Australian Government

Australian Nuclear Science and Technology Organisation

OPAL Reactor Commissioning and Operations Planning

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Outline

- Introduction
- Organisational Structure
- Documentation
- Staffing
- Precommissioning
- Commissioning

Introduction

- Contract awarded to INVAP – July 2000
- Detailed engineering and construction phase (Construction licence issued)
- First Concrete pour – November 2002
- Reactor pool installed – December 2003
- Precommissioning - Now
- Cold Commissioning – planned for late 2005
- Hot Commissioning – planned for first half 2006 (subject to Operating Licence)
- Full operation – late 2006

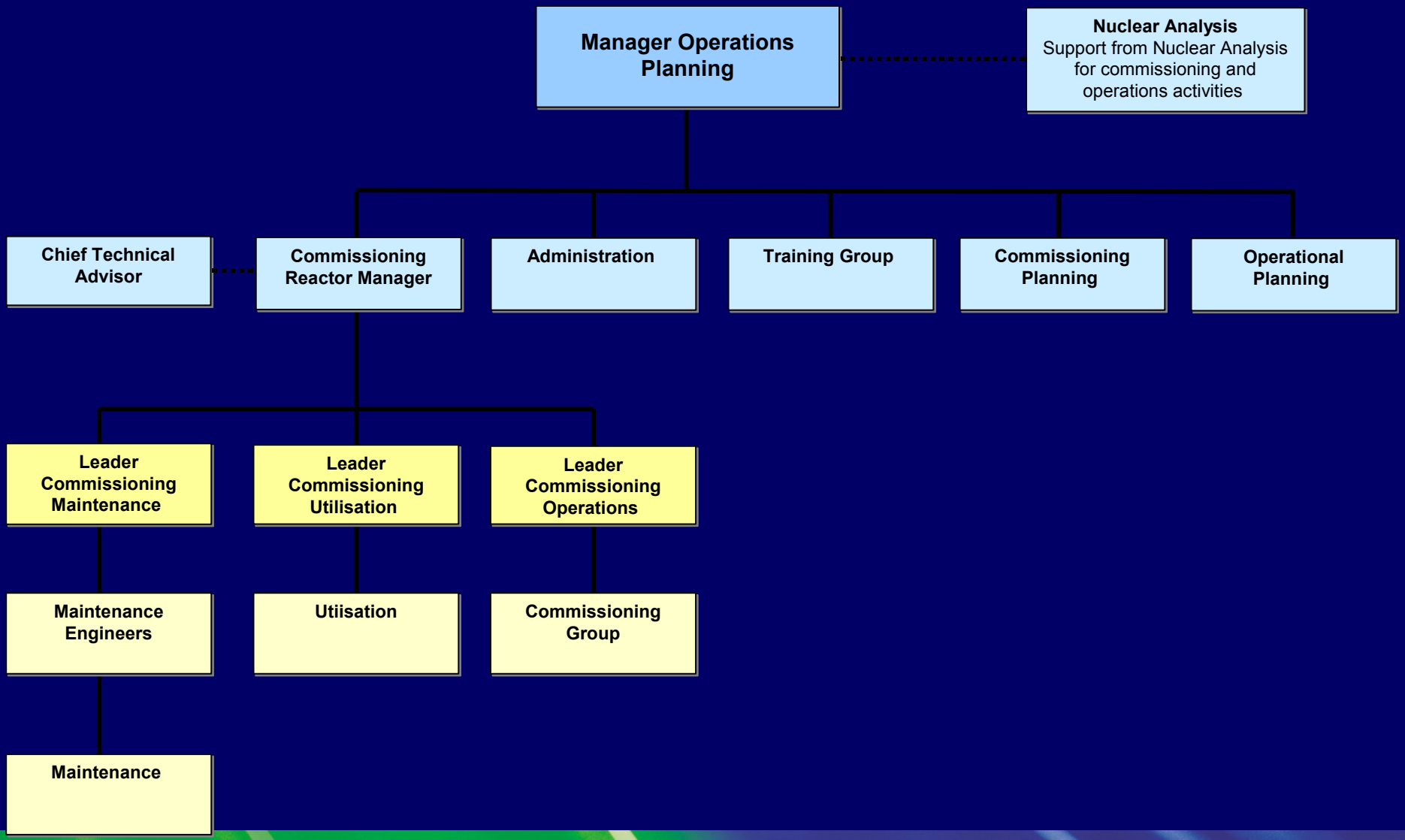
Project Structure

INVAP

Commissioning Operations Group (COG)

ANSTO Project Group

ANSTO OPAL COMMISSIONING OPERATIONS GROUP (COG)



Documentation

- Drafted by INVAP
- Review and comments by ANSTO
- Documentation includes
  - Operations manuals
  - Procedures & Instructions
  - Maintenance manuals
  - Design manuals
  - Engineering reports
  - Safety Analysis Report

Documentation

- Additional documentation prepared by ANSTO to gain Quality certification to ISO 9001:2000
  - Total 20 Procedures including:
  - Safety Management
  - Core Management
  - Modification Management
- All tests performed using approved procedures
- Records maintained
- Final reports prepared by Commissioning teams

Documentation

- Precommissioning and Commissioning Procedures
- All test performed using detailed approved procedures
  - Objective
  - Method
  - Equipment
  - Data sheets
  - Acceptance criteria

Staffing

- Recruitment process for internal and external staff – including HIFAR staff
- COG consists of approx 50 staff
- 30 staff have undertaken a OPAL design and Operations training course
- Operations staff to be chosen for further training

Precommissioning

- INVAP responsible for precommissioning
- ANSTO project team provides oversight
- COG witness and support precommissioning activities as needed
- Other tests include:
  - Factory acceptance tests
  - Installation tests
  - Functional tests

Precommissioning

- Precommissioning performed to demonstrate:
  - Systems operate as expected according to design objective
  - OH&S requirements
  - Interface with other systems or services
  - Appropriateness of operational and maintenance documentation

Commissioning Stages

- Stage A – Pre Fuel Loading Tests
  - Plant systems properly function in an integrated manner
- Stage B1 – Fuel loading and first approach to criticality
  - Fuel progressively loaded into the core
  - First criticality

Commissioning Stages

- Stage B2 – Low power tests
  - Continue loading Fuel
  - Low power tests
  - Demonstrate core compliance with Nuclear & Thermal-hydraulic design

Commissioning Stages

- Stage C – Power ascension and full, power tests
  - Staged power increase
  - Test performed at each power level
  - Full power tests
- Contract performance demonstration tests
  - Confirm compliance with contract performance acceptance criteria

Commissioning

- IAEA Guidelines
- Purpose of Commissioning
  - to demonstrate that plant systems and subsystems operate together in an integrated manner in accordance with the design objective and meet the performance criteria regarding operational requirements, occupational safety requirements and nuclear safety requirements.

Commissioning Plan

- INVAP and ANSTO responsibilities
- Objectives of commissioning
- Commissioning Organisation
  - Management group
  - Commissioning group & Teams
  - Operations group
  - Construction group
  - Commissioning Safety Review Committee
  - Commissioning Quality Assurance group

Commissioning Organisation