

INTRODUCTION AND MAIN CONCLUSIONS

INTRODUCTION

At the request of the government of the Republic of Brazil, an IAEA Operational Safety Review Team (OSART) of international experts visited Angra 2 Nuclear Power Plant from 12-31 October 2002. The purpose of the mission was to review operating practices in the areas of Management organization and administration; Training and qualification; Operations; Maintenance; Technical support; Radiation protection; Chemistry; and Emergency planning and preparedness. In addition, an exchange of technical experience and knowledge took place between the experts and their plant counterparts on how the common goal of excellence in operational safety could be further pursued.

The Angra OSART mission was the 116 in the programme, which began in 1982. The team was composed of experts from France, Germany, Bulgaria, Canada, USA, Sweden, UK, Hungary, Slovak Republic and a Host Plant Peer from Angra 2, together with the IAEA staff members and observers from Argentina and Mexico. The collective nuclear power experience of the team was approximately 320 man-years.

Before visiting the plant, the team studied information provided by the IAEA and the Angra plant to familiarize themselves with the plant's main features and operating performance, staff organization and responsibilities, and important programmes and procedures. During the mission, the team reviewed many of the plant's programmes and procedures in depth, examined indicators of the plant's performance, observed work in progress, and held in-depth discussions with plant personnel.

Throughout the review, the exchange of information between the OSART experts and plant personnel was very open, professional and productive. Emphasis was placed on assessing the effectiveness of operational safety rather than simply the content of programmes. The conclusions of the OSART team were based on the plant's performance compared with good international practices.

MAIN CONCLUSIONS

The OSART team concluded that the management of Eletronuclear has adopted the safety message "To Strive for Nuclear Excellence" as a tool to continuously improve the operational safety as well as the reliability of the plant. Managers at Angra 2 were found to be committed to improve the operational safety of their plant. The team found several good areas of performance, including the following:

- The cleanliness inside the plant impressed the team
- The competent and knowledgeable staff
- The openness to external evaluations and invitations for international assessment and support.
- The good overall performance during the initial period of operation

The team offered a number of proposals for improvements in operational safety. The most significant proposals includes the following:

- Although the overall staff size is adequate, Eletronuclear and the plant, in close cooperation, should develop and implement a comprehensive staffing program, including anticipation of staff changes and future needs in personnel
- The need of strengthening the link between the training organization and line management to avoid missed training opportunities and to ensure adequate and effective training. Furthermore both organizations should enhance their ownership for a common training process covering all steps from specification of needs to follow up of achieved improvements of skills and knowledge
- The need of further enhancement in development and implementation of practices in the areas of operation, maintenance and technical support; such as conduct of operator rounds, completion of the work control system and trending and monitoring of performance parameters.
- The need to simplify the procedure review process and make the plant documentation translation process more productive to provide adequate instructions for operators in a timely manner.
- Angra 2 is a new plant with most processes in place, nevertheless there is a need to use more of the managerial and supervisory resources, at all levels, to drive the quality and completion of implemented programs and processes in a reasonable time frame.

An important element of the OSART review is the identification of those findings that exhibit positive and negative safety cultural aspects of operational safety performance. The OSART team used the guidance provided in INSAG-4, INSAG-13 and IAEA Safety Report Series No. 11 to assess various organizational and technological aspects of operational safety culture at the Angra 2 nuclear power plant. The team members were very impressed with a number of positive safety culture aspects observed in Angra 2 plant, including:

- The plant staff is proud of the plant and feels a great deal of ownership of the plant
- The general housekeeping is impressive
- The plant has instituted a enhancement program in the area of safety culture
- The plant has a self-evaluation process in progress

The team also identified several areas where management and staff are encouraged to enhance performance:

- The plant should enhance its questioning attitude and be less tolerant of the deficiencies they identify
- Although it is not the general situation today, there are some signs of self-satisfaction and too much trust in the design..

The Angra 2 NPP management expressed a determination to address the areas identified for improvement and indicated a willingness to accept a follow up visit in about eighteen months.

