

**Harwell-Chilton Campus Local
Stakeholder Group**

***UKAEA Report On Safety
Performance at Harwell for
2007/2008***

Prepared by:
A J Haresnape
Industrial Safety Team, SSHED

Presented by
Mrs. Kathleen Stevenson
Director of Safety and Environment

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TITLE: UKAEA Report On Safety Performance at the Harwell Licensed Site For 2007/2008

SUMMARY:

This report details the safety performance of the UKAEA Harwell licensed site for the financial year 2007/08.

It concludes that:

- Occupationally received radiation doses from all causes have remained low and are well within legal limits.
- The number of unusual occurrences raised remains high and this indicates a positive safety culture.
- The number of events and lost time accidents has stayed at a very low number.
- TRIR has reduced significantly during the period.
- The emergency arrangements have been thoroughly tested during the year.

APPROVAL:

	Name	Signature	Date
Prepared By:	A J Haresnape	Master signed	5 th June 2008
Approved By:	K A Stevenson	Master signed	5 th June 2008

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LSG Members

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GLOSSARY

ADS	Approved Dosimetry Service
HiPo	High Potential Occurrence
HOSOC	Head of Site Operations Cell (part of site emergency arrangements)
HSE	Health and Safety Executive
HSED	Harwell Safety and Environment Department
INES	International Nuclear Event Scale
ISO	International Organisation for Standardisation
ISRS	International Safety Rating System
LTA	Lost Time Accident
man Sv	Man Sieverts (collective dose)
mSv	Milli Severts
NDA	Nuclear Decommissioning Authority
OCNS	Office of Civil Nuclear Security
OHD	Occupational Health Department
PAS	Personal Air Sampler
PPE	Personal Protective Equipment
RADSAFE	Name of the emergency response plan for the nuclear industry
RIDDOR	Reporting of Injuries, Diseases and Dangerous Occurrences Regulations
RoSPA	Royal Society for the Prevention of Accidents
RPI	Radiological Protection Instrumentation
SAS	Static Air Sampler
SECR	Site Emergency Control Room
TRIR	Total Recordable Incident Rate
UKAEA	United Kingdom Atomic Energy Authority
UNOR	Unusual Occurrence

1 INTRODUCTION

This report is produced by UKAEA for the Harwell Chilton Campus Stakeholder Group and details the safety performance of the UKAEA Harwell licensed site for the financial year 2007/08 (radiological dose information is for calendar year 2007). The report also includes information on tenants and contractors working on the licensed site. In most instances information has also been provided on measurements made in previous years to show the 2007 results in their historical perspective.

In recent years, much of the nuclear work has declined as work associated with the decommissioning of nuclear plant and restoration of the site has progressed. A range of both nuclear and non-nuclear consultancy and service work continues to be carried out on the site.

2 UKAEA ORGANISATION AND ROLE

The UKAEA mission is to restore the environment of our sites in a way which is safe and secure, environmentally responsible, value for money, and publicly acceptable. The intention is to develop the site as part of the whole campus for science, technology and innovation.

UKAEA is the holder of the nuclear site licence at Harwell and is responsible for all nuclear safety issues within the site whether carried out by UKAEA staff, contractors or tenants. GE Healthcare (formerly Amersham plc) remains the licensee of two separate nuclear licensed sites within the fenced boundary of Harwell. UKAEA has approx. 460 staff on the site and is supported by a range of contractors. There are a number of tenant organisations on the licensed site.

3 KEY DEVELOPMENTS

During the reporting period significant effort has been made to continue to improve our performance. An overview of key developments is given below.

- SHE Improvement Plan was developed and focused on a number of key safety initiatives namely behavioural safety, senior management commitment, improvements to UNOR Reporting and the establishing of arrangements for Operating Experience, Feedback and Learn.
- Introduction of Conduct and Expectations Manual.
- Introduction of the Safety Assistance Centre and the sites SHE Reward and Recognition scheme.
- RoSPA has awarded UKAEA Harwell Division a Silver award.
- Good progress has been made in completing the Modern Standards Safety Case Programme.

- ISO 9001:2000, ISO 14001:1996 certifications maintained.

4 MANAGEMENT OF SAFETY

The management of safety within UKAEA remains a line management responsibility through the Head of Site and this is supported by the implementation of Company Standards and Procedures.

The site confirms implementation of these standards through a rigorous safety monitoring programme. This comprises of self-assessment by facilities and projects and the site audit programme provided by the safety and environment department.

Safety improvements are also identified by the UNOR reporting system. All those working on the site are strongly encouraged to report incidents and near misses. During the year 1663 UNOR's were reported compared with (1448) during the previous period. The increase is largely due to the improvement initiatives undertaken at Harwell.

UNOR's are categorised depending on their safety significance. Significant UNOR's are categorised as Events and investigated in more depth than other occurrences. Near misses which could have led to a more significant loss in different circumstances are categorised as HiPo Occurrences and are also investigated in more detail.

There were a total of 3 safety events reported during the year, two involved lost time injuries. During the year proactive safety initiatives have been carried out to tackle the causes of lost time accidents. Table 4 gives details of all the events and the lost time accidents that occurred during the reporting period.

During the period the Total Recordable Incident Rate (TRIR) and Days Away Case rate (DACR) improved significantly. The TRIR reduced to 0.45 compared to (1.46) during the previous period and the DACR reduced to 0.30 compared to (0.53) during the previous period.

These measures identify workplace injuries and illnesses that require medical treatment and/or >1 days lost time. These measures will continue to prove challenging during the next period.

There were 11 High Potential Occurrences "HiPo" raised during the period and Table 5 gives details of all the HiPo Occurrences.

An important measure for the grading of 'nuclear events' is the International Nuclear Event Scale "INES". This system permits nuclear operators in all member countries (including the UK) to compare their events to a common scale. None of the events that occurred at Harwell in the reporting period were significant enough to be classified on this scale. The last INES event (Level 1) that occurred at Harwell was in 2004.

5 SAFETY AND ENVIRONMENTAL PERFORMANCE

Detailed information on performance is included in the Appendix, Tables 1-5.

5.1 Radiological Safety

Table 2 shows the total recorded dose received by UKAEA staff, tenant's staff and contractor's staff in 2007 and in previous years. The average dose per worker for the site has remained constant at 0.10 mSv and the maximum work related individual dose was 3.60 mSv which is an increase on the previous year. This is compared with the legal limit of 20 mSv.

5.2 Radiological Improvements

During 2007 improvement initiatives have included:

- Implementation of the RPS Standard through scheduling regular RPS forums. These provide RPS's with further information and development, enabling them to better understand their role and take on more responsibility for radiological protection in their work areas.
- A skills assessment and development process has been applied to the contract health physics surveying service. Coaching and further training at the request of UKAEA has been provided to surveying staff and as a result sickness absence and staff turnover is reduced leading to increases in efficiency and service quality.
- A UKAEA ALARP procedure has been prepared that seeks to improve operational understanding of what ALARP is and its implementation at the key stages in project life cycles.

5.3 Industrial Safety

Table 3 shows the number of Lost Time Accidents (LTA) at Harwell during the financial year 2007/08. Figures for previous years are included for comparison. These figures cover the staff of UKAEA, visitors, contractors and tenants. The number of LTA decreased to (5) compared with (23) during 2006/07.

6 PROACTIVE SAFETY & ENVIRONMENT INITIATIVES

The safety and environment initiatives were identified during the development of the SHE improvement plan. The following campaigns were undertaken during the period.

- Safety Workshops – Workshops were held to launch the Harwell Conduct and Expectations Manual and Safety Advisors/Senior Managers attended behavioural safety workshops.
- Safety Talks – A number of tool box talks were provided over the period, including arrangements for electrical safety, UNOR Reporting and Hand/Arm Vibration etc.
- Health and Safety Week – UKAEA and Capita carried out a series of road shows to raise awareness topics.
- Safety Sessions are provided on a monthly basis as part of the UKAEA In Brief process addressing a wide selection of topics.
- Harwell Safety and Environment Bulletin – Published bi-monthly by HSED and is used to convey safety news, monthly safety and environment topics and lessons learnt.

7 SAFETY AND ENVIRONMENT TRAINING

The statistics for the year 2007/08 indicate that on average each operational person within UKAEA at Harwell received approximately 7 days training on safety & environment topics, administrative and office staff received approximately 4 days training on safety & environment topics. The significant areas of training undertaken were:

- Site Induction Training,
- Site Induction Refresher Training,
- Manual Handling,
- Crane & Forklift driving (basic and refresher),
- Risk Management and Systems of Work Arrangements,
- Environmental Management,
- General Working and Managing Safely,
- General Management & Supervisor training,
- Control & Supervision of staff,
- Management of Contractors,
- Instruction in wearing Personal Protective Equipment,
- Safety Case writing and Management,
- Radiation Protection,
- Practical Fire Extinguisher Training.

8 EMERGENCY PLANNING

The annual level 1 NII demonstration exercise was held in October and was considered by the site to be an adequate demonstration of the site emergency arrangements. NII have not formally responded to the exercise. Their concerns have been incorporated in the exercise report.

The annual test of the site counter-terrorism plan, to meet the requirements of the Nuclear Industries Security Regulations 2003, was held in June. The exercise involved a full team in the Site Emergency Control Room (SECR) and the Head of Site Operations Cell (HOSOSC), together with the Police Control room. The exercise was observed by OCNS who considered it to be adequate.

A program of in-house training was put into place by the SEO for exercise driving staff. This is a change from past practice when exercise driving was carried out by a contractor (SERCO).

The Command and Control training program continues for appointed SEO staff. There continues to be a move towards a more structured and role specific training package.

Draft contingency plans for reasonably foreseeable accidents are being produced for inclusion in the site contingency manual. These plans will also link into facility specific emergency instructions.

The site emergency radio handsets were refurbished to modern standards and the transmitter system and pager system was moved from its original location on the top of the B60 water tower to a purpose built mast on the West side of site.

9 CONCLUSIONS

It is concluded that:

- Occupationally received radiation doses from all causes have remained low and are well within legal limits.
- The number of unusual occurrences raised remains high and this indicates a positive safety culture.
- The number of events and lost time accidents has stayed at a very low number.
- TRIR has reduced significantly during the period.
- The emergency arrangements have been thoroughly tested during the year.

APPENDIX

Table 1: Number of Unusual Occurrences at Harwell for FY 2007/8 and Previous Years

	Number of Unusual Occurrences (UNOR)						
	01/02	02/03	03/04	04/05	05/06	06/07	07/08
Events	11	9	7	10	4	2	3
Occurrences	1318	1327	1527	1233	1371	1446	1660
Total	1329	1336	1534	1243	1375	1448	1663

Table 2: Total work related radiation dose at Harwell for calendar year 2006 and previous years

Calendar Year Item	2000	2001	2002	2003	2004	2005	2006	2007
Total dose (man Sv)	0.204	0.229	0.240	0.265	0.166	0.096	0.068	0.074
Number of staff exposed	840	818	733	809	835	735	691	699
Average work related dose (mSv)	0.24	0.28	0.33	0.33	0.20	0.13	0.10	0.10
Maximum individual dose ¹ (mSv)	8.2	4.9	6.0	3.76	2.36	3.15	2.28	3.60

Note: ¹ The average annual dose received by a member of the general public in the United Kingdom from all sources is a little over 2 mSv.

Table 3: Lost time accidents at Harwell for FY 2006/07 and previous years.

Year Item	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08
Lost Time Accidents	13	15	9	8	13	7	4	2
Reported to HSE (usually because absent for more than 3 days).	5	11	7	3	8	3	2	2
Days Lost	89	235	182	37	98	39	23	5

Note: These figures apply to UKAEA staff, Contractors, and Tenants in Categorized Plant.

Table 4: Details of Events and Lost Time Accidents at Harwell for FY 2007/08

Bldg. No.	Date	Description of event	Lost Time Days
LETP	26/11/07	Contractor bumped his head on TV stand during cleaning activities. RIDDOR Reportable >3 day LTA.	4
WSA	07/11/07	During a lifting operation to remove a heating element a failure occurred and the load fell from height striking a contractor on the shoulder. RIDDOR Reportable (Dangerous Occurrence).	0
Site Active Drains	20/09/07	Contractor aggravated a previous shoulder injury during lifting operations. Operative had been instructed not to perform lifting operations. (1 day LTA).	1
WEP	16/08/07	Contractor tripped over trailing cable sustained wrist fracture and other injuries. RIDDOR Reportable Major Injury (No LTA)	0

Table 5: Details of High Potential Occurrences for FY 2007/08

Bldg. No	Date	Description
CNC	22/01/08	Employee received possible electric shock from mains powered door bell.
B418	28/10/07	A fault was reported on the product wrapping machine investigation identified the 415volt power cable had been cut.
B459	23/10/07	During PAT testing of hired infra-red heaters one of the heating elements exploded, throwing hot glass around the workshop.
WEP	03/07/07	Contractor (5M UK Ltd) was observed leaning over the edge of the building to measure catchpot.
RAMT (B459)	22/05/07	Ross truck flask transporter carrying a loaded 4" graviner departed from the west entrance of 459 loading bay and it was noticed that there was a quantity of break fluid on the loading bay floor.
WEP	16/05/07	Contractor was observed standing on the ridge beam of the WEP building installing the inner ridge liner to the cladding. Work was stopped.
B462.27	26/04/07	After the removal of the LH manipulator from packing cell it was found that an operator was contaminated on his left palm. HPDO called in. Received return call from HPDO to send operator to OCH Health Dept where he will be met by HPDO & Nurses
B462.27	10/04/07	A mobile scaffold was used to gain access to the top of RM1 but could not be positioned close enough to enable work to be carried out from the scaffold platform. The Team Leader climbed through the scaffold guard rails to gain access to the top of RM1 to carry out the work
WEP	03/04/07	Nukem Construction Manager was preparing to step from a mezzanine floor onto a ladder to descend to ground level. As he stepped onto the ladder it slipped sideways which could have resulted in a fall of approx. 5m.