

ISIS

Rutherford Appleton Laboratory, Oxfordshire



Julian Brower CEng FIET
Section Leader
ISIS Accelerator Performance Improvement

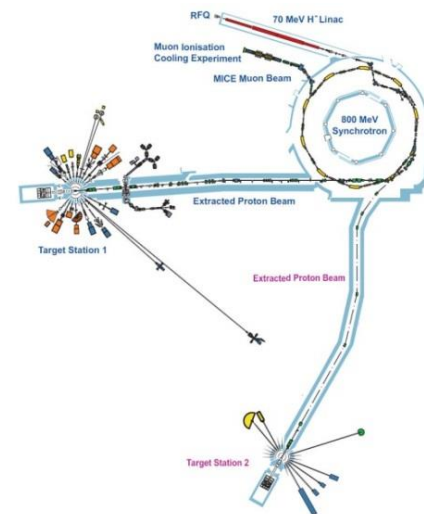
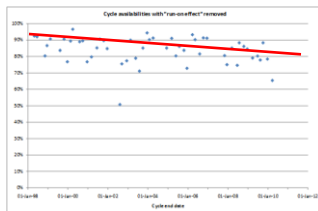


Science & Technology Facilities Council

ISIS

Organisation

- World class spallation neutron source
- Flagship UK facility
- Started 1985
 - 85-90% availability
- ~360 staff (1st Nov 13)
 - Culture base on experience
- Divisions (6), groups (30+), section (60+)
- £400mil asset value of accelerator
- FY12/13 £54mil (120 day operation)
 - £32mil resource(r) / £22mil capital(c)
 - £22.2mil Staff(r) + Electricity(r)
 - £3.6mil Operational spares (10k+)(c)
 - £5.4mil Sustainability(c)



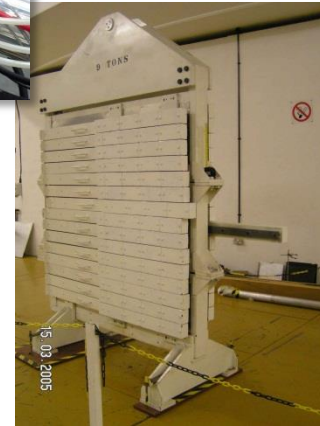
Targets/Enterprise strategies

- Maintain 5mA days
- Maintain beam availability >90%
- Operate ISIS sustainably
 - *FLD*
 - *reduce call outs*
 - *mitigation and sustainability programme, AEM's*
 - *maintenance day (ion source)*
- Design for quick turnaround
 - *active handling*
 - *minimise dose rates to people*
- Best practise forums
- Improve USER experience

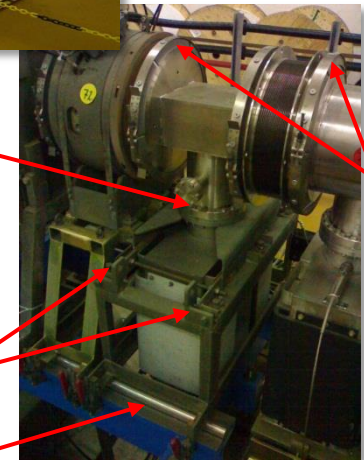


ion source

active handling



quick turnaround



Conflat seals

V-band seals

Lifting lugs

Aligned rails — pre-alignment in workshop



Assets in ISIS

- Accounting
 - *STFC asset inventory, £10K+*
 - *tracking via bar code system, disposal*
 - *depreciation, accounting for zero book value vs. real value*
- QA systems
 - *no formal QA systems (ISO9001)*
 - *using best internal/industry practises,*
 - *Document control MS's*
 - *Drawing MS's*
 - *Project MS's*
 - *Quality control MS's*
 - *Safety processes*
- Sustainability
 - *mitigation & sustainability programme, finite and reasonable, monthly, prioritisation*
- Asset responsibility
 - *disseminated to group (via GL), section, individual ...historical system*



Maintenance Management & Tools

- MM

- Localised MM systems and strategies
- Managed by group leaders
- Manufacturers recommendations



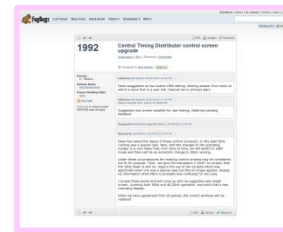
- Preventative maintenance

- extensive (plant) using internal & external resources
- Software systems: SKF (bearings) Prüftechnik (pumps)
- Turbo pump replacement 2yrs/mtbf 2.5yrs
- High Power RF Valve conditioning/performance tracking



- Issue tracking

- IT Tracking: Fogbugz (control system),
Footprints (instrument computing)
- Other bespoke tracking systems



- Spares (FLD)

- database of large tickets items (in situ) or stores department
- localised group databases and stores locations
- plethora of systems



Department for Business, Innovation and Skills

Table 2.9: Department for Business, Innovation and Skills

	£ billion				
	2010-11	2011-12	2012-13	2013-14	2014-15
Resource DEL ¹	16.7	16.5	15.6	14.7	13.7
Capital DEL	1.8	1.2	1.1	0.8	1.0
Total DEL	18.6	17.6	16.7	15.5	14.6
Departmental AME	1.5	1.4	1.4	1.4	1.4

Some challenges

- Budgetary limitation (SSR)
- Sustainability
 - £12m/yr. needed (3% NAV), £5m/yr. available
- Old equipment defies conventional asset management
- Ownership ambiguity (*master timing generator*)
- High value spares, assets or spares?

LINAC Tank 4



Nina Choke



Bending Magnet



High Powered Valves

