The Abdus Salam
International Centre for Theoretical Physics

United Nations
Educational, Scientific and
Cultural Organization

IAEA
International Atomic Energy Agency

2257-15

Joint ICTP-IAEA School of Nuclear Energy Management

8 - 26 August 2011

Peer Reviews and Advisory Services

Pierre Gest
IAEA, Vienna
Austria

Strada Costiera 11, 34151 Trieste, Italy - Tel.+39 040 2240 111; Fax +39 040 224 163 - sci_info@ictp.it

Peer Reviews and Advisory Services

Pierre Gest

Joint IAEA/ICTP School of Nuclear Energy Management

16 August 2011

IAEA
International Atomic Energy Agency

IAEA SAFETY REVIEW SERVICES

- Peer reviews performed upon request of Member States
- Assess compliance with Safety Standards and provide recommendations for improvements
- Also identify good practices to be shared with the industry
- Results publically available (unless formally requested by Member State)

Areas Covered

- Cover all areas of nuclear safety infrastructure
  - Regulatory framework (IRRS)
  - Technical safety of NPP (PSA, design, accident management,…)
  - Siting
  - Operational safety of NPP (OSART)
  - Research reactors
  - Fuel cycle facilities

IAEA SAFETY REVIEW SERVICES 1/2

- Integrated Regulatory Review Service (IRRS)
- International Probabilistic Safety Assessment Review Team (IPSART)
- Review of Accident Management Program (RAMP)
- Safety Assessment and Design Safety Review Service (SADRS)
- Generic Reactor Safety Review (GRSR)
- International seismic safety centre Services (ISSC)

IAEA SAFETY REVIEW SERVICES 2/2

- Operational Safety Review Team (OSART)
- Integrated safety Assessment of Research Reactors (INSARR)
- Safety assessment of Fuel Cycle Facilities during operation (SEDO)

In-depth introduction to OSART as example

- OSART = Operational Safety Review Team
- OSART selected as example
  - It is the best known peer review service of IAEA
  - It was established in 1982 and more than 160 missions have been conducted since then
  - Other services use a methodology similar to OSART

Objectives of the OSART programme 1/2

- to provide the host country (regulatory authority, plant/utility management and governmental authorities) with an objective assessment of the status of the operational safety of an NPP with respect to international standards of operational safety and performance;
- to provide the host plant with recommendations and suggestions for improvement in areas where performance falls short of IAEA Safety Standards and international best practices;

Objectives of the OSART programme 2/2

- to provide all Member States with information regarding good practices identified in the course of the review;
- to provide experts and observers from Member States with opportunities to broaden their experience and knowledge of their own field.

Standard review scope: 9 areas

- Management, organization and administration
- Training and qualification
- Operations
- Maintenance
- Technical support
- Operational experience feedback
- Radiation protection
- Chemistry
- Emergency planning and preparedness

Black colour: core areas

Blue colour: optional areas

Customized OSART review scope

Customized review scope = core areas + selected optional areas

Additional optional areas:

- Commissioning for pre-operational OSART,
- Long Term Operation,
- Transition from Operations to Decommissioning,
- In-Depth Safety Culture,
- Probabilistic Safety Assessment Applications,
- Severe Accident Management.

Safety Standards used during OSART 1/2

- Safety of Nuclear Power Plants: Operation – NS-R-2
- Fire Safety in Operation – NS-G-2.1
- Operational Limits & Conditions and Op. Procedures – NS-G-2.2
- The Plant Modifications – NS-G-2.3
- The Operating Organization – NS-G-2.4
- Core Management and Fuel Handling – NS-G-2.5
- Maintenance, Surveillance and In-Service Inspection – NS-G-2.6
- Radiation protection and Rad. waste management – NS-G-2.7
- The Recruitment, Qualification and Training – NS-G-2.8
- Commissioning – NS-G-2.9
- Periodic Safety Review – NS-G-2.10
- Feedback of Experience from Events in Nuclear Installations – NS-G-2.11
- Ageing management for Nuclear Power Plants – NS-G-2.12
- Evaluation of seismic safety for existing nuclear installation – NS-G-2.13
- Conduct of Operations – NS-G-2.14
- Severe accident management programmes for NPP – NS-G-2.15
- Chemistry – SSG 13
- (ILO codes of practice – Industrial safety reference)

Safety Standards used during OSART 2/2

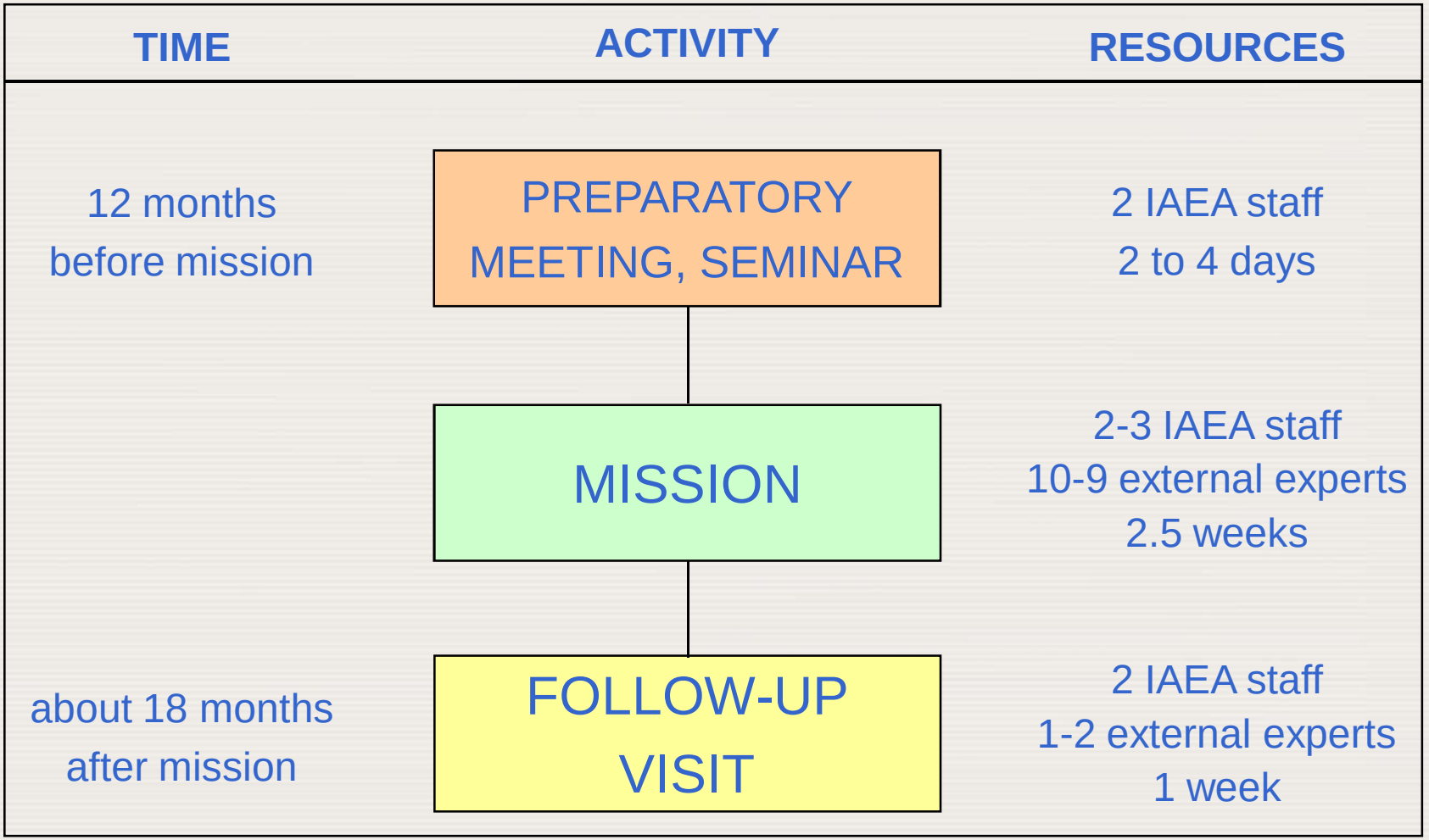
- The Management System for Facilities and Activities: GS-R-3
- Application of Management Systems to Facilities – GS-G-3.1
- The Management System for Nuclear Installations – GS-G-3.5
- Safety assessment and verification - NS-G-1.2

- International Basic Safety Standards for Protection Against Ionizing Radiation and for the Safety of Radiation Sources Safety Series No.115;
- Occupational Radiation Protection RS-G-1.1
- Assessment of Occupational Exposure Due to Intakes of Radionuclides RS-G-1.2
- Assessment of Occupational Exposure Due to External Sources of Radiation RS-G-1.3
- Environmental and Source Monitoring for Purpose of Radiation Protection RS-G-1.8

- Preparedness and Response for Nuclear or Radiological Emergency: GS-R-2
- Arrangements for Preparedness for a Nuclear or Radiological Emergency GS-G-2.1

- INSAG Reports

Overall Concept of OSART Process



Reporting OSART mission results

- Individual reports
- Recommendations, suggestions and good practices in OSMIR database
- Good practices on IAEA website
- OSART mission highlights summarize generic lessons learned
  - 2003-2006 on IAEA website
  - 2007-2009 was published in 2010

OSART History 1983 – 2011

- 163 missions: 101 sites; 33 countries
  - 115 OSART missions to operational plants
  - 21 OSART missions to plants under construction/commissioning
  - 7 safety review missions
  - 10 technical exchange missions
  - 6 expert missions
- 103 follow-up visits (started in 1989)
- Technical assistance, including OSART seminars

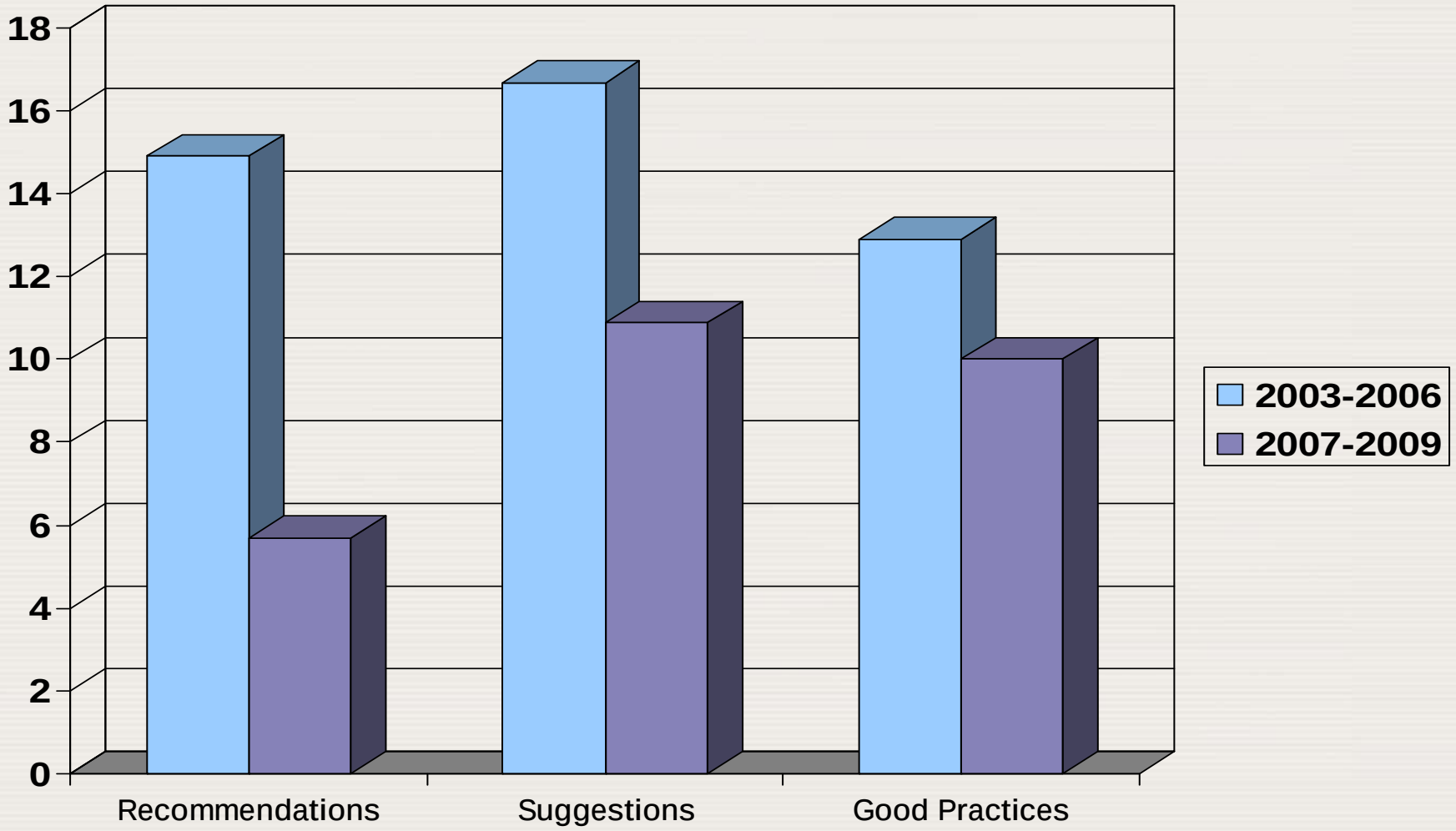
OSART PROGRAMME 1983-2011.7

163 OSART missions:

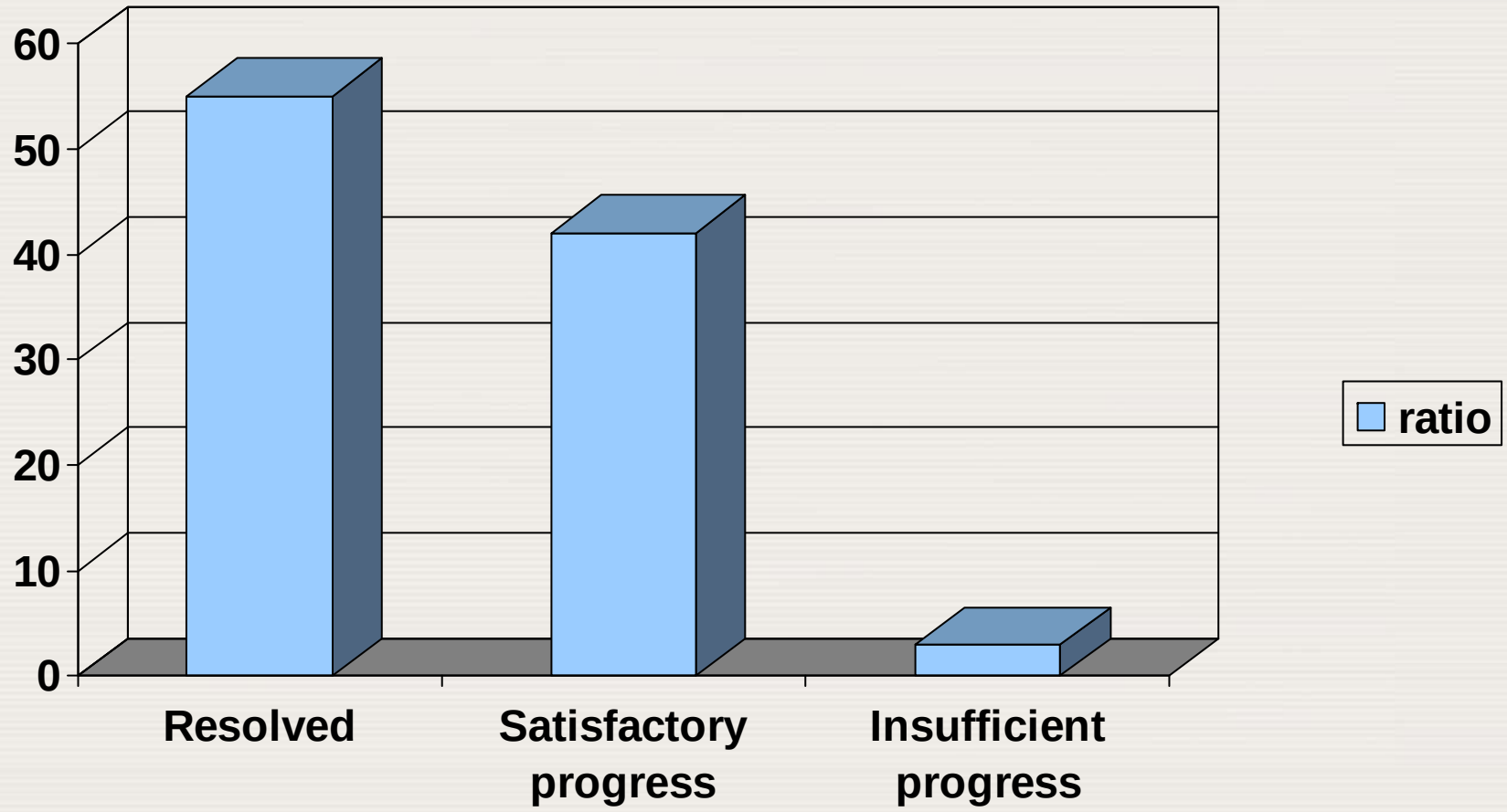
Western Europe	54
Central Europe	26
Eastern Europe	31
Asia	28
North America	14
South America	7
Africa	3

IAEA

Number of findings per mission



Follow-up mission results 2006-2008



Typical findings in 2007-2009 OSARTs 1/2

The following areas were addressed by Recommendation or Suggestion in at least 1/3 of the OSART missions:

- industrial safety policies or programmes;
- training equipment and training materials;
- operations field personnel;
- material conditions;

Typical issues in 2007-2009 OSARTs 2/3

- effectiveness of the operating experience programme;
- prevention of contamination spreading;
- radiation detection devices;
- chemistry control programmes;
- quality control of chemistry surveillance;
- labelling, storage and handling of chemicals.

Communication

- As general practice OSART reports become publicly available
- Upon request main results are communicated in press release or press conference
- There has been an increasing interest with the OSART results from media perspective (newspapers, radio, TV)

OSART – Nuclear Safety Standards interface