



Airline suit worker removing redundant equipment from the former MTR Reprocessing Plant

## **Dounreay Site Restoration Limited (DSRL)**

**FY 2011/12 Q2 Report  
Dounreay Stakeholder Group  
Site Restoration Sub-Group  
October 2011**

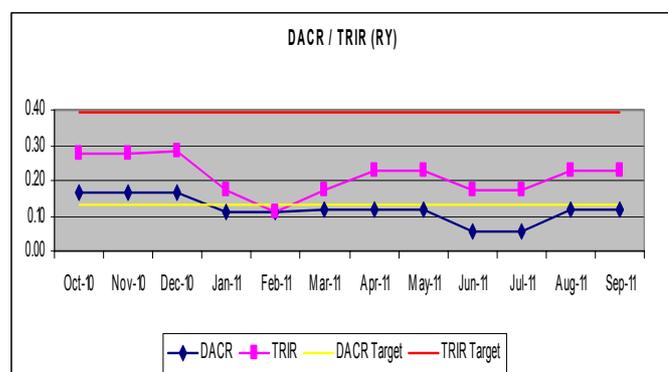
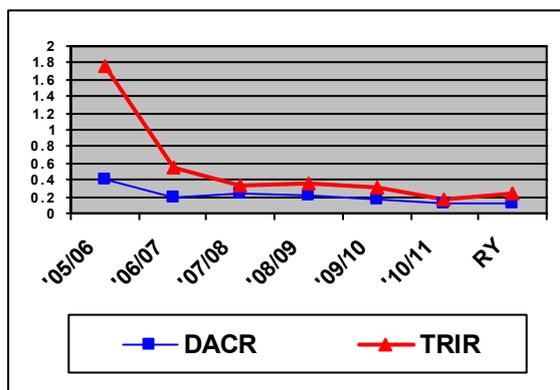
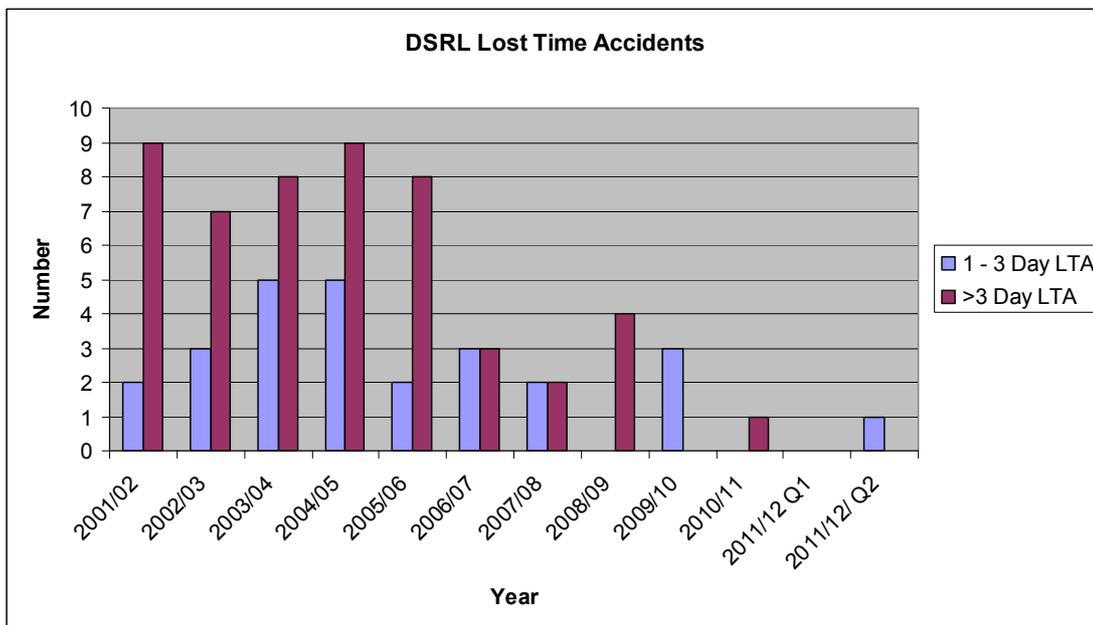
# 1. Safety Performance

## Safety Performance/Issues

### Health Safety Security and Environment –

There have been no RIDDOR reportable incidents during this quarter. A fire fighter was injured when pulling on the straps to tighten up his leggings. The top part of the quick release buckle came away from the bottom part and struck him in the eye. Fortunately there is no permanent damage to the eye, however as he received hospital treatment and was off work for three days it is classified as an OSHA Days Away Case injury.

The Total Recordable Injury Rate (TRIR) for the rolling year has increases from 0.17 to 0.23 (within the NDAs 'green' range) and the Days Away Case Rate (DACR) increased from 0.06 (an all-time low) to 0.12. It has been 476 days (4.54 million man hours) since the last lost time accident greater than 3 days (up to 30 September 2011), which surpasses the previous record of 469 days. This has since been extended to over 500 days which is an excellent performance by all staff and contractors personnel at Dounreay at a time when a high volume of construction-type work is being done. Graphs showing the reduction in the injury and accident rates over the past 5 years are shown below:

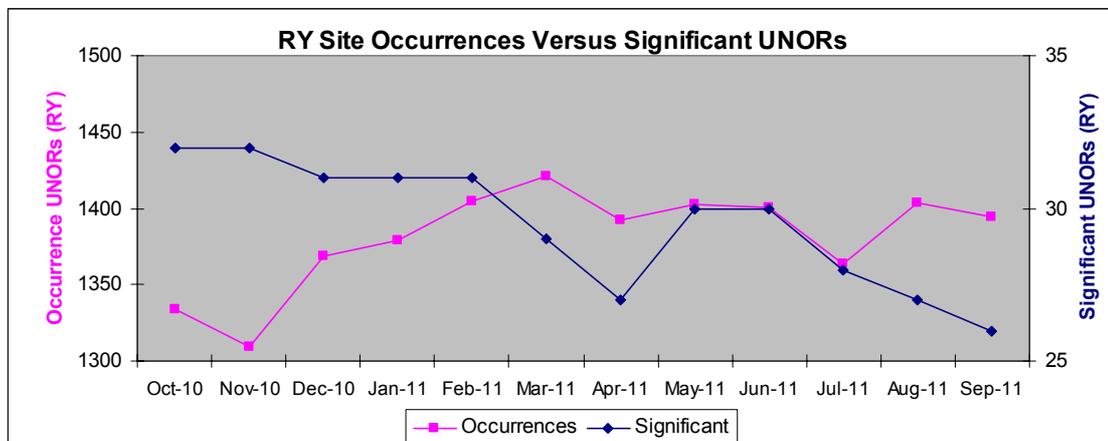


Mike Weightman, HSE Director of Nuclear Directorate and Chief Inspector and David Senior, Deputy Chief Inspector attended a DSRL Board Meeting and visited both DFR and DECC (new Emergency Control Centre) during the quarter. Their feedback was positive.

DSRL met with ONR to provide an update on the eight recommendations from the ONR interim report on the Japanese earthquake & tsunami response that apply to Dounreay and on our response to the European Regulators Group (ENSREG) Stress Tests. There has been good dialogue with ONR and sharing with other site operators to ensure a proportionate, but consistent response is given by 31 October 2011. The work to respond is on programme.

Health and Safety Week took place comprising a safety and security stand down and a road show. The stand down had a presentation reflecting on the good performance to date, a message to guard against complacency, and followed by safety or security walkrounds across the whole site. The associated road show featured working at height, lifting and isolation practices.

During recent months, and reinforced by the stand down, the number of significant UNORs for the 12 month running year has notable decreased. This is attributed to an improvement in the reporting culture which allows deficiencies to be resolved without incurring, or potential incurring significant loss.



Note: RY refers to Rolling Year

Following confirmation of British Safety Council of 5-star award for both Health and Safety, and Environmental Management audits we have made application for the BSC Sword of Honour and Globe of Honour (the result was announced in October and the Site was successful in receiving the sword).

DSRL monitors a large number of safety metrics to identify any emerging trends and one is currently in the enhanced attention zone:

- A backlog of low level waste drums awaiting compaction has accumulated as a result of the failure of the supercompactor at the Waste Receipt, Assay, Characterisation and Supercompaction Plant (WRACS), see waste management section.

### Security Issues

There have been no security issues since the previous meeting. Discussions have continued with officials from the Department of Energy and Climate Change and Office Nuclear Regulation (ONR) Civil Nuclear Security (CNS) over recent months on changes that are required to the site's physical security requirements in the light of changes in security regulations and the government requirements. The programme of work to enhance existing fences, install additional anti-vehicle defences and change the personnel access arrangements continues to programme. Most of the work will be undertaken by the local supply chain and be completed this year.

## 2. Environmental Performance

All discharges since the previous meeting were within the sites authorised limits and there have been no environmental incidents.



Figures 1 and 2: Aerial views of Landfill 42 after reprofiling

The project to close off Landfill 42 has continued to make good progress, see Figures 1 and 2. The Landfill has completed the surveying and intrusive re-profiling works and is progressing the delivery of 7000te of crushed rock and rock armour. Progress is continuing on installation of the replacement boreholes. An Invitation to Tender (ITT) has been issued for the procurement and installation of the Membrane/Liner. The project is on target for landfill closure this financial year (ahead of the Operating Plan target by three months).

Access to Sandside Beach for monitoring purposes has been maintained, the rate of particle finds has reduced since the peak when monitoring resumed, with 6 particles being recovered over the period 1 July 2011 to 30 September 2011.

### 3. Operational Performance

Decommissioning in support of the hazard reduction mission continues to progress well; performance remains steady with a schedule performance index (SPI) for the year to date of. A table showing performance against the NDA's Operating Plan Targets for Dounreay for 2011/12 is attached in Appendix 1.

DSRL met three NDA Operating Plan Targets this quarter, two were on delivered on schedule and one was completed early:

- D003: Removal of 34 Spent Fuel Cans from the PFR Buffer Store (scheduled completion date 31 December 2011; actual completion date 29 July 2011)
- D017: Removal and Treatment of Out of Reactor Material Work; Complete installation of equipment in D2001 plant for loading flasks with Breeder Fuel
- D013: Refurbish D1206 manipulator decontamination gloveboxes; refurbishment completed to allow manipulator replacement work to commence.

All other in-year Operating Plan Targets remain on schedule with the exception of the following:

- - CT D001: Bulk NaK Destruction at Dounreay Fast Reactor (DFR). The NaK Destruction Plant (NDP) has continued to operate well since its return to routine service in July 2011. Thirty-four batches of NaK have been fully processed and discharged to sea this quarter. Achievement of the processing target of 305 batches (cumulative) by the December 2011 due date remains under threat. Details of the pin-hole leak that occurred at the IXP in October are given in the Reactor Decommissioning section below.
- - D07: Complete decommissioning of the D1251 Sentencing Tanks. This project started the year behind schedule as a result of delays that occurred during 2010/11. Active commissioning of the sludge recovery plant is now ongoing. The programme continues to be reviewed and there are considered to be opportunities to recover all or some of the slippage during the tank dismantling phase.

#### Reactor Decommissioning

NDP successfully processed 34 batches of primary NaK this quarter. At 09:50 on Friday 07/10/2011 an activity-in-air alarm at the DFR Ion Exchange Plant (IXP) sounded, indicating that there had potentially been a leak of liquid from the IXP process pipework into the secondary containment cell. Local management were immediately informed and by 10:30 the plant had been safely shut down and isolated and it was confirmed that there had been a small leak (less than 1 litre) of radioactively contaminated caustic solution into the secondary containment. It has subsequently been confirmed that the leak was from a T-piece where the contaminated caustic solution from the NaK plant and the acid feed lines join prior to passing through a static mixer. A new part has since been fabricated and the plant was restarted on 15 October 2011 resulting in a total plant down-time of around one week. It has been confirmed by DSRL that there was no release of radioactivity to the environment, subsequently confirmed independently by SEPA following a visit by their Site Inspector. The incident attracted a higher level of press coverage than might be expected for an incident of this nature and this happened on the day of the incident and without the facts being verified with DSRL prior to publication, which is unusual.

The Sodium Inventory Destruction (SID) Plant has successfully destroyed the tenth load this financial year. The current NaK contaminated loads can be destroyed more quickly than sodium loads but the requirement to use an inert gas glovebox to load the components into the pressure vessel takes longer.

Two Primary Cold Trap Loop (PCTL) pumps have been removed from the PFR Reactor Top but all efforts to remove the PCTL basket have failed despite prolonged heating to melt sodium seals. The project has discovered a simpler way to remove the PCTL basket, cold, and will now return to electrical stripout of all the redundant cabling, including the heating circuits.

### **Fuel Cycle Area Decommissioning**

D1204 (Reprocessing Plant) Decommissioning project continues to decommission the High Active Sampler (HAS) sample bulge. First man entries into the Medium Active (MA) Cell, for ten years, to undertake surveys and installation of temporary shielding has commenced in preparation for dismantling.

D1217 (Post Irradiation Examination – PIE Facility) Decommissioning is progressing with waste packaging and flask moves. The scabber has been transferred onto the west rails with the cell roof sealed for containment dismantling. Two shift working arrangements have been implemented to recover programme slippage.

Furnace Scheme Designs have been received for the Unirradiated Fuel Characterisation Facility (UFCF) that will be used to repack fuels prior to storage or off-site shipment. The Invitation to Tender for the detailed design has been issued.

D1251 Sentencing Tanks / D9814 Pond Area has progressed active commissioning. Sludge is successfully being collected on filters in the Clean-Up Unit (PCU). However, the project remains behind schedule.



Figure 3: New office accommodation for the D3100 project.

Preparatory work in support of the D3100 Low Level Waste Repository project continues. Redundant portakabins have been relocated to the site and removal of redundant asbestos ducting from the new waste vault footprint has been carried out, see Figure 3.

## Waste Management

At the Waste Receipt Assay & Characterisation Supercompaction (WRACS) the aging supercompaction equipment suffered a critical failure of the compaction casing during the quarter apparently due to fair wear and tear rather than mal-operation. The initial clean down and inspection of the supercompactor has been completed. Fontijne compactor manufacturers have visited the site in early October 2011 to review the plant status and assess the potential for repair or replacement. Drums continue to be characterised at WRACS and the storage of uncompacted drums on site is now being carried out. Potential 18 months storage space is available in this mode.

Following the necessary regulatory approvals to return waste that arose from commercial operations in the 1990s, preparations for the first shipment of Belgian Intermediate Level Waste (ILW) commenced during the quarter.

## Major Project Performance

Table 1 below shows the performance metrics for the major projects at Dounreay:

Since 1 April 2009 through 1 October 2011

Project	Values in £ millions					CPI	Comments
	Planned	Performed	Cost	SPI			
Low Level Waste Repository	6.1	6.2	5.5	1.02	1.13	Slightly ahead of schedule, for each £ spent, £1.13 of scope is being performed.	
Dounreay Cementation Plant	14.1	14	12	0.99	1.17	On schedule, for each £ spent, £1.17 of scope is being performed.	
D1251 Complex Decommissioning	6.5	5.7	5	0.88	1.14	Delayed by issues last FY but below budget	
Offshore Particles Cleanup	6.5	7.2	6.3	1.11	1.14	Well ahead of schedule and under cost	
Fuel Cycle Area Decommissioning	224.5	219.6	197.3	0.98	1.11		
Reactor Decommissioning	79.5	77	69.1	0.97	1.11	Slightly behind scheduls, performing £1.11 worth of work for every £1.00 spent	

**Table 1: Major Project Performance Metrics over the period 1 April 2009 to 3 July 2011**

Note: SPI is a measure of work performed against work planned, SPI > 1.0 = work ahead of schedule

CPI is a measure of cost of work performed against budget, CPI > 1 = work delivered below cost budget

## 4. Contractual Obligations

A Supply Chain Event, held in Caithness on 24 August 2011, was well attended by local and national contractors to DSRL. An update was provided to the supply chain regarding the PBO Competition and upcoming contract opportunities at Dounreay. DSRL also presented their policy and procurement strategy at a "Tendering Masterclass" in Inverness for Small & Medium Enterprises (SMEs) on 15<sup>th</sup> September 2011, organised by Scottish Enterprise. Further, DSRL participated at the NDA Supply Chain Improvement Forum on 15<sup>th</sup> September 2011. The group included SMEs and large Tier 2 contractors to the NDA estate to discuss what approach should be taken to create additional opportunities for SMEs.

Seventeen Expressions of Interest were received for the Design & Build of the D3100 Grout Plant. Seven contractors will be invited to tender.

Contracts have been tendered and awarded for the Security Upgrades Project to a total value of over £7M. These include contracts for the following:

- Security Services Group - Main Consultants
- MM Miller - Civils Work
- John Gunn & Sons - Civils Work
- JGC Engineering & Technical - Electrical Work
- Cleveland Cable Company - Electric Cable
- Morson International - Hired Staff
- Security Solutions - Turnstiles/Pedestrian Gates
- Arch Henderson LLP - Technical Support

Major contracts awarded in the second quarter of 2011/12 include:

Title	Company	Value (£K)
Construction of DMTR Waste Loading Bay	JGC	450
PFR Turbine Hall High Pressure Hot Water Pipework Removal & Asbestos Remediation	Sureclean	500
D9875 Drum Store Roof Removal Phase 2	Corecut	200
D1209 Duct Characterisation	Inspectahire	200
Supply, Delivery, Installation and Commissioning of High Resolution Gamma Spectroscopy System D9867	Canberra	300
BFR NaK Cleaning Process Trials	AMEC	500
Supply of Mobile Extract Units	MC Air Filtration	200

## 5. Other Issues

### Dounreay Management Competition

The PBO competition for DSRL continues. A Management of Change document, supporting the Transition Plan and organisational HAZOP Report, has been prepared to gain approval for the transition to a new Parent Body. These documents have been formally submitted to ONR and SEPA, SEPA had no comments and ONR expects to respond with an agreement in October 2011. NDA intends to hold a workshop with DSRL in late October 2011, to assess the implications of the change in share transfer date and to ensure that all transition requirements are met. This assessment will include financial, contractual and logistical impacts. DSRL carried out a number of staff presentations during

the quarter to run the staff on the transition period. Information rooms are to be run during October 2011. An announcement on the preferred bidder will be made by NDA on 23 November 2011.

## Human Resources

Three graduate engineers were selected from the graduate recruitment campaign: two started employment during Q2 and one will start in Q3. The total number of DSRL staff now stands at 876.

## 6. Site Statistics – at a glance

(as of 30 September 2011 unless stated, with 30 June 2011 figures shown in brackets)

### PROGRAMME DELIVERY

#### Schedule performance index (SPI)

Year to date	Year-end forecast
0.97 (0.96)	0.98 (0.98)

\* SPI measures work actually carried out against the agreed NDA schedule.

#### COST PERFORMANCE INDEX (CPI)

Year to date	Year-end forecast
1.01 (1.09)	1.01 (1.02)

\* CPI measures the cost of work actually carried out against the forecast agreed with the NDA. A figure of 1.0 equals the cost agree; greater than 1.00 reflects efficiency gains.

### NDA OPERATING PLAN TARGET STATUS

Base Targets due/achieved to date in 2011/12	5 of 18 achieved to date
--	--------------------------

\* These are agreed milestones with NDA which results in payment of fee.

### PRODUCTION

	June to Sept 2011	2011 – 2012 total
Low-level waste processed for disposal (note that the supercompactor has been out of operation since Aug 2011)	867 drums	2,464 drums
Raffinate liquor converted to solid intermediate waste	110	236 drums

### HEALTH AND SAFETY

	July – Sept 2011	2011 – 2012 total
Number of reportable radiological events:	0 (0)	0 (0)
Number of events on International Nuclear Event Scale:	0 (0)	0 (0)
Number of Lost Time Accidents (LTA) 3 days or less	0 (0)	1 (1)
Total Recordable Incident Rate Compare injury and illness rates per 20,000 hours worked	0.23 (0.28)	
RIDDOR reportable occurrences	0 (0)	1 (1)
Hours worked since last LTA more than 3 days	4.54 million (3.60 million)	
Average individual radiation dose (DSRL)	0.06 mSv for year to date	

Average individual radiation dose (non-DSRL)	0.09 mSv for year to date
--	---------------------------

## ENVIRONMENT

	May 2011	2011 – 2012 total
Events reported to regulator	0	0
Amount of paper recycled	0	17,670 kg
Amount of metal recycled	26,920 kg	104,700 kg
Amount of cardboard recycled	5980 Kg	11980 Kg
Particles recovered from local beaches	6	31

## PEOPLE

	Sept 2011
DSRL staff	876 (877)
Contractor staff	1274 (899)

Dounreay Site Restoration Ltd  
31 October 2011

# Appendix 1: Operating Plan Targets 2011/12

DSRL Operating Plan Targets		Target 2011/12				Performance to Period End		Forecast to Completion			Commentary
		Q1	Q2	Q3	Q4	Plan	Actual	July	August	Sept	
Unique Ref No	Target										
<b>Bulk Sodium Potassium (NaK) destruction at Dounreay Fast Reactor</b>											
CT D001	Destroy cumulative batch number 305.			80		57	42	80	80	80	The plant has continued to operate well throughout this quarter destroying 34 batches of primary NaK. The target of processing 305 batches (cumulative) by December 2011 due date still remains under threat but recovery continues.
<b>Removal of spent fuel cans (176) from the PFR buffer store and pond matrix</b>											
CT D003	Remove 176 spent fuel cans (remaining 39 programmed for 2013/14)				34	34	34	34	34	34	PBI delivered.
<b>Remove and destroy sodium from contaminated material at the Prototype Fast Reactor Plant</b>											
D004	Sodium Inventory Disposal Plant (SID) - Process loads of Alkali Metal through SID				17	8	10	17	17	17	Six loads of sodium wetted steel components were processed during the quarter. The operating programme has been re-sequenced to delay planned maintenance until January 2012 to minimise disruption of processing.
<b>D1207 LLW Facility</b>											
D006	Demolish redundant D1207 LLW facility to slab level in accordance with the mission to decommission the site			x				31/03/2012	31/03/2012	31/03/2012	Demolition DMR progressed
<b>Complete Decommissioning of sentencing tanks at Dounreay Materials Test Reactor</b>											
D007	Complete decommissioning of the D1251 Sentencing Tanks			x							This project started the year behind schedule as a result of delays that occurred during 2010/11. Active commissioning of the sludge recovery plant is now ongoing. The programme continues to be reviewed and there are considered to be opportunities to re
<b>D1200 Laboratory Complex</b>											
D010	Complete Lab #90 cell 2 decommissioning			x				31/01/2012	31/01/2012	31/01/2012	Cell 2 decommissioning is progressing well with floor dismantling in progress.
<b>D1206 (PFR reprocessing plant) Decommissioning</b>											
D013	D1206 (PFR reprocessing plant) refurbish decontamination glovebox		x					25/08/2011	25/08/2011	25/08/2011	PBI delivered.
D014	D1206 Zac Fuel removed from facility			x				08/12/2011	08/12/2011	08/12/2011	Safety documentation for the removal of fuel is being prepared and mock-up trials in progress. Cell preparations commenced.
<b>Removal and Treatment of Out Of Reactor Material - Work collaboratively with Sellafield to achieve agreement of the early off-site transfer of material to Sellafield</b>											
D017	Complete installation of equipment in D2001 plant for loading flasks with Breeder Fuel		x					26/07/2011	26/07/2011	26/07/2011	PBI delivered.
CT D018	Capability to dispatch 2 out of reactor breeder flask rail shipments to Sellafield				x						The return of breeder fuel to Sellafield has been integrated into the Magnox Operating Plan (MOP) and the final business case is expected to be approved by December 2011. DSRL will be ready to ship material by Q4 to meet Operating Plan targets however the
<b>Ongoing support to the DSRL PBO Competition, completing Transition and Exit plans and ensuring DSRL treat all participants equally</b>											
D021	Obtain NDA approval for the transition plan		x					23/06/2011	23/06/2011	23/06/2011	PBI delivered.
D022	Complete transition to new PBO				x			31/03/2012	31/03/2012	31/03/2012	All DSRL activities to achieve this are on schedule. Final details of the transition required can only be confirmed once the Preferred Bidder and individual posts are known (November 2011). Transition plan has been endorsed by Dounreay Nuclear Safety Comm
<b>D3100 LLW Repository</b>											
D023	Complete design of the D3100 new LLW repository			x				12/10/2011	12/10/2011	12/10/2011	The design continues to programme. The HAZOP was held and the scheme design review was held on 29/30 September 2011. Focus continues on developing the Mechanical and Electrical elements of the scheme design.
<b>New Active Analysis Laboratory</b>											
D025	Complete detail design of the new active analysis laboratory			x				15/12/2011	15/12/2011	15/12/2011	Design process underway and project progressing to schedule.
<b>Unirradiated Fuels Characterisation Facility (UFCF)</b>											
D028	Unirradiated Fuel Characterisation Facility Hazard & Operability Study (HAZOPs) and Preliminary Safety Report (PSR) Complete SOCR				x			22/06/2011	22/06/2011	22/06/2011	PBI delivered.
CT D030	SOCR				-10%	-14.6%	-23.1%	31/03/2012	31/03/2012	31/03/2012	SOCR plan for 2011/12 suggests that this target should be comfortably met.
<b>RAG STATUS</b>											
	Red Black Cross - Target lost irretrievably										
	Red - Behind target: with little possibility of recovery										
	Amber - Behind required target: with possibility of recovery										
	Green - As target or better										
	Blue - target has been achieved on or ahead of schedule										
	Blue Red Cross - target achieved behind schedule										

