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NRCB 91-01, Supp. 1

UNITED STATES
NUCLEAR REGULATORY COMMISSION
OFFICE OF NUCLEAR MATERIAL SAFETY AND SAFEGUARDS
WASHINGTON, D.C. 20555

July 27, 1993

NRC BULLETIN 91-01, SUPPLEMENT 1: REPORTING LOSS OF CRITICALITY SAFETY CONTROLS

Addressees

For Action All fuel fabrication facilities.

For Information - All facilities whose activities include, Hot Cell Operations, Uranium Enrichment Operations, Uranium Fuel R&D, and Critical Mass Operations.

Purpose

The U.S. Nuclear Regulatory Commission (NRC) is issuing this bulletin to (1) provide addressees clearer reporting criteria, (2) request that action addressees take certain actions, and (3) require that all action addressees report to NRC whether and to what extent the requested actions will be taken and notify the NRC when actions associated with this bulletin are complete.

This document is not intended to address accident mitigation, emergency response, long-term corrective actions, or license requirements. Such actions should be performed in accordance with the license and established regulations.

Background

This is a follow-up to Bulletin 91-01, "Reporting Loss of Criticality Safety Controls," which was issued on October 18, 1991. The bulletin requested that addressees inform the NRC of their criteria and procedures to ensure the prompt evaluation and reporting of conditions and events involving criticality safety.

Description of Circumstances

The NRC staff has reviewed each licensee's response to the bulletin. Most responses reflected a commitment to promptly evaluate events with criticality safety implications, report the most significant events immediately to the NRC, and report less significant events within 24 hours.

Also, we received numerous comments on the bulletin through correspondence and various meetings and workshops. A major comment concerned the bulletin's statement that loss or lack of a controlled parameter related to criticality safety should be reported to the NRC immediately. Several persons noted that

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further clarification regarding the definition of "a loss of a controlled parameter" is needed. Also, several persons noted that a loss of a controlled parameter is not always a significant event warranting an immediate report, for example, if the event involves a small amount of special nuclear material. These licensees maintained that they should only report events immediately to the NRC if there is a significant threat of a criticality accident or if the severity of the threat cannot be readily determined.

Discussion

We have considered these comments and conclude that further clarification is warranted. Therefore, we are clarifying that we want reported to the NRC immediately, those cases where (1) moderation is used as the primary criticality control, or (2) more than a safe mass of fissionable material is involved (regardless of the type of controls used to satisfy the double contingency principle), and that meet one or more of the following immediate reporting criteria.

Immediate Reporting Criteria

1. Any event that results in the violation of the double contingency principle, as defined in ANSI 8.1, and where the double contingency principle cannot be re-established within 4 hours after the initial observation of the event.

2. The occurrence of any unanticipated or unanalyzed event for which the safety significance of the event or corrective actions to re-establish the double contingency principle are not readily identifiable.

3. Any case where it is determined that a criticality safety analysis was deficient and where the necessary controlled parameters were not established or maintained.

4. Any event involving a controlled parameter previously identified by the NRC or the licensee as requiring immediate reporting to the NRC and where the double contingency principle cannot be re-established within 4 hours after the initial observation of the event.

Events and/or conditions that satisfy the above criteria should be reported within 4 hours from the initial observation, in accordance with 10 CFR 20.403 and 10 CFR 70.50.

All other criticality safety events that do not meet the aforementioned criteria, but still result in a violation of the double contingency principle, such as events where the double contingency principle is violated but control

is immediately re-established, should be reported to the NRC within 24 hours in accordance with the commitments in the responses to the bulletin.

It is expected that criticality safety events will be promptly evaluated and that appropriate management and technical personnel will be available 24 hours a day to perform such evaluations.

It should be emphasized that it is important that NRC be notified of events related to criticality safety and that if there is any doubt as to whether an event should be reported, the NRC should be contacted.

Requested Actions

Addressees are requested to review their criticality safety reporting procedures to ensure that they meet or exceed the reporting criteria described in this clarification of NRC Bulletin 91-01. Questions may be directed to the contact listed below.

Reporting Requirements

Within 60 days of this bulletin, pursuant to 10 CFR 70.22(d), each recipient shall provide the Commission with a statement (1) confirming that their current reporting criteria and management implementation procedures meet these minimum criteria, or (2) describing those procedures revised to be consistent with the reporting criteria.

Address any such written correspondence to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, D.C. 20555, under oath or affirmation under the provisions of Section 182a, Atomic Energy Act of 1954, as amended. In addition, submit a copy to the appropriate regional administrator.

Paperwork Reduction Act Statement

This bulletin contains information collection requirements that are subject to the Paperwork Reduction Act of 1980 (44 U.S.C. 3501 et seq.). These requirements were approved by the Office of Management and Budget, approval number 3150-0009.

The public reporting burden for this collection of information is estimated to average 8 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for further reducing reporting burden, to the Information and Records Management Branch (MNBB-7714), U.S. Nuclear Regulatory Commission, Washington, D.C. 20555; and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-3019, (3150-0009), Office of Management and Budget, Washington, D.C. 20503.

Further clarification to this bulletin is provided in the attached responses to specific questions raised by licensees.

If you have any questions about this matter, please contact the Operations Branch at (301) 504-3497.

Elizabeth Q. Ten Eyck

for Robert F. Burnett, Director
Division of Fuel Cycle Safety
and Safeguards
Office of Nuclear Material Safety
and Safeguards

Attachments:
1. Questions and Answers to Bulletin 91-01
2. List of Recently Issued NMSS Bulletins
3. List of Recently Issued NRC Bulletins

QUESTIONS AND ANSWERS TO BULLETIN 91-01

Q1. If reporting criteria currently contained in the licensee's emergency plan cover the 91-01 requirements for immediate reporting and are consistent with the 91-01 immediate reporting criteria, does the 91-01 procedure need to cover only the 24-hour criteria?

A1. Yes. No other immediate reporting would be required under 91-01.

Q2. The double contingency requirement includes all control parameters that have previously, before the event, been identified in the nuclear criticality safety analysis. Therefore, if a work station has six controls, and four are lost, is reporting required?

A2. No. If some controls are lost, and the double contingency requirement is still fulfilled, it is not reportable under 91-01. However, it should be noted that in some instances several controls may be necessary to provide an adequate barrier. For example, dual sampling is required when sampling is utilized as a criticality control.

Q3. In cases where a deficiency in the criticality analysis is found, and in the same analysis a mitigating condition not previously identified is found, is the deficient criticality analysis reportable?

A3. Yes. The licensee should report it. In addition, the licensee should prepare a corrected analysis.

Q4. If an event or condition occurs, as envisioned in criteria 2 or 3 for immediate reporting, does the licensee have 4 hours to determine if it is within the established safety parameters and report it to the NRC?

A4. Yes. The licensee has a total of 4 hours to report the event or condition to the NRC, from the time the event or condition is first noted or identified.

Q5. What determines that a controlled parameter was previously identified formally by the NRC or licensee?

A5. Controlled parameters identified in the NRC approved section of the license application or in a license condition would be considered formally identified by the NRC, and those controlled parameters identified in current nuclear criticality safety analyses would be considered formally identified by the licensee.

Definitions:

Safe Mass: 45 percent of the minimum critical mass of special nuclear material for a given enrichment.

Re-establish: establish within 4 hours after the identification of the event the conditions to assure that the double contingency principle and the pre-established licensed conditions for that system exist.

LIST OF RECENTLY ISSUED NMSS BULLETINS

Bulletin No.	Subject	Date of Issuance	Issued to
93-01	Release of Patients After Brachytherapy Treatment with Remote Afterloading Devices	04/20/93	Brachytherapy Licensees Authorized to Use Afterloading Brachytherapy Unit(s) Capable of Delivering Dose Rates Greater than 500 RADS (centigray) per Hour at 1 Centimeter
92-03	Release of Patients after Brachytherapy	12/08/92	For Action - Brachytherapy Licensees Authorized to use the Omnitron Model 2000 High Dose Rate (HDR) Afterloading Brachytherapy Unit For Information - None
92-02	Safety Concerns Relating to "End of Life" of Aging Theratronics Teletherapy Units	08/24/92	For Action - All Teletherapy Licensees For Information - None
91-01	Reporting Loss of Criticality Safety Controls	10/18/91	All fuel cycle and uranium fuel research and development licensees.
88-06	Actions to be Taken for the Transportation of Model No. SPEC 2-T Radiographic Exposure Device	06/14/88	All NRC licensees authorized to manufacture, distribute, or operate radiographic exposure devices or source changers.

LIST OF RECENTLY ISSUED NRC BULLETINS

Bulletin No.	Subject	Date of Issuance	Issued to
93-03	Resolution of Issues Related to Reactor Vessel Water Level Instrumentation in BWRs	05/28/93	All holders of OLs or CPs for boiling water reactors (BWRs) with the exception of Millstone, Unit 1, and Big Rock Point.
93-02	Debris Plugging of Emergency Core Cooling Suction Strainers	05/11/93	All holders of OLs for nuclear power reactors.
93-01	Release of Patients After Brachytherapy Treatment with Remote Afterloading Devices	04/20/93	Brachytherapy Licensees Authorized to Use Afterloading Brachytherapy Unit(s) Capable of Delivering Dose Rates Greater than 500 RADS (centigray) per Hour at 1 Centimeter
90-01, Supp. 1	Loss of Fill-Oil in Transmitters Manufactured by Rosemount	12/22/92	All holders of OLs or CPs for nuclear power reactors.
92-03	Release of Patients after Brachytherapy	12/08/92	For Action - Brachytherapy Licensees Authorized to use the Omnitron Model 2000 High Dose Rate (HDR) Afterloading Brachytherapy Unit For Information - None
92-01, Supp. 1	Failure of Thermo-Lag 330 Fire Barrier System to Perform its Specified Fire Endurance Function	08/28/92	For Action - All holders of operating licenses for nuclear power reactors. For Information - All holders of construction permits for nuclear power reactors.

OL = Operating License
CP = Construction Permit