



***MAIN ITEMS OF  
CONSTRUCTION INSPECTION  
OF NPP IN CHINA***

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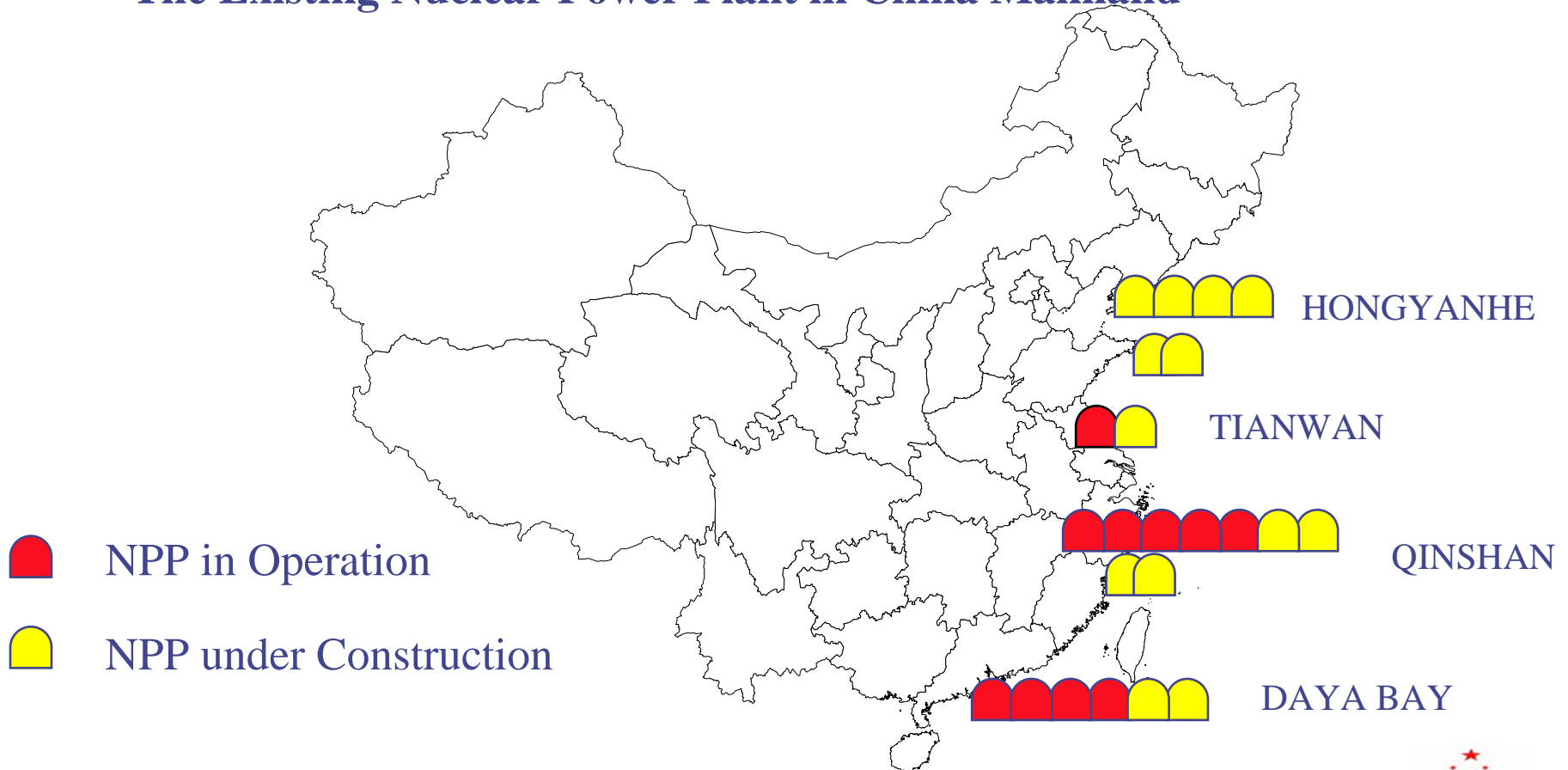
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# 1. INTRODUCTION

- ◆ *Chinese government considers the safety of nuclear power to be the key issue in health development of nuclear power.*
- ◆ *“Safety First and Quality First” is always a policy that must be carried on Chinese nuclear industry*

# 2. Status of Nuclear Power Plants in China Mainland

## The Existing Nuclear Power Plant in China Mainland



## 2. Status of Nuclear Power Plants in China Mainland(Operating)

<b>NPP Name</b>	<b>Unit No</b>	<b>Date of the First Connection to the Grid</b>
Qinshan NPP	CN-1	Dec.15,1991
Guangdong Daya Bay NPP	CN-2	Aug.31,1993
	CN-3	Feb.07,1994
Qinshan Phase II NPP	CN-4	Feb.06,2002
	CN-5	Mar.19,2004
Guangdong LingAo NPP	CN-6	Feb.26,2002
	CN-7	Sep.14,2002
Qinshan Phase III NPP	CN-8	Nov.19,2002
	CN-9	Jun.12,2003
Jiangsu Tianwan NPP	CN-10	May.12,2006

## 2. Status of Nuclear Power Plants in China Mainland (Under-Constructing)

<b>NPP Name</b>	<b>Unit No</b>	<b>Date of Construction</b>
Jiangsu Tianwan NPP	CN-11	Sep.20,2000
Qinshan Phase II NPP	CN-12	Apr.28,2006
	CN-13	Jan.28,2007
Ling Ao NPP	CN-14	Dec.15,2005
	CN-15	Jun.15,2006
Hongyanhe NPP	CN-16	Sep.15,2007*
	CN-17	
	CN-18	
	CN-19	



## *2. Status of Nuclear Power Plants in China Mainland*

- ◆ *There would be 40,000 MWe NPP units in operation and 18,000 MWe NPP units under construction by 2020.*
- ◆ *They would be located in the coast area such as Liaoning, Shandong, Zhejiang, Fujian, Guangdong Province, etc., and inland area of Hunan, Hubei, Anhui, Jiangxi, etc.*

### *3. Licensing System*

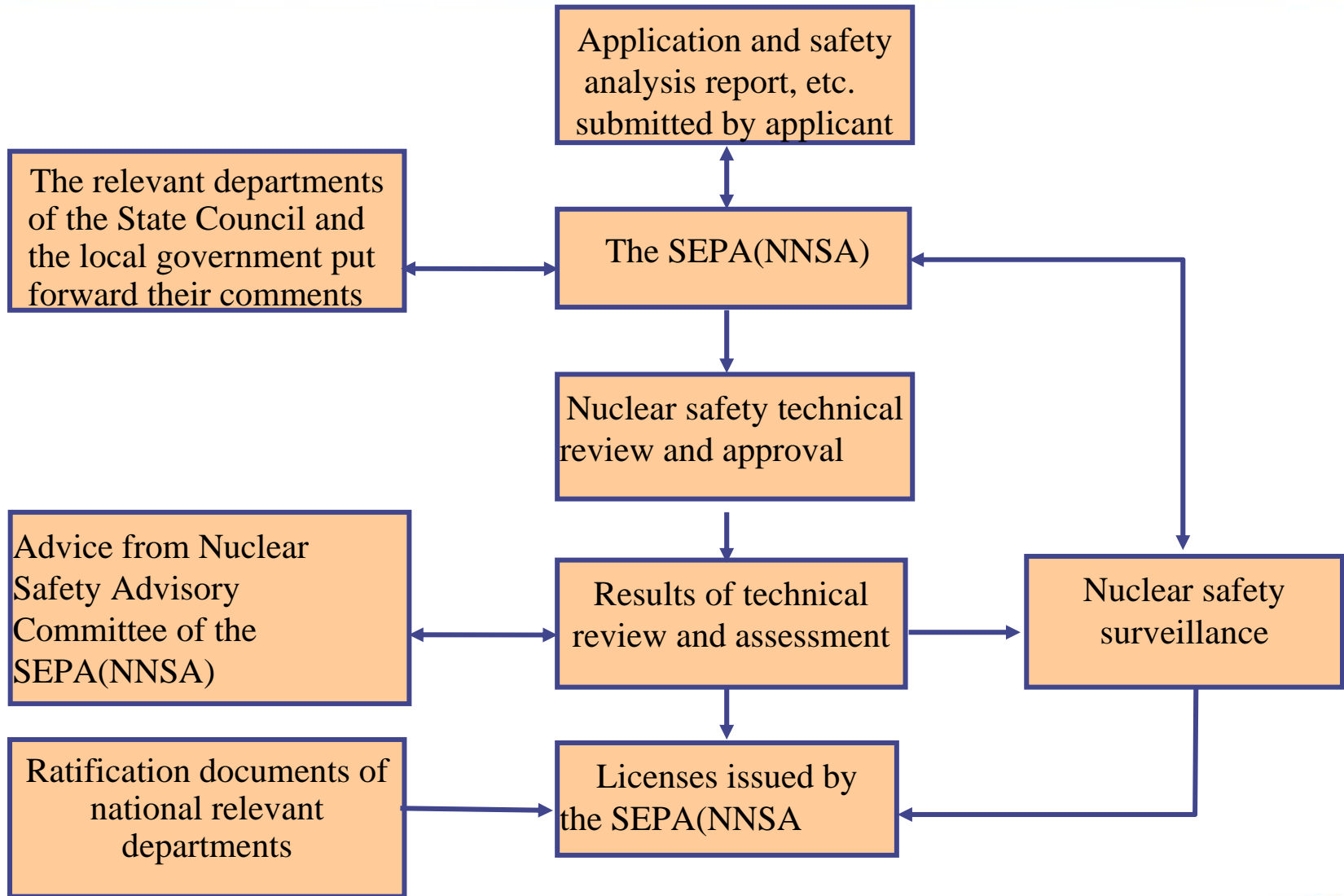
*China adopted licensing system from international practices and experiences for nuclear safety regulation.*



# 3. Licensing System

- ◆ *Safety licenses that the NNSA is responsible for reviewing, approving and promulgating or checking and authorizing include :*
  - *Siting Permit of NPP*
  - *Construction permit of NPP;*
  - *Ratification for the first fuel loading of NPPs;*
  - *Operation permit of NPP;*
  - *License for operators of NPP;*
  - *Ratification for decommissioning of NPPs, etc.*
  
- ◆ *The procedure of Application, Review and Approval of a License is as follows:*

# Process of licenses application



# 4. NPP Siting Regulation

## 1. NPP Siting Regulation

- ◆ *The applicants submit the Site Safety Evaluation Report, and then, the NNSA would review it completely and independently.*
- ◆ *The review and evaluation mainly discuss:*
  - *The influence of the vicinity of the site to the NPP.*
  - *The influence of the NPP to the vicinity of the site .*
  - *The influence of the population.*



## 4.NPP Siting Regulation

- ◆ *The topic mainly focus on the character of those sites, the followings are included:*
- *The geographical location of the site and the population distribution;*
  - *The industrial or military facilities in the vicinity;*
  - *Meteorologic conditions;*
  - *Engineering hydrology;*
  - *Geology and seismic.*



## 4. NPP Siting Regulation

- ◆ *The NNSA would make the inspections concerned:*
  - *The mutual influence of the vicinity and the NPP.*
  - *Foundation inspection;*
  - *The construction preparation checking;*
  - *QA inspection.*



## *5. The regulation on the manufacture of Nuclear Safety equipment*

*The vendor who are in charge of civil nuclear safety equipment's design, manufacture, installation, or NDT should obtain the license of NNSA.*

## *5. The regulation on the manufacture of Nuclear Safety equipment*

- ◆ *The civil nuclear safety equipment's design, manufacture, installation, or NDT vendor should establish integrated quality assurance system to ensure the quality and reliability.*

## *5. The regulation on the manufacture of Nuclear Safety equipment*

- ◆ *The Licensee should carry out the quality management and process control on the activities above mentioned.*
- ◆ *The regulatory body and its branches should arrange the inspection and regulation on the activities above mentioned, through the method of the routine or sampled inspection.*





## *6. The inspection on NPP under construction*

- ◆ *The NNSA and its regional office have their own responsibilities on the regulation and inspection for NPP's construction.*
- ◆ *NNSA: mainly focus on the program compile and promulgation.*
- ◆ *Regional office: mainly focus on the on-site inspection.*



## *6. The inspection on NPP under construction*

*Inspection focus mainly on the followings:*

- ◆ *The implementation of the QA program.*
- ◆ *The management of the constructing activities.*
- ◆ *The quality of the buildings and modules, etc.*



## *6. The inspection on NPP under construction*

*The aim of inspection is to :*

◆ *Verify whether the construction*

- . Comply with the regulations and PSAR*
- . Comply with the requirement of license conditions*
- . Comply with design requirement of SSC*

◆ *The effectiveness of QA*

# *6. The inspection on NPP under construction*

- ◆ *The QA inspection for the NPP under construction*
  - *The inspection of implementation of QA program by licensees;*
  - *Participating the QA supervising activity of the licensees;*
  - *Purchase, acceptance and storing activity;*
  - *Audit the QC document and records;*
  - *Walk-through Inspecting;*
  - *Investigation on the construction event ;*
  - *NCR audit;*
  - *Audit on the design or engineering modification;*
  - *Special process supervising;*
  - *Supervise on the field-making modules;*
  - *The inspection on the supervising of licensee on the vendors; etc.*





## *6. The inspection on NPP under construction*

- ◆ *The construction quality of the SSC:*
  - *Concreting of the nuclear island ;*
  - *Containment cylinder constructing;*
  - *Containment dome constructing;*
  - *Containment penetration installation;*
  - *Containment reinforce installation;*
  - *Containment liner installation;*
  - *Nuclear auxiliary building;*
  - *Fuel store building;*
  - *Essential service water pump and channel;*
  - *EDG building;*
  - *Liquid waste store sink;etc.*

# *6. The inspection on NPP under construction*

*The inspection is mainly through the method of:*

- ◆ *documental audit*
- ◆ *daily inspection*
- ◆ *routine inspection*
- ◆ *non-routine inspection*
- ◆ *sampled inspection*
- ◆ *periodic conversation*
- ◆ *control point regulation*
- ◆ *inspection on nuclear safety specified issues*



***THANK YOU  
FOR YOUR ATTENTION!***