The People's Republic of China

National Nuclear Safety Administration

2014 Annual Report

Contents

1 General Description

China's civilian nuclear facilities showed good performance on operation safety and construction quality in 2014, and no level 2 or above safety incidents or accidents of the "International Nuclear and Radiological Event Scale (INES)" occurred in operating nuclear power plants (NPPs), research reactors, fuel cycle facilities, radioactive waste storage and disposal facilities, and the radioactive material transportation. The lower lever events in operating and constructing nuclear facilities were handled properly.

The quality of radiation environment nationwide was generally good in 2014. The levels of environmental ionizing radiation remained within the fluctuant ranges of radioactive backgrounds, and there were no evident changes on the radiation levels around nuclear facilities and nuclear technology utilization projects. The overall condition of environmental electromagnetic radiation was good, and there were no evident changes on the radiation levels around facilities with emission of electromagnetic radiation.

Reformation of Administrative Review and Approval

According to the unified arrangement made by the State Council, a number of authorizations were adjusted, integrated, or decentralized, and items requiring government review and approval in the area of regulation on nuclear and radiation safety were optimized and reinforced. The authorizations on the qualification of personnel of non-destructive tests (NDT) for civilian nuclear safety equipment, and the qualification of research reactor operators previously implemented by several governmental organizations were adjusted to only by the Ministry of Environmental Protection (National Nuclear Safety Administration) [hereinafter referred to as MEP (NNSA)]. The power of reviewing and issuing radiation safety licenses to medical users of radioactive source of category I and to organizations making Positron Emission Tomography (PET) radio-pharmaceuticals (self-use only) was delegated to provincial-level divisions of environmental protection. After review and approval, the valid period of importing and exporting radio-pharmaceutical and its raw material was increased from 6 months to 1 year. The responsibility of

regulation on radiation safety of military organizations involving in the civilian use of nuclear technologies was transferred to the military by the related divisions of environmental protection.

Capability Building

Major breakthroughs were made in the construction of National Technology R&D Base for Nuclear and Radiation Safety Regulation. The overall project proposal, including the total built-up area of 92,957m^2 and the investment of 748.86 million Yuan, was approved by the National Development and Reform Commission. The land-use right over 3 pieces of construction fields with the total area of 145,333.33m^2 was approved by Beijing Municipal Bureau of Land and Resources.

The radiation monitoring capability was strengthened. MEP (NNSA) carried out the construction of automatic stations of the state-controlled network for monitoring radiation environment, and improved the network operations, maintenance, and quality management, and completed final acceptance check on the system of collecting and publicizing nationwide data from monitoring the radiation environment. MEP (NNSA) carried out coordinated planning for construction on the surveillance and monitoring system of NPPs, and completed the review, approval and the acceptance check on the systems. MEP (NNSA) enhanced the capability of monitoring team, organized assessments of the monitoring quality for each province, and carried out competition in emergency monitoring skills, and strengthened the examination of certificates on duty.

The building of NPP nuclear accident emergency supporting task forces by nuclear power industry groups was promoted. MEP (NNSA) implemented the mechanism of mutual support and cooperation among five nuclear power industry groups, and the mechanism of mutual support among nearby NPPs. MEP (NNSA) guided the China National Nuclear Corporation (CNNC) to organize a nuclear emergency supporting task force rested on the Qinshan nuclear power base in Zhejiang province, and guided the China General Nuclear Power Group (CGNPG) to organize a nuclear emergency supporting task force rested on the Daya Bay nuclear power base in Guangdong province. MEP (NNSA) also improved the capability of radiation accident emergency response at provincial-level, and built innovative mechanisms to guide six provincial-level environmental protection divisions, such as Shaanxi provincial environmental protection division, to carry out emergency exercise for radiation accident, and strengthened the exchange of emergency response experience.

Regulation Strengthening

MEP (NNSA) continued its effort to improve the way of regulation, and strengthened routine inspections, and deepened the standardization and normalization of regulation. MEP (NNSA) timely discovered and appropriately solved nuclear and radiation safety problems, and efficiently responded to the radiation accident of the loss of a radioactive source of category Ⅱ in Nanjing, Jiangsu Province. MEP (NNSA) also fulfilled the alert mission on nuclear and radiation security and emergency response at the APEC Meeting, and further increased Chinese nuclear and radiation safety levels.

MEP (NNSA) worked out a time schedule implementing the responsibilities for solving problems discovered in 2013 major inspection of nuclear and radiation safety, and pressed the comprehensive implementation of Post-Fukushima requirements on safety improvements, and compiled a report on the implementation of Post-Fukushima improvement actions. MEP (NNSA) promoted great progress on the experience feedback system of NPPs, and further enhanced the experience feedback capability of NPPs. MEP (NNSA) innovatively designed modes of nuclear power plant commissioning regulation, and well prepared for the regulation on commissioning of AP1000 and EPR NPPs. MEP (NNSA) strengthened the review on the autonomously designed NPPs, and explored a standardized mode for reviewing NPPs. MEP (NNSA) strengthened the research on nuclear safety policies, and continued improving the system of regulatory technical documents.

MEP (NNSA) coordinated and solved the problem of capable fault in The 404 Co.,Ltd., CNNC, and researched on the categorization principle and basic safety requirements for nuclear fuels cycle facilities. MEP (NNSA) carried forward the treatment and disposal of the radioactive waste left in the past, and promoted the implementation of the overall plan on the decommissioning of the “two plants and three institutes” and the management and disposal of their radioactive wastes. MEP (NNSA) strengthened the management on the projects of Radiation Environment Status Investigation and Assessment of Nationwide Nuclear Bases and Nuclear Facilities, and made impressive achievements in key projects. MEP (NNSA) completed the special inspection on radioactive sources safety, improved the safety level of movable γ-ray flaw detectors, and pushed forward the reuse of the spent radioactive sources. MEP (NNSA) carried out investigations on radiation environmental safety of the development and utilization of mineral resources, and standardized the administration of environmental review over the projects of power transmission and distribution.

MEP (NNSA) strictly carried out the regulation on nuclear safety equipment in accordance

with the regulations, and improved the laws and regulations, and carried out licensing reviews strictly, and handled the event violating laws and regulations with severity. MEP (NNSA) carried out special inspections on the activities of purchase and supervision in nuclear power engineering corporations, and carried out special inspections on organizations engaged in the installation of nuclear safety equipment.

MEP (NNSA) vigorously explored the mechanism for optimizing the management of personnel qualification, and put forward that newly-built NPPs may entrust operating NPPs with the development of operators by the way of holding temporary posts, and put forward the requirements on key positions where the Registered Nuclear Safety Engineers are needed and their minimum number on duty in the nuclear technology utilization organizations.

MEP (NNSA) explored the establishment of the system of public communication, and push forwarded establishing a sound public communication mechanism for integrating the popularization of science, the information transparency, the public participation, and the public sentiments response into a "four-in-one" system. MEP (NNSA) summarized and spread the public communication experience of Xudapu Nuclear Power Plant, and organized the development of public communication for planned nuclear power projects, ensured the public rights of knowing the facts, participating, and overseeing, so as to steadily perform the licensing of planned nuclear power projects.

Activities on the 30th Anniversary of Regulation on Nuclear and Radiation Safety in China

MEP (NNSA) carried out a series of activities on the 30th anniversary of regulation on nuclear and radiation safety in China, such as the publication of *Thirty Years (1984-2014) of Regulation on Nuclear and Radiation Safety in China,* the compilation of Solicited Articles on the 30th Anniversary of Regulation on Nuclear and Radiation Safety in China, the production of publicity film on the subject of regulation on nuclear and radiation safety, the organization of a symposium on exchange of experience in regulating nuclear and radiation safety, and carried out a series of activities on technical exchange and discussion. These activities comprehensively summarized the accomplishments of, the contributions made by, and experience in regulating nuclear and radiation safety over the past three decades, thus promoted the public and the international peers' understanding on the nuclear and radiation safety regulation in China, and highlighted the positive image of Chinese nuclear safety regulatory body.

Development of Nuclear Safety Culture

For the implementation of the Chinese nuclear security concept of “Rationality, Coordination and Co-advancement” by the Chinese President Xi Jinping, MEP (NNSA) organized specialists in the nuclear industry domain and carried out sufficient research and justification, aligned with international research results, took into full account of Chinese practices, then formulated China’s Policy Statement on Nuclear Safety Culture, and jointly issued the Statement with the National Energy Administration and the State Administration of Science, Technology and Industry for National Defence, PRC, which made clear the government’s attitude on active promotion of nuclear safety culture, and provided the guidelines on fostering and developing nuclear safety culture in the entire nuclear industry. The statement is the Chinese government’s first statement on nuclear safety culture, and China became the second country in the world having issued a policy statement on nuclear safety culture.

MEP (NNSA) carried out a special action on the publicity of nuclear safety culture, with aims of covering all the licenses and their core members namely “two full coverage” and “two zero tolerances” on the concealed misrepresentation and the violation of operating procedures, so as to enhance the consciousness of hardship, credibility, responsibility, awe, and law-abidance. Up till the end of the year, mobilization meetings had been held in the fields of nuclear safety equipment, NPPs and research reactors, nuclear fuel cycle facilities, and nuclear technologies utilization, on which the publicity was carried out and nuclear safety culture was implemented comprehensively . The special action began in August, 2014, and will last up to August, 2015.

2 Policies, Plans, Regulations and Standards

In 2014, MEP (NNSA) actively promoted the legislation of the “Nuclear Safety Act”, and carried out special research and the draft preparation. The legislation progress made a breakthrough. MEP (NNSA) pushed forward the reformation of the regulatory system of nuclear and radiation safety, and made adjustment, decentralization, integration for a number of administrative authorizations. MEP (NNSA) optimized, and enhanced administrative reviews and approvals of nuclear and radiation safety regulation, and summarized basic experience of 30-year nuclear safety regulation to form a number of theoretical, innovative achievements. MEP (NNSA) deeply carried out mid-term assessment of “The 12th Five-Year Plan and 2020 Long-term Goals on Nuclear Safety and Radioactive Pollution Prevention and Control”, and promoted the implementation of the plan. MEP (NNSA) also strengthened communication and coordination, and completed the top design of nuclear safety scientific research, and built up the initial standard system of nuclear and radiation safety. MEP (NNSA) endorsed the first nuclear power industry standard, and pushed forward the preparation and revision of regulations and standards according to the schedule.

Nuclear Safety Legislation

MEP (NNSA) actively assisted the National People’s Congress in carrying out legislation investigation, and organized legislation communication with IAEA and France, and invited IAEA experts to attend special discussion in China. MEP (NNSA) promoted legislative process of the “Nuclear Safety Act” to bring the time for deliberation to 2016, and proposed the top design scheme of regulations system referred to nuclear composed by 3 laws together. MEP (NNSA) also rearranged nuclear safety regulation functions, and developed “Nuclear Safety Legislation Knowledge Textbook” as a legislation accessory material.

System Innovation

MEP (NNSA) performed the research, and submitted the “Research Report on the Reformation of Nuclear Safety Regulatory System”. This promoted the reformation of ecological civilization system and eco-environmental protection administration system. MEP (NNSA) rearranged nuclear safety regulation functions, and proposed problems in nuclear safety regulation and

resolving suggestions. According to the unified arrangement made by the State Council, MEP (NNSA) made adjustment, decentralization, and integration for a number of administrative authorizations, and optimized, and enhanced administrative reviews and approvals of nuclear and radiation safety regulation. The qualification licenses of NDT personnel and qualification examination of research reactor operators were adjusted to be implemented by MEP (NNSA).

Nuclear Safety Plan

MEP (NNSA) carried out, and completed the mid-term assessment on "The 12th Five-Year Plan and 2020 Long-term Goals on Nuclear Safety and Radioactive Pollution Prevention and Control" together with the National Development and Reform Commission, the Ministry of Finance, the National Energy Administration, and the State Administration of Science, the Technology and Industry for National Defence, PRC. MEP (NNSA) developed preliminary study on "The 13th Five-Year Plan on the Nuclear Safety and Radioactive Pollution Prevention and Control", to focus on special research of 12 aspects, including nuclear safety requirements for inland NPPs in the 13th Five-Year, the third party liability insurance in nuclear and radiation accidents, and regulation system of nuclear safety, etc. MEP (NNSA) also conducted the research on the overall idea of the 13th Five-Year Plan, and carried out idea research of 10 subfields, including NPPs, research reactors, nuclear fuel cycle facilities, etc.

Policy Research

MEP (NNSA) organized the research on nuclear and radiation safety policy system.

Nuclear Safety Scientific Research

MEP (NNSA) carried out top design of nuclear and radiation safety scientific research special project, and completed "General Implementation Plan on Nuclear and Radiation Safety Scientific Research Major Special Project (draft)". MEP (NNSA) studied the scheme on the construction of nuclear and radiation safety key laboratories and engineering technology centers, and organized special research on nuclear and radiation safety scientific research of the13th Five-Year on environmental protection and technology. MEP (NNSA) also collected 62 scientific research projects, and 10 scientific research special requirements for public welfare industry.

The Development of Regulations and Standards

MEP (NNSA) published the "Codification of Regulations on Nuclear and Radiation Safety", and started to prepare the "Five-Year Development Plan (2015-2020) on Nuclear and Radiation Safety Regulations", and held 4 meetings of review committee on nuclear and radiation safety regulations and standards,

in which 17 regulations, standards, guides, and technical documents were reviewed, and 2 standards were endorsed (see Table 1 to Table 4). MEP (NNSA) issued nuclear safety guide "Standard Format and Content of Nuclear and Radiation Safety Analysis Report on Radioactive Material Transportation", and set up a system for reporting nuclear safety regulations status, and issued the "Report on Nuclear Safety Regulations Status" quarterly.

MEP (NNSA) formed the initial nuclear and radiation safety standard system, and defined the relationship between standards and regulations, proposed standard system framework, and formed standard system table. MEP (NNSA) organized thesis proposal demonstration for the "Safety Standard on Use and Operation Radioactive Sources in Laboratory", and the "Technical Specification on Radiation Environmental Monitoring"; collected comments for the "Radiation Safety Technical Specification on Electron Linear Accelerator Industrial CT"; and submitted the "Requirements for Near-surface Disposal on Low-and-Intermediate Level Solid Radioactive Wastes" and the "Technical Requirements for Safety Management on Uranium Geological Prospecting and Mining and Metallurgy Radioactive Wastes". MEP (NNSA) carried out the endorsement of nuclear power standards in energy industries, and endorsed the "Operating Conditions Category on Pressurized Water Reactor Nuclear Power Plants" by issuing a document. MEP (NNSA) also endorsed 10 nuclear power standards in energy industries successively, including the "Criterion on Single Fault in Important Fluid System of Pressurized Water Reactor Nuclear Power Plants", and formed initial confirmation comments on 19 nuclear power standards in energy industries to be developed, including the "Provision on Operation Radiation Protection in Nuclear Power Plants".

Table 1. The First Review Meeting of Nuclear and Radiation Safety Regulations and Standards in 2014

Title	Category	Stage	Author	Review Group	Result
Code on Decommissioning Safety of Nuclear and Radiation Facilities	Department rule	First draft for comments	Nuclear and Radiation Safety Center, MEP	Radiation safety group	Accepted
External Man-induced Event in Nuclear Power Plants Site Selection	Guide	Draft for review	Nuclear and Radiation Safety Center, MEP	Nuclear safety group	Accepted
Safety Management on Extremely-Low Level Solid Radioactive Waste	Standard	First draft for comments	CNNC Beijing Research Institute of Uranium Geology	Radiation safety group	Accepted

Table 2. The Second Review Meeting of Nuclear and Radiation Safety Regulations and Standards in 2014

Title	Category	Stage	Author	Review Group	Result
Rules of Regulation on the Radioactive Material Transportation Safety	Department rule	Draft for review	China Productivity Center for Machinery	Radiation safety group	Accepted
Requirements on the Safety Regulation for Radioactive Wastes	Department rule	Draft for review	China Institute for Radiation Protection	Radiation safety group	Accepted
Anti-seismic Safety Assessment for Operating Nuclear Power Plants	Guide	First draft for approval	Nuclear and Radiation Safety Center, MEP	General committee	Accepted
Radiation Protection Design and Operating Radiation Protection for Research Reactors	Guide	First draft for approval	Suzhou Nuclear Safety Center	General committee	Accepted
Management of Operating Organization and Operating Personnel of Research Reactors	Guide	Draft for review	Suzhou Nuclear Safety Center	Nuclear safety group	Rejected
Radiation Safety Technical Specification on Electron Linear Accelerator Industrial CT	Standard	Draft for review	Chongqing University	Radiation safety group	Accepted

Table 3. The Third Review Meeting of Nuclear and Radiation Safety Regulations and Standards in 2014

Title	Category	Stage	Author	Review Group	Result
Rules of Regulation on Radioactive Material Transportation Safety	Department rule	First draft for approval	China Productivity Center for Machinery	General committee	Accepted
Content and Format of Environment Impact Assessment Report/Forms of Nuclear Technology Application Program	Standard	First draft for approval	Nuclear and Radiation Safety Center, MEP	General committee	Accepted
Radiation Safety Technical Specification on Electron Linear Accelerator Industrial CT	Standard	First draft for approval	Chongqing University	General committee	Accepted

Table 4. The Fourth Review Meeting of Nuclear and Radiation Safety Regulations and Standards in 2014

Title	Category	Stage	Author	Review Group	Result
Requirements on Decommissioning Safety	Department rule	Draft for review	Nuclear and Radiation Safety Center, MEP	Radiation safety group	Accepted
Requirements on the Safety Regulation for Radioactive Wastes	Department rule	First draft for approval	China Institute for Radiation Protection	General committee	Accepted
External Man-induced Event in Nuclear Power Plants Siting Review	Guide	First draft for approval	Nuclear and Radiation Safety Center, MEP	General committee	Accepted
Concrete High Integrity Container for Low-and-Intermediate Level Solid Radioactive Wastes	Standard	Draft for review	China Nuclear Power Engineering Co., Ltd.	Radiation safety group	Accepted
Ductile Cast Iron High Integrity Container for Low-and-Intermediate Level Solid Radioactive Wastes	Standard	Draft for review	China Nuclear Power Engineering Co., Ltd.	Radiation safety group	Accepted
Cross Linked High Density Polyethene High Integrity Container for Low-and-Intermediate Level Solid Radioactive Wastes	Standard	Draft for review	China General Nuclear Power Corporation	Radiation safety group	Accepted
Standards for Radioactive Safety and Protection against Radiation of the Radioisotopic Production by Nuclear Reactor	Standard	Draft for review	China Institute of Atomic Energy	Radiation safety group	Accepted
Confirmation Comments on 19 Nuclear Power Standards in Energy Industries to be Developed, including the “Provision on Operation Radiation Protection in Nuclear Power Plant”	Standard Endorsement	—	Nuclear and Radiation Safety Center, MEP	General committee	Accepted
Endorsement Review Opinion on “Overpressure Analysis Requirements for Coolant System and Main Steam System of Pressurized Water Reactor Nuclear Power Plant Reactors ” (Pilot)	Standard Endorsement	—	Nuclear and Radiation Safety Center, MEP	General committee	Accepted
Technical Guide for Radiation Monitoring of Radioactive Material Transportation Packages and Transportation Vehicles	Technical document	Draft for review	Beijing Radiation Safety Technique Center	Radiation safety group	Accepted

3 Safety Regulation on Nuclear Power Plants

Nuclear Power Plants in Operation

In 2014, operating nuclear power plants (NPPs) had no radioactive events endangering the safety of the public and the environment. The monitoring indicators over the year showed that the integrity of three safety barriers was in good condition.

The operating data of NPPs in 2014 is shown in Table 5, and the issuance and renewal of NPP operator license in 2014 is shown in Table 6.

Table 5. Operating Data of Nuclear Power Plants in 2014

NPP Name	Generation Output in 2014 (TWh)	Unit	Unit No.	Nominal Power (MW)	Generation Output of Unit (TWh)	Load Factor(%)	Capability Factor(%)
Qinshan	2.623	1	CN01	310	2.623	96.58	92.69
Qinshan Phase II	20.234	1	CN04	650	4.874	85.60	83.53
		2	CN05	650	4.930	86.59	85.01
		3	CN14	660	5.269	91.14	92.00
		4	CN15	660	5.161	89.27	89.77
Qinshan Phase III	11.688	1	CN08	728	6.045	94.79	96.16
		2	CN09	728	5.643	88.48	90.14
Daya Bay	15.140	1	CN02	900	8.622	100.02	99.66
		2	CN03	900	6.518	75.62	75.58
Ling'ao	32.553	1	CN06	990	7.683	88.59	90.44
		2	CN07	990	8.105	93.46	94.55
		3	CN12	1,080	8.360	87.88	89.42
		4	CN13	1,080	8.405	88.35	90.31
Tianwan	16.767	1	CN10	1,060	8.323	89.64	89.83
		2	CN11	1,060	8.444	90.94	91.11
Hongyanhe	11.961	1	CN16	1,119	6.579	67.13	70.04
		2	CN17	1,119	5.381	74.80	75.69

continued

NPP Name	Generation Output in 2014 (TWh)	Unit	Unit No.	Nominal Power (MW)	Generation Output of Unit (TWh)	Load Factor(%)	Capability Factor(%)
Ningde	11.62	1	CN18	1,089	6.210	56.70	57.31
		2	CN19	1,089	5.410	98.66	99.83

Table 6. NPP Operator License Issuance and Renewal in 2014

NPP Name	NEW (individuals)		Renewal (individuals)		Subtotal (individuals)
	Operators	Advanced Operators	Operators	Advanced Operators	
Qinshan	1	5	5	9	20
Qinshan Phase II	12	32	20	29	93
Qinshan Phase III	6	6	19	4	35
Daya Bay	15	8	15	30	68
Ling'ao NPP Units 1 and Unit 2	9	11	15	26	61
Ling'ao NPP Units 3 and Unit 4	4	10	10	31	55
Tianwan	28	1	16	37	82
Hongyanhe NPP Units 1 and Unit 2	8	21	51	9	89
Ningde NPP Units 1 and Unit 2	16	25	44	15	100
Total	99	119	195	190	603

Qinshan NPP

In 2014, Qinshan NPP was kept in stable operation and in good safety state with no operating events. The 15th refueling overhaul was completed. Three safety barriers were kept intact, and the gross damage rate of the fuel assembly, the leakage rate of the primary loop pressure boundary, and the leakage rate of the containment were all within the specified limits.

Nuclear safety-related approvals for Qinshan NPP in 2014 are shown in Table 7, inspection activities for Qinshan NPP in 2014 are shown in Table 8, and the radiation protection dose of Qinshan NPP in 2014 is shown in Table 9.

Vice Minister of MEP, Administrator of NNSA, Li Ganjie, Inspected the Qinshan Nuclear Power Base

Table 7. Nuclear Safety-Related Approvals for Qinshan NPP in 2014

Approval Date	Document No.	Document Title
01/15/14	NNSA[2014]10	Notification of Approving the Modification Plan of Pre-amplifier for Rotational Speed Measurement of the Reactor Coolant Pump of Qinshan NPP
01/28/14	NNSA[2014]22	Notification of Approving the Modification of Parts of the Firefighting System of Qinshan NPP
03/26/14	NNSA[2014]57	Notification of Approving the Revision of Decay Time in Technical Specification for Qinshan NPP
05/23/14	NNSA[2014]104	Notification of Approving Modification of Parts of the Technical Specification of Qinshan NPP
06/05/14	NNSA[2014]111	Notification of Approving Modification of Isolation Signal Control Circuit of Main Feed Water System of Qinshan NPP
06/05/14	NNSA[2014]112	Notification of Approving the Replacement of Primary System Thermometer Cable of Qinshan NPP
06/19/14	NNSA[2014]141	Notification of Approving the Clearance Levels of Scrapped Air Filter Metal Framework of Qinshan Nuclear Power Base
06/20/14	NNSA[2014]136	Notification of Releasing the Re-criticality Control Point after the R15 of Qinshan NPP
12/04/14	NNSA[2014]275	Notification of Approving the Operation Licenses Renewal of Qinshan 300MWe Unit, Qinshan NPP Phase II Unit 1 and Unit 2 and Qinshan NPP Phase III Unit 1 and Unit 2

Table 8. Inspection Activities for Qinshan NPP in 2014

Start Date	Item	Main Contents of the Inspection
06/12/14	Special inspection on management of radioactive waste	Operation status of radioactive waste disposal system in Qinshan area, and compliance with regulations and standards for radioactive waste management
06/17/14	Regulatory inspection before re-criticality following the R15 refueling	Conformity with conditions set for re-criticality after the R15 refueling
10/20/14	Special inspection on welding activities of the operating NPP	Conformity with regulations and standards for welding activities in Qinshan area
10/28/14	Routine inspection on effectiveness of quality assurance program in Qinshan area	Effectiveness of quality assurance program in Qinshan area

Table 9. Radiation Protection Dose of Qinshan NPP in 2014

Unit	Annual Man Average Effective Dose (mSv)	Annual Maximum Individual Effective Dose (mSv)	Annual Collective Effective Dose (man·Sv)	Normalized Collective Effective Dose (man·mSv/Gwh)
—	0.143	4.035	0.253	0.096,5

Qinshan NPP Phase II

In 2014, 4 units of Qinshan NPP Phase II were kept in stable operation and in good safety state. The 11th refueling overhaul of unit 1, the 10th of unit 2, the 4th of unit 3, and the 2nd of unit 4 were completed. The three safety barriers were kept intact. The gross damage rate of fuel assembly, the leakage rate of the primary loop pressure boundary, and the leakage rate of the containment were all within the specified limits.

Nuclear safety-related approvals for Qinshan NPP Phase II in 2014 are shown in Table 10, and inspection activities in 2014 are shown in Table 11. The operating event in 2014 is shown in Table 12, and the radiation protection dose in 2014 is shown in Table 13.

Table 10. Nuclear Safety-Related Approvals for Qinshan NPP Phase II in 2014

Approval Date	Document No.	Document Title
01/15/14	NNSA[2014]11	Notification of Exemption from Hydro Test on Weld Beads after Maintenance of Parts of the Nuclear Class 2 Auxiliary System Pipeline of Qinshan NPP Phase II Unit 1
02/17/14	NNSA[2014]28	Notification of Approving Refueling Program of Qinshan NPP Phase II Unit 1 and Unit 2
02/25/14	NNSA[2014]32	Notification of Approving Modification of the First Set Safety Valve of Main-Steam System of Qinshan NPP Phase II Unit 1 and Unit 2
02/27/14	NNSA[2014]34	Notification of Approving the Release of the Re-criticality Control Point after the 2nd Refueling Overhaul of Qinshan NPP Phase II Unit 4
03/10/14	NNSA[2014]39	Notification of Approving the Modification of Part of Safety-Related System Periodic Test Requirements (Rev. D) of Qinshan NPP Phase II Unit 1 and Unit 2
03/21/14	NNSA[2014]56	Notification of Approving License Documents including Final Safety Analysis Report (Rev. C) of Qinshan NPP Phase II Unit 1 and Unit 2
04/09/14	NNSA[2014]64	Notification of Approving the Modification of the Reactor Building Pit Filter of Qinshan NPP Phase II Unit 1 and Unit 2
04/09/14	NNSA[2014]65	Notification of Approving the Second Stage Modification of Physical Protection System of Qinshan NPP Phase II Unit 1 and Unit 2
04/09/14	NNSA[2014]66	Notification of Approving the Modification of Addition the Second Invasion Detection Mean of Protection Zone Fence of Qinshan NPP Phase II Unit 3 and Unit 4
04/11/14	NNSA[2014]71	Notification of Approving the Modification of Addition of Eight-shape Blind Plate for Partial Pipeline of Qinshan NPP Phase II Unit 1 and Unit 2
05/23/14	NNSA[2014]103	Notification of Approving the Revision of In-Service Inspection Program of Qinshan NPP Phase II Unit 1 and Unit 2
05/27/14	NNSA[2014]108	Notification of Releasing the Re-criticality Control Point after the 11th Refueling Overhaul of Qinshan NPP Phase II Unit 1 and Unit 2

continued

Approval Date	Document No.	Document Title
06/19/14	NNSA[2014]140	Notification of Approving Irradiation Test in Reactor of the Domestic Third Generation Fuel Assembly of Qinshan NPP Phase II
06/19/14	NNSA[2014]141	Notification of Approving Clearance Levels of Scrapped Air Filter Metal Framework of the Qinshan Nuclear Power Base
06/24/14	NNSA[2014]142	Notification of Approving the Preventative Maintenance of Reactor and Spent Fuel Cooling System Valves of Qinshan NPP Phase II
07/15/14	NNSA[2014]152	Notification of Approving the Modification of Parts of Technical Specification (Rev. C) of Qinshan NPP Phase II Unit 1 and Unit 2
07/18/14	NNSA[2014]163	Notification of Releasing the Re-criticality Control Point after the 10th Refueling Overhaul of Qinshan NPP Phase II Unit 2
09/01/14	NNSA[2014]181	Notification of Approving the Modification of Technical Specification of Qinshan NPP Phase II Unit 3 and Unit 4
09/01/14	NNSA[2014]183	Notification of Approving the Revision of the Maintenance Program of Qinshan NPP Phase II Unit 1 and Unit 2
09/01/14	NNSA[2014]184	Notification of Approving the Improvement of Long Cycle Refueling of Qinshan NPP Phase II Unit 3 and Unit 4
09/30/14	NNSA[2014]208	Notification of Approving the Preventative Maintenance of RRI Valves for Qinshan NPP Phase II Unit 3 and Unit 4
11/18/14	NNSA[2014]260	Notification of Approving Temporary Dynamic Control Rod Scale Test during 304 Overhaul and 403 Overhaul of Qinshan NPP Phase II
11/18/14	NNSA[2014]261	Notification of Approving the Release of the Re-criticality Control Point after the 4th Refueling Overhaul of Qinshan NPP Phase II Unit 3
12/04/14	NNSA[2014]275	Notification of Approving the Operation Licenses Renewal of Qinshan 300MWe Unit, Qinshan NPP Phase II Unit 1 and Unit 2 and Qinshan NPP Phase III Unit 1 and Unit 2
12/05/14	NNSA[2014]278	Notification of Issuing the Operation Licenses for Qinshan NPP Phase II Unit 3 and Unit 4
02/17/14	MEP App[2014]27	Reply to the Environment Impact Report Form for Long Cycle Refueling Project for Qinshan NPP Phase II Unit 3 and Unit 4

Table 11. Inspection Activities for Qinshan NPP Phase II in 2014

Start Date	Item	Main Contents of the Inspectiont
02/25/14	Regulatory inspection for Re-criticality after 402 Overhaul of Qinshan NPP Phase II	The conditions conformity for reactor re-criticality after 402 overhaul
05/22/14	Regulatory inspection for re-criticality after 111 overhaul of Qinshan NPP Phase II	The conditions conformity for reactor re-criticality after 111 overhaul
07/15/14	Regulatory inspection for re-criticality after 210 overhaul of Qinshan NPP Phase II	The conditions conformity for reactor re-criticality after 210 overhaul

III

continued

Start Date	Item	Main Contents of the Inspectiont
11/13/14	Regulatory inspection for re-criticality after 304 overhaul of Qinshan NPP Phase II	The conditions conformity for reactor re-criticality after 304 overhaul

Note: There are three common inspection items in Qinshan area, see Table 8 for details.

Table 12. The Operating Event of Qinshan NPP Phase II in 2014

Event Date	Title	Cause	INES Classification
09/12/14	Automated shutdown caused by condenser vacuum deterioration of Qinshan NPP Phase II Unit 2	Equipment failure	0

Table 13. Radiation Protection Dose of Qinshan NPP Phase II in 2014

Unit	Annual Man Average Effective Dose (mSv)	Annual Maximum Individual Effective Dose (mSv)	Annual Collective Effective Dose (man·Sv)	Normalized Collective Effective Dose (man·mSv/Gwh)
Unit 1 and Unit 2	0.346	6.839	0.905	0.092,3
Unit 3 and Unit 4	0.085	2.109	0.206	0.019,7

Qinshan NPP Phase III

In 2014, 2 units of Qinshan NPP Phase III were kept in stable operation and in good safety state. The 7th refueling overhaul of unit 2 was completed. The three safety barriers were kept intact. The gross damage rate of fuel assembly, the leakage rate of the primary loop pressure boundary, and the leakage rate of the containment were all within the specified limits.

Nuclear safety-related approvals for Qinshan NPP Phase III in 2014 are shown in Table 14, the inspection activities in 2014 is shown in Table 15, and radiation protection dose in 2014 is shown in Table 16.

Table 14. Nuclear Safety-Related Approvals for Qinshan NPP Phase III in 2014

Approval Date	Document No.	Document Title
01/29/14	NNSA[2014]24	Notification of Approving the Displacement of Partial Containment Isolating Valves of Qinshan NPP Phase III
02/24/14	NNSA[2014]33	Notification of Approving the Leaktight Structure Modification of SG 100mm Hand Hole of Qinshan NPP Phase III
04/02/14	NNSA[2014]59	Notification of Approving the Modification of the Containment Pit Filter of Qinshan NPP Phase III
05/12/14	NNSA[2014]84	Notification of Approving the Release of the Re-criticality Control Point after the 7th Overhaul of Qinshan NPP Phase III Unit 2
06/19/14	NNSA[2014]141	Notification of Approving Clearance Levels of Scrapped Air Filter Metal Framework of the Qinshan Nuclear Power Base

continued

Approval Date	Document No.	Document Title
09/22/14	NNSA[2014]197	Notification of Approving the Change of Monitoring System for Tritium in Air of Qinshan NPP Phase III
11/20/14	NNSA[2014]263	Notification of Approving Overall Change of Local Air Cooler of Qinshan NPP Phase III
12/04/14	NNSA[2014]275	Notification of Approving the Operation Licenses Renewal of Qinshan 300MWe Unit, Qinshan NPP Phase II Unit 1 and Unit 2, and Qinshan NPP Phase III Unit 1 and Unit 2

Table 15. Inspection Activities for Qinshan NPP Phase III in 2014

Start Date	Item	Main Contents of the Inspection
05/07/14	Regulatory inspection before re-criticality after the 207 overhaul of Qinshan NPP Phase III	The conditions conformity for reactor re-criticality after 207 overhaul

Note: There are three common inspection items in Qinshan area, see Table 8 for details.

Table 16. Radiation Protection Dose of Qinshan NPP Phase III in 2014

Unit	Annual Man Average Effective Dose (mSv)	Annual Maximum Individual Effective Dose (mSv)	Annual Collective Effective Dose (man·Sv)	Normalized Collective Effective Dose (man·mSv/Gwh)
Unit 1 and Unit 2	0.342	7.192	0.721	0.061,7

Daya Bay NPP

In 2014, Daya Bay NPP was kept in stable operation and in good safety state. The 17th refueling overhaul of unit 2 was carried out. The three safety barriers were kept intact. The gross damage rate of fuel assembly, the leakage rate of the primary loop pressure boundary, and the leakage rate of the containment were all within the specified limits.

Nuclear safety-related approvals for Daya Bay NPP in 2014 are shown in Table 17, and inspection activities in 2014 are shown in Table 18. The operating event of Daya Bay NPP in 2014 is shown in Table 19, and radiation protection dose of Daya Bay NPP in 2014 is shown in Table 20.

Nuclear Safety Chief Engineer of MEP, Vice Administrator of NNSA, Liu Hua, Inspected the Daya Bay NPP

Table 17. Nuclear Safety-Related Approvals for Daya Bay NPP in 2014

Approval Date	Document No.	Document Title
03/13/14	NNSA[2014]54	Notification of Approving Clearance Level of SG Blowdown System Spent Resin of the Daya Bay Nuclear Power Base
05/23/14	NNSA[2014]106	Notification of Approving Revision of the In-service Inspection Program of Daya Bay NPP and Ling'ao NPP
06/13/14	NNSA[2014]129	Notification of Approving the Reception of the Spent Fuel Assemblies into Ling'ao NPP Unit 4 from Daya Bay NPP Unit 2
06/13/14	NNSA[2014]131	Notification of Approving the Modification of Extended Capacity of Reactor Protection Power Source of Daya Bay NPP
07/14/14	NNSA[2014]154	Notification of Approving the Revision of Operation Technical Specification of Daya Bay NPP and Ling'ao NPP Unit 1 and Unit 2
09/19/14	NNSA[2014]194	Notification of Approving Improvement of RPN Intermediate Range Display Channel in PAMS of Daya Bay NPP and Ling'ao NPP Unit 1 and Unit 2
09/19/14	NNSA[2014]195	Notification of Approving Addition of Reactor Coolant High Radioactivity Alarm of Daya Bay NPP and Ling'ao NPP Unit 1 and Unit 2
09/19/14	NNSA[2014]198	Notification of Approving Re-qualification Test and System Parameter Modification after Improvement of Reactor Cooling Monitor System of Daya Bay NPP
09/19/14	NNSA[2014]199	Notification of Approving the Modification to Optimize the Test Circuit of Reactor Protection System of Daya Bay NPP and Ling'ao NPP Unit 1 and Unit 2
09/23/14	NNSA[2014]202	Notification of Approving the Replacement and Improvement of Thermocouple of Reactor Monitoring System of Daya Bay NPP
09/30/14	NNSA[2014]207	Notification of Approving Overall Replacement and Improvement of DEL System Refrigerator of Daya Bay NPP
09/30/14	NNSA[2014]209	Notification of Approving the Modification to Add Diesel Generator Set to Hydro Test Pump Turbine Generator System of Daya Bay NPP Unit 1 and Unit 2 and Special Instrument of Ratification for High Energy Battery Project Commissioning of Daya Bay NPP Unit 2
09/30/14	NNSA[2014]210	Notification of Approving Adjustment of Anti-Dilution Prevention Time of Daya Bay NPP and Ling'ao NPP
10/21/14	NNSA[2014]240	Notification of Approving the Stop of the Spent Fuel Pool Cooling Pump and RRI Pump during Containment Pressure Test of Daya Bay NPP Unit 2
12/23/14	NNSA[2014]287	Notification of Approving the Release of Re-criticality Control Point after the 17th Refueling Overhaul of Daya Bay Unit 2
12/08/14	MEP App[2014]26	Reply Letter on the Improvement Action Plan of the Second Periodic Safety Review of Daya Bay NPP Unit 1 and Unit 2

Table 18. Inspection Activities for Daya Bay NPP in 2014

Start Date	Item	Main Contents of the Inspection
03/19/14	Routine Regulatory inspection on reactor coolant system	Fulfillment of relevant activities on reactor coolant system of Daya Bay NPP and Ling'ao NPP in recent two cycles with documents such as operation technical specification, safety-related system and equipment periodic test surveillance requirements, chemical and radioactive chemical technical specification, in-service inspection program, and preventive maintenance program, etc.
04/23/14	Special inspection on nuclear accident emergency	Fulfillment of practical emergency organization, emergency facility and equipment, and executive procedure and other working documents of Daya Bay nuclear power base with the emergency plan.
06/10/14	Routine inspection on fire prevention	Fulfillment of fire prevention-related items and activities of Daya Bay NPP and Ling'ao NPP with requirements of nuclear safety regulations and operation licenses.
09/16/14	Routine inspection on safety-related electrical system	Operation status of safety-related electrical system of Daya Bay NPP and Ling'ao NPP, conformity of periodic tests with periodic test surveillance requirements, conformity of maintenance items with preventive maintenance programs, conformity of modification items with documents approved by NNSA, and timely and effective treatment of abnormities and defects.
12/16/14	Regulatory inspection before re-criticality after the 217 refueling overhaul of Daya Bay NPP	Fulfillment of reactor criticality conditions after the 217 refueling overhaul
12/23/14	Routine inspection on solid, liquid, and gaseous radioactive waste management	Operation status of solid, liquid, and gaseous radioactive waste treatment systems, and the fulfillment of management with regulations and standards.

Table 19. The Operating Event of Daya Bay NPP in 2014

Event Date	Title	Cause	INES Classification
12/16/14	Reactor shutdown triggered by the wrong trip of No.3 main pump of Daya Bay NPP unit 1	Equipment failure	0

Table 20. Radiation Protection Dose of Daya Bay NPP in 2014

Unit	Annual Man Average Effective Dose (mSv)	Annual Maximum Individual Effective Dose (mSv)	Annual Collective Effective Dose (man·Sv)	Normalized Collective Effective Dose (man·mSv/Gwh)
Unit 1 and Unit 2	0.462	6.906	1.512	0.100,0

Ling'ao NPP

In 2014, Ling'ao NPP was kept in stable operation and in good safety state. The 12th refueling overhaul of unit 1, the 11th of unit 2, the 4th of unit 3, and the 3rd of unit 4 were completed. The three safety barriers were kept intact. The gross damage rate of fuel assembly, the leakage rate of the primary loop pressure boundary, and the leakage rate of the containment were all within the specified limits.

Nuclear safety-related approvals for Ling'ao NPP in 2014 are shown in Table 21, and inspection activities in 2014 are shown in Table 22. Operating events of Ling'ao NPP in 2014 are shown in Table 23, and the radiation protection dose in 2014 is shown in Table 24.

Table 21. Nuclear Safety-Related Approvals for Ling'ao NPP in 2014

Approval Date	Document No.	Document Title
01/13/14	NNSA[2014]7	Notification of the Release of Re-criticality Control Point after the 11th Refueling Overhaul of Ling'ao NPP Unit 2
01/20/14	NNSA[2014]15	Notification of Approving Four Assemblies with Slightly Damaged Grids to be Placed back to the Reactor of Ling'ao NPP
01/21/14	NNSA[2014]16	Notification of Approving Replacement of Nuclear Safety Class Valves of Ling'ao NPP Unit 3 and Unit 4
02/12/14	NNSA[2014]25	Notification of Approving the Release of the Re-criticality after the 3rd Refueling Overhaul of Ling'ao NPP Unit 4
04/11/14	NNSA[2014]69	Notification of Approving the Release of the Re-criticality Control Point after the 4th Refueling Overhaul of Ling'ao NPP Unit 3
06/19/14	NNSA[2014]135	Notification of Approving the Release of the Re-criticality Control Point after the 12th Refueling Overhaul of Ling'ao NPP Unit 1
10/21/14	NNSA[2014]241	Notification of Approving Improvement of Main Pump Shaft Seal Protection of Ling'ao NPP Unit 3 and Unit 4
11/06/14	NNSA[2014]247	Notification of Approving the Implementation of One Eddy Current Inspection on SG Tubes Every Two Cycles of Ling'ao NPP Unit 3 and Unit 4
11/28/14	NNSA[2014]270	Notification of Approving Design Optimization Project (the first group) of Reactor Protection System of Ling'ao NPP Unit 3 and Unit 4
12/23/14	NNSA[2014]288	Notification of Approving Improvement of Operation Monitoring Instrument of Spent Fuel Pool Cooling and Processing System Cooling Pump of Ling'ao NPP Unit 3 and Unit 4

continued

Approval Date	Document No.	Document Title
07/14/14	MEP App[2014]176	Reply to the Environment Impact Registration Form of Construction Project of Large-scale Emergency Mobile Equipment Storehouse of Ling'ao NPP Unit 3 and Unit 4
03/07/14	MEP Notice[[2014]1	Reply Letter of the First Periodic Safety Review Improvement Action Plan of Ling'ao NPP Unit 1 and Unit 2

Note: There are six common review items in Ling'ao NPP and Daya Bay NPP, see Table 17 for details.

Table 22. Inspection Activities for Ling'ao NPP in 2014

Start Date	Item	Main contents of the inspection
01/07/14	Regulatory inspection for re-criticality after 211 overhaul of Ling'ao NPP	The condition conformity for reactor re-criticality after 211 overhaul
02/10/14	Regulatory inspection for re-criticality after 403 overhaul of Ling'ao NPP	The condition conformity for reactor re-criticality after 403 overhaul
04/09/14	Regulatory inspection for Re-criticality after 304 Overhaul of Ling'ao NPP	The condition conformity for reactor re-criticality after 304 overhaul
06/04/14	Regulatory inspection for Re-criticality after 112 Overhaul of Ling'ao NPP	The condition conformity for reactor re-criticality after 112 overhaul

Note: There are five common inspection items in Ling'ao NPP and Daya Bay NPP, see Table 18 for details.

Table 23. Operating Events of Ling'ao NPP in 2014

Event Date	Title	Cause	INES Classification
03/27/14	L3KRT009MA unavailability caused by the sampling line entrance taped	Human error	0
07/01/14	Automatic shutdown during power range measurement channel periodic test	Equipment failure	0
07/29/14	L4KRT036MA first branch on-site sampling locations not in consistent with the design files	Human error	0

Table 24. Radiation Protection Dose of Ling'ao NPP in 2014

Unit	Annual Man Average Effective Dose(mSv)	Annual Maximum Individual Effective Dose(mSv)	Annual Collective Effective Dose(man·Sv)	Normalized Collective Effective Dose(man·mSv/Gwh)
Unit 1 and unit 2	0.300	7.731	0.858	0.054,0
Unit 3 and unit 4	0.185	4.098	0.623	0.037,0

Tianwan NPP

In 2014, the overall operation conditions of Tianwan NPP unit 1 and unit 2 were good, and there was no operating events. The 7th refueling overhaul of unit 1 and unit 2 were completed. The three safety barriers were kept intact. The gross damage rate of fuel assembly, the leakage rate of the primary loop pressure boundary, and the leakage rate of the containment were all within the specified limits.

Nuclear safety-related approvals for Tianwan NPP unit 1 and unit 2 in 2014 are shown in Table 25, and inspection activities in 2014 are shown in Table 26. The Radiation protection dose of Tianwan NPP in 2014 is shown in Table 27.

Vice Director General of Nuclear and Radiation Safety Regulation Department Ⅱ of MEP, Tang Bo, Inspected Tianwan NPP

Table 25. Nuclear Safety-Related Approvals for Tianwan NPP Unit 1 and Unit 2 in 2014

Approval Date	Document No.	Document Title
01/16/14	NNSA[2014]12	Notification of Approving the Temporary Reduce of Fuel Pool Water Level during Tianwan NPP T107, T207 Overhaul
01/29/14	NNSA[2014]19	Notification of Approving the Release of the Re-criticality Control Point after the 7th Refueling Overhaul of Tianwan NPP Unit 1
03/13/14	NNSA[2014]53	Notification of Approving Application of Biodegradable Protective Supplies and Modification of Associated Processing Facilities
04/18/14	NNSA[2014]73	Notification of Approving the Release of the Re-criticality Control Point after the 7th Refueling Overhaul of Tianwan NPP Unit 2
04/25/14	NNSA[2014]78	Notification of Approving Addition the Temporary Storehouse for Solid Radioactive Waste of Tianwan NPP
09/19/14	NNSA[2014]196	Notification of Approving Retrofit Replacement of Shutdown Breakers of Tianwan NPP Unit 1 and Unit 2 Control and Protection System
09/19/14	NNSA[2014]200	Notification of Approving Modification of Part of the Technical Specification of Tianwan NPP Unit 1 and Unit 2
09/19/14	NNSA[2014]201	Notification of Approving Replacement of CRDM Position Indicator of Tianwan NPP Unit 1 and Unit 2
10/08/14	NNSA[2014]211	Notification of Approving the Modification of Emergency Drain Cooler of Volume and Boron Control System (1KBA40AC001) of Tianwan NPP Unit 1

continued

Approval Date	Document No.	Document Title
11/13/14	NNSA[2014]255	Notification of Approving Safety Significance Modification of Recycled Uranium Fuel into the Reactor of Tianwan NPP
11/18/14	NNSA[2014]262	Notification of Approving the Whole Replacement of Neutron Temperature Measurement Channel and Cable in its Loop of Tianwan NPP Unit 1 and Unit 2
12/16/14	NNSA[2014]285	Notification of Approving Modification of Technical Specification including Main Steam Valve Station Movement Test of Tianwan NPP Unit 1 and Unit 2
04/23/14	MEP App[2014]95	Reply to the Environment Impact Report of Addition the Temporary Storehouse for Solid Radioactive Waste of Tianwan NPP

Table 26. Inspection Activities for Tianwan NPP Unit 1 and Unit 2 in 2014

Start Date	Item	Main contents of the inspection
01/22/14	Regulatory inspection for reactor re-criticality after 107 overhaul of Tianwan NPP unit 1	The condition conformity for reactor re-criticality after 107 overhaul
04/14/14	Regulatory inspection for reactor re-criticality after 207 overhaul of Tianwan NPP unit 2	The condition conformity for reactor re-criticality after 207 overhaul
06/11/14	Regulatory inspection on the nuclear material control	Site oversight and inspection on nuclear material control and physical protection of Tianwan NPP
07/30/14	Routine regulatory inspection on computer software and information management situation of Tianwan NPP	Management of software, information and all kinds of working procedures of Tianwan NPP
10/09/14	Regulatory inspection on on-site nuclear emergency comprehensive exercises of Tianwan NPP in 2014	Site oversight and inspection on on-site nuclear emergency comprehensive exercises of Tianwan NPP in 2014
10/29/14	Routine regulatory inspection on the operating experience feedback of Tianwan NPP	The operating experience feedback of Tianwan NPP

Table 27. Radiation Protection Dose of Tianwan NPP in 2014

Unit	Annual Man Average Effective Dose(mSv)	Annual Maximum Individual Effective Dose(mSv)	Annual Collective Effective Dose(man·Sv)	Normalized Collective Effective Dose(man·mSv/Gwh)
Unit 1	0.130	2.994	0.316	0.038,0
Unit 2	0.081	1.492	0.181	0.021,4

Hongyanhe NPP

In 2014, Hongyanhe NPP unit 1 and unit 2 were kept in stable operation and in good safety state. The 1st refueling overhaul of unit 1 was completed. The three safety barriers were kept intact. The gross damage rate of fuel assembly, the leakage rate of the primary loop pressure boundary, and the leakage rate of the containment were all within the specified limits.

Nuclear safety-related approvals for Hongyanhe NPP unit 1 and unit 2 in 2014 are shown in Table 28, and inspection activities in 2014 are shown in Table 29. Operating events in 2014 are shown in Table 30, and the radiation protection dose in 2014 is shown in Table 31.

An Overall View of Hongyanhe NPP Phase I Unit 1 to Unit 4

Table 28. Nuclear Safety-Related Approvals for Hongyanhe NPP Unit 1 and Unit 2 in 2014

Approval Date	Document No.	Document Title
03/12/14	NNSA[2014]52	Notification of Approving Implementation Time Window of the Primary Loop Re-hydrotest and Complete In-Service Inspection of Hongyanhe NPP Unit 1
04/09/14	NNSA[2014]63	Notification of Approving the Modification of Position of Essential Service Water System Temperature Measurement Points of Liaoning Hongyanhe NPP Unit 1
04/24/14	NNSA[2014]76	Notification of Releasing 90% Rated Power (thermal power) Control Point of Liaoning Hongyanhe NPP Unit 2
05/22/14	NNSA[2014]102	Notification of Approving the Refueling Program of Liaoning Hongyanhe NPP Unit 1 and Unit 2
05/30/14	NNSA[2014]109	Notification of Approving the Release of the Re-criticality Control Point after the 1st Refueling Overhaul of Liaoning Hongyanhe NPP Unit 1
12/30/14	NNSA [2014]303	Notification of Approving Stop of the Spent Fuel Pool Cooling Pump and RRI Pump in the Course of Containment Pressure Test during the 1st Cycle Shutdown of Hongyanhe NPP Unit 2
09/05/14	NNSA Notice[2014]117	Reply Letter of Approving “On-site Emergency Plan of Liaoning Hongyanhe NPP Phase I”

Table 29. Inspection Activities for Hongyanhe NPP Unit 1 and Unit 2 in 2014

Start Date	Item	Main contents of the inspection
03/10/14	Regulatory inspection on preparation of the 1st refueling overhaul of Hongyanhe NPP unit 1	Radiation protection and waste management, physical protection and fire prevention safety, refueling overhaul management, preparation of the 1st refueling of unit 1 overhaul, implementation of requirements from each previous dialogue meetings and nuclear safety regulation, issues needed further implementation which is related to the refueling overhaul report review, and other related work
04/14/14	Regulatory inspection on 90% rated power (thermal power) control point of Hongyanhe NPP unit 2	Completion of system commissioning tests after the 1st criticality, main unexpected event sheets (UES) and design change applications (DCR), operation management (including implementation of technical specification, periodic testing, etc.), handling of operating events, system and equipment defects treatment, and implementation of the nuclear safety regulatory requirements
05/20/14	Regulatory inspection on re-criticality control points after the 1st overhaul of Hongyanhe NPP unit 1	The condition conformity for reactor re-criticality after the 1st overhaul of unit 1
10/27/14	Regulatory inspection on radiation protection, radiation monitoring of Hongyanhe NPP unit 1 and full power inspection of unit 2	Radiation protection and radioactive waste management of unit 1, commissioning and operation management, nuclear power plant radiation monitoring, and implementation of requirements from previous dialogue meetings and nuclear safety regulations of unit 2

Table 30. Operating Events of Hongyanhe NPP in 2014

Event Date	Title	Cause	INES Classification
02/05/14	Unit 2 ring crane not in the anti-seismic position when the primary loop temperature above 90℃	Human error	0
02/25/14	EUF of unit 2 unavailable for long time	Equipment failure	0
03/12/14	H2RCV002PO pump shaft balance thrust retaining ring fractured at neck	Equipment failure	0
07/21/14	Unit 1 and unit 2 shutdown caused by a large number of jellyfish rushed into the CFI water intake	Equipment failure	0
08/01/14	Unit 2 forced back to the NS/SG mode due to CEX condenser seawater leakage	Equipment failure	0

Table 31. Radiation Protection Dose of Hongyanhe NPP in 2014

Unit	Annual Man Average Effective Dose(mSv)	Annual Maximum Individual Effective Dose(mSv)	Annual Collective Effective Dose(man·Sv)	Normalized Collective Effective Dose(man·mSv/Gwh)
Unit 1 and Unit 2	0.329	8.076	1.002	0.084,0

Ningde NPP

In 2014, the overall operation conditions of Ningde NPP unit 1 and unit 2 were good. The 1st refueling overhaul of unit 1 was completed. The three safety barriers were kept intact. The gross damage rate of fuel assembly, the leakage rate of the primary loop pressure boundary, and the leakage rate of the containment were all within the specified limits.

Nuclear safety-related approvals for Ningde NPP unit 1 and unit 2 in 2014 are shown in Table 32, and inspection activities in 2014 are shown in Table 33. Operating events in 2014 are shown in Table 34, and the radiation protection dose in 2014 is shown in Table 35.

Table 32. Nuclear Safety-Related Approvals for Ningde NPP Unit 1 and Unit 2 in 2014

Approval Date	Document No.	Document Title
01/06/14	NNSA[2014]5	Notification of Approving the Special Application to Stop the RRI Pump and Spent Fuel Pool Cooling Pump when Listening Checks during the Containment Pressure Test of Ningde NPP Unit 1
01/26/14	NNSA[2014]17	Notification of Approving the Refueling Program of Fujian Ningde NPP Unit 1 and Unit 2
01/27/14	NNSA[2014]20	Notification of Approving the Reversion of “Safety-related System and Equipment Periodic Test Surveillance Requirements of Ningde NPP Unit 1 and Unit 2”
01/27/14	NNSA[2014]21	Notification of Approving the Modification Program of Air-Cooled Device of Emergency Diesel Generators Cooling Water System of Ningde NPP Unit 1
02/17/14	NNSA[2014]26	Notification of Releasing 90% Rated Power Control Point of Fujian Ningde NPP Unit 2
02/27/14	NNSA[2014]35	Notification of Approving the “Operation Technical Specification of Fujian Ningde Unit 1 and Unit 2” (Rev. 2)
02/27/14	NNSA[2014]36	Notification of Approving the “Startup Physical Test Surveillance Requirements of Fujian Ningde Unit 1 and Unit 2” (Rev. 2)
04/25/14	NNSA[2014]75	Notification of Approving the Release of the Re-criticality Control Point after the 1st Refueling Overhaul of Fujian Ningde Unit 1
03/12/14	NNSA Notice[2014]34	Reply Letter of Approving the “Quality Assurance Program (commissioning phase) of Fujian Ningde NPP Phase I”

continued

Approval Date	Document No.	Document Title
04/16/14	NNSA Notice[2014]46	Notification of Issuing the “Inspection Report for the 1st Criticality after 1st Refueling Overhaul of Fujian Ningde NPP Unit 1”
11/13/14	NNSA Notice[2014]144	Reply Letter of Approving the “Quality Assurance Program (commissioning phase) of Fujian Ningde NPP Phase I” (Rev. 3)
11/13/14	NNSA Notice[2014]145	Reply Letter of Approving the “Quality Assurance Program (design and construction phase) of Fujian Ningde NPP Phase I” (Rev. 1)

Table 33. Inspection Activities for Ningde NPP Unit 1 and Unit 2 in 2014

Start Date	Item	Main contents of the inspection
01/02/14	Inspection on the first grid connection control point of Fujian Ningde NPP unit 2	Implementation of site conditions before the grid connection of unit 2
01/14/14	The 1st routine regulatory inspection on Ningde NPP in 2014	Unit 1 operation management, radiation protection and waste management, physical protection and fire protection, emergency preparation and emergency response, refueling overhaul management, preparation of the 1st refueling overhaul of unit 1, implementation of requirements from previous dialogue meetings and nuclear safety regulation, and issues needed further implementation in the refueling overhaul report review
02/11/14	Regulatory inspection of 90% rated power control point of Ningde NPP unit 2	System commissioning and operation management, radiation protection, effluent discharge, mechanical equipment, I&C and electrical equipment, and defects elimination during unit 2 power decreasing
04/02/14	Inspection for criticality control points after N101 overhaul of Ningde NPP	The condition conformity for reactor re-criticality after N101 overhaul
07/02/14	Regulatory inspection for 100% power of Ningde NPP unit 2 and third routine regulatory inspection in 2014	Commissioning management and test operation management of unit 2

Table 34. Operating Events of Ningde NPP in 2014

Event Date	Title	Cause	INES lassification
02/24/14	RCP second and third loop flows and the total core flow above the mechanical design flow criteria of unit 2	Equipment failure	0
02/26/14	Automatic shutdown of unit 2 reactor caused by unit 1 main transformer power transmission	Equipment failure	0
02/26/14	Unavailability for long time of unit 1 EUF	Human error	0

continued

Event Date	Title	Cause	INES lassification
03/24/14	Unavailability for long time of the fire protection in the charge pump room of unit 1	Equipment failure	0
03/24/14	The repair time of unavailable RRA002PO beyond operation technical specification requirements of unit 2	Equipment failure	0
04/14/14	Retreat of unit 2 due to exceeding limits of SG sodium and positive conductivity	Human error	0
06/09/14	Low cooling water flow of unit 1 RRA heat exchanger	Human error	0
07/08/14	Critical operation with the first group I0 in unit 1	Equipment failure	0
08/06/14	Unit 2 KRT036MA 5th branch on-site sampling position not in consistent with the design files	Human error	0

Table 35. Radiation Protection Dose of Ningde NPP in 2014

Unit	Annual Man Average Effective Dose(mSv)	Annual Maximum Individual Effective Dose(mSv)	Annual Collective Effective Dose(man·Sv)	Normalized Collective Effective Dose(man·mSv/Gwh)
Unit 1 and unit 2	0.311	6.064	0.786	0.068,0

An Overall View of Ningde NPP Unit 1 to Unit 4

Ningde NPP Unit 2 Satisfied the Requirements on Commercial Operation

Nuclear Power Plants under Construction

Hongyanhe NPP

Hongyanhe NPP unit 3 reached the 1st criticality on October 24, 2014. Hot test preparation of unit 4 was in progress.

Nuclear safety-related approvals for Hongyanhe NPP unit 3 and unit 4 in 2014 are shown in Table 36, and inspection activities in

2014 are shown in Table 37. One constructing event and three operating events occurred in 2014 (see Table 38 and Table 39).

Table 36. Nuclear Safety-Related Approvals for Hongyanhe NPP Unit 3 and Unit 4 in 2014

Approval Date	Document No.	Document Title
09/11/14	NNSA[2014]191	Notification of Issuing the "Instrument of Ratification for the Initial Fuel Loading" of Hongyanhe NPP Unit 3
09/28/14	NNSA[2014]205	Notification of Approving the Release of Control Point before System Cold Tests of Liaoning Hongyanhe NPP Unit 4
10/21/14	NNSA[2014]424	Notification of Approving the Release of the 1st Criticality Control Point of Liaoning Hongyanhe NPP Unit 3
09/11/14	MEP App[2014]224	Reply of Approving Environment Impact Report (operation phase) of Liaoning Hongyanhe NPP Unit 3 and Unit 4

Table 37. Inspection Activities for Hongyanhe NPP Unit 3 and Unit 4 in 2014

Start Date	Item	Main contents of the inspection
06/09/14	Nuclear safety routine inspection on commissioning status of Hongyanhe NPP unit 3	Commissioning management and quality assurance, hot tests completion, DCS, three wastes (including liquid, gaseous and solid), radiation protection, operation preparation, implementation of the safety requirements in each inspection, and other issues including Post-Fukushima improvements
07/15/14	Regulatory inspection before the initial fuel loading of Hongyanhe NPP unit 3	Quality assurance, structures and nuclear safety equipment, system commissioning, operation preparation, physical protection and fuel storage, emergency preparation, radiation protection, environmental protection facility, license conditions, and implementation of the safety requirements on each inspection and Post-Fukushima improvements
09/22/14	Control point inspection on cold tests of Hongyanhe NPP unit 4	Preparation and quality assurance on cold tests program of primary system, installation of equipment and system delivery related to the cold tests, non-conformance solutions on civil construction and installation, and implementation of the safety requirements on each inspection
10/14/14	Regulatory inspection before the 1st criticality of Hongyanhe unit 3	Completion status of commissioning tests and preparation, main design modification application, implementation of technical specification after the initial fuel loading and periodic tests, and implementation of relevant safety management requirements, review comments and other issues concerning safety

continued

Start Date	Item	Main contents of the inspection
11/04/14	Regulatory inspection before the first connection to the grid for Hongyanhe NPP unit 3 and the special inspection on illegal equipment repair welding	System commissioning status before connection to the grid and defects treatment, operation management, maintenance management and implementation of remaining problems during construction phase and management requirements on each inspections, overall conditions of welding procedure management, welding management and technology procedure, startup, treatment and close of welding non-conformance item, welder qualification, welding procedure assessment, welding materials management, quality assurance records of welding repairs process, violation of procedures and regulations, and checking on self-inspection report of operating organization

Table 38. The Constructing Event of Hongyanhe NPP Unit 3 and Unit 4 in 2014

Event Date	Unit	Title
03/01/14	Unit 3	Damage of LHQ fan blades

Table 39. Operating Events of Hongyanhe NPP Unit 3 and Unit 4 in 2014

Event Date	Title	Cause	INES Classification
10/23/14	Critical operation with the first I0 of Hongyanhe NPP unit 3	Human error	0
11/15/14	Heavy gas protection action caused by main transformer C phase failure of Hongyanhe unit 3	Equipment failure	0
12/11/14	The DWS unavailability time of Hongyanhe unit 3 beyond the maintenance time limit	Human error	0

Ningde NPP

Cold tests of Ningde NPP, unit 3 were finished on May 10, hot tests were finished on October 13, and the fuel loading was prepared. 4NCC tests of unit 4 started on December 25, and the single system commissioning was transited to the integrated commissioning actuation. Neither a construction event nor a operation event occurred in 2014.

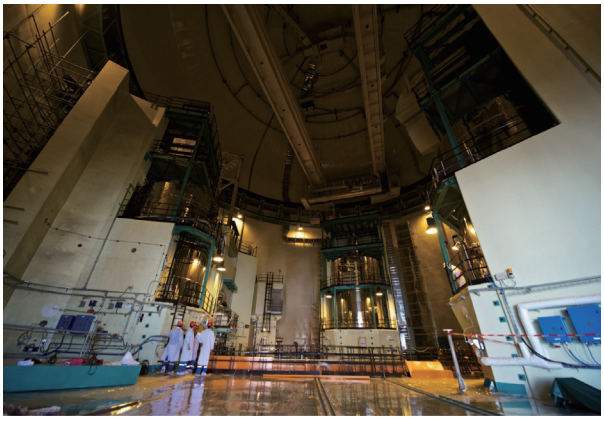
Nuclear safety-related approvals for Ningde NPP unit 3 and 4 in 2014 are shown in Table 40, and inspection activities in 2014 are shown in Table 41.

Table 40. Nuclear Safety-Related Approvals for Ningde NPP Unit 3 and Unit 4 in 2014

Approval Date	Document No.	Document Title
06/19/14	NNSA[2014]134	Notification of Adjusting the Part Construction and Commissioning Control Point of Ningde NPP
12/15/14	NNSA[2014]280	Notification of Issuing the "Permission for the Initial Fuel Loading" of Ningde NPP Unit 3
03/12/14	NNSA Notice[2014]35	Reply Letter of Accepting the "Commissioning Program of Fujian Ningde NPP Unit 3 and Unit 4" (Rev. B)
12/02/14	NNSA Notice [2014]163	Notification of Issuing the "Report of Comprehensive Regulatory Inspection before the Initial Fuel Loading of Fujian Ningde NPP Unit 3"
12/15/14	MEP App [2014]342	Reply of Approving Environment Impact Report of Fujian Ningde NPP Unit 3 and Unit 4 (operation phase)

Table 41. Inspection Activities for Ningde NPP unit 3 and 4 in 2014

Start Date	Item	Main Contents of the Inspection
03/17/14	Inspection on main pipe welding of Ningde NPP unit 4	Unit construction management, main piping welding preparation, and implementation of safety requirements in previous dialogue meetings and inspections
04/21/14	Control point inspection on cold tests of Ningde NPP unit 3	Status of handing over the installation of cold-tests-related systems, the preparation of system cold tests of unit 3, and implementation of regulatory requirements and those of previous dialogue meetings
10/13/14	Fourth routine regulatory inspection on Ningde NPP in 2014	Quality assurance, implementation of safety requirements in previous inspections, Post-Fukushima improvements, engineering and operation management, environment monitoring, emergency preparation, radiation protection and radioactive sources management, industrial safety, physical protection, and fire-fighting safety
11/19/14	Comprehensive inspection before the initial fuel loading of Ningde NPP unit 3	Quality assurance, structures and nuclear safety equipment, system tests and operation preparation, physical protection and fuel storage, radiation protection, environmental protection facilities and emergency preparation, license conditions, remaining problems, and Post-Fukushima improvements



An Overall Inside View of Ningde NPP Unit 3 Nuclear Island

RPV of Ningde NPP Unit 4 Nuclear Island Arrived at the Site

Fuqing NPP

The initial fuel loading of Fuqing NPP unit 1 started on May 30, the 1st criticality reached on July 24, the unit 1 was connected to the grid on August 20, and the 168-hour model operation phase was finished on November 22. Cold tests of unit 2 began on July 25, and hot tests began from November 20. Unit 3 was in the peak period for installation. Dome hoisting of unit 4 was finished on June 24, and the installation of unit 4 equipment has started.

Nuclear safety-related approvals for Fuqing NPP in 2014 are shown in Table 42, and inspection activities in 2014 are shown in Table 43. Three constructing events and six operating events occurred in Fuqing NPP in 2014 (see Table 44 and Table 45).

Table 42. Nuclear Safety-Related Approvals for Fuqing NPP in 2014

Approval Date	Document No.	Document Title
05/30/14	NNSA[2014]110	Notification of Issuing the “Instrument of Ratification for the Initial Fuel Loading of Fuqing NPP Unit 1”
07/14/14	NNSA[2014]153	Notification of Approving the Release of Control Point before Cold Tests of Fujian Fuqing NPP Unit 2
07/14/14	NNSA[2014]156	Notification of Approving the Release of the 1st Criticality Control Point of Fujian Fuqing NPP Unit 1
11/06/14	NNSA[2014]248	Notification of Approving the Release of 90% Nominal Power Control Point of Fujian Fuqing NPP Unit 1
11/17/14	NNSA[2014]258	Notification of Approving Emptying the Spent Fuel Pool of Fuqing NPP Unit 1
04/01/14	NNSA Notice[2014]38	Official Letter of Issuing “Non-routine Regulatory Inspection Report on DCS Installation and Commissioning of Fuqing NPP Unit 1”

continued

Approval Date	Document No.	Document Title
04/11/14	NNSA Notice[2014]44	Official Letter of Issuing “Inspection Report on Environmental Protection Facilities before the Initial Fuel Loading of Fuqing NPP Unit 1”
04/25/14	NNSA Notice[2014]55	Official Letter of Issuing “Comprehensive Inspection Report before the Initial Fuel Loading of Fuqing NPP Unit 1”
05/30/14	MEP App [2014]128	Reply of Approving Environment Impact Report of Fujian Fuqing NPP Unit 1 and Unit 2 (operation phase)

Table 43. Inspection Activities for Fuqing NPP in 2014

Start Date	Item	Main Contents of the Inspection
02/25/14	The 1st routine regulatory inspection in 2014	Implementation of quality assurance program (commissioning phase) of Fuqing NPP unit 1, commissioning management (commissioning program, system commissioning program, implementation of commissioning procedure, treatment of commissioning defects and abnormal items, and commissioning modification management), DCS installation and commissioning (inspection on incoming merchandise, on-site quality control of installation and commissioning), pre-service inspection, and implementation of safety requirements
03/18/14	The 1st non-routine nuclear safety inspection in 2014 and special inspection on DCS system	Close of DCS pending issues of Fuqing NPP unit 1 during manufacturing phase, on-site quality control of DCS installation and commissioning, and implementation of the requirements in the 1st routine regulatory inspection on East China Regional Office of NNSA from February 25 to 27
03/26/14	Regulatory inspection on environmental protection facilities of unit 1	Installation and commissioning of waste treatment systems and environment monitoring system of Fuqing NPP unit 1 and unit 2, installation and commissioning of radioactive effluent monitoring system of unit 1, and emergency facilities, non-radioactive contaminant treatment or discharge facilities of unit 1, management of relevant quality recorded documents, and implementation of the requirements in environmental impact report review process and on-site survey
04/16/14	Comprehensive regulatory inspection before the initial fuel loading of unit 1	Project progress before the initial fuel loading of Fuqing NPP unit 1, quality assurance, construction quality, pre-service inspection, commissioning, operation preparation, radiation protection, physical protection and fuel storage, emergency preparation, DCS commissioning, environmental protection facilities, Post-Fukushima improvements, and other issues concerned
06/16/14	Second routine regulatory inspection in 2014 and Regulatory inspection on control point of dome installation of unit 4	Implementation of quality assurance program of Fuqing NPP unit 2-4, quality on NI installation, quality on NI civil construction, preparation before dome hoisting of unit 4, and implementation of relevant safety management requirements

continued

Start Date	Item	Main Contents of the Inspection
07/07/14	Regulatory inspection on the 1st criticality control point of unit 1	Completion of commissioning tests and preparation before the 1st criticality, design modification application, implementation of technical specification after initial fuel loading, periodic tests, and implementation of relevant safety management requirements and review comments
07/07/14	Control point inspection before the cold tests of unit 2	Preparation and quality assurance on cold tests of primary system, installation of equipment and status of handover systems related to the main system cold tests, civil constructions and installation and treatment on non-conformance items of installation, and implementation of the safety requirements in previous inspections
08/06/14	Regulatory inspection before the first connection to the grid for unit 1	System commissioning status before grid connection and defects repairs, operation management (including compliance with technical specification, periodic tests management, treatment of operating events, operating defects repairs, operating experience feedback), maintenance management (maintenance program implementation, personnel training and authorization, preventative maintenance and corrective maintenance management, and maintenance qualification)
11/03/14	Control point inspection on 90% power of unit 1	Commissioning defects, abnormal items at maintenance stage, operating management after grid connection (including periodic tests), treatment of operating events, system and equipment defects repairs after temporary operating handover, and implementation of relevant safety management requirements

Table 44. Constructing Events of Fuqing NPP in 2014

Event Date	Unit	Title
06/20/14	Unit 2	Abnormal actuation of safety spray pump (2EAS002PO)
08/13/14	Unit 2	Non-conformance found in welding line between pressurizer lower head and vertical support skirt by UT tests
12/19/14	Unit 2	Abnormal pad temperature of three primary pumps thrust

Table 45. Operating Events of Fuqing NPP in 2014

Event Date	Title	Cause	INES Classification
07/18/14	Unit 1 unplanned shutdown due to the failure of SG feed meter 1ARE048MD flash	Equipment failure	0
08/04/14	Unit 1 short time unavailability of KIC operator office	Equipment failure	0

continued

Event Date	Title	Cause	INES Classification
08/09/14	Unit 1 unplanned shutdown caused by power range channel tests of nuclear instrumentation system	Human error	0
09/09/14	Unit 1 unplanned shutdown caused by SG high water level signal after stop the primary pump	Equipment failure	0
09/15/14	Unit 1 LHSP unexpected initiation during implementation of TCA	Human error	0
12/26/14	Unit 1 short time unavailability of KIC operator office	Equipment failure	0

Inspectors of Nuclear and Radiation Safety Regulation Checking on the Fuel Building of Fuqing NPP unit 1

Fuqing NPP On-site Oversight by Inspectors from East China Regional Office of NNSA

Yangjiang NPP

Commercial operation of Yangjiang NPP unit 1 began on March 25. Hot tests of unit 2 were finished on December 1, and the initial fuel loading was prepared. Cold tests of unit 3 were completed on November 25. For unit 4, the dome hoisting was finished. Unit 5 and unit 6 were under civil construction.

Nuclear safety-related approvals for Yangjiang NPP in 2014 are shown in Table 46, and inspection activities in 2014 are shown in Table 47. Two constructing events and six operating events occurred in 2014 (see Table 48 and Table 49).

Table 46. Nuclear Safety-Related Approvals for Yangjiang NPP in 2014

Approval Date	Document No.	Document Title
09/01/14	NNSA[2014]182	Notification of Approving the Refueling Program (Rev. 10) of Yangjiang NPP

continued

Approval Date	Document No.	Document Title
09/30/14	NNSA[2014]206	Reply Letter of SG Damage Assessment and Repairing Plan of Yangjiang NPP Unit 2
10/09/14	NNSA[2014]215	Notification of Approval of the 500kV Transmission Line Modification of Yangjiang NPP
11/06/14	NNSA[2014]246	Notification of Approving the Release of Control Point before Cold Tests of Yangjiang NPP Unit 3
11/13/14	NNSA[2014]254	Notification of Approval of Upgrading the “In-service Inspections Program of Yangjiang NPP”
03/10/14	NNSA Notice [2014]33	Reply Letter of Implementation of Frequency Control Tests of Yangjiang NPP Unit 1
06/23/14	NNSA Notice [2014]84	Reply Letter of Accepting the “Quality Assurance Program during Design and Construction Phase of Yangjiang NPP” (Rev.12)
06/23/14	NNSA Notice [2014]85	Reply Letter of Accepting the “Quality Assurance Program during Commissioning Phase of Yangjiang NPP” (Rev.13)
10/21/14	NNSA Notice [2014]136	Reply Letter of Accepting the “Quality Assurance Program during Commissioning of Yangjiang NPP Unit 3 and Unit 4” (Rev. A)
12/31/14	NNSA Notice [2014]183	Notification of Issuing the “Inspection Report of Yangjiang NPP Unit 2 before the Initial Fuel Loading”

Table 47. Inspection Activities for Yangjiang NPP in 2014

Start Date	Item	Main Contents of the Inspection
01/19/14	Control point inspection before 90% power of unit 1	System commissioning completion status after grid connection, implementation of UES, DCR, TCA, remaining problems, operation management (including compliance with technical specification, periodic tests), treatment of operating events (LOE\IOE), system and equipment defect repairs, and implementation of relevant safety management requirements
04/01/14	Non-routine inspection on operating events of Yangjiang NPP unit 1	Determination, track and feedback management of operation events; processes, root causes and experience feedback of operation events (Y-LOE-1-2014003, Y-LOE-1-2014004, Y-LOE-1-2014005); operator training and authorization management, control measures of human error, closure of pending items, system hand-over management, and management of Temporary Control Alternation (TCA), and Temporary Special Device (TSD)
05/27/14	Regulatory inspection on control point before dome hoisting of Yangjiang unit 4	Project overall progress, conformity with construction license conditions and safety management requirements of previous inspections, quality assurance program implementation during design and construction, quality control of important items and activities, treatment status and experience feedback of major non-conformance items (constructing events), and completion of dome hoisting preparation

continued

Start Date	Item	Main Contents of the Inspection
08/12/14	Routine regulatory inspection on 100% power of Yangjiang unit 1	Status of commissioning tests, operation management of the units, radiation protection and radioactive waste management, operation and main abnormal items of special safety facility, nuclear safety-related interior events and treatment, operation of physical protection system, and implementation of the safety requirements in previous inspections
11/04/14	Control point inspection on cold tests of Yangjiang NPP unit 3	Preparation and quality assurance of cold tests (commissioning phase), hand-over of installed equipment and systems related to the cold tests, treatment of non-conformance items during civil construction and installation, and implementation of the safety requirements in pervious inspections
12/02/14	Routine inspection on commissioning management of Yangjiang NPP unit 2	Organization structure and responsibilities, commissioning documents management, commissioning interface management, commissioning implementation management, commissioning safety management, commissioning item management, and commissioning quality management
12/22/14	Regulatory inspection before the initial fuel loading of Yangjiang NPP unit 2	Implementation of quality assurance program, installation quality of structures and nuclear safety equipment, system commissioning, operation preparation, operation event feedback, radiation and environmental protection facilities, physical protection, fuel storage, license conditions, applying documents, implementation of the safety requirements in previous inspections, and other items such as Post-Fukushima improvements and emergency preparation

Table 48. Constructing Events of Yangjiang NPP in 2014

Event Date	Unit	Title
06/05/14	Unit 2	Impacts on hot terminal water room surface due to foreign item in primary side of SG1 and SG3
11/07/14	Unit 3	Abnormal deformation of heating-insulated tube during the hydro test after installation of 8#CRDM

Table 49. Operating Events of Yangjiang NPP in 2014

Event Date	Title	Cause	INES Classification
01/04/14	Non-trigger of partial condenser failure signals in RPR protection due to connection error of high-high water level signal of condenser of unit 1	Human error	0
01/11/14	Reactor shutdown triggered by SG #3 water level high-high and P7 signal of unit 1	Human error	0
02/26/14	The primary loop pressure beyond the value in P-T drawing in NS/RRA mode of unit 1	Human error	0

continued

Event Date	Title	Cause	INES Classification
02/28/14	System unavailability due to unremoved temporary blind flange in EUF entrance in RX of unit 1	Human error	0
03/05/14	Automated shutdown triggered by loss of main feed-water of unit 1	Human error	0
03/11/14	1RCP loop flow beyond the flow criteria in mechanical design of unit 1	Equipment failure	0

An Overall View of Yangjiang NPP Unit 1 to Unit 6

Dome Hoisting of Yangjiang Unit 4

Qinshan NPP Expansion Project (Fangjiashan NPP)

Hot tests for Fangjiashan NPP unit 1 were completed on July 12. The initial fuel loading was completed on September 3. Fangjiashan NPP unit 1 reached the 1st criticality on October 21, and satisfied the requirements on commercial operation on December 15. Cold tests for unit 2 were completed on May 26, and hot tests were completed on October 28. The initial fuel loading was completed on December 5. Fangjiashan NPP unit 3 achieved the 1st criticality on December 25.

Nuclear safety-related approvals for Fangjiashan NPP in 2014 are shown in Table 50. Inspection activities for Fangjiashan NPP in 2014 are shown in Table 51. One constructing event (see Table 52) and three operating events (see Table 53) occurred in Fangjiashan NPP in 2014.

Table 50. Nuclear Safety-Related Approvals for Fangjiashan NPP in 2014

Approval Date	Document No.	Document Title
09/01/14	NNSA [2014]180	Notification of Issuing the “Permission for the Initial Fuel Loading of Qinshan NPP Expansion Project (Fangjiashan NPP) Unit 1”

continued

Approval Date	Document No.	Document Title
10/20/14	NNSA [2014]237	Notification of Approving the "Power Supply Modification of Jacking-up Oil Pump of the Main Pump" of Qinshan NPP Expansion Project (Fangjiashan NPP)
10/20/14	NNSA [2014]238	Notification of Releasing the Control Point of the 1st Criticality of Qinshan NPP Expansion Project (Fangjiashan NPP) Unit 1
12/02/14	NNSA [2014]274	Notification of Issuing the "Permission for the Initial Fuel Loading of Qinshan NPP Expansion Project (Fangjiashan NPP) Unit 2"
12/02/14	NNSA [2014]277	Notification of Approving the Release of the Control Point before Reaching 97% of the Rated Power (thermal) of Qinshan NPP Expansion Project (Fangjiashan NPP) Unit 1
12/23/14	NNSA [2014]290	Notification of Releasing the Control Point of the 1st Criticality of Qinshan NPP Expansion Project (Fangjiashan NPP) Unit 2
12/30/14	NNSA [2014]301	Notification of Approving the Application of Temporary Dynamic Rod Scaling during the First Physical Tests Phase of Qinshan NPP Expansion Project (Fangjiashan NPP) Unit 2
08/25/14	NNSA Notice[2014]107	Notification of Issuing the "Report of Comprehensive Regulatory Inspection before the Initial Fuel Loading of Qinshan NPP Expansion Project (Fangjiashan NPP) Unit 1"
09/01/14	NNSA Notice[2014]108	Reply Letter of Accepting the "Quality Assurance Program during the Commissioning Phase of Qinshan NPP Expansion Project (Fangjiashan NPP)" (Rev.1.2)
10/09/14	NNSA Notice[2014]129	Notification of Issuing the "Regulatory Inspection Report before the 1st Criticality of Qinshan NPP Expansion Project (Fangjiashan NPP) Unit 1"
11/18/14	NNSA Notice[2014]151	Reply Letter of Accepting the "Quality Assurance Program during the Commissioning Phase of Qinshan NPP Expansion Project (Fangjiashan NPP)" (Rev. D)
12/01/14	NNSA Notice[2014]159	Notification of Issuing the "Report of Comprehensive Regulatory Inspection before the Initial Fuel Loading of Qinshan NPP Expansion Project (Fangjiashan NPP) Unit 2"
09/01/14	MEP App[2014]216	Reply of Approving the Environment Impact Report (Operation Phase) of Qinshan NPP Expansion Project (Fangjiashan NPP)

Table 51. Inspection Activities for Fangjiashan NPP in 2014

Start Date	Item	Main Contents of the Inspection
03/12/14	Routine regulatory inspection on hot tests of Fangjiashan NPP unit 1	The implementation of quality assurance program during commissioning phase and previous regulatory requirements, the implementation of the commissioning program, DCS installation and commissioning, pre-service inspection, and operation management

continued

Start Date	Item	Main Contents of the Inspection
05/21/14	Inspection on cold test control point of Fangjiashan NPP unit 2	The implementation of quality assurance program during commissioning phase, system handover, cold test preparation, experience feedback implementation, and implementation of regulatory requirements
06/16/14	On-site comprehensive emergency exercise before the initial fuel loading and inspection on nuclear emergency preparation of Fangjiashan NPP unit 1	Operation of nuclear emergency system and personnel emergency response capacity, nuclear emergency response platform and its emergency equipment and document preparation, emergency plan, effectiveness and operability of related implementation procedures, emergency response and handling capability against nuclear accidents caused by external extreme accidents combined with the Fukushima nuclear accident experience feedback, capacity of nuclear facilities for radiation environmental emergency monitoring, punctuality and accuracy of emergency response systems for organizing to exchange, to send information with and to report to off-site organizations, to publicize nuclear and radiation safety information, respond ability to public opinions, and other issues related to emergency
08/04/14	Comprehensive inspection before the initial fuel loading of Fangjiashan NPP unit 1	Quality assurance, structures and nuclear safety equipment, system commissioning, operation preparation, radiation protection, emergency preparation, physical protection and fuel storage, environmental protection facilities, license conditions, application documents and implementation of problems in reviews, implementation of requirements for each nuclear safety regulatory inspection, and other issues such as Post-Fukushima improvements
09/24/14	Comprehensive Regulatory inspection before the 1st criticality of Fangjiashan unit 1	Commissioning before the 1st criticality, significant abnormal items in commissioning, and design modification applications, preparation before the 1st criticality, implementation of technical specification after the fuel loading, implementation of regular tests, and other nuclear safety-related issues, such as implementation of inspection requirements before the initial fuel loading
11/04/14	Control point inspection on the 1st connection to the grid for Fangjiashan NPP unit 1	Management of system commissioning before connection to the grid, operation management, maintenance management, and implementation of requirements of regulations related to commissioning
11/05/14	Routine regulatory inspection on hot tests of Fangjiashan NPP unit 2	Implementation of the quality assurance program during the commissioning phase, implementation of requirements of commissioning program and pre-service inspection program, operation management, and implementation of regulations requirements

continued

Start Date	Item	Main Contents of the Inspection
11/18/14	Comprehensive inspection before the initial fuel loading of Fangjiashan NPP unit 2	Quality assurance, structures and nuclear safety equipment, system commissioning, operation preparation, radiation protection, emergency preparation, physical protection and fuel storage, environmental protection facilities, license conditions, application documents and implementation of problems in reviews, implementation of requirements for each regulatory inspection, and other issues such as Post-Fukushima improvements
11/28/14	Routine regulatory inspection before reaching 97% of the nominal power (thermal) of Fangjiashan NPP unit 1	Commissioning project status, operation management (including the implementation of the operation technical specification, etc.), treatment of operating events, treatment of system and equipment non-conformance items, deficiency repairs, and implementation of regulatory requirements
12/16/14	Routine regulatory inspection before the1st criticality of Fangjiashan unit 2	Commissioning completion tests before the 1st criticality, significant commissioning abnormal items, design modification application, preparation before the 1st criticality, implementation of technical specification after the initial fuel loading, implementation of regular tests, and other nuclear safety-related issues such as implementation of requirements for the inspections before the initial fuel loading
12/30/14	Comprehensive regulatory inspection on the first connection to the grid for Fangjiashan NPP unit 2	System commissioning before connection to the grid, operation management, maintenance management, and implementation of regulatory requirements related to commissioning

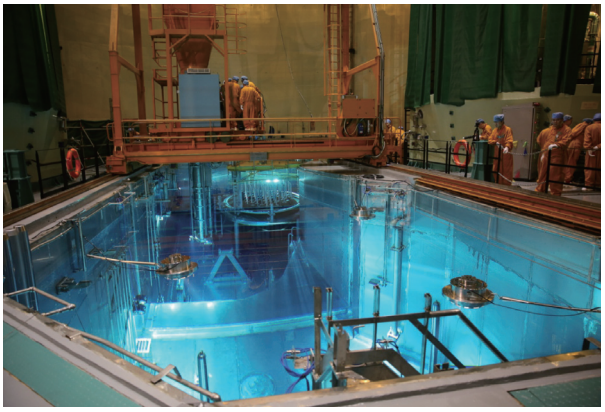
Table 52. The Constructing Event of Fangjiashan NPP in 2014

Event Date	Unit	Title
01/12/14	Unit 2	Lack of fusion reoccurred in the weld 1U6 of transition section of loop I

Table 53. Operating Events of Fangjiashan NPP in 2014

Event Date	Title	Cause	INES Classification
09/10/14	Trip of reactor breaker triggered by RPR protection signal during the test of unit 1	Equipment failure	0
11/10/14	Unit 1 reactor shutdown caused by turbine shutdown due to the axial displacement during the test of TP1RRC57	Equipment failure	0
12/09/14	Unit 1 protective shutdown of the reactor caused by high pressure of the pressurizer during the test of TP1RRC57	Equipment failure	0

An Overall View of Fangjiashan NPP



The Initial Fuel Loading of Fangjiashan NPP Unit 1

Sanmen NPP

Construction, installation, and commissioning preparation of Sanmen NPP unit 1 and unit 2 were undertaken in 2014. Civil construction of unit 1 was completed, and the main equipment was installed except the main pump. The nuclear island of unit 2 was under civil construction, and the reactor pressure vessel (RPV) was erected in the designed position. Effected by design modification, equipment manufacturing, installation of bulk material, and other factors, the project progress of Sanmen NPP unit 1 and unit 2 was somewhat seriously delayed, but the quality and safety were under control.

Nuclear safety-related approvals for Sanmen NPP in 2014 are shown in Table 54, and inspection activities are shown in Table 55. Six constructing events occurred in Sanmen NPP in 2014 (see Table 56).

Table 54. Nuclear Safety-Related Approvals for Sanmen NPP in 2014

Approval Date	Document No.	Document Title
04/08/14	NNSA Notice[2014]41	Official Letter of Approving the Implementation of the Steam Generator Lateral Support Change Programs of Sanmen NPP and Haiyang NPP Unit 1
05/12/14	NNSA Notice[2014]63	Reply Letter of Accepting the “Quality Assurance Program of Sanmen NPP Phase Ⅰ (design and construction phase)” (Rev. 8)
06/18/14	NNSA Notice[2014]81	Reply Letter of Supplementary On-spot Tests for the Protection and Safety Monitoring System of Sanmen NPP Unit 1
09/01/14	NNSA Notice[2014]109	Reply Letter of New Fuel Assemblies Transferred to the New Fuel Storage and the Flushing Well of Sanmen NPP Unit 1
11/20/14	NNSA Notice[2014]153	Reply Letter of Main Pipeline Installation of Sanmen NPP Unit 2

Table 55. Inspection Activities for Sanmen NPP in 2014

Start Date	Item	Main Contents of the Inspection
01/30/14	Special inspection of preparation before module CB20 installation of Sanmen NPP unit 1	Assembly processing of module CB20, quality control of assembly processes of module CB20, preparation before installation of module CB20, and construction plans after module CB20 ready in place, etc.
07/09/14	The routine regulatory inspection on the construction and installation quality and commissioning preparation of Sanmen NPP in 2014	Progress and quality management of nuclear island construction and installation of the project phase I, and commissioning preparation of unit 1, etc.
08/06/14	Special inspection before the hoisting the RPV of unit 2	Organization management of RPV installation, and programs related to RPV installation, construction conditions, etc.
10/08/14	Inspection of preconditions for new fuel assemblies transferred to the new fuel storage and the flushing well of unit 1	Personnel and organization management, status of hand-over of construction and installation and system commissioning, function of physical protection system, establishment of radiation protection area, safety analysis and programs, and fuel transportation preparation
10/16/14	Special inspection of welding activities of nuclear safety equipment	Welding activities of nuclear safety equipment in the past three years, welding process management, welding management and technical procedures, treatment of welding non-conformance items, welding personnel qualification, welding process qualification, welding material management, quality assurance records of repair welding processes, and situations against rules and regulations, etc.
12/22/14	Routine Regulatory inspection on the main pipeline welding preparation of unit 2	Documents related to fabrication and welding of the main channel bevel of unit 2, personnel and tools preparation, and preparation of the main channel, supplies and field, etc.

Table 56. Constructing Events of Sanmen NPP in 2014

Event Date	Unit	Title
05/05/14	Unit 1 and unit 2	Non-conformity of RNS pump connecting nozzle weld overlay cladding material with the design requirements
05/23/14	Unit 1	Thickness deviation of the main steam pipe wall
06/10/14	Unit 1 and unit 2	Non-conformity of partial nuclear safety class pipe weldolet sizes with the latest design requirements
06/10/14	Unit 1 and unit 2	Wrong reception of nuclear island valves
09/30/14	Unit 2	Thickness deviation of the main pipe wall

continued

Event Date	Unit	Title
11/06/14	Unit 1	Test stop for engineering durability of the first main pump (SN2)

An Overall View of the Sanmen NPP Site

RPV Installation of Sanmen NPP Unit 2

Haiyang NPP

Construction, installation, and commissioning preparation of Haiyang NPP unit 1 and unit 2 were undertaken in 2014. Civil construction of unit 1 was completed, and the main equipment was installed except for the main pump. The nuclear island of unit 2 was under construction, and the RPV was ready to install. Effected by design modification, equipment manufacturing, installation of bulk material, and other factors, the processes of Haiyang NPP unit 1 and unit 2 was somewhat seriously delayed, but the quality and safety were under control.

The nuclear safety-related approval for Haiyang NPP in 2014 is shown in Table 57, and inspection activities are shown in Table 58. Five constructing events occurred in Haiyang NPP in 2014 (see Table 59).

Table 57. The Nuclear Safety-Related Approval for Haiyang NPP in 2014

Approval Date	Document No.	Document Title
04/08/14	NNSA Notice[2014]41	Official Letter of Approving the Implementation of the Steam Generator Lateral Support Change Programs of Sanmen NPP and Haiyang NPP Unit 1

Table 58. Inspection Activities for Haiyang NPP in 2014

Start Date	Item	Main Contents of the Inspection
03/04/14	Special inspection of preparation before the CB20 module installation of Sanmen NPP unit 1	On-site assembly of module CB20, quality control of assembly processes of module CB20, installation preparation of module CB20, and construction plans after module CB20 ready in place, etc.
07/14/14	Routine Regulatory inspection of construction quality and commissioning preparation	Progress of the construction and installation for the nuclear island of the project phase I, quality management of construction and installation of the nuclear island, commissioning preparation, and implementation of previous nuclear safety regulatory requirements
08/27/14	Special inspection of the RPV installation of Sanmen NPP unit 2	Organization and management of the RPVs, RPV-related programs, and construction conditions, etc.
10/27/14	Special inspection of nuclear safety equipment welding activities	Issues and improvements in the self-check reports by the operating organization, implementations and tracking of review comments by the regional office, and random inspection of nuclear safety equipment welding (repair welding) activities

Table 59. Constructing Events of Haiyang NPP in 2014

Event Date	Unit	Title
02/07/14	Unit 1	Bearing damage after the test of No. SN13 main pump losing cooling water
05/06/14	Unit 1	Wrong reception and installation of nuclear island valves
07/10/14	Unit 1	Non-conformity of partial nuclear level pipe weldolet sizes with the latest design requirements
07/10/14	Unit 1	Non-conformity of RNS pump nozzle surfacing cladding material with the design requirements
07/23/14	Unit 1	Thickness deviation of the main steam pipe wall

Haiyang NPP Unit 1

Haiyang NPP Unit 2

Taishan NPP

Construction of Taishan NPP unit 1 and unit 2 was undertaken smoothly in 2014. Safety and quality management was in good condition, and no constructing events occurred. Till December 31, the engineering design was basically completed, and the civil construction was at the final stage. The installation was in the peak period, and the commissioning work was initiated.

The nuclear safety-related approval for Taishan NPP in 2014 is shown in Table 60, and inspection activities are shown in Table 61.

An Overall View of Taishan NPP

Table 60. The Nuclear Safety-Related Approval for Taishan NPP in 2014

Approval Date	Document No.	Document Title
10/14/14	NNSA Notice[2014]131	Reply Letter of Accepting the "Quality Assurance Program during Commissioning of Taishan NPP Unit 1 and Unit 2" (Rev. C)

Table 61. Inspection Activities for Taishan NPP in 2014

Start Date	Item	Main Contents of the Inspection
01/21/14	Special inspection of stainless steel cladding construction of unit 2	Personnel qualification management, NDT laboratory management, material procurement and acceptance, document control, and non-conformance item and design change management
02/20/14	Special inspection of pre-stress construction of unit 2	Tools management, staffing, ETF document management, regulatory inspection, and experience feedback unit 1 and unit 2
03/26/14	Special inspection on commissioning preparation of Taishan NPP	Personnel training and authorization, interfaces management, equipment maintenance management, and non-conformance item management
04/22/14	Special inspection on equipment introduction management of Taishan NPP	Interface management of equipment involvement management, document control, personnel qualification management, procedure processes control, and non-conformance item management
05/21/14	Special inspection on the activity of personnel licensed for special process of nuclear safety equipment of Taishan NPP	Welders, welding operators, NDT personnel qualification management, and NDT report
06/19/14	Special inspection on equipment qualification	Submission of equipment qualification reports, and the unidentified equipment calibration

continued

Start Date	Item	Main Contents of the Inspection
07/16/14	Nuclear safety inspection of the control point before the first main equipment installation of Taishan NPP unit 2	The first main equipment installation of Taishan NPP unit 2 and emergency response plan, project conditions and preparation, risk analysis, specialized tools management, organization and personnel management, site changes and non-conformance item management, implementation and commitment of regulatory inspection, experience feedback, and equipment maintenance after delivering on-site and installation
07/23/14	Special inspection of pressurizer installation and readiness of unit 2	Organization of pressurizer installation and readiness activities, and implementation of quality plan and tools management
08/14/14	Special inspection of pre-service inspection conditions	Inspection before service organization, personnel training and authorization, interface management, document control, design change management, non-conformance item management, equipment calibration, on-site cleanliness control, non-conformance item management, regulatory inspection, and experience feedback
10/21/14	Special inspection of dome shell construction of unit 1	Dome construction plan, design change management, construction difficulties, and civil engineering laboratory
11/05/14	Special inspection of implementation of Post-Fukushima improvements	Implementation of Post-Fukushima improvements submitted by Taishan Nuclear Power Joint Venture Co., Ltd.
11/10/14	Special inspection of corrective actions on violation welding repairing at nuclear safety equipment of Taishan NPP	Welding and NDT management of Taishan Nuclear Power Joint Venture Co., Ltd., China Nuclear Industry Huaxing Construction Company Limited, China Construction Second Engineering Bureau Ltd., and China Nuclear Industry 23 Construction Co., Ltd.
11/10/14	Nuclear safety inspection on the first weld bead of the main pipeline, control point of Taishan NPP unit 2	Main system construction organization, personnel qualification management, welding document preparation of the main system and non-conformance item management, on-site inspection of incoming main equipment and other parts, maintenance and cleanliness control, welding materials and tools management, construction preparation of the first weld bead
11/18/14	Routine inspection on commissioning management of Taishan NPP	Quality assurance program during commissioning phase and commissioning program, commissioning organization and staffing, commissioning interface management, personnel training and qualification management, commissioning test files, tools procurement and item management, non-conformance item management, and experience feedback
11/24/14	Special inspection on the first operator exam of Taishan NPP	Printing papers, simulator exam oversight, paper test oversight, oral test oversight
12/11/14	Special inspection on class 1E cable installation of Taishan NPP	Interfaces management, staffing and training, document control, design control, procurement control, item control, quality control of cables (laying, termination, connection) installation construction process, non-conformance item management

Hainan Changjiang NPP

Cold function tests on main system of Hainan Changjiang NPP unit 1 were finished, and hot tests were ready. Installation of main equipment, such as RPV and SG of unit 2 was completed, and the installation of Nuclear Island was in the peak period.

Nuclear safety-related approvals for Hainan Changjiang NPP in 2014 are shown in Table 62, and inspection activities in 2014 are shown in Table 63. One constructing event occurred in 2014 (see Table 64).

Table 62. Nuclear Safety-Related Approvals for Changjiang NPP in 2014

Approval Date	Document No.	Document Title
11/05/14	NNSA [2014]245	Notification of Releasing the Control Point before the Main System Cold Tests of Changjiang NPP Unit 1
09/01/14	NNSA Notice [2014]110	Reply Letter of Accepting the "Quality Assurance Program during Commissioning Phase of Changjiang NPP Unit 1 and Unit 2" (Rev. 3)
09/15/14	NNSA Notice [2014]118	Reply Letter of Accepting the "Commissioning Program of Changjiang NPP Unit 1 and Unit 2 (Rev. B)"

Table 63. Inspection Activities for Changjiang NPP in 2014

Start Date	Item	Main Contents of the Inspection
03/11/14	Control point inspection before the first welding bead on primary pipeline of unit 2	The construction organization system, staff training and qualification management, and the WPS and welding management for main system of the NPP, the construction management preparation and project progress condition, and introduction of the first weld construction preparation condition
05/05/14	Routine inspection on commissioning management and tests of containment sealing and integral strength of unit 1	Introduction of the commissioning items and the main problems, commissioning organizations, personnel qualification and authorization, compilation and implementation of quality assurance program on commissioning phase and commissioning program and the corresponding management procedures, construction installation hand-over, and the implementation plan and preparation on containment integral strength and sealing tests of unit 1
10/29/14	Control point inspection before main system cold function tests of unit 1	The preparation and quality assurance for main system cold function test, the equipment installation and main system cold function tests relevant system delivery, handlings of major non-conformance items during civil works and installation, implementation of all regulatory requirements
10/29/14	Routine inspection on implementation effectiveness of commissioning program	Implementation of commissioning phase quality assurance program and commissioning program and the corresponding management procedures, personnel qualification and authorization management, commissioning document management, commissioning interface management, commissioning implementation management, design modification management, non-conformance item management, and experience feedback management

Table 64. The Constructing Event of Changjiang NPP in 2014

Event Date	Unit	Title
12/07/14	unit 1	An UT display beyond the limits during the RPV pre-service inspection

Installation of Hainan Changjiang NPP Unit 1 Steam Turbine

Oversight of Primary Loop Hydro Test on Hainan Changjiang NPP Unit 1

Guangxi Fangchenggang NPP

Primary pipeline and surge line welding of Guangxi Fangchenggang NPP unit 1 were completed in May 2014, the cold tests were finished on August 7, 2014, and the hot tests were started on December 30, 2014. Main equipment installation and primary pipeline welding of nuclear island of unit 2 were in progress. No constructing events occurred in Guangxi Fangchenggang NPP in 2014.

Nuclear safety-related approvals for Guangxi Fangchenggang NPP in 2014 are shown in Table 65, and inspection activities in 2014 are shown in Table 66.

Table 65. Nuclear Safety-Related Approvals for Guangxi Fangchenggang NPP in 2014

Approval Date	Document No.	Document Title
2014/07/15	NNSA [2014]157	Notification of Releasing the Control Point on the Main System Cold Tests of Guangxi Fangchenggang NPP Unit 1
2014/04/28	NNSA Notice [2014]56	Reply Letter of Accepting the “Commissioning Program of Guangxi Fangchenggang NPP Unit 1 and Unit 2” (Rev. B)
2014/05/12	NNSA Notice [2014]62	Reply Letter of Accepting the “Quality Assurance Program during the Commissioning Phase of Guangxi Fangchenggang NPP Unit 1 and Unit 2”
2014/09/22	NNSA Notice [2014]125	Reply Letter of Accepting the “Quality Assurance Program during the Engineering Design and Construction Phase of Guangxi Fangchenggang NPP Unit 1 and Unit 2” (Rev. 4)

Table 66. Inspection Activities for Guangxi Fangchenggang NPP in 2014

Start Date	Item	Main Contents of the Inspection
06/30/14	Control point inspection before the main system cold tests of Guangxi Fangchenggang NPP unit 1	The preparation and quality assurance for main system cold tests, the equipment installation and main system cold tests relevant system hand-over, treatment of non-conformance items during civil construction and installation, implementation of all regulatory requirements
08/12/14	Regulatory inspection on control point of the first weld bead of the primary pipeline of Fangchenggang NPP unit 2	Main system construction organization, personnel qualification management, main system welding document preparation and non-conformance item management, the inspection of main equipment and their parts received on site, maintenance and cleanliness control, welding material and welding tools management, and the first welding construction preparation
09/22/14	Routine inspection on commissioning management and the strength and leak-tightness tests of containment of Guangxi Fangchenggang NPP unit 1	Commissioning organization and responsibility, commissioning documents, interface, safety, items, quality management, and the unit 1 CTT test preparation

The Overall View of Guangxi Fangchenggang NPP Unit 1and Unit 2

Inspectors from South China Regional Office of NNSA Inspected Guangxi Fangchenggang NPP

Tianwan NPP Phase II

Tianwan NPP unit 3 and unit 4 were under construction. All the construction was progressing smoothly in 2014. The nuclear island containment dome of unit 3 was hoisted.

Nuclear safety-related approvals for Tianwan NPP Phase II in 2014 are shown in Table 67, and inspection activities in 2014 are shown in Table 68.

Hoisting of the Nuclear Island Containment Dome of Tianwan NPP unit 3

Table 67. Nuclear Safety-Related Approvals for Tianwan NPP Phase II in 2014

Approval Date	Document No.	Document Title
12/16/14	NNSA [2014]284	Notification of Releasing the Control Point of Nuclear Island Containment Dome Hoisting of Tianwan NPP Unit 3
12/23/14	NNSA Notice[2014]175	Reply Letter of Endorsement of the Quality Assurance Program (design and construction phase) (Rev. D) of Tianwan NPP Unit 3 and Unit 4”

Table 68. Inspection activities for Tianwan NPP Phase II in 2014

Start Date	Item	Main Contents of the Inspection
03/11/14	Routine regulatory inspection on incoming merchandise, storage, and maintenance status of materials and equipment of unit 3 and 4	Acceptance test of Incoming merchandise, storage, and maintenance status of materials and equipment (including the inspection of items provided from Russia), acceptance test and oversight status of materials and bulk materials over QA3 level
11/19/14	Special inspection on welding activities of nuclear safety equipment	Management of on-site wielding activities, welding records, and repair welding activities of nuclear safety equipment in the past three years
12/08/14	Routine regulatory inspection on preparation before the dome hoisting of unit 3	Implementation of quality assurance program, preparation of organization and technical proposal of dome hoisting activity, personnel quality for the installation, treatment of NCRs, and experience feedback, etc.

Huaneng Shandong Shidao Bay HTR-PM NPP Demonstration Project

In 2014, the construction of Huaneng Shandong Shidao Bay HTR-PM NPP Demonstration Project was progressing smoothly. Each period was completed on schedule. Concrete pouring of conventional island building and electric building was completed. Walls of reactor building were under construction, and the main equipment would be ready for installation in July, 2015.

Inspection activities for Huaneng Shandong Shidao Bay HTR-PM NPP Demonstration Project in 2014 are shown in Table 69.

Table 69. Inspection Activities for Huaneng Shandong Shidao Bay HTR-PM NPP Demonstration Project in 2014

Start Date	Item	Main Contents of the Inspection
03/04/14	Nuclear safety inspection on construction management and quality assurance program implementation of Huaneng Shandong Shidao Bay HTR-PM NPP Demonstration Project	Construction quality control, quality of civil engineering and equipment installation, non-conformance item management, implementation of requirements for previous nuclear safety inspection
09/10/14	routine regulatory inspection on construction and installation quality of Huaneng Shandong Shidao Bay HTR-PM NPP Demonstration Project	Civil engineering construction of the nuclear island, installation of the nuclear island, operation states of quality assurance system, implementation of nuclear safety regulatory requirements
10/29/14	Special inspection on welding activities of nuclear safety equipment	Welding activities of nuclear safety equipment in the past three years, welding procedure management, welding management and technology procedure, treatment of the welding non-conformance items, welding personnel quality, welding procedure qualification, welding material management, quality assurance records of repair welding, and status of disobeying procedures and related regulation, etc.

Planned Nuclear Power Plants

Large-Scale Advanced PWR Major Special Project CAP1400 Demonstration Project

MEP (NNSA) officially replied to the Plant Siting Review Comments and the Environmental Impact Report on Siting Phase of Large-Scale Advanced PWR Major Special Project CAP1400 Demonstration Project, carried out regulatory inspection on nuclear island foundation pit after excavation for unit 1. MEP (NNSA) accepted the construction permit application documents and environmental impact report (construction phase), and organized technical reviews. MEP (NNSA) also prepared the “Technical Opinions

on Several Review Questions of CAP1400 Demonstration Project", and carried out pilot work on public communication.

Xudapu NPP Unit 1 and Unit 2

MEP (NNSA) officially replied to the Plant Siting Review Comments and the Environmental Impact Report of Siting Phase of Xudapu NPP Unit 1 and Unit 2, and carried out regulatory inspection on nuclear island foundation pit after evacuation of unit 1. MPE (NNAS) accepted the construction permit application documents and environmental impact report (construction phase), organized technical reviews, and carried out pilot work on public communication.

Haiyang NPP Unit 3 and Unit 4

MEP (NNSA) officially replied to the Plant Siting Review Comments and the Environmental Impact Report of Siting Phase of Haiyang NPP Unit 3 and Unit 4, and carried out regulatory inspection on nuclear island foundation pit after evacuation for unit 3 and unit 4. MEP (NNSA) accepted the construction permit application documents and environmental impact report (construction phase), organized technical reviews, and carried out pilot work on public communication.

Lufeng NPP Unit 1 and Unit 2

MEP (NNSA) officially replied to the Plant Siting Review Comments and the Environmental Impact Report of Siting Phase of Lufeng NPP Unit 1 and Unit 2, and carried out regulatory inspection on nuclear island foundation pit after evacuation for unit 1. MEP (NNSA) accepted the construction permit application documents and environmental impact report (construction phase), organized technical reviews, and carried out pilot work on public communication.

Fuqing NPP Unit 5 and Unit 6

MEP (NNSA) officially replied to the Report on Safety Analysis Review of Plant Siting and Review Report of Plant Siting Environmental Impact of Fuqing NPP Unit 5 and Unit 6. MEP (NNSA) carried out regulatory inspection on nuclear island foundation pit after evacuation for unit 5, and accepted the construction permit application documents and environmental impact report (construction phase), and organized technical reviews.

Sanmen NPP Unit 3 and Unit 4

MEP (NNSA) organized technical reviews of the Safety Analysis Report on Plant Siting and the Environmental Impact Report (siting phase) of Sanmen NPP Unit 3 and Unit 4, and conducted special reviews on water intake and outlet plans.

4 Safety Regulation on Research Reactors

In 2014, among 19 in-service research reactors, 12 were in operation, 5 were in long-term shutdown, and 2 were not in operation (see Table 70). There were 8 operating events in 2014 (see Table 71), and 5 of them were non-planned shutdown events which occurred in C stage during commissioning phase of China Experimental Fast Neutron Reactor, and the other 3 events occurred in High Flux Engineering Test Reactor, and 5MW Experimental Low Temperature Nuclear Heating Reactor.

Table 70. Operation Status of Research Reactors in 2014

Facility Name	Design Power	Operating Organization	Operating Status
101 Heavy Water Reactor (101 HWR)	10MW	China Institute of Atomic Energy (CIAE)	Long-term shutdown (permanently closed)
China Experimental Fast Neutron Reactor (CEFR)	65MW	CIAE	1550.5h
China Advanced Research Reactor (CARR)	60MW	CIAE	198h
49-2 Swimming Pool Reactor (49-2 SPR)	3.5MW	CIAE	1065.4h
Miniature Neutron Source Reactor (MNSR)	27kW	CIAE	8 times (46h)
Miniature Reactor Zero Power Facility (CFMNSR)	—	CIAE	13 times
Zirconium Hydride Solid Critical Facility (SSZR)	—	CIAE	Long-term shutdown
DF-VI Fast Neutron Criticality Facility (DF-VI CFFR)	—	CIAE	Long-term shutdown
Pilot Plant Nuclear Criticality Safety Experiment Facility (UCF)	—	CIAE	Not in operation
Shielding Experiment Reactor(SER)	1MW	Institute of Nuclear and New Energy Technology of Tsinghua University (INET/TU)	Long-term shutdown

continued

Facility Name	Design Power	Operating Organization	Operating Status
5MW Experimental Low Temperature Nuclear Heating Reactor (5MW-NHR)	5MW	INET/TU	46d
10MW High Temperature Gas-cooled Reactor (10MW-HTGR)	10MW	INET/TU	10 times (critical experiment)
High Flux Engineering Test Reactor (HFETR)	125MW	Nuclear Power Institute of China (NPIC)	236.8d
High Flux Engineering Test Reactor Experimental Facility (HFETR)	—	NPIC	Long-term shutdown
China Burst Reactor(CRP)	1MW	NPIC	4 times
Minjiang Test Reactor (MJTR)	5MW	NPIC	23 times (critical experiment)
18-5 Critical Facility	—	NPIC	62 times
Miniature Neutron Source Reactor of Shenzhen University (MNSR)	30kW	Joint Institute of Applied Nuclear Technology, Shenzhen University (INTCA/SU)	Not in operation
In-hospital Neutron Irradiator (IHNI)	30kW	Beijing Capture Technology Co., Ltd (CNCT)	29 times (84.4h)

Table 71. Operating Events of Research Reactors in 2014

Event Date	Facility Name	Title	Cause	Level
02/24/14	5MW-NHR	Protective shutdown induced by electricity loss of 2# transformer of reactor	Equipment failure	0
04/08/14	CEFR	Protective shutdown induced by 2# automatic control station abnormal items of the conventional island	Equipment failure	0
05/06/14	CEFR	Protective shutdown induced by output error of main throttle valve status signal of steam turbine	Equipment failure	0
05/14/14	CEFR	Protective shutdown induced by pressure fluctuation caused by pipe warming up inadequacy of the reactor 1# super-heater	Equipment failure	0
09/09/14	HFETR	Protective shutdown induced by lateral vibration abnormal items of 3# main pump electric machine	Equipment failure	0
10/29/14	HFETR	Protective shutdown induced by electricity loss of high voltage section I	Equipment failure	0

continued

Event Date	Facility Name	Title	Cause	Level
11/26/14	CEFR	Protective shutdown induced by low-low feed water pressure of 1#SG caused by start-up of wastegate HO2 abnormal items	Equipment failure	0
12/10/14	CEFR	Protective shutdown induced by low-low feed water flow of 1#SG caused by opening input error of 2# feed water scoop tube	Human error	0

In 2014, 1 construction license and 2 operating licenses of research reactors were issued; 3 environmental impact reports of construction projects were approved, and 1 environmental acceptance was completed, and 16 nuclear safety licenses were proceeded; reviews and endorsements of quality assurance programs for 8 research reactors were completed, and 2 control points were released. Nuclear safety-related approvals for research reactors are shown in Table 72, and inspection activities are shown in Table 73.

Table 72. Nuclear Safety-Related Approvals for Research Reactors in 2014

Approval Data	Document No.	Document Title
02/17/14	NNSA[2014]27	Reply to Spent Fuel Assembly Hoisting of SER of Tsinghua University
05/19/14	NNSA [2014]99	Notice of Approving Temporary Change of Operating Limit and Condition of Primary Container Pressure under Partial Operation Mode of CEFR
05/23/14	NNSA [2014]107	Notice of Approving the Change of Design Scheme of Pyrohelium Experimental Loop of HTR-10 of INET/TU
06/25/14	NNSA [2014]145	Notice of Approving the Change of Feed Water Flow and Pressure Protection Approach of the Steam Generator of CEFR
07/15/14	NNSA [2014]158	Notice of Issuing Operating License to 10MW-HTGR of TU
07/15/14	NNSA [2014]159	Notice of Issuing Operating License to Neutron Irradiator of Hospital
08/13/14	NNSA [2014]175	Reply to the PSAR of Cold Neutron Source Installation of CEFR
10/09/14	NNSA [2014]213	Notice of Approving the Delay the Isolation Scheme of Main Steam Isolating Valve and Operating Limits Modifications of Measurement Accuracy of Burn-up Measuring Instrument of HTR-10 of TU
10/09/14	NNSA [2014]214	Notice of Approving Temporary Modification of Operating Limits and Condition of Atmosphere Relief Valve of CEFR
11/06/14	NNSA [2014]251	Notice of Approving the Neutron Activation Samples of CARR Put into the Reactor to be Irradiated

continued

Approval Data	Document No.	Document Title
11/27/14	NNSA [2014]264	Notice of Approving the Release of Control Point of “75% Rated Thermal Power” of CEFR
12/01/14	NNSA [2014]271	Notice of Approving the Change of Helium Safety Valve of HTR-10 of TU
12/15/14	NNSA [2014]281	Notice of Approving the Release of Control Point of “100% Rated Thermal Power” of CEFR
12/25/14	NNSA [2014]291	Notice of Approving the High Purity Aluminum Nitride Targets of CARR Put into the Reactor to be Irradiated
09/05/14	NNSA Notice [2014]116	Letter of Approving the “Operating Quality Assurance Program of MJTR” and the “Operating Quality Assurance Program of HFETR”
12/10/14	NNSA Notice [2014]166	Letter of Approving the Quality Assurance Program of 10MW-HTGR, 5MW-NHR, and SER of TU
12/10/14	NNSA Notice [2014]167	Letter of Approving the “Commissioning Quality Assurance Program of CEFR” and the “Operating Quality Assurance Program of CEFR”
02/17/14	MEP App [2014]26	Reply to the Environmental Impact Report of Hoisting of Spent Fuel Assembly of SER of TU

Table73. Inspection Activities for Research Reactors in 2014

Start Date	Item	Main Contents of the Inspection
02/13/14	Regulatory inspection on CEFR before restarting the reactor	Preparation before restarting the reactor, implementation and consequence of safety important items routine tests, treatment and feedback of abnormal items and events occurred in recent years, and other issues may affect the start of reactor
10/21/14	Comprehensive inspection on 10MW-HTGR before restarting the reactor	Management and implementation of quality assurance program and relevant quality assurance documents, inspection, maintenance, and test work before starting the reactor, allocation and management of operating personnel
11/21/14	Inspection before releasing the control point of “75% rated thermal power” of CEFR	Commissioning management and quality assurance management condition before “75% rated thermal power”, completion of commissioning tests before “75% rated thermal power”, preparation for stage commissioning work after “75% rated thermal power”
12/08/14	Inspection before releasing the control point of “100% rated thermal power” of CEFR	Commissioning management and quality assurance management condition before “100% rated thermal power”, completion of commissioning tests before “100% rated thermal power”, preparation for stage commissioning work after “100% rated thermal power”

5 Safety Regulation on Nuclear Fuel Cycle Facilities

In 2014, in-service facilities for producing, fabricating, storing, and reprocessing nuclear fuel (see Table 74) were maintained in safe operation, and the quality of facilities under construction was effectively controlled. The nuclear fuel cycle facilities were kept good safety records, while their environmental impacts were attenuated continually, and no unacceptable nuclear and radiation harm to the personnel, the public, or the environment ever happened.

In 2014, there were 1 construction license, 1 permission approval for fuel loading, and 3 operation licenses that were issued. There were 3 environmental impact reports/forms for other projects, and 7 nuclear safety technical reformation certifications were replied to, and 2 environmental acceptance tests for construction projects were completed.

Nuclear safety-related approvals for nuclear fuel cycle facilities in 2014 are shown in Table 75, and inspection activities for nuclear fuel cycle facilities in 2014 are shown in Table 76.

Table 74. Major Facilities for Producing, Fabricating, Storing, and Reprocessing Civil Nuclear Fuel

Facility Name	Operating Organization	Product Form	Current Status
Uranium Conversion Project	The 272 Uranium Industry Co., Ltd., CNNC	Natural UF_6	Under construction
Chemical Conversion Wet Fabrication Line	CNNC Jianzhong Nuclear Fuel Co., Ltd.	UO_2 powder	In operation
Chemical Conversion Dry Fabrication Line	CNNC Jianzhong Nuclear Fuel Co., Ltd.	UO_2 powder	In operation
Powder Metallurgical Fabrication Line	CNNC Jianzhong Nuclear Fuel Co., Ltd.	Gd_2O_3 and UO_2 sintered pellet	In operation
Nuclear Fuel Assembly Fabrication Line	CNNC Jianzhong Nuclear Fuel Co., Ltd.	PWR fuel assembly	In operation
IDR Process Research and Equipment Production Line	CNNC Jianzhong Nuclear Fuel Co., Ltd.	UO_2 powder	In operation

continued

Facility Name	Operating Organization	Product Form	Current Status
Extension and Technical Reformation of Nuclear Fuel Elements Fabrication Line	CNNC Jianzhong Nuclear Fuel Co., Ltd.	PWR nuclear fuel assembly	In trial operation
HWR Nuclear Fuel Elements Fabrication Line	China Northern Nuclear Fuel Co., Ltd. (CNNFC), CNNC	HWR nuclear fuel assembly	In operation
PWR Nuclear Fuel Elements Fabrication Line	China Northern Nuclear Fuel Co., Ltd. (CNNFC), CNNC	PWR nuclear fuel assembly	In operation
AP1000 Nuclear Fuel Elements Fabrication Line and Extension of PWR Nuclear Fuel Elements Fabrication Line	China Northern Nuclear Fuel Co., Ltd. (CNNFC), CNNC	AP1000 nuclear fuel assembly, and PWR fuel pellet	In trial operation
High Temperature Gas-cooled Reactor Fuel Elements Fabrication Line	China Northern Nuclear Fuel Co., Ltd. (CNNFC), CNNC	High temperature gas-cooled reactor sphere fuel element	Under construction
Shaanxi Uranium Centrifugation Separation Facility	Shaanxi Uranium Co., Ltd., CNNC	Low enrichment UF_6	In operation
Shaanxi Phase IV Centrifugation Project	Shaanxi Uranium Co., Ltd., CNNC	Low enrichment UF_6	In operation
North Region Centrifuge Extension Project, Phase I	Shaanxi Uranium Co., Ltd., CNNC	Low enrichment UF_6	In operation
North Region Centrifuge Extension Project, Phase II	Shaanxi Uranium Co., Ltd., CNNC	Low enrichment UF_6	Under construction
Lanzhou Uranium Centrifugation Separation Facility, Phase I	Lanzhou Uranium Co., Ltd., CNNC	Low enrichment UF_6	In operation
Lanzhou Centrifuge Commercial Paradigm Project	Lanzhou Uranium Co., Ltd., CNNC	Low enrichment UF_6	In operation
Lanzhou Uranium Concentration Project, Phase III	Lanzhou Uranium Co., Ltd., CNNC	Low enrichment UF_6	In operation
Uranium Purification and Conversion Project	The 404 Co., Ltd., CNNC	Natural UF_6	Under construction
Spent Fuel Reception and Storage Facility	The 404 Co., Ltd., CNNC	—	In operation
Extension Project of Spent Fuel Storage Pool of Reprocessing Pilot Plant	The 404 Co., Ltd., CNNC	—	Under construction
Spent Fuel Reprocessing Pilot Plant	The 404 Co., Ltd., CNNC	—	In trial operation

continued

Facility Name	Operating Organization	Product Form	Current Status
Temporary Dry Storage Facility for Spent Fuel of Qinshan NPP, Phase III	Third Qinshan Nuclear Power Company Ltd.	—	In operation

Table 75. Nuclear Safety-Related Approvals for Nuclear Fuel Cycle Facilities in 2014

Approval Date	Document No.	Document Title
01/15/14	NNSA[2014]9	Notification of the Operation License for North Region Centrifuge Extension Project, Phase I of Shaanxi Uranium Co., Ltd., CNNC
06/19/14	NNSA[2014]139	Notification of Issuing Permission for the Fuel Loading for Extension and Technical Reformation of Nuclear Fuel Elements Fabrication Line of CNNC Jianzhong Nuclear Fuel Co., Ltd.
07/15/14	NNSA[2014]162	Notification of the Operation License for Lanzhou Uranium Concentration Project, Phase III of Lanzhou Uranium Co., Ltd., CNNC
08/13/14	NNSA[2014]173	Notification of Approving the Installation and Commissioning of the North Region Centrifuge Extension Project, Phase II of Shaanxi Uranium Co., Ltd., CNNC
08/13/14	NNSA[2014]174	Notification of Approving the Replacement of 110-1 Sub-item Process of Exhaust Water Jet Unit of CNNC Jianzhong Nuclear Fuel Co., Ltd.
10/10/14	NNSA[2014]216	Notification of Issuing the Construction License for Uranium Conversion Project of The 272 Uranium Industry Co., Ltd., CNNC
10/20/14	NNSA[2014]234	Notification of Approving the Conversion and Reformation Project of Pellets Disk from Kazakhstan of CNNC Jianzhong Nuclear Fuel Co., Ltd.
11/13/14	NNSA[2014]253	Notification of Approving the Application for Replacement of Water Jet Unit, Use of Floor-Washing Machine, and Installation of the Sprinkler System of China Northern Nuclear Fuel Co., Ltd. (CNNFC), CNNC
11/17/14	NNSA[2014]259	Notification of Approving the 120 AB Sub-item NO.2 Pelletizing System Reformation of CNNC Jianzhong Nuclear Fuel Co., Ltd.
12/17/14	NNSA[2014]283	Notification of Issuing the Operation License for 200 tons/year Uranium IDR Process Research and Equipment Research of CNNC Jianzhong Nuclear Fuel Co., Ltd.
12/25/14	NNSA[2014]295	Notification of Approving the Application for the Dissolving and Recycling System Reformation of PWR Nuclear Fuel Elements Fabrication Line of China Northern Nuclear Fuel Co., Ltd. (CNNFC), CNNC
12/30/14	NNSA[2014]300	Notification of Approving the Additional 20 Days for Chemical Conversion Wet Fabrication Line of CNNC Jianzhong Nuclear Fuel Co., Ltd.

continued

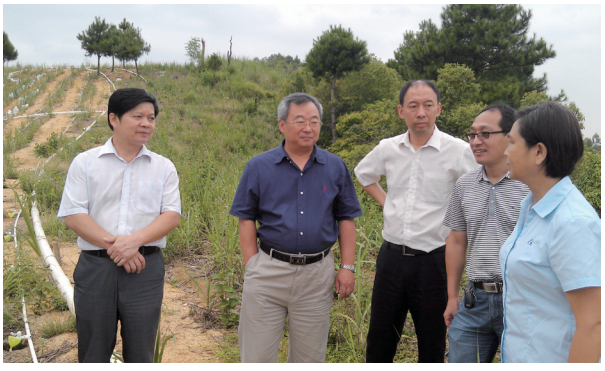
Approval Date	Document No.	Document Title
12/31/14	NNSA[2014]304	Notification of Approving the Addition of Fuel Rods Water Lube Device to Fuel Assembly Process of 140 Sub-item and the 2140 Sub-item of CNNC Jianzhong Nuclear Fuel Co., Ltd.
06/19/14	NNSA Notice [2014]82	Reply Letter of the Agreement about the Safety Reformation of the Liquid Ammonia Storage Tank of HWR Nuclear Fuel Elements Fabrication Line of China Northern Nuclear Fuel Co., Ltd. (CNNFC), CNNC
12/11/14	NNSA Notice [2014]168	Reply Letter of Approving the Commissioning Program and the Quality Assurance Program (commissioning phase) of the High Temperature Gas-cooled Reactor Fuel Elements Fabrication Line
06/11/14	MEP App[2014]140	Reply to the Environmental Impact Report of the Extension and Technical Reformation of Nuclear Fuel Elements Fabrication Line (applying for operation license) of CNNC Jianzhong Nuclear Fuel Co., Ltd.
08/13/14	MEP App[2014]196	Reply to the Environmental Impact Form of the Construction Project of AP1000 Nuclear Fuel Elements Grid Straps Fabrication Line
10/11/14	MEP App[2014]266	Reply to the Environmental Impact Report (applying for construction license) of the Uranium Conversion Project of The 272 Uranium Industry Co., Ltd., CNNC
10/29/14	MEP Acc[2014] 221	Official Letter of the Environmental Acceptance Test Comments on Technical Reformation Project Completion of the TVS-2M Fuel Assembly Fabrication Line of CNNC Jianzhong Nuclear Fuel Co., Ltd.
11/02/14	MEP Acc[2014] 230	Official Letter of the Environmental Acceptance Test Comments on Project Completion of 200 tons/year Uranium IDR Process Research and Equipment Research of CNNC Jianzhong Nuclear Fuel Co., Ltd.

Table 76. Inspection Activities for Nuclear Fuel Cycle Facilities in 2014

Start Date	Item	Main Contents of the Inspection
05/13/14	Comprehensive Safety Inspection before Loading of the Extension and Technical Reformation Project of Nuclear Fuel Elements Fabrication Line of CNNC Jianzhong Nuclear Fuel Co., Ltd.	Nuclear safety inspection
09/18/14	Environmental Acceptance Test Comments on Technical Reformation Project Completion of the TVS-2M Fuel Assembly Fabrication Line of CNNC Jianzhong Nuclear Fuel Co., Ltd.	Environmental acceptance tests for project completion
09/19/14	Environmental Acceptance Test Comments on Project Completion of 200 tons/year Uranium IDR Process Research and Equipment Research of CNNC Jianzhong Nuclear Fuel Co., Ltd.	Environmental acceptance test for project completion

6 Radiation Environment Regulation on Exploitation and Utilization of Uranium Mines

The review and approval of the environmental impact assessment for 11 construction projects were completed by MEP (NNSA), including Uranium Mining and Metallurgy Project (mining license phase) in Geminggou Uranium Deposit, Xi'an Blue Sky Uranium Co., Ltd., CNNC in Yongchang Town, Gansu Province; the Qian IV Site In-Situ Uranium Leach Mining Project of Qianjiadian Uranium Deposit Tongliao Uranium Co., Ltd., CNNC; the Shulouqiu Uranium Mining and Metallurgy Project Shaoguanjinyuan Uranium Co., Ltd., CNNC, etc. The environmental acceptance tests for 14 projects completion were finished, including the Decommissioning and Remediation Project of the 701 Uranium Deposit; the Comprehensive Technical Reformation Project (706 uranium deposit) Xi'an Blue Sky Uranium Co., Ltd., CNNC; the 731 In-Situ Uranium Leach Mining Project Xinjiang Tianshan Uranium Co., Ltd., CNNC, etc. Radiation environment regulation approvals for exploitation and utilization of uranium mines in 2014 are shown in Table 77.



Vice Administrator of NNSA, Director General of Nuclear and Radiation Safety Regulation Department III of MEP, Ye Min, Inspected the Liutang Rare Earth Deposit of Aluminum Corporation China (CHINALCO) Guangxi Chongzuo Nonferrous Rare Earth Development Co., Ltd.

Table 77. Radiation Environment Regulation Approvals for Exploitation and Utilization of Uranium Mines in 2014

Approval Date	Document No.	Document Title
01/17/14	MEP App [2014]14	Reply to the Environmental Impact Report of Uranium Mining and Metallurgy Project (mining license phase) in Geminggou Uranium Deposit of Xi'an Blue Sky Uranium Co., Ltd., CNNC in Yongchang Town, Gansu Province
02/10/14	MEP App [2014]24	Reply to the Environmental Impact Report of the Uranium Ore Hydrometallurgy Industrial Test in Longshou Mountain of Xi'an Blue Sky Uranium Co., Ltd., CNNC
04/01/14	MEP App [2014]79	Reply to the Environmental Impact Report of the Qian IV Site In-Situ Uranium Leach Mining Engineering Test of Qianjiadian Uranium Deposit of Tongliao Uranium Co., Ltd., CNNC
04/08/14	MEP App [2014]84	Reply to the Environmental Impact Report of the Shulouqiu Uranium Mining and Metallurgy Project of Shaoguanjinyuan Uranium Co., Ltd., CNNC
04/18/14	MEP App [2014]94	Reply to the Environmental Impact Report of 2011 Mineral Resources Saving and Comprehensive Utilization of Reward Project of Shaoguanjinyuan Uranium Co., Ltd., CNNC
09/05/14	MEP App [2014]219	Reply to the Environmental Impact Report of the Qian IV Site In-Situ Uranium Leach Mining Project of Qianjiadian Uranium Deposit
09/05/14	MEP App [2014]220	Reply to the Environmental Impact Report of the Decommissioning and Remediation Project (phase I) of the 745 Uranium Deposit
09/22/14	MEP App [2014]248	Reply to the Environmental Impact Report of the Hydrometallurgy Plant Safety Technical Reformation Project of Shaoguan Jinhong Uranium Co., Ltd., CNNC
09/22/14	MEP App [2014]249	Reply to the Environmental Impact Report of the Pool Leaching Technology Expanding Test of Uranium and Molybdenum Comprehensive Recycling Project for Uranium and Metallurgy Mining in Low Concentration of the 460 Uranium Deposit of China Northern Uranium Co., Ltd., CNNC
10/27/14	MEP App [2014]273	Reply to the Environmental Impact Report of the Decommissioning and Remediation Project of the In-Situ Uranium Leach Mining Test Base in Yunnan Province
11/13/14	MEP App [2014]295	Reply to the Environmental Impact Report of the Hydrometallurgy Plant Safety Technical Reformation Project of Four Companies, including Zhejiang Quzhou Uranium Co., Ltd., CNNC
01/15/14	MEP Acc [2014]2	Official Letter of Environmental Acceptance Test Comments on the Decommissioning and Remediation Project Completion of the 701 Uranium Deposit

continued

Approval Date	Document No.	Document Title
01/15/14	MEP Acc [2014]3	Official Letter of Environmental Acceptance Test Comments on the Comprehensive Technical Reformation Project Completion (the 706 uranium deposit) of Xi'an Blue Sky Uranium Co., Ltd., CNNC
03/31/14	MEP Acc [2014]49	Official Letter of Environmental Acceptance Test Comments on the 731 Site In-Situ Uranium Leach Mining Project Completion of Xinjiang Tianshan Uranium Co., Ltd., CNNC
05/29/14	MEP Acc [2014]91	Official Letter of Environmental Acceptance Test Comments on Project Completion of the Nuclear Facilities Safety Emergency Regulation of Two Companies, including the 272 Uranium Industry Co., Ltd., CNNC
07/03/14	MEP Acc [2014]118	Official Letter of Environmental Acceptance Test Comments on Project Completion of the Energy Saving and Emission Reduction Technical Reformation of Ganzhou Jinrui Uranium Co., Ltd., CNNC
07/03/14	MEP Acc [2014]120	Official Letter of Environmental Acceptance Test Comments on Project Completion of the Tailing Safety Regulation of the Nuclear Industry 272 Factory
07/03/14	MEP Acc [2014]121	Official Letter of Environmental Acceptance Test Comments on Project Completion of the Emissions Reduction Technical Reformation of The 737 Factory of Xinjiang Tianshan Uranium Co., Ltd., CNNC
09/01/14	MEP Acc [2014]172	Official Letter of Environmental Acceptance Test Comments on Project Completion of the Recovery and Reconstruction Project of Former Uranium Purification Fabrication Line of the 272 Uranium Industry Co., Ltd., CNNC
09/15/14	MEP Acc [2014]173	Official Letter of Environmental Acceptance Test Comments on Project Completion of the Nuclear Facilities Safety Emergency Regulation of the Former Nuclear Industry 279 Factory
09/15/14	MEP Acc [2014]174	Official Letter of Environmental Acceptance Test Comments on Project Completion of the Nuclear Facilities Safety Emergency Regulation of the Shaoguanjinyuan Uranium Co., Ltd., CNNC
10/29/14	MEP Acc [2014]222	Official Letter of Environmental Acceptance Test Comments on Project Completion of the Technical Reformation of Shazi River Deposit
12/01/14	MEP Acc [2014]243	Official Letter of Environmental Acceptance Test Comments on Project Completion of the Decommissioning and Remediation (phase I) of the 721 Uranium Deposit
12/22/14	MEP Acc [2014]273	Official Letter of Environmental Acceptance Test Comments on Project Completion of the Energy Saving and Emissions Reduction Technical Reformation of Shaoguanjinyuan Uranium Co., Ltd., CNNC
12/22/14	MEP Acc [2014]274	Official Letter of Environmental Acceptance Test Comments on Project Completion of the Comprehensive Technical Reformation (prevention for safety) of China Northern Uranium Co., Ltd., CNNC

Regulations and Standards

MEP (NNSA) organized to draft the "Technical Guide on Environmental Impact Assessment of Uranium Mining and Metallurgy (draft for comments)" and the "Technical Specification on Environmental Acceptance Test of Construction Project Completion of Uranium Mining and Metallurgy (draft for comments)". MEP (NNSA) also organized a conference about the impact caused by developing and utilizing uranium in-situ leaching mining on groundwater.

Administrative Enforcement of the Law

MEP (NNSA) punished Shaanxi Nuclear Group 218 Class for the environmentally illegal activity of constructing the Guangshigou Uranium Mining without fulfilling the procedures of the environmental impact assessment and environmental acceptance test of project completion. MEP (NNSA) had issued the decision of administrative penalty.

Petitions and Complaints

The petitions and complaints about environmental problems of Liaoning 752 Deposit and environmental problems of Tarangaole Coal Mining of ShenHua Group, etc., were solved timely.

Environmental Management of Associated Ore

MEP (NNSA) organized to draft the "Report about Strengthening the Radiation Safety Regulation of Tailing Sand", and submitted it to the State Council together with other 7 ministries, including the Ministry of Industry and Information Technology, and the Ministry of Land and Resources, etc. MEP (NNSA) reviewed the Radiation Impact Chapter of the Liutang Rare Earth Deposit of Aluminum Corporation China (CHINALCO) Guangxi Chongzuo Nonferrous Rare Earth Development Co., Ltd.; MEP (NNSA) officers also paid visits to Guangxi Province, Jiangxi Province, Sichuan Province, and Hunan Province to investigate environmental management of rare earth smelting enterprises.

7 Safety Regulation on Radioactive Wastes

According to the "Law of the People's Republic of China on the Prevention and Control of Radioactive Pollution", "Safety Regulation on Radioactive Wastes", and other department rules and guides, the supervision and management of radioactive wastes were enhanced. The preparation and revision of safety regulations of radioactive wastes were carried forward, and safety supervision on construction and operation of radioactive wastes repositories was fulfilled. Treatment and disposal of left radioactive wastes was pushed forward, and the specific work about investigation and evaluation of present radiation environment around national nuclear bases and nuclear facilities was carried out.

The Preparation and Revision of Regulations and Standards of Radioactive Wastes

MEP (NNSA) issued the format and contents requirements of the environmental acceptance test comments on project completion of decommissioning projects and the license application format of the radioactive solid wastes storage and disposal. MEP (NNSA) collected comments on 5 regulation and standard drafts, including "Safety Regulation of Nuclear Facilities Decommissioning", "Nuclear Power Plant Radioactive Wastes Minimization", and "Concrete High Integrated Container for Low-and-Intermediate Level Radioactive Solid Wastes", etc.

Safety Supervision on Construction and Operation of Radioactive Waste Repositories

In 2014, Northwest Low-and-Intermediate Level Waste Repository accepted 420.904 m^3 low and intermediate level wastes, 395 barrels or boxes in total. The main nuclides contained in the wastes were ^{60}Co, and ^{137}Cs, with the total radioactivity of 1.74E+14 Bq. By the end of 2014, Northwest Low-and-Intermediate Level Waste Repository accepted 9,875.624 m^3 wastes, 18,427 barrels or boxes in total, with the total radioactivity of 2.56E+14 Bq.

In 2014, Guangdong Beilong Low-and-Intermediate Level Waste Repository had totally accepted 82 radioactive waste packages, which were generated in Daya Bay NPP, and Ling'ao NPP. Waste package types are C1 concrete barrels, with the total volume of 101.68 m^3, and total radioactivity

of 1.98E+13 Bq. Till the end of 2014, Guangdong Beilong Low-and-Intermediate Level Waste Repository had totally accepted 784 waste packages, with the total volume of 1,594.84 m^3, and the total radioactivity of 5.69E+13 Bq.

Administrative Reviews and Approvals Related to Radioactive Wastes Safety

According to the "Safety Regulation on Radioactive Wastes", MEP (NNSA) issued the license of radioactive solid wastes storage and disposal for Qingyuan Environmental Engineering Technology Co., Ltd, CNNC and also issued the license of the radioactive solid waste disposal for Guangdong Daya Bay Nuclear Energy and Environmental Protection Co., Ltd (see Table 78).

Table 78. Administrative Reviews and Approvals Related to Radioactive Wastes Safety in 2014

Approval Date	Document No.	Document Title
11/17/14	MEP Notice[2014]252	Official Letter of Issuing the License of the Radioactive Solid Wastes Storage and Disposal for Qingyuan Environmental Engineering Technology Co., Ltd, CNNC
12/25/14	MEP Notice[2014]303	Official Letter of Issuing the License of the Radioactive Solid Wastes Disposal for Guangdong Daya Bay Nuclear Energy and Environmental Protection Co., Ltd.

Treatment and Disposal of Left Radioactive Wastes

Environmental impact reports for 16 projects were replied to, and environmental acceptance test comments on project completion for 11 projects were completed, and 13 regulatory requirement documents were issued by MEP (NNSA).

Investigation and Evaluation of Present Radiation Environment around National Nuclear Bases and Nuclear Facilities

MEP (NNSA) organized the second leadership group meeting about investigation and evaluation of present radiation environment situation around national nuclear bases and nuclear facilities, and carried out well-organized investigation and evaluation for 18 projects. MEP (NNSA) organized training courses of monitoring technology and evaluation technology, and carried out two comparison activities between laboratories. MEP (NNSA) also issued 9 guidance documents, including the "Investigation Guide of Personal Diet and Living Habits of Residents Living around Nuclear Facilities", etc.

8 Safety Regulation on Radioisotope and Irradiation Devices

Until December 31, 2014, there were 65,266 entities in total producing, selling or using radioisotopes and irradiation devices in China. Among them, there were 15,210 entities producing, selling, and using radioisotopes; the number of the radioactive sources in service was 118,968 (11,603 of category I, 14,218 of category II, 2,015 of category III, 91,132 of others). There were 50,056 entities, only producing, selling, or using irradiation devices. The total number of irradiation devices was 125,881. There were 30,525 waste radioactive sources, which were accepted by provincial level repositories, and 104,890 waste radioactive sources have been transferred to or accepted by the national radioactive waste repository.

The number of entities regulated by MEP (NNSA) was 231 in total, which were producing radioisotopes (except for making Positron Emission Tomography (PET) radio-pharmaceuticals for self-use only), selling, and using radioactive sources of category I (except for medical radioactive sources of category I); selling (including installation) and using irradiation devices of category I, and the unsealed radioactive material workplaces of class A qualification.

Deepening Administration Simplifying and Power Decentralizing on Nuclear Technology Utilization

MEP (NNSA) undertook investigations on current situation of commissioning or decentralizing approval authority on local nuclear technology utilization, and strengthened the guidance on local administration simplifying and power decentralizing. MEP (NNSA) issued “Notification of Related Issues of Decentralizing Radiation Safety Regulatory Authority on Nuclear Technology Utilization” (MEP Notice[2014]677). MEP (NNSA) also required local divisions to take over the decentralized regulatory work to assure that the regulation was transited steadily.

MEP (NNSA) promoted regulation of civil-involved military nuclear technology utilization, and together with the General Logistics Department of People’s Liberation Army

(PLA), issued "Notification of Related Issues on Radiation Safety Regulation of Military Radioisotopes and Irradiation Devices" (MEP Dep[2014]61) to define the responsibilities of military for safety regulation of radiation environment. MEP (NNSA) organized military-civil inspections on radiation safety to ensure that radiation safety regulatory responsibilities for supervision of civilian-involved military nuclear technology utilization entities were transferred steadily.

MEP (NNSA) optimized the review and approval of transferring radio-pharmaceuticals, and organized investigations on producing, selling, using radio-pharmaceuticals and current situation of their regulation. MEP (NNSA) also issued "Notice of Related Issues of Radiation Safety Regulation on Radio-pharmaceuticals", in which the valid period of review and approval of the transfer of radio-pharmaceuticals and materials was extended from six months to one year.

Undertake Special Inspections on Radioactive Sources Safety

In order to learn from the major radiation accident of the out-of-control mobile γ radiographic inspection source which occurred in Nanjing and harmed people, and to discover and eliminate latent safety weaknesses in related enterprises in China, MEP (NNSA) issued "Notice to Undertake Special Inspections on Radioactive Sources Safety" (MEP Off[2014]46) in May, 2014. MEP (NNSA) organized special inspections which focused on high risk radioactive sources, and guided and standardized provincial radiation regulatory staff to undertake special inspections on more than 400 γ radiographic inspection entities. MEP (NNSA) fulfilled the goal of "Inspect on Safety Risk Thoroughly, Strengthen the Regulation, Guarantee the Environmental Safety and Public Health, and Maintain the Society Stability", and organized the Experience Exchange Meeting on National Special Activities of Radioactive Sources Safety in Beijing on November 25, 2014.

Carry Forward Special Activity of Action on Propagation and Implementation of Nuclear Safety Culture in the Field of Nuclear Technology Utilization

MEP (NNSA) implements the spirit of President Xi Jinping's instruction of "China's Approach to Nuclear Security", to thoroughly implement the requirements of "two full coverage, two zero tolerances" which means nuclear safety culture propagation and implementation covers all licensees and all key staff, and there is no tolerance for concealing and misrepresentation and violation of operational procedures. MEP (NNSA) also issued the implementation proposal in the field of nuclear technology utilization "Notice of Issuing 'Implementation Proposal of Carrying Forward Special Activity Action of Propagation and Implementation of Nuclear Safety Culture '" (NNSA Notice

[2014]133). MEP (NNSA) carried forward enhancing the overall level of nuclear safety culture in the whole industry, and strengthen awareness of the consciousness of hardship, responsibility, credibility, as well as awe and law-abidance, so as to ensure radiation safety.

During the "Experience Exchange Meeting on National Radioactive Source Safety Special Activity and Initiating Meeting of Carrying Forward Special Activity of Propagation and Implementation of Nuclear Safety Culture in the Field of Nuclear Technology Utilization", the experience feedback of special inspections was conducted. The Vice Minister of MEP, Administrator of NNSA, Li Ganjie, delivered a speech about nuclear safety culture to the legal persons or the CEOs of the organizations who issue licenses.

Strengthen Communication and Standardize Management

In June, 2014, the Symposium on National Radiation Safety Regulation was held in Qinghai. More than 150 delegates, including leaders and senior managers, etc., from provincial environmental protection departments/bureaus, PLA Environmental Protection Bureau, Nuclear and Radiation Safety Regional Offices of MEP, the Nuclear and Radiation Safety Center, and Environmental Radiation Monitoring Technology Center, attended the symposium. The achievements of the past year were fully recognized in the symposium, and the new situation and the new challenges of national radiation safety regulation were discussed. The objectives of summarizing the work, exchanging experience, making clear the tasks, and promoting the work were achieved in the symposium.

Licensing and Inspection

In 2014, radiation safety licenses for 10 nuclear technology utilization entities were issued, licenses of 22 entities were renewed, licenses of 2 entities were expanded, licenses of 16 entities were added new items, licenses of 23 entities were modified, and license of 1 entity were cancelled (see Table 79).

Environmental impact reports for 7 decommissioning nuclear technology utilization projects were reviewed and approved. Project completion acceptance checks for 5 new, modified, and expanded projects were completed. The final acceptance checks of environmental protection for 8 decommissioning nuclear technology utilization projects were completed, and exempting from regulation for 5 entities was reviewed and approved (see Table 80).

Review and Approval of Radioisotope Imports and Exports

There were totally 1,518 applications for radioactive source (unsealed radioactive

materials) imports and exports which were approved in 2014, including 878 applications for imported radioactive sources, 285 applications for exported radioactive sources, and 355 applications for imported and exported unsealed radioactive materials. The total number of imported radioactive sources was 6,211, and the total number of exported radioactive sources was 1,398. The total radioactivity of imported unsealed radioactive materials was 1.46E+16Bq, and the total radioactivity of exported unsealed radioactive substances was 6.30E+13Bq.

Radiation Protection and Safety Training

Quality controls and on-site supervisions for the intermediate and primary training courses of radiation safety and protection held by recommended training institutes were undertaken continually, for enhancing training quality. In 2014, 70 training courses of radiation safety and protection of different levels were held by 8 training institutions, including 28 intermediate classes of 3,442 trainees, 34 primary classes of 2,920 trainees, and 8 refreshment classes of 665 trainees. These courses greatly contributed to improving the quality of the staff in nuclear technology utilization entities, and to fostering their nuclear safety culture.

In order to strengthen the training, to consolidate the foundation, and to improve the professional abilities of nuclear safety regulatory staff, 3 radiation safety regulation courses of nuclear technology utilization were held. More than 470 trainees from provincial environmental protection departments / bureaus participated in the training, including over 20 trainees from the PLA for enhancing the professional abilities and regulatory capabilities of the related military personnel.

Radiation Accidents

In 2014, there were 6 radiation accidents. One of them was major accident, which occurred in Nanjing, Jiangsu Province. It was one out-of-control Iridium-192 radioactive source of category II, which caused injury and was finally recovered. The other 5 accidents were ordinary accidents, including 2 dropping-into-well accidents, involving 2 radioactive sources: one cesium-137 radioactive source of category IV, and one hydrogen-3 radioactive source of category V. After accidents, the wells were sealed. The other 3 accidents were losses or thefts of the radioactive sources, involving 4 radioactive sources of category IV or V. Until December 31, 2014, one cesium-137 radioactive source of category IV was recovered. Up to then, all the accidents did not cause any environmental contamination.

City Repositories

The city repositories were all in normal operation in 2014.

Promoting Waste Radioactive Source Reusing with the Concept of Recirculation Economy

MEP (NNSA) continuously pushed forward technological research related to waste spent radioactive source recycling, and agreed with Chengdu Gaotong Isotope Co., Ltd. (CNNC), and the 404 Co., Ltd, CNNC on recycling and reusing projects of waste cobalt-60 radioactive source, and waste cesium-137 radioactive source, respectively.

Table 79. List of Radiation Safety Licenses Approved in 2014

No.	Entities	Type
1	Hainan Zheda Irradiation Technology Co., Ltd.	New application
2	Yantai Dongfang Irradiation Utilization Co., Ltd.	New application
3	Sichuan Jinhe Irradiation Technology Co., Ltd.	New application
4	Shenzhen Haibo Technology Co., Ltd.	New application
5	Shenzhen OUR New Medical Technologies Co., Ltd.	New application
6	Air China Cargo Co., Ltd.	New application
7	Jilin CNNC Irradiation Technology Co., Ltd.	New application
8	SunVic Chemical Beijing Medical Technologies Co., Ltd.	New application
9	The 719th Research Institute of China Shipbuilding Industry Corporation	New application
10	Huashan Hospital of Fudan University	New application
11	Institute of Processing of Agricultural Produce and Nuclear Agricultural Research, Hubei Academy of Agricultural Science	Renewal
12	Baoji Jinqiao Irradiation Technology Co., Ltd.	Renewal
13	Guangzhou Huada Biotechnology Co., Ltd.	Renewal
14	Radiation Safety Technical Center of Henan Province	Renewal
15	University of Science and Technology of China	Renewal
16	Dalian Fu'an Irradiation New Technology Co., Ltd.	Renewal
17	Zhejiang Yindu Irradiation Technology Co., Ltd.	Renewal
18	Radiation Monitoring Station of Zhejiang Province	Renewal
19	Guizhou Province Academy of Agricultural Sciences	Renewal
20	Gansu Tianchen Irradiation Technology Co., Ltd.	Renewal
21	Radiation Monitoring Station of Xinjiang Uygur Autonomous Region	Renewal

continued

No.	Entities	Type
22	Radiation Technology Pilot Experiment Research Base of Shanghai Institute of Applied Physics, Chinese Academy of Sciences	Renewal
23	Liaoning Cobalt Radioactive Source Radiation Center	Renewal
24	Guangzhou Furui High-Energy Technology Co., Ltd.	Renewal
25	Renji Hospital Shanghao Jiaotong University School of Medicine	Renewal
26	Shanghai Academy of Agricultural Sciences	Renewal
27	Sichuan Institute of Atomic Energy	Renewal
28	The 404 Co., Ltd, CNNC	Renewal
29	Institute of Nuclear and New Technology, Tsinghua University	Renewal
30	Institute of Modern Physics, Chinese Academy of Sciences	Renewal
31	The Second Artillery General Hospital of Chinese People's Liberation Army	Renewal
32	Beijing Institute of Metrology	Renewal
33	Zhengzhou Tianhong Luyuan Irradiation Technology Co., Ltd.	Extended capacity
34	Yunnan Huayuan Nuclear Radiation Technology Co., Ltd.	Extended capacity
35	Shanghai Radiation Environment Regulation Office	Addition
36	Shanghai Yuanzi Kexing Pharmaceutical Co., Ltd.	Addition
37	National Institute of Metrology, China	Addition
38	University of Science and Technology of China	Addition
39	Shenzhen JPY Ion-Tech Co., Ltd.	Addition
40	Hefei Institutes of Physical Science, Chinese Academy of Sciences	Addition
41	The 404 Co., Ltd, CNNC	Addition
42	Air Force General Hospital, People's Liberation Army	Addition
43	Institute of Nuclear and New Technology, Tsinghua University	Addition
44	Peking University Health Science Center	Addition
45	Shanghai GMS Pharmaceutical Co., Ltd.	Addition
46	Institute of Modern Physics, Chinese Academy of Sciences	Addition
47	Beijing Military Region General Hospital of Chinese People's Liberation Army	Addition

continued

No.	Entities	Type
48	National Institute of Metrology	Addition
49	Institute of High Energy Physics, Chinese Academy of Sciences	Addition
50	The Second Artillery General Hospital of Chinese People's Liberation Army	Addition
51	Shenzhen OUR New Medical Technologies Co., Ltd.	Modification
52	Lanzhou Vent Radiation Co., Ltd.	Modification
53	BINE High-Tech Co., Ltd.	Modification
54	Beijing North Institute of Biological Technology	Modification
55	Xiamen Wanheyuan Irradiation Technology Co., Ltd.	Modification
56	Fujian Jixing Irradiation Technology Co., Ltd.	Modification
57	Zhangzhou Wanheyuan Irradiation Technology Co., Ltd.	Modification
58	Jiangsu RDS Technology Co., Ltd.	Modification
59	Radiation Monitoring Center of Guangdong Province	Modification
60	Biotechnology and Nuclear Technology Research Institute, Sichuan Academy of Agricultural Sciences	Modification
61	Guangxi Nanxiang Radiation Co., Ltd.	Modification
62	Radiation Monitoring Station of Hainan Province	Modification
63	Foshan Raypoly High-Tech Co., Ltd.	Modification
64	Yangzhou Radiation Center	Modification
65	Institute of Nuclear Agriculture and Space Mutation Breeding of Hunan Province	Modification
66	Beijing Institute of Metrology	Modification
67	CGNPC Uranium Resources Co., Ltd.	Modification
68	MASEP Infini Medical Science Technology Development (Shenzhen) Co., Ltd.	Modification
69	The Second Military Medical University	Modification
70	The Hospital of Qinghai University	Modification
71	Beijing Military Region General Hospital of Chinese People's Liberation Army	Modification
72	Beijing Shijitan Hospital, Capital Medical University	Modification

continued

No.	Entities	Type
73	Radiation Monitoring Station of Guangxi Zhuang Autonomous Region	Modification
74	Zhejiang University	Cancellation

Table 80. List of Environmental Protection Approvals and Acceptance Checks for the Projects in the Field of Radioisotope and Irradiation Devices Safety Regulation in 2014

Approval Date	Document No.	Organization	Document Title
01/15/14	MEP App[2014]11	Aerospace Research Institute of Materials and Processing Technology	Reply to the Environmental Impact Report of Applying Three Irradiation Devices of Category II by Aerospace Research Institute of Materials and Processing Technology
01/26/14	MEP App [2014]17	Ningxia Academy of Agriculture and Forestry Sciences	Reply to the Environmental Impact Report of Decommissioning the Anti-Chemical and Irradiation Laboratory of Ningxia Academy of Agriculture and Forestry Sciences
02/11/14	MEP App [2014]25	Navy General Hospital of Chinese People's Liberation Army	Reply to the Environmental Impact Report of the Decommissioning Project of Navy General Hospital of Chinese People's Liberation Army
07/08/14	MEP App [2014]174	Beijing Shunyi Prevention and Treatment Center for Tuberculosis	Reply to the Environmental Impact Report of the Decommissioning Project of Beijing Shunyi Prevention and Treatment Center for Tuberculosis
09/05/14	MEP App [2014]222	Dalian Institute of Applied Technology, CNNC	Reply to the Environmental Impact Report of Decommissioning the Irradiation Device of Dalian Institute of Applied Technology, CNNC
10/10/14	MEP App [2014]264	Fujian Jian'ou Minbei Irradiation Center	Reply to the Environmental Impact Report of the Decommissioning Project of Fujian Jian'ou Minbei Irradiation Center
11/17/14	MEP App [2014]309	Changchun Yusha Real Estate Development Co., Ltd.	Reply to the Environmental Impact Report of Decommissioning the Irradiation Device of Changchun Yusha Real Estate Development Co., Ltd.
01/15/14	MEP Acc[2014]1	Jiangsu RDS Technology Co., Ltd.	Official Letter of the Environmental Acceptance Test Comments on Project Completion of Decommissioning Co-60 Irradiation Device and Isotopes Laboratory of Jiangsu RDS Technology Co., Ltd.

continued

Approval Date	Document No.	Organization	Document Title
01/26/14	MEP Acc [2014]6	Liaoning Academy of Agricultural Sciences	Official Letter of the Environmental Acceptance Test Comments on Final State of Decommissioning the Xiongyue Irradiation Device of Liaoning Academy of Agricultural Sciences
02/10/14	MEP Acc [2014]19	Ningxia Academy of Agriculture and Forestry Sciences	Official Letter of the Environmental Acceptance Test Comments on Final State of Decommissioning the Anti-Chemical and Irradiation Laboratory of Ningxia Academy of Agriculture and Forestry Sciences
04/02/14	MEP Acc [2014]51	National Institute of Metrology, China	Official Letter of the Environmental Acceptance Test Comments on Project Completion of Radioisotope and Irradiation Device of National Institute of Metrology, China
04/16/14	MEP Acc [2014]60	China Institute of Atomic Energy	Official Letter of Project Completion of the Isotope Repository of China Institute of Atomic Energy
04/16/14	MEP Acc [2014]61	Fujian Copton Irradiation Technology Co., Ltd.	Official Letter of the Environmental Acceptance Test Comments on Final State of Decommissioning the Small Size Co-60 Irradiation Device for Research Purpose of Fujian Copton Irradiation Technology Co., Ltd.
05/29/14	MEP Acc [2014]88	Navy General Hospital of Chinese People's Liberation Army	Official Letter of the Environmental Acceptance Test Comments on Final State of Decommissioning Project of Navy General Hospital of Chinese People's Liberation Army
06/13/14	MEP Acc [2014]94	Jilin Academy of Agricultural Sciences	Official Letter of the Environmental Acceptance Test Comments on Decommissioning the Irradiation Device in Jilin Academy of Agricultural Sciences
07/21/14	MEP Acc [2014]144	The Second Hospital of Beijing Corps of the Chinese People's Armed Police Force	Official Letter of the Environmental Acceptance Test Comments on the Nuclear Technology Utilization Project Completion of the Second Hospital of Beijing Corps of the Chinese People's Armed Police Force
08/01/14	MEP Acc [2014]154	Beijing Shunyi Prevention and Treatment Center for Tuberculosis	Official Letter of the Environmental Acceptance Test Comments on Final State of the Decommissioning Project of Beijing Shunyi Prevention and Treatment Center for Tuberculosis

continued

Approval Date	Document No.	Organization	Document Title
09/22/14	MEP Acc [2014]191	Dalian Institute of Applied Technology, CNNC	Acceptance Test Comments on Final State of the Decommissioning Project of Dalian Institute of Applied Technology, CNNC
10/29/14	MEP Acc [2014]223	Fujian Jian'ou Minbei Irradiation Center	Official Letter of the Environmental Acceptance Test Comments on Final State of Decommissioning Cobalt Radioactive Source of Fujian Jian'ou Minbei Irradiation Center
12/17/14	MEP Acc [2014]265	Changchun Yusha Real Estate Development Co., Ltd.	Official Letter of the Environmental Acceptance Test Comments on Final State of Decommissioning Cobalt Radioactive Source of Changchun Yusha Real Estate Development Co., Ltd.
01/17/14	MEP Notice [2014]63	Beijing Telesound Electronics Co., Ltd.	Reply Letter of Exemption Management of Tritium Radioactive Source in TS-601 Portable Explosive Detector of Beijing Telesound Electronics Co., Ltd.
02/18/14	MEP Notice [2014]180	The Third Research Institute of Ministry of Public Security	Reply Letter of Exemption Management of Ni-63 Radioactive Source in XT12-03 Portable Explosive Drug Detector and AY05-02 Portable Explosive Drug Detector of the Third Research Institute of Ministry of Public Security
10/17/14	MEP Notice [2014]1338	Thermo Fisher Scientific (Shanghai) Instrument Co., Ltd.	Reply Letter of Exemption Management of Ni-63 Radioactive Source in Trace1300, Trace1310 Gas Chromatograph Assembled by Thermo Fisher Scientific (Shanghai) Instrument Co., Ltd.
10/20/14	MEP Notice [2014]1347	Beijing Telesound Electronics Co., Ltd.	Reply Letter of Exemption Management of Ni-63 Radioactive Source in Portable Explosive Detector of Beijing Telesound Electronics Co., Ltd.
10/20/14	MEP Notice [2014]1349	Beijing Beifen-Ruili Analytical Instrument (Group) Co., Ltd.	Reply Letter of Exemption Management of Ni-63 Radioactive Source in 4 Types of Gas Chromatographs including SP-3400 Gas Chromatograph

9 Nuclear Material Control and Physical Protection for Nuclear Installations

In 2014, according to the “Law of the People’s Republic of China on the Prevention and Control of Radioactive Pollution”, “Safety Regulation on Civil Nuclear Installations”, “Regulation on Nuclear Material Control” and relevant laws and regulations, MEP (NNSA) executed its responsibilities for regulatory inspections, technical reviews on nuclear material control and physical protection of nuclear installations, and for nuclear material licenses verification.

Nuclear Material Licenses Verification

MEP (NNSA) undertook technical review on the applications for nuclear material licenses of Baotou Nuclear Fuel Co., Ltd., CNNC, Hainan Nuclear Power Co., Ltd., Shandong Haiyang Nuclear Power Co., Ltd., and Guangxi Fangchenggang Nuclear Power Co., Ltd., and their evaluations done by the Nuclear Material Control Office of CAEA, and on-site inspections, thus completed the verification process.

Review and Inspection of Physical Protection for Nuclear Installations

MEP (NNSA) undertook regulatory inspections on the unclear material control and physical protection systems of Daya Bay NPP, Tianwan NPP, CNNC Jianzhong Nuclear Fuel Co., Ltd. and Nuclear Power Institute of China, and completed review of physical protection for Sanmen NPP unit 3 and unit 4, Haiyang NPP unit 3 and unit 4, Lufeng NPP Phase I, Hongyanhe NPP unit 5 and unit 6, Xudapu NPP unit 1 and unit 2 at PSAR stage. MEP (NNSAP) completed review of physical protection for Haiyang NPP unit 1 and unit 2, Fangchenggang NPP unit 1 and unit 2, Ningde NPP Phase I, Hongyanhe NPP unit 3 and unit 4, Changjiang NPP unit 1 and unit 2 at FSAR stage, review of physical protection for the expansion and technical reformation project of nuclear fuel fabrication line at FSAR stage of CNNC Jianzhong Nuclear Fuel Co., Ltd., and Honghua project phase II at FSAR stage. MEP (NNSA) also reviewed the upgrading modification of physical protection system of Yangjiang NPP and Hongyanhe

NPP, and developed the Nuclear Safety Guide "Nuclear Facility Physical Protection (draft for comments)".

Administrative reviews and approvals by MEP (NNSA) related to nuclear material control in 2014 are shown in Table 81.

Table 81. Administrative Reviews and Approvals Related to Nuclear Material Control in 2014

Approval Date	Document No.	Document Title
04/21/14	NNSA Notice [2014] 53	Reply Letter of Agreeing the Temporary Change of Fence in the Control Zone of Yangjiang NPP
04/23/14	NNSA Notice [2014] 54	Reply Letter of Agreeing the Additional Temporary Measures in Physical Protection System of Hongyanhe NPP
07/30/14	NNSA Notice [2014] 101	Reply Letter of Verification of Reapplications for Nuclear Material License for Nuclear Power Operation and Management Co., Ltd., CNNC and Qinshan Nuclear Power Co., Ltd.
08/13/14	NNSA Notice [2014] 106	Official Letter of Issuing the "Regulatory Inspection Report on Nuclear Material Control of Jiangsu Nuclear Power Co., Ltd."
09/22/14	NNSA Notice [2014] 123	Reply Letter of Issuing Nuclear Material License to Hainan Nuclear Power Co., Ltd.
12/17/14	NNSA Notice [2014] 174	Official Letter of Issuing the "Regulatory Inspection Report on Nuclear Material Control of Daya Bay Nuclear Power Operation and Management Co., Ltd."
12/23/14	NNSA Notice [2014] 176	Reply Letter Issuing Nuclear Material License to Shandong Nuclear Power Co., Ltd.

10 Regulation on Safe Transportation of Radioactive Material

In 2014, the transportation activities of radioactive material were safely implemented without occurrence of nuclear and radiation accidents or incidents. The "Format and Content of Analysis Report for Nuclear and Radiation Safety of Radioactive Material Transportation (HAD701/02—2014)" was officially released, "Regulations for the Safe Transportation of Radioactive Material (draft for approval)" was developed. Comments collection of "Emergency Preparedness and Emergency Response for Nuclear and Radiation Accident of Radioactive Material Transportation", and "Radiation Detection Technology Guide of Transportation Container and Transportation Vehicles for Radioactive Material" was completed.

In 2014, MEP (NNSA) replied to 14 SARs of radioactive material transportation, and approved 5 designs of radioactive material transportation containers. MEP (NNSA) also issued 1 license of manufacture, and approved utilization of 6 imported containers.

MEP (NNSA) administrative reviews and approvals in the field of regulation on safe transportation of radioactive material are shown in Table 82, and inspection activities are shown in Table 83.

Table 82. Administrative Reviews and Approvals in the Field of Regulation on Safe Transportation of Radioactive Material in 2014

Approval Date	Document No.	Document Title
01/15/14	NNSA [2014]8	Notification of Approving the Nuclear and Radiation Safety Analysis Report for Waste Co-60 Radioactive Sources of Cixi City Radiation Center
01/17/14	NNSA [2014]13	Notification of Approving the Nuclear and Radiation Safety Analysis Report for TVS-2M Fuel Components Transportation of Tianwan NPP
03/04/14	NNSA [2014]37	Notification of Approving the Nuclear and Radiation Safety Analysis Report for Radioactive Sources (category I) of Qingyuan Environmental Engineering Technology Co., Ltd, CNNC

continued

Approval Date	Document No.	Document Title
04/10/14	NNSA [2014]67	Notification of Approving the Nuclear and Radiation Safety Analysis Report for Spent Fuel Rods Domestic Highway Transportation of Daya Bay NPP
04/14/14	NNSA [2014]70	Notification of Approving the Nuclear and Radiation Safety Analysis Report for PC Nuclear Fuel Components Domestic Highway Transportation
04/23/14	NNSA [2014]74	Notification of Approving the Nuclear and Radiation Safety Analysis Report for Nuclear Fuel Components Returned to the No.2 Operating Factory of CNNC
04/28/14	NNSA [2014]77	Notification of Approving the Change of Arrival at the Station of Nuclear Fuel Components of Hongyanhe NPP
06/13/14	NNSA [2014]126	Notification of Issuing the Approval for UF6 Transportation Container of China Nuclear Energy Industry Corporation, CNEIC
06/13/14	NNSA [2014]127	Notification of Issuing the Approval of the TK-C57 Transportation Container for New Fuel of CIAE
06/13/14	NNSA [2014]128	Notification of Approving the Use of Transportation Container for Radioactive Materials (category I) of the Russian National Science Center Atomic Reactor Research Institute Within P.R. China
06/13/14	NNSA [2014]130	Notification of Approving the Additional Use of Nordion's F-458 Transportation Container Within P.R. China
06/25/14	NNSA [2014]144	Notification of Approving the Nuclear and Radiation Safety Analysis Report for Nuclear Fuel Components of CEFR by Domestic Highway Transportation
07/07/14	NNSA [2014]150	Notification of Approving the Nuclear and Radiation Safety Analysis Report (supplementary report of plan change) for Nuclear Fuel Assembly Transportation of Ningde NPP and Fuqing NPP
07/29/14	NNSA [2014]164	Notification of Approving Add the Use of Transportation Container for Radioactive Materials (category I) of Russia's State Nuclear Fuel Company Within P.R. China
07/31/14	NNSA [2014]171	Notification of Approving the Nuclear and Radiation Safety Analysis Report (supplement report of carrier change) for C-188 Co-60 Radioactive Source of Beijing Sanqiangheli Radiation Engineering Technology Co., Ltd.
08/25/14	NNSA [2014]178	Notification of Approving the Supplementary Report of Qiongzhou Strait Transportation of Nuclear and Radiation Safety Analysis Report for CN-101 Co-60 Radioactive Source
09/04/14	NNSA [2014]186	Notification of Approving Limit Change of the Design Approval of SY-I Transportation Container
09/24/14	NNSA [2014]204	Notification of Issuing the Design Approval of SY-Ⅰ(A) Transportation Container

continued

Approval Date	Document No.	Document Title
10/10/14	NNSA [2014]217	Notification of Approving the Nuclear and Radiation Safety Analysis Report for Iridium-192 and Selenium-75 Radiation Source of Beijing Shuangyuan Isotope Technology Co., Ltd
10/10/14	NNSA [2014]218	Notification of Approving the Nuclear and Radiation Safety Analysis Report of Import and Export by Railway Transportation for UF6 Products of China Nuclear Energy Industry Corporation, CNEIC
10/10/14	NNSA [2014]219	Notification of Approving the Nuclear and Radiation Safety Analysis Report for Industrial Co-60 Radioactive Sources of Beijing Hefuyuan Science and Technology Development Co., Ltd.
10/14/14	NNSA [2014]223	Notification of Issuing the Design Approval of FCTC10 Transportation Container
10/10/14	NNSA [2014]224	Notification of Approving the Availability Modification of the Transportation Container Manufacturing License for Radioactive Material (category I) of CIAE
11/13/14	NNSA [2014]257	Notification of Approving the Use of AREVA's 48Y Natural UF6 Transportation Container Within P.R. China
12/05/14	NNSA [2014]276	Notification of Approving Nuclear and Radiation Safety Analysis Report for Nuclear Fuel Material Components Transportation of Changjiang NPP
12/16/14	NNSA [2014]282	Notification of Approving Transportation Mode Change of the Design Approval of CNFC-3G New Nuclear Fuel Transportation Container

Table 83. Inspection Activities in the Field of Regulation on Safe Transportation of Radioactive Material in 2014

Start Date	Item	Main Contents
02/24/14	Inspection on spent fuel transportation container manufacture of Xi'an Nuclear Equipment Co., Ltd., CNNC	Nuclear safety inspection
05/29/14	On-site inspection on transportation container of QCOM in the period of transition	Nuclear safety inspection
06/10/14	Test witness of the transportation container test for high temperature gas-cooled reactor of China Nuclear Power Engineering Co., Ltd	Container witness
08/26/14	Witness of lead layer shielding of spent fuel transportation container of CNSC	Container witness
11/24/14	On-site witness of new nuclear fuel element transportation and storage container test of high temperature gas-cooled reactor	Container witness
12/01/14	On-site witness of new nuclear fuel element transportation and storage container fire test of high temperature gas-cooled reactor	Container witness

11 Regulation on Civilian Nuclear Safety Equipment

Regulatory Review and Approval

In 2014, MEP (NNSA) received and reviewed 22 new applications for the civil nuclear safety equipment license, 5 of them were denied after the preliminary review of the applications. MEP (NNSA) approved 58 applications, of which 9 for new licenses (see Table 84), 16 for renewal (see Table 85), and 33 for extension (see Table 86). At the same time, MEP (NNSA) completed the technical reviews of modification application about licensees' activity sites and technical ability, etc. By the end of 2014, 194 licensees were issued for the design, manufacture, installation, and NDT of nuclear safety equipment, including 142 for mechanical equipment, 48 for electrical equipment, 4 for NDT, and 13 for installation. Licensees holding civilian nuclear safety equipment licenses are shown in Table 87.

In 2014, 55 applications for registration of civilian nuclear safety equipment import were received and reviewed, 90 were accepted and approved (see Table 88), and none had been denied or suspended. Till the end of 2014, the total number of the entities having registration confirmation for design, manufacture or NDT service of nuclear safety equipment reached 255, among which 6 were comprehensive registration, 178 were for mechanical equipment, 67 were for electrical equipment, and 5 were for NDT service.

Table 84. New Issuance of Licenses for Civilian Nuclear Safety Equipment in 2014

Issuance Date	Document No.	Document Title
05/15/14	NNSA[2014]87	Notification of Issuing Manufacture License for Civilian Nuclear Safety Equipment of Alfa Laval (Jiangyin) Manufactory Co., Ltd
05/15/14	NNSA [2014]88	Notification of Issuing Manufacture License for Civilian Nuclear Equipment of Baosteel Special Steel Co., Ltd. and Cancellation of the License of Baoshan Iron & Steel Co., Ltd.

continued

Issuance Date	Document No.	Document Title
05/15/14	NNSA [2014]90	Notification of Issuing Design and Manufacture License for Civil Nuclear Equipment of Special equipment Co., Ltd., CSIC
10/17/14	NNSA [2014]228	Notification of Issuing Design and Manufacture License for Civil Nuclear Equipment of China Nuclear Control System Engineering Co., Ltd., and canceling License for CNNC (Beijing) Nuclear Instrument Factory
11/27/14	NNSA [2014]265	Notification of Issuing Design and Manufacture License for Civil Nuclear Equipment of Nantong Kunlun Air Conditioner Industry Co., Ltd.
11/27/14	NNSA [2014]266	Notification of Issuing Design License for Civil Nuclear Equipment of Harbin Electric Company Limited
11/27/14	NNSA [2014]267	Notification of Issuing Manufacture License for Civil Nuclear Equipment of Hebei Canghai Heavy Industries Co., Ltd.
11/28/14	NNSA [2014]269	Notification of Issuing Manufacture License for Civil Nuclear Equipment of Yangzhou Chengde Steel Tube Co., Ltd.
11/28/14	NNSA [2014]272	Notification of Issuing Design and Manufacture License for Civil Nuclear Equipment of Nanjing Duble Metal Equipment Engineering Co., Ltd.

Table 85. Approvals of License Activity Scope Expansion for Civilian Nuclear Safety Equipment in 2014

Issuance Date	Document No.	Document Title
04/08/14	NNSA[2014]60	Notification of Approving Manufacture License Activity Scope Expansion for Civil Nuclear Safety Equipment of Bohai Shipbuilding Factory Group Co., Ltd., CISC
05/15/14	NNSA[2014]89	Notification of Approving Manufacture License Activity Scope Expansion for Civil Nuclear Safety Equipment of Harbin Electric Corporation (QHD) Heavy Equipment Co., Ltd.
05/15/14	NNSA[2014]92	Notification of Approving Design and Manufacture License Activity Scope Expansion for Civil Nuclear Safety Equipment of Dalian Deep Blue Pump Co., Ltd.
05/15/14	NNSA[2014]93	Notification of Approving Manufacture License Activity Scope Expansion for Civil Nuclear Safety Equipment of Jiangsu Xinhengji Special Equipment Co., Ltd.
05/15/14	NNSA[2014]94	Notification of Approving Manufacture License Activity Scope Expansion for Civil Nuclear Safety Equipment of Nantong Dart-Pollrich Fan Co., Ltd.
05/15/14	NNSA[2014]95	Notification of Approving Manufacture License Activity Scope Expansion for Civil Nuclear Safety Equipment of Jiangsu Electric Power Equipment Co., Ltd.

continued

Issuance Date	Document No.	Document Title
05/15/14	NNSA[2014]96	Notification of Approving Manufacture License Activity Scope Expansion for Civil Nuclear Safety Equipment of Shandong Nuclear Power Equipment Manufacture Co., Ltd.
05/15/14	NNSA[2014]98	Notification of Approving Manufacture License Activity Scope Expansion for Civil Nuclear Safety Equipment of Yangzhuo Huayu Pipe Fitting Co. Ltd.
09/30/14	NNSA[2014]212	Notification of Approving Manufacture License Activity Scope Expansion for Civil Nuclear Safety Equipment of China First Heavy Industries Co., Ltd.
10/16/14	NNSA[2014]225	Notification of Approving Design and Manufacture License Activity Scope Expansion for Civil Nuclear Safety Equipment of Jiangsu Shangshang Cable Group Co., Ltd
10/16/14	NNSA[2014]227	Notification of Approving Design and Manufacture License Activity Scope Expansion for Civil Nuclear Safety Equipment of the 719th Research Institute of China Shipbuilding Industry Corporation
10/17/14	NNSA[2014]230	Notification of Approving Design and Manufacture License Activity Scope Expansion for Civil Nuclear Safety Equipment of Jiangsu Huaguang Cable and Electrical Equipment Co., Ltd.
10/17/14	NNSA[2014]233	Notification of Approving Manufacture License Activity Scope Expansion for Civil Nuclear Safety Equipment of Shanghai Electric KSB Nuclear Pumps and Valves Co., Ltd.
10/17/14	NNSA[2014]236	Notification of Approving Manufacture License Activity Scope Expansion for Civil Nuclear Safety Equipment of Changshou Huaxin Special Steel Co., Ltd.
10/17/14	NNSA[2014]239	Notification of Approving Installation License Activity Scope Expansion for Civil Nuclear Safety Equipment of China Nuclear Industry Huaxing Construction Co., Ltd.
11/06/14	NNSA[2014]249	Notification of Approving Installation License Activity Scope Expansion for Civil Nuclear Safety Equipment of Guangdong Power Engineering Corporation of China Energy Engineering Group (Energy China)

Table 86. Renewal Approvals of Licenses for Civilian Nuclear Safety Equipment in 2014

Issuance Date	Document No.	Document Title
03/10/14	NNSA[2014]41	Notification of Approving Design and Manufacture License Renewal for Civil Nuclear Safety Equipment of Jiangsu Shangshang Cable Group Co., Ltd.
03/10/14	NNSA [2014]42	Notification of Approving Design and Manufacture License Renewal for Civil Nuclear Safety Equipment of Changzhou Bayi Cable Co., Ltd.

continued

Issuance Date	Document No.	Document Title
03/10/14	NNSA [2014]43	Notification of Approving Design and Manufacture License Renewal for Civil Nuclear Safety Equipment of Jiangsu Huaguang Cable and Electrical Appliance Co., Ltd.
03/10/14	NNSA [2014]44	Notification of Approving Design and Manufacture License Renewal for Civil Nuclear Safety Equipment of Shanghai Power Equipment Research Institute
03/10/14	NNSA [2014]45	Notification of Approving Design and Manufacture License Renewal for Civil Nuclear Safety Equipment of Shaanxi Diesel Engine Heavy Industry Co., Ltd.
03/10/14	NNSA [2014]46	Notification of Approving Design and Manufacture License Renewal for Civil Nuclear Safety Equipment of Shanghai APOLLO Machinery Co., Ltd.
03/10/14	NNSA [2014]47	Notification of Approving Manufacture License Renewal for Civil Nuclear Safety Equipment of AREVA DONGFANG Reactor Coolant Pumps Co., Ltd.
03/10/14	NNSA [2014]48	Notification of Approving Manufacture License Renewal for Civil Nuclear Safety Equipment of Yantai Taihai Manoir Nuclear Equipment Co., Ltd.
03/10/14	NNSA [2014]49	Notification of Approving Manufacture License Renewal for Civil Nuclear Safety Equipment of Anhui Yingliu Group Huoshan Casting Co., Ltd.
03/10/14	NNSA [2014]50	Notification of Approving Manufacture License Renewal for Civil Nuclear Safety Equipment of Wuxi Flange Forging Co., Ltd.
03/10/14	NNSA [2014]51	Notification of Approving Manufacture License Renewal for Civil Nuclear Safety Equipment of Shanghai Xinmin Heavy Forging Co., Ltd.
05/15/14	NNSA [2014]85	Notification of Approving Design and Manufacture License Renewal for Civil Nuclear Safety Equipment of Nanjing AEROSUN-TOLA Expansion Joint Co. Ltd.
05/15/14	NNSA [2014]86	Notification of Approving Design and Manufacture License Renewal for Civil Nuclear Safety Equipment of Jiangsu Shentong Valve Co., Ltd.
05/15/14	NNSA [2014]91	Notification of Approving Design License Renewal and Extension for Civil Nuclear Safety Equipment of China Nuclear Power Design Co., Ltd (Shenzhen).
06/09/14	NNSA [2014]114	Notification of Approving Design and Manufacture License Renewal for Civil Nuclear Safety Equipment of Xi'an Nuclear Instrument Factory, CNNC

continued

Issuance Date	Document No.	Document Title
06/09/14	NNSA [2014]115	Notification of Approving Design and Manufacture License Renewal for Civil Nuclear Safety Equipment of China Nuclear Power Technology Research Institute
06/09/14	NNSA [2014]116	Notification of Approving Design and Manufacture License Renewal for Civil Nuclear Safety Equipment of Shanghai Automation and Instrumentation Co., Ltd.
06/09/14	NNSA [2014]118	Notification of Approving Installation License Renewal and Change License Information Modification for Civil Nuclear Safety Equipment of China Nuclear Industry Fifth Construction Co., Ltd.
06/09/14	NNSA [2014]119	Notification of Approving Manufacture License Renewal and Activity Scope Expansion for Civil Nuclear Safety Equipment of China Nuclear Industry Fifth Construction Company
06/09/14	NNSA [2014]120	Notification of Approving NDT License Renewal for Civil Nuclear Safety Equipment of Nuclear Power Institute of China
06/09/14	NNSA [2014]121	Notification of Approving NDT License Renewal for Civil Nuclear Safety Equipment of China Nuclear Power Operation Technology Co., Ltd.
06/09/14	NNSA [2014]122	Notification of Approving NDT License Renewal for Civil Nuclear Safety Equipment of STATE Nuclear Power Plant Service Company
06/09/14	NNSA [2014]123	Notification of Approving Installation License Renewal for Civil Nuclear Safety Equipment of Jiangsu Electric Power Construction No.3 Engineering Company of China Energy Engineering Group Co., Ltd.
06/09/14	NNSA [2014]124	Notification of Approving Design and Manufacture License Renewal for Civil Nuclear Safety Equipment of Anhui Cable Co., Ltd.
06/09/14	NNSA [2014]125	Notification of Approving Manufacture License Renewal for Civil Nuclear Safety Equipment of China Nuclear Power Equipment Co., Ltd.
07/29/14	NNSA [2014]169	Notification of Approving Manufacture License Renewal for Civil Nuclear Safety Equipment of Shanghai Morimatsu Pressure Vessel Co., Ltd.
08/12/14	NNSA [2014]176	Notification of Approving Design and Manufacture License Renewal for Civil Nuclear Safety Equipment of Yangzhou Electric Power Equipment Manufacture Factory Co., Ltd., CEEC
10/16/14	NNSA [2014]226	Notification of Approving Design and Manufacture License Renewal for Civil Nuclear Safety Equipment of Suzhou East-Instrument Automation Control Equipment Co., Ltd.

continued

Issuance Date	Document No.	Document Title
10/17/14	NNSA [2014]229	Notification of Approving Design and Manufacture License Renewal for Civil Nuclear Safety Equipment of Kiamusze Electric Machine Co., Ltd.
10/17/14	NNSA [2014]231	Notification of Approving Design and Manufacture License Renewal for Civil Nuclear Safety Equipment of Changzhou Electric Power Station Auxiliary Equipment Works, Ltd.
10/17/14	NNSA [2014]232	Notification of Approving NDT License Renewal for Civil Nuclear Safety Equipment of CGNPC Inspection Technology Co., Ltd.
12/26/14	NNSA [2014]296	Notification of Approving Design and Manufacture License Renewal for Civil Nuclear Safety Equipment of Beijing Jingcheng Compressor Co., Ltd.
12/30/14	NNSA [2014]302	Notification of Approving Manufacture License Renewal for Civil Nuclear Safety Equipment of Zhejiang Jiuli Hi-Tech Metals Co., Ltd.

Table 87. List of Licensees Holding Civilian Nuclear Safety Equipment Licenses

No.	Licensee	Type(s) of License
1	China Institute of Atomic Energy	Mechanical design, electrical design, and mechanical manufacture
2	China Nuclear Power Design Co., Ltd (Shenzhen).	Mechanical design, electrical design
3	Nuclear Industry Engineering Research and Engineering Co., Ltd.	Mechanical design
4	China Nuclear Power Engineering Company	Mechanical design, electrical design
5	Shanghai Nuclear Power Engineering and Design Institute	Mechanical design, electrical design
6	Nuclear Power Institute of China	Mechanical design, electrical design, electrical manufacture, NDT
7	Institute of Nuclear and New Energy Technology, Tsinghua University	Mechanical design, electrical design
8	China Nuclear Power Operation Technology Co., Ltd.	Mechanical design, NDT
9	The 719th Research Institute of China Shipbuilding Industry Corporation	Mechanical design, electrical design, electrical manufacture
10	China Nuclear Industry 23 Construction Co., Ltd.	Installation, and mechanical manufacture
11	China Nuclear Industry Fifth Construction Co., Ltd.	Installation, and mechanical manufacture
12	China Nuclear Industry Huaxing Construction Co., Ltd.	Installation

continued

No.	Licensee	Type(s) of License
13	China Nuclear Industry 22 Construction Co., Ltd.	Installation
14	China Nuclear Industry 24 Construction Co., Ltd.	Installation
15	Guangdong Power Engineering Corporation	Installation
16	Zhejiang Thermal Power Company, CEEC	Installation
17	Jiangsu Electric Power Construction No.3 Company, CEEC	Installation
18	Anhui No.2 Electric Power Engineering and Construction Corporation, CEEC	Installation
19	Hunan Provincial Thermal Power Construction Company, CEEC	Installation
20	Hebei No.1 Electric Power Engineering and Construction Corporation, CEEC	Installation
21	China Construction Second Engineering Bureau Ltd.	Installation
22	TianJin Electric Power Construction Co., Ltd. CEEG	Installation
23	Shanghai Automation and Instrument Co., Ltd.	Electrical design, electrical manufacture, mechanical design, mechanical manufacture
24	Shanxi North MTU Engine Co., Ltd.	Electrical design, electrical manufacture
25	Baoding Tianwei Baobian Electric Co., Ltd.	Electrical design, electrical manufacture
26	Xi'an XD Transformer Co., Ltd.	Electrical design, electrical manufacture
27	TBEA Shenyang Transformer Group Co., Ltd.	Electrical design, electrical manufacture
28	Baosheng Science and Technology Innovation Co., Ltd.	Electrical design, electrical manufacture
29	TBEA Hengyang Transformer Co., Ltd.	Electrical design, electrical manufacture
30	Changzhou Bayi Cable Co., Ltd.	Electrical design, electrical manufacture
31	Jiangsu Huaguang Cable and Electrical Equipment Co., Ltd.	Electrical design, electrical manufacture
32	Jiangsu Shangshang Cable Group Co., Ltd.	Electrical design, electrical manufacture

continued

No.	Licensee	Type(s) of License
33	Shaanxi Diesel Engine Heavy Industry Co., Ltd.	Electrical design, electrical manufacture
34	Shanghai Power Equipment Research Institute	Electrical design, electrical manufacture
35	Anhui Cable Co., Ltd.	Electrical design, electrical manufacture
36	Jiangsu Changyan Cable Co., Ltd.	Electrical design, electrical manufacture
37	Suzhou East-Instrument Automation Control Equipment Co., Ltd.	Electrical design, electrical manufacture
38	Xi'an Nuclear Instrument Co., Ltd., CNNC	Electrical design, electrical manufacture
39	China Nuclear Power Technology Research Institute, CGN	Electrical design, electrical manufacture
40	Changzhou Power Station Auxiliary Equipment Works Ltd.	Electrical design, electrical manufacture
41	Kiamusze Electric Machine Co., Ltd.	Electrical design, electrical manufacture, mechanical design, mechanical manufacture
42	Nanyang Explosion Protection Group Co., Ltd.	Electrical design, electrical manufacture
43	Shanghai Cable Factory Co., Ltd.	Electrical design, electrical manufacture
44	Shenyang Northeast Accumulator Co., Ltd.	Electrical design, electrical manufacture
45	Yangzhou Electric Power Equipment Manufacture Factory, CEEC	Electrical design, electrical manufacture
46	Shanghai Foxboro Co., Ltd.	Electrical design, electrical manufacture
47	Shanghai Electric Group Shanghai Electric Machine Factory	Electrical design, electrical manufacture
48	Shanghai Guanghua Instrument Co., Ltd.	Electrical design, electrical manufacture
49	Chongqing Chuanyi Automation Co., Ltd.	Electrical design, electrical manufacture
50	China Techenergy Co., Ltd.	Electrical design, electrical manufacture

continued

No.	Licensee	Type(s) of License
51	Shanghai Welltech Automation Co., Ltd.	Electrical design, electrical manufacture
52	Yantai Cable Factory	Electrical design, electrical manufacture
53	Far East Cable Co., Ltd.	Electrical design, electrical manufacture
54	Sichuan Star Cable Co., Ltd.	Electrical design, electrical manufacture
55	Hoppecke Power System (Wuhan) Co., Ltd.	Electrical design, electrical manufacture
56	Shanghai East Heavy Machinery Co., Ltd., CSSC	Electrical design, electrical manufacture
57	Shenyang Cable Industry Corporation	Electrical design, electrical manufacture
58	Jiangsu Xinyuancheng Cable Co., Ltd.	Electrical design, electrical manufacture
59	The 718th Research Institute of China Shipbuilding Industry Corporation	Electrical design, electrical manufacture
60	State Nuclear Power Plant Service Company	NDT
61	CGN Inspection Technology Co., Ltd.	NDT
62	China First Heavy Industries Co., Ltd.	Mechanical manufacture
63	China Erzhong Group (Deyang) Heavy Industries Co., Ltd	Mechanical manufacture
64	Shanghai Heavy Machinery Factory Co., Ltd.	Mechanical manufacture
65	Dongfang Electric Corporation Dongfang Turbine Co., Ltd.	Mechanical manufacture
66	Dongfang Electric Corporation (Wuhan) Nuclear Equipment Co., Ltd.	Mechanical manufacture
67	Zhongxing Energy Equipment Co., Ltd.	Mechanical manufacture
68	Dalian Sulzer Pump & Compressor Co., Ltd.	Mechanical design, mechanical manufacture
69	Guizhou Hangtian Xinli Forging & Casting Co., Ltd.	Mechanical manufacture
70	Shenyang Xintong Power Station Equipment Manufacture Co., Ltd.	Mechanical design, mechanical manufacture
71	Suzhou Hailu Heavy Industry Co., Ltd.	Mechanical manufacture

continued

No.	Licensee	Type(s) of License
72	Wuxi Xitang Petro & Chemical Mechanical Co., Ltd.	Mechanical manufacture
73	Xi'an Nuclear Equipment Co., Ltd., CNNC	Mechanical design, mechanical manufacture
74	Dongfang Electric Corporation Dongfang Boiler Co., Ltd.	Mechanical manufacture
75	Dalian Baoyuan Nuclear Equipment Co., Ltd.	Mechanical manufacture
76	Dongfang (Guangzhou) Heavy Machinery Co., Ltd.	Mechanical manufacture
77	Harbin Electric Corporation (QHD) Heavy Equipment Co., Ltd	Mechanical manufacture
78	Shenyang Shengshi High & Middle Pressure Valve Co., Ltd	Mechanical design, mechanical manufacture
79	Shijiazhuang Valve No.1 Factory Co., Ltd.	Mechanical design, mechanical manufacture
80	Shanghai Kaiquan Pump Co., Ltd.	Mechanical design, mechanical manufacture
81	Qinhuangdao Nuclear and Wind Equipment Co., Ltd.	Mechanical manufacture
82	Dalian Teikoku Canned Motor Pump Co., Ltd.	Mechanical design, mechanical manufacture
83	Changshu Huaxin Special Steel Co., Ltd.	Mechanical manufacture
84	Shenyang Blower Works Group Nuclear Pump Co., Ltd.	Mechanical design, mechanical manufacture
85	Jiangsu Xinhengjite Special Equipment Co., Ltd.	Mechanical manufacture
86	Shanghai Electric Corporation Nuclear Equipment Company	Mechanical manufacture
87	Shenjiang Valve Co., Ltd.	Mechanical design, mechanical manufacture
88	Wuhan Heavy Machinery Casting and Forging Co., Ltd., CSIC	Mechanical manufacture
89	Tianding Nuclear Power Equipment Co., Ltd., AVIC Xi'an Aviation Engine Group	Mechanical manufacture
90	Hu'nan XCMC Changsha Pump Works Co., Ltd.	Mechanical design, mechanical manufacture
91	Jiangnan Valve Co., Ltd.	Mechanical design, mechanical manufacture
92	Jiangsu Huayang Pipe Fittings Co., Ltd.	Mechanical manufacture
93	Jiangsu Xingyang Pipe Fitting Co., Ltd.	Mechanical manufacture

continued

No.	Licensee	Type(s) of License
94	Sichuan Sanzhou SCMP Nuclear Equipment Manufacture Incorporation (ASS. ANEM)	Mechanical manufacture
95	Shanghai Eho Valve Manufacture Co., Ltd.	Mechanical design, mechanical manufacture
96	Shanghai Valve Factory Co., Ltd.	Mechanical design, mechanical manufacture
97	Wuxi Xinfeng Pipe Fittings Corp	Mechanical manufacture
98	Shanghai Electric Power Generation Equipment Co., Ltd.	Mechanical design, mechanical manufacture
99	Shanghai Morimatsu Pressure Vessel Co., Ltd.	Mechanical manufacture
100	Yantai Taihai Marnoir Nuclear Equipment Co., Ltd.	Mechanical manufacture
101	Anhui Yingliu Group Huoshan Casting Co., Ltd.	Mechanical manufacture
102	Bao Steel Group Corporation	Mechanical manufacture
103	Dongfang Areva Nuclear Pump Co., Ltd.	Mechanical manufacture
104	Nanjing AEROSUN-TOLA Expansion Joint Co. Ltd.	Mechanical design, mechanical manufacture
105	Shanghai Apollo Machinery Co., Ltd.	Mechanical design, mechanical manufacture
106	Shanghai Xinmin Heavy Forging Co., Ltd.	Mechanical manufacture
107	Suzhou High and Middle Pressure Valve Factory	Mechanical design, mechanical manufacture
108	Wuxi Flange Forging Co., Ltd.	Mechanical manufacture
109	China Nuclear Gansu Jiahua Nuclear Equipment Manufacture Co., Ltd.	Mechanical manufacture
110	Jiangsu Shentong Valve Co., Ltd.	Mechanical design, mechanical manufacture
111	China Nuclear Power Equipment Co., Ltd.	Mechanical manufacture
112	Beijing Jingcheng Compressor Co., Ltd.	Mechanical design, mechanical manufacture
113	Nanfang Ventilator Co., Ltd.	Mechanical design, mechanical manufacture
114	Harbin Electric Machinery AC/DC Machine Co., Ltd.	Mechanical manufacture
115	Zhejiang Jiuli Hi-Tech Metals Co., Ltd.	Mechanical manufacture

continued

No.	Licensee	Type(s) of License
116	Hebei Hongrun Heavy Industry Group Co., Ltd.	Mechanical manufacture
117	Jiangsu Yinhuan Precision Steel Piping Co., Ltd.	Mechanical manufacture
118	Jiangsu Haida Pipe Fitting Ltd.	Mechanical manufacture
119	Wujiang Dongwu Machine Co., Ltd.	Mechanical design, mechanical manufacture
120	Jiangsu Electric Power Equipment Co., Ltd.	Mechanical design, mechanical manufacture
121	Shandong Nuclear Power Equipment Manufacture Co., Ltd.	Mechanical manufacture
122	Shenyang Kejin Special Material Co., Ltd.	Mechanical manufacture
123	Zhejiang Shangfeng Industry Co., Ltd.	Mechanical design, mechanical manufacture
124	Zhejiang Hanyuan Electric Power Manufacture Co., Ltd.	Mechanical manufacture
125	Chongqing Pump Factory Ltd.	Mechanical design, mechanical manufacture
126	Suzhou Neway Valve Co., Ltd.	Mechanical design, mechanical manufacture
127	Citic Heavy Industries Co., Ltd.	Mechanical manufacture
128	Shanghai Shenjiang Forging Co., Ltd.	Mechanical manufacture
129	Baoyin Special Steel Piping Co., Ltd.	Mechanical manufacture
130	Dalian Deep Blue Pump Co., Ltd.	Mechanical design, mechanical manufacture
131	Hunan XCMC Changsha Pump Casting Co., Ltd.	Mechanical manufacture
132	Sichuan Greatwall Steel Piping Co., Ltd.	Mechanical manufacture
133	Jiangsu Xinghe Valve Co., Ltd.	Mechanical design, mechanical manufacture
134	Bohai Shipbuilding Factory Group Co., Ltd., CISC	Mechanical manufacture
135	Angang Heavy Machine Co., Ltd.	Mechanical manufacture
136	Xi'an Shangu Power Co., Ltd.	Mechanical design, mechanical manufacture
137	Yangzhou Huayu Pipe Fitting Co., Ltd.	Mechanical manufacture
138	Zhejiang Sanfang Group Co., Ltd.	Mechanical design, mechanical manufacture

continued

No.	Licensee	Type(s) of License
139	Lanzhou Lanshi Heat-exchanger Equipment Co., Ltd.	Mechanical design, mechanical manufacture
140	Dalian Dagao Valve Co., Ltd.	Mechanical design, mechanical manufacture
141	Shanghai First Machine Tool Co., Ltd.	Mechanical manufacture
142	Sufa Technology Industry Co., Ltd., CNNC	Mechanical design, mechanical manufacture
143	Gelin (Changzhou) Electrical Power Machine-building Co., Ltd.	Mechanical design, mechanical manufacture
144	Zhejiang Jindun Fans Holding Co., Ltd.	Mechanical design, mechanical manufacture
145	Fangda Carbon New Material Technology Co., Ltd.	Mechanical manufacture
146	Shanghai Neles-Jamesbury Valve Co., Ltd.	Mechanical manufacture
147	Shanghai Electric KSB Nuclear Pump & Valve Co., Ltd.	Mechanical design, mechanical manufacture
148	Pangang Group Chengdu Iron and Vanadium Co., Ltd.	Mechanical manufacture
149	Dalian Hitachi Machinery and Equipment Co., Ltd.	Mechanical manufacture
150	Shanghai No. 5 Valve Factory Co., Ltd.	Mechanical design, mechanical manufacture
151	Shanghai Lianggong Valve Factory Co., Ltd.	Mechanical design, mechanical manufacture
152	Jilin Zhongyi Nuclear Piping Manufacture Co., Ltd.	Mechanical manufacture
153	Dongfang Electric Co., Ltd.	Mechanical manufacture
154	Siping THT Plate Heat Transfer Co., Ltd.	Mechanical design, mechanical manufacture
155	Sichuan Kexin Mechanical Equipment Co., Ltd.	Mechanical manufacture
156	Pall Filter (Beijing) Co., Ltd.	Mechanical manufacture
157	Tyco Fluid Control (Shanghai) Co., Ltd.	Mechanical design, mechanical manufacture
158	Nantong Dart-Plllrich Fan Co., Ltd.	Mechanical design, mechanical manufacture
159	Lisega Pipeline Bearer Technology (Shanghai) Co., Ltd.	Mechanical manufacture

continued

No.	Licensee	Type(s) of License
160	Taiyuan Heavy Industry Co., Ltd.	Mechanical manufacture
161	Tai'an Shankou Forging and Casting Co., Ltd.	Mechanical manufacture
162	Jiangsu Biaoxin Kubota Industry Co., Ltd.	Mechanical manufacture
163	Shanghai Toyo Tanso Carbon Material Co., Ltd.	Mechanical manufacture
164	Zhangjiagang Chemical Equipment Co., Ltd.	Mechanical manufacture
165	Shandong Hongda Technology Group Co., Ltd.	Mechanical manufacture
166	Shangyu Special Fan Co., Ltd.	Mechanical design, mechanical manufacture
167	Inner Mongolia North Heavy Industries Group Co., Ltd.	Mechanical manufacture
168	Bohai Heavy Industry Pipeline Co., Ltd.	Mechanical manufacture
169	Nantong China International Marine Containers Co., Ltd.	Mechanical manufacture
170	Shanghai Ruiniu Machinery and Equipment Manufacturing Co., Ltd.	Mechanical design, mechanical manufacture
171	Dalian Shipbuilding Heavy Industry Group Co., Ltd.	Mechanical manufacture
172	Anshan Electromagnetic Valve Co., Ltd.	Mechanical design, mechanical manufacture
173	Zhejiang Zhongda Special Steel Co., Ltd.	Mechanical manufacture
174	Jiangsu Wujin Stainless Steel Pipe Group Co., Ltd.	Mechanical manufacture
175	Hengyang Valin Steel Tube Co., Ltd.	Mechanical manufacture
176	Jiangsu Runyang Pipe Fitting Co., Ltd.	Mechanical manufacture
177	Qingdao Lanshi Heavy Machinery Co., Ltd.	Mechanical manufacture
178	China-Kinwa High Technology Co., Ltd.	Electrical design, electrical manufacture
179	Sichuan Huadu Nuclear Equipment Manufacture Co., Ltd.	Mechanical manufacture
180	Wuxi Huatex Machinery Manufacture Co., Ltd.	Mechanical manufacture
181	Jiangsu Haishi Pump Manufacturing Co., Ltd.	Mechanical design, mechanical manufacture
182	Anhui A-Line Electric Pumps Co., Ltd.	Mechanical design, mechanical manufacture
183	China Nuclear Control System Engineering Co., Ltd.	Electrical design, electrical manufacture

continued

No.	Licensee	Type(s) of License
184	Harbin Boiler Co., Ltd.	Mechanical manufacture
185	Yangzhou Shuguang Cable Co., Ltd.	Electrical design, electrical manufacture
186	Shandong Beichen Mechanical snd Electrical Equipment Co., Ltd,	Mechanical manufacture
187	Special Equipment Co., Ltd., CSIC	Mechanical design, mechanical manufacture
188	Alfa Laval (Jiangyin) Equipment Manufactory Co., Ltd,	Mechanical manufacture
189	China Nuclear Control System Engineering Co., Ltd.	Electrical design, electrical manufacture
190	Nantong Kunlun Air Conditioning Co., Ltd,	Mechanical design, mechanical manufacture
191	Hebei Canghai Pipe Fittings Group Co., Ltd	Mechanical manufacture
192	Harbin Electric Company Limited	Mechanical design
193	Yangzhou Chengde Steel Pipe Co., Ltd	Mechanical manufacture
194	Nanjing Duble Metal Equipment Engineering Co., Ltd	Mechanical design, mechanical manufacture

Table 88. Confirmation of the Foreign Entity Registration for the License for Civilian Nuclear Safety Equipment in 2014

Document No.	Issuance Date	Title
03/10/14	NNSA[2014]38	Notification of Issuing Civil Nuclear Safety Equipment Foreign Entity Registration Confirmation for LISEGA and other 27 German Entities
04/28/14	NNSA [2014]82	Notification of Issuing Civil Nuclear Safety Equipment Foreign Entity Registration Confirmation for Mitsubishi Electric Corporation and Other 21 Japanese Entities
08/12/14	NNSA [2014]177	Notification of Issuing Civil Nuclear Safety Equipment Foreign Entity Registration Confirmation for ANDRITZ and Other 17 Austrian Entities
09/05/14	NNSA [2014]188	Notification of Issuing Civil Nuclear Safety Equipment Foreign Entity Registration Confirmation for AREVA and Other 19 French Entities
12/24/14	NNSA [2014]294	Notification of Issuing Civil Nuclear Safety Equipment Foreign Entity Registration Confirmation for Sandvik Materials Technology and the other Swedish Entities

Safety Inspection on Imported Equipment

In 2014, MEP (NNSA) undertook regulatory inspections on the imported nuclear safety equipment according to related regulations. In the field of applied inspection at the Customs, application documents of 627 batches of imported equipment were reviewed, including 401 batches of mechanical equipment, while 226 batches of electrical equipment. Among the applications, 583 batches were signed for releasing, 44 batches were rejected. In the field of open package inspection, applications of 594 batches were received, including 394 batches of mechanical equipment, and 200 batches of electrical equipment. Among the inspections, 569 batches were accepted, while 25 batches were rejected, and 120 batches were taken open package inspection.

Regulation and Inspection for Civilian Nuclear Safety Equipment

In 2014, according the surveillance plan, MEP (NNSA) undertook comprehensive inspections and special inspections on domestic factories, and 2 comprehensive inspections on foreign factories. Supervision and inspection activities for civil nuclear safety equipment in 2014 are shown in Table 89. Until now, 9 in-factory inspection offices were established in China, United States, and Russia, and permanent inspectors were assigned there for routine inspections. Through inspections, renovation requirements were raised in time for the problems discovered and expert reviews and special inspections were fulfilled to major unqualified items related to nuclear safety.

Table 89. Regulatory Inspections on Civilian Nuclear Safety Equipment in 2014

Start Date	Item
01/06/14	The Comprehensive Regulatory Inspection on Nuclear Safety of Jiangsu Electric Power Equipment Co., Ltd.
02/25/14	The Special Inspection on Start-up Preparation for Prototype Manufacture Activities of CNSC Spent Fuel Transportation Container of Xi'an Nuclear Equipment Co., Ltd., CNNC
03/05/14	The Special Inspection on Design and Manufacture Activities for Nuclear Safety Equipment of Dalian DV Valve Co., Ltd.
03/20/14	The Special Inspection on Management of Purchase and Supervision Activities of China Nuclear Power Engineering Co., Ltd.
03/24/14	The Comprehensive Inspection on Anhui Cable Co., Ltd.
03/25/14	The Comprehensive Inspection on Shanghai Automation and Instrumentation Co., Ltd.
03/26/14	The Review on Renovation and Implementation of Comprehensive Inspection in 2013 of Institute of Nuclear and New Energy Technology, Tsinghua University

continued

Start Date	Item
04/02/14	The Special Inspection on Rectification within Prescribed Timeframe of Dalian DV Valve Co., Ltd.
04/09/14	The Special Inspection on Work Stoppages of Harbin Electric Power Equipment Co., Ltd.
04/21/14	The Comprehensive Inspection on Shenyang Northeast Storage Battery Co., Ltd.
04/23/14	The Comprehensive Inspection on Zhejiang JIULI Hi-tech Metals Co., Ltd.
04/28/14	The Comprehensive Inspection on Harbin Electric Corporation (QHD) Heavy Equipment Co., Ltd.
05/05/14	The Comprehensive Inspection on Jiangsu Yinhuan Precision Steel Pipe Co., Ltd
05/08/14	The Comprehensive Inspection on Jiangsu Haida Pipe Fitting Ltd.
05/13/14	The Comprehensive Inspection on Dongfang Electric Corporation Dongfang Boiler Co., Ltd.
05/14/14	The Comprehensive Inspection on Sufa Technology Industry Co., Ltd., CNNC
05/14/14	The Comprehensive Inspection on Chongqing Pump Industry Ltd.
05/15/14	The Comprehensive Inspection on Reports of (Guangzhou) Heavy Machinery Co., Ltd.
05/16/14	The Special Inspection on Sichuan Kexin Mechanical and Electrical Equipment Co., Ltd.
05/19/14	The Comprehensive Inspection on TBEA Hengyang Transformer Co., Ltd.
05/21/14	The Comprehensive Inspection on Nanjing AEROSUN-TOLA Expansion Joint Co., Ltd.
06/03/14	The Comprehensive Inspection on Lanzhou LS Heat-Exchange Equipment Co., Ltd
06/05/14	The Investigation on Survey of On-site Fan Manufacturing Activity of Xi'an Shangu Power Co., Ltd.
06/09/14	The Comprehensive Inspection on Guizhou Hangtian Xinli Casting and Forging Co., Ltd.
06/16/14	The Special Inspection on Management of Purchase and Supervision Activities of Nuclear Power Institute of China
06/16/14	The Comprehensive Inspection on Yangzhou Electric Power Equipment Manufacture Factory Co., Ltd., CEEC
06/23/14	The Special Inspection on Quality Assurance of Purchase and Supervision Activities of China Nuclear Power Engineering Co., Ltd.
06/30/14	The Special Inspection on Quality Assurance of Purchase and Supervision Activities of China Guangdong Nuclear Power Engineering Co., Ltd.
07/09/14	The Special Inspection on Corrective Implementation of NDT Illegal Subcontracting Event of Beijing Jingcheng Compressor Co., Ltd.
07/15/14	The Comprehensive Inspection on Changzhou Bayi Cable Co., Ltd.

continued

Start Date	Item
07/15/14	The Special Inspection on Fastener of Shanghai No. 1 Machine Tool Works Co., Ltd.
07/18/14	The Comprehensive Inspection on Suzhou East-Instrument Automation Control Equipment Co., Ltd.
07/21/14	The Comprehensive Inspection on Baoding Tianwei Baobian Electric Co., Ltd.
07/23/14	The Special Inspection on Civil Nuclear Safety Equipment Manufacture Activities of Zhangjiagang Chemical Machinery Co., Ltd.
07/30/14	The Special Inspection on Typical Quality Problems of Dongfang (Guangzhou) Heavy Machinery Co., Ltd.
08/25/14	The Comprehensive Inspection on Shanghai Power Equipment Research Institute
08/25/14	The Comprehensive Inspection on Shenyang Blower Works Group Nuclear Pump Co., Ltd.
08/27/14	The Special Inspection on Ability Weakening Situation of Tianding Nuclear Power Equipment Co., Ltd., AVIC Xi'an Aviation Engine Group
09/01/14	The Comprehensive Inspection on Xi'an Nuclear Instrument Factory, CNNC
09/01/14	The Special Inspection on Rectification within Prescribed Timeframe of Harbin Electric Power Equipment Co., Ltd.
09/09/14	The Comprehensive Inspection on Pilot Work of Group Management for Civil Nuclear Safety Equipment of Dongfang Electric Co., Ltd.
09/10/14	The Comprehensive Inspection on China Erzhong Group (Deyang) Heavy Industries Co., Ltd.
09/15/14	The Comprehensive Inspection on China Nuclear Power Design Co., Ltd (Shenzhen).
09/16/14	The Comprehensive Inspection on Shandong Nuclear Power Equipment Manufacture Co., Ltd.
09/17/14	The Investigation on Illegal Subcontracting Activities of Differentiated Fan of Nanfang Ventilator Co., Ltd.
09/19/14	The Special Inspection on Illegal Design and Manufacturing Activities of Differentiated Fan of Taishan Project of Xi'an Shangu Ventilation Equipment Co., Ltd.
10/08/14	The Review on Renovation and Implementation of Comprehensive Inspection in 2013 of Shanghai Nuclear Power Engineering and Design Institute
10/14/14	The Comprehensive Inspection on Sichuan Great Wall Steel Piping Co., Ltd.
10/15/14	The Investigation by China Guangdong Nuclear Power Engineering Co., Ltd. on Illegal Subcontracting and Returning Package of Fan of Taishan Project
10/27/14	The Special Inspection on Manufacture and Test Activities of Pressure Shell Components of Shanghai No. 1 Machine Tool Works Co., Ltd.
10/28/14	The Comprehensive Inspection on Sichuan Star Cable Co., Ltd.
10/28/14	The Comprehensive Inspection on Zhejiang HanYuan Power Equipment Manufacture Co., Ltd.

continued

Start Date	Item
11/02/14	The Comprehensive Inspection on EMD Millipore Corporation
11/02/14	The Comprehensive Inspection on Westinghouse Electric Company
11/14/14	The Special Inspection on Design and Manufacture Activities of Civil Nuclear Safety Equipment of Yantai Taihai Manoir Nuclear Equipment Co., Ltd.
11/18/14	The Comprehensive Inspection on Nuclear Power Institute of China
11/19/14	The 2014 Comprehensive Inspection on Suzhou Neway Valve Co., Ltd.
11/24/14	The Special Inspection on Not-Welded Event of Set Screw for Spray Head of Stabilizer of Xi'an Nuclear Equipment Co., Ltd., CNNC
11/25/14	The Comprehensive Inspection on NDT Activities of Civil Nuclear Safety Equipment of CGN Inspection Technology Co., Ltd.
11/25/14	The Comprehensive Inspection on Shanghai East Heavy Machinery Co., Ltd., CSSC
12/01/14	The Comprehensive Inspection on TBEA Shenyang Transformer Group Co., Ltd.
12/08/14	The Comprehensive Inspection on NDT Inspection Activities of Civil Nuclear Safety Equipment of China Nuclear Power Operation Technology Co., Ltd.
12/09/14	The Comprehensive Inspection on China Techenergy Co., Ltd.
12/09/14	The Comprehensive Inspection on China-Kinwa High Technology Co., Ltd.
12/09/14	Nuclear Safety Culture Publicity for China-Kinwa High Technology Co., Ltd.
12/12/14	Nuclear Safety Culture Publicity for China Techenergy Co., Ltd.
12/16/14	The Comprehensive Inspection on Shanghai Electric KSB Nuclear Pump and Valve Co., Ltd.
12/16/14	Nuclear Safety Culture Publicity for China Nuclear Power Operation Technology Co., Ltd.
12/24/14	The Review on Corrective Implementation of Comprehensive Inspection in 2013 of China Nuclear Power Engineering Company
12/24/14	Nuclear Safety Culture Publicity for Jiangsu New Yuancheng Cable Co., Ltd.
12/25/14	Nuclear Safety Culture Publicity for Changzhou Electric Power Station Auxiliary Equipment Works Ltd.
12/26/14	Nuclear Safety Culture Publicity for Changzhou Bayi Cable Co., Ltd.
12/28/14	The Comprehensive Inspection on NDT Activities and Nuclear Safety Culture Publicity of Nuclear Power Institute of China

12 Regulation on Electromagnetic Environment

MEP (NNSA) formally released “Controlling Limits for Electromagnetic Environment” (GB8702-2014), “Technical Guidelines for Environmental Impact Assessment of Electric Power Transmission and Distribution Project” (HJ24-2014) and “Technical Norms for Environmental Protection in Electric Power Transmission and Distribution Project for Check and Accept of Completed Project” (HJ705-2014), etc., and organized the compilation of “Definition of Major Changes and Treatment Principles of Construction Project in Electric Power Transmission and Distribution Project (draft for comments)”.

MEP (NNSA) accomplished reviews and approvals of environmental impact reports of 19 construction projects, including Guinan 500 kV electric power transmission and distribution project (adjustment), Pingyu power plant phase III 1000 kV output project, Xinjiang Santang Lake - Kumul 750 kV electric power transmission and distribution project, and accomplished environmental protection check and accept for 38 completed projects, including Manas power plant phase III output (Fengwu) 750 kV electric power transmission and distribution project and 500 kV line project from Yidu to Jiangling changing connection to Xinglong, see Table 90.

Table 90. Administrative Reviews and Approvals in the Field of Regulation on Electromagnetic Environment in 2014

Approval Date	Document No.	Document Title
01/17/14	MEP App[2014]13	Reply to the Environmental Impact Report for Guinan 500kV Electric Power Transmission and Distribution Project (adjustment)
03/05/14	MEP App[2014]32	Reply to the Supplemental Environmental Impact Report for Wannan - Wuhu East 500kV Electric Power Transmission and Distribution Project
03/05/14	MEP App[2014]33	Reply to the Environmental Impact Report for Pingyu Power Plant Phase III 1000kV Output Project
03/19/14	MEP App[2014]67	Reply to the Environmental Impact Report for Xinjiang Santang Lake - Kumul 750kV Electric Power Transmission and Distribution Project

continued

Approval Date	Document No.	Document Title
06/13/14	MEP App[2014]144	Reply to the Environmental Impact Report for the Second Circuit of Interconnection Project (inland part) between the Main Southern Power Grid and Hainan Power Grid
07/08/14	MEP App[2014]173	Reply to the Environmental Impact Report for the Ground Application System Project of Fengyun-4 Satellite
07/29/14	MEP App[2014]183	Reply to the Environmental Impact Report for Qinghai Haidong Youning 750kV Electric Power Transmission and Distribution Project
09/30/14	MEP App[2014]255	Reply to the Environmental Impact Report for Ningdong - Zhejiang DC Sending End 750kV Access Project
10/30/14	MEP App[2014]276	Reply to the Environmental Impact Report for Jiuquan - Hunan ±800kV DC UHV Electric Power Transmission Project
10/30/14	MEP App[2014]277	Reply to the Environmental Impact Report for Inner Mongolia West – Tianjin South 1000kV AC Electric Power Transmission and Distribution Project
11/06/14	MEP App[2014]286	Reply to the Environmental Impact Report for the Back-to-back DC Asynchronous Interconnection Project between Yunnan Power Grid and the Western Shandong Part of the Main Southern Power Grid
11/06/14	MEP App[2014]287	Reply to the Environmental Impact Report for Yongren - Funing ±500kV DC Electric Power Transmission and Distribution Project
11/18/14	MEP App[2014]310	Reply to the Environmental Impact Report for Qiaowan 750kV Electric Power Transmission and Distribution Project
11/18/14	MEP App[2014]311	Reply to the Environmental Impact Report for Xinjiang Wucai Bay – Jiji Lake – Santang Lake 750kV Electric Power Transmission and Distribution Project
11/18/14	MEP App[2014]312	Reply to the Environmental Impact Report for Lanzhou East 750kV Substation Extension Project
12/04/14	MEP App[2014]322	Reply to the Environmental Impact Report for Taiyang Mountain – Liupan Mountain – Pingliang 750kV Electric Power Transmission and Distribution Project
12/25/14	MEP App[2014]346	Reply to the Environmental Impact Report for Qinghai Haixi 750kV Switching Station Expansion Project
12/25/14	MEP App[2014]347	Reply to the Environmental Impact Report for Yuheng (Jingbian) – Weifang 1000kV AC Electric Power Transmission and Distribution Project
12/25/14	MEP App[2014]348	Reply to the Environmental Impact Report for Yangqu Hydropower Station Output Project
01/28/14	MEP Acc[2014]7	Official Letter of the Environmental Acceptance Test of Project Completion of 750kV Manas Power Plant Phase III Output (Fengwu) Electric Power Transmission and Distribution

continued

Approval Date	Document No.	Document Title
01/28/14	MEP Acc[2014]8	Official Letter of the Environmental Acceptance Test of Project Completion of 500kV Line from Yidu to Jiangling Changing Connection to Xinglong
03/26/14	MEP Acc[2014]45	Official Letter of the Environmental Acceptance Test of Project Completion of High Resistance Busbar Expansion of Hubei Yidu 500kV Convertor Station
03/26/14	MEP Acc[2014]46	Official Letter of the Environmental Acceptance Test of Project Completion of Xingdong (Zongzhou), Linhe 500kV Substation Expansion
03/26/14	MEP Acc[2014]47	Official Letter of the Environmental Protection Check and Acceptance of Completed Shahe Power Plant – Xingtai South (Guangyuan) 500kV Double-circuit Transmission Line Project
03/26/14	MEP Acc[2014]48	Official Letter of the Environmental Acceptance Test of Project Completion of Wenfeng (Gongchang) 330kV Electric Power Transmission and Distribution
03/31/14	MEP Acc[2014]50	Official Letter of the Environmental Acceptance Test of Project Completion of Guixi Power Plant “Build Large Shut Down Small” 500kV Output
04/25/14	MEP Acc[2014]67	Official Letter of the Environmental Acceptance Test of Project Completion of Zhengzhou South 500kV Electric Power Transmission and Distribution
05/04/14	MEP Acc[2014]68	Official Letter of the Environmental Acceptance Test of Project Completion of Minzhu 500kV Electric Power Transmission and Distribution
05/04/14	MEP Acc[2014]69	Official Letter of the Environmental Acceptance Test of Project Completion of Jiangsu 500kV Nantong North Booster Electric Power Transmission and Distribution
05/04/14	MEP Acc[2014]71	Official Letter of the Environmental Acceptance Test of Project Completion of Urumqi North – Turpan - Kumul 750kV Electric Power Transmission and Distribution
05/04/14	MEP Acc[2014]72	Official Letter of the Environmental Acceptance Test of Project Completion of Ulanhot - Baicheng 500kV Electric Power Transmission and Distribution
05/04/14	MEP Acc[2014]73	Official Letter of the Environmental Acceptance Test of Project Completion of 500kV Jin’anqiao Power Plant Output
05/29/14	MEP Acc[2014]89	Official Letter of the Environmental Acceptance Test of Project Completion of Huaihua (Pailou) - Changyangpu the Second 500kV Electric Power Transmission and Distribution
05/29/14	MEP Acc[2014]90	Official Letter of the Environmental Acceptance Test of Project Completion of Huaihua (Pailou) 500kV Main Substation Expansion
06/30/14	MEP Acc[2014]112	Official Letter of the Environmental Acceptance Test of Project Completion of Guodian Baoji the Second Power Plant 750kV Output
06/30/14	MEP Acc[2014]113	Official Letter of the Environmental Acceptance Test of Project Completion of Huaneng Shaanxi Qinhua Electric Power Co., Ltd. 750kV Output

continued

Approval Date	Document No.	Document Title
06/30/14	MEP Acc[2014]114	Official Letter of the Environmental Acceptance Test of Project Completion of Shibei (Yaojiang River) 500kV Electric Power Transmission and Distribution
06/30/14	MEP Acc[2014]115	Official Letter of the Environmental Acceptance Test of Project Completion of Kiamusze - Suihua - Harbin 500kV Electric Power Transmission and Distribution
06/30/14	MEP Acc[2014]116	Official Letter of the Environmental Acceptance Test of Project Completion of Jixian - Khanh Van - Fangzheng 500kV Electric Power Transmission and Distribution
06/30/14	MEP Acc[2014]117	Official Letter of the Environmental Acceptance Test of Project Completion of Yueqing (Sidu) 500kV Electric Power Transmission and Distribution
07/02/14	MEP Acc[2014]119	Official Letter of the Environmental Acceptance Test of Project Completion of Guangdong Suidong Converter Station AC Matching Output
07/04/14	MEP Acc[2014]122	Official Letter of the Environmental Acceptance Test of Project Completion of Jiangsu Fudou Mountain - Changshu South 500kV Line Capacity Expansion and Renovation
07/04/14	MEP Acc[2014]123	Official Letter of the Environmental Acceptance Test of Project Completion of Yuan River Cascade Hydropower Station Group and Guizhou East Thermal Power Plants 500kV Output
08/11/14	MEP Acc[2014]156	Official Letter of the Environmental Acceptance Test of Project Completion of Pingding Mountain – Bai River 500kV Double-circuit Electric Power Transmission and Distribution
08/11/14	MEP Acc[2014]157	Official Letter of the Environmental Acceptance Test of Project Completion of He'nan Anyang West and Jiaozuo West - Tapu 500kV Electric Power Transmission and Distribution
09/23/14	MEP Acc[2014]193	Official Letter of the Environmental Acceptance Test of Project Completion of Liancheng 330kV Electric Power Transmission and Distribution
09/23/14	MEP Acc[2014]194	Official Letter of the Environmental Acceptance Test of Project Completion of Minxian County 330kV Electric Power Transmission and Distribution
09/23/14	MEP Acc[2014]195	Official Letter of the Environmental Acceptance Test of Project Completion of Gunsu 330kV Hathpace Electric Power Transmission and Distribution
09/23/14	MEP Acc[2014]196	Official Letter of the Environmental Acceptance Test of Project Completion of Ningxia Taiyang Mountain (Luo Mountain) 330kV Electric Power Transmission and Distribution
09/23/14	MEP Acc[2014]197	Official Letter of the Environmental Acceptance Test of Project Completion of Gunsu Yellow River Bingling Hydropower Station 330kV Output
12/01/14	MEP Acc[2014]244	Official Letter of the Environmental Acceptance Test of Project Completion of Zhoukou Phase II 500kV Electric Power Transmission and Distribution

continued

Approval Date	Document No.	Document Title
12/18/14	MEP Acc[2014]270	Official Letter of the Environmental Acceptance Test of Project Completion of Hubei Shiyan 500kV Electric Power Transmission and Distribution
12/18/14	MEP Acc[2014]271	Official Letter of the Environmental Acceptance Test of Project Completion of Shangdu Power Plant Phase III 500kV Electric Power Transmission and Distribution
12/18/14	MEP Acc[2014]272	Official Letter of the Environmental Acceptance Test of Project Completion of Seergu 500kV Electric Power Transmission and Distribution
12/29/14	MEP Acc[2014]275	Official Letter of the Environmental Acceptance Test of Project Completion of Gangudi 500kV Electric Power Transmission and Distribution
12/29/14	MEP Acc[2014]276	Official Letter of the Environmental Acceptance Test of Project Completion of Riyue Mountain 750kV Substation Phase II Expansion
12/29/14	MEP Acc[2014]278	Official Letter of the Environmental Acceptance Test of Project Completion of Suining 500kV Electric Power Transmission and Distribution

Electric Power Transmission and Distribution Project of the 750kV Channel II Interconnection between Xinjiang and the Northwest Power Grid Main Network

13 Radiation Environment Monitoring

In 2014, the nationwide radiation environmental quality was generally good. The environmental ionizing radiation levels remained stable fluctuating around the natural background. The environmental ionizing radiation overall level adjacent to nuclear facilities and nuclear technology application projects did not show obvious changes. The overall environmental electromagnetic radiation level was fine, and the overall environmental electromagnetic radiation level adjacent to electromagnetic radiation emitting facilities did not show obvious changes.

Radiation Environment Monitoring

MEP (NNSA) made great efforts to implement the capacity building projects for national radiation environment monitoring; established three levels of national, provincial, and municipal radiation environment monitoring teams; preliminarily built up the national radiation environment monitoring network system; completed the final acceptance check of the national radiation environment monitoring data collection and release system, and drew up the data release scheme.

MEP (NNSA) coordinated and promoted the construction of regulatory monitoring system of NPPs, and perfected the corresponding construction specifications and strengthened guides on acceptance check to enable the review and approval, and acceptance check of the construction of regulatory monitoring systems of NPPs to be completed in an orderly manner.

MEP (NNSA) established and perfected the examination mechanism of performance in national radiation environment monitoring work and the assessment mechanism of the capability of radiation environment monitoring organizations, organized nationwide provincial radiation monitoring organizations to carry out quality examination and skills competition.

MEP (NNSA) promoted the standardization of radiation environment monitoring management, and further improved the operation and maintenance system and the monitoring quality management system of state controlled network.

Concerning the difficulty and weakness of current radiation monitoring work, MEP (NNSA) compiled “Positions on Further Strengthen Radiation Monitoring Work”, in order to further guide provincial environmental protection departments in radiation accident monitoring and emergency response.

Eight departments, including the National Development and Reform Commission, jointly formulated and issued “Notice of Radioactivity Monitoring of Potable Water and Emergency Disposal Work”; took Zhejiang Province as a pilot project to carry out investigation work and compiled “Scheme for Pilot Survey of the Radioactivity Level of Potable Water Sources”.

MEP (NNSA) vigorously promoted the compilation of series of training materials on radiation environment monitoring, and completed the 2014 nationwide training tasks for radiation environment monitoring, and held 35 classes of comprehensive and operational skill trainings for 700 people.

Environmental Ionizing Radiation

The nationwide environmental ionizing radiation levels remained stable fluctuating around the natural background. The real-time continuous γ radiation air-absorbed dose rates (see Figure 1) from radiation environment automatic monitoring station were all fluctuating around the local natural background. Aerosols, activity concentrations of radionuclides in fallout, and tritium activity concentration in the air had no obvious changes compared with those of previous years.

Natural radionuclide activity concentrations in Yangtze river, Yellow River, Pearl River, Songhua River, Huai River, Hai River, Liao River, rivers in Zhejiang and Fujian, rivers in the Southwest, rivers in the Northwest, and major lakes (reservoirs) were at the same levels as the investigation results of nationwide environmental natural radioactive levels from 1983 to 1990. The artificial radionuclide activity concentration had no obvious changes compared with those of previous years.

The total α and β activity concentrations in monitored potable groundwater and water from centralized potable water sources in provincial capital cities had no obvious changes compared with those of previous years, and were lower than specified limits in the “Potable Water Hygienic Standard” (GB 5749-2006). Artificial radionuclide strontium-90 and cesium-137 activity concentrations (see Figure 2) in seawater in offshore marine areas had no obvious changes compared with those of previous years, and were lower than specified limits

in the “Seawater Quality Standard” (GB 3097-1997). Artificial radionuclide strontium-90 and cesium-137 activity concentrations in marine lives had no obvious changes compared with those of previous years.

Natural radionuclide activity concentrations in soil were at the same levels as the investigation results of nationwide environmental natural radioactive levels from 1983 to 1990, and artificial radionuclide activity concentrations had no obvious changes compared with those of previous years.

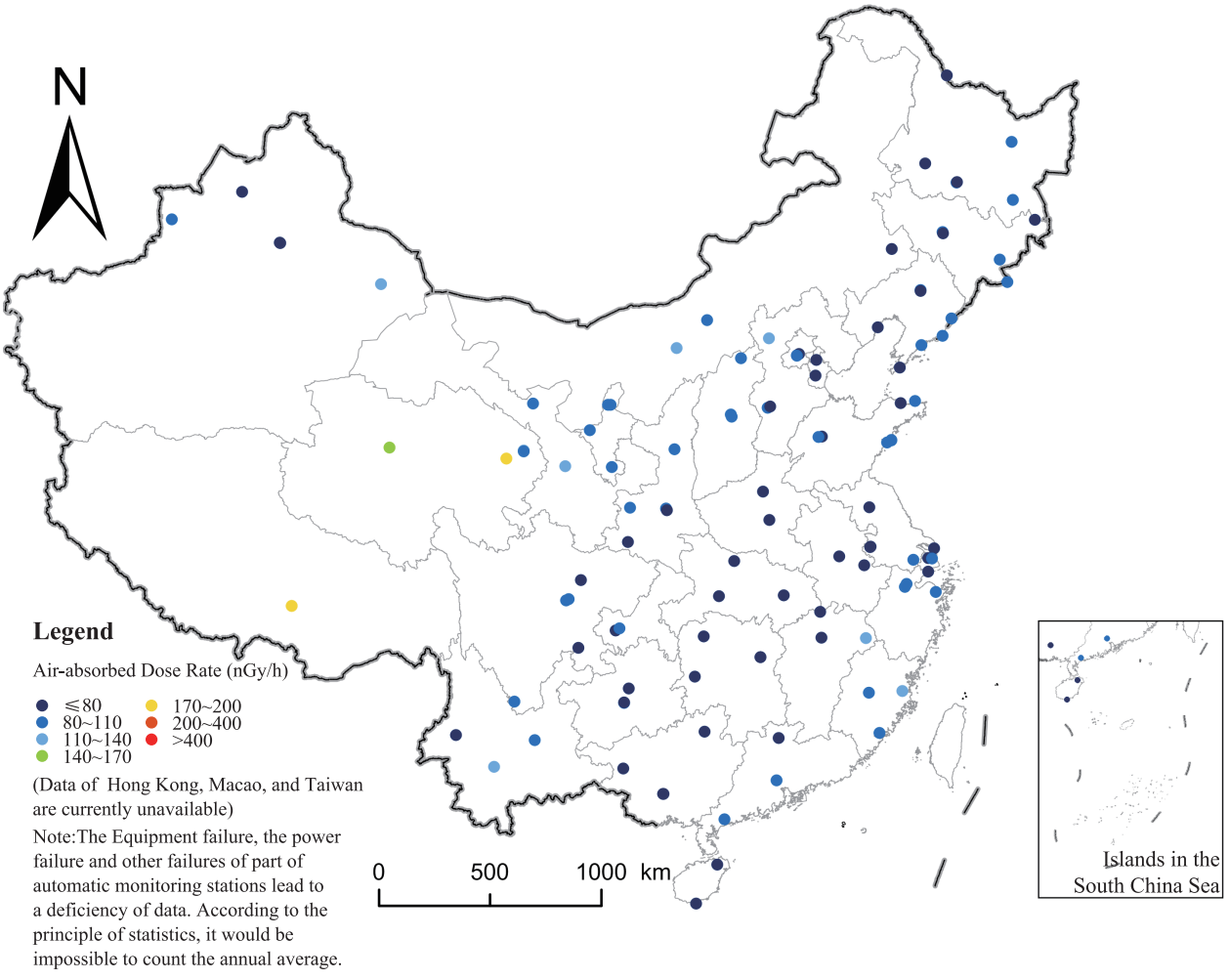
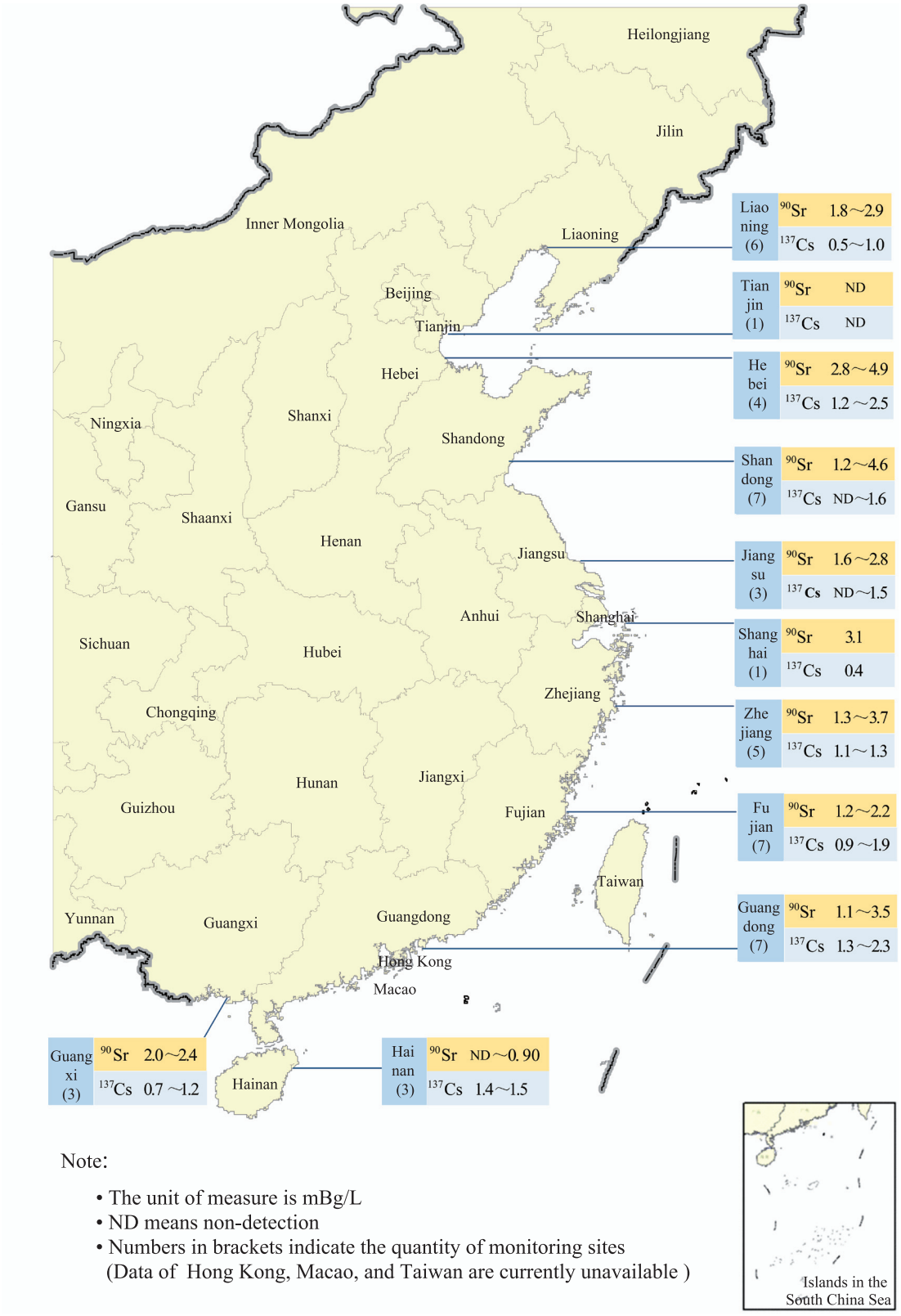


Figure 1. Distribution Map of National Radiation Environment Automatic Monitoring Stations for Real-time Continuous Gamma Radiation Air-absorbed Dose Rate in 2014



Note:

- The unit of measure is mBg/L
- ND means non-detection
- Numbers in brackets indicate the quantity of monitoring sites (Data of Hong Kong, Macao, and Taiwan are currently unavailable)

Figure 2. Strontium-90 and Cesium-137 Activity Concentrations in Offshore Marine Areas of China in 2014

Environment Ionizing Radiation around Nuclear Power Plants in Operation

The annual average values of γ radiation air-absorbed dose rates (including cosmic ray response values) of radiation environmental automatic monitoring stations around Zhejiang Qinshan NPP, Daya Bay/Ling'ao NPP, Yangjiang Nuclear Power Plant, Tianwan Nuclear Power Plant, Hongyanhe Nuclear Power Plant, and Ningde Nuclear Power Plant were 100.6 nGy/h, 124.0 nGy/h, 118.6 nGy/h, 98.0 nGy/h, 76.4 nGy/h and 98.1 nGy/h, respectively within the fluctuation range of local natural background levels.

The tritium activity concentrations in air, precipitation, surface water, well water, part of the sea water, and some biological samples around Zhejiang Qinshan NPP, and in sea water around the discharge outlets of Guangdong Daya Bay/Ling'ao NPP somewhat increased, compared with the background levels before operation of the NPP, but the evaluation results showed that the radiation doses to the public were much lower than regulatory limits.

The tritium activity concentrations in environmental media around Yangjiang NPP, Hongyanhe Nuclear Power Plant, and Ningde Nuclear Power Plant had no obvious changes, compared with the background levels before operation. The activity concentrations of radionuclides other than tritium in the environmental media around NPP had no obvious changes, compared with those of the previous years.

Environmental Ionizing Radiation around Civil Research Reactors

The ambient environmental γ radiation air-absorbed dose rates and radionuclide activity concentrations in aerosol, fallout, surface water, groundwater, and soil around Miniature Neutron Source Reactors and other research facilities from Institute of Nuclear and New Energy Technology, Tsinghua University, and Shenzhen University had no obvious changes compared with those of previous years.

Trace amount of iodine-131 was detected from some of the aerosol samples and trace amounts of tritium and strontium-90 were detected from some of the groundwater samples around China Institute of Atomic Energy; trace amounts of iodine-131, cobalt-60 and cesium-137 were detected from some of the aerosol samples and trace amount of cobalt-60 was detected from some of the soil samples around Nuclear Power Institute of China, all of which were far below the limits of related standards.

Environment Ionizing Radiation around Nuclear Fuel Cycle Facilities and Waste Disposal Facilities

The ambient environmental γ radiation air-

absorbed dose rates around the nuclear fuel cycle facilities of Lanzhou Uranium Co., Ltd., CNNC, Shaanxi Uranium Co., Ltd., CNNC, China Northern Nuclear Fuel Co., Ltd. (CNNFC), CNNC, CNNC Jianzhong Nuclear Fuel Co., Ltd. The 404 Co., Ltd, CNNC, as well as those around the Northwest Low-and-Intermediate Level Solid Radioactive Waste Repository, Guangdong Beilong Low-and-Intermediate Level Solid Radioactive Waste Repository, and Qinghai State-owned 221 Factory Radioactive Waste Pit, were within the fluctuation of local natural background levels, and the radionuclide activity concentrations in the environmental media associated with the above business activities had no obvious changes compared with those of the past years.

Ambient Ionizing Radiation of the Uranium Mining and Metallurgy Facilities

The radioactive environmental qualities around uranium mining and metallurgy facilities were generally stable. The ambient environmental γ radiation air-absorbed dose rates, activity concentration of radon in air, total α activity concentration in aerosols, and radionuclides of uranium and radium-226 in surface water and potable well water around the mine were at the same levels as those of the previous years.

Electromagnetic Radiation

The nationwide electromagnetic radiation environmental quality was overall good. The comprehensive environmental electromagnetic field intensity was much lower than the public exposure derived limits specified in “Regulation on Electromagnetic Radiation Protection” (GB 8702-88). The ambient electromagnetic radiation levels of the electromagnetic radiation facilities had no obvious changes, compared with those of the previous years. The electromagnetic radiation levels of the monitored environmental sensitive sites around mobile communication base station antennas were lower than the public exposure derived limits specified in the standard GB 8702-88; the work frequency electric field intensities and magnetic induction intensities of the monitored environmental sensitive sites around electric transmission facilities were all lower than the work frequency field evaluation standard for residential areas and all-day radiation for the public specified in “Technical Norms on Environment Impact Assessment of Electromagnetic Radiation Produced by 500 kV Ultra-high Voltage Transmission and Distribution Electric Power Project”.

14 Emergency Management of Nuclear and Radiation Accidents

In 2014, MEP (NNSA) effectively enhanced the regulation of the civil nuclear facilities emergency preparation through review and reexamination of the on-site emergency response plans, inspection of the conditions of the routine emergency preparation, and supervision and evaluation of the on-site comprehensive emergency exercises in accordance with the regulations. MEP (NNSA) continually strengthened its emergency preparation and emergency response capability, and satisfactorily accomplished several nuclear and radiation emergency response tasks thus retained highly efficient emergency response capability.

Regulation on Nuclear Facility Emergency Preparation

The special inspections on the on-site emergency response to nuclear accidents, and supervision and evaluation of comprehensive emergency exercises before the initial fuel loading of Fujian Fuqing NPP Unit 1 and Fangjiashan NPP Unit 1 were completed. The supervision and evaluation of comprehensive emergency exercise of Liaoning Hongyanhe NPP, Fujian Ningde NPP, Tianwan NPP, Qinshan Nuclear Power Base, Guangdong Daya Bay Nuclear Power Base were completed. All of the inspection reports were issued. The issuance of the inspection reports in 2014 are shown in Table 91.

Emergency Plan Approval

In 2014, MEP (NNSA) reviewed and approved the on-site emergency plans before the initial fuel loading of Fujian Fuqing NPP. MEP (NNSA) also reexamined and approved the civil nuclear facility emergency plans of Liaoning Hongyanhe NPP Phase I, Fujian Ningde NPP Phase I, Zhejiang Qinshan Nuclear Power Base, Lanzhou Uranium Co., Ltd., CNNC (see Table 92).

Nuclear and Radiation Emergency Preparedness, Anti-terrorist and Security Guarding

According to the unified deployment, MEP (NNSA) successfully completed nuclear and radiation safety emergency and security guarding missions during the APEC conference.

MEP (NNSA) responded to the major radiation accident of the loss of a radioactive source of category Ⅱ in Nanjing, Jiangsu province. In May, 2014, during its radiation detection work in Nanjing, Tianjin Hongdi Engineering Detection Development Co., Ltd. seriously violated the operating procedures, and illegally employed personnel without qualification to conduct γ-ray detection operations, resulting in the loss of a radioactive source of category Ⅱ, causing others receiving undue radiation exposure and acute radiation sickness. This accident was a significant radiation accident. In accordance with relevant regulations and scheme, MEP (NNSA) quickly responded, through planning and coordination, to guide and assist Jiangsu Environmental Protection System in conjunction with local governments and relevant departments to search for the lost source. After 40-hours fully intensive search, the lost source was successfully recovered and safely stored. At the same time, in order to avoid public panic, MEP (NNSA) comprehensively guided the work of information publicity and public opinion guidance, and effectively controlled the expansion and spread of the accident consequences, to maximize the protection of people's lives and safety and radiation environment safety.

Construction of Nuclear Emergency Supporting Forces in Nuclear Power Industry Groups

According to the requirements of the "National Civil Nuclear Facilities Comprehensive Safety Inspection Report" and The 12th Five-year Plan and 2020 Long-term Goals on Nuclear Safety and Radioactive Pollution Prevention and Control Program", which had been approved by the State Council for implementation, MEP (NNSA) guided the nuclear power industry groups to carry out the construction of NPP nuclear emergency supporting forces. In 2014, CNNC and CGNPC rested on Zhejiang Qinshan Nuclear Power Base and Guangdong Daya Bay Nuclear Power Base, and constructed their group level, with independent titles, nuclear emergency supporting forces, respectively. The five nuclear groups, CNNC, CGNPC, China Power Investment Corporation, the State Nuclear Power Technology Corporation, and China Huaneng Group, signed the "Framework Agreement on Cooperation of Mutual Rescue among Nuclear Power Industry Groups in Nuclear Accident Emergency". Therefore, the nationwide co-construction of NPP nuclear accident emergency capabilities and sharing of resources for emergency were initially achieved.

Effectively Maintaining the Emergency Response Capability

MEP (NNSA) continually perfected its nuclear and radiation accident emergency response. A 24-hour shifts emergency system was implemented to ensure the effective operation of the nuclear and radiation

emergency response system, and unimpeded communication channels. The 'system of nuclear and radiation emergency decision-making support and command dispatch' and the 'platform of emergency monitoring dispatch' were integrated. The video display terminal and the video conference function of MEP (NNSA) emergency command room were upgraded. MEP (NNSA) carried out emergency training in the MEP nuclear and radiation safety regulatory system, and implemented linked comprehensive emergency exercise.

Vice Administrator of NNSA, Director General of Nuclear and Radiation Safety Regulation Department Ⅰ of MEP, Guo Chengzhan, Inspected Sanmen NPP

Table 91. Inspection Reports on On-Site Nuclear Emergency Comprehensive Exercises

Issuance Date	Document No.	Document Title
02/24/14	NNSA Letter [2014]23	Official Letter of Issuing the "Inspection Report of On-site Comprehensive Nuclear Emergency Exercise and Nuclear Emergency Preparation before the Initial Fuel Loading of Fujian Fuqing NPP Unit 1"
05/23/14	NNSA Letter [2014]69	Official Letter of Issuing the "Inspection Report of On-site Comprehensive Nuclear Emergency Exercise before the Initial Fuel Loading of Liaoning Hongyanhe NPP Unit 3"
06/30/14	NNSA Letter [2014]91	Official Letter of Issuing the "Inspection Report of On-site Comprehensive Nuclear Emergency Exercise and Nuclear Emergency Preparation before the Initial Fuel Loading of Fangjiashan NPP Unit 1"
11/06/14	NNSA Letter [2014]142	Official Letter of Issuing the "Inspection Report of On-site Comprehensive Nuclear Emergency Exercise of Tianwan NPP in 2014"
11/06/14	NNSA Letter [2014]143	Official Letter of Issuing the "Inspection Report of On-site Comprehensive Nuclear Emergency Exercise before the Initial Fuel Loading of Ningde NPP Unit 3"
12/18/14	NNSA Letter [2014]173	Official Letter of Issuing the "Inspection Report of On-site Comprehensive Nuclear Emergency Exercise of Ling'ao NPP Phase Ⅱ in 2014"

Table 92. Nuclear Emergency Plan Approvals in 2014

Issuance Date	Document No.	Document Title
05/30/14	NNSA Letter [2014]71	Reply Letter of the Agreement about "On-site Emergency Plan of Fujian Fuqing NPP Unit 1 and Unit 2"
09/01/14	NNSA Letter [2014]112	Reply Letter of the Agreement about "On-site Emergency Plan of Qinshan NPP Ⅰ/Ⅱ/Ⅲ"
09/05/14	NNSA Letter [2014]117	Reply Letter of the Agreement about "On-site Emergency Plan of Liaoning Hongyanhe NPP Phase Ⅰ"
11/27/14	NNSA Letter [2014]157	Reply Letter of the Agreement about "Civil Nuclear Facility Emergency Plan of Lanzhou Uranium Co., Ltd., CNNC"
12/15/14	NNSA Letter [2014]170	Reply Letter of the Agreement about "On-site Emergency Plan of Fujian Ningde NPP Phase Ⅰ"

15 Personnel Qualification

The Personnel Qualification of Nuclear and Radiation Safety Regulation Staff

According to the "Rules on Credentials Management of Nuclear and Radiation Safety Inspectors" (the 24th decree of the MEP), MEP (NNSA) had completed the work of investigation of the provincial radiation safety supervision and inspection personnel, and issued certificates to the nuclear and radiation safety supervision and inspection personnel.

By the end of 2014, a total number of 7 nuclear safety training courses for NNSA new employees were held. 405 staff members graduated from the courses, and obtained the graduation certificates. Among them, 398 members came from the national level entities. A total number of 8 training courses of nuclear power (intermediate level training of nuclear and radiation safety) were held. 257 members participated in the training, and obtained the graduation certificates. 251 members among them came from organizations at national level (see Table 93).

Table 93. Training Statistics of Nuclear and Radiation Safety Regulation Staff

(from organizations at national level, as of December 2014)

Entities	Passed the Primary Training	Passed the Intermediate Training
NNSA (Administration)	21	23
North China Regional Office of NNSA	40	36
East China Regional Office of NNSA	44	35
South China Regional Office of NNSA	24	26
Northeast China Regional Office of NNSA	15	14
Northwest China Regional Office of NNSA	12	14
Southwest China Regional Office of NNSA	9	7
Nuclear and Radiation Safety Center	233	96
Total	398	251

In order to improve the knowledge and regulation capability and to enhance the quality of the team, the Engineering Master Program of nuclear power and nuclear technology engineering field of radiation protection and environment protection major, has been undertook in Tsinghua University since 2005. Until the end of 2014, five classes were held, and 107 students completed the courses, including 17 students from national level entities (see Table 94). According to the plan of the project, sixth class enrollment was underway.

Table 94. Statistics of Environment Protection System Engineering Master Class students (as of December 2014)

Sessions	Number from national level organizations	Number for all students
1st class (2005 opening)	4	24
2nd class (2006 opening)	1	23
3rd class (2009 opening)	3	18
4th class (2011 opening)	4	17
5th class (2013 opening)	8	25
Total	20	107

The second session of the nuclear and radiation safety regulation seminar had been held on the base of success of the first session in 2013, the theme of the second seminar was “deepening reform, ruling the country by law, strengthening the nuclear safety culture construction”, “Proceedings of the Second Session of the Nuclear and Radiation Safety Regulation Seminar” was compiled including 132 theoretical achievements.

Qualification of Welders and Non-destructive Testers for Civilian Nuclear Safety Equipment

MEP (NNSA) authorizes the examination entities to hold the examinations for welder and welding operator for civilian nuclear safety equipment. MEP (NNSA) regulates the examinations, and issues or authorizes the certificates in accordance with related regulations. In 2014, 14 welder examination entities held a total of 260 examinations, 3,146 welders took part in the examinations, and a total number of 6,171 examination items (see Table 95) were qualified.

In order to further improve the civilian nuclear safety equipment welder management system, The Personnel Qualification Management Information System (welder management module) was

launched on May 1, 2014. It realized the whole process information management of the welder examination registration, examination plan, examination supervision, examination evaluation, reporting, qualified items, and certificate processes.

From the second half of 2014, it was adjusted that MEP (NNSA) began to overall perform the civilian nuclear safety equipment NDT personnel qualification management. MEP (NNSA) authorized relevant entities to hold the examinations for non-destructive testers. MEP (NNSA) regulated the examinations and issued certificates in accordance with related regulations.

A number of 5 NDT examination entities held a total of 100 examinations, and a total number of 2,486 NDT items were qualified, including a total number of 7 methods: RT, UT, MT, PT, VT, LT, and ET (see Table 96).

Table 95. Statistics of Examinations for Welders in 2014

Examination Entities	Examinations	Number of Passers	Number of Examination Courses
Shanghai Electric Power Generation Equipment Co., Ltd.	38	181	298
China First Heavy Industries Co., Ltd.	3	180	372
Shanghai Electric Corporation Nuclear Equipment Company	10	88	113
Harbin Electric Corporation (QHD) Heavy Equipment Co., Ltd.	11	144	207
Dalian Baoyuan Nuclear Equipment Co., Ltd.	10	175	402
China Nuclear Industry Fifth Construction Company	18	285	615
Xi'an Nuclear Equipment Co., Ltd., CNNC	4	98	173
China Nuclear Industry Huaxing Construction Co., Ltd.	6	231	359
China Nuclear Industry 23 Construction Co., Ltd.	84	1,269	2,727
Jiangsu Province 3rd Electric Power Construction Company of China Energy Engineering Group Co., Ltd.	33	65	129
Jiangsu First Electric Power Construction Company of China Energy Engineering Group Co., Ltd.	8	100	179
Dongfang Electric Corporation Dongfang Boiler Co., Ltd.	26	226	375
China Nuclear Industry 22 Construction Co., Ltd.	6	57	152

continued

Examination Entities	Examinations	Number of Passers	Number of Examination Courses
China Nuclear Industry 24 Construction Co., Ltd.	3	47	70
Total	260	3,146	6,171

Table 96. Statistics of Examinations of NDT Personnel in 2014

Examination Entities	NDT	NDT Level	Batches	Number of Examination Courses
State Nuclear Power Plant Service Company	PT	Ⅰ/Ⅱ	5	151
		Ⅲ	2	6
	UT	Ⅰ/Ⅱ	4	96
		Ⅲ	1	15
	ET	Ⅰ/Ⅱ	3	48
		Ⅲ	1	6
	MT	Ⅰ/Ⅱ	5	134
	VT	Ⅰ/Ⅱ	4	175
	LT	Ⅰ/Ⅱ	3	49
		Ⅲ	1	1
Nuclear Power Institute of China	RT	Ⅰ/Ⅱ	1	21
	PT	Ⅰ/Ⅱ	3	57
	UT	Ⅰ/Ⅱ	3	50
	VT	Ⅰ/Ⅱ	3	121
	LT	Ⅰ/Ⅱ	2	52
CGNPC Inspection Technology Co., Ltd.	PT	Ⅰ/Ⅱ	4	145
	UT	Ⅰ/Ⅱ	4	99
	ET	Ⅰ/Ⅱ	3	71
	MT	Ⅰ/Ⅱ	3	90
	VT	Ⅰ/Ⅱ	4	156
	LT	Ⅰ/Ⅱ	2	39

continued

Examination Entities	NDT	NDT Level	Batches	Number of Examination Courses
China Nuclear Power Operation Technology Corporation Co., Ltd.	RT	Ⅰ/Ⅱ	4	157
		Ⅲ	2	11
	PT	Ⅰ/Ⅱ	3	100
	UT	Ⅰ/Ⅱ	3	84
		Ⅲ	1	10
	ET	Ⅰ/Ⅱ	2	49
		Ⅲ	1	3
	MT	Ⅰ/Ⅱ	2	61
		Ⅲ	1	0
	VT	Ⅰ/Ⅱ	3	66
	LT	Ⅰ/Ⅱ	3	38
China Nuclear Industry 23rd Construction Co., Ltd.	RT	Ⅰ/Ⅱ	4	109
	PT	Ⅰ/Ⅱ	2	38
	UT	Ⅰ/Ⅱ	2	23
	VT	Ⅰ/Ⅱ	4	138
	LT	Ⅰ/Ⅱ	2	17
Total	—	—	100	2,486

Regulation of Operating Personnel Qualification for Civilian Nuclear Facility

MEP (NNSA) carried out inspection to the examinations for civilian nuclear facility operators, reviewed the license application materials, and approved the “Operator’s License for Civilian Nuclear Facility” in accordance with related regulations. In 2014, 4 meetings of nuclear reactor operator qualification approval committee were held, and a total of 685 license applications and 396 renewal license applications were reviewed and approved. By the end of 2014, 1,734 nuclear power plant operators hold the licenses (see Table 97), in which 717 operators hold the senior operator licenses, 1,017 operators hold the operator licenses, and 454 operators hold research reactor operator licenses (see Table 98), in which 210 operators hold the senior operator licenses,

244 operators hold operator licenses. In order to take full advantage of nuclear power groups in training operator, MEP(NNSA) clearly put forward that new nuclear plants may entrust operators by taking temporary posts in operating NPP.

Table 97. Statistics of Operator Licenses for Nuclear Power Plants (as of December 2014)

Operation Organization	Nuclear Facilities	Senior Operator	Senior Operator in Non-operation post	Operator	Operator in Non-operation post	Subtotal
Nuclear Power Operation Management Co., Ltd., CNNC	Qinshan NPP	27	3	53	0	83
	Qinshan NPP Phase II unit 1 and unit 2	54	5	30	6	95
	Qinshan NPP Phase II unit 3 and unit 4	51	4	54	0	109
	Qinshan NPP Phase III unit 1 and unit 2	47	7	64	0	118
	Fangjiashan NPP unit 1 and unit 2	35	0	38	0	73
CNNP Jiangsu Nuclear Power Co., Ltd.	Tianwan NPP unit 1 and unit 2	61	15	86	2	164
Daya Bay Nuclear Power Operation and Management Co., Ltd.	Daya Bay NPP unit 1 and 2	49	19	50	2	120
	Ling'ao NPP unit 1 and unit 2	53	19	55	1	128
	Ling'ao NPP unit 3 and unit 4	54	28	53	7	142
Fujian Ningde Nuclear Power Co., Ltd.	Ningde NPP unit 1 and unit 2	59	1	31	0	91
	Ningde NPP unit 3 and unit 4	21	1	81	0	103
Liaoning Hongyanhe Nuclear Power Co., Ltd.	Hongyanhe NPP unit 1 and unit 2	32	1	93	0	126
	Hongyanhe NPP unit 3 and unit 4	21	1	20	0	42

continued

Operation Organization	Nuclear Facilities	Senior Operator	Senior Operator in Non-operation post	Operator	Operator in Non-operation post	Subtotal
Yangjiang Nuclear Power Co., Ltd.	Yangjiang NPP unit 1 and unit 2	25	2	123	0	150
Fujian Fuqing Nuclear Power Co., Ltd.	Fuqing NPP unit 1 and unit 2	21	1	101	0	123
Guangxi Fangchenggang Nuclear Power Co., Ltd.	Fangchenggang NPP unit 1 and unit 2	0	0	67	0	67
Total	—	610	107	999	18	1,734

Table 98. Statistics of Operator Licenses for Civilian Research Reactor (as of December 2014)

Operation Organization	Nuclear Facilities	Senior Operator	Operator	Subtotal
CIAE	Swimming Pool Reactor (SPR)	13	4	17
	DF-VI Fast Neutron Criticality Facility (DF-VI CFFR)	4	2	6
	Reprocessing Pilot Plant Uranium Solution Criticality Facility	7	10	17
	Miniature Reactor Zero Power Facility (CFMNSR)	2	3	5
	China Experimental Fast Neutron Reactor (CEFR)	27	18	45
	China Advanced Research Reactor	20	8	28
Beijing Capture Technology Co., Ltd (CNCT)	In-hospital Neutron Irradiator (IHNI)	0	3	3

continued

Operation Organization	Nuclear Facilities	Senior Operator	Operator	Subtotal
NPIC	High Flux Engineering Test Reactor (HFETR)	17	22	39
	Minjiang Test Reactor (MJTR)	11	5	16
	China Burst Reactor (CRP)	3	5	8
	High Flux Engineering Test Reactor Experimental Facility (HFETR)	1	7	8
	18-5 Critical Facility	6	4	10
INET/TU	5MW Experimental Low Temperature Nuclear Heating Reactor (5MW-NHR)	18	28	46
	10MW High Temperature Gas-cooled Reactor (10MWHTGR)	66	114	180
	Shielding Experimental Reactor	5	4	9
CNCT	Xi'an Burst Reactor	10	7	17
Total	—	210	244	454

The Regulation of Registered Nuclear Safety Engineer Qualification

In 2014, a total number of 2,692 applicants signed up the Registered Nuclear Safety Engineer Test, and 1,663 applicants actually took the test, 347 applicants were qualified after passing 4 subjects. By the end of 2014, there are a total number of 3,476 individuals successfully acquired practice qualification certificate of Registered Nuclear Safety Engineer nationwide, and 2,107 Registered Nuclear Safety Engineers in 286 entities in total.

In 2014, 961 Nuclear Safety Engineer registrations were made, in which 957 were new applications or renewals, 4 were modifications. There were 7 sessions of registered nuclear safety engineer continuing education training classes held successfully in total, and a total number of 940 individuals participated and obtained the graduation certificates, in which 3 sessions of "Nuclear Quality Assurance and Nuclear Safety Culture" classes trained 572 people, and 4 sessions of "Radiation Protection" classes trained 368 people in total.

16 International Cooperation

Hosted International Atomic Energy Agency (IAEA) International Conference

From October 27 to 31, MEP (NNSA) successfully hosted the 3rd IAEA International Conference on Challenges Faced by Technical and Scientific Support Organizations in Enhancing Nuclear Safety and Security. The Conference focused on discussions and communications on topics related to Fukushima nuclear accident, including the development of IAEA nuclear safety action plan, summary of Fukushima nuclear accident, roles that TSOs played in Fukushima nuclear accident, emergency preparedness and response, TSOs capability building etc., and meanwhile deliberated over TSOs' development prospect and cooperation among the participating organizations. Vice Minister of MEP, Administrator of NNSA, Li Ganjie, and Deputy Director General of IAEA Denis Flory attended the opening ceremony and delivered speeches. There were 230 foreign representatives from 50 countries and international organizations and nearly one hundred Chinese representatives who participated in the conference.

The conference was an important activity in the international nuclear safety domain after Fukushima nuclear accident, which provided a good platform for nuclear safety regulatory bodies and TSOs to share information and experience; through this conference, 30 years' achievements of Chinese nuclear safety regulation and improvements made after Fukushima nuclear accident were shown to the world.

The 3rd IAEA International Conference on Challenges Faced by Technical and Scientific Support Organizations in Enhancing Nuclear Safety and Security

Vice Minister of MEP, Administrator of NNSA, Li Ganjie, Met with Deputy Director General of IAEA Denis Flory in Beijing

Work on the Implementation of Conventions

Convention on Nuclear Safety

From March 24 to April 4, Nuclear Safety Chief Engineer of MEP, Vice Administrator of NNSA, Liu Hua, led a delegation attending the 6th review meeting of Convention on Nuclear Safety, introduced Chinese National Report, accepted on-site reviews and met with Director General and Deputy Director General of IAEA as well as delegates from USA, France, UK, Pakistan and Russia, etc. to exchange views with them on personnel exchange, capability building, strengthening bilateral cooperation and further enhancing the implementation of the convention. The delegation also coordinated and communicated with those member states as US, Russia, France, Japan, UK, India, Pakistan and Switzerland which had different positions, and the Convention Secretariat about on revision proposal of the convention.

Revision of convention working group was established to provide guidance on the participation of consultation meetings for the diplomatic conference so as to well prepare for the diplomatic conference to be held in February, 2015.

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

MEP (NNSA) attended the 2nd special meeting of Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management and the organization meeting of the 5th review conference; participated in the revision of convention guideline documents, or amending the convention guideline documents and in the discussion of relevant themes of the 5th review conference; took part in the election of officers for the 5th review conference and successfully recommended an expert from China Institute for Radiation Protection to be the vice-chairman of the national group.

MEP (NNSA) undertook 4 reviewing and editing board meetings of the national report; finished compiling the national report and submitted to the Convention Secretariat.

Multilateral Cooperation in Nuclear Safety

Serving the General Diplomatic Situation and Providing Technical Support for Nuclear Safety Summit

MEP (NNSA) participated in domestic preparation meeting before the 3rd Nuclear Safety Summit; provided materials on the progress of nuclear safety regulation; verified and revised documents on the achievement of the Summit and the draft of Chinese leader's speech for the Summit; and actively pushed international cooperation of nuclear safety regulation to be further incorporated into overall diplomatic work.

MEP (NNSA) started to arrange for the 4th Nuclear Safety Summit, prepare the meeting materials and made every effort to demonstrate the important role that nuclear safety regulation of China plays in maintaining safety of the nation.

Continually Maintain Close Cooperation with IAEA

MEP (NNSA) actively took part in various activities of IAEA, taking advantages of this platform to expand cooperation channels, propagandize good practices and strengthen capability building of its own. The main work is as follows.

Based on the communication with IAEA, MEP (NNSA) actively communicated and coordinated with relevant departments in China, pushing to sign cooperation agreements with IAEA; coordinated with IAEA to develop cooperation in radiation protection filed and signed meeting minutes.

MEP (NNSA) took part in the 58th IAEA general conference and Senior Regulators Meeting on Nuclear Safety, and conducted bilateral talks with delegates from Korea, Canada, UAE, and South Africa, and expanded cooperation domains and scopes.

MEP (NNSA) promoted participation in drafting IAEA safety standards; promoted participation in the work of IAEA radiation environment monitoring network; formulated and implemented plans of extra-budgetary projects developed by IAEA and MEP (NNSA), and applied for 2016-2017 IAEA technology cooperation projects; attended IAEA global nuclear safety network steering committee meetings, pushed forward to establish Chinese national station in order to serve the construction of national portal network for nuclear safety regulation.

MEP (NNSA) undertook construction, operation and maintenance of national stations for Asian nuclear safety network, nominated experts to participate in its 3 working groups of governments and regulatory bodies, radioactive waste management and safety analysis, thus created conditions for gradually deepening the participation in the

network activities; undertook training of root cause analysis methods under this network and regional workshops of safety analysis for comprehensive practice of NPP; received experts from Indonesian Nuclear Regulatory Authority for one-year visit, and dispatched experts to take part in nuclear safety training conducted for UAE by IAEA, thus created opportunities for promoting the "going out" of China's nuclear safety regulatory experience.

Continue to Participate in OECD-NEA Multinational Design Evaluation Program (MDEP)

MEP (NNSA) signed memorandum of cooperation in the field of nuclear and radiation safety regulation with OECD Nuclear Energy Agency, defined the key fields and ways of cooperation and expanded the channels that China involved in OECD-NEA cooperation mechanism.

MEP (NNSA) took part in biennial conference, policy group meeting and guidance committee meeting of Multinational Design Evaluation Program (MDEP), communicated with international counterparts about experience in nuclear safety regulation of newly-built NPP; actively developed activities of professional groups under the framework of MDEP, for providing experience feedback on safety regulation of our NPP in operation and under construction, thus enhanced the use of this mechanism for reference and support to China's nuclear safety regulation, and propagated the good practices of China at the same time.

Regional Cooperation in Nuclear Safety

Northeast Asian Top Regulators Meeting on Nuclear Safety

On June 27, 2014, MEP (NNSA) took part in coordinators' meeting for the Top Regulators Meeting held in Japan, and negotiated concrete schemes of cooperation under the framework of the Top Regulators Meeting, as well as reached consensus with Japan and Republic of Korea about events report, emergency exercise and information exchange; established the framework for cooperation of personnel capability building and well prepared for the Top Regulators Meeting.

On September 2, 2014, MEP (NNSA) participated in the 7th Northeast Asian Top Regulators Meeting on Nuclear Safety, held in Japan, on which the proposals of tri-state nuclear safety cooperation program was put into further implementation and the working outline for online information sharing working group and human resource development working group was approved. MEP (NNSA) introduced relevant practices of implementation of approach to nuclear safety concept, legislation of nuclear safety

and construction of Technology R&D Base for Nuclear and Radiation Safety Regulation and visited the site of Fukushima Daiichi NPP, providing reference for deep understanding the field circumstances after Fukushima nuclear accident.

MEP (NNSA) also actively participated in various activities under the mechanism of Senior Regulators Meeting: took part in the first topical meeting, shared Post-Fukushima accident nuclear safety improvement practices with experts from USA, Russia, France and Canada; visited Republic of Korea to take part in observation of emergency exercise of NPP.

Bilateral Cooperation in Nuclear Safety

China-US Cooperation in Nuclear Safety

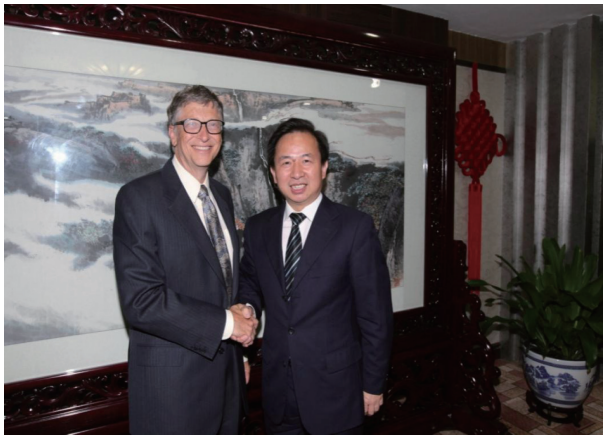
On April 16, 2014, Vice Minister of MEP, Administrator of NNSA, Li Ganjie, met with Kristine Svinicki, Commissioner of the US Nuclear Regulatory Commission in Beijing, and exchanged views on AP1000 project, safety improvement work after Fukushima nuclear accident, and enhancement of publicity, etc.

On June 18, 2014, Vice Minister of MEP, Administrator of NNSA, Li Ganjie, met with Bill Gates, Chairman of US Terra Energy Company in Beijing to exchanged views on matters of common concern related to nuclear safety and development of nuclear power technology for the next generation.

On the 26th Regulation Information Conference and 2014 China-US Nuclear Safety Cooperation Steering Committee Meeting, the two parties agreed to further strengthen cooperation in AP1000, NPP in operation, introduction of software for technical review, nuclear emergency response, nuclear fuel cycle, radioactive waste management, regulation on radioactive sources and other related fields.

MEP (NNSA) renewed the China-US Protocol of Cooperation in Research of Nuclear Reactor Safety; attended the workshop in US on AP1000; received one technical NRC staff for 2-month communication in China; and continued to deepen bilateral technical exchange on nuclear power projects including AP1000 and CAP1400, etc.

Under the China-US Peaceful Uses of Nuclear Technology Agreement, the 2014 annual meeting of radioactive source security working group was held successfully. On the meeting, cooperation between the two parties in physical security upgrade of radioactive source facilities, storage and transportation safety of radioactive sources as well as security training were retrospect, and plans for cooperation in 2014 were negotiated. Based on the paradigm projects, supports will be provided for the formulation of standards and personnel capability-building in China.



Vice Minister of MEP, Administrator of NNSA, Li Ganjie, Met with Bill Gates, Chairman of Terra Power in Beijing

China-Russia Cooperation in Nuclear Safety

China-Russia Cooperation Meeting on Nuclear Safety Regulation was held in Beijing from June 18 to 19, 2014. Vice Minister of MEP, Administrator of NNSA, Li Ganjie, attended the meeting and reached a consensus in principle with Alexey Aleshin, the Chairman of Federal Environmental,Industrial and Nuclear Supervision Service of Russia for re-signing the Bilateral Cooperation Agreement, establishment of the mechanism for having Biennial Joint Coordination Meeting and other near-term cooperation issues. The two parties agreed to cooperate in Fast Neutron Reactors, Floating Reactors, Nuclear Emergency, Transportation of Radioactive Material, Regulation on Radioactive Sources and Regulation on Nuclear Equipment, etc. The meeting enhanced the level of cooperation in nuclear and radiation safety between China and Russia, widened the areas and deepened the content of cooperation, thus consolidated the foundation for further pragmatic and efficient cooperation.

MEP (NNSA) invited officers from Russia National Nuclear Regulatory Body to observe Nuclear Emergency Exercise of NPPs in China, to hold workshops on Radioactive Sources and Transportation as well as other related activities.

On September 1, 2014, Nuclear Safety Group Meeting, the 18th Meeting of Nuclear Subcommittee of China-Russia Intergovernmental Joint Commission for Regular Meetings of Premiers, was held in Beijing, the achievements of the cooperation between the two regulatory bodies were listed as the important contents of bilateral cooperation in nuclear field.

China-Russia Cooperation Meeting on Nuclear Safety Regulation

China-Pakistan Cooperation in Nuclear Safety

The 7th China-Pakistan Nuclear Safety

Cooperation Steering Committee Meeting was held in Beijing from May 26 to 27, 2014. Vice Minister of MEP, Administrator of NNSA, Li Ganjie, attended the meeting and had an in-depth conversation with Chairman of Pakistan Nuclear Regulatory Authority Anwar Habib on issues of nuclear equipment licensing, NDT, transportation of radioactive materials, design of radioactive package, etc. Cooperation in various fields of visits of Pakistani representatives, communication of nuclear safety review and nuclear emergency were determined. China-Pakistan Protocol of Cooperation in Nuclear Safety was renewed and minutes were signed after the meeting.

MEP (NNSA) arranged visits for Pakistani representatives, and provided information on the import of NDT equipment and management of radioactive wastes.

China-EU Cooperation in Nuclear Safety

MEP (NNSA) continued to promote the China-EU development and cooperation program of "Strengthening the Capabilities of China's National Nuclear Regulatory Body and its Technical Support Organizations" to reinforce the capabilities of NNSA and its TSOs in nuclear safety regulatory technology.

The initiating meeting was held in Beijing at the end of February, 2014, yearly working plans, working approaches and acceptance check of results, etc., of the seven sub-projects were discussed and determined.

Two meetings on the progress of the sub-projects were held in June and November respectively, summarizing the implementation of projects, and discussing and determining the detailed arrangements for the next stage. Six workshops or training courses were held in the specialized fields of nuclear safety independent regulatory verification, nuclear safety culture and safety regulation, operating experience feedback and risk assessment on flood prevention of NPPs, etc. Two groups of experts from EU were invited to China for providing consultation.

At the end of November 2014, experts from EU were invited to China to discuss the application for new China-EU cooperation projects. The two parties will further cooperate in the fields of emergency response of NPPs, management and safe transportation of radioactive wastes as well as capability building of the Technology R&D Base for Nuclear and Radiation Safety Regulation, etc.

Other Bilateral Cooperation

During the 3rd IAEA International Conference on Challenges Faced by Technical and Scientific Support Organizations in Enhancing Nuclear Safety and Security, MEP (NNSA) signed the Protocol of Cooperation with Office for Nuclear Regulation of UK, and established the platform for cooperation with UK regulatory body. The Protocol of Cooperation with French Nuclear Safety Authority was renewed, thus consolidated the achievements

of bilateral cooperation.

MEP (NNSA) recommended Nuclear and Radiation Safety Center as the group leading organization of the Nuclear Safety Group of Joint Committee of China-Korea Nuclear Power Cooperation, and attended the 11th Joint Committee Meeting in May.

MEP (NNSA) supported the Program on Youth Technological Talents Visits launched by Ministry of Science and Technology, having accepted staff from Indonesian Nuclear Regulatory Authority for one-year training in the field of thermal-hydraulic calculation, serving for the “going out” of nuclear power.

17 Memorabilia

On January 14, 2014, Vice Administrator of NNSA, Director General of Nuclear and Radiation Safety Regulation Department Ⅲ of MEP, Ye Min, met with Joseph J. Krol, Associate Administrator of National Nuclear Security Administration, U.S. Department of Energy, and his colleagues in Beijing. The two sides exchanged views on radiation accident emergency response, cooperation in searching out-of-control radioactive sources and other issues.

From February 20 to 21, 2014, a meeting to check and approve relevant issues of the sixth review meeting of "Convention on Nuclear Safety" was held in Beijing. Nuclear Safety Chief Engineer of MEP, Vice Administrator of NNSA, Liu Hua, attended the meeting.

On February 26, 2014, Vice Minister of MEP, Administrator of NNSA, Li Ganjie, met with Luis Echávarri, the Director of OECD Nuclear Energy Agency. The two sides exchanged views on nuclear safety regulation cooperation and other issues of common concern and reached a consensus on signing a memorandum of cooperation.

On March 4, 2014, the "Reply Letter on the Endorsement of the Nuclear Power Standard in Energy Industries 'Operating Condition Categorization of PWR Nuclear Power Plants' (NB/T 20035-2011)" (NNSA Letter[2014]28) was issued. This is the first nuclear power industry standard endorsed by NNSA.

From March 10 to 15, 2014, the 26th nuclear regulatory cooperation conference and the 2014 annual China-US nuclear safety cooperation steering committee meeting were held in the United States. At the meeting, the two sides exchanged views on the cooperation accomplishments since renewing the "China-US Protocol of Cooperation in Nuclear Safety" and the 2014 annual cooperation plan, and reached a consensus on strengthening bilateral cooperation on regulation of nuclear fuel cycle facilities and radioactive sources.

On March 14, 2014, the State Commission Office for Public Sector Reform (SCOPSR) issued "Notification on Division of Responsibilities of Civilian Nuclear Safety Equipment NDT Personnel Qualification Management" (SCOPSR Notice[2014]8), to define NNSA's unified responsibility for civilian nuclear safety equipment NDT personnel qualification management.

On March 17, 2014, the “Plant Siting Review Comments” of Haiyang NPP Unit 3 and Unit 4 were issued.

From March 24 to April 4, 2014, the sixth review meeting of “Convention on Nuclear Safety” was held at the IAEA headquarters, Nuclear Safety Chief Engineer of MEP, Vice Administrator of NNSA, Liu Hua, headed a delegation to attend the meeting, and delivered the national report of China in the country group review, and answered questions on Chinese regulation raised by various parties and received high recognition.

On April 8, 2014, the “Plant Siting Review Comments” were issued for Xudapu NPP Unit 1 and Unit 2.

On April 16, 2014, Vice Minister of MEP, Administrator of NNSA, Li Ganjie, met with Kristine Svinicki, Commissioner of United States Nuclear Regulatory Commission in Beijing. The two sides exchanged views on issues of AP1000 project progress, safety improvement after Fukushima Accident and strengthening public information and so on.

On April 17, 2014, the second steering group meeting of the specific work of national nuclear bases and nuclear facilities radiation environment status investigation and evaluation was organized in Beijing. Vice Minister of MEP, Administrator of NNSA, Li Ganjie, attended the meeting and addressed, and Nuclear Safety Chief Engineer of MEP, Vice Administrator of NNSA Liu Hua summarized the specific work.

On May 5, 2014, the signing ceremony of “Framework Agreement on Cooperation of Mutual Rescue among Nuclear Power Industry Groups in Nuclear Accident Emergency” and the unveiling ceremony for the establishment of the CGNPG nuclear power plant emergency supporting task force were held in Daya Bay nuclear power base. Vice Minister of MEP, Administrator of NNSA, Li Ganjie, attended the ceremony, and unveiled for the supporting task force together with the Chairman of CGNPG, Secretary of CGNPG Party Committee, He Yu.

From May 7 to 10, 2014, in accordance with relevant regulations and plans, through planning and coordination, MEP (NNSA) guided and assisted Jiangsu Environmental Protection System in conjunction with local governments and relevant departments to respond to the radiation accident of the loss of a radioactive source of category Ⅱ in Nanjing, Jiangsu Province.

On May 12, 2014, concerning the radiation accident of the loss of a radioactive source of category Ⅱ in Nanjing, Jiangsu province, the “Notification of carrying out a special inspection on the safety of radioactive sources” (MEP Off [2014]46) was issued to carry out a nationwide urgent special inspection focusing on high-risk radioactive sources.

On May 19, 2014, the CNNC nuclear power plant emergency supporting task force was established. Vice Minister of MEP, Administrator of NNSA, Li Ganjie, attended the ceremony, and unveiled for the supporting task force together with the Chairman of CNNC, Secretary of CNNC Party Committee, Sun Qin.

From May 26 to 27, 2014, the 7th China-Pakistan Nuclear Safety Cooperation Steering Committee Meeting was held in Beijing. Vice Minister of MEP, Administrator of NNSA, Li Ganjie, attended the meeting and met with Anwar Habib, Chairman of Pakistan Nuclear Regulatory Authority (PNRA), and renewed the "NNSA and PNRA Protocol of Cooperation in Nuclear Safety".

On May 30, 2014, the "Permission for the Initial Fuel Loading" of Fuqing NPP Unit 1 was issued.

On June 5, 2014, the "Notification of Related Issues of Decentralizing Radiation Safety Regulatory Authority on Nuclear Technology Utilization" (MEP Off [2014]677) was issued. It specifies that starting from July 1, 2014, the radiation safety regulatory functions and responsibilities for users of medical radioactive sources of category Ⅰ and organizations using radio-pharmaceuticals (self-use only) for making Positron Emission Tomography (PET) are transferred from MEP to the provincial environmental protection departments.

On June 18, 2014, the "Plant Siting Review Comments" was issued to Large-scale advanced PWR major special project CAP1400 demonstration project.

On June 18, 2014, Vice Minister of MEP, Administrator of NNSA, Li Ganjie, met with the Bill Gates, Chairman of the U.S. Terra Power in Beijing.

From June 18 to 19, 2014, the Sino-Russian nuclear safety regulation cooperation meeting was held in Beijing, Vice Minister of MEP, Administrator of NNSA, Li Ganjie, and Alexey Aleshin, the Chairman of Federal Environmental, Industrial and Nuclear Supervision Service of Russia headed delegations to attend the meeting. At the meeting, the two sides reached principal consensus on re-signing bilateral cooperation agreements, establishing a mechanism of biennial joint coordination meeting, and near-term cooperation matters.

On June 19, 2014, the "Plant Siting Review Comments" were issued to Lufeng NPP Unit 1 and Unit 2.

From June 19 to 20, 2014, the 2014 annual national symposium on radiation safety regulation was held in Xining, Qinghai province and Vice Administrator of NNSA, Director General of Nuclear and Radiation Safety Regulation Department Ⅲ of MEP, Ye Min, attended the symposium.

From June 30 to July 3, 2014, the workshop

on Radiation Protection and Safety of Radiation Sources: International Basic Safety Standards (BSS) and the 12th meeting of the 21st Century Radiation Protection Forum were held in Yantai, Shandong Province. Nuclear Safety Chief Engineer of MEP, Vice Administrator of NNSA, Liu Hua, attended the meeting, and discussed in depth with IAEA officials on the cooperation in the field of radiation protection.

On July 15, 2014, the “Operation Licenses” were issued to the 10MW high temperature gas-cooled reactor and the hospital neutron irradiator of Tsinghua University.

On July 30, 2014, the “Notification of Carrying out Midterm Evaluation of the 12th Five-year Plan and 2020 Long-term Goals on Nuclear Safety and Radioactive Pollution Prevention and Control ” (MEP Off [2014]993) was issued. MEP (NNSA) carried out an evaluation of the nuclear safety plan approved by the States Council for the first time.

On July 30, 2014, the radioactive material transportation containers of category Ⅰ made by Russian state-operated nuclear fuel company was approved to be used in China.

On September 1, 2014, the “Permission for the Initial Fuel Loading” was issued to Fangjiashan NPP Unit 1.

On September 1, 2014, the “Notification of Carrying out the Special Action of Publicizing and Promoting Nuclear Safety Culture” (MEP Off [2014]1099) was issued, to carry out a one-year special action of publicizing and promoting nuclear safety culture in the whole industry.

From September 1 to 5, 2014, the 7th Northeast Asian Top Regulators Meeting on Nuclear Safety and the first workshop were held in Tokyo, Japan. After the workshop, representatives investigated the Fukushima Daiichi NPP. Vice Administrator of NNSA, Director General of Nuclear and Radiation Safety Regulation Department Ⅰ of MEP, Guo Chengzhan, headed a delegation to attend the meeting and the investigation activities.

On September 9, 2014, the national standard of environmental quality named as “Controlling Limits for Electromagnetic Environment” was officially issued.

On September 11, 2014, the “Permission for the Initial Fuel Loading” was issued to Hongyanhe NPP Unit 3.

From September 21 to 28, 2014, the 58th Annual Regular Session of the IAEA General Conference and the Senior Regulators Meeting on Nuclear Safety were held in the headquarters of IAEA, and Vice Administrator of NNSA, Director General of Nuclear and Radiation Safety Regulation Department Ⅱ of MEP, Wang Zhongtang, headed a delegation to attend the meeting.

From September 22 to 26, 2014, the 3rd

business communication meeting and the 4th working group meeting of the Cross-strait Cooperation Agreement about Nuclear Power Safety were held in Shanghai. The two sides exchanged views on the safety performance of nuclear power plants and operating experience feedback, the nuclear safety research, the radiation protection regulation practice of NPPs, the nuclear emergency experience feedback and other issues. After the meeting, the "Workshop on NPP Safety Improvement after the Fukushima Nuclear Accident" and the "Topical Workshop on Radioactivity Comparison of Environmental Samples" were held.

On September 29, 2014, the 2014 regulation experience exchange conference on nuclear fuel cycle and radioactive wastes, and the initiating meeting of "Special Action of Publicizing and Promoting Nuclear Safety Culture" in the field of civilian nuclear fuel cycle facilities were held in Beijing. Nuclear Safety Chief Engineer of MEP, Vice Administrator of NNSA, Liu Hua, attended the meeting and delivered a mobilization speech.

On October 10, 2014, the construction license was issued to the uranium conversion project of the 272 Uranium Co., Ltd., CNNC.

On October 11, 2014, the construction license was issued to the uranium purification and conversion fabrication line of the 404 Co., Ltd., CNNC.

On October 20, 2014, the "Technical Guidelines on Environmental Impact Assessment of Electric Power Transmission and Distribution Project" (HJ 24-2014) and the "Technical Norms for Environmental Protection Check and Acceptance of Completed Project on Electric Power Transmission and Distribution" (HJ 705-2014) were issued.

From October 27 to 31, 2014, the 3rd International Technical and Scientific Support Organization Conference (hereinafter referred to as TSO Conference) was held in Beijing. About 300 representatives from nuclear safety regulatory bodies and technical support organizations of related Member States, Economic Cooperation and Development (OECD) Nuclear Energy Agency, the World Association of Nuclear Operators, European technical support network and nuclear power operators attended the conference. Vice Minister of MEP, Administrator of NNSA, Li Ganjie, delivered a speech at the opening ceremony, and met with the participating representatives of regulatory bodies of related Member States.

On October 27, 2014, Vice Minister of MEP, Administrator of NNSA, Li Ganjie, met with Mr. John Jenkins, Chief Executive of British Office for Nuclear Regulation, while attending the TSO Conference, and co-signed the Sino-British Arrangements on the Cooperation of Safety Regulation and Information Exchange in the Area of Peaceful Use of Nuclear Energy.

On October 29, 2014, Vice Minister of MEP, Administrator of NNSA, Li Ganjie, met with Mr. Philip Kamei, Deputy Director of French ASN, while attending the TSO Conference, and exchanged the texts of renewed China-France Cooperation Agreement on Nuclear Safety and Radiation Protection and the Cooperation Arrangement on European PWR (EPR).

On October 29, 2014, the Symposium on Thirty years of Nuclear and Radiation Safety Regulation in China was held in Beijing.The Minister of MEP, Zhou Shengxian, attended the meeting and addressed, and the Vice Minister of MEP, Administrator of NNSA, Li Ganjie, presided over the meeting.

On November 5, 2014, the national conference on experience feedback of civilian nuclear safety equipment and the mobilization meeting of Special Action on Publicizing and Promoting Nuclear Safety Culture were held in Beijing. The Vice Minister of MEP, Administrator of NNSA, Li Ganjie, attended the meeting and addressed.

On November 13, 2014, the 48Y natural uranium hexafluoride transportation container made by the French AREVA was approved to be used within P.R.China.

On November 19, 2014, the storage and disposal license of radioactive solid wastes for Qingyuan Environmental Engineering Technology Co., Ltd, CNNC was issued.

On November 24, 2014, the national conference on experience exchange of nuclear safety in NPPs and the mobilization meeting of Special Action on Publicizing and Promoting Nuclear Safety Culture in the field of nuclear power plants and research reactors were held in Beijing.The Vice Minister of MEP, Administrator of NNSA, Li Ganjie, attended the meeting and addressed.

On November 25, 2014, the national conference on experience exchange of the special action of radioactive source safety and the mobilization meeting of special Action on Publicizing and Promoting Nuclear Safety Culture in the field of nuclear technology utilization were held in Beijing.The Vice Minister of MEP, Administrator of NNSA, Li Ganjie, attended the meeting and addressed.

On December 2, 2014, the “Permission for the Initial Fuel Loading” was issued to Fangjiashan NPP Unit 2.

On December 5, 2014, the “Operation Licenses” were issued to Qinshan NPP Phase Ⅱ Unit 3 and Unit 4.

On December 9, 2014, the Vice Minister of MEP, Administrator of NNSA, Li Ganjie, met with Remy Autebert, the Asia-Pacific President of AREVA, and exchanged views on China-France cooperation in nuclear safety, Taishan EPR NPP project in China, construction of reprocessing plants and other issues.

On December 15, 2014, the “Permission for the Initial Fuel Loading” was issued to Ningde NPP Unit 3.

On December 15, 2014, the disposal license of radioactive solid wastes was issued to Guangdong Daya Bay Nuclear Energy and Environmental Protection Co., Ltd.

On December 23, 2014, the “Notification of issuing the Nuclear Safety Culture Policy Statement” (NNSA Notice [2014]286) was jointly issued by MEP (NNSA), the National Energy Administration and the State Administration of Science, Technology and Industry for National Defense, PRC.