



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION V
1990 N. CALIFORNIA BOULEVARD
SUITE 202, WALNUT CREEK PLAZA
WALNUT CREEK, CALIFORNIA 94598

July 27, 1981

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What action is being
proposed?
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MEMORANDUM FOR: L. B. Higginbotham, Chief
Radiological Safety Branch, IE:HQ

FROM: H. E. Book, Chief
Radiological Safety Branch, Region V

SUBJECT: ^FNES-4 (NAC-1E) CASK STATUS UPDATE

On May 7, 1981, the NAC-1E cask was transported from San Onofre Unit 1 to a Department of Energy contractor (Energy Systems Group, a Division of Rockwell International, Santa Susana, CA) for decontamination. Region V established a line of communication with Dr. Remley, Manager, Health, Safety and Radiation Services for Energy Systems Group (ESG). Dr. Remley was informed of the previous radiological problems associated with handling of this cask. Dr. Remley advised us that the decontamination would be carried out with the cost of materials and labor borne by Nuclear Assurance Corporation (NAC). The ESG decontamination effort was coordinated with Mr. Charles R. Johnson, Vice President, Engineering and Transportation Services, NAC. Dr. Remley made it clear that ESG would conduct their activity under DOE purview and would not expect NRC inspector involvement unless significant mechanical defects were observed.

On May 28, 1981, Dr. Remley informed Region V that while moving the cask, about two quarts of solution spilled from the vent. The liquid read 25 r/hr at four inches from the container in which it was collected. No unusual personnel exposures occurred, however cell decontamination was required. The leak was apparently caused by cracking of the vent valve's teflon seat. The Transportation Certification Branch of NMSS was informed of this incident by Region V on June 4, 1981.

On June 15, 1981, we learned that about five quarts of solution were removed from the cask. The solution had a pH of 5. A sample of this solution was poured into a beaker until a dose rate of 35 r/hr was measured at a distance of six inches. Two quarts produced the 35 r/hr dose rate. Additional analysis is being performed to determine isotopic content and quantity. Results are expected about August 3, 1981.

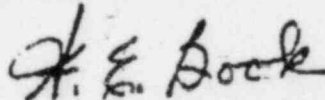
Dr. Remley called on July 21, 1981 to advise us that cask decontamination efforts have been terminated at NAC's request. NAC has spent about \$80,000 and feel they cannot justify additional expenditures. ESG estimates that 150 grams of fuel fragments still remain either in, or under, the fuel basket. The next step would have likely been to remove the fuel basket and clean the cask barrel. ESG is now holding the cask and is searching for a way to return it to NAC.

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Based on their decontamination efforts, ESG speculates that use of the fuel basket with failed bundles is conducive to accumulation of fuel products in the four to six inch reservoir located in the bottom of the basket. Draining of the cask does not result in flushing of this area. When the cask is placed in a horizontal position for transport, residual fluid in the reservoir may drain into the cask barrel. Fuel fragments can then accumulate in the vent and drain lines in close proximity to teflon valve internals causing potential leakage pathways and radiological hazards in handling the cask. In one instance this residual fluid has been found to contain 14 uCi/ml of transuranic isotopes and 480 uCi/ml of gross gamma activity. Such residual activity could conceivably have been discharged into the unsuspecting licensee's spent fuel storage pool. This could create operational problems for power reactors trying to dispose of spent pool filters and cleanup deionizers highly contaminated with transuranic isotopes.

Based on the operating experience with the NFS-4 NAC-1D and NAD-1E casks during the last year (see Region I Investigative Report), we conclude that if used as presently permitted by NRC Certificate of Compliance No. 6698, Revision 14, an unnecessary risk of personnel exposure, loss of integrity, and dispersion of radioactive material exists. The July 22, 1981 "Order to Show Cause" regarding surface contamination of the NAC-1D cask did not address problems identified in handling of the NAC-1E cask, nor did it address similar contamination problems previously experienced in using the NAC-1E cask. We recommend a comprehensive review be initiated by NMSS prior to next use of NFS-4 casks. Specific questions related to the NAC-1E cask can be addressed with G. Yuhas (FTS 463-3748) of my staff.



H. E. Book, Chief
Radiological Safety Branch

cc: C. E. MacDonald, NMSS

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Status: Spent Fuel Casks (as of June 22, 1981)

<u>Model No.</u>	<u>No. Built</u>	<u>Serial No.</u>	<u>Owner</u>	<u>Comments</u>
NFS-4 (truck cask)	7	NFS-4A	NFS	Out of Service by NRC Order dated April 6, 1979
		NFS-4B	NFS	" " " " " " " " " "
		NAC-1A	Duke Pwr	" " " " " " " " " "
		NAC-1B	Duke Pwr	In Service - contents limited to dry shipments, 2.5kw
		NAC-1C	NAC	Out of Service by NRC Order dated April 6, 1979
		NAC-1D	NAC	In Service - Dry, 2.5kw - Contamination Problems outer cask service
		NAC-1E	NAC	In Service - Dry, 2.5kw - Internal, external contamination problems about 2 months before available for service
IF-300 (rail cask)	4	301	GE	In Service - limited to dry shipments - pressure relief problems for wet shipments
		302	GE	" " " " " " " " "
		303	GE	" " " " " " " " "
		304	C&P Co.	" " " " " " " " "
NL-1/2 (truck cask)	3 (2 under construction, no work being done, 6-12 months to finish)		NAC	In Service
NL-10/24 (rail cask)	2 (1 under construction, no work being done)		NAC	Out of Service - no fuel baskets available or QA checks performed by NAC or IE
TN-8 (truck cask)	0 (2 available in Europe)			
TN-9 (truck cask)	2	TN-9.1	Comm. Ed.	In Service
		TN-9.2	Transnuc.	Available in 1 month

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