



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

April 15, 1997

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File: Internat:
Mexico

FROM: James L. Blaha *[signature]*
Assistant for Operations, OEDO

SUBJECT: TRIP REPORT - IAEA OSART TO LAGUNA VERDE NUCLEAR POWER PLANT IN MEXICO

The attached trip report is provided for your information.

Attachment:
As stated

cc: J. Callan, EDO (w/o attachment)
E. Jordan, DEDO (w/o attachment)
H. Thompson, DEDR (w/o attachment)
P. Norry, DEDM (w/o attachment)
J. Blaha, AO (w/attachment)
W. Dean, OEDO (w/attachment)
D. Barss, NRR (w/o attachment)
SECY (w/attachment)
OGC (w/attachment)
OCA (w/o attachment)
OPA (w/o attachment)

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

April 2, 1997

MEMORANDUM TO: Charles L. Miller, Chief
Emergency Preparedness and
Radiation Protection Branch
Division of Reactor Program Management
Office of Nuclear Reactor Regulation

THRU: *THU* Thomas H. Essig, Chief
Emergency Preparedness and
Environmental Health Physics Section

FROM: *Daniel M. Barss* Daniel M. Barss, Emergency Preparedness Specialist
Emergency Preparedness and
Environmental Health Physics Section
Emergency Preparedness and
Radiation Protection Branch
Division of Reactor Program Management
Office of Nuclear Reactor Regulation

SUBJECT: TRIP REPORT - IAEA OSART MISSION TO LAGUNA VERDE NUCLEAR
POWER PLANT IN MEXICO, FEBRUARY 10-28, 1997.

During the period of February 10-28, 1997, I participated as a team member on an Operational Safety Assessment Review Team (OSART), organized by the International Atomic Energy Agency (IAEA), to the Laguna Verde Nuclear Power Plant in Mexico. My team assignment was to review the area of emergency preparedness and planning.

The plant's emergency preparedness program, like its United States counterparts, is based on the guidance found in NUREG-0654, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants." A detailed report of my review findings was provided to the OSART Team Leader at the conclusion of the OSART mission.

A summary of the team's findings was reported to top management of the plant, as well as representatives of Mexico's nuclear regulatory authority, National Commission of Nuclear Safety and Safeguards (CNSNS), at an exit meeting. A set of Technical Notes containing the team's complete findings, recommendations, suggestions, as well as noted good practices was prepared and provided to plant management in conjunction with the exit meeting.

Contact: Daniel M. Barss, PERB/NRR
(301) 415-2922

The Technical Notes are proprietary information for IAEA sole use and are not releasable. From the Technical Notes, the IAEA team leader will develop the OSART report. The plant and CNSNS will be given an opportunity to comment on the report before it is issued in final form. The report is submitted through official channels to the Member State, Mexico, which requested the OSART. The IAEA restricts initial distribution of the report to itself, members of the review team, the plant, and regulatory authority involved. The report is automatically released after 90 days unless the Member State indicates otherwise.

Evaluation and Recommendation

The NRC's continued support of IAEA activities, particularly OSART missions, is strongly recommended. An OSART mission provides an opportunity for NRC personnel to interact on a team with experts from many other nations. There is a sharing of concerns common throughout the nuclear power industry on a world wide level. These interactions enhance understandings between individuals with different cultural and national backgrounds. A better global view and understanding of issues is fostered. An opportunity for professional growth and broadening of the individual participants is provided. Contact, understandings, and friendships on an international scale are developed, thus enhancing relationships and understandings, not only within the nuclear power industry but at a international level as well.

Details of the OSART Mission

During the OSART mission, 15 experts from different countries visited the plant and had an opportunity to assess its operational safety performance. The OSART was organized by the International Atomic Energy Agency (IAEA) at the request of the Government of Mexico.

The purpose of the OSART is not to verify conformance of the plant's operations with regulatory requirements. The OSART starts with an assumption that the plant is operating within applicable regulatory requirements. OSART also does not review the design of the plant.

OSART is an opportunity for the nuclear power plant to get its operational practices compared with the best current practices in the world by an international team of experts. The result of the review is a set of recommendations, suggestions, identifications of good practices, and good performances.

A recommendation is advice on how improvements in operational safety can be made in that activity or program that has been evaluated. It is based on proven, good international practices and addresses the root cause rather than the symptoms of the identified concern. Absence of recommendations can be interpreted as performance corresponding with proven international practices.

A suggestion is either an additional proposal in conjunction with a recommendation or may stand on its own following a discussion of the pertinent background. It may indirectly contribute to improvements in operational safety, but is primarily intended to make a good performance more effective,

to indicate useful expansions to existing programs, and to point out possible superior alternatives to ongoing work.

A good practice is an indication of an outstanding performance, program, activity, or equipment markedly superior to that observed elsewhere and not just the fulfillment of current requirements or expectations. It should be superior enough to be brought to the attention of other nuclear power plants as a model of the general quest for excellence.

A good performance is a superior objective that has been achieved or a good technique or program that contributes directly or indirectly to operational safety and sustained good performance that works well at the station. It might not be necessary to recommend its adoption by other nuclear power plants, because of financial considerations, differences in design and other reasons.

Conduct of OSART Team Activities

To make the OSART mission as effective as possible, team training was performed during the weekend of February 8 and 9, 1997, before the start of the review process. During the training, the purpose of the OSART mission and main objectives were explained. IAEA-TECDOC-744, "OSART Guidelines", 1994 Edition, was used as a basis for the training.

Every day of the mission, each team member had a defined review schedule. Team members were expected to take notes observing the facts that affect safety. Every afternoon at 5:00 PM, the team had a meeting where each team member reported about his findings of that day. Every night team members would summarize the findings in a document called Working Notes. The team leader and assistant team leader would review these notes every morning and convey their comments to team members. Along with the development of the Working Notes was a process of issues definition, which would lead to suggestions and recommendations in the final document. The Working Notes were a team document and their final version was agreed upon with the consensus of all team members and observers. The Working Notes are the basis for the Technical Notes. The team leader met daily with plant management to keep them informed of the teams progress.

The typical daily schedule for team members consisted of leaving for the site by bus at 7:30 AM. From 8:00 to 8:30 AM was reserved for office business and preparation for the days evaluations. Then 8:30 AM to 4:30 PM team members were expected to be onsite and in the plant interacting with their counterparts, other site personnel, and conducting the evaluation. A one hour lunch break with counterparts was included. After returning to the office from 4:30 to 5:00 PM was preparation time for the daily meeting. The daily meeting was normally 5:00 to 6:30 PM. Dinner at 7:00 PM. After dinner each team member needed to document in detail his Working Notes for the day. This task normally took about 3 hours. Each work day team members worked approximately 13 hours.

Experts on Laguna Verde OSART Mission

Jose Manuel Diaz Francisco, IAEA (Brazil), Team Leader
Robert Brian Taylor, IAEA (Canada), Assistant Team Leader
Bernard Payen, IAEA (France), Management, Organization and Administration
Graham Hodges, Sizewell B Training Centre, UK, Training and Qualifications
Ricardo Tibaldi, Embalse NPP, Argentina, Operations
Erney Villarruiel, WNP-2, USA, Operations
Ulrich Frick, Leibstadt NPP, Switzerland, Maintenance
Robert Goodman, Pickering NPP, Canada, Technical Support
Lubomir Dobiš, Bohunice NPP, Slovakia, Radiation Protection
Johan Lejon, Oskarshamn NPP, Sweden, Chemistry
Daniel M. Barss, USNRC, USA, Emergency Preparedness and Planning
Andre Figueroa Mir, Asco NPP, Spain, Special Observer
Khatiyar S.C., Tarapur Atomic Power Station, India, Special Observer
Juan Manuel Presa, Cuba, Special Observer
Andrej Stritar, Nuclear Training Centre, Slovenia, Special Observer

Each team member had a designated counterpart from the plant, who was generally with him all the time. Observers joined the team member of their particular interest.

Description of Laguna Verde

Laguna Verde Units 1 and 2 are located on the Gulf of Mexico in the municipality of Alto Lucero, in the State of Veracruz, Mexico. The site is 69km NNW of the city of Veracruz, 60km ENE of Jalapa, the state capital, and 260km ENE of Mexico City. The site is bounded on the east by the Gulf of Mexico and on the west by Federal Highway No. 180. The site includes Laguna Verde on the north and Laguna Salada on the south and has a total area of 3,700,000 square meters.

The plant site grade level is approximately 11 meters above Mean Sea Level. A belt of sand dunes runs from north to south and vegetation consists of small trees, scrubs and grass around the coast line.

Both units have a boiling water reactors nuclear steam supply system as

designed by the General Electric Company and designated as BWR 5. The design employs the drywell pressure suppression features of the BWR/MARK II containment concept. The units are designed to operate at a gross electrical output power of 674 MWE and a net electrical output power of approximately 650 MWE.

Construction on Unit 1 was started in 1976, and for Unit 2 in 1977. Startup testing was completed and commercial operation began on July 29, 1990, for Unit 1, and April 10, 1995, for Unit 2.

The plant is owned by Comisión Federal de Electricidad (CFE), which is a Mexican government-owned electrical utility. The responsibility for the management of the plant is with the CFE General Director, who delegates the responsibility to the appointed Nuclear Director. The staff operates the plant under responsibility of the Plant Manager who manages a staff of approximately 1200.

Public Information Center

Due to the need for an increased public awareness of the facts associated with nuclear power plants (NPP), the Laguna Verde NPP has developed an impressive public information center. This center is located in the same building as the training center. The information center has two exhibition rooms, a lecture room and a cafeteria totaling about 600 m² in area. In the lecture room, visitors are shown a short introductory video about the plant. In the exhibition area, visitors can learn about the role of the Laguna Verde plant, the basics of electricity and nuclear fission, the technology of a nuclear power plant and about its environmental impact. There are three big reliefs indicating Laguna Verde's location, several experiments explaining electrical phenomena, and a mockup of the entire site. Most interesting is the largest room, which is arranged like the interior of the plant. Visitors can go through a real containment interlock and see a very good mockup of the reactor vessel with containment in 1:5 scale. There is also a surrogate tour through the plant presented, (a computerized system with more than 100,000 photos of the inside of the plant and with the possibility to "walk" through it).

Visitors can look through an observation window to the simulator control room, which is located next to the information center. The information center also produces some printed materials, which are provided to visitors. The plant has also set up a world wide web home page with basic information for the general public.

In the year 1996 the center had a total of 18,710 visitors, mostly school groups.

NOTE: A draft copy of this document was provided to a representative of the Office of International Programs on March 3, 1997, to assist in preparation for discussions on nuclear reactor safety issues by Chairman Jackson with nuclear energy officials of Mexico and a visit to Mexico and the Laguna Verde NPP the week of March 3, 1997.