

February 16, 1995

MEMORANDUM TO: J. W. McCormick-Barger, Chief  
Radiological Programs Section 1

FROM: J. A. Grobe, Chief  
Nuclear Materials Inspection Section 2

SUBJECT: REQUEST FOR TECHNICAL ASSISTANCE IN THE REVIEW OF THE  
EMERGENCY PLAN FOR ADVANCED MEDICAL SYSTEMS, INC.  
(DOCKET NO. 030-16055; LICENSE NO. 34-19089-01)

Enclosed is a copy of the proposed emergency plan for the Advanced Medical Systems, Inc. facility at 1020 London Road in Cleveland, Ohio. The plan was submitted on January 31, 1995, with the licensee's application for renewal of NRC License No. 34-19089-01.

We are in the process of reviewing the licensee's application and request your assistance in the review of their emergency plan. Due to the sensitivity of several issues concerning this licensee, we have been placed on a very tight schedule for completing the evaluation of this renewal application and request your review be completed by March 10, 1995.

Also enclosed for your information and reference is Regulatory Guide 3.67 regarding emergency plans for fuel cycle facilities and a letter from the Local Area Planning Committee in Cuyahoga County expressing concern with the AMS emergency plan. Your review should include a rigorous assessment of the adequacy of the licensee's source term analysis and off site dose projections.

The plan contains facility diagrams in the form of blueprints. We have included the original blueprints with the copy of the emergency plan. Please return the blueprints when you have completed your review so they can be placed in the file.

Your assistance in this matter is greatly appreciated. If you have any questions, please feel free to contact me at Extension 9806.

Enclosures: As stated

DOCUMENT NAME: M:\AMS.EP

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Cleveland, Ohio 44114

## City of Cleveland

MICHAEL R. WHITE, MAYOR

DEPARTMENT OF PUBLIC HEALTH

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Division of the Environment  
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February 16, 1994

Mr. Jack Grobe, Chief  
Nuclear Materials Inspection Section #2  
Nuclear Regulatory Commission  
801 Warrenville Rd.  
Lisle, IL 60532-4351

BY FAX & U.S. MAIL

Dear Mr. Grobe:

It has recently come to the attention of the City of Cleveland that a considerable quantity of water has accumulated in the basement of the Advanced Medical Systems (AMS) facility located at 1020 London Road in Cleveland. The City further understands that this water is contaminated with radioactive Cobalt 60. The presence of this water raises a number of questions for which the City is looking to the Nuclear Regulatory Commission for a response.

Specifically:

- 1) Does the contaminated water currently in the basement of the AMS facility pose any risk to the public health of the citizens of Cleveland?
- 2) Does the contaminated water currently in the basement of the AMS facility pose any risk to workers in the building or to City inspectors who may need to enter the site?
- 3) How and where will this will this water be disposed of?
- 4) What is the timetable for the remediation of this water?
- 5) What likelihood is there that contaminated water will leach out of the basement into the surrounding soil and water table?
- 6) What is the potential that the contaminated water in the basement will cause the basement floor to crack or break?

B/b<sup>2</sup>  
(continued)

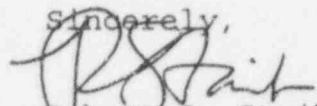
Mr. Jack Grobe  
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The City is also aware that the NRC has recently written to AMS requesting information regarding a number of the issues referred to in the above questions. Please provide the City with copies of the responses which NRC has received from AMS.

Thank you for your attention to this matter. I look forward to your timely response. If you have any questions, please do not hesitate to contact me at (216) 664-2324.

Sincerely,



Robert O. Staib  
Acting Director

cc: Judith Zimomra, Executive Assistant  
William M. Ondrey Gruber, Law  
Michael Konicek, Director  
Julius Ciaccia, Commissioner  
Darnell Brown, Commissioner  
Lisa Mehringer, Law

## STATUS OF AMS ISSUES

### WATER ISSUES

- Close teamwork within NRC attacking this project. NMSS and OGC are together with us.
- NMSS prepared to issue a "hold harmless" letter based on certain restrictions on water discharge concentration and volume. Letter on hold.
- Grobe meeting with the City of Cleveland to keep them on board and abreast of issues.
- NEORSD/OEPA/AMS/Cleveland/NRC meeting scheduled for Wednesday, 2/22 to bring issues to closure. Grobe to attend, NMSS on board.
- Maintaining a "stable" situation with groundwater and infiltration. Commitments tied down in CAL.
- Public meeting with licensee Monday (2/6) - discussed water plans and remediation plans. Participants - RIII, NMSS, AMS, NEORSD, Cleveland, Plain Dealer. Meeting went well.
- Plans review completed by RIII and NMSS. Called licensee yesterday with minor questions. Confirmatory Order will be in HQ for review next week.
- Water processing will begin week of 2/27. Water will be cleaned to tanks and then discharged or evaporated. Recycle still a remote possibility.
- Close coordination with OEPA. Initial water processing to tanks OK. Discharge to sewers will require their review. Evaporation will not require a permit.
- Jim Williams (Ohio governor's liaison with NRC) has been briefed.

B/64

## RENEWAL ISSUES

- DFP in NMSS (at contractor) under review. Licensee proposed \$1.8M. Probably a little low. WHUT Room still an issue. Will expedite DFP (30 to 60 days).
- License renewal under review in RIII. Senior staff dedicated to the project. Complex renewal will probably take 90 days to close.
- Renewal will include a license condition with outcomes and milestones/schedules for:
  - Inventory Completion (contract let for front plug removal)
  - Inventory Reduction
  - Facility Decontamination
- Four hearing requests were filed (Subpart L). Two or three will likely be admitted.

Today's Date (whatever)

## REGIONAL TECHNICAL ASSISTANCE REQUEST FORM

Date: <sup>21</sup>2/12/96 E-Mail to: Don Cool (DAC), cc:CLE

From: Cynthia Pederson (CDP1) Director, DNMS, Region 3

Licensee: Advanced Medical Systems (AMS) License No.: 34-19089-01

☐ Problem/Issue:

**Background:** AMS routinely pumps ground water from its underdrain system and manhole to 3000 gallon storage tanks. For each tank, AMS and NEORS D take samples of the water for analysis. The tanked water must meet the following criteria before it may be discharged:

- The Co-60 concentration must be less than or equal to 100 pCi/l (agreement between AMS and NEORS D);
- The Co-60 must be readily soluble in water (10 CFR 20.2003(a)(1)).

If these conditions are met, the water is discharged onto AMS' property. Some of this discharged water presumably finds its way into the NEORS D sewer system.

Shortly after AMS replaced the facility underdrain system, it flushed the system with 10,000 gallons of clean water. Samples of this water were then analyzed by AMS' contract laboratory, and found to contain no detectable Co-60. Shortly thereafter, AMS began analyzing water samples with an in-house sodium-iodide based gamma spec system. This system has a nominal detection sensitivity of 20-40 pCi/l for Co-60.

According to AMS' procedures, if any Co-60 is detected in a water sample, then the sample is tested for solubility. Stated another way, if Co-60 is detected above the detection sensitivity, then the sample is tested for solubility. On the other hand, if Co-60 is not detected (at levels above the detection sensitivity), the solubility test is not performed.

According to AMS' procedures for in-house solubility testing, the water sample is passed through a 0.45  $\mu$ m filter, and then the filtered water is analyzed with AMS' in-house gamma spec system. The Co-60 is assumed to be soluble if the following condition is met:

$$\frac{C_f}{t_f} \pm 2 \frac{\sqrt{C_f}}{t_f} = \frac{C_u}{t_u} \pm 2 \frac{\sqrt{C_u}}{t_u}$$

where  $C_f$  = net counts in spectral region(s) of interest for the filtered water,  $C_u$  = net counts in spectral region(s) of interest for the unfiltered water,  $t_f$  = count time for the filtered water, and  $t_u$  = count time for the unfiltered water.

Question - Are the AMS procedures referred to above (including the given thresholds) acceptable to NRC?

B/LCS



### RIII Recommendations

On February 13, 1995, an NRC inspector went to AMS and took seven water samples from tank 880. Four samples were obtained from the top of the tank while the water was being recirculated. (The water in the tank had been recirculating for approximately 24 hours.) Three samples were obtained from the bottom outlet valve of the tank. These bottom samples were taken one hour after the recirculation pump had been turned off. Prior to taking the samples, approximately two liters of water was drained from the bottom outlet valve and returned to the tank.

At RIII, each water sample was counted, and then passed through a 0.45  $\mu$ m filter. For the water samples, no Co-60 was detected in the top samples, but Co-60 was detected in the bottom samples. For the filter results, no Co-60 was detected from the top samples, but Co-60 was detected from the bottom samples.

RIII recommends that the concentration of Co-60 be obtained after the tank is thoroughly mixed. Thoroughly mixed means mixing in both the horizontal and vertical directions.

RIII reviewed the American Public Health Association's "Gross Alpha and Gross Beta Radioactivity (Total, Suspended, and Dissolved)," which is listed in IN 94-07 as the second of two acceptable methods which may be used for the radioanalysis of suspended solids in water. (AMS refers to this APHA method in its procedures.) RIII also performed field tests in early 1995 at AMS in which the effectiveness of counting filters vs. filtered water was studied.

As a result of RIII's analysis of AMS tank 880, RIII's review of the above mentioned article, and RIII's field tests, RIII recommends that water from ALL tanks be tested for solubility. This test shall require that: (1) the bottom of each tank be sampled after the water has settled for a few hours or so after the pumps have been turned off, and (2) the filter (not the filtered water) be counted by a gamma spec system.

*Of course, if NRC requires AMS to count the filter, NRC must approve an acceptable threshold (MDA).*

Recommended Action (with revisions): ☐ Approve or ☐ Reject

Remarks:

Headquarter Reviewer: \_\_\_\_\_

Regional Reviewer: M. Weber

Reviewer Code: S2

Reviewer Phone No.: (708)829-9825 FAX No.: (708)515-1259

Request Needed by: yesterday Expedite ASAP.

