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The Deputy Secretary of Energy
Washington, DC 20585

November 3, 1999

MEMORANDUM FOR HEADS OF DEPARTMENTAL ELEMENTS

FROM: T. J. GLAUTHIER

SUBJECT: NUCLEAR CRITICALITY SELF-IMPROVEMENT INITIATIVE

The purpose of this memorandum is to direct a series of actions we will take over the next several months to strengthen the Department's ongoing nuclear-criticality safety programs and identify and make any necessary improvements in the management of fissile materials at our sites to ensure that we maintain appropriate nuclear criticality controls. These actions have been developed with the Under Secretary, Dr. Ernest Moniz, and other senior members of the Department and are essential to maintaining a workplace that is safe for our workers and protective of the public's health.

Over the last several years, the Department has worked on several key initiatives associated with the criticality safety programs at our sites. These initiatives include stabilizing at-risk fissile materials for safe long-term storage; enhancing the analytical underpinnings of our criticality safety programs (e.g., by performing relevant critical experiments and other activities that enhance the numerical processing codes used in criticality safety analyses); developing mechanisms to attract, maintain, and retain qualified criticality safety professionals within the Federal and contractor workforces; and ensuring adequate criticality safety training facilities for criticality safety practitioners. Details of these initiatives and the actions underway are provided in the Department's Implementation Plans in response to Defense Nuclear Facilities Safety Board Recommendations 97-2, 94-1, and 97-1.

This past August, the Department also launched a nuclear criticality self-improvement initiative through a conference for senior Federal and contractor managers. This conference resulted in the identification of a series of specific, additional actions needed to strengthen our criticality safety programs.

In addition, in September we took another important step to improve the Department's management of fissile materials with the formation of the Nuclear Materials Council. The Council, chaired by the Under Secretary will guide the development of an integrated nuclear-materials management plan. The plan will be completed by March 2000 and will include an assessment of fissile material

stabilization programs and identify opportunities for better integrating criticality expertise into our operations.

To support these initiatives, particularly in light of the recent criticality event in Japan, I am directing program and field offices and the Office of Environment, Safety and Health (EH) to take the following steps to assess the adequacy of our nuclear criticality safety programs at our sites and to identify and implement, where needed, enhancements to these programs.

1. **Review of Key Facilities.** A team of criticality safety experts from Headquarters, Federal staff from the field elements, and independent experts -- and led by the Office of Environment, Safety and Health -- will work collaboratively with field elements to conduct a high-level assessment of the operational criticality safety aspects of several key facilities in the Department, listed in order of priority: Oak Ridge Y-12 plant; Los Alamos National Laboratory building PF-4 at TA-55; Savannah River Site FB-Line facility and H-Area exterior tank storage; the Hanford Plutonium Finishing Plant; and Rocky Flats Building 371.

   The anticipated scope of the review is contained in Attachment 1. Within 90 days, the team will complete the review with relevant field elements and forward a report to Secretary Richardson that includes a summary of the results of this review -- including an identification of any immediate problems and related corrective actions and an assessment of whether the operations and criticality safety risks at these facilities are well understood, analyzed, and controlled.

   The results of these assessments also will be used by the Nuclear Materials Council in developing the Department's framework for long-term fissile materials stewardship.

2. **Self-Assessments.** On a broader basis and within 120 days, DOE field elements will complete self-assessment(s) for all facilities and operations involving fissile materials, using the criteria contained in Attachment 2. In addition, the Department's operating contractors also should be directed by appropriate field elements to conduct self-assessments using the criteria provided in Attachment 3.

   The self-assessments will evaluate adequacy of procedures, procedural adherence; adequacy of criticality safety training, including training and qualification of criticality safety practitioners. The assessments also will include staffing analyses to ensure the short-term and 5-year adequacy of staffing for criticality safety professionals at the Federal and contractor levels at our sites.

Although an emphasis of the self-assessments is on the operational aspects of criticality safety, training and qualifications, the assessments should determine whether normal and accident conditions represented by the facilities/operations have been adequately considered and properly analyzed.

Deficiencies identified through these assessments -- and any deficiencies identified in the review of key facilities described above -- that cannot be corrected immediately, will require an accompanying corrective action plan (in accordance with the Department's Implementation Plan for the Defense Nuclear Facilities Safety Board Recommendation 98-1). Corrective actions plans, including plans to increase or change staffing, should specifically identify the actions planned, the affected facility(ies), schedule, and cost considerations, including potential sources or offsets for funding. Ensuring the safety of our sites clearly must take priority over other work.

These assessments must be performed by qualified criticality safety professionals. The Department's Criticality Safety Support Group should be consulted to identify qualified technical resources for these assessments. In addition, expertise represented on the Criticality Safety Support Group should be considered a technical resource for these assessments.

The results of the assessments, including any associated corrective actions, should be reported to the respective Program Secretarial Office, with a copy to the Office of Environment, Safety and Health. Within 30 days of receipt from the field, programs should review these materials, resolve comments with the field elements, and submit the reports to the Office of Environment, Safety and Health, indicating whether there are any outstanding issues that require resolution. The Office of Environment, Safety and Health will report regularly to me and the Under Secretary on the status of these reviews and corrective action plans.

3. **EH Analysis of Results.** Based on the submittals provided by the Program Secretarial Offices, the Office of Environment, Safety and Health will analyze the results and identify what field investigations will be performed by EH. These investigations will include a review of conduct of operations, a walk-down of work areas, and interviews with workers to assess worker knowledge of criticality risks and controls. Additionally, the EH analysis will evaluate the recommended Federal and contractor criticality safety resource needs across the complex.

Within 120 days of receiving these submittals, EH will provide a report to Secretary Richardson on the overall adequacy of the Department's criticality safety programs, including any additional general actions needed or significant open issues requiring senior management attention.

4. **Performance Metrics.** Within 120 days, DOE field elements should develop performance metrics that are specific to nuclear criticality safety at their sites that could be incorporated into the contract in subsequent contract modifications. Metrics should be tailored to meet the specifics of the site and contract. The metrics should be submitted to the Program Secretarial Offices for review, with subsequent transmittal to EH within 45 days of receipt.

5. **Options Study for Los Alamos Critical Experiments Facility.** A team will perform an options study over the next 6 months on options for relocating the Critical Experiments Facility at Los Alamos TA-18, including whether to move to an existing facility at another site, or whether and where to construct a new facility, in order to maintain the Department's criticality safety experimental capability and the requisite training facilities for criticality safety practitioners. The team will include the Office of Defense Programs in a key role, and representation from the Offices of Nonproliferation and National Security; Security and Emergency Operations; Environmental Management; Science; Nuclear Energy; and Environment, Safety and Health. Members of the Department's Criticality Safety Support Group also will participate in the effort, and will review and provide comments on the results of the options study.

   This study will consider security, safety, and health aspects of each of the options as well as the cost and schedules for design, modification/ construction, operation of existing, replacement, or new facilities. The study should result in a recommendation to the Secretary, supported by a proposed transition plan that would ensure continuity of training and the retention of critical staff to manage and operate these facilities.

We look forward to the results of these efforts – and to working with you to strengthen our criticality safety programs. Thank you for your cooperation on this very important issue.

Attachments