



**NUCLEAR ENERGY SERVICES**

A UNIT OF **QUALCORP**

March 13, 1985  
Ref. No. JRM-442

MS 12  
P6

Mr. Lawrence F. Friedman, Ph.D., C.H.P.  
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Nuclear Materials Section B  
Division of Engineering and Technical Programs  
U.S. Nuclear Regulatory Commission - Region I  
631 Park Avenue  
King of Prussia, PA 19406

SUBJECT: NES Responses to the NRC Transmittal,  
dated January 8, 1985

REFERENCE: (1) Docket No. 030-22060  
Control No. 03234  
(2) Telecon F. Trejo to L. Friedman  
March 8, 1985

Dear Dr. Friedman:

NES is submitting herewith in duplicate the responses to your comments concerning our application for a by-product materials license. We have elected to follow your comments format structure for our responses.


Attachment I of this submittal contains our response to your general comments. Attachment II includes our responses to your comments numbered 1 through 26 and Attachment III contains the complete revised documents per your discussions with Mr. F. Trejo.

We trust that the enclosed additional information will allow you to complete the review of our application.

Mr. Francisco Trejo will be in contact with you shortly to inquire about the status of the review and to find out whether or not you require additional information.

Sincerely yours

NUCLEAR ENERGY SERVICES

  
John R. May  
General Manager  
Waste Management Services

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06-20775-01 PDR

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enclosure

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ATTACHMENT I

NES BY-PRODUCT MATERIAL LICENSE APPLICATION  
CLARIFICATION ON USE, CONDITIONS AND POSSESSION AMOUNTS

1. INTENDED USE OF LICENSE(S)

NES is applying for a by-product materials license(s) that would authorize NES for receipt, use and/or possession incident to:

- (1) the transport of radioactive materials in packages or containers approved for use under the provisions of 10CFR71 for transfer to persons authorized to receive the licensed material pursuant to the terms and conditions of specific licenses issued by the NRC or any Agreement State,
- (2) the receipt and possession of packaged wastes picked up at customer facilities for transportation and transfer to authorized disposal sites,
- (3) the maintenance, repair and/or decontamination of tools, equipment and containers,
- (4) the decontamination of facilities,
- (5) the analysis of air, water, soil and vegetation samples and other liquids and materials,
- (6) the analysis of wipe or smear samples,
- (7) the use and possession of instrument check sources, and
- (8) the packaging of radioactive materials for transport.

Docket No. 030-22060  
Control No. 03234  
Attachment I - Cont'd

## 2. CONDITIONS

NES shall use the by-product materials license(s) under the following conditions:

- (1) licensed material shall be used only at NES temporary jobsites anywhere in the United States where the NRC maintains jurisdiction for regulating the use of licensed material.
- (2) packaged wastes containing by-product and/or source materials may be possessed anywhere in the United States where the NRC maintains jurisdiction as in 2.(1) above. Packaged wastes containing uranium-235 may be possessed anywhere in the United States.
- (3) to transport licensed material or deliver licensed material to a carrier for transport in accordance with the provisions of 10CFR71.
- (4) NES shall comply with all the documents, statements and procedures submitted as part of the application.

## 3. POSSESSION AMOUNTS OF LICENSED MATERIAL

NES' current and planned activities justify the requested possession limits for licensed material.

### 3.1 NES Activities

#### 3.1.1 Waste Disposal Services

NES intends to provide waste disposal services to 10 CFR 50 licensed facilities, and non-Part 50 facilities.

The NES waste disposal services to Part 50 facilities include:

- provision of Type A transport casks licensed by the NRC
- pick-up of large components at Part 50 facilities (i.e., fuel racks) and decontamination/volume reduction/disposal of such components. Decon

Docket No. 030-22060  
Control No. 03234  
Attachment I - Cont'd

### 3.1.1 (Continued)

volume reduction activities performed at temporary job sites. Disposal of unreleasable materials will be at licensed disposal sites.

NOTE: Customers (part 50 facilities) require a current by-product material license as part of the contract prerequisites. In some cases, the customer will require NES to take possession of the material at the plant site.

- provision of Type B transport casks licensed by the NRC. Currently, NES has a Type B cask capable of carrying up to 2000 A<sub>2</sub> quantity of irradiated non-fuel bearing material.
- provision of Type B transport casks for the transfer of irradiated in-core detectors containing exempt quantities of fissile material. This particular service entails the removal of the detectors (fission chambers) at a non-part 50 facility, repackaging and disposal at a licensed facility.

### 3.1.2 Decontamination and Decommissioning (D/D) of Non-Part 50 Facilities

NES will provide the following D/D services to non-part 50 facilities.

- performance of radiological characterization of the facility
- preparation of decontamination and decommissioning plan
- implementation of decontamination and decommissioning plans
- final site radiological surveys
- assistance for the license termination process, when required

Docket No. 030-22060  
Control No. 03234  
Attachment I - Cont'd

### 3.2 Amount(s) of Licensed Material Associated with NES Activities

NES expects to receive, possess and transport packages containing in excess of 40,000 curies, but less than 50,000 curies, of by-product material with Atomic Nos. 3-83 inclusive, except Carbon-14. For example, a shipment of stellite balls (a highly activated section of a control rod blade) may represent an inventory of close to 40,000 Ci (based on the utilization of two (2) NES-5 Type B casks). This example is applicable to NES plans, since it is our intent to repackage these components (stellite balls) at Non-Part 50 facilities for transfer to licensed users.

In addition, NES has had experience with Non-Part 50 facilities whose license has expired, where the licensed material inventory existing at the time of clean-up is close to the limits of the amounts of licensed material requested by NES in its application.

The NRC has previously licensed other companies providing the same service that NES offers, for similar amounts of licensed material. Specifically, we are referring to the following by-product material licenses:

- (1) License No. 06-21140-01 - Anefco, Inc.
- (2) License No. 12-21214-01 - Chem-Nuclear Systems, Inc.

ATTACHMENT II

NES RESPONSES TO NRC TRANSMITTAL

DATED JANUARY 8, 1985

Q1. In Document 82A8001, on page 12 you state that your Radiation Safety Committee will meet once a year. We feel that, in order to fulfill its function, a Radiation Safety Committee must meet at least quarterly. Please confirm that your committee will meet at least that frequently.

A1. The NES Radiological Safety Committee will hold as a minimum quarterly meetings. Page 12 in Document 82A8001 has been revised to that effect.

Q2. On page 10 of Document 82A8002, you state that the "minimum frequency for instrument calibration is twelve (6) months." Please clarify.

A2. Page 10 of Document 82A8002 has been revised and states the minimum frequency for instrument calibration to be twelve (12) months.

Q3. With regard to your training program, essential subjects such as basic physics of radiation, biological effects of radiation, and mathematics of radiation, do not appear to be covered. Some of this material does appear in Document 82A8006, but it is not clear how that document is used in your program. It is not referenced in the section on training. Please explain.

A3. Page 7 of Document 82A8003 has been revised to indicate the use and basis of the Radiation Worker Training Program. Proper reference to Document 82A8006, "Radiation Worker Handbook and Training Manual," has been made. In addition, a discussion on mathematics of radiation has been included in Document 82A8006, Sections 6.2, 6.3, 6.4 and on pages 6 and 39.

Docket No. 030-22060  
Control No. 03234  
Attachment II - cont'd

Q4. With regard to your bioassay program (Document 82A8003, paragraph 2.3, pp. 21 and 22) please clarify the criteria the Radiation Safety Officer (RSO) will use to decide who will be monitored, and the method and frequency of assays. In Section C of this paragraph, the action levels are too high. Please supply more conservative levels, or justify the levels stated. With regard to Section D, the current version of 10 CFR Part 20, and Appendix B to Part 20, are based on the calculational models in ICRP 2 and 10A. The limits in Appendix B are based on a 50-year dose commitment, with the entire dose commitment assigned to the year in which the exposure was received. Please submit procedures that conform. Since 10 CFR 20.401(b) requires that records of surveys to comply with sections of Part 20 be kept in the same units used in Part 20, and since the limits in Section 20.103 are expressed in exposure to the maximum permissible concentration (MPC) for a certain number of hours, results of bioassays, which are surveys to show compliance with Section 20.103, must be expressed in MPC-hours. Please submit amended procedures.

A4. NES has revised pages 21, 22, 23 and 27 of Document 82A8003 in accordance with the above comments.

Q5. With regard to your procedures for controlling high radiation areas (Section 3.1 A 4, p. 29, Document 82A8003), these procedures appear to violate 10 CFR 20.203(c)(3) in that it is never permissible to control a high radiation area in such a way that an individual is prevented from leaving. The word "boundaries" is ambiguous in this context. High radiation areas must have positive controls over entry. Please submit amended procedures.

A5. Section 3.1 A 4, p. 29 has been revised to incorporate your comments.

Q6. With regard to Section 3.3 A 2, you have made general statements about how contamination can be controlled. This is unacceptable. We need a positive statement detailing how you will control contamination. A statement that one of several alternatives will be used is acceptable, but words like "normally" are not. Please submit procedures for contamination control.

A6. Section 3.3A1, A2, and A3 (Document 82A8003) have been revised to incorporate proper procedures for contamination control.

Q7. It is not clear from your respiratory protection program in Document 82A8003 that medical examinations are required for all individuals before they are permitted to use respiratory protection, although this is stated elsewhere. Please clarify.

A7. Section 4.1 E (Document 82A8003) has been revised to clearly state the requirement of a medical examination for all individuals before they are qualified to use respiratory protective equipment.

Q8. Please submit the criteria that you will use to determine when anti-contamination clothing must be used. A chart similar to Table 4-1, Document 82A8003, would be suitable. You should also submit similar criteria relating contamination levels to requirements for respiratory protection and anti-contamination clothing.

A8. Page 32 of 76 (Document 82A8003) has been revised to state the minimum protective clothing requirements.

Q9. With regard to Document 82A8006: It is not clear how this document will be used. It is not referenced in the training section of your Radiation Safety Manual. Please explain.

A9. Refer to answer A3 above.

Q10. On pp. 14-15, your paraphrase of 10 CFR 20.101 is inaccurate and misleading. In particular, 1.25 rem in a calendar quarter is not the same as 1.25 rem/3 months. The three rem per quarter limit does not apply to extremities and skin, as implied.

A10. Pages 14-15 (Document 82A8006) have been revised to incorporate the correct radiation dose standards for individuals in restricted areas.

Q11. On p. 17, medical radiation is not considered beneficial. The benefits to the irradiated individual are judged to exceed the risks involved. Also, non-medical exposure is not "dangerous," but does entail some risk which increases with dose.

A11. Page 17 of Document 82A8006 has been revised to incorporate your comments.

Q12. On p. 17, gonads are not blood-forming organs, as you imply. Also, you fail to discuss the stochastic nature of radiation risk.

A12. Page 17 of Document 82A8006 has been revised to replace "gonads" for "trunk of the body." Also, a discussion on the stochastic nature of radiation has been added on p. 18 of the subject document.

Q13. On p. 26, the film in a film badge is exposed by the radiation. The film is developed by the normal chemical process.

A13. Page 26 of Document 82A8006 has been revised to clearly state the operational basis of a film badge.

Q14. On p. 27, there is a gross typo at the end of paragraph 6.4. Also, you fail to explain the theory behind the time-distance-shielding strategy.

A14. Refer to revised pages 26 through 32 (Document 82A8006).

Q15. With respect to Document 82A8008, the calculation of the MDL on p. 13 does not include the efficiency of the counter.

A15. Page 13 (Document 82A8008) has been revised in accordance with your comment.

Q16. On pp. 6-8 (Document 82A8009), please submit a document that makes it clear that material cannot be considered "special form" unless it has been shown that the material will pass the tests in 49 CFR 173.469, and documentation of the tests is kept on file for one year from the last shipment.

A16. Pages 6-8 of Document 82A8009 have been revised to incorporate your comments.

Q17. On p. 9, (Document 82A8009) paragraph E, you state that it is not appropriate to consider packaging. Is this correct?

A17. Page 9 (Document 82A8009), paragraph E, has been revised to read . . . "it is now appropriate to . . ."

Docket No. 030-22060  
Control No. 03234  
Attachment II - cont'd

Q18. On pp. 15, 17, 21 and 22 (Document 82A8009), you refer to section numbers. Do these refer to the Code of Federal Regulations, and if so, what title? If these references concern transportation, the correct form of the reference is 49 CFR 173.403(1). Please submit a corrected document.

A18. Pages 5-10, 15-38, 40-47 (Document 82A8009) have been revised to clearly address 49 CFR and its applicable sections.

Q19. On p. 16, (Document 82A8009), you neglect to mention that limited quantities, instruments, and articles are required to be labeled "Radioactive" on the outside of the inner packaging, or, if there is no inner packaging, on the outside of the package. Please submit a corrected document.

A19. Page 16 (Document 82A8009) has been revised to incorporate your comments.

Q20. On pp. 22-23 of Document 82A8009, you fail to explain how you plan to comply with DOT Specification 7A. You state the general requirements, but fail to state how you will meet them. Please submit your procedures for assuring that the packagings you will use for shipment of Type A quantities of radioactive materials will meet DOT and NRC requirements.

A20. Page 22 (Document 82A8009) has been revised to incorporate the criteria under which NES shall comply with DOT and NRC requirements for Type A packages. The NRC has reviewed and approved the NES' Quality Assurance Program for Radioactive Materials Packages (Transport casks/containers) with respect to the requirements of 10 CFR 71, Subpart H. The approval number for our QA Program is 0512.

In addition, NES has recently licensed a Type B package (NRC Certificate of Compliance NO. 9193). Thus, NES has previously satisfied and complied with NRC requirements involved with radioactive packages.

Q21. With respect to Document 82A8010, on p. 7, paragraph D 2, you instruct personnel to secure equipment which will prevent a safety hazard. Is this correct?

A21. Page 7 (Document 82A8010) has been revised to correct the typo. The word "prevent" has been changed to "present."

Docket No. 030-22060  
Control No. 03234  
Attachment II - cont'd

Q22. With regard to Document 82A8013, p. 3, Section 4.1, 10 CFR 20 does not deal with exempt quantities. Please clarify what you mean by "exempt" and how this concept will be used. You appear to use this in the sense of a "limited quantity" as defined in 49 CFR 173.421. Material in a sample for analysis may also be exempt from the requirements for a license under 10 CFR 30.18. No material may be transferred as waste (Section 4.1) except as provided in 10 CFR 20.301. Samples in quantities greater than those permitted by 10 CFR 30.18 can only be transferred in accordance with 10 CFR 30.41.

A22. Section 4, pages 3-4 of Document 8wA8013 have been revised to incorporate your request for clarification.

Q23. With regard to Document 82A8014, is this document intended to be a statement of commitment by you, or just a statement of good practice? The wording of the document suggests the latter, and does not appear to be a respiratory protection program. Please clarify.

A23. Document 82A8014 has been revised to clearly state the NES commitment to a respiratory protection program for all of its employees and contracted personnel when working in airborne contaminated areas.

Q24. With respect to Document 82A8015, the purpose of this document is not clear. Does it refer to the decontamination of equipment, of a facility before release, or both? What are your release criteria?

A24. Page 3 of Document 82A8015 has been revised to incorporate a section stating the purpose of this document. Refer to Section 5 of this document for NES' release criteria.

Q25. With regard to Document 82A8016, it is not clear why an environmental sampling program is required. Please explain.

A25. NES is hereby withdrawing Document 82A8016 from the list of supporting documents submitted as part of the By-products Materials license application.

Q26. 10 CFR 20.205(d) requires licensees to establish and maintain procedures for safely opening packages in which licensed material is received. Please submit your procedures.

Docket No. 030-22060  
Control No. 03234  
Attachment II - cont'd

- A26. Please find attached Document 82A8018, "Receipt and Handling of Radioactive Materials (RAM) Packages."  
This document is intended to fulfill the requirements of 10 CFR 20.205.

Docket No. 030-22060  
Control No. 03234

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ATTACHMENT III  
REVISED DOCUMENT PAGES  
FOR  
NES RADIOLOGICAL SAFETY PROGRAM

<u>DOCUMENT</u>	<u>REMOVE EXISTING PAGES</u>	<u>INSERT NEW PAGES</u>
82A8001	1, 2 12	1, 2 12
82A8002	1, 2 10 12	1, 2 10 12
82A8003	1, 2 3-74	1, 2 3-76
82A8006	1, 2 3-34	1, 2 3-37
82A8008	1, 2 13	1, 2 13
82A8009	1, 2 5-10 15-38 40-47	1, 2 5-10 15-38 40-47
82A8010	1, 2 3 7	1, 2 3 7
82A8013	1, 2 3, 4	1, 2 3, 4
82A8014	1, 2 3-6 10 12 14	1, 2 3-6 10 12 14

Docket No. 030-22060  
Control No. 03234

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ATTACHMENT III (Continued)

<u>DOCUMENT</u>	<u>REMOVE EXISTING PAGES</u>	<u>INSERT NEW PAGES</u>
82A8015	1, 2 3-5 None	1, 2 3-5 8A
82A8018	None	1-12
None	Table of Contents	Table of Contents