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March 7, 2005

MEMORANDUM TO: Joseph G. Giitter, Chief
Special Projects Branch
Division of Fuel Cycle Safety
and Safeguards

THRU: Brian W. Smith, Chief /RA/
Gas Centrifuge Facility Licensing Section
Special Projects Branch, FCSS

FROM: Yawar H. Faraz, Project Manager /RA/
Gas Centrifuge Facility Licensing Section
Special Projects Branch, FCSS

SUBJECT: TELEPHONE SUMMARIES: USEC INC. REQUESTS FOR
ADDITIONAL INFORMATION ON PROPOSED AMERICAN
CENTRIFUGE PLANT

From December 8, 2004, through January 26, 2005, staff from the U.S. Nuclear Regulatory Commission (NRC) held a series of telephone conference calls with staff from USEC Inc. (USEC) to discuss potential safety and safeguards Requests for Additional Information (RAIs) pertaining to USEC's application for the American Centrifuge Plant (ACP) proposed to be built in Piketon, Ohio. These telephone conference calls were intended to allow USEC to begin response preparation at an early stage. I am attaching the telephone summaries for your use. Attachment 1 contains telephone summaries on RAIs pertaining to the non-sensitive portions of the application while Attachments 2 and 3 contain telephone summaries on RAIs pertaining to the sensitive portions of the application.

Docket: 70-7004

Attachment 1: USEC Inc. - Telephone Summaries (Public)
Attachment 2: USEC Inc. - Telephone Summaries (Proprietary Information)
Attachment 3: USEC Inc. - Telephone Summaries (Official Use Only)

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| Dan Minter/SODI | Carol O'Claire/Ohio EMA |
| James Curtiss/W&S | Randall DeVault/DOE |
| Rod Krich/LES | Peter Miner/USEC Inc. |
| Rocky Brown/Mayor of Beaver | Garry Hager/SPFPA/USEC |
| Billy Spencer/Mayor of Piketon | Jim Brushart/Pike Co. Comm. Chair. |
| Harry Rioer/Pike Co. Commissioner | Teddy West/Scioto Twp. Trustee |
| Larry Scaggs/Seal Twp. Trustee | Ted Wheeler/Pike County Auditor |
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| SEchols/FCSS | MKelly/NSIR | MLamastra/FCSS | VGoel/NRR |
| RShaffer/RES | AFrazier/NSIR | HGraves/RES | BThomas, SFPO |
| DMcIntyre/OPA | JBongarra/NRR | WBrach, SFPO | |

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**ML050210270 (Package) ML050210273 (Memo) ML050210301 (Attachment 2)
 ML050210323 (Attachment 3)**

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|-------------|---------------|--|---------|--|-----------|--|--------|--|
| OFC | GCFLS | | GCFLS | | GCFLS | | GCFLS | |
| NAME | SSteele: bkh1 | | YFaraz | | LMarshall | | BSmith | |
| DATE | 1/25/05 | | 2/24/05 | | 3/7/05 | | 3/7/05 | |

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TELEPHONE SUMMARIES (PUBLIC) Chemical Safety

Date and Time: December 14, 2004; 9:00 AM

Call Participants: NRC:
 W. Troskoski/NMSS
 N. Garcia-Santos/NMSS
 R. Wescott/NMSS

USEC Inc.:
 J. Boyce
 K. Coriell
 R. Coriell
 G. Corzine
 K. Easter
 R. Halverson
 R. Holliday
 P. Miner
 G. Pyzik
 D. Ruggles

On December 14, 2004, a conference call between U.S. Nuclear Regulatory Commission (NRC) and USEC Inc. (USEC) was held to discuss chemical safety issues related to USEC's license application for a uranium enrichment facility, the American Centrifuge Plant (ACP). NRC requested further information describing the following in the chemical safety area:

1. Human Factors

The NRC indicates that Section 6.2.2.9, page 6-7, of the license application states that "human factors design responsibility for plant and system design in the ACP is assigned to engineering, with specific technical assistance from Industrial Safety personnel. Human factors reviews address the interface of people with processes and its impact on system operation." The NRC sought clarification on the scope and extent of human factors reviews applied to IROFS and Initial Conditions. Also, NRC asked USEC to describe how human factors reviews are considered within the design control/change process within the ACP and to describe the impact and the relevance of human factors on the performance of the chemical safety program.

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USEC acknowledged the comment.

2. Detection and Monitoring

The NRC asked USEC to correct the reference in Section 6.2.2.10 of the license application from "Section 2.2.3.5.1" to "Section 2.2.3.5." There is currently no Section 2.2.3.5.1 in the ISA Summary.

USEC indicated that it would verify this information and make any needed corrections.

3. Preventive Maintenance and Quality Considerations

The NRC indicated that the license application in Section 6.2.2.3.3, page 6-5, states "ACP personnel perform inspection and testing based on the graded approach to quality." The NRC asked USEC to clarify this statement and to provide a description of the graded approach to quality for performing tests and inspections.

USEC acknowledged the comment.

4. Identification and Inventory Control

The NRC made reference to Section 6.2.2.11.1, page 6-8, of the license application which states that ACP personnel are responsible for reviewing a contractor's Safety and Health Plan in order to identify hazardous and toxic materials that may be brought on site by the contractor. The NRC added that the application also mentions that the Material Safety Data Sheets (MSDSs) for such chemicals and the list of the chemicals "is forwarded to Industrial Hygiene and appropriate supervision."

The NRC asked USEC to clarify if ACP personnel keep records of the MSDSs and any other information about hazardous and toxic materials that may be brought on site by a contractor for use in places where special nuclear material is present. The NRC also asked about the on-site locations where these MSDSs would be stored and for a commitment to maintain these records for internal and external use.

USEC acknowledged the comment.

5. Retention and Disposition of Records

In accordance with the guidance provided in Section 6.3(8) of NUREG-1520, the NRC asked USEC to provide and clarify commitments to report chemical releases and to retain records specifically related to chemical process safety compliance.

USEC acknowledged the comment.

6. Personnel Qualification and Training

The NRC indicated that Section 11.2.2, page 11-13, of the application states "a member of the ACP organization provides oversight of contractor activities." The NRC asked what department within the ACP organization will be responsible for this task.

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Also, the NRC asked USEC to clarify how it would provide oversight of contractors' qualification and training programs to ensure that these programs are aligned with USEC's training requirements.

USEC acknowledged the comment.

ISA Summary issues were discussed separately.

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Financial Qualifications and Decommissioning Funding Plan

Date and Time: December 16, 2004; 1:00 PM

Call Participants: NRC:

R. Uleck/NRR
C. Pittiglio/NRR
Y. Faraz/NMSS

USEC Inc.:

P. Miner
J. McIntosh
T. Wertz
D. Scott
M. Smith
R. Holliday
P. Cox
R. Halverson

On December 16, 2004, a conference call between U.S. Nuclear Regulatory Commission (NRC) and USEC Inc. (USEC) was held to discuss financial qualification and decommissioning funding plan issues related to USEC's license application for a uranium enrichment facility, the American Centrifuge Plant (ACP). During the conference call, NRC requested the following information concerning USEC's financial qualifications and its decommissioning funding plan (DFP):

1. Concerning the deployment costs for the ACP provided in Table C-1 of Appendix C to Chapter 1 of the license application, the NRC asked USEC to submit a detailed estimate of the cost to construct and operate the ACP.

USEC acknowledged the comment.

2. Concerning the DFP, the NRC asked USEC to provide complete supporting bases for each of the tables in the DFP and its Appendix D. USEC asked for examples to get a better understanding of the level of detail needed. The NRC referred USEC to Section A.3 in Appendix A to Volume 3 of NUREG-1757, "Consolidated NMSS Decommissioning Guidance," and the Louisiana Energy Services (LES) license application.

USEC acknowledged the comment.

3. Concerning the DFP, the NRC asked USEC to provide the supporting basis for the cost estimate to dispose depleted uranium.

USEC acknowledged the comment.

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Decommissioning Funding

Date and Time: December 20, 2004; 9:00 AM

Call Participants: NRC:
 T. Fredrichs/NMSS
 Y. Faraz/NMSS

 USEC Inc.:
 K. Coriell
 P. Cox
 R. Holliday
 P. Miner
 D. Scott
 J. McIntosh
 M. Smith

On December 20, 2004, a conference call between U.S. Nuclear Regulatory Commission (NRC) and USEC Inc. (USEC) was held to discuss decommissioning funding issues related to USEC's license application for a uranium enrichment facility, the American Centrifuge Plant (ACP). During the conference call, the NRC requested the following information concerning the decommissioning funding plan:

1. USEC is requesting an exemption from 10 CFR 70.25(e) in Chapter 1 of the license application, which would permit USEC to cover the cost of depleted uranium disposal incrementally as the tails are generated. The NRC asked USEC to reword the exemption request such that the financial assurance increments are provided in advance rather than in arrears of the generation of depleted uranium. The NRC informed USEC that annual increments would be acceptable. The NRC also asked USEC to propose a license condition to further assure incremental additions to the financial assurance total are timely provided.

USEC acknowledged the comment.

2. The NRC asked USEC to include the cost of depleted uranium disposal in the total decommissioning cost estimate (DCE) presented in Table C3.18 of the Decommissioning Funding Plan (DFP) in accordance with 10 CFR 70.25(e).

USEC agreed to add the cost estimate in Table C3.18 of the DFP.

3. The NRC indicated that per 10 CFR 70.25(e), USEC should provide certification that financial assurance in the amount of the cost estimate has been provided.

USEC committed to provide such a certification. The NRC referred USEC to Section A.2.4 of Vol. 3 of NUREG-1757.

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4. The NRC asked USEC to incorporate a 25 percent contingency factor into the disposal cost estimate for depleted uranium in accordance with guidance provided in Section 3.1.2.3, Appendix A, NUREG 1757, and Appendix A of NUREG/CR-6477.

USEC acknowledged the comment.

5. The NRC informed USEC that additional detail is needed to support the decommissioning cost estimate in accordance with the guidance contained in Appendix A of NUREG 1757. As examples, the NRC staff indicated that information is needed to allow the NRC to verify if appropriate unit costs and labor rates were used, or if disposal of wastes generated during decontamination was included in the cost estimate. The NRC added that in Tables C3.6 through C3.10, labor hours were provided for the five major tasks: (1) planning and preparation, (2) decontamination and/or dismantling of radioactive facility, (3) restoration of contaminated areas of facility grounds, (4) final radiation survey, and (5) site stabilization and long term surveillance. However, no breakdown of the major tasks to be accomplished under these headings were included.

USEC agreed to provide additional information to address this comment.

6. The NRC informed USEC that the decommissioning cost estimate is intended to account for the cost of an independent third party contractor to perform the work activities. Therefore, costs should include appropriate overhead and profit rates for contractors. The worker costs shown in Table D3.12 do not identify whether or not overhead and profit were included in the costs. The NRC informed USEC that its cost estimate should be revised to include an appropriate overhead rate on labor costs (Appendix A, NUREG-1757, and Appendix A, NUREG/CR-6477).

USEC acknowledged the comment.

7. The NRC informed USEC that the DCE does not appear to include waste disposal costs for any wastes generated by the decontamination process for the facility components or any wastes generated from restoration of facility grounds. Therefore, USEC needs to revise the cost estimate to include costs for disposal of wastes generated in decontaminating its individual facility components and restoring facility grounds.

USEC acknowledged the comment.

8. The NRC informed USEC that its DCE did not identify the costs of labor and transportation for packaging, shipping, and disposal of wastes. Because labor and transport costs were not specifically identified, the NRC cannot verify the adequacy of labor and transportation costs. Therefore, USEC should revise or justify the disposal unit costs so that these costs can be verified.

USEC acknowledged this comment.

9. Table C3.19 indicated a tails disposal cost of \$3/kg U, but did not clarify where the tails

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will be processed or how the unit cost was derived. The NRC informed USEC that this cost appeared to be at the low end of the likely range of costs. No other costs were included for tails disposal, such as transportation or loading. Because the ultimate disposition of the tails is not known at this point, it is not clear whether the tails would need to be transported (e.g., the tails might be processed by DOE at its co-located facility). Therefore, USEC must justify this unit cost and clarify whether it includes anything beyond the actual waste disposal costs.

USEC acknowledged this comment.

10. The NRC informed USEC that its DCE does not provide justification for the laboratory costs included in Table C3.16. Specifically, no information is included to indicate the number of samples and locations or the derivation of the \$105/sample unit cost. Therefore, USEC must provide a justification of the laboratory costs. The miscellaneous costs listed in Table C3.17 did not include license fees, insurance, or taxes. Therefore, USEC needs to revise the DCE to include these costs.

USEC acknowledged these comments.

11. The NRC informed USEC that the draft financial assurance documents should include an unexecuted draft of the broker/agent's power of attorney, as recommended by NUREG-1757, Volume 3, pages 4-24 and A-90.

USEC acknowledged the comment.

12. The NRC informed USEC that its DCE does not specify whether the cost of maintaining the security of classified matter and licensed material was considered for the duration of the decommissioning period. The NRC informed USEC that it should either attest that the cost of security is included in the DCE or revise the DCE to include those costs.

USEC acknowledged this comment.

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Environmental Protection

Date and Time: December 22, 2004; 1:00 PM

Call Participants: NRC:
 Y. Faraz/NMSS
 S. Echols/NMSS

 USEC Inc.:
 G. Goslow
 R. Holliday

On December 22, 2004, a conference call between U.S. Nuclear Regulatory Commission (NRC) and USEC Inc. (USEC) staffs was held to discuss environmental protection issues related to USEC's license application for a uranium enrichment facility, the American Centrifuge Plant (ACP). During the conference call, NRC discussed with USEC the following potential issues pertaining to environmental protection.

1. Regarding the X-7727H corridor, Section 9.2.1.2.1 of the license application provides a worst case bound for airborne uranium concentration in the corridor. The NRC requested that USEC provide an estimate of a more realistic expected concentration.

USEC agreed to provide clarifying language indicating that under nominal conditions, there would be no detectable uranium concentration in the corridor.

2. The NRC requested USEC to be more specific in Section 9.2.1.2.2 of the license application as to "at some point in the future," or under what circumstances, the tower water cooling (TWC) blowdown will likely be modified to bypass the recirculating cooling water (RCW) system.

USEC agreed to provide clarifying language that the term "at some point in the future" refers to the eventual decommissioning of the GDP.

3. Regarding the "ample" capacity of the GDP RCW to accept TWC effluent and modification of the TWC blowdown, the NRC requested that USEC provide an estimate of (quantify) what is meant by "ample" (e.g., current capacity and usage, percentage to be used by TWC effluent).

USEC agreed to provide clarifying language that the term "ample" capacity refers to the time prior to the eventual decommissioning of the GDP.

4. The NRC requested that USEC describe in Section 9.2.1.2.2 of the license application the basic elements of the integrity assurance plan that assures the tanks are not leaking as the ACP takes possession of them. The NRC also requested that USEC provide a statement as to when the plan will be available.

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USEC agreed to provide clarifying language indicating that the integrity assurance plan is modeled after the Environmental Protection Agency (EPA) program for petroleum plants.

5. Regarding Section 9.2.1.2.2 of the license application, the NRC requested that USEC provide a reference or citation for and briefly summarize the inspection and maintenance program for the UF₆ cylinders to assure that no licensed material is released to the storage pads.

USEC agreed to cross reference the more detailed discussion of the inspection and maintenance program found in Section 4 of its license application.

6. According to Section 9.2.1.2.2 of the license application, stormwater runoff drains into holding ponds. Stormwater runoff is continuously monitored and data from this monitoring is "available" to ACP environmental personnel as assurance that no unanticipated discharge occurred. As written, the mere availability of the data for review, without more, does not appear to contribute to the control of liquid effluents. NRC requested that USEC specify whether the review of this data is part of a written procedure to assure that the data is in fact reviewed.

USEC agreed to clarify that the GDP data would be monitored according to procedures to be developed for facility operation.

7. In the discussion of waste minimization in Section 9.2.1.4 of the license application there is reference to generated waste being treated to the extent practical before storage or disposal. NRC requested that USEC provide a reference or citation to, and briefly describe, such treatment.

USEC agreed to provide clarifying language referencing the X-705 facility for sewage treatment and that there may be waste minimization from a chemical standpoint.

8. NRC requested that USEC define with greater specificity, in Section 9.2.2 of the license application, what is meant by the statement that the ACP will "routinely" analyze the four radionuclides anticipated to be present in liquid effluents.

USEC agreed to clarify the discussion of routinely analyzing radionuclides by cross referencing with the more detailed discussion found in Section 9.3 of its license application.

9. In order to better estimate the degree of conservatism or margin regarding the projected total effective dose equipment (TEDE) to the as low as reasonably achievable (ALARA) goal, NRC requested that USEC provide a realistic estimate of the expected average emission rate in Section 9.2.2.1.1 of the license application.

Concerning this request, USEC informed NRC that the data to support a more realistic expected emission rate will not be available until plant operation.

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10. In Section 9.2.2.1.2 of the license application, USEC states that it may supplement reservation meteorological data with data from the National Weather Service. In addition, it may also use such data in lieu of reservation meteorological data. NRC requested that USEC provide circumstances under which data from the National Weather Service be used in lieu of reservation meteorological data.

USEC agreed to clarify that National Weather Service data would be used in lieu of on-site data when that data was unavailable.

11. Concerning Section 9.2.2.1.4 of the license application, the NRC requested USEC to provide a reference or citation to, and briefly summarize, the written procedure that would apply to ensure that operational control system deficiencies are documented and acted upon in a “responsible” manner.

USEC referred the NRC to Chapter 11 “Management Measures” of the application. The NRC agreed that the information contained in this chapter was sufficient.

12. Concerning Section 9.2.2.2.2 of the license application, the NRC requested USEC to provide the frequency of the routine monitoring of the 550 gallon collection tanks’ contents (observing and tracking the levels indicated on the gauges). In addition, NRC requested USEC to provide the frequency for sampling and analyzing the contents of the liquid effluent system (LEC) system. Provide references or citations to applicable procedures.

USEC referred the NRC to Chapter 11 “Management Measures” of the application. The NRC agreed that the information contained in this chapter was sufficient.

13. Concerning Section 9.2.2.3.1 of the license application, the NRC requested USEC to explain what is meant by collecting and packaging ACP-generated waste “where feasible,” and segregating wastes at the source “when possible.” The NRC requested that USEC discuss whether there are any criteria or guidance for these terms.

USEC agreed to clarify what is meant by collecting ACP-generated waste “where feasible.”

14. Concerning Section 9.2.2.3.2 of the license application, the NRC requested USEC to provide a reference or citation to the procedural requirements that will be followed for labeling containers known to have radioactive waste.

USEC agreed to clarify that the procedure for labeling containers will be developed as part of operational requirements.

15. Concerning Section 9.2.2.3.2 of the license application, the NRC requested USEC to identify the conditions under which overpacks may be used for appropriate wastes and damaged containers.

USEC agreed to clarify what is meant by “appropriate wastes.”

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16. In Section 9.2.2.4.1 of the license application, the NRC requested USEC to define or provide examples of “other credible effluent information” that would be used to assess atmospheric impacts of ACP operations.

USEC agreed to provide general examples of “other credible effluent information.”

17. Concerning Section 9.2.2.4.2 of the license application, the NRC requested USEC to provide a summary table indicating no statistically significant difference in soil and vegetation concentrations in unrestricted areas, or, alternatively, provide a citation to GDP studies.

USEC referred the NRC to a table containing this information in the license application.

18. Concerning Section 9.2.2.4.3 of the license application, the NRC requested USEC to provide a summary table indicating no statistically significant difference in surface water concentrations in unrestricted areas, or, alternatively, provide a citation to GDP studies.

USEC referred the NRC to a table containing this information in the license application.

19. Concerning Section 9.2.2.4.4 of the license application, the NRC requested USEC to provide a summary table indicating no statistically significant difference in sediment concentrations in unrestricted areas, or alternatively, provide a citation to GDP studies.

USEC referred the NRC to a table containing this information in the license application.

20. Concerning Section 9.2.2.4.5 of the license application, the NRC requested USEC to indicate whether the DOE groundwater monitoring program includes sampling for uranium and thorium. The NRC requested that USEC identify the constituents of interest if other than technetium. The NRC also requested a citation to the DOE program.

USEC agreed to identify the DOE program and the radionuclides of primary concern.

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Chapter 1 and 11 of License Application

Date and Time: January 6, 2005; 11:30 AM

Call Participants: NRC:

W. Troskoski/NMSS
Y. Faraz/NMSS
B. Smith/NMSS

USEC Inc.:

K. Coriell
R. Halverson
R. Holliday
G. Shoemaker
P. Miner

On January 6, 2005, a conference call between U.S. Nuclear Regulatory Commission (NRC) and USEC Inc. (USEC) was held to discuss issues related to Chapter 1 General Information and Chapter 11 Management Measures of USEC's license application for a uranium enrichment facility, the American Centrifuge Plant (ACP). During the conference call, NRC requested the following information:

Chapter 1

1. The NRC indicated that building layout drawings/floor-plans depicting all process areas where significant quantities of hazardous material will be present/used including X-3001, X-3002, X-3012, X-3356, X-7746, and X-3346, should be provided.

USEC indicated that its contractor Flour was in the process of developing such drawings and that these would be ready in the next several months.

2. The NRC asked USEC to provide an official acknowledgment from the Department of Energy (DOE) or some other equivalent indication that DOE will provide sufficient indemnification for the ACP to meet the requirements of 10 CFR 140.13b. The NRC indicated that it was not clear to the NRC, based on the wording in Section 3107 of the Privatization Act, that it is applicable to gas centrifuge facilities as mentioned in the application.

USEC replied that it has been discussing this issue with DOE and will likely address this item in its lease for the ACP.

3. The NRC informed USEC that several specific possession limit amounts in Table 1.2-1 of the License Application need to be revised to amounts that the plant is anticipated to utilize/generate over its 30-year planned operation at full capacity. The NRC asked USEC to provide the bases in its response for requesting the specific amounts listed in

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Table 1.2-1. As an example, the NRC pointed out that the Decommissioning Funding Plan estimates depleted uranium tails generation over the ACP's 30-year planned operation to be about 11,920 metric tons of UF₆. However, Table 1.2-1 lists a much higher amount for source material. The NRC also indicated that it was not clear why an amount as large as that listed for SNM is warranted.

Editorial Comment

4. The NRC pointed out that the second sentence of Section 1.0 needed to include "decommissioning" in the list of items covered by the license application.

Chapter 11 (Management Measures)

1. Section 11.1.1.1 of the license application identifies the graded approach for management measures that ACP proposes to apply to IROFS based on defined quality levels. The NRC requested USEC to provide a description of how the proposed approach would be applied to criticality safety controls.

USEC stated that they understood the issue and would provide an appropriate explanation.

2. USEC was requested to confirm that modifications to process, design, system documentation, and drawing specifications discussed in Section 11.1.4.1 of the license application should also be evaluated, as appropriate, for potential chemical safety concerns.

USEC acknowledged the request.

3. USEC was asked to confirm that ACP oversight of contractor qualification and training programs for activities that could affect IROFS are commensurate with the ACP Quality Assurance Program (QAP) requirements (e.g., the contractors programs contain the same level of performance requirements and commitments as the ACP QAP).

USEC stated that this issue would be addressed.

4. The NRC requested USEC to confirm that maintenance work packages are developed for QL-3 IROFS and that the work packages receive engineering review.

USEC stated that they did not intend to have any QL-3 items identified as IROFS and that text pertaining to the QL definitions contained in Section 11.1.1.1 of the license application and in the QA Program would be revised to reflect this fact.

Since all IROFS would be either QL-1 or QL-2, the NRC had no further questions.

5. The NRC requested USEC to revise Section 11.4.2.1 of the license application to state that safe work practices to control processes and operations with special nuclear material, IROFS, and/or hazardous chemicals incident to the processing of licensed

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material are covered by appropriate procedures. The NRC noted that this commitment was already contained in the Lead Cascade application.

USEC stated that the section would be revised.

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Nuclear Criticality Safety

Date and Time: December 22, 2004; 9:00 AM

Call Participants: NRC:
 Y. Faraz/NMSS
 C. Tripp/NMSS

 USEC Inc.:
 J. Bolling
 G. Shoemaker
 G. Corzein
 J. Rapp
 G. Pyziek
 R. Holliday

On December 22, 2004, a conference call between U.S. Nuclear Regulatory Commission (NRC) and USEC Inc. (USEC) was held to discuss nuclear criticality safety (NCS) issues related to USEC's license application for a uranium enrichment facility, the American Centrifuge Plant (ACP).

The NRC's questions concerned the following areas: (1) Chapter 5, "Nuclear Criticality Safety," of the license application, and (2) the criticality accident alarm system (CAAS) exemption request for the cylinder storage yards in Chapter 1 of the license application. At the conclusion of the call, USEC stated that it understood all the NRC's questions.

USEC provided some additional information on some of the NRC NCS questions. The NRC did not, except as specifically noted below, comment on the adequacy of this information. In addition, for some questions the NRC stated that it would do some additional checking based on this information. The information below summarizes the telephone call.

1. NRC requested that USEC clarify whether all controls and/or barriers relied on to meet the double contingency principle (DCP) will be classified as items relied on for safety (IROFS). Clarify the difference between controls and barriers.

USEC acknowledged the comment.

2. NRC requested that USEC clarify whether the criteria for fissile material operations (\$1wt% ²³⁵U and \$100g ²³⁵U) apply to normal operating conditions only or to credible abnormal conditions as well. If applied to normal conditions only, NRC requested USEC to justify why abnormal conditions can be assured to be subcritical. If applied to abnormal conditions as well. If applied to normal conditions only, NRC requested USEC to justify why abnormal conditions can be assured to be subcritical. If applied to normal conditions, NRC requested that USEC explain how all abnormal conditions will be identified (given that nuclear criticality safety (NCS) evaluation is not required for non-

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fissile material operations).

USEC stated that a process would be considered non-fissile only if there was no credible way to reach the fissile material criteria (\$1wt% or \$100g ²³⁵U).

3. NRC requested that USEC describe the “equivalent technical experience” that is considered acceptable substitution for the educational requirements for the NCS manager, Section 5.2.1 of the license application. Also, USEC was asked to clarify whether the four years of “nuclear experience” requirement pertains to experience in NCS.

USEC stated that it explicitly did not intend to require that the NCS Manager have four years of NCS experience, but only four years of “nuclear experience.”

4. NRC asked USEC to justify why one year as a qualified NCS Engineer is sufficient for qualification as a Senior NCS Engineer, given the duties incumbent on the position.

USEC stated that typically it takes more than one year to fulfill the qualifications as a Senior NCS Engineer, and that this is consistent with current GDP practice.

5. NRC asked USEC to state whether they commit to follow ANSI/ANS-8.19-1996 and ANSI/ANS-8.20-1991 as they relate to training, procedures, and audits and assessments.

USEC stated that Section 11.4 of the license application provided the information requested in this question. The NRC stated that it would look into this.

6. NRC requested that USEC describe the procedure control and work control process, and any differences between the approval and change control processes for procedures and work packages.

USEC acknowledged the comment.

7. NRC asked USEC to clarify whether postings and/or labels are required for administrative controls in all operations without an “in-hand” operating procedure.

USEC clarified that it would post all administrative controls unless they were included in in-hand operating procedures.

8. NRC asked USEC to clarify what is meant by an “appropriate size” for the writing on postings and what is meant by “conspicuous locations” for posting placement.

USEC acknowledged the comment.

9. In reference to Section 5.3.3 of the license application, NRC requested USEC to state whether the NCS organization reviews all fissile material operation changes, or only those involving an NCS-related IROFS.

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USEC clarified that NCS would review any facility changes involving uranium or a uranium-processing operation.

10. NRC asked USEC to justify why annual walkthroughs of fissile material operations are acceptable as stated in Section 5.3.4. of the license application.

USEC stated that all fissile material operations would be walked down annually, and that the purpose of this walkdown would be to ensure operations are being conducted as specified in the nuclear criticality safety evaluation (NCSE).

11. NRC asked USEC to state how often NCS Program audits will be performed.

USEC stated that NCS Program Audits will be internal quality assurance audits to be conducted once every three years. For both the fissile material operation walkdowns and the program audits, the NRC indicated justification would be needed because these time frames were significantly longer than what was recommended in NUREG-1520.

12. NRC asked USEC to clarify the meaning of “if necessary” with regard to when an NCSE is needed.

USEC clarified that “as necessary” meant when the process was qualified as a fissile material operation.

13. NRC requested that USEC describe how the natural and credible course of events is maintained, in Section 5.4.2 of the license application. Also, USEC was asked by NRC to describe what “other means” may be used than those described.

USEC stated that in using the natural and credible course of events, it meant an event similar to the use of “unlikely events” as previously reviewed at the gaseous diffusion plants (GDPs). USEC provided the example of inadvertent sprinkler activation.

14. NRC asked USEC to describe the process and/or criteria that will be used to ascertain whether a change in process conditions is sufficiently “unlikely” to meet the DCP, in Section 5.4.2 of the license application.

USEC acknowledged the comment.

15. NRC asked USEC to clarify the meaning of the second full paragraph on page 5-9 of the license application.

With regard to subpart (a), USEC clarified that “items related to NCS” pertained mainly to the use of non-NCS programs credited for NCS (such as the fire protection program). With regard to subpart (b), USEC stated that it meant that changes to the above programs would be reviewed against the configuration management program. With regard to subpart (c), USEC stated that the intent was to reiterate that USEC may or may not take credit for the above programs. The NRC stated that this language should

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be clarified.

16. NRC asked USEC to state whether the NCSE approval process includes review by the Plant Safety Review Committee (PSRC). Section 5.2.1 of the license application states that one of the duties of NCS Engineers is to provide support to the PSRC. However, the process described in Section 5.4.2 (top of page 5-10) of the license application does not discuss this.

USEC stated that NCS was considered part of the Plant Safety Review Committee (PSRC), but that changes to NCSEs are only referred to the PSRC if it is determined that NRC pre-approval is needed (10 CFR 70.72).

17. NRC asked USEC to remove the following statement in Section 5.4.2.1 of the license application: "Controls are sometimes applied to a non-fissile material operation to ensure it does not inadvertently involve fissile material. These controls can be either engineered or administrative and may be incorporated into applicable operating procedures or work instructions at the discretion of the responsible line manager."

USEC clarified that the need for criticality controls is identified by NCS, but that it is the responsibility of line management to maintain these controls.

18. NRC asked USEC to revise their commitment to the preferred design philosophy in Section 5.4.3 of the license application (or justify not doing so), to indicate that passive engineered controls are preferred over active engineered controls, and enhanced administrative over simple administrative controls. NRC asked USEC to revise their commitment to indicate that two-parameter control is preferred over two controls on one parameter.

USEC stated that it would clarify that passive engineered controls are to be preferred over other controls, but that it drew no distinction between simple and enhanced administrative controls (i.e., no extra credit for enhanced controls). USEC stated that one area in which it could not comply with dual-parameter control was in the use of 10-ton UF₆ cylinders. The NRC stated that it recognized there would be exceptions and expected that they be individually justified. USEC then stated that it considered the use of dual-parameter control to be preferable in general, but that it could not always comply with this.

19. NRC asked USEC to clarify whether the justification for taking exception in certain instances to the preferred design philosophy in Section 5.4.3 of the license application will be documented in plant NCSEs.

USEC clarified that it did not intend to justify deviations from the preferred design approach. The NRC indicated that NUREG-1520 expected that deviations would be justified.

20. NRC asked USEC to revise their commitment to ANSI/ANS-8.3 to indicate to which version of the standard they are committing, and that they are committing to the

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standard as modified by Regulatory Guide (RG) 3.71.

USEC stated that it would clarify that it was committing to the 1997 version of ANSI/ANS-8.3.

21. NRC asked USEC to remove the following statement from Section 5.4.4 of the license application with regard to when a CAAS exemption is appropriate: "Other exceptions to CAAS coverage are documented in NCS evaluations and are based on a conclusion in the NCSE that a criticality accident is non-credible in an area where the fissile material operation is ongoing."

USEC acknowledged the comment.

22. NRC asked USEC to provide justification for the criteria for CAAS exemption due to incredibility in Section 5.4.4 of the license application (less than 700g ²³⁵U, less than 50g ²³⁵U/m², less than 5g ²³⁵U in any 10-liter volume). USEC was asked to state whether these criteria are applied only to normal or also to credible abnormal conditions.

USEC stated that the criteria for justifying CAAS exemption due to incredibility were taken from ANSI/ANS-8.3 and that in applying these criteria it would consider both normal and abnormal conditions.

23. USEC was asked to clarify whether dual criticality alarm coverage will exist in all areas meeting the criteria in 10 CFR 70.24(a) that are not subject to an NRC-approved exemption. In the event that dual coverage is not maintained, USEC was asked to clarify whether there are any other compensatory measures that may be used besides those listed in Section 5.4.4 of the license application, and if so, what they are.

USEC stated that dual alarm coverage would be maintained in all areas, even in the event of detector outage. USEC further stated that it did not expect to get into limiting condition of operation (LCO) conditions requiring compensatory measures. NRC stated that this should be explained in more detail.

24. USEC was asked to provide the technical basis for limiting the installation of evacuation horns and radiation warning lights to facilities within 200 feet of buildings or facilities requiring CAAS coverage.

USEC acknowledged the comment.

25. USEC was asked to clarify whether the "credible abnormal events" that the CAAS system is required to survive include natural phenomena or external events, including seismic events, fire, explosion, or corrosive atmosphere.

USEC clarified that the "credible abnormal events" that the CAAS system is required to survive will include all the events listed.

26. In Section 5.4.4.1 of the license application, USEC was asked to justify use of the plant

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public announcement (PA) system to warn plant personnel within 200 feet of a portable CAAS unit in the event of a criticality accident and describe the range in which the portable unit's alarm will be audible and explain why the time delay for notifying at-risk personnel using the PA system is acceptable.

USEC acknowledged the comment.

27. USEC was asked to clarify the statement contained in Section 5.4.5.1 (page 5-13) of the license application that "Water is considered to be the most efficient moderator commonly found in the ACP," and to state that they will evaluate whether moderators more efficient than water (e.g., oil under certain conditions) are present, on a case-by-case basis, or justify not doing so.

USEC stated that it would provide additional justification to support the statement that water is the most efficient moderator.

28. USEC was asked to clarify their commitment to limit the use of moderating material for firefighting in areas where greater than safe masses of uranium are handled, processed, or stored, and moderation controls are applied. USEC was asked to clarify whether this means that moderating material for firefighting will be entirely excluded, or the amounts of such materials will be limited based on analysis in NCSEs.

USEC stated that whether moderating materials would be used by firefighters would be based on whether the area had a water-based sprinkler system, and that limitations on the use of moderating materials would be reflected in the written instructions to firefighters. USEC stated that it would consider the use of moderating material by firefighters in performing its double contingency analysis.

29. NRC requested that USEC commit to the following: when moderator control is used and process variables can affect moderation, they will be identified as IROFS, or justification will be provided for not doing so.

USEC stated that the main area where moderation is used for NCS is in the closed UF₆ process, and that it would not consider all containment features (e.g., piping) to be IROFS because there were few moderation-controlled areas that involved more than a safe mass. Only in areas where the unmitigated sequence was considered credible would IROFS be proposed.

30. NRC requested that USEC state whether it commits to ANSI/ANS-8.22-1997 with regard to moderator control, and if so, clarify to which provisions in the standard it is committing.

USEC stated that ANSI/ANS-8.22-1997 did not apply and it would not commit to this standard. The NRC stated that this should be explained.

31. NRC requested that USEC describe the safety factor that will be used when basing safe

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geometry dimensions on established standards.

USEC stated that it would run its own calculations to confirm any results obtained from standards, including for the purpose of taking interaction into account.

32. NRC requested that USEC clarify what other management measures than pre-operational verification will be used, as appropriate, when relying on geometry for criticality control. If geometry control can be lost by bulging, corrosion, leakage, or other mechanisms, means should be provided to prevent its loss.

USEC clarified that installed equipment must include sufficient margins of safety so that dimensional limits will not be exceeded by bulging, corrosion, etc. Portable containers will be controlled by the configuration management process.

33. NRC asked USEC to clarify that when relying on factors such as geometry, enrichment, or composition, in the setting of mass limits, these controls in conjunction with mass will only be credited as one control for meeting the DCP, or justification will be provided for not doing so. USEC was requested to clarify that when these items are not identified as IROFS, all other parameters will be evaluated at their most reactive credible values (e.g., spherical geometry, optimum moderation, most reactive reflection).

USEC clarified that cases such as those described in this question can only be credited as one leg of the DCP.

34. NRC asked USEC to describe the safety margin that will be applied to mass limits (a) when double batching is credible and (b) when double batching is not credible.

USEC stated that there are no batch operations at the ACP. For the transport of materials around the plantsite, 1/4 of the minimum critical mass could be used.

35. NRC asked USEC to state what means are provided to segregate materials of different enrichment when enrichment is used for criticality control.

USEC stated that justification would be provided whenever fissile material is not at the maximum (5 or 10wt% ²³⁵U). Fissile material operations will routinely assume the maximum assay.

36. NRC asked USEC to justify the use of homogeneous safe mass at up to 10wt% ²³⁵U. USEC was asked to demonstrate that the difference between heterogeneous and homogeneous systems at up to 10wt% ²³⁵U are sufficiently close, and with the chosen margin of subcriticality, that the difference can be ignored.

USEC acknowledged the comment.

37. NRC asked USEC to clarify whether the use of concentration control requires dual independent sampling. In particular, USEC was asked to clarify whether drawing and

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analyzing the samples must be done by two different individuals or using different instrumentation.

USEC indicated that there would be no reliance on concentration control in areas with more than a safe mass of uranium.

38. NRC requested that USEC clarify that when process variables can affect concentration, they are identified as IROFS, or provide justification for not doing so.

USEC acknowledged the comment.

39. NRC asked USEC to describe whether there is a minimum reflection condition to account for the presence of nearby structural or transient materials (e.g., 1-inch tight fitting reflector). If this is not used, USEC was asked to justify why the models are adequately bounding.

USEC acknowledged the comment.

40. NRC asked USEC to state whether the full range of interstitial moderation is considered in evaluating normal and abnormal conditions.

USEC stated that it did not consider the full range of interstitial moderation, but considered full flooding (if credible) and low levels of moderator (such as due to sprinkler activation). USEC stated it would consider interstitial moderator to the extent credible.

41. NRC asked USEC to state whether it commits to the use of ANSI/ANS-8.21-1995 in the use of fixed neutron absorbers.

USEC stated that it took credit for no fixed neutron absorbers, but that it would commit to ANSI/ANS-8.21 if it did rely on fixed absorbers in the future.

42. NRC asked USEC to state whether raschig rings and/or soluble absorbers are used in the facility, and if so, whether USEC commits to ANSI/ANS-8.5-1996.

USEC stated it would not use raschig rings or soluble neutron absorbers.

43. NRC asked USEC to clarify the assertion in Section 5.4.5.2 of the license application that "The generic nature of the experimental data does not address the variables present in the different operations." USEC was asked to explain whether this means that the selected benchmark experiments do not cover the range of parameters (area of applicability) needed for ACP operations.

USEC acknowledged the comment.

44. NRC requested the following of USEC: When using handbooks to derive subcritical

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limits, describe the amount of margin used (e.g., 90% of the minimum critical diameter). Describe how the handbooks are validated for use in setting subcritical limits.

USEC acknowledged the comment.

45. NRC asked USEC to describe how hand calculations are validated for use in setting subcritical limits.

USEC acknowledged the comment.

46. NRC asked USEC to expand on the statement in Section 5.4.5.1 of the license application that "Computer codes are validated using experimental data from benchmark experiments that, ideally, have geometries and material compositions similar to the systems being modeled." USEC was asked to indicate what course of action will be followed when benchmark experiments with geometry and material composition similar to the systems being modeled are not used.

USEC acknowledged the comment.

47. NRC asked USEC to justify the use of a minimum margin of subcriticality of 0.02 for ACP operations and to show that this provides adequate assurance of subcriticality.

USEC acknowledged the comment.

48. NRC asked USEC to provide in their License Application a summary description of the validation report for ACP operations (or justify not doing so), for all methods used to determine subcritical limits.

USEC stated that the validation report itself was incorporated into the license application by reference.

49. NRC asked USEC to explain the statement in Section 5.4.5.2 of the license application that "Scoping and analysis calculations may be performed utilizing various unvalidated computer codes; however, computer calculations of k_{eff} used as the basis for NCS evaluations are confirmed by, or performed using, configuration-controlled codes and cross section libraries for which documented validations are performed..." USEC was asked to clarify whether all calculations used to set subcritical limits are either confirmed by or performed using validated methods (i.e., if not performed using validated methods, is there 100% confirmation using validated methods?).

USEC clarified that if it used an unvalidated computer code for scoping calculations, it would confirm the results using a validated method. USEC stated, for example, that if it performed 15 calculations to determine the point of optimum moderation, it would then need to rerun some of the calculations (e.g., 5 cases) using validated methods.

50. NRC asked USEC to clarify to which of the currently NRC-endorsed ANSI/ANS-8 series standards they are committing, and to which provisions of those standards they are

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committing.

USEC responded that Section 1.5 of the license application contained a list of all the codes and standards to which it committed.

51. NRC asked USEC to describe how the basis for its existing criticality accident alarm system (CAAS) exemption request relates to the cylinder storage yards for the ACP.

USEC acknowledged the comment.

52. NRC asked USEC to explain why part of the justification for excluding CAAS from the cylinder yards is that maintaining and calibrating the CAAS would expose plant personnel to undue risk, when the administrative controls (e.g., cylinder surveillance) would also put plant personnel at risk in the same area.

USEC acknowledged the comment.

53. NRC asked USEC to describe how much water would be needed in a cylinder at the maximum assay to result in criticality. USEC was asked to state the maximum assay of cylinders in the CAAS-exempt areas and to provide a summary of this analysis. Also, NRC asked USEC to describe how much water would ingress from a 10-, 100-, and 1000-year rainfall event relative to the minimum amount needed for criticality.

USEC stated that there was a wide variation in the calculation of how much water would be needed to achieve criticality in a 10-ton cylinder (ranging from 4 ½ gallons to tens of gallons).

54. NRC asked USEC to describe the cylinder handling practices that ensure a low likelihood of breaching a solid UF₆ cylinder.

USEC acknowledged the comment.

55. NRC asked USEC to justify why the risk of criticality is sufficiently low to permit exclusion of the CAAS from cylinder yards, given that the cumulative likelihood of a criticality (i.e., sum of likelihoods for the four accident sequences related to cylinder handling) is just barely highly unlikely ($1.2 \times 10^{-5}/\text{yr}$).

USEC acknowledged the comment.

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