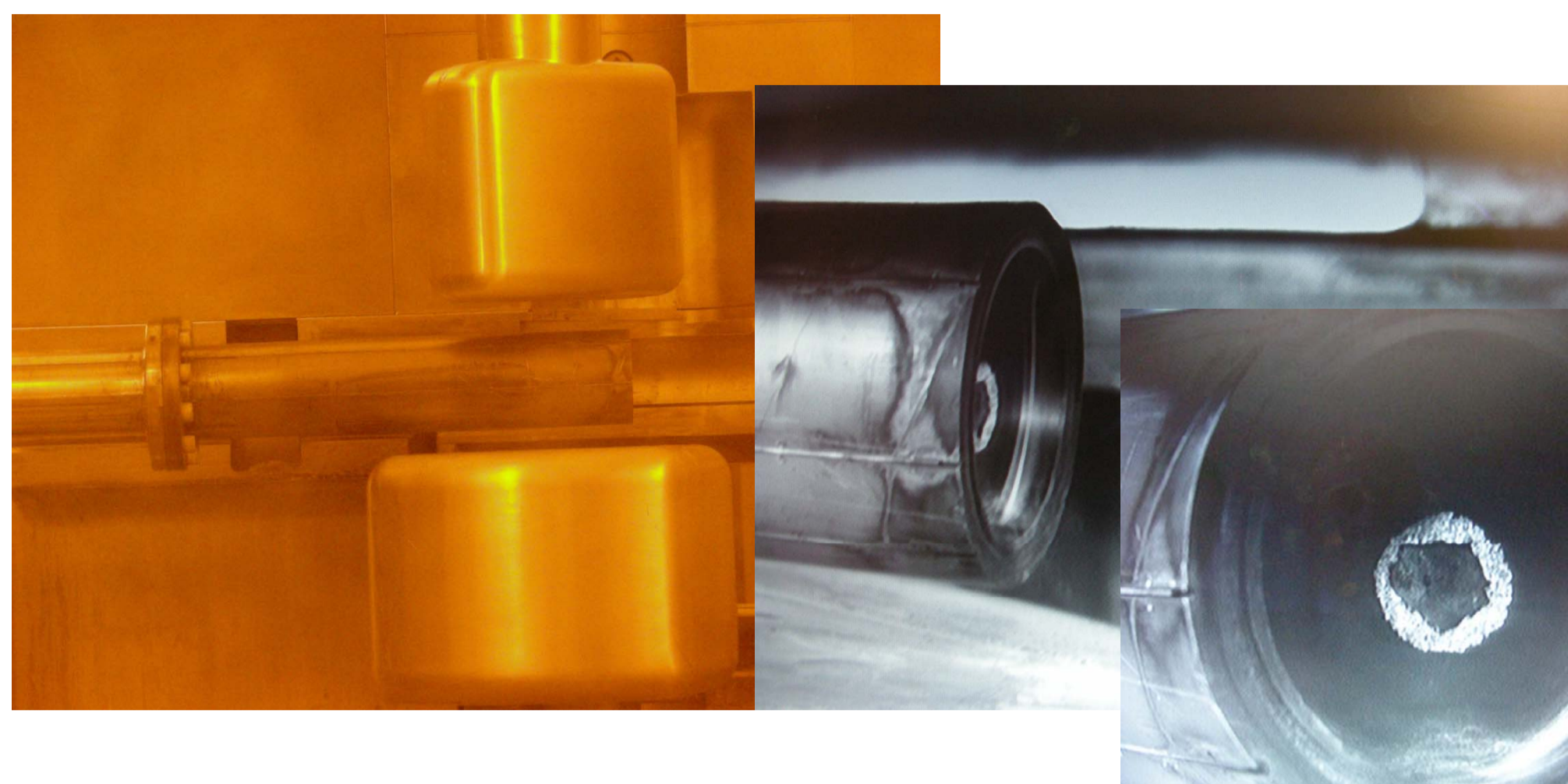
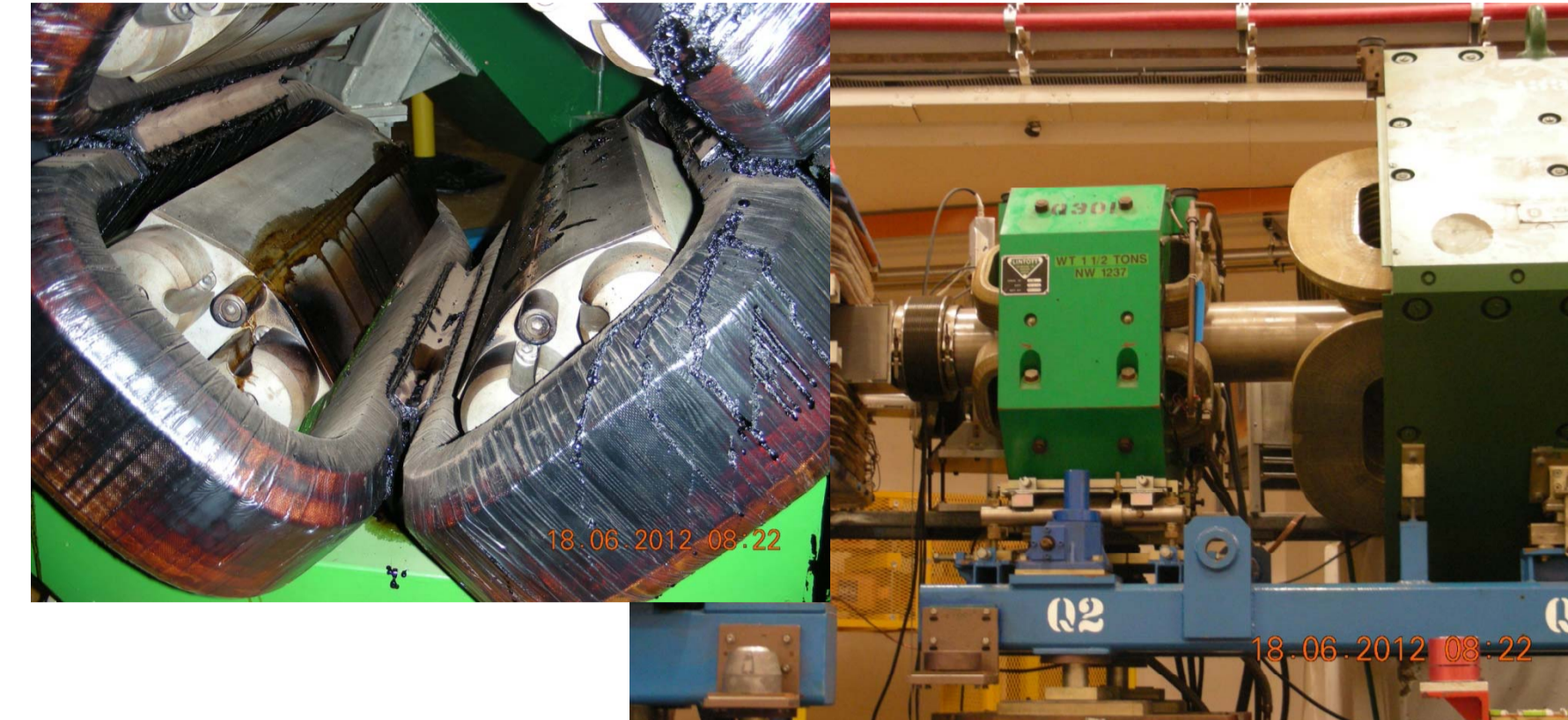




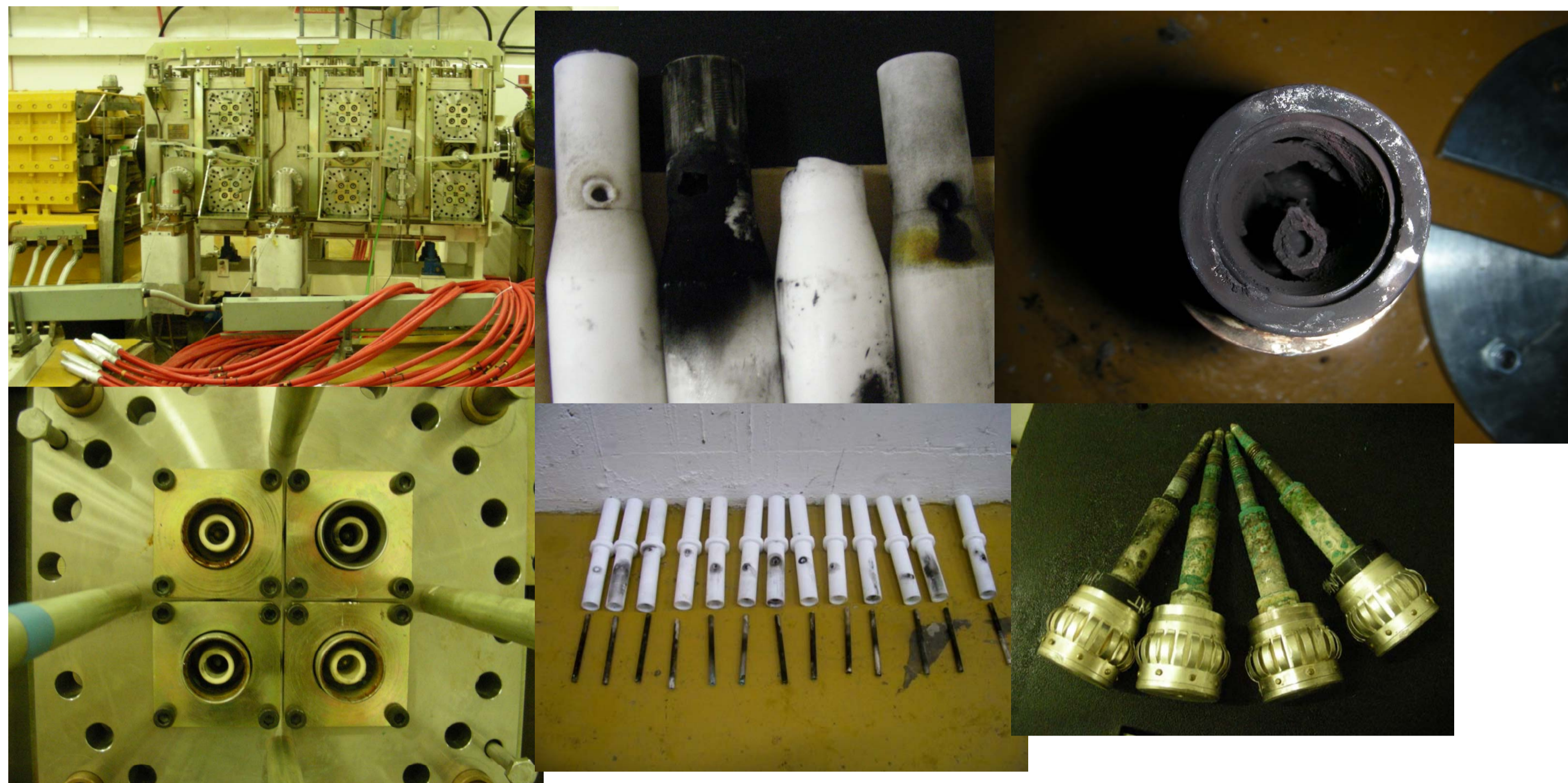
Operational Disasters at ISIS Every Picture tells a story!



Target 2 catastrophic failure in Jan 2010. Tantalum cladding corrosion resulted in replacing the target. June 2010 saw similar effect occurring. Void Vessel atmosphere moist. Temperature modelling error made - possible 800°C not 200°C on front face! Redesign, manufacture & test program over 8 months. New design has water cooled front face.



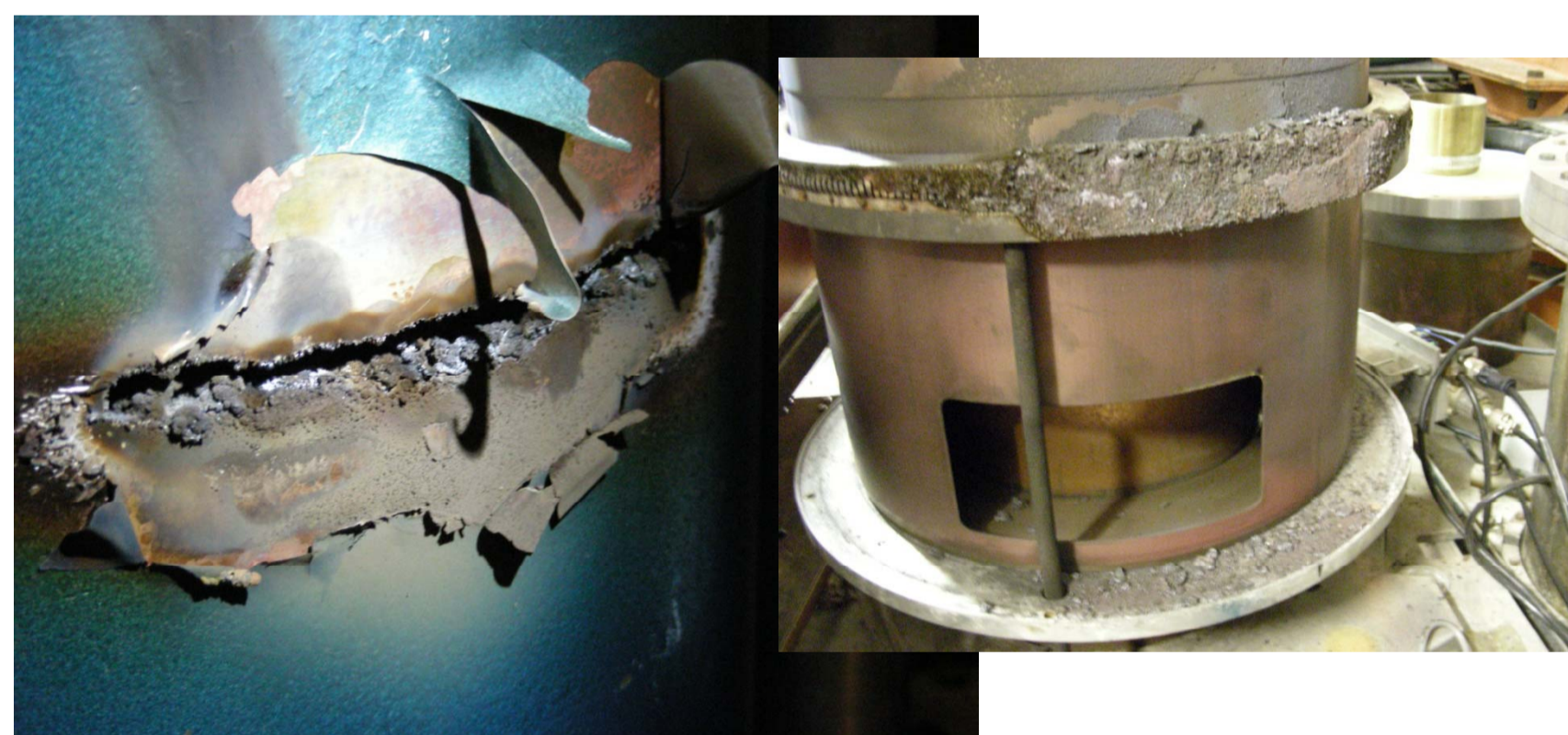
June, 2012 power was lost to Sub Station 22. Area out of bounds for ISIS staff. Power supply restored in approximately 5 hours but 'knock on' effect significant. EQ2 power supply controller failed to danger and continued to power magnet (5kW)! Overheating and smoke resulted. 8 CO₂ extinguishers used. Local Fire Service arrived but 'radiation' environment!!!



Kicker magnet connector failures - Kicker cables upgraded and connectors redesigned by contractors. New features included sharp edges, thin material and unspecified PTFE grade. Although PTFE not ideal for radiation areas had been successfully used for many years. Lost time due to random failure incurred and radiation doses to personnel during cycles. Occasional synchrotron vacuum loss when ceramic connectors overheated (~24 hour recovery time). Embarked on a regime of scheduled inspections mid-cycle. Tried Peek material but same problem. Many months taken to remedy the issue. New 'rounded' design, thicker material, 'moulded' rather than 'turned' virgin PTFE.



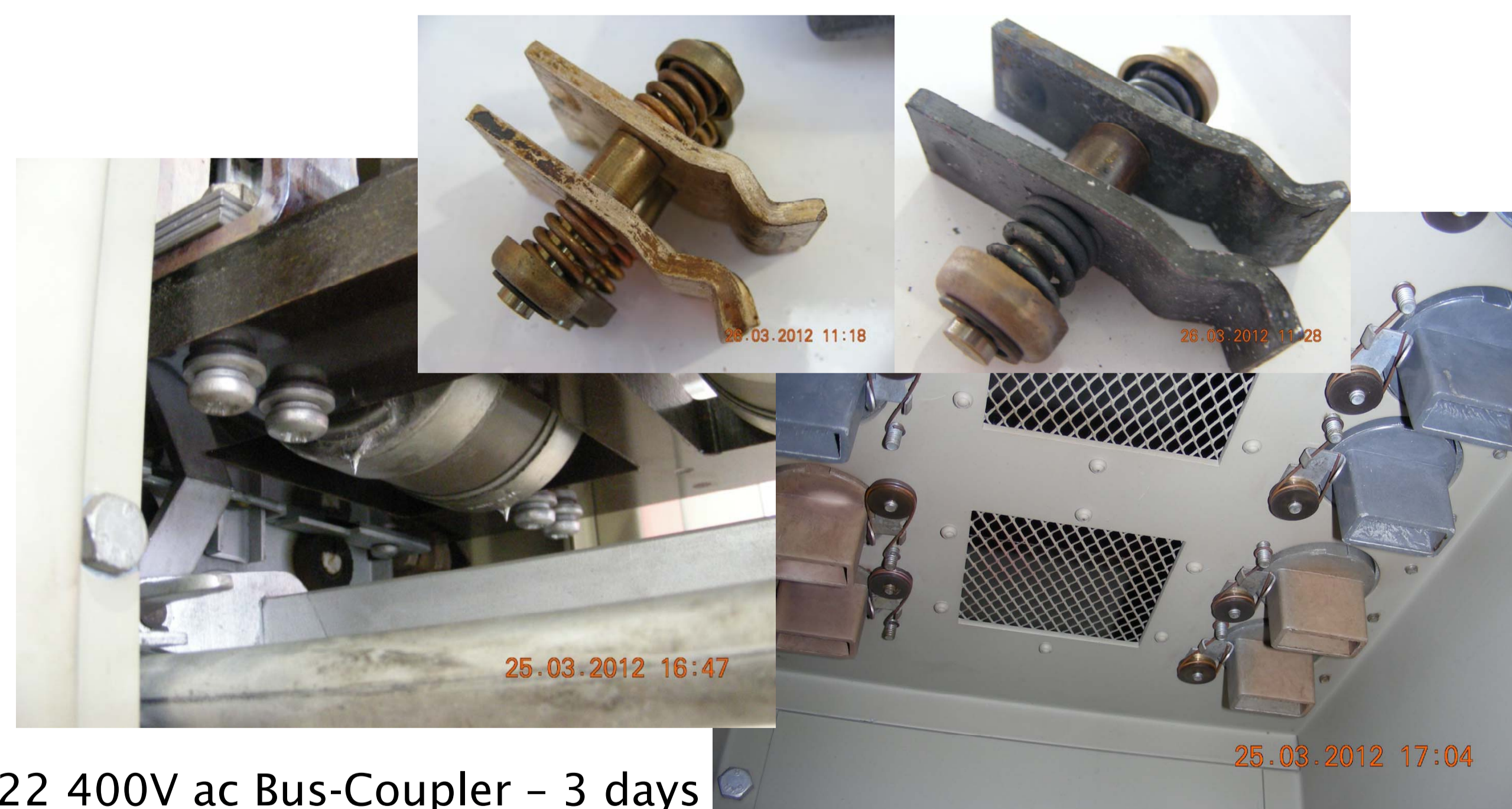
E2K2 Kicker manifold failure - this magnet operates at 10Hz and the vibration caused the weld to fracture. A significant amount of water was lost. Water penetrated the insulation of Dipole 3 and brought about the premature failure of the magnet windings. The cycle was terminated 5 hours early. 4 weeks to change the dipole.



Linac Tank 4 TH116 coaxial circuit - 2MW pulsed RF amplifier, 202.5MHz. The anode tuning ring finger strip, after many years service, failed. Intense sparking occurred and 'cut' the brass outer casing. ISIS was down for approximately one week.



Building R6 external re-cladding - a contractor, using a battery operated drill, successfully drilled a hole for inserting a rivet. He even managed to get the rivet in but was shocked by the result!! No one was badly hurt and it took 4 hours to become operational.



SUB 22 400V ac Bus-Coupler - 3 days lost. No spares! Redundancy is arranged by the operation of the bus coupler. Unfortunately the unit had not been serviced for some time as it was scheduled to be replaced. Problem due to weak springs on the fuse carrier receptacle.



The 11kV Supply from SUB 10 to SUB 12 - Explosion! Fortunately area not accessible, no one was hurt but it was reported that a passer-by had to go home early. ISIS was down for approximately 1 day whilst a new joint was made.

SP2 Dipole winding failure - May 2010, a leak in one of the dipole coils prior to a cycle starting forced a delay in starting up by an extra week. This particular dipole is situated underneath the Extracted Proton Beamline and required EPB components to be removed before the dipole could be accessed. Had this failed during a cycle it would have been 4 weeks off.

