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

CHAIRMAN

COMM
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January 22, 1980

The Honorable Gary Hart, Chairman
Subcommittee on Nuclear Regulation
Committee on Environment and Public Works
United States Senate
Washington, D. C. 20510

Dear Mr. Chairman:

This is in response to your letter of November 15, 1979 with which you submitted a number of questions regarding Three Mile Island Unit 2. The specific responses to each question listed in the order in which they were posed are enclosed.

Sincerely,

John F. Ahearne

Enclosures:
1. Responses to Questions
2. Statement of Policy and Notice of Intent to Prepare a Programmatic Environmental Impact Statement dated November 21, 1979
3. Met Ed's Cleanup Proposals
4. NUREG-0584, "Assuring the Availability of Funds for Decommissioning Nuclear Facilities"

cc: Senator Alan Simpson

258

Responses to Questions

Question 1

Do the risks to the public and worker health and safety increase as cleanup activities are delayed, i.e., specifically:

We believe that delaying cleanup activities beyond that necessary for a careful review, modification if necessary, and approval, if appropriate, of the licensee proposals will increase the risks to the general public and the worker health and safety, as specifically discussed below.

1a. What are the risks associated with the radioactive atmosphere presently contained by the reactor building?

The radioactivity that would be encountered by workers in the reactor building is from three primary sources: the radioactivity contained in the atmosphere, primarily krypton-85; the radioactivity deposited on the walls, floors, and other surfaces, primarily cesium-137; and the radioactivity contained in the water in the reactor building basement, primarily cesium-137. The whole body dose rates, resulting primarily from cesium, vary from few rem per hour in the upper levels of the reactor building to over 200 rem per hour near the basement water level. The skin dose rates from the krypton-85 are several hundred rem per hour throughout the reactor building. In contrast to the body-penetrating gamma rays characteristic of cesium-137, krypton-85 results essentially in skin dose because it emits beta particles which are stopped in the skin. At these levels of radiation, worker entry would be possible but not desirable. Therefore, the radioactive atmosphere in the reactor building poses a significant risk to the workers only if entry were made prior to cleanup of the krypton.

Risks to workers and the general public increase somewhat if cleanup is delayed, because materials deteriorate with time and thus the potential for leakage from the reactor building from such things as valve seats and seals will increase with time. This, combined with the potential for an operational error, could result in an uncontrolled release of the reactor building atmosphere. In addition, it is not expected that the reactor building internal pressure can be maintained at a negative level, with respect to outside atmospheric pressure, indefinitely. From the standpoint of radioactive decay, little would be gained by delaying cleanup of the containment atmosphere since the half-life of Kr-85 is 10.76 years. Even taking into account these considerations, we expect that the consequences of significant leakage would be small. As outlined in the response to part b on the dose of the surrounding population, if all the Kr-85 were released over a two-hour period, the dose to surrounding populations would still be small.

1b. What would the health effects of a hypothetical ground release be?

We understand that your question concerns an accidental release of Krypton-85 gas (a ground level release of radioactive gases) from the reactor building. Normal controlled releases would be through the plant vent stack (elevated release).

The reactor building presently contains about 4.4×10^4 Ci of Kr-85. Although it is unlikely that all of this material would be released, we have assumed a worst case scenario in which the Kr-85 was released over a 2-hour period. Although the exact dose estimates depend on site specific conditions (e.g., wind speed and direction), we have estimated

a most likely dose based on meteorological conditions previously measured at Three Mile Island. However, depending on the specific meteorological conditions at the time of such a release, if it occurred, the actual doses could be 100 times lower or 100 times higher than the most likely values given below.

Noting these uncertainties, we estimate the cumulative whole body person-rem exposure within 50 miles of the plant to be 0.2 person-rem. The most likely maximum dose to an individual who remained at the site boundary would be about 0.2 millirem whole-body and about 19 millirem skin dose. The dose to the average individual within 50 miles of such a release would be 1×10^{-4} millirem. While the risk to the maximally exposed individual of premature death from cancer is less than one chance in 10,000,000, the risk to the average individual would be 1000 times less than this.

Even under the worst meteorological conditions, which might increase the maximum individual dose by a factor as high as 100 (i.e., approximately 20 millirem whole-body), the risk to the individual exposed to the maximum dose would be small compared with the risk from continuing exposure to natural background radiation (about 125 millirem per year.)

A final consideration is whether the reduction in risk by allowing some of the radioactive krypton to decay is significant enough to outweigh the need to expeditiously proceed with decontamination activities. Because the half-life of Krypton-85 is 10.76 years, it would take over 10 years for the level of radioactivity in the containment atmosphere to diminish by ½. After 2 years, the radioactivity would be reduced

by only 12%. In considering the extremely low projected person-rem doses discussed above, we do not believe that the small net reduction in person-rems that would be saved by letting the krypton decay can justify this action in light of the risk of an uncontrolled release of radioactivity which increases as a function of time.

1c. What are the risks associated with a delay in the processing of the contaminated water contained in the reactor building?

The current rate of increase in the water level within the reactor building is conservatively estimated to be about 1.5 inches per month. Delay in processing the contaminated water in the reactor building would allow the water level to continue to increase, caused by reactor coolant system leakage, which is conservatively estimated to be about 0.5 gallons per minute.

Continued water level rise with no compensating action taken would create the following potential risks:

(1) reactor building out-leakage of contaminated water to adjacent buildings (auxiliary, fuel handling and control buildings) or to the ground;

(2) increased build-up of sedimentation in the reactor building sump, thereby hindering the future cleanup operations; and

(3) the need for realignment of important systems that interface with the Reactor Coolant System (RCS) so that they can be maintained in an operable condition for use at a later date if required (an example is the Decay Heat Removal System).

Items (1) and (2) above are long-term concerns and corrective action can be delayed much longer than for item (3). The contained water level inside the reactor building is currently significantly below grade level. Due to the construction features of the reactor building (steel-lined against a four foot thick pre-stressed concrete wall), the probability of water seepage is low. Leakage across instrument penetrations is not expected to occur because the reactor building has been designed to withstand an internal pressure of 60 psig. Also, recent limited visual examination through one of the penetrations has shown no structural damage inside the reactor building.

The shorter term concerns associated with a delay in removing the water from the reactor building (Item 3) would be the potential loss of the ability to operate some motor-operated valves in the containment building. This could result in having to isolate the RCS pressure boundary from the decay heat removal system (located outside the reactor building) with one valve instead of two. We estimate conservatively (assuming an RCS leakage rate of 0.5 gallon per minute) that it would be six months or longer before certain components might be rendered inoperable.

Isolating the reactor coolant pressure boundary with one valve may create a greater potential for intersystem leakage with contaminated water. However, if this leakage were to occur, it would be confined inside the Auxiliary Building and should involve increased risk to the public. Worker access to the affected area would be limited.

1d. Can the water in the primary building leak out if too much time passes?

We believe that the probability for water to leak out of the reactor building would increase if "too much time passes" and no actions were taken to remove the contained water. The reason is because of possible but unforeseen occurrences, such as human error. At this time, we see no likely leakage paths; if such are found, we would require action to be taken to eliminate them.

1e. When is the earliest that the building could leak?

We do not know when, at the earliest, the reactor building could leak. However, we have approved the licensee's design of a ground seepage detection system which will be used to detect any reactor building outleakage that might occur. The design consists of eight ground wells strategically located around the periphery of the reactor building. The water pumped from these wells would be monitored for radioactivity. This detection system is expected to be installed by the end of this year.

1f. Is there any urgency associated with the removal of the nuclear core? The safe boron level has been cited at 3000 parts per million. Could stratification of the coolant lower the concentration in the core to below this level?

There is no immediate urgency associated with the need to remove the nuclear core. We require that the Reactor Coolant System (RCS) be maintained at a boron concentration ranging from 3,000 to 4,500 parts per million (ppm). We expect no boron stratification in the RCS. The reasons are: (1) there is adequate flow to promote mixing of the injected concentrated boron solution in the RCS and to have it diffused in possible stagnant regions of the core (boron concentration as

low as 900 ppm can prevent return to criticality), and (2) the coolant is pressurized, thus there are no boiling regions that may cause a change in boron concentration. Also, for the boron to precipitate at a concentration of 4,500 parts per million, the RCS temperature would have to be less than 40°F. It is unlikely that the RCS temperature would ever approach such a low value.

How long can each specific activity be safely delayed?

With regard to your comment on how long each specific activity can safely be delayed, we expect that a minor delay would have little impact on the health and safety of the public or on-site workers. In addition, in case of an emergency, for example if the water in the containment got too high, emergency operations can be undertaken to correct the situation. However, because materials degrade with time, maintenance cannot be readily done because of the contamination, and operational errors cannot be excluded, we expect that in a time frame of a year or two, some small uncontrolled leakage might occur. The resulting increased risk to workers or the public would be highly dependent on specific circumstances, but as discussed in the answer to Question 1b, any increased risk to the public is expected to be small.

Question 2

Please describe more specifically than you were able in our hearing, how a modified EIS procedure, license modifications or orders are expected to be utilized in future cleanup activities at TMI.

On November 21, 1979, the Commission issued a Statement of Policy and Notice of Intent to Prepare a Programmatic Environmental Impact Statement regarding future cleanup activities at TMI-2. A copy of that document is enclosed. This policy statement reflects the Commission's determination that an overall environmental study of the decontamination and disposal processes will not only assist the Commission in discharging its regulatory responsibilities to protect the public health and safety but also assure that the public is informed and, indeed, involved in the Commission's decisionmaking process. Such a statement will include an overall description of anticipated activities and a schedule for their completion, as well as a discussion of alternatives and the rationale for the choices made. In making this determination, the Commission is, of course, mindful that such a programmatic statement may well have to be supplemented as additional information regarding the exact condition of the core and other areas and equipment in the reactor building is obtained. Nevertheless, it is believed that such a statement can serve as a useful planning tool. As necessary, individual portions of the overall cleanup effort will be accompanied by the preparation of an environmental assessment followed, as appropriate, by a negative declaration or environmental impact statement. The Commission intends to coordinate with the President's Council on Environmental Quality (CEQ), including consultation, before determining the scope of the programmatic impact statement.

As discussed more fully in response to Question 5 below, the Commission has recognized that there may be a need to take action during the development of the programmatic environmental impact statement. Consistent with the exigencies of a particular situation, the Commission intends to consult with CEQ regarding its NEPA responsibilities. Actions taken will be accompanied by an environmental assessment followed by a negative declaration or preparation of a full impact statement as appropriate. In the event that a presently unforeseen emergency situation should arise, the Commission will, to the extent practicable, consult with CEQ as well.

A careful balance must be reached as to activities, or specific aspects thereof, which require the imposition of particular license limitations to protect public health and safety and the environment, and the need to permit operational flexibility in areas which would not affect the external environment. Currently, an Order is being finalized which will impose a number of license conditions in the form of Technical Specifications and provide a single compilation of requirements to replace the NRC-approved procedures under which the facility has been maintained since the March 28, 1979 accident. Specific prohibitions on the discharge of the intermediate radioactively contaminated water (currently being successfully processed by the EPICOR-II system) and high-level water in the reactor building, and on the purging or other treatment of the reactor building atmosphere, pending completion of appropriate environmental reviews, will be included.

As necessary to assure the continued protection of the health and safety of the public and the environment, the Commission will require, by order, that the licensee conduct its activities in a prescribed manner. The Commission intends to fully utilize the authority conferred by the Atomic Energy Act to take this type of action as the public interest warrants.

Question 3

If an EIS is prepared for the cleanup of TMI, who will do it?

The NRC staff will prepare the programmatic environmental impact statement for the cleanup of Three Mile Island Unit 2 (TMI-2). Assistance in preparation of the statement will be obtained from one or more national laboratories, depending on the availability of the necessary expertise. This effort is currently underway.

Question 4

How long will that take?

We expect that the Programmatic Environmental Impact Statement will at first be issued as a draft for public comment in May or June 1980. The final statement is expected to be issued at the end of November 1980.

Question 5

What about actions necessitated by conditions on-site during the process of preparing the Environmental Impact Statement? Will they require a separate EIS? An Environmental Assessment?

As discussed in our response to Question 2 above, the Commission, in its policy statement regarding preparation of a programmatic environmental impact statement, has recognized the possibility that there may be a need for prompt action during development of the programmatic statement. Action of this

kind will be preceded, to the extent practicable, by consideration of advice from CEQ on the NRC's NEPA responsibilities and will not be taken until it has undergone an appropriate review. Such review would take the form of an environmental assessment followed, as appropriate, by the issuance of a negative declaration or a full environmental impact statement.

Question 6

What about venting of krypton gas from containment? Will an assessment of possible environmental impacts of alternate treatments of Kr-85 be prepared?

On November 13, 1979, the licensee proposed that atmospheric venting be the means for removing the contaminated gases, mainly Kr-85, from the containment. The licensee considered various alternatives and concluded that the venting operation can be done with no significant hazard to the site or to the general population (i.e., by purging the reactor building atmosphere through the station vent stack, and by employing a meteorological feedback system to implement release over a period of time under favorable meteorological conditions). Under these conditions the licensee has calculated that the cumulative dose within 50 miles of the plant would be about 0.75 person-rem. The peak beta skin dose at the site boundary is calculated to be from 2.9 - 5.6 millirem with a whole-body dose between .04 and .10 millirem. An advantage to venting is that it can be accomplished in a much shorter time than the other alternatives considered. We are currently preparing an Environmental Assessment of the licensee's proposals. (Copies of the licensee's proposals are enclosed.) This Assessment may be used as part of a near-term decision regarding the krypton, but in any event will be fully incorporated into the programmatic EIS.

Question 7

Should the NRC consider the financial ability of a utility to withstand the effects of an accident or decommissioning? Have any formal proposals been made by any NRC personnel with respect to this issue. If so, please supply the Subcommittee with such a proposal.

Under the provisions of 10 CFR 50.33(f) and Appendix C to Part 50, the staff determines whether an operating license applicant 'has reasonable assurance of obtaining the funds necessary to cover the estimated costs of permanently shutting the facility down and maintaining it in a safe condition." In making this determination, the staff reviews the applicant's decommissioning cost estimate for reasonableness by comparing it to independent estimates prepared for the staff by the Pacific Northwest Laboratory. In addition, the applicant must demonstrate that it has a method for assuring that funds will be available for subsequent decommissioning.

The Commission is now considering development of more explicit overall policy for nuclear facility decommissioning which would include specific guidance on decommissioning criteria for production and utilization facility licensees. As part of this effort, a staff task force is studying alternative methods for assuring the availability of funds for decommissioning. Although the staff has not yet made any final proposals in this regard, the enclosed publication, NUREG-0584, "Assuring the Availability of Funds for Decommissioning Nuclear Facilities," presents various funding alternatives that are being studied.

In light of the severe financial consequences to Met Ed and GPU caused by the TMI accident, the Commission has directed the staff to analyze alternative approaches for assuring that each licensee has adequate financial arrangements to facilitate recovery from a major accident, including, but not limited to,

consideration of a requirement for adequate utility insurance or a commitment of a holding company's assets for accident recovery. The Commission's regulations do not now provide for such arrangements. However, the financial consequences of the accident to Met Ed and GPU will be a factor considered by the staff in determining whether there is reasonable assurance that the licensee can obtain the necessary funding in the TMI-1 restart proceeding.

The NRC staff is monitoring the utility and nuclear industry's current joint effort to establish their own insurance pool (through a mutual insurance entity related to the Institute for Nuclear Power Operations) to help cover the costs of replacement power required as a result of a nuclear accident. Losses sustained by third parties in a nuclear accident are covered by provisions of the Price-Anderson Act. Additionally, many utilities, at their own discretion, maintain "all risk" property insurance on their nuclear facilities which could cover some or all damages to the facilities. We will continue to monitor the industry's efforts to provide its own replacement power insurance for an accident, so that we can make a judgment as to the adequacy of the coverage provided.

ENCLOSURE 1

STATEMENT OF POLICY AND NOTICE OF INTENT TO
PREPARE A PROGRAMMATIC ENVIRONMENTAL IMPACT STATEMENT

AGENCY: U.S. Nuclear Regulatory Commission

ACTION: Statement of Policy

SUMMARY: The Nuclear Regulatory Commission has decided to prepare a programmatic environmental impact statement on the decontamination and disposal of radioactive wastes resulting from the March 28, 1979 accident at Three Mile Island Unit 2. For some time the Commission's staff has been moving in this direction. In the Commission's judgment an overall study of the decontamination and disposal process will assist the Commission in carrying out its regulatory responsibilities under the Atomic Energy Act to protect the public health and safety as decontamination progresses. It will also be in keeping with the purposes of the National Environmental Policy Act to engage the public in the Commission's decision-making process, and to focus on environmental issues and alternatives before commitments to specific clean-up choices are made. Additionally, in light of the extraordinary nature of this action and the expressed interest of the President's Council on Environmental Quality in the TMI-2 clean-up, the Commission intends to co-ordinate its actions with CEQ. In particular, before determining the scope of the programmatic environmental impact statement the Commission will consult with CEQ.

The Commission recognizes that there are still areas of uncertainty regarding the clean-up operation. For example, the precise

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condition of the reactor core is not known at this time and cannot be known until the containment has been entered and the reactor vessel has been opened. For this reason, it is unrealistic to expect that the programmatic impact statement will serve as a blueprint, detailing each and every step to be taken over the coming months and years with their likely impacts. That the planned programmatic statement inevitably will have gaps and will not be a complete guide for all future actions does not invalidate its usefulness as a planning tool. As more information becomes available it will be incorporated into the decision-making process, and where appropriate supplements to the programmatic environmental impact statement will be issued. As the decontamination of TMI-2 progresses the Commission will make any new information available to the public and to the extent necessary will also prepare separate environmental statements or assessments for individual portions of the overall clean-up effort.

The development of a programmatic impact statement will not preclude prompt Commission action when needed. The Commission does recognize, however, that as with its Epicor-II approval action, any action taken in the absence of an overall impact statement will lead to arguments that there has been an inadequate environmental analysis, even where the Commission's action itself is supported by an environmental assessment. As in settling upon the scope of the programmatic impact statement, CEQ can lend assistance here. For example should the Commission before completing its programmatic statement decide that it is in the

best interest of the public health and safety to decontaminate the high level waste water now in the containment building, or to purge that building of its radioactive gases, the Commission will consider CEQ's advice as to the Commission's NEPA responsibilities. Moreover, as stated in the Commission's May 25 statement, any action of this kind will not be taken until it has undergone an environmental review, and furthermore with opportunity for public comment provided.

However, consistent with our May 25 Statement, we recognize that there may be emergency situations, not now foreseen, which should they occur would require rapid action. To the extent practicable the Commission will consult with CEQ in these situations as well.

With the help of the public's comments on our proposals we intend to assure, pursuant to NEPA and the Atomic Energy Act, that the clean-up of TMI-2 is done consistently with the public health and safety, and with awareness of the choices ahead. We are directing our staff to include in the programmatic environmental impact statement on the decontamination and disposal of TMI-2 wastes an overall description of the planned activities and a schedule for their completion along with a discussion of alternatives considered

and the rationale for choices made. We are also directing our staff to keep us advised of their progress in these matters.

Dated at Washington, D.C. this 21st day of November, 1979.

For the Commission

SAMUEL J. CHILK
Secretary of the Commission

DRAFT

ASSURING THE AVAILABILITY OF FUNDS FOR DECOMMISSIONING NUCLEAR FACILITIES

ROBERT S. WOOD
ANTITRUST & INDEMNITY GROUP
OFFICE OF NUCLEAR REACTOR REGULATION
U. S. NUCLEAR REGULATORY COMMISSION
July 1979

(Note: Any opinions or conclusions contained in this paper are those of the author and do not represent official NRC policy.)

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United States Senate

COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
WASHINGTON, D.C. 20510

November 15, 1979

The Honorable Joseph Hendrie
Nuclear Regulatory Commission
Washington, D. C. 20555

Dear Chairman Hendrie:

Thank you for your participation in the November 9, 1979 hearings held by the Senate Three Mile Island investigation.

In the hearings, we attempted to surface issues relevant to recovery at TMI. However, because of time constraints, many important questions were not fully addressed. In view of this, and the need to have on the record your views on these matters, we would appreciate your responding in writing to the questions attached to this letter. Please supply the reasoning behind your responses.

We would appreciate your comments as quickly as you can provide them. In order for your answers to be factored into our investigatory report, they should be in our possession by November 26. Answers received after this date may be utilized at a later date.

Thank you very much for your cooperation.

Sincerely yours,

Gary Hart

Alan K. Simpson
Ranking Minority Member
Subcommittee on Nuclear Regulation

Gary Hart
Chairman
Subcommittee on Nuclear Regulation

Enclosure
S/H/kcs

Note. OCA obtained an extension until 12/3/79

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6. What about venting of krypton gas from containment? Will an assessment of possible environmental impacts of alternate treatments of Kr-85 be prepared?

7. Should the NRC consider the financial ability of a utility to withstand the effects of an accident or decommissioning? Have any formal proposals been made by any NRC personnel with respect to this issue? If so, please supply the Subcommittee with such a proposal.

QUESTIONS FOR
JOSEPH HENDRIE, NRC

1. Do the risks to the public and worker health and safety increase if cleanup activities are delayed, i.e., specifically:

   a. What are the risks associated with the radioactive atmosphere presently contained by the reactor building?

   b. What would the health effects of a hypothetical ground release be?

   c. What are the risks associated with a delay in the processing of the contaminated water contained in the reactor building?

   d. Can the water in the primary building leak out if too much time passes?

   e. When is the earliest that the building could leak?

   f. Is there any urgency associated with the removal of the nuclear core? The safe boron level has been cited at 3000 parts per million. Could stratification of the coolant lower the concentration in the core to below this level?

   How long can each specific activity be safely delayed?

2. Please describe more specifically than you were able in our hearing, how a modified EIS procedure license modifications or orders are expected to be utilized in future cleanup activities at TMI.

3. If an EIS is prepared for the cleanup of TMI, who will do it?

4. How long will that take?

5. What about actions necessitated by conditions on-site during the process of preparing the Environmental Impact Statement? Will they require a separate EIS? An Environmental Assessment?

While details of the proposed purging operation are contained in the report, the salient features include:

1. The controlled purge of the approximately 44,000 curies of Kr-85 is accomplished from an elevated stack with significant dilution before reaching the site boundary. In addition, purge will be permitted only under conditions of favorable meteorology. Comprehensive evaluations indicate that the maximum off-site dose resulting from total release will be less than 5 mrem. Environmental monitoring will be employed to detect the off-site ground level presence of any Kr-85 above background.

2. Controlled purging does not require storage of Kr-85 for prolonged periods of time. It accordingly is a permanent solution and eliminates all risks arising from accidents with the three alternative methods.

3. Purging requires only slight modifications to existing equipment and, hence, is an operationally desirable and safe approach.

We are cognizant of the concern on the part of some members of the surrounding communities about the venting of the Kr-85. We are convinced, however, that this is the most prudent and safest approach, with negligible radiological impact of handling the containment Kr-85. The Company will do whatever it can to provide sufficient information to the public to assure them they will be aware of the timing of releases and the results of the monitoring of both on-site and off-site radiation levels.

We will be technically ready to proceed with containment purging in approximately one month. We are requesting your approval to proceed with purging, subject to verification by NRC personnel on site of equipment and procedures, and are ready to meet with you to review the attachment or any other questions which you might have.

Very truly yours,

R. C. Arnold
Senior Vice President
Metropolitan Edison

RCA:LWH:tas

Attachment

Met-Ed / GPU

Metropolitan Edison Company
Post Office Box 480
Middletown, Pennsylvania 17057
717 944-4041

Writer's Direct Dial Number

November 13, 1979
GQL 1416

TMI Support
Attn: Richard Vollmer
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Sir:

Three Mile Island Nuclear Station, Unit 2 (TMI-2)
License No. DPR-73
Docket No. 50-320
Reactor Containment Building Atmosphere Cleanup

The ultimate safe condition for the reactor and reactor containment building requires decontamination and removal of the reactor fuel. To accomplish this it is necessary that the existing reactor building atmosphere, containing Kr-85, be removed. Over the past few months we have studied the various alternatives for accomplishing removal of the Kr-85, including a comprehensive safety and environmental assessment. The results of these studies are contained in the attached report.

Of the four options examined; charcoal adsorption and storage, gas compression and storage, cryogenic processing and storage, and atmospheric purge, we strongly recommend that atmospheric purge be the means for accomplishing the disposal of Kr-85. Our studies show that the purge operation, using controlled venting through the plant exhaust stack and meteorological feedback, can be done with no significant hazard or radiation exposure either to the general population or the site. The purge can meet all technical specifications and NRC radiological criteria. A significant advantage to the purge operation is that it can be accomplished in a relatively short time compared to the two to three years required for alternatives and this short time scale, in itself, is a significant safety advantage. The time to implement alternatives to purge are such that we cannot guarantee full containment integrity and would, in fact, expect general population doses to exceed those minimum levels resulting from purge.