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**NUCLEAR MANAGEMENT AND RESOURCES COUNCIL**

1776 Eye Street, N.W. • Suite 300 • Washington, DC 20006-3706  
(202) 872-1280

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Thomas E. Tipton  
Vice President & Director  
Operations, Management and  
Support Services Division

January 3, 1994

Mr. Samuel J. Chilk  
Secretary  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555

**ATTENTION:** Docketing and Services Branch

**SUBJECT:** Notice of Proposed Rulemaking -- "Protection Against  
Malevolent Use of Vehicles at Nuclear Power Plants"  
58 Fed. Reg. 58804 - November 4, 1993  
Request for Comments

Dear Mr. Chilk:

These comments are submitted by Nuclear Management and Resources Council (NUMARC)<sup>1</sup> on behalf of the industry in response to the Nuclear Regulatory Commission's (NRC) proposed rule for *Protection Against Malevolent Use of Vehicles at Nuclear Power Plants*, (58 Fed. Reg. 58804 - November 4, 1993). In addition to the general comments below, detailed comments on the proposed rule and regulatory analysis, the backfit analysis and the proposed Regulatory Guide are provided in Enclosures 1 through 3, respectively.

The NRC is addressing the review of the design basis threat (DBT) in two phases. The first phase, on malevolent use of vehicles, has resulted in this proposed regulation that would require each licensee to install a vehicle barrier system (VBS) to prevent land vehicle intrusion into the protected area. The second phase, which explores revisions to the makeup, equipment and capabilities of a postulated paramilitary force that a licensee

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<sup>1</sup>NUMARC is the organization of the nuclear power industry that is responsible for coordinating the combined efforts of all utilities licensed by the NRC to construct or operate nuclear power plants, and of other nuclear industry organizations, in all matters involving generic regulatory policy issues and on the regulatory aspects of generic operational and technical issues affecting the nuclear power industry. Every utility responsible for constructing or operating a commercial nuclear power plant in the United States is a member of NUMARC. In addition, NUMARC's members include major architect/engineering firms and all of the major nuclear steam supply system vendors.

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must protect against, will not be completed and available for comment until later this year. The industry is concerned that addressing the DBT in phases rather than in an integrated manner may cause licensees to make changes as a result of this proposed rule that will later have to be modified or may be unnecessary after all aspects of the DBT have been considered.

The industry is concerned that the NRC has proposed a rule on malevolent use of vehicles that is not supported by its regulatory analysis or backfit analysis. For example, the backfit analysis contains no quantified risk data or safety goal evaluation to support the conclusion that the proposed regulations result in the substantial increase in public health and safety required by 10 CFR 50.109. The proposed requirements would also impose excessive conservatism on the existing conservative security requirements.

The NRC has linked the vehicular penetration of the protected area (PA) fence at Three Mile Island (TMI) with the terrorist bombing at the World Trade Center (WTC). The proposed rule contemplates that the intruding vehicle will be fully loaded with personnel, equipment, and a large explosive device. Other than the fact that both occurred in February 1993, there is no connection between the TMI and WTC events. The NRC's vehicle bomb assessment results show that vehicle bombs are usually stationary when the explosive device has been detonated. Further, historical data support the assumptions that the explosive will be placed in a stationary vehicle outside the protected area and that suicide missions are rare. The NRC has already built substantial conservatism into the current design basis threat (DBT); coupling these events results in adding unnecessary conservatism. For example, the revised DBT should include either a land vehicle intrusion or a detonation of explosives outside the protected area, but not a combination of the two.

The proposed rule contemplates an explosive TNT equivalent more powerful than any previously detonated for malevolent purposes in the United States. To specify the power of a postulated explosive device significantly larger, as described in the NRC's safeguards addendum, adds unnecessary conservatism to the DBT.

The industry is also concerned that the VBS design would be required to be "nuclear grade." Unless the design utilizes existing technology and barrier device test results, the cost will unnecessarily escalate. The NRC should evaluate the effectiveness of the VBS as but one part of the broader defense-in-depth approach to protect public health and safety.

Notwithstanding these important concerns, the industry believes that it is important to deter unauthorized land vehicle penetration challenges to nuclear power plant protected

areas. The industry also recognizes that it must be able to safely shutdown the plant in the unlikely event of the detonation of an explosive device parked outside the protected area. These beliefs are based on business prudence (e.g., protection of employees and the investment in generating equipment inside the protected area) rather than concern for radiological sabotage or nuclear safety considerations since adequate protection of public health and safety are provided within existing NRC rules.

### Key Principles

Both industry and NRC agree, albeit for different reasons, that unauthorized vehicles should not be allowed inside the protected area and the licensee must be able to safely shutdown the plant following the detonation of an explosive device outside the protected area. In order to accomplish the NRC's and industry's objectives in a reasonable and realistic manner, we recommend that the following principles be used to guide the establishment of protection requirements for land vehicles and land vehicle bombs in the proposed rule:

- (1) The design basis vehicle that could be used to attempt penetration of a nuclear power plant site protected area;
  - (a) Has a mass typical of a four-wheel drive land vehicle;
  - (b) Attains speed(s) that depends upon the speed(s) achievable by a four-wheel drive vehicle traveling over the plant site-specific road(s) and/or terrain immediately outside the portion of the protected area fence chosen for the intrusion attempt;
  - (c) Carries only personnel and hand-carried equipment; and
  - (d) Has a total mass and maximum impact speed that are limited to the vehicle mass and speed specified in the NRC's November 19, 1993, safeguards document.
- (2) The objective of a vehicle barrier system (VBS) or set of vehicle obstacles is to stop the forward motion of the vehicle in the vicinity of the site protected area fence rather than at the fence line;
- (3) A design basis bomb that could be used in an attempt to damage plant equipment will;

- (a) Be placed in a stationary vehicle outside the protected area; and
  - (b) Have explosive capability no greater than bombs previously detonated for malevolent purposes within the United States.
- (4) Plant operators should be able to safely shutdown the plant following the detonation of an explosive device as described above outside the protected area; and
- (5) Commercial-grade design, procurement and installation is appropriate for the resolution of this issue; a "nuclear grade" review and inspection process is not necessary.

To make these principles operational, we suggest that the discussion in the regulatory guide be expanded to describe the flexibility available to licensees in designing and installing barriers to protect against this threat. For example, the energy-absorbing capability of the various barrier devices and the speed-reducing capability of natural and man-made obstacles would be based on presently available test data (from Federal agencies, national laboratories and/or barrier manufacturers).

### Schedule

The NRC-proposed schedule of 90 days to submit plans to the NRC and 270 additional days to fully implement the rule is unrealistic given the many factors that licensees must take into account to be in full compliance with the final rule. These make it impractical for many licensees to fully meet the rule on the schedule proposed.

As a result, we recommend that licensees be given at least 180 days (vice 90 days) after issuance of the rule and various guidance documents to perform the required analysis, prepare and submit their plans. Additionally, a minimum of eighteen months, after issuing the proposed design to the NRC, should be allowed to finalize the design, procure and install the VBS. There are two key reasons for changing the schedule. First, the necessary guidance will not be issued until sometime in 1994. Second, many factors (e.g., site configuration, outage schedules, material availability, adverse weather conditions, etc.) could make it impractical for licensees to procure and install the designed VBS in the remaining NRC-proposed 270-day period, especially since there are only a few manufacturers of active vehicle barriers.



Mr. Samuel J. Chilk

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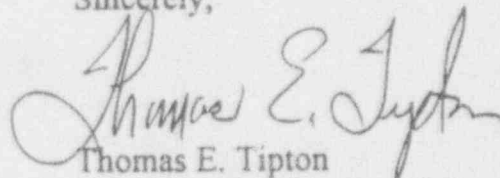
Summary

Plant security is but one part of a broad defense-in-depth approach to safety employed in the design and operation of the plants. The present security systems are designed to provide deterrence, detection, delay, assessment and armed response. These features, together with the design, operation, training, emergency planning and related activities, provide adequate protection of public health and safety from uncontrolled radiological releases.

The industry believes that it is important to deter unauthorized land vehicle penetration challenges to a licensee's protected area. The industry also recognizes that it must be able to safely shutdown the plant in the unlikely event of the detonation of an explosive device outside the PA. These actions are prudent for the protection of its employees, investment and public confidence. Since NRC and industry agree in principle, it is important that, in addressing the issue, it be done in an integrated manner using a reasonable and realistic approach without imposing unnecessary conservatism.

We appreciate the opportunity to comment on the proposed rule modification and would welcome the opportunity to discuss our comments further with appropriate NRC personnel.

Sincerely,

A handwritten signature in cursive script that reads "Thomas E. Tipton". The signature is written in dark ink and is positioned above the printed name.

Thomas E. Tipton

TET:plg  
Enclosures

NUMARC Comments  
Proposed Rule and Regulatory Analysis

PROTECTION AGAINST MALEVOLENT USE OF VEHICLES  
AT NUCLEAR POWER PLANTS

Proposed Requirements

The NRC is proposing to amend 10 CFR 73.1 of its regulations concerning physical protection of nuclear power plants to specifically include in the design basis threat (DBT): *A four-wheel drive land vehicle used for the transport of personnel, hand-carried equipment, and/or explosives...*

It also proposes to amend § 73.55(c) to add: *Vehicle control measures, including vehicle barrier systems, must be established to protect against use of a land vehicle, as specified by the Commission, as a means of transportation to gain unauthorized proximity to vital areas. Each licensee shall compare the vehicle control measures established in accordance with 10 CFR 73.55(c)(7) to the Commission's design goals and criteria for protection against a land vehicle bomb.*

The NRC schedule would require each licensee to: *...submit to the Commission a summary description of the proposed vehicle control measures ... and the results of the vehicle bomb comparison ... within 90 days from the effective date of the rule. Then 270 days after that (within 360 days from the effective date of the rule), each licensee would be required to: ...fully implement the required vehicle control measures, including site-specific alternative measures as approved by the Commission....*

Impetus for the Rule

The impetus for this rulemaking is the linking of two unrelated events that occurred in February 1993. The first event was the Three Mile Island (TMI) vehicular intrusion; the second event occurred in New York City at the World Trade Center (WTC). Other than the fact that both events occurred in February 1993, there was no actual connection between these events. However, the NRC's proposed rule has coupled them together forging a combined protection requirement. The relevance of the events will be discussed further below.

## Regulatory History

The malevolent use of vehicles at nuclear power plants is not a new concern. The design basis threat was developed by the NRC in the mid-1970s. The potential for malevolent use of vehicles/bombs at nuclear sites was reviewed after the Beirut bombing in 1983. NRC Information Notice 84-07, *Design-Basis Threat and Review of Vehicular Access Controls*, advised licensees ...to examine their contingency plans and the tactical measures to be employed by members of the security organization to impede penetration of protected areas by unauthorized vehicles. In 1989, further review resulted in Generic Letter *Reactor Safeguards Contingency Planning for Surface Vehicle Bombs*, which required licensees to have short-range surface vehicle bomb threat contingencies. The NRC rejected the need for permanent measures, such as those now being proposed, in favor of those contingency plans. They continue to be available for implementation at each site.

## NRC Denial of Petition in 1991

The Nuclear Control Institute (NCI) and the Committee to Bridge the Gap (CBG) have, since 1985, periodically petitioned the Commission to expand the design basis threat. The NRC denied a January 11, 1991, petition by NCI/CBG (noticed in 56 Fed. Reg. 3228 - January 29, 1991) with the following statements in 56 Fed. Reg. 26784 - June 11, 1991:

*The NRC staff believes that a decision on the petition can be based on response to a single pivotal issue: Has the threat of radiological sabotage of domestic nuclear reactors changed to an extent that justifies a need to upgrade the current design basis threat?*

*The nature of terrorism was the subject of detailed analysis before the NRC published its design basis threat (§ 73.1), and it continues to remain the focus of staff review. NRC efforts in creating the design basis threat and the actions taken by the NRC since the publication of § 73.1 to assure its continuing validity remain a key component in the NRC safeguards program.*

*Thousands of acts of terrorist violence worldwide, ranging from simple attacks on property to the sophisticated, deadly bombing of civil airlines, are examined and analyzed by the NRC. The NRC uses a wide variety of information, ranging from that reported directly from the scene of the incident to that included in a finished analysis provided by the intelligence community. Throughout this ongoing daily analysis, the staff focuses its*

*effort on reviewing realistic, not hypothetical, adversary characteristics, including weaponry, group size, tactics, explosives, and targets. The NRC then compares what has occurred or is credible to the attributes enumerated in the design basis threat.*

*With respect to truck and boat bombs of the size estimated in NRC studies as being capable of causing significant damage to domestic power reactors, the NRC staff notes the following:*

- There has been one such truck bomb in the U.S. (Math Lab., Wisconsin, 1970).*
- There have been no others in the Western Hemisphere.*
- There have been no others outside of an area of civil unrest.*
- There have been none directed against a nuclear activity worldwide.*
- There have been no boat bombs directed at any activity, nuclear or otherwise, worldwide.*
- Contingency planning to protect against truck bombs has been completed for all domestic power reactors.*

*Based on the foregoing facts, on discussions with appropriate elements of the Executive Branch, and on NRC's independent assessment of the domestic threat environment, the NRC concludes that the likelihood of nuclear terrorism involving the use of large truck bombs against nuclear power reactors in the United States is extremely low, that a change in the design basis threat for radiological sabotage is unwarranted, and that contingency planning is sufficient.*

*Although changes are occurring worldwide, the NRC has not detected, to date, any significant change to the threat environment, including weaponry, group size, state-sponsorship, or targeting, that warrants a modification of the design basis threat statements for NRC licensed nuclear power reactors.*

*The NRC has accepted the notion that reactor sabotage, with radiological releases, is technically feasible for many years. Measures are employed at power reactors to protect against credible radiological sabotage scenarios.*



*In the unlikely event of radiological sabotage, damage control and accident mitigation measures would likely limit the amount of radioactivity released.*

*Among the issues considered by the NRC during its deliberations on the vehicle bomb were the provisions of the Commission's backfit rule. The rule states in 10 CFR 50.109(a)(3) that the Commission can require backfitting when it determines that there is a substantial increase in the overall protection of the public health and safety or the common defense and security to be derived from the backfit, and that the direct and indirect costs of implementation for that facility are justified in view of this increased protection. Contrary to the belief of the petitioner and supported by some commenters, the NRC concluded that the vehicle denial system referred to in this excerpt would not provide a substantial increase in the overall protection of the public health and safety. Cost was not a deciding factor.*

*The Commission concludes that there has been no change in the domestic threat since the design basis threat was adopted that would justify a change in the design basis threat. Accordingly, the petitioners' request to modify the design basis threat for radiological sabotage as set forth in 10 CFR 73.1 is hereby denied.*

We believe that the points made by the NRC in that 1991 denial are still valid after the TMI and WTC events and should be reviewed during this rulemaking process. The attention given to these two unrelated events has clearly overshadowed the NRC's previous long-term perspective.

Of further interest is that this petition was submitted just before the period of the Gulf War (Desert Storm), February 1991, when the highest potential terrorist threat was expected. The NRC did not conclude that the DBT or other security posture at nuclear power plants needed to be increased during that period.

#### NUMARC 1992 Letter to the NRC Chairman

As we stated in our letter of December 21, 1992, to Chairman Selin, the industry is not suggesting that terrorism should no longer be considered a threat in the United States. Our comments noted that the FBI has been recording and analyzing terrorist incidents for over ten years. It published a report on terrorist incidents occurring in the period 1980 to 1986 in December of 1986. Discussing the 190 terrorist incidents that occurred in the United States and Puerto Rico during these years, the report notes that New York alone accounted for 52 of these (39 percent). The FBI report states that, *This is not unexpected*

since New York, particularly New York City, has a high concentration of Government buildings, diplomatic establishments, national monuments and world-renowned commercial and cultural institutions. During that period seven known terrorist groups were active in New York. More recently, in the FBI's report for 1990, seven terrorist incidents were recorded - five in Puerto Rico and two in California.

In a discussion of a behavioral science approach to understanding terrorists in the 1990 report, the FBI states, *Terrorists carefully assess which targets are most vulnerable, and may conduct surveillance to further develop their intelligence on a target. They select operations that pose a minimum of risk with a maximum chance of success.* The FBI indicates that such events, if they occur, are most likely to be directed at attractive, relatively unprotected targets (e.g., the WTC). If an explosive device is used, it would most likely be placed in a parked vehicle. We also noted from FBI information that terrorists are likely to lack the training, weapons and education presumed in the DBT.

Historically, terrorist groups have chosen targets that represented or sympathized with the government or cause they opposed. People opposed to nuclear power have chosen to demonstrate at the plant, seek media time and other activities to express their point of view to mass audiences. None of these groups match the description of the DBT.

Even though more terrorism is experienced in other countries, it appears that the security requirements for commercial nuclear power plants overseas are not as prescriptive as those in the United States. The basic philosophy in other countries with respect to protection against an outside threat is to make the site more secure than other political targets of opportunity.

### Three Mile Island Event

The gate crashing by a trespasser at TMI was evaluated in detail by an NRC Incident Investigation Team (IIT). Their findings are described in NUREG-1485, "Unauthorized Forced Entry into the Protected Area at Three Mile Island Unit 1 on February 7, 1993." The germane conclusions were:

- *The event resulted in no actual adverse reactor safety consequences and was of minimal safety significance.*
- *The security force responded appropriately to the specific challenge presented by the intruder.*
- *The NRC requirements for establishing and maintaining a physical protection system and as used during the security program licensing*

*process do not consider use of a vehicle to breach a PA barrier. In this event, the use of a vehicle reduced the amount of time the security force had to assess and respond to the event.*

### World Trade Center Event

On February 26, 1993, an explosive laden rental van, which had been parked under the WTC in New York City, was detonated. This was a rare event that was graphically newsworthy.

In our aforementioned letter of December 21, 1992, we quoted a previous FBI statement acknowledging that a terrorist event would not be unexpected in New York. The WTC bombing followed the predicted pattern, although more brazen than earlier events. In a December 1992 counter-terrorism briefing with NUMARC, the FBI advised that their method of predicting any potential terrorist activity is to review the history of terrorist groups. A WTC type of event would have been a reasonable prediction. We also learned that the FBI's terrorist profile in this country does not include suicide as an expected tactic, as confirmed in the WTC event.

In April 1993, NRC reported that they had studied 508 vehicle bomb events as part of a continuing vehicle bomb assessment begun in 1988. Fewer than 5 of those events occurred in the United States. For the 508 events, the vehicle was usually parked, and the explosives detonated by a timing device or by remote control. Suicide attacks were rare. It is thus reasonable to expect that, as at the WTC, a vehicle bombing attempt in the U.S. would involve a parked vehicle. To assume otherwise would add additional conservatism to an already very conservative assumption that a commercial nuclear plant would be a terrorist target.

### Senate Subcommittee Hearing Statements

In a hearing before the Senate Environment Committee's Subcommittee on Clean Air and Nuclear Regulation, on March 19, 1993, NRC Chairman Selin stated, *The objective of our physical protection requirements at commercial nuclear power reactors is to protect the general public from sabotage-induced releases of radioactive material off the site -- in other words, to protect the general health and safety from radioactive releases.... [T]he licensees, not as NRC licensees, but as operators of power plants, may have other responsibilities to their own shareholders in light of their own law enforcement responsibilities.... Thus, unless there is a potential for radiological sabotage, protection of the plant and its personnel is the province of each nuclear utility.*

Further, in commenting on previous Commission reviews concerning the need for any additional requirements for vehicle control measures, Chairman Selin stated, *The Commission concluded that such protection was not needed at the time. The Commission put a lot of dependence on the sturdiness of reactor buildings, on redundant safety systems, on damage-mitigating features of power reactors, reactors that are designed to take a hurricane, a tornado, natural effects, overpressures. They're quite sturdy buildings compared to normal construction. In other words, I would just say that the Commission followed its traditional defense-in-depth philosophy. Considerable weight is also given to the fact that an attack on a nuclear facility is a drastic step, that the potential consequences and likely political backlash could be directed against the causes of the saboteur. The Commission consulted with the intelligence community and heard that the community believed that there was no credible threat of terrorism against nuclear power plants.*

This last statement was confirmed at the hearing by Mr. Brandon, FBI Intelligence Division Deputy Assistant Director, who stated, *With regard to nuclear facilities in the United States specifically, we rate the threat of acts of terrorism as low. We have no current indications of targeting or planning of acts of terrorism by any group or individuals.*

#### Relevance of TMI and WTC Events

As the staff notes, neither the Three Mile Island intrusion nor the World Trade Center explosion signal an increase in the threat against hardened facilities such as nuclear power plants. Prior to the occurrence of these events, the NRC considered it unnecessary to require licensees to have permanent vehicle barrier systems. However, the staff now believes that barriers are needed to repel any attempt to penetrate the protected area with a land vehicle transporting personnel, hand-carried equipment and/or explosives and to keep any bomb attempt outside a safe standoff distance from vital equipment. Contingency plans, required by Generic Letter 89-07, were considered sufficient for this purpose.

The TMI event demonstrated that a trespasser can use a land vehicle to penetrate a gate made from chain-link fencing -- an event that a licensee is not required to prevent. The WTC event was a rare, but graphic, newsworthy item that demonstrated terrorist capability in the United States. After several years of continuous threat evaluation and the recent reduction in Middle East tensions, the coupling of these two events has caused the NRC to propose a change in the DBT to include a four-wheel drive land vehicle that could be used to gain access to the protected area with explosives on board - a suicide mission. The basis for this action, the coupling of two unrelated events, is unwarranted.



Even though the NRC acknowledges that there has been no increase in the threat against nuclear power plants, this rulemaking action is now deemed necessary to enhance public safety. The apparent staff reasoning is that regulatory change is necessary to restore consecutive losses in a so called "margin of prudence," the protection necessary to thwart the hypothetical DBT of § 73.1 as opposed to that required to protect against the current threat estimate.

Our concern about this postulated decrease in the "margin of prudence" is further discussed in the Regulatory Analysis below. It is inappropriate to use such an undefined concept as a basis for this rulemaking. Enhancements made as a matter of prudence are the province of each individual licensee.

### Regulatory Analysis

The arguments presented by the NRC in various staff papers (SECY-93-102 and SECY-93-166) and the documents supporting this proposed rule (SECY-93-270) do not make a convincing case for a significant enhancement of public health and safety resulting from the installation of a vehicle barrier system (VBS) at each nuclear power plant. There is no quantitative basis provided by the staff in support of any conclusion other than an enhancement of industrial safety by precluding intrusion of unauthorized vehicles.

The background section of the Regulatory Analysis for this proposed rule discusses the development of Generic Letter 89-07, which requires licensees to have short-range contingency plans for installation of temporary measures for response to a surface vehicle bomb threat. Then, after linking the TMI and WTC events together, the objectives of this rulemaking are discussed. Although concluding *...that there is no indication of an actual vehicle threat against the domestic commercial nuclear industry...*, the proposed rulemaking is required *...to enhance reactor safety by maintaining a prudent margin between what is the current threat estimate (low) and the design basis threat for radiological sabotage specified in 10 CFR 73.1(a) (higher).*

During staff presentations on November 3-4, 1993, members of the Advisory Committee on Reactor Safeguards challenged the use of the "margin of prudence" argument as a substitute for the customary considerations of a backfit analysis. Some ACRS members expressed concern that the staff avoided the use of probability in their analysis. We emphasize that NRC responsibilities, as defined in the Atomic Energy Act, are to ensure the protection of public health and safety. NRC expansion into matters of prudence is unwarranted and would result in expansion of the NRC's sphere of regulatory influence beyond plant safety. If there would be no public health and safety consequence of an activity, the licensee alone should make the necessary decisions.

In paragraph 4.2, Benefits, the staff writes, *For the purpose of this analysis, a quantitative evaluation would require, among other things, quantification of the likelihood that someone would use a vehicle bomb in an attempt to damage a nuclear power plant, the probability that the bomb would be set off from a stationary location or that forced entry into the PA would be attempted, the probability that a bomb of a particular size would be used, and the probability that the bomb would be in a particular location. Staff is unable to quantify any of these factors.* With the difficulty in performing a quantitative evaluation, one should rely on past history. When NUMARC was briefed by the FBI, the point was made by the FBI representative that the Bureau does not rely on a "crystal ball" to predict future potential threats. Rather, historical patterns and profiles are used. History does not support coupling the two unrelated events (i.e., TMI and WTC).

We note that the NRC has previously discounted the tactic of adding all possibilities associated with a postulated event without sufficient consideration of the associated probabilities. An example of this was noted in the NRC response (56 Fed. Reg. at 26787, columns 1 and 2) to the aforementioned NCI/CBG petition. In the section where the petitioner used worst case observations to conclude there would be "unacceptable damage" to nuclear power plant safety equipment, the NRC responded: *The massive structures, redundant safety systems and damage mitigation features of currently licensed reactors each provide a certain, although unquantified measure of protection against an uncontrollable release of radioactive material resulting from a truck bomb, irrespective of standoff distance... and The NRC considers the foregoing set of assumptions to be unlikely in the extreme and not an appropriate basis for safeguards rulemaking.* The NRC rejected the petitioners' combination of twelve conservative assumptions (e.g., *that a terrorist group favors nuclear reactor sabotage over other targets that exist in the U.S., etc.*) to determine the need for additional regulation. Although discounting the petitioners' argument that "if it can happen, it will happen," the staff appears to be using the same line of reasoning -- malevolent attempts will be directed at commercial nuclear facilities simply because two unrelated events occurred in time proximity.

Also in paragraph 4.2, the staff states that licensee operators made decisions during the TMI intrusion event *that could have negatively affected the public health and safety.* This statement is contrary to the aforementioned IIT conclusion (NUREG-1485), that, *The event resulted in no actual adverse reactor safety consequences and was of minimal safety significance [emphasis added].*

In paragraph 5.0, Decision Rationale, the staff concludes that in each case, TMI and WTC, *the event has not established a need to redefine adequate protection.* But, rule amendments are still necessary to *provide a substantial increase in overall protection of*

*the public health and safety*, to prevent attempts of radiological sabotage. Again, no justification is provided to support the position that a "substantial" increase will be realized.

Option 5 (paragraph 6.0), is the one recommended in SECY-93-166, and approved for proposed rulemaking by the Commission. One industry concern would be alleviated if the staff assessment that *the determination on costs of implementation of Option 5 is based on the premise that the only definitive requirement for all licensees is that they provide measures to protect against the use of a land vehicle as a means of transportation to gain proximity to vital areas and that they assess any incremental measures, if necessary to meet the design goal for a land vehicle bomb...*, means that the goal of prevention of vehicle intrusion and the design goal for a potential land vehicle bomb are considered to be separate entities.

Since the staff simply asserts, but does not demonstrate, that a substantial increase in public health and safety would accrue from the installation of a VBS, no regulatory basis, analytical or otherwise, has been provided. Adequate protection against radiological sabotage already exists.

### Industry Concerns

The nuclear power industry has significant concerns relative to this rulemaking. Because the proposed rule amendments and implementation requirements are the unsubstantiated result of linking the TMI and WTC events into one threat, the requirements will add more conservatism on top of existing conservative requirements. Postulating a combination of hypothetical threats when no such credible threat exists, as an argument favoring increasing a so-called "margin of prudence," is unfounded. The NRC has built substantial conservatism into the existing DBT. It is not necessary to make the DBT any more unrealistic.

The proposed rule contemplates that the intruding vehicle will be fully loaded with personnel, equipment, and a large bomb. Since no connection was established between the TMI and WTC events, such linkage should be removed. Uncoupling the proposed protection requirements would allow for a more reasonable basis for a vehicle barrier system. There would either be the potential for a land vehicular intrusion attempt or the potential for an attempted bombing by means of remote detonation of explosives in a parked vehicle outside the protected area barrier system, not a combination of the two.

Some design attributes (e.g., loaded vehicle weight and bomb explosive power) contained in the NRC's safeguards addendum which was sent to each licensee on November 19, 1993, should be reconsidered. The staff agrees that, *there is no indication*



*of an actual vehicle threat against the domestic commercial nuclear industry.* Given the lack of an actual threat and the historical perspective concerning the magnitude and method of terrorist bombings, we are unable to find justification for the selection of some of the prescribed threat attributes. We understand that the WTC bomb was the largest terrorist-planted explosive charge ever detonated in this country. By requiring additional protection against an admittedly unlikely event and increasing the size of the explosive above domestic experience to date, the NRC is being ultra-conservative. The size of the design basis explosive (DBX) should be no larger than the maximum explosive equivalent previously detonated within this country. Additionally, any additions to the DBT phraseology regarding land vehicle bombs should specify that the carrier is to be considered stationary outside the protected area prior to any hypothesized explosive detonation.

Many licensees have the expectation that the NRC will want to inspect VBS installations to "nuclear grade" standards. Our preliminary review shows that licensees can meet the intent of the rule without an expensive "nuclear grade" barrier system. Installations costing between \$500K to \$1M per site are considered more than adequate to protect our employees and our generating equipment while continuing to adequately protect the health and safety of the public. As noted in the Regulatory Analysis, § 4.3, the staff's cost estimates include doubling the vendor costs *[t]o account for licensee overhead costs (engineering, interface connections, procurement and training)...* for installation of active barriers and tripling for passive barriers. The review does not include costs associated with design verification/certification to "nuclear standards" that could increase the resulting cost by an additional factor of two to three.

The industry is also apprehensive about the second phase of the NRC's DBT reevaluation. The first phase covers the malevolent use of vehicles; the second (yet to be completed) explores revisions to the makeup, equipment and capabilities of a postulated paramilitary force that a licensee must protect against. The industry is concerned that potential modifications to the paramilitary aspects of the DBT may ignore the facility protection responsibility of the Federal government in accordance with 10 CFR § 50.13. Licensees need to be assured that their VBS or other protection features will not need additional modifications as a result of the phase two reevaluation.

### Key Principles

Nuclear power plants are considered "hardened" facilities. Plant security is but one part of a broad defense-in-depth approach to safety employed in the design and operation of the plants. The present security systems are designed to provide deterrence, detection, delay, assessment and armed response. These features, together with the design, operation, training, emergency planning and related activities, provide adequate



protection of public health and safety from uncontrolled radiological releases. As reflected in statements made at the Senate Subcommittee Hearing, and stated in the regulatory and backfit analyses, the NRC agrees.

The industry recognizes the importance of preventing unauthorized site penetration by land vehicles. A licensee must also retain the capability to safely shutdown the plant in the unlikely event that an explosive device in a stationary land vehicle outside the protected area barrier is detonated. We also assert that these are separate and distinct challenges. The denial of unauthorized vehicle access is done for the purpose of protecting our employees, our investment in plant equipment and to maintain the confidence and support of the public in providing safe generation of electricity.

Both industry and NRC agree that the issue needs to be addressed albeit for different reasons. In order to accomplish the NRC's objectives, as well as those of the industry, we recommend that the proposed rule be based on a set of principles. We suggest that the following principles be used to guide the establishment of protection requirements for land vehicles and land vehicle bombs:

- (1) The design basis vehicle that could be used to attempt penetration of a nuclear power plant site protected area;
  - (a) Has a mass typical of a four-wheel drive land vehicle;
  - (b) Attains speed(s) that depends upon the speed(s) achievable by a four-wheel drive vehicle traveling over the plant site-specific road(s) and/or terrain immediately outside the portion of the protected area fence chosen for the intrusion attempt;
  - (c) Carries only personnel and hand-carried equipment; and
  - (d) Has a total mass and maximum impact speed that are limited to the vehicle mass and speed specified in the NRC's November 19, 1993, safeguards document.
- (2) The objective of a vehicle barrier system (VBS) or set of vehicle obstacles is to stop the forward motion of the vehicle in the vicinity of the site protected area fence;
- (3) A design basis bomb that could be used in an attempt to damage plant equipment will;
  - (a) Be placed in a stationary vehicle outside the protected area; and

- (b) Have explosive capability no greater than bombs previously detonated for malevolent purposes within the United States.
- (4) Plant operators should be able to safely shutdown the plant following the detonation of this explosive device outside the protected area; and
- (5) Commercial-grade design, procurement and installation is appropriate for the resolution of this issue; a "nuclear grade" review and inspection process is not necessary.

To make these principles operational, we suggest that the discussion in the regulatory guide be expanded to describe the flexibility available to licensees in designing and installing barriers to protect against this threat. For example, the energy-absorbing capability of the various barrier devices and the speed-reducing capability of natural and man-made obstacles would be based on presently available test data (from Federal agencies, national laboratories and/or barrier manufacturers).

There are also operational features under the cognizance of each licensee that should not be prescribed in the rulemaking. Any VBS inspection requirement would be covered by existing regulations by extending the provisions of subparagraph §73.55(c)(4): *All exterior areas within the protected area shall be periodically checked to detect the presence of unauthorized persons, vehicles, or materials.* Compensatory measures for maintenance or repair of barriers would be the preserve of licensee personnel. And, Independent Spent Fuel Storage Installations should specifically be excluded from such barrier requirements.

### Consolidation of DBT Rule Change Proposals

This rulemaking is concerned with only one of two phases of the NRC's DBT reevaluation. The NRC staff's *Design Basis Threat Reevaluation - Proposed Action Plan* (Memorandum for the Commissioners from the Executive director of Operations, March 11, 1993), provided for a two-phased review of the DBT. The first phase, on malevolent use of vehicles, has resulted in this proposed rulemaking. The second, which explores the makeup, equipment and capabilities of a postulated paramilitary force that a licensee must protect against, will apparently not be available for comment until later in 1994. Separate rulemaking could result in more expensive, layered, and potentially inconsistent action at the licensee sites.

Also, the industry is concerned that additional paramilitary activities could be included in an amended DBT. In previous correspondence (Section 2.3.18, of NUMARC

letter to the NRC dated July 29, 1993, submitted in response to the Regulatory Review Group review), we suggested a reevaluation of the paramilitary aspect of the current DBT. In our opinion, the threat attributes in 10 CFR 73.1 for the design basis force that could attempt radiological sabotage fall into the definition of a paramilitary (formed on a military pattern) force. We note that 10 CFR 50.13 states that a licensee ... *is not required to provide for design features or other measures for the specific purpose of protection against the effects of ... attacks and destructive acts, including sabotage, directed against the facility by an enemy of the United States, whether a foreign government or other person, ....* At a news conference on July 7, 1993, Chairman Selin is quoted as saying, *Once you get into paramilitary attacks, et cetera, you're really beyond what it makes sense for licensees to do.* It appears that the event at the World Trade Center was caused by an enemy of the United States.

We strongly recommend:

- (1) The NRC delay determining the implementation date on a final rule concerning the DBT until both phases of the DBT reevaluation have been completed and evaluated; and
- (2) The NRC establish a clear demarcation of the capability accorded to the § 73.1 design basis threat and that which would shift the responsibility for protection of these critical facilities to the Federal government in accordance with § 50.13.

### Schedule

The NRC-proposed schedule is too tight for the magnitude of the action required. Since the NRC's final guidance document (Reg. Guide or NUREG) is not expected to be published until the rule becomes final, a ninety-day period will not be sufficient to properly develop and submit the required summary description of the proposed vehicle control measures and the results of the vehicle bomb comparison.

As a minimum, licensees should be allowed 180 days after all guidance documents and the final rule have been issued in order to perform the required analysis and prepare the submittal. Some sites are expected to need to perform studies of design alternatives because of site specific issues associated with the safe standoff requirement.

Additionally, a minimum of eighteen months from issuance of the design description to the NRC should be allowed for VBS procurement and installation. Many factors (e.g., site configuration, outage schedules, material availability, adverse weather

conditions, etc.) may make it impractical for some licensees to complete the VBS in less time. Also, there are only a few commercial manufacturers of active vehicle barriers.

Further, we recommend that the NRC complete phase two of the DBT reevaluation and resolve all comments on both phases prior to establishing a final implementation schedule. Licensees need to be assured that their protected area perimeter will not need additional modifications resulting from the Phase Two reevaluation. The final schedule must allow sufficient time for cost-efficient completion.



NUMARC Comments  
Backfit Analysis

PROTECTION AGAINST MALEVOLENT USE OF VEHICLES  
AT NUCLEAR POWER PLANTS

The backfitting analysis developed by the staff attempts to justify only the installation of proposed vehicle intrusion control measures. The analysis falls short of the threshold established in the backfitting rule in that it contains no quantified risk data or safety goal evaluation which could be used as a basis for quantifying the substantial increase in public health and safety required by 10 CFR § 50.109. Regarding appropriate measures to fully meet the vehicle bomb criteria, the staff has not sought to develop a backfitting analysis, because it is unable to quantify the risk. Instead, it has shifted the burden of developing a backfitting-type analysis to the licensee, which must justify why the measures required to fully meet the bomb criteria do not result in increased protection. There is no explanation of how the licensee would be able to quantify the risk factors that the staff admits it is unable to quantify. In other words, the licensee must show objectively that it substantially satisfies requirements that were derived subjectively. This provision runs counter to the fundamental principle of the backfitting rule that it is the NRC, not the licensee, which must provide a documented analysis to justify a proposed change.

The NRC referenced SECY-93-166 in its determination that neither the Three Mile Island (TMI) intrusion incident nor the World Trade Center (WTC) bombing established a need to redefine adequate protection as used in the context of 10 CFR 50.109. With regard to the WTC bombing in particular, the staff concluded that "the use of a vehicle bomb to create radiological sabotage at a nuclear power plant is not currently a reasonable expectation" (SECY-93-166, encl. 6, page 12).

Since adequate protection was not an issue, the staff justified the backfit imposed by the proposed rule by concluding that amending the Commission's regulations to protect against malevolent use of a vehicle bomb against a nuclear power plant would provide a substantial increase in overall protection of the public health and safety. Citing the TMI event as the basis for this conclusion, the staff stated that the TMI operations staff "made decisions that could have negatively affected the public health and safety" (SECY-93-166, encl. 6, page 12). This was the only referral to public health and safety in the backfit analysis.

While the Incident Investigating Team (IIT)<sup>1</sup> concluded that licensee performance needed improvement in some areas, there was no allegation that public health and safety was ever in question. Conclusion 6.1 of NUREG-1485 was: *The event resulted in no actual adverse reactor safety consequences and was of minimal safety significance.* The lessons of the TMI incident are informative, but there is no evidence that they necessarily have generic implications for all nuclear power plants. The NRC provided no quantitative analysis to support its position that the requirements of the this rule provide a substantial increase in overall protection of the public health and safety. On the contrary, the staff's contention for the need for the rule is highly subjective. NUMARC feels that the observations of one event at one plant are being applied improperly to justify the imposition of the proposed rule upon the entire industry.

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<sup>1</sup> NUREG-1485, "Unauthorized Forced Entry into the Protected Area at Three Mile Island Unit 1 on February 7, 1993."

NUMARC Comments  
Proposed Regulatory Guide DG-5006

PROTECTION AGAINST MALEVOLENT USE OF VEHICLES  
AT NUCLEAR POWER PLANTS

In the Regulatory Position portion (Part C) of the proposed Regulatory Guide, paragraph 1.1, Passive Barriers, the staff writes that, *Measures should be established to periodically verify the integrity of those portions of the barrier that are located outside the protected area.* Since the shape, configuration, materials and other characteristics of the Vehicle Barrier System (VBS) will vary from site-to-site, we recommend that the choice of these measures be left to each licensee.

In paragraph 1.2, Active Barriers, in the same part, the staff writes that *Operational design features of the active barrier or barrier system should be capable of allowing access for authorized vehicles while preventing access of unauthorized vehicles.* Adequate assurance of achieving this objective can be obtained in an arrangement using just one active barrier. We suggest that the text be revised to remove any ambiguity on this point.

We agree with the logic steps described in paragraph 2.1, Blast Effect Analysis, for determining whether the criteria for protection against a land vehicle bomb are satisfied. Until the industry has the opportunity to review the addendum which specifies approaches acceptable for determining safe standoff distances, it will be unable to comment on the cost involved in the blast effects analyses.

The regulatory position described in paragraph C.2.2, Alternate Measures to Protect Against Explosive, is excessive. It is reasonable that the licensee propose alternative measures for Commission review when the design goals and criteria cannot fully be met. It is not reasonable to ask licensees to perform analyses beyond what the NRC staff has done in support of this proposed rule. In paragraph C.2.2, the NRC staff notes that licensee proposals for alternative measure should include:

- 1) Findings regarding the extent to which a licensee is able to provide protection against explosives;
- 2) A description, analysis, and cost estimate of additional measures needed to fully meet the design goals and criteria;

- 3) A description, analysis, and cost estimate for the alternative measures, including an assessment of the protection provided; and
- 4) *A comparison of the costs of the measures described in (2) and (3) and assessment supporting a finding that additional costs of fully meeting the design goals and criteria are not justified by the added protection that would be provided. The assessment should describe the extent that alternative measures provide equivalent protection against a vehicle bomb and unique plant characteristics relevant to potential consequences of a vehicle bomb.*

Since the comparison and assessment requested in item (4) was not provided by the Commission in support of this proposed rule, this same subjective assessment should not be required of licensees. Licensees who determine the need to propose alternative measures should only be required to provide the information resulting from accomplishment of items 1, 2, and 3 above. Discussions between the NRC staff and the licensee should be held to resolve any issues.