AC 76-1
PDR

MAR 8 1988

MEMORANDUM FOR: Raymond F. Fraley, Executive Director
Advisory Committee on Reactor Safeguards

FROM: Bill M. Morris, Director
Division of Regulatory Applications
Office of Nuclear Regulatory Research

SUBJECT: PROPOSED RULE ENTITLED, "STORAGE OF SPENT NUCLEAR FUEL IN NRC APPROVED STORAGE CASKS AT CIVILIAN NUCLEAR POWER REACTORS SITES"

Enclosed are six copies of a draft proposed Federal Register Notice and preliminary regulatory analysis on the subject rule, which were recently distributed for headquarters and regional offices review at the division level. These copies are for your information only.

Recent congressional action has caused the schedule for this proposed rule to be accelerated. Although it was not included in the February revision of the ACRS planning agenda, it is anticipated that the package for ACRS review will be submitted in April with a request for consideration by the full committee at its May meeting, if required.

/s/

Bill M. Morris, Director
Division of Regulatory Applications
Office of Nuclear Regulatory Research

Enclosures:
As stated

Distribution: [MEMO FOR FRALEY]
subj-circ-chron
BMorris
ZRosztoczy
ADiPalo
JTelford
WPearson
RDB Reading File
JRoberts, NMSS (w/o enclosures)
LRouse, NMSS (w/o enclosures)
CBartlett, RES (w/o enclosures)

*SEE PREVIOUS CONCURRENCE

Offc:	RES:RDB:DRA	RES:RMDAS	RES:RDB:DRA	RES:RDB:DRA	RES:DRA	RES:DRA
Name:	*WPearson:tf	*CBartlett	JTelford	ADiPalo	ZRosztoczy	BMorris
Date:	3/4/88	3/4/88	3/7/88	3/7/88	3/ /88	3/8/88

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AC76-19

AC 76-1
PDR

ADVISORY COMMITTEE ON NUCLEAR WASTE

(BRIEF FOR MEETING ON JUNE 28, 1988)

PROPOSED RULE ON STORAGE OF SPENT FUEL IN CASKS AT POWER REACTOR SITES

The Commission is proposing to amend its regulations in 10 CFR Part 72 to provide for the storage of spent fuel at the sites of power reactors without, to the maximum extent practicable, the need for additional site-specific approvals, as required by the Nuclear Waste Policy Act of 1982. Holders of power reactor operating licenses would be permitted to store spent fuel in casks certified by NRC under a general license. The proposed rule is mainly administrative in nature. It would provide procedures by which cask vendors could obtain certificates for spent fuel casks and power reactor licensees could store spent fuel without additional site-specific approval by the Commission.

The proposed rule would provide for power reactor licensees to store spent fuel at the reactor site without additional site-specific approvals by the Commission. A general license would be issued to holders of power reactor licenses for the storage of spent fuel generated at the site in casks approved by the NRC. The licensee would have to show that there were no changes required in the reactor technical specifications or unreviewed safety questions as regards activities related to spent fuel storage under the general license. The licensee would also have to show compliance with conditions of the storage cask Certificate of Compliance, including demonstrating that site-related parameters (e.g., earthquake intensity, ambient temperatures) and equipment design bases are within the envelop of parameters analyzed in the cask safety analysis report. The licensee would also have to show compliance with special nuclear material control and accounting and safeguards procedures and conditions that are being proposed for storage of spent fuel in an independent spent fuel installation located within the exclusion area of a nuclear power reactor. The licensee would have to establish and maintain records documenting compliance, which would have to made available for inspection by the

Commission. The Commission would rely on its inspection and enforcement authority to ensure that its regulations were met and, thus, ensure adequate protection of public health and safety.

The Commission would rely on dry storage casks for confinement of radioactive material to the extent required for protection of public health and safety and the environment. The cask would be relied on to provide safe confinement independent of the operations in which it is involved or regardless of its location, so long as conditions are within the limits specified in the Certificate of Compliance. Cask vendors would submit a safety analysis report (SAR) showing how cask designs and fabrication can provide adequate protection to public health and safety. The NRC staff would review and analyze the SAR and certify that a particular cask, when designed, fabricated, and used under the conditions analyzed, provides adequate protection to public health and safety. Part of the cask certification procedure would be for the NRC to ensure, through acceptance of a quality assurance program and inspections, that casks are designed, fabricated, tested, maintained, and modified under the acceptance criteria in the rule. The certification program would be similar to that now conducted for casks approved for shipping spent fuel under 10 CFR Part 71. The proposed rule would set forth criteria for obtaining spent fuel storage cask certification. Three cask would be listed in the proposed rule as being certified for storage of spent fuel under the general license. Other casks would be routinely added, through appropriate rulemaking procedures, as they receive certification.

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NRC STAFF PRESENTATION TO THE ACNW

SUBJECT: RULEMAKING: STORAGE OF SPENT NUCLEAR FUEL IN NRC APPROVED STORAGE CASKS AT NUCLEAR POWER REACTOR SITES

DATE: JUNE 28, 1988

PRESENTER: LELAND C. ROUSE

JOHN P. ROBERTS

PRESENTER'S TITLE/BRANCH DIV.:
BRANCH CHIEF/FUEL CYCLE SAFETY BRANCH/IMNS

SECTION LEADER/IRRADIATED FUEL STORAGE SECTION/IMSB/IMNS

PRESENTER'S NRC TEL. NO.: 49-23328

49-20608

SUBCOMMITTEE:

TO BE USED ALL PRESENTATIONS TO THE ACNW BY NRC EMPLOYEES

NRC STAFF PRESENTATION TO THE
ACNW

SUBJECT: RULEMAKING: STORAGE OF SPENT NUCLEAR FUEL IN NRC APPROVED STORAGE CASKS AT NUCLEAR POWER REACTOR SITES

DATE: JUNE 28, 1988

PRESENTER: LELAND C. ROUSE

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PRESENTER'S TITLE/BRANCH DIV.: BRANCH CHIEF/FUEL CYCLE SAFETY BRANCH/IMNS

SECTION LEADER/IRRADIATED FUEL STORAGE SECTION IMSB/IMNS

PRESENTER'S NRC TEL. NO.: 49-23328

49-20608

SUBCOMMITTEE:

TO BE USED ALL PRESENTATIONS TO THE ACNW BY NRC EMPLOYEES

PURPOSE OF RULEMAKING

APPROVE DRY STORAGE OF SPENT FUEL IN CASKS
(Uniform bases for inspection + licensing)

ESTABLISH PROCEDURES FOR STORAGE OF SPENT FUEL AT REACTOR SITES WITHOUT NEED FOR ADDITIONAL SITE - SPECIFIC APPROVALS

JUSTIFICATION FOR RULEMAKING

PROVIDES GREATER EFFICIENCY IN LICENSING

MANDATED BY THE CONGRESS
(NUCLEAR WASTE POLICY ACT OF 1982 SECTIONS 133 AND 218(A))

HOW RULE WILL ACHIEVE ITS PURPOSE

PROVIDE FOR CERTIFICATION OF DRY SPENT FUEL STORAGE CASK DESIGNS

PROVIDE GENERAL LICENSE TO HOLDERS OF A POWER REACTOR OPERATING LICENSE TO USE CERTIFIED CASKS

CONDITION OF GENERAL LICENSE FOR STORAGE OF SPENT FUEL

LIMITED TO SPENT FUEL GENERATED AT THE SITE

SPENT FUEL STORAGE ONLY IN STORAGE CASKS CERTIFIED BY NRC

LICENSEE MUST SHOW:

- COMPLIANCE WITH CONDITIONS OF CASK CERTIFICATE
- NO UNREVIEWED SAFETY QUESTION INVOLVED
- NO TECHNICAL SPECIFICATION CHANGES REQUIRED (OR LICENSE AMENDMENT OBTAINED)

SPECIAL NUCLEAR MATERIAL ACCREDITING AND SAFEGUARDS

REPORTING AND RECORDKEEPING

TERMINATION OF GENERAL LICENSE

- CONTINUE STORAGE UNDER AS AMENDED PART 50 LICENSE
- SPENT FUEL REMOVAL FROM SITE PRIOR TO REACTOR DECOMMISSIONING COMPLETION

SPENT FUEL CASK CERTIFICATION PROCESS

FORMALIZES PRESENT TOPICAL REPORT CASK DESIGN SAFETY REVIEW ACTIONS

PROCEDURES AND CRITERIA BASED ON STAFF EXPERIENCE

- SPECIFIC LICENSES ISSUED
- PREVIOUSLY APPROVED CASK DESIGN
- CERTIFICATION OF CASK DESIGNS IN RULEMAKING

QUALITY ASSURANCE AND FABRICATION INSPECTION

CONDITIONS FOR CASK CERTIFICATION

DiPalo/Au
Hinchar
Pearson
File

pt. 7/7/88

AC 76-1
PDR

UNITED STATES
NUCLEAR REGULATORY COMMISSION
ADVISORY COMMITTEE ON NUCLEAR WASTE
WASHINGTON, D.C. 20555

July 1, 1988

The Honorable Lando W. Zech, Jr.
Chairman
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Dear Chairman Zech:

SUBJECT: PROPOSED RULE ON STORAGE OF SPENT NUCLEAR FUEL IN CASKS AT NUCLEAR POWER REACTOR SITES

During the first meeting of the Advisory Committee on Nuclear Waste, June 27-29, 1988, we met with the NRC Staff to discuss the proposed rule on "Storage of Spent Nuclear Fuel in NRC Approved Storage Casks at Nuclear Power Reactor Sites" (referenced).

Overall, we endorse the development of this rule. Formulation of regulations designed to address this subject on a generic basis will be constructive. We offer the following specific comments:

1. The portion of the rule that restricts the storage of spent fuel at a given site to only fuel that was produced at that site should be re-examined. Since a utility with multiple nuclear power plant sites may desire to centralize its storage of spent fuel at one location, it appears useful to include in the rule guidance for obtaining approval of such an approach.

2. Since the above approach would require that the fuel be transported and ultimately all such fuel will need to be shipped to a site for final disposal, it would appear useful to design the casks with the safety of, and doses associated with, subsequent operations in mind.

3. Finally, since several NRC offices will be responsible for implementing this rule, we urge that careful attention be addressed to the division of responsibilities within the NRC.

Sincerely,

Dade W. Moeller

Dade W. Moeller
Chairman

Reference:
U. S. Nuclear Regulatory Commission, Proposed Rule dated June 6, 1988 (7590-01), "Storage of Spent Nuclear Fuel in NRC Approved Storage Casks at Nuclear Power Reactor Sites"

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4pp.

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PDR

UNITED STATES
NUCLEAR REGULATORY COMMISSION
ADVISORY COMMITTEE ON NUCLEAR WASTE
WASHINGTON, D.C. 20555

July 15, 1988

SCHEDULE AND OUTLINE FOR DISCUSSION
2ND MEETING OF THE ADVISORY COMMITTEE ON NUCLEAR WASTE
JULY 21-22, 1988
WASHINGTON, D.C.

Thursday, July 21, 1988, Room 1046, 1717 H Street, N.W., Washington, D.C.

1) 10:30 - 10:45 A.M. — Chairman's Comments (Open)
- 1.1) Opening Remarks (DWM)
- 1.2) Items of current interest (DWM/OSM)

2) 10:45 - 12:15 P.M. — Below Regulatory Concern (BRC) (Open)
TAB 2---
- 2.1) Review and comment regarding proposed Commission policy statement on BRC (DWM/OSM)
- 2.2) Presentation by William Lahs of RES on this subject

12:15 - 1:15 P.M. — LUNCH

3) 1:15 - 3:30 P.M. — DOE's Dry Cask Storage Study (Open)
TAB 3---
- 3.1) Review and comment regarding DOE's Dry Cask Storage Study (DWM/OSM)
- 3.2) Presentation by Dwight Shelor of DOE's Office of Civilian Radioactive Waste Management, QA Division

3:30 - 3:45 P.M. — BREAK

4) 3:45 - 4:45 P.M. — Rulemaking on Anticipated and Unanticipated Events (Open)
TAB 4---
- 4.1) Review and comment regarding proposed rulemaking on this topic
- 4.2) Presentation by Dr. John Trapp of NRC's Division of High-Level Waste Management

5) 4:45 - 5:45 P.M. — ACNW Activities and Preparation of ACNW Reports (Open)
TAB 5---
- 5.1) Discuss Future ACNW activities, future meeting agendas and organizational matters (DWM/OSM)
- 5.2) Preparation of ACNW reports, as appropriate (DWM/OSM)

5:45 P.M. — RECESS

Friday, July 22, 1988, Room 1046, 1717 H Street N.W., Washington, D.C.

6) 8:30 - 9:30 A.M. Environmental Monitoring of Low-Level Waste Facilities (Open)

TAB 6--- 6.1) Review and Discuss NRC Draft Technical Position (DWM/OSM)

6.2) NRC Staff Presentation on this subject by Dr. John Starmer of Low-Level Waste Division

9:30 - 9:45 A.M. BREAK

7) 9:45 - 11:30 A.M. Center for Nuclear Waste Regulatory Analyses (CNWRA) (Open)

TAB 7--- 7.1) Discussion of "The Center," its purpose, charter, etc. (DWM/SJSP)

7.2) Mr. Joseph Bunting of NRC High-Level Waste Division and representatives of The Center will make presentations

8) 11:30 - 12:30 P.M. EPA Stardards for HLW Geologic Repository (Open)

TAB 8--- 8.1) Review and comment on the current status of the EPA Standards (DWM/SJSP)

8.2) Dan Egan will present the EPA's current status and future plans

12:30 - 1:30 P.M. LUNCH

9) 1:30 - 4:00 P.M. Briefing on Site Visits in South Carolina

TAB 9--- 9.1) Discussion of planned site visits by ACNW, August 3-5, 1988 (DWM/SJSP)

9.2) Presentations by the NRC Staff, Office of State Programs, (Don Nussbaumer), State of South Carolina (H. Schealy), U.S. DOE (J. Daly), Chem-Nuclear (Mr. Ryan) and LN Technologies (R. Voit)

~~10)~~ 4:00 - 4:45 P.M. NRC Staff Actions on ACNW Recommendations (Open)

TAB 10--- 10.1) The ACNW will discuss with the NRC Staff the actions that the Staff has taken on ACNW recommendations (DWM/OSM)

NOTE: Done before adjournment.

11) 4:45 - 5:30 P.M. ACNW Activities and Preparation of ACNW Reports

TAB 11--- 11.1) Continue discussion of future ACNW activities (See TAB 5.1) (DWM/OSM)

11.2) Preparation of ACNW reports, as appropriate (WM/OSM)

5:30 P.M. ADJOURN

CRGR REVIEW

AC 76-1
PDR

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

AUG 15 1988

MEMORANDUM FOR: Edward L. Jordan, Chairman
Committee to Review Generic Requirements

FROM: Eric S. Beckjord, Director
Office of Nuclear Regulatory Research

SUBJECT: PROPOSED RULE ENTITLED, "STORAGE OF SPENT NUCLEAR FUEL IN NRC-APPROVED STORAGE CASKS AT NUCLEAR POWER REACTOR SITES"

Enclosed for review by the CRGR are the proposed Federal Register notice and preliminary regulatory analysis on the subject rule (20 copies of each are enclosed), which were distributed for Office concurrence on July 26, 1988. It is requested that review be scheduled at the earliest available meeting because this rulemaking is on the Chairman's agenda.

The proposed rule would allow power reactor licensees to store spent fuel at the reactor site without additional site-specific approvals by the Commission. A general license would be issued to holders of power reactor licenses for the storage of spent fuel on the site in NRC-approved casks. Dry storage casks would be relied on for confinement of radioactive material, and the rule would set forth procedures and criteria for obtaining NRC approval of storage casks. The reactor licensee would have to show that there were no unreviewed safety questions or changes in the reactor technical specifications as regards activities related to spent fuel storage under the general license. The licensee would also have to show conformance with conditions of the storage cask Certificate of Compliance.

Reactor licensees would not have to submit license applications or related documents under Part 72. However, they would have to establish and maintain records showing compliance with conditions of the general license and the Certificate of Compliance of any cask used for storage of spent fuel. These records would have to be made available for inspection by the Commission. The Commission would rely on its inspection and enforcement authority to ensure compliance with its regulations. Since the safety requirements of Part 72 are not being changed, no adverse effect on occupational exposure or the health and safety of the public is anticipated. The rule would apply to any holder of a power reactor license and would be implemented by the licensee upon notification of the Commission that spent fuel was being stored under the general license. Alternatively, power reactor licensees could apply for a specific license under Part 72.

Resource burdens on the NRC, power reactor licensees, and spent fuel storage cask vendors are discussed in the enclosed preliminary regulatory analysis. No significant incremental resource requirements are expected on NRC, although distribution of existing resource requirements would be different. For

instance, the resource requirements of NRR and the regions would increase. No license fees would be required and other cost reductions are anticipated for reactor licensees. Currently fees for the approval of topical reports, which is the present method for approval of spent fuel storage cask designs, is limited to $20,000. Under the proposed rule full cost would be recovered for approval of storage cask designs, which could amount to as much as $300,000. Since the amendments do not involve provisions that would impose backfits, as defined in 10 CFR 50.109, no backfit analysis has been prepared.

Eric S. Beckjord, Director
Office of Nuclear Regulatory Research

Enclosures: As stated

NUCLEAR REGULATORY COMMISSION

10 CFR Parts 72 and 170

Storage of Spent Nuclear Fuel in NRC-Approved Storage Casks at Nuclear Power Reactor Sites

AGENCY: Nuclear Regulatory Commission.

ACTION: Proposed rule.

SUMMARY: The Commission is proposing to amend its regulations in 10 CFR Part 72 to provide, as directed by the Nuclear Waste Policy Act of 1982, for the storage of spent fuel at the sites of power reactors without, to the maximum extent practicable, the need for additional site-specific approvals. Holders of power reactor operating licenses would be permitted to store spent fuel, in casks approved by NRC, under a general license. The proposed rule contains criteria for obtaining an NRC Certificate of Compliance for spent fuel storage casks.

DATE: Submit comments by (45 days following publication). Comments received after this date will be considered if it is practical to do so, but the Commission is able to assure consideration only for comments received on or before this date.

ADDRESSES: Mail written comments to Secretary, U.S. Nuclear Regulatory Commission, Washington, DC, 20555 ATTN: Docketing Service Branch. Deliver comments to one White Flint North, 11555 Rockville Pike, Rockville, MD between 7:30 a.m. and 4:15 p.m. weekdays.

Copies of NUREG-0459, 0525, 0703, 0709, 1092, 1140, and 1223, reports which are referenced in this notice and the environmental assessment, may be purchased through the U.S. Government Printing Office by calling (202) 275-2060 or by writing to the U.S. Government Printing Office, P.O. Box 37082, Washington, DC 20013-7082. Copies of DOE/RL-87-11, referenced in the environmental assessment, and the NUREG reports listed above may be purchased from the National Technical Information Service, U.S. Department of Commerce, Springfield, Virginia 22161. Copies of the NUREG reports listed above, the environmental assessment and finding of no significant environmental impact, and comments received on the proposed rule are available for inspection and copying for a fee at the NRC Public Document Room, 1717 H Street NW., Washington, DC.

FOR FURTHER INFORMATION CONTACT: William R. Pearson, Office of Nuclear Regulatory Research, Nuclear Regulatory Commission, Washington, DC 20555. Telephone: (301) 492-3764.

SUPPLEMENTARY INFORMATION:

Background

Section 218(a) of the Nuclear Waste Policy Act of 1982 (NWPA) includes the following directive, "The Secretary [of DOE] shall establish a demonstration program in cooperation with the private sector, for the dry storage of spent nuclear fuel at civilian nuclear power reactor sites, with the objective of establishing one or more technologies that the [Nuclear Regulatory] Commission may, by rule, approve for use at the sites of civilian nuclear power reactors without, to the

maximum extent practicable, the need for additional site-specific approvals by the Commission." Section 133 of the NWPA states, in part, that "the Commission shall, by rule, establish procedures for the licensing of any technology approved by the Commission under Section 218(a) for use at the site of any civilian nuclear power reactor."

Discussion

This proposed rule would allow power reactor licensees to store spent fuel at the reactor site without additional site-specific reviews. A general license would be issued to holders of power reactor licenses for the storage of spent fuel in casks approved by the NRC. The licensee would have to show that there are no changes required in the facility technical specifications or unreviewed safety questions related to activities involving storage of spent fuel under the general license. The licensee would also have to show compliance with conditions of the Certificate of Compliance. The licensee would have to establish and maintain records showing compliance, which would have to be made available for inspection by the Commission.

This rule would not limit storage of spent fuel to that which is generated at the reactor site. Transfers of spent fuel from one reactor site to another are authorized under the receiving site's facility operating license pursuant to 10 CFR Part 50. The holder of a reactor operating license would apply for a license amendment, under § 50.90 (unless already authorized in the operating license), for the receipt and handling of the spent fuel from another reactor. In addition, the reactor licensee would be expected to request amendment of the

Price-Anderson indemnification agreement to provide for coverage of the transferred spent fuel. 10 CFR Part 72 is not germane to such transfers of spent fuel. If the spent fuel has been previously transferred and is currently stored in the reactor spent fuel pool, the only consideration under the general license would be whether or not the spent fuel meets conditions of the cask's Certificate of Compliance.

Although experience with storage of spent fuel under water is greater than with dry storage in casks, experience with storage of spent fuel in dry casks is extensive and widespread. The Canadians have been storing dry CANDU-type spent fuel at Whiteshell in vertical concrete casks called silos since 1975. Although the storage of spent fuel at Whiteshell does not involve light-water-reactor (LWR) fuel, it has contributed to the knowledge and experience of dry spent fuel storage in concrete casks. Dry cask storage has been demonstrated in West Germany. There has also been experience with dry spent fuel storage in the United States. The Department of Energy (DOE) and its predecessors have kept non-LWR spent fuel in dry storage in vaults and dry wells since the 1960s. An NRC survey of the dry storage of spent fuel, in the United States and elsewhere, was presented in NUREG/CR-1223, "Dry Storage of Spent Fuel - A Preliminary Survey of Existing Technology and Experience" (April 1980). NUREG/CR-1223, at Section IV.C, contains a description of DOE demonstration of dry LWR spent fuel storage in sealed storage casks (SSC) and dry wells. The storage of LWR spent fuel in SSC, which is an above ground, steel-lined, reinforced concrete cylinder or cask, started in 1979. The DOE demonstration program has continued and has been expanded to include dry storage in metal casks and storage of consolidated fuel rods as well as storage of spent fuel assemblies. Programs have been conducted by DOE

in cooperation with Virginia Power at its Surry plant, with Carolina Power and Light at its H.B. Robinson 2 plant, with General Electric at its Morris plant for dry storage of LWR spent fuel. Also dry storage of LWR spent fuel assemblies continues at the Idaho National Engineering Laboratory, along with demonstration of their disassembly and storage of the consolidated fuel rods.

The NRC staff has obtained substantive information from the DOE development programs. It has also gained experience from the issuance of licenses for the onsite storage of spent fuel in nodular cast iron casks at the Surry site of Virginia Power and in stainless steel canisters stored inside concrete modules at the H.B. Robinson 2 site of Carolina Power and Light. The safety of dry storage of spent fuel was considered during development of the Commission's original regulations in 10 CFR Part 72, "Licensing Requirements for the Storage of Spent Fuel in an Independent Spent Fuel Storage Installation (ISFSI)," which was promulgated on November 12, 1980 (45 FR 74693). A proposed rule entitled, "Licensing Requirements for the Independent Storage of Spent Nuclear Fuel and High-Level Radioactive Waste," was published in the Federal Register on May 27, 1986 (51 FR 19106). The proposed rule mainly provided for licensing the storage of spent fuel and high-level radioactive waste at a Monitored Retrievable Storage (MRS) facility, and did not cover the mandates of Sections 133 and 218(a) of the NWPA. However, the MRS rulemaking also addressed the safety of dry storage of spent fuel in casks. Recently the Commission approved a final rule derived from the proposed rule. This rulemaking takes into account changes in Part 72 that will appear in the final rule.

Activities related to unloading fresh and spent fuel casks and loading spent fuel casks for shipment are routine procedures at power reactors. The procedures for dry storage of spent fuel in casks would be an extension of these procedures. Over the last several years the staff has reviewed and approved three spent fuel storage cask designs, including a dry spent fuel storage system consisting of stainless steel canisters placed in concrete modules, and a concrete modular vault design. Requests for approval of cask designs are currently submitted in the form of topical safety analysis reports (TSARs). Three dry storage cask TSARs have been approved for referencing, which means that an ISFSI license applicant may reference appropriate parts of the report in licensing proceedings for the storage of spent fuel. This greatly reduces an ISFSI license applicant's time, effort, and cost. The same reliance on an approved safety analysis is being made available for on-site dry cask storage.

Separate topical safety analysis reports have been received for design of casks fabricated using nodular cast iron, thick-walled ferritic steel, concrete, and stainless steel and lead. Four cask design topical reports are under active review at the present time. Three spent fuel storage cask designs have been approved to date, and their approval for spent fuel storage under the general license is being included in this rulemaking. Casks approved for storage in the future will be routinely added to the listing in proposed §72.214 through rulemaking procedures. Since such rulemaking would neither constitute a significant question of policy nor amend 10 CFR Parts 0, 2, 7, 8, 9 Subpart C, or 110, the Commission concludes that additions to §72.214 may be made under the rulemaking authority of the EDO. Certificates of Compliance would be exhibited in a

NUREG report issued by the NMSS staff, which would be updated as appropriate.

The NRC experience in the review of cask design and fabrication and licensing of spent fuel storage installations on the site of operating reactors has been documented in part by publication of two draft regulatory guides. In April of 1986, two draft regulatory guides entitled "Standard Format and Content for the Safety Analysis Report for Onsite Storage of Spent Fuel Storage Casks" (Task number CE-301) and "Standard Format and Content for a Topical Safety Analysis Report for a Dry Spent Fuel Storage Cask" (Task number CE-306) were issued for public comment. Single copies of these draft guides may be obtained from W.R. Pearson, Office of Nuclear Regulatory Research, Nuclear Regulatory Commission, Washington, DC 20555 (Telephone: (301)492-3764).

The passive nature of dry storage of spent fuel in casks provides operational benefits attractive to potential users. One benefit is that there is no need to provide operating systems to purify and circulate the water. Another benefit is that the potential for corrosion of the fuel cladding and reaction with the fuel is reduced, especially if an inerting atmosphere is maintained inside the cask. Also, since cooling of the spent fuel is a passive activity, active mechanisms, such as pumps and fans, are not required. Although Part 72 allows storage of any spent fuel over one year old, it is anticipated that most spent fuel stored in casks will be five years old or more. Because of the passive nature of cask cooling, the storage capacity of a cask is significantly increased as the spent fuel is aged, especially for fuel that is five years old or more. It is probable that reactor licensees will remove the older fuel from the storage pool to take advantage of this additional cask storage

capacity. Spent fuel storage casks are massive (on the order of 100 tons), of simple design, passive in nature, and will be manufactured under a strict quality assurance program, which NRC will ensure through its inspection program.

The Commission believes that, with provisions for proper quality assurance ensured under the Commission's inspection and enforcement authority, dry storage of spent fuel in casks provides adequate protection to public health and safety.

Proposed Rule

The General License

Under this proposed rule, a general license would be issued to holders of nuclear power reactor licenses to store spent fuel at reactor sites in casks approved by the NRC. The Commission will rely on dry storage of spent fuel in casks for confinement of radioactive material to provide adequate protection of public health and safety and the environment. It will rely on its inspection and enforcement authority to ensure compliance with conditions of the general license and cask certificates. A power reactor license holder would have to notify the Commission before storing spent fuel under the general license for the first time and register use of each cask as the spent fuel is stored. The Commission would make use of the notification of first use to initiate inspection actions and the registration of each cask to establish independent records related to use of casks. The cask records would be used to detect potential generic and specific cask safety problems, to keep track of repairs, to keep track of defects and damage resulting in a significant reduction in safety, and to keep track of the date by which spent

fuel must be removed from the cask unless the cask model has been reapproved. (As explained later, a cask service life is initially limited to 20 years.) A separate record would also be established for each cask by the cask vendor. This record would be transferred to, and be maintained by, cask users who would show any maintenance to the cask and lists its contents. When a cask model has been reapproved, users of this model would be notified by the NRC. They would also be advised of any changes in conditions for use of the cask.

The reactor license holder would have to show that the storage of spent fuel will be in compliance with the conditions of the cask Certificate of Compliance, including assurance that site parameters and other design bases are within the envelope of the values analyzed in the cask safety analysis report. An evaluation would also be made to show that there will be no changes necessary to the facility technical specifications and no unresolved safety questions in activities involving the storage casks. Procedures and criteria in 10 CFR 50.59 would be used for these evaluations. These types of evaluation are currently done for specific licenses issued under Part 72. Issues related to systems and components used both for reactor operations and spent fuel storage activities would be included. Most concerns to date have been related to control of heavy loads and have been accommodated. If there is a safety problem or a change in technical specifications required, and the reactor license holder wishes to store spent fuel under the general license, the problem must be resolved before storage, including submittal of an application for license amendment under Part 50 if necessary.

The reactor license holder would commit to establishing and maintaining a quality assurance program, an emergency plan, a training

program, and a radiation control program for activities related to spent fuel storage under the general license. Similar plans and programs are in effect for reactor operations. The appropriate existing plans or programs could be modified or amended to cover activities related to the spent fuel storage, if the reactor licensee chose to do this. These plans and programs would be examined for compliance by the NRC inspection staff.

The reactor license holder should make a commitment to conduct spent fuel storage activities in accordance with written and approved procedures. Procedures for safe handling of the spent fuel should be established by a thorough study of what is to be accomplished and approved by two independent competent groups within the licensee's organization. The reactor licensee has made this commitment for reactor operations, and the same or a similar approval system may be used for this storage of spent fuel.

Instances in which significant reductions in the safety effectiveness of or defects in casks are discovered must be reported. Initial notifications would have to be made within 24 hours, and written reports would follow within 30 days. The 24-hour notification is necessary, because defects or damage from accidents may present a hazard to public health and safety which could be mitigated by assistance from Federal Agencies, including the Commission. A written report is needed so that the staff can determine whether or not there are generic health and safety implications. The 30-day period is allowed so that the licensee can review and analyze the event and present a clear and complete history.

When the power reactor operating license expiration date approaches, the holder of the license must take some actions. Under 10 CFR 50.54(bb)

the reactor license holder must submit a program in writing to the Commission, no later than five years prior to the license expiration date, showing how the reactor licensee intends to manage and provide funding for the management of all irradiated fuel on the reactor site. This program would have to include the spent fuel stored under the general license proposed in this rulemaking.

The reactor license holder will also have to decide whether to request termination of the reactor operating license under 10 CFR 50.82. In a proposed rule published by the Commission in the Federal Register on February 11, 1985 (50 FR 5600), § 50.82 would be revised, but this discussion is equally applicable to the current or the proposed § 50.82. If the reactor license holder decides to apply for termination of the license, the plan submitted with the application must show how the spent fuel stored under this general license will be removed from the site. The plan would include an explanation of when and how the spent fuel will be moved, unloaded, and shipped prior to starting decommissioning of the equipment needed for these activities.

In part, the environmental assessment for this rulemaking relies on findings from the waste confidence proceedings, in which the Commission concluded they had confidence that there would be no significant environmental impacts from the storage of spent fuel for a period of 30 years beyond the expiration date of reactor licenses. Thus, an application for reactor license termination that proposes a decommissioning period beyond this 30-year period would have to contain a discussion of the environmental impacts from storage of the spent fuel beyond the period analyzed by the Commission. The general license would terminate automatically when the spent fuel is removed from storage.

Cask Certification

Cask vendors will submit a safety analysis report (SAR) showing how cask designs and fabrication can provide adequate protection to public health and safety. In the process of evaluating design bases in the SAR, certain assumptions must be made in order to arrive at practical solutions. One assumption is that the spent fuel will be stored in the cask for 20 years. Thus, the NRC initially approves casks for only 20 years of storage, after which they would have to be reapproved. This does not mean that after 20 years the cask becomes an unsafe container, it simply means that evaluations were not performed for a period greater than 20 years. The service life of a cask is 20 years from the time spent fuel is initially loaded into the cask. As a result of the limited service life, casks in use will have varying storage lifetimes remaining. For instance, 20 years after a cask model has been approved for storage there could be casks of this model in use with from zero to 20 years of service life remaining.

The holder of the cask Certificate of Compliance (cask vendor) should apply for reapproval of a storage cask. Submittal of an application would be made 17 years after the initial cask approval date, which is three years prior to the expiration date of the cask certificate, to allow time for the NRC staff to reevaluate the cask safety and reissue the cask certificate. However, if the holder of a cask certificate goes out of business or will not submit an application for reapproval in a timely manner for any reason, the Commission would be notified and in turn would notify the cask users. In any case, cask users would have to take action to ensure that spent fuel is stored in casks approved by the NRC. Several options would be available to licensees. If the cask were reapproved under

submittals by the vendor, the Commission would notify all users and the only action necessary for the users would be to update the cask records. If the cask vendor does not apply for reapproval, for whatever reason, the licensee would be notified by the Commission. The licensee would then have to arrange for reapproval or remove casks from service as their service life expires. This could mean removal of the spent fuel and storing it elsewhere.

The cask will be relied on to provide safe confinement of radioactive material independent of the operations in which it is involved or regardless of its location, so long as conditions comply with the Certificate of Compliance. Part of the cask approval procedure will be for NRC to ensure, through acceptance of a quality assurance program and inspections, that casks are designed, fabricated, tested, and maintained under the acceptance criteria that are set forth in this rule. The cask approval program will be analogous to that now conducted for casks approved for shipping spent fuel under 10 CFR Part 71. Records will be established by vendors and maintained by users to provide historical information on all casks, so that if there is a safety problem with a particular cask, a cask fabrication process, or with a cask model the NRC could issue notices to cask vendors and users to initiate corrective actions.

NRC costs related to cask approval reviews and evaluations, quality assurance program approvals, and cask fabrication inspections would be fully recovered. The schedule of fees in 10 CFR 170.31 and 170.32 would be revised to recover these costs. Inspection of plant and site-related activities would be performed by resident inspectors. NRC costs related to onsite inspections would also be recovered under 10 CFR Part 170.

Safeguards

Spent fuel removed from light water reactors contains low enriched uranium, fission products, plutonium, and other transuranium elements (transuranics). Owing to the special nuclear material in spent fuel, safeguards for an independent spent fuel storage installation must protect against theft and radiological sabotage and must provide for material accountability. The requirements for physical protection are set forth in proposed § 72.212. No specific requirements for material control and accounting are being added, because existing requirements in Parts 72 and 50 are adequate.

The theft issue arises mainly from the plutonium component of the spent fuel. Plutonium, when separated from other substances, can be used in the construction of nuclear explosive devices and therefore must be provided with a high level of physical protection. However, the plutonium contained in spent fuel is not readily separable from the highly radioactive fission products and other transuranics and for that reason is not considered a highly attractive material for theft. Moreover, the massive construction of casks significantly complicates theft scenarios. For these reasons no specific safeguards measures to protect against theft are proposed other than maintaining accounting records and conducting periodic inventories of the special nuclear material contained in the spent fuel.

Safeguards measures to protect against sabotage should be consistent with the probability and consequences of radiological sabotage. The term "radiological sabotage" is defined in 10 CFR Part 73 and means any deliberate act directed against a plant or transport vehicle and cask in which an activity licensed under NRC regulations is conducted, or against a

component of a plant or transport vehicle and cask which could directly or indirectly endanger the public health and safety by exposure to radiation.

In assessing the probability and consequences of radiological sabotage, the NRC considers: (1) the threat to storage facilities; (2) the response of typical storage casks or vaults and their contained spent fuel to postulated acts of radiological sabotage; and (3) the public health consequences of acts of radiological sabotage.

The NRC has carried out studies to develop information about possible adversary groups which might pose a threat to licensed nuclear facilities. The results of these studies are published in NUREG-0459, "Generic Adversary Characteristics - Summary Report" (March 1979) and NUREG-0703, "Potential Threat to Licensed Nuclear Activities from Insiders" (July 1980). Actions against facilities were found to be limited to a number of low consequence activities and harassments, such as hoax bomb threats, vandalism, radiopharmaceutical thefts, and firearms discharges. The list of actions is updated annually in a NUREG-0525, "Safeguards Summary Event List" (July 1987). None of the actions have affected spent fuel containment and, thus, have not caused any radiological health hazards.

In addition, the NRC staff regularly consults with law enforcement agencies and intelligence-gathering agencies to obtain their views concerning the possible existence of adversary groups interested in radiological sabotage of commercial nuclear facilities. None of the information the staff has collected confirms the presence of an identifiable domestic threat to dry storage facilities or to other components of nuclear facilities.

The consequences to the public health and safety would stem almost exclusively from the fraction of the release that is composed of respirable particles. In an NRC study, an experiment was carried out to evaluate the effects of a very severe, perfectly executed explosive sabotage scenario against a simulated storage cask containing spent fuel assemblies. The amount of fuel disrupted was measured. The fraction of disrupted material of respirable dimensions (0.005%) had been determined in a previous experiment. From this information an estimate of the airborne, respirable release was made, and the dose as a function of range and other variables was calculated. In a typical situation, for an individual at the boundary of the reactor site (taken as 100 meters from the location of the release) and in the center of the airborne plume, the whole-body dose was calculated to be 1 rem and the 50-year dose commitment (to the lung, which is the most sensitive organ) was calculated to be 2 rem. Doses higher or lower can be obtained depending on the variables used in the calculation. Variables include the meteorological conditions, the age and burn-up of the fuel, the heat-induced buoyancy of the airborne release, the range to the affected individual, and the explosive scenario assumed.

Although the experiment and calculations carried out lead to a conclusion of low public health consequences, there are limitations that must be taken into account. In particular, consequence modeling assumptions more severe than those in the foregoing calculation are possible if unconstrained sabotage resources or protracted loss of control of the storage site are allowed. For that reason protection requirements are proposed to provide for (1) early detection of malevolent moves against the storage site, and (2) a means to quickly summon response resources to assure against protracted loss of control of the site.

The proposed requirements comprise a subset of the overall protection requirements currently in force at every operating nuclear power reactor. Inasmuch as the security force at each reactor is thoroughly familiar with requirements similar to those proposed and has years of experience in carrying them out, the NRC concludes that the requirements can be successfully imposed through a general license for storage of spent fuel in NRC-approved casks without the need for advanced NRC review and approval of a physical security plan or other site-specific document before the reactor licensee implements the requirements.

Material control and accounting (MC&A) requirements are designed to protect against the undetected loss of the special nuclear material in spent fuel by maintaining vigilance over the material, tracking its movement and location, monitoring its inventory status, maintaining records of transactions and movements, and issuing reports of its status at the time of physical inventory. Similar requirements for MC&A have been applied to power reactors, to spent fuel storage at independent spent fuel storage installations, and to operations at certain other classes of fuel cycle facilities without requiring the licensee to submit a plan to document how compliance will be achieved. In these situations the requirements have been found to be sufficient. For these reasons, it is concluded that the MC&A requirements for the dry storage of spent fuel at power reactors can be handled under a general license.

A minor editorial change to § 72.30(b) is also proposed to make clear that a decommissioning funding plan is an integral part of an applicant's proposed decommissioning plan.

Finding of No Significant Environmental Impact: Availability

The Commission has determined under the National Environmental Policy Act of 1969, as amended, and the Commission's regulations in Subpart A of 10 CFR Part 51, that this rule, if adopted, would not be a major Federal action significantly affecting the quality of the human environment and therefore an environmental impact statement is not required. The rule is mainly administrative in nature and would not change safety requirements, which could have significant environmental impacts. The proposed rule would provide for power reactor licensees to store spent fuel in casks approved by NRC at reactor sites without additional site-specific approvals by the Commission. It would set forth conditions of a general license for the spent fuel storage and procedures and criteria for obtaining storage cask approval. The environmental assessment and finding of no significant impact on which this determination is based are available for inspection at the NRC Public Document Room, 1717 H Street NW., Washington, DC. Single copies of the environmental assessment and the finding of no significant impact are available from W.R. Pearson, Office of Nuclear Regulatory Research, Nuclear Regulatory Commission, Washington, DC 20555; Telephone: (301)492-3764.

Paperwork Reduction Act Statement

This proposed rule amends information collection requirements that are subject to the Paperwork Reduction Act of 1980 (44 U.S.C. 3501 et seq.). This rule has been submitted to the Office of Management and Budget for review and approval of the paperwork requirements.

Regulatory Analysis

The Commission has prepared a preliminary regulatory analysis on this proposed rule. The analysis examines the benefits and impacts considered by the Commission. The Preliminary Regulatory Analysis is available for inspection in the NRC Public Document Room, 1717 H Street NW., Washington, DC. Single copies may be obtained from W.R. Pearson, Office of Nuclear Regulatory Research, Nuclear Regulatory Commission, Washington, DC 20555; Telephone: (301)492-3764.

The Commission requests public comments on the preliminary regulatory analysis. Comments on the preliminary regulatory analysis may be submitted to the NRC as indicated under the ADDRESSES heading.

Regulatory Flexibility Act Certification

In accordance with the Regulatory Flexibility Act of 1980 (5 U.S.C. 605(b)), the Commission certifies that this rule, if promulgated, will not have a significant economic impact on a substantial number of small entities. This proposed rule affects only licensees owning and operating nuclear power reactors. The owners of nuclear power plants do not fall within the scope of the definition of "small entities" set forth in Section 601(3) of the Regulatory Flexibility Act, 15 U.S.C. 632, or the Small Business Size Standards set out in regulations issued by the Small Business Administration at 13 CFR Part 121.

Backfit Analysis

The NRC has determined that the backfit rule, 10 CFR 50.109, does not apply to this proposed rule, and, thus, a backfit analysis is not required for this proposed rule, because these amendments do not involve any provisions which would impose backfits as defined in § 50.109(a)(1).

List of Subjects

Part 72: Manpower training programs, Nuclear materials, Occupational safety and health, Reporting and recordkeeping requirements, Security measures, Spent fuel.

Part 73: Hazardous materials - transportation, Incorporation by reference, Nuclear materials, Nuclear power plants and reactors, Penalty, Reporting and recordkeeping requirements, Security measures.

Part 74: Accounting, Hazardous materials - transportation, Material control and accounting, Nuclear materials, Packaging and containers, Penalty, Radiation protection, Reporting and recordkeeping requirements, Scientific equipment, Special nuclear material.

Part 170: Byproduct material, Nuclear materials, Nuclear power plants and reactors; Penalty, Source material, Special nuclear material.

For reasons set out in the preamble and under the authority of the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, the Nuclear Waste Policy Act of 1982, and 5 U.S.C. 552 and 553, the NRC is proposing to adopt the following revisions to 10 CFR Part 72 and conforming amendments to 10 CFR Parts 73, 74, and 170.

PART 72 - Licensing Requirements for the Independent Storage of Spent Nuclear Fuel and High-Level Radioactive Waste

1. The authority citation for Part 72 is revised to read as follows:

Authority: Secs. 51, 53, 57, 62, 63, 65, 69, 81, 161, 182, 183, 184, 186, 187, 189, 68 Stat. 929, 930, 932, 933, 934, 935, 948, 953, 954, 955, as amended, sec. 234, 83 Stat. 444, as amended (42 U.S.C. 2071, 2073, 2077, 2092, 2093, 2095, 2099, 2111, 2201, 2232, 2233, 2234, 2236, 2237, 2238, 2282); sec. 274, Pub. L. 86-373, 73 Stat. 688, as amended (42 U.S.C. 2021); sec. 201, as amended, 202, 206, 88 Stat. 1242, as amended, 1244, 1246 (42 U.S.C. 5841, 5842, 5846); Pub. L. 95-601, sec. 10, 92 Stat. 2951 (42 U.S.C. 5851); sec. 102, Pub. L. 91-190, 83 Stat. 853 (42 U.S.C. 4332); secs. 131, 132, 133, 135, 137, 141, Pub. L. 97-425, 96 Stat. 2229, 2230, 2232, 2241, sec. 148, Pub. L. 100-203, 101 Stat. 1330-235 (42 U.S.C. 10151, 10152, 10153, 10155, 10157, 10161, 10168).

Section 72.44(g) also issued under secs. 142(b) and 148(c), (d), Pub. L. 100-203, 101 Stat. 1330-232, 1330-236 (42 U.S.C. 10162(b), 10168(c)(d).) Section 72.46 also issued under sec. 189, 68 Stat. 955 (42 U.S.C. 2239); sec. 134, Pub. L. 97-425, 96 Stat. 2230 (42 U.S.C. 10154). Section 72.96(d) also issued under sec. 145(g), Pub. L. 100-203, 101 Stat. 1330-235 (42 U.S.C. 10165(g).) Subpart J also issued under secs. 2(2), 2(15), 2(19), 117(a), 141(h), Pub. L. 97-425, 96 Stat. 2202, 2203, 2204, 2222, 2244 (42 U.S.C. 10101, 10137(a), 10161(h)). Subparts K and L are also added under sec. 133, 96 Stat. 2230 (42 U.S.C. 10153) and 218(a), 96 Stat. 2252 (42 U.S.C. 10198).

For the purposes of sec. 223, 68 Stat. 958, as amended (42 U.S.C. 2273); §§ 72.6, 72.22, 72.24, 72.26, 72.28(d), 72.30, 72.32, 72.44(a), (b)(1), (4), (5), (c), (d)(1), (2), (e), (f), 72.48(a), 72.50(a), 72.52(b), 72.72(b), (c), 72.74(a), (b), 72.76, 72.78, 72.104, 72.106, 72.120, 72.122, 72.124, 72.126, 72.128, 72.130, 72.140(b), (c), 72.148, 72.154, 72.156, 72.160, 72.166, 72.168, 72.170, 72.172, 72.176, 72.180, 72.184, 72.186 are issued under sec. 161b, 68 Stat. 948, as amended (42 U.S.C. 2201(b)); §§ 72.10(a), (e), 72.22, 72.24, 72.26, 72.28, 72.30, 72.32, 72.44(a),(b)(1), (4), (5), (c), (d)(1),(2),(e), (f), 72.48(a), 72.50(a), 72.52(b), 72.90(a)-(d), (f), 72.92, 72.94, 72.98, 72.100, 72.102(c), (d), (f), 72.104, 72.106, 72.120, 72.122, 72.124, 72.126, 72.128, 72.130, 72.140(b), (c), 72.142, 72.144, 72.146, 72.148, 72.150, 72.152, 72.154, 72.156, 72.158, 72.160, 72.162, 72.164, 72.166, 72.168, 72.170, 72.172, 72.176, 72.180, 72.182, 72.184, 72.186, 72.190, 72.192, 72.194 are issued under sec. 161i, 68 Stat. 949, as amended (42 U.S.C. 2201(i)); and §§ 72.10(e), 72.11, 72.16, 72.22, 72.24, 72.26, 72.28, 72.30, 72.32, 72.44(b)(3), (c)(5), (d)(3), (e), (f), 72.48(b), (c), 72.50(b), 72.54(a), (b), (c), 72.56, 72.70, 72.72, 72.74(a), (b), 72.76(a), 72.78(a), 72.80, 72.82, 72.92(b), 72.94(b), 72.140(b), (c), (d), 72.144(a), 72.146, 72.148, 72.150, 72.152, 72.154(a), (b), 72.156, 72.160, 72.162, 72.168, 72.170, 72.172, 72.174, 72.176, 72.180, 72.184, 72.186, 72.192, <u>72.212(b), 72.216, 72.218, 72.230, 72.234(e) and (g)</u> are issued under sec. 161o, 68 Stat. 950, as amended (42 U.S.C. 2201(o)).

2. In § 72.30, paragraph (b) is revised to read as follows:

§ 72.30 Decommissioning planning, including financing and recordkeeping.

* * * * *

(b) [~~The decommissioning funding plan must contain~~] The proposed decommissioning plan must also include a decommissioning funding plan containing information on how reasonable assurance will be provided that funds will be available to decommission the ISFSI or MRS. This information must include a cost estimate for decommissioning and a description of the method of assuring funds for decommissioning from paragraph (c) of this section, including means of adjusting cost estimates and associated funding levels periodically over the life of the ISFSI or MRS.

* * * * *

3. New Subpart K and Subpart L are added to read as follows:

Subpart K - General License for Storage of Spent Fuel at Power Reactor Sites

Sec.

72.210 General license issued.

72.212 Conditions of general license issued under § 72.210.

72.214 List of approved spent fuel storage casks.

72.216 Reports.

72.218 Termination of the general license.

72.220 Violations.

Subpart L - Approval of Spent Fuel Storage Casks

72.230 Procedures for spent fuel storage cask submittals.

72.232 Inspection and tests.

72.234 Conditions of approval.

72.236 Specific criteria for spent fuel storage cask approval.

72.238 Issuance of an NRC Certificate of Compliance.

72.240 Conditions for spent fuel storage cask reapproval.

Subpart K - General License for Storage of Spent Fuel at Power Reactor Sites

§ 72.210 General license issued.

A general license is hereby issued for the storage of spent fuel in an independent spent fuel storage installation at power reactor sites to persons authorized to operate nuclear power reactors under Part 50 of this chapter.

§ 72.212 Conditions of general license issued under § 72.210.

(a)(1) The general license is limited to storage of spent fuel in casks approved under the provisions of this Part.

(2) The general license for each cask fabricated under a Certificate of Compliance shall terminate 20 years after the date that the cask is first used to store spent fuel, unless the cask model is reapproved. In the event that a cask vendor does not apply for a cask model reapproval under § 72.240 of this part, any user or user representative may apply for cask reapproval.

(b) The general licensee shall:

(1)(i) Notify the Nuclear Regulatory Commission under §72.4 at least 90 days prior to first storage of spent fuel under the general license. The notice may be in the form of a letter, but must contain

the licensees name, address, reactor license number (s), and the name and means of contacting a person for additional information. A copy of the submittal must be sent to the Administrator of the appropriate Nuclear Regulatory Commission regional office listed in Appendix D to Part 20.

(ii) Register use of each cask with the Nuclear Regulatory Commission no later than 30 days after using the cask to store spent fuel. This registration may be accomplished by submitting an NRC Form-xxx or by a letter containing the following information: the licensee's name and address, the licensee's reactor license number(s), the name and title of a person who can be contacted for additional information, the cask certificate or model number, the cask identification number. Submittals must be in accordance with the instructions contained in § 72.4 of this part. A copy of each submittal must be sent to the Administrator of the appropriate Nuclear Regulatory Commission regional office listed in Appendix D to Part 20.

(2) Perform written evaluations that show that conditions set forth in the Certificate of Compliance are met for the anticipated total number of casks to be used for storage. The licensee shall also show that cask storage pads and areas are designed to adequately support the static load of the stored casks. Evaluations must show that the requirements of § 72.104 of this part are met. A copy of this record must be retained for 3 years.

(3) Determine, using procedures and criteria in § 50.59 of this chapter, whether activities under this general license involve any unreviewed safety questions or changes in the facility technical specifications, including activities related to spent fuel storage casks. If

any Nuclear Regulatory Commission approval is required, the procedure set forth in Part 50 of this chapter for this type of approval must be followed. A copy of the evaluation must be retained by the licensee for three years after initial storage of spent fuel under the general license.

(4) Protect the spent fuel against the design basis threat of radiological sabotage in accordance with the licensee's physical security plan approved in accordance with § 73.55, with the following additional conditions and exceptions:

(i) The physical security organization and program must be expanded and modified as necessary to assure that activities conducted under this general licensee do not decrease the effectiveness of the protection of vital equipment in accordance with § 73.55.

(ii) Storage of spent fuel must be within a protected area, in accordance with § 73.55(c), but need not be within a separate vital area. Existing protected areas may be expanded or new protected areas added for the purpose of storage of spent fuel in accordance with this general license.

(iii) Notwithstanding any requirements of the licensee's approved security plan, the observational capability required by § 73.55(h)(6) may be provided by a guard or watchman in lieu of closed circuit television for protection of spent fuel under the provisions of this general license.

(iv) For the purposes of this general license, the licensee is exempt from § 73.55(h)(4)(iii)(A) and (5) of this chapter.

(5) Establish and maintain as current records an emergency plan, a quality assurance program, a training program, and a radiation protection program for activities related to storage of spent fuel under the general license until the general license is terminated.

(6) Maintain a copy of the Certificate of Compliance and documents referenced in the certificate for each model of cask used for storage of spent fuel, until use of the cask model is discontinued. The licensee shall comply with the terms and conditions of the certificate.

(7)(i) Maintain the record provided by the cask supplier for each cask that shows:

(A) The NRC Certificate of Compliance number;

(B) The name and address of the cask vendor/lessor;

(C) The listing of spent fuel stored in the cask; and

(D) Any maintenance performed on the cask.

(ii) This record must include sufficient information to furnish documentary evidence that any testing and maintenance of the cask has been conducted under a quality assurance program accepted by the Nuclear Regulatory Commission.

(iii) In the event that a cask is sold, leased, loaned, or otherwise transferred, this record must also be transferred to and must be accurately maintained by the new user. This record must be maintained by the current cask user during the period that the cask is used for storage of spent fuel and retained by the last user for 3 years following decommissioning of the cask.

(8) Conduct activities related to storage of spent fuel under this general license in accordance with procedures written and approved by the licensee.

(9) On reasonable notice the licensee shall make records available to the Commission for inspection.

§ 72.214 List of approved spent fuel storage casks.

The following casks have been reviewed and evaluated by the Commission and are approved for storage of spent fuel under the conditions specified in their respective Certificates of Compliance.

1. Certificate Number:

SAR Submitted by: General Nuclear Systems, Inc.

SAR Title: "Topical Safety Analysis Report for the Castor V Cask Independent Spent Fuel Storage Installation (Dry Storage)"

Docket Number: 72-1000

Certification Expiration Date:

Model Number: CASTOR V/21

2. Certificate Number:

SAR Submitted by: Westinghouse Electric Corp.

SAR Title: "Topical Safety Analysis Report for the Westinghouse MC-10 Cask for an Independent Spent Fuel Storage Installation (Dry Storage)."

Docket Number: 72-1001

Certification Expiration Date:

Model Number: MC-10

3. Certificate Number:

SAR Submitted by: Nuclear Assurance Corp.

SAR Title: "Topical Safety Analysis Report for the NAC Storage/Transport Cask for use at an Independent Spent Fuel Storage Installation."

Docket Number: 72-1002

Certification Expiration Date:

Model Number: Storage/Transport

§ 72.216 Reports.

(a) The licensee shall make an initial report within 24 hours to the Director, Office of Nuclear Materials Safety and Safeguards, and a resident inspector at the reactor site, of any:

(1) Defect with safety significance discovered in any cask; and

(2) Instance in which there is a significant reduction in the safety effectiveness of any cask during use.

(b) A written report, including a description of the means employed to repair any defects or damage and prevent recurrence, must be submitted in accordance with § 72.4 within 30 days. A copy of the written report must be sent to the Administrator of the appropriate Nuclear Regulatory Commission regional office shown in Appendix D to Part 20.

§ 72.218 Termination of the general license.

(a) The notification regarding planning for the management of all spent fuel at the reactor required by § 50.54(bb) of this chapter must include a plan for removal of the spent fuel stored under this general license from the reactor site. The plan must show how the spent fuel

will be managed before starting to decommission systems and components needed for moving, unloading, and shipping this spent fuel. The general license terminates when all spent fuel stored in dry casks is removed from the dry cask storage area.

(b) Spent fuel previously stored may continue to be stored under this general license after termination of the reactor license under § 50.82 of this chapter. An application for termination of the reactor operating license submitted under § 50.82 of this chapter must, however, contain a description of how the spent fuel stored under this general license will be removed from the reactor site. If the decommissioning mode selected under § 50.82 is likely to extend beyond 30 years after the expiration date of the reactor operating license, the licensee must include in the application a discussion of incremental environmental impacts of the extended spent fuel storage.

(c) The reactor licensee must send a copy of submittals under § 72.218(a) and (b) to the Administrator of the appropriate Nuclear Regulatory Commission regional office shown in Appendix D to Part 20.

§ 72.220 Violations.

Storage of spent fuel under a general license may be halted or terminated under § 72.84.

Subpart L - Approval of Spent Fuel Storage Casks

§ 72.230 Procedures for spent fuel storage cask submittals.

(a) An application on NRC Form-xxxx must be submitted in accordance with the instructions contained in § 72.4. A safety analysis report

describing the proposed cask design and how the cask should be used to store spent fuel safely must be included with the application.

(b) Casks that have been certified for transportation of spent fuel under Part 71 of this chapter may be approved for storage of spent fuel under this subpart. An application on NRC Form-xxxx must be submitted in accordance with the instructions contained in § 72.4. A copy of the Certificate of Compliance issued by the NRC for the cask, and drawings and other documents referenced in the certificate, must be included with the application. A safety analysis report showing that the cask is suitable for storage of spent fuel for a period of at least 20 years must also be included.

(c) Public inspection. An application for the approval of a cask for storage of spent fuel may be made available for public inspection under § 72.20.

(d) Fees. (1) Fees for review and evaluation related to spent fuel storage cask approval and reapproval are those shown in § 170.31 of this chapter.

(2) Fees for quality assurance program approvals and inspections related to spent fuel storage cask fabrication are those shown in § 170.32 of this chapter.

§ 72.232 Inspection and tests.

(a) The applicant shall permit, and make provisions for, the Commission to inspect at reasonable times the premises and facilities at which a spent fuel storage cask is fabricated and tested.

(b) The applicant shall perform, and make provisions that permit the Commission to perform, tests that the Commission deems necessary or appropriate for the administration of the regulations in this part.

(c) The applicant shall notify the Director, Division of Reactor Inspection and Safeguards, Office of Nuclear Reactor Regulation, and the Director, Division of Industrial and Medical Nuclear Safety, Office of Nuclear Materials Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, DC, 20555, at least 45 days prior to starting fabrication of any spent fuel storage cask.

§ 72.234 Conditions of approval.

(a) Design, fabrication, testing, and maintenance of a spent fuel storage cask must comply with the technical criteria in § 72.236.

(b) Design, fabrication, testing, and maintenance of spent fuel storage casks must be conducted under a quality assurance program that meets the requirements of Subpart G of this part.

(c) Cask fabrication must not start prior to receipt of the Certificate of Compliance for the cask model.

(d) Cask model reapproval is required 20 years after the issuance of a Certificate of Compliance. Any applicant under § 72.230, who receives a Certificate of Compliance under § 72.238, shall notify the Commission if an application for cask reapproval will not be submitted.

(e)(1) The applicant shall ensure that a record is established and maintained for each cask fabricated under the NRC Certificate of Compliance.

(2) This record must include:

(i) The NRC Certificate of Compliance number;

(ii) The cask model number;

(iii) The cask identification number;

(iv) Date fabrication started;

(v) Date fabrication completed;

(vi) Certification that the cask was designed, fabricated, tested, and repaired in accordance with a quality assurance program accepted by NRC;

(vii) Certification that inspections required by § 72.236(j) were performed and found satisfactory; and

(viii) The name and address of the cask user.

(3) A copy of this record must be submitted to the Commission in accordance with instructions contained in § 72.4 and the original of the record supplied to the cask user. A current copy of a composite record of all casks, showing the above information, must be retained by the applicant for 20 years after the cask is shipped.

(f) The composite record required by § 72.234(e)(3) must be made available to the Commission for inspection.

(g) The applicant shall ensure that written procedures and appropriate tests are established for use of the casks. A copy of these procedures and tests must be provided to each cask user.

§ 72.236 Specific criteria for spent fuel storage cask approval.

(a) Technical specifications concerning the spent fuel to be stored in the cask, such as the type of spent fuel (i.e., BWR, PWR, both), enrichment of the unirradiated fuel, burn-up (i.e., megawatt-days/MTU), cooling time of the spent fuel prior to storage in the cask, maximum heat designed to be dissipated (i.e., kw/assembly, kw/rod), the maximum spent fuel loading limit, and condition of the spent fuel (i.e., intact assembly or consolidated fuel rods), inerting atmosphere requirements, must be provided.

(b) Design bases and design criteria must be provided for structural members and systems important to safety.

(c) The cask must be designed and fabricated so that the spent fuel is maintained in a subcritical condition under credible conditions.

(d) Radiation shielding and confinement features must be provided to the extent required to meet the requirements in §§ 72.104 and 72.106 of this part.

(e) Casks must be designed to provide redundant sealing of confinement systems.

(f) Casks must be designed to provide adequate heat removal capacity when the cask is stored without active cooling.

(g) Casks must be designed to store the spent fuel safely for a minimum of 20 years and permit maintenance as required.

(h) Casks must be compatible with wet or dry spent fuel loading and unloading facilities.

(i) Casks must be designed to facilitate decontamination to the extent practicable.

(j) Casks must be inspected to ascertain that there are no cracks, pinholes, uncontrolled voids, or other defects that could significantly reduce their confinement effectiveness.

(k) Casks must be conspicuously and durably marked with

(1) A model number;

(2) A unique identification number; and

(3) An empty weight.

(l) Casks and systems important to safety must be evaluated, by subjecting a sample or scale model to tests appropriate to the part being tested, or by other means acceptable to the Commission, demonstrating

that they will reasonably maintain confinement of radioactive material under normal, off-normal, and accident conditions.

§ 72.238 Issuance of an NRC Certificate of Compliance.

A Certificate of Compliance for a cask model will be issued by NRC on a finding that

(a) The criteria in § 72.236(a) through (i) are met; and

(b) The applicant certifies that each cask will be fabricated, inspected, and tested in accordance with § 72.236(j) and (l).

§ 72.240 Conditions for Spent Fuel Storage Cask Reapproval.

(a) The holder of a cask model Certificate of Compliance, a user of a cask model approved by NRC, and representatives of cask users may apply for a cask model reapproval.

(b) Application for reapproval of a cask model must be submitted 3 years prior to the date that the Certificate of Compliance for that model expires. The application must be accompanied by a safety analysis report (SAR). The new SAR may reference the SAR originally submitted for the cask model

(c) A cask model will be reapproved if conditions in § 72.238 are met, including demonstration that storage of spent fuel has not significantly, adversely affected systems and components important to safety.

The following amendments are proposed to 10 CFR Part 170 of this chapter.

Part 170 - Fees for Facilities and Materials licenses and Other Regulatory Services Under the Atomic Energy Act of 1954, as Amended

4. The authority citation of Part 170 continues to read as follows:

AUTHORITY: 31 U.S.C. 9701, 96 Stat. 1051; sec. 301, Pub. L. 92-314, 86 Stat. 222 (42 U.S.C. 2201w); sec. 201, 88 Stat. 1242, as amended (42 U.S.C. 5841).

5. In § 170.31, a new category 13 is added to read as follows (note: Footnotes to the chart remain unchanged):

§ 170.31 Schedule of fees for materials licenses and other regulatory services.

* * * * *

Category of materials and type of fee[1]	Fee[2]
13. Spent fuel storage cask Certificate of Compliance	
Application - - - - - - - - -	$150
Approval:	
1. Safety Analysis Report - -	Full Cost[3]
2. Amendments, Revisions and Supplements to Safety Analysis Report - - - - -	Full Cost[3]

* * * * *

6. In § 170.32, category 10 is revised to read as follows (note: Footnotes to the chart remain unchanged):

§ 170.32 Schedule of fees for health and safety, and safeguards inspections for materials licenses.

* * * * *

Category of licensees	Type of inspection[1]	Fee[2]	Maximum frequency[3]
10. Transportation of radioactive material and storage of spent fuel under 10 CFR § 72.201: Inspection of spent fuel casks, packages, and shipping containers.	Inspections on the reactor site	Full cost recovery.	N/A--Resident inspector.
	Fabrication of spent fuel dry storage casks.	--do--	Inspection of casks to be determined.

* * * * *

Dated at Rockville, Maryland, this ____ day of _____, 1988.

For the Nuclear Regulatory Commission.

Samuel J. Chilk,
Secretary of the Commission.

PRELIMINARY REGULATORY ANALYSIS

Storage of Spent Nuclear Fuel in NRC Approved
Storage Casks at Nuclear Power Reactor Sites

(10 CFR Parts 72 and 170)

1. STATEMENT OF THE PROBLEM

It is anticipated that electrical utilities which utilize nuclear reactors for power will have a major need for additional storage of spent fuel to supplement the reactor's water basin storage, starting in the 1990s. The Nuclear Waste Policy Act of 1982 (NWPA) recognizes this need for additional spent fuel storage capacity at nuclear power reactor sites. In section 218(a), the NWPA states that "the Secretary [of DOE] shall establish a demonstration program, in cooperation with the private sector, for the dry storage of spent fuel at civilian nuclear power reactor sites, with the objective of establishing one or more technologies that the Commission may, by rule, approve for use at the sites of civilian nuclear power reactors without, to the maximum extent practicable, the need for additional site-specific approvals by the Commission". In section 133, the NWPA states that "the Commission shall, by rule, establish procedures for the licensing of any technology approved by the Commission under section 218(a)". The Commission recognizes these needs by including the development of the basis for rulemaking that would enable use of dry spent fuel storage in casks without, to the extent practicable, site-specific license reviews in their planning guidance (NUREG-0885, "U.S. Nuclear Regulatory Commission Policy and Planning Guidance 1987", Issue 6, September 1987). Currently the regulations in Part 72 do not permit licensing spent fuel storage without extensive site reviews. This rulemaking would accomplish these directives by providing for issuance of a general license to the holders of nuclear power reactor licenses for the storage of spent fuel at the site in casks approved by the NRC.

2. OBJECTIVES

2.1 To provide for compliance with the directives in sections 133 and 218(a) of the NWPA that instruct the Commission to approve one or more technologies for the dry storage of spent fuel at civilian nuclear power reactor sites without the need for additional site-specific approvals and to set forth procedures for licensing any approved technology.

2.2 To establish conditions that protect the health and safety of the public and that are not inimical to the common defense and security.

3. ALTERNATIVES

3.1 No Action

The NWPA directs that the Commission approve one or more technologies, that have been developed and demonstrated by DOE, for the use of spent fuel storage at the sites of civilian nuclear power reactors without, to the maximum extent practicable, the need for additional site-specific review. It also directs that the Commission, by rule, set forth procedures for licensing the technology. Regulations for accomplishing these needs are not in place, thus, some action is necessary.

3.2 Available Alternatives

The procedural alternatives available to NRC staff are amendment of licenses, use of regulatory guides or branch technical positions, and use of the rulemaking process. The purpose of this action is to license storage of spent fuel. 10 CFR Part 72 specifically addresses dry storage of spent fuel, under a materials license. The reactor is licensed to operate under 10 CFR Part 50 and amendment of the reactor operating license, which is a facility license, is not appropriate. Regulatory guides or branch positions do not carry the force of law, so they are only appropriate for conveying information concerning staff procedures. The preferred course of action is to proceed with rulemaking to amend Part 72.

4. CONSEQUENCES

4.1 Benefits

The proposed action will bring NRC regulations into compliance with the NWPA with no adverse effect on the public health and safety, and minimal impact on nuclear power reactor licensees and the NRC. Industry and NRC impacts are discussed in sections 4.2.1 and 4.2.3.

The proposed rule would ensure protection of public health and safety through the use of the Commission's inspection and enforcement authority. NRC inspectors would inspect activities related to storage of spent fuel at the reactor site and verify that conditions important to safety are in compliance with the Commission's regulations. Personnel from the Office of Nuclear Material Safety and Safeguards (NMSS) will evaluate design and fabrication procedures for storage casks, as submitted in a safety analysis report by cask vendors, and approve casks for storage of spent fuel. They will issue a Certificate of Compliance for casks after verification of the cask design and the applicant's quality assurance program (QA). The criteria for obtaining a Certificate of Compliance are set forth in proposed subpart L. In general terms, cask approval can only be obtained after NRC is assured that the design is adequate for storage of the type of spent fuel specified and that a QA program acceptable to the NRC will be applied to the cask design, fabrication, testing, and maintenance. Except for the formal submittal of a license application and its related documents, the procedure for storage of spent fuel under this rule would essentially be the same as that currently required for a specific license under Part 72. The rulemaking process ensures that the public will be involved in the development of any final rule that may be promulgated.

4.2 Impacts

4.2.1 NRC

o NMSS. Approximately one staff-year (2087 hours) of effort and $200,000 in contractor work is currently required for reviews and evaluations related to issuance of a specific license under Part 72. The $200,000 includes technical assistance for such work as independent computation and verification

of design bases and design criteria applications. It is estimated that two license applications per year, for a period of 10 years starting about 1990, will be submitted for dry storage of spent fuel on nuclear power reactor sites. The total burden on NMSS for issuance of the estimated 20 specific licenses would be about 41,740 staff-hours under current requirements in Part 72. The proposed rule would eliminate the necessity for this type of license review by NMSS.

The staff did not analyze resource requirements beyond the year 2000. However, if a significant number of reactor licensees seek and obtain license extension amendments (beyond the current limit of 40 years), the need for additional dry storage capacity would rise significantly. Thus, the requirement for this type of resource would increase.

The proposed rule would require that casks used for storage of spent fuel be approved by the NRC. Subpart L of the proposed rule sets forth criteria for obtaining cask approval. The major burden for reviews, evaluations, and issuance of Certificates of Compliance will be assigned to NMSS personnel. It is estimated that NMSS staff resources required for approval of each cask would be about one-half a staff-year (1,000 staff-hours). Based on current submittals and information, the staff anticipates that there may be 10 or more applications for spent fuel storage cask certificates. For purposes of this analysis it is assumed that there will be 10 submittals. Thus, it would require about 10,000 staff-hours for reviews and evaluations related to initial storage cask approvals, or about 1,000 staff-hours per year averaged over the 10-year period analyzed. Technical assistance costs would still be required.

Cask designs that have been approved for transportation of spent fuel may also be considered for spent fuel storage. If the cask vendor has a Certificate of Compliance issued under Part 71 for the cask, the procedure for approval for spent fuel storage would entail an analysis showing that the spent fuel could be stored in the cask safely for 20 years. This could be a rather simple analysis and no technical assistance work is anticipated. Further, since many of the casks currently approved for transportation would be uneconomical for spent fuel storage, few submittals are expected. Thus, no separate estimate is made.

o NRR. The anticipated involvement of the Office of Nuclear Reactor Regulation (NRR) personnel under the proposed rule would be significantly different from their current involvement. Reactor project managers and NMSS personnel currently coordinate to ensure that independent spent fuel storage installation (ISFSI) operations and reactor operations are compatible. Currently NRR resource requirements are small. Under the proposed rule, it is anticipated that NRR personnel will be responsible for inspections related to spent fuel cask fabrication and QA application. They will also continue to be responsible for physical protection plans.

It is estimated that about 6,750 metric tons (tonnes) of uranium in spent fuel will be removed from reactors over the 10 years analyzed. It is assumed that it will be stored in casks and that about 10 tonnes of uranium can be stored in a cask. Thus, about 680 storage casks will be required. About 15 percent of these cask fabrications would be inspected by NRC, which will be about 10 cask fabrication inspections per year. An average inspection trip is estimated to require about 40 staff-hours and cost about $2,000. The reason for the large estimated travel expenses is that some inspection trips will require foreign travel. In addition, there would be technical assistance costs estimated to be about $10,000. It is anticipated that there will also be about 80 staff-hours required for inspection preparation and report writing. Thus, about 1,200 staff-hours and $120,000 in expenses would be required per year for spent fuel cask fabrications.

o Regional Offices. Each operating reactor has at least one resident inspector. In addition, the regions have a staff of field inspectors. It is anticipated that inspection activities related to storage of spent fuel under the general license proposed in this rule, including review of operating plans and programs (i.e., quality assurance plan, emergency plan, training program) would be performed by a resident inspector. It is anticipated that about 800 staff-hours per year would be required for these inspections.

o Training. Resources would also be needed to train NRR and Regional personnel to perform reviews, evaluations, and inspections related to spent fuel storage in casks under the general license and to cask fabrication. A cadre of 10 persons from the Regional offices (2 from each Region) and 2 from

NRR would probably be sufficient for an initial compliment. It is estimated that the training could be accomplished using NRC training facilities. The training sessions could be conducted by NMSS personnel. It is estimated that a total of 800 staff-hours for the Regions, 160 staff-hours for NRR, and 240 staff-hours for NMSS would be required. In addition the Regions would incur an estimated $15,000 in expenses for travel to headquarters.

o Total NRC Resource Requirements. If storage of spent fuel in an ISFSI were to be licensed under existing regulations, the major resources would be the estimated 41,740 NMSS staff-hours and the $4,000,000 in contracted technical assistance required for reviews and evaluations related to issuing the estimated 20 equivalent specific licenses under Part 72. This would be about 4,200 staff-hours per year, averaged over the 10-year period analyzed. Other NRC resource requirements under current regulations are not zero, but are relatively small.

Estimated resources for NMSS activities under the proposed rule would be the estimated 1,000 staff-hours per year for initial cask reviews and approvals. In addition, there would be the 1,200 staff-hours and $120,000 expenses per year required by NRR related to cask fabrication inspections, and the 800 staff-hours per year required by the regions for inspections. The total estimated resources for training is 1,200 staff-hours and $15,000 in expenses. Total NRC staff resource requirements are estimated to amount to about 3,000 staff-hours per year under the proposed rule, which would compare to an estimated 4,200 staff-hours if specific licenses are approved under existing regulations. The $200,000 for contractor assistance would continue to be part of the initial approval of cask designs and would amount to $2,000,000 over the 10 year period analyzed. This is about half of the contractual expenses estimated to be required if specific licenses had to be approved. This leads to the conclusion that total NRC resource requirements under the proposed rule would be lower than if specific licenses were issued under current regulations. Resources are required for inspections related to safeguards and physical security. These resources are expected to remain about the same and are not considered separately. In any case, fee schedules in 10 CFR 170 are being revised to ensure that costs related to the rule are fully recovered.

4.2.2 Other Government Agencies.

No other Government agency, except TVA, is licensed to operate a nuclear power reactor. The impacts estimated for nuclear power reactor licensees would apply to TVA.

4.2.3 Nuclear Power Reactor Licensees

Currently nuclear power reactor licensees must submit an application for a specific license under 10 CFR Part 72 to store spent fuel in an independent spent fuel storage installation on the reactor site. The NRC recovers full costs for approval of specific licenses, which in cases similar to the general license would amount to about $200,000. License fees related to spent fuel storage under the general license would be eliminated.

It is estimated that the annual reporting burden for a specific licensee under Part 72 is currently about 1,309 hours and the recordkeeping burden about 5,165 hours. The proposed rule would eliminate the annual reporting burden for affected reactor licensees. Costs related to printing and distribution of license documents required by Part 72 (e.g., safety analysis report, environmental report) would also be eliminated. However, evaluations concerning safety and recordkeeping related to operating and organizational plans and programs would still have to be conducted. Records related to these activities would have to maintained by the reactor licensee and would be subject to inspection by, but not submitted to, the NRC. The proposed rule would not alter reactor operating requirements under Part 50. The proposed rule would simplify the procedures under which a nuclear power reactor licensee could store spent fuel. A draft regulatory guide entitled, "Standard Format and Content for a Safety Analysis Report for Onsite Storage of Spent Fuel Storage Casks," was issued for public comment in April 1986 under task number CE-301-4. This guide and the public comments received on it were considered in the development of proposed subpart K. (Single copies of the draft guide may be obtained from W.R. Pearson, Office of Nuclear Regulatory Research, Nuclear Regulatory Commission, Washington, DC, 20555 (Telephone: (301) 492-3764)).

Incremental costs for design, construction, operation, and decommissioning of facilities for the storage of spent fuel under this rule have not been estimated. If the reactor licensee has a need for storage of spent fuel beyond the capacity of the reactor storage pool, the licensee could choose whether to apply for a specific license under 10 CFR Part 72 or to store spent fuel under the general license provided by this rule. In either case, there would be costs related to the design, construction, operation and decommissioning. The licensee would decide on the procedure that provided the better solution for his purposes.

In the area of safeguards and physical protection it is estimated that adoption of these regulations would cost reactor licensees a one time expenditure of about $42,000, if an additional protected area must be constructed for storage of the spent fuel under the general license. This is based on estimated costs of about $14,000 for additional physical barriers (800 feet of fence and a 50 foot gate encompassing about an acre), $8,800 for additional illumination (8 poles), and $19,200 for additional detection systems (6 systems). It is also estimated that an annual cost of about $1,300 for additional testing and maintenance related to this storage of spent fuel will be required. Current experience indicates that existing safeguards organizations are adequate to cover safeguards functions similar to those required by this proposed rule. However, it is possible that additional guards may be required under some circumstances. For instance, it may be necessary to increase the number of guards to cover spent fuel storage areas located remotely from the reactor protected area.

4.2.4 Cask Vendors.

Currently costs for approval of a topical safety analysis report, which is the present means of getting dry spent fuel storage cask designs approved for use, are limited to $20,000. This is significantly less than NRC actual costs. Under the proposed rule NRC would recover full costs for approval of cask designs. This could amount to about $250,000 to $300,000 per design, including cost of contractor work and cask fabrication inspections.

Cask vendors have submitted six topical reports to NMSS for approval for use of casks for spent fuel storage. Three of the topical reports have been approved and these casks are listed in this rule as approved for storage of spent fuel.

No incremental costs for additional reporting requirements are expected as a result of this action. The criteria for approval of spent fuel storage casks, as set forth in subpart L, are not significantly different from the design, fabrication, and quality assurance criteria that are currently used. A draft regulatory guide entitled, "Standard Format and Content for a Topical Safety Analysis Report for a Dry Spent Fuel Storage Cask," was issued for public comment in April 1986 under task number CE-306-4. The guide and the public comments received on it were considered in development of subpart L. (Single copies of the draft guide may be obtained from W.R. Pearson, Office of Nuclear Regulatory Research, Nuclear Regulatory Commission, Washington, DC, 20555 (Telephone: (301) 492-3764)).

4.2.5 Public.

No incremental cost impact on the public is expected. As shown in the preceding cost analyses, no significant increase in the cost of doing business is expected as a result of this action. It is anticipated that costs to power reactor licensees will be less than that required to obtain a specific license for the same type of storage. Total NRC resources are also anticipated to be reduced slightly. However, these incremental costs would be insignificant compared to the overall costs, so no significant savings to the public is anticipated. Since the power reactor licensee must comply with the requirements of the Commission's regulations, no reduction in public health and safety is anticipated. In fact, risk to public health and safety could be reduced. If shipment of the spent fuel is significantly delayed, the radioactivity of the spent fuel would be lower at the time of shipment.

4.3 Impacts on other Requirements.

On May 27, 1986, a proposed rule amending Part 72 was published in the Federal Register (51 FR 19106). It primarily concerned licensing the storage of spent fuel and high-level radioactive waste in a monitored retrievable storage facility, which would be constructed and operated by the DOE and licensed by the Commission. It did not address requirements for licensing mandated by sections 133 and 218(a) of the NWPA. The Commission approved a final rule, derived from the proposed rule, at a meeting held on Thursday, July 14, 1988. Changes made in Part 72, as a result of this final rule, are reflected in this proposed rulemaking.

4.4 Constraints.

No legal, institutional, or policy constraints are anticipated.

5. DECISION RATIONALE.

An assessment of the benefits and impacts of the alternatives leads to the conclusion that the requirements of the proposed rule are commensurate with the Commission's responsibilities for public health and safety and the common defense and security. No other available alternative is believed to be as satisfactory, thus, this action is recommended.

6. IMPLEMENTATION.

This proposed rule will be published in the Federal Register allowing 45 days for public comment. Since rulemaking is mandated by the NWPA and the incremental impacts of this rule are minor, no implementation problems are anticipated.

AC 76-1
PDR

ROUTING AND TRANSMITTAL SLIP

Date 8/30/88

TO: (Name, office symbol, room number, building, Agency/Post)	Initials	Date
1. Cheryl Sakenas		
2.		
3.		
4.		
5.		

Action	File	Note and Return
Approval	For Clearance	Per Conversation
As Requested	For Correction	Prepare Reply
Circulate	For Your Information	See Me
Comment	Investigate	Signature
Coordination	Justify	

REMARKS

SUBJ: SPENT FUEL STORAGE PROPOSED RULE

Attached are 20 copies of revisons to be made to the draft of the proposed rule dated 8/4/88. The issue of spent fuel cask design compatibility was raised by the Commission after I sent the draft proposed rule to CRGR.

NMSS and OGC agree with these revisions. Please distribute the revisions to the CRGR members.

DO NOT use this form as a RECORD of approvals, concurrences, disposals, clearances, and similar actions

FROM: (Name, org. symbol, Agency/Post)	Room No.—Bldg.
W.R. Pearson	NLS - 119
	Phone No. 2-3764

5041-102

OPTIONAL FORM 41 (Rev. 7-76)
Prescribed by GSA
FPMR (41 CFR) 101-11.206

☆ GPO: 1983 O - 381-529 (232)

As sent to Cheryl Sakenas on 8/30/88

submittals by the vendor, the Commission would notify all users and the only action necessary for the users would be to update the cask records. If the cask vendor does not apply for reapproval, for whatever reason, the licensee would be notified by the Commission. The licensee would then have to arrange for reapproval or remove casks from service as their service life expires. This could mean removal of the spent fuel and storing it elsewhere.

The cask will be relied on to provide safe confinement of radioactive material independent of the operations in which it is involved or regardless of its location, so long as conditions comply with the Certificate of Compliance. Part of the cask approval procedure will be for NRC to ensure, through acceptance of a quality assurance program and inspections, that casks are designed, fabricated, tested, and maintained under the acceptance criteria that are set forth in this rule. The cask approval program will be analogous to that now conducted for casks approved for shipping spent fuel under 10 CFR Part 71. Records will be established by vendors and maintained by users to provide historical information on all casks, so that if there is a safety problem with a particular cask, a cask fabrication process, or with a cask model the NRC could issue notices to cask vendors and users to initiate corrective actions.

→ Please Insert attached

NRC costs related to cask approval reviews and evaluations, quality assurance program approvals, and cask fabrication inspections would be fully recovered. The schedule of fees in 10 CFR 170.31 and 170.32 would be revised to recover these costs. Inspection of plant and site-related activities would be performed by resident inspectors. NRC costs related to onsite inspections would also be recovered under 10 CFR Part 170.

(Insert on page 13)

The scope of this rule is to allow holders of nuclear power reactor licenses to store spent nuclear fuel at reactor sites under a general license using dry cask spent fuel storage technology. The Commission has studied and investigated different methods for spent fuel storage and believes that approval of dry cask storage is appropriate at this time. The Commission is continuing to study other methods and may, in the future, approve some other method for use under a general license. Meanwhile other methods have been and will continue to be approved under specific licenses issued under Part 72. In approving storage cask designs, he confinement of radiation and radioactive material is the primary consideration for spent fuel storage. The Commission must also consider related operations, such as loading spent fuel into casks, unloading casks, and transportation of the spent fuel for its ultimate disposition by the Department of Energy (DOE). The Commission believes prudent concern, for overall activities related to the back-end of the LWR fuel cycle, dictates that consideration should be given to the compatibility of spent fuel storage cask designs with the eventual transportation to a DOE monitored retrievable storage facility or geologic repository. The Commission believes that cask designers should be aware of developments in this technology and should design spent fuel storage casks for compatibility with future disposition of the spent fuel, to the extent that is practicable, given the information available at the time that a cask is being designed.

(b) Design bases and design criteria must be provided for structural members and systems important to safety.

(c) The cask must be designed and fabricated so that the spent fuel is maintained in a subcritical condition under credible conditions.

(d) Radiation shielding and confinement features must be provided to the extent required to meet the requirements in §§ 72.104 and 72.106 of this part.

(e) Casks must be designed to provide redundant sealing of confinement systems.

(f) Casks must be designed to provide adequate heat removal capacity when the cask is stored without active cooling.

(g) Casks must be designed to store the spent fuel safely for a minimum of 20 years and permit maintenance as required.

(h) Casks must be compatible with wet or dry spent fuel loading and unloading facilities.

(i) Casks must be designed to facilitate decontamination to the extent practicable.

(j) Casks must be inspected to ascertain that there are no cracks, pinholes, uncontrolled voids, or other defects that could significantly reduce their confinement effectiveness.

(k) Casks must be conspicuously and durably marked with

(1) A model number;

(2) A unique identification number; and

(3) An empty weight.

(l) Casks and systems important to safety must be evaluated, by subjecting a sample or scale model to tests appropriate to the part being tested, or by other means acceptable to the Commission, demonstrating

(m) (See Insert attached) X

(M) TO THE EXTENT PRACTICABLE, IN THE DESIGN OF DRY SPENT STORAGE CASKS, CONSIDERATION SHOULD BE GIVEN TO THE COMPATIBILITY OF THE DRY STORAGE CASK SYSTEMS AND COMPONENTS WITH TRANSPORTATION AND OTHER ACTIVITIES RELATED TO THE REMOVAL OF THE STORED SPENT FUEL FROM THE REACTOR SITE FOR ULTIMATE DISPOSITION BY THE DEPARTMENT OF ENERGY.

AC 76-1
PDR

ROUTING AND TRANSMITTAL SLIP

Date 10/31/88

TO: (Name, office symbol, room number, building, Agency/Post)	Initials	Date
1. R.M. Bernero, NMSS		
J.R. Goldberg, OGC		
2. C.J. Paperiello, Reg. III		
D.F. Ross, RES		
3. J.H. Sniezek, NRR		
4.		
5.		

	Action		File		Note and Return
	Approval		For Clearance		Per Conversation
	As Requested		For Correction		Prepare Reply
	Circulate		For Your Information		See Me
	Comment		Investigate		Signature
	Coordination		Justify		

REMARKS

SUBJ: Storage of Spent Fuel in NRC

Enclosed are revised pages of the Federal Register notice and regulatory analysis on the proposed rule entitled "Storage of Spent Fuel in NRC - Approved Casks at Nuclear Power Reactor Sites," which were originally sent to CRGR on August 15, 1988. These revisions were made as a result of an issue raised by the Commission on cask design standardization at its meeting of Aug 10, 1988.

Also enclosed is a copy of a SRM dated Oct 26, 1988 resulting from a Commission briefing held on Wednesday, Oct 19, 1988.

DO NOT use this form as a RECORD of approvals, concurrences, disposals, clearances, and similar actions

FROM: (Name, org. symbol, Agency/Post)	Room No.—Bldg.
William Pearson, RDB, DRA, RES	NL/S129
	Phone No. X23764

5041-102 ★U.S.GPO:1986-0-491-247/20041 OPTIONAL FORM 41 (Rev. 7-76) Prescribed by GSA FPMR (41 CFR) 101-11.206

AC 76-1
PDR

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

OFFICE OF THE
SECRETARY

IN RESPONSE, PLEASE
REFER TO: M881019

ACTION - Thompson, NMSS

October 26, 1988

Cys: Stello
Taylor
Hoyle
Beckjord, RES
Scroggins, ARM

MEMORANDUM FOR: Victor Stello, Jr.
Executive Director for Operations

FROM: Samuel J. Chilk, Secretary

SUBJECT: STAFF REQUIREMENTS - BRIEFING ON DIFFERENT CASK DESIGNS FOR SHIPPING AND STORING NUCLEAR MATERIALS, 2:00 P.M., WEDNESDAY, OCTOBER 19, 1988, COMMISSIONERS' CONFERENCE ROOM, ONE WHITE FLINT NORTH, ROCKVILLE, MARYLAND (OPEN TO PUBLIC ATTENDANCE)

The Commission* was briefed by the staff on different cask designs for shipping and storing nuclear materials, i.e., spent fuel.

The Commission encouraged the staff to continue working with the Department of Energy, utility licensees and shipping cask fabricators to achieve cask design compatibility to the greatest extent possible. With NRC taking a leadership role, active participation by the utilities and the industry should be sought to achieve this goal.

Commissioner Rogers requested the staff, in their consideration of the designs of casks, to separate those designs for transport and repository storage from those designs for onsite storage, and to assign a higher priority to the achievement of compatibility among transport and repository storage casks while simultaneously expediting the review of proposed onsite storage cask designs.

The Commission requested the staff provide a paper addressing the resources needed to handle license applications for cask designs.

~~(EDO)~~ (NMSS) (SECY Suspense: 1/13/88)

cc: Chairman Zech
Commissioner Roberts
Commissioner Carr
Commissioner Rogers
Commissioner Curtiss
OGC
GPA
PDR - Advance
DCS - P1-124

Rec'd Off. EDO
Date 10-27-88
Time 9:30 A

* Commissioner Carr was not present.

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Activities related to loading and unloading spent fuel casks are routine procedures at power reactors. The procedures for dry storage of spent fuel in casks would be an extension of these procedures. Over the last several years the staff has reviewed and approved three spent fuel storage cask designs, including a dry spent fuel storage system consisting of stainless steel canisters placed in concrete modules, and a concrete modular vault design. Requests for approval of cask designs are currently submitted in the form of topical safety analysis reports (TSARs). Three dry storage cask TSARs have been approved for referencing, which means that an ISFSI license applicant may reference appropriate parts of the report in licensing proceedings for the storage of spent fuel. This greatly reduces an ISFSI license applicant's time, effort, and cost. The same reliance on an approved safety analysis is being made available for on-site dry cask storage.

Separate topical safety analysis reports have been received for design of casks fabricated using nodular cast iron, thick-walled ferritic steel, concrete, and stainless steel and lead. Four cask design topical reports are under active review at the present time. Three spent fuel storage cask topical safety analysis reports have been approved for reference, and approval of their design for spent fuel storage under a general license is being included in this rulemaking. Casks approved for storage in the future will be routinely added to the listing in proposed §72.214 through rulemaking procedures. Because this type of rulemaking would neither constitute a significant question of policy nor amend 10 CFR Parts 0, 2, 7, 8, 9 Subpart C, or 110, the Commission concludes that additions to §72.214 may be made under the rulemaking authority delegated to the Executive Director for Operations.

(Insert on page 6)

During review of storage cask designs to be approved in this rulemaking, the NMSS staff has considered the compatibility of their designs with transportation to and disposal at DOE facilities and will continue to do so in the future. Currently, there is limited knowledge concerning specific design criteria to facilitate handling of spent fuel between the time it is put into casks at the reactor site and the time it will be handled for interim storage at a monitored retrievable storage facility (MRS) or disposal at a repository. However, the staff will remain in contact with DOE and will ensure, to the extent practicable, that cask designs incorporate the latest design criteria available at the time that the design is approved.

If the cask vendor does not apply for reapproval, for whatever reason, the licensee would be notified by the Commission. The licensee would then have to arrange for reapproval or remove casks from service as their service life expires. This could mean removal of the spent fuel and storing it elsewhere.

The cask will be relied on to provide safe confinement of radioactive material independent of the operations in which it is involved or regardless of its location, so long as conditions comply with the Certificate of Compliance. The cask approval program will be analogous to that now conducted for casks approved for shipping spent fuel under 10 CFR Part 71. Records will be established by vendors and maintained by users to provide historical information on all casks, so that if there is a safety problem with a particular cask, a cask fabrication process, or with a cask model the NRC could issue notices to cask vendors and users to initiate corrective actions.

The Commission believes that a prudent concern for overall activities related to the back-end of the LWR fuel cycle dictates that consideration should be given to the compatibility of spent fuel storage cask designs with the transportation of the spent fuel to its ultimate disposition at a Department of Energy (DOE) monitored retrievable storage facility or geologic repository. Cask designers should be aware of doe developments and plans for transportation of spent fuel offsite and should design spent fuel storage casks, to the extent that is practicable given the information that is available at the time that the cask is designed, for compatibility with future disposition of the spent fuel.

(Insert on page 13)

The four cask designs that would be approved in this rulemaking comply to the extent practicable at this time. The Commission notes that the vendors of these casks have indicated their intent to pursue certification for these casks as shipping casks for offsite transportation under 10 CFR Part 71. However, spent fuel can be safely off-loaded from storage casks at reactor sites, if necessary, at the end of the storage period. In the interest of overall fuel cycle efficiency, however, the Commission encourages storage design developments to avoid this eventuality for all spent fuel storage systems.

PRELIMINARY REGULATORY ANALYSIS

Storage of Spent Nuclear Fuel in NRC Approved
Storage Casks at Nuclear Power Reactor Sites

(10 CFR Parts 72 and 170)

1. STATEMENT OF THE PROBLEM

It is anticipated that electrical utilities that utilize nuclear reactors for power will have a major need for additional storage of spent fuel, to supplement the reactor's water basin storage, starting in the 1990s. The Nuclear Waste Policy Act of 1982 (NWPA) recognizes this need for additional spent fuel storage capacity at nuclear power reactor sites. In section 218(a), the NWPA states that "the Secretary [of DOE] shall establish a demonstration program, in cooperation with the private sector, for the dry storage of spent fuel at civilian nuclear power reactor sites, with the objective of establishing one or more technologies that the Commission may, by rule, approve for use at the sites of civilian nuclear power reactors without, to the maximum extent practicable, the need for additional site-specific approvals by the Commission". In section 133, the NWPA states that "the Commission shall, by rule, establish procedures for the licensing of any technology approved by the Commission under section 218(a)". The Commission recognizes these needs by including the development of the basis for rulemaking that would enable use of dry spent fuel storage in casks without, to the extent practicable, site-specific license reviews in their planning guidance (NUREG-0885, "U.S. Nuclear Regulatory Commission Policy and Planning Guidance 1987", Issue 6, September 1987). Currently the regulations in Part 72 do not permit licensing spent fuel storage without extensive site reviews. This rulemaking would accomplish these directives by providing for issuance of a general license to the holders of nuclear power reactor licenses for the storage of spent fuel at the site in dry casks approved by the NRC.

2. OBJECTIVES

2.1 To provide for compliance with the directives in sections 133 and 218(a) of the NWPA that instruct the Commission to approve one or more technologies for the dry storage of spent fuel at civilian nuclear power reactor sites without the need for additional site-specific approvals and to set forth procedures for licensing any approved technology.

2.2 To establish conditions that provide adequate protection of public health and safety and that are not inimical to the common defense and security.

3. ALTERNATIVES

3.1 No Action

The NWPA directs that the Commission approve one or more technologies, that have been developed and demonstrated by DOE, for the use of spent fuel storage at the sites of civilian nuclear power reactors without, to the maximum extent practicable, the need for additional site-specific review. It also directs that the Commission, by rule, set forth procedures for licensing the technology. Regulations for accomplishing these needs are not in place, thus, some action is necessary.

3.2 Available Alternatives

The procedural alternatives available to NRC staff are amendment of licenses, use of regulatory guides or branch technical positions, and use of the rulemaking process. The purpose of this action is to license storage of spent fuel. 10 CFR Part 72 specifically addresses dry storage of spent fuel, under a materials license. The reactor is licensed to operate under 10 CFR Part 50 and amendment of the reactor operating license, which is a facility license, is not appropriate. Regulatory guides or branch positions do not carry the force of law, so they are only appropriate for conveying information concerning staff procedures. The preferred course of action is to proceed with rulemaking to amend Part 72.

4. CONSEQUENCES

4.1 Benefits

The proposed action will bring NRC regulations into compliance with the NWPA with no adverse effect on the public health and safety, and minimal impact on nuclear power reactor licensees, spent fuel storage cask system vendors, and the NRC. NRC and Industry impacts are discussed in sections 4.2.1, 4.2.3, and 4.2.4.

The proposed rule would ensure protection of public health and safety through the use of the Commission's inspection and enforcement authority. NRC inspectors would inspect activities related to storage of spent fuel at the reactor site and verify that conditions important to safety are in compliance with the Commission's regulations. Personnel from the Office of Nuclear Material Safety and Safeguards (NMSS) will evaluate design and fabrication procedures for storage casks, as submitted in a safety analysis report by cask vendors, approve cask system designs, and issue a Certificate of Compliance. The criteria for obtaining a Certificate of Compliance are set forth in proposed subpart L. In general terms, approvals can only be obtained after NRC is assured that designs are adequate for storage of the type of spent fuel specified and that a quality assurance program (QA) acceptable to the NRC will be applied to the cask design, fabrication, testing, and maintenance. Except for the formal submittal of a license application and its related documents, the procedure for storage of spent fuel under this rule would essentially be the same as that currently required for a specific license under Part 72. The rulemaking process ensures that the public will be involved in the development of any final rule that may be promulgated.

4.2 Impacts

4.2.1 NRC

o NMSS. Approximately one staff-year (2087 hours) of effort and $200,000 in contractor work is currently required for reviews and evaluations

related to issuance of a specific license under Part 72. The $200,000 includes technical assistance for such work as independent verification of design criteria applications and computation of design bases.

It is estimated that additional spent fuel storage capacity, that is capacity above that available in reactor spent fuel storage pools, will be needed at between 35 and 45 reactor sites by about the year 2000. This would average about 4 license applications per year, under existing regulations in part 72, over the 10 year period analyzed. Using this estimated average, the total resource burden on NMSS would be about 83,480 staff-hours and $8,000,000, if specific licenses were required under part 72. The proposed rule would eliminate the need for site-specific license reviews, and thus, these resource requirements.

The staff did not analyze resource requirements beyond the year 2000, because recent indications are that the Department of Energy (DOE) will be accepting spent fuel at a repository by the year 2003. Power reactors of recent vintage have spent fuel pool designs that have adequate space for the life of the plant, provided DOE is accepting spent fuel for disposal by about 2005. However, if DOE does not start accepting spent fuel in the 2005 time frame or if a significant number of reactor licensees seek and obtain license period extensions (beyond the current limit of 40 years), additional dry storage capacity could be needed at an additional 15 to 30 sites. Thus, the requirement for additional specific licenses and resource requirements would increase proportionately.

The proposed rule would require that only NRC-approved casks be used for storage of spent fuel. Subpart L of the proposed rule sets forth criteria for obtaining cask approvals. The major burden for reviews, evaluations, and issuance of Certificates of Compliance will be assigned to NMSS personnel. It is estimated that NMSS staff resource requirements for approval of each cask would be about one-half a staff-year (1,000 staff-hours). Based on current submittals and information, the staff anticipates that 10 or more applications for spent fuel storage cask system design approvals will be submitted. For purposes of this analysis it is assumed that there will be 10 submittals. Thus, it would require about 10,000 staff-hours for reviews and evaluations related to storage cask approvals, or about 1,000 staff-hours per year averaged over the

10-year period analyzed. Technical assistance contract costs of about $200,000 per cask design would still be required.

Cask designs that have been approved for transportation of spent fuel may also be considered for spent fuel storage. If the cask vendor has a Certificate of Compliance issued under Part 71 for the cask, the procedure for approval for spent fuel storage would entail an analysis showing that the spent fuel could be stored in the cask safely for 20 years. This could be a rather simple analysis and no technical assistance costs are anticipated. Further, since many of the cask designs currently approved for transportation would be uneconomical for spent fuel storage, few submittals are expected. Thus, no separate analysis for this type of approval is made.

o NRR. The anticipated involvement of the Office of Nuclear Reactor Regulation (NRR) personnel under the proposed rule would be significantly different from their current involvement. Currently, NMSS personnel coordinate with reactor project managers to ensure that independent spent fuel storage installation (ISFSI) operations and reactor operations are compatible. Under the proposed rule, it is anticipated that NRR personnel will be responsible for inspections related to initial spent fuel cask fabrication and QA implementation. NRR will continue to be responsible for physical protection plans.

It is estimated that about 7,000 metric tons of heavy metal (MTHM), as spent fuel, exceeding spent fuel storage pool capacity will be removed from reactors over the 10 years analyzed. It is assumed that this spent fuel will be stored in casks and that about 10 MTHM can be stored in a cask, thus, a total of about 700 storage casks will be required. It has been estimated that the maximum cumulative additional requirements (beyond the capacity of reactor spent fuel pools) for spent fuel storage will be between 12,000 and 20,000 MTHM and will occur between the years 2012 and 2016. Thus, estimates made in this analysis are probably conservative and the number of casks required could be significantly higher. Experience indicates that extrapolations into the future are subject to large uncertainties, so reevaluations will be made during the continuing rulemaking procedure.

NRR will conduct a programmatic inspection of cask manufacturers during initial cask production. Subsequent NRR inspections will be conducted on a reactive basis in response to NMSS requests and in identified areas of concern. It is estimated that the average number of these inspections will be about 10 per year. An inspection trip is estimated to require about 40 staff-hours and cost about $2,000. The reason for the large estimated expense is that some inspection trips will require foreign travel. In addition, there would be technical assistance costs estimated to be about $10,000 per inspection. It is anticipated that there will also be about 80 staff-hours required for inspection preparation and report writing. Thus, about 1,200 staff-hours and $120,000 in expenses would be required per year for inspections related to spent fuel cask fabrications.

o Regional Offices. Each operating reactor has at least one resident inspector. In addition, the regions have a staff of field inspectors. It is anticipated that inspection activities related to storage of spent fuel at a reactor site under the general license proposed in this rule, including review of operating plans and programs (i.e., quality assurance plan, emergency plan, training program) would be performed by a resident inspector. It is anticipated that about 500 staff-hours per year would be required for these inspections.

o Training. Resources would also be needed to train NRR and Regional personnel to perform reviews, evaluations, and inspections related to spent fuel storage in casks under the general license and to cask fabrications. A cadre of 10 persons from the Regional offices (2 from each Region) and 2 from NRR would probably be sufficient for an initial compliment. It is estimated that the training could be accomplished using NRC headquarters training facilities. The training sessions could be conducted by NMSS personnel. It is estimated that a total of 800 staff-hours for the Regions, 160 staff-hours for NRR, and 240 staff-hours for NMSS would be required. In addition the Regions would incur an estimated $15,000 in expenses for travel to headquarters.

o Total NRC Resource Requirements. If storage of spent fuel in an ISFSI were to be licensed under existing regulations, the major resources would be the estimated 83,480 NMSS staff-hours and the $8,000,000 in contracted

technical assistance required for reviews and evaluations related to issuing the estimated 40 specific licenses under Part 72. This would be about 8,350 staff-hours per year, averaged over the 10-year period analyzed. Other NRC resource requirements would not be zero, but are relatively small.

Resources requirements for NMSS activities under the proposed rule are estimated to be about 1,000 staff-hours per year for storage cask system design reviews and approvals. In addition, there would be the 1,200 staff-hours and $120,000 expenses per year required by NRR related to cask fabrication inspections, and the 500 staff-hours per year required by the regions for onsite inspections. Thus, NRC staff resource requirements are estimated to amount to about 3,000 staff-hours per year under the proposed rule, which would compare to an estimated 8,350 staff-hours if specific licenses were to be approved under existing regulations. The $200,000 for contractor assistance would continue to be part of the initial approval of cask designs and would amount to $2,000,000 over the 10 year period analyzed. These contractor assistance costs would be about a quarter of those estimated to be required if specific licenses were to be required. Resources also are required for inspections related to safeguards and physical security, but these resources are expected to remain about the same as those currently required and are not considered separately. The total estimated resources for training are 1,200 staff-hours and $15,000 in expenses. This leads to the conclusion that total NRC resource requirements under the proposed rule would be lower than if specific licenses were issued. In any case, fee schedules in 10 CFR 170 are being revised to ensure that costs related to the rule are fully recovered.

4.2.2 Other Government Agencies.

No other Government agency, except TVA, is licensed to operate a nuclear power reactor. The impacts estimated for nuclear power reactor licensees would apply to TVA.

4.2.3 Nuclear Power Reactor Licensees

Currently nuclear power reactor licensees must submit an application for

a specific license under 10 CFR Part 72 to store spent fuel in an independent spent fuel storage installation on the reactor site. Licensing fees in cases similar to those covered under the general license amount to between $250,000 to $300,000. These licensing fees would be eliminated under this proposed rule.

It is estimated that the annual reporting burden for a specific license under Part 72 is currently about 1,309 hours and the recordkeeping burden about 5,165 hours. The proposed rule would eliminate the annual reporting burden for affected reactor licensees. Costs related to printing and distribution of license documents required by Part 72 (e.g., safety analysis report, environmental report) would also be eliminated. However, the recordkeeping burden would remain about the same. Records related to operating and organizational activities would still have to maintained by the reactor licensee and would be subject to inspection by, but need not be submitted to, the NRC. The proposed rule would not alter reactor operating requirements under Part 50. The proposed rule would simplify the procedures under which a nuclear power reactor licensee could store spent fuel. A draft regulatory guide entitled, "Standard Format and Content for a Safety Analysis Report for Onsite Storage of Spent Fuel Storage Casks," was issued for public comment in April 1986 under task number CE-301-4. This guide and the public comments received on it were considered in the development of proposed subpart K. (Single copies of the draft guide may be obtained from W.R. Pearson, Office of Nuclear Regulatory Research, Nuclear Regulatory Commission, Washington, DC, 20555 (Telephone: (301) 492-3764).

Incremental costs for design, construction, operation, and decommissioning independent spent fuel storage installations under this proposed rule have not been separately estimated. If a reactor licensee has a need for storage of spent fuel beyond the capacity of the reactor storage pool, the licensee could choose between whether to apply for a specific license under 10 CFR Part 72 or to store spent fuel under the general license provided by this rule. In either case there would be costs related to the design, construction, operation, and decommissioning. Licensees would decide on the procedure that provided the better solution for their purposes.

In the area of safeguards and physical protection it is estimated that adoption of these regulations would cost reactor licensees a one time expenditure of about $130,000 if an additional protected area must be constructed for storage of the spent fuel under the general license. This is based on estimated costs of about $14,000 for additional physical barriers (800 feet of fence and a 50 foot gate encompassing about an acre), $88,000 for a concrete storage pad (about a foot thick), $8,800 for additional illumination (8 poles), and $19,200 for additional detection systems (6 systems). It is also estimated that an annual cost of about $1,300 for additional testing and maintenance related to this storage of spent fuel will be required. Current experience indicates that existing safeguards organizations are adequate to cover safeguards functions similar to those required by this proposed rule. However, it is possible that additional guards may be required under some circumstances. For instance, it may be necessary to increase the number of guards to cover spent fuel storage areas located remotely from the reactor protected area.

4.2.4 Cask Vendors.

Cask vendors have submitted six topical safety analysis reports to NMSS for approval for use of casks for spent fuel storage. Four of these topical reports have been approved and these cask designs are being approved in this rulemaking.

Costs for approval of a topical safety analysis report, which is the present means of getting dry spent fuel storage cask designs approved for use, are currently limited to $20,000. This is significantly less than NRC actual costs. Under the proposed rule NRC would recover full costs for approval of cask designs. This could amount to about $250,000 to $300,000 per design, including cost of review and approval procedures, contractor work, and cask fabrication inspections.

No incremental costs related to reporting requirements are expected as a result of this action. The criteria for approval of spent fuel storage casks, as set forth in subpart L, are not significantly different from the design, fabrication, and quality assurance criteria that are currently used. A draft regulatory guide entitled, "Standard Format and Content for a Topical

Safety Analysis Report for a Dry Spent Fuel Storage Cask," was issued for public comment in April 1986 under task number CE-306-4. The guide and the public comments received on it were considered in development of subpart L. (Single copies of the draft guide may be obtained from W.R. Pearson, Office of Nuclear Regulatory Research, Nuclear Regulatory Commission, Washington, DC, 20555 (Telephone: (301) 492-3764)).

4.2.5 Public.

No incremental cost impact on the public is expected. As shown in the preceding cost analyses, no significant increase in the cost of doing business is expected as a result of this action. It is anticipated that costs to NRC and power reactor licensees will be less than that required to obtain a specific license for the same type of storage. However, these incremental cost reductions would be insignificant compared to the overall costs. Costs to spent fuel storage cask vendors is expected to increase, but since only about 10 submittals for cask design approvals are expected. So the total economic impact on the public as a result of this action is not expected to be significant. Since the power reactor licensee must comply with the requirements of the Commission's regulations, no reduction in public health and safety is anticipated. In fact, risk to public health and safety could be reduced, because if shipments of the spent fuel are significantly delayed, the radioactivity of the spent fuel would be lower at the time of shipment.

4.3 Impacts on other Requirements.

4.3.1 Other Rulemakings

A final rule amending Part 72 was made effective on Monday September 19, 1988 (53 FR 31651). It primarily concerned licensing the storage of spent fuel and high-level radioactive waste in a monitored retrievable storage facility, which would be constructed and operated by the DOE and licensed by the Commission. It did not address requirements for licensing mandated by sections 133 and 218(a) of the NWPA.

4.3.2 Finding of no Significant Environmental Impact

The Commission has determined under the National Environmental Policy Act of 1969, as amended, and the Commission's regulations in Subpart A of 10 CFR Part 51, that this rule, if adopted, would not be a major Federal action significantly affecting the quality of the human environment and therefore an environmental impact statement is not required. The rule is mainly administrative in nature and would not change safety requirements, which could have significant environmental impacts. The proposed rule would provide for power reactor licensees to store spent fuel in casks approved by the NRC at reactor sites without additional site-specific approvals by the Commission. It would set forth conditions of a general license for the storage of spent fuel and procedures and criteria for obtaining storage cask approval. The environmental assessment and finding of no significant impact on which this determination is based are available for inspection at the NRC Public Document Room, 2120 L Street NW., Washington, DC (Lower Level). Single Copies of the environmental assessment and finding of no significant environmental impact are available from W. R. Pearson, Office of Nuclear Regulatory Research, Nuclear Regulatory Commission, Washington, DC 20555; Telephone: (301) 492-3764.

4.3.3 Paper Work Reduction Statement

This proposed rule amends information collection requirements that are subject to the Paper Work Reduction Act of 1980 (44 U.S.C. 3501 et seq.). This rule has been submitted to the Office of Management and Budget for review and approval of the paper work requirements.

4.3.4 Regulatory Flexibility Act Certification

In accordance with the Regulatory Flexibility Act of 1980 (5U.S.C 605(b)), the Commission certifies that this rule, if promulgated, will not have a significant economic impact on a substantial number of small entities. This rule would affect only licensees owning and operating nuclear power reactors. The owners of nuclear power reactors do not fall within the scope of the definition of "small entities" in the Regulatory Flexibility Act or the small

Business size standards set forth in regulations issued by the Small Business Administration at 13 CFR Part 121.

4.3.5 Backfit Analysis

The NRC has determined that a backfit analysis is not required, because these amendments do not involve any provisions that would impose backfits as defined in §50.109(a)(1).

4.4 Constraints.

No legal, institutional, or policy constraints are anticipated.

5. DECISION RATIONALE.

An assessment of the benefits and impacts of the alternatives leads to the conclusion that the requirements of the proposed rule are commensurate with the Commission's responsibilities for public health and safety and the common defense and security. No other available alternative is believed to be as satisfactory, thus, this action is recommended.

6. IMPLEMENTATION.

This proposed rule will be published in the Federal Register allowing 45 days for public comment. Since rulemaking is mandated by the NWPA and the incremental impacts of this rule are minor, no implementation problems are anticipated.

CRGR BRIEFING

STORAGE OF SPENT NUCLEAR FUEL IN NRC-APPROVED STORAGE CASKS AT NUCLEAR POWER REACTOR SITES

NOVEMBER 9, 1988

AC 76-1
PDR

Purpose of Rulemaking

Approve Dry Storage of Spent Fuel in Casks

Establish Procedures for Storage of Spent Fuel at Reactor Sites Without the Need for Additional Site-Specific Approvals

Justification For Rulemaking

Provides Greater Efficiency in Licensing

Mandated by the Congress

(Nuclear Waste Policy Act of 1982 Sections 133 and 218(a))

Support For Rulemaking

Technology demonstrated provides adequate protection of public and occupational health and safety.

- 25 years experience
- DOE demonstration program
- NRC experience

How Rule Will Achieve Its Purpose

Provide for certification of dry spent fuel storage case designs

Provide general license to holders of a power reactor operating license to use certified casks.

Condition of General License For Storage Of Spent Fuel

Spent fuel storage only in storage casks certified by NRC

Licensee must show:

Compliance with conditions of case certificate

No unreviewed safety question involved

No technical specification changes required (or license amendment obtained)

Special nuclear material safeguards

Reporting and recordkeeping

Termination of General License

Continue storage under as amended Part 50 license

Spent fuel removal from site prior to reactor decommissioning completion

Spent Fuel Cask Certification Process

Formalize present topical report cask design safety review actions

Procedures and criteria based on staff experience

- Specific licenses issued
- Previously approved cask design
- Certification of cask designs in rulemaking

Quality assurance and fabrication inspection

Conditions for cask certification

SAFEGUARDS

PROTECTION UNDER LICENSEE'S PHYSICAL SECURITY PLAN

- PHYSICAL SECURITY MODIFIED, IF APPROPRIATE
- STORAGE WITHIN PROTECTED AREA
- NO NEW MATERIAL CONTROL AND ACCOUNTING MEASURES

FEES

10 CFR PART 170 REVISED TO COVER COSTS OF:

- REACTOR ON-SITE INSPECTIONS
- APPROVAL/REAPPROVAL OF CASK CERTIFICATIONS
- CASK VENDOR INSPECTIONS

Lahs
AC76-1
PDR

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

November 23, 1988

MEMORANDUM FOR: Victor Stello, Jr.
Executive Director for Operations

FROM: Edward L. Jordan, Chairman
Committee to Review Generic Requirements

SUBJECT: MINUTES OF CRGR MEETING NUMBER 150

The Committee to Review Generic Requirements (CRGR) met on Wednesday, November 9, 1988 from 1-5 p.m. A list of attendees for this meeting is attached (Enclosure 1). The following items were addressed at the meeting:

1. B. Morris (RES) and W. Lahs (RES) presented for CRGR review a proposed rule change to 10 CFR Part 72 to provide for the storage of spent fuel at the sites of power reactors. The Committee requested a briefing on the accompanying certificates of compliance and regulatory guides before providing a recommendation on this rulemaking.

2. S. Newberry (NRR) and D. Lasher (NRR) briefed the Committee on a draft SER of B&W Topical Report BAW-10167 and Supplement 1, "Justification for Increasing the Reactor Trip System On-Line Test Intervals." This topical report proposes extending the STIs for RPS/ARTS instrument strings from one to six months (with a staggered test schedule). The Committee agreed with the staff findings on this topical report but was concerned with the asymmetrical approach to staff approvals of technical specification changes for different vendors.

In accordance with the EDO's July 18, 1983 directive concerning "Feedback and Closure of CRGR Reviews," a written response is required from the cognizant office to report agreement or disagreement with the CRGR recommendations in these minutes. The response, which is required within five working days after receipt of these minutes, is to be forwarded to the CRGR Chairman and if there is disagreement with CRGR recommendations, to the EDO for decisionmaking.

Questions concerning these minutes should be referred to Cheryl Sakenas (492-4148).

E L Jordan

Edward L. Jordan, Chairman
Committee to Review Generic
Requirements

Enclosures:
As stated

cc w/enclosures:
See next page

4pp.

8812090063

AC76-59

cc w/enclosures:
Commission (5)
SECY
Office Directors
Regional Administrators
CRGR Members
W. Parler
B. Morris
W. Lahs
S. Newberry
D. Lasher
E. Rossi
C. Berlinger

Enclosure 1
ATTENDANCE LIST
CRGR MEETING NO. 150

November 9, 1988

CRGR

E. Jordan
R. Bernero
J. Goldberg
D. Ross
J. Sniezek
C. Paperiello (by telecon)

NRC STAFF

C. Heltemes
C. Sakenas
B. Morris
W. Lahs
W. Pearson
L. Rouse
S. Treby
R. Cilimberg
J. Roberts
R. Dube
D. Lasher
S. Newberry
E. Chow
S. Diab
R. Emch
E. Butcher

Enclosure 2 to the Minutes of CRGR Meeting No. 150
Storage of Spent Nuclear Fuel in NRC-Sponsored
Storage Casks at Nuclear Power Reactor Sites

TOPIC

B. Morris (RES) and W. Lahs (RES) presented for CRGR review a proposed rule change to 10 CFR Part 72 to provide for the storage of spent fuel at the sites of power reactors. This rulemaking complies with the provisions of the Nuclear Waste Policy Act of 1982 (NWPA) to establish provisions for dry storage of spent fuel at civilian nuclear power reactors, without the need for additional site-specific approvals. A copy of the briefing slides used by the staff are attached to this enclosure.

BACKGROUND

The package submitted by the staff for review by CRGR in this matter was transmitted by memorandum dated August 15, 1988, E. S. Beckjord to E. L. Jordan and subsequent revisions on October 31, 1988. The review package included the Federal Register Notice and the preliminary regulatory analysis.

CONCLUSIONS/RECOMMENDATIONS

As a result of their review of this matter, including discussions with the staff at this meeting, the Committee made the following recommendations:

1. The reporting requirements in 72.216 should be reviewed with AEOD and revised to conform with 50.72 reporting requirements.

2. Specific references in the FRN to potential NRC inspection actions should be reviewed and revised, as appropriate, to clarify that the licensee has the primary responsibility for safety. In particular, delete references to assignment of inspection responsibilities to resident inspectors.

3. Records of cask repairs should not be the responsibility of the NRC. The language should be clarified in the FRN as to who is responsible for maintaining records.

4. Language used in Section 72.236 of the rule should be reviewed for appropriateness and ambiguity. Terms in which the meaning is not clear should be defined.

The Committee requested a briefing on the accompanying certificates of compliance and regulatory guides before providing a recommendation on this rulemaking.