Sellafield Safety Performance Report 2012

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Summary and Recommendation:

Sellafield Ltd has recently published a safety performance report for 2012 covering all aspects of the business from nuclear, environment, industrial and radiological safety.

Recommendation:
That the contents of this report are noted.

1. Report overview

The report published by Sellafield Ltd is a summary of the efforts made into improving safety onsite. It covers all aspects from employee safety to nuclear materials to hazard reduction. The report divides the different safety concerns into 5 main categories and highlights the safety achievements and outstanding issues in each section. A few of the main points from each section are:

1. Risk and Hazard Reduction
    - Sellafield acknowledge that "there have been some disappointments and we need to improve our performance in both risk and hazard reduction and in the delivery of projects that are needed to support the clean-up of Legacy Ponds and Silos and Highly Active Liquor (HAL) reduction in 2013."
    - The report also highlights the progress they have made with the legacy ponds, legacy silos and HAL reduction.

2. Nuclear Safety
    - Sellafield state that "Two of the key ways that we can improve nuclear safety at Sellafield is through the acceleration of risk and hazard reduction – cleaning up the older nuclear buildings on the site – and safeguarding nuclear materials.
    - Teams safely removed the first oxide fuel from the Pile Fuel Storage Pond and transferred to the Active Handling Facility, a year ahead of schedule

3. Environmental Safety
    - Delivered the beach monitoring programme to schedule and also ran a very successful sub-sea particle monitoring campaign in difficult working conditions with no accidents.
    - Overall discharges from Sellafield have reduced by a factor of approximately 1,000 since their peak in the 1970s.
    - Sellafield are committed to minimising the environmental impact of their operations and responding to the concerns of the local communities. In particular working to minimise the impact of noise from steam releases and plant reconfigurations at the Combined Heat and Power Plant.
4. Industrial Safety
    - A Lost Time Accident (LTA) is a work related accident resulting in an individual being unable to attend work for one day or more. 2012 is the best safety performance year since records began with a LTA of 21 days
5. Radiological Safety

    Effective dose is the measurement of how much energy is absorbed in matter or in people. The unit used to express total harm to the whole body from exposure to ionising radiation is Sievert (Sv). The International Commission on Radiological Protection (ICRP) set the rate of acceptable exposure to members of the public to be 1mSv and to workers to be 20mSv per year over 5 years[1]. The Sellafield safety report states that:
    - "The annual radiological dose that people are allowed to receive is 20mSv – the average Sellafield worker receives less than 1mSv per year."
    - "The footprint within Thorp and Flask Maintenance now accessible with reduced Personal Protective Equipment is 930,000m3." This means that a large area is now accessible without risk to radiation, therefore no need for the special equipment.

For a full review of all safety achievements, improvements and outstanding issues please see the full report attached or you can access it electronically at: http://www.sellafieldsites.com/press/sellafield-ltd-safety-performance-report-2012/

[1] www.oecd-nea.org/rp/reports/.../nea6920-**ICRP**-recommendations.pdf

Appendix one: Sellafield Safety Report.

Sellafield Ltd

A Nuclear Management Partners company operated under contract to the NDA

In the spotlight…

Safe, Secure, Reliable, Predictable Operations
Safety Performance Report 2012

All of our employees and contractors have a role to play in keeping themselves and our plants and facilities safe. This report demonstrates their commitment to continually improving our safety performance.

2012

best ever lost time accident rate

Contents

Case Studies: meet the people who are keeping Sellafield safe

Future Plans: see what we are going to do in 2013

These icons can be found throughout the report

Executive Summary

Safety is at the heart of all that we do.

Welcome to the first Sellafield Ltd Safety Performance Report. Covering the 2012 calendar year, this report includes an overview of our performance across nuclear, environmental, industrial and radiological safety.

As the organisation responsible for the safe operation of the Sellafield nuclear site under contract to the Nuclear Decommissioning Authority and the ownership of Nuclear Management Partners, our highest priority is placed on the safety of our employees and the safe management of nuclear materials.

This enduring commitment, talked about daily, always comes first. It remains as much a part of our culture as our dedication to making Sellafield the site and workforce of choice for potential new missions.

We measure our safety performance against industry best practice at a national and international level through our membership of the World Association of Nuclear Operators and Institute of Nuclear Power Operations.

Through this continuous programme of benchmarking and assessment we know what excellence in our safety performance looks like, and we are driving to achieve it. We are doing this by increasing the number of areas where we are drilling down to understand the detail of our safety performance so that we can identify gaps in current performance and put in place actions to address any shortfall. We are setting safety goals for ourselves which are deliberately designed to challenge the organisation and our performance.

The Sellafield site is one of the most complex nuclear sites in the world. In a relatively small footprint we have employees working in production, waste management and support plants alongside colleagues who are decommissioning and demolishing buildings.

The number of new buildings under construction on the site is also going up.

It is these new buildings which will receive, treat and store the waste we retrieve from some of our oldest buildings – our Legacy Ponds and Silos. Emptying these buildings is one of the key ways in which we can improve the overall safety of the site, by reducing risk. It is an essential part of our nuclear and environmental safety programme.

While we have made some progress in the clean-up of these older buildings, more detail of which is provided later in this report, we have not met all of the demanding risk and hazard reduction challenges that we set ourselves in 2012.

There is no blueprint for the clean-up work that we are doing. The challenges within Legacy Ponds and Silos are unique and disparate. It is therefore essential that the principles of safety continue to drive our decision making and actions.

Improving safety at Sellafield Ltd covers everything from keeping our employees safe to looking after nuclear materials and cleaning up older buildings. We are making progress in these areas, but we still have much to do.

Kliss McNeel EHS&Q Director

The safety of our employees and the safe management of nuclear materials is our single most important responsibility as a nuclear site licence company.

One of the teams across Sellafield Ltd who achieved safety milestones this year.

Nuclear safety is our overriding priority and we also strive to improve our performance in environmental, industrial and radiological safety.

While we did have some notable safety achievements in 2012, we also had some disappointments particularly with performance in the Legacy Ponds and Silos programme.

We have a programme which is there to enable performance improvement and we are investigating further opportunities to accelerate work in this important area.

Each of our employees must know the role they have to play in the safe operation of our site and they are our extended safety team. Most of this report is dedicated to the describing their tireless, concerted efforts to keep our sites and each other safe.

We are delighted that 2012 saw them achieve the lowest Lost Time Accident rate since records began. More details of this success can be found in the industrial safety section of this report.

In environmental safety the site continues to operate well within the discharge limits set by our regulators. It is our goal to continually improve our environmental performance.

We have seen an overall reduction in our radiological safety metrics in 2012 compared to previous years. These metrics include the number of reportable contamination events and the radiological dose received by our employees every year.

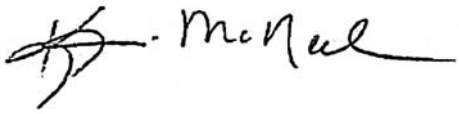
Our focus areas for improvement in each of these safety areas are covered in this report.

In addition to these goals we will drive improvement in our safety performance by continuing to invest in our asset care and maintenance programmes and improving the site's infrastructure.

We are committed to continually improving our safety performance

I want to thank you for taking the time to read this report and your interest in our safety performance. There are a number of ways that you can stay up to date throughout the year:

- Site Incident Reports are published in our Sellafield Ltd newsletter. To subscribe to the newsletter please visit www.sellafieldsites.com
- We give regular updates on our safety performance to the West Cumbria Sites Stakeholder Group, an independent scrutiny body. The Group's meetings are open to the public and reports are published on their website www.wcssg.com
- We publish an annual groundwater report and an annual environmental discharge report. Both of these can be found on www.sellafieldsites.com



Kliss McNeel EHS&Q Director

Sellafield Ltd Overview

Our team is responsible for safe performance across all of our operations.

Under the ownership of Nuclear Management Partners, Sellafield Ltd is the site licence company responsible for the safe delivery of work at the Sellafield site, Risley site and our satellite offices.

Our approach of putting safety first has always been at the heart of our activities and decision making.

Our focus on safety is shared by our customer and site owner, the Nuclear Decommissioning Authority, which continues to allocate the majority of its available funding to the clean-up of the Sellafield site.

We, in turn, dedicate the majority of our annual £1.6bn budget towards risk and hazard reduction programmes associated with the buildings and facilities which span the history of the UK's civil and military nuclear history.

By focusing our efforts on cleaning up the legacy buildings we are making the Sellafield site safer every day.

These clean-up operations, along with our spent fuel management and nuclear waste management programmes, are underpinned by rigorous safety processes and procedures. We closely monitor our performance against these measures as do our independent regulators, the Office for Nuclear Regulation and the Environment Agency.

All of our operations at Sellafield are subject to stringent rules and regulations.

Everyone who works for or on behalf of Sellafield Ltd has a personal responsibility for safety. While our continued safe operation is a key part of everyone's job, we also have a dedicated full-time team of safety experts.

This team draws together expertise in all facets of safety including radiological safety, nuclear safety, industrial safety, human performance, safety case development, risk assessment, and environmental protection.

As a team we are enhancing safety in all of our nuclear and non-nuclear operations by:

- Seeking out and implementing best practice
- Monitoring compliance with regulations and international standards
- Never being satisfied with our safety performance and driving for continual improvement

Our safety efforts are enhanced through our involvement with expert organisations including the World Association of Nuclear Operators and the Institute of Nuclear Power Operations.

This report covers our performance across all areas of safety and our plans to improve in line with these international benchmarks.

1.6bn

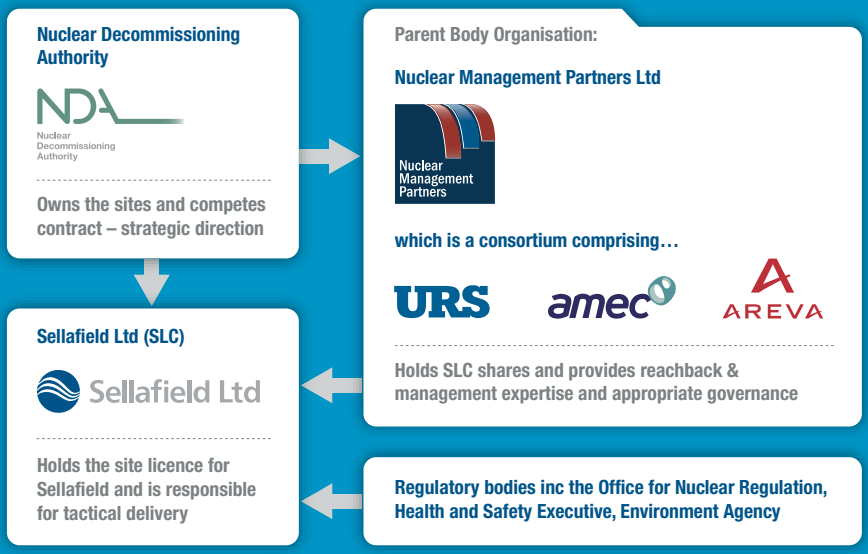
More than 50% of the Nuclear Decommissioning Authority's annual budget is spent at Sellafield.

Our workstreams

- **Risk & Hazard Reduction**
- **Decommissioning**
- **Waste Management**
- **Spent Fuel Management**
- **Nuclear Materials**

For more information on our activities and future plans please visit the Sellafield website at www.sellafieldsites.com

Relationship diagram



NDA
Nuclear Decommissioning Authority

The early pioneering work on nuclear technology for both defence and electricity generation has left a significant legacy at Sellafield which needs to be safely managed, safely operated and safely decommissioned.

Our Regulators

Health and Safety Executive

HSE is the national independent watchdog for work-related health, safety and illness. It is an independent regulator and acts in the public interest to reduce work-related death and serious injury across Great Britain's workplaces.

Office for Nuclear Regulation

Office for Nuclear Regulation is responsible for all civil nuclear sector regulation across the UK. ONR was formed on 1 April 2011 as an agency of the Health and Safety Executive (HSE). It is now working towards becoming an independent statutory corporation. ONR is responsible for regulating the safety and security at 40 various nuclear licensed sites in the UK, including Sellafield.

Environment Agency

The Environment Agency oversees how we dispose of our radioactive waste by granting site permits. These permits set out limits and conditions on the amount and way we dispose of waste and cover all radioactive waste disposals including discharges to air and water, and transfers of wastes for incineration or disposal to land.

Sellafield Site Overview

Risk and hazard reduction is our core mission

Sellafield in West Cumbria is home to some of the most iconic landmarks and facilities within the UK's nuclear industry.

Covering two square miles, the site is home to four groups of facilities. The first is a group of buildings dating back to the beginning of the UK's nuclear programme and are known as Legacy Ponds and Silos. The safe and accelerated clean-up of these buildings is our primary mission on behalf of the Nuclear Decommissioning Authority.

The second group makes up the remainder of our decommissioning programme and includes the world's first commercial scale nuclear power station – Calder Hall. The site is also home to the Windscale Advanced Gas-cooled Reactor which is the first nuclear reactor to be fully decommissioned.

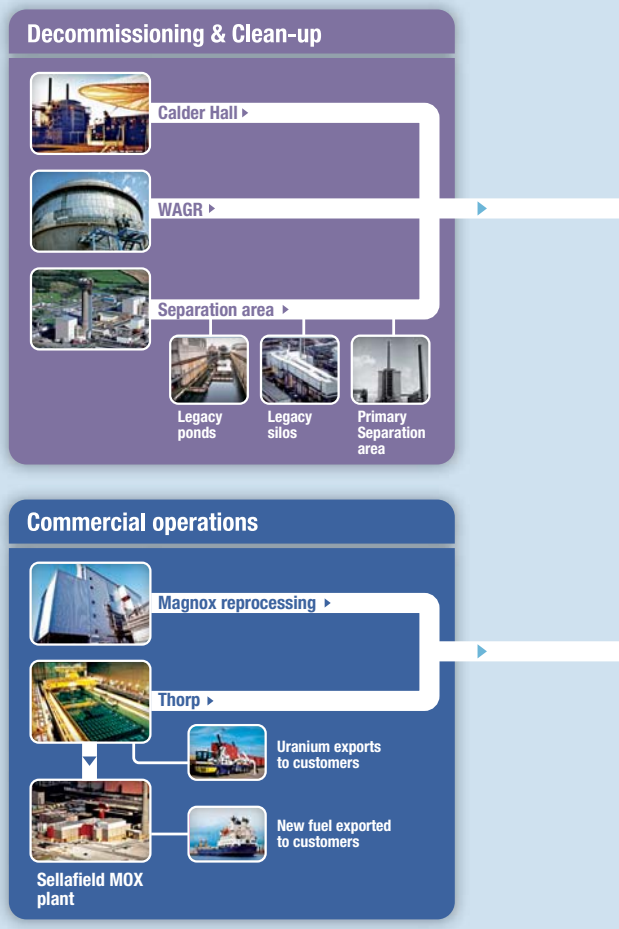
Over one hundred operational buildings designed to reprocess spent nuclear fuel and safely manage all levels of nuclear materials make up the third group of facilities. The last group is comprised of the entire infrastructure needed to operate the site, including office accommodation, change rooms and stores. We also operate and maintain the utilities required on any working site, including a Combined Heat and Power Plant which provides steam to the site, electricity substations and water provision.

Every project and building at Sellafield poses its own unique set of safety challenges. Meeting these challenges is what drives us.

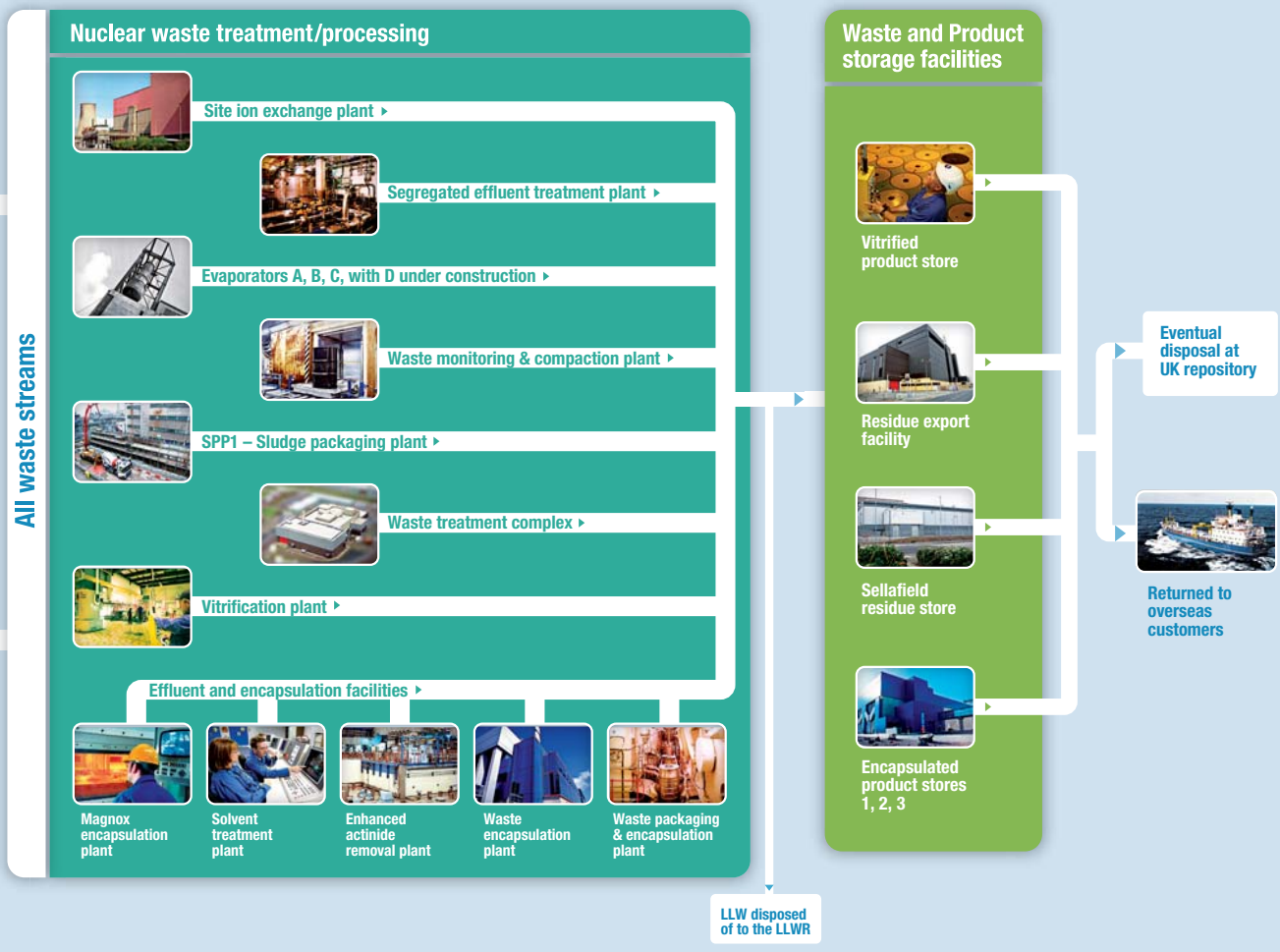
In the past twelve months alone we have delivered a number of large scale projects with no significant nuclear or conventional safety events. These include:

- The installation of pipework to physically connect a sixty-year-old legacy pond to a new sludge storage building
- The construction of a new retrievals building alongside a sixty-year-old legacy silo within a heavily congested area
- The refurbishment and return to service of a skip-handler which stands above a legacy pond
- The isolation and repair of a section of one of the legacy ponds
- The safe management of all levels of nuclear waste.

Sellafield site activities



The safety of our employees, supply chain and visitors on the Sellafield site is paramount. Access to the Sellafield site is subject to stringent arrangements including a sound understanding of our safety and security standards and expectations. Once on site, additional safety instructions are provided through briefings, signage and building procedures.



Sellafield is home to more than two hundred nuclear facilities and more than one thousand buildings. Our primary mission is the safe acceleration of risk and hazard reduction

Risk and Hazard Reduction in 2012

£67.5bn

Our decommissioning portfolio is one of the largest and most diverse in the world today, with a total lifetime cost of £67.5bn

2,200

Our decommissioning programme includes 170 major nuclear facilities and 2,200 other buildings dating from the 1940s

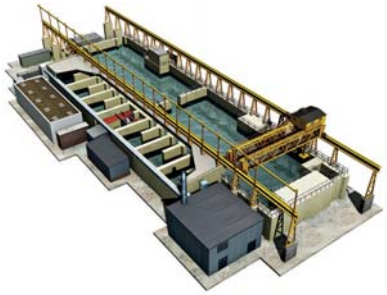
Our priority is the safe delivery of the Nuclear Decommissioning Authority's mission of accelerating risk and hazard reduction and to deliver this clean-up mission cost-effectively.

This is particularly relevant at the Sellafield site where our Legacy Ponds and Silos pose the most significant challenges, and where it is essential that tangible demonstrable progress is made.

We have delivered some key milestones in 2012, which are covered here. However, there have been some disappointments and we need to improve our performance in both risk and hazard reduction and in the delivery of projects that are needed to support the clean-up of Legacy Ponds and Silos and Highly Active Liquor (HAL) reduction in 2013. We are also focused on delivering our asset care and maintenance programme. Delivery in these areas are key elements to continuously improve our safety performance.

Legacy Ponds

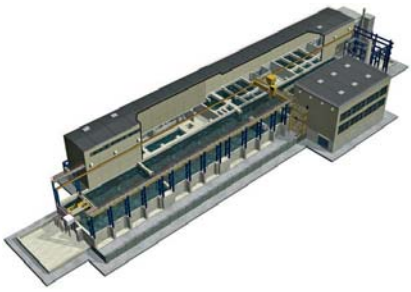
Pile Fuel Storage Pond



The first retrieval of oxide fuel was safely completed in 2012. This fuel was transferred to the Active Handling Facility on site, a year ahead of schedule.

Radioactive sludge retrieval is ongoing from the 12 bays into the in-pond corral. In preparation for the retrieval of sludge from the pond we have also completed the construction of a Local Sludge Treatment Plant. The Local Effluent Treatment Plant reduces discharges by almost 100 per cent.

First Generation Magnox Storage Pond



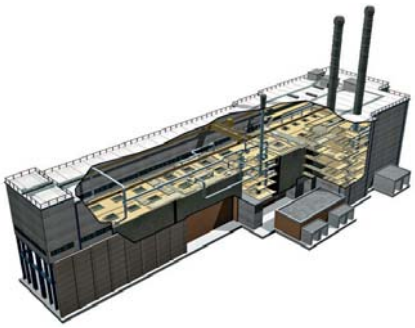
We installed a pipebridge that connects the First Generation Magnox Storage Pond to the Sludge Packaging Plant 1, currently under construction, to provide a route for sludge export. Bespoke robotic technology was developed and used to remove a risk associated with the structure of the facility and we completed a survey of the pond using a remotely operated vehicle. We have also refurbished the skip handler so that it is once again able to move under its own power.

Oxide fuel which had been stored in the pond for over 40 years was successfully retrieved.

The safe delivery of risk and hazard reduction is our core mission at Sellafield. We will continue to focus on improvements in project management and accelerating clean-up.

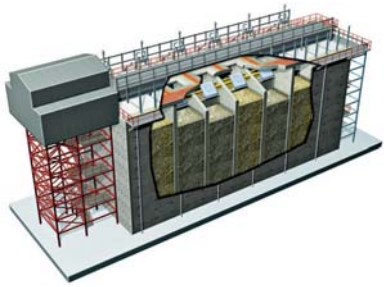
Legacy Silos

Magnox Swarf Storage Silos



Foundations for a seismic strengthening tower have been poured. The construction of a Silo Emptying Machine has been completed and we have disposed of historic legacy waste associated with the original Silo Retrieval Facility. Not withstanding these specific achievements, our overall performance against the Magnox Swarf Storage Silos clean-up programme is a key improvement area for us in 2013.

Pile Fuel Cladding Silo



The final concrete pour for the Waste Retrieval Facility superstructure has been safely completed. A detailed design of the six silo containment doors has also been completed. The team has delivered both of these projects while achieving one year without a lost time accident.

An enormous 15-hour concrete pour was completed for the Waste Retrieval Facility control room foundations.

We have to build new facilities to support the clean-up of older buildings like these silos

HAL reduction

HAL workstream

Highly Active Liquor (HAL) arises as a result of reprocessing irradiated nuclear fuel. We turn this waste into a solid stable form through a process called vitrification. In 2012 we continued to reduce our HAL stocks at Sellafield through vitrification and made progress on the return to service of one our highly active evaporators. Key to the long term success of our HAL reduction programme is the availability of a new evaporator – Evaporator D, which will not be completed in line with our original schedule. Reducing the delay in the completion of Evaporator D is one of the priorities for our project management directorate.

Our teams safely manage high level waste as well as intermediate and low level waste.

Nuclear Safety

Sludge retrieval receives a lift.

Part of our mission to reduce risk and hazard.

Overview

Many of our buildings at Sellafield process and manage nuclear materials. Our programme of nuclear safety protects our employees, the public and the environment from undue radiological hazard by ensuring correct operating conditions, prevention of accidents and the mitigation of accident consequence.

We will continue to improve our nuclear safety performance by always proactively looking across our activities to find areas for improvement. Increasing the number of areas where we do deep inspection will, as a consequence, increase the number of metrics where our performance is lower than we would like. This constant search for areas where we can do more is essential in order to continue to drive down the severity and frequency of nuclear safety events.

Two of the key ways that we can improve nuclear safety at Sellafield is through the acceleration of risk and hazard reduction – cleaning up the older nuclear buildings on the site – and safeguarding nuclear materials.

Nuclear safety is our overriding priority and it is of paramount importance to us, our customer and our regulators.

Our progress this year includes taking an important step towards retrieving waste from the First Generation Magnox Storage Pond (FGMSP), now we have a skip handler machine fully operational for the first time since the 1990s.

The installation of FGMSP pipebridge linking the Sludge Packaging Plant 1, currently under construction, will provide a route for sludge export from the facility. Teams safely removed the first oxide fuel from the Pile Fuel Storage Pond and transferred to the Active Handling Facility, a year ahead of schedule. Also, the construction of a Waste Retrieval Facility and control room to remove legacy waste from the sixty-year-old Pile Fuel Cladding Silo is progressing well.

We have established clear goals and expectations in nuclear safety and in the risk and hazard reduction programmes within Legacy Ponds and Silos. We have also implemented actions to meet these goals but the timescales for realising tangible benefits and improvements are not meeting our expectations. We will drive to meet our goals in 2013. We continue to implement industry standard measures through our Integrated Change Programme to strengthen the performance of our business.

CASE STUDY:

Visual management

Plant Operational Control Centres provide a clear line of sight across the organisation.

Implemented through our Integrated Change Programme, the use of nuclear safety dashboards and the Plant Operations Control Centres (POCC) provide a more rigorous approach to briefing and reporting and give everyone immediate and consistent clarity about the status of any given plant.

Briefings are much more visual, consistent and frequent.

The new POCC provides a visual and consistent view of operations: safety information on the nuclear safety dashboard, operational experience information from previous shifts, and plant-specific information such as which alarms are up and which rooms are reset. Because the information in every POCC will use the same format and structure, everyone will know what to expect and where to find it.

Plants will have a mid-shift briefing also – again, using ACEMAN to properly examine barriers and progress, risks and opportunities – to ensure safety and performance are reviewed and supported and aligned to the integrated work planning process.

ACEMAN

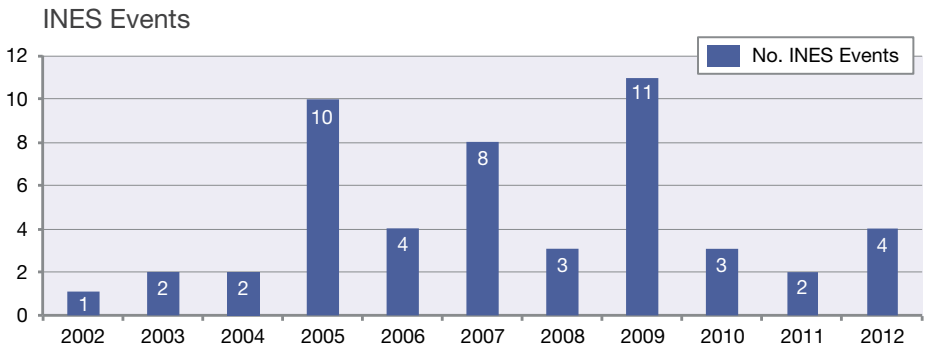
Accident free
Control dose
Event free
Meet commitments
Attend and use training
Nil rework

Our employees use ACEMAN discussions to identify and overcome barriers to delivery.

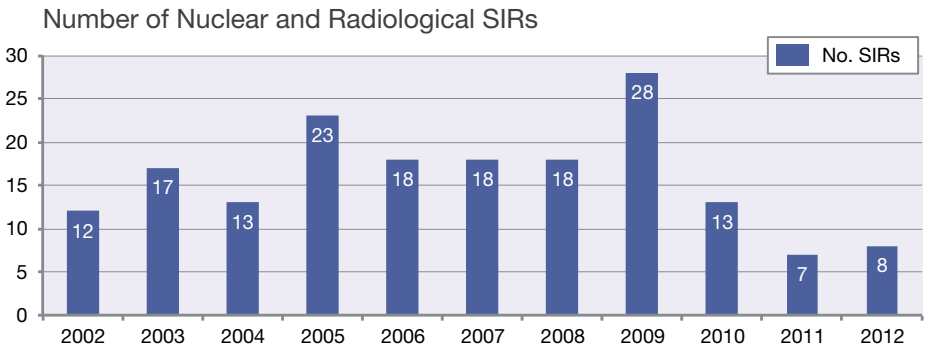
Nuclear Safety

The International Nuclear Event Scale (INES) is a rapid alert system used for consistent communication of events across the nuclear industry. These are categorised between Level 1, which is an anomaly with no impact on the safety of the general public or workforce, and Level 7 which represents a major accident.

In 2012 at Sellafield Ltd no nuclear events were rated higher than INES Level 1; we had a total of 4 INES Level 1 events.



Nuclear and radiological site incident reports are included together. There has been an overall reduction in significant radiological events including doses greater than 10 per cent of a dose limit or unauthorised contamination events. Performance has been achieved through dedicated clean-up, maintenance and asset care improvements and improved risk application to control doses. This indicates that the impact of events is decreasing however focus is required on the effectiveness of all barriers.



We use these metrics and others to scrutinise our performance, identify areas for improvement and put plans in pace to close gaps in performance.

Key elements of Sellafield Ltd Nuclear Safety

Corporate Reviews
- Provide independent effectiveness review, including nuclear safety

Nuclear Management Partners Board
- Provides support, reachback, management expertise
- Mobilises corporate resources, including nuclear safety experts, review teams

External Nuclear Oversight
- External organisations help ensure nuclear safety effectiveness and compiance

Sellafield Ltd Board
- Provides strategic direction for nuclear safety
- Makes nuclear safety decisions at the strategic level
- Legally accountable for all Sellafield Ltd activities

Sellafield Ltd Executive (Team/Committee)
- Responsible for execution of Sellafield Plan in compliance with nuclear safety policy and principles
- Makes nuclear safety decisions at the operational level

Managing Director, Sellafield Ltd
- Leads nuclear safety across Sellafield Ltd
- Approves the Nuclear Safety Policy and Manual

Deputy Managing Director –Operations, Sellafield Ltd
- Serves as Chief Nuclear Officer

EHS&Q Executive Director, Sellafield Ltd
- Manages nuclear and environmental safety assurance at Sellafield
- Maintains Nuclear Safety Policy and Manual

Nuclear Safety Committee
- Safety committee based at Sellafield
- Ensure nuclear safety is given highest priority

Assurance Programme
- Provides leadership with evaluation of organisational effectiveness, including nuclear safety

Sellafield Ltd Management System (SLMS)
- Help ensure that goals, objectives and compliance are met, including nuclear safety

Sellafield Ltd Workforce
- Ensures nuclear safety is the principal priority in the execution of all work across Sellafield Ltd

Nuclear Safety Policy
- Establishes nuclear safety as principle priority
- Defines nuclear safety and nuclear safety culture
- Lists commitments: leadership, behaviours, processes

Nuclear Safety Manual
- Describes nuclear safety at Sellafield in detail
- establishes the nuclear safety principles
- A user's/guidance/ reference manual

How we implement nuclear safety

We apply the same defence in depth approach to our nuclear safety governance arrangements as we do to all projects and activities across the business.

Nuclear Safety
Continuous Improvement

W A N O

We benchmark our performance against the World Association of Nuclear Operators and the International Nuclear Plant Operators.

We hold ourselves up against the best and are members of World Association of Nuclear Operators (WANO) and Institute of Nuclear Power Operations (INPO) to identify where we can get better.

As part of our nuclear safety improvements within the Integrated Change Programme we have a nuclear safety policy, training and manual aligned to international standards. We have enhanced nuclear safety awareness through a nuclear safety culture training course and the establishment of standard nuclear safety dashboards across the site.

We have a comprehensive assurance programme of internal regulation, in addition to the external regulation activities, inspections, audits and reviews that are part of our daily routine. Nuclear is different, nuclear technology is different and scrutiny is especially important in our industry. Our annual review of safety performance is part of our overall assurance programme to review how we are doing, the areas we have identified that need attention and our priority areas of focus for the year ahead.

We focus on quality in everything we do in order to achieve business excellence, continuous improvement, excellence in safety and security performance and customer and stakeholder satisfaction.

Focus going forward

- **Acceleration of risk and hazard reduction**
- **Continued implementation of the Integrated Change Programme and its transition to sustaining excellence**
- **Continue to expand and develop the assurance framework**
- **Continued improvement in governance**

We remain committed to the Integrated Change Programme and our Journey to Excellence.

At Sellafield nuclear safety is our principle priority as it poses the most significant potential risk. By coupling this focus with our commitment to industrial, radiological and environmental safety we are creating a strong nuclear safety culture.

Assurance arrangements at Sellafield Ltd

Assurance activities help keep our site safe

We carry out a wide range of assurance activities for the monitoring, assessment, review, benchmarking and improvement of processes internal to Sellafield Ltd. The arrangements are designed to provide oversight to confirm that risks associated with nuclear, radiological and conventional safety, the environment, quality and business reputation are being managed and that the business complies with legislation and standards.

We increased our inspection team in size and strength this year and it is now embedded within each operating unit. We also have a three tier assurance framework (line, function and independent). A Performance Evaluation Board to conduct WANO style reviews on plants has been established.

The operations room provides a line of sight between daily performance and the expectations of our stakeholders.

Environmental Safety

We delivered our beach monitoring programme to schedule and also ran a very successful sub-sea particle monitoring campaign in difficult working conditions with no accidents.

We work hard to minimise the environmental impact of our operations across all areas of on-site activity. We engage with our stakeholders on how we manage our environmental responsibilities by recognising and addressing the concerns that people have.

We also work closely with our regulators and in 2012 we worked with Environment Agency to produce a less complicated, risk based Radioactive Substances discharge permit.

Our environmental safety performance is discussed regularly with stakeholders and regulators and is reported through the West Cumbria Sites Stakeholder Group and via the Sellafield Ltd website. We also publish an annual discharge and environmental report and particles in the environment reports, which are also available from our website.

It is our goal to continually improve our environmental performance by:

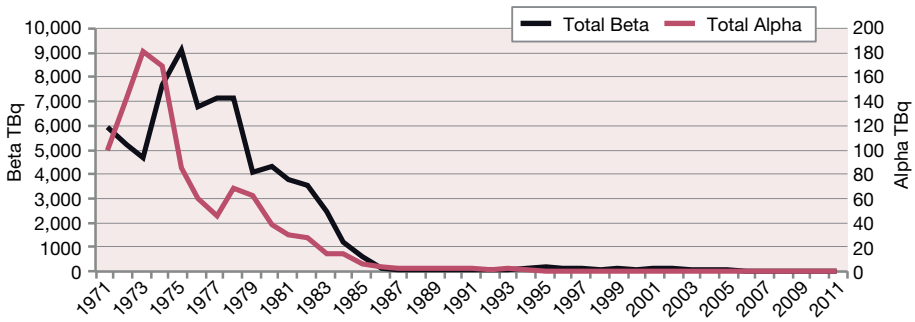
- eliminating accidents and incidents
- minimising waste and the use of natural resources
- ensuring that all wastes are managed safely and with care for the environment
- understanding, controlling, managing and remediating the legacy of contaminated land and groundwater at Sellafield
- sharing and using best practice
- meeting or exceeding current standards of environment, health and safety performance.

In 2012 environmental discharges remain at a low percentage of permit levels.

The reduction in discharges to the marine environment from Sellafield over the last 35 years is due to major investment in abatement plant. We remain committed to minimising our environmental discharges.

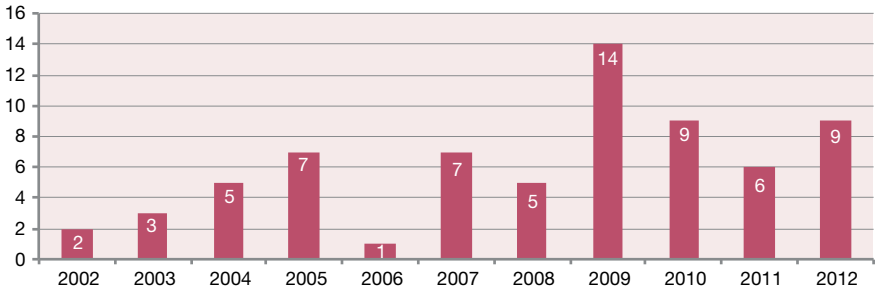
Overall discharges from Sellafield have reduced by a factor of approximately 1,000 since their peak in the 1970s.

Environmental Discharge



Last year we monitored 150 hectares of beach using the best technology available. We constantly review our monitoring programmes

Environmental events



Environmental events are when we fail to comply with a specific requirement of our permits (from Environment Agency). In nearly all cases we have identified the failure ourselves and declared it to the Environment Agency. Our goal is to have no events.

Continuous Improvement

It is important that we maintain skilled resource in environmental programme. We support all our environmental staff in becoming members of the Institute of Environmental Management and Assessment or an equivalent. We are currently recruiting to provide additional environmental support to the hazard reduction projects.

In 2012 we had an environmental event free run of 100 days; we are working towards a longer run in 2013. We aim to remain at the forefront of development of risk based environmental regulation.

We are committed to minimising the environmental impact of our operations and responding to the concerns of our local communities. In particular we will be working to minimise the impact of noise from steam releases and plant reconfigurations at our Combined Heat and Power Plant.

In 2013 we will build on our success in obtaining Monitoring Certification Scheme (MCERTs) certificates for the majority of our effluent systems.

Sellafield Ltd has an independently accredited certificate to the International Environmental Management Standard ISO: 14001 through our environmental management system (EMS).

As part of our environmental monitoring programme, 4,000 environmental samples are analysed every year.

Environmental protection is a key part of our safety programme

Industrial Safety

Overview

We want to make sure that our employees stay safe. To help achieve this we have a number of programmes under way under an umbrella of 'industrial safety'.

Industrial safety covers a range of safety hazards that individuals may come in contact with in an industrial workplace.

It includes occupational hygiene, chemical safety and conventional safety which covers the protection of the workforce, prevention of injuries, safe management of chemicals, safe use of machinery and plants and compliance with health and safety regulations.

Safety is, and always will be, our number one priority at Sellafield Ltd.

In 2012 we achieved a run of 5.7 million man hours, nearly three months, without a lost time accident resulting in a day or more absence from work. This is an astonishing achievement and we are now focused on beating this record and achieving our overall aim of 10 million man hours without a Lost Time Accident. Individual directorates and teams within the business achieved their own notable successes including the team at Calder Hall which became the first UK winners of the URS Safe Project of the Year.

Industrial Safety Facts:

2012

Best ever lost time accident rate performance since records began

5.7m

We worked for more than five and a half million man hours without a lost time accident in 2012

1m

All delivery directorates exceeded one million man hours without any lost time accidents

4m

Contractor safety performance reached a ten-year high with no lost time accident for more than four million hours

CASE STUDY:

Safety Representative
Helen Edwards

Helen Edwards is the lead safety representative within Sellafield Ltd's Infrastructure directorate. She is also the health and safety representative for Prospect Union's Sellafield Ltd branch.

Responsibilities

Within the Infrastructure directorate I coordinate the safety representatives from all three unions and ensure that they are given the opportunity to perform their functions under the Health and Safety at Work Act (1974) and Safety Representative and Safety Committees Regulations (1977).

Union appointed safety representatives are highly trained and have support and backing from the unions. It has been proved in many case studies that by working with the employer, safety representatives make a difference in achieving good standards in health, safety and welfare in the workplace.

Challenges

The role of safety representative is an additional responsibility. The representatives also have a day-job to do. A key part of my role is to highlight the key role that safety reps play and the need for them to be released from their other day-to-day activities so that they can continue to improve health and safety in the workplace.

Highlights

- **Our Safety Representative Charter has been reinvigorated this year, 10 years on from its original issue. The charter is significant as it represents the commitment of support from the Sellafield Ltd executive to work together with the three unions to provide a safe working environment.**

- **I have monitored the involvement of Infrastructure safety representatives with regards to attendance at safety committees, involvement in investigations and management of change. There has been a definite improvement in 2012.**

Helen is an active member of our safety governance meetings

In 2013 I will be focusing on the effectiveness of the safety consultative framework and continuous improvement of union appointed safety representatives involvement across Sellafield Ltd.

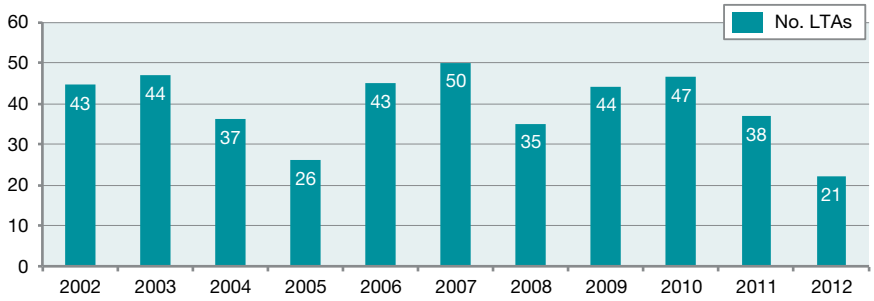
Industrial Safety

2012 was our best safety performance since records began

Number of Lost Time Accidents (including Major Injuries with Lost Time)

A Lost Time Accident (LTA) is a work related accident resulting in an individual being unable to attend work for one day or more.

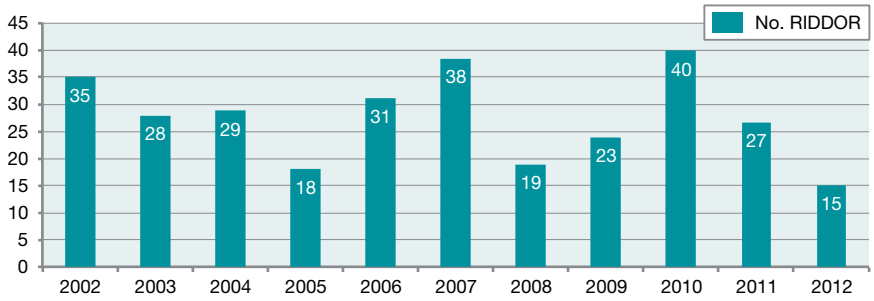
Performance in 2012 has significantly improved with a rate of accidents per 200,000 hours worked being 0.17. Our goal is to have no lost time accidents.



Number of RIDDOR Injuries

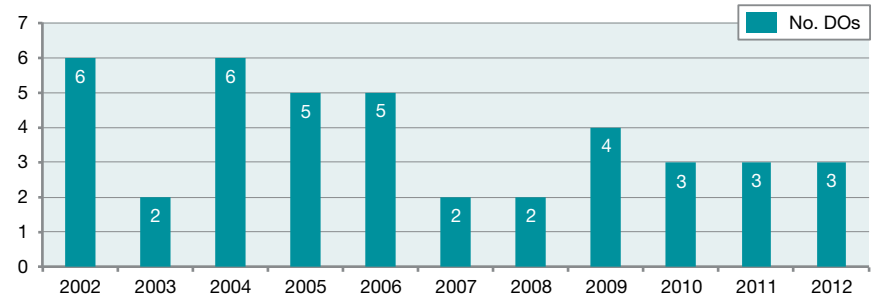
A RIDDOR injury is an injury arising out of or in connection with work resulting in an individual being unable to attend work for more than 7 days (records show for greater than 3 days).

Performance has improved significantly with 2012 performance being our best ever. Our goal, as with all accidents, is to strive to achieve zero.



Number of Dangerous Occurrences

A dangerous occurrence is defined in RIDDOR and includes such events as failure of lifting equipment, malfunction of breathing apparatus, failure of radiography equipment



Our determination to keep our employees safe is reinforced daily. Starting all of our meetings and discussions with a Safety Share gives us the opportunity to discuss relevant safety topics and keep each other safe.

Focus going forward

We are proud of our industrial safety achievements in 2012. Some of our individual teams have reached millions of man hours without a Lost Time Accident. We are collectively striving to be in the top quartile of performance for the World Association of Nuclear Operators (WANO) for Lost Time Accidents in every 200,000 hours worked.

As a result of improving our performance in the Control of Major Accidents and Hazards (COMAH) and Dangerous Substances and Explosive Substances Atmosphere Regulations (DSEAR) compliance and standards, our regulator has more confidence in our performance in this area.

There is still more that we can do. For example, we are looking at how we can reduce the number of minor injuries that occur and to make our occupational hygiene performance best in class. Involvement of our workforce and safety reps in identifying and eliminating accidents will continue in 2013 and beyond. Improving our asset care will help us to prevent industrial safety events.

In summary, our primary focus areas in 2013 within industrial safety are:

- **Full implementation of all industrial standards to achieve best in class performance across all of Sellafield Ltd**
- **Continued engagement and cooperation with our workforce to identify and remove industrial safety risks**
- **Continued strong engagement with safety representatives to affect cultural safety improvements in the workplace**
- **Comparison with best practice and application of the site wide performance improvement programme in industrial safety**

The team at Calder Hall was awarded the URS Safe Project of the Year award in 2012 in recognition of their continuous safe performance, including more than seven years without a Lost Time Accident.

We implemented a new injury prevention training programme in 2012 and more then 2,000 employees have successfully completed it.

We are never satisfied. There is always more that we want to do to improve safety.

Industrial Safety
Continuous Improvement

ACEMAN features within regular Plant Operation Control Centre discussions which are designed to identify barriers, increase productivity and provide clear line of sight across the organisation

Proactively improving safety

Our industrial safety performance in 2012 was strong, with areas of real improvement. This was achieved through hard work and effort by the whole of the workforce.

In addition to our regular schedule of safety inspections and internal regulation and assurance, we have developed a number of safety programmes which are helping us to improve our safety performance.

ACEMAN

Accident free, **C**ontrol dose, **E**vent free, **M**eet commitments, **A**ttend and use training, **N**il rework

ACEMAN is a human performance tool that we use to help teams identify and recognise the barriers that they face daily when completing their work. Teams discuss these issues and identify solutions where possible or escalate up through the management structure.

An organisation as large and complex as ours needs to maintain a line of sight from the bottom of the organisation to the top and across all of our activities. ACEMAN is one of the visual management tools that we use to help us do this. Regular ACEMAN discussions also contribute to a positive safety culture.

Injury Prevention

We use the MoveSMART® occupational injury prevention programme which raises safety awareness and aims to ease strain and stresses on the body to help prevent injuries, particularly soft tissue injuries.

More than 2,000 of our employees have completed the training programme which will be developed in 2013 to include a module on preventing slips, trips and falls.

We encourage our employees to take an active role in safety. They are our eyes and ears across the Company; flagging up issues and sharing best practice.

Peer to Peer Observations

Our Peer to Peer Observation programme is about our employees looking out for each other. Having a conversation with a colleague to reinforce safe behaviours or prevent a potential unsafe or injurious act.

Observations allow us to share learning and best practice as well as analysing data to target improvement actions.

Since its launch in 2009, more than 87,000 observations have been carried out by our employees. More than 23,000 observations have been completed so far this financial year alone.

Charities also benefit from the programme as, for each observation made and recorded, money is donated to worthwhile causes. So far more than £25,000 has been donated and further donations will be made at the end of the current financial year.

Feedback from our customer

"I would like to congratulate you on this level of performance, which is a significant raising of standards relative to previous years, and reflects the effort that you, your team, and the Sellafield Ltd workforce in general have put in.

These statistics do not happen by themselves and in this case I know this run is the result of activities carried out under your safety improvement programme, greater management attention to safety information, improving safety inspections, management observations, peer to peer observations, engagement with the supply chain, accident case management and the introduction of the MoveSMART® training.

I know that you will now redouble your efforts to repeat and then beat these figures on the way to meeting your own declared aim of a world-class figure of 10 million man hours."

Mark Steele
Head of Programme, Sellafield
Nuclear Decommissioning Authority

Local good causes continue to benefit from our safety observations.

87,000

Since its launch in 2009, more than 87,000 observations have been carried out by our employees

23,000

More than 23,000 observations have been completed so far in the 2012/13 financial year alone.

We want our teams to do even more observations in 2013

Radiological Safety

Overview

Our radiological safety programme is focused on safeguarding our employees, contractors and the general public against any potential hazards of ionising radiation as a result of our operations.

We maintain personnel and environmental radiation doses below regulatory limits and as low as reasonably achievable.

The annual radiological dose that people are allowed to receive is 20mSv – the average Sellafield worker receives less than 1mSv per year.

In 2012 we have seen a reduction in the number and significance of personal contamination events. There has also been a reduction in the number of radiological contaminated areas, minimising risks to employees and reducing the volume of future contaminated waste. The number of significant radiological events resulting in unauthorised release of contamination or unauthorised dose has also reduced.

Radiological Safety Facts:

1mSv

The average Sellafield worker receives only 5% of the radiological dose allowed in the UK

3

We safely manage all three levels of nuclear waste; low level, intermediate level and high level

The footprint within Thorp and Flask Maintenance now accessible with reduced Personal Protective Equipment is **930,000m^3**

20

We have had 20 fewer Sellafield Incident Reports than the peak in 2009

CASE STUDY:

Employees like Jackie provide radiological safety advice and monitoring

Health Physics Monitor
Jackie McCarron

Jackie McCarron is a health physics monitor and team leader support.

Responsibilities

I am part of a team providing a day-to-day radiological monitoring service carrying out defined routine survey schedules to monitor plant conditions and report results. This work helps maintain safety on plant and it is part of our compliance with Sellafield Ltd policy, statutory and site licence requirements.

I also offer advice to operations and maintenance staff on how to minimise their radiological exposure when carrying out operations.

Challenges

We have seen an increase in trainee numbers within the team as colleagues move to development roles elsewhere on site. Through the commitment of our day and shift teams we have delivered work schedules and been able to complete the training and development of these trainees enabling the moves to new roles to take place. The training and development of the trainees will be an area of continued focus.

Opportunities

Team members are encouraged to take an active part in ACEMAN, the human performance tool we use to help identify and recognise potential barriers faced when completing work.

We take the time to share knowledge and discuss daily issues and try to resolve these as a team to identify any areas for improvements. We discuss solutions and implement improvements through familiarisation documents.

The benefit from ACEMAN discussions and the implementation of Integrated Work Management will help with planning and managing resource more efficiently.

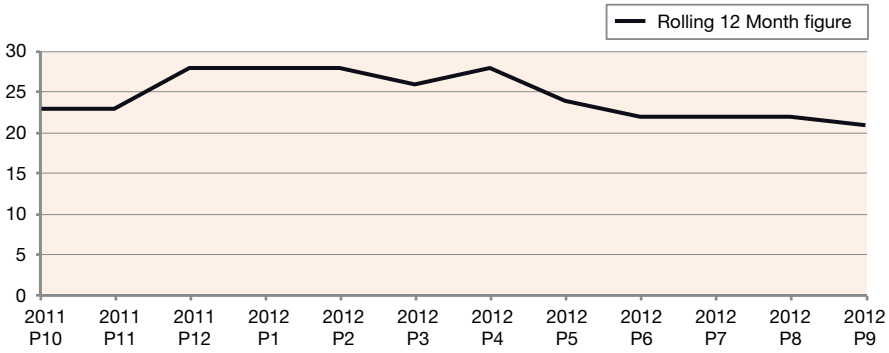
In 2013 I am looking to complete the required authorised persons process, the team leader assessment course and continue to assist with the training and development of our trainees.

Radiological Safety

Reportable Contamination Events

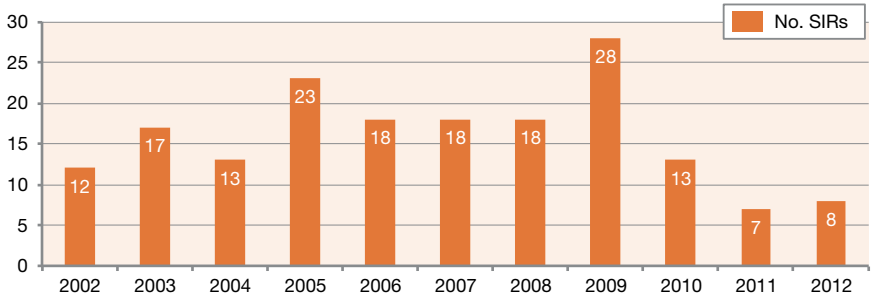
There has been an overall reduction in events with the rolling 12-month figure at the end of 2012. Although this performance has improved, we still have more to do to prevent every contamination event.

Performance improved but still more to do



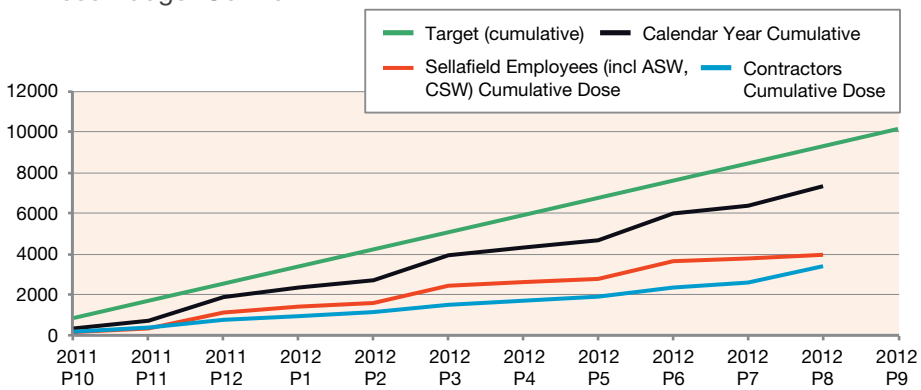
Number of Nuclear and Radiological SIRs

Nuclear and radiological site incident reports are included together. There has been an overall reduction in significant radiological events including doses greater than 10 per cent of a dose limit or unauthorised contamination events. Performance has been achieved through dedicated clean-up, maintenance and asset care improvements and improved risk application to control doses. This indicates that the impact of events is decreasing however focus is required on the effectiveness of all barriers.



Dose Budget Control

Average doses for the Sellafield Ltd and contractor workforce have remained consistent at less than 1mSv/annum compared with an annual dose limit of 20mSv/annum. The highest individual doses have not exceeded 10mSv/annum.



Our focus on radiological safety is relentless; we use a range of behaviours, tools and processes that help us all work together to protect our people, our community and the environment.

Summary

Our improved performance has been achieved through dedicated clean-up, maintenance and asset care improvements and improved risk application to control doses.

We foster a culture of continuous improvement. We are working to improve our recruitment and capability of radiological health physics monitors to meet demands from site and improve the availability of radiological qualified persons to oversee the maintenance of radiation protection instruments.

In summary, our primary focus areas in 2013 within radiological safety are:

- **We will continue the reduction of contaminated areas through decontamination.**
- **We will continue our focus in the reduction of low level personal contamination events through education and coaching of individuals and improving plant radiological conditions.**
- **We will pursue the recruitment of professionals into the radiological protection teams.**

Monitoring is part of our radiological protection arrangements.

Radiological protection involves defence-in-depth.

We aim to strengthen our radiological teams in 2013

Radiological Safety
Continuous Improvement

A changeroom in Thorp before, top, and after rollback.

Rollback improves contamination control and gives easier access to work

Proactively improving safety

We proactively seek out ways in which we can continue to keep personnel and environmental radiation doses below our regulatory limits and as low as reasonable practicable.

One of our key programmes under way in this area is radiological rollback.

Radiological rollback

Radiological rollback is a programme to reduce the radiological footprint of facilities by downgrading their radiological status through decontamination.

This work has a huge number of benefits including improved contamination control and minimised contaminated areas, improving safety and easing access to work areas, reduction in radiological events as well as reduced survey requirements, reduction in active waste and reduced demand on personal protective equipment.

In 2012 radiological rollback took place in Thorp and Flask Maintenance covering an area of 930,000m^3 – that is roughly the same size as 200 football pitches.

Radiological Safety – Continual Improvement

We have completed the successful replacement of the whole body and extremity dose meters at Sellafield with an improved dose meter with greater efficiency and capability to measure and record radiation dose.

We will continue our efforts to improve our recruitment of radiological health physics monitors to meet demands from site and improve the availability of radiological qualified persons to oversee the maintenance of radiation protection instruments.

Continuous improvement is essential and we will continue the reduction of contaminated areas through decontamination. We will continue our focus in the reduction in low level personal contamination events through education and coaching of individuals and improving plant radiological conditions and pursue increased recruitment of professionals into the radiological protection teams.

New extremity dosemeter

Following on from the implementation of the whole body dosemeter across Sellafield Ltd, a new extremity dosemeter has also been successfully introduced across the business in 2012.

New extremity dosemeter has been introduced across the business.

Alternative versions of extremity dosemeters were tested and trialled on the Sellafield site. The one selected as the most effective and suitable for Sellafield Ltd is an Extremity TLD (Thermo Luminescent Dosemeter) which is an element mounted in a plastic ring.

The dosemeter is designed to measure doses from X-ray, beta and gamma radiations to the hand and is already widely used in the UK by organisations including the Health Protection Agency. The ring is provided to users in a single, adjustable and more robust format on a monthly basis.

The processing of the dosemeters is more efficient; when dosemeters are returned for processing, the sensitive elements are removed and placed in special carriage cards which are then fed into an automated TLD reader.

New Powered Suit (NUPOSUIT)

Feeback from employees who have trialled the suit has been positive

Sellafield Ltd has been working with a suit manufacturer to develop this ventilated suit which is inflated by means of a powered air-fed respirator (PAPR). The combination of suit with internal respirator providing additional protection during undressing.

Trials are ongoing on site to introduce it as an alternative in certain situations to either: PVC/suit with respirator where the ventilation can offer improved comfort to the wearer; air-fed suits where contamination levels may just exceed the current levels for PVC suit use or where poor access or a lack of convenient air supply, make the task more difficult to carry out.

We are looking at more opportunities to use the suit where we can build up operator confidence and assess performance. Feedback from tasks where it has been used has been positive from both wearers and those organising the tasks.

Its most recent use was for an in-cave basket recovery task in an area with no convenient air supply. The task was carried out successfully and feedback from operators was good particularly as a more comfortable alternative to PVC suits.

In the longer term, with increased experience on its performance, the Nuposuit should be suitable for use in higher levels of contamination, subject to local risk assessment.

Summary

2013

In 2013 we will focus on realising the benefits of the Integrated Change Programme.

Completing key constructions to cost, time and quality depends on robust project management.

In producing this report we have set out an overview of our performance in the key areas of nuclear, environmental, industrial and radiological safety. Nuclear safety remains our overriding priority.

We have had notable successes and some disappointments. Our teams continue to demonstrate a positive industrial safety culture and a commitment to keeping themselves and each other safe.

We are also aware of where we need to apply renewed focus in 2013. This report covers the focus for improvement in each of the safety areas, which can be summarised under the following key themes:

- Delivering sustained acceleration of risk and hazard reduction
- Improving leadership and training
- Improving the close out of corrective actions

Progress is already under way. All of our improvement programmes across the business, including safety, are captured as part of our Integrated Change Programme.

The Integrated Change Programme is built around seven focus areas which clearly underpin the improvements we need to make within safety:

Organisation and Leadership

The organisation and leadership workstream is about providing clarity of vision; leadership excellence through coaching and developing competencies; and effective processes to support leadership.

Clarity of vision gives our teams a line of sight to connect the work they do every day with achieving our overall objectives and future vision. ACEMAN is key to this, as are the Plant Operations Control Centres, which provides the links up and down the organisation, and are geared up to respond to the barriers identified in operational ACEMAN conversations.

Nuclear Safety and Operations

This workstream is fundamental and is all about operating our plants in a professional, consistent and safe way, while ensuring we perform with nuclear safety as an overriding priority, and to a high level of discipline.

Specifically we are revitalising nuclear safety through dashboard and key performance measures, meeting and improving on the standards set out in our disciplined operations manual, getting the right resource in place and improving the implementation of safety cases.

Integrated Work Management

This workstream embeds standards, consistency and efficiency into every piece of work – whether the work is outage, production, maintenance or modification, it will go through the same work management process.

Sustaining and improving our safety performance across all areas is crucial to the overall success of Sellafield Ltd and to achieving our mission.

Key to this focus area is out T-8 planning process, a structured approach to work planning that work is loaded up, spares in place, people scheduled and instructions in place – ready for the start of a piece of work.

Project Execution and Improvement

We recognise the need to deliver projects faster and more cost-effectively so that new facilities are available as needed to clean up the legacy buildings on site.

Specific workstreams include a gated process for projects, the development and implementation of improved project execution practices, and the sanction and validation of projects.

One of the key benefits of this focus area includes increased predictability of projects' outcomes, by improving functional specifications and drawing on international best practice to validate projects at key points.

Training

A fundamental aspect of our ability to complete our mission safely is having the right people, with the skills and knowledge they need to do their jobs confidently, safely and effectively.

One of the workstreams included in this focus area is about improving knowledge and skill through technical training – developing the programmes and materials needed to meet international training standards. We are going right back to basics by breaking down the components of a job, analysing the training need and providing the materials needed to raise standards.

Commercial

Making sure that the necessary spares, materials, equipment, consumables, and services are available at the right time, in the right quantity, to the right quality standard and at the right price is the priority of this focus area.

Supporting this are a number of workstreams to deliver effective procurement as well as the resultant arrangements, improve performance and value for money in relation to supply chain spend, and embed the make/buy processes throughout the business.

Engineering

The Engineering focus area is designed to improve disciplined conduct of engineering operations, plant availability and throughput, nuclear safety and regulatory compliance by systematically reviewing the way we operate and maintain our plant and equipment.

In 2013 we will continue our drive to not only fully implement the Integrated Change Programme but to realise the benefits. Through benefit realisation we will continue to improve our performance across all facets of safety at Sellafield.

Improving training brings benefits for everyone.

7

Delivering the seven focus areas within the Integrated Change Programme will improve our safety performance.

Making sure we have the right people, with the right skills, at the right time, in the right place.

Sellafield Ltd

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