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In 2009, nuclear facilities in service maintained a safe operation and the quality of nuclear facilities under construction was under effective control. There were no safety related events or accidents of level 2 or above occurred in any operational NPPs, research reactors, nuclear fuel cycle facilities, radioactive waste storage, treatment and disposal facilities, or radioactive material transportation activities. Minor events and nonconformance items of nuclear facilities in operation and under construction were timely handled.

In 2009, the national environmental radiation monitoring network was in regular service, and the radiation environment throughout the country generally maintained in a good state. The ionizing radiation level in the environment was kept at the same level as previous years. On the whole, there were no significant changes in the radiation levels of the environment adjacent to the nuclear facilities and nuclear technology application activities. The general condition of the environmental electromagnetic levels was in good state. The electromagnetic radiation levels of most of the electromagnetic radiation facilities met the national standards except that the combined field intensities in certain parts of surrounding environment of a few high-power transmitters just exceeded the standards.

Sep.14, 2009, the Regulations on Transportation Safety of Radioactive Articles was issued by the State Council.

Regulations on the Safety of Radioactive Wastes (draft) was submitted to the Legislative Affairs Office of the State Council.

Systematical Planning

In order to implement the Plan for Nuclear Safety and the Prevention and Control of Radioactive Pollution, and to enhance the capacity of nuclear and radiation safety regulation, the Overall Program from

the end of 11th Five-Year to 12th Five-Year for Nuclear and Radiation Safety Regulatory Capability Building was compiled and submitted to the State Council. Based on the “Macro-strategic Research on Nuclear and Radiation Safety”, NNSA has initiated the drafting of the 12th Five-Year Plan for Nuclear and Radiation Safety Regulation.

Capacity Building

Efforts were made to actively promote the capacity building of nuclear and radiation safety regulation. The Special Fund for the Emission Reduction of Major Pollutants of the central revenue has arranged a sum of 200 million RMB for a program on technical support system for nuclear safety regulation. The first disbursement of 45 million RMB was appropriated within the year to cover the expenses of procurement of software on safety analysis and simulator for V&V of improved second generation NPP as well as the establishment of the database for nuclear safety regulation.

All-round promotion was made to push forward the nuclear and radiation monitoring capacity building project with the Special Fund for Emission Reduction of Major Pollutants of the central revenue. Sixty-six contracts were signed by 31 provincial environmental protection bureaus and the project was implemented orderly.

The establishment of pre-warning and emergency response monitoring system for nuclear and radiation contingencies was strengthened. Altogether 21 online pre-warning monitoring spots adjacent to key nuclear installations and 4 data collection centers were set up, which formed a primary network for radiation environmental pre-warning monitoring. Efforts were made to enhance the capability of on-site monitoring and isotope analysis under nuclear and radiation accidents, and to allocate 4 monitoring vehicles for on-site emergency and 4 sets of car-

mounted mobile laboratories to some NNSA regional offices as well as provincial radiation stations.

The national nuclear technology application and radiation safety regulation system was developed and put into trial at the provincial level. The national project of building urban radioactive waste repository was making progress, and final completion was achieved and main work was completed in most provinces.

Organization Development

The annual qualification test for the Registered Nuclear Safety Engineer was held in September 2009, and as many as 225 people were qualified as the Registered Nuclear Safety Engineers.

Two national training courses on nuclear energy were co-hosted by NNSA and CGNPC, and 61 staff from the nuclear and radiation safety administration have received a six-month systematical training.

Two training workshops for personnel of the national radiation environmental monitoring network were held, which contributed to the enhancement of the overall personnel capability. Training programs for emergency response were implemented for different levels of emergency response staff.

Strengthen the Nuclear and Radiation Regulation

In accordance with the law and regulations, NNSA carried out strict and effective regulatory work over the nuclear installations nationwide, and all nuclear installations were maintained in safe status.

The nuclear safety review and inspection were strengthened, and strict law enforcement was carried out. Work was done to reinforce daily inspection and operational experience feedback of NPPs in operation. Importance was attached to both administration and review on NPP projects under or planned construction; an review and approval system was strictly followed to control accessibility. New projects proceeded in a positive, sound and orderly manner with balanced development. Radiation safety licens-

ing system was further standardized, and the issuance for radiation safety licenses was examined and censored nationwide. Administrative approval system for nuclear equipment was also standardized and achieved both publicity and transparency.

The technical reviews of the environmental impact reports for the design stage and preliminary safety analysis reports of 8 nuclear power units i.e. Unit 3 & 4 of Hongyanhe NPP, Unit 1 & 2 of Sanmen NPP, Unit 1 & 2 of Haiyang NPP and Unit 1 & 2 of Taishan NPP were completed, and the construction permits were issued. The review work for the final safety analysis reports and the environmental impact reports for the initial loading stage of nuclear power units of Unit 3 & 4 of LingAo NPP and Unit 3 & 4 of the expansion project of Qinshan Phase II NPP has started. The technical review of nuclear power projects of Hunan Taohuajiang NPP, Hubei Xianning NPP, Jiangxi Pengze NPP, Ningde NPP (Unit 3 & 4), Yangjiang NPP (Unit 3 & 4), Changjiang NPP, Fangchenggang NPP and Huaneng Shandong Shidaowan HTR-PM NPP demonstration project were carried out. Licensing application for the environmental impact report about the siting stage and the site safety analysis report of Unit 5 & 6 of the expansion project of Tianwan NPP was received and to be reviewed.

The nuclear safety supervision on NPPs under construction was reinforced. The nuclear safety supervision mode was standardized and improved by issuing the nuclear safety supervision program of the commissioning phase for nuclear power units of Unit 3 & 4 of LingAo NPP and Unit 3 & 4 of the expansion project of Qinshan Phase II NPP. Nuclear safety inspections on the negative excavation of nuclear island foundation pit, the first concrete of nuclear island foundation and commissioning management were organized.

The regulation and management of nuclear technology application projects were further enhanced.

Six NNSA regional offices were organized to carry out special inspections to prevent the source blockage incident of γ irradiator nationwide. Special administration on irradiator source blockage incident was launched; and modification requirement was specifically made to all the γ irradiators nationwide, which was planned to be completed by the end of 2010. The national on-site meeting of radiation monitoring for metal scrap recycling enterprises was held, which promoted those enterprises to carry out radia-

tion monitoring.

The general census about national radioactive pollution sources was completed and the investigation in the radiation environment of associated mineral sources in Baiyunebo was carried out.

International Cooperation

In the field of international cooperation on nuclear safety, the NNSA continuously consolidated and developed its bilateral, multilateral and regional cooperation, and also actively participated in the programs of international organizations.



◎ Regulations and Standards Revision and Compilation ◎

Early 2009, in order to fit the needs of the nation's nuclear power speedy development and to further strengthen the compilation and revision of regulations and standards on nuclear and radiation safety, the NNSA issued "Procedure for revision and compilation of nuclear & radiation safety regulations and standards" and "The Organization of regulations and standards review committee on nuclear and radiation safety". "Committee of regulations and standards review on nuclear and radiation safety" was set

up on April 30, 2009, under which there are four specialist (professional) groups. They were Nuclear Safety Group, Radiation Safety Group, Nuclear Safety Equipment Group and Electromagnetic Radiation Safety Group.

"Committee of regulations and standards review on nuclear and radiation safety" has held five conferences in 2009, and 55 drafts of nuclear safety regulations, rules, standards, safety guides and technical documents were reviewed.

Progress of regulations and standards in revision or compilation

Progress	Name	Category
Issued	Regulations on the Safety of Radioactive Articles Transportation	Regulations
	Regulations for Radiation Protection and Safety of Gamma Irradiation Facilities (GB10252-2009)	Standard
Waiting for issue	Instrumentation and Control Systems Important to Safety in Nuclear Power Plants	Safety Guide
	Commissioning for Nuclear Power Plants	Safety Guide
	Maintenance, Surveillance and In-service Inspection in Nuclear Power Plants	Safety Guide
	Modifications to Nuclear Power Plants	Safety Guide
	Commissioning of Research Reactors	Safety Guide
	Maintenance, Periodic Testing and Inspection of Research Reactors	Safety Guide
	General Requirements of Monitoring for Environmental Ionizing Radiation	Standard
	Radiochemical Analysis of Caesium-137 in Water and Ash of Biological Samples	Standard
	Radiochemical Analysis of Strontium-90 in Water and Ash of Biological Samples	Standard
	Radiochemical Analysis of Plutonium in Water and Soil Samples	Standard

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Progress	Name	Category
	Analytical Method of Polonium-210 in Water	Standard
	Performance Requirements for Low and Intermediate Level Radioactive Waste Form—Cemented Waste Form	Standard
	Safe Close of Research Reactor	Technical Document
Submitted to the Legislative Affairs Office of the State Council	Regulations on Radioactive Waste Safety	Regulations
Reviewed and Approved by the specific conference of the Ministrator	Code on Safety and Protection Against Radioactive Isotopes, Radial Equipments	Ministry Rule
Submitted to the Ministratory of Environment Protection for approval	Technical Requirements on Discharge of Radioactive Liquid Effluents from Nuclear Power Plants	Standard
	Regulations on environmental radiation protection of nuclear power plants	Standard
Submitted to the NNSA for approval	Format and Contents of Safety Analysis Report on design of Radioactive Articles Transportation Container	Safety Guide
	Design of Reactor Containment Systems for Nuclear Power Plants Safety Guide	Safety Guide
	Design of the Reactor Coolant System and Associated Systems in Nuclear Power Plants	Safety Guide
	Code of Public participation in Environmental Impact Assessment for Nuclear Power Plant (Provisional)	Ministry Rule
	Safeguards Glossary	Technical Document
Reviewed by the “Regulations and Standards Review Committee on Nuclear and Radiation Safety”	Core Management and Fuel Handling for Nuclear Power Plants	Safety Guide
	Protection against Internal Hazards other than Fires and Explosions in the Design of Nuclear Power Plants	Safety Guide
	Emergency Preparedness and Response of Nuclear Power Plant Operating Organization	Safety Guide
	Emergency Preparedness and Response of Nuclear Fuel Cycle Facility Operating Organization	Safety Guide
	Safety Standard of Packages for Low and Intermediate Level Solid Radioactive Wastes	Standard
	Guides for Electromagnetic Radiation Protection	Standard
	Technical Guide for Environmental Impact Assessment of Electric Power Transmission and Transformation Projects	Standard

Progress	Name	Category
	Technical Acceptance Criteria on Environmental Protection for Completed Electric Power Transmission and Transformation Projects	Standard
Drafts for Approval	Code of administrative permission on Radioactive Articles Transportation	Ministry Rule
	Code of Site Evaluation of Nuclear Installations	Ministry Rule
	Emergency Preparedness and Response of Nuclear fuel Cycle Facility Operating Organization	Safety Guide
	Classification and Category of Radioactive Articles	Ministry Rule
Reviewed by the experts group	General Requirements for Environmental Radiation Monitoring around Near Surface Disposal Site of Low and Intermediate Level Radioactive Solid Waste	Standard
	General Requirement of Quality Assurance for Ionizing Radiation Monitoring	Standard
	General Requirement for Monitoring Effluents at Nuclear Facilities	Standard
	Analytical method for I-131 in water, milk, plant and animal thyroid gland	Standard
Draft for Review	Requirement for Near Surface Disposal of Low and Intermediate Level Radioactive Solid Wastes	Standard
	General Requirement in Environmental Quality Assessment of Nuclear Radiation	Standard
	Standard of Measurement of Environmental Terrestrial Gamma-Radiation Dose Rate	Standard
	Analytical Methods for Micro-Quantity of trace Uranium in Environmental Samples	Standard
	Analytical Method of Tritium in Water	Standard
Submitted to the NNSA for comments collection	Requirement on Safe Management of Radioactive Wastes from the Mining and Milling of Uranium and Thorium Ores	Standard
Draft Reviewed by the experts group before comments collection	Principles for Decommissioning of γ Irradiation Facility	Safety Guide
	Siting of Geological Disposal Facilities	Safety Guide
	Format and Contents of Environmental Impact Report of Vitreous Solidify Facility for High Level Radioactive Liquid	Safety Guide

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Progress	Name	Category
	Geological Disposal (siting stage) of Radioactive Waste Safety Requirements	Department Rule
	Emergency Response Condition Qualification in Nuclear Power Plant Siting	Safety Guide
	Seismic Design and Qualification for Nuclear Power Plants	Safety Guide
	Evaluation of Seismic Hazards for Nuclear Power Plants	Safety Guide
	Radiation Protection Aspects of Design for Nuclear Power Plants	Safety Guide
	Video Monitoring System for Nuclear Installations	Safety Guide
	Format and Content of Environmental Impacts Evaluation Reports(Tables) for Nuclear Technology Application Facilities	Standard
	Technical Requirement on Gaseous Radioactive Waste Processing System of Pressurized Water Reactor Plants	Standard
	Technical Guide on Liquid Radioactive Waste Processing System of Pressurized Water Reactor Plants	Standard
	Technical Guide on Solid Radioactive Waste Processing System of Presurized Water Reactor Plants	Standard
	Format and Contents of Technical Specifications of Research Reactors	Technical Document
Draft for comment	Format and Contents of Safety Analysis Report of Radioactive Articles Transportation	Safety Guide
	Operational Limits and Conditions and Operating Procedures of Research Reactors Safety Guide	Technical Document
First draft	Code of Measures on Transportation Safety of Radioactive Articles	Department Rule
	Exercise of Emergency Responses to Nuclear Accident of Nuclear Power Plants	Safety Guide
	Determination of Emergency Action Levels on Nuclear Power Plant Accidents	Safety Guide
	Safety Performance Assessment on Radioactive Article Transportation Container	Safety Guide
	Guide of Emergency Response to Radiation Accidents	Technical Document

◎ Safety Regulation on NPPs ◎

1. Nuclear Power Plants in Operation

In 2009, there were no radioactive events in operational nuclear power plants endangering the

safety of the public or the environment. The monitoring indexes over the year showed that the integrity of three safety barriers was all in sound status.

The Operating Data of the Operational Nuclear Power Plants in 2009

NPP Name	Generation Output in 2009 (TWh)	Unit	IAEA Unit No.	Nominal Power MW(e)	Generation Output of Unit (TWh)	Load Factor (%)	Capability Factor (%)
Qinshan	2.362	1	CN01	310	2.362	86.98	87.43
Qinshan Phase II	9.958	1	CN04	650	4.991	87.41	85.35
		2	CN05	650	4.967	87.00	85.21
Qinshan Phase III	11.723	1	CN08	700	5.757	93.88	91.93
		2	CN09	700	5.967	97.30	95.37
Daya Bay	16.374	1	CN02	984	7.775	90.20	91.23
		2	CN03	984	8.599	99.76	99.76
LingAo	15.467	1	CN06	990	7.723	89.05	90.38
		2	CN07	990	7.744	89.30	91.09
Tianwan	14.267	1	CN10	1060	6.819	77.84	74.12
		2	CN11	1060	7.448	85.02	80.70

Statistics of NPP Operator License Issuing and Renewal in 2009

NPP Name	License issuing		License renewal		Total
	Reactor operator	Senior reactor operator	Reactor operator	Senior reactor operator	
Qinshan	16	0	0	10	26
Qinshan Phase II	19	14	1	7	41
Qinshan Phase III	8	11	7	0	26
Daya Bay	0	0	5	10	15
LingAo	0	0	9	15	24
Tianwan	20	11	18	47	96
Total	63	36	40	89	228

1) Qinshan NPP

In 2009, the unit of Qinshan NPP (was formally connected to the grid) completed the eleventh refueling overhaul (R11).

Regulatory Review and Approval

The NNSA carried out safety review on 13 safety-related applications in Qinshan NPP over the year.

Document No.	Date	Title
NNSA[2009] 4	Jan. 10, 2009	Notification of approving the modifications of switch cabinet and its protection panel on 6KV safety bus of Qinshan NPP
NNSA[2009]7	Jan. 10, 2009	Notification of approving the increase of power supply interval in 220KV switch cabinet
NNSA[2009]14	Jan 23, 2009	Notification of approving the enhancement of fuel assembly burnup limitations in Qishan NPP
NNSA[2009]52	Mar. 20, 2009	Notification of approving the addition of the startup feedwater system
NNSA[2009]62	Apr. 7, 2009	Notification of approving the replaced of primary pump cooling valve of Qishan NPP
NNSA[2009]63	Apr. 2, 2009	Notification of approving the modification of the hydrogen mitigation fan of Qinshan NPP
NNSA NOTICE[2009]67	Apr.13, 2009	Notification of releasing the reactor first criticality control point after the eleventh refueling overhaul of Qinshan NPP
NNSA[2009]82	May 12, 2009	Notification of approving technical specifications (version II) in Chapter 16 of Qinshan NPP FSAR
NNSA[2009]87	May 26, 2009	Notification of approving changes in operation mode of the standby power source line and output line of Qinshan NPP
NNSA[2009]141	Sept. 2, 2009	Notification of approving the modifications in FSAR due to adding the startup and shutdown the feed water system
NNSA[2009]153	Sept. 30, 2009	Notification of issuing and renewing the operator licenses of Qinshan NPP etc
NNSA[2009]180	Nov. 19, 2009	Notification of approving the modification of the spare power sources of nuclear island fire detection system
NNSA[2009]181	Nov. 19, 2009	Notification of approving the procedural modifications in withdrawing the irradiation monitoring tubes of pressure vessel material of Qinshan NPP.

Inspection

Date	Item	Main Content
Apr. 9-10, 2009	Nuclear safety inspection before the first criticality after the eleventh refueling overhaul of Qinshan NPP.	<ol style="list-style-type: none"> 1. Unit operating status of the last cycle 2. Implementation of Refueling overhaul 3. Implementation of fuel management and loading; 4. Execution of technical specifications during the refueling overhaul 5. Implementation of quality control, quality assurance and nuclear safety supervision in Qinshan NPP 6. Application of emergency preparedness and radiation protection and radioactive waste management during the overhaul 7. Implementation of in-service Inspection on safety-related systems and equipment 8. Fulfillment status for the first criticality after refueling overhaul.
May 14, 2009	The non-routine inspection on the physical protection and the anti-terror emergency preparedness status	<ol style="list-style-type: none"> 1. Fulfillment of the assignment of the nuclear safety production responsibilities. 2. Physical protection and the anti-terror emergency preparedness status.
May 22, 2009	The second periodic dialogue meeting in 2009	<ol style="list-style-type: none"> 1. The unit operating status and the status of handling main abnormalities and defects since the last dialogue meeting 2. The implementation status of main variation items in R10. 3. The discussion on the understanding of two independent offsite power described in the technical specifications. 4. The review status for the refueling summarizing report of R10 of Qinshan NPP. 5. The special item inspection conclusion of the containment isolation system and the special item inspection plan for the spent fuel pool cooling system were notified.

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Date	Item	Main Content
July 15, 2009	The non-routine nuclear safety inspection.	Night shifts of the operating personnel and safeguarding personnel in Qinshan NPP
Aug. 26, 2009	The third periodic dialogue meeting in 2009	<ol style="list-style-type: none"> 1. The unit operating status and the status of handling main abnormalities and defects since last dialogue meeting 2. Discussion on the format and contents of the refueling report, startup report and the refueling summarizing report.
Dec. 10, 2009	The non-routine nuclear safety inspection	Night shifts of the operating and security personnel of Qinshan NPP.
Dec. 2009	The routine nuclear safety inspection on the implementation status of the quality assurance program.	The effectiveness of implementing the quality assurance program.
2009	The special inspection on the periodic tests.	The on-site inspection on 54 periodic tests and the completion of selective examination for the periodic test reports.
2009	The special inspections on the auxiliary feed water system and the spent fuel pool cooling system.	The operating status of the auxiliary feed water system and the spent fuel cooling system.

Operational Event

Date	Event	Cause	Level
2009-07-18	The false signal of primary pump trip caused by the failure of air switch in reactor protection system resulting in the reactor shut down	Equipment failure	0

Safety Barriers Integrity

In 2009, three safety barriers of Qinshan NPP were kept intact. Total fuel element damage rate, the leakage rate of the primary loop coolant, and the leak rate and the internal pressure of the containment were all within the specified limits.

Radioprotection Dose

Annual Effective Dose per Person (mSv)	Maximum Annual Individual Dose (mSv)	Annual Collective Dose (man·Sv)	Normalized Collective Dose (man·mSv/Gwh)
0.336	4.257	0.453	0.1918

2) Qinshan Phase II NPP

In Qinshan Phase II NPP, the seventh (107) refueling overhaul of unit 1 and the fifth (205) refueling overhaul of unit 2 were completed.

Regulatory Review and Approval The NNSA carried out a safety review for 13 safety-related applications of Qinshan Phase II NPP over the year.

Document No.	Date	Title
NNSA NOTICE[2009]18	Feb.26, 2009	Notification of approving the safeguard program in Qinshan Phase II NPP
NNSA[2009]104	June 2, 2009	Notification of approving the addition of breaking siphon tube and valve to chemical reagents of containment spray system in Unit 1&2 of Qinshan Phase II NPP
NNSA[2009]108	June 17,2009	Notification of technical specifications (Version C) of Qinshan Phase II NPP
NNSA[2009]109	June 17, 2009	Notification of approving the unification of the welding norm of four units of Qinshan Phase II NPP
NNSA[2009]115	June 22, 2009	Notification of approving the periodic test requirement of safety related system and equipments (Version D) in Qinshan Phase II NPP
NNSA[2009]116	June 24, 2009	Notification of releasing the reactor first criticality control point after the fifth refueling overhaul of unit 2 of Qinshan Phase II NPP.
NNSA[2009]130	Aug.10, 2009	Reply to appeal for temporarily interrupting the cooling of spent fuel storage pool in Qishan Phase II NPP
NNSA NOTICE[2009]71	Aug.12, 2009	Reply to the scheme of operator licensing for the first group of operators in the expanded project of Qinshan Phase II NPP
NNSA NOTICE[2009]114	Sept 28, 2009	Notice of approving the surveillance requirements on the physical experiments in Qinshan Phase II NPP
NNSA[2009]186	Dec 7, 2009	Notification of start grinding the welding defect of nuclear auxiliary system piping during 107 refueling overhaul in Qinshan Phase II NPP
NNSA[2009]190	Dec 14, 2009	Notification of approving the solution of weld defects of backplate bracing in main steam piping during the seventh refueling overhaul of Unit 1 of Qinshan Phase II NPP.
NNSA[2009]193	Dec 25, 2009	Notification of approving the corrective maintenance on the weld of nuclear auxiliary piping during the seventh refueling overhaul of Unit 1 of Qinshan Phase II NPP.
NNSA[2009]202	Dec 28, 2009	Notification of issuing the operator licenses of civil nuclear installation to Nuclear Power Qinshan Joint Venture Company Limited etc.

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Inspection

Date	Item	Main Content
Apr. 27, 2009	Workshop of nuclear safety inspection on operating nuclear power plant in Qinshan nuclear power base.	<ol style="list-style-type: none"> 1. Discussion on the mode and method of surveillance and regulation 2. Discussion on the method of nuclear safety inspection based on the performance index system. 3. Experience exchange in nuclear safety regulation
May 7, 2009	The first periodic dialogue meeting in 2009	<ol style="list-style-type: none"> 1. The unit operating status and the status of handling main abnormalities and defects since last dialogue meeting 2. The review and dialogue for the fifth refueling report of unit 2 of Qinshan Phase II NPP. 3. The preparation status of the fifth refueling overhaul of unit 2 of Qinshan Phase II NPP.
May 21, 2009	Annual Coordination Meeting between NNSA and Nuclear Power Qinshan Joint Venture Company Limited in 2009	<ol style="list-style-type: none"> 1. Summary of nuclear safety inspection by NNSA on Qinshan Phase II NPP in 2008 2. Summary of supervision and inspection by Shanghai regional office on Qinshan Phase II NPP in 2008 and the arrangements of nuclear safety surveillance in 2009 3. The status of operating and nuclear safety regulation in 2008 reported by Qinshan Phase II NPP and the manage plan in 2009
June 18, 2009	The pre-first criticality nuclear safety inspection after the fifth refueling overhaul of unit 2 of Qinshan Phase II NPP.	<ol style="list-style-type: none"> 1. Operating status of Unit 2 of Qinshan Phase II NPP in the last cycle 2. Implementation of the refueling overhaul. 3. The implementation of fuel management and loading; 4. The implementation of technical specifications in the refueling overhaul 5. The implementation of quality control, quality assurance and nuclear safety supervision in Qinshan NPP 6. The implementation of emergency preparedness, radiation protection and radioactive waste management during the overhaul 7. The inspection of in-service examination on safety-related system and equipment 8. The fulfillment status of the reactor first criticality starting conditions after refueling overhaul.
Sept 21, 2009	The special item inspection on reactor protection system	<ol style="list-style-type: none"> 1. Operating status from March to August in 2008 2. The application of experiments of safe-related system 3. The application of technical specifications 4. Important abnormality and event and their treatments 5. The management status of operating procedure 6. The status of eliminating the defects 7. The status of change in design

Date	Item	Main Content
Sept.27, 2009	The routine nuclear safety inspection in 2009.	<ol style="list-style-type: none"> 1. The implementation status of the quality assurance program. 2. The status of physical protection 3. The status of fire protection 4. The management of nuclear material
Oct.27, 2009	The second periodic dialogue meeting in 2009	<ol style="list-style-type: none"> 1. The preparation status of the refueling overhaul 2. The status of radiation protection 3. The status of effluence and waste management the status of emergency preparedness and response
Dec.26, 2009	Witnessing the treatment done to the welding defects of nuclear auxiliary system piping	<ol style="list-style-type: none"> 1. Witnessing the grinding of the welds of parent metal in safety injection adapter. 2. Witness of unremoved defects of the weld in nuclear auxiliary system piping after grinding to 6mm

Operational Event

Date	Unit	Event	Cause	Level
Nov 23, 2009	1	Standard exceeded in some nuclear auxiliary system piping welds by in-service inspection during 107 refueling overhaul.	Equipment failure	0

Safety Barriers Integrity

In 2009, the general operation statuses of unit 1 and unit 2 of Qinshan Phase II NPP was good, and the three safety barriers were kept intact. The fuel element damage rates, leakage rates of the primary loop coolant, leakage rates and the internal pressures of the containment were all within the specified limits.

Radioprotection Dose

Annual Effective Dose per Person (mSv)	Maximum Annual Individual Dose (mSv)	Annual Collective Dose (man·Sv)	Normalized Collective Dose (man·mSv/Gwh)
0.345	7.899	0.710	0.071

3) Qinshan Phase III NPP

In Qinshan Phase III NPP, the 4th overhaul of unit 1 was carried out and the refueling overhaul of unit 2 has begun on Dec.15, 2009.

Regulatory Review and Approval the NNSA carried out safety review for 8 safety-related applications in Qinshan Phase III NPP over the year.

Document No.	Date	Title
NNSA[2009]8	Jan. 21, 2009	Notification of releasing first reactor criticality control point after the fourth overhaul of unit 1 of Qinshan Phase III NPP.
NNSA[2009]29	Feb. 20, 2009	Notification of extending duration in partly replacing the pipes of No.4 heat exchanger of recirculating cooling water system in Unit 1 of Qinshan Phase III NPP
NNSA[2009]68	Apr. 13, 2009	Notification of modification in the equipments of 400V uninterrupted power supply in Qinshan Phase III NPP
NNSA[2009]144	Sep. 23, 2009	Notification of approving commissioning operation of temporary Spend fuel dry storage facility for Qinshan Phase III NPP
NNSA[2009]167	Nov. 10, 2009	Notification of approving the refueling under subcritical conditions of Unit 2 of Qinshan Phase III NPP
NNSA[2009]191	Dec. 11, 2009	Notification of approving the modifications the technical specifications of Qinshan Phase III NPP
NNSA[2009]202	Dec. 24, 2009	Notification of issuing the operator licenses of Nuclear Power Qinshan Joint Venture Company Limited.
NNSA[2009]204	Dec. 30, 2009	Notification of approving the demonstration experiment of loading the equivalent natural uranium fuel to the reactor core in Qinshan Phase III NPP



Inspection

Date	Item	Main Contents
Jan. 13-14, 2009	The pre-criticality nuclear safety inspection after the 104 refueling overhaul in Qinshan Phase III NPP.	<ol style="list-style-type: none"> 1. The operating status in the second half of 2009 2. The status of nuclear safety management during the refueling overhaul 3. The quality assurance and quality control during the refueling overhaul 4. The implementation status of modifications in important safety-related system and equipment 5. The implementation status of in-service inspection and maintenance plan 6. The status of handling of main abnormalities and defects during the refueling overhaul 7. The implementation of periodic experiments during the overhaul 8. The status of emergency preparedness, radiation protection and management of radioactive waste 9. The status of possessing the criticality starting condition.
Feb. 20, 2009	The first periodic dialogue meeting in 2009 and the review meeting for 104 refueling report.	<ol style="list-style-type: none"> 1. The unit operating status since the first criticality after 104 refueling overhaul and the accomplishment status of overhaul 2. The unit operating status and the status of handling of main abnormalities and defects since last dialogue meeting 3. The review and dialogue for the fourth refueling report of unit 1 of Qinshan Phase III NPP. 4. The implementation of cobalt control rod modifications 5. The processing status of spent fuel dry storage project 6. Other questions needed to be discussed.
March 2008 -May 2009	The special item inspection on containment system executed by Shanghai Regional Office	The operation status of containment system from March 2008 to February 2009 in Unit 1&2 of Qinshan Phase III NPP (including spray system 34310, containment isolation system 67314, reactor cooling system 73110, reactor hydrogen control system 68460)
July 1, 2009	The non-routine inspection on temporary spent fuel dry storage facility executed by Shanghai regional office	The preparation of loading test in temporary spent fuel dry storage facility of Qinshan Phase III NPP.
July 29, 2009	Nuclear safety inspection before loading of temporary spent fuel dry storage	<ol style="list-style-type: none"> 1. The testing and installation status of safety-related system and equipment, the main equipments and tools in preparation, transportation and storage area of spent fuel, the simulation operation and procedures

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Date	Item	Main Contents
	facility executed by NNSA	<ol style="list-style-type: none"> 2. The radioactive monitor equipments, radiation protection equipments and operating procedures 3. Side slope around the facility, extending building construction and module construction quality 4. Physical protection system, including physical barrier, alarm system, documents related to physical protection 5. The preparation of operating documents 6. The status of emergency preparedness, including emergency equipments, emergency documents, emergency logo and emergency exercise preparation 7. Quality assurance
Sept. 17-18, 2009	The routine nuclear safety inspection executed by Shanghai Regional Office	The management status of the qualified assurance program, physical protection, fire protection and nuclear material control.
Nov. 17, 2009	The second periodic dialogue meeting in 2009 and the review meeting for 204 refueling overhaul.	<ol style="list-style-type: none"> 1. The reviewing questions of 204 overhaul report and operating status 2. The processing status of such important projects as RCW spare system, cobalt control rod and spent fuel dry storage.
October ~ December 2009	The special item inspection on containment system executed by Shanghai Regional Office	The operating status of shutdown cooling system and liquid area control system from April 2008 to September 2009

Operational Event

None

Safety Barriers Integrity

In 2009, the total operation status of unit 1 and unit 2 of Qinshan Phase III NPP were good, three safety barriers were kept integrate. Total fuel element damage rate, leakage rate of the primary loop coolant, leakage rate and the internal pressure of the containment were all within the stated limits.

Radioprotection Dose

Annual Effective Dose per Person (mSv)	Maximum Annual Individual Dose (mSv)	Annual Collective Dose (man·Sv)	Normalized Collective Dose (man·mSv/Gwh)
0.327	6.415	0.748166	6.38×10^{-2}

4) Daya Bay NPP and LingAo NPP

In 2009, the thirteenth refueling overhaul of unit 2 was carried out and unit 1 kept steadily operated

in Daya Bay NPP. The seventh refueling overhaul of unit 1 and the sixth refueling overhaul of unit 2 were carried out in LingAo NPP.

Regulatory Review and Approval

The NNSA carried out a safety review for 7 safety-related applications for both Daya Bay and

LingAo NPP, 6 specially for Daya Bay NPP, 8 specially for LingAo NPP and 4 refueling report reviews in 2009. Additionally, one waiver request was approved by NNSA.

Document No.	Date	Title
NNSA[2009]1	Jan. 9, 2009	Notification of approving of releasing the criticality control point after the sixth refueling overhaul of unit 2 of LingAo NPP.
NNSA[2009]7	Jan. 10, 2009	Reply on approving surveillance requirements of physical startup experiments of LingAo NPP.
NNSA[2009]3	Jan. 10, 2009	Notification of approving the item substitution of spare part purchasing of control rod drive mechanism in LingAo NPP
NNSA NOTICE[2009]9	Jan. 15, 2009	Notice of alteration of control area access of LingAo NPP.
NNSA[2009]50	Mar. 20, 2009	Notification of modifying in jet pipes of emergency diesel generator system in Daya Bay and LingAo NPP.
NNSA[2009]55	Mar. 24, 2009	Notification of approving of releasing the criticality control point after the seventh refueling overhaul of unit 1 of LingAo NPP.
NNSA NOTICE[2009]32	Mar. 27, 2009	Notification of approving the extension of validity of civilian nuclear facility operator license of Daya Bay NPP etc.
NNSA[2009]66	Apr. 10, 2009	Notification of approving the item substitution of V2306 electric relay in Daya Bay NPP
NNSA[2009]64	Apr. 10, 2009	Notification of approving the parameter adjustment of main steam isolation valve actuator in Daya Bay NPP
NNSA[2009]65	Apr. 10, 2009	Notification of disapproving the acceptance criteria of the maximum temperature difference among the thermocouples in the core of Daya Bay NPP
NNSA[2009]69	Apr. 14, 2009	Notification of renewing the civilian nuclear facility operator license of Daya Bay NPP etc.
NNSA[2009]70	Apr. 17, 2009	Notification of approving the waiver request of withdrawing R2 control rod at RCD mode of Unit 1 of Daya Bay NPP.
NNSA[2009]77	May. 8, 2009	Notification of approving of releasing the criticality control point after the thirteenth refueling overhaul of unit 1 of Daya Bay NPP.
NNSA[2009]105	June 5, 2009	Notification of approving of extension the validity of surveillance requirements of periodic experiments of safe-related systems and equipments(trial version)
NNSA[2009]132	Oct.10, 2009	Notification of approving the review program of ten-yearly periodic safety review in LingAo NPP
MEP NS NOTICE[2009]66	Sept.30, 2009	Reply on extending application of plant emergency program in Daya Bay and LingAo NPP(version 5)
NNSA NOTICE[2009]116	Oct.10, 2009	Reply on the surveillance requirements of startup physical experiments in the core of Daya Bay NPP.
NNSA[2009]188	Dec.9, 2009	Notification of approving the application for replacing the SAR diaphragm valve with needle valve in Daya Bay and LingAo NPP.

National Nuclear Safety Administration

Document No.	Date	Title
NNSA[2009]194	Dec.21, 2009	Notification of approving the application for modifying in seals protection of primary coolant pump in Daya Bay and LingAo NPP
NNSA[2009]195	Dec.21, 2009	Notification of approving the normal production of radioactive resins cementation by improved techniques in Daya Bay and LingAo NPP.
NNSA[2009]196	Dec.21, 2009	Notification of approving the application for modifying in terminal board of thermocouples in RIC system of LingAo NPP
NNSA[2009]197	Dec.21, 2009	Notification of approving the application for vibration reduction at the inlet exhaust pipe of auxiliary feed water pumps in LingAo NPP.
NNSA[2009]198	Dec.21, 2009	Notification of approving the application for reducing the damps in main steam line and main feed line of LingAo NPP.
NNSA[2009]200	Dec.24, 2009	Notification of approving the application for vibration reduction at the sensitive tubes of auxiliary feed water system in Daya Bay NPP
NNSA[2009]201	Dec.24, 2009	Reply on the application for modifying the operating technique specifications of Daya Bay NPP
NNSA[2009]203	Dec.30, 2009	Notification of approving of releasing the criticality control point after the seventh refueling overhaul of unit 2 of LingAo NPP

Inspection

Date	Item	Main Contents
Jan. 6-7, 2009	The pre-recritical nuclear safety inspection after the sixth refueling overhaul of unit 2 of LingAo NPP	The fulfillment status of the reactor criticality startup condition after L206 refueling overhaul.
Mar. 10, 2009	The routine inspection on the radioactive waste management in Beilong Repository.	To verify if related requirements for the radioactive waste management in the radiation environment impact, inspection program were met by the radiation safety and protection inspection in the means of ensuring the radiation environment safety. The management and implementing procedures of the radioactivity wastes; whether the waste receiving procedure and the detecting equipment in the waste package could insure the waste receiving quality; the validity of the accident emergency plan; the implementing status of the report system; the transportation status for the low and intermediate level wastes; the archives about the records of receiving the radioactive waste and monitoring for the environment; the radiation protection measures and the safety safeguarding measures; the fulfilling status of the corrective opinions presented in the first routine inspection.

Date	Item	Main Contents
Mar. 19-20, 2009	The pre-recritical nuclear safety inspection after the seventh refueling overhaul of unit 1 of LingAo NPP	The fulfillment status of the reactor criticality startup condition after L107 refueling overhaul.
Apr. 27-28, 2009	The routine inspection on the management of spare parts, instrument and control equipments	<p>To verify if the related requirements of nuclear safety regulations were met by the management of spare parts, instrument and control equipments.</p> <p>The spare parts management of CCM equipments;</p> <p>The purchase at home or abroad and the registration by foreign supplier since HAF600 was put into effect;</p> <p>The status of spare part purchasing and main problems during D213, L206 and L107 overhaul;</p> <p>The implementation status of instrument and control management system and existing problem;</p> <p>The important abnormality in both instrument and control and their treatments in 2007/2008.</p>
May 5-6, 2009	The pre-recritical nuclear safety inspection after the thirteenth refueling overhaul of unit 1 of Daya Bay NPP	The fulfillment status of the reactor criticality startup condition after D113 refueling overhaul.
July. 21-23, 2009	The routine inspection of physical protection	<p>To confirm the operating effectiveness of physical protection system;</p> <p>The organization system, personnel allocation, management system, operation and alternation of physical protection system, administration system for emergent events and its exercise</p>
July 21-23, 2009	The routine inspection on radiation protection	<p>To verify if the management of radiation protection in Daya Bay and LingAo NPP met the requirements of nuclear safety regulations.</p> <p>Radiation protection zoning, control of personnel in-and-outer, the configuration and use of the equipments in radiation monitoring, protection and decontamination, training in radiation protection, control of individual dose and health supervision, the radioactive monitoring on site, the implementing status, inspection and supervision on radiation protection program</p>

National Nuclear Safety Administration

Date	Item	Main Contents
Oct. 18-21, 2009	The routine inspection on engineering safety feature in Daya Bay NPP	To confirm the operating reliability and functional integrity of engineering safety features in Daya Bay NPP; The overall operating status and the implementing status of the relative procedures and management program, the important safety-related equipments and their maintenance policies, the treatment and statistical analysis of the unsatisfied periodic experiments in technical specifications; the important modifications of engineering safety features, the in-service inspection items and problems found
Sept. 2/3/9, 2009	The routine inspection on implementation of technical specifications	To verify the procedure system and modification management of implementing the technical specifications; to verify if such actions as normal operation, experiment and maintenance could meet the requirements of nuclear safety regulations and guides; Procedure system, technical specifications modification, the use and management of waiver request; the management of TOI; the supervision on technical specifications by DNMC; the license operating events deviated from the technical specifications and the implementation status of their correcting actions
Sept. 15-17, 2009	The routine inspection on emergency management	To investigate the accomplishment of corrective actions required by NNSA after the comprehensive emergency exercise on July 3, 2009. The improvement in the effectiveness of emergency assembling counting system, the renewal and improvement of emergency communication equipments, emergency training and exercise, the accomplishment of corrective actions after the exercise
Sept. 23, 2009	The non-routine inspection on safeguard and fire protection during the national day holiday	The safeguard plan and its implementation before/after the national day; the fire drill in 2009; the corrective actions related to the fire protection; the status of fire alarm system; the progression of external power grid reliability
Dec. 24-25, 2009	The pre-recritical nuclear safety inspection after the seventh refueling overhaul of unit 2 of LingAo NPP	The fulfillment status of the reactor criticality startup condition after L207 refueling overhaul.

Operational Event

Date	Unit	Event	Cause	Level
Mar. 13, 2009	1(LingAo)	Violation of technical specifications because of L1PTR728VB was not closed tightly	Human error	0
June 15, 2009	1(Daya Bay)	The delayed triggering of Boron meter alarm D1REN055A because of the parameter modification.	Human error	0
Nov. 19, 2009	1(Daya Bay)	The use of connection bearing shell with manufacture quality defects in D1/2LHP emergency diesel generator	Equipment failure	0

Safety Barriers Integrity

In 2009, three safety barriers of Daya Bay NPP and LingAo NPP were kept intact. Total fuel element damage rate, leakage rate of the primary loop coolant, leakage rate and the internal pressure of the containment were all within the stated limits.

Radioprotection Dose In 2009, the excess dose

irradiation of the personnel and the event of management losing control of the radioactive matter did not happened, the body surface contamination and the floor contamination by human factor were well controlled in Daya Bay NPP and LingAo NPP.

	Annual Effective Dose per Person (mSv)	Maximum Annual Individual Dose (mSv)	Annual Collective Dose (man·Sv)	Normalized Collective Dose (man·mSv/Gwh)
Daya Bay NPP	0.278	5.240	0.715	0.044
LingAo NPP	0.502	10.586	1.531	0.099

5) Tianwan NPP

In 2009, unit 1 and unit 2 of Tianwan NPP completed the second refueling overhaul.

Regulatory Review and Approval

The NNSA carried out a safety review for 7 safety-related applications in Tianwan NPP over the year.

Document No.	Date	Title
NNSA NOTICE[2009]8	Jan.10, 2009	Reply on approving the operating quality assurance program of Jiangsu Nuclear Power Corporation
NNSA NOTICE[2009]14	Feb. 11, 2009	Notification of ratification the refueling program of Tianwan NPP(version B1)
NNSA[2009]28	Feb.13, 2009	Notification of approving the replacement the regenerative heat exchanger of the volume and Boron control system in Unit 1 of Tianwan NPP
NNSA[2009]31	Mar. 23, 2009	Notification of approving the domestic transportation of fuel assembly in Tianwan NPP
NNSA[2009]57	Mar. 27, 2009	Notification of approving of releasing the criticality control point after the second refueling overhaul of unit 1 of Tianwan NPP
NNSA[2009]80	May 12, 2009	Notification of modifying the in-service inspection scheme for No.2 weld in pressure vessel of Unit 2 of Tianwan NPP
NNSA[2009]81	May 12, 2009	Notification of approving the technological scheme of repairing the weld defects on surge nozzle in Tianwan NPP

Inspection

Date	Item	Main contents
2009-03-24~25	The pre-recritical nuclear safety inspection after the second refueling overhaul of unit 1 of Tianwan NPP	The fulfillment status of the reactor criticality startup condition after the second refueling overhaul of Unit 1 of Tianwan NPP
2009-06-15~16	The pre-recritical nuclear safety inspection after the second refueling overhaul of unit 2 of Tianwan NPP	The fulfillment status of the reactor criticality startup condition after the second refueling overhaul of Unit 2 of Tianwan NPP
2009-06-25~26	The environment acceptance inspection on Tianwan Phase I NPP	To inspect the environment conditions of Tianwan Phase I NPP at completion

Operational event

Date	Unit	Event	Cause	Level
June 3, 2009	1	The false startup of No. 3 emergency diesel generator of Unit 1 of Tianwan NPP	Equipment failure	0
June 11, 2009	2	The false startup of No.1 emergency diesel generator of Unit 2 of Tianwan NPP	Equipment failure	0
Oct.31, 2009	1	Automatic reactor shutdown because of the failure in main transformer Phase A of Unit 1 of Tianwan NPP	Equipment failure	1
Dec.15, 2009	1	Automatic reactor shutdown because of the periodic experiment of protection and pre-protection actuator in Unit 1 of Tianwan NPP	Equipment failure	0

Safety Barriers Integrity

In 2009, three safety barriers of unit 1 and unit 2 of Tianwan NPP were integrated. Total fuel element damage rate, leakage rate of the primary loop coolant, leakage rate and the internal pressure of the containment were all within the stated limits.

Radioprotection Dose

Annual Effective Dose per Person (mSv)	Maximum Annual Individual Dose (mSv)	Annual Collective Dose (man·Sv)	Normalized Collective Dose (man·mSv/Gwh)
0.244	3.199	0.548	0.0384

2. Nuclear Power Plants under Construction

1) Unit 3&4 of LingAo NPP

In 2009, Unit 3 of LingAo NPP entered the overall commissioning stage. The installation quality of Unit 4 was under control. In May and November, the applications for First loading Ratification for Unit 3 and 4 were submitted to NNSA respectively.

Regulatory Review and Approval

Document No.	Date	Title
NNSA NOTICE[2009]66	Oct. 3, 2009	Reply on the contract of design and produce the adjust valve of RRI155VN by VANATOME
NNSA NOTICE[2009]113	Sept. 28, 2009	Notification of printing and distributing the nuclear safety surveillance and inspection program of Unit 3&4 of LingAo NPP.

Inspection

Date	Item	Content
Jan. 5, 2009	The special item inspection of NCR on 1U1 weld in main steam line of Unit 1.	1. NCR report of 1U1 weld in main steam line of Unit 3 2.Report of radiation examination of manufacture and installation company
Mar. 25, 2009	The special item inspection on the preparation of hydraulic testing of the secondary side in No.3 steam generator	1.The overall status of hydraulic test for the secondary side of No.3 steam generator 2.The organization and implementation mode 3.Work in the preparation stage and preparing status 4.The overall testing plan
Mar. 26, 2009	Non-routine inspection on pressure test of auxiliary piping of Unit 3&4	1.The application of standard used in the test 2.Work procedures and the management of experimental records
May 26, 2009	Special item inspection on the preparation status of pre-service inspection.	1.The progress of capacity verification 2.Some questions related to in-service inspection program 3.The plan of eddy-current examination on heat exchanger tubes in steam generator, personnel and organization 4.The preparation on site
June 25, 2009	Special item inspection on the preparation status of nuclear circuit cleaning(NCC)	The preparation status and overall plan for nuclear circuit cleaning
Oct. 28, 2009	Routine inspection on commissioning management	1.Quality assurance at commissioning stage 2.Management system at commissioning stage 3.Personnel qualification and training 4.Management of commissioning documents 5.Management of the calibration of measure and test equipments
Sept. 2009	Surveillance on cold functional test of primary loop in Unit 3	1. Preparation status of cold functional test. 2.Management of technical documents for cold functional test 3.Witness at the pressure of 154bar and 228bar on site
Dec. 2-3, 2009	Special item inspection on the installation status of Unit 4	1.Overall installation status of Unit 4 2.Documents related to the welding of Unit 4
Dec. 2009	Surveillance of containment pressurizing test in Unit 3	1.Preparation of containment pressurizing test 2.Calibration of instruments for pressurizing test. 3.Witness at the pressure of 4.83bar on site

2) Unit 3&4 of expansion project of Qinshan Phase II NPP

In 2009, Unit 3&4 of expansion project of Qinshan Phase II NPP entered the overall stage of installation. In July, the application for first the loading ratification was submitted to NNSA. In December, Unit 3 entered the commissioning stage.

Regulatory Review and Approval

Document no.	Date	Title
NNSA NOTICE[2009]142	Nov. 27, 2009	Notification of issuing nuclear safety surveillance and inspection program of Unit 3&4 of Qinshan Phase II NPP
NNSA NOTICE[2009]151	Dec. 24, 2009	Notification of issuing the nuclear safety inspection report on commissioning management of Unit 3 of Qinshan Phase II NPP

Inspection

Date	Item	Content
Feb. 24-25, 2009	Routine nuclear safety inspection by Shanghai Regional Office in 2009	1. Overall progression status of construction 2. Status of equipment installation 3. Quality assurance
Dec. 8-9, 2009	Nuclear safety inspection on commissioning management of Unit 3 of Qinshan Phase II NPP	Status of commissioning management and preparation in Unit 3 of Qinshan Phase II NPP.

3) Liaoning Hongyanhe NPP

In 2009, Unit 1 of Liaoning Hongyanhe NPP entered the installation stage. The reactor containment dome of Unit 1 was installed on August 10. The construction quality was under control. Construction permits were issued to Unit 3&4 and their construction quality was under control.

Regulatory review and approval

Document No.	Date	Title
NNSA NOTICE[2009]1	Jan. 4, 2009	Reply on ratification quality assurance program in design and construction stage of Liaoning Hongyanhe NPP Phase I NPP(renewed)
NNSA[2009]6	Jan. 10, 2009	Notification of issuing construction permit of Unit 3&4 of Liaoning Hongyanhe Phase I NPP
NNSA NOTICE[2009]22	Mar. 3, 2009	Reply on printing and distributing the nuclear safety inspection report of the site preparation before the First Concrete was poured in the nuclear island base of unit 3 of Liaoning Hongyanhe Phase I NPP
NNSA NOTICE[2009]74	Nov. 8, 2009	Reply on printing and distributing the nuclear safety inspection report of the site preparation before the First Concrete was poured in the nuclear island base of unit 4 of Liaoning Hongyanhe Phase I NPP

Inspection

Date	Item	Main Content
Feb. 23-24, 2009	The nuclear safety inspection on the site preparation status before the First Concrete was poured in the nuclear island base of unit 3 of Liaoning Hongyanhe Phase I NPP	To handle of the residual problems appeared in the early construction of nuclear island base of Unit 3; Construction organization and planning of nuclear island of Unit 3; Preparation status of construction
May 12-13, 2009	Nuclear safety supervision on the preparation status before the installation of nuclear island.	To confirm if the conditions provided by construction organization in view of the installation of nuclear island of Hongyanhe Phase I NPP could meet the construction requirements
Jun. 25-26, 2009	Special item inspection on manpower mobilization of Hongyanhe project division, China Nuclear Power Engineering Co. LTD	1.The implementation status of manpower mobilization 2.The capability of supervision and management on site for the commencement of 4 units at the same time
Jul. 28-29, 2009	The nuclear safety inspection on the site preparation status before the First Concrete was poured in the nuclear island base of unit 3 of Liaoning Hongyanhe Phase I NPP	To handle of the residual problems appeared in the early construction of nuclear island base of Unit 3; Construction organization and planning of nuclear island of Unit 3; Preparation status of construction Implementation of construction quality assurance
Dec. 28-29, 2009	Routine nuclear safety inspection in 2009	1.The fulfillment of nuclear manage requirement and permitted conditions during the construction 2.Implementation of quality assurance

4) Fujian Ningde NPP

In 2009, the civil project works were comprehensively deployed in unit 1 and unit 2 of Ningde NPP. The reactor containment dome of Unit 1 was installed on November 30 and the equipment installation has begun. The technical nuclear safety review on Unit 3&4 for construction permit was finished.

Regulatory review and approval

Document No.	Date	Title
NNSA NOTICE[2009]86	Aug. 21, 2009	Reply on printing and distributing the nuclear safety inspection report of negative excavation of the nuclear island base of Unit 3&4 of Fujian Ningde Phase I NPP
NNSA NOTICE[2009]153	Dec. 24, 2009	Reply on printing and distributing the nuclear safety inspection report of routine nuclear safety inspection before FCD of Fujian Ningde NPP
NNSA NOTICE[2009]163	Dec.30, 2009	Reply on ratification of quality assurance program(design and construction stage) for Ningde Phase I NPP
MEP[2009]576	Dec. 30, 2009	Reply on approving the environment impact report(design stage) of unit 3&4 of Fujian Ningde Phase I NPP

Inspection

Date	Item	Title
Jan. 13, 2009	The first periodic dialogue meeting in 2009 between Shanghai Regional Office and Ningde NPP	Management status of safety-related construction Actions including quality assurance implementation and plan of owner and contractor, the treatments of safety-related quality issues, construction of containment concrete and steel liner; Fulfillment of nuclear safety management requirements including interface procedure of quality assurance, treatment of 2#RPV non-conformance item, etc.
Nov. 23-24, 2009	The nuclear safety inspection on the site preparation status before the First Concrete was poured in the nuclear island base of unit 3 of Fujian Ningde NPP	Implementation of quality assurance program of Ningde NPP, construction quality control of safety-related important items on site(including manufacture containment dome on site and installation);preparation status on site before FCD

5) Fujian Fuqing NPP

In 2009, unit 1&2 of Fujian Fuqing NPP were in construction stage. The First Concrete was poured in the nuclear island base of unit 2 of Fuqing NPP on June 16.

Regulatory review and approval

Document No.	Date	Title
NNSA NOTICE[2009]55	Jun. 12, 2009	Reply on printing and distributing the nuclear safety inspection report of on-site preparation before the First Concrete was poured in the nuclear island base of unit 2 of Fuqing NPP
NNSA NOTICE[2009]158	Dec.24, 2009	Reply on the feasibility research report on emergency road of Fujian Fuqing NPP

Inspection

Date	Item	Main Content
May 25-26, 2009	Nuclear safety inspection on construction preparation before the First Concrete was poured in the nuclear island base of unit 2 of Fujian Fuqing NPP	1. On-site preparation status before the First Concrete was poured in the nuclear island base of unit 2 of Fujian Fuqing NPP 2. Implementation status of quality assurance program of design and construction stage
Oct. 23-24, 2009	Routine nuclear safety inspection on civil construction quality of Unit 1&2 of Fujian Fuqing NPP	1. Implementation status of quality assurance program of design and construction stage 2. Quality control of construction civil and steel structure of Unit 1&2 of Fujian Fuqing NPP

6) Guangdong Yangjiang NPP

In 2009, the construction quality of Unit 1&2 of Yangjiang NPP was under control. The application for the construction permission of Unit 3&4 was accepted by NNSA

Regulatory review and approval

Document No.	Date	Title
NNSA NOTICE[2009]54	June 12, 2009	Reply on printing and distributing the nuclear safety inspection report of on-site preparation before the First Concrete was poured in the nuclear island base of unit 2 of Yangjiang NPP

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Inspection

Date	Item	Main Content
Feb. 17, 2009	Special item inspection on quality assurance group, department of Yangjiang Project, China Nuclear Power Engineering Co. LTD	1. Organization and personnel of construction quality assurance group 2. Surveillance status of quality assurance division
Apr. 8, 2009	Special item inspection on acceptance of welded pin	Treatment of C3 non-conformance item of welded pin acceptance
Apr. 8, 2009	Special item inspection on the management of on-site laboratory	1.Management status of welding laboratory 2.Management of physical and chemical laboratory
May12-13, 2009	Nuclear safety inspection of on-site preparation status before the First Concrete was poured in the nuclear island base of unit 2 of Yangjiang NPP	On-site preparation status before the First Concrete was poured in the nuclear island base of Unit 2; Completion of nuclear safety inspection requirements; Treatment of the residual problems appeared in the early construction of nuclear island base of Unit 2; Organizing and planning for the nuclear island construction of Unit 2; Preparation status of construction
Jun. 18, 2009	Special item inspection of nuclear island raft foundation of Unit 2	1. Heart insulating measurement of nuclear island raft foundation 2. Monitoring data management in maintaining
Jun. 19, 2009	Special item inspection of steel liner material acceptance	Purchase and acceptance statuses of steel plates used for steel liner
Oct.27-30, 2009	Annual routine integrated inspection	1.Reassure the construction of important structures lives up with the promise in PSAR 2.Construction status of concrete 3.Prefabrication of steel liner and steel structure and construction status 4.Quality assurance

7) Expansion Project of Qinshan NPP(Fangjiashan nuclear power project)

In 2009, Unit 1&2 of the expansion project of Qinshan NPP were in construction stage. Their construction qualities were under control.

Regulatory review and approval

Document No.	Date	Title
NNSA NOTICE[2009]60	July 16, 2009	Reply on printing and distributing the nuclear safety inspection report of on-site preparation before the First Concrete was poured in the nuclear island base of unit 2 of expansion project of Qinshan NPP (Fangjiashan Nuclear Power Project)

Inspection

Date	Item	Main Content
June 24-25, 2009	Nuclear safety inspection of on-site preparation before the First Concrete was poured in the Nuclear island base of unit 2 of expansion project of Qinshan NPP (Fangjiashan Nuclear Power Project)	On-site preparation status before the First Concrete was poured in the nuclear island base of Unit 2; Implementation status of quality assurance program (design and construction stage)

8) Taishan NPP

At the end of 2009, the First Concrete was poured in the nuclear island base of Unit 1 of Guangdong Taishan NPP

Regulatory review and approval

Document No.	Date	Title
NNSA[2009]30	Feb. 24, 2009	Review report of nuclear power plant siting of Guangdong Taishan Phase I NPP
MEP[2009]111	Feb 24, 2009	Reply on ratification of environment impact report of Guangdong Taishan Phase NPP(siting stage)
NNSA NOTICE[2009]23	Mar 11, 2009	Reply on printing and distributing the nuclear safety inspection on the negative excavation of the foundation pit in unit 1 of Guangdong Taishan NPP
NNSA NOTICE[2009]85	Aug. 21, 2009	Reply on printing and distributing the nuclear safety inspection report of on-site preparation before the First Concrete was poured in the nuclear island base of unit 1 of Taishan Phase I NPP
MEP[2009]402	Sept. 2, 2009	Reply on ratification of environment impact report of Taishan Phase I NPP(design stage)
NNSA NOTICE[2009]117	Oct.13, 2009	Reply on ratification of quality assurance program of Unit 1&2 of Taishan NPP(design and construction stage)
NNSA[2009]178	Nov. 18, 2009	Notification of issuing construction permits of Unit 1&2 of Taishan NPP.
NNSA NOTICE[2009]152	Dec. 24, 2009	Reply on printing and distributing the nuclear safety inspection report of the negative excavations of the foundation pit in unit 2 of Taishan NPP

Inspection

Date	Item	Main Content
Feb. 25-26, 2009	Nuclear safety inspection on the negative excavations of the foundation pit in unit 1 of Taishan NPP	Inspection of the construction quality of the negative excavation of the nuclear island and the protection status of the foundation pits
July 23-24, 2009	Nuclear safety inspection of on-site preparation before the First Concrete was poured in the nuclear island base of unit 1 of Taishan NPP	On-site preparation status before the First Concrete was poured in the nuclear island base of Unit 1; Implementation status of quality assurance program (design and construction stage)
Nov. 24-25, 2009	Nuclear safety inspection on the negative excavations of the foundation pit in unit 2 of Taishan NPP	Inspection of the construction quality of the negative excavation of the nuclear island and the protection status of the foundation pits

9) Sanmen NPP

On March 29 2009, the First Concrete was poured in the nuclear island base of Unit 1 of Sanmen NPP.
On Dec. 15 2009, the First Concrete was poured in the nuclear island base of Unit 2

Regulatory review and approval

Document No.	Date	Title
NNSA NOTICE[2009]13	Feb.9, 2009	Reply on ratification of the review report on siting safety and supplementary environment impact report of Sanmen Phase I NPP.
NNSA[2009]56	Mar. 26, 2009	Notification of issuing construction permits of Unit 1&2 of Sanmen Phase I NPP.
NNSA NOTICE[2009]34	Mar.26, 2009	Reply on ratification of quality assurance program of Unit 1&2 of Sanmen Phase I NPP(design and construction stage)
MEP[2009]178	Apr. 1, 2009	Reply on the environmental impact report of unit 1 and unit 2 of Sanmen Phase I NPP (design stage)

Inspection

Date	Item	Main Content
Mar.11-12, 2009	Nuclear safety inspection on the negative excavations of the foundation pit in unit 2 of Sanmen NPP	Inspection of the negative excavation of the nuclear island foundation pits of Unit 2 of Sanmen NPP
Mar. 11-12, 2009	Nuclear safety inspection of on-site preparation before the First Concrete was poured in the nuclear island base of unit 1 of Sanmen NPP	On-site preparation status before the First Concrete was poured in the nuclear island base of Unit 1 of Sanmen NPP.
June 25-26, 2009	Routine inspection on working status of quality assurance system in the construction stage of Sanmen Phase I NPP; Inspection of On-site preparation status before the integral hoisting and installation of CA20 structure module of unit 1	Inspection of working status of quality assurance system in the construction stage of Sanmen Phase I NPP; Inspection of On-site preparation status before the integral hoisting and installation of CA20 structure module of unit 1
Oct. 22-23, 2009	Inspection on working status of quality assurance system in the construction stage of Sanmen Phase I NPP Nuclear safety inspection of on-site preparation for hoisting and installing steel concrete vessel bottom heading	Inspection on working status of QA system in construction stage; Inspection on preparation for CVBH hoisting and installation
Dec. 4, 2009	Nuclear safety inspection of on-site preparation before the First Concrete was poured in the nuclear island base of unit 2 of Sanmen NPP	On-site preparation status before the First Concrete was poured in the nuclear island base of Unit 2 of Sanmen NPP.

10) Haiyang NPP

On Sept. 24 2009, the First Concrete was poured in the nuclear island base of Unit 1 of Haiyang Phase I NPP

Regulatory review and approval

Document No.	Date	Title
NNSA NOTICE[2009]29	Mar. 25, 2009	Reply on ratification of the review report on siting safety and supplementary environment impact report of Haiyang Phase I NPP.
NNSA[2009]142	Sept. 24, 2009	Notification of issuing construction permit of Unit1&2 of Haiyang Phase I NPP
NNSA[2009]143	Sept.24, 2009	Notification of ratification of quality assurance program or Hanyang Phase I NPP(design and construction stage)
MEP[2009]434	Sept. 24, 2009	Reply on the ratification of environment impact report (design stage) of Unit 1&2 of Haiyang Phase I NPP
NNSA[2009]189	Dec. 9, 2009	Notification of releasing the control point of the First Concrete poured into nuclear island base of Unit 1 of Haiyang NPP

Inspection

Date	Item	Main Content
Feb.20-21, 2009	Routine nuclear safety inspection on the negative excavations of the foundation pit in unit 1 of Haiyang NPP	Inspection of the negative excavation status of the nuclear island foundation pits of Unit 1 of Haiyang NPP
May 7-8, 2009	Routine nuclear safety inspection on the negative excavations of the foundation pit in unit 2 of Haiyang Phase I NPP	Inspection of the negative excavation status of the nuclear island foundation pits of Unit 2 of Haiyang Phase I NPP
Aug.6-7, 2009	Nuclear safety inspection of on-site preparation before the First Concrete was poured in the nuclear island base of unit 1 of Haiyang NPP	On-site preparation status before the First Concrete was poured in the nuclear island base of Unit 1 of Haiyang NPP
Nov. 13, 2009	Nuclear safety inspection on maintenance and protection of nuclear island concrete base of Unit 1 of Haiyang NPP	To inspect the maintenance and protection of concrete pour in Unit 1 of Haiyang NPP

11) Huaneng Shandong Shidaowan HTR-PM NPP Demonstration Project

In 2009, Huaneng Shandong Shidaowan HTR-PM NPP Demonstration Project entered the stage of applying for construction permission.

Regulatory review and approval

Document No.	Date	Title
NNSA NOTICE[2009]52	May 27, 2009	Notification of ratification of quality assurance program in the design and construction stage, version B)of Huaneng Shandong Shidaowan HTR-PM NPP Demonstration Project

Inspection

Date	Item	Main Content
June 15-16, 2009	Nuclear safety inspection on the negative excavations of the foundation pit in Huaneng Shandong Shidaowan HTR-PM NPP Demonstration Project	Construction procedures and records of negative excavations of the nuclear island foundation pit; Confirmation of final exploration results of negative excavation; Non-conformance items and their treatments Quality assurance and its implementation.
Aug. 16-17, 2009	Nuclear safety inspection of on-site preparation before the First Concrete was poured in the nuclear island base of Huaneng Shandong Shidaowan HTR-PM NPP Demonstration Project	Construction preparation status before FCD; Construction quality assurance program and its implementation; Treatment of the residual problems appeared in the early construction of foundation base in nuclear island
Nov. 12, 2009	Special item inspection on preparation status before the construction of Huaneng Shandong Shidaowan HTR-PM NPP Demonstration Project	Construction status of the demonstration project; maintenance of concrete bars; implementation status of corrective requirements before FCD

3. Nuclear Power Plants planned

1) Hainan Changjiang NPP

In August 2009, the application documents for construction permission of Unit 1&2 of Hainan Changjiang NPP were accepted.

Regulatory review and approval

Document No.	Date	Title
MEP[2009]377	Aug. 10, 2009	Reply on environment impact report of Unit 1&2 of Hainan Changjiang NPP (siting stage)
NNSA[2009]134	Aug. 11, 2009	Reviewing report of plant siting of Unit 1&2 of Hainan Changjiang NPP
NNSA NOTICE[2009]105	Sept. 28, 2009	Reply on printing and distributing the nuclear safety inspection report on the negative excavation of nuclear island foundation pit of Unit 1&2 of Hainan Changjiang NPP

Inspection

Date	Item	Main Content
Sept. 10-11, 2009	Nuclear safety inspection on negative excavation of nuclear island foundation pit of Unit 1&2 of Changjiang NPP, Hainan	Inspection of construction quality of negative excavation and protection of foundation pit.

2) Guangxi Fangchenggang NPP

In August 28 2009, the application documents for construction permission of Unit 1&2 of Guangxi Fangchenggang NPP were accepted.

Regulatory review and approval

Document No.	Date	Title
MEP[2009]378	Aug. 10, 2009	Reply on environment impact report of Unit 1&2 of Guangxi Fangchenggang NPP(siting stage)
NNSA [2009]133	Aug. 11, 2009	Review opinion of plant siting of Unit 1&2 of Guangxi Fangchenggang NPP
NNSA NOTICE[2009]106	Sept. 28, 2009	Reply on printing and distributing the nuclear safety inspection report on the negative excavation of nuclear island foundation pit of Unit 1&2 of Guangxi Fangchenggang NPP

Inspection

Date	Item	Main Content
Aug.30-Sept.1, 2009	Nuclear safety inspection on negative excavation of nuclear island foundation pit of Unit 1&2 of Guangxi Fangchenggang NPP	Inspection of construction quality of negative excavation and protection of foundation pit.

3) Fujian Fuqing NPP(Unit 3、4、5、6)

On Sept. 2 2009, the review report of plant siting of Unit 3/4/5/6 of Fuqing NPP was issued. In September, preliminary safety analysis report, quality assurance program and environment impact report (design stage) of Unit 3/4 of Fuqing NPP were accepted for technical review.

Regulatory review and approval

Document No.	Date	Title
NNSA[2009]139	Sept. 2, 2009	Review opinion of plant siting of Unit 3/4/5/6 of Fujian Fuqing NPP
MEP[2009]403	Sept. 2, 2009	Reply on environment impact report of Unit 3/4/5/6 of Fujian Fuqing NPP(siting stage)

Inspection

Date	Item	Main Content
Nov. 10-11, 2009	Nuclear safety inspection on negative excavation of nuclear island foundation pit of Unit 3/4 of Fuqing NPP	Inspection on construction quality of negative excavation and protection of foundation pit

4) Expansion Project of Tianwan NPP(Unit 5/6)

In August 2009, the environment impact report (design stage) and site safety analysis report of the expansion project of Tianwan NPP (Unit 5/6) were accepted for technical review.

5) Hunan Taohuajiang NPP

Regulatory review and approval

Document No.	Date	Title
NNSA[2009]71	Apr. 24, 2009	Review opinion of plant siting of Unit 1/2 of Hunan Taohuajiang NPP
MEP[2009]209	Apr. 24, 2009	Reply on environment impact report of Unit 1/2 of Hunan Taohuajiang NPP(siting stage)

6) Hubei Xianning NPP

Regulatory review and approval

Document No.	Date	Title
NNSA[2009]72	Apr. 24, 2009	Review opinion of plant siting of Unit 1/2 of Hubei Xianning NPP
MEP[2009]208	Apr. 24, 2009	Reply on environment impact report of Unit 1/2 of Hubei Xianning NPP(siting stage)

7) Jiangxi Pengze NPP

Regulatory review and approval

Document No.	Date	Title
NNSA[2009]73	Apr. 24, 2009	Review opinion for plant siting of Unit 1/2 of Jiangxi Pengze NPP
MEP[2009]207	Apr. 24, 2009	Reply on environment impact report of Unit 1/2 of Jiangxi Pengze NPP(siting stage)



◎ Safety Regulation on Research Reactors ◎

In 2009, NNSA further enhanced the nuclear safety regulation on in-service and under-construction research reactors. The nuclear safety regulatory mode was further standardized and made perfection. The experience feedback and information sharing were strengthened. NNSA continued to establish and improve regulations system for research reactors. Of

the 17 in-service research reactors, 9 were in operation, 8 were in safety shutdown conditions. Besides, the China Experimental Fast Reactor was under construction and the In-Hospital Neutron Irradiator (IHNI) was first fueled. There were 10 operational occurrences in the year, of which there was no event of level I or above.

Operation Status of Research Reactors in 2009

No.	Name	Designed Power	Operating Organization	Operation in 2008	Integrated Flux
1	101HWRR	10MW	CIAE	Not in operation	—
2	SPR	3.5MW	CIAE	1928.22h	281.19MW·d
3	MNSR	27kW	CIAE	Started 38 times	2204.04kW·h
4	CFMNSR	—	CIAE	Not in operation	—
5	SSZR	—	CIAE	Not in operation	—
6	CFFR	—	CIAE	Not in operation	—
7	UCF	—	CIAE	Started 32 times	—
8	CEFR	65MW	CIAE	Under construction	—
9	SER	1MW	INET\TU	Started 427 times	25.87MW·h
10	5MW-NHR	5MW	INET\TU	Not in operation	—
11	HTR-10	10MW	INET\TU	Not in operation	—
12	HFETR	125MW	NPIC	81.27d	5504.52MW·d
13	HFEZR	—	NPIC	Not in operation	—
14	CRP	1MW	NPIC	7 pulses	—
15	MJTR	5MW	NPIC	72.1d	357.99MW·d
16	18-5 Critical Facility	—	NPIC	Started 13 times	—
17	MNSR	27kW	SITT	Not in operation	—
18	MNSR	27kW	INTCA\SU	25 times	1484.4kW·h
19	IHNI	30 kW	CNCT	0.8167h	18.9kw·h

National Nuclear Safety Administration

Issuing/Renewing of the Nuclear Safety Licenses to Research Reactor Operators in 2009

Names of Operating Organization	License Application		Renew license application		Total
	Reactor operator	Senior reactor operator	Reactor operator	Senior reactor operator	
NPIC	6	4	8	16	34
CIAE	23	14	9	10	56
INET\TU	0	0	16	22	38
CNCT	0	4	0	0	4
Total	29	22	33	48	132

Regulatory Review and Approval

The NNSA accepted and reviewed application of NPIC and approved the trial operation of CRP Apr. 2009.

The NNSA accepted and reviewed applications and reports of SITT and approved the permanent unloading of JiNan MNSR Apr., 2009.

Sep. 2009, the first fueling of the CEFR was approved.

Oct. 2009, the first fueling of the IHNI was approved.

	Date	Title
NNSA notice [2009]16	Feb.24, 2009	Notice on acceptance of the “General Commissioning Program of the CEFR”
NNSA [2009]59	Apr.3,2009	Notification of approval of operation of the CRP
NNSA [2009]106	Jun.6,2009	Notification of approval of technical reformation of the 18-5 Critical Facility
NNSA [2009]107	Jun.11,2009	Notification of approval of cancelation of the comprehensive performance test of refueling system of the CEFR at phase A2.1
NNSA notice [2009]61	Jul.24,2009	Reply on the approval of the construction for unloading of Jinan MNSR
NNSA notice [2009]80	Aug.14,2009	Notice on acceptance of the “QA Program of the IHNI Project (commissioning stage), Version B”
NNSA notice [2009]82	Aug.14,2009	Notice on acceptance of the “QA Program of the IHNI Project (commissioning stage), Version B”
NNSA [2009]136	Aug.27,2009	Notification of Approval of the unloading of the Jinan MNSR
NNSA notice [2009]91	Sep.1,2009	Notice on proposal of treatment of the event of the SER
NNSA notice [2009]92	Sep.1,2009	Notice on proposal of treatment of the event of the SPR
NNSA [2009]137	Sep.2,2009	Notification of approval of the alternation of the acceptance criteria and change of part of the commissioning items of the CEFR
NNSA [2009]140	Sep.2,2009	Notification on approval of the spent fuel from Jinan MNSR to be received by the CIAE
NNSA [2009]145	Sep.22,2009	Notification on approval of the initial fuel loading of CEFR
NNSA Notice [2009]157	Oct.14,2009	Notification on approval of the initial fuel loading of IHNI

Regulatory Inspection

Date	Item	Main Content
Apr.13-14,2009	Specific inspection on physical protection and emergency Preparedness in CIAE	Physical Barriers integrity around the nuclear facility. Perimeter detection and alarm system. Entrance and exit control. Protection control center. Document integrity of emergency procedures. Emergency organization. Capability of emergency response of emergency personnel. Emergency equipment and facility. Training and exercise for emergency
Apr.15-16,2009	Specific inspections on physical protection and emergency Preparedness of the in-service reactor in INET\TU	Barriers integrity around the nuclear facility. Perimeter detection and alarm system. Output and Input port control. Guard control center. Document integrity of emergency programmes. Emergency organization. Capibility of personnel for resoponse to emergency. Emergency equipment and facility. Training and exercise for emergency
Apr.28-29,2009	Specific nuclear safety inspection on commissioning of CEFR	Documentation management. Equipment management including calibration and status markings of instruments, site managemnt and cleanness control. Qualification, training and authorization of personnel. Interface among units. Organization of commissioning test, test report compiling and reviewing, and alternation management of commissioning
May 18-19,2009	Specific nuclear safety inspection on operational events management and Experience Feedback	Management procedures and implementation rules for operation events. Situation of implementation of operation Report system. Checking and assessment of operation events, Feedback of Experience from operation
May 18-19,2009	Specific nuclear safety inspection on the effectiveness of quality assurance program in CNCT	Effectiveness of the quality assurance program
Jun. 17,2009	Specific nuclear safety inspection on Recruitment, Training and Qualification of operation personnnel	Recruitment and arrangement, Training and Qualification of operation personnel. Operator license management
Jul. 18-19,2009	Specific nuclear safety inspection on commissioning before initial fuel loading	The status of accomplishment of commissioning. The quality of commissioning test report. The status of fulfilling the requirements claimed in past inspections.
Jul. 21,2009	Specific nuclear safety inspection on preparedness of initial fuel loading of the IHNI	The situation of accomplishment of commissioning. The quality of commissioning test report. The situation of fulfilling the requirements c;aimed in the last inspection. Preparedness of documents related to initial fuel loading

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Date	Item	Main Content
Jul.23-24,2009	Comprehensive nuclear safety inspection on the CEFR before initial fuel loading	The situation of accomplishment of building. Installation and commissioning of the CEFR. The situation of fulfilling the guarantee in Safety analysis Reports and answers in historic reviews. The situation of implementing the quality assurance programme. Preparedness of operation.
Jul. 24,2009	Comprehensive nuclear safety inspection on the IHNI before initial fuel loading	The situation of accomplishment of building. Installation and commissioning of the IHNI. The situation of fulfilling the guarantee in Safety analysis Reports and answers in historic reviews. The situation of implementing the quality assurance programme. Preparedness of operation.
Aug.27-28,2009	Specific nuclear safety inspection on Radiation Protection and Radioactive Waste Management in CIAE	Radiation protection management. Personnel dose control in plant area. Radiation monitoring instrument. Total quantity of radioactive effluent released to environment and doserate control of outside plant area. Waste treatment, storage and in-plant-transportant. Decontamination of personnel, equipments and buildings
Sep. 22-23,2009	Specific nuclear safety inspection on Radiation Protection and Radioactive Waste Management in INET\TU	Radiation protection management. Personnel dose control in plant area. Radiation monitoring instruments. Total quantity of radioactive effluent released to the environment and doserate control of outside plant area. Waste treatment, storage and in-plant-transportation. Decontamination of personnel, equipments and buildings
Sep.12,2009	Specific nuclear safety inspection on refueling and physics test of the MJTR	Core loading Planning. Fuel Handling. Treatment of special or unforeseen circumstances
Dec.14-15, 2009	Annual routine nuclear safety inspection on CIAE	The situation of fulfilling the requirements claimed in the last Annual regular nuclear safety inspection and claimed in specific item inspections this year. The implementation status of QA programmes
Dec.16-17, 2009	Annual routine nuclear safety inspection on CEFR	The situation of fulfilling the requirements claimed in the last Annual regular nuclear safety inspection and claimed in specific item inspections this year. The implementation status of QA programmes. The maintenance situation of safety important equipments
Dec.18, 2009	Annual routine nuclear safety inspection on the IHNI	The situation of fulfilling the requirements claimed in specific item inspections. The implementation status of QA programmes
Dec.22-23, 2009	Annual routine nuclear safety inspection on INET\TU	The situation of fulfilling the requirements claimed in the last Annual regular nuclear safety inspection and claimed in specific item inspections this year. The implementation situation of QA programmes

Date	Item	Main Content
Dec.29-30, 2009	Annual routine nuclear safety inspection on NPIC	Safety management of research reactor operation. The implementation situation of QA programmes. Periodic maintenance of out-service reactors. The management of safety related tests. The situation of fulfilling the requirements of previous inspections

Operation Event

Date	Facility	Event Description	Cause	Level
2009-03-03	HFETR	Manually shutdown induced by the leakage of sealpad at the joint between the body of the purifying column 1# and its gas exhausting pipe	Equipment failure	0
2009-03-18	MJTR	Automatic reactor trip induced by voltage instant fluctuation of offsite power	External Events	0
2009-03-26	HFETR	Automatic reactor trip induced by distance switch problem of safety rod 2.	Equipment failure	0
2009-04-27	MJTR	Manually shutdown due to unqualified water quality of primary loop	Equipment failure	0
2009-06-15 2009-06-16	MJTR	Automatic reactor trip induced by false low water level signal of 1# reactor pool caused by failure of water level meter	Equipment failure	0
2009-07-23	SER	Abnormal Water level of reactor pool, the water level descended for unknown reason	Equipment failure	0
2009-07-29	SPR	Several alarm out standing induced by voltage instant fluctuation of offsite power	External Events	0
2009-07-31	SPR	Automatic reactor trip induced by voltage instant fluctuation of offsite power	External Events	0
2009-08-17	SPR	Cleanness of swimming pool bottom changed for unknown reason	/	0
2009-09-20	MJTR	Automatic reactor trip induced by failure of power supply of section B	External Events	0

◎ Safety Regulation on Fuel Cycle Installations ◎

Installation for Manufacture, Fabrication, Storage and Reprocessing of Nuclear Fuels

In 2009, the operation of in-service installations for manufacture, fabrication, storage and reprocessing of nuclear fuels was safe and the quality of the

under-construction installations was under effective control. The facilities have kept good safety records and there were no unacceptable nuclear and radiation harm to the plant personnel, the public and the environment.

Statistics of Main Nuclear Fuel Manufactures, Fabrications, Storages and Reprocessing Installations in China

Installation	Operating Organization	Designed Capacity	Product	Status quo
Yi Bin NPP fuel fabrication line	China Jianzhong Nuclear Fuel Corporation(CJNFC)	200t(U)/a	PWR nuclear fuel	In operation
Expansion project of Yi Bin NPP fuel fabrication line	China Jianzhong Nuclear Fuel Corporation(CJNFC)	200t(U)/a	PWR nuclear fuel	In trial operation
Yibin gadolinium-contained fuel fabrication line	China Jianzhong Nuclear Fuel Corporation(CJNFC)	10t (M)/a(M stand for mixture of Gd ₂ O ₃ and UO ₂)	Agglomerated blocks from UO ₂ and Gd ₂ O ₃	In operation
VVER-1000 nuclear fuel fabrication line	China Jianzhong Nuclear Fuel Corporation(CJNFC)	41t(U)/a	PWR nuclear fuel	In commissioning
Baotou PWR nuclear fuel fabrication line	China Northern Nuclear Fuel Corporation(CNNFC)	200 t(U)/a	PWR nuclear fuel assembly	Under construction
Baotou HWR nuclear fuel fabrication line	China Northern Nuclear Fuel Corporation(CNNFC)	200 t(U)/a	HWR nuclear fuel assembly	Feasibility study
Baotou HTR nuclear fuel fabrication line	China Northern Nuclear Fuel Corporation(CNNFC)	2.1 t(U)/a	HTR nuclear fuel element	siting
Shannxi Uranium centrifugal uranium separation facility	Shannxi Uranium Enrichment Co., Ltd, CNNC	500tSWU/a	Low enrichment UF ₆	In operation
Shannxi Uranium centrifugal uranium separation facility of phase IV	Shannxi Uranium Enrichment Co., Ltd, CNNC	500tSWU/a	Low enrichment UF ₆	Under construction
Lanzhou Uranium centrifugal uranium separation facility of phase I	Lanzhou Uranium Enrichment Co., Ltd, CNNC	500tSWU/a	Low enrichment UF ₆	In operation

Installation	Operating Organization	Designed Capacity	Product	Status quo
Spent fuel receiving and stocking facility	No.404 Corporation\CNNC	550t(HM)/a		In operation
Spent fuel reprocessing pilot plant	No.404 Corporation\CNNC	50tU		In trial operation
Temporary spent fuel Dry storage facility, Qinshan NPP Phase III	Qinshan NPP Phase III	-	-	In trial operation

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Regulatory Review and Approval

Document No.	Date	Main contents
MEP app. [2009]176	2009-04-03	Reply on the EIR for high level radioactive liquid waste and solid waste treatment facility of the spent fuel reprocessing pilotplant
MEP App.[2009]239	2009-05-18	Reply on the EIR (feasibility assessment stage) of phase IV of Shannxi Uranium centrifugal uranium separation facility
NNSA [2009]86	2009-05-18	Review opinion on the siting of Shannxi Uranium centrifugal uranium separation facility of phase IV
MEP App. [2009]322	2009-06-25	Reply on the EIR(siting stage) of the HTR-PM NPP nuclear fuel fabrication line of CNNFC
NNSA [2009]120	2009-06-25	Review opinion on the siting of the HTR-PM NPP nuclear fuel fabrication line of CNNFC
NNSA [2009]128	2009-08-03	Notification on approval of material feeding to the reform project of VVER-1000 nuclear fuel fabrication line of China Jianzhong Nuclear Fuel Corporation(CJNFC)
MEP App. [2009]356	2009-08-03	Reply on the EIR(applying for operation stage) of the reform project of VVER-1000 nuclear fuel fabrication line of China Jianzhong Nuclear Fuel Corporation(CJNFC)
MEP App. [2009]435	2009-09-23	Reply on the EIR(loading stage) of the temporary spent fuel Dry storage facility Qinshan NPP III
NNSA [2009]144	2009-09-23	Notification on approval of the loading and trial operation of the temporary spent fuel Dry storage facility Qinshan NPP III
MEP acc. [2009]287	2009-10-20	Notice of Opinion on the examination and acceptance on environmental protection of the reform project of VVER-1000 nuclear fuel fabrication line
MEP App. [2009]458	2009-10-22	Reply on the EIR of the supplementary project of the CRARL
NNSA [2009]175	2009-11-12	Notification on issuing the license for constructing the treatment facility for high level liquid radioactive waste and solid radioactive waste of the spent fuel reprocessing pilot plant
MEP App. [2009]518	2009-12-09	Reply on the EIR(applying for construction stage) of Shannxi Uranium centrifugal uranium separation facility of phase IV
NNSA [2009]187	2009-12-09	Notification on issuing the license for construction of Shannxi Uranium centrifugal uranium separation facility of phase IV
MEP App. [2009]567	2009-12-24	Reply on the EIR (operation stage) of the spent fuel reprocessing pilotplant, No.404 Corporation, CNNC
NNSA [2009]199	2009-12-24	Notification on issuing the permission for the material feeding of the spent fuel reprocessing pilot plant, No.404 Corporation, CNNC

Regulatory Inspection

Date	Title	Main contents
Mar. 10-11, 2009	Specific inspection on Nuclear material control of Lanzhou Uranium Enrichment Co., Ltd, CNNC	Nuclear material control
Mar. 18-19, 2009	Specific inspection on Nuclear material control of Shannxi Uranium Enrichment Co., Ltd, CNNC	Nuclear material control
Apr. 21-23, 2009	Inspection on nuclear and radiation safety of China Jianzhong Nuclear Fuel Corporation(CJNFC)	Safety operation. Compliance with Operational Limits and Conditions. Radiation protection management. Radioactive waste management and control. Nuclear material control
Jul. 21-24, 2009	Inspection on nuclear safety of reprocessing facility of the pilot project	Cold commissioning result. The situation of fulfilling the correction requirement. QA. Organizational management. Emergency preparedness
Jul. 28-29, 2009	Inspection on nuclear safety of the temporary spent fuel Dry storage facility, Qinshan Phase III NPP	The situation of installation and commissioning of safety important system and equipments. Radiation protection management. Operation document. Emergency preparedness. QA
Sep. 21, 2009	examination and Acceptance on environmental protection of the reform project of VVER-1000 nuclear fuel fabrication line of CJNFC	Examination and Acceptance on environment protection
Oct. 22-23, 2009	Comprehensive safety inspection on Lanzhou Uranium Enrichment Co., Ltd, CNNC	Radiation protection, Nuclear criticality safety control. Radioactive waste management. Installation and commissioning of facilities for environmental protection. Physical protection. Nuclear material accounting
Dec. 7-10, 2009	Comprehensive safety inspection on PWR nuclear fuel fabrication line of CNNFC before material feeding	Organization, Personnel management and training. Management and control of “Three Types of Wastes” and “three at the same time” of environmental protection facilities. Nuclear criticality safety control and management. Radiation protection control and management. The arrangement of ventilation, fire protection and fire fighting. Physical protection, nuclear material accounting (PWR and HWR). Problems met in commissioning with depleted Uranium and their resolutions.

Regulation on Uranium Mining and Milling Installations

Based on the principle of “Category of construction projects for environment impact report classified regulation”, the environment impact assessment work on Uranium geology exploration projects was detailed.

Safety rectification of uranium tailings ponds

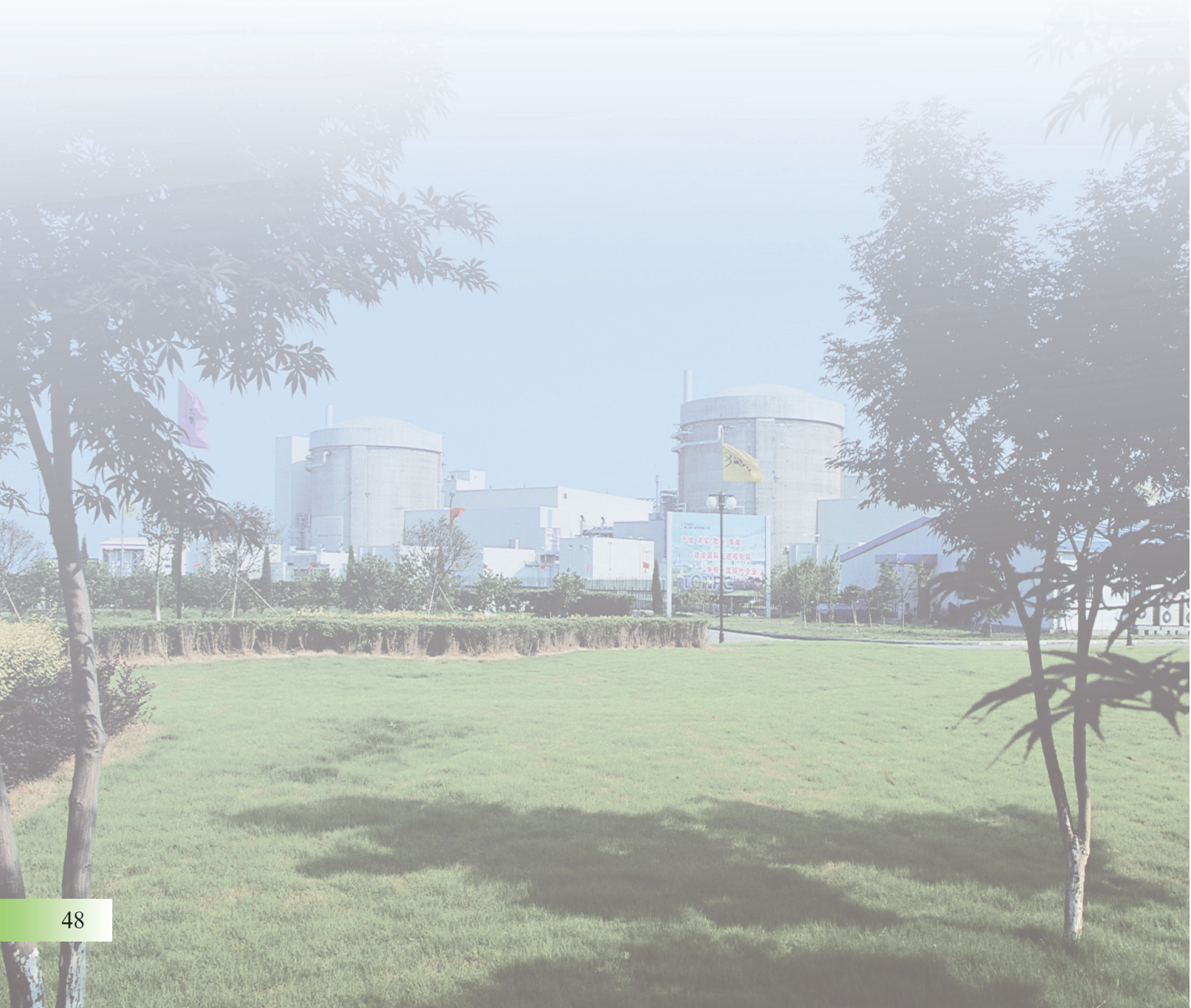
With the profound lessons of collapse of dams of tailing ponds in Xiangfen county, Shanxi Province, the NNSA carried out an on site inspection on uranium tailings ponds with potential haz-

ards and approved the environment impact reports of 3 rectification projects. Time limit was required for corrective actions on the potential environmental pollution of the Dawan Uranium Mining and Milling project.

Project Review and Approval

The NNSA reviewed and approved the environmental impact reports of 17 construction projects including that of “741-10 Uranium Mining and Milling Project”.

The NNSA accepted and completed examination on environmental protection of 2 projects including Fu Zhou Jin An Uranium Corporation limited CNNC.



◎ Safety Management of Radioactive Waste ◎

Regulation on Legacy Radioactive Waste Arising from Nuclear Activities

The regulation on radioactive wastes were based on the national regulations. The approval, inspection and examination on the management of radioactive waste arising from past nuclear activities were enhanced especially on important nuclear facilities. Nuclear industrial bases were the emphases of radwaste regulation. Existing problems of which were found in a timely manner through inspections, and efforts were made actively to solve legacy problems.

The nationwide general investigation on radioactive contamination source and the radiation environment investigation on Baiyune'bo associated mineral resources were completed.

In order to ensure nuclear safety and fasten the decommissioning work, the MEP cooperating with the relevant department, formulated a long and medium term plan on nuclear facility decommissioning and radioactive waste treatment of the important nuclear industry bases, which provided important assurance for eliminating obscure weaknesses and thoroughly resolving the legacy radioactive waste treatment and nuclear facility decommissioning issues.

Radioactive Waste Regulation in Nuclear Facilities

Statistics of Radioactive Waste Discharge from Qinshan NPP in 2009

Category		Unit	Annual limit	Annual management limit	Annual discharge or output
Gas	Aerosol	Bq	1.04E+8	8.32E+07	8.50E+06
	Inert gases		7.70E+13	6.16E+13	4.35E+12
	Halogen		8.56E+09	6.85E+09	9.57E+06
Liquid	Tritium		6.70E+12	5.36E+12	3.71E+12
	Other nuclides		1.30E+10	1.04E+10	5.65E+08
Solid	Compressible	m ³	-	35	26.8
	Uncompressible			-	9.8
	other			-	-
	Cement solidify				4
	Package gross volume				-

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Statistics of Radioactive Waste Discharge from Qinshan Phase III NPP in 2009

Category		Unit	Annual limit	Annual management limit	Annual discharge or output
Gas	Aerosol	Bq	4.80E+09	2.40E+08	1.70E+06
	Inert gases		2.94 E+14	7.35 E+13	8.67 E+12
	Halogen		1.78 E+09	4.45 E+08	2.32 E+06
Liquid	Tritium	Bq	7.00 E+13	3.50 E+13	2.85 E+13
	Other nuclides		3.72 E+11	1.86 E+10	1.42 E+09
Solid	Compressible	m ³	-	-	45.32
	Uncompressible				27.06
	Others				85.23
	Package gross volume			230	157.61

Statistics of Radioactive Waste Discharge from Daya Bay NPP in 2009

Category		Unit	Annual limit	Annual management limit	Annual discharge or output
Gas	Aerosol	Bq	5.71E+10	4.86E+09	2.76E+06
	Inert gases		7.14E+14	1.85E+14	2.51E+12
	Halogen		2.14E+10	5.28E+08	6.52E+05
	Tritium		N/A	5.50E+14	3.53E+13
	C—14		N/A	1.72E+12	3.53E+11
Liquid	Tritium	Bq	N/A	7.00E+14	4.20E+13
	C—14		N/A	3.25E+10	2.14E+08
	Other nuclides		2.14E+11	2.75E+10	4.24E+09
Solid	Compressible	m ³	-	38	33.6
	Uncompressible			5	3.2

Statistic of Radioactive Waste Discharge from LingAo NPP in 2009

Category		Unit	Annual limit	Annual management limit	Annual discharge or output
Gas	Aerosol	Bq	3.80E+09	—	2.61E+06
	Inert gases		1.14E+15	9.12E+12	1.09E+12
	Halogen		3.42E+10	/	4.30E+06
Liquid	Tritium	Bq	1.45E+14	/	5.98E+13
	Other nuclides		7.00E+11	4.90E+09	5.01E+08
Solid	Steel vessel	m ³	/	/	52.8
	Concrete vessel		/	/	82
	Package gross volume		/	135	134.8

Statistics of Radioactive Waste Discharge from Tianwan NPP in 2009

Category		Unit	Annual limit	Annual management limit	Annual discharge or output
Gas	Aerosol	Bq	3.80E+09	—	3.78E+06
	Inert gases		1.14E+15	1.14E+13	1.11E+12
	Halogen		3.42E+10	/	1.25E+07
Liquid	Tritium	Bq	1.45E+14	/	4.87E+13
	Other nuclides		7.00E+11	4.90E+09	2.55E+08
Solid	Steel vessel	m ³	/	/	46
	Concrete vessel		/	/	88.8
	Package gross volume		/	135	134.8

Regulation on Low and Intermediate Level Waste Repository in Operation

Low and intermediate level waste disposal was actively promoted. The siting of Feifengshan low and intermediate level waste repository was developed well. The environmental impact evaluation of the National Plan of Siting on Low and Intermediate Level Waste Repository was finished, which provided the basis of approving the plan by the State Council.

Northwest Low and Intermediate Level Waste Repository

In 2009, 1587m³ low and intermediate level wastes, totaled 1051 barrels/boxes were accepted. Main nuclides contained in the wastes included: ⁶⁰Co, ¹³⁷Cs, ⁹⁰Sr, ²²⁶Ra, ²³⁸U etc. with total activity of 1.71E+12Bq in 2009. Up to the end of 2009, Northwest Low and Intermediate level Waste Repository has accepted 3310m³ low and intermediate level wastes, totaled 6696 barrels/boxes with total activity of 8.69E+12Bq.

Two Disused Source Centralized Storage

The National Disused Source Centralized Storage totally accepted 1031 disused source packages

in 2009, which contained 15858 disused sources with total activity of 3.68E+15Bq in 2009. Up to the end of 2009, the legacy disused source storage of nuclear industry has totally accepted and laid up 17105 disused sources (excluding 437288 fire alarm sources) with total activity of 9.84E+15Bq. The national disused source storage has accepted and stored 4238 disused source packages so far, which contained 60430 disused sources with the main nuclides as: ⁶⁰Co, ⁹⁰Sr, ¹³⁷Cs, ²²⁶Ra, Am-Be and ²³²Th etc. The total activity of the disused sources was 1.44E+16Bq.

Guangdong Beilong Low and Intermediate Level Waste Repository

A total of 146 radioactive waste packages from Daya Bay NPPs were accepted in 2009. By the end of 2009, Guangdong Beilong Low and Intermediate Level Waste Repository totally accepted 352 waste packages for temporary storage, which included 14 pieces of waste packages of reactor disused baffles and 2 pieces of used pressure vessel upper heads, 200 pieces of C1 concrete waste packages, and 136 pieces of C4 concrete waste packages. The total waste activity was 2.7696E+13Bq.

◎ Safety Regulation on Radioisotope and Irradiation Facilities ◎

Up to Oct. 31, 2009, there were totally 50246 institutions for producing, selling and using radioisotopes and irradiation facilities in China, among them 12073 institutions for producing, selling and using radiation sources which in possession of 90958 radiation sources; 38021 institutions only in production, sale, and use of irradiation facilities (non-production, non-sale, and non-usage of radiation sources), which in possession of 81574 sets; and 152 institutions for using unsealed radioactive materials. There were up to 25880 disused radiation sources being accepted by City Radioactive Waste Storages of each province, and 50630 disused radiation sources have been accepted by the National Radioactive Waste Storage.

There were 685 institutions (radioisotope production, sale and use category I radiation sources, and sale and use of category I irradiation facilities) regulated directly by MEP. The MEP has already authorized Environmental Protection Departments (EPDs) or Environmental Protection Bureaus (EPBs) of 25 provinces (autonomous region, municipalities) except EPDs or EPBs of 6 provinces or autonomous regions, municipalities, which were Beijing, Shanghai, Hubei, Hainan, Tibet autonomous region, and Qinghai to be responsible for licensing and regulating some of their institutes. After the authorization, there were totally 219 institutions regulated directly by MEP.

Regulated Management

《MEP Teaching Material Series on Ionizing Radiation Safety and Protection Series of Training Materials》(a total 3 books) were published.

《Regulation and Inspection Technical Procedure on Radiation safety and Protection of Radioisotope and Irradiation Facilities》(the second trial version) and

《Inspection Program of radiation safety and protection on Nuclear Technique Application of MEP》(provisional) were published.

Two national seminars on exchange of radiation safety experience were held in Shanxi and Jiangxi provinces, respectively. All provinces EPD exchanged mutual experience and discussed problems in regulation to clarify the further way of thinking. The on-site inspection of licenses issuing work was conducted in 11 provinces to solve difficulties during ordinary regulation and improve the national licenses issuing work. The meeting to publicize and explain 《Guide on Design, Construction and Operation of γ radiation facilities》(GB17568-2008) was held. Business enterprises and companies on radiation facilities were organized together to study and discuss. The special inspection to prevent blockage accident in γ radiation facility organized by 6 regional offices was done. Through the national radiation monitoring on-site meeting on disused metal recycles fields, radiation monitoring for disused metal recycle fields was promoted. The on-site meetings on handling blocking sources accident and special administration and rectification on prevention of source blockage incident were launched. The special modification on prevention of source blockage incident on γ radiation facilities was required and will be completed by the end of 2010.

Licensing and Inspection

More than 30 licensing review for various nuclear technology applications were completed, which including examinations and acceptance on completion of projects, licenses review, environment evaluation report review and approval, and licenses alternation. Final decommissioning acceptance of 4 γ radiation facilities was completed. In 2009, radia-

tion safety licenses were issued to 194 nuclear technology application institutes, which met all safety requirements, directly regulated by MEP, and notices were issued notice on completing the rectifications within specified periods for other 25 institutes.

Imports and Exports Approval

In 2009, more than 1,100 import and export applications of radioisotope were approved, including 900 import applications. A total of 4,400 radiation sources were imported, among which class I, II and III radiation sources were more than 2,000.

Radiation safety training

In 2009, 7 national institutes were organized 18 training courses. The number of trainees was 4300.

Radiation Accidents and Emergency response

In 2009, 19 radiation sources were lost or stolen in the whole country. 23 sources were involved in radiation accidents, 4 sources were retrieved.

Three treatment of radioactive sources blockage incidents of γ irradiator in Qi county in Henan, Fanyu in Guangzhou and Zhengzhou in Henan were properly guided, coordinated, and settled. The leaders from the State Council gave the important instructions on incidents in Qixian of Henan and Panyu of Guangzhou. The administrator of MEP commended personally on-site. All above incidents were handled appropriated without causing any radioactive mate-

rials release or environmental pollution, and no one was exposed to radiation. The radioactivity contamination to stainless steel products in Yuyao of Zhejiang was investigated and resolved.

Construction of National Urban Radioactive Waste Storage

Radioactive waste storage acceptance and radiation safety licenses reviewing work were completed in 8 provinces of Heilongjiang, Gansu, Ningxia, Tibet, Chongqing, Guizhou, Jiangsu and Shanghai. By the end of 2009, 23 provincial radioactive waste storages were completed, 4 provincial radioactive waste storages have been capped, 4 provincial radioactive waste storages were incomplete. 18 province-supplementary laboratories were completed, 3 province-supplementary laboratories have been capped, and 7 province-supplementary laboratories were incomplete. The disused sources and waste, which had been stored in 24 provincial radioactive waste storages in historically, were transported to the national storages for centralized regulation, and the other 6 provincial radioactive waste storages were not transported. 12 provincial waste storages construction projects have accepted the environment protection organized by MEP, and 9 province-radiation stations have obtained Radiation Safety Licenses from MEP.

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Validation of Nuclear Material Licenses

In 2009, approval confirmation of nuclear material licenses for Beijing Capture Tech Co.,Ltd, Northwest Machine Co., Ltd, Lingdong Nuclear Electricity Co., Ltd, and Beijing Deyan Xingye Tech & Trade Co., Ltd were accepted.

The NNSA issued license to Beijing Capture Tech Co.,Ltd ,and completed the review on license application from Northwest machine Co., Ltd. The application from Beijing Deyan Xingye Tech & Trade

Co., Ltd was not approved.

Review and Inspection on Physical Protection of Nuclear Installations

The work of 3 reviews on physical protection projects of laundry and hot laboratory construction of Unit 1,2, piping installation of process system in 00 district, connecting sewage pipeline between unit 1,2 and unit 3,4 in Qinshan NPP phase II were completed. Review on alteration of entrance in controlled area in LingAo NPP was completed.

◎ Safety Regulation on Transportation of Radioactive Articles ◎

After “Regulations on Radioactive Articles Transportation Safety” was issued, NNSA propagandized and explained it as a special topic together with some departments, enterprises and industry associations. NNSA compiled five administrative management procedures for the transportation of radioactive materials, and supported other departments, such as Ministry of Public Security, Ministry of Transport and Civil Aviation Administration, to draft their supporting documents.

Title of administrative procedure	Status
Approval procedures on applying for license or its extension/change of transportation container design for Class I radioactive materials	Draft for approval
Approval procedures on applying for license or its extension/change of Transportation container manufacture for Class I radioactive materials	Draft for approval
Approval procedures on applying for nuclear and radiation safety analysis report on transportation for Class I radioactive materials.	Draft for approval
Approval procedures on applying for license on use of import transportation containers for Class I radioactive materials.	Draft for approval
Filing procedures on design, manufacture and use of transportation containers for Class II radioactive materials.	Draft for approval



Administrative Approval

Document No.	Date	Title
NNSA [2009] 54	Mar. 25, 2009	Notification of issuing licenses for design of RY-ID and RY-ID1 spent fuel shipping containers
NNSA [2009] 58	Mar. 27, 2009	Notification of approving to accept SPRR-300 spent fuel assemblies for spent fuel collection & storage facilities of CNNC 404 Factory Co., Ltd.
NNSA Notice [2009] 53	Jun. 5, 2009	Reply on approval of radioactive spent resin transportation of Third Qinshan NPP
NNSA [2009] 117	Jun. 25, 2009	Notification of issuing license for design of GY-40 ⁶⁰ Co source packing container
NNSA [2009] 118	Jun. 25, 2009	Notification of issuing license for design of GY-20 ⁶⁰ Co source packing container
NNSA Notice [2009] 90	Aug. 27, 2009	Reply on approval of spent fuel shipping of Jinan miniature neutron source reactor
MEP Notice [2009] 257	Oct. 22, 2009	Reply on approval of changing spent fuel shipping route for 825 Project
NNSA Notice [2009] 125	Nov. 10, 2009	Reply on approval of transportation of uranium-plutonium samples from China Institute of Atomic Energy to CNNC 404 Factory
NNSA [2009] 154	Oct. 10, 2009	Notification of issuing license for design of JZR-08 shipping container of VVER-1000 fuel assemblies

◎ Safety Regulation on Civil Nuclear Equipments◎

Licensing of Civil Nuclear Safety Equipments

In 2009, 93 applications for nuclear safety equipment licensing had been received and reviewed, 74 of which were new licenses, and 19 for license renewal/expansion. NNSA approved 74 new applications, and performed technical examinations for 19 license renewal/expansion enterprises. Thirty-two applications had not been accepted.

By the end of 2009, 140 licensees were qualified for the design, fabrication, installation and non-destructive testing of nuclear safety equipments, 97 of which were for nuclear safety mechanical equipments, 23 for nuclear safety electrical equipments, 16 for installation and 4 for non-destructive testing.

Document No.	Date	Title
NNSA [2009] 10	Jan. 23, 2009	Notification of issuing license of civil nuclear safety mechanical equipment design & fabrication for Shanghai Appollo Machinery Co., Ltd.
NNSA [2009] 11	Jan. 23, 2009	Notification of issuing license of civil nuclear safety mechanical equipment fabrication for Baoshan Iron & Steel Co., Ltd.
NNSA [2009] 12	Jan. 23, 2009	Notification of issuing license of civil nuclear safety mechanical equipment fabrication for AREVA Dongfang Reactor Coolant Pumps Co., Ltd.
NNSA [2009] 13	Jan. 23, 2009	Notification of issuing license of civil nuclear safety mechanical equipment design & fabrication for Suzhou High & Medium Pressure Valve Factory
NNSA [2009] 15	Jan. 23, 2009	Notification of approval of license change on civil nuclear safety equipment installation for Guangdong Power Engineering Corporation
NNSA Notice [2009] 16	Jan. 23, 2009	Notification of issuing license of civil nuclear safety mechanical equipment fabrication for Shanghai Xinmin Heavy Duty Forging Co., Ltd.
NNSA [2009] 17	Jan. 23, 2009	Notification of issuing license of civil nuclear safety equipment non-destructive testing for Nuclear Power Institute of China
NNSA [2009] 18	Jan. 23, 2009	Notification of issuing license of civil nuclear safety electrical equipment design & fabrication for Changzhou Bayi Cable Co., Ltd.
NNSA [2009] 19	Jan. 23, 2009	Notification of issuing license of civil nuclear safety electrical equipment design & fabrication for Jiangsu Huaguan Cable & Electrical Appliance Co., Ltd.
NNSA [2009] 20	Jan. 23, 2009	Notification of issuing license of civil nuclear safety electrical equipment design & fabrication for Nanjing AEROSUN-TOLA Co., Ltd.

Document No.	Date	Title
NNSA [2009] 21	Jan. 23, 2009	Notification of issuing license of civil nuclear safety mechanical equipment fabrication for Wuxi Falan Forging Co., Ltd.
NNSA [2009] 22	Jan. 23, 2009	Notification of issuing license of civil nuclear safety electrical equipment design & fabrication for Shanxi Diesel Engine Heavy Industry Co., Ltd.
NNSA [2009] 23	Jan. 23, 2009	Notification of issuing license of civil nuclear safety electrical equipment design & fabrication for Jiangsu Shangshang Cable Group Co., Ltd.
NNSA [2009] 24	Jan. 23, 2009	Notification of issuing license of civil nuclear safety equipment non-destructive testing for State Nuclear Power Plant Service Company
NNSA [2009] 25	Jan. 23, 2009	Notification of issuing license of civil nuclear safety equipment non-destructive testing for China Nuclear Power Operation Technology Co., Ltd.
NNSA [2009] 26	Jan. 23, 2009	Notification of issuing license of civil nuclear safety electrical equipment design & fabrication for Shanghai Power Equipment Research Institute.
NNSA [2009] 27	Jan. 23, 2009	Notification of issuing license of civil nuclear safety electrical equipment fabrication for Anhui Yinliu Group Huoshan Forging Co., Ltd.
NNSA [2009] 33	Mar. 10, 2009	Notification of issuing license of civil nuclear safety electrical equipment installation for Hunan Provincial Thermal Power Construction Corporation
NNSA [2009] 34	Mar. 10, 2009	Notification of approval of license change on civil nuclear safety mechanical equipment design & fabrication for CNNC Sufa Technology Industry Co., Ltd.
NNSA [2009] 35	Mar. 10, 2009	Notification of approval of license change on civil nuclear safety mechanical equipment fabrication for Shanghai Heavy Machinery Plant Co., Ltd.
NNSA [2009] 36	Mar. 11, 2009	Notification of approval license change on civil nuclear safety mechanical equipment fabrication for Jiangsu Huayang Pipe & Fittings Co., Ltd.
NNSA [2009] 37	Mar. 11, 2009	Notification of approval of license change on civil nuclear safety mechanical equipment fabrication for Changshu Huaxin Specialty Steel Co., Ltd.
NNSA [2009] 38	Mar. 11, 2009	Notification of issuing license of civil nuclear safety electrical equipment design & fabrication for CNNC Beijing Nuclear Instrument Factory

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Document No.	Date	Title
NNSA [2009] 39	Mar. 11, 2009	Notification of issuing license of civil nuclear safety electrical equipment design & fabrication for Shanghai Automation Instrumentation Co., Ltd.
NNSA [2009] 40	Mar. 11, 2009	Notification of issuing license of civil nuclear safety electrical equipment design & fabrication for Suzhou East-Instrument Automatic Control Equipment Co., Ltd.
NNSA [2009] 41	Mar. 11, 2009	Notification of issuing license of civil nuclear safety electrical equipment design & fabrication for Jiangsu Changyan Cable Co., Ltd.
NNSA [2009] 42	Mar. 11, 2009	Notification of issuing license of civil nuclear safety electrical equipment design & fabrication for Anhui Cable Co., Ltd.
NNSA [2009] 43	Mar. 11, 2009	Notification of issuing license of civil nuclear safety electrical equipment design & fabrication for Xi'an Nuclear Instrument Factory
NNSA [2009] 44	Mar. 11, 2009	Notification of issuing license of civil nuclear safety electrical equipment design & fabrication for China Nuclear Power Technology Research Institute
NNSA [2009] 45	Mar. 16, 2009	Notification of approval of license extension on civil nuclear safety mechanical equipment fabrication for Shenzhen Shiyinda Piping Co., Ltd.
NNSA [2009] 46	Mar. 16, 2009	Notification of approval of license extension on civil nuclear safety mechanical equipment installation for China Nuclear Industry Fifth Construction Co., Ltd.
NNSA [2009] 47	Mar. 16, 2009	Notification of approval of license extension on civil nuclear safety mechanical equipment fabrication for China Nuclear Jiahua Nuclear Equipment Co., Ltd.
NNSA [2009] 48	Mar. 16, 2009	Notification of approval of license extension on civil nuclear safety mechanical equipment fabrication for China Nuclear Power Equipment Co., Ltd.
NNSA [2009] 49	Mar. 16, 2009	Notification of approval license extension on civil nuclear safety mechanical equipment design & fabrication for Jiangsu Shentong Valve Co., Ltd.
NNSA [2009] 85	May 14, 2009	Notification of approval of license change on civil nuclear safety mechanical equipment fabrication for Wuxi Xinfeng Pipe-Fittings Co., Ltd.
NNSA [2009] 89	May 26, 2009	Notification of issuing license of civil nuclear safety mechanical equipment fabrication for China Nuclear Industry Fifth Construction Co., Ltd.

Document No.	Date	Title
NNSA [2009] 90	May 26, 2009	Notification of issuing license of civil nuclear safety mechanical equipment fabrication for Pangang Group Chengdu Iron & Steel Co., Ltd.
NNSA [2009] 91	May 26, 2009	Notification of issuing license of civil nuclear safety equipment non-destructive testing for CGNPC Inspection Technology Co., Ltd.
NNSA [2009] 92	May 26, 2009	Notification of issuing license of civil nuclear safety mechanical equipment design & fabrication for Nanfeng Ventilator Co., Ltd.
NNSA [2009] 93	May 26, 2009	Notification of issuing license of civil nuclear safety mechanical equipment design & fabrication for Dainai Pumps Co., Ltd.
NNSA [2009] 94	May 26, 2009	Notification of approval of license change on civil nuclear safety mechanical equipment fabrication for Sichuan Sanzhou SCMP Nuclear Equipment Manufacture Incorporation
NNSA [2009] 95	May 26, 2009	Notification of issuing license of civil nuclear safety electrical equipment design & fabrication for Changzhou Power Station Auxiliary Equipment Works Co., Ltd.
NNSA [2009] 96	May 26, 2009	Notification of issuing license of civil nuclear safety electrical equipment design & fabrication for Jiamusi Electric Machine Co., Ltd.
NNSA [2009] 97	May 26, 2009	Notification on issuing license of civil nuclear safety electrical equipment design & fabrication for Nanyang Explosion Protection Group Co., Ltd.
NNSA [2009] 98	May 26, 2009	Notification of issuing license of civil nuclear safety electrical equipment design & fabrication for Shanghai Cable Works Co., Ltd.
NNSA [2009] 99	May 26, 2009	Notification of issuing license of civil nuclear safety electrical equipment design & fabrication for Yangzhou Electric Power Equipment Repair & Manufacture Factory
NNSA [2009] 100	May 26, 2009	Notification of issuing license of civil nuclear safety mechanical equipment fabrication for Harbin Electric Machinery AC & DC Generator Co., Ltd.
NNSA [2009] 101	May 26, 2009	Notification of issuing license of civil nuclear safety mechanical equipment design & fabrication for Beijing Jingcheng Environmental Protection Development Co., Ltd.
NNSA [2009] 102	May 26, 2009	Notification of issuing license of civil nuclear safety electrical equipment design & fabrication for Shenyang Northeast Storage Battery Co., Ltd.

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Document No.	Date	Title
NNSA [2009] 103	May 26, 2009	Notification of issuing license of civil nuclear safety mechanical equipment installation for Anhui No.2 Electric Power Engineering & Construction Company
NNSA [2009] 119	Sep. 3, 2009	Notification of approval of license change on civil nuclear safety mechanical equipment fabrication for Shanghai Morimatsu Pressure Vessel Co., Ltd.
NNSA [2009] 121	Jul. 10, 2009	Notification of issuing license of civil nuclear safety electrical equipment design & fabrication for Nuclear Power Institute of China
NNSA [2009] 123	Aug. 3, 2009	Notification of issuing license of civil nuclear safety mechanical equipment fabrication for Huzhou Jiuli Extrusion Special Steel Co., Ltd.
NNSA [2009] 124	Aug. 3, 2009	Notification of issuing license of civil nuclear safety mechanical equipment fabrication for Zhejiang Jiuli Hi-Tech Metals Co., Ltd.
NNSA [2009] 125	Aug. 3, 2009	Notification of approval of license change on civil nuclear safety mechanical equipment fabrication for Shanghai Electric Nuclear Power Equipment Co., Ltd.
NNSA [2009] 126	Aug. 3, 2009	Notification of approval of license change on civil nuclear safety mechanical equipment design for Jiangsu Power Equipment Co., Ltd.
NNSA [2009] 138	Sep. 3, 2009	Notification of approval of license change on civil nuclear safety mechanical equipment fabrication for Suzhou Hailu Heavy Industry Co., Ltd.
NNSA [2009] 148	Sep. 30, 2009	Notification of approval of license extension on civil nuclear safety mechanical equipment design & fabrication for Wujiang Dongwu Machine Co., Ltd.
NNSA [2009] 149	Sep. 30, 2009	Notification of approval of license expansion on civil nuclear safety mechanical equipment fabrication for Dalian DV Valve Co., Ltd.
NNSA [2009] 150	Sep. 30, 2009	Notification of issuing license of civil nuclear safety mechanical equipment fabrication for Jiangsu Haida Pipe Fittings Co., Ltd.
NNSA [2009] 151	Sep. 30, 2009	Notification of issuing license of civil nuclear safety mechanical equipment fabrication for Jiangsu Yinhuan Precision Steel Tube Co., Ltd.
NNSA [2009] 162	Oct. 26, 2009	Notification of issuing license of civil nuclear safety electrical equipment fabrication for Shanghai Foxboro Co., Ltd.

Document No.	Date	Title
NNSA [2009] 163	Oct. 26, 2009	Notification of issuing license of civil nuclear safety electrical equipment design & fabrication for Shanghai Guanghua Instrument Co., Ltd.
NNSA [2009] 164	Oct. 26, 2009	Notification of issuing license of civil nuclear safety mechanical equipment fabrication for Shandong Nuclear Power Equipment Manufacturing Co., Ltd.
NNSA [2009] 165	Oct. 26, 2009	Notification of issuing license of civil nuclear safety electrical equipment design for Shanghai Electric Group Shanghai Electric Machinery Co., Ltd.
NNSA [2009] 168	Nov. 11, 2009	Notification of approval of license expansion on civil nuclear safety mechanical equipment fabrication for Shanghai No. 1 Machine Tool Plant Co., Ltd.
NNSA [2009] 169	Nov. 11, 2009	Notification of issuing license of civil nuclear safety mechanical equipment design for Shanghai Electric Power Generation Equipment Co., Ltd.
NNSA [2009] 170	Nov. 11, 2009	Notification of approval of license expansion on civil nuclear safety mechanical equipment fabrication for China Nuclear Industry 23 Construction Co., Ltd.
NNSA [2009] 171	Nov. 11, 2009	Notification of approval of license expansion on civil nuclear safety mechanical equipment fabrication for Anhui Yingliu Group Huoshan Forging Co., Ltd.
NNSA [2009] 172	Nov. 11, 2009	Notification of approval of license expansion on civil nuclear safety mechanical equipment design for China Nuclear Power Engineering Co., Ltd.
NNSA [2009] 173	Nov. 11, 2009	Notification of approval of license expansion on civil nuclear safety mechanical equipment fabrication for Dalian Baoyuan Nuclear Equipment Co., Ltd.
NNSA [2009] 174	Nov. 11, 2009	Notification of issuing license of civil nuclear safety electrical equipment design & fabrication for Chongqing Sichuan Instrument automation Co., Ltd.
NNSA [2009] 182	Nov. 25, 2009	Notification of issuing license of civil nuclear safety mechanical equipment fabrication for Shenyang Kejin Special Material Co., Ltd.
NNSA [2009] 192	Dec. 25, 2009	Notification of issuing license of civil nuclear safety mechanical equipment design & fabrication for Zhejiang Shangfeng Industrial Holdings Co., Ltd.

Registration of Import Civil Nuclear Safety Equipments

In 2009, 151 applications for nuclear safety equipment registration had been received and reviewed, 78 of which had been issued registration confirmation. Seven applications were not accepted or suspended. Up the end of 2009, 89 enterprises had obtained registration confirmation for nuclear safety equipment design, fabrication and non-destructive testing.

Document No.	Date	Title
NNSA [2009] 2	Jan. 9, 2009	Notification of issuing registration confirmation of civil nuclear safety equipment for 26 oversea enterprises, Westinghouse Electric Corporation of US, etc.
NNSA [2009] 9	Jan. 23, 2009	Notification of issuing registration confirmation of civil nuclear safety equipment for 23 oversea enterprises, Mitsubishi Heavy Industries, Co., Ltd. of Japan, etc.
NNSA [2009] 32	Mar. 3, 2009	Notification of issuing registration confirmation of civil nuclear safety equipment for 6 oversea enterprises, ENSA of Spain, etc.
NNSA [2009] 53	Mar. 25, 2009	Notification of issuing registration confirmation of civil nuclear safety equipment for 8 oversea enterprises, Doushan Heavy Industries & Construction Co., Ltd. of Korea, etc.
NNSA [2009] 88	May 26, 2009	Notification of issuing registration confirmation of civil nuclear safety equipment for 5 oversea enterprises, AREVA Intercontrole of France, etc.
NNSA [2009] 146	Sep. 28, 2009	Notification of issuing registration confirmation of civil nuclear safety equipment for 7 oversea enterprises, Flowserve Flow Control (UK) Company, etc.
NNSA [2009] 156	Oct. 13, 2009	Notification of refusing DCNS registration
NNSA [2009] 158	Oct. 16, 2009	Notification of issuing registration confirmation of civil nuclear safety equipment for 2 oversea enterprises, SEMPELL AG Company of Germany, etc.
NNSA [2009] 184	Nov. 27, 2009	Notification of issuing registration confirmation of civil nuclear safety equipment for SAFAS S.p.A Company of Italy, etc.

Inspection on Nuclear Safety Equipment

In 2009, six on-site offices for daily supervision were established in some areas gathering enterprises of manufacturing key equipments. According to requirements of supervision programs, 462 item inspections on key procedures, including 218 on-site witnesses, were completed for 69 domestic enterprises, integrated inspections for 31 domestic and 8 foreign enterprises, and special inspections for 5 enterprises where there are problems. Surveillance was conducted on verifying non-destructive testing capability for those enterprises carrying out pre-service testing of Qinshan Phase II expansion NPP.

The release papers were signed for 292 batches of inspected equipments which meet the requirements. Ten batches of inspected equipments have failed to get the release papers. Ninety-six open-package witnesses were completed.

Rectification requirements would be raised once there were problems during inspections. Expert reviews and special inspections must be performed to major non-conformance related to nuclear safety. In 2009, administrative punishments were imposed on those enterprises existing serious problems, such as China Nuclear Power Engineering Company, Shanghai Electric Nuclear Power Equipment Company, China First Heavy Industries Group Company and Jiangsu Xinyang Pipe fittings Company. That was to guarantee that the design and fabrication of nuclear safety equipments can comply with the requirements of nuclear safety regulations and standards.

In general, the qualities were under control for design, fabrication, installation and non destructive testing of nuclear safety equipments in 2009.

Date	Activity	Content
Aug. 19, 2009	Integrated inspection for Shanghai Nuclear Engineering Research & Design institute	Inspections on the quality assurance system and license qualification for nuclear safety equipment design; Inspection on quality control for joint design activities with CGN design institute.
Sep. 24, 2009	Integrated inspection for Nuclear Power Institute of China	Inspections on the quality assurance system and license qualification for nuclear safety equipment design; Inspection on quality control for joint design activities with CGN design institute.
Nov. 19, 2009	Integrated inspection and item inspection for Shenzhen China Nuclear Power Design Co., Ltd.	Inspections on the quality assurance system and license qualification for nuclear safety equipment design; Confirmation on verification records for the design of a part of nuclear safety equipments.
Jun. 24, 2009	Integrated inspection for 719 Research Institute of China Shipbuilding Industry Corporation	Inspections on the quality assurance system and license qualification for nuclear safety equipment design; Inspection on quality control for joint design activities with CGN design institute.
Apr. 22, 2009 Nov. 19, 2009 Jan.-Dec., 2009	Integrated inspection, special inspection and item inspection for China First Heavy Industries Group Company	Inspections on the implementation of quality assurance system and compliance with license qualifications, regulations and standards; Inspections on welding and hydrostatic testing of RPV safety ends for Qinshan Phase II expansion, Hongyanhe, Ningde, Yangjiang, Fangjiashan and Fuqing NPPs; Inspections on mechanical properties, non-destructive testing and component welding of shaft forgings for Hongyanhe and AP1000 NPPs.

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Date	Activity	Content
Jan. 15, 2009 Jan.-Aug., 2009	Integrated inspection and item inspection for China National Erzhong Group Company	Inspections on the implementation of quality assurance system and compliance with license qualification, regulations and standards; Inspections on manufacturing and ultrasonic testing of RPV flange forgings for Hongyanhe NPP; Inspections on manufacturing of SG upper head for Fuqing NPP.
Feb. 20, 2009 Aug. 23, 2009 Feb.-Dec., 2009	Integrated inspection, special inspection and item inspection for Shanghai Heavy Machinery Plant Co., Ltd.	Inspections on the implementation of quality assurance system and compliance with license qualifications, regulations and standards; Inspections on forging manufacturing of internals, RPV and SG for Ningde, Fangjiashan, Fuqing, Hongyanhe, LingAo Phase II, Changjiang and Shidaowan NPPs.
Nov. 15, 2009 Aug.-Dec., 2009	Integrated inspection and item inspection for Shanghai Electric Nuclear Power Equipment Co., Ltd.	Inspections on the implementation of quality assurance system and compliance with license qualifications, regulations and standards; Inspections on manufacturing of SG and boron injection tanks for Fangjiashan, Hongyanhe and Ningde NPPs.
Aug. 28, 2009 May.-Dec., 2009	Integrated inspection and item inspection for Dong Fang Boiler Group Co., Ltd.	Inspections on the implementation of quality assurance system and compliance with license qualification, regulations and standards; Inspections on hydrostatic testing of RPV and pressurizer for LingAo Phase II NPP; Inspections on manufacturing of volume control tanks for Hongyanhe NPP; Inspections on manufacturing of safety injection tanks and boron injection tank for Yangjiang NPP.
Nov. 19, 2009 Aug.-Nov., 2009	Integrated inspection and item inspection for Xi'an Nuclear Equipment Co., Ltd.	Inspections on the implementation of quality assurance system and compliance with license qualifications, regulations and standards; Inspections on manufacturing and hydrostatic testing of safety injection tanks and boron injection tanks for Fuqing and Fangjiashan NPPs.
Feb. 26, 2009 Mar.-Nov., 2009	Integrated inspection and item inspection for Shanghai No. 1 Machine Tool Plant Co., Ltd.	Inspections on the implementation of quality assurance system and compliance with license qualifications, regulations and standards; Inspections on temporal assembling and cold & hot testing of core internals for LingAo Phase II NPP; Inspections on hot testing and welding for Qinshan Phase II expansion NPP; Inspections on welding of core basket for Ningde NPP.
Mar. 16, 2009 Mar.-Oct., 2009	Integrated inspection and item inspection for Sichuan Sanzhou SCMP Nuclear Equipment Manufacture Incorporation	Inspections on the implementation of quality assurance system and compliance with license qualifications, regulations and standards; Inspections on mechanical properties, ray examinations and manufacturing records of primary pipes for Fuqing and Hongyanhe NPPs.

Date	Activity	Content
Apr. 14, 2009 Apr.-Dec., 2009	Special inspection and item inspection for Yantai Taihai Manior Nuclear Power Equipment Co., Ltd.	Special inspections on the implementation of nuclear quality assurance system and the quality reduction of primary pipes; Inspections on the chemical composition, heat treatment, mechanical properties and non-destructive testing of primary pipes for Ningde, Yangjiang and Fangjiashan NPPs.
Nov. 26, 2009 Aug.-Nov., 2009	Integrated inspection and item inspection for Changshu Huaxin Specialty Steel Co., Ltd.	Inspections on the implementation of quality assurance system and compliance with license qualifications, regulations and standards; Inspections on manufacturing and testing of Class I and II nuclear stainless steel pipes for Ningde, Yangjiang, Fangjiashan and Fuqing NPPs.
Jul. 1, 2009 May.-Sep., 2009	Special inspection and item inspection for Shandong Nuclear Power Equipment Manufacturing Co., Ltd.	Special inspections on manufacturing fail to identify acceptance criteria and welding fail to meet technical requirements for steel containment; Inspections on manufacturing of RPV lower head for Sanmen and Haiyang NPPs.
Feb. 18, 2009 Feb.-Dec., 2009	Integrated inspection and item inspection for Shanghai Electric Power Generation Equipment Co., Ltd.	Inspections on the implementation of quality assurance system and compliance with license qualifications, regulations and standards; Inspections on manufacturing and hydrostatic testing of Class II and III nuclear containers for Ningde, Fuqing, Yangjiang and Qinshan Phase II expansion NPPs.
Nov. 19, 2009 Apr.-Oct., 2009	Integrated inspection and item inspection for Dalian Baoyuan Nuclear Equipment Co., Ltd.	Inspections on the implementation of quality assurance system and compliance with license qualifications, regulations and standards; On-site witnesses on air tightness testing of personnel lock, nitrogen leakage testing of condensers and destructive testing of weld seams for Hongyanhe and Ningde NPPs.
Nov. 17, 2009 May.-Nov., 2009	Integrated inspection and item inspection for Dalian Hitachi Machinery & Equipment Co., Ltd.	Inspections on the implementation of quality assurance system and compliance with license qualifications, regulations and standards; Witnesses on air tightness testing of equipment hatch and hydrostatic testing of flow stabilizers of equipment cooling water pumps for Hongyanhe NPP; On-site witnesses on welding of equipment hatch for Ninde NPP.
Aug. 27, 2009	Integrated inspection and item inspection for Zhongxing Energy Equipment Co., Ltd.	Inspections on the implementation of quality assurance system and compliance with license qualifications, regulations and standards; On-site witnesses on the manufacture of stainless pipes for Fangjiashan NPP.
Jun. 11, 2009 Jul. 19, 2009	Integrated inspection and item inspection for Wuxi Xitang Petrochemical Machine & Equipment Co., Ltd.	Inspections on the implementation of quality assurance system and compliance with license qualifications, regulations and standards; On-site inspections on manufacturing and hydrostatic testing of radiochemical equipments.

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Date	Activity	Content
Nov. 10, 2009 Jul.-Nov., 2009	Integrated inspection and item inspection for Suzhou Hailu Heavy Industry Co., Ltd.	Inspections on the implementation of quality assurance system and compliance with license qualifications, regulations and standards; On-site inspections on chemical additive tanks for Qinshan Phase II expansion NPP; On-site inspections on the size of upper core barrel shell for Hongyanhe NPP.
Aug.-Sep., 2009	5 Item inspection for China Nuclear Power Equipment Co., Ltd.	On-site inspections on hydrostatic testing of condensing tanks for Qinshan Phase II expansion NPP; On-site inspections on hydrostatic testing of air storage tanks and welding of barrel circumferential weld seams for Hongyanhe NPP.
Oct. 23, 2009	2 Item inspection for Xi'an Aero-Engine Group Tianding Nuclear equipment Co., Ltd.	On-site witnesses on hydrostatic testing of first surge tank to measure RPV water level for Qinshan Phase II expansion NPP.
Jun. 22, 2009 Jun.-Dec., 2009	Integrated inspection and 6 item Inspection for Guizhou Aerospace Xinli Castings and Forgings Co., Ltd.	Inspections on the implementation of quality assurance system and compliance with license qualifications, regulations and standards; On-site witnesses on mechanical properties and ultrasonic testing of nozzle forgings for Fangjiashan and Fuqing NPPs.
Sep.-Dec., 2009	11 Item inspection for Anhui Yinliu Group Huoshan Forging Co., Ltd.	On-site inspections on RT and mechanical properties of valve body castings for Hongyanhe, Fuqing and Ningde NPPs.
May-Dec., 2009	4 Item inspection for Shanghai Xinmin Heavy Duty Forging Co., Ltd.	On-site witnesses on manufacturing of Class II forging tee fittings for Ningde NPP; On-site witnesses on manufacturing of SG safety ends for Hongyanhe NPP; On-site witnesses on mechanical properties of manhole seats of safety injection tanks for Sanmen NPP.
May-Jul., 2009	5 Item inspection for Nanjing Aerosun-Tola Co., Ltd.	On-site witnesses on hydrostatic testing and leak tightness testing of longitudinal weld seams of corrugated pipes and expansion joints of containment spray heat exchangers for Hongyanhe and Ningde NPPs.
Jun.-Nov., 2009	9 Item inspection for Wuxi Falan Forging Co., Ltd.	Inspections on mechanical properties and ultrasonic testing of Class II and III nuclear parts, such as pipes, flanges and penetration assemblies, for Ningde, Fuqing and Fangjiashan NPPs.
Mar. 27, 2009 Mar.-Dec., 2009	License extension inspection and 9 item inspection for Jiangsu Electric Power Equipment Co., Ltd.	Inspections on pre-manufacturing of nuclear safety related pipes and ball-passing testing of in-core guide tubes for Qinshan Phase II expansion NPP; On-site inspections on welding for Ningde and Hongyanhe NPPs; On-site inspections on stopper welding of main steam pipes for Hongyanhe NPP.
Apr.-Nov., 2009	16 Item inspection for Jiangsu Huayang Pipe & Fittings Co., Ltd.	Inspections on the prerequisite, heat treatment, forming processes, ultrasonic testing and mechanical properties of Class II and II nuclear safety parts, such as elbows, tees and reducers, for Hongyanhe, Yangjiang, Fuqing, Fangjiashan, Taishan and Qinshan Phase II expansion.

Date	Activity	Content
May-Aug., 2009	6 Item inspection for Wuxi Xinfeng Pipe-Fittings Co., Ltd.	Inspections on hot-pressure forming and ultrasonic testing of pipe fittings for Ningde, Fangjiashan and Qinshan Phase II expansion NPP.
Jun. 22, 2009 Jun.-Nov., 2009	Integrated inspection and 16 item inspection for China Nuclear Industry 23 Construction Company Qinshan Machinery Factory	Inspections on the implementation of quality assurance system and compliance with license qualifications, regulations and standards; On-site inspections on the manufacturing prerequisite and welding of buffer tank barrel for Fangjiashan NPP.
Jun. 16, 2009	One Item inspection for China Nuclear Industry 23 Construction Company South Prefabrication Factory	Inspections on the prerequisite for the pre-casting of nuclear Class III carbon steel pipes.
Feb.-Sep., 2009	3 Item inspection for Shenzhen Shiyinda Piping Co., Ltd.	On-site inspections on the prerequisite and butt-joined seams for pre-castings of a part of Class I nuclear stainless pipes for Hongyanhe NPP.
Jan.-Dec., 2009	4 Item inspection for Wuhan Heavy Industry Casting & Forging Co., Ltd.	On-site inspections on the heat treatment, hydrostatic testing, ultrasonic testing, composition analysis and mechanical properties of main steam pipes for Hongyanhe, Ningde and Yangjiang NPPs.
Mar. 3, 2009 Jul. 2, 2009	Integrated inspection and 2 item inspection for Changzhou Gelin Power Machinery Manufacturing Co., Ltd.	Inspections on the implementation of quality assurance system and compliance with license qualifications, regulations and standards; On-site witnesses on assembling and static testing of dampers for Qinshan Phase II expansion NPP.
Sep. 7, 2009	Integrated inspection and one item inspection for Shenyang Xintong Power generator Equipment Manufacturing Co., Ltd.	Inspections on the implementation of quality assurance system and compliance with license qualifications, regulations and standards; On-site inspections on the startup prerequisite of manufacturing hydraulic dampers for Fuqing NPP.
Oct. 9, 2009 Dec. 8, 2009	Two times special inspection for Jiangsu Xinyang Pipe Fittings Co., Ltd.	Investigation on irregular activities in mockup manufacturing and on-site verification on their rectification in the license expansion application.
Jun. 10, 2009	One item inspection for Jiangsu New Hengji Industrial & Trading Co., Ltd.	Inspections on the prerequisite of manufacturing Class II nuclear SG pipes & fittings for Hongyanhe and Ningde NPPs.
Oct. 26, 2009	2 item inspection for Pangang Group Chengdu Iron & Steel Co., Ltd.	On-site witnesses on the startup prerequisite of manufacturing Class II and III nuclear seamless steel pipes (size of 1/2-inch), and hydrostatic testing of Class II and III nuclear seamless steel pipes (size of 6-inch) for Fuqing NPP.
Aug. 24, 2009	One item inspection for Yangzhou Huayu Pipe Fitting Co., Ltd.	On-site witnesses on cold forming of nuclear safety related pipes & fittings.
Jan. 12, 2009	Integrated inspection for Shanghai Automation Instrumentation Company 7th Automation Instrumentation Factory	Inspections on the implementation of quality assurance system and compliance with license qualifications, regulations and standards.
Sep. 17, 2009	Integrated inspection for Shanghai Anderson Greenwood Crosby Valve Co., Ltd.	Inspections on the implementation of quality assurance system and compliance with license qualifications, regulations and standards.

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Date	Activity	Content
Sep. 21, 2009 Sep.-Dec., 2009	Integrated inspection and 2 Item Inspection for CNNC Sufa Technology Industry Co., Ltd.	Inspections on the implementation of quality assurance system and compliance with license qualifications, regulations and standards; On-site witness on performance testing of parallel seat gate valves and manual wedged gate valves for Hongyanhe NPP.
Sep. 14, 2009 Jun.-Dec., 2009	Integrated inspection and 6 Item Inspection for Jiangsu Shentong Valve Co., Ltd.	Inspections on the implementation of quality assurance system and compliance with license qualifications, regulations and standards; Inspections on the closeout report and overall testing of nuclear grade locks for Hongyanhe NPP.
Jan. 19, 2009	2 Item inspection for Dalian DV Valve Co., Ltd.	On-site inspections on overall factory testing and manufacturing files of gate valves for Qinshan Phase II expansion NPP.
Dec. 1, 2009	Integrated inspection for Dalian Deep Blue Pump Co., Ltd.	Inspections on the implementation of quality assurance system and compliance with license qualifications, regulations and standards.
Mar. 4, 2009	Item inspection for Shenyang Turbo Machinery Co., Ltd.	On-site witnesses on factory performance testing of safety service water pumps for Qinshan Phase II expansion NPP.
Jul.-Dec., 2009	2 Item inspection for Areva Donggang Reactor Coolant Pumps Co., Ltd	On-site inspections on the prerequisite of assembling, performance testing and hot testing for No.4 main pump of Linao Phase II NPP; On-site inspections on hot testing records for No. 5 main pump for Linao Phase II NPP.
Mar. 2, 2009	One item inspection for Shanghai Power Equipment Research Institute	On-site witnesses on electrical performance testing of nuclear safety related electrical penetration assemblies for Qinshan Phase II expansion NPP.
Jun.-Sep., 2009	5 item inspection for Shanxi Diesel Engine Heavy Industry Co., Ltd.	On-site witnesses on hydrostatic testing of emergency diesel generator set, and the evaluation record confirmation and non-destructive testing of common base welding for Hongyanhe and Ningde NPPs.
Feb.-Sep., 2009	16 item inspection for Changzhou Bayi Cable Co., Ltd.	On-site witnesses on factory acceptance testing of instrument cables and compensation cables for LingAo Phase II and Hongyanhe NPPs.
Mar.-Aug., 2009	4 item inspection for Jiangsu Huaguan Cable & Electrical Equipment Co., Ltd.	On-site witness on factory performance testing of 2 batches of nuclear control cables for Qinshan Phase II expansion NPP.
Jun. 8, 2009 May-Aug., 2009	Integrated inspection and 12 item inspection for Jiangsu Shangshang Cable Group Co., Ltd.	Inspections on the implementation of quality assurance system and compliance with license qualifications, regulations and standards; On-site witnesses on factory performance testing of nuclear power cables for Qinshan Phase II expansion NPP; Inspection on the prerequisite of manufacturing nuclear power cables for Hongyanhe NPP; On-site witness on factory performance testing of fire-resisting power and control cables for Tianwan Unit 2.

Date	Activity	Content
Aug. 13, 2009	3 item inspection for Beijing Nuclear Instrument Factory	Inspections on quality files of manufacturing and on-site witness on factory performance testing for reactor protection system equipments in Unit 4 of Qinshan Phase II expansion NPP.
Jun.-Aug., 2009	16 item inspection for Xi'an Nuclear Instrument Factory	Inspections on records and factory performance testing of aging screening, function testing and performance testing of parts and components, and overall commissioning for Class 1E low activity liquid off-line continual monitoring instrument of radiation monitoring system in Qinshan Phase II expansion NPP.
Sep. 22, 2009	3 item inspection for Shanghai Automation Instrumentation Co., Ltd.	Inspections on quality records of manufacturing control cabinets of emergency diesel generator set for Hongyanhe NPP.
Sep. 10, 2009	Ome item inspection for China Nuclear Power Technology Research Institute	Inspections on filing document of power supply and transformer of nuclear grade cabinets for Daya Bay NPP.
Mar.-Oct., 2009	10 item inspection for Suzhou East-Instrument Automatic Control Equipment Co., Ltd.	On-site witnesses on factory performance testing of relay frames of Unit 4, local control boxes of ventilation system of Unit 3 and 4, and local control panel cabinets of nuclear island building for Qinshan Phase II expansion NPP.
Jan. 16, 2009	4 item inspection for Anhui Cable Co., Ltd.	On-site witnesses on factory acceptance testing of fifth batch of LV/MV power cables for Qinshan Phase II expansion NPP.
Jun. 5, 2009	3 item inspection for Jiangsu Changyan Cable Co., Ltd.	On-site witnesses on factory performance testing of third batch of control cables for Qinshan Phase II expansion NPP.
Sep.-Nov., 2009	14 item inspection for Jiamusi Electric Machine Co., Ltd.	On-site witnesses on motor overall performance testing of Class II and III pumps, such as charging pump and essential service water pump, for Hongyanhe and Ningde NPPs.
Aug. 5, 2009 Aug.-Nov., 2009	Integrated inspection and 14 item inspection for Shenyang Northeast Storage Battery Co., Ltd.	Inspections on the implementation of quality assurance system and compliance with license qualifications, regulations and standards; Inspections on air tightness testing of manufacturing nuclear island storage batteries for LingAo NPP; On-site witness on charging testing of Class 1E storage batteries for Qinshan Phase II expansion NPP; Inspections on the quality records of GFD acid-proof and explosion-proof lead-acid batteries for Qinshan Phase II expansion NPP.
Feb. 23, 2009 Feb.-Nov., 2009	Integrated inspection and 15 item inspection for Yangzhou Electric Power Equipment Repair & Manufacture Factory	Inspections on the implementation of quality assurance system and compliance with license qualifications, regulations and standards; On-site witnesses on factory performance testing of nuclear electronic actuators for Tianwan, Hongyanhe Phase I, Ningde and Yangjiang NPPs.
Dec. 11, 2009	5 item inspection for Nanyang Explosion Protection Group Co., Ltd.	On-site witnesses on factory performance testing of Apollo equipment cooling water pumps for Hongyanhe NPP and diesel coolers for Hongyanhe and Ningde NPPs.

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Date	Activity	Content
Sep. 18, 2009	5 item inspection for Shanghai Cable Works Co., Ltd.	On-site witnesses on factory performance testing of control cabinet cables of emergency diesel generator set for Hongyanhe NPP.
Jul.-Dec., 2009	5 item inspection for Nuclear Power Institute of China	Inspections on the startup prerequisite of LV/MV electrical penetration assemblies for Hongyanhe NPP; On-site witnesses on non-destructive testing of weld seams for Hongyanhe NPP; On-site witnesses on non-destructive testing of electrical penetration assemblies of personnel air lock for Fuqing Phase I NPP.
Dec. 22, 2009	10 item inspection for Shanghai Guanghua Instrument Co., Ltd.	On-site witnesses on records and factory performance testing of Class 1E pressure/different pressure transmitters for Qinshan Phase II expansion NPP; Inspections on files of commissioning and overall factory performance testing of Class 1E flow meters for reforming project of hydrogen elimination fan of Qinshan Phase I NPP.
Dec. 4, 2009	2 item inspection for Shanghai Foxboro Co., Ltd	Inspections on records of factory performance testing, and on-site witness on overall testing for KRG system protection cabinet of unit 4 of Qinshan Phase II expansion NPP.
Jan. 11, 2009	Doushan Heavy Industries & Construction Co., Ltd. from Korea	Inspections on major non-conformance to RPV safety end welding for Unit 3 of Qinshan Phase II expansion NPP.
Aug. 24, 2009	Mitsubishi Heavy Industries Co., Ltd., Japan	Inspections on compliance of registration application and quality assurance system with HAF 604 regulation; Inspection on the effectiveness of quality control for main pump manufacturing of Qinshan Phase II expansion NPP.
Sep. 7, 2009	Weir Company, France	Inspections on the establishment and implementation of quality management system for the design & fabrication of pilot-operated safety valves for Hongyanhe and Ningde NPPs; Inspection on the quality status for the fabrication of pilot-operated safety valves for Hongyanhe and Ningde NPPs.
Sep. 9, 2009	Griss Company, France	Inspections on the establishment and implementation of quality management system for the design & fabrication of main steam safety valves and diaphragm valves for Hongyanhe, Ningde and Yangjiang NPPs; Inspections on the quality status for the fabrication of main steam safety valves and diaphragm valves for Hongyanhe, Ningde and Yangjiang NPPs.

◎ Management of Electromagnetic Radiation Environment ◎

Rationalizing the system and mechanism

According to the “Requirement on Environmental Impact Assessment document classification approval” (Ministry Order No. 5) of MEP, Classification Management Catalogue for Environmental Impact Assessment of Transmission Project was revised in order to expedite progress. To highlight and strengthen the electromagnetic radiation monitoring of project completion and acceptance phase, 14 provincial radiation environmental monitoring station as the recommended unit for acceptance and survey of the transmission type were increased.

Project Review and Approval

To meet the national need of expanding the domestic demand, maintaining growth and restructuring, and the further implementation of “seven promises” on environmental impact assessment work, approval of the process of EIA document and the review process of Acceptance and completion of the environmental protection project were established according to the work principle “thinning management and treat, seizing the key,

preventing disputes”, approval to 64 transmission project environmental impact assessment report was organized and completed. 45 lots (including the Division focusing “Jindongnan~Nanyang~Jingmen 1000kV UHV AC pilot demonstration projects”) environmental protection completion and acceptance of power transmission project was carried out and has solved the major problems found in the acceptance review timely.

Petition for administrative reconsideration and complaints handling

In order to cope with three cases of administrative reconsideration including the “ administrative reconsideration case for second channel between Chongqing and Hubei Province Hydropower sent 500 kilovolt power transmission project” dealt by the Laws and Regulations Division of MEP,. the environmental protection complaints of surrounding noise pollution of Yidu converter station in Hubei Province and many other power transmission projects were inspected and dealt.

◎ Radiation Environmental Monitoring ◎

In 2009, radiation environment quality was generally in good conditions, environmental ionizing radiation levels remained stable, ambient environment ionizing radiation levels of nuclear installations and activities of nuclear technology application had in general no significant change in general; environmental electromagnetic radiation in general was preferable, the ambient electromagnetic radiation level of electromagnetic radiation facilities met national standards except that environmental combined field intensities slightly exceeded national standards.

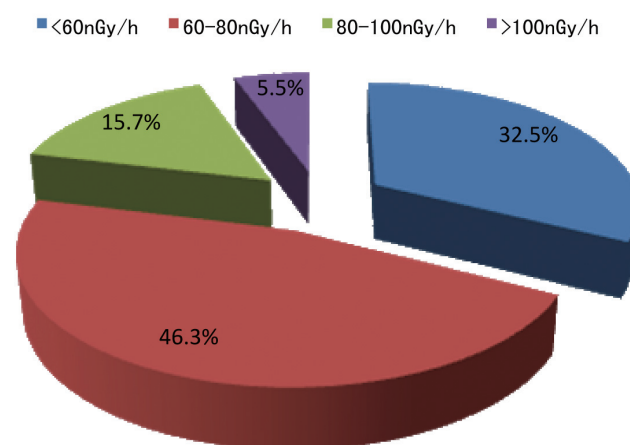
Strengthening radiation environmental monitoring

According to “Key Points of National Radiation Environmental Monitoring in 2009”, A strengthened mechanism of radiation environment monitoring, a scientific method system of the radiation environment monitoring, and completed the state-controlled network of radiation environment, the performance appraisal work for national monitoring network of radiation environment was carried out. Emergency monitoring was ever prepared, nuclear radiation monitoring and emergency response of the Northeast border area and Nuclear and Radiation Security Emergency standby monitoring of the sixtieth anniversary of the National Day were completed successfully. The environmental monitoring of electromagnetic radiation was strengthened, electromagnetic environment impact monitoring of 1000kV Jindongnan ~ Nanyang~ Jingmen UHV model and test project were carried out, and a number of standards of electromagnetic radiation environmental quality and pollution control were revised.

Environment Ionizing Radiation

In national key cities, environmental γ radiation dose rate, gross α and β radioactivity of aerosol and fallout, activity concentration of tritiated water in atmosphere were all at environmental normal level;

In water body of rivers, lakes and reservoirs including: the seven key river systems of Changjiang, Huanghe, Zhujiang, Songhuajiang, Huaihe and Liaohe, southwestern and northwestern rivers, South-to-North water diversion, rivers in Zhejiang and Fujian provinces, key lakes and reservoirs, the activity concentrations of radionuclides did not show any significant changes compared with past years, and activity concentrations of natural radionuclides were at the national investigation level of natural radioactive measurement(1983—1990). Activity concentrations of gross α and β were all lower than the guideline value of “Sanitary standards for drinking water” in drinking water from central drinking-water source area. Activity concentrations of artificial radionuclide ^{90}Sr and ^{137}Cs in offshore water were all lower than regulation limit of “Quality Standards for Sea Water”. Compared with past years, the activity concentration of radionuclides in monitored soil did not change, and activity concentrations of natural radionuclides were at the national investigation level of natural radioactive measurement(1983—1990).



γ dose rate distribution of national radiation environment monitoring network in 2009(cosmic ray response value has been deducted)

Environment Ionizing Radiation Ambient, Nuclear Power Plants in Operation

Zhejiang Qinshan nuclear power base, Guangdong Daya Bay/LingAo nuclear power plants and Jiangsu Tianwan nuclear power plant operated safely, and the annual average values of γ penetrating radiation dose rate (containing cosmic ray response value) by ambient radiation environmental automatic monitoring stations were 103.1nGy/h, 1243.5nGy/h and 101.5nGy/h respectively, and were within the swing range of local natural background level. Compared with the background before the operation of the nuclear power plants, the activity concentration of tritium had slightly elevated in air, precipitation, surface water and some biology samples around Zhejiang Qinshan nuclear power base, and in sea water around the discharge outlets of Guangdong Daya Bay/LingAo nuclear power plants, but its additional dose to public was far lower than regulation limit. The activity concentrations of the other radionuclides than tritium in the environmental media of operating nuclear power plans had no significant change.

Environment Ionizing Radiation Ambient, Uranium Mining and Mining Facilities and Companion Radiation Mines

No unusual condition was found for the radon concentration in the air, gross α and β activity concentrations in aerosol and fallout, and the activity concentrations of radionuclides uranium and radium-226 in underground water and biology samples of ambient environment of uranium mining and milling facilities, including Northern Uranium Corporation Benxi Uranium Mine\CNNC, Zhejiang Quzhou Uranium Company\CNNC, Fuzhou JinAn Uranium Company\CNNC, Ganzhou Jinrui Uranium Company\CNNC, HengYang Xinhua Chemical Metallurgy Co., Ltd, Jinyuan Uranium Corporation Guilin branch\CNNC, Nanning Xinyuan Nuclear Industry Co., Ltd No. 701 mine, Guizhou Former No.

761 Nuclear Industry Factory, Guizhou Former No. 276 Nuclear Industry Factory and Xinjiang Tianshan Uranium Company\CNNC etc. But γ radiation dose rates for some monitoring spots around mining area and transportation mineral roads of very few uranium mining and milling systems were higher than that before the operation, because the scattering during mineral transportation. And because of the impact of discharged waste water and seepage of tailing dams, the activity concentration of radionuclide uranium and radium-226 in surface water and sediment samples of a few environmental monitoring spots around some uranium mining and milling systems were higher than the regulated limit of "Requirements of Uranium Mining and Metallurgy Radiation Protection and Environmental Protection". Different extents of influences were caused to the local environment by the activities of mining, smelting, processing of some associated radioactive ore including Baiyun'ebo Ore.

Environment Ionizing Radiation Ambient, Other Reactors and Nuclear Fuel Cycle Facilities

For China Institute of Atomic Energy, Institute of Nuclear and New Energy Technology of Tsinghua University, Shandong Institute and Laboratory of Geological Sciences, Nuclear Power Institute Of China, Shaanxi Northwest Institute of Nuclear Technology and other research facilities, the ambient environment γ radiation dose rate, radionuclide activity concentration in aerosol, fallout surface water, soil and biological samples, had no significant change compared with past years. Gross α and β radioactive activity concentrations of drinking groundwater were all lower than the limits regulated in "Sanitary Standard for Drinking Water". For Baotou Nuclear Fuel Plant, Jianzhong Nuclear Fuel Corporation\CNNC, Shaanxi Uranium Enrichment Co., Ltd, No.404 Corporation\CNNC, Northwest Low and intermediate Level Solid Radioactive Waste Repository, Lanzhou Uranium Enrichment

Corporation, Beilong Low and intermediate Level Solid Radioactive Waste Repository and other Nuclear fuel cycle facilities, the ambient environment γ radiation dose rates were still at the normal environment level, and the unusual increase of activity concentrations of radionuclides manufactured, fabricated and storage was not monitored in other environmental media.

Environment Electromagnetic Radiation Ambient Electromagnetic Radiation Facilities

The general condition of environment electromagnetic radiation level was preferable. The electromagnetic radiation level of environmental sensitive sites around mobile communication base station antennas which took monitored were lower than the

public exposure derived limit regulated in “Regulations for Electromagnetic Radiation Protection”; environment combined field intensities of measure spots of environmental sensitive buildings around a few broadcasting transmit stations had exceeded the public exposure derived limit regulated in “Regulations for Electromagnetic Radiation Protection”; the work frequency field intensities of environmental sensitive sites around transmission lines and substations were all lower than the work frequency field evaluation standard 4kV/m for residential area, and the magnetic induction intensities were all lower the work frequency limit 100 μ T for public all-weather radiation;



◎ Emergency Response for Nuclear and Radiation Accidents ◎

Emergency Plans

In 2009, “Environmental Protection Ministry emergency plan of the Nuclear Accident”, “Environmental Protection Ministry Emergency Plan of the Radiation Accident” were revised and completed. To ensure radiation environment safety of the capital and the important parts during the 60th anniversary of national day, and to ensure that we can accurately grasp the situation, analyze and evaluate and decision-make, and take appropriate emergency response actions timely when nuclear and radiological terrorist attacks, the ministry formulated the “environment Protection Ministry emergency implementation plan of nuclear and radiation terrorist attacks during national day in 2009”.

Supervision and Management of Nuclear Facility Emergency Response

As nuclear safety regulators of Civilian nuclear facilities, NNSA’s nuclear facilities continue to conduct supervision and management of emergency preparedness. The NNSA effectively enhanced regulatory management of nuclear facility emergency response through strictly reviewing and reexamin-

ing the nuclear facility emergency response plans, enhancing the inspection on the situation of routine preparation of emergency response, supervision and evaluation of onsite integrated emergency exercises.

In 2009, the NNSA completed the review of the emergency response plan for Tianwan Nuclear Power Plant, Shaanxi Uranium Enrichment Co., Ltd., Lanzhou Uranium Enrichment Company Limited, experimental fast reactor of Atomic Energy Institute, Pilot Factory 404/CNNC and six operating nuclear facility units and a nuclear emergency special inspection to Shaanxi Uranium Enrichment Co., Ltd has been carried out. The NNSA has supervised and inspected onsite emergency response integrated examination for nine nuclear facilities, including Guangdong Daya Bay / LingAo Nuclear Power Station, China Experimental Fast Reactor, Shaanxi Uranium enrichment Co., Ltd., Northern nuclear fuel components Co., Ltd., Lanzhou Uranium Enrichment Company Limited, China Nuclear Power Institute and Qinghua Nuclear and New Energy Technology Institute, and the reports were issued.

Emergency Plan Approval

Document No.	Approval Time	Title
NNSA Notice[2009]42	2009-04-23	Reply on onsite emergency plans of nuclear accidents of civilian nuclear facilities of No.504\CNNC,
NNSA Notice[2009]48	2009-05-12	Reply on onsite emergency plans (B version) of Tianwan Nuclear Power Plant
NNSA Notice[2009]66	2009-09-30	Reply on the extension of onsite emergency plan (fifth edition) of "Guangdong Daya Bay Nuclear Power Plant / Ling Ao Nuclear Power Plant"
NNSA Notice[2009]154	2009-12-29	Reply on the consent of emergency plan (B version) of "Power reactor component reprocessing pilot test plant of No. 404/CNNC"

Inspection Reports of Site Area Nuclear Comprehensive Emergency Exercise

Document No.	Approval Time	Title
NNSA Notice[2009]4	2009-01-10	The letter on the issuance of "supervision and inspection reports of TNPP onsite comprehensive emergency exercise in 2008"
NNSA Notice[2009]5	2009-01-10	The letter on the issuance of "supervision and inspection reports of Daya Bay / Ling Ao nuclear power plant onsite comprehensive emergency exercise in 2008"
NNSA Notice[2009]76	2009-08-13	The letter on the issuance of supervision and inspection reports of "Ling Ao Nuclear Power Station onsite comprehensive emergency exercise in 2009"
NNSA Notice[2009]96	2009-09-03	The letter on the issuance of "supervision and inspection reports of comprehensive emergency exercise before first loading of the reactor of hospital neutron irradiation device"
NNSA Notice[2009]98	2009-09-03	The letter on the issuance of "supervision and inspection reports of comprehensive emergency exercise before loading of China Experimental Fast Reactor of China Institute of Atomic Energy "
NNSA Notice[2009]100	2009-09-03	The letter on the issuance of "supervision and inspection reports of comprehensive emergency exercise of the third branch of No. 404/CNNC in 2009"
NNSA Notice[2009]101	2009-09-03	The letter on the issuance of "supervision and inspection reports of comprehensive emergency exercise of CNNC Shaanxi Uranium enrichment Company in 2009 "
NNSA Notice[2009]107	2009-09-28	The letter on the issuance of "supervision and inspection reports of comprehensive emergency exercise of Institute of Nuclear and New Energy Technology of Tsinghua University in 2009"
NNSA Notice[2009]149	2009-12-29	The letter on the issuance of "supervision and inspection reports of comprehensive emergency exercise before first loading of model project of CNNC Lanzhou Uranium Enrichment Company"
NNSA Notice[2009]150	2009-12-29	The letter on the issuance of "supervision and inspection reports of comprehensive emergency exercise before loading of fuel components factory of CNNC Northern Nuclear Fuel Components Ltd."

Nuclear and Radiation Emergency Response, Anti-terrorism and Security Standby

From May 25 to June 22 in 2009, Ministry of Environmental Protection launched its second border radiation emergency response action, a total of 11 information reports, and monitoring information was concerned and recognized by the central.

From September 15 to October 10 in 2009, entered security emergency preparedness situation for the 60th anniversary of the National Day, the major environmental emergency monitoring force was mobilized to prepare in Beijing, National nuclear and radiation environment security standby task for National Day was completed successfully.

Maintaining Emergency Response Capacity

To do nuclear accident emergency response well, the NNSA has implemented 24-hour on duty system.

In November 2009, the NNSA attended the first

national nuclear accident emergency exercise, and has launched a comprehensive nuclear emergency response organizations of Environmental Protection Ministry at all levels. The operating effectiveness of emergency command system, the reasonability of action of emergency response personnel, the implementation of the contingency plan and related operational procedures were tested, this has accumulated experience for revision and improvement for operational procedures.

An emergency response training in batches, at different levels was carried out for different emergency response personnel. The national radiation emergency monitoring technical training courses were held in Chengdu, Sichuan, and the technical training courses for emergency personnel of national civil nuclear facilities were held in Fuzhou, Fujian.

◎International Cooperation◎

Implementation of International Conventions Implementation of the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management

May 10-21, 2009, the 3rd Review Conference of the Joint Convention on the Safety of Spent Fuel Management and on the safety of Radioactive Waste Management (hereafter referred to as the Joint Convention) was held at the IAEA headquarter in Vienna, Austria. The Chinese governmental delegation consisting of the MEP/NNSA and other government departments as well as operating units of nuclear power plant had attended the conference. The Chinese delegation submitted the first national report to the IAEA and answered questions raised by the other Parties concerning the national report. After reviewing, all Parties considered the national report of China (including the oral presentation) to be comprehensive in content. It was acknowledged in the conference that China fully fulfilled its duties and responsibilities under the Joint Convention, and established good practices in setting up the fund for spent fuel management, initiating the research project on radioactive waste minimization and rebuilding the waste repository in HKSAR.

Implementation of the Convention on Nuclear Safety

September 28 to October 1, 2009, representatives from the MEP/NNSA attended the Special Meeting/ Preparatory Meeting for the 5th Review Conference of the Convention on Nuclear Safety in Vienna, Austria. This meeting passed the amendment to rules and preparatory work for the 5th Review Conference of the Convention on Nuclear Safety. Mr. Li Ganjie, Vice Minister of the MEP and Administrator of the NNSA, was elected unanimously the president of the 5th Review Conference in 2011. In preparation for

the forthcoming Review Conference, the MEP/NNSA took the lead in the election of the 5th National Report Editing and Censoring Committee and organized the 1st session of the 5th National Report Editing and Censoring Committee meeting of the Convention on Nuclear Safety.

Bilateral Cooperation

March 9-13, 2009, representatives from NNSA attended the International Conference on Nuclear Regulation held in the US. The Conference was aimed at information exchange among nuclear safety authorities around the world. During the meeting, the NNSA representatives introduced China's practices in the safety review and assessment of the advanced type of reactors like AP1000 and EPR units, which was good reference for other countries to carry out nuclear safety review on advanced nuclear reactors. Meanwhile, representatives from NNSA also participated in the policy group meeting of MDEP.

April 18-19, 2009, Vice Premier Li Keqiang, accompanied by Administrator Li Ganjie, NNSA, attended the commencement ceremony of the construction of AP1000 unit which was the most significant cooperation project between China and the US. Mr. Bill Borchardt, Executive Director for Operations of the USNRC, was invited to attend the ceremony on behalf of the Chairman of the USNRC.

June 1-5, 2009, the 4th China-Pakistan Steering Committee Meeting of Cooperation on Nuclear Safety was held in Urumqi, Xinjiang Uyghur Autonomous Region. Administrator Li Ganjie of NNSA together with Chairman Anwar Habib of Pakistan Nuclear Regulatory Authority attended the meeting. The two parties discussed the cooperative activities for the next stage and renewed the Protocol of the Cooperation on Nuclear Safety between the National Nuclear Safety Administration of the People's Re-

public of China and the Nuclear Regulatory Authority of Islamic Republic of Pakistan.

June 18, 2009, the NNSA and the USNRC held NNSA-USNRC Steering Committee Meeting of Cooperation on Nuclear Safety through video conference. The two parties informed each other the progress of the review on new reactors, affirmed the accomplishments achieved in 2008 in the cooperation on nuclear safety between the two countries and fixed the cooperative activities at the next stage.

June 14-20, 2009, the NNSA delegation visited France for exchange of views on the concerned issues arose from the nuclear safety review on EPR project in Taishan NPP in Guangdong province.

July 28-29, 2009, the 10th Sino-Japan Nuclear Safety Workshop was held in Lanzhou, Gansu province, China. The Chinese and Japanese sides affirmed the fruitful achievements of the cooperation in nuclear safety over the past 17 years, and expressed that the two countries would continue to enhance nuclear safety cooperation and to share regulatory information via the platform of Sino-Japan Nuclear Safety Workshop to make further efforts in pushing forward the development of nuclear energy and nuclear safety.

September 14, 2009, the delegation of NNSA visited Russian Institute of Nuclear Safety affiliated to Russian Academy of Science. The two parties discussed the scope and approach of cooperation in future and expressed the hope that the two sides should strengthen communications and establish cooperative relationship.

September 17, 2009, the delegate of NNSA attended the 13th Meeting of the Chinese-Russian Subcommittee on Nuclear Issues of the Sino-Russian Prime Ministers' Regular Meeting Committee. In the session of discussing the cooperation on nuclear safety regulation, both of the heads of nuclear safety groups from China and Russia gave introductions, highlighting that the cooperation on nuclear and ra-

diation safety in the area of peaceful use of nuclear energy was a priority and key direction for the cooperation between China and Russia. Therefore, the two countries would continue the relevant cooperation in nuclear and radiation safety regulation.

November 26, 2009, Administrator Li Ganjie, NNSA, met Mr. Katsuhiko Sogabe, Director of JNES, and exchanged the views regarding how to further enhance the cooperation on nuclear safety between China and Japan, and attended the Forum on Nuclear and Radiation Safety and Ceremony of the 20th Anniversary for the Establishment of Nuclear and Radiation Safety Center of NNSA.

December 1, 2009, the NNSA and the USNRC held the video conference on safety review on AP1000 nuclear reactor. The two parties had an in-depth communication on the issues of nuclear safety review on the seismic design of shield building of the first AP1000 nuclear reactor unit that was being built in Sanmen, Zhejiang province of China.

October 2009, the NNSA and the Department of Energy of the United States of America reached an agreement to develop cooperation in package, storage, transportation of disused radioactive sources, upgrading of physical protection and staff training. The Nuclear and Radiation Safety Center and the Alamos National Laboratory of the US signed an agreement on storage of disused radioactive sources, which was valid for 5 years with total amount of 3 Million in USD.

December 14-18, 2009, the representatives of NNSA and the USNRC signed the Agreement on Nuclear Reactor Research about the thermal-hydraulic code applications and maintenance program and the severe accident research program during the Conference on An Affective Regulatory System of Nuclear Safety held in Cape Town, South Africa, which was conducive to the smooth progressing of AP1000 nuclear safety review and further improving NNSA's competence in nuclear safety

regulation.

Regional Cooperation

June 29 to July 3, 2009, the 2nd ASEAN+3 Forum on Nuclear Safety and Regional Workshop on Nuclear Safety Infrastructure of Asian Nuclear Safety Network was held in Shenzhen, China. The delegates from China, Indonesia, Japan, South Korea, Malaysia, Philippines, Thailand and Vietnam as well as IAEA attended the Forum. Administrator Li Ganjie, NNSA attended the opening ceremony and made a keynote speech. Mr. Wannarat Channukul, Minister of Ministry of Energy of Thailand, Madam Xue Hanqin, Chinese Ambassador to ASEAN, and the delegates of Ministry of Foreign Affairs of Thailand and IAEA attended the opening ceremony and delivered speeches. The meeting was held in an aim to implement Premier Wen Jianbao's new initiation in 2009 to promote East Asian cooperation. Minister Yang Jiechi, Ministry of Foreign Affairs, at the Foreign Affairs Ministers' Meeting between ASEAN+3 countries, gave a high appraisal on the fruits of the meeting and expressed the hope to further expand the exchange and cooperation in nuclear safety between ASEAN member states and China, Japan and South Korea.

August 27-28, 2009, the 2nd Northeast Asia Top Regulators Meeting on Nuclear Safety and the 4th NNSA-NISA-MEST Meeting for Exchange of Information on Nuclear Power Safety was held in Seoul, South Korea. The delegates of the regulatory authorities of the three countries introduced the current status of nuclear safety regulation as well as the challenges they faced in their own countries respectively and exchanged views on further promote the nuclear safety cooperation among them. After the meeting, DG Xu Qinghua, Department of International Cooperation, Ministry of Environmental Protection, on behalf of Administrator Li Ganjie, NNSA, signed the Memorandum of Cooperation for Top Regulators' Meeting on Nuclear Safety Among The National

Nuclear Safety Administration of the People's Republic of China and The Nuclear and Industrial Safety Agency of Japan and the Ministry of Education, Science and Technology of the Republic of Korea.

Cooperation with International Organizations

February 17-18, 2009, the 1st AP1000 Working Group Meeting of MDEP was held in Beijing. Experts from the nuclear safety regulatory authorities of China, the US, UK and Canada attended the meeting and communicated on the concerned technical issues of AP1000 nuclear reactor design, providing support to further review on AP1000 for the countries.

April 9-10, 2009, the 2nd Dialogue meeting of Strategic Cooperation of Asian Nuclear Safety Network was held in Seoul, South Korea. A delegate from NNSA attended the meeting, in which the issues of major strategies, policies and capacity building to promote the regional cooperation under the framework of ANSN were discussed.

April 20-23, 2009, the IAEA International Ministerial Conference on Nuclear Energy in the 21st Century was held in Beijing. Administrator Li Ganjie, NNSA, attended the meeting and delivered a keynote speech on "Seize Opportunity, Meet Challenges and Push Forward the Healthy Development of Nuclear Power". During the meeting, Administrator Li Ganjie Met Director of NEA of OECD, Chairman of Atomic Energy Commission of France, President of IRSN of France, Chairman of Pakistan Atomic Energy Commission, President for Asian and Pacific, EDF and AREVA Group of France, exchanged views to enhance bilateral and multilateral nuclear safety cooperation.

June 3-5, 2009, the 8th Meeting of Steering Committee Meeting of MDEP was held in Paris, France. A delegate of NNSA attended the meeting.

September 14-18, 2009, the 53rd IAEA Conference and the Nuclear Safety Top Official Meeting

were held in Vienna, Austria. The delegate of NNSA attended the meeting and made a remark.

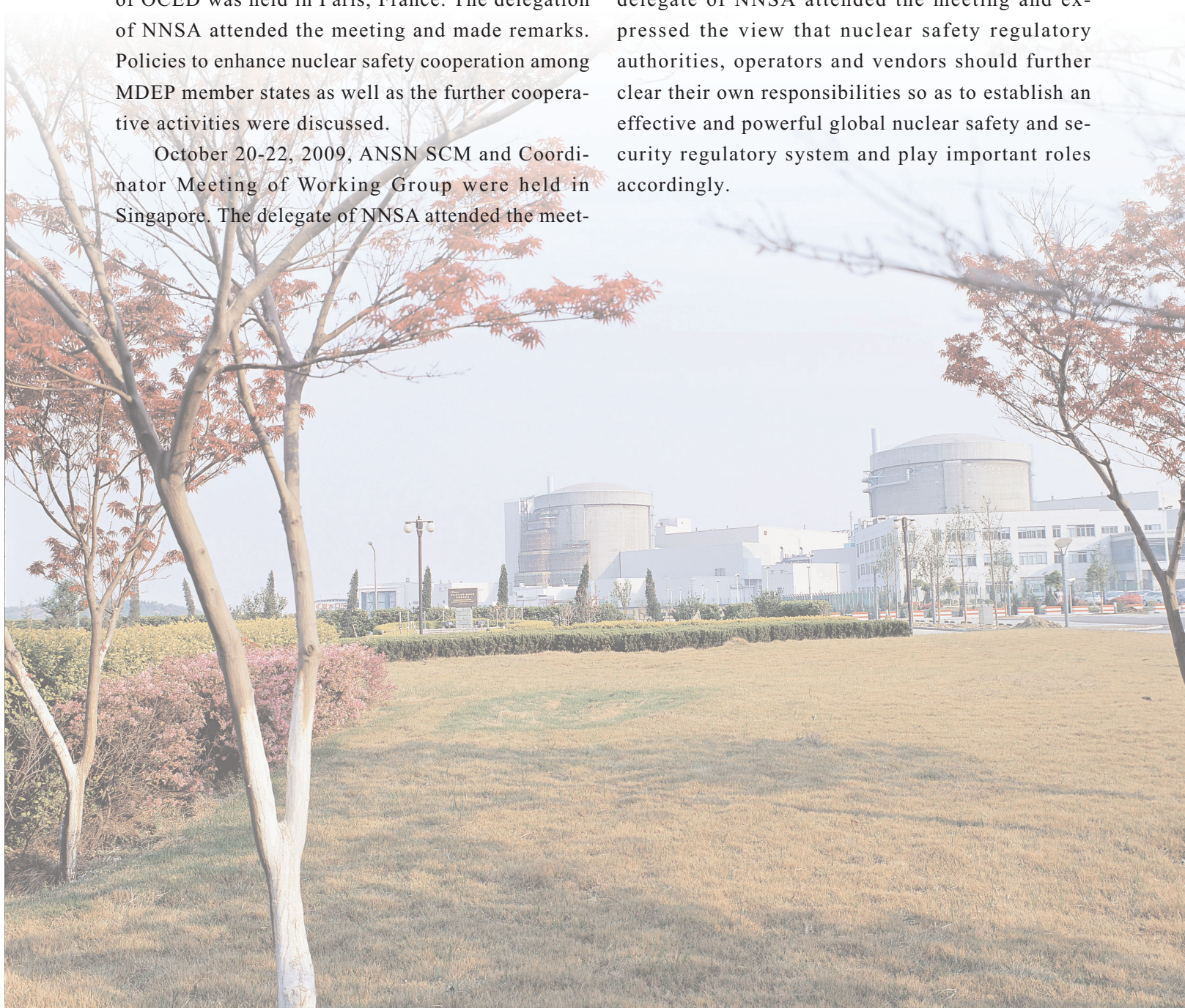
May, 2009, in preparation for Integrated Regulatory Review Service by IAEA in 2010, the Ministry of Environmental Protection (NNSA) established an IRRS Preparatory Group headed by Administrator Li Ganjie, NNSA.

September 10-11, 2009, MDEP Meeting of NEA of OCED was held in Paris, France. The delegation of NNSA attended the meeting and made remarks. Policies to enhance nuclear safety cooperation among MDEP member states as well as the further cooperative activities were discussed.

October 20-22, 2009, ANSN SCM and Coordinator Meeting of Working Group were held in Singapore. The delegate of NNSA attended the meet-

ing and made remarks. The delegates attending the meeting discussed the nuclear safety issues and the activities and approaches of ANSA in future and proposed the member states to promote the utilization of ANSN in their own countries.

December 14-18, 2009, the IAEA International Conference on Effectiveness of Nuclear Regulatory System was held in Cape Town, South Africa. The delegate of NNSA attended the meeting and expressed the view that nuclear safety regulatory authorities, operators and vendors should further clear their own responsibilities so as to establish an effective and powerful global nuclear safety and security regulatory system and play important roles accordingly.



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January 10, 2009, the CP of Unit 3 and 4 of Liaoning Hongyanhe NPP Phase I was issued.

March 26, 2009, the CP of Unit 1 and 2 of Sanmen NPP Phase I was issued.

April 30, 2009, the Review Committee on Nuclear and Radiation Safety Regulations & Standards was set up.

August 3, 2009, the letter of ratification for fuel loading of the upgrading project of the VVER-1000 nuclear fuel fabrication line of CJNFC was issued.

September 24, 2009, the CP of Unit 1 and 2 of Haiyang NPP Phase I was issued.

October 14, 2009, the letter of ratification for the first loading of clinical neutron irradiator was issued.

November 18, 2009, the CP of Unit 1 and 2 of Taishan NPP was issued.

November 12, 2009, the CP of pilot facility for high level radioactive liquid and solid waste disposal was issued.

From June to November of 2009, three cases of radioactive sources blockage incidents of γ irradi-

tor in Qixian in Henan, Fanyu in Guangzhou and Zhengzhou in Henan respectively were properly settled. The above incidents didn't cause any radiation release or environmental pollution, and no one was exposed to any radiation.

September 14, 2009, the Regulations on Transportation Safety of Radioactive Articles was issued by the State Council.

December 4, 2009, special administration on irradiator source blockage incident was launched nationwide.

December 24, 2009, the letter of ratification for fuel loading of the reprocessing pilot plant of No. 404 Corporation\CNNC was issued.

In 2009, both the radiation emergency response action at frontier and the nuclear emergency & anti-terrorism duty to ensure the safety and security of the 60th anniversary were accomplished successfully.

In 2009, the general census of national radioactive pollution sources was completed and the investigation into the radiation environment of associated mineral sources in Baiyunebo was carried out.