

May 31, 2000

MEMORANDUM William D. Travers
TO: Executive Director for Operations
FROM: Annette L. Vietti-Cook, Secretary /RA/
SUBJECT: STAFF REQUIREMENTS - SECY-00-0085 - REVIEW OF THE TOKAI-MURA CRITICALITY ACCIDENT AND LESSONS LEARNED

The Commission has approved the staff's recommendation to forward the NRC's report entitled *NRC Review of the Tokai-mura Criticality Accident* to the National Security Council, other Federal agencies as appropriate, Congressional Oversight Committees, the Japanese Science and Technology Agency, the Japanese Nuclear Safety Commission, and the Japanese Ministry of International Trade and Industry (MITI), subject to the changes in the attachment.

(EDO) (SECY Suspense: 6/30/00)

Attachment: [Changes to the Report on the Tokai-mura Criticality Accident](#)

cc: Chairman Meserve
Commissioner Dicus
Commissioner Diaz
Commissioner McGaffigan
Commissioner Merrifield
OGC
CIO
CFO
OCA
OIG
OPA
Office Directors, Regions, ACRS, ACNW, ASLBP (via E-Mail)
PDR

ATTACHMENT

Changes to the Report on the Tokai-mura Criticality Accident

1. Update the fact that NEI has finalized its report on the subject.
2. Include both SI and English radiological quantities (rather than SI units only), per NRC's metrication policy.
3. As "GyEq" (Gray equivalent) is not an ICRU basic dosimetric quantity, include the explanation of the unit (and reference to its source) that appears on page 29 of the IAEA report, which is attachment no. 6 to SECY-00-0085, as a footnote whenever the term "GyEq" is used in an NRC document.
4. On page 2, paragraph 1, revise line 6 to read '... sufficiently **reflected and** moderated for the geometry of the vessel ~~achieve and~~ **to generate a supercritical power burst followed by a** sustain **ed** quasi steady-state'
5. On page 2, revise paragraph 3 (1st paragraph under Accident Consequences) as follows:

The three operators who were nearest to the precipitation tank in the Conversion Building at the time of the accident received estimated radiation doses of 1-4.5 gray equivalent (GyEq), 6.0-10 GyEq, and 16-20 GyEq. The first operator (supervisor, most distant from the precipitation tank) has been released but is under medical supervision; ~~the other two second operator s subsequently died. is still in the hospital, and the third operator died on December 21, 1999.~~ A briefing by the JAERI indicated that ~~the 24 JCO workers involved in recovery operations to terminate the criticality received individual doses up to about 48 millisieverts (mSv). JAERI also estimated that a total of 436 persons, including local residents, were exposed to radiation from the accident (mostly below 50 mSv).~~ **two hundred and twenty-four JCO workers received elevated radiation exposures. Of these, the 24 workers involved with recovery operations were exposed to a maximum of 48 mSv. The 104 workers who performed other countermeasures received less than 8 mSv each. The doses for the other JCO workers on site ranged between 15-20 mSv for one person, 5-10 mSv for three other people, and less than 5 mSv for the remainder. All doses for those 224 workers were below NRC occupational limits. Two hundred and fourteen members of the public were also exposed to direct radiation due to the accident. Their exposure ranged from 24 mSv for one person, 15-20 mSv for two people and 10-15 mSv for six others. The remainder of the members of the public received exposures less than 10 mSv , which is less than the Environmental Protection Agency protective action guide.**

6. On page 2, add the following sentence to the end of paragraph 4: 'Based on NRC staff review of the data, the environmental releases, as opposed to direct radiation, would not cause any member of the Japanese public to receive an exposure in excess of NRC limits.'

7. On page 2, add the following sentence to the end of paragraph 5: 'The apparent lack of effective emergency response and timely public communication were contributing factors to the impact of the event on the public.'
8. On page 3, paragraph 3, revise the last 2 lines to read ' ... that the system was still ~~critical and~~ causing significantly elevated'
9. On page 8, revise item 1. to read ' **Provide** ~~No existence of~~ a criticality accident'
10. On page 8, revise item 2. to read '~~Timely communication of~~ **Communicate** recommendations to local residents **promptly**.'
11. On page 9, revise item 3. to read ' **Provide appropriate level of** interface ~~roles~~ between the'
12. On page 10, revise item 4. to read ' **Improve** ~~Problems with~~ the company's'
13. On page 11, revise the 1st paragraph under the "Staff Conclusions" to read:

The staff has determined that it is **not likely** ~~unlikely~~ that a similar event could occur at a U.S. commercial fuel cycle facility. **The staff has taken additional measures to confirm that operational and nuclear criticality safety controls at U.S. commercial fuel facilities are effective and provide adequate protection for workers and members of the public.** The current NRC fuel facility oversight process adequately addresses the root causes of the Tokai-mura criticality accident. In addition, no changes to the proposed 10 CFR Part 70 are necessary to address the lessons learned.