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MEMORANDUM FOR: Roy J. Caniano, Chief, Fuel Facilities and
Contaminated Sites Section

FROM: George M. France, III, Fuel Facilities Inspector

SUBJECT: TRIP REPORT - JULY 28, 1992, NUCLEAR SAFETY
MEETING; US NRC HQ/NMSS & CE HEMATITE & CORP.

On July 28, 1992, I visited Headquarters for the purpose of meeting with representatives from Combustion Engineering (CE) and the NMSS licensing staff. Messrs. Conant, Eskridge, Grossman, and Klotz represented the licensee, while Messrs. Hickey, Robinson, Soong, and Tokar were present for NMSS. The CE staff called this meeting to discuss a pending license amendment application on criticality safety (a one inch document).

Mr. Hickey received a quick briefing of the licensee's presentation and departed for another meeting. Messrs. Conant, Grossman, and Klotz of CE's staff followed the briefing with an overview of the fuel rod expansion program, a schedule of construction activities, and the criticality safety requirements.

Mr. Conant indicated that his overview of the license amendment application was an attempt to alert NMSS of the phase start-up approach that CE is using to pursue fuel rod expansion. Conant indicated that the current construction effort could lead to plant startup in May or June 1993. Prior to startup CE will need NMSS permission to run the following qualification tests:

- Early spring 1993; introduce natural and depleted oxide into the plant. Monitor ventilation and oxide handling controls.
- Tentative receipt of fuel rod scanner, December 1992. Uranium oxide (natural and depleted) pellets are needed to qualify/test the scanner.
- January 1993; assemble the Kardex unit for automatic load and run test.
 - Kardex unit: a pellet storage rack or system-loads by rubber belted conveyor belts-convey trays to rack station w/~ 225 lbs of uranium oxide per tray. Pellet trays are loaded by lifts or chain hoist (elevator units). The unit will be housed in an interior room constructed of reinforced concrete with tie-downs designed for stability during earthquakes.

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- January 1993; test the transfer cart or electric scooter. The scooter is designed to transport fuel pellets from the oxide pellet plant to the fuel rod loading plant.

Mr. Klotz provided insight about criticality safety and the fuel rod expansion program.

The transfer of pellets from the presses to the Kardex unit will require a 5 minute excursion by a route that traverses between the two buildings. Obviously, the pellet trays must be covered to prevent exposure to the environment, especially moisture. Moisture in fuel rods causes failure due to the presence of hydride. Consequently, pellets are maintained free of moisture because of operational and nuclear safety concerns. For both reasons pellets are dried at 500 °C in reduced atmosphere and warmed at 125 °F to remove moisture.

The inner room that houses the Kardex unit has built in drains. If by some method the room was flooded, water would flow through the drains and out on the floor of the plant. The pellet trays are also designed to drain. In turn, the criticality concern is minimized, because the floor of the plant is considered a safe slab.

Installation of the Kardex unit which houses about 55 slots for pellet trays must be measured in place and compared with a previously calculated nuclear safety analysis. Mr. Klotz made this clear during our discussion. The safe spacing of adjacent transfer carts filled with pellet trays is maintained by design. Consequently, the temporary storage of pellet trays in route are maintained nuclearly safe. The rubber belts that are attached to the elevator that conveys pellet trays to the Kardex unit are expected to require frequent inspection and replacement. Mr. Grossman replied that maintenance workers may be required to wear respiratory protection, when servicing the Kardex unit.

The license renewal application has a number of discussions and calculations involving integrated safety analyses. Mr. Klotz indicated that the following conservative assumptions were made in the safety analyses:

- Flooding in the Kardex unit storage room-albeit, in reality the bottom tray is 15 inches above the floor.
- Water reflection on all four sides of the fuel storage box (16 x 16).
- Structural failures-roof cave in-collapse of Kardex unit with full trays of UO₂ pellets.

The application also discusses radiological safety, industrial safety, and an evaluation of process upsets. It was apparent that the licensee attempted to integrate safety analyses throughout the process description.

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Mr. Grossman indicated that Ms. Bonnie Bieser has been assigned the task of notifying the region about scheduled installations that are considered safety systems. The licensee provided a copy of tentative schedules as attached. Unless other arrangements are desired, those calls will probably be directed to me.

Mr. Tokar indicated that renewal of the existing license should be forthcoming, while the direction and closure of the amendment issues is limited to or dependent upon available manpower/resources. Consequently, the time table for meeting the licensee's schedule for testing components could not be predicted at this meeting.

While visiting NMSS, I was also informed by Jerry Swift that a supplement to the Commission Paper, burial concerns under 10 CFR 20.302, for Kerr-McGee Cimarron was drafted to provide additional information on former contaminated ponds at the Cimarron site near Crescent, Oklahoma. A copy of the draft is attached for your information.

If you have any questions regarding this trip report or would like to discuss any matters further please let me know.

/s/

George M. France, III
Fuel Facilities Inspector

Attachments: As stated

cc w/attachments:

J. Grobe

Docket & License File No:
70-0036/SNM-33

RIII

GRI 10 YES

France/dsv
08/11/92



POLICY ISSUE

(Information)

July 15, 1992

SECY-91-398A

For: The Commissioners

From: James M. Taylor
Executive Director
for Operations

Subject: LICENSE TERMINATIONS FOR CIMARRON CORPORATION FACILITIES,
CRESCENT, OKLAHOMA

Purpose: To provide additional information on former contaminated ponds
at the Cimarron Corporation site near Crescent, Oklahoma.

Background: In SECY-91-398, staff presented its regulatory approach
for decommissioning of the Cimarron site. This would involve
three licensing actions: the termination of the mixed-oxide
license, SNM-1174, the authorization of the burial pursuant to
10 CFR 20.302 of soil contaminated with low concentrations of
enriched uranium, and decommissioning of the remainder of the
site under license SNM-928, to be addressed later. Included
in the remainder of the site are five former ponds, mentioned
on page 4 of SECY-91-398. In subsequent staff discussions, it
was decided that additional information should be provided to
the Commission regarding the former ponds. This paper
provides the additional information. The staff
recommendations and requested Commission approvals in SECY-
91-398 remain unchanged.

Discussion: Before the staff makes a final decision to terminate License
No. SNM-928 and release the entire Cimarron site for

NOTE: TO BE MADE PUBLICLY AVAILABLE
WHEN THE FINAL SRM ON SECY-91-398
IS MADE AVAILABLE

Contact:
Jerry J. Swift, NMSS
504-2609

unrestricted use, the former ponds must be addressed. The five former ponds were designated Uranium Waste Pond No. 1, Uranium Waste Pond No. 2, the Uranium Emergency Pond, the Plutonium Evaporation Pond, and the Plutonium Emergency Pond. The two plutonium ponds had synthetic sheet liners. The three uranium ponds were unlined, except that Uranium Waste Pond No. 1 had its bottom treated ("lined") with tar and gravel. These five ponds were closed by the licensee upon receipt of Amendment No. 2 dated July 10, 1978, to License No. SNM-1174. At that time, it was intended by both the staff and licensee that the pond areas were suitable for release for unrestricted use. Prior to applying for authorization to close the ponds, the licensee had removed the pond sludge, solidified it with cement, and shipped it to a licensed disposal facility. Remaining in the ponds were the liners (in the plutonium ponds) and a layer of contaminated soil of variable thickness, but commonly 4 to 8 inches thick. Before being tilled in the pond closure process, the pond-bottom soil was sampled by the licensee, by the Oklahoma State Department of Health, and by the Nuclear Regulatory Commission's Region III. The licensee's sample analysis results are generally higher than the State's and the NRC's, with one composite sample as high as 1486 picocuries uranium per gram of soil (in Uranium Waste Pond No. 1). Although the sample analysis procedures are not clearly specified, the licensee's results, and the NRC's (the analysis was performed by Argonne National Laboratory), indicate that appreciable parts of the bottoms of Uranium Waste Ponds Nos. 1 and 2 had been contaminated in the 300 to 400 picocuries per gram range. The Uranium Emergency Pond had uranium concentrations averaging about 50 picocuries per gram. In the soil beneath the liners, the plutonium ponds showed uranium contamination generally in the 30 to 40 picocurie per gram range. Except for one sample at 6 pCi/g, plutonium concentrations were less than 0.3 pCi/g.

After review of the results of the sample analysis, the State of Oklahoma, on March 2, 1978, approved the closure plan on the basis that the concentration "is less than those concentrations which are exempted from regulation under the Radiation Protection Regulations (Section 4.2)." In June 1978, NRC's Fuel Reprocessing and Recycle Branch submitted the closure proposal, sampling results, and associated correspondence to the Environmental Protection Agency's Region VI, Dallas, Texas, and received its approval, dated June 26, 1978, as follows: "The levels of residual radioactivity in the plutonium evaporation pond following decontamination are generally quite low and well under EPA's recommended "screening level" for plutonium in the general environment (0.2 micro-Ci/m² - this is a conservatively developed level at which for most situations, radiation dose will not exceed 1 mrad/yr lung dose or 3 mrad/yr bone dose). No comparable

screening level for enriched uranium contaminated soils has yet been developed by EPA. However, the reported levels are generally less than the screening level for plutonium with a few exceeding by a factor of 2 to 3. Kerr-McGee's plan calls for discing unlined ponds, bulldozing berms over the bottoms to level all the ponds to the surrounding topography. This will blend the levels of higher activity with the much more abundant low activity soil, further reducing or eliminating the spots that exceed the screening level.

In conclusion, the method outlined by Kerr-McGee appears to be appropriate to return the pond areas to a condition suitable for safe unrestricted use."

The closure process authorized by License Amendment No. 2 involved folding sheet liners up in the pond center and burying them with fill. Unlined ponds were to be tilled to blend the contaminated layer into deeper soil, and then the pond berms leveled and the ponds filled to match the surrounding ground surface. The finished surfaces were revegetated.

Although Uranium Waste Ponds 1 and 2, in particular, may have concentrations of uranium contamination which exceed current guidelines for release for unrestricted use, the ponds appear to have been closed in accordance with all procedures and requirements in effect in 1978. Even though the license itself was not terminated in 1978, it would conform to the principles of the policy on finality expressed in the Action Plan enclosed with SECY-92-106 to not reopen this issue. On the other hand, the staff has an opportunity now to review the case, before the license is terminated. Of particular interest is the issue of whether the former ponds in their present condition are contributing to groundwater contamination, radiological or chemical (e.g., nitrates).

Therefore, staff is including the former ponds in its evaluation of the decommissioning to be performed on the remainder of the site before termination of the uranium facility license, No. SNM-928.

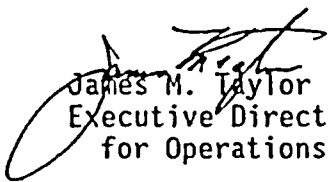
The staff has also considered the potential for the ground water impacts of the proposed 10 CFR 20.302 burial described in SECY-91-398 to overlap with potential impacts of the former ponds. Although the proposed 10 CFR 20.302 burial site is not much more than 100 feet horizontally from the former Uranium Waste Pond No. 2, it is both uphill and up the ground water gradient. As mentioned in SECY-91-398 (and documented in the 10 CFR 20.302 Environmental Assessment), based on measurements by the licensee, staff performed an evaluation of uranium migration from the burial via precipitation infiltration and

ground water transport to a hypothetical drinking water well 20 feet vertically and 1 foot horizontally from the horizontal limits of the buried material. This evaluation showed no uranium reaching the hypothetical well within 1,000 years.

This suggests that any potential overlapping of ground water effects from the two areas is many thousands of years in the future. The other former ponds are appreciably farther from the proposed burial.

This additional information supplements the information provided in SECY-91-398 about decontamination of the remainder of the Cimarron site. The staff believes it is appropriate to proceed with a decision on the termination of the mixed oxide facility license No. SNM-1174 and on the 10 CFR 20.302 soil disposal. With regard to finality (a reopener clause), the staff proposes to follow the guidance in the Action Plan, SECY-92-106, as approved by the Commission on April 6, 1992.

Coordination: The Office of the General Counsel has reviewed this paper and has no legal objection.


James M. Taylor
Executive Director
for Operations

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REGION IV
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Assembly Building
Construction and Occupancy
Schedule

	<i>Estimated</i> Date of <u>Completion</u>
Permits, Site Preparation, Foundations, and Steel Frame	complete
Sides and roof	8/31/92
Rough Utilities	9/15/92
Slab poured and cured	10/31/92
Initial Occupancy	11/02/92
HEPA system and final utilities	12/24/92
Finishes	1/31/93

ABB Combustion Engineering
7/28/92; LN Grossman

Safety System Installations
in
New Assembly Building

The following are scheduled dates for safety system installation activities. Actual dates may differ somewhat; we will inform Region III 7-10 days ahead of actuals.

*(Boric Bicsler will
call George France)*

August	8/15-20 Conduits placed in slab (8/20 Begin slab pour)
September	9/17-30 Major HEPA ducts installed Wall conduits installed and wires pulled
October	10/19-31 Activate fire alarms
November	11/15-30 Install Warehouse Sprinklers
December	by 12/24 Install HEPA drops, pumps and filters
January	1/04-22 Test HEPA systems Install criticality alarms Activate and test remaining alarms

*7/28/92
Len Grossman*