Sellafield Security and Safety Change Programme

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Sellafield Site
Sellafield Today

• The world’s most complex and compact nuclear facility
  – In excess of 2600 buildings and 290 active facilities dating from 1940s to present day
  – 1 million m$^3$ concrete above ground, 1 million m$^3$ concrete below ground
  – 37km road, 15km railway, 120km sewers and 65km water pipes
• Owned by Nuclear Decommissioning Authority, Managed and Operated as a subsidiary by Sellafield Ltd
• Employs 11,500 people inclusive of engineering and functional support at its Warrington office
• Further 3,000 employed through the supply chain
• Costs £2bn per year to operate, maintain and decommission
• > £50bn lifetime operating costs
• Is in the process of moving from an Operations mission to Decommissioning mission as dominant activity
Sellafield in a Security and Safety Perspective

Site comprises:
- 7 Cat I facilities
- 4 Cat II facilities
- 47 Cat III facilities
- 36 Cat IV facilities

In comparison a single Nuclear Power Reactor is the equivalent of 1 Cat III facility
Sellafield Today – A Changing Landscape

- Sellafield is the UK Government site of choice to consolidate UK nuclear sensitive materials.
- 9/11, Fukushima and the decision to consolidate sensitive nuclear materials to Sellafield Site has brought about a significant change in security and safety posture to the site with the following programmes established.
  - The Sellafield Security Enhancement Programme (SSEP) was Est in 2011 – response to 9/11
  - Sellafield Resilience Programme was Est in 2012 – response to Fukushima
  - The Sellafield Cyber Programme was Est in 2014 – response to emerging cyber threat
- The total value of all programmes is in excess of £1bn
- Programme Strategic Objectives are reducing overall site risk through:
  - Reducing the likelihood of theft of Nuclear Material
  - Reducing the likelihood of an event that could lead to an Unacceptable Radiological Consequence
  - Increasing Response Capability to a Building Emergency, Site Incident and Sellafield Emergency
  - Increasing stakeholder confidence in Sellafield Site Security, Safety and Emergency Management arrangements
- Whilst these physical aspects make up the bulk of the programme there are a number of crucial ‘softer’ activities which compliment and frame the programme
  - ‘Defence in Depth’ and a ‘Graded Approach’ to safety and security i.e. applying ALARP principles to security

*Deter and Delay Detect and Assess Respond and Recover*
Sellafield Security Enhancement Programme

• The Sellafield Security Enhancement Programme

  **Deter and Delay**
  • Highly visible armed police in side and outside of Sellafield.
  • Personal and vehicle search through independent guard force.
  • Hostile Vehicle Mitigation Measures established.
  • Principles of safe by distance established with multiple barriers.
    – Outer Perimeter Sterile Zone
    – High Security Area
    – High Consequence Vital Areas
  • Enhanced fence design and topping.
Deter and Delay

Security Enhancements Programme Overview

HIGH SECURITY AREA 1

HIGH SECURITY AREA 2

RIVER CALDER

HIGH SECURITY AREA 3

OUTER PERIMETER STERILE ZONE
Detect and Assess

• The Sellafield Security Enhancement Programme.
  – Detect and Assess
    • Perimeter detections systems
    • Perimeter detection systems linked with communications system
    • High definition cameras providing full colour HD - CCTV capability
    • New Security management System and Emergency Management System
Sellafield Security Enhancement Programme

- The Sellafield Security Enhancement Programme.
  - **Respond and Recover**
    - New Main Site Command facility under construction for delivery July 2019.
    - New Civil Nuclear Constabulary (CNC) Training facility provided.
    - New CNC accommodation and armoury planned.
Main Site Command Facility (MSCF)

- Dimensions 60m – 35m
- Two floors.
- 72 hour resilient facility
- Digitised hub for the recovery from all security, emergency and safety related events
- Resilient communication systems
- Resilient Camera to Console
- Resilient data centre
**Main Site Command Facility**

- Command centre for Civil Nuclear Constabulary and Emergency Command Centre – dimensions 25m x 33m
- Linked by a ‘bridge’ for tripartite ‘Blue Light’ discussions and emergency response with clear and common situational awareness.
Main Site Command Facility

- Installed Building Mgt System, Security Mgt System and Emergency Mgt System
- Video wall and recording equipment built in with capability to project all images.
- Shared situational awareness for all organisations.
Realising the Benefits of the Programme

• The new facilities represent a significant change from our existing operating arrangements to a fully digitised hub

• Full realisation of the programme capability will not be achieved without significant up skilling of staff and teams.

• To ensure this is delivered the programme release its benefits on a staged basis:
  – July 2019 – Initial Operating Capability (IoC) realised
  – July 2020 – Full Operating Capability (FoC) realised

• IoC will realise the basic requirements which will allow transition to the new MSCF.

• Between IoC and FoC further capabilities will be released and teams upskilled in the delivery of the new arrangements.
  – Single Call handling
  – Data logging
  – Presentation of data etc.
Unified Command and Control

- Sensors
- Communications Network
- Power Network
- Data Centre
- High Security Area 1
- High Security Area 2
- High Security Area 3
- MSCF
- Outer Perimeter
- River Calder
- Security / Emergency Management Systems (SMS / EMS)
- Command and Control suite
Defense in Depth and Graded Approach

- The prior slides recognise the physical aspects of the programme however the wider programme seeks to realise full capability release and is framed by the following:
  - Security vulnerability assessments and malicious actions assessment are the basis of decision making.
    - Safety case methodology is used throughout.
    - Utilising ALARP in these assessments through the implementation of UK Security Assessment Principles (UKSYApps)
    - Severe accident Management Systems consider not only plant failures but the impact of malicious actions.
  - Senior Leaders in the SL organisation now have full accountability for security of their own plant areas this is a transition from central delivery to central support and advice.
  - The organisations of Security & Resilience and Environment Health, Safety and Quality have merged to leverage the benefits of a mature EHS&Q organisation
Thank You

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