For discussion on
4 July 2012

Legislative Council Panel on Security
Daya Bay Contingency Plan - Exercise Checkerboard

This paper reports on the outcome of Exercise Checkerboard, which was held in late April 2012 to test out the revised Daya Bay Contingency Plan (DBCP), and the way forward.

Background

2. Following the Fukushima nuclear incident in Japan in 2011, the Government conducted a comprehensive review of the DBCP. We reported to the Panel on Security in December 2011 on the DBCP review proposals, and introduced the revised DBCP and exercise preparation in April 2012. The revised DBCP and the exercise arrangements are set out in LC Paper No. CB(2)1291/11-12(01).

3. To recap, the objectives of this major inter-departmental exercise are to –

(i) test the response capability of bureaux and departments (collectively referred to as departments below) involved in the event of a serious off-site accident at the nuclear power stations at Daya Bay;

(ii) practise the command, control, planning, deployment and support organisations which would function during various stages when the DBCP is activated; and

(iii) test and practise the coordination of the Emergency Response System and the capacities of relevant departments in response to other emergencies or natural disasters that might possibly happen incidental to the off-site accident.

Exercise Checkerboard

4. The DBCP exercise, codenamed "Exercise Checkerboard" was conducted on two consecutive days on 26-27 April. It is the largest exercise that the Government has ever held, mobilising over 3 200 officers from more

than 30 departments[1] (list at ***Annex A***). In addition, this major exercise also involved public participation, with over 2 000 citizens and volunteers joining as players. The Hong Kong Nuclear Investment Limited (HKNIC) was also invited to participate as players.

Exercise Nature and Scenario

5. Exercise Checkerboard is primarily a command post exercise with field deployment by departments. Once the DBCP was activated, responsible bureaux, departments and public organisations would act and interact in response to the simulated accident, focusing on their coordination and cooperation. The exercise scenario postulated that there was a severe nuclear accident at the Guangdong Daya Bay Nuclear Power Station (GNPS), including events under different themes at different time slots that will test the judgment and the ability to make use of knowledge and training outcomes to jointly respond to the emergency situations.

6. The major theme is the occurrence of a nuclear accident at the GNPS in the morning of Day 1 that developed into an off-site emergency with the controlled release of radiological substances into the atmosphere at about 1330hrs. Following urgent repair at GNPS, the radiological release at the crippled plant was stopped at about 1600 hrs. Based on the meteorological conditions under the exercise, the radiological substances were carried by wind to Hong Kong. During the period when Hong Kong was affected by the plume, the background radiation level of Hong Kong increased. Since the radiological substances were constantly dispersed and diluted over the distance travelled, the dose rate recorded by the Hong Kong radiation monitoring stations was well below the criteria for intervention for implementation of countermeasures (including evacuation, sheltering and use of thyroid blocking agents).

7. Other themes of the postulated events and situations to be tackled under the two-day exercise are -

(i) Power blackout at certain locations in North District of the New Territories;

(ii) Radiation monitoring and consequence assessment;

(iii) Public panic and public information over food, water and health;

[1] Unless the context otherwise requires, the word 'department' also carries the meaning of 'bureau'.

(iv) Plume countermeasures – evacuation of Tung Ping Chau and sheltering;

(v) Ingestion countermeasures and boundary control measures;

(vi) Assistance rendered to incoming travellers and general public; and

(vii) Landslides causing evacuation of villagers in Sai Kung.

8. Driven by the postulated events, the player departments implemented the DBCP and their departmental plans. Various high-level emergency committees were convened to steer the emergency response. When the incident at GNPS broke out in the morning, the Guangdong authorities notified Hong Kong Government, which immediately announced the activation of the DBCP. In response to the development of the incident, the activation level of DBCP was escalated from "Observation" level to "Ready" level, "Partial Activation" level and "Full Activation" level in about five hours. The Emergency Monitoring and Support Centre (EMSC) of the Security Bureau (SB) came into operation and worked in tandem with various emergency centres activated by other departments (list at ***Annex B***). Various government departments immediately enhanced the radiation monitoring of air, food, raw water, drinking water and sea water. All these efforts facilitated the assessment of the situation and the making of prompt decisions on appropriate and coordinated responses by different parts of the Government. Critical information about the accident, possible impact on Hong Kong, community sentiments etc were shared by all player departments on a common electronic platform to facilitate communication. In addition, departments were also required to handle large number of constantly emerging enquiries from the public and the media regarding the latest situation of the nuclear plant, e.g. whether evacuation of Tung Ping Chau was to be implemented and the contamination situation of air and water, etc.

9. During the two days of the Exercise, the following emergency committees were convened as envisaged in the DBCP –

(i) the Director of Information Services convened two meetings of the Information Policy Committee (IPC) to formulate the media strategy to advise the Chief Executive's Steering Group (CESG);

(ii) Secretary for Security (S for S) and the Under-Secretary for Security (US for S) convened three meetings of the Implementation Task Force (ITF) to make recommendations to the CESG and to follow up on its steer; and

(iii) The Chief Executive personally convened two meetings of the

CESG to discuss and decide on necessary strategies and countermeasures, with the Chief Secretary for Administration, Secretary for Justice, S for S, Secretary for Food and Health, Secretary for the Environment, Secretary for Home Affairs and heads of relevant departments attending.

Field Deployment

10. Apart from testing out the co-operation and decision making among player departments in taking appropriate response measures at different times, the Exercise also required extensive on-the-ground operations to test out the actual co-ordination and implementation capabilities in pursuing such response measures. These include -

(i) collection of air, raw water and sea water samples from fire stations, reservoirs, marine fish culture zones and offshore in the northeast water for radiation tests;

(ii) deployment of helicopters and mobile survey teams to track the plume coverage in the air and measure the radiation level on the ground;

(iii) implementation of precautionary evacuation in Tung Ping Chau, including the use of helicopters, police launches and customs vessels in the evacuation and radiation checking of evacuees at Ma Liu Shui and Sai Kung;

(iv) implementation of sheltering measures in three schools at Tai Po;

(v) conducting radiation checking for vegetables, pigs, goods vehicles and goods at points of entry;

(vi) setting up of health desks and monitoring centres at points of entry and swimming pools in urban area to assist people who are suspected to have been contaminated by radiation;

(vii) activation of emergency radiation treatment centres in public hospitals to receive persons who are severely contaminated by radiological substances;

(viii) being confronted at the same time by a landslide in the rural area in Sai Kung after continuous heavy rain, an emergency evacuation of 120 people by the Police and arrangements for temporary accommodation, following a site inspection by the Geotechnical

Engineering Office.

Public Participation

11. To enhance the realism and to test out procedures in which members of public may be involved in the kind of emergencies like that postulated by the exercise scenario, we extended invitation to relevant resident organizations in the vicinity and interested schools, and liaised with the auxiliary services etc to involve citizens and volunteers in the exercise –

(i) about 120 villagers, teachers, students and volunteers evacuated from Tung Ping Chau;

(ii) about 2,040 teachers and students from three schools in Tai Po taking shelter during the passage of the plume;

(iii) 100 volunteers as inbound travellers seeking help at a health desk at Man Kam To;

(iv) 100 volunteers as local citizens seeking help at a monitoring centre set up at a public swimming pool in Shatin;

(v) 120 villagers evacuated from villages in Sai Kung due to landslide; and

(vi) 2 lorry drivers who allowed the goods they conveyed into Hong Kong (vegetables and pigs) to be tested.

Communications with the Public

12. Government's capability in communicating with the public and providing the public with timely, accurate, and appropriate information to avoid public panic due to unfounded rumours is a vital aspect in handling any emergencies. Hence, this is also an important part in the Exercise Checkerboard.

13. During the two-day exercise, the following measures were implemented by player departments –

(i) The Combined Information Centre (CIC) was activated by the Information Services Department in Day 1 to collate information and interface with the media, following the media strategy endorsed by the CESG;

(ii) A series of press releases were issued by the CIC, keeping the "public" informed of the accident situations, radiation monitoring results and Government responses under the DBCP. HKNIC, being the investor of the nuclear power plant, also issued press releases;

(iii) Relevant departments released radiation monitoring results regarding air, water, food and livestock on a regular and timely basis;

(iv) All the above press releases and radiation monitoring data, as well as simulated press statements released by agencies outside Hong Kong such as the International Atomic Energy Agency (IAEA) and the World Health Organization, were uploaded by players onto a mock emergency information webpage of the DBCP website for easy reference of players, observers and others participants in the exercise;

(v) At about noon time on Day 1, an SMS message was sent to mobile phones of the participating members of the public, players, observers, etc to disseminate advice on precautionary evacuation of Tung Ping Chau;

(vi) US for S conducted press conferences in the afternoon of both days, with the support of representatives of professional and operational departments and HKNIC to respond to questions raised by simulated reporters; and

(vii) CIC and player departments also answered simulated enquiries from the media as well as legislators, district council members, non-government organisations and members of the public etc.

Media Arrangements

14. The media has a keen interest in this exercise. To facilitate the media and as part of our efforts in enhancing public education on radiation and nuclear safety, media points were arranged at the following locations –

(i) Tung Ping Chau (evacuation);

(ii) Ma Liu Shui (radiation monitoring of evacuees);

(iii) Man Kam To (radiation scanning of food and livestock); and

(iv) Tuen Mun Hospital (activation of Emergency Radiation Treatment Centre).

Evaluation

15. As part of our evaluation efforts, we collected views through exchanges, wash-up sessions and questionnaires (for participating departments and organisations) from the following –

(i) expert observers from the IAEA, overseas nuclear authorities, emergency response departments in the Mainland and Macau SAR, nuclear experts in Hong Kong and the Mainland, as well as our local Expert Advisory Panel;

(ii) players from 5 bureaux and 27 departments; and

(iii) umpires who were deployed to observe the exercise at emergency centres or field operation grounds and simulators who drive the events of the exercise scenario.

16. In addition, we collected views from members of the Legislative Council Panel on Security[2] who observed the Exercise and also took note of the reports and comments in the media or views expressed through various channels.

17. In overall terms, we consider that the Exercise has achieved the objectives that it sets out to achieve –

(i) Various government departments have fully demonstrated capabilities under trying circumstances in responding to a major nuclear emergency coupled with an incidental natural disaster, in accordance with the revised DBCP and the general Emergency Response System.

(ii) The Exercise effectively practised the command, control, planning, deployment and support organisations at various stages of the government responses to the emerging emergencies, allowing many good lessons to be learnt for continuous improvements of our departments in emergency preparedness.

[2] We thank the Hon. James TO Kun-sun, Hon. Cyd HO Sau-lan and Dr Hon LAM Tai-fai for attending the exercise.

18. Local and overseas expert observers consider that the strengths demonstrated in the Exercise include the following –

(i) DBCP is a thorough contingency plan which has been prepared taking into account international standards and best practices from countries with considerable emergency preparedness experience;

(ii) The scenario of the exercise was sufficiently challenging to meet the goals of the exercise;

(iii) The participation of a large number of government departments and officers clearly demonstrated that the scope of the event was appropriately vast to test out the key aspects of the revised DBCP;

(iv) Clear governance arrangements were demonstrated for decisions which required the authority of the CESG;

(v) The Government demonstrated its ability to utilize the existing plans and procedures to enhance radiation monitoring, assess possible consequences, organize an evacuation of areas within the Emergency Planning Zone (specifically Tung Ping Chau), monitor food and plants imported into Hong Kong, provide boundary control monitoring and screening of inbound vehicles and travellers and render assistance to those in need within Hong Kong;

(vi) The Government exhibited a clear public communication capability to ensure the timely dissemination of information to those in Hong Kong; and

(vii) The continued effectiveness of the Emergency Response System, in particular the emergency response measures and arrangements under the DBCP, was verified.

Areas for improvements and follow up

19. As always, a good exercise is one that allows many lessons to be identified for the pursuit of continuous improvements, not necessarily one where everything goes well. The Exercise Checkerboard is of no exception. We will take this opportunity to further enhance our nuclear emergency preparedness.

20. To further enhance Government's emergency response capability, relevant departments will follow up suggestions on various fronts, including -

(i) strengthening the technical arrangements of the EMSC with a view to ensuing that departments concerned would get the emergency information speedily so that appropriate follow-up actions can be taken;

(ii) continuing discussions with the Mainland authorities to further enhance notification arrangements during nuclear incidents;

(iii) Relevant professional departments would continue to enhance their professional knowledge, training and, if necessary, review the procedures with a view to further enhancing the monitoring, assessment and emergency response capabilities;

(iv) On communication with the public, the Government would speed up the dissemination of information to the public about the most updated situation of the incident and, if necessary, disseminating information through various channels including press conference, press briefing, DBCP websites, SMS, etc. depending on the circumstances, so as to inform the public of the necessary measures to be taken and stem public panic;

(v) On plume countermeasures, the Government would enhance the detailed logistic arrangements and infrastructural support for the precautionary evacuation of Tung Ping Chau, such as sky shout by helicopters and police vessel sirens, and installation of appropriate signage for direction of evacuation routes and sheltering locations;

(vi) On ingestion countermeasures and radiation monitoring, we will keep the procedures under review to avoid possible contamination of experimental apparatus, with reference to the latest technological developments and international best practice; and

(vii) On personal protective equipment, there is a case to standardize the use of protective equipment by all frontline departments on a default basis for precautionary evacuation of Tung Ping Chau to avoid unnecessary confusion.

Way Forward

21. Exercise Checkerboard is a major undertaking with great complexity. We consider that a major inter-departmental exercise on the DBCP and the overall Emergency Response System should be conducted in a cycle of every three to five years. The theme and scale of each exercise may vary depending

on the objectives, emphasis and issues to be addressed at the time. The DBCP and departmental plans and procedures would be reviewed based on the issues to be addressed as appropriate. Relevant bureaux and departments should also strengthen their training and drills, and conduct smaller-scale exercises and drills on various themes jointly or individually, to prepare for the overall comprehensive exercise of the Government.

22. In addition, we should also consider as a whole various contingency plans under the Government's Emergency Response System, training and drilling on internal security, as well as the requirements of inter-departmental exercises, with a view to ensuring the best coordination of emergency response efforts. We will also study the institutional set up in SB to better implement the overall Government-wide exercise.

Next Step

23. All relevant bureaux and departments will follow up on the areas for improvements identified above, and SB will continue to coordinate as appropriate.

24. In the longer term, we must remain vigilant and continue to maintain a close watch on any new standard that may be promulgated by the IAEA, Mainland authorities and other advanced countries, and their work to enhance emergency preparedness. If necessary, we will update and strengthen different aspects of the DBCP to meet the latest national or international safety levels.

Security Bureau
June 2012

Annex A

Bureaux, Departments and Organizations Participated in the Exercise Checkerboard

1. Chief Executive's Office
2. Chief Secretary for Adminsitration's Office
3. Environment Bureau
4. Educaiton Bureau
5. Food and Helath Bureau
6. Home Affairs Bureau
7. Security Bureau
8. Agriculture, Fisheries and Conservation Department
9. Auxiliary Medical Service
10. Customs and Excise Department
11. Civil Aid Service
12. Civil Engineering and Development Department
13. Department of Health
14. Department of Justice
15. Drainage Services Department
16. Electrical and Mechanical Services Department
17. Environmental Protection Department
18. Food and Environmental Hygiene Department
19. Fire Services Department
20. Government Flying Service
21. Government Laboratory
22. Government Logistics Department
23. Home Affairs Department
24. Hong Kong Observatory
25. Hong Kong Police Force
26. Immigration Department
27. Information Services Department
28. Leisure and Cultural Services Department
29. Marine Department
30. Office of the Communications Authority
31. Social Welfare Department
32. Transport Department
33. Trade and Industry Department
34. Water Supplies Department
35. Hospital Authority
36. Hong Kong Nuclear Investment Company Limited

Annex B

Emergency Centres Participated in the Exercise Checkerboard

1. Emergency Monitoring and Support Centre
2. Agriculture, Fisheries and Conservation Departmental Emergency Headquarters
3. Auxiliary Medical Service Headquarters Control Room
4. Customs and Excise Department Coordination Centre
5. Civil Aid Service Central Command Centre
6. Geotechnical Engineering Office Emergency Control Centre, Civil Engineering and Development Department
7. Department of Health Emergency Control Centre
8. Emergency Duty Room of Radiation Health Unit, Department of Health
9. Drainage Services Department Emergency Control Centre
10. Electrical and Mechanical Services Department Coordination Office
11. Food and Environmental Hygiene Department Command Centre
12. Fire Services Communications Centre, Fire Services Department
13. Government Flying Service Air Control and Command Centre
14. Government Logistics Department Transport Pool Control Centre
15. Government Logistics Centre, Government Logistics Department
16. Home Affairs Department Headquarters Emergency Co-ordination Centre
17. Home Affairs Department Tai Po District Emergency Co-ordination Centre
18. Home Affairs Department Sai Kung District Emergency Co-ordination Centre
19. Hong Kong Observatory Monitoring and Assessment Centre
20. Hong Kong Observatory Central Forecasting Office
21. Police Headquarters Command and Control Centre
22. Regional Command and Control Centre, Hong Kong Island
23. Regional Command and Control Centre, Kowloon
24. Regional Command and Control Centre, New Territories
25. Regional Command and Control Centre, Marine
26. Immigration Department Emergency Co-ordination Centre
27. Boundary Joint Command Centre
28. Man Kam To Joint Command Centre
29. Information Services Department Combined Information Centre
30. Leisure and Cultural Services Department Departmental Coordination Centre
31. Hong Kong Maritime Rescue Coordination Centre
32. Emergency Transport Co-ordination Centre, Transport Department
33. Water Supplies Department Central Incident Centre
34. Water Supplies Department Hong Kong Regional Incident Centre
35. Water Supplies Department Kowloon Regional Incident Centre
36. Water Supplies Department New Territories East Regional Incident Centre
37. Water Supplies Department New Territories West Regional Incident Centre
38. Hospital Authority Head Office Major Incident Control Centre