For discussion
on 6 July 2010

Legislative Council Panel on Security
Daya Bay Nuclear Power Station Notification Mechanism

Purpose

This paper briefs members on the notification mechanism and contingency plan of the Hong Kong Special Administrative Region (HKSAR) in case of a nuclear incident at Daya Bay Nuclear Power Stations (DBNPS). It also provides information on the event which occurred in Daya Bay on 23 May this year.

Guangdong Nuclear Power Station and Lingao Nuclear Power Station

2. The DBNPS, which includes Guangdong Nuclear Power Station (GNPS) and Lingao Nuclear Power Station (LNPS), is located at Daya Bay about 50 km north-east of the Hong Kong city centre. GNPS is owned by the Guangdong Nuclear Power Joint Venture Company Limited (GNPJVC), with a 75/25 joint venture between the Guangdong Nuclear Investment Company Limited (GNIC) and the Hong Kong Nuclear Investment Company Limited (HKNIC). The HKNIC is a wholly owned subsidiary of China Light & Power Holdings Limited (CLP). CLP is also a shareholder of the Daya Bay Nuclear Power Operations and Management Co Ltd (DNMC) which is responsible for the management and operation of GNPS. GNIC, as the majority shareholder of the DNMC, oversees its daily operation. About 70% of GNPS's electricity output is supplied to Hong Kong. The output of LNPS, which is owned by the Lingao Nuclear Power Company Limited, is entirely supplied to Guangdong Province.

3. The GNPS comprises two "pressurised water reactors" of French design, which has an excellent safety record world-wide. Each reactor is protected by three barriers to prevent the release of radioactive material from the core. In addition, there are multiple protective systems. In the event of failure of one of the systems, there are still multiple means for meeting the safety targets. The design of the pressurised water reactors at the LNPS is similar to those at the GNPS. The International Atomic Energy Agency (IAEA), established under the auspices of the United Nations, conducted safety reviews on the GNPS both before and after it commenced operation to confirm that the nuclear station would be operated in strict compliance with international safety standards. The UK Atomic Energy Authority also conducted a comprehensive risk assessment

on the GNPS and concluded that the risk to Hong Kong residents was extremely low and much smaller than the risks encountered in everyday life.

4. GNPS and the LNPS commenced operation in 1994 and 2000 respectively. There has not been any incident of radioactive release.

International Nuclear Event Scale (INES)

5. The INES was drawn up by the IAEA to establish an internationally recognised standard for facilitating better understanding by the public, media and the nuclear industry of the degree of significance of nuclear-related events. The INES classification takes into account many factors, including any degradation of safety protection measures, the integrity of radiological barriers and control devices, as well as the impact on the public and the environment.

6. The nuclear industry is subject to stringent regulatory controls. Any abnormal event will be analysed and classified from Level 0 to Level 7 in accordance with the INES. Any event that comes within the classification of the INES is considered a Licensing Operational Event. Level 0 is also known as "below scale" events, which implies that the incident has no safety significance. Levels 1 to 3 events are regarded as "incidents", which have very little or no impact to the environment. Levels 4 to 7 are regarded as "accidents", representing various degrees of radiological impact. All incidents and accidents will be verified, reported, analysed and rectified so as to prevent any recurrence in the future. As for events outside the INES (i.e. "out of scale" or below Level 0), they do not have any relevance to safety. Further details of the INES are enclosed in **Annex I**.

7. The DBNPS also adopts the INES rating system. In case of a Licensing Operational Event (i.e. events at Level 0 or above), the DBNPS shall, in accordance with Mainland statutory requirements, report the event to the relevant state regulatory body, namely the National Nuclear Safety Administration (NNSA). NNSA will handle the matter accordingly, including examining and confirming the contents of the report and the rating of the event. The NNSA also has a number of inspectors stationed on-site at the DBNPS to monitor the station's operation and performance.

Notification mechanism of the HKSAR and the Guangdong authorities

8. The HKSAR Government and the Guangdong authorities have established an official contingency notification channel. In simple terms, the Prevention and Emergency Administrative Commission Office of Guangdong Province for Nuclear Accident of Civil Nuclear Facility (PEACO,GD) is responsible for coordinating contingency actions to be taken by various

Guangdong authorities in response to events at the DBNPS. In case of a contingency event or accident at the station, the DBNPS operator will inform the PEACO,GD and other relevant state organisations immediately. The PEACO,GD will notify Hong Kong authorities in accordance with the arrangements agreed between the two sides and the classification of the "emergency situation". The classification of "emergency situation" follows the IAEA's four-category system for classifying nuclear emergencies according to its impact on safety (in ascending order of severity) –

Classification of emergency situation	**Description**
Emergency Standby	Safety levels may be reduced at the plant.
Plant Emergency	Radiological consequences of the emergency are confined to a section of the plant.
Site Emergency	Radiological consequences of the emergency are confined to the site.
Off-Site Emergency	Radiological consequences of the emergency extend beyond the site boundary.

9. In the event of an "Off-Site Emergency", PEACO,GD will immediately inform the HKSAR Government via the Hong Kong Observatory (HKO). The Duty Officer of the HKO will acknowledge receipt, inform the Security Bureau (SB), and commence the assessment process. The SB will determine the appropriate level of activation the Daya Bay Contingency Plan. It will also direct and co-ordinate the HKSAR Government's response to the nuclear incident. PEACO,GD will provide update report on the situation no longer than every six hours. It will give further notification immediately on detecting significant changes.

10. In respect of non off-site emergencies, PEACO,GD is also obliged to notify Hong Kong. Depending on the situation, the SB will determine the appropriate level of activation of the Daya Bay Contingency Plan. After receiving a report of "Site Emergency" from DBNPS, PEACO,GD will make a first notification to the Hong Kong authorities as soon as possible based on the circumstances at the time and at latest two hours after being notified by DBNPS. Thereafter, PEACO,GD will make follow up notifications once every six hours. If there are significant changes, the follow up notifications will be made as soon as possible. When a nuclear incident leading to a "Plant Emergency" or an "Emergency Stand-by" occurs at DBNPS, the PEACO,GD will notify the Hong Kong authorities at the same time when it notifies the IAEA.

11. China is a signatory to the United Nations Convention on Early Notification of a Nuclear Accident. Pursuant to the Convention, China is obliged to notify the IAEA of any accident at a nuclear facility in China from which a release of radioactive material occurs or is likely to occur. The IAEA, after receiving such a notification, will inform HKO. The Hong Kong authorities will then follow-up on the report with the Guangdong authorities through the liaison channel. This arrangement can be regarded as an additional notification channel to that with the PEACO,GD.

12. The above notification mechanism between the HKSAR Government and the Guangdong authorities is set out in the Daya Bay Contingency Plan which has been uploaded onto the websites of SB and HKO.

Notification system between the Administration and the CLP/HKNIC

13. The board of directors of the HKNIC include representatives from the SB and the Environment Bureau. The HKNIC submits monthly reports on its operations and performance to the board of directors. These reports will cover any Licensing Operational Events that occurred at the station. Upon receipt of any such reports, the SB will request relevant technical support departments, including HKO, the Electrical and Mechanical Department (EMSD) and the Department of Health, to study the reports and make an assessment. Should there be any questions concerning nuclear safety, the Administration will seek clarification from the HKNIC immediately.

14. Furthermore, the CLP is obliged under the Electricity Ordinance to notify the Director of Electrical and Mechanical Services of a loss or impending loss of all or a portion of the electric supply from a power source outside Hong Kong. An unscheduled power interruption from GNPS may indicate an abnormality at the power station, though this does not necessarily mean the occurrence of a nuclear event. If such power interruption occurs, apart from being notified by the DBNPS, the CLP System Control Centre will also be able to detect it immediately through its own monitoring system. The Control Centre will alert the EMSD and the HKO in accordance with the established notification mechanism. Generally speaking, the first notice will reach the Government within 15 minutes of the power interruption, and the information received can then be assessed and analysed.

Standing warning system

15. Apart from the above notification mechanisms with the PEACO,GD, the CLP and the HKNIC, the Administration has also set up its own warning system. The system mainly includes –

i) HKO's Radiation Monitoring Network

The Radiation Monitoring Network, consisting of ten field stations, monitors the ambient gamma radiation level. An alarm will sound at the HKO Headquarters if there is a significant increase of the ambient radiation level at any one of these stations. An increase in ambient radiation level can be triggered by meteorological events and not necessarily due to an accidental release of radioactive materials from the DBNPS. HKO will therefore verify the radiation level and make enquiries with the DBNPS on its situation to ascertain the cause of the alarm. In other words, the Radiation Monitoring Network can promptly verify whether Hong Kong is contaminated by radioactive substances and identify the extent of contamination.

(ii) On-line water contamination monitor at Muk Wu of the Water Supplies Department

There are two identical on-line water contamination monitoring systems at Muk Wu Pumping Station to monitor incoming drinking water from Guangdong. The alarms of HKO and WSD will sound if there is a significant increase in the radiation level. HKO and WSD will confirm whether these are false alarms, and conduct detailed analysis of water samples where necessary. HKO and WSD will alert the SB immediately if the alarm is found to be genuine after confirmation analysis.

Contingency Plan of the Daya Bay Nuclear Power Station

16. DBNPS is equipped with a multiple protection system and is in strict compliance with the international safety standards in its daily operation, maintenance and repairs. The risk of any incidents resulting in the release of radioactive material beyond the boundaries of the station is, therefore, extremely low. However, to prepare for the unexpected, the HKSAR Government has put in place a comprehensive contingency plan – the Daya Bay Contingency Plan. In case of an accident at the nuclear station that leads to a release of radioactive material, the plan can be activated for immediate response actions to minimise its impact on Hong Kong residents. The contingency plan was prepared in consultation with the IAEA and was also tested by IAEA before promulgation.

17. The main components of the Daya Bay Contingency Plan include:

- Immediate assessment of the consequences of nuclear accident – ascertain the latest situation at the nuclear power station, enhance

monitoring of the radiation level in Hong Kong, and assess the consequences of the nuclear accident.

- Key countermeasures of the contingency plan – inform the public of the accident and the countermeasures to be taken; when necessary, implement full countermeasures at Mirs Bay and the island of Ping Chau, and implement ingestion pathway countermeasures throughout the territory.

- Emergency structure – mobilise relevant government personnel expeditiously to assess the situation, give advice to decision makers, and make recommendations on countermeasures that should be taken.

18. The HKSAR Government has conducted comprehensive testing on this contingency plan on four separate occasions under the observation of IAEA or other international experts. The four exercises all confirmed that the plan was sound and all relevant departments and agencies involved were fully prepared to respond immediately to a nuclear accident causing the release of radioactive material.

19. In addition, both Guangdong and Hong Kong have agreed that comparisons on measurements would be conducted between the environmental radiation monitoring departments of the two sides on a regular basis. Independent organisations are engaged to conduct the comparison exercises (including the items of the radiological measurements comparison exercises conducted by the IAEA) to ensure reliability of their measurements. To ensure the effectiveness of the communication channels, the two sides also conduct monthly direct communication tests, which include tests on communication by phone and fax, and on-line communication.

Case Summary

20. Having been alerted to the event which occurred on 23 May at GNPS, the Hong Kong authorities immediately sought verification from the HKNIC. The HKNIC clearly indicated to the Administration that the situation on 23 May had not reached the conditions for classifying it as Level 0 event under the INES and that the event has no relevance to safety. Details of the event are set out in the information paper submitted by the HKNIC at **Annex 2**. The DNMC has set up an expert group to conduct follow-up investigation. The HKNIC has also undertaken to submit its investigation findings to the HKSAR Government.

21. In addition, the SB also contacted the PEACO,GD to seek further information. In its reply, the PEACO,GD indicated that there was an abnormal

increase in the radioactivity level of the cooling water in the Unit 2 reactor of the DBNPS on 23 May, and it had been determined that the event was caused by a minor crack in the sealing of one of the fuel rods. The monitoring equipment at the nuclear power station recorded no abnormality in the radiation levels inside the station or in its surrounding environment. Independent monitoring by the Guangdong authorities at the radiation monitoring points set up around the nuclear power station also did not detect any abnormality, indicating that the incident had made no impact on the environment.

22. According to the data collected by the Radiation Monitoring Network of the HKO, there were no abnormal changes in the local radiation level in Hong Kong on or after 23 May. For example, according to the data collected at Ping Chau, which is the radiation monitoring station closest to DBNPS, the daily average radiation levels in May were within the normal range of fluctuation. The HKO will continue to monitor the local radiation level round the clock. If any abnormality is detected, it will raise alert immediately.

Advice sought

23. Members are invited to take note of the paper.

Security Bureau
June 2010

Annex 1

International Nuclear Event Scale (INES)

Band	Criteria / Level	Off-site impact	On-site impact	Defence-in-depth degradation
ACCIDENT	7 Major Accident	Major release : Widespread health and environmental effects		
	6 Serious Accident	Significant release: likely to require full implementation of planned countermeasures		
	5 Accident with off-site-risk	Limited release: likely to require partial implementation of planned countermeasures	Severe damage to reactor core / radiological barriers	
	4 Accident without significant off-site-risk	Minor release: public exposure of the order of prescribed limits	Significant damage to reactor core / radiological barriers / fatal exposure of a worker	
INCIDENT	3 Serious Incident	Very small release: Public exposure at a fraction of prescribed limited	Severe spread of contamination / acute health effects to a worker	Near accident – no safety layers remaining
	2 Incident		Significant spread of contamination / over exposure of a worker	Incidents with significant failures in safety provisions
	1 Anomaly			Anomaly beyond the authorized operating regime
DEVIATION	0 Below scale event deviation	No safety significance		
	Out of scale event	No safety relevance		

Annex 2

Hong Kong Nuclear Investment Company

Operational Matter on 23 May 2010 at the Guangdong Daya Bay Nuclear Power Station

Information Paper

This paper aims to provide information on the operational matter related to a fuel rod on 23 May 2010 at the Guangdong Daya Bay Nuclear Power Station (Daya Bay) and the follow up actions.

Operational Details

2. Daya Bay, commissioned in 1994, is the first large scale commercial nuclear power station in the Chinese Mainland. Daya Bay comprises of two identical 984 MW (gross) pressurised water reactor (PWR) type electricity generating units. This type of reactor is very common internationally and accounts for about 60% of the world's operating reactors. It has a long track record of safe and reliable operations.

3. Daya Bay adopts the mature French technology for its 2 reactors. Among others, Daya Bay's key feature is the redundant, independent, isolated enclosure design to guard against any potential radioactive leakage to the environment. In the PWRs of Daya Bay, nuclear reaction is confined within the fuel rods inside the confinement of a 200-millimeter steel casing and a 0.9-meter thick reinforced concrete structure. The design is illustrated in Figure 1.

4. On 23 May 2010, Daya Bay under its regular routine monitoring detected a slight increase in radioactivity in the reactor cooling water in Unit 2 Reactor. The reactor cooling water is totally isolated on its own according to the design and excluded from any contact with the external environment, thus causing no impact to the public.

5. Measurements at Unit 2 showed that the level of increase in radioactivity was stable and well within the allowable design operating limit in the technical specifications for reactor operations. The level is within one-tenth of the allowable design operating limit. This has no effect at all to the normal operations of Daya Bay. At no time was there any leak of radioactivity to the external environment or any impact on public safety and health.

6. At Daya Bay, nuclear-related events are rated in accordance with the International Nuclear Event Scale (INES). It is an international standard developed by the International Atomic Energy Agency (IAEA) to classify events, on a scale of 0 to 7, according to the significance to nuclear safety. These events, once classified, are known

as “Licensing Operational Events” (LOEs). A Level 0 Licensing Operational Event is also known as a “Below Scale” Licensing Operational Event, that is, it is of no nuclear safety significance at all. The situation at reactor Unit 2 on 23 May 2010 did not even constitute a Level 0 Licensing Operational Event, i.e. beneath Below Scale.

7. The preliminary assessment conducted at the plant indicates that the situation might be due to an imperfect sealing of a fuel rod in the reactor core of Unit 2. Each reactor has 41 448 fuel rods. All these fuel rods are made in France in compliance with the original specifications of the French reactor manufacturer.

8. Though the incident was not considered to have any safety implications, Daya Bay management nevertheless reported the situation to the National Nuclear Safety Administration (NNSA) of China on 25 May 2010 and informed the Daya Bay Nuclear Safety Consultative Committee (NSCC), its nuclear expert advisory and public communication body, on 10 June 2010 proactively and voluntarily.

Reactor design has allowed for such radioactivity

9. For operating nuclear reactors, it is in the design to allow for a certain amount of radioactive iodine and noble gases present in reactor cooling water, which is confined and isolated within multiple redundant enclosures of the reactor. A small increase in radionuclides in the reactor cooling water therefore indicates radionuclides escaped through claddings of fuel rods. The amount of these radionuclides at the Unit 2 Reactor has remained small and well within the limits specified for the reactor (within one-tenth of the allowable design operating limit).

10. Daya Bay has regular routine monitoring of radioactive iodine and noble gases in the reactor cooling water. At present, daily measurements show that the amount of these radionuclides has remained stable in the reactor cooling water since their presence starting 23 May. The nuclear power station has many different sophisticated monitoring instruments and can detect the tiniest change caused by even a small defect in one single fuel rod.

11. Based on the technical specifications prepared by the French reactor designer and approved by the PRC nuclear safety regulator, there are 3 zones of operations with regard to the concentration of radioactive iodine and noble gases. Zone 1 is the normal zone of operation, where a low concentration of radionuclides in the reactor cooling water is programmed for and allowed. This allows the reactor to have unrestricted operation. Currently, Unit 2 is well within this zone with radioactivity level within one-tenth of the limits of this zone. Zone 2, when a medium radioactivity level concentration is found, the reactor is required by the technical specifications to operate at a stable configuration, that is, change in the reactor operating mode should be avoided. This means that it is still safe to operate in this zone provided its operation

mode is not changed or affected. Zone 3, when a higher radioactivity level concentration is found, the reactor is required by the technical specification to shut down within 48 hours, and the situation will be classified as a "Level 0" (also known as Below Scale) Licensing Operational Event on the INES. The current situation in which the reactor now operates is well within Zone 1 as depicted in Figure 2.

No change in radiation outside

12. As the radioactivity is confined in the reactor cooling water, and with the proper functioning of the enclosing system and the containment building. There is no resulting change in the radioactivity measured inside and outside the concrete containment building. Daya Bay has 5 on-site radiation monitoring stations placed within 1 km from the nuclear power station to provide real time continuous monitoring. The data for May and early June shows normal fluctuations about a steady background level and is comparable with earlier months. This is shown in Figures 3. The fluctuations are the changes in the background readings resulted from rainfalls in the vicinity.

13. Daya Bay has 5 more external radiation monitoring stations which keep track of gamma radiation on a real time continuous basis. They are located at about 5 km from Daya Bay. Same as the 5 on-site monitoring stations, they also show no abnormal level of radiation.

14. The Guangdong Environmental Bureau announced on 17 June 2010 that based on 24-hour surveillance in Guangdong and Hong Kong, no change was observed in radioactivity around Daya Bay as compared to measurements before Daya Bay was in operation. The announcement was published on their website on 18 June 2010.

Further investigation

15. Daya Bay will include in its investigation the cause of the imperfect sealing of fuel rod. As the situation is well within the allowable operation zone and remains stable, replacement work will be carried out in the next planned refuelling outage where the affected fuel rod will be replaced. Preventive measures will be developed following the investigation.

16. Hong Kong Nuclear Investment Company Limited (HKNIC) will make available the findings to the HKSAR Government in accordance with established process.

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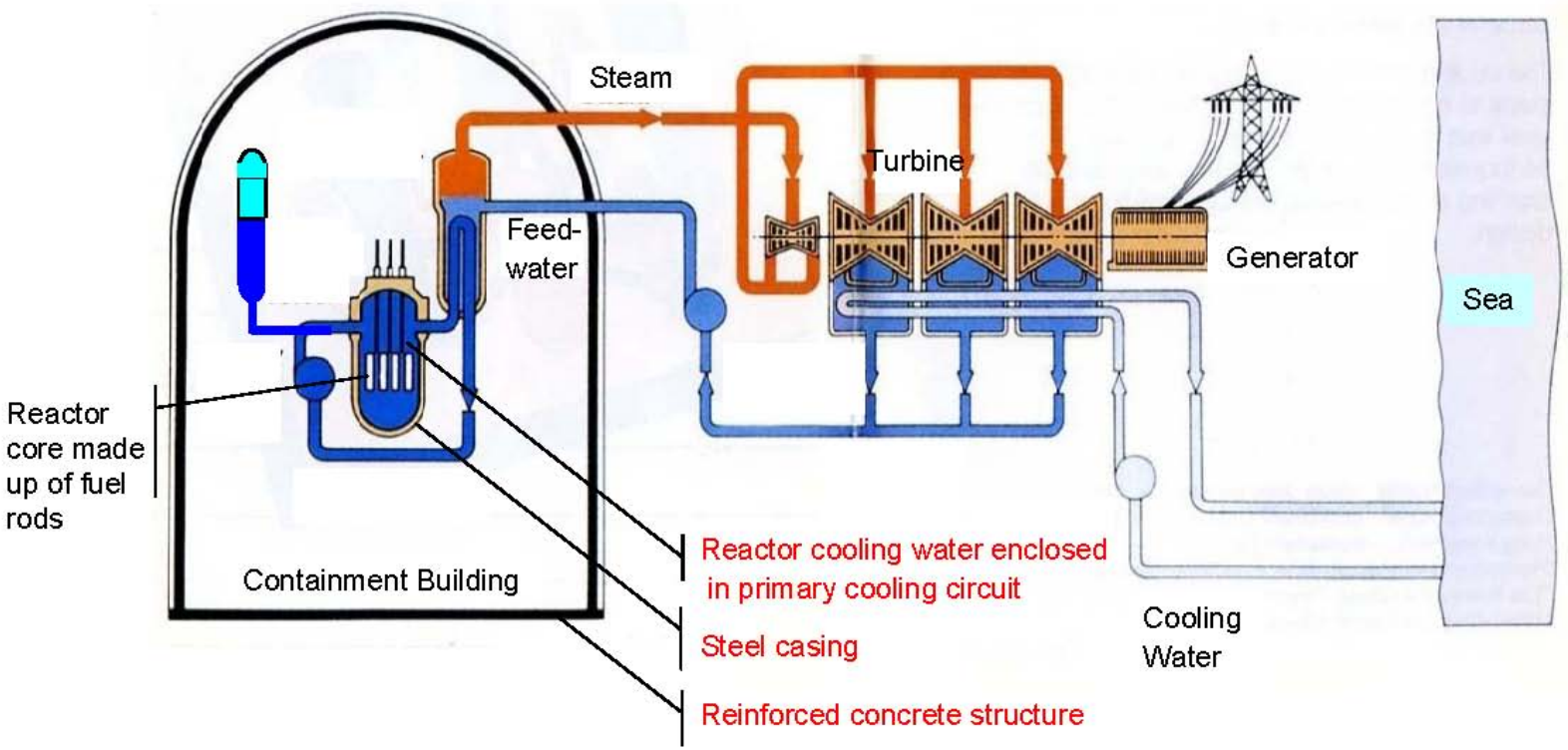

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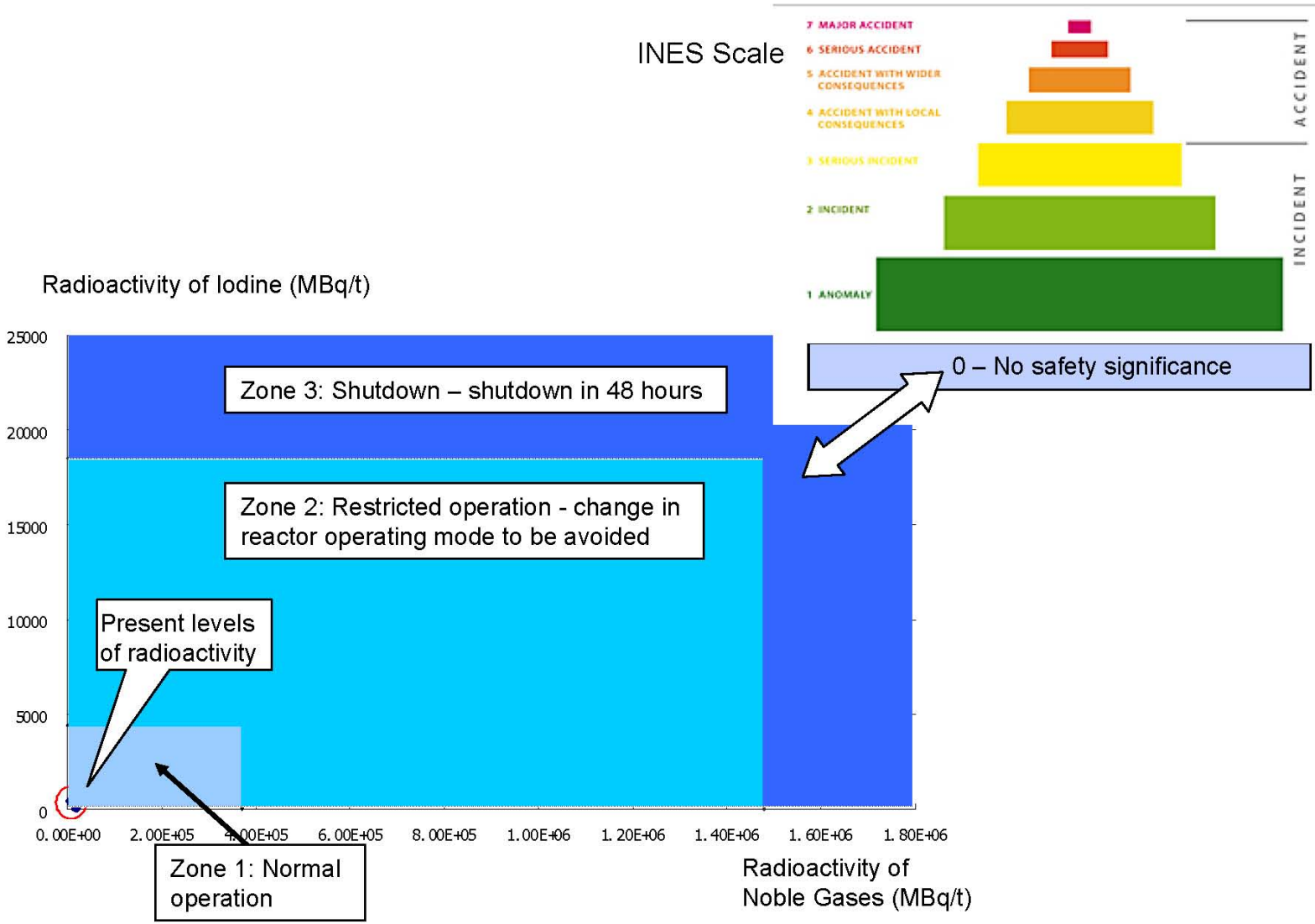


Figure 2 Operating limits due to radioactivity in the reactor cooling water of Daya Bay Unit 2

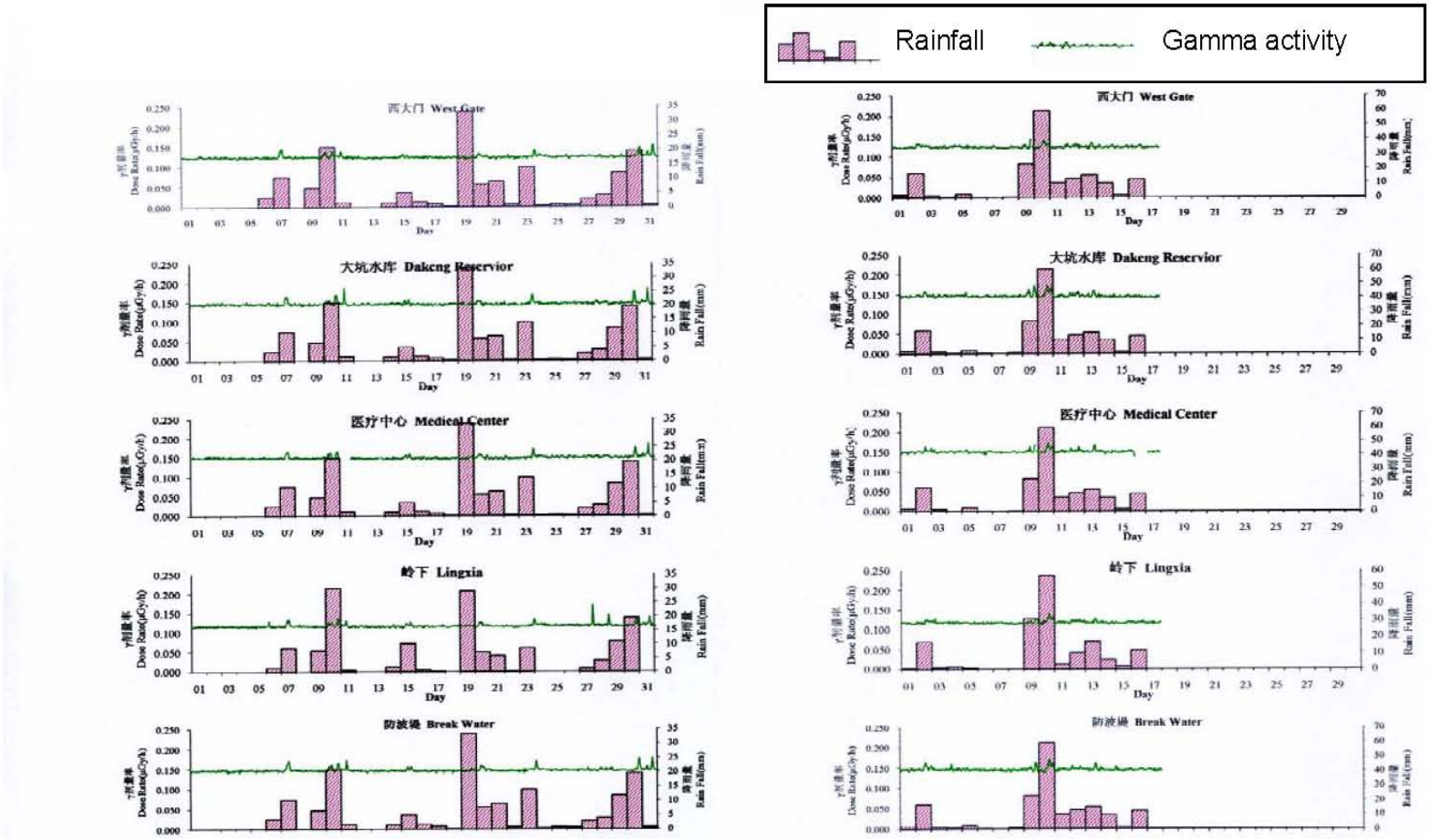


Figure 3 Gamma activity at Daya Bay on-site radiation monitoring stations (May and June 2010)

Note: Gamma activity at a monitoring station is also affected by rainfall and may experience a slight and temporary increase.

Appendix : Supplementary Information

Classification and Reporting of an INES event

There are internationally established requirements for the monitoring, reporting and disclosure of nuclear-related incidents. The International Nuclear Event Scale (INES), developed by the International Atomic Energy Agency (IAEA), rates nuclear and radiation-related events on a scale of 0 to 7, with Level 0 known as "Below Scale". The INES is promulgated as a worldwide tool to consistently communicate to the public the significance of nuclear and radiation-related events. To rate an Event, the scale considers a host of factors, including any degradation of safety protection, the integrity of radiological barriers and control devices, and impact to the public and the environment. An event rated on the scale is known as a Licensing Operational Event (LOE).

2. Daya Bay has a statutory requirement to report an LOE to the PRC nuclear safety regulator, National Nuclear Safety Administration (NNSA) within 24 hours after identifying the event. This will be followed by a full report within a month. NNSA will review the report before its final acceptance.

3. NNSA has a number of inspectors stationed on-site at Daya Bay to monitor its operations and performance.

4. Daya Bay Nuclear Operations and Management Company (DNMC), the operator of Daya Bay, also provides information of LOE to the owner of Daya Bay, Guangdong Nuclear Power Joint Venture Company (GNPJVC). Hong Kong Nuclear Investment Company (HKNIC), as the shareholder in GNPJVC, will report Daya Bay's operations and performance, including occurrence of LOE, on a monthly basis to its board directors, who presently include two government-nominated directors from the Environment Bureau and the Security Bureau. The relations of these companies are shown in Figure A 1. LOE information will also be posted on a monthly basis to the HKNIC website.

5. DNMC will also inform its advisor, Daya Bay Nuclear Safety Consultative Committee (NSCC), on a regular basis.

Notification Mechanism for matters outside INES classification

6. For matters outside INES, i.e. non LOEs, DNMC also has regular reporting mechanism to GNPJVC. These matters are on those that may have an effect on Daya Bay's performance in the area of general industrial safety and operating excellence. HKNIC would also on a monthly basis reports to its Board of Directors.

7. These performance-related matters cover a number of areas, including fuel quality, its performance (where the fuel rod situation on 23 May 2010 falls in), plant capability factor, industrial accident, and staff radiation dosage monitoring. These matters may not be related to plant nuclear safety.

8. Information showing the general operation status of Daya Bay is made available at the HKNIC website monthly.

9. DNMC also provides these information to its advisor, NSCC.

Daya Bay performance

10. Daya Bay regularly benchmarks its operational performance with nuclear power stations in the world. There are 9 indicators commonly used in the industry in the areas of generation capability, plant safety and efficiency, industrial safety and radiation protection.

11. In 2009, Daya Bay reached world top quartile performance in 8 out of these 9 indicators, with the remaining indicator placed above world median.

12. Daya Bay operates a programme to monitor radioactivity level in its nearby environment. The results up to now show that there is no change in radiation level around Daya Bay since its commercial operation in 1994.

13. Independent measurements by the Guangdong Environmental Bureau also show that there is no change in radiation level up to now around Daya Bay area as compared to the result before Daya Bay's commercial operation in 1994.

14. Measurements by the Hong Kong Observatory show as well that there is no change in radiation level up to now in Hong Kong as compared with the record before Daya Bay's commercial operation in 1994.

15. Monthly results of environmental monitoring at Daya Bay are posted on the HKNIC website.

Emergency Response at Daya Bay

16. The HKSAR Government and the Guangdong Provincial Government have an effective communication system in place for the unlikely event of a nuclear accident with release of radioactive material at Daya Bay. Upon declaration of an emergency, Daya Bay will inform the Guangdong Provincial Government, which will follow established emergency communications protocols to inform the HKSAR Government.

17. Daya Bay has developed emergency plans, approved by NNSA and relevant government authorities in Guangdong, for the handling of different situations and natures of various incidents. Daya Bay will activate the appropriate emergency plans if certain abnormal situations at the nuclear power station affect nuclear safety.

18. Regular emergency exercises are conducted at Day Bay involving various relevant government authorities to ensure the preparedness and effectiveness in the implementation of emergency plans. The most recent one was held in November last year.

Disclosure of Information and Engagement Activities

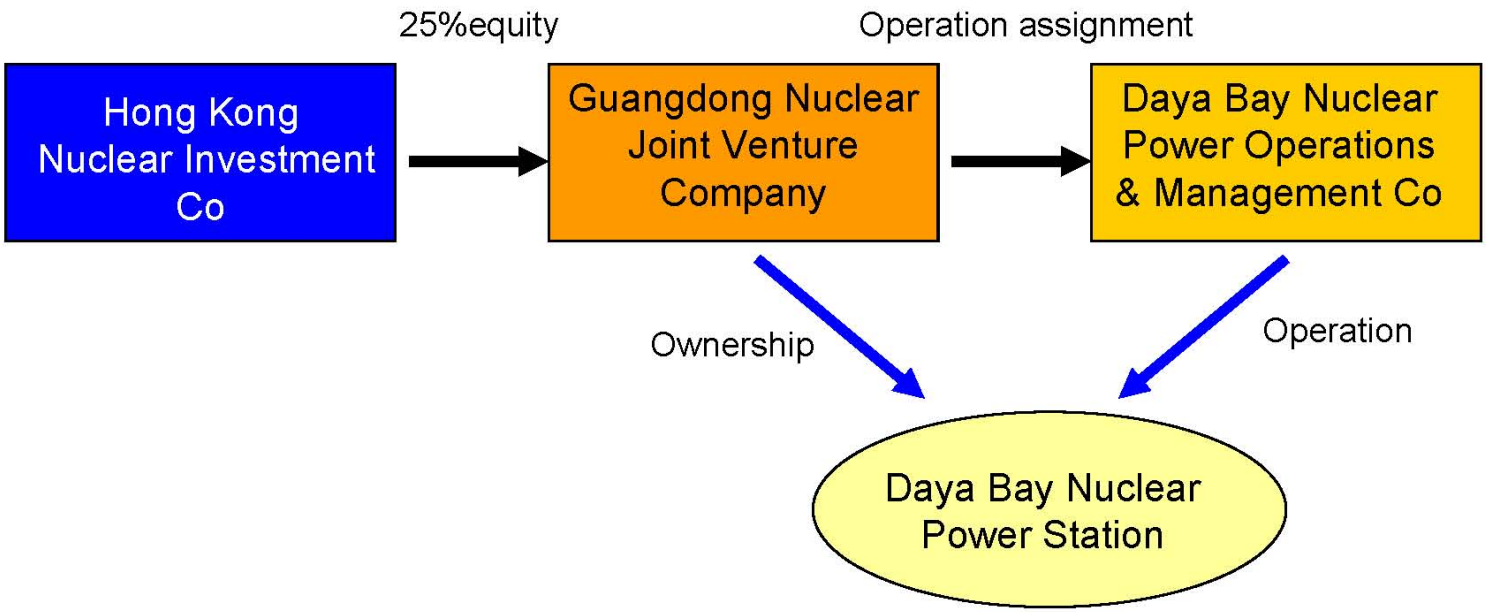
19. HKNIC, a shareholder of Daya Bay, appreciates the importance of increasing the transparency of Daya Bay and engaging with stakeholders on a regular basis. To this end, HKNIC operates a website to provide public with information about Daya Bay and its operation. The website is kept updated on a monthly basis with an array of information including LOEs. Level 1 or above LOEs are reported with description of the situation and causes of the events.

20. Also accessible on the website are statistics on station availability, staff radiation dosages, solid radioactive waste produced, reported numbers of fires and industrial accidents, radiation monitoring result, etc., all of which are commonly used industrial parameters for assessing safety in the operation of nuclear power stations. The website also contains educational information about nuclear power and nuclear safety

21. Since 1990, Daya Bay has received over 1 000 visitors from Hong Kong per year, including professionals, academia, chamber members, teachers and students. Daya Bay regularly receives over 10 000 visitors per year, as well as industry peers from other parts of China and overseas.

List of Figures for the Appendix

Figure A 1 Business relations on Daya Bay



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