

November 8, 2000

MEMORANDUM TO:

Chairman Meserve  
Commissioner Dicus  
Commissioner Diaz  
Commissioner McGaffigan  
Commissioner Merrifield

FROM:

Janice Dunn Lee, Director */RA/*  
Office of International Programs

SUBJECT:

VISIT OF PASCAL COLOMBANI, GENERAL ADMINISTRATOR,  
ATOMIC ENERGY ADMINISTRATION (CEA) OF FRANCE,  
NOVEMBER 14, 2000

Attached are the meeting schedule, biographical information, country summary, background information and suggested talking points for use during the November 14 visit of Dr. Pascal Colombani, General Administrator, CEA. Dr. Colombani will be in Washington to participate in a panel discussion at the American Nuclear Society meeting on the morning of November 13. Because of his limited time, Dr. Colombani requested an appointment with Chairman Meserve only.

In addition to meeting with the NRC Chairman, he will meet with DOE, the National Security Council and Senate energy leaders. This is Dr. Colombani's first visit to NRC.

By copy of this memorandum, SECY, OGC, EDO, and OPA are being advised of the final arrangements.

Attachments: 1. Commission Meeting Schedule  
2. Biographical Information  
3. Country Summary  
4. Background Information and Talking Points

cc: SECY  
OGC  
EDO  
OPA  
OCA  
NRR  
RES  
NMSS

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**VISIT TO NRC OF  
DR. PASCAL COLOMBANI, GENERAL ADMINISTRATOR  
ATOMIC ENERGY ADMINISTRATION  
NOVEMBER 14, 2000**

**SCHEDULE**

4:00 pm                      Chairman Meserve (O-17 D1)

**ACCOMPANYING PERSONS**

Jacques Bouchard, Director of Reactor and Fuel Cycle Division, CEA; Philippe Thie'baud, Director of International Relations, CEA; Regis Babinet, Nuclear Counselor of the French Embassy and Howard Faulkner OIP.

**DISCUSSION TOPICS**

Dr. Colombani wants to introduce himself to the Chairman and exchange information on the perspective for nuclear energy in the U.S.

Reactor safety:

- consequences of deregulation
- life extension
- evolutions in the field of risk-assessment

Role of NRC in high level waste management.

Mox fuel from weapons plutonium.

## **COUNTRY SUMMARY FRANCE**

France has a nuclear capability and maturity equivalent to the U.S. on an industrial, commercial basis, including all aspects of the nuclear fuel cycle. In 1998, France generated 78 percent of its electricity by nuclear power as well as exporting significant amounts of electricity to other countries in Europe. The French government is proud of its successful nuclear program which greatly reduces France's dependency on conventional fuel imports and provides environmental benefits.

France is a nuclear weapons country.

One national utility, Electricite de France

58 licensed PWRs

1 Licensed LMFBR (Phenix)

1 advanced PWR planned (EPR)

Average capacity factor for 1998 was more than 80%

Uranium ore: Mines and processing plants in France, Africa and North America

3 uranium conversion plants

1 large uranium enrichment plant

4 LWR fuel fabrication plants

1 MOX fuel fabrication plant

2 fuel reprocessing plants

3 vitrification facilities

2 low level waste storage facilities

2 sites undergoing suitability characterization for possible HLW repositories

Long history of regulatory and research cooperation with NRC

### Regulatory Organizations

Directorate for the Safety of Nuclear Installations, DSIN

Director: Andre-Claude Lacoste

responsible for the licensing and inspection of nuclear facilities.

Institute for Nuclear Safety and Protection, IPSN

Director: Michel Livolant

provides technical, safety expertise to DSIN; conducts safety research.

Office for Protection Against Ionizing Radiation, OPRI

Director: Jean-Francois Lacronique

responsible for regulation and oversight of radiation protection matters.

### Activities/Issues

NRC has regular interactions, from the Commissioners to staff specialists, in the regulatory and research areas with most of the nuclear organizations in France. Initially, activities were focused in the reactor area but they have now expanded to include waste management, spent fuel storage, decommissioning, and fabrication and use of Mox fuel.

### BACKGROUND AND TALKING POINTS

### **Atomic Energy Administration (CEA)**

CEA is a non-government, public *research and development* agency with scientific, technical, defense and industrial aims. Also, it is the lead organization on non-proliferation matters. CEA has about 16,000 employees and an annual budget of \$ 3 billion. Dr. Colombani has been General Administrator since January 1, 2000. Mr. Philippe Thie'baud, Director of International Relations, is the French governor to the IAEA Board. Oversight of CEA is provided by the Ministries of Defense and Industry. Its relationship to the government is similar to the national laboratories in the U.S. General management is the responsibility of the General Administrator and the High Commissioner oversees the defense part of the organization. The Inspector General for Nuclear Safety reports directly to the General Administrator.

The previous General Administrator, Yannik d'Escatha, visited NRC twice in the past. This is Mr. Colombani's first visit to NRC; the Chairman met Mr. Thie'baud previously at the IAEA General Conference in September.

Currently, the Institute for Radiation Protection and Nuclear Safety, IPSN, is part of the CEA. It conducts nuclear safety and radioprotection research, analyzes the safety of nuclear installations and carries out assessments of safety analyses on behalf of the government (DSIN), and inspects facilities relating to safeguards and physical protection. A.C. Lacoste, the Director of DSIN, is Chairman of the Management Committee that oversees the IPSN program.

For the past two years, the French government has been developing a revised nuclear regulatory structure in France. Disagreements between the Ministries of Environment, Health, and Industry regarding oversight of the new regulatory Agency have resulted in a stalemate in revising the legislation. Reportedly, one point that appears resolved is to separate IPSN from CEA and to form a single technical institute combining both nuclear safety and radiation protection as a stand-alone public entity. In a related and recent move, the IPSN budget for 2001 was transferred from the Ministry of Economy, Finance and Industry to the Ministry of Environment.

### **IPSN - NRC Research Cooperation**

The French are one of the NRC's best partners in cooperative activities in the area of nuclear reactor safety research, mainly conducted through the Institute for Protection and Nuclear Safety (IPSN) and its research facilities which include the test reactors PHEBUS and CABRI. Presently, IPSN is an organizational unit of CEA. We currently have specific cooperative agreements in the following areas: severe accidents, T-H code development and assessment, high burn-up fuel behavior under accident conditions, probabilistic risk assessment and seismic engineering. Additionally, we participate with IPSN in multilateral research projects dealing with source term, severe accident phenomena, fuel-coolant interaction, concrete containment model testing and human factors.

### **Recent Reorganization of CEA**

On September 1, a major, internal reorganization within CEA occurred to consolidate its civilian nuclear energy activities. The former, separate Divisions of Reactors, Fuel Cycle and Waste Management were incorporated into a nuclear energy pole managed by a single director. The new unit will add certain technical support staff from three CEA research centers.

Shortly after he became General Administrator, Dr. Colombani initiated an assessment of CEA's operational structure. It was determined that to efficiently design nuclear reactors for the future, the process must consider the type of fuel, and to properly assess the fuel cycle impact, the corresponding waste products must be considered. Consequently, it was felt that in today's environment, these three organizations need to work more closely together, thereby, leading to the formation of the nuclear energy pole.

Jacques Bouchard was appointed head of the new nuclear energy pole. Previously, he was the Director of the Reactor Division. While in this position he interacted with Commissioners and senior staff of NRC. Just prior to his new position, he served as Director of Military Applications at CEA.

Since the mid 1960s, French reactor development has been solely directed to the large evolutionary PWR. Their current reactor design effort, the European Pressurized Reactor (EPR), is a 1450 MWe continuation of this direction. However, in the past two years, there are muted signals that this approach may be changing. Since no new electrical generation is needed for ten years, reportedly, there are a few voices suggesting that more consideration be given to advanced reactor concepts. Framatome is a modest financial contributor to the General Atomic gas reactor effort. Moreover, this recent CEA reorganization and consolidation seems to be motivated by interest in new and maybe advanced reactor-fuel cycle concepts.

### **CEA - DOE Agreement**

On September 18, Secretary Richardson and Dr. Colombani signed an Agreement for cooperation in advanced nuclear reactor science and technology. The areas of cooperation are advanced reactor materials and fuel development, medical and industrial use of isotopes, and research and development on nuclear waste transmutation. CEA indicated that the two sides foresee joint planning for the use of R&D resources and a common research program on fuel and materials for next generation reactors. Future meetings are being planned between the two parties to develop details of the cooperation.

With the recent reorganization at CEA and the conclusion of the cooperative Agreement with DOE, French thoughts and plans on advanced reactors are a timely topic to discuss with the visiting delegation.

### **Economic Study of the Nuclear Power Option**

A major government economic study and forecast of nuclear power in the future was published in August. The study concludes that under all demand scenarios, the cost of electricity will be

lowest through 2050 for nuclear power as compared to natural gas. Also, operating the nuclear plants for 45 years rather than 30 is least expensive under all scenarios of electricity demand and fossil fuel prices. However, the cost differentials among the six investigated scenarios are modest implying that decisions on France's nuclear future may depend more heavily on political and social issues than economic considerations.

Other significant economic conclusions of the study are that recycling spent fuel is more expensive than direct disposal, and the cost of handling Mox is three times that of handling spent uranium oxide.

### SUGGESTED TALKING POINTS

The Chairman may wish to:

- Acknowledge the continuing, valuable research cooperation between CEA, through IPSN, and NRC as most recently evidenced by our participation in the French Phebus PF and Cabri programs.
- Indicate that NRC is part of the U.S. Mox effort and that he will visit Melox in early December. Inquire as to the status of the French program to assist Russia in their weapons plutonium disposition.
- Indicate that NRC is aware of the recent reorganization at CEA and the signing of an Agreement with DOE on advanced reactors. Inquire as to CEA thoughts on future reactor concepts and explain US activity in this area. Indicate that this may be an area of future exchange between CEA and NRC.
- Indicate that we are aware of the recent economic study on future electrical generation. Inquire if this study included advanced reactor designs and if not, how these may impact the results.