



UNITED STATES
NUCLEAR REGULATORY COMMISSION
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Central File

February 13, 1984

MEMORANDUM FOR: Darrell G. Eisenhut, Director
Division of Licensing

FROM: Thomas M. Novak, Assistant Director
for Licensing
Division of Licensing

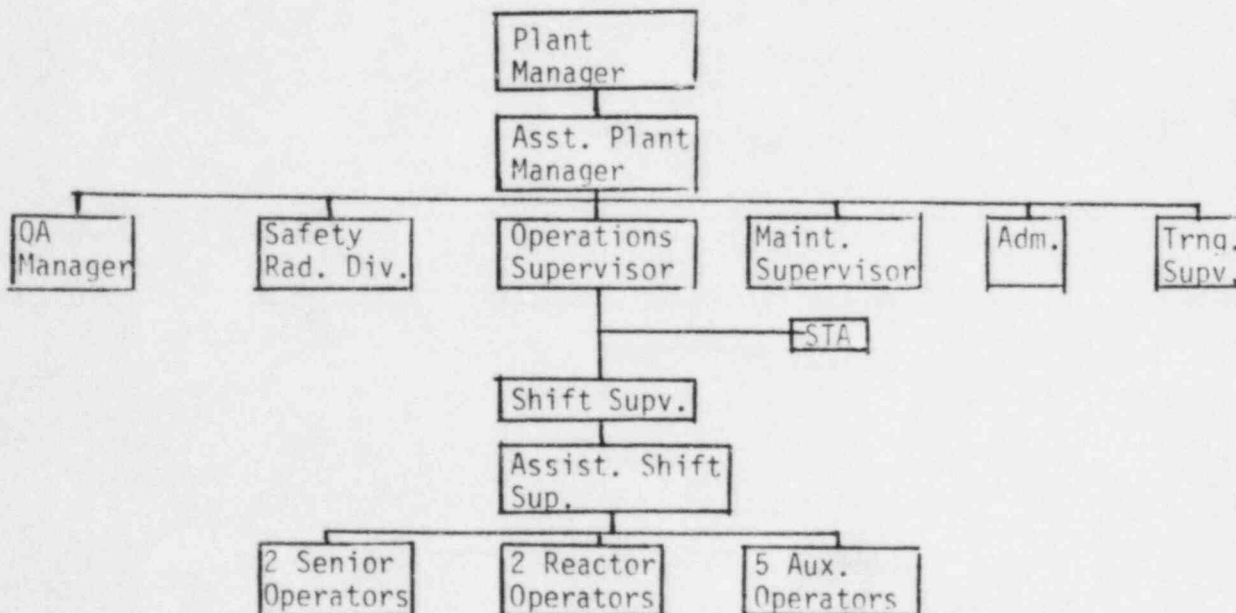
SUBJECT: TRIP REPORT - PLANT VISIT ON NOVEMBER 8, 1983 TO SAINT-LAURENT-DES-
EAUX B1 & B2 PLANT (2800 MWT TWIN UNIT PWR) AND VISIT ON NOVEMBER 9,
1983 TO KSB LABORATORIES, FRANKENTHAL, WEST GERMANY

Plant Visit to St. Laurent (Comparable to a Westinghouse 3 loop plant)

The plant visit was arranged by Bernard Fourest of the French Atomic Energy Commission. The site is a four unit site (2 gas graphite and 2 PWRs). My visit concentrated only on the PWR facility.

The Saint Laurent reactor plant most closely resembles the Farley Station. It is a twin Framatore (W) design of ~2785 Mwt. Unit 1 went critical in January 1981 followed Unit 2 in June 1981. Mr. J. Libmann from the French AEC and Mr. Pierre Lienart, Manager, Nuclear Safety Division, EDF were in attendance at the meeting. Also in attendance were members of the operating staff including the plant manager, operations superintendent, and an engineer assigned to the duties of Shift Technical Advisor (STA).

The discussions began with a description of the operating organization at the site. The organization shown below is a standard organization used at all twin unit sites and is in effect at Saint Laurent.



The operation is a six shift rotation including the STA. EDF is planning to go to a seven shift rotation. This manning is standard at all twin unit sites. The duties of the STA besides providing advice to the shift supervisor regarding safety matters also include:

1. Supervises all radiation protection activities
2. Supervises on shift training
3. Supervises periodic testing
4. Supervises equipment testing maintenance

EDF considers people assigned to the STA to be of management potential. The assignment as a STA is between 2 to 3 years. The operation staff personnel are not licensed. EDF has set standards for reactor operators and upon completion of the program, individuals are certified either as reactor or senior reactor operators.

EDF currently has 3 simulators in operation. With the priority given to the training of the new operating reactors for the approximately 30 units under construction, experienced operators are scheduled for one week of simulator requalification training every two years. They plan to increase the number of operational simulators to satisfy the goal of yearly simulator requalification training.

Mr. Lienhart introduced the subject of emergency procedures. He indicated that while on a two year assignment with INPO he had discussed the procedures with members of NRC. Examples were shown to me and they had the following characteristics:

1. They are considered symptom oriented procedures but tend to be more diagnostic.
2. Each member of the operating crew has his own procedure. The shift supervisor, assistant supervisor, senior operator, and operator each have specific procedures describing required actions. The STA has a procedure to follow in performing in an advisory role.
3. Each procedure is color-coded for the assigned position. The written material is carefully prepared with changes in print size to emphasize certain actions. The level of detail increases as you proceed lower in the organization. For example, the shift supervisor's procedure identifies broad overview guidance while the RO procedure directs valve manipulation etc. The written material was not lengthy and could be easily followed.

The same procedures are in use at all twin units. My impression of the procedures was that they had been carefully thought out and were a quality product.

Mr. Lienhart next discussed the on shift training that is available to the operating staff. A terminal is available in the control room from which an operator can perform training using a computer program developed in question and answer format. The answers are in the multiple choice format with the computer responding immediately if the first or second choice is the correct answer. After two failures to answer the question, the program identifies the correct answer. The test is scored and the results are provided to management only as a voluntary action by the operator. The management believes that by making it voluntary, operators are encouraged to train so as to improve their understanding of plant behavior and report favorable results.

The number of reactor trips was discussed and the St. Laurent staff noted that they probably have on the order of 10-12 trip per unit per year. They believe the cause of the trips is equally divided between trips resulting from steam generator water level, operator error, and from improper training and or procedure weaknesses in directing periodic surveillance testing.

A discussion of personnel action regarding fire protection measures noted that the shift supervisor has the assignment to supervise fire control activities. Beyond this specific assignment the operating staff would rely on the fire protection training given to all plant personnel. Drills are performed on an annual basis. The drill consists of starting with an unannounced setting off of a smoke bomb and then relying on plant personnel to recognize the event, signal the alarm, and take necessary actions. The event ends with offsite fire fighters and equipment arriving on site, hooking up their equipment, and testing it for readiness.

With regard to authority and responsibility during an emergency, the final authority is with the plant manager. He does not report to any headquarters management for decision regarding accident mitigation actions.

The visit ended with a plant tour. The control room had little activity in progress. The operating unit had approximately ten annunciator lights on. The unit's control room preparing for refueling had many more annunciator lights on. EDF plans to change all control room panels etc. in accordance with TMI NUREG-0737. SPDS panels will be included in this change. All units will change to the same revised configuration.

Visit to KSB Laboratories

On November 9, 1983 a meeting was held at the KSB facilities with Dr. Robert Darnedde, General Manager Power Plant Technology Division and Dr. Heinz Freese, Director of Research. Joining the meeting from Combustion Engineering were Frank Bevilacqua, Vice President, Engineering, and Edward Scherer, Director, Nuclear Licensing. The purpose of the meeting was to gain additional background into the design and operation of KSB reactor coolant pumps. The KSB pump design was utilized for the reactor coolant pumps at Palo Verde.

The first nuclear application of the KSB pump design occurred at the Gundremmingen BWR plant (200 MWt). The next applications were to PWRs and included the Obrigheim (600 MWt, 3 loop) and most recently the PWRs Biblis-A and B units (3900 MWt, 4 loop) in operation for 8 and 5 years, respectively. The Biblis RCP design most nearly represented the Palo Verde design.

The supplier of the RC pumps for Palo Verde was CE/KSB. The design input was provided by KSB with CE providing fabrication expertise. The parent KSB organization did review and approve all major design changes.

The KSB staff described some of the operating experience with KSB designed pumps. At the Biblis plants, the most significant operational problem involved hydraulic vibrations leading to loss of bolt preloading. Biblis RCPs also incurred several reactor coolant pump seal failures.

In discussing possible part changes to the Palo Verde pumps, it was noted that the reactor coolant pumps for the Greene County application were in storage in New York State. These pumps were the first U.S. domestic application by CE/KSB.

Original signed by:
Thomas M. Novak

Thomas M. Novak, Assistant Director
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cc: H. Denton
NRR Division Directors

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