PUBLIC

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NUCLEAR REGULATORY COMMISSION
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August 2, 1996

34-19089-01
030-16055

MEMORANDUM TO: John Madera, Chief
Nuclear Materials Licensing, RIII

FROM: Donald A. Cool, Director
Division of Industrial and
Medical Nuclear Safety, NMSS

SUBJECT: REQUEST FOR TECHNICAL ASSISTANCE IN THE REVIEW OF THE STRUCTURAL INTEGRITY REPORT FROM ADVANCED MEDICAL SYSTEMS, INC. (AMS)

I am responding to your request for technical assistance regarding AMS's response dated, June 7, 1996, to USNRC Inspection Report No. 030-16055/95006 (DNMS) that looked at the structural integrity of the London Road facility buildings. The overall assessment of the review is provided below, with specific topics addressed in the attachment. This response has been coordinated with the Division of Waste Management (DWM), NMSS.

To our knowledge, there has not been a definitive statement provided by AMS regarding the additional period of time over which the 1958 building structure must perform its confinement function. Consequently, the actions or inactions proposed by AMS cannot be evaluated with respect to the time function. AMS has proposed no repairs, no maintenance program, and no periodic structural integrity inspections or evaluations, but has proposed a movement monitoring program for select areas of the building on a generally 2-year frequency after the initial program startup. AMS has accepted the fact that there may be localized failures of certain building elements under this philosophy of operation but along with its structural consultant has concluded that there will be no loss of confinement of stored radioactive material in the concrete core structure. We agree with this assessment for normal conditions, but do not agree that, based on the current facts, this conclusion is valid for the indefinite future. Therefore, we should re-evaluate the conditions and facts at 10-year intervals, unless new information becomes available to cause a change in these intervals.

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With regard to events impacting the AMS site relative to the emergency plan, such as seismic events and tornados, the AMS structural consultant has provided an assessment of the vulnerabilities of the building based on some very simplified analyses. The conclusion is that a 0.1g ground motion at the site would not cause the loss of confinement of the radioactive materials stored in the concrete core. A severe tornado would likely cause heavy damage to all but the concrete core structure, and the test cell and the radiography room would be vented to the atmosphere. We believe that these are reasonable conclusions.

Attachment: As stated

REVIEW OF ADVANCED MEDICAL SYSTEMS, INC., RESPONSE TO
INSPECTION REPORT NO. 030-16055/95006
Dated June 7, 1996

1. The Advanced Medical Systems, Inc. (AMS) and its structural consultant have identified additional cracking in the southeast corner of the second floor slab and have an opinion as to the cause of the distress in this area. In addition, they are willing to accept a local collapse in the southeast area of the structure and conclude that if such a local collapse were to occur, it would not compromise the concrete core structure where the radioactive materials are stored. The AMS consultant made no comment regarding the need for repairs. Based on these facts, the licensee has proposed that no repairs be made.

   We believe that radioactive materials stored in the concrete core structure will be adequately confined to the concrete core structure that will remain intact after any local adjacent failures in the bearing walls. In addition, we believe there is a high degree of confidence that the core will remain intact for at least a period of 10 years.

2. AMS and its structural consultant have investigated the cracking of the north bay of the east wall and concluded that any associated failure with this distressed area would not result in compromising the concrete core structure that contains the radioactive materials. The consultant made no recommendation for repairs to the existing levels of observed distress unless the subject wall at the second floor level were to fail, leaving the building envelope open to the elements.

   We believe that radioactive materials stored in the concrete core structure will be adequately confined to that intact core. We believe there is a high degree of confidence that the core will remain intact for at least a period of 10 years.

3. The AMS consultant found no evidence of structural degradation in the roof decking where there was evidence of corrosion on the underside. AMS has proposed no additional activity relative to the roof decking.

   We believe the reroofing completed in 1994 should halt or severely retard the corrosion process related to the roof deck panels, and the panel are acceptable for use during the next 10 years.

4. During the investigation, the AMS consultant was able to determine the source of the fluids above the concrete slab of the second floor and also identified the pathway of the fluid as passing through pipe chases, not the structural concrete floor slab. It was concluded that no degradation had taken place as a result of the fluids.

   We accept this additional information and conclusion.

5. AMS states that its structural consultant concluded "that even with no repair or maintenance, the AMS building on London Road is capable of providing protective confinement for its licensed radioactive materials inventory for many years into the future." AMS concluded that a routine inspection program is not required but has elected to provide for a position or location survey to monitor the building movement at several critical locations in the structure. After the initial survey, a recheck will be made in 6 months and then every 2 years thereafter. The AMS radiation protection staff will perform routine inspections in order to identify unusual conditions that may warrant further study if conditions were to change between the intervals of surveys.

   We note that the AMS consultant stated that the need to periodically inspect and evaluate the building's ability to perform its intended functions over the utilization period was out of the scope of his review. The AMS consultant indicated that a sound maintenance program can result in the lifetimes of similar type facilities being extended 25 to 30 years; however, the elements of such a maintenance program were not provided in the report, and AMS has stated that no maintenance is necessary in order to assure protective confinement of the licensed radioactive materials inventory for many years into the future.

   We would expect that the AMS movement monitoring program will, at a minimum, address the possible additional vertical and horizontal movements associated with the southeast corner distress of the 1958 building, as well as the wall of the 1958 building above the original lobby area. We should observe the periodic results of the monitoring program and reevaluate the condition of the building structure, including the capability of the concrete core structure to continue to function, at the end of a 10-year period.