NUCLEAR REGULATORY COMMISSION

10 CFR Part 73

Physical Protection of Irradiated Reactor Fuel in Transit

AGENCY: U.S. Nuclear Regulatory Commission

ACTION: Effective amendments to interim final rule

SUMMARY: The Commission is amending its interim rule for the physical protection of irradiated reactor fuel (spent fuel) in transit which was issued on June 15, 1979. The interim rule and a related guidance document designated NUREG-0561 were issued in effective form without the benefit of public comment. Public comments were, however, solicited on both the interim regulation and the guidance document. This notice summarizes the comments, gives the Commission response to each, and sets forth the interim amended rule in final form.

EFFECTIVE DATE: July 3, 1980.

NOTE: The Nuclear Regulatory Commission has submitted this rule to the Comptroller General for review under the Federal Reports Act, as amended, 44 U.S.C. 3512. The date on which the record keeping requirement of Section 73.37(b)(5) becomes effective, unless advised to the contrary, will be 75 days following publication in the Federal Register. This time period reflects inclusion of the 45 days which the General Accounting Office is allowed for its review (44 U.S.C. 3512(c)(2)).

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SUPPLEMENTARY INFORMATION: On June 15, 1979, the U.S. Nuclear Regulatory Commission amended 10 CFR 73 of its regulations to provide immediately effective interim requirements for the protection of spent fuel in transit. Concurrently, the NRC issued a guidance document (NUREG-0561) to assist licensees in carrying out the requirements. Both the amendment and the guidance document were published without benefit of public comment in the interest of the public health and safety. At the time of publication, the public was invited to submit its views and comments. After reviewing comments received from the public, and after taking into account the experience gained during the several months that the amendments have been effective, the Commission has decided to make a number of changes to the amendments and to NUREG-0561. All references to specific sections of the regulation refer to the June 15, 1979 version of the regulation, unless otherwise specified.

A. Following is a summary of changes to the amendments. These changes were, of course, accompanied by appropriate changes to NUREG-0561.

(1) Small quantity shipments. Some comments suggest that the scope of the rule should be revised to specify for spent fuel a threshold quantity below which protection requirements would not apply. The Commission agrees with this suggestion and has modified §73.1(b)(5) and §73.37(a) to set the threshold level at 100 grams in net weight of irradiated fuel (i.e., uranium, plutonium and associated fission products) exclusive of cladding or other structural or packaging material; thus shipments of spent fuel in quantities below 100 grams need not be protected. It is believed that the 100 gram threshold is in the public interest inasmuch as it would simplify the transport of small quantities, such as those made in connection with

spent fuel research activities. The calculated average radiological consequences of successful sabotage of a shipment of 100 grams of spent fuel even in a heavily populated environment are negligible.

The language of §73.1(b)(5) and §73.37(a) has also been changed to clarify which shipments are covered by the amendments. Shipments of material which are exempt from the requirements of §73.30 through §73.36 on the basis of the external radiation dose rate associated with such shipments, are now referred to in the regulations directly in terms of their dose rate, rather than in terms of their exemption from another rule. The guidance will clarify that the dose rate measurement in the case of smaller shipments, which may involve multiple packaging, should refer to the arrangement of shipment packages which results in the highest measurable external dose rate. This should eliminate any ambiguity which may arise from the possibility that the highest measurable dose rate for a grouping of several different packages comprising a single shipment may depend on the particular arrangement and orientation of the packages within the transport vehicle.

(2) Transit through heavily populated areas. Some comments suggest that the NRC modify its current embargo of shipments through heavily populated areas. These comments contend that truck shipments should not be required to depart from interstate highways, even in heavily populated areas. Some of these comments further contend that interstate highways are safer and faster than alternative routes, that police response time is faster along interstate than secondary routes, that hijacked shipments would be easier to locate on interstates, and that interstates offer saboteurs less advantage of protracted concealment. Comments noted that prior to the issuance of the regulation, routes were being chosen to

avoid heavily populated areas and to minimize shipment time. Some comments contend that shipments protected by armed escorts as outlined in the guidance document should be permitted to transit heavily populated areas.

Other comments suggest that NRC continue to strengthen its current embargo on spent fuel transit through heavily populated areas. They ask that the "where practicable" exception in 10 CFR 73.37(a)(3) be eliminated. They also ask that the guidance document be modified to eliminate extra driving time as a basis for exception, unless there are overriding safety and safeguards considerations. Some comments suggest that the NRC emphasize the use of routes through areas of low population density.

The NRC considered two alternative protection strategies. Under the first alternative, shipments would be planned to avoid heavily populated areas where practicable. Preliminary analysis indicated that most spent fuel shipments would move by road and suggested that avoidance of heavily populated areas is generally practicable. This alternative became the basis for the rule issued on June 15, 1979. The chief benefit of this alternative is that it takes advantage of the fact that sabotage of spent fuel must take place in a heavily populated area if the serious consequences discussed in a Sandia Report (SAND 77-1927) are to be obtained. The necessary conditions for successful sabotage would thus entail the adversary gaining control over the shipment, moving it to a heavily populated area, and then placing and detonating the necessary explosive charge. It is believed that the measures set forth in the June 15, 1979 regulation are capable of interrupting this sequence of events. The principal disadvantage of this protection strategy stems from the fact that the highway system is designed to connect population centers, and therefore major highways pass near or through the population centers. Avoidance of heavily

populated areas leads to the use of secondary roads. Compared with interstate highways, these secondary roads are characterized by a higher likelihood of conventional traffic accident, by longer times in transit, by less frequent patrolling by the local law enforcement agency (LLEA), and by lengthened response times in the event that LLEA assistance is requested.

Under the second alternative, shipments would be permitted to transit heavily populated areas under armed escort. The significant advantages and disadvantages of the first alternative are interchanged in the second alternative. In the second alternative, highways are the best available, the likelihood of a conventional traffic accident is reduced, total travel time for the shipment is reduced, the roads are more frequently patrolled by the LLEA, and the LLEA response time in the event of a call for assistance is reduced. On the other hand, spent fuel would be within heavily populated areas on a planned basis some of the time, thus satisfying one of the necessary conditions for successful sabotage with potentially serious consequences.

The Commission has decided that there is no clear advantage of the one alternative strategy over the other. Accordingly, the rule has been revised to allow either protection strategy to be used. The revised provisions make it clear that either (i) avoidance of heavily populated areas, or (ii) passage through heavily populated areas on approved routes employing additional protective measures, which are delineated in §73.37(c)(1), (d)(1), and (e)(1), are acceptable routing alternatives. The Commission retains its earlier position that interstate highways should be used whenever possible.

(3) Performance objectives. Some comments suggest that the NRC should provide criteria and guidelines for the use of force for the protection of spent fuel shipments. Another comment suggests that the regulation and guidance be modified to clarify whether escorts have the duty to defend spent fuel shipments or merely to detect and report threats to the shipment. The amendments have been modified to include a new section, now designated as §73.37(a), which provides performance objectives to be achieved by the physical protection system for spent fuel shipments. These performance objectives do not specifically address the issue of the degree of force escorts are to use in protecting shipments, but indicate the general level of protection that is to be provided by the entire physical protection system. Within heavily populated areas, armed escorts are expected to carry out their assigned duties, including implementation of emergency procedures in case of attack, under the same legal umbrella extended all other private guards (or law enforcement personnel, in the case LLEA personnel are employed as escorts).

(4) Clarification of certain terms. Some comments request that certain troublesome phrases in the regulation be clarified. With respect to §73.37(a)(3), which requires that "the route is planned to avoid, where practicable, heavily populated areas," comments request that the phrase "where practicable" be clarified. In §73.37(d), which requires that "...if it is not possible to avoid heavily populated areas, the Commission may require, depending on individual circumstances of the shipment, additional protective measures," comments request that the phrases "not possible" and "additional protective measures" be clarified. The requirements have been revised and the troublesome phrases have been eliminated or clarified.

(5) Calls for assistance. Some comments present the concern that the rule does not require that escorts communicate directly with the LLEA in the event that LLEA assistance is required. The Commission agrees with this concern. The regulation has been modified to explicitly require that escorts communicate directly with the LLEA in the event LLEA assistance is required.

(6) Road shipments: Immobilization. Some comments are concerned with the safety consequences of immobilization and that inadvertent operation of the immobilization device could lead to a serious accident. Some comments suggest that immobilization of both the tractor and the trailer (rather than the tractor or trailer) should be provided. Some comments suggest that the method of immobilization should be specified and approved by the NRC rather than allowing the method to be specified by the licensee. Other comments suggest that NRC analysts consider strengthening the immobilization requirement while simultaneously reducing the number of escort personnel required. Finally, one comment suggests that LLEA's along the route should be familiarized with the immobilization technique in the event that the need should arise to move a vehicle following activation of the immobilization device.

The NRC is concerned with the possible safety consequences of immobilization. The method of immobilization proposed by the licensee was intended to be reviewed by the NRC for its safety implications. The regulation has been modified to specifically require that the method of immobilization be approved by the NRC prior to the making of shipments. The intent of the regulation and the related guidance is to assure that, when operated, the immobilization device will delay movement of the spent fuel shipment for at

least one-half hour. The immobilization provision is essentially a performance requirement that can be complied with by immobilizing the trailer or the tractor or both. The guidance has been reviewed and appears to be clear on this point.

It is also intended that the licensee should have the opportunity to use his ingenuity and skill in determining how to best accomplish the immobilization. Accordingly, the particular method of immobilization required has not been specified.

The staff recognizes that a licensee might develop alternative methods of immobilization. The staff will evaluate any proposed method of protection and will approve the proposal if it provides adequate protection against sabotage occurring in heavily populated areas.

The staff believes that it would be self defeating to familiarize a large number of individuals with the immobilization technique, with a view toward constructive use of this information in the event that the need should arise to move a vehicle following immobilization. Instead, the guidance document has been revised to suggest that the possible need for traffic control following operation of the immobilization device should be considered by the licensee when preparing the operating procedures for the shipment.

(7) Road shipments: Training. Some comments suggest a significant expansion of the driver and escort training program. Some of these comments suggest that the training curriculum should include training in anti-sabotage and in initial response to spills of radioactive material. Some comments suggest that clarification of the level of proficiency needed to satisfy the training curriculum of Appendix D should be provided. One comment

contends that some of the topics in Appendix D are superfluous. Another comment suggests that the training curriculum in Appendix D should apply to drivers as well as escorts. One comment suggests that the training program should emphasize safe driving techniques.

The driver and escort training requirements have been reviewed and the regulations and guidance have been adjusted accordingly. The revised amendments include specific requirements for familiarization of the driver and LLEA personnel with certain safeguards procedures, and inclusion of a weapons training and qualifications program for escorts who are armed. The Commission has decided that the training requirements, as revised, are consistent with the duties and responsibilities of the drivers and escorts.

(8) Rail shipments: Route restrictions. Some comments contend that rail transport is penalized, compared with truck transport, through the lack of realistic alternative routes. The regulation has been modified to permit transport through heavily populated areas. One effect of that change is to eliminate the need for alternative rail routes which avoid heavily populated areas.

(9) Rail shipments: Stops: Some comments ask that the regulation and guidance pertaining to planned rail stops be modified to allow for the crew changes that take place every 100-200 miles. The comments also point out that rail shipment planners cannot meet the current stop criteria, which would permit stops only for refueling and provisions. These suggestions were adopted and the regulation and guidance document have been modified accordingly.

(10) Shipments by sea. Some comments suggest that the rule be expanded to include requirements for the protection of spent fuel aboard ships and

boats. A review of the rule as published June 15, 1979, will show that §73.1(b)(5), §73.37(a), and §73.37(d) apply to shipments independent of the mode of transport. However, in the interest of clarity, the rule has been revised to include a new section specifically addressing the protection of spent fuel shipments aboard vessels. New guidance has been added to NUREG-0561, accordingly.

(11) Written log. The original version of NUREG-0561 contained a chapter describing a written log to be kept by shipment escorts during the course of a spent fuel shipment. The purpose of this log was to provide a durable record of the circumstances surrounding a given shipment, to support inspection and enforcement functions of the NRC, and form the basis for any further regulatory actions regarding spent fuel shipments, in general. It was determined that this guidance needed to be given a firm regulatory basis by specifically requiring the maintenance of a written log in the regulations. These requirements are comparable to the recordkeeping requirements of s73.70, which cover shipments of other types of special nuclear material.

(12) Communications center. The amendments published on June 15, 1979, included requirements for calls by escorts to a "designated location," for purposes of monitoring the spent fuel shipment. Further details regarding the duties of personnel at this designated location were included in the guidance document, NUREG-0561. It was determined that further detail regarding this safeguards function would be desirable so as to give the detailed guidance included in NUREG-0561 a firm regulatory basis. The facility at the designated location has been termed the "communications center," and is now described in the regulation.

B. In some instances, the comments showed a need for modification of the guidance document alone. Following is a summary of those changes:

(1) Definition of heavily populated areas. A number of comments suggest that the definition of a heavily populated area be modified in various ways to permit more areas to qualify. Some point out that the present definition causes certain cities to be excluded from the list of heavily populated areas provided in the guidance document even though they have populations or population densities greater than some of those which were included. These anomalies were explained to arise from failures to take into account the combined populations of contiguous cities in the same urbanized area and the total populations of urbanized areas. Other comments suggested that areas with large temporary populations such as colleges be included although their permanent populations would not otherwise qualify the areas as heavily populated areas. Some comments suggested that specific cities be added to the list of heavily populated areas.

Reconsideration of the bases for defining heavily populated areas has led to a broader definition which is included in the revised guidance document. Accordingly, the number of urbanized areas listed as heavily populated areas is increased to approximately 180.

The NRC would like to take temporary population centers into account in determining whether an area qualifies as a heavily populated area. However, there are no readily available census figures upon which the NRC presently can base such determinations. Therefore, the NRC invites officials of temporary population centers to submit, to the NRC, information in support of including that area in the list of heavily populated areas.

This same mechanism will be used to assist in the continuous updating of the list relative to those areas meeting the population criteria.

(2) Road shipments: Criteria for selection of highways. Some comments suggest that NRC guidance should include a prioritizing or ordering of the various highway types (interstate, 4 lane, 2 lane marked, 2 lane unmarked, etc.) to aid licensees in the selection of alternative routes. One comment suggests that routes used in the past for spent fuel shipments, including routes used for military spent fuel shipments, should be approved automatically. The suggestion to prioritize route highway-types was adopted and the guidance in NUREG-0561 has been amended to include suitable criteria. Routes used for spent fuel shipments prior to the issuance of the interim rule, however, will not be automatically approved inasmuch as those routes, like all other proposed routes, must meet current criteria before approval.

(3) Road shipments: Criteria for detours. Some comments express concerns about detours from pre-planned routes. Some of these comments ask that the guidance document be modified to provide better criteria for determining when detours are appropriate. These comments also suggest that the NRC, rather than the licensee, should produce the guidelines. Some comments are concerned that once a shipment is en route, implementation of the detour procedures set forth in the guidance document might not be possible. Some comments suggest that LLEA's should be notified at the outset of each unplanned detour. In response to these suggestions, the guidance document has been modified to set forth some new guidelines to be followed in detour situations. However, except for the obvious instance of

where a shipment is being escorted by LLEA personnel, it is believed that the LLEA need not be notified of each detour inasmuch as the agency is not expected to do anything differently as a result of a detour.

(4) Rail shipments: Advance notification. Comments indicate that not all of the required advance notification data can be provided in advance of a rail shipment; among these data are routing, specification of stops, and cask serial numbers. Some comments contend that some of the information specified in the guidance document may be irrelevant to rail shipments. These suggestions were generally adopted. The guidance document has been modified to clarify advance notification requirements for rail shipments.

(5) Rail shipments: Unanticipated route changes. Some comments suggest that the rule and the guidance should be modified to allow for the unanticipated route changes that sometimes occur in rail transport. This suggestion was adopted by modifying the guidance document.

C. The Commission also received a number of comments and suggestions which were considered but which did not lead to changes to the amendments or to NUREG-0561. Following is a discussion of those comments:

(1) Justification for the rule. Some comments contend that the NRC has not provided proper or sufficient basis for the new regulation.

(a) Some comments ask that the NRC not modify its regulations on the basis of unproven information in draft form, such as the Sandia report.

The Commission has decided that there is an adequate basis for interim requirements for the protection of spent fuel shipments. The NRC continually

reexamines the adequacy of its regulations for the protection of the public health and safety against deliberate acts. Part of this reexamination consists of studies and research projects. One of these studies, conducted by Sandia Laboratories and published in draft form in May 1978 as SAND-77-1927, concluded that serious public health consequences could result in the event of successful sabotage of a spent fuel shipment in a heavily populated area. Although a later draft Sandia report predicts less serious consequences, a significant degree of uncertainty remains that can only be resolved by further study. The Commission is currenty pursuing a research effort to resolve these issues. While awaiting the results of this research the Commission believes that it is prudent to retain these requirements on an interim basis. When the final research results are analyzed the NRC will either modify, continue, or rescind 10 CFR 73.37, whichever is appropriate, based on those results.

(b) Other comments point out that the NRC should regulate on the basis of risk, a concept wherein risk equals the product of the consequences of an event, such as sabotage, and the probability of the event. Inasmuch as the NRC has no basis to specify an identifiable threat, some comments conclude that the probability of sabotage is insufficient to justify a legitimate concern.

NRC has not pursued quantitative risk studies for safeguards because of extreme difficulty in adequately quantifying the various factors contributing to risk. This view was expressed in the Reactor Safety Study (WASH 1400) and sustained by the Lewis panel's peer review of that document. The Lewis Panel Report (NUREG/CR-0400) states: "The risk from sabotage was not calculated in the Reactor Safety Study. The ommission was deliberate, and proper, because it was recognized that the probability of sabotage of a nuclear power plant cannot be estimated with any confidence." Similarly, estimates of the probability of successful sabotage of spent fuel shipments cannot be made with any confidence.

In their report (NUREG/CR-0400) the Lewis panel points out that, even with "realistic" risk estimates, further conservatisms must be incorporated in the regulatory process. In the absence of "realistic" risk estimates, it is even more important to incorporate conservatisms in regulatory decision making. This is the approach taken in safeguards.

We know of no attempts to sabotage spent fuel shipments in a manner leading to a significant radiological release. But we have conservatively assumed that such a sabotage act might be attempted. Furthermore, we have tried to determine, logically and systematically, the characteristics of persons who might attempt to perpetrate such crimes. The results of our threat characterization work have been published as NUREG-0459, Generic Adversary Characteristics Summary Report.

Another factor in making a determination concerning the probability of successful sabotage is the reaction of spent fuel to sabotage. It is generally agreed among analysts that the serious consequences discussed in the Sandia report could result only if sabotage is carried out in or near a heavily populated area and only if some of the normally solid spent fuel contained in a massive, durable cask is somehow released as respirable particles. It is further agreed among analysts that the only credible way to carry out such sabotage is through the skillful use of explosives. The reaction of spent fuel and spent fuel casks to explosive sabotage is subject to large uncertainty. A research program is being carried out to improve our understanding, but the program will likely not yield useful results for approximately one year.

The Commission frequently uses the concept of risk in its deliberations concerning the need for new regulations and did so in this case. The

Commission found that the likelihood of successful sabotage is uncertain inasmuch as the existence of a credible adversary organization cannot be ruled out and the response of spent fuel and spent fuel casks to credible explosive sabotage is subject to large uncertainty. With respect to consequences, it appears that the release of a small fraction of the inventory of a spent fuel casks as respirable particles could produce serious consequences in a heavily populated area. On this basis the Commission has decided to generally let stand these requirements designed to protect spent fuel shipments against sabotage in heavily populated areas on an interim basis. The need for permanent requirements will be reconsidered when the results of the research program become available.

(c) With respect to the Sandia report, the staff notes that the latest draft of the report projects sabotage consequences less serious than are set forth in the May 1978 draft, and cited by the NRC as the basis for the rule. Another comment points out that even the consequences set forth in the May 1978 Sandia draft, are not that much more serious than those of a severe accident, the risk of which the NRC appears to be willing to accept.

As mentioned above, a later draft of the Sandia report issued during September 1979, estimates less serious consequences than the May 1978 version, partly because the May version assumed larger amounts of material released as a result of sabotage. In view of the continuing uncertainties concerning the release fraction, the Commission has decided it is prudent to, in the interim, protect spent fuel in-transit.

(d) Other comments point out that Department of Energy (DOE) analysts have concluded that the rule is premature and inappropriate. The

comments also point out that DOE does not require protection of spent fuel shipments for which it is responsible.

The Commission notes that the DOE and the NRC have access to the same information and that DOE has decided not to require protection for the spent fuel shipments for which it is responsible. Despite the policy of NRC and DOE to have comparable requirements for the protection of nuclear materials, the Commission accepts the fact that from time to time reasonable administrators will differ temporarily on the difficult question of what constitutes adequate safeguards. Both agencies are developing additional information on the issues and are coordinating with one another. It is believed that the differences in positions of the two agencies are temporary and will be resolved as new information, such as that from the research program discussed above, becomes available.

(e) Other comments argue that adequate protection is provided by the durable containers in which spent fuel shipments are made.

The Commission agrees that the massive, durable casks in which spent fuel shipments are made provide a high degree of protection against many kinds of sabotage, including explosive sabotage. However, in view of the uncertainties in predicting the response of spent fuel and spent fuel casks to explosives, the Commission believes that it is no longer prudent to depend upon cask design alone to protect against sabotage in heavily populated areas. Accordingly, until additional information can be developed to resolve some of the present uncertainties concerning the response of spent fuel to explosives, the Commission has decided that spent fuel shipments should be protected as specified in 10 CFR 73.37, as modified.

(f) Some comments question the need for significant, costly protection measures for rail casks. They point out that rail casks are more substantial than truck casks and that according to Sandia, successful sabotage entails even more explosives and skill than for truck casks. The comments further point out that there is no record of hijacking trains, and therefore the movement of a hijacked train from a low population area to a high population area seems quite remote. Comments also point out that protection measures for rail shipments in heavily populated areas already include frequent surveillance by railroad police and are therefore adequate.

The referenced Sandia Report indicates that similar uncertainties apply to possible explosives attacks on both road and rail shipments. Even though rail shipments would most likely require a higher level of adversary resources for successful sabotage, such sabotage is considered possible for both road and rail modes. The Sandia Report states in particular that attacks on rail casks using shaped charges is possible since the requisite materials can be carried by men on foot. Moreover, the likelihood that available rail routes would include passages through heavily populated areas diminishes the importance of the consideration that it would be more difficult for an adversary to illicitly move a hijacked train from a less densely populated area to a heavily populated area. Protection for rail shipments, therefore, is still required.

(2) Adequacy of protection requirements. Some comments state that protection of spent fuel shipments under the interim rule is not adequate against terrorist action. These comments argue that protection equivalent to that already given strategic special nuclear materials is needed.

Some comments suggest that NRC should require licensees to justify all spent fuel shipments by considering all possible alternatives to the making of shipments.

One of the most frequent comments favored an embargo of spent fuel shipments until a permanent storage facility is established. Thereafter, spent fuel shipments would be permitted only to that facility.

Some comments contend that the additional measures required for movements through heavily populated areas are too weak to deter or to provide protection against successful sabotage; these comments ask that the regulation be modified to indicate additional safeguards and list them in detail.

One comment suggests that for any given heavily populated area the protection measures required should be similar for all shipments, rather than allowing various options for each shipment.

The Commission considered a number of sets of measures for the protection of spent fuel shipments. One of these sets of measures would have provided that spent fuel shipments would be protected equivalently to shipments of formula quantities of strategic special nuclear material (SSNM), which must also be protected against theft. However, 10 CFR §73.6 of the Commission's physical protection rules for SSNM specifically exempts spent fuel which is not readily separable and which has a total external dose rate in excess of 100 rems per hour at a distance of 3 feet from any accessible surface without intervening shielding. Such materials possess intrinsic protection against theft and are not readily usable to fabricate nuclear explosives. Nevertheless, the Commission considers it prudent to require some additional measures to protect spent fuel against radiological sabotage.

Shippers of spent fuel must submit route information and security plans to the NRC for authorization to carry out the shipment. The NRC thus

has the opportunity to review the shipper's plan for the shipment and to assure that he has considered alternatives to the making of the shipment.

The Commission reaffirms its judgment that spent fuel can be shipped safely without constituting unreasonable risk to the health and safety of the public. Accordingly, the Commission does not believe that it is necessary to prohibit spent fuel shipments until a permanent storage facility is established.

Some requirements of the regulation, particularly regarding transiting urbanized areas, have been changed considerably in this later version. Given these changes, the Commission has decided that the protection level required reasonably protects the public against risk from sabotage of spent fuel shipments. The escort force has the capability to call for assistance and in a heavily populated area, local law enforcement authorities could be on the scene within minutes. Within a heavily populated area, the escort force is armed and therefore has the potential to prevent sabotage until local authorities arrive.

The Commission is seeking adequate protection for shipments which must pass through heavily populated areas. In the Commission's view, an adequate level of protection can be provided by either private guards or law enforcement personnel.

(3) Liability limits. One comment suggests that no shipments of spent fuel should be permitted unless the shipper carries private liability insurance without limit. Other comments favor informing the public of the liability limits currently in force for shipments.

The Commission has not at the present time extended indemnity coverage to spent fuel shipments on a generic basis. However, spent fuel shipments are

indemnified while in the course of transportation to or from an indemnified facility (principally nuclear reactors). Indemnity coverage for spent fuel shipments to or from reactors terminates at the point at which transportation ends.

The provisions of Section 170 of the Atomic Energy Act of 1954, as amended, require production and utilization facility licensees, i.e., reactors and reprocessing plants to have and maintain financial protection (e.g., nuclear liability insurance) to cover public liability claims resulting from a nuclear incident. The Commission is also directed to enter into protection and indemnify the licensee for up to $500 million in excess of that financial protection.

The indemnity protection afforded the public for accidents arising during transportation is derived from the coverage provided under the insurance policies maintained by licensees of reactors and reprocessing plants and in the indemnity agreements executed by these licensees with the Commission. The coverage under the policies and indemnity agreements incorporate the so-called "omnibus" provisions of the Price-Anderson Act. Under the "omnibus" coverage liability protection extends not only to the liability of the licensee, but also to any other person who may be liable, such as a transporter. However, there would be no Price-Anderson Act protection (or limit on liability) under facility licensees' insurance policies and indemnity agreements once a shipment were highjacked and placed beyond the control of the transporter. Extension of the Price-Anderson Act protection to cover incidents occurring after a shipment has been highjacked is beyond the scope of this rulemaking.

(4) ALARA implications. One comment suggests that the implications of the rule with respect to the Commission policy of maintaining radiation exposure levels as low as reasonably achievable (ALARA) should be examined.

The Commission has not at the present time extended indemnity coverage to spent fuel shipments on a generic basis. However, spent fuel shipments are

accidents involving radioactive material shipments are sufficiently small to allow continued shipments by all modes. Because transportation conducted under present regulations provides adequate safety to the public, the staff concludes that no immediate changes to the regulations are needed at this time. This determination is partly based on the conclusion in NUREG-0170 that the average radiation dose to the population at risk from normal transportation is a small fraction of the limits recommended for members of the general public from all sources of radiation other than natural and medical sources and is a small fraction of natural background dose.

The staff has examined the ALARA implications of the rule for the specific case of spent fuel shipments by truck. Calculations indicate that routine exposure from shipments routed around cities would likely be about 30% higher than the small but calculable routine exposure for similar shipments routed through cities. The Commission considers that this difference in such small routine exposures is not a significant health factor and therefore not to be considered a significant factor in the choice of routing.

(5) Transportation mode. Some comments suggest that the scope of the rule should be expanded to require licensees to examine alternative transportation modes for shipments.

The Commission agrees that alternative modes of transportation should be considered during the development of a program for the protection of spent fuel shipments against sabotage. The characteristics of alternative modes have been considered in the revised rule and suitable measures have been developed for road, rail and water transport. Accordingly, a licensee may choose the mode of transportation for his shipment on the basis of considerations other than safeguards.

(6) High level waste. Some comments suggest that the scope of the rule should provide requirements for the protection of high level waste shipments.

No licensed shipments of high level waste are presently being made. Only a few facilities currently possess high level waste. Shipments of the waste from a facility at which it now resides to another facility would involve the amendment of one or more licenses. At that time, appropriate requirements would be issued.

(7) Test reactor fuel shipments. Comments suggest that the staff consider relaxing protection requirements for test reactor spent fuel in recognition of the fact that it contains no free radioactive gases.

The revised rule has not been modified to reduce the protection requirements for test reactor spent fuel. Fission gases would account for only a tiny fraction of the calculated health effects. Solid, respirable material would account for most of the health effects.

(8) Distinction between guidance documents and regulations. Public comments on both the amendments published in the Federal Register and the supporting guidance document (NUREG-0561) were received. Some comments apparently mistake the guidance document for a regulation and therefore conclude that the supposed regulation is too loosely worded. Other comments apparently reflect only the regulatory amendments and suggest that the amendments alone are worded too loosely to be effective.

Following is a discussion of the distinction between regulations and guidance documents. Regulations set forth legal requirements that licensees must follow. The NRC is empowered to inspect against and enforce the provisions of its

regulations. Regulations without exception carry the approval of the Commission. Guidance documents, on the other hand, can be prepared and issued by the staff. The documents are not legally binding upon licensees. The primary purposes of the guidance documents are: (1) to describe and make available to the public the intent and scope of application of the regulatory provisions, (2) in some cases, to provide alternative methods that are normally acceptable to the NRC staff for implementing specific parts of the Commission's regulations, (3) in some cases, to delineate techniques used by the staff in evaluating specific problems, and (4) to provide guidance to applicants concerning certain information needed by the staff in its review of applications for permits and licenses. Guidanace documents are not intended as substitutes for regulations and, therefore, compliance with guidance documents is not required.

(9) Licensee costs. Some comments contend that the cost estimates developed by the staff are too low. One comment suggests that the cost for truck transportation would be at least double that estimated by the NRC staff and probably much higher. Another comment states that truck transportation cost is approximately double that estimated by the staff even before the cost of safeguards required by the rule are added in. One comment places cost in the range of twenty million dollars per year by assuming ten thousand shipments per year circa 1985. Comments argue that staff estimates of rail costs are in even greater error than staff estimates of truck costs; these comments conclude that rail shipments must be made in special trains in order to satisfy the rule and that, therefore, the cost of each rail shipment will be in the range of twenty to forty thousand dollars.

With respect to truck shipments, our latest information indicates that as many as 500 shipments might occur during calendar year 1980. The number of possible shipments is currently limited by the number of shipment casks available. Even

if new casks were quickly manufactured, allowing the number of shipments to double, the Commission notes that the interim rule is designed to be in effect only until about mid CY81, and therefore, believes that the high cost estimates stemming from protection of large numbers of spent fuel shipments circa 1985 are not appropriate or relevant. With respect to rail shipment costs, the Commission disagrees with the contention that special trains are needed to meet the requirements for rail shipments, and therefore, rejects the high cost estimates which are based on the use of special trains.

(10) Cost-benefit study. Some comments suggest that the NRC should provide a cost benefit analysis in support of the regulation. Comments also suggest that the requirements of the rule should be clearly defined and should be cost effective. They argue that regulations must be cost effective in order to be meaningful and must avoid being arbitrary or capricious or an abuse of discretion. Some comments suggest that the rule is not cost effective in its present form.

This interim rule is expected to be in effect for a year or two. Recent figures indicate that if the maximum number of potential shipments occur, the requirements may result in a cost of about five hundred thousand dollars per year, distributed over a number of licensees. The addition of protection measures for spent fuel shipments does not have a significant effect on the environment. After taking into account the cost, the duration, and the absence of significant impact on the environment, the Commission has decided that a detailed cost-benefit study is not needed for this interim rule. Although a detailed cost-benefit study was not performed, the general costs and benefits resulting from this rule have been reviewed, as have the potential consequences of sabotage of spent fuel shipments to the public health and safety. A decision has been made that the benefits from reducing the probability of occurrence and potential consequences of spent

fuel shipment sabotage justify the cost of the requirements. A detailed cost-beneift study will be prepared in support of any permanent rule that is issued.

(11) Preemption. Some comments urge that the NRC preempt state and local restrictions on spent fuel shipments. Some comments seek to preempt those state and local ordinances which would ban or otherwise restrict shipments or which would require rerouting of shipments over secondary roads, with an attendant increase in safety hazard.

Some comments argue that preemption would lead to a more responsible national policy concerning uniformity of spent fuel transport regulations. Some comments favoring preemption suggest that the NRC should take into account state and local concerns when drafting federal regulations. One comment suggests that NRC eliminate from its rule references to local ordinances as a basis for rerouting shipments; this comment concludes that a local community should not be able to prevent the use of a route acceptable to the NRC. One comment suggests that the regulations make clear that local ordinances in conflict with the NRC rule would be preempted.

Other comments took the opposite view of preemption. These comments declare that local communities have the right to be more restrictive than the NRC in the regulation of spent fuel shipments which they perceive as threatening their safety.

To date, the NRC has contested a local ordinance that regulates the transport of nuclear materials only once (United States v. New York City (S.D.N.Y. No. 76 Civ. 273)). In this case NRC, ERDA (now DOE) and DOT sought a judgement declaring a New York Health Code provision to be inconsistent with the Federal Statutory scheme for transportation of nuclear materials. On January 30, 1976, a United States request for a preliminary injunction barring enforcement of the local ordinance was denied.

On August 17, 1978, the Materials Transportation Bureau of the DOT published an advance notice of proposed rulemaking (43 F.R. 36492) dealing with the subject of highway routing of radioactive materials. On October 26, 1978, the DOT published a notice (43 F.R. 50006) of its intention to hold a public hearing on this subject in Washington, D.C., on November 29, 1978. On January 31, 1980 the DOT published for public comment a proposed rule dealing with the highway transportation (including Federal routing requirements) of radioactive material. The DOT has expressed its intention to publish a final rule on this subject by the end of 1980.

Where state law is consistent with new Federal regulations promulgated under the Hazardous Materials Transportation Act (HMTA) or where the state in a legitimate exercise of its police power imposes general, non-radiological constraints (e.g., speed limits, load limits) on all truck transportation, the Commission does not presently contemplate actions to preempt the enforcement of these laws. However, the Commission reserves judgement on whether it may become necessary to seek such preemptive action in a limited way (e.g., where specific route considerations are at issue) prior to the time the DOT regulations become effective. Once the DOT regulations on this subject become effective, there appears a strong possibility that inconsistent state and local rules may be preempted on a broader basis.

(12) Information on routes and schedules. Some comments suggest that the NRC adopt a liberal policy concerning the information on routes and schedules that would be made public. These comments suggest that route information should be published in the Federal Register; subsequently the NRC should hold public hearings (or provide some other means for public input) on routes. These comments further suggest that NRC should contact state and local authorities before granting a route approval. Some comments

conclude that a local population has better knowledge of routes than could be developed by NRC surveillance teams, thereby allowing the defects and advantages of alternate routes to be more adequately considered. Comments suggest that the state and local authorities should be notified of details of routes. Comments also suggest that state and local authorities should be notified in advance of the schedule of each shipment. Some comments suggest that state and local authorities should take steps to have emergency response and law enforcement organizations alerted and on duty at the time spent fuel shipments are made.

Other comments suggest that the NRC should adopt a conservative policy with respect to information on routes and schedules. These comments suggest that NRC withhold information on routes and schedules, pointing out that information certified by the NRC would be valuable to potential saboteurs. The comments also point out that it is a principle of security that sensitive information should be restricted to the minimum number of people. These comments conclude that the NRC should restrict dissemination of route and schedule information to a limited number of elected and appointed state and local officials who should be requested or required to avoid making the information public.

Current staff policy concerning information on routes and schedules is to generaly withhold this information from public disclosure. However, in one recent specific instance, the Commission decided that information on staff-approved routes should not be withheld. It noted, however, that the decision was case-specific and should not be considered a precedent.

(13) Consolidated notice. Some comments note the proliferation of local ordinances requiring advance notice and ask that the NRC establish

in its rule such that only the NRC need be notified. The NRC could then notify state and local agencies as it deems necessary.

Adoption of this suggestion would imply that the NRC rule preempts local ordinances calling for advance notification of shipments. As was noted earlier, the NRC has not yet contested local ordinances that regulate the transportation of spent fuel. Although this suggestion will not be adopted at this time, it will be re-evaluated when DOT routing rules go into effect.

(14) Need for comprehensive study. One comment suggests that a comprehensive study of ports of entry for import of spent fuel shipments and subsequent routes is needed; the proposed principal criteria for selection of a port or route would be to affect the least population in event of sabotage.

In consideration of the Commission's revised position relative to avoidance of heavily populated areas; i.e., that passage through a heavily populated area, on approved routes, when supported by additional measures such as armed escorts, is acceptable, the Commission does not regard ports-of-entry as a particular problem area with respect to routing. Ports that are also listed as heavily populated areas will require the additional protection.

(15) Expansion of response capabilities. Some comments propose a significant expansion of capabilities for responding to accidents or sabotage. These comments suggest that all emergency response units in all communities along the route submit response plans to the NRC for approval. Some comments suggest that all emergency response units in all communities along the route submit response plans to the NRC for approval. Some comments

suggest that these response units should be required to conduct drills. Other comments propose that LLEA personnel along the route be trained to deal with radiological releases. Some comments suggest that the shipper should provide an escort capable of handling all emergency situations. Some comments also suggest that the NRC should help to develop these various emergency response units. Some comments suggest that the shipper should be responsible for the preparation of emergency plans, while others suggest that the NRC should be responsible. Some comments ask that provisions be made for local governments to approve licensee emergency response procedures and emergency plans.

These suggestions appear to be prompted, at least in part, by the provisions of 10 CFR 73.37(a)(6) which require a licensee to develop procedures for coping with threats and safeguards emergencies. As is noted in NUREG-0561, the purpose of this requirement is to provide for the development of a plan to be used by drivers, escorts, licensee personnel and other individuals involved in a shipment in case of threats, attempted sabotage, or other events that jeopardize the security of a shipment. The larger question of emergency plans, emergency preparedness, emergency response and the like are judged to be beyond the scope of these interim safeguards requirements. Recent staff views on these questions are available in NUREG-0535 - Review and Assessment of Package Requirements (Yellow Cake) and Emergency Response to Transportation Accidents.

(16) Arrangements with LLEA: Clarity and feasibility. Some comments request that the NRC clarify its description of what constitutes acceptable arrangements, who must be contacted, and whether the arrangement or contact

with the LLEA must be documented. One comment suggests that the licensee's responsibility with respect to this requirement be limited to maintaining an up-to-date list of telephone numbers and contacts in LLEAs.

One comment points out that in the case of transcontinental shipment, a very large number of LLEAs would have jurisdiction along the route and that contacting all of them would not be feasible.

Under current practice, the NRC staff makes the initial contacts and arrangements with LLEAs as part of the approval process. Accordingly, the concerns set forth in the comment do not appear to be justified since the relevant burdens have been assumed by the NRC staff.

(17) Arrangements with LLEA: Information security concerns. Some comments suggest that coordination with LLEAs along the route would be tantamount to announcing the route and would therefore be contrary to good information security practice.

During the coordination process, the NRC staff informs LLEAs of the importance of protection of spent fuel and asks that the agency not disclose sensitive information, such as routes, that would be helpful to a saboteur. The agencies have generally been cooperative. Accordingly, NRC practices were not changed as a result of the suggestion.

(18) LLEA capabilities. One commenter notes his experience which suggests that LLEAs in heavily populated areas are unwilling or unable to provide the additional protection suggested by the NRC for shipments through heavily populated areas.

NRC staff experience is at variance with the experience of this commenter. Staff experience is that LLEAs have been very cooperative in assisting in the protection of shipments of nuclear materials. Also the rule allows for pirvate armed escorts, instead of LLEA personnel, to be used to protect shipments. For these reasons, no changes were made in the regulation or the guidance as a result of this comment.

(19) Road shipments: Alternative routes. Some comments suggest that NRC route approval policy should include approval of a reasonable number of alternative routes. The comments suggest that the approvals remain valid indefinitely.

Current staff policy is to approve a number of alternative routes. The actual number of routes that can be approved is, of course, limited. Once a route is approved, the approval would remain valid until new information suggests that the approval should be withdrawn.

(20) Road shipments: Rush-hour concern. One comment suggests that in the event of routing through a heavily populated area, the scheduling should be planned so as to avoid the local rush hour traffic.

The staff performs route surveys, including route surveys through heavily populated areas, and makes arrangements with LLEAs along the route of the shipments for their response to an emergency or a call for assistance. Rush-hour concerns are taken into account during this planning.

(21) Road shipments: Route planning. Some comments contend that the information given in the guidance document and in the related reference documents does not provide detail sufficient to distinguish and select highway routes.

The staff agrees with the comment, but notes that the Census Bureau data supplemented by local road maps jointly provide a sufficient basis for route selection. Furthermore, the revised rule allows greater use of interstate highways, which should make route selection easier. Accordingly, no changes were made in the regulation or guidance as a result of this comment.

(22) Road shipments: Drivers. Some comments suggest that the NRC should confer more closely with the DOT inasmuch as it appears that some driver requirements imposed by NRC are in conflict with DOT requirements. One comment suggests that 10 CFR 73.37(b)(1) be modified to specify two trained drivers rather than one. Comments suggest that in view of the potential consequences from accidents, drivers should operate spent fuel shipment vehicles in the safest and most reassuring way in order to instill public confidence.

With respect to the coordination suggestion, the staff notes that in accordance with the terms of a Memorandum of Understanding, the latest version of which was published in the Federal Register on July 2, 1979, the NRC and DOT have agreed to advise and consult with one another before either issues a new regulation. This procedure was followed before issuance of this regulation. The DOT review did not reveal any conflicts between DOT regulations and the NRC interim regulation. The suggestion that the requirements of 10 CFR 73.37(b)(1) be modified to make explicit that two properly trained truck drivers satisfy the requirement was not adopted because the original phrasing already permits that option. The suggestion that two truck drivers rather than one should be required was not adopted because there appears to be no adequate safeguards justification. The

provision is allowed to stand because it allows greater flexibility for the licensee in designing his security arrangements and it does not sacrifice the effectiveness of protection arrangements.

The NRC agrees with the comment that shipment vehicles should be operated safely. However, the rule was not changed because the subject of safe driving is not within the scope of this physical protection rule change proceeding.

(23) Road shipments: Escorts. Some comments suggest that the regulation should be changed to always require an escort vehicle to accompany the shipment vehicle; other comments contend that an escort vehicle is undesirable because it increases the likelihood of an accident. Some comments are concerned that the duties assigned to drivers and escorts in the regulation and guidance would overwhelm the drivers and escorts for shipments longer than one day. One comment proposes that the NRC should license escorts and test them annually. Finally, some comments suggest that more than one escort might be needed for extended stopovers.

The Commission has decided that the current level of protection, which permits a single vehicle system to be used outside of heavily populated areas, is adequate. In addition, a second escort or other added safeguards measures are required for transiting urban areas. The Commission has also decided that the duties of the drivers and escorts are straight-forward; that the training program as revised (Appendix D of 10 CFR Part 73) is adequate. With respect to the size of the escort force, the regulation specifies the number, capabilities, and duties of personnel who are to be on duty at any one time; it is the obligation and responsibility of the licensee to provide a force size sufficient to provide for relief and rest periods.

(24) Road shipments: Call-in schedule. Some comments contend that the two-hour call-in schedule required by 10 CFR 73.37(b)(2) is not practicable; they argue that carrying out the requirements would violate DOT regulations by disturbing the co-driver's rest period on long trips. The comments suggest that an eight-hour call-in schedule would be more appropriate. Comments also point out that the two-hour call-in schedule (if carried out) would require extra stops for telephone calls, thereby making the shipment vulnerable to sabotage.

The two-hour call-in schedule has been reviewed with DOT. Representatives of DOT found nothing in the requirement that was unsafe for a lone driver to carry out while driving or that was in conflict with DOT regulations. Accordingly, the two-hour call-in requirement is allowed to stand. The Commission reaffirms its judgment that the benefits from two-hour call-ins justify the additional risk of those instances where the vehicle must be stopped and the call-in done by conventional telephone.

(25) Road shipments: Citizens band (CB) radio. Some comments suggest that there is no assurance that CB contacts can be made, and therefore the requirement for CB radio in the shipment vehicle is superfluous. Other comments note that the designated control location is not required to be equipped with a CB radio and ask that the NRC reconsider whether a potential saboteur could gain advantage from this situation.

A requirement for CB radio is included in recognition of the fact that CB radio offers an inexpensive back-up to the primary communication system.

It is true that there is no guarantee that a CB contact can be established in the event that there is a need to call for assistance. On the other hand,

the adversary is faced with a back-up communications system that he can neither ignore nor readily defeat. The CB requirement is included because it, in some measure, reduces an adversary's likelihood of success. Also, CB radio is useful for communication among the escort vehicles and shipment vehicle and can be used in most heavily populated areas to contact the LLEA. However, because the transmission range of CB radio is short compared with the likely distance that shipments will be transported, there is no requirement for a CB radio to be installed in the control location.

(26) Rail shipments: Special trains. Some comments urge the use of special trains to transport spent fuel rail casks. These comments contend that special trains have the following advantages: The requirements of 10 CFR 73.37(c) are difficult for regular trains but can be handled readily by special trains. Special train speeds are lower and can be tailored to circumstances. Special trains are shorter than regular trains with the advantage that "burying" the shipment car under other cars in the event of an accident is less likely; this feature, the comments argue, would be very significant in the event of a fire. A special train offers better observation of the shipment car. Most railroad accidents occur in rail yards and special trains spend less time in rail yards than do regular trains. Special trains have priority in use of track over regular trains. Regular trains could conceivably carry spent fuel together with other hazardous material, such as explosives or inflammables, in different cars of the same train; this situation would not occur with a special train.

Special routing is possible to avoid rail yards and heavily populated areas. Finally, the probability of certain classes of train accidents, such as brake failure or railroad crossing accidents, is lower because special trains are shorter than regular trains.

Other comments take the opposite view and suggest that the use of regular trains for spent fuel shipments is entirely satisfactory for the following reasons: The likelihood of hijacking a regular train from a low population to a high population area is remote in the extreme. Special trains have no particular advantage in avoiding high population areas. Special trains, as now proposed, would be stopped to yield right-of-way to regular trains.

NRC approval of alternative routes would provide adequate response to the uncertainties of weather, rail damage, and other uncontrollable influences.

A regular train in a rail yard would be under surveillance by the escort and the railroad police. Special trains have no advantage in communications; moreover, rail traffic controllers always know the approximate location of their trains.

Needed protection requirements for rail shipments can be met by regular trains. Accordingly, the suggestion that the regulations be modified to require the use of special trains was rejected.

(27) Rail shipments: Arrangements with LLEA. Some comments suggest that arrangements with LLEAs are needed only when a shipment car is stopped in a rail yard. This suggestion was not adopted because it would be inconsistent with the fundamental protection measure that an escort should always be present with a spent fuel shipment and that escort should be able to request and obtain assistance from the LLEA independent of the location of the shipment.

(28) Rail shipments: Escorts. Some comments contend that escorts are not needed when a train is moving. Other comments point out that more than one escort will be needed to provide surveillance during extended stopovers

and that special lighting might be needed for effective surveillance. One comment points out that no existing spent fuel rail cask car provides for an escort within the car, as is implied by the guidance document and the regulation. Finally, some comments request that the NRC consider speed restrictions for spent fuel shipments and reconsider its decision not to require surveillance while the train is moving -- particularly while the train is moving very slowly.

One of the fundamental protection measures is that an escort should always be present near the shipment, independent of the location of the train and independent of whether the train is moving. Accordingly, the suggestion that an escort is not needed while the train is moving was rejected.

One intent of the requirement is that a stopped shipment car always be under observation; it is the responsibility of the licensee to provide an escort force sufficiently large to meet that intent.

The object of the observation requirement is the early detection of circumstances that threaten deliberate damage to the shipment in a heavily populated area. Lighting in heavily populated areas is expected to be sufficient for this purpose.

With respect to the comment concerning the escort in the same rail car with the spent fuel cask, the guidance document was written so as not to preclude the escort from riding in a rail car containing a spent fuel cask. The staff had in mind a small cask in which slightly greater than exempted quantities of spent fuel might be shipped rather than a typical rail cask containing up to ten fuel assemblies.

The Commission has recognized the need for surveillance capabilities while trains are moving, and has reflected this in the regulation.

(29) Rail shipments: Strengthening of requirements proposed. One comment asserts that spent fuel shipments by road are inherently unsafe and that shipments should be made by rail. The comment contends that current capabilities for the safety and protection of rail shiplments are inadequate and identifies numerous areas where he believes improvements are needed.

The Commission disagrees with the view that spent fuel shipments by road are inherently unsafe. The comment does not provide an adequate justification for the extreme measures proposed pertaining to rail shipments. The Commission has no new information to modify its current view that spent fuel shipments can be moved safely on the existing rail system. Accordingly, no changes were made to the regulation or the guidance as a result of this comment.

The following modifications to the rule have been coordinated with the Department of Transportation in accordance with the Memorandum of Understanding between NRC and DOT that was published in the Federal Register on July 2, 1979. The Department of Transportation has determined that the NRC rule is not in conflict with current DOT regulations.

These amendments to the interim final rule are being published in effective form subject to codification. In the Federal Register notice issuing the interim final rule (44 FR 34466), comments were requested on the rule even though it was published in effective form. It is those comments received that have led to the amendments being made here. It is as if comments had been received on a proposed rule. Accordingly, the Commission for good cause finds that further notice and public procedure is unnecessary.

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, and sections 552 and 553 of Title 5 of the United States Code, the following amendments to Title 10, Chapter 1, Code of Federal Regulations, Part 73, are published as a document subject to codification.

1. Section 73.1 of 10 CFR Part 73 is amended by revising paragraph (b)(5) to read as follows:

§73.1 Purpose and Scope.

* * * * *

(b) Scope

* * * * *

(5) This part also applies to the shipment of irradiated reactor fuel in quantities that in a single shipment both exceed 100 grams in net weight of irradiated fuel, exclusive of cladding or other structural or packaging material, and have a total radiation dose rate in excess of 100 rems per hour at a distance of 3 feet from any accessible surface without intervening shielding.

2. Section 73.37 of 10 CFR Part 73 is revised to read as follows:

§73.37 Requirements for physical protection of irradiated reactor fuel in transit.

(a) Performance objectives.

(1) Each licensee who transports, or delivers to a carrier for transport, in a single shipment, a quantity of irradiated reactor fuel in excess of 100 grams in net weight of irradiated fuel, exclusive of cladding or other structural or packaging material, which has a total external radiation dose rate in excess of 100 rems per hour at a distance of 3 feet from any

accessible surface without intervening shielding, shall establish and maintain, or make arrangements for, and assure the proper implementation of, a physical protection system for shipments of such material that will achieve the following objectives:

(i) Minimize the possibilities for radiological sabotage of spent fuel shipments especially within heavily populated areas; and

(ii) Facilitate the location and recovery of spent fuel shipments that may have come under the control of unauthorized persons.

(2) To achieve these objectives, the physical protection system shall:

(i) Provide for early detection and assessment of attempts to gain unauthorized access to, or control over, spent fuel shipments;

(ii) Provide for notification to the appropriate response forces of any spent fuel shipment sabotage attempts; and

(iii) Impede attempts at radiological sabotage of spent fuel shipments within heavily populated areas, or attempts to illicitly move such shipments into heavily populated areas, until response forces arrive.

(b) General requirements. To achieve the performance objectives of paragraph (a) of this section, a physical protection system established and maintained, or arranged for, by the licensee shall:

(1) Provide for notification of the Nuclear Regulatory Commission in advance of each shipment, in accordance with §73.72 of this part.

(2) Include procedures for coping with circumstances that threaten deliberate damage to a spent fuel shipment and with other safeguards emergencies.

(3) Include instructions for each escort that, upon detection of the abnormal presence of unauthorized persons, vehicles or vessels in the vicinity of a spent fuel shipment, or upon detection of a deliberately induced situation that has the potential for damaging a spent fuel shipment, the escort will:

(i) Determine whether or not a threat exists;

(ii) Assess the extent of the threat, if any;

(iii) Inform local law enforcement agencies of the threat and request assistance; and

(iv) Implement the procedures developed in accordance with paragraph (b)(2) of this section.

(4) Include a communications center at a designated location, which will be staffed continuously by at least one individual who will monitor the progress of the spent fuel shipment and will notify the appropriate agencies in the event a safeguards emergency should arise.

(5) Provide for maintenance of a written log by the escorts and communications center personnel, for each spent fuel shipment, which will include information describing the shipment and significant events that occur during the shipment, and will be available for review by authorized NRC personnel for a period of at least 1 year following completion of the shipment.

(6) Provide that arrangements have been made with local law enforcement agencies along the routes of road and rail shipments, and at U.S. ports where vessels carrying spent fuel shipments are docked, for their response to an emergency or a call for assistance.

(7) Provide for advance approval by the NRC of the routes used for road and rail shipments of spent fuel, and of any U.S. ports where vessels carrying spent fuel shipments are scheduled to stop.

(8) Provide that shipments are planned so that scheduled intermediate stops are avoided to the extent practicable.

(9) Provide that at least one escort maintains visual surveillance of the shipment during periods when the shipment vehicle is stopped, or the shipment vessel is docked.

(10) Provide that escorts (other than members of local law enforcement agencies, or ship's officers serving as unarmed escorts) have successfully completed the training required by Appendix D of this part.

(11) Provide that shipment escorts make calls to the communications center at least every 2 hours to advise of the status of the shipment for road and rail shipments, and for sea shipments while shipment vessels are docked at U.S. ports.

(c) Shipments by road. In addition to the provisions of paragraph (b), the physical protection system for any portion of a spent fuel shipment that is by road shall provide that:

(1) A transport vehicle within a heavily populated area is:

(i) Occupied by at least two individuals, one of whom serves as escort, and escorted by an armed member of the local law enforcement agency in a mobile unit of such agency; or

(ii) Led by a separate vehicle occupied by at least one armed escort, and trailed by a third vehicle occupied by at least one armed escort.

(2) A transport vehicle not within any heavily populated area is:

(i) Occupied by at least one driver and one other individual who serves as escort; or

(ii) Occupied by a driver and escorted by a separate vehicle occupied by at least two escorts; or

(iii) Escorted as set forth in paragraph (c)(1) above.

(3) Escorts have the capability of communicating with the communications center, local law enforcement agencies, and one another, through the use of:

(i) A citizens band (CB) radio available in the transport vehicle and in each escort vehicle;

(ii) A radiotelephone or other NRC-approved equivalent means of two-way voice communications available in the transport vehicle or in an escort vehicle committed to travel the entire route; and

(iii) Citizens band (CB) radio and normal local law enforcement agency radio communications in any local law enforcement agency mobile units used for escort purposes.

(4) The transport is equipped with NRC-approved features that permit immobilization of the cab or cargo-carrying portion of the vehicle.

(5) The transport vehicle driver has been familiarized with, and is capable of implementing, transport vehicle immobilization, communications, and other security procedures.

(d) Shipments by rail. In addition to the provisions of paragraph (b), the physical protection system for any portion of a spent fuel shipment that is by rail shall provide that:

(1) A shipment car within a heavily populated area is accompanied by two armed escorts (who may be members of a local law enforcement agency), at least one of whom is stationed at a location on the train that will permit observation of the shipment car while in motion.

(2) A shipment car not within any heavily populated area is accompanied by at least one escort stationed at a location on the train that will permit observation of the shipment car while in motion.

(3) Escorts have the capability of communicating with the communications center and local law enforcement agencies through the use of a radiotelephone, or other NRC-approved equivalent means of two-way voice communications, which shall be available on the train.

(e) Shipments by sea. In addition to the provisions of paragraph (b), the physical protection system for any portion of a spent fuel shipment that is by sea shall provide that:

(1) A shipment vessel, while docked at a U.S. port within a heavily populated area, is protected by:

(i) Two armed escorts stationed on board the shipment vessel, or stationed on the dock at a location that will permit observation of the shipment vessel; or

(ii) A member of a local law enforcement agency, equipped with normal LLEA radio communications, who is stationed on board the shipment vessel, or on the dock at a location that will permit observation of the shipment vessel.

(2) A shipment vessel, while within U.S. territorial waters, or while docked at a U.S. port not within a heavily populated area, is accompanied by an escort, who may be an officer of the shipment vessel's crew, who will assure that the shipment is unloaded only as authorized by the licensee.

(3) Escorts have the capability of communicating with the communications center and local law enforcement agencies through the use of a radiotelephone, or other NRC-approved equivalent means of two-way voice communications.

3. Appendix D of 10 CFR Part 73 is amended by adding a paragraph at the end, as follows:

> The licensee is also required to assure that armed individuals serving as shipment escorts, other than members of local law enforcement agencies, have completed a weapons training and qualifications program equivalent to that required of guards, as described in III and IV of Appendix B of this part, to assure that each such individual is fully qualified to use weapons assigned him.

4. The first sentence of §73.72 of is amended by adding the phrase "or spent fuel required to be protected under the provisions of §73.37," after the words "special nuclear material of moderate strategic significance".

(Secs. 53, 161b, 161i, Pub. L. 83-703, 68 Stat. 930, 948, 949; Sec. 201, Pub. L. 93-438, 88 Stat. 1242-1243 (42 U.S.C. 2073, 2201, 5841).)

Dated at Washington, D.C. this 27th day of May, 1980.

For the U.S. Nuclear Regulatory Commission

Samuel J. Chilk
Secretary of the Commission