



Ministry
of Defence

Exercise DIAMOND DRAGON 15 Lessons Identified Report

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EXERCISE DIAMOND DRAGON 2015 – Lessons Identified Report

Aim

Exercise DIAMOND DRAGON 2015, was a Level 3¹ joint UK/US nuclear emergency response exercise, conducted at RAF Honington in Suffolk from 30 June to 2 July 2015.

The primary aim of the exercise was to test the UK MOD, U.S. and multi-agency response to a simulated crash in the UK of a U.S. aircraft carrying U.S. nuclear weapons leading to a simulated release of radioactive material.

Exercise play in the Defence Crisis Management Centre (DCMC), MOD Main Building, London included notionalised interaction between the Cabinet Office Briefing Room (COBR) and Scientific Advisory Group for Emergencies (SAGE) and the Strategic Coordinating Group (SCG) to provide context and challenge to the local strategic play.

Scenario

The Scenario involved a simulated crash in the UK of a U.S. aircraft carrying U.S. nuclear weapons leading to a simulated release of radioactive material. The highly improbable scenario involved a U.S. Air Force C17 transiting UK airspace, diverting to land at RAF Lakenheath after developing a serious fuel leak. Adverse weather prevented the aircraft from landing at Lakenheath and the pilot attempted to land at Honington where the aircraft crashed on approach.

The aircraft was carrying two U.S. nuclear weapons, one of which was simulated to have been disrupted and involved in the subsequent fuel fire causing a simulated release of radioactive contamination. The second weapon remained intact and inside the airframe.

Participation

The exercise tested the Command and Control activities of the RAF Station NEO Team (SNT) Immediate Response Force (IRF) and integration with the responding Civilian Emergency Services (CES) and other agencies including the U.S. IRF from RAF Lakenheath.

The GOLD (Strategic) command structure was set up at Suffolk Police Headquarters, Martlesham, and SILVER (Tactical) at Landmark House, Ipswich. The MOD, as Lead Government Department (LGD) for a Defence nuclear emergency, activated the Headquarters Defence Nuclear Emergency Organisation (HQ DNEO) in the Defence Crisis Management Centre (DCMC), MOD Main Building, London. Other UK government departments, agencies and a U.S. Embassy Liaison Officer participated in the central government response in the DCMC.

Participating agencies included:

- UK Ministry of Defence (MOD)
- Defence Science & Technology Laboratory (DSTL)
- Atomic Weapons Establishment (AWE)

¹ Level 3 Exercise – Key elements of the MOD HQ and cross government arrangements for responding to an emergency involving Defence nuclear assets, as well as the on-site and off-site response arrangements (i.e. Level 1 and 2 exercise), will be tested during a Level 3 exercise.

- U.S. Department of Defense, U.S. Air Forces in Europe (USAFE)
- U.S. Department of Energy, Accident Response Group (ARG)
- U.S. Defence Threat Reduction Agency (DTRA)
- U.S. European Command (US-EUCOM)
- U.S. Embassy, London
- Suffolk County Council
- West Suffolk (Forest Heath & St Edmundsbury) councils
- Suffolk Constabulary
- Suffolk Fire and Rescue Services
- East of England Ambulance Service
- Department of Communities and Local Government (DCLG) Resilience and Emergencies Division (RED)
- Radiation Information Monitoring Network (RIMNET)
- National Health Service (NHS) England
- Government Office for Science (GO Science)
- Meteorological Office (Met Office)
- Public Health England (PHE)
- Department for Environment, Food and Rural Affairs (Defra)
- Food Standards Agency (FSA)
- Environment Agency (EA)

Lessons Identified

This report captures national level Lessons Identified from Exercise DIAMOND DRAGON, as provided by participating agencies. These will be taken forward by the relevant agencies through their own procedures. MOD will review progress on their implementation through its Lead Government Department arrangements.

Local, more operationally focused, issues that can be addressed by individual agencies local Emergency Planning Consultative Committees (EPCCs), Local Resilience Forums or equivalent have been omitted, except where they give rise to larger issues which may require wider consultation to address.

Additionally, it should be noted that the exercise highlighted many positive aspects of a coordinated and effective response in the very unlikely event of an emergency involving a U.S. Air Force aircraft transiting over the UK. This included the effective integration of U.S, UK MOD, CES and other agencies. The commitment, enthusiasm and professionalism of all those involved helped contribute to a very successful exercise overall.

Acknowledgement

The significant contribution of all the agencies involved in planning for and participating in the exercise is gratefully acknowledged.

Exercise DIAMOND DRAGON 2015 – Lessons Identified

Serial	Lesson Identified
1.	The need to discuss and agree upon the level of classified information between the U.S. Accident Response Group (ARG) and the UK AWE Technical Team.
2.	The AWE Mobile Accommodation Units (MAUs) were positioned close to the Joint Military Command Post MAUs, which achieved favourable feedback on ease of communication between the two areas.
3.	Resilience Direct proved to be a valuable tool for Nuclear Emergency Organisation (NEO) responders particularly at GOLD and the AWE Situations Coordination Centre (SCC). The ability to download the Strategic Coordinating Group (SCG) meeting minutes and other information was of great advantage to the teams.
4.	The exercise planning process made up of 4 large meetings: Scoping; Initial Planning; Mid planning; and Final Planning were supplemented with a number of Small Group Planning Meetings (SGPM). These smaller meetings identified detailed issues at UK and U.S. organisational levels, allowing organisations to understand the resources that they needed to commit to the exercise and were very well received.
5.	There was an abnormally high number of observers present (over 100). A delay to the responding teams entering the hot areas meant that the observers were not able to see any visible action taking place for some time. This type of exercise often has delays before emergency activities take place due to the fact that there is no Immediate Response Force (IRF) element present until the Station NEO Team (SNT) arrive.
6.	There was a reluctance of the Civil Emergency Services to enter the cordon. There were several reasons for this, one being the MOD-delivered hazard briefing. It needs to be improved through better training of the Station NEO Team Incident Commander, improved briefing material or better information in writing.
7.	The Combined Fire Control had difficulties in understanding the initial information passed to them by the Joint Operations Centre (JOC). The civil nuclear emergency response area has a well-tested procedure that could be adopted by the military to ensure relevant information needed by the emergency services is provided in a standard, easily understood format.
8.	The National Situation Report (SitRep) template was used in Suffolk for the first time and was considered to be an improvement on previous reporting formats. It was however unclear to agencies as to what level of information was required in the SitRep. As the document is intended to give a consolidated picture of the situation to COBR and other central government departments, as well as to local responding agencies, more detailed national guidance is required on the

	completion of the form to ensure all Local Resilience Forums are reporting similar core information at the same level of detail.
9.	Exercise DIAMOND DRAGON involved a wide range of agencies, including U.S. personnel, all bringing with them their own terminology and acronyms. To ensure a clear understanding by all participating agencies the use of plain English, or as a minimum, the terms listed in the Civil Contingencies Lexicon should be used.
10.	Information given during the exercise by FSA/Defra on the consumption of locally sourced food and drinking water was standard advice that did not take into account available technical information relating to the actual hazard from the incident.
11.	The lack of easily accessible information on the hazards presented by the various types of military aircraft hampered the initial responders on the scene from making an informed risk assessment, resulting in a delay to the response. This information is available and can be shared before any emergency with the emergency services.
12.	The use of Resilience Direct, including the mapping function, on the day allowed National and local Command and Control facilities to share information and have improved situational awareness during the exercise. This was the first time that we had exercised using Resilience Direct and the experience was positive, we need to learn from the experience and to refine and improve the protocols and procedures.
13.	With the introduction of the Joint Emergency Services Interoperability Programme (JESIP), a documented process for decision making has been standardised for the Emergency Services, each Emergency Service should expand the training requirement to include rank and file staff likely to be the first responders on the scene. Training on the Joint Decision Model should also be offered to the supporting agencies and members of the Scientific and Technical Advice Cell (STAC) who are likely to be present at one of the multi-agency coordination levels, this will help to emphasise the need for time-critical advice from all levels during an incident to ensure a timely response.
14.	A number of variant IT systems, including Resilience Direct and the MOD Nuclear Emergency Response Information Management System (NERIMS), were used as part of the response. This resulted in poor information flow between agencies. There is a need to review the use of IT systems to ensure their effective use and integration in support of the multi-agency response.
15.	Due to various meetings it was sometimes difficult for GOLD and HQ DNEO media cells to communicate.
16.	NERIMS sub-areas were not used correctly meaning that information was not entered in the appropriate fields. Some speculations were made that this may be down to training.
17.	The pace of the exercise limited the play for HQ DNEO and what could realistically be asked from COBR/SAGE.

18.	A Weapon Recovery Director would have contributed greatly in the planning process. The U.S. Federal Team Leader (FTL) spent most of his time briefing or coordinating with the Bronze commander, leaving very little time for him to work with his planning team and define priorities. In this scenario the WRD would have easily served as the FTL's deputy and directed the planning team in execution of the priorities of the Bronze Commander. This would have allowed the FTL to concentrate more on the political issues at the command level.
19.	Controllers: During the initial phases of response there were not enough DOE controllers to cover all of the locations at the accident site and provide injects as required. A critical lesson learned was not having a controller at the Forward Command Post with the Immediate Response Force (IRF) on scene Commander and Bronze Commander interacting with the emergency response elements.
20.	Communication: Two objectives of Exercise DIAMOND DRAGON were to pass secure data from the IRF to the Sandia National Laboratories (SNL) Accident Response Group (ARG) Home Team and to pass data from the Atomic Weapons Establishment (AWE) to Department of Energy (DOE) Headquarters via ECN. Both of these objectives were met.
21.	Training: There was no training conducted prior to Exercise DIAMOND DRAGON between AWE and ARG. This resulted in a very steep learning curve during the initial phase of the Command Post Exercise (CPX) portion of the exercise. The ARG personnel did receive a Procedures Authorisation Group (PAG) briefing during in processing and this was invaluable in understanding the process. At the start of day two all elements went from the Bronze Commander briefing immediately into writing recovery plans. Transmissibility was also a topic of concern during the exercise for both Department of Defence (DOD) elements and Department of Energy (DoE) personnel.
22.	Plume Modelling: Planning for the exercise in the H&S arena was very well coordinated between DOD and AWE personnel. Plume models and plots matched across multiple systems with exacting results regardless of who were given the readings or what dose conversions had to be done.
23.	Security Clearances: The goal of the U.S. side was to keep the exercise at an unclassified level. This is almost impossible to do in this scenario and may have led to some mistrust. Security approvals for Visits of Americans (VISAMs) were passed for all personnel yet access to the classified processing area with AWE was unavailable.
24.	Documentation: Recovery Task Plans are similar to the ARG Weapon Recovery plans but are not on the Weapon Recovery Data Storage System (WRDSS) computers. Likewise the UK does not have our templates for weapon recovery planning. When one of the UK field deployable computer systems failed temporarily due to extremely hot weather there was only one laptop available to write plans on and it did not have the needed templates.
25.	DOE Controller Locations – DOE controllers replicating the Home Team provided inputs to the responders at the incident

	site. Having DOE controllers located at the Forward Control Point and Strategic would ensure that technical advice reached all the appropriate audiences.
26.	Weapon Recovery Information Exchange – Prior to the exercise, an Information Exchange focussed on the weapon recovery staffing process would provide a foundation of the process prior to the event and would maximize the opportunity to work through the bilateral coordination.
27.	Weapon Trainer – To add realism use weapon trainer and components where practical.
28.	Synthetic Media – The simulated media and web site added realism and fidelity to the event.
29.	Response Task Force Participation – Though USAFE provided functional experts to help observe and control the exercise, no Response Task Force members participated. Consequently the event did not include a turnover between the Initial Response Force Commander and the Response Task Force Commander or interaction between the commander and the MOD's lead on Day 1. Further on Day 2 some of the bilateral groups had limited tasks or insufficient pressure applied that would have better replicated a realistic operating environment.