

CONCLUSIONS OF THE REPORT

1. The Panel's dominant concern was with the continued safety of the fuel in the reactor pressure vessel. This can only be jeopardised by overheating of the fuel, as a result of a reactor plant fault or a major impact on the submarine, or other damaging external event (eg. earthquake).
 2. Pertinent reactor plant faults comprise inadequate decay heat removal or inadvertent raising of the control rods. At the current very low level of decay heat loss of forced cooling of the fuel is not of concern. The Panel is satisfied that the depth of the defences to prevent inadvertent raising of the control rods is sufficient.
- A major impact or other damaging external event is considered by the Panel to be very unlikely, and HMS Tireless is no more vulnerable on a daily basis to such an event than any nuclear powered submarine on a recreational visit. The Panel made a recommendation on limiting the use of the mobile crane near the submarine, which the MoD accepted. The Panel concludes that these events will not contribute a significant safety risk.
4. The Panel reviewed the weld repair and examination procedures and concluded that they are very likely to produce a high integrity weld. When the pressure tests are also taken into account, the risk of weld failure after reactor start up is considered to be acceptably low.
 5. The Panel has identified a small possibility that the MoD has misdiagnosed the location of the crack to be repaired. This would only be apparent a few weeks into the repair, and could cause about two months delay. Alternatively, the production of a faulty weld repair could cause a delay of up to two weeks. In neither case would there be a significant safety risk.
 6. The Panel also reviewed the MoD's engineered and administrative arrangements for dealing with the waste, including the mildly contaminated water that is to be removed from the submarine's primary circuit. These arrangements were considered to represent good safety practice and the Panel is satisfied that this activity represents a very low safety risk.
 7. Before reaching these conclusions, the Panel obtained a significant amount of MoD information, including large elements of its safety case and safety assessment for the activities. The Panel is satisfied that a sufficient amount of information has been made available to it. It is also satisfied with the quality of the MoD's work and the underlying safety culture.

Finally, the Panel reviewed the various options for taking HMS Tireless to the UK for repairs there and found no overall safety advantages.

The Panel noted a documentary inconsistency in the Gibraltar Public Safety Scheme regarding the definition of a Z berth at Gibraltar. This is for the MoD to resolve, but does not affect these conclusions.

10. Other parts of the Gibraltar Public Safety Scheme do not require amendment of

contingency measures to allow for the proposed repair.

11. The Panel's considered assessment is that the MoD's planned repairs on HMS Tireless will be sufficiently safe, presenting a risk to the Gibraltar population broadly equivalent to that accrued over the annual allowance for recreational visits.