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ADJUDICATIONS STAFF

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION
ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

Michael C. Farrar, Chair
Nicholas G. Trikouros
Lawrence G. McDade

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In the Matter of

SHAW AREVA MOX SERVICES

Mixed Oxide Fuel Fabrication Facility
Possession and Use License

Docket No. 70-3098-MLA

ASLBP No. 07-856-02-MLA-BD01

**INTERVENORS' REPLY TO SHAW AREVA MOX SERVICES' AND NRC
STAFF'S OPPOSITIONS TO INTERVENORS' REQUEST TO ASLB TO
REQUEST NRC COMMISSIONERS TO SUSPEND CONSTRUCTION OF
PROPOSED MOX PLUTONIUM PROCESSING FACILITY**

INTRODUCTION

Blue Ridge Environmental Defense League ("BREDL"), Nuclear Watch South ("NWS"), and Nuclear Information and Resource Service ("NIRS") (collectively "Intervenors") hereby reply to Shaw AREVA MOX Services, L.L.C.'s ("Shaw AREVA's") and the U.S. Nuclear Regulatory Commission ("NRC" or "Commission") Staff's oppositions to Intervenors' request to the Atomic Safety and Licensing Board ("ASLB") to request the Commission to suspend construction of the proposed MOX plutonium processing facility pending completion of the design for the proposed facility. Shaw AREVA MOX Services LLC's Answer to Petitioners' February 11, 2008 Response Regarding Case Management Issues (March 7, 2008) ("Shaw AREVA Answer"); NRC Staff's Response to Intervenors' Late-filed Contention Seven and Board's Memorandum

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and Order of February 21, 2008 (March 10, 2008) (“NRC Staff Response”). Intervenors submit the following:

(1) Both Shaw AREVA and the NRC Staff argue that Petitioners’ request is governed by the standard for issuance of a stay. Shaw AREVA Answer at 16-17, NRC Staff Response at 16-17. As is made clear in Intervenors’ Response to Atomic Safety and Licensing Board’s Memorandum and Order of January 16, 2008 Regarding Case Management Issues (February 11, 2008) (“Intervenors’ Request”), Intervenors base their request on the Commission’s need to ensure the integrity and effectiveness of its review of safety, security and environmental protection in the MOX plutonium processing facility licensing process, and in order to protect the fairness and efficiency of the proceeding.¹ There is no doubt that the Commission has full authority to conduct its licensing activities in a manner that ensures these goals are satisfied.

Moreover, whether or not the harm caused by the premature conduct of the licensing proceeding for the MOX plutonium processing facility is “irreparable,” it constitutes exactly the type of harm the Commission Staff sought to avoid by recommending the promulgation of 10 C.F.R. § 70.23(b) to require pre-construction approval of major design elements:

[I]n some cases, a clear requirement for preconstruction review would be equitable both to licensees and the regulatory staff and would avoid inevitable problems with regard to interpretation of criteria and standards, and the necessity for potentially burdensome changes in design after construction has begun.

¹ While Shaw AREVA argues that environmental issues are outside the ASLB’s jurisdiction, NRC regulations clearly require that the NRC must address new and significant information regarding environmental impacts up until the moment of licensing. 10 C.F.R. § 51.92.

SECY-R-188, Proposed Amendments to Part 70: Pre-Construction Review of Plutonium Processing and Fuel Fabrication Plants, Appendix B (Report of the Task Force on Plutonium Facilities) at 26 (March 17, 1971).² To go forward with construction of the MOX plutonium processing facility would invite the very problems the NRC sought to avoid in adopting the recommendations of its Task Force.

(2) Shaw AREVA claims that Intervenors did not consult the other parties prior to filing their request, as required by 10 C.F.R. § 2.323. Shaw AREVA Answer at 15 n.4. However, as Intervenors reported to the ASLB in their January 31, 2008, Response to Atomic Safety and Licensing Board Memorandum and Order of January 16, 2008, Intervenors had previously discussed, with counsel for Shaw AREVA and the NRC Staff, their view that:

the only way this operating license case can be managed fairly, in a way that protects their hearing rights, is for both this operating license proceeding and construction of the proposed MOX plutonium fuel fabrication facility to be suspended pending completion of the design for the facility.

² A copy of SECY-R-188 is attached as Attachment 1. In SECY-R-188, the Commission Staff adopted the recommendations of a Task Force that was commissioned to evaluate regulatory issues for licensing of plants processing significant quantities of plutonium or other hazardous radioactive materials. The Staff concurred in the Task Force's recommendations in the course of proposing amendments to the NRC's Part 70 regulations. *Id.* at 8.

Intervenors were unaware of the existence of this SECY paper until it was referenced in a recently released report: V. Jain, et al., Assessment of Red Oil Runaway Reactions in the Aqueous Polishing Process Units of the Mixed Oxide (MOX) Fuel Fabrication Facility at vii (October 2006) (ADAMS Accession No. ML 080440403). While SECY-R-188 is marked "Official Use Only," it was included in a collection of former Public Document Room microfiche documents provided by the NRC to the Union of Concerned Scientists several years ago, and therefore appears to have been released as a public document. Intervenors regret that because they had to print the document from microfiche, the quality of the print is poor, although legible for the most part.

Id. at 2. Because Intervenors had already reported to the ASLB on the results of their discussions with counsel for Shaw AREVA and the Staff, they did not consider it necessary to do so again.

(3) Shaw AREVA also argues that this Board has no jurisdiction to consider Intervenors' request, which should be brought before the ASLB that considered the construction authorization request ("CAR"). It is Intervenors' understanding that the earlier ASLB no longer exists, however. Shaw AREVA has simply identified yet another reason why the ASLB should refer Intervenors' request to the Commission.

(4) The Staff also makes an argument suggesting that in 2001, when it noticed a hearing on the CAR, the Commission intended to allow construction while some major design features were still unknown. NRC Staff Response at 17 (quoting statement in hearing notice that "the Applicant would submit an initial application focusing on the preconstruction approvals of siting and design bases, 'leaving the balance of the information including detailed design and safety evaluation issues, to be addressed in a second submittal.'" 66 Fed. Reg. 6,701 (January 22, 2001). *See also* Shaw AREVA's Answer at 22 (citing *Power Reactor Dev. Co. v. Int'l Union of Elec. Radio and Machine Workers, AFL-CIO, et al*, 367 U.S. 396, 400-408 (1961) for the proposition that "it has long been well established law that facility design need not be complete prior to beginning construction.") But these arguments are contradicted by SECY-R-188, which states that:

Under the revised regulation, the pre-construction review requirement will provide the Commission with the opportunity to conduct an *in-depth* evaluation of those aspects of the application related to the site and the plant design bases. Those aspects related primarily to operation of the plant and not to the plant design bases would be evaluated after construction is initiated but prior to issuance of the license. The following aspects would be evaluated prior to the

start of construction: site studies considering population distribution, meteorology, hydrology (including potential flooding conditions), geology and seismology design bases for plant structures, systems and components considering adverse natural phenomena and internal accidents such as fire, explosion and criticality; *waste handling and treatment systems*; effluent control and monitoring systems; *design provisions relating to industrial security and nuclear material safeguards*; and preliminary emergency plans.

Id. at 6 (emphasis added). As demonstrated in Intervenor's Request at 6-8, significant issues with respect to waste disposal and security remain unresolved.³ Moreover, the unresolved issues are not mere details, but fundamental design elements. Thus it is inappropriate to go forward with construction.

Finally, Shaw AREVA argues that Intervenor's request to suspend construction of the facility pending completion of the design has already been addressed in CLI-02-7, 55 NRC 205 (2002). Shaw AREVA Answer at 20.⁴ Intervenor respectfully disagree. In CLI-02-07, the Commission rejected an argument that it lacked the authority to split the licensing proceeding for the MOX plutonium processing facility into two separate parts: a construction authorization proceeding and an operating license proceeding. The

³ The Staff graphically illustrates the unsettled status of fundamental security design issues when it states that:

[T]he Staff will only make a determination regarding whether the MOX facility meets the NRC DBT [design basis threat] based on the NRC's regulations. The DOE will make a finding that the plan meets its DBT under the DOE's regulatory authority.

NRC Staff Response at 19 n.14. In the post-9/11 era, it should be completely unacceptable to allow continued construction of the MOX plutonium processing facility -- including security-related design features -- when the Staff is still uncertain which DBT will govern the design.

⁴ At page 20, Shaw AREVA correctly points out a typographical error in Intervenor's pleading. Petitioners did intend to say that construction of principal systems and safety components ("PSSCs") should be suspended until the design of those PSSCs has been completed.

Commission expressed no opinion on what would be the result if the two-step process failed to ensure that the design was completed before construction began, leading to “the necessity for potentially burdensome changes in design after construction has begun” (SECY-R-188, Appendix B at 26), the undermining of safety and environmental protection, and the preclusion of hearing rights in the operating license proceeding – as will happen here if the Commission does not take steps to manage this proceeding more efficiently and fairly.

Respectfully submitted,



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March 17, 1971



SECY-R 188

PROPOSED AMENDMENTS TO PART 70: PRE-CONSTRUCTION REVIEW OF
PLUTONIUM PROCESSING AND FUEL FABRICATION PLANTS

Note by the Secretary

The Director of Regulation has requested that his attached report be circulated for consideration by the Commission at an early Meeting.

W. B. McCool

Secretary of the Commission

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- 1 -

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ATOMIC ENERGY COMMISSION

PROPOSED AMENDMENTS TO PART 70 TO PROVIDE FOR PRE-CONSTRUCTION
REVIEW OF PLUTONIUM PROCESSING AND FUEL FABRICATION PLANTS

Report by the Director of Regulation

THE PROBLEM

1. To consider amending Part 70 to provide for Commission review and evaluation of the site and design bases of plutonium processing and fuel fabrication plants prior to plant construction. The purpose of the pre-construction review would be to determine whether the plant design will enable the plant to withstand, without loss of capability to protect the public, the forces imposed by adverse natural phenomena pertinent to the site, such as floods, tornadoes and earthquakes, and forces generated by in-plant accidents such as criticality, fires and explosions, and to give attention to appropriate protection against acts of industrial sabotage that might endanger the public.

BACKGROUND AND SUMMARY

2. A Task Force composed of representatives of several Headquarters Divisions was established by the Director of Regulation to identify facilities (other than production and utilization facilities) which, in event of flood, tornado, earthquake or internally generated destructive forces, could create a significant health and safety problem outside the plant area. The Task Force was also asked to consider the need for changing AEC regulations to require a pre-construction review of the site and important design features of such facilities in light of environmental considerations. The Task Force was composed of representatives of the Office of General Counsel and the Divisions of Materials Licensing, Reactor Standards, Reactor Licensing, Compliance, Radiological and Environmental Protection, Nuclear Materials Safeguards and Production. The Task Force report is attached as Appendix B.

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3. The study was directed principally toward licensed plutonium processing and fuel fabrication plants. Historically, plants used for plutonium fuel fabrication and fuel development activities have not been designed to resist the forces of adverse natural phenomena, such as earthquakes and tornadoes. Typically, these plants are constructed in accordance with national and local commercial building codes and consist of pre-cast concrete slabs or blocks with steel framing to provide a high degree of fire resistance. Safety analyses have dealt principally with the matter of internal accidents such as criticality, fires and explosions. The design bases and operating controls have emphasized measures for minimizing such occurrences and effectively dealing with them if they should occur. The sites of existing licensed plutonium plants are in rural or semi-rural areas, sometimes near small communities but several miles from dense population centers. In some cases, however, there are residences within a few hundred meters of the plant.

4. To develop a technical basis for deciding whether consideration of the effects of adverse natural phenomena should be required in the siting, design, construction and operation of plutonium plants, consideration was given to the consequences of such events on existing plants. The tornado hazard was analyzed in detail.

5. It was concluded that the loadings imposed by a tornado would severely damage or completely destroy typical, existing plant structures. It was also concluded that, with this violent building failure, considerable damage would occur to gloveboxes and equipment affording the primary confinement of the plutonium in process. In assessing the consequences of such an event, it is recognized that such analysis involves uncertainties, not only in regard to the behavior of a tornado and its dispersal mechanisms, but in predicting the quantities of plutonium available for dispersal as a result of building and equipment damage. However, the analysis shows that even if only a small fraction of the dispersible plutonium in process (about 50 kilograms in a large-scale fabrication plant) were released, substantial exposures might

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result to people in nearby unrestricted areas, as well as widespread ground contamination. Considering both soluble and insoluble forms of plutonium, the potential exposures are comparable to or in excess of those resulting from reactor design basis accidents of much lower probability. To provide a frame of reference, a bone dose of 150 rems and a lung dose of 75 rems were considered roughly equivalent biologically to Part 100 doses for whole body and thyroid. The estimated bone dose for a ground level release of 3 grams of soluble plutonium was 150 rems at 500 meters from the plant; the lung dose for a ground level release of 150 grams of insoluble plutonium was estimated to be 60 rems at the same distance. As noted above, both the 3-gram and 150-gram releases are small fractions of the inventory of dispersible plutonium that might be in process. Also, with the release of 150 grams of plutonium, ground contamination over several square miles could exceed levels that have been recommended as upper limits following accidental releases. Additional details regarding the assumptions and results of the analysis are contained in Appendix "B".

6. For earthquakes, it was postulated that with failure of the building and rupture of piping and gloveboxes, the dispersal of plutonium by such mechanisms as fires triggered by the earthquake or by the occurrence of surface winds could result in substantial exposures and ground contamination. In addition to adverse natural phenomena, accidents which might occur within the plant, such as fires and explosions, constitute a mechanism which could cause a breach of confinement barriers, i.e., gloveboxes, equipment, filters and structures, resulting in dispersal of plutonium to the environment. As shown by the tornado analysis, the release of only a small fraction of the dispersible plutonium in process could result in exposures comparable to or in excess of those considered in reactor design basis accidents.

7. We believe that the magnitude of potential exposures and ground contamination levels which could result from breach of confinement barriers in licensed plutonium processing and fuel fabrication plants should not be considered acceptable when evaluating the consequences of adverse natural phenomena or when evaluating the consequences of in-plant accidents which have

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a similar or higher probability of occurrence than adverse natural phenomena. Accordingly, those portions of plutonium processing and fuel fabrication plants in which dispersible plutonium is handled in substantial quantities should be designed to withstand adverse natural phenomena and internal accidents without loss of capability to protect the public. In addition, the sites for such plants should be at reasonable distances from densely populated areas to minimize the consequences in the event a release of plutonium occurs despite the precautions taken.

8. The present Commission regulation (10 CFR Part 70) which governs the licensing of special nuclear material does not provide for Commission review and approval of site, building and equipment prior to construction of facilities proposed by the applicant for the conduct of licensed activities. In practice, applicants for licenses for new plutonium processing and fuel fabrication facilities have usually discussed licensing requirements, as related to their proposed operations, with the Division of Materials Licensing early in the development of their plans. However, in order for the AEC to evaluate properly the adequacy of a plant design to withstand the forces of natural phenomena, such as earthquakes and tornadoes, and internal accidents, we believe that the AEC regulations should be amended to provide for mandatory Commission review of site and plant design bases prior to the beginning of construction of such plants. Appendix "A" is a notice of proposed rulemaking containing suitable amendments to Part 70 to effectuate this objective.

9. We are developing appropriate siting and general design criteria for plutonium processing and fuel fabrication plants which will deal with protection against adverse natural phenomena and in-plant accidents. In the interim, the siting principles of Part 100, the General Design Criteria for nuclear power reactors in Appendix A of Part 50 and the criteria used to evaluate the adequacy of the design of irradiated fuel reprocessing plants would be used where they are applicable.

10. Our review of license applications for plutonium plants would continue to include detailed evaluation of equipment, instrumentation, processes

and safety programs. However, under the revised regulation, the pre-construction review requirement will provide the Commission with the opportunity to conduct an in-depth evaluation of those aspects of the application related to the site and the plant design bases. Those aspects related primarily to operation of the plant and not to the plant design bases would be evaluated after construction is initiated but prior to issuance of the license. The following aspects would be evaluated prior to the start of construction: site studies considering population distribution, meteorology, hydrology (including potential flooding conditions), geology and seismology; design bases for plant structures, systems and components considering adverse natural phenomena and internal accidents such as fire, explosion and criticality; waste handling and treatment systems; effluent control and monitoring systems; design provisions relating to industrial security and nuclear material safeguards, and preliminary emergency plans.

11. In addition, the proposed quality assurance program for the design, construction, testing and operation of the structures, systems and components of the plant would be reviewed. The criteria set forth in Appendix B of Part 50, "Quality Assurance Criteria for Nuclear Power Plants", would be used in determining the adequacy of the quality assurance program. The applicant would also be required to submit an environmental report with his application in order that the review required by the National Environmental Policy Act of 1969 be initiated prior to plant construction. A certification under section 21(b) of the Federal Water Pollution Control Act would be required.

12. Those aspects of the application which will be evaluated after the beginning of plant construction include: qualifications of the operating organization; personnel training program; administrative procedures; criticality controls and radiation safety practices as related to the process steps and operating parameters considering both normal and abnormal conditions (such as, in the case of mixed oxide processing, the process of blending, pelletizing, sintering and grinding); surveillance

of equipment and systems necessary for safe operation; radiation instrumentation; radiation monitoring and dosimetry programs; nuclear material safeguards procedures; environmental survey programs; and emergency plans.

13. License applicants for plutonium processing and fuel fabrication plants would also be required to submit the same kind of information regarding their industrial security measures to protect against industrial sabotage as that required of production or utilization facility license applicants. The guidance now being developed in this regard for power reactor licensees would be utilized as appropriate. For example, a safety guide which describes the important aspects of an acceptable security program for a power reactor facility is currently being developed by the staff. The factors discussed in the guide are currently being used as interim guidance for evaluating proposed security measures. These factors are: (1) control of access for preventing unauthorized entry of personnel and material to the plant site, control room, reactor building, and other vital buildings and to equipment within these areas, (2) procedures for selecting and maintaining reliable personnel, (3) procedures for maintaining the status of vital equipment, and (4) plant design features which provide a high degree of assurance that deliberate acts of sabotage will not lead to consequences that can cause undue risk to the health and safety of the public.

14. The kinds of plutonium operations to which the proposed additional requirements in Appendix "A" would apply are facilities used for the manufacture of plutonium reactor fuel and facilities for the conduct of plutonium fuel research and development activities. Such facilities typically process kilogram quantities of plutonium. Smaller scale plutonium operations such as the fabrication of sources and small thermoelectric batteries, analytical laboratory work, and other types of research and development activities which involve such smaller inventories of dispersible plutonium in their process would not be covered.

15. There are other radionuclides which, because of the quantities,

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chemical and physical form, and types of facilities authorized under existing licenses, could present a significant exposure risk if a substantial portion of the authorized possession limits were released to the environment as a result of adverse natural phenomena or internal accidents. Processes using large quantities of byproduct material are quite varied in terms of the nature of the operation, size of facilities and equipment involved. The complete process for large quantities of byproduct material is usually carried out in a small area such as a hot cell or shielded glovebox. In some instances, suitable protection against the effects of natural phenomena can be achieved through controlling the inventory of materials available in dispersible form. The confinement capability inherent in massive shielding structures which are used in connection with many of the byproduct materials operations provides a degree of protection against the effects of adverse natural phenomena. Therefore, we believe that applications for byproduct material licenses should be considered on a case-by-case basis to determine whether a detailed evaluation of the capability to prevent substantial accidental releases, by adverse natural phenomena or other means, is necessary. Accordingly, we do not recommend any proposed amendments of Part 30.

16. There are 11 licensed plutonium processing and fabrication plants in existence which have not been designed to resist adverse natural phenomena. We believe that these plants should be examined with the objective of improving to the extent practicable their ability to withstand adverse natural phenomena without loss of capability to protect the public and their capability for coping with in-plant accidents. A list of existing plutonium plants, indicating their location, possession limit, and nature of operations performed, is attached as Appendix "C".

STAFF JUDGMENTS

17. The Office of the General Counsel concurs in the recommendations of this paper. The Office of Congressional Relations concurs in the draft ~~to be presented to the~~ ~~Committee on Atomic Energy~~ attached as Appendix "D". The Division of Public Information prepared the draft public announcement, attached as Appendix "E". The General Manager is considering the implications that these proposed amendments may have on AEC facilities and may wish to discuss these aspects at the Commission meeting.

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RECOMMENDATION

16. The Director of Regulation recommends that the Atomic Energy

Commission:

a. Approve publication in the Federal Register of the proposed amendments to 10 CFR Part 70 which (1) amend § 70.4 to define plutonium processing and fuel fabrication plants, (2) revise § 70.21 to require filing of an application for a plutonium processing and fabrication plant at least 6 months prior to beginning plant construction, (3) revise § 70.22 to require an application for a plutonium processing and fabrication plant to include a description of the site, a description and safety assessment of the plant design bases and a description of the quality assurance program to be applied and (4) revise § 70.23 to state that the Commission will approve construction of the principal structures, systems and components of a plutonium processing and fuel fabrication plant on the basis of information filed pursuant to § 70.22(f) and to require a determination by the Commission that the design bases provide reasonable assurance of protection against natural phenomena and potential accidents and that the construction approved pursuant to § 70.23(b) has been completed in accordance with the application;

b. Note that the proposed amendments to 10 CFR Part 70 as set out in Appendix "A" will be published in the Federal Register, allowing 60 days for public comment;

c. Note that, if after expiration of the comment period no adverse comments or significant questions have been received and no substantial changes in the text of the rule are indicated, the Director of Regulation will arrange for publication of the amendment in final form. If adverse comments or significant questions have been received or substantial changes in the text of the rule are indicated, the revised amendment will be submitted to the Commission for approval;

d. Note that the staff is developing appropriate siting and general design criteria for plutonium processing and fabrication plants which will include consideration of protection against adverse natural phenomena as well as in-plant accidents. In the interim, the siting principles of 10 CFR Part 100, the General Design Criteria for nuclear power reactors in 10 CFR Part 50 and the criteria used to evaluate the adequacy of the design of irradiated fuel reprocessing plants will be used where they are applicable. The criteria set forth in Appendix B of 10 CFR 50 "Quality Assurance Criteria for Nuclear Power Plants" will be used in determining the adequacy of the quality assurance programs;

e. Note that the Joint Committee on Atomic Energy will be informed by letter such as Appendix "D";

f. Note that a public announcement such as Appendix "E" will be issued upon filing of the notice of proposed rule making with the Office of the Federal Register; and

g. Note that the Environmental Protection Administration will be informed of the proposed amendments to 10 CFR Part 70.

APPENDIX "B"
REPORT OF
TASK FORCE ON PLUTONIUM FACILITIES

INTRODUCTION

In a memorandum of December 17, 1964 from Mr. Harold L. Price to Dr. Marvin M. Mann, Mr. Price established a Task Force to examine the licensing rules and criteria for plants processing significant quantities of plutonium or other hazardous radioactive material.

The Task Force was composed of representatives of the Office of General Counsel, and the Divisions of Materials Licensing, Reactor Standards, Reactor Licensing, Compliance, Radiation Protection Standards, Nuclear Materials Safeguards and Production.

The Task Force was directed to identify facilities which, in the event of serious damage from fire, flood, tornado, earthquake, or internally generated destructive forces, could create a significant health and safety problem outside the plant area. The Task Force was also asked to develop pros and cons of changing licensing rules to prohibit the start of construction or alteration of such facilities until the Commission has reviewed the site and important design information in the light of environmental considerations. As part of the study, the topics which should be included in criteria relevant to a preconstruction review were to be identified. In a second phase of the study, the Task Force would be expected to develop appropriate rules and criteria.

BACKGROUND

Historically, plants for plutonium fuel fabrication and scrap recovery have not been designed to resist the forces of natural phenomena such as earthquakes and tornadoes. Typically, these plants are constructed of precast concrete slabs or blocks with steel framing to provide a high degree of fire resistance. The structures are designed to withstand wind loadings

which generally have not been designed to resist natural phenomena. The panel believes that such existing facilities should be improved to the extent practicable in terms of providing protection against natural phenomena. Further, any major modifications to such facilities should meet the protection criteria established for new plants.

CONCLUSIONS

1. The action of natural phenomena on plutonium plants for fuel fabrication or scrap recovery not located to avoid nor designed to resist the forces involved could result in substantial radiation exposures to persons offsite and ground contamination over several square miles.

2. Those portions of plutonium fuel fabrication or scrap recovery plants in which dispersible plutonium is handled should be designed to withstand adverse natural phenomena without releasing significant quantities of plutonium.

IMPLEMENTATION

The Panel considered two ways by which conclusion 2. could be implemented. The alternatives are:

A. Amend Part 70 to include siting and design criteria for plutonium plants, define the plant functions or areas to which they apply and offer preliminary ALC review and approval of the site, the facility design bases, and the quality assurance programs proposed by an applicant. It should be made clear in this approach that any construction work done prior to review by the Commission is wholly at the risk of the applicant.

B. Amend Part 70 to require that the site, the design bases for structures, systems, and components and the quality assurance program for plutonium fuel fabrication and scrap recovery facilities be reviewed and approved by the Commission prior to the initiation of construction. The same criteria as described under A. above would apply.

DISCUSSION OF THE MERITS

Alternative A

This approach would not alter the present regulatory requirements with respect to review of applications for materials licenses. Applicants merely would be encouraged to submit their plans before making their final decisions on design.

There are, however, two factors that may encourage applicants to seek regulatory review prior to the beginning of construction.

(1) The application of Commission policy and procedure under the National Environmental Policy Act to fuel fabrication and scrap recovery plants, and

(2) The substantial capital investment involved in plutonium fabrication and scrap recovery plants.

The major disadvantage of this approach is that it does not avoid cumbersome problems for both the licensee and the Commission should review after construction begins indicate the need for substantial changes.

Alternative B

This approach would minimize the problems associated with review of facilities after construction has begun, or is substantially completed. It would provide for timely review of facilities siting and design, and for consideration of environmental factors.

For either of the approaches, criteria for siting, design, and operation would be formulated covering the following topics:

Site and Environment

Population distribution

Meteorology

Hydrology (including flooding)

Geology

Sismology

Principal Plant Features

Structural Design

General

Tornado

Seismic

Other natural phenomena

Fire and Explosion

Physical Security (Industrial sabotage)

Plant Layout

Ventilation Systems

Building ventilation

Process ventilation

Filters and other air-cleaning systems

Air Monitoring Systems

Containment and confinement equipment (gloveboxes, hot cells, piping, tanks, etc.)

Storage facilities

Basic Criticality Concepts

Waste handling and treatment systems

Effluent control and monitoring systems

Provisions for Nuclear Materials Safeguards

Provision for Maintenance

Plans for organization, training of personnel, and conduct of operations and maintenance

Quality Assurance Program

Emergency Planning

Environmental Monitoring

RECOMMENDATION

The Task Force recommends Alternative B. While it is likely that Alternative A would work satisfactorily in some cases, a clear requirement for pre-construction review would be equitable both to licensees and the regulatory staff and would avoid inevitable problems with regard to interpretation of criteria and standards, and the necessity for potentially burdensome changes in design after construction has begun.