Technical Review on Chinshan Spent Fuel Dry Storage Facility

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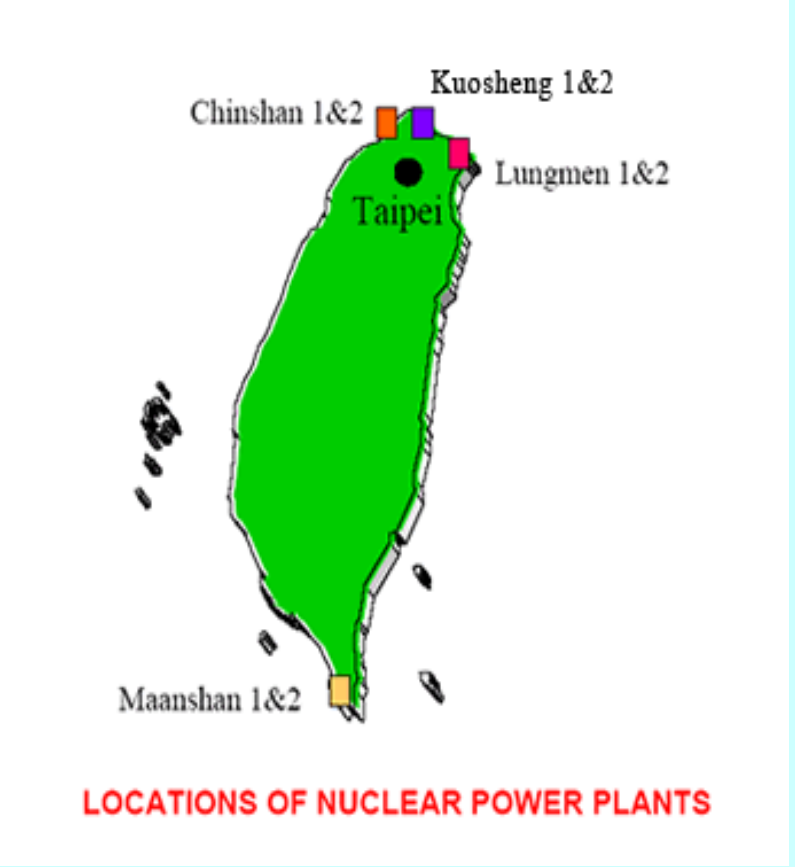
Outline

- Introduction
- Chinshan ISFSI Project
- Safety Regulation on Chinshan ISFSI
  - Construction License Review
  - Inspection Preparation
  - Operating License Review Program
  - Safety Control during Storage
- Concluding Remarks

Introduction

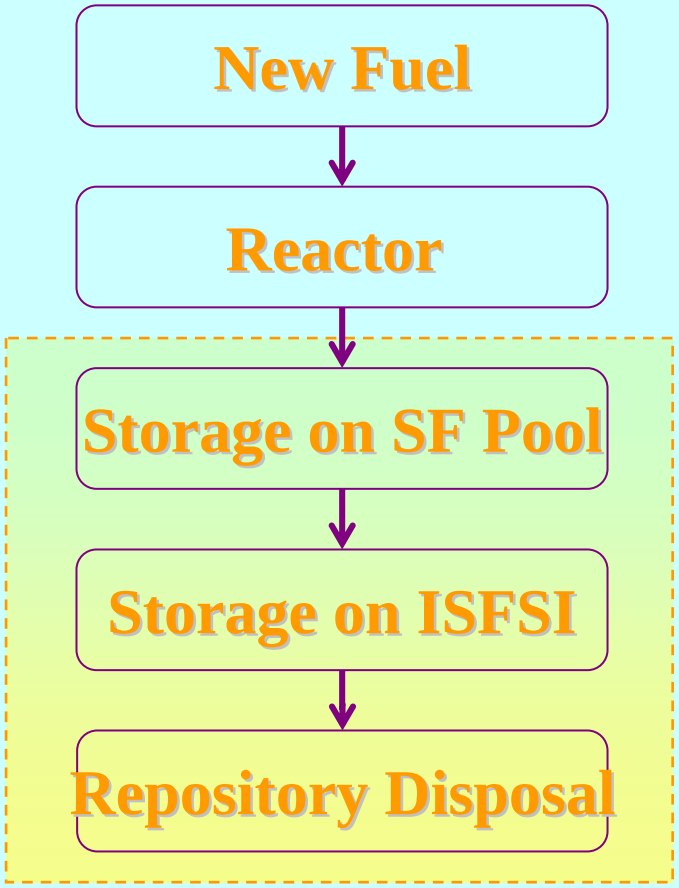
- Taiwan has three NPSs in operation
- Lungmen NPS is under construction
- Estimated 7,350 metric tons spent fuel will be produced



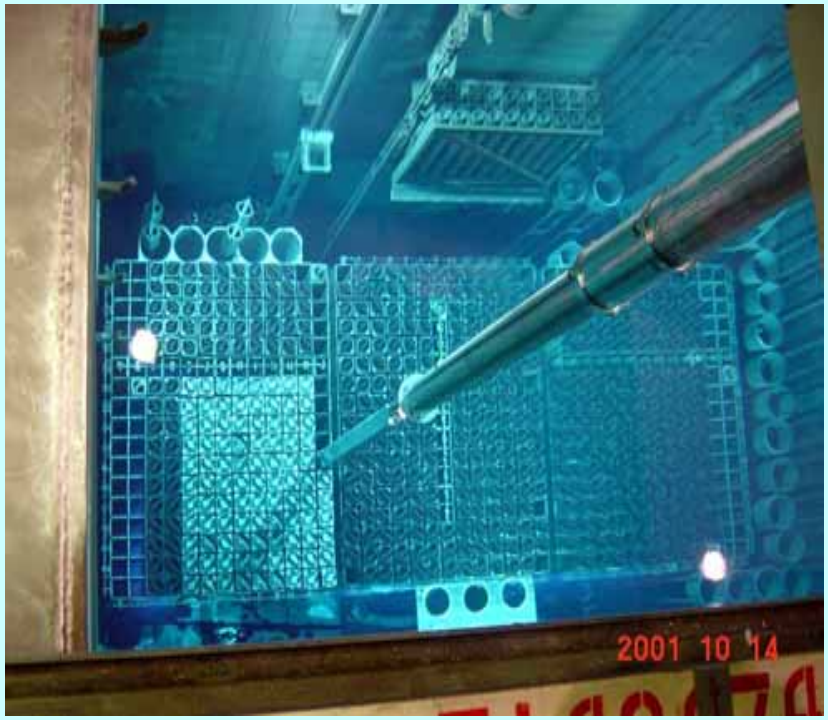
LOCATIONS OF NUCLEAR POWER PLANTS

Introduction(continued)

- Management Strategy on Spent Fuel
  - Near term：pool storage
  - Medium term：onsite dry storage
  - Long term：deep geological disposal



Introduction (continued)



Spent fuel stored in spent fuel pool

Introduction (continued)

Reactor	Year of Commercial Operation	Pool Capacity (Assembly)	Storage Inventory		Expected Year of Full Occupation
			Fuel Assembly	Tones (MTU)	
Chinshan 1	1978	3,083	2,564	442	2010
Chinshan 2	1979	3,083	2,540	438	2011
Kuosheng 1	1981	5,026	3,488	586	2015
Kuosheng 2	1983	5,026	3,376	567	2016
Maanshan 1	1984	2,152	1,054	424	2125
Maanshan 2	1985	2,159	1,004	404	2126

Updated on April 10, 2008

Chinshan ISFSI Project

- Chinshan NPS will lose its full core reserve in 2010.
- TPC commissioned INER in July 2005 to implement on-site ISFSI project
- The INER-HPS dry storage system was developed
  - Technology transfer from NAC International.
- TPC submitted the application for construction license in March 2007

Major Components of INER-HPS System

Canister(TSC)

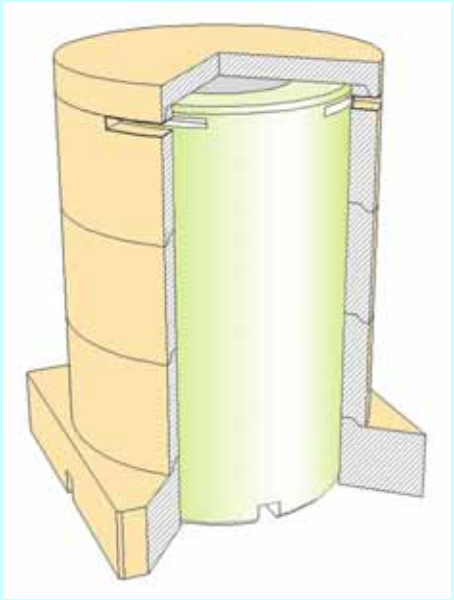
OD 1.70 m
Ht. 4.84 m
Wt. 16.65 t

Transfer Cask(TFR)

OD 2.12 m
ID 1.72 m
Ht. 5.13 m
Wt. 46.18 t

Concrete Cask (VCC)

OD 3.45 m
ID 1.89 m
Ht. 5.70 m
Wt. 112.73 t



Add-on Shield (AOS)

Sq. foot 4.5 x 4.5 m
OD 4.20 m
Wall thk. 0.35 m
Ht. 6.03 m
Wt. 81.20 t

Chinshan ISFSI Project (continued)

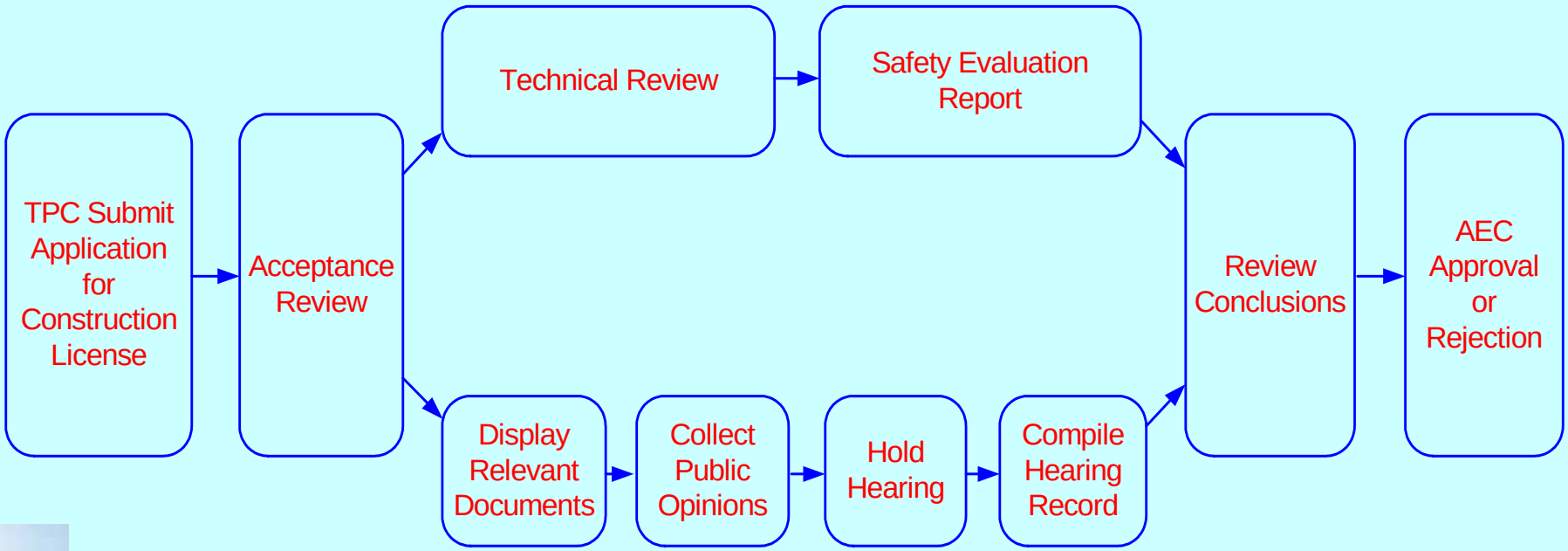
- Chinshan ISFSI Design
  - Concrete cask type
  - Facility capacity：30 storage casks (1680 spent fuel assemblies)
  - Design life：50 years

Safety Regulation on Chinshan ISFSI

- Safety objectives
  - Radiological protection shall ensure the annual effective dose equivalent caused not greater than 0.25 mSv
    - For Chinshan ISFSI, TPC's design criteria is not greater than 0.05 mSv/year
- Control Strategy
  - Two stage safety review
    - Construction License review
    - Operating License review
  - Construction and fabrication inspections

Construction License Review

- Review Process



Construction License Review

(continued)

- License Approval Conditions：According to Article 17 of the Nuclear Materials and Radioactive Waste Management Act (NMRWMA)
  - The construction is consistent with the prescription of the relevant international conventions
  - The equipment and the facilities are sufficient to secure the public health and safety
  - The impact to the environmental ecology complies with the prescription of relevant laws/statutes and decrees
  - The technology, the management ability, and the financial basis, etc., of the applicant are competent to operate the facilities

Construction License Review

(continued)

- A technical review team (30 experienced experts with 10 technical groups) was organized in 2005
- Two preliminary review studies had been conducted
  - NAC-UMS Cask SAR Review Study
    - focused on design features and site-specific limits
    - 124 safety issues
  - Diablo Canyon ISFSI SAR Review Study
    - Similar geological features to Chinshan NPS
    - Specific site licensing procedure
    - 128 safety issues

Construction License Review

(continued)

- SAR technical review work has been completed
  - Relevant safety issues has been clarified
  - Hearing was held in Aug. 10, 2007
  - Safety Evaluation Report (SER) has been drafted
- TPC shall provide the complete document (including EIA approval document) to AEC to meet the Act requirements

Hearing held on Aug. 10, 2007

Inspection Preparation

- Inspection procedures compilation
  - Reference from NRC IP 60851-60857, 86001
- Personnel training
  - Welding and NDT personnel training courses
  - ASME Code training courses
- Canister manufacture inspection workshop presented by Japanese experts in Dec. 2007

Operating License Review Program (continued)

- Regulatory requirements
  - Even after the completion of the construction of ISFSI, the ISFSI shall not be formally operated, until the AEC has approved and issued an operating license
  - Before to apply for operating license of ISFSI, the applicant shall submit a preoperational test plan to the AEC

Operating License Review Program (continued)

- Documents needed for preoperational test
  - Facility operating technical specifications
  - Personnel training program
  - Emergency plan for accidents
  - Other documents designated by AEC
- Preparation for reviewing test run plan
  - With the experience of SAR review, AEC may reorganize a review team and identify the critical issues ASAP
  - Inspections during preoperational test

Operating License Review Program (continued)

- Documents needed for operating license
  - Safety analysis report of the latest edition
  - Technical specifications of the facilities
  - Preoperational test report
  - Incident response plan
  - Other documents designated by AEC

Concluding Remarks

- AEC has completed the review work of Chinshan ISFSI SAR
- Inspection is critical to Chinshan ISFSI project. NRC inspection experience is beneficial to building up our inspection system
- AEC intends to invite NRC experts (NMSS) to hold an inspection workshop by the end of this year

Thanks for your attention