Canadian Submarine Acquisition Programme

by Martin Shadwick

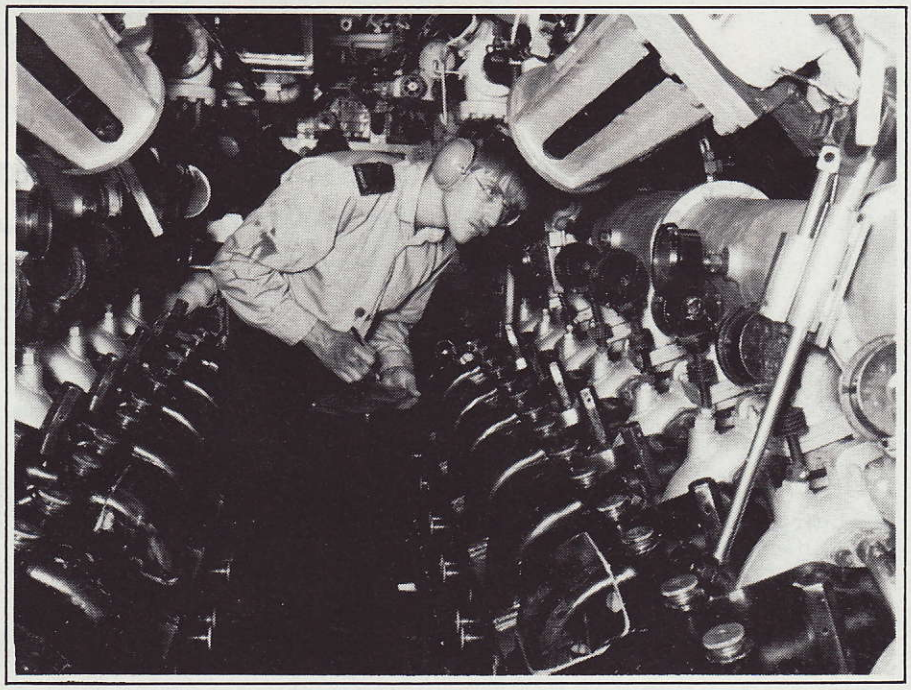
The sub-surface component of Canada's navy is currently confined to three British-built Oberon-class submarines. Acquired between 1965 and 1968, the diesel-electric powered Oberons are now in the final stages of a $42.4 million Submarine Operational Update Project (SOUP). Two of the Oberon class submarines, HMCS *Ojibwa* and HMCS *Onondaga,* have already completed their SOUP refits. The third, HMCS *Okanagan,* is currently in dockyard hands and should re-enter service by mid-1986. A combined mid-life refit and update project, SOUP has provided the Oberons with the Singer Librascope SFCS Mk 1 fire control system, the Sperry AN/ BQG-501 MicroPUFFS passive ranging sonar, a new electronic warfare suite and a low light television system and image intensifier for the existing Barr and Stroud CH74 attack periscope. Other improvements include new communications equipment, a Mitel SX-20 telephone system, a Racal Decca DS-4 SATNAV receiver, an AN/ WQC-501 underwater telephone and new main batteries.

Unlike their six Australian sisters, which are receiving an even more ambitious upgrading under the SWUP programme, the Canadian Oberons will retain their existing Type 187 attack sonar (the Australian boats have received the Krupp-Atlas CSU3-41). Nor are Canada's Oberons receiving the McDonnell Douglas Sub-Harpoon missile system. Their long-in-the-tooth Mk 37C torpedoes are, however, being replaced by the Gould Mk 48 Mod 4 under the separate MAST (Maritime Air/Sea Torpedo) programme.

Although updated Canadian, Australian and British Oberons will remain in service for an extended period of time, all three navies have launched, or are projecting, Oberon-replacement programmes. The furthest along in this process, the Royal Navy already has four Vickers Type 2400 (Upholder-class) boats on order. The Royal Australian Navy has narrowed its Oberon replacement competition to bids from West Germany (the HDW-IKL 2000) and Sweden (Kockums Type 471). Teams led by Rockwell International and Hollandse Signaalapparaten are in competition to provide the combat systems for the new Australian submarines. The first Australian boat — six or more are projected — is currently scheduled for launching in 1992.

In Canada, the Department of National Defence is currently awaiting government approval for the project definition stage of CASAP, the Canadian Submarine Acquisition Programme. Although CASAP, which currently covers only four submarines, is first and foremost an Oberon-replacement programme, the bidders will be asked to quote price and availability on up to eight additional submarines. CASAP could, in other words, serve as the harbinger of a substantially larger submarine acquisition programme. It could also allow the submarine to play a far more prominent role within Canada's navy. Cabinet approval of the project definition stage is anticipated by mid-1986. The remainder of the CASAP schedule anticipates the selection of two finalists for funded project definition studies by early 1988, the selection of the winner by late 1989 and formal contract award by early 1990. The first boat would enter service in 1995, with the other three following in 1997, 1998 and 1999.

The CASAP requirement is expected to emphasize long range, minimal manning, quiet operation, substantial torpedo and missile reload capacity (probably for the Mk 48 and Sub-Harpoon) and a domestic life-cycle support capability. Off-shore construction in a foreign yard will be examined, as will the prospects for building all or some of the boats in Canada. Although nuclear-powered contenders have been largely ruled out, the possible use of hybrid



Engine room of "O" class submarine HMCS *Onandaga.*

HMCS *Onandaga,* "O" Class submarine.

drives incorporating fuel cells, Stirling engines or other advanced technologies will be examined. Such propulsion systems could help to provide at least some Canadian sub-surface capability in Arctic or near-Arctic waters. An increased naval presence in the Arctic could, of course, serve to meet both military and quasi-military (i.e. sovereignty protection) objectives. All-nuclear-powered designs, while not as expensive in basic sail-away terms as some might expect, would require an enormous investment in new infrastructure.

As Canada obviously lacks an indigenous submarine design capability, CASAP is expected to draw a list of European bidders very similar to that of the recent Australian competition. Designs likely to be proposed for the CASAP requirement include the British Type 2400 (Vickers), the Dutch Walrus (RDM), the French CD (Dubigeon), the German IKL-2000 (HDW-IKL), the German TR-1700A (Thyssen), the Italian S90 (CNR) and the Swedish Type 471 (Kockums). A variety of combat suites (i.e. sonar, ESM, fire control), from an equally diverse range of suppliers, could be offered with each of these submarines.

The CASAP opportunities for Canadian industry will, of course, be heavily influenced by the ultimate size and scope of the CASAP programme. If CASAP grows beyond the nominal four-boat requirement and thereby becomes a major part of Phase III of the projected Ship Replacement Programme, the cost-effectiveness of hull construction in Canadian shipyards will be dramatically enhanced. An expanded CASAP programme would also generate additional opportunities for Canadian suppliers of naval electronics. Although Canadian firms have previously had little contact with the very special requirements of submarines, much of their experience with CPF electronics is clearly relevant to CASAP. Computing Devices Company, for example, could draw on its considerable expertise in towed array sonars (CANTASS), signal processors (AN/ UYS-501) and processing and display systems (SHINPADS). Some of the expertise gained from the development and production of the other members of Canada's growing family of naval sub-systems, such as SHINCOM (Leigh Instruments) and SHINMACS (CAE Electronics), also may be relevant to CASAP. CASAP could, as well, present further opportunities to build on Canada's increasing expertise in such areas as naval electro-optics (i.e. Spar Aerospace) and naval electronic warfare (i.e. MEL Canada). CASAP also could lead to technology transfer in areas which are currently foreign to the Canadian defence-industrial base.

Although the submarine which ultimately secures the CASAP contract will be foreign-designed, the competitive industrial groupings must be led by a Canadian prime contractor. There is no formal requirement, however, that the Canadian prime be a shipbuilding company per se. A programme with potentially far-reaching defence and defence-industrial consequences, CASAP has not surprisingly attracted the attention of a wide variety of would-be participants, including Litton Systems, Paramax Electronics, St. John Shipbuilding, Versatile Vickers, Marine Industries and Computing Devices. The foreign competition to provide the basic design should be no less intense.