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(First Part)

Resumption of French nuclear tests in the Pacific

REPORT

**submitted on behalf of the Defence Committee
by Sir Russell Johnston, Rapporteur**

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on the resumption of French nuclear tests in the Pacific

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1. Adopted in committee by 14 votes to 3 with 1 abstention.

2. *Members of the committee:* Mr. *Baumel* (Chairman); Mr. De Decker (Vice-Chairman); Mr. Alloncle, Mrs. Beer, MM. Bianchi, Briane, Brito, Cox, Dees, Dumont, Fernandes Marques, Mrs. *Fernandez Ramiro*, MM. Hardy (Alternate: *Sir Russell Johnston*), Horn, Jacquat, Kelchtermans, *Kotsonis*, La Russa, Mrs. Lentz-Cornette, MM. López Valdivielso (Alternate: *López Henares*), Marten, *Lord Newall*, MM. Parisi, Paschalidis, Pavlidis, Pécriaux, Petruccioli (Alternate: *Guidi*), Reis Leite (Alternate: *Mrs. Aguiar*), Schloten, *Sir Dudley Smith*, Mr. Sole Tura (Alternate: *Cucó*), Mrs. Soutendijk van Appeldoorn, *Sir Keith Speed*, MM. *Speroni*, *Vazquez*, *Woltjer*, Zierer.

Associate members: Mr. Kilic, Ms. Özver.

N.B. *The names of those taking part in the vote are printed in italics.*

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Glossary

Draft Resolution***on the resumption of French nuclear tests in the Pacific***

The Assembly,

- (i) Noting the 13th June 1995 decision of the President of France to resume France's nuclear tests in the South Pacific in order to ensure the safety, security and reliability of its deterrent forces and to complete current work on the development of a test simulation;
- (ii) Aware that this decision concerns a maximum of eight tests between September 1995 and the end of May 1996 at the latest;
- (iii) Noting that on 11th May 1995 all states having signed the non-proliferation treaty unanimously decided to extend this treaty indefinitely and that the five nuclear powers, including France, committed themselves to sign the comprehensive test ban treaty by 1996 and, in the meantime, to exercise some restraint with respect to nuclear tests;
- (iv) Aware that France has vowed to sign the comprehensive test ban treaty at the end of 1996, stating its commitment to a "zero option" in the treaty, excluding even small-scale tests of one kiloton or less;
- (v) Recognising that only very few specialists have at their disposal the scientific and technical means needed to assess whether these additional nuclear underground tests are indispensable;
- (vi) Considering that this autonomous decision was taken notwithstanding the existence of a self-imposed moratorium on nuclear testing which had been observed by France, Russia, the United Kingdom and the United States since 1992;
- (vii) Recognising that the moratorium on French nuclear tests, announced by President Mitterrand in 1992, interrupted the existing nuclear test programme;
- (viii) Accepting that France wishes to ensure that its deterrent force is fully effective in advance of its commitment to sign the nuclear test ban treaty, but nevertheless considering that its decision could create political conditions which endanger the signature of such a treaty in the autumn of 1996;
- (ix) Considering that unilateral decisions on issues which can be considered vital for the defence and security of Europe could impede the development of a common European security and defence policy;
- (x) Considering that it is increasingly less likely that, within the framework of a common European security and defence policy, nuclear forces would be an asset for the defence and security of the national territory of only one particular country;
- (xi) Welcoming France's initiatives to start a fundamental discussion with some of its European partners on the rôle of the French nuclear forces in a common security and defence policy;
- (xii) Recalling its Recommendation 564 on the rôle and future of nuclear weapons adopted on 16th June 1994;
- (xiii) Considering that the French decision to hold a number of nuclear tests might encourage those states, which are not official nuclear weapon states, but which are trying to acquire such weapons or have the ability to assemble them quickly, to proceed with their efforts to achieve a nuclear capability;
- (xiv) Noting that it is essential to maintain a basic European solidarity as regards security and defence matters;
- (xv) Profoundly concerned that France's unilateral decision to proceed with nuclear tests without prior consultation may have regrettable political consequences for the cohesion of the European policy to promote non-proliferation of nuclear weapons;
- (xvi) Noting that both the British and French nuclear forces could play a rôle in maintaining peace on the European continent and participate in the security of the European Union if there is a political will to do so;
- (xvii) Welcoming the work of the permanent Anglo-French Joint Commission on Nuclear Policy and Doctrine which has confirmed many points of convergence in the assessments made by the two countries, and noting that both countries wish to continue this work which should lead to a new rapprochement;

(xviii) Noting that France has proposed to start a dialogue with Germany on the possibilities of concerted deterrence in order to protect their future common existence and to create a common strategic area;

(xix) Stressing the need for a European doctrine of nuclear deterrence as long as nuclear weapons have not been abolished worldwide, while at the same time stressing that this doctrine needs to be reconsidered and reformulated now that the "rules of the game" mutually accepted during the cold war period no longer apply;

(xx) Noting that the proposed dialogue on the rôle of French nuclear weapons in a European security and defence policy should include such subjects as doctrine, strategy and common vital interests which should be protected,

ASKS THE FRENCH GOVERNMENT

1. To halt or reduce the number of nuclear tests as a gesture of good faith and as evidence of its commitment to the achievement of a worldwide nuclear test ban in autumn 1996;
2. To intensify discussions with the British Government with a view to enabling co-operation on their nuclear forces and consider in what way these forces can be integrated into a common European security and defence policy;
3. To extend the proposal to start a dialogue with Germany on the possibilities of concerted deterrence to include the other member states of WEU in order to protect not only their common future existence but also to create a common strategic area.

Explanatory Memorandum

(submitted by Sir Russell Johnston, Rapporteur)

I. Introduction

1. The French Presidential candidate, Mr. Jacques Chirac, had undertaken to resume nuclear testing, should that prove necessary, to ensure the reliability of the French deterrent. On 13th June 1995, as President of the French Republic, Mr. Chirac announced the resumption of nuclear tests by France; this was to be a final series of eight tests between September 1995 and May 1996. The President of the French Republic linked this resumption to the signing of the treaty on a total ban on nuclear tests. This decision came after a moratorium of more than three years decided by the previous French President, François Mitterrand, on 8th April 1992. On 5th September, the first test, Thetis, of 20 kt took place. This event rekindled the debate on French nuclear tests. To understand fully what nuclear tests are and what is at stake for France, it is necessary to recall the events leading up to them.

II. Background

2. For a better understanding of the present French policy regarding nuclear testing, the history of the development of France's nuclear arsenal will be recalled succinctly in the following paragraphs¹.

(a) From the start of nuclear research to the first tests

3. In fact, French nuclear research began well before the second world war². Since it is essential to recall the political and scientific circumstances allowing France to develop a nuclear weapon, the historical part of this report will not therefore be limited to the purely military aspect of the question, but will also examine the aspects of civil research which led to the production of such a weapon in France.

1. Dominique Mongin, "La genèse de l'armement nucléaire français", Université de Paris 1 – Sorbonne 1991; W. Kohl, "French nuclear diplomacy", Princeton, Princeton University Press, 1971; M. Duval, Yves Le Baut, "L'arme nucléaire française : pourquoi ? comment ?", Paris, SPM, 1992; Spencer Weart, "La grande aventure des atomistes français", Paris, Fayard, 1980; Yves Rocard, "La naissance de la bombe atomique française", La Recherche, No. 141, February 1983.

2. Cohen Samy, "Les pères de la bombe atomique française", l'Histoire No. 117, December 1988.

4. In the period between the two wars, nuclear physics were already at a very advanced stage in France thanks to the work of Pierre and Marie Curie, Frédéric Joliot-Curie and Irène Joliot-Curie.

5. It should be recalled that in January 1939 two German scientists showed proof of the fission of uranium under the action of neutrons. At that moment, various countries had already started research in this field. In France, it was the team of Frédéric Joliot-Curie, Lew Kowarski and Hans Halban of the Collège de France that assumed responsibility for this. Their very advanced work brought proof, in the spring of 1939, of the possibility of producing controlled or explosive atomic energy starting from uranium. Their outstanding work continued with the enrichment of uranium into isotope 235 and the arrangement and dimensions of moderators, but the declaration of war in September 1939 and the German occupation of France in June 1940 brought French atomic research to a halt before the scientists could take out patents.

6. Two members of the team, Kowarski and Halban, then took refuge in England to be able to continue their work in what was later known as the Cambridge Group. There they took out several patents, based in particular on the results obtained in France. Others crossed the Atlantic and took part, albeit indirectly, in the Manhattan programme, the aim of which was to achieve an atomic weapon.

7. Before the end of the war, after the test in Alamogordo on 18th July 1945, General de Gaulle had already been informed by various scientists of the progress made in American research in these matters and of its military implications. Thus, in autumn 1945, after the Hiroshima and Nagasaki explosions, he took the decision to create the Atomic Energy Commissariat (AEC). On the day of its official inauguration, 18th October 1945, Joliot-Curie was appointed high commissioner and Dautry, another leading research worker, general administrator. This event was one of the first to mark the resumption of French nuclear research.

8. France thus opted to work on nuclear fission immediately after Hiroshima but, for the time being, for civilian purposes only.

9. Initially, the Atomic Energy Commissariat sought to conclude several agreements with the

United Kingdom concerning the recovery of patents taken out by the French research workers during the war. The AEC took like action for recognition of the Joliot patents in the United States and more than fifty other countries. The commissariat persevered in attempting to claim recognition for France's rôle in the history of atomic energy. This was a means for France to affirm its place and rôle among leading nations.

10. However, the instability of the Fourth Republic in France after the war and the lack of financial means were to hold back French nuclear research which fell well behind that of the Americans. To some extent, American aid also prevented France from turning towards the military application of nuclear energy. The colonial conflicts in which France became bogged down between 1946 and 1958 also seriously jeopardised the future of the French atomic weapon. At that time, the French army itself preferred the empire to the bomb, counting on the American nuclear umbrella in the event of need.

11. The cold war was also to have particular consequences for the development of a French nuclear weapon. The French scientific corps was strongly influenced by the communist movement which then had the backing of a quarter of the electorate. Frédéric Joliot-Curie and other scientists clearly gave their voices to the Soviet Union and even campaigned against the Atlantic Alliance and American nuclear weapons. Thus, Joliot-Curie signed the Stockholm appeal on 19th March 1950 calling for an absolute ban on nuclear weapons. In response to all these very strong positions, the government of Georges Bidault appointed Francis Perrin to lead the AEC in April 1950 instead of Joliot-Curie.

12. A first five-year plan for the development of atomic energy prepared by Félix Gaillard, a member of the Pinay government (March 1952 to January 1953) was mainly intended to find a remedy for the French energy deficit. The plan was to produce 50 kilos of plutonium a year which, in theory, would allow six to eight nuclear bombs to be produced.

13. In the National Assembly, an amendment tabled by the French communist party in July 1952 specifying that France would conduct no military research in this matter was rejected by a large majority³; the full impact of this event is revealed by the fact that it left the way free for military applications of the atom, even if it did not give its defenders a free hand.

14. At European level, Germany was authorised to re-arm in the framework of the new WEU

3. Journal officiel de la République française, Assemblée nationale, débats, 3rd July 1952; voting against the amendment: 518 to 100.

and of NATO in exchange for renouncing nuclear, bacteriological and chemical weapons. This re-armament was almost certainly one of the reasons which made France decide to procure nuclear weapons. Perhaps there was still fear of a German military renaissance just a few years after the end of the war. This was specifically the view of the French military authorities which, for the first time in 1954, suggested that France should accede to nuclear power but provided that this would take place in a European framework. In October and in November of the same year, the then Prime Minister, Pierre Mendès France, took several decisions showing his interest in the military applications of nuclear energy⁴.

15. In 1955 and 1956, the revival of European ideas through the creation of the European Atomic Energy Community (Euratom) almost called in question the future of the French nuclear weapon. The proposal then was that Euratom should have a monopoly of ownership of fissile material and that its use should be strictly pacific but, finally, in July 1956, France managed to arrange for the treaty to leave full latitude to the states in the area of military nuclear research. Thus, Guy Mollet, then Prime Minister, affirmed France's freedom to choose in military nuclear matters, while promising a five-year moratorium before holding the first French test.

16. During the same period (February 1958), the proposal was made to form a European conventional and nuclear armaments pool by uniting the efforts of the Federal Republic of Germany, France and Italy⁵. It was meant as a response to the Anglo-Saxon pool, which united British and American military efforts, particularly in the nuclear field. This agreement was even initialised by the ministers of defence of the three states in question, but General de Gaulle put a final stop to it at the Defence Council meeting on 17th June 1958. This episode perhaps also heralded the problems now facing Europeans today.

17. Finally, one of the main factors that influenced the French choice in this matter was certainly the crisis in the Atlantic Alliance that started in 1953 and was to end by France leaving NATO.

18. This Franco-American difference within the organisation stemmed from two sources: first, a feeling of dependence on Americans in defence matters and, more particularly, in the area of

4. An influential event in this connection was the meeting at the Quai d'Orsay on 26th December 1954, where Pierre Mendès France decided that France should pursue its research under a common-core programme and retain the military option.

5. The initiative was also known as the "armaments triangle"; see studies by L. Nutti, E. Conze and C. Barbier, *Revue d'Histoire Diplomatique* No. 1-2, 1990.

atomic weapons⁶; second, the American strategic choice of massive retaliation which certain French authorities saw as a change in the balance within NATO. General Valluy, then French representative in the NATO Standing Group, wrote at the time: "Western defence centred around the nuclear weapon is becoming wholly dependent on American wishes ... The only possible correction is the formation by the European nations of a nuclear arsenal to allow them to intervene in the new warfare with their own means; it would give them the possibility of resuming a leading rôle in directing the coalition"⁷.

19. The Franco-British Suez operation revealed once and for all the dissent, within the alliance, between the American protector and the other member countries. The absence of American solidarity in this crisis revealed clearly that there could be very divergent interests. In France, the feeling of dependence on Americans was expressed no longer merely in regard to defence, but also in regard to foreign policy. The French felt the American attitude to be a kind of vassalage to the extent that parliament affirmed the need to possess the nuclear bomb⁸. Furthermore, the Soviet threat to launch missiles on London and Paris in response to the intervention which the USSR opposed gave added importance to the debate.

20. After the Suez crisis, several decisions were taken on nuclear matters and some concerned the military aspect (nuclear warheads). On 5th December 1956, a Committee for the Military Applications of Atomic Energy was created secretly; this committee provided for co-operation between the Atomic Energy Commissariat and senior military officials. On 5th October 1956, there was an order for the establishment of a programme concerning vehicles of delivery. Finally, a programme was outlined on 19th December 1956 for a future strategic nuclear bomber.

21. Events speeded up in 1957 and Franco-American relations deteriorated within the alliance. In nuclear matters, the French did not receive from the Americans the same assistance as the British which allowed them to explode their H-bomb. The Prime Minister, Félix Gaillard, was

6. At a press conference in April 1954, General de Gaulle stated: "French governments have made our defence entirely dependent on others, through our lack of atomic weapons, over which we have given them a monopoly... without requiring participation in plans and decisions in the atomic war." Charles de Gaulle, *Discours et Messages*, Volume 2, Paris, Plon 1970.

7. Cited in Claude Delmas, *Histoire politique de la bombe atomique*, Paris, Albin Michel, 1967, pages 289-290.

8. The Rapporteur of the Defence Committee of the French National Assembly even stated at the time that "The creation of a nuclear force and thermonuclear national force... is now fundamental to our military effort". *Journal officiel, Assemblée Nationale Française, Débats*, 7th December 1956, page 5586.

already asserting France's independence of the Americans in negotiations concerning the stockpiling of nuclear weapons and the installation of launching ramps for Thor and Jupiter rockets. Following the same course, on 11th April 1958, he chose the date for the first French nuclear explosion. At that time, however, the door was still not closed to negotiations with the Americans.

22. The return of General de Gaulle after the crisis of 13th May 1958 marked the end of French indecision in these matters. The choices were clear; at the meeting of the Defence Council on 17th June 1958, he confirmed the date of the first French nuclear explosion and decided to accelerate the French nuclear programme. In September 1958, he called for a sharing of nuclear know-how and joint leadership with the alliance. For him, the nuclear weapon was the spearhead of national political independence. He considered it as the only weapon capable of compensating for the inferiority of armies; it would be an equalising factor in relations between powers. It was also a guarantee since it allowed France to have a detonator in the event of the Americans hesitating to resort to their nuclear weapons. But this weapon was also first considered as a shield. Its use in battle was envisaged as defensive to re-establish balance.

23. As a result of these facts, certain observers have been able to note that France's nuclear decisions were reached more because of its allies than because of its enemies⁹.

24. The production of a nuclear weapon, however, means carrying out nuclear tests to measure its power and reliability. The various aspects of French nuclear tests will now be examined in the following part of the present report.

(b) French nuclear tests in the Sahara

25. French nuclear tests in the Sahara were held in two different sites named Reganne and In Ecker.

(i) Reganne

26. The date set for France's first nuclear explosion by General de Gaulle at the meeting of the Defence Council on 17th June 1958 was the beginning of 1960. The place chosen for this experiment was the Sahara and, more precisely, the Reganne oasis 700 km south of Colomb-Béchar, then an integral part of French Algeria¹⁰. This test, which was eventually to take place on 13th February 1960 at 7.04 a.m., was then placed

9. Maurice Vaisse, "France's atomic choice (1945-1958)", *XX^e siècle, Revue d'Histoire*, No. 36, 1992.

10. Reggane is situated in the Tanezrouf. Apart from the base camp located on the plateau, the firing range included an ancillary base at Hammodia.

under the responsibility of the Commandement Interarmées des Armes Spéciales (CIAS), commanded by General Ailleret. On 16th March the French Government announced: "The power of the nuclear device tested at Reggane on 13th February was between 60 and 70 kt and the result of the explosion was particularly satisfactory."

27. The success of the atmospheric test "Gerboise bleue" informed the world that France was joining the very restricted nuclear power club (the United States, USSR, Great Britain).

28. The test presented an opportunity for various measurements for obtaining the maximum scientific data including nuclear analysis, ultra-rapid photographs and samples for radiochemical analysis of the residue of the explosion. The military authorities made a large number of observations on the effects of the explosion. In cooperation with the national meteorological service and the AEC, they had also verified the radiological security of the operation.

29. Shortly after this first test, the AEC proposed testing the emergency device, available on the firing range, should an incident have prevented the successful conduct of the test. The French state welcomed this proposal. Thus on 1st April 1960, before the high temperatures of the Sahara in summer, the second air test, named "Gerboise blanche", was carried out.

30. Two other tests were carried out on the Reggane range, "Gerboise rouge" on 27th December 1960 and "Gerboise verte" on 25th April 1961.

31. These first four French tests, however, were held in an atmosphere of international tension. This was a period in which the other nuclear powers (United States, USSR and Great Britain) had decided on a moratorium (since November 1958). Public opinion in several countries was also very vociferous against the tests and their radioactive fallout. Moreover, the virulence of certain international protests at the time was not very different from that of today.

32. As a result, France then took the decision to conduct tests underground towards the end of 1961. To that end, it was decided to change site.

(ii) *In Ecker*

33. The place chosen for these underground tests was In Ecker in the Hoggar, some 150 km north of Tamanrasset and 2 000 km south of Algiers. In Ecker is in the mountainous area of Tan Afela which was chosen for the special density of its rocky substructure. It was then called the Oasis Military Test Centre.

34. Thirteen tests were held there up to 16th February 1966, but the 1962 Evian Agreements and the independence of Algeria called in ques-

tion the prolongation of tests in this area; France had to leave the Sahara before 1967. Thus, after decontamination and cleaning the sites, they were returned to the Algerian state on 1st and 15th January 1967. France then had to find other sites suitable for such tests.

(c) *French nuclear tests in the Pacific*

(i) *Characteristics of the test sites on the Mururoa and Fangataufa atolls*

35. The sites chosen were the French Polynesian atolls, of Mururoa and Fangataufa (atolls of the Tuamutu)¹¹ in the South Pacific, still known as the Pacific Test Centre. From the geographical point of view, Mururoa, the largest of the two atolls, with a perimeter of 60 kilometres, was 40 kilometres away from Fangataufa. These two Polynesian territories are part of France, although they are some 20 000 kilometres away from the metropolis.

36. Here it should be recalled that these atolls, although far distant from metropolitan territory, are associated with France. Their history has been linked to that of France since the beginning of the last century. Confirmation of the wish of the inhabitants of French Polynesia to accede to the status of overseas territory was the subject of a vote in 1958 following a 1956 national programme law proposing that they move progressively towards independence (they then decided to link their destiny to that of France)¹². Recent voting corroborates this attachment to France in spite of separatist movements which are still in the minority. Even if these tests are not appreciated by the local population any more than that of the metropolitan territory, this in no way calls in question the territory's link with France. The territorial assembly composed of locally elected representatives which handles administrative questions was, moreover, consulted by the French authorities about the nuclear tests. The French presence is an important economic advantage for the population of the region. The standard of living of the inhabitants is similar to that of Australians, for example, which is approximately four times higher than the regional average.

37. The test sites were created on 21st September 1962 and the Direction des Centres d'Experimentation Nucléaires (DIRCEN) was made res-

11. These atolls are 1 200 km from Tahiti and more than 4 000 km from any major city on the shores of the Pacific.

12. The atolls form part of French Polynesia, which has the status of overseas territory. Article 74 of the French Constitution makes special arrangements for them in view of their specific interests within the overall interests of the Republic. The representative of the government is a high commissioner. He is responsible for national interests, administrative control and respect of laws in the territory. The territory is administered freely by elected representatives.

possible for organising and exploiting the range. The DIRCEN was a joint service – AEC body; the military authorities handled support operations and the AEC prepared and carried out measures for the functioning of the test device that the Direction des Applications Militaires had worked out in the metropolis. All the necessary infrastructure for tests was installed and even a harbour channel was created at Fangataufa which did not have one.

38. Hao, 450 kilometres north-west of Mururoa, was chosen as advanced support base. Considerable modernisation work was carried out there for this purpose. The rear base and command were set up in Tahiti. Moreover, a large number of peripheral posts were installed on surrounding atolls to verify the conditions of security (meteorological, radiological and biological monitoring posts). Finally, various services were created for environmental and scientific monitoring purposes.

39. These sites were chosen by the French state for the different types of testing because of their relative isolation and geological characteristics.

40. These uninhabited atolls are a long way from the main maritime or air routes and several hundred kilometres from the nearest inhabited areas. These characteristics made the site suitable for air tests. Nevertheless, as additional protection for air and maritime navigation in the region, an exclusion zone (a dangerous zone with a 200 nautical mile radius) was defined and activated before firings above ground.

41. Moreover, the basaltic sub-stratum covered by a calcareous, or hardened dolomite, stratum of some 300 metres produced by the aggregation of coral residue was considered suitable for underground tests. The high density of basalt allows nuclear tests to be confined and thus avoids any leak of radioactivity. From a technical point of view, in one-tenth of a second, the explosion provokes the formation of a spherical cavity containing several thousand tons of melted rock, with a high silicium content, trapping most of the radioactivity resulting from the firing. Basalt is also a good test medium since the speed of circulation of water caused by the geothermic flow caused by the explosion is very low in a volcanic environment. Due to their affinity with the environment (radioactive matter is set in lava), their low solubility and the natural decline of radioactivity, the matter remains trapped at a very great depth and progressively loses its radioactivity. For that reason, the concentration of plutonium and caesium in the Mururoa lagoon is a thousand times less than the threshold tolerated for water normally consumed in the United States.

(ii) Characteristics of the tests conducted

42. The first tests conducted at the Mururoa and Fangataufa sites were atmospheric. Test series

were grouped in order to take advantage of favourable meteorological conditions. Strict military security measures were taken; a strong aeronaval force (the Alpha force – an aircraft-carrier, escort vessels, etc.) was stationed on the spot. Meteorological forecasts were also made in view of their importance for tests above the ground; the general direction of wind at high altitudes is of special importance in these circumstances. Various samples were taken systematically after each firing.

43. The first firing at Mururoa took place on a barge on 2nd July 1966. The six tests in the first series were as follows:

- four barge tests (in which the load and measuring instruments were on a barge some 2 000 m from the advanced recording post);
- one balloon test (a complex technique whereby the device is carried by balloon to an altitude high enough to limit the radiological effects on the ground while allowing the effective conduct of testing);
- one test of a device dropped from an aircraft as an operational test for the Mirage IV bomb.

44. Much scientific data was gathered on the occasion of these various tests, in particular thanks to the chemical diagnosis (functioning of the chemical explosive) and the nuclear diagnosis (reconstitution of the very high dynamic gamma flow, some 15 decades, and of very short duration, a few hundred nanoseconds).

45. The first thermonuclear test was conducted at the Fangataufa atoll on 24th April 1968.

46. After 41 tests in the atmosphere, underground tests were started in June 1975. The advantage of this technique was to allow tests to be conducted throughout the year, unlike tests in the atmosphere which have to be conducted during the southern winter in order to have favourable meteorological conditions.

47. After each test, an oblique small-diameter borehole directed towards the firing cavity allowed a few fragments of vitrified rock to be recovered, analysis of which completed the measurements obtained at the time of firing. Considerable progress was made with effect from 1976 in regard to both the concept and taking of measurements which were now more accurate and complete than those made in the atmosphere.

48. The first underground tests were initially conducted from the coral fringe above water from derricks such as those used in the oil industry. With effect from 1979, however, it was decided to move on to tests in the central zone of the lagoon. Independently of the increase in the potential

number of tests that could be conducted in this manner, it was thus also possible to avoid undue packing down of the terrain that might cause difficulties, particularly in the event of storms. The first test of this type took place on 10th April 1981 and with effect from 1987 all tests were carried out in the central zone; this is still the technique employed today.

49. In all, 41 tests in the atmosphere and 134 tests in boreholes in the atolls (from the edge of the atolls or in the central zone) were conducted between 1960 and 1991 on Mururoa and Fangataufa. Added to those in the Sahara, France had thus conducted a total of 192 tests up to 1992.

(d) Security measures and international monitoring

50. In the following paragraphs, only tests conducted on Mururoa and Fangataufa will be examined.

51. From the outset, the effects of nuclear tests have been monitored extremely closely. Apart from the security measures observed during each firing and already mentioned previously, various studies and research have been conducted at both national and international level in order to monitor the effects on the environment.

52. The IPSN (Institut de Protection et de Sûreté Nucléaire) each year publishes a report on the analyses and measurements made which it transmits to the Scientific Committee of the United Nations. Validation of the laboratory procedures and recognition of the competence of experts and engineers responsible for measuring radioactivity must be achieved by cross-campaigns between the scientists of the DIRCEN and the laboratory of the National Meteorological Bureau, the International Atomic Energy Agency (IAEA), the Protection Office of the Ministry of Health (OPRI) and on occasion with the laboratories of various countries.

53. At national level, the French Government produces an annual report on the monitoring of the environment and the radiological situation. This report is distributed to elected representatives of French Polynesia and to the Scientific Committee of the United Nations on the Effects of Atomic Radiation (UNSCEAR). Furthermore, during tests in the atmosphere, several thousand biological samples have been taken and atmospheric aerosols have been analysed, the results being sent to UNSCEAR. This revealed no specific anomaly. Several publications, visits and missions have always allowed some transparency in the conditions in which tests are conducted. Led by the DIRCEN and the AEC, the overall knowledge gathered at the Polynesian sites in the last 25 years regarding science and the environment will be passed on to the international community.

54. A particularly close watch is kept on the civilian population in the Pacific. The global doses of radiation they have received in the last three years are below the limits fixed for the public (the average natural exposure in Polynesia is 1 mSv and the public should not be exposed to more than 5 mSv). Regular radiological monitoring of foodstuffs in Polynesia has been conducted since 1975; no anomaly has been noted. Verification is even more extensive on the sites extending to a broad cross section of living foodstuffs (shellfish, fish, poultry, coconut) and certain marine vegetation (algae and plankton) which are apt to concentrate radioactive particles in suspension in the water. These various studies of products destined directly or indirectly for consumption show that the level of artificial radioactivity ingested by the population of the region is still below 0.1 mSv. This quantity is one thousandth of natural exposure and can have no consequence of any kind on human health.

55. Two reference stations in Tahiti and Mururoa enable the physical environment of the sites to be monitored. They follow ambient radiation, radioactivity in the air and in rainwater. Sediment immediately surrounding former 0 points of the Mururoa and Fangataufa airborne tests still has residual artificial radioactivity. Radioactive concentrations in the water of the lagoons, even if higher than those of the Pacific, are still infinitesimal and do not jeopardise undersea fauna and flora (they are identical to those of the Baltic sea). Finally, artificial atmospheric radioactivity in Mururoa and Fangataufa is still below one millionth of ambient natural radioactivity; like the other measurements, they represent no danger for persons on the site or inhabitants of the region.

56. However, outside verifications have also been conducted. In this respect, France has agreed to the proposals made by outside bodies or international authorities. This was the case for the mission led by Mr. Haroun Tazieff in 1982 and the foreign scientific mission led by Professor Atkinson, Director of the Christchurch National Laboratory (New Zealand) in 1983. Similarly, the French Commander Cousteau led a mission in this region in 1987; like others, he concluded that the tests conducted at Mururoa and Fangataufa had no notable effect on the populations or the environment of the region. Finally, experts of the International Atomic Energy Agency also made comparative measurements of radioactivity during a stay in Mururoa in 1991. The results obtained confirmed the findings of the various missions. Other foreign laboratories of scientific renown also took part. There was a further series of verifications in 1994. Identical checks will also be made at the conclusion of the last French nuclear test series.

57. Finally, it is necessary to mention the scientific reports of some countries which have been

the strongest opponents of France. First, there was a report commissioned by the Australian Prime Minister, Paul Keating, from the Australian Nuclear Science and Technology Organisation. The scientists who prepared this report concluded on 16th August last, at a meeting with the press, that the impact of the tests on the health of people in the Pacific region would probably not be significant. Should there be any leakage, a danger which the scientists minimised, they believed it would be possible that the local environment might be affected. The impact would be greater on the atoll and would diminish with distance¹³. The other scientific report comes from New Zealand and, more specifically, the External Assessments Bureau. Its content has not yet been revealed officially by the head of the Wellington Government, John Bolger, but it is believed that the rate of radioactivity in the French atolls in question is even lower than that in New Zealand.

58. Nevertheless, French nuclear tests were resumed in a relatively pernicious international atmosphere which should now be examined.

III. Aspects of the international dispute over French nuclear testing

59. Objections to French nuclear testing stem, among others, from states which consider they are concerned by French tests or from international organisations or non-governmental organisations. They are sometimes intermingled.

60. What has to be determined initially is the nature of these objections; in other words, what are the true arguments behind these objections? Here one should try to rise above any controversy which might encumber the constructive outcome of this analysis.

61. The arguments put forward are often mixed but may be classified in two main categories: conventional ecological arguments and political arguments. Only the former can find a relatively stable juridical basis.

(a) Tests and the environment

62. The main ecological argument is based on the legislation governing cross-border pollution. International law on the environment can offer protection to states which are victims of pollution caused by another state. In the case in point, environmental damage to certain states would appear to be caused by the French nuclear tests. International law has several well-established standards to defend states which are victims of pollution

13. Comments reported in *Le Monde*, 17th August 1995 in an article entitled "Australian and New Zealand scientists minimise the impact of French nuclear tests on the environment".

caused by another state (cross-border pollution). The legal basis for such an allegation can be found in principle 21 of the Stockholm Convention which stipulates that states have the obligation to ensure that the activities under their control do not jeopardise the environment of other states. This principle has been confirmed in other conventions and international agreements such as the Montego Bay convention on the law of the sea, the Rio declaration, the World Charter of Nature and decisions of the International Court of Justice.

63. The various samples and measurements of the environment examined previously can prove the existence of no significant degradation of the environment or the atolls in the region. As long as the states concerned have no tangible scientific proof, it appears to be impossible for them to use this international legal standard to call a halt to French nuclear tests. Finally, it seems doubtful that countries such as Australia and New Zealand located several thousand kilometres away from the atolls can be subjected to any kind of cross-border nuclear pollution.

64. Moreover, on 23rd September, New Zealand's suit was dismissed through lack of jurisdiction of the International Court of Justice which it had requested to reopen the question of nuclear tests in 1974, but on the new basis of underground tests¹⁴; the 1974 decision concerned tests in the atmosphere by France and the Pacific and their consequences on the environment. This matter had already been dismissed since France at the time had officially given up this type of test. The International Court of Justice has therefore not given an opinion on the substance in these two cases but these events clearly show that it is difficult for the time being to condemn a state which carries out nuclear tests.

65. Yet another argument prolongs the previous one by taking up a principle that is at the very basis of international law of the environment today to the effect that one does not inherit the land of one's grandparents but one borrows it from one's children. The countries that object base their criticism on the future consequences of these tests. For them, the presence in the sub-strata of radioactive matter is a danger for future generations in addition to being a potential danger for the present one in the event of an earthquake or collapse of the atolls because of their being undermined by the multiplicity of tests. Certain international legal standards, moreover, call upon states to abstain from any activity, the future consequences of which they ignore. At the moment, these are mainly conventions, declarations or agreements and their binding force is still relative.

14. *Ibid*, Note 15, International Court of Justice, on nuclear tests.

66. France meets this argument with allegations that the risk is minimal, controls are effected regularly and radioactivity which is present at a depth of something like one kilometre below the surface will diminish with the years. France believes that the speed of water movement in the basalt rock (which is not very permeable) is not enough to allow radioactive substances liable to affect human health to rise to the surface. Its view is that at the moment when water which has been in contact with the radioactive matter in the sub-soil regains the surface, its rate of radioactivity will have diminished to such an extent that it will no longer present any danger for mankind.

67. But the spirit that dominates certain arguments is perhaps the relativisation of scientific knowledge. However just, science cannot predict the future and decide the future consequences of a persistently dangerous substance whose long-term effects cannot be known. Too many parameters are in play for one to be able to give a reasonable answer to such a prospective analysis. Precedents add grist to the deep conviction of certain opponents of the tests; indeed, from the end of the 1940s until the sixties, the Americans, like the Russians, conducted scientific tests under the aegis of the most eminent institutes on the effects of radioactive material on human beings. These facts, now well-known thanks to the declassification of certain documents in the two countries for various reasons, clearly show how ignorance of certain consequences of radioactive material can lead to serious disturbances to the human organism. Given the state of their knowledge at the time, eminent research workers were convinced that they could master most of the consequences of their acts. While not wishing thereby to reduce mankind to powerlessness (any human activity involves an element of risk), a critical mind should also accompany scientists when they make certain affirmations. It is perhaps this lack of a critical mind that calls into question for some the so-called innocuity of nuclear tests. How can one be reasonably convinced of the absence of future danger of radioactive substances buried several hundred metres underground, even if this ground is formed by the hardest rock?

(b) The French moratorium

68. On 8th April 1992, President François Mitterrand, through his Prime Minister, announced the suspension of French nuclear tests that year. Thus started the French moratorium on nuclear tests which was renewed several times, finally to be suspended by the new French President, Jacques Chirac, in 1995. President Mitterrand's announcement came only a few days before the start of what was to have been the annual test series. The decision was intended to encourage worldwide nuclear disarmament and to accomplish

a symbolic act which was supposed to encourage non-proliferation.

69. Clearly, one can question the legal validity of such a moratorium at international level. It was a unilateral act by a state committed to it for as long as anticipated in its declaration; thus, any violation of this unilateral undertaking can be challenged by any other state concerned. The jurisprudence of the International Court of Justice in this matter is firm and unswerving¹⁵.

70. The French moratorium was subsequently renewed when in a televised speech on 25th October 1993 François Mitterrand committed France in this respect for as long as he would be Head of State, i.e. until May 1995. Throughout that period, France abided by its undertaking; in the words of the President, France reserved the possibility of resuming tests after May 1995.

(c) The comprehensive test ban treaty

71. France is one of the thirty-seven states parties to the Disarmament Conference which, in August 1993, decided unanimously to negotiate a complete test ban treaty. The main conditions for such a treaty were its universality and the effectiveness of guarantees it would grant the signatory states. The work of the Disarmament Conference in negotiating the treaty should be completed by the end of 1996. It was stated at the NPT conference that before the treaty came into force, the nuclear powers should exercise the greatest discretion. France then indicated that it did not exclude a possible resumption of tests before signing a test ban treaty. Certain commentators, however, then remarked that such conduct was contrary to the principle of goodwill that should preside over all international negotiations¹⁶. According to this principle, if the conduct of one of the parties to the negotiation was contrary to the aim and purpose of the treaty being negotiated, such conduct would deprive the negotiation of its substance. They pointed out that the French reservation was contrary to the undertaking that was being negotiated by the various states and that one could not reasonably accept in good faith a conduct that was contrary to future commitments. In their view, France would call the negotiations into question.

15. Permanent International Court of Justice, Eastern Greenland case, PCIJ, Ser. A/B, No. 53, 68 (1933); International Court of Justice, Nuclear Tests case (Australia vs France), ICJ, Rep. 253 (1974); see also S. Carbone, "Promise in international law: a confirmation of its binding force", International Yearbook I.L. 1975, pages 166-172; J-P. Jacques, "A propos de la promesse unilatérale", Mélange Reuters, 1981, pages 327-345.

16. Principle found *inter alia* in Article 31.1 of the 1969 Vienna Convention on the Law of Treaties.

(d) The compatibility of tests and the Euratom treaty

72. In regard to the French nuclear tests, other criticism arose in Europe regarding a possible violation by France of the Euratom Treaty of 1957. Article 34 of this treaty stipulates that in the event of "particularly dangerous experiments" any member state is obliged first to obtain the Commission's opinion. Furthermore, if "such experiments are liable to affect the territories of other member states", this opinion is binding. Those who criticised France in this respect pointed out that 900 kilometres away from the test centre is the Pitcairn island inhabited by 85 British subjects.

73. The dilemma is that the Euratom Treaty concerns in principle only civil nuclear questions but it is noted that the Commission is also competent in health protection in connection with the security provisions, whatever may be the origin of the explosion. Two complaints were made to the Commission in this respect at the beginning of summer 1995. Opinions differ regarding the responsibility of the Commission in this matter.

74. This issue caused a dispute between the Commission and the Parliament. In a spirit of appeasement and to avoid a tussle with the French authorities, the President of the Commission, Mr. Santer, explained to the European Parliament that the information available was not enough to reach an opinion¹⁷. This very diplomatic answer did not prevent Mr. Santer, however, from recalling that the Commission had no competence to give an opinion on the political or military expediency of the French decision. The President of the Commission recalled that he would make full use of Articles 35 and 36 of that treaty which allow important technical information to be obtained; he undertook to be very active in this respect. In this sense, on 6th September he urged France to provide him with guarantees concerning the security of these tests and a team of European experts was sent to the Mururoa atoll.

75. On 22nd October, the European Commission concluded that the tests under way did not pose a perceptible risk of significant exposure to radiation to workers or the population and that Article 34 of the Euratom treaty did not therefore apply. According to Mr. Santer, a delegation of the Commission experts which had visited Mururoa found that the level of radiation was 10 micro Sieverts as opposed to the allowed exposure level of 5 000 micro Sieverts.

(e) The lack of European concertation

76. More generally, what was hard to accept by France's European partners was the lack of prior consultation. There was no discussion within the

17. Financial Times, 7th September 1995.

Union of the unilateral decision to resume tests. France's unilateralism was seen by some to conflict with its words about co-operation and European integration, particularly in defence matters. Whether justified or not, such an attitude was bound to upset the susceptibilities of certain countries of the Union which have always been opposed to nuclear weapons. Thus, a proposal made by the French political authorities at a later stage to Europeanise its deterrent force was open to suspicion, even if this matter is a question of great importance for the introduction of a common defence.

(f) European and international reaction

77. The resumption of nuclear tests by France did not therefore fail to arouse some quite sharp reactions among partners and also at world level¹⁸. It is not necessary to revert to the opposition manifested in the European Parliament led mainly by socialist, communist and ecological groups.

78. Reactions among European states were very diverse. The United Kingdom remained relatively neutral and Germany, in the person of Chancellor Helmut Kohl, while recalling that his country did not have the same appreciation of nuclear matters as France, specified that he in no way wished to call in question Franco-German friendship which was the most precious outcome of the post war period¹⁹. The United Kingdom refused any condemnation²⁰. Other European comments were not so lenient; newcomers to the Union (Austria, Finland and Sweden) and certain founder members such as Belgium, Italy or the Netherlands showed no mercy in their reactions. The Swedish Minister of Culture, Margot Wallstrom, even marched alongside Polynesian protestors for independence on 3rd September.

79. Reactions at international level were also diverse. In the Asia-Pacific zone, criticism was almost unanimous. It is understandable that countries such as Japan should be particularly sensitive about such events. New Zealand and Australia adopted an extremely critical attitude towards France. South American countries such as Chile also protested vigorously. On the other hand, the United States and Russia only expressed regrets. China, which is still holding nuclear tests, merely took note of the French tests.

18. See for example the Financial Times, 3rd October 1995 "French N-test prompts wave of criticism" or Le Figaro, 3rd October 1995 "Les regrets de l'étranger".

19. For more details of Chancellor Kohl's arguments, see the article by B. Bollaert "L'indéfectible soutien de Helmut Kohl" in Le Figaro, 7th September 1995.

20. See The Times, 7th September 1995 "Rifkind refuses to join in the condemnation".

IV. The resumption of French nuclear tests in 1995

80. According to the decision of the President of France, nuclear tests in the South Pacific have been resumed to ensure the safety, security and reliability of its deterrent forces and to complete current work on the development of a test simulation.

81. In any event, it should be clearly noted that the purpose of these tests is not to help to create new weapons. This was made abundantly clear by the President of the French Republic on 14th June 1995, when he announced the resumption of tests: "It is not a question of increasing our armament, but of ensuring maintenance."

(a) The qualification of the TN-75

82. The second test conducted by France on the Fangataufa atoll on 2nd October 1995 at 0.30 a.m. Paris time was intended, according to the experts, to qualify the TN-75 warhead. This deduction was allowed by the conjunction of two factors: first, the AEC stated that the test had released energy of some 110 kt which corresponded to a qualification firing of a nuclear warhead such as the TN-75 and, second, this test followed twenty-two others conducted at different stages in the development of the TN-75 and which had begun at the end of the seventies. Six of these nuclear warheads are to equip each M-45 sea-to-ground missile. These weapons are to equip the new French nuclear missile-launching submarines of the Strategic Ocean Force, which will replace the present Redoutable class submarines, the first of which was decommissioned in 1991.

83. The first submarine of this class, the Triomphant, will carry out its first patrol in the autumn of 1996. Its commissioning will be followed by that of the Téméraire in 1999, the Vigilant which most probably will be ready only after the anticipated date of July 2001 and of a fourth unit that has not yet been named, but which has little chance of being operational before January 2005. Each of the planned four submarines will carry sixteen of this type of missile. It is estimated that the construction of these four submarines will amount to F 81.5 billion.

84. So far, the Redoutable class submarines forming France's Strategic Ocean Force have been equipped with M-4 missiles, each with six TN-70 or TN-71 nuclear warheads of 150 kt. Compared with these two nuclear warhead models, the TN-75 is what the experts at the Direction des Applications Militaires du Commissariat à l'Énergie Atomique (DAM-CEA) have termed to be a major technological leap. This is a particularly high-performing warhead, unprecedented in France, whose only equivalent is to be found in the most sophisticated United States or

Russian weapons. Very few specific technical data are available in view of the sensitivity of the question which is classified "secret-défense". It is nevertheless known that the power of this thermonuclear device is some 100 kt and its load has been miniaturised to the maximum. It is also lighter than previous weapons, which increases the range of the missile. The new warhead has been hardened, which makes it less vulnerable to electromagnetic impulses which might deregulate its operation in-flight and it also has stealth features to make it less detectable and is equipped with more decoys to divert antiballistic defences. The TN-75 draws the maximum from the latest technology in terms of weight, volume and power. As a comparison, its power is six to ten times that of the Hiroshima bomb (5 tons for a power of some 15 kt). The total weapons produced will be the equivalent of a total destructive power two thousand times the power of that bomb.

85. The M-45 missile is intended to carry six TN-75 warheads which is thus a considerable technological progress compared with the M-4 missile. It has a range of 6 000 km (instead of 4-5 000 km for the M-4). Its warhead is of a totally new concept. It also has penetration capabilities and decoy systems which allow it to divert the electronic counter-measures of an enemy's sophisticated defences²¹.

86. According to parliamentary sources, the total cost of developing this weapon is estimated at F 26 billion, which, added to the cost of the new Strategic Ocean Force, gives a total of some hundred billion francs.

87. In conclusion, the M-45 missile armed with six TN-75 nuclear warheads is a far more sophisticated weapon than its predecessors; its different technical characteristics allow it to respond better to the level of advancement reached by foreign defences. This new weapon, destined to ensure the major part of the French deterrent force until approximately the year 2010, is therefore essential for maintaining the credibility of the French deterrent force. It should be noted that the TN-75 was already designed when France interrupted its nuclear tests in 1992, without having been validated. Evidently, it cannot be said that this is an increase in armaments but merely a question of verifying the reliability of a weapon that existed already.

(b) Verification of the reliability and the security of existing weapons

88. Another technical justification given by the French Government is the absolute need for maintenance for the nuclear weapons already in

21. Le Monde, 19th October 1995.

service²². It is necessary to verify the ageing of the various parts of these weapons. The 60 kiloton test held on 27th October last was certainly organised for this reason. Indeed its power corresponded to no category of weapon in service operationally (bombers and all kinds of missiles). The French Defence Ministry, moreover, declared that this test was intended to guarantee the future safety and reliability of these weapons. At the present juncture of French scientific knowledge, only tests can verify their state. Not to carry out such verification tests might raise questions about the reliability of these weapons and constitute a serious danger should they have deteriorated.

89. It is anticipated that the simulation programme France is working to achieve will allow this verification to be effected in laboratory without any further testing; this will be examined later in the present report.

*(c) The simulation of nuclear tests
(the PALEN programme)*

90. Part of the French final test campaign is meant to provide the scientific information necessary for achieving a simulation programme. This programme is based on numerical simulation backed by experience; for that, a few specific tests are essential in order to isolate and provide instances of essential aspects revealed through full-blown tests, which provide a back-up for the simulation system.

91. An official French report²³ in December 1993 during the French moratorium considered that ten more tests would still be useful for providing the information necessary for achieving the programme. In view of the scientific progress and the international atmosphere in this respect, it seems that today these estimates have been revised downwards.

92. One test, called Lycurgue, was conducted before the French moratorium in 1992, which allowed French physicians to learn more about the phenomena of pollution. The present tests will certainly also cover this very complex area of science.

93. France has thus affirmed that it wished to sign the treaty banning nuclear tests and also maintain and modernise its nuclear deterrent force. The only way for it to reconcile these two aims is to acquire the technology allowing nuclear tests to be simulated and for that it is essential to

conduct a few more tests. As a necessary condition for obtaining this technology, these tests will provide backing and validation for the various processes linked with simulation, more specifically, lasers and numerical simulation means.

*V. The rôle of France's nuclear weapons
in the defence of Europe*

94. There is a possibility that the reactions of many EU-WEU member states to the French nuclear tests will spark off a new debate on the rôle of the French nuclear arsenal in the defence of Europe. The recent proposals made by both the President and the Prime Minister of France to Europeanise the French nuclear forces, although not entirely new²⁴, cannot be ignored by the European allies and they should also be linked with an urgently-needed public debate on the rôle and significance of nuclear weapons in the post-cold war world.

95. Before any additional development, it is necessary to fix the framework of the notion of concerted deterrence. Indeed, it is not a matter of "shared deterrence" which would mean others also having a finger on the trigger. The President of the French Republic alone retains this prerogative. Nor is it a matter of "enlarged deterrence" which would imply just extending the French nuclear guarantee to Germany. Concerted deterrence means a dialogue between partners on nuclear deterrent force procedures in addition to an extension of guarantee²⁵.

96. It should be recalled here that in June 1992, the WEU Assembly recommended that the Council define "a European concept of the rôle of nuclear weapons and developing consultations between its members on the possibility of resorting to such weapons²⁶". A similar approach was set out in Recommendation 540.

(a) The French proposal

97. After the resumption of its nuclear tests, France proposed that its European partners, in the framework of instituting a common defence, think about the availability of its nuclear deterrent forces. Thus, on 31st August 1995, President Chirac said: "As it builds up its defence, the European Union might wish the French deterrent to play a rôle in this defence." This idea was even more clearly affirmed the same day by the French

22. Address by the French Prime Minister to the IHEDN on 6th September 1995.

23. Assemblée Nationale, Commission de la défense, rapport d'information no. 847, "La simulation des essais nucléaires" (Defence Committee report on the simulation of nuclear tests).

24. President Mitterrand had already alluded to it in 1992.

25. Article by Daniel Vernet "France-OTAN: la fin des tabous" (France-NATO: the ending of taboos), *Le Monde*, 31st October 1995.

26. Recommendation 517.

Prime Minister, Alain Juppé, who said that co-operation in defence questions could no longer overlook the nuclear dimension of our common security. The Prime Minister was merely recalling the concept of concerted deterrence he had already mentioned at the beginning of 1995 when he was Minister for Foreign Affairs in the previous government.

98. The vague wording of the French proposal needs to be spelled out, but it will inevitably raise political, military and strategic problems that will have to be examined more closely. It should also be noted that this proposal was made in the adverse context of the resumption without consultation of French nuclear tests. Such a poor view of this resumption was taken by public opinion in many countries that it would seem difficult for any European country to voice its approval and particularly for the United Kingdom and Germany, to which this proposal was clearly directed. It should not be forgotten that in the latter country pacifist, anti-nuclear and ecological movements are very influential. Moreover for historical reasons, any discussion of defence questions in Germany is still very delicate. Indeed, any immediate approval would be taken by public opinion to imply approval of the French tests. It would not fit into the framework of this report to reveal the deep-rooted intentions of the various European partners towards France. Mention will merely be made of the various tendencies and positions adopted at official level in the countries concerned, while the position of Germany and the United Kingdom will be highlighted in more detail.

(b) The German reaction

99. The reaction of German political authorities to the French proposal for concerted deterrence could be characterised as polite and rather non-committal. In fact, this is the best that could be expected, bearing in mind a public opinion which is very hostile to nuclear tests and nuclear weapons in general. The German Minister for Foreign Affairs, Klaus Kinkel, in a statement at the beginning of September, believed that the idea of concerted deterrence was interesting and should be discussed and studied closely. While not constituting acceptance, this position allowed Germany diplomatically to defer discussion of the basic question underlying such an offer. Apparently, the German Government tried to avoid any statement which could harm the Franco-German relationship which is passing through a sensitive period due to other questions regarding European integration.

100. The German Minister for Foreign Affairs did not close the door on the French proposal when he said that, after the end of the tests, Ger-

many would be prepared to reexamine the status of French and British deterrent forces in order to facilitate the creation of a European defence identity and give it credibility. Germany would not make the first step, the ideas must come from France. Having just hinted at its intentions for the time being, France will have an important rôle to play in this field.

101. Later, Minister Kinkel seemed to be hedging his position in this respect in an interview with *Le Figaro* on 8th October 1995: "NATO is our nuclear umbrella. We do not wish to have access to the nuclear bomb, neither through the main entrance, nor through the back door (concerning concerted deterrence). For me, it is a question of politeness to talk about it with our French friends". Once again, these remarks cannot be taken out of the context of the growing opposition of the German people to French tests in the South Pacific.

102. In the internal German debate on this issue, the Social-Democrat opposition is strongly opposed to the French proposal. Within the coalition government itself, opinions diverge between Europeans and Atlanticists; these differences of view are represented by such influential persons on the German political scene as Wolfgang Schäuble, Chairman of the Christian-Democrat parliamentary group in the Bundestag, and Volker Rühle, the present Defence Minister of Germany. While the former believed he could not imagine a future European security without a nuclear component, the latter thought that Germany already had the benefit of American protection and that French nuclear weapons had always had direct significance for European security²⁷. More radical opposition to any co-operation in this matter is represented by Edmund Stoiber (close to Theo Waigel, Finance Minister in Bonn and Chairman of the Bavarian CSU), Minister-President of Bavaria. Speaking to journalists in Bonn on 22nd September last, he said that the German Government would not follow up the French proposal to Europeanise the strike force.

103. Other important actors on the German political scene voiced their interest in the French proposal. Thus, Karl Lamers, Christian-Democrat group spokesman on foreign policy in the Bundestag, said this was an opportunity to seize while affirming that concerted deterrence should be set in the overall framework of Europe's common foreign and security policy²⁸. All agreed, however, not to interpret the French offer as a proposal to have a finger on the trigger; it was more a question of reflecting on proposals for concerted strategy in the nuclear area.

27. *Le Monde*, 9th September 1995.

28. *Le Figaro*, 22nd September 1995.

104. If one wishes to understand what the German reaction might be to the French proposal, it is necessary to refer to the actual state of affairs in the nuclear debate in Germany. As already noted previously, there are strong anti-nuclear pacifist and ecological lobbies in Germany, which are certainly very much against such a proposal. The most radical of them are even opposed to any form of nuclear use, be it civil or military. Some also amalgamate the ban on producing nuclear weapons imposed after the second world war²⁹ with the opening of a debate on a new nuclear guarantee that could protect Germany.

105. Yet it must not be forgotten that this hostility did not prevent Euromissiles being stationed on German territory, thus giving it the benefit of a first nuclear guarantee. Likewise, it is recalled that the supposed constitutional obstacles against "out-of-area" operations by German armed forces were taken away by a decision of the German constitutional court, thus enabling the government to take the action which it deemed necessary. Although the latter argument may not herald an affirmative answer from Germany regarding the French proposal, it nevertheless indicates a certain flexibility in German attitudes.

106. Finally, a last factor that might be interesting to recall in this respect is a historical event that has already been mentioned in the first part of the present report: the secret agreements on defence questions and armaments, including nuclear questions, between France, Germany and Italy of 1957-58 (Colomb-Béchar, the agreement between the Defence Ministers of Germany (Strauss) and France (Bourgès-Maunoury) on 1st January 1957, the protocol of 25th November 1957, including Italy in addition and the agreement of 8th April 1958 concerning more particularly the building of an isotope separation plant at Pierrelatte. The full texts of these agreements were published only a few years ago.

107. The framework for these co-operation agreements was to be NATO and WEU and their aim was to harmonise the military concepts of France and Germany concerning the organisation and doctrines governing the use and armament of their forces, with particular regard to areas of new weaponry. The category of new weaponry allows it to be thought that the negotiators at the time did not exclude co-operation in the nuclear military field. Emphasis was already laid at the time on the existence of problems of a specifically European nature and problems specific to European countries of the alliance, and this throws considerable light on the reluctance of Bonn and Paris with regard to NATO's strategy. Doubts about the

readiness of the United States to use its nuclear means in the event of significant local hostilities in Europe was an important factor in the wish to reach agreement on this question.

108. The prevailing concept at the time was, nevertheless, not to weaken NATO, even though the purpose of this agreement was to face up to American discrimination in nuclear matters between members of NATO. Chancellor Adenauer, in the words of Defence Minister Strauss, then said he was quite prepared to join with France and Italy in questions of aircraft, rockets and nuclear weapons, which he believed the three countries needed. Thus the protocol of 25th November 1957 clearly specified that co-operation would give priority to aircraft, missiles and the military applications of nuclear energy. However the return to power of General de Gaulle on 1st July 1958 put an end to these agreements and more particularly their nuclear aspects.

109. These brief historical facts can in no way be compared to the present French proposal concerning concerted deterrence, be it in the content of the agreements or the international context of the time. It is nevertheless interesting to see how certain questions persist throughout history. Reference is made here to the specific problems of European countries of the alliance which again seem to be on the agenda in regard to the discussion of concerted deterrence. It is also interesting to note that the Germans have not always been opposed to discussion of military nuclear problems.

110. The nature of the German answer will be very important from a political point of view. A positive answer would open the door to a European doctrine of deterrence in which not only British but also French nuclear guarantees would be extended to other countries. The fact that a future common defence would be covered by a concerted European deterrence would undoubtedly strengthen the political weight of Europe on the international scene. Indeed, one cannot deny the political impact of nuclear weapons in the world today. Mention is sometimes made of the equalising power of this weapon in that it allows a country that possesses it to pull itself up to the same level as the other countries that have it. It cannot therefore be gainsaid that such a choice would influence the CFSP instituted by the Maastricht Treaty by strengthening Europe's authority vis-à-vis its partners. Whether or not one is opposed to the nuclear weapon, it is still today a criterion of state power. It is still a factor of independence, too.

(c) The United Kingdom position

111. There is no major problem in this respect in the United Kingdom which is also a nuclear power thanks to its possession of American Trident missiles which equip its nuclear submarines.

29. The September 1954 London conference placed a ban on the production of nuclear weapons on German territory and in the 1954 Paris Agreements, Germany undertook not to produce ABC weapons on its territory.

Public opinion in Britain is also susceptible in this matter. Moreover, Franco-British co-operation in questions of nuclear doctrine has made great progress since 1992 as the French Prime Minister, Alain Juppé, recently noted: "the two countries are closer than they had originally hoped"³⁰.

112. The Anglo-French Commission, the Joint Commission on Nuclear Policy and Doctrine, which was established in autumn 1992 and given a permanent status in 1993, has indeed proved to be a useful instrument in improving relations between the two countries in military nuclear matters. A review by this Joint Commission of the compatibility of the deterrence doctrines of both countries led to the conclusion that there is no irreconcilable gap between the British "flexible response" and the French "weak against the strong" doctrine.

113. The European dimension of deterrence as seen by each of the Western European nuclear states has also been discussed in this Commission. A joint project, however, to develop a long distance air-to-ground missile has been abandoned by the United Kingdom because of budget overruns for the Trident 2 D-5 missiles which will equip the new strategic submarines. At present, the Joint Commission is reviewing the rôle of deterrence in relation to new security risks, including mass destruction weapons which could be deployed by states with unstable political structures.

114. It should clearly be noted, however, that in the agenda of the Joint Commission there is as yet no question of joint patrols by strategic submarines for both countries or joint targeting. It is said that for the United Kingdom, the participation of France in NATO's Nuclear Planning Group is a preliminary question before a discussion on such far-reaching co-operation could start.

115. It should also be noted that the United Kingdom does not see any room for a new deterrent organisation in Europe outside NATO³¹.

(d) The reaction of the European Union

116. The formal Council meeting of the fifteen ministers for foreign affairs held in Santander (Spain) did not reach even a minimum consensus on this question. The meeting ended on 10th September and revealed differences between neutral countries which were reticent about the question of European defence (and therefore a fortiori about the nuclear question) and countries wishing to build a political Europe through a CFSP together with a common defence system. Also, the summit meeting of heads of state and of govern-

ment in Majorca, in the Balearic islands, on 22nd and 23rd September allowed no specific progress to be made in this matter.

117. It seems that the polemic atmosphere created by the French nuclear tests is not favourable for starting the debate on concerted deterrence before all tests have been finished and the comprehensive test ban treaty (CTBT) has been signed.

VI. The development of a European defence identity and concerted deterrence

118. In the post-cold war world, new relationships between old allies are inevitably taking shape, and it is no secret that Europe will have to do more for its own security, even if at this moment, or in the foreseeable future, there is no question of disbanding the Atlantic Alliance which for so many years has been and still continues to be the bedrock of European security.

119. The development of a European defence identity requires the establishment of a complete common security and, in time, defence policy. The rôle and future of these weapons in such a European security and defence policy can certainly not be ignored with two Western European states having a nuclear arsenal at their disposal.

120. In this framework, it should also be taken into consideration that the continuing existence of a United States nuclear umbrella against the threat of a massive armed attack on Western Europe is less relevant today than during the cold war. Even though uncertainties persist as regards developments in Russia with its still impressive nuclear forces, there is no doubt that the threat from the East has largely diminished. This change of context should be a stimulant for new thinking in the field of deterrence and the specific rôle of the French and British nuclear forces, bearing in mind that the United States nuclear forces will continue to play a major rôle in the defence strategy of the Atlantic Alliance.

121. It is important to understand that a slow and considered approach is necessary in these questions. The European countries concerned should adopt a policy of small steps as the European institutions did successfully in other areas. A slow approach should not lead to immobility, however. Small steps should not result in marking time which would be highly prejudicial for the defence of Europe. To do nothing in this matter would not help to define the European defence identity and would thus jeopardise the common defence plans provided for in the Maastricht Treaty. A direction for the years to come must therefore be chosen if any steps at all are to be taken. The question is simple: should concerted steps be taken by the countries of the Union for a European deterrent and, if so, by what ways and means?

30. Defense News, 11th-17th September 1995.

31. Prime Minister John Major, in an interview in *Le Monde*, 29th-30th October 1995.

122. Since, according to the Maastricht Treaty, WEU's task is to develop a European defence identity, it is particularly concerned with the debate on a European deterrence since this would be a component part of common defence. France suggests that this still vague identity must inevitably include a concerted nuclear strategy, but it is noted here that the French proposal for concerted deterrence is also rather vague. Before any discussion on this issue could start, France should present more specific ideas and provide more details regarding its own ideas on this issue. Clearly WEU would be the ideal centre for concerting the European approach; NATO would be the body for links with the United States. This would be what might be called constructive complementarity.

123. The strategic problem is twofold: on the one hand, France's redefinition of the notion of vital interests and the concept of sanctuarising the national territory, which are the criteria for committing its nuclear weapons, and, on the other, the positioning of this concerted deterrence in regard to NATO.

124. France will indeed have to redefine the vital interests which govern the use of its nuclear deterrent force. Quite naturally, the vital interests nuclear weapons are supposed to protect are in the first place connected with the integrity of national territory. Over the years, this very strict notion of national interests has been gradually extended and at present there can be little doubt that the French doctrine does not apply exclusively to its national territory in the strictest sense. Aggression against Germany, for example, could just as well call in question the vital interests of France. With the increasingly intensifying social, economic and political links between European states creating an unprecedented interdependence, there is therefore a need to clarify and redefine the notion of vital interests and to find a definition of what might be the European common interest that might be defended by French nuclear weapons. In this respect, firm backing may be found in Article V of the modified Brussels Treaty, which stipulates that: "If any of the high contracting parties should be the object of an armed attack in Europe, the other high contracting parties will... afford the party so attacked all the military and other aid and assistance in their power." This article seems to imply that France and the United Kingdom could be led to make use of their nuclear deterrent force in the event of an attack on one of the other states party to the treaty. Article V of the modified Brussels Treaty would therefore seem to contain all the elements for circumscribing what might be covered by the notion of common European interest in the framework of thinking on concerted deterrence.

125. Concerted deterrence also raises problems in regard to the place it would take in relation to the American deterrent instituted in the frame-

work of NATO. Would there not be a superimposition of nuclear umbrellas between the one offered by the United States and the United Kingdom in the framework of NATO and another one which could be offered by France?

126. On 6th September 1995, in his speech to the Institut des hautes études de défense nationale (IHEDN), the French Prime Minister, Alain Juppé, discreetly made it understood that Paris was no longer opposed to discussing in NATO, or at least in a renovated NATO, its independent nuclear force.

127. To that end, he recalled that "the American presence is and will remain essential for our security" and even mentioned the possibility of French participation in a discussion on nuclear deterrence in the Atlantic Alliance, which would be a change in the attitude adopted since 1966; thus he stated that "French doctrine is built on the model of deterrence of the strong by the weak. This is what is known in mathematics as a borderline case because it does not take account, inter alia, of our membership of alliances. I believe that at a time when we are setting our sights on the achievement of a common defence policy with our European partners, including the United Kingdom, while working to renovate the transatlantic link, we must learn to introduce the collective dimension as a factor of our doctrine."


128. It is therefore clear for the French Prime Minister that the emergence of concerted deterrence in a European defence system would in no way call in question the American nuclear protection to which Germany and the United Kingdom are very attached. For him, a nuclear deterrent force protecting the vital interests of Europe might be included in the relevant NATO arrangements. This nevertheless implies a redefinition of the position of European states within that alliance and particularly of France, which withdrew in 1966. This conclusion is drawn from the fact that the Americans may lose their pre-eminent position as regards nuclear deterrence within the alliance. Understandably, France may not agree to link its deterrent force to NATO without having the benefit of decision-making powers regarding its commitment. This desire to keep a degree of independence is confirmed by the political dimension of the resumption of French nuclear tests at the present juncture. Everything rests on a redefinition of the place of France and of its deterrent force in regard to the alliance. One may have to think in terms of the need for a new deal in this respect. It may thus be understood that Europeans will not build up a joint defence under the protection of a concerted nuclear deterrence without the United States. NATO remains the essential instrument for discussion and co-ordination between effective United States protection and the emergence of concerted European deterrence.

APPENDIX

Glossary

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| AEC | Atomic Energy Commissariat. French organisation dealing with nuclear questions, particularly the military applications of nuclear research. |
| Airix 2 | Project currently being carried out by the CEA (French Atomic Energy Commissariat) for a high penetration X-ray generator to be located at Vaujours-Moronvilliers. This radiographic facility is essential for blank firings. It enables very detailed analyses to be made of instability problems in chain reactions that arise during priming of detonators. |
| Blank firings | Tests carried out without nuclear material. These cannot at present replace full-scale tests. Observation of phenomena produced during these tests will be made possible thanks to Airix 2, the future French high penetration X-ray generator. |
| Concerted deterrence | Proposal made by the President of France, Mr. Jacques Chirac, for discussing the extension of the French nuclear guarantee and a common nuclear doctrine with his European partners. Concerted deterrence cannot be equated either with shared deterrence where all countries taking part would have a "finger on the trigger" on the same basis as France or "extended deterrence which would merely extend the guarantee". |
| CTBT | Comprehensive Test Ban Treaty. Treaty placing a complete ban on nuclear testing. France is committed to signing after conducting its final series of tests. The treaty has been negotiated in the framework of the Disarmament Conference which has set 1996 as deadline. |
| DIRCEN | Direction des Centres d'Experimentation Nucléaires. A French joint services/AEC body tasked with preparing and carrying out measures for the operation of devices. It therefore used the French test facilities in the South Pacific. |
| ECJ | European Court of Justice. |
| Euratom | European treaty signed on 25th March 1957 creating the EAEC (European Atomic Energy Community); it entered into force on 1st January 1958 at the same time as the Treaty of Rome founding the former EEC; Euratom is concerned only with civilian nuclear questions. |
| IAEA | International Atomic Energy Agency. International organisation with responsibility, inter alia, for supervising compliance with non proliferation norms. |
| ICJ | International Court of Justice. |
| IHEDN | Institut des hautes études de défense nationale. A high-level French education and training institute on contemporary strategic and military problems. |
| Laser mégajoule (LMJ) | French ultra high power laser project for simulating nuclear explosions using thermonuclear micro-explosion techniques. The AEC plans to locate it in Aquitaine; a co-operative project with the United States is under consideration. |
| Moratorium | Period during which a state agrees to abstain from nuclear testing, often through a declaration or promise placing it in the legal category of unilateral acts, legally enforceable against that state should it fail to comply with their terms. France observed a moratorium on nuclear testing between April 1992 and June 1995. |

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| Moscow Treaty | Treaty signed by the United States, the USSR and the United Kingdom on 5th August 1963 on the banning of nuclear testing in the atmosphere, in space and under water, France refused to accede to it. |
| M-45 | French missile which is to carry the TN-75 warhead. The future SOP strategic nuclear submarines will each be equipped with 16 such missiles. |
| NPT | Non-proliferation Treaty. Treaty initially concluded in 1968 (coming into force in 1970) for a 25-year period. 178 countries ratified it (France and China in 1992). A conference held from 18th April to 12th May extended it indefinitely. The treaty restricts the states authorised to possess nuclear weapons to five; however it provides for compensation for non-nuclear states. |
| OMTC | Oasis Military Test Centre. Name given to the Sahara test site at In Ecker in the Hoggar, where France conducted some of its first nuclear tests. |
| OT (TOM) | Overseas Territory. Part of French territory with some independence. Such territories have an administrative Assembly. French Polynesia is in this category. |
| PALEN Programme | Programme of adjustment to the limitation of nuclear testing. This French scientific programme is intended to simulate nuclear tests so that full-scale testing need no longer be carried out. From a technological point of view it uses highly sophisticated radiological techniques essential for blank testing (Airix 2), high-power pulse generators and extremely powerful computers. |
| PTC | Pacific Test Centre. This is the complex in French Polynesia in the South Pacific where nuclear testing is carried out. The tests are conducted on the Mururoa and Fangataufa atolls (forming part of the atolls of Tuamutu). |
| Reganne – In Ecker | Sites in the Sahara chosen by France for carrying out its first nuclear tests. |
| SOF | Strategic Ocean Force. A force made up of French nuclear missile-launching submarines forming a very important part of French nuclear deterrent forces. Future Triumphant-class submarines will carry M-45 missiles with TN-75 nuclear warheads. |
| Thermonuclear | Refers to the fusion reaction produced by the hydrogen bomb. The first French test of this type was held in Fangataufa (French Polynesia) on 24th August 1968 (atmospheric test); the TN-75 is a thermonuclear weapon. |
| TN-75 | TN = tête nucléaire. The TN-75 is the latest French nuclear warhead, to be carried by the M-45 missile that will arm the future French Triumphant-class nuclear missile-launching submarines. |
| UNSCEAR | United Nations Scientific Committee on the Effects of Atomic Radiation. United Nations body with the task, inter alia, of receiving, studying and verifying all documents transmitted by states in connection with nuclear tests. |
| Validation | Makes it possible to check, by means of full-scale nuclear tests, that scientists' calculations actually produce the forecast effect. For the time being, nuclear tests are the only means France has of validating its calculations (until a full test simulation programme is produced). A nuclear weapon is described as "qualified" when all calculations involved in its manufacture have been validated and it is ready for mass production. A weapon is validated when it is totally reliable. |

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