

August 9, 2001

MEMORANDUM TO: Michael F. Weber, Division Director
Division of Fuel Cycle Safety
and Safeguards
Office of Nuclear Material Safety
and Safeguards

FROM: Andrew Persinko, MOX Project Manager */RA/*
Enrichment Section, Special Projects Branch
Division of Fuel Cycle Safety
and Safeguards
Office of Nuclear Material Safety
and Safeguards

SUBJECT: TRIP REPORT - ASSIGNMENT TO FRENCH AUTORITE DE
SURETE NUCLEAIRE (NUCLEAR SAFETY AUTHORITY) -
APRIL 30, 2001 - JULY 13, 2001

From April 30, 2001, through July 13, 2001, I worked with the French Autorite de surete nucleaire (ASN) (nuclear safety authority) at various locations in France. The purpose of the trip was to: (1) exchange fuel cycle safety information with the French Direction de la surete des installations nucleaires (DSIN); (2) obtain an overview of nuclear safety for fuel cycle facilities in France; (3) obtain a more detailed understanding of safety aspects related to the MELOX mixed oxide (MOX) fuel fabrication facility and the spent fuel reprocessing facility located in La Hague; and (4) obtain a more detailed understanding of the MELOX and La Hague processes.

As part of the itinerary, I worked at ASN offices in Paris, Marseille, Marcoule, Lyon, and Caen and at the MELOX, La Hague, Cadarache, Romans, Pierrelatte, and Veurey sites. I reviewed numerous safety and technical documents such as French regulations, safety reports, and technical safety analyses; observed and participated in five inspections on various topics at the MELOX, Cadarache, and Romans sites; and discussed technical topics and operating experience with DSIN technical personnel. While at La Hague, I visited a test facility adjacent to the La Hague reprocessing plant where I observed a full-scale working model of the electrolyzer to be used in the U.S. MOX facility. The model was built in order to conduct operational tests.

On July 12, 2001, I had an exit interview with M. Lacoste, the Director of the DSIN. During the exit interview, I described my activities while working with the DSIN and the benefits of my trip, as I perceived them, for both NRC and DSIN. M. Lacoste informed me that he will be speaking with Chairman Meserve in September at Sellafield and asked that I inform the Chairman about my work with the DSIN before then, if possible.

I have attached a more detailed trip report (memo from Persinko to Giitter dated July 13, 2001).

Attachment: Trip Report

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July 13, 2001

TO: Joseph G. Gitter, Section Chief
Enrichment Section
Special Projects Branch
Division of Fuel Cycle Safety and Safeguards
Office of Nuclear Material Safety and Safeguards

FROM: Andrew Persinko, MOX Project Manager
Enrichment Section
Special Projects Branch
Division of Fuel Cycle Safety and Safeguards
Office of Nuclear Material Safety and Safeguards

SUBJECT: ASSIGNMENT TO FRENCH AUTORITE DE SURETE NUCLEAIRE
(NUCLEAR SAFETY AUTHORITY) (APRIL 30, 2001 - JULY 13, 2001)

From April 30, 2001 through July 13, 2001, I worked with the French Autorite de surete nucleaire (ASN)(nuclear safety authority) at various locations in France. The itinerary of trip, including all meetings with the regulatory authorities in France, was arranged by the Direction de la surete des installations nucleaires (DSIN). The U.S. Nuclear Regulatory Commission (NRC) funded the trip.

The purpose of the trip was to: 1) exchange fuel cycle safety information with French DSIN regulators; 2) obtain an overview of nuclear safety for fuel cycle facilities in France; 3) obtain a more detailed understanding of safety aspects related to the MELOX mixed oxide (MOX) fuel fabrication facility and the spent fuel reprocessing facility located in La Hague; and 4) obtain a more detailed understanding of the MELOX and La Hague processes. The reason for focusing on the MELOX MOX fuel facility and the fuel reprocessing facility at La Hague is that the MOX facility to be constructed in the U.S., for which I am the project manager, will be based on processes in both of these facilities. Before arriving in France, I provided to the DSIN technical topics that I would like to discuss while in France (e.g., risk informed vs. deterministic analyses, operational experience, etc.). The visit was solely devoted to fuel cycle facilities and did not include other aspects of nuclear safety, such as reactor safety or nuclear material transportation.

The ASN combines the resources of the DSIN (central department located in Paris and the Paris suburb, Fontenay-aux-Roses), the regional Divisions des installations nucleaires (DIN)(nuclear installation departments) offices set up within the Directions regionales de l'industrie, de la recherche et de l'environnement (DRIRE), and the Bureau de controle des chaudières nucleaires (BCCN)(nuclear steam supply system control office). The ASN is supported by the Institut de protection et de surete nucleaire (IPSN)(institute for nuclear safety and protection). The missions of the DSIN include developing technical regulations concerning the safety of nuclear installations and following their application, organizing activities for inspections of the installations, collecting all information concerning nuclear safety in France and foreign, proposing and organizing information for the public on nuclear safety, and following

research work performed on nuclear safety. The missions of the regional DIN offices include day-to-day activities such as performing inspections, follow-up after reactor shutdowns, handling of incidents, controlling pressure vessels, regulating the work of power reactors, and relations with local authorities. The IPSN provides technical support to the DSIN and DIN in such areas as technical evaluation of operating experience, criticality safety, fire protection, radiological protection, etc. The DSIN reports to the Ministers of Industry and Environment.

Topics covered during the visit can be divided into two broad categories: 1) regulations and the regulatory process in France, including the conduct of inspections and the inspection process, and 2) technical issues. Some activities such as inspections in which I participated, can be included in both categories since the inspections addressed both regulatory aspects as well as technical issues.

A chronological summary of the trip activities and locations is provided below. Inspections and major meetings with licensees that I attended while at each location are also provided.

1. DSIN in Paris (April 30 - May 11)
2. DIN/Marseille at the MELOX facility (May 21 - June 1)
3. IPSN/DES/SESUL/BESIAC at Marcoule (June 5 - June 15)
 - Inspection at Romans: Degraded Conditions (June 6)
 - DSIN meeting with MELOX to discuss status of outstanding questions (June 11)
 - Inspection at MELOX: Confinement Ventilation (June 12)
4. DIN/Marseille at Marseille (June 18 - June 22)
 - Inspection at Cadarache/AtPu: Operation in Degraded Conditions and Load Handling (June 20)
 - Inspection at MELOX: Criticality Safety (June 21)
5. DIN/Lyon at Lyon (June 25 - June 27)
 - Visit to Pierrelatte/FBFC: Fabrication of Fuel Rods and Control Rods (June 26)
 - Visit to Veurey/SICN: Test Facility for MELOX (June 26)
 - Inspection at Romans: AP2, Maintenance and Operations (June 27)
5. DSIN in Paris (June 28 - June 29)
6. IPSN/DES/SESUL/BERH in Paris (July 2 - July 3)
7. DIN/CAEN at Caen (July 4)
8. DIN/CAEN at La Hague (July 5 - July 10)
 - Visit to SGN: View full-scale working model of the electrolyzer to be used in the U.S. MOX facility (July 9)
5. DSIN in Paris (July 11 - July 13)

During the visit, I reviewed numerous documents, both regulatory and technical. These included the annual report of the ASN, French laws and regulations (surete nucleaire en

France: legislation et reglementation), safety reports for MELOX and La Hague, IPSN reviews of the MELOX safety evaluation reports, technical operating limits prescribed by the DSIN, general rules for operation (regles generale exploitation (RGE)), operational feedback, and reportable events for MELOX and La Hague.

I discussed technical issues with DSIN and IPSN personnel such as deterministic vs. risk informed approaches to regulation, worker safety, radiological protection, emergency preparedness, and waste. Specific to MELOX and La Hague, I also discussed topics such as criticality safety, operational experience, reportable events, seismic, confinement and fire protection.

During my visit, I observed five inspections on various subjects at the MELOX, Cadarache and Romans sites. The inspection process generally consisted of discussing documents, such as procedures, documents containing technical limits and values (consignes), and the RGE with the operator. Afterward, operations at various locations in the facility were inspected.

At MELOX, I visited the powder receipt/storage, powder processing, pellet processing, pellet sintering, fuel rod assembly, fuel bundle assembly, and utility areas, including the utility control room.

At La Hague, I visited facilities in UP2-800 and UP3, the reprocessing facilities for domestic and foreign fuel, respectively. In UP3, I visited UP3 T0 (fuel assembly receiving area/pool storage area), UP3 T4 (plutonium purification area) and the UP3 laboratory. In UP2-800, I visited UP2-800 R1 URP (receipt of plutonium powder and scraps and dissolution), UP2-800 R2 UCD (waste treatment area), and UP2-800 R4 (future plutonium purification area for UP2-800). Since UP2-800 R4 is under construction, there is no plutonium in the facility. Thus, the visit to UP2-800 R4 afforded a unique opportunity to visit areas and view components and internals of components that are not currently accessible in T4 and will not be accessible in R4 after operation begins. Related to UP2 800, I visited UP2-400 MAPu (the current plutonium purification area for UP2-800), which will be replaced by UP2-800 R4 when it becomes operational. Additionally, I visited the environmental control room for the entire La Hague site. One of the functions of the control room is to monitor gaseous and liquid releases and assure that they are within allowed limits.

While visiting La Hague, I visited the COGEMA/SGN facility next to La Hague where there is a full-scale working model of the electrolyzer that is to be used the U.S. MOX facility. The model was constructed for test purposes.

Benefits of the Visit

Benefits to NRC

- Supports NRC licensing review of MOX fuel fabrication facility
 - gained more detailed understanding of the processes employed at the MELOX and La Hague facilities (U.S. MOX facility is modeled after these facilities).
 - gained more detailed understanding of technical safety aspects and issues associated with the MELOX and La Hague facilities.
 - better understanding of operational experience and incidents, especially those

- that have occurred at MELOX and La Hague.
- focus recommendations for future meetings on specific technical subjects between NRC MOX technical specialists and French regulatory technical specialists.
- Improved understanding of the French regulations and regulatory process. This includes an understanding of how inspections at French fuel facilities are conducted and the relationship between the regulatory authorities and the operator.
- Improved communication channels for information on French regulatory activities and issues. Developed working relationships between NRC regulatory personnel and French regulators/inspectors. Establishment of working level contacts at DSIN.
-

Benefits to the Nuclear Safety Authority in France

- Improved French understanding of the U.S. regulations and regulatory process.
 - effluent limits, inspection processes, risk-informed vs. deterministic regulatory approaches, interface with the public and providing information to the public, design aspects of US fuel cycle facilities.
- Improved communication channels for information on US regulatory activities and issues
 - shared information use of the NRC website, the NRC MOX website and the availability of the MOX newsletter.
 - provide liaison with NRC to facilitate providing U.S. input on fuel facility inspection; sharing with French officials information about the NRC revised fuel cycle oversight program under development.
 - establish working level contact at NRC.

Conclusion

The visit to the DSIN accomplished the purposes described above. Fuel cycle safety information was exchanged with French DSIN regulators, and an overview of nuclear safety for fuel cycle facilities in France was obtained. Further, a more detailed understanding of safety aspects related to the MELOX MOX fuel fabrication facility and the spent fuel reprocessing facility located in La Hague, and a more detailed understanding of the MELOX and La Hague processes were obtained.

The visit to the DSIN proved mutually beneficial to both NRC and the DSIN personnel. The primary benefit is an improved communication between NRC and DSIN on the working level. Discussion of operational experience, incidents, and improvements at MELOX and La Hague can be expanded to all fuel cycle facilities, transportation, and reactors in the future and can be beneficial to both NRC and DSIN. Communication between NRC and the ASN should continue on the working level, especially in exchanging information about operational experience, incidents that have occurred and improvements that have been implemented in nuclear facilities in France and the U.S.

cc:

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