

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

March 21, 1996

MEMORANDUM FOR: G. W. Cunningham

COPIES: Board Members

FROM: W. M. Shields

SUBJECT: Fire Protection Visit to Rocky Flats Environmental Technology Site (March 15, 1996)

1. **Background:** Members of the Defense Nuclear Facilities Safety Board (Board) staff noted, during walkthroughs in late 1995, that transient combustible materials seemed to be accumulating in Building 371 at the Rocky Flats Environmental Technology Site (RFETS). In a February 16, 1996 memorandum, DynCorp (fire prevention services contractor) addressed the problem of "excessive accumulation of combustibles in Building 371 over the last 12 months" and provided certain guidelines regarding transient combustibles. Building management was specifically directed to alleviate problems in listed areas.

Funding for the Fire Hazards Analysis (FHA) for Building 371 has recently been deleted. Therefore, the building has no FHA complying with current DOE criteria. Considering the building's current and projected mission, this seemed inadvisable. The defunding of the Building 371 FHA also raised questions about overall maintenance of the RFETS fire protection program.

2. **Discussion:** During the trip, the Board staff determined that:
 - a. **Building 371 Issues:** Substantial transient combustibles have accumulated in several locations. These materials are mainly associated with construction activities ongoing in the building. They include both construction waste and materials needed for further work and building maintenance. Apparently, Building 371 has been unable to remove the waste materials because Building 664 is not currently accepting these materials for staging and disposal. Some of the material may be slightly contaminated. At the time of the review, building management has taken two steps to mitigate the problem: (1) crating most of the combustibles in fire-treated plywood, also painting some wood items with fire-resistance paint, and (2) spreading out the waste containers to avoid a large fire load in any one area.

The areas in which these combustibles are located are covered by automatic sprinkler systems and are generally occupied. A fire of any size would likely be detected quickly, extinguishers are available, and fire department response time is about 5 minutes. A fire response pre-plan has been prepared for the building and is of high quality.

There are some problems with sprinkler coverage, however. Most sprinklers are located on the ceiling, sometimes 20-30' above the floor, with ducts, pipes, and cables in between. One large case of combustibles was beneath an HVAC duct and would have received minimum coverage from overhead sprinklers. Emergency lights are plug-in fluorescent fixtures (AC-powered) hanging from thin metal pipes. These lights could not be counted in a seismic event or in a fire affecting A/C power cables.

The Board staff considers steps taken so far are adequate in the short term to address the risk of these transient combustibles. A limited-scope combustible loading analysis for Building 371 has been proposed by Kaiser-Hill Fire Protection Engineering. If funded and carried out in the near term, this analysis would serve to provide solidly-based guidelines for the building during construction activities. It is not, however, a substitute for a completed FHA or for ultimate removal of transient combustibles from the building.

b. Site Fire Protection Issues: Severe budget reductions at Rocky Flats are beginning to impact fire protection in plutonium buildings. The following impacts have already occurred:

- ▶ Completion of Building 371 Fire Hazards Analysis completion not funded.
- ▶ Building 707 FHA update (a post-start ORR finding) not funded, though not yet due.
- ▶ Annual updates of FHAs for other buildings falling behind.
- ▶ Funding deleted for annual full-flow fire pump test.

Neither the contractor nor DOE could provide documentation that these changes (which will result in Order non-compliance) have undergone appropriate safety analysis per the Unreviewed Safety Question (USQ) procedures.

The Board staff believes that any building containing significant quantities of plutonium, should have an order-compliant FHA and this FHA should be kept current until such time as the building's radioactive contents have been reduced to minimal levels. Decisions to not maintain a correct FHA should be based on safety justification has been prepared by the contractor and approved by DOE (including EH-HQ). USQ procedures should be invoked where appropriate.

Fire pumps are started weekly (off-line) and the yard loop is annually flow-tested using feed from the gravity tank. However, this tank is seismically unreliable (it is just a municipal-style water tank), hence the fire pumps will be essential should an earthquake occur at the site. The fire pumps are not tested to full head pressures annually consistent with accepted industry practices.

3. **Future Action:** The combustible loading issue in Building 371 should be monitored by the Board's site representatives. They should confirm on a regular basis that (1) additional transient combustible materials are not accumulating in the building, and (2) actions are proceeding to remove the combustibles already there.

DOE should provide technical justification for actual or planned reductions in the RFETS fire protection program for plutonium buildings (including personnel reductions). **The Board's statutory approvals of resumption of operations in Buildings 559 and 707 were premised on compliance with fire protection requirements and guidance.** Other buildings such as Building 371 with a continuing high inventory of plutonium must remain fully protected. Funding decisions should not precede safety analysis.