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## MEASURES TO STRENGTHEN INTERNATIONAL CO-OPERATION IN NUCLEAR, RADIATION AND WASTE SAFETY

### STUDY OF THE RADIOLOGICAL SITUATION AT THE ATOLLS OF MURUROA AND FANGATAUFA

#### Background

1. On 22 September 1995, in resolution GC(39)/RES/23 entitled "Nuclear testing", the General Conference, inter alia,

- called on all States concerned

"to fulfil their responsibilities to ensure that sites where nuclear tests have been conducted are monitored scrupulously and to take appropriate steps to avoid adverse impacts on health, safety and the environment of such nuclear testing",

- requested all States concerned

"to inform the International Atomic Energy Agency of any adverse impact on health, safety and the environment as a consequence of such nuclear testing as necessary to assist the Agency to discharge its functions under the Statute" and

- called for

"co-operation between the States concerned and the International Atomic Energy Agency in accordance with its Statute in the implementation of the two preceding paragraphs".

2. Before that resolution was adopted, in his statement to the General Conference the Director General had said that:

"As reported to the Board of Governors the previous week, he had recently received a letter from the French Minister for Foreign Affairs concerning France's irreversible commitment to the conclusion of a comprehensive nuclear test ban treaty in 1996 and its intention to undertake a final series of nuclear tests before that date. The Minister had asked whether the Agency would be willing to conduct a scientific mission to assess the radiological impact of the tests. Such an assessment would have to be complemented by an assessment of the geological situation of the test site. In reply he had indicated that, for the Agency to take a decision on the matter, a number of preliminary questions would need to be carefully considered, including the objective and the scope of the mission, its modalities and the composition of a team. He had added that the Secretariat wished to consult with the French authorities and with others on those issues. Consultations with French experts were scheduled to take place during the week of the Conference.

"The French request was being considered in the context of the numerous services provided by the Agency to its Member States in the field of nuclear safety and radiological protection and its establishment of radiation safety standards."<sup>1/</sup>

3. On 12 December 1995, the Director General informed the Board of Governors that:

"The resumption of nuclear testing in the Pacific had been the subject of a resolution in which the General Conference had called, inter alia, for co-operation between the States concerned and the Agency. As he had mentioned in September, the Government of France had requested the Agency to perform a study of the overall radiological situation at the Mururoa and Fangataufa Atolls, account being taken of all past events of radiological significance and the study comprising two parts: an assessment of the radiological situation and an evaluation of the potential long-term radiological impact. The envisaged study could be carried out - after the end of the tests - under the supervision of an international advisory committee composed of highly qualified experts, including experts from relevant organizations belonging to the United Nations system. In the light of consultations with Member States, he had informed the French Foreign Ministry that the Agency was ready in principle to conduct the study and that an agreement could be formalized after discussions with the relevant French authorities on modalities."<sup>2/</sup>

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<sup>1/</sup> See GC(39)/OR.1, paragraphs 44 and 45.

<sup>2/</sup> See GOV/OR.883, paragraph 36.

4. On 18 March 1996, the Director General informed the Board that:

"As reported to the Board in September and December, the Secretariat had been requested by the Government of France to conduct a study designed to assess the radiological situation at the atolls of Mururoa and Fangataufa in French Polynesia. At its 1995 session, the General Conference had called, inter alia, for co-operation between the Agency and Member States concerned. Since the informal briefing of Board members in February, at which he had mentioned the progress made in preparing for the study, all arrangements and the terms of reference had been formalized. An International Advisory Committee to supervise the study was being established under the chairmanship of Dr. Gail de Planque of the United States. A technical team from the Secretariat had visited the Pacific test sites in order to make logistic preparations for the necessary measurements and sampling. The first formal meeting of the International Advisory Committee was set for early April. The findings, conclusions and recommendations of the study, which was expected to take about 18 months, would be contained in a report of the Committee to be published by the Agency. The co-operation with the French authorities had been good. France was covering the costs of the study, but other voluntary contributions - in the form of expert services and laboratory work - would be welcome."<sup>3/</sup>

5. Also on 18 March 1996, a statement to the Board made by the Acting Deputy Director General for Nuclear Safety included the following remarks:

"Turning to the study - mentioned by the Director General in his introductory statement - of the radiological situation at the Mururoa and Fangataufa atolls, he said that an Agency team from Seibersdorf and Monaco had just returned from a visit to the atolls, where they had made logistic preparations for measurements and sample-taking due to begin at the end of June. Besides the 14 experts of the International Advisory Committee, two task groups and five working groups with a total of about 50 additional experts would be directly involved. A worldwide network of national laboratories, in addition to the Agency's own laboratories at Seibersdorf and Monaco, would assess environmental samples. The project, which was being funded through a voluntary contribution from France, would take approximately 18 months to complete."<sup>4/</sup>

6. On 10 June 1996, the Director General informed the Board that:

"The International Advisory Committee on the Study of the Radiological Situation at the Atolls of Mururoa and Fangataufa was now fully operative. It was composed of

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<sup>3/</sup> See GOV/OR.887, paragraph 19.

<sup>4/</sup> See GOV/OR.887, paragraph 48.

ten prominent scientists from ten Member States plus representatives of WHO, UNSCEAR, the South Pacific Forum and the European Commission. The Committee had set up [Task and Working Groups] comprising 26 experts from 15 Agency Member States and Fiji and supported by a grid of national laboratories co-ordinated by the Agency's laboratories in Seibersdorf and Monaco. A group dealing with the present radiological situation had already started work, and a three-week sampling campaign would take place at the atolls at the end of July. He would inform the Board periodically about the study."<sup>5/</sup>

## The Study

### Objectives

7. The objectives of the Study of the Radiological Situation at the Atolls of Mururoa and Fangataufa are to "assess the radiological situation (both present and future) at the atolls and involved areas from the point of view of radiological safety", "ascertain whether there are any radiological hazards to people"<sup>6/</sup>, and make "recommendations on the form, scale and duration of any monitoring, remedial action or other follow-up action that might be required".

8. The Study covers both the current radiological situation and the potential long-term<sup>7/</sup> radiological situation.

### Technical framework

9. The technical framework for the Study is provided by the International Basic Safety Standards for Protection against Ionizing Radiation and for the Safety of Radiation Sources.<sup>8/</sup>

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<sup>5/</sup> See GOV/OR.891, paragraph 26.

<sup>6/</sup> In radiological protection it is customary to presume that the adequate protection of individual human beings should also ensure that no other species will be threatened as a population, even if individuals of the species may be harmed; this presumption will be examined by taking into account any known particular characteristics of the local biota at the Mururoa and Fangataufa Atolls.

<sup>7/</sup> "Long-term" is used to mean a period of time over which remedial actions can have a significant effect on the doses to people. It is provisionally presumed that the customary time of around 10 000 years - with emphasis on the short-term - will provide an appropriate margin for this purpose.

<sup>8/</sup> Jointly sponsored by the Food and Agriculture Organization of the United Nations, the International Labour Organisation, the Nuclear Energy Agency of the Organisation for Economic Co-operation and Development, the Pan American Health Organization, the World Health Organization and the International Atomic Energy Agency and published by the Agency as Safety Series publication No. 115.

## The International Advisory Committee

10. As reported by the Director General to the Board in March 1996, an International Advisory Committee of independent, highly qualified experts from Member States and ex officio experts selected by relevant intergovernmental organizations has been convened by the Director General to provide scientific guidance and direction to the Agency on all matters related to the conduct of the Study.

11. The membership of the International Advisory Committee is as follows: Chairperson - Ms. Gail de Planque, former Commissioner of the United States Nuclear Regulatory Commission; Mr. D. Beninson, former Chairman of the International Commission on Radiological Protection (ICRP), Chairman of Argentina's Ente Nacional Regulador Nuclear; Mr. R. Clarke, present Chairman of ICRP, Director of the United Kingdom's National Radiological Protection Board; Ms. Helen Garnett, Executive Director of the Australian Nuclear Science and Technology Organisation; Mr. G.E.G. Holm, Associate Professor, Lund University Hospital, Sweden; Mr. H.S. Karyono, Director, Nuclear Minerals Development Center, Indonesian National Atomic Energy Agency; Mr. A. Kaul, President, of Germany's Bundesamt für Strahlenschutz (Federal Office for Radiation Protection); Mr. A. Matuchenko, member of the Russian Federation's Commission on Radiation Protection; Mr. T. Numakunai, Director General of Japan's Institute of Radiation Measurements; Mr. A. Poletti, Department of Physics, University of Auckland, New Zealand; and the following ex officio experts selected by relevant intergovernmental bodies - Mr. G. Fraser, Head of the Sector of Radiation Protection in the European Commission's Directorate General for the Environment, Nuclear Safety and Civil Protection (selected by the European Commission); Mr. V.A. Fuavao, Director of the South Pacific Environment Programme (selected by the South Pacific Forum); Mr. B. Bennett, Director of United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR), (selected by UNSCEAR and also by the United Nations Environment Programme (UNEP)); Mr. W. Kreisel, Executive Director for Health and Environment of the World Health Organization.

## Organizational structure

12. The organizational structure for the Study includes - besides the International Advisory Committee - a Liaison Office set up by the French Government, a Project Management Office set up by the Agency and the Task and Working Groups (see attached chart) referred to by the Director General when reporting to the Board in June 1996.

13. The Task and Working Groups are described below:

- (i) Task Group A (on the current radiological situation) - under the chairmanship of Mr. A. McEwan, Director of the National Radiation Laboratory in Christchurch, New Zealand - is responsible for evaluating (a) the radioactive materials in the environment that may lead to radiation exposure of the public;

and (b) the doses to members of the public as a result of the environmental contamination. It is supported by two working groups: the first - headed by Mr. F. Schönhofer of the Federal Institute of Food Control and Research in Vienna, Austria, and co-ordinated by the Agency's Laboratory at Seibersdorf - is responsible for assessing the terrestrial environmental contamination of the atolls and their biota; and the second - headed by Mr. D. Woodhead of the Directorate of Fisheries Research (Ministry of Agriculture, Fisheries and Food), United Kingdom, and co-ordinated by the IAEA Marine Environment Laboratory in Monaco - is responsible for assessing the aquatic environmental contamination of the atolls' lagoons and the surrounding oceanic water and of their biota. Data to be evaluated will be obtained - inter alia - from the French Government and through independent sampling and measurements.

- (ii) Task Group B (on the potential long-term radiological situation) - under the chairmanship of Mr. D. Levins, Deputy Director of the Environment Division of the Australian Nuclear Science and Technology Organisation (ANSTO) - is responsible for evaluating the potential long-term radiological impact of the radioactive materials remaining in the geological cavities at the atolls. It is supported by three Working Groups:
- Working Group 3 - headed by Mr. L.-E. De Geer of the Nuclear Detection Group of Sweden's National Defence Research Establishment and dealing with the source term - will assess the radiologically significant radioactive materials remaining in the deep geological formations of the atolls, their physical-chemical composition in relation to their geological transportability and their predicted rates of release from the test cavities;
  - Working Group 4 - headed by Mr. C. Fairhurst of the Department of Civil Engineering at the University of Minnesota, United States of America, and dealing with geosphere radionuclide transport - will assess the geological stability and hydrology of the atolls, estimate other physical and chemical parameters which influence the movement of radionuclides through the atolls and model the transport of radionuclides from the vicinity of the test cavities to the biosphere; and
  - Working Group 5 - headed by Mr. E. Mittelstaedt of the Federal Maritime and Hydrographic Agency in Hamburg, Germany, and dealing with marine modelling - will assess the marine transport of radioactive materials that might be released from the geological formations.

#### Financial aspects

14. The Study is being financed by France.
15. Contributions in kind are being provided by a number of Agency Member States - Argentina, Australia, Austria, Belgium, Denmark, Germany, Indonesia, Japan, New Zealand, the Russian Federation, Slovenia, Spain, Sweden, Switzerland, the United Kingdom and the United States of America - and by Fiji, WHO, the European Commission, UNSCEAR and the South Pacific Forum.

#### Progress

16. The first formal meeting of the International Advisory Committee was held at Agency Headquarters on 13-14 April 1996, with the participation of Task and Working Group Chairmen. The Committee established its terms of reference. Also, first proposals for the Task and Working Groups' terms of reference and action plans were reviewed. The membership of the Task and Working Groups was agreed (on the basis of nominations made by Committee members), as was the format of the final report.
17. Task Group A has agreed upon its terms of reference and drawn up an action plan for terrestrial and aquatic sampling. The sampling campaign, aimed at evaluating the results of French environmental monitoring programmes and producing additional data useful for radiation dose assessment, has been taking place since mid-July. During this five-week sampling campaign, Task Group A's working groups have been receiving full co-operation and logistic support from the relevant French authorities. The sample analysis results are expected to be available by the end of the year.
18. Task Group B has reviewed the work programmes proposed by its three supporting Working Groups and has identified and resolved a number of interface problems. Also, it has agreed on schedules for future work and posed a number of questions to the French liaison team on matters requiring clarification.

#### Outlook

19. The International Advisory Committee will hold its next meeting, in the South Pacific region, probably in French Polynesia and in Fiji, late in 1996. It will review the progress made and discuss an outline of its report.
20. According to its terms of reference, the Study is to be completed within 18 months after the necessary information and data have been provided to the relevant Working Groups by the French Liaison Office.

21. The Study's findings, conclusions and recommendations will be contained in a report of the Committee to be published by the Agency. It is expected that the report will be published early in 1998.

22. The Secretariat will keep the Board of Governors and the General Conference informed about the progress of the Study.

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## Organization



