

Editorial

The problems associated with old nuclear submarines reaching the last years of their life and their eventual de-commissioning and removal and break-up of their reactors have long been ignored, and are now coming home to roost.

In the June 1989 (*Navy International* June 1989 p273) we featured an article on these problems and some of the ways in which they could be overcome. However, while governments drag their heels as to which is the most effective, least costly, and environmentally most acceptable methods of dealing with obsolete reactors, navies are already having to get to grips with the problem, particularly those submarines nearing the end of their life. In addition there is the now increasing problem of how to effectively deal with nuclear-powered submarines which have been lost accidentally at sea.

Twice in January there was news coverage which should give cause for concern to those with responsibility for dealing with such matters. The first incident related to a problem experienced with one of the older generation of RN nuclear-powered submarines. Following the discovery of a fault in HMS *Warspite's* power plant, believed to be a crack in the water-cooling circuit (although there are numerous other possible faults), all 20 nuclear submarines in the RN are to be checked for possible metal fatigue or other faults. Already the submarines of this group (HMSs *Warspite*, *Valiant*, *Churhill*, *Conqueror* and *Courageous*) are well

over 20 years old having been laid down in the 1960s to a design dating even earlier than this. Already the earlier submarines in this group have suffered from corrosion problems, and HMS *Conqueror* suffered a problem with her reactor causing it to be shut down while on voyage to the Falklands in 1982. *Valiant* was found to have a very fine crack in her primary cooling plant in 1981, while HMS *Dreadnought* (now de-commissioned and laid up pending a decision as to what to do with the boat and her reactor) was also found to have cracks in her secondary cooling system in 1981, leading to the decision to decommission the boat.

While the RN has suffered relatively minor problems with its now aging fleet of nuclear submarines, the Soviets have suffered numerous incidents, some of them disastrous (see *Navy International* February 1989 p93). At the beginning of February this year the Russians requested assistance from other powers to keep an eye on the sea area surrounding the wreck of the 'Mike'-class SSN which was lost off Norway in April last year.

So what is the answer to the problem of obsolete nuclear submarines? The interesting point to note is that for the first time the nuclear powers of the world are having to grapple with a problem which is new to them, for it is only now that the earliest generations of nuclear power plants are reaching the end of their life. Not only is there the

problem of how to dispose of these power plants, but there is also the question of the learning curve associated with the behaviour of such plants as they get older. There is no bank of data or knowledge on which to draw and from which prognoses can be made as to the possibility of faults arising in such systems as they reach old age. In fact no one really knows what the ultimate age of a reactor might be, nor at what stage one might expect to experience failures and faults in the apparatus.

As they near the end of their life what is to be done with these submarines? Shipbreakers will not want to handle them for fear of contamination, apart from the fact that such companies would have to be very rigidly inspected and have to install special equipment for handling radioactive material. Then there is the problem of how to dispose of the material. Dumping radioactive material in deep water is now banned by the Law of the Sea. As discussed in the article published last year it could be dumped in deep shafts on land, or it could be taken across to the USA where they are preparing sites for decommissioned submarines. As far as the UK is concerned, however, no policy decision on this front has yet been taken. Time is running short, as the latest incidents highlight, and certainly France, the UK, USA and USSR must soon make decisions on how best to handle the thorny question of decommissioning nuclear-powered submarines.

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