Conclusion Plenary Session III
Radiation Safety in Practice

TS III.1.1 RP in Nuclear Reactor

TS III.1.2 RP in Nuclear Fuel Cycle Facilities

TS III.1.3 Decommissioning and Restoration

TS III.1.4 Radioactive Waste Management

Debriefing report to IRPA12, by S. Saint-Pierrre

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Summary Conclusions

TS III1.1 and 1.2 Nuclear Installations:

Nuclear Power Plants (NPP) and Nuclear Fuel Cycle (NFC) Facilities

Excellent support from senior industry executives:

- **Mr. Alerto Andino, Director and CEO, CONUAR (Argentina)**
- **Dr. Filho Tranjan, President, INB (Brazil)**
- **Mr. Hideki Toyomatsu, Executive Office, Kepco (Japan)**
- **Mr. Dominique Minière, Deputy Senior VP, EdF (France)**

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Conclusions: NPP and NFC

1. Substantial nuclear developments are foreseen around the world over the coming decades

2. These developments closely relate to the world challenge on energy and environment

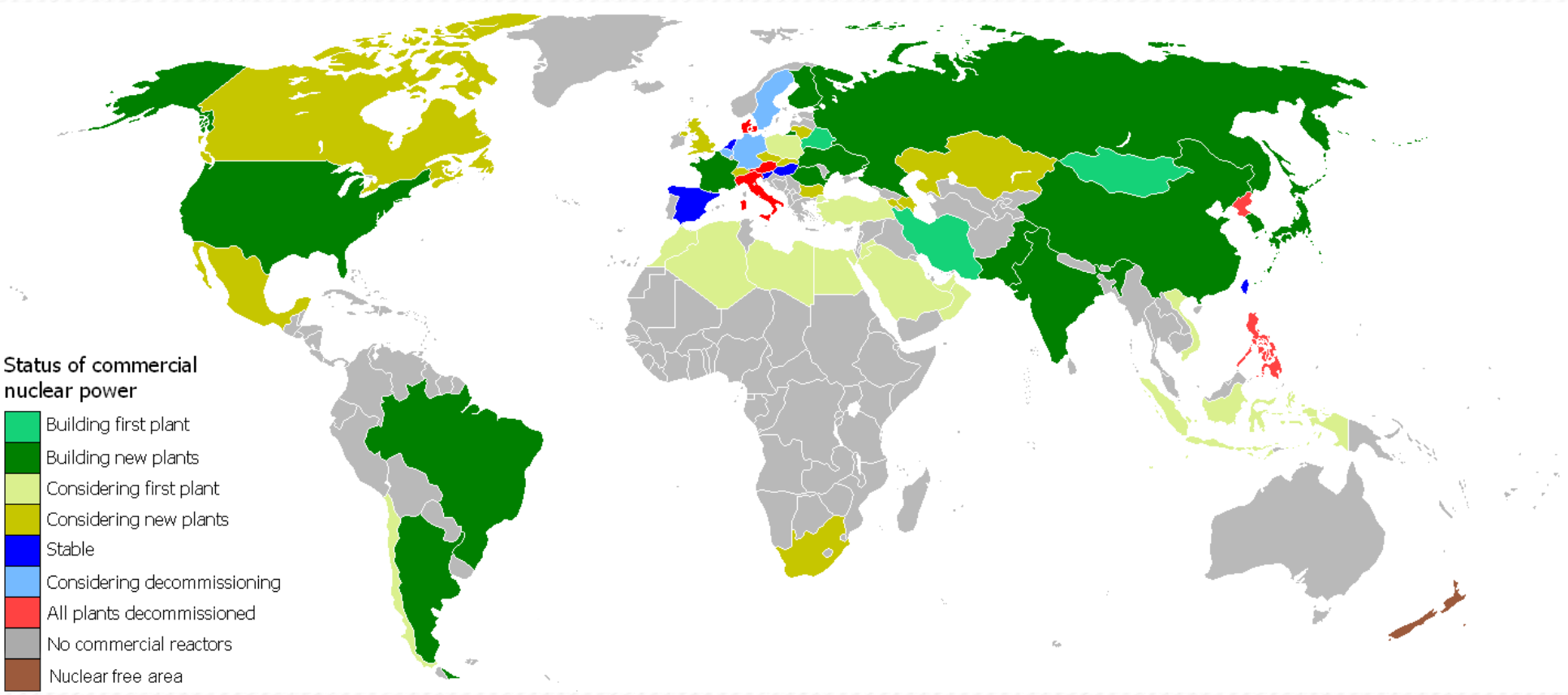
- Operators from France, Japan and USA have all highlighted their practical contributions. We also heard from Argentina and Brazil.

3.The long and solid track record of industry RP performance: an excellent basis for expansion

- Collective doses and individual doses have been steadily reduced over the years (this precedes the notion of DC!)

Global Movement toward Nuclear Renaissance

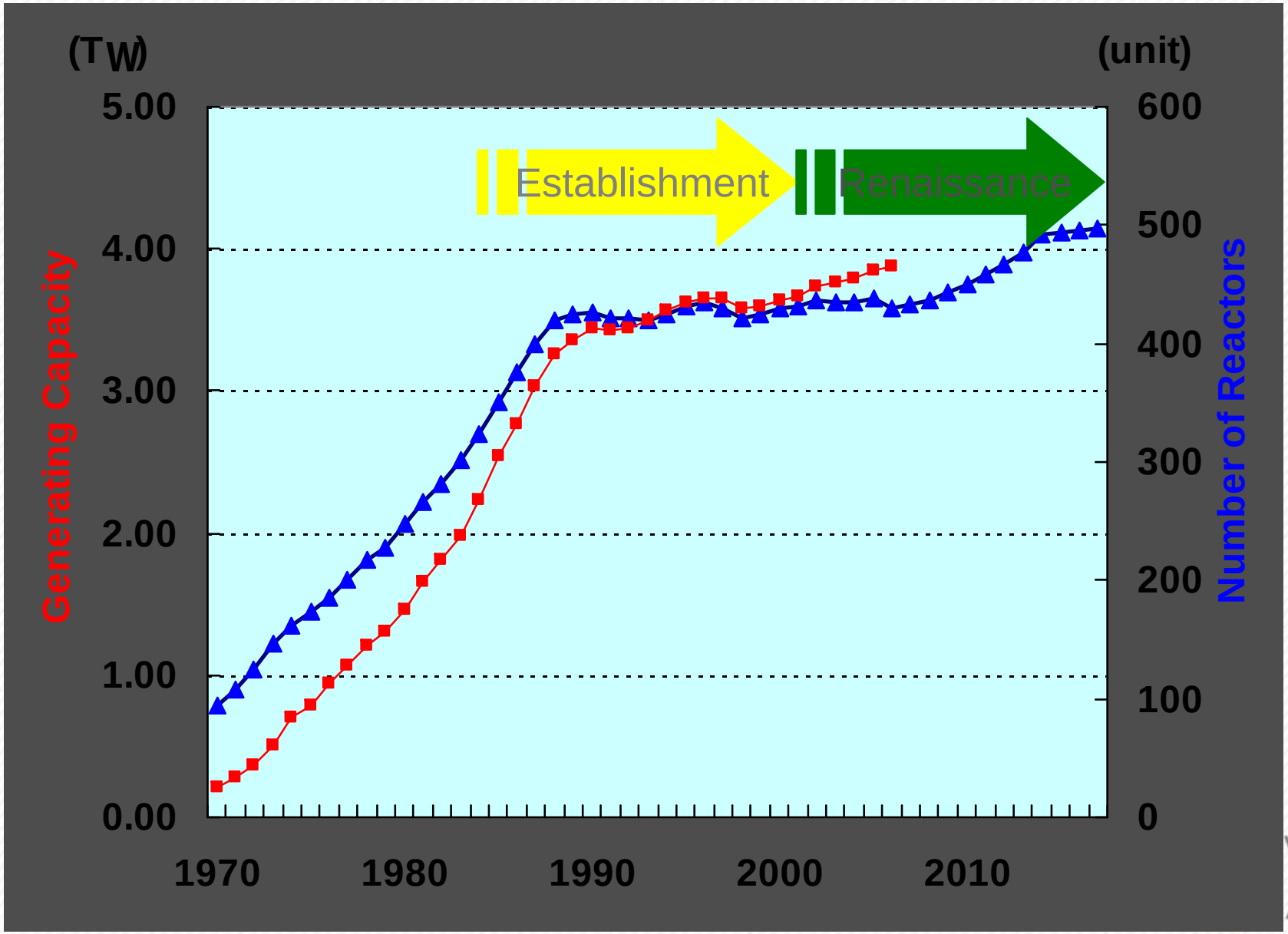
Extended Introduction of Nuclear Power Generation



- Total 31 countries and regions have introduced nuclear power generation (as of March 2008).
- Over 20 countries are planning to build or will build new nuclear power plants in future.

Global Movement toward Nuclear Renaissance

World Nuclear Reactors and Generating Capacity



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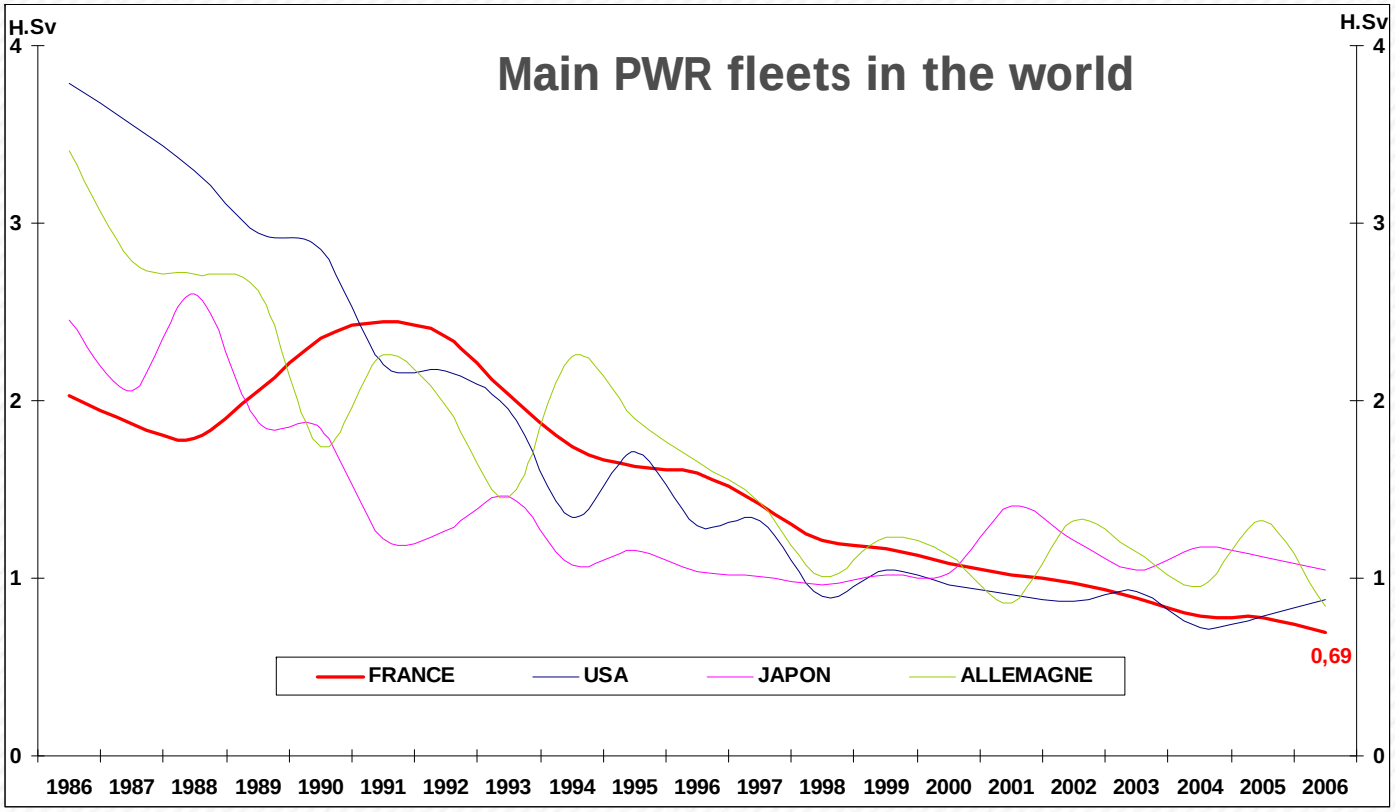
Collective radiation exposure



The efforts by EDF and contractors have reduced collective radiation exposure by a factor of four per reactor in nearly 15 years:

From 2.44 M.Sv in 1991 to 0.63 M.Sv in 2007

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Conclusions: NPP and NFC

4. In support of a nuclear energy global expansion, all operators are committed to strengthened RP

Key areas for improvements + global opportunities

- **A greater harmonization of the global safety regime**
- **Fully integrate RP as part of this regime**
- **Further develop and integrate Safety Culture in RP**

Conclusions: NPP and NFC

Key areas for improvements + global opportunities

- Design and implement practical improvements for highest exposed jobs and for general working conditions
- Share “Best Practices” through industry cooperation
- Improve public communication about radiation & radiation safety, including the reporting of RP incidents

Conclusions: NPP and NFC

Future challenges

- RP workforce and skills renewal, attraction and stability
- RP education and training programs
- RP Stewardship for emerging nuclear energy countries
- Extend RP practices to all relevant professions
- More balance and complete coverage of public health policies for the control of exposure

Conclusions: NPP and NFC

Other key points

Emerging nuclear fuel cycle countries (mines, conversion, enrichment, etc.) anticipate RP challenges

Really nice to hear about RP for new build

Even nicer…robust RP improvements have been integrated in currently offered new nuclear power reactors

Conclusions: NPP and NFC

Other key points…

Quality Management Systems (QMS) applied to integrated safety and Safety Culture are best drivers for sustaining excellent RP performance

Dose constraint (DC) is only one of the flexible tools of Optimization.

- DC cannot restrict Optimization, this would be counter productive

- One comment the from the audience (C. Streffer) clarified that DC should be flexible and part of an iterative process

Summary Conclusions

TS III.1.3 Waste Management
and
TS III.1.4 Decommissioning/Restoration

Conclusions: Waste Management

IAEA set of waste safety requirements and safety guides was presented

Waste management aspects have been presented for diverse sources

– A modular reactor (PBMR), the largest research accelerator (CERN), borehole disposal, a LLW waste disposal site (UK)

Several papers covered radioactive waste management plans (general or national)

Conclusions: Waste Management

LLW UK – Flagged two issues

1) Environmental regulations for radioactive discharges tend to be excessive (huge cost versus tiny dose reduction)
2) How much of a country resources should be used?

Clean-up is important and so is a good sense of proportion and a transparent methodology (cost-dose-risk benefits)

A comprehensive methodology for dealing with uncertainties (context of clearance levels) was presented

- This method has been adopted by the Japan regulatory body. It is Also consistent with ICRP 104

Conclusions: Waste Management

Other Main Points:

Progress has been made in NORM waste management

Countries without nuclear energy programs have also progressed in WM programs, and IAEA has been helpful

There is a lot of technological knowledge for the characterization of wastes as part of WM programs

Stakeholder involvement is important in support of decision-making as part of WM sitting process

Conclusions: Decommissioning/Restoration

End-state to be discussed upfront: vacant field or various types of site reuse

–e.g. industrial, commercial, leisure

Decommissioning is increasingly important. Early planning is key. Priority process is also key.

Characterization is a necessary step for planning and undertaking decommissioning

Radiation Protection organization: e.g.

- Transition from operation to decommissioning

- Contractors need to be fully included

Conclusions: Decommissioning/Restoration

Adapted waste management infrastructures and routes

Although site-specific context prevails, a common approach to decommissioning increases credibility

–e.g. IAEA safety guides

Systematic approach to ALARA should be an integral part of decommissioning with monitoring and control

Experience sharing mechanisms (e.g. int'l cooperation) already exist and need to be further developed

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