-to-horizontal ratios were developed as a function of spectral periods for both soil and rock based on two approaches with different weights. The first is an equivalent-linear approach based on site-specific P-wave velocity profiles for rock and soil. The second is the empirical ratios approach for rock developed by Abrahamson and Silva.[6] Ratios from these two approaches were weighted at 0.60 (rock) and 0.40 (soil), and combined to obtain the smooth ratios that were then applied to the DBE horizontal spectra to obtain DBE vertical spectra. The resultant DBE horizontal and vertical ground accelerations for rock and soil are summarized in Table 2-3.

Summary of Staff Review

As indicated previously, DOE-ID designed the TMI-2 ISFSI based on seismic design criteria contained within the INEEL AE standards. In the AE standards related to a reactor or similar high risk facilities, the peak design basis horizontal acceleration for the INTEC is 0.36g, including effects of soil amplification. This design PHA corresponds to the 84th percentile of the 1970s DOE DSHA results and is supported by the early 1990s DSHA results. The latest DSHA conducted by a DOE subcontractor (i.e., WCFS), however, suggested a 50th-percentile PHA of 0.34g and an 84th-percentile PHA of 0.56g (Table 2-1), which exceeds DOE design PHA for the TMI-2 ISFSI. The recent DOE PSHA suggests PHAs of 0.30g (return period 2,000 year) and 0.47g (return period 10,000 year) (Table 2-3). The ISFSI design PHA of 0.36g, therefore, bounds the PHA of the 50th-percentile deterministic value of 0.34g and the 2,000-year return period probabilistic value of 0.30g.

PSHA considers contributions from all potential seismic sources and integrates across a range of source-to-site distances and magnitudes. Most importantly, DSHA is a time-independent statement, whereas PSHA estimates the likelihood of earthquake ground motion occurring at the location of interest within the time frame of interest. The most recent DOE probabilistic analyses conducted by WCFS for INEEL, including the INTEC, provide for explicit inclusion of

[6]Abrahamson, N., and W. Silva. 1996. *Empirical Ground Motion Models.* Draft Report.

the range of seismologic and tectonic interpretations including seismic source characterization and ground motion estimation consistent with approaches contained in Regulatory Guide 1.165, previously Draft DG–1032, (Nuclear Regulatory Commission, 1997b). Based on this study, the PHAs for the INTEC are 0.23g (return period 1,000 year), 0.30g (return period 2,000 year), and 0.47g (return period 10,000 year). This study also included sophisticated sensitivity analyses that isolated the contributions to the total ground motion hazard produced by various potential seismic sources and evaluated the relative importance of various uncertainties associated with characterization of these seismic sources.

As mentioned earlier, NUREG–0800, Section 2.5.2.6 (Nuclear Regulatory Commission, 1997a) states the NRC preference of using the 84th-percentile deterministic response spectra for both spectral shape and ground motion amplitude estimates. Also, the most recent DOE deterministic analyses suggested an 84th-percentile PHA value of 0.56g and a 50th-percentile value of 0.34g for the INTEC. 72.102(f)(1) may lead one to conclude that 0.56g is the requisite design value for the TMI-2 ISFSI site. The staff has determined that there is a regulatory basis, for a different design value that may be appropriate and that because 72.102(f)(1) does not specifically allow for the use of probabilistic analyses the staff has concluded that an exemption is warranted. In 1980, when 10 CFR Part 72 was first promulgated, ISFSIs were largely envisioned to be SNF pools or massive dry storage structures expected to be built at existing power plant sites. In the Statements of Consideration accompanying the initial rulemaking, the NRC recognized that the design PHA for dry casks and canisters need not be as high as for a power reactor and should be determined on a case-by-case basis until more experience is gained with licensing these types of units. With over 10 years of experience licensing dry cask storage, and robust analyses demonstrating cask behavior in accident scenarios, the staff now has a reasonable basis to consider a different design value adequate for licensing dry storage ISFSIs, where appropriate.

PSHA results have been accepted in other licensing actions. For example, the PSHA method is acceptable for power reactors under January 1997 revisions to 10 CFR Parts 50 and 100. Furthermore, NRC accepted the PSHA method for the design and performance assessment of the proposed high-level waste (HLW) repository at Yucca Mountain (U.S. Department of Energy, 1994c). The NRC has accepted return periods of 1,000 years for Category 1 and 10,000 years for Category 2 DBAs for the PHA estimation for the 100- to 150-year preclosure design life of the proposed HLW repository at Yucca Mountain (U.S. Department of Energy, 1996b). According to a staff evaluation (Chen and Chowdhury, 1998), the use of a 2,000-year return period to determine probabilistic design acceleration for the 20-year design life of the TMI-2 ISFSI is conservative, regardless of whether a specific SSC should be designed for Category 1 or Category 2 DBAs. In summary, the staff review and independent investigation indicate that DOE-ID proposed seismic design horizontal acceleration of 0.36g provides an adequate design value and reasonable assurance for site safety and therefore an exemption to 10 CFR 72.102(f) will be granted as part of the licensing of this facility.

2.5.6.3 Surface Faulting

Surface faulting is discussed in Section 2.6.3, Surface Faulting, of the SAR, and corresponding responses to RAIs 2-6 and 2-7. The possibility of surface faulting is addressed through discussions of geologic conditions, evidence of site fault offset, earthquakes associated with capable faults, investigation of capable faults, and correlation of epicenters with capable faults. The staff reviewed information presented in the SAR, corresponding responses to the RAIs,

DOCKETED
USNRC

2003 FEB -5 AM 9:31

OFFICE OF THE SECRETARY
RULEMAKINGS AND
ADJUDICATIONS STAFF

NUCLEAR REGULATORY COMMISSION

Docket No. 72-22 Official Exh. No. SS
In the matter of PFS

Staff ✓	IDENTIFIED ✓
Applicant	RECEIVED ✓
Intervenor	REJECTED
Other	WITHDRAWN
DATE 6-6-03	Witness
Clerk pmp	