

Different types of reports are established, such as periodical reports and reports of abnormal events. Immediate notification is required for events which involve the degradation of the plant safety conditions, or exposure to radiation of site personnel or the public at levels beyond the established limits. Other events should be reported within 24 hours or 30 days, depending on their safety significance.

The International Nuclear Events Scale (INES) is used to classify the safety significance of the events. No event of INES level 1 was reported in 1996/97. In 1996, Angra 1 reported to CNEN six (6) events of INES level 0. In 1997 this number increased to nineteen (19), all of which had minor significance, except for the problem resulting from the re-occurrence of fuel degradation as mentioned in item 2.1.1.

5.3.7. Item vii. Operating experience feedback

The operational experience feedback process in Brazil comprises two complementary systems: one performed by the utility, which processes both in-house and external information, and one performed by CNEN.

An Operational Experience Analysis Group was established by FURNAS and continues to operate under ELETRONUCLEAR. This group investigates relevant incidents occurred in Angra 1 and in similar nuclear installations in order to make recommendations. A programme to collect operating experience has been established using several sources of information, such as INPO, WANO and Owners Groups. In addition, technical exchange visits conducted periodically constitute a valuable source of information on other plant experiences (see Annex 4 for a list of international missions related to the Angra plant).

CNEN itself has its own system for operational experience feedback, by which it can analyze Angra 1 events and actively participate in international organizations to share its own operating experience, as it has done under the auspices of the International Reporting System (IRS) of the IAEA. To date, Brazil has reported 10 events to IRS. CNEN transfers the relevant IRS reports it receives to the operator for evaluation. The feedback loop is thereby completed.

5.3.8. Item viii. Radioactive waste and spent fuel

The Angra 1 nuclear power plant is equipped with systems for the treatment and conditioning of liquid, gaseous and solid wastes. Liquid wastes are solidified in concrete and conditioned in 55-gallon drums. Solid wastes may be conditioned in drums or in special boxes. Gaseous wastes are stored in holdup tanks and may be released from time to time. These tanks have the capacity for long term storage, which eliminates the need for scheduled discharge. For the time being, medium and low level wastes are being stored on site in a separate storage facility.

Generated volume of solid radioactive waste material is kept to a minimum by preventing materials from becoming radioactive, by decontaminating and reusing radioactive materials, by monitoring them for radioactivity and by separating non-radioactive material prior to conditioning and storage, and by other volume reduction techniques. Procedures, personnel training and quality control checks are used to ensure that radioactive materials are properly packed, labeled and transported to the storage facility.

With respect to the spent fuel of Angra 1, an expansion of the spent fuel pool capacity has been performed by the installation of compact racks to accommodate the spent fuel generated for the expected operational life of the unit.



BR01E1215

Chapter 6. PLANNED ACTIVITIES TO IMPROVE SAFETY

Safety culture entails a questioning attitude and a search for excellence. Therefore, notwithstanding the good Brazilian record on safety, the country's nuclear operators and

regulators are constantly working on improvements in this area.

At present, CNEN works in the approval of a bill of law that would establish licence fees and taxes (see item 3.2) that could help relieve the constant fund shortage of a regulatory body whose scope of activity is ever increasing. In addition, a bill of law is under discussion that would establish administrative and monetary penalties for all nuclear facilities and services that registered cases of non-compliance. Such measures are expected to strengthen the enforcement powers of CNEN.

The Authorization for Permanent Operation of Angra 1 established a realistic schedule for the realization by the operator of a series of improvements. These include the development of a Plant Aging Management Programme and a Maintenance Efficiency Programme. Furthermore, CNEN regulation NE 1.26 [18] requires a periodical safety review after every ten-year period of operation, which is expected to be an opportunity for reviewing past performance and for upgrading the plant, to the extent possible, in accordance with current safety requirements.

Current activities at the plant with the view to improving nuclear safety include the review and expansion of the Probabilistic Safety Assessment (PSA) for Angra 1 (see 4.5), and the review of the technical specifications for operation, so as to adapt them to current international practice.

With respect to emergency planning, a task force has been created to introduce a quality assurance programme for organizations involved in SIPRON, to the extent possible. Additionally, formal agreements have been signed to provide the civil defenses of Angra Municipality and of Rio de Janeiro State with an improved infrastructure for public shelters, health care and other measures related to emergency preparedness.

Chapter 7. FINAL REMARKS



BR01E1216

Given the safety performance of nuclear installations in Brazil, and considering the information provided in this National Report, the Brazilian nuclear organizations consider that the following characterizes the record of the country's nuclear programme:

- the achievement and maintenance of a high level of safety in its nuclear installations;
- the establishment and maintenance in its nuclear installations of effective defenses against potential radiological hazards so as to protect individuals, the society and the environment from the harmful effects of ionizing radiation;
- the ability to prevent accidents with radiological consequences, and preparedness for mitigating the consequences of such accidents should they occur.

Brazil thus considers that its nuclear programme has met the principles and objectives set forth by the Convention on Nuclear Safety.

REFERENCES

1. Convention on Nuclear Safety - Legal Series No. 16 - International Atomic Energy Agency - Vienna - 1994.
2. Guidelines Regarding National Reports under the Convention on Nuclear Safety - CNS/PREP/FINAL DOCUMENT 2 - 1997.04.24.
3. Power Reactor Information System - International Atomic Energy Agency (available through the Internet at <http://iaea.or.at>).
4. Licensing of Nuclear Installations - CNEN-NE-1.04 - July 1984.