



# Advanced Medical Systems, Inc.

1020 London Road  
Cleveland, OH 44110  
(216) 692-3270

May 3, 1995

Mr. James Caldwell  
Nuclear Materials Inspection, Section 2  
United States Nuclear Regulatory Commission  
801 Warrenville Road  
Lisle, Illinois 60523-4351

Re: Application to Amend USNRC License No. 34-19089-01

Dear Mr. Caldwell:

Recently, Advanced Medical Systems, Inc. (AMS) was issued Amendment No. 32 to the referenced license number to permit treatment of contaminated water that currently exists in the basement of the London Road facility. Documentation submitted by AMS in its amendment application indicated that Quanterra, Inc., a commercial analytical laboratory located in St. Louis, Missouri, would provide confirmatory analyses on treated water samples.

Quanterra has recently indicated that they may not be unable to maintain the "rapid turnaround time" AMS has imposed upon them for much longer.<sup>1</sup> Therefore, AMS has retained Lockheed Analytical Services (975 Kelly Johnson Drive, Las Vegas, Nevada 89119-3705) to provide back-up analytical services. The following are the specifications that were provided to Lockheed:

1. Upon receipt, samples shall be analyzed by the methodology of gamma spectroscopy (Method HASL 300 or equivalent).
2. Count times should be sufficient to achieve a nominal detection limit of 20 picocurie of <sup>60</sup>Co per liter of water. If it is not possible to achieve this detection limit, please indicate what the detection limit is.
3. The concentration of <sup>60</sup>Co, in units of "picocuries per liter" shall be reported for each sample.
4. For those samples where the data indicate statistically-negative results (e.g., <sup>60</sup>Co in concentrations below 20 picocuries per liter), a notation of "not detectable" or "below MDA" shall be entered in the report.

---

<sup>1</sup> Samples collected for confirmatory analyses are forwarded, by overnight carrier, to the laboratory for priority (e.g., before 10:00 a.m.) delivery. Once received, the samples are logged into the sample tracking system, analyses are completed, and results are faxed to the AMS water treatment project manager before 1:00 p.m. the day following sample shipment.

B/145

RECEIVED

MAY 8 1995

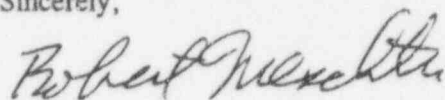
REGION III

5. The concentration of all other gamma-emitting radionuclides that are positively identified in the sample shall be provided.
6. Samples that contain greater than 20 picocuries but less than 200 picocuries of  $^{60}\text{Co}$  per liter shall be immediately subject to solubility determination by American Public Health Association's Method 7110, "Gross Alpha and Gross Beta Radioactivity (Total, Suspended, and Dissolved)" from Standard Methods for the Examination of Water and Wastewater, or equivalent.
7. The samples shall be archived until further notice.
8. The containers in which the samples arrived shall be archived.
9. Preliminary gamma spectroscopy and, if applicable, solubility results, stamped or marked as "draft" or "preliminary" shall be sent by facsimile to Mr. Alan Duff at (216) 692-3269. For initial reporting purposes, Lockheed may fax reports generated directly by the instrumentation.
10. Once the preliminary results are approved, the final report may be issued. All paper or electronic copies in your possession that are marked "draft" or "preliminary" shall be destroyed.
11. Lockheed shall commit to delivery of the preliminary gamma spectroscopy results within two hours after sample receipt, and solubility testing, if warranted, within 24 hours after sample receipt. The final report may be issued within 10 business days after the entire sampling campaign is complete.

Enclosed for your review are copies of the standard operating procedures that Lockheed Analytical Services follows for these analyses. Enclosed also is a copy of Lockheed's USNRC license to possess the radioactive materials in question.

AMS understands that the license amendment fee will be assessed and billed at a later date by the USNRC. Therefore, no fee is enclosed. If you have any questions, please contact me at (216) 692-3270. Your prompt attention to this matter is imperative since delays in securing confirmatory analytical services will negatively impact our ability to meet the remainder of the requirements contained in Amendment 32.

Sincerely,



Robert Meschter, RSO

cc: D. Cesar  
D. A. Miller, Esq., Stavole & Miller  
H. Billingsley, Esq., Arter & Hadden



NEVADA STATE HEALTH DIVISION  
RADIOACTIVE MATERIAL LICENSE

Pursuant to Nevada Revised Statute 459.040 and State of Nevada Regulation for Radiation Control and in reliance on statements and representations heretofore made by the licensee designated below, a license is hereby issued authorizing such licensee to transfer, receive, possess and use the radioactive material designated below; and to use such radioactive material for the purpose(s) and at the place(s) designated below. This license is subject to all applicable rules, regulations, and orders now or hereafter in effect and to any conditions specified below.

|   |  |   |
|---|--|---|
| <p>LICENSEE</p> <p>1. Name: Lockheed Engineering &amp; Sciences Company</p> <p>2. Address: Lockheed Analytical Lab<br/>6585 South Paradise Road<br/>Las Vegas, Nevada 89119</p> |  | <p>3. License number: 03-11-0269-03</p> <p>4. Expiration date: September 30, 1996</p> <p>5.</p> |
|---|--|---|

|  |                                   |  |
|--|-----------------------------------|--|
| 6. Radioactive material:<br>(Element and mass number)                          | 7. Chemical and/or physical form: | 8. Maximum quantity licensee may possess at any one time:                      |
| A. Hydrogen 3  | A. Any                            | A. 100 millicurie total.<br>Not to exceed 1 millicurie per source or sample    |
| B. Any radionuclide with atomic numbers 3-91                                   | B. Any                            | B. 100 millicurie total.<br>Not to exceed 100 microcuries per source or sample |
| C. Any radionuclide with atomic numbers 92-105 except Special Nuclear Material | C. Any                            | C. 350 microcuries total.  |
| D. Source Material   | D. Any                            | D. 50 pounds   |
| E. Special Nuclear Material  | E. Any                            | E. 2 grams   |
| F. Any radionuclide with atomic numbers 3-91                                   | F. Dry packaged radioactive waste | F. 100 millicuries total.  |

## NEVADA STATE HEALTH DIVISION

# RADIOACTIVE MATERIAL LICENSE SUPPLEMENTARY SHEET

License Number 03-11-025

Continued . . .

|  |                                   |                                      |
|--|-----------------------------------|--------------------------------------|
| G. Any radionuclide with atomic numbers 92-105 | G. Dry Packaged radioactive waste | G. 350 millicuries total             |
| H. Special Nuclear Material                    | H. Dry packaged radioactive waste | H. 2 grams                           |
| I. Nickel.63                                   | I. Foil source                    | I. Not to exceed 15 millicuries each |
| J. Radium 226                                  | J. Sealed source                  | J. Not to exceed 10 microcuries each |

## 9. Authorized Use

A-E. To be used as calibration sources for analytical equipment the analysis of commercial and government environmental, biological and agricultural samples to determine the quantity of low activity radionuclides.

F., G., and H. For storage until shipment.

I. To be used as a component of detector cells incorporated in gas chromatograph units.

J. To be used as external standard source in liquid scintillation counters.

## CONDITIONS

10. Radioactive material shall be used only at the licensee's facility stated in Item 2, above.

## NEVADA STATE HEALTH DIVISION

## RADIOACTIVE MATERIAL LICENSE

## SUPPLEMENTARY SHEET

License Number 03-11-026

## Conditions Continued . . .

11. Radioactive material shall be used by, or under the supervision of, John M. Newey, Terry J. Romanko, or J. Russell Stimmel.
12. The Radiation Safety Officer for activities authorized by this license shall be John M. Newey.
13. Each Ni-63 source must only be used in gas chromatography devices approved by the U.S. Nuclear Regulatory Commission or an Agreement State for the source. The licensee shall maintain for inspection by the Division the necessary documentation which demonstrates the Ni-63 source is approved for the device in which it is being used. The documentation may be technical literature from the manufacturer describing the device or other equivalent documentation.
14. Detector cells containing radioactive material shall not be opened or the sources removed from the detector cell by the licensee.
15. In lieu of using the conventional radiation caution colors (magenta or purple on yellow background) as provided in Section 459.340(1) of the Nevada Administrative Code (NAC), the licensee is hereby authorized to label detector cells and cell baths, containing radioactive material and used in gas chromatography devices, with conspicuously etched or stamped radiation caution symbols without a color requirement.
16. Maintenance, repair, cleaning, replacement, and disposal of foils contained in detector cells shall be performed only by the device manufacturer or other persons specifically authorized by the U.S. Nuclear Regulatory Commission or an Agreement State to perform such services.
- 17.A.(1) Each sealed source acquired from another person and containing radioactive material, other than hydrogen 3 with a half-life greater than 30 days and in any form other than gas shall be tested for contamination and/or leakage before use. In the absence of a certificate from a transferor indicating that a test has been made within 6 months before the transfer, a sealed source received from another person shall not be put into use until tested.



## NEVADA STATE HEALTH DIVISION

RADIOACTIVE MATERIAL LICENSE  
SUPPLEMENTARY SHEET03-11-02  
License Number.....

Conditions Continued . . .

- 17.A.(2) Notwithstanding the periodic leak test required by this condition, any licensed sealed source is exempt from such leak tests when the source contains 100 microcuries or less of beta and/or gamma emitting materials or 10 microcuries or less of alpha emitting material.
- (3) Except for alpha sources, the periodic leak test required by this condition does not apply to sealed sources that are stored and not being used. The sources excepted from this test shall be tested for leakage before any use or transfer to another person unless they have been leak tested within 6 months prior to the date of use or transfer.
- B. Notwithstanding Paragraph A of this Condition, sealed sources designed to emit alpha particles shall be tested for leakage and/or contamination at intervals not to exceed 3 months.
- C. The test shall be capable of detecting the presence of 0.005 microcuries of radioactive material on the test sample. The test sample shall be on from the sealed source or from the surfaces of the device in which the sealed source is permanently or semi-permanently mounted or stored on which one might expect contamination to accumulate. Records of leak test results shall be kept in units of microcuries and maintained for inspection by the Division.
- D. If the test required by Subsection A of this Condition reveals the presence of 0.005 microcurie or more of removable contamination, the licensee shall immediately withdraw the sealed source from use and shall cause it to be decontaminated and repaired or to be disposed of in accordance with Division regulations. Within 5 days of knowledge of leak test results, a report shall be filed with the Radiological Health Section, Nevada State Health Division, 505 E. King Street, Room 203, Carson City, Nevada 89710 describing the equipment involved, the test results, and the corrective action taken.
- E. The licensee is authorized to collect leak test samples for analysis by the licensee. Alternatively, tests for leakage and/or contamination may be performed by persons specifically licensed by the U.S. Nuclear Regulatory Commission or an Agreement State.

## NEVADA STATE HEALTH DIVISION

## RADIOACTIVE MATERIAL LICENSE

## SUPPLEMENTARY SHEET

03-11-026'

License Number.....

Conditions Continued . . .

18. If during receipt, processing, or analysis of any sample, the licensee discovers the sample exceeds the possession limits of the license, the licensee shall discontinue activities with the sample except to repackage the sample for immediate return to the supplier. The licensee shall maintain for review by the Division a record of each such occurrence.
19. All samples and residue from sample analysis with both a radioactive component which is subject to regulation and a hazardous material component which is subject to regulation shall be returned to the supplier.
20. The licensee shall conduct a physical inventory every 6 months to account for all sources and/or devices received and possessed under the license. Records of inventories shall be maintained for 2 years from the date of each inventory.
21. Except as specifically provided otherwise in this license, the licensee shall conduct its program in accordance with the statements, representations, and procedures contained in the documents including any enclosure listed below. Chapter 459 of the Nevada Administrative Code shall govern unless the statements, representations and procedures in the licensee's application and correspondence are more restrictive than the regulations.
  - A. Application dated January 31, 1991 signed by Kenneth Asbury.
  - B. Letter dated August 6, 1991 signed by Kenneth Asbury.
  - C. Letter dated August 7, 1991 from the Radiological Health Section.

DONALD S. KWALICK, M.D., M.P.H.  
STATE HEALTH OFFICER

FOR THE NEVADA STATE HEALTH DIVISION

By 

Stanley R. Marshall, Supervisor  
Radiological Health Section

Date August 5, 1991

ram91\lockheed.lic

NEVADA STATE HEALTH DIVISION

RADIOACTIVE MATERIAL LICENSE  
SUPPLEMENTARY SHEET

License Number 03-11- 3-0  
Amendment No. 1

Lockheed Engineering & Sciences  
Company

Lockheed Analytical Lab  
975 Kelly Johnson Drive  
Las Vegas, NV 89119

In accordance with letter dated Date November 26, 1991, signed by Ross K Robeson, Nevada Radioactive Materials License No. 03-11-0269-03 is amended as follows:

TO CHANGE

Item 2 to read: Lockheed Analytical Lab  
975 Kelly Johnson Drive  
Las Vegas, NV 89119

TO ADD Condition 21. D.

Condition 21.D. to read: Letter dated November 26, 1991 signed by Ross K Robeson.

DONALD S. KWALICK, M.D., M.P.H.  
STATE HEALTH OFFICER

FOR THE NEVADA STATE HEALTH DIVISION



Stanley R. Marshall, Supervisor  
Radiological Health Section

Date December 17, 1991

ram91\lokhed.am1



## NEVADA STATE HEALTH DIVISION

## RADIOACTIVE MATERIAL LICENSE

## SUPPLEMENTARY SHEET

License Number 03-11-01 3  
Amendment No. 2

CORRECTED COPY

Lockheed Environmental Systems and Technologies  
975 Kelly Johnson Drive  
Las Vegas, Nevada 89119

In accordance with letter dated July 7, 1992, signed by James E. Pollard, Nevada Radioactive Materials License No. 03-11-0269-03 is amended as follows:

TO CHANGE

---

Items 2, 8.G., and 9.A. through E. to read:

2. (Address) 975 Kelly Johnson Drive, Las Vegas, Nevada 89119

8.G. 350 microcuries total

9. A. through E. To be used incidental to the receipt and analysis of customers samples submitted for analysis; in development and standardization of chemical procedures; instrument calibration; preparation of liquid and solid radioanalysis calibration standards. Sealed sources may also be used for demonstration purposes in laboratory training courses.

Conditions 10, 11, 12, and 19 to read:

10. Radioactive material shall be stored and used only at the licensee's facility stated in Item 2, above.
11. Radioactive material shall be used only by, or under the supervision of, Joseph A. Hutchinson, Lynn Jaussi, Jimmy A. Morales, Nee Van Nuyen, Terry J. Romanko, Joseph S. Schmitt, or J. Russell Stimmel.
12. The radiation safety officer for activities authorized by this license shall be Jimmy A. Morales.
19. All samples and residue from sample analysis with both a radioactive component which is subject to regulation and a hazardous material component which is subject to regulation shall be disposed of at a licensed mixed waste disposal facility or returned to the supplier.

## NEVADA STATE HEALTH DIVISION

RADIOACTIVE MATERIAL LICENSE  
SUPPLEMENTARY SHEET

License Number 03-11-02 3

Amendment No. 2

CORRECTED COPY

Continued . . .

TO ADD

Condition 21.D.

21.D. Letter dated July 7, 1992 signed by Charles W. Carter, Ph.D.

DONALD S. KWALICK, M.D., M.P.H.  
STATE HEALTH OFFICER

FOR THE NEVADA STATE HEALTH DIVISION

By Lay Bassett

Date October 15, 1992

for Stanley R. Marshall, Supervisor  
Radiological Health Section

ram\lesat3#2.amd

## NEVADA STATE HEALTH DIVISION-

## RADIOACTIVE MATERIAL LICENSE

## SUPPLEMENTARY SHEET

03-11-03  
License Number.....  
Amendment No. 4

Lockheed Environmental Systems and Technologies  
975 Kelly Johnson Drive  
Las Vegas, Nevada 89119

In accordance with letter dated November 2, 1993, signed by Jimmy A. Morales,  
Nevada Radioactive Materials License No. 03-11-0269-03 is amended as follows:

## TO ADD

Items 6.K., 7.K., 8.K. and 9.K.

- 6.K. Cobalt 57
- 7.K. Sealed source Isotope Products Laboratories Model GFS Series, Series 3200 Capsule, Drawing Number A3202
- 8.K. Not to exceed 10 millicuries per device
- 9.K. For use in HNU Model SEFA-Pb portable high resolution spectrum analyzers.

## Condition 17.A.(4)

- 17.(A)(4) Sealed sources described in Item 7.K. shall be tested shall be tested for leakage and/or contamination at intervals not to exceed six months. In the absence of a certificate from a transferor indicating that a test has been made within six (6) months prior to the transfer, a sealed source received from another person shall not be put into use until tested.

## TO CHANGE

## Condition 14 to read:

- 14.A. Detector cells containing radioactive material shall not be opened or the sources removed from the detector cell by the licensee.
- B. Sealed sources described in Item 7.K. and 8.K. shall not be opened or removed from the device by the licensee.

DONALD S. KWALICK, M.D., M.P.H.  
STATE HEALTH OFFICER

FOR THE NEVADA STATE HEALTH DIVISION

By

Stanley R. Marshall, Supervisor  
Radiological Health Section

Date January 10, 1994

ram\lesat3#4.amd

## NEVADA STATE HEALTH DIVISION

RADIOACTIVE MATERIAL LICENSE  
SUPPLEMENTARY SHEETLicense Number 03-11-03  
Amendment No. 3

Lockheed Environmental Systems and Technologies  
975 Kelly Johnson Drive  
Las Vegas, Nevada 89119

In accordance with letter dated February 17, 1993, signed by Jimmy A. Morales, Nevada Radioactive Materials License No. 03-11-0269-03 is amended as follows:

## TO CHANGE

---

Items 8.E. and 8.H. to read:

8.E. 150 grams.

8.H. 150 grams.

DONALD S. KWALICK, M.D., M.P.H.  
STATE HEALTH OFFICER

FOR THE NEVADA STATE HEALTH DIVISION

By 

Stanley R. Marshall, Supervisor  
Radiological Health Section

Date April 15, 1993

ram\lesat3#3.amd