



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

May 28, 1992

Docket No. 50-332
Construction Permit No. CPCSF-4

MEMORANDUM FOR: Richard E. Cunningham, Director
Division of Industrial and
Medical Nuclear Safety

FROM: A. Thomas Clark, Jr.
Advanced Fuel and Special
Facilities Section
Fuel Cycle Safety Branch
Division of Industrial and
Medical Nuclear Safety

SUBJECT: EVALUATION OF CAPABILITY OF BARNWELL NUCLEAR FUEL PLANT
AS A PRODUCTION FACILITY FOR REPROCESSING NUCLEAR FUEL

Section 101 of the Atomic Energy Act of 1954, as amended (the "Act"), states that "It shall be unlawful, as provided in section 91 [of the Act], for any person within the United States to transfer or receive in interstate commerce, manufacture, produce, transfer, acquire, possess, use, import, or export any utilization or production facility except under and in accordance with a license issued by the Commission pursuant to section 103 or 104 [of the Act]. As stated in the final sentence of Section 185 of the Act, "For all other purposes of this Act, a construction permit is deemed to be a 'license'." Section 11 of the Act defines a production facility as any equipment or device determined by rule of the Commission to be capable of the production of special nuclear material in such quantity as to be of significance to the common defense and security. Paragraph (3) of §50.2 of 10 CFR Part 50 defines a reprocessing plant as a production facility.

By letter, dated April 27, 1992, the Commission staff informed Allied General Nuclear Services, Inc. (AGNS) that the staff intended to initiate termination of Construction Permit No. CPCSF-4 unless AGNS could provide additional information to support its request for continuation of the activities authorized thereby. This action was consistent with the Commission's Staff Requirement Memorandum SECY-91-021, dated April 30, 1991. AGNS informed the Commission staff by letter, dated May 12, 1992, that it does not intend to provide additional information to support its request.

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Since the staff is now preparing to deny the request by AGNS to amend the construction permit in order to change the latest construction completion date, it is necessary to determine the capability of the existing physical facility at the Barnwell site to reprocess nuclear fuel, i.e., as a production facility under the Act, as described above. In this memorandum, I set forth the specific bases that will be used for making such a determination. I also request your independent evaluation and approval of the bases for my determination. The determination of capability as a production facility is independent of any determination of the extent of compliance with any other rules for radiation protection, such as that exercised by the State of South Carolina under the State Agreements Program (10 CFR Part 150). Any action taken by the Commission or its staff with respect to the AGNS construction permit has no bearing on the status of the license issued by the State of South Carolina for the BNFP.

Basis for Evaluation

The mere possession of buildings and equipment for which the original purpose was to reprocess nuclear fuel does not per se determine that a facility is capable as a production facility. The same buildings and equipment might be used for a variety of other purposes. The principal determining factor is the physical lack of a direct means whereby the purpose of reprocessing could be accomplished. The matter does not hinge on the efficiency of performance, but, rather, being able to directly perform the required operations to any degree. For example, the possession of engineering drawings, which indicate precisely how to manufacture a device capable of producing special nuclear material is not, of itself, a production facility. Lacking any direct means to accomplish such a purpose, a facility would not be classified as a production facility.

Other important influencing factors in such a determination would be: (1) the ready access of nuclear material from which to produce special nuclear material, and (2) the presence of a staff of personnel with the proper specific knowledge to be able to perform functions related to the production of special nuclear material. In order to properly consider the question of whether or not any equipment or device is capable of the production of special nuclear material all of the above factors need to be considered. In the section below I have considered such factors.

Analysis and Evaluation

Although there is no exact precedent for the present situation with the Barnwell Nuclear Fuel Plant (BNFP), some of the staff valuation for the Midwest Fuel Recovery Plant (MFRP) is directly applicable. In both cases the applicant no longer intended to pursue an application for an operating license. In both cases uranium had been used for extensive testing of facility equipment. Virtually all of the equipment in the MFRP intended for use to recover nuclear fuel constituents remains in place to this day. At the MFRP all of the provisions for receiving and storing nuclear fuel has been retained and is, in fact, currently in use under NRC license. At MFRP the following actions were determined by the staff and OGC to render the facility no longer a production facility: (1) the Swing-Arm Conveyor used to lift spent nuclear fuel in the Chemical Process Cell was disabled, (2) the electrical power to the Swing-Arm Conveyor was disconnected, and (3) a steel plate was welded over the hatch in the Chemical Process Cell through which fuel was to have been transferred into the cell.

Actions taken by AGNS to remove buildings and equipment from the Barnwell site have left the facility less capable as a reprocessing plant than the MFRP. A list of removed equipment is attached to this memorandum. The list does not directly indicate the severing and removal of the power cabling and control panelling to most areas of the plant. Unlike the MFRP the complete shear assembly in the high activity cell of the BNFP has been removed from the cell. Although the pieces lay scattered at various locations in the plant, there is no capability for chopping. The removal of air compressors, steam boilers, cooling towers, and the electrical power substation have rendered the plant much less capable than the MFRP. Electrical power cannot be supplied to the mechanism for transferring spent fuel from the spent fuel storage pool into the high activity cell. There is no water in the pool and no spent fuel present. Since hoists and cranes have been removed, there is no convenient means to lift and move spent fuel in a cell, even if it were in the cell. There also are no chemicals, such as nitric acid, at the site for any chemical dissolution. Therefore, there is no longer a capability at the Barnwell facility to lift spent nuclear fuel into the reprocessing area, and no means for chopping and dissolving the spent fuel. Thus the criteria used for the MFRP determination applies to Barnwell.

In addition to the physical aspects of the plant, there is no operating staff at the site, except for custodial care. Oversight for security control is performed by personnel at the adjacent Chem-Nuclear low-level waste disposal site.

Conclusions

Based on the above information, as to the extent to which: (1) the BNFP has been altered through the removal of key equipment and buildings, and (2) AGNS lacks the presence of any knowledgeable staff to perform any common functions essential to the reprocessing of spent nuclear fuel in order to safely recover any useful constituents, I conclude that the Barnwell Nuclear Fuel Plant is, in fact, incapable of being a production facility within the definition of Section 11 of the Atomic Energy Act.

/S/

A. Thomas Clark, Jr.
Advanced Fuel and Special
Facilities Section
Fuel Cycle Safety Branch
Division of Industrial and
Medical Nuclear Safety

Approved:

/S/

Richard E. Cunningham, Director
Division of Industrial and
Medical Nuclear Safety

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DATE	: 5/21/92	: 5/22/92	: 5/22/92	: 5/22/92	: 5/27/92

OFFICE	: IMNS	:	:	:
NAME	: RECunningham	:	:	:
DATE	: 5/28/92	: / /	: / /	: / /

List of Equipment Removed from the BNFP

1. Data analysis system for hull monitor
2. Small, portable laboratory equipment
3. Chiller unit and heating unit from emergency utility area room
4. Chlorine room heater--yard equipment
5. Portable air conditioning equipment
6. Two cooling towers
7. Two process steam boilers
8. Auxiliary building equipment and buildings
9. Health Physics decontamination pump (laboratory)
10. Forced draft fan for utility boiler
11. Four air compressors in emergency utility area
12. Portable pumps and compressors
13. Scott air masks, flashlights, gas masks, revolvers, watch clocks, filing cabinets, friskers (all from Security)
14. Instrumentation: DOP generator, oscilloscope, amplifier, test and calibration electronics
15. Two emergency generators (includes starting air receiver, and exhaust manifold silencer)
16. Fire safety equipment (some necessary equipment remains)
17. Warehouses
18. Radiation safety and detection equipment: area monitors, personnel monitors, etc.
19. Some other buildings
20. Fuel storage canisters (for spent fuel)
21. Fuel oil tank trailer (yard equipment)
22. 1/2-Ton boom crane
23. Radios and other Security equipment (see 13. above?)
24. Shop and maintenance equipment
25. Office equipment, except that needed for custodial care

Remote Maintenance & Scrap and Remote Process Cells

26. Power manipulators and trolleys
27. Basket handling crane
28. 3-Ton hoist and trolley
29. Controls for cranes
30. Master slave manipulators (some remain in sample aisle)

Uranium Hexafluoride Plant

31. Electrolytic fluorine cells
32. Reagent tanks
33. Instrument air receiver
34. Four cold traps
35. Two air cooled aftercoolers
36. Oxide dust collector blower

Equipment List Continued

37. Air compressor
38. A few pumps
39. Scrubber
40. Small vacuum system, dust collector
41. Sampler -- many left
42. Uranyl nitrate mixer
43. Reagent tank mixer

Other

44. Power substation
45. Cylinder crane
46. Decontamination room crane
47. Drum handler
48. Uranium trioxide barrel dumping funnel
49. Cold traps cooling equipment
50. Plant air drier
51. Emergency generator