

Credible choices: UK General Purpose Frigate programme

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The UK's 2015 Strategic Defence and Security Review unveiled plans for the Royal Navy to receive a new class of smaller, cheaper and more exportable general-purpose frigate. Richard Scott reports

Following last year's Strategic Defence and Security Review (SDSR15) plans for the renewal of the UK Royal Navy's (RN's) surface combatant force radically altered. While the Conservative government maintained a commitment to maintaining a fleet of 19 destroyers and frigates (DD/FF), the previous assumption that all 13 Type 23 frigates would be replaced one-for-one by the new Type 26 Global Combat Ship (GCS) was dropped.

Instead, SDSR15 rolled out a radically different force structure plan, cutting the Type 26 programme to just eight ships (commensurate with the need to replace the eight Type 23 frigates roled for anti-submarine warfare) and announcing plans for a new class of at least five smaller, cheaper and potentially more exportable general-purpose frigates.

Eight months after SDSR15 was made public, the key user requirement for what is generally known as the General Purpose Frigate (GPFF) is still to be finalised. Similarly, while pre-concept work has been undertaken in the Ministry of Defence (MoD), the Maritime Capability (MARCAP) area within Naval Command Headquarters (NCHQ), and Defence Equipment and Support (DE&S), there is still much to be done to flesh out the overall acquisition strategy. It is not helped by the fact that build strategy options for the GPFF are feeding into wider work under way to define a long-term UK National Shipbuilding Strategy.

Nonetheless, a number of statements and written answers issued by ministers over recent months have provided important clues as to the roles and missions envisaged of the GPFF. At the same time, the major players across the UK's maritime sector have already begun to position themselves to stake their claims to a role in the design, build, integration, and support of the new vessel.

Their thinking is conditioned by two big assumptions. First, that the GPFF budget envelope will be significantly constrained, with talk of a unit production cost (UPC) in the region of GBP275 million-GBP350 million (USD323.8 million-USD453.3 million). *IHS Jane's* has been told that that the Treasury still prefers to use the term light frigate, indicating a view that tends to correlate size with cost. Second, the planned out-of-service dates (OSDs) of the oldest Type 23s drive the need for a fast-track acquisition so that overall DD/FF hull numbers can be maintained from the mid-2020s. This has been exacerbated by the slowdown in the Type 26 programme: the first-of-class is not now expected to enter service until 2025 with the follow-on ships stretched out to one every 18 months.



The Type 21 programme marked the last time that the UK purchased an essentially 'off-the-shelf' frigate design. (Richard Scott/NAVYPIX)

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Sea change

In the run up to SDSR15 the higher echelons of the RN had remained resolute in their opposition to the idea of a less-capable 'second tier' surface combatant. Speaking to *IHS Jane's* in early 2015, the then First Sea Lord and Chief of Naval Staff Admiral Sir George Zambellas, was unequivocal in his belief that high-end capability should not be traded for hull numbers. "One of the siren calls I completely resist is to try and produce something that is not a credible platform, something that is smaller, cheaper, and less effective," he said. "The reason for that is that in the

first world that I live in, credible capability could one day be doing counter-piracy operations, the next week it could be in a hot war in the Gulf, and the week after in a hot war somewhere else.

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Credible frigate

At this stage, the MoD has little to say, noting only that the GPF programme has just begun its pre-concept phase activity. "This work will consider a range of capability requirements based on the ship's role, operating environment and the likely threats it will face, and will also take into account the wider capabilities available to defence, such as those provided through the procurement of the Type 26 GCS," *IHS Jane's* was told. "This work is in the very early stages and it is too soon to say what the acquisition strategy or procurement timetable will be."

Notwithstanding his earlier comments, Adm Zambellas in his post-SDSR15 Galaxy message to the RN spoke of "a new generation of credible general purpose frigates". Yet, at the time of writing there was no clear understanding of what 'credible' meant in the context of the GPF.

Similarly, while NCHQ, the MoD and DE&S have undertaken some early pre-concept work, there has as yet been no formal guidance on where the new GPF will sit on the cost/capability curve. "At the moment the solution space extends from an offshore patrol vessel [OPV] at one end of the spectrum, to a Type 26 'lite' at the other, and everything in between," one industry source told *IHS Jane's* earlier this year. "Everyone in the customer community has a different view as to what it should be."

In a statement on shipbuilding in the Clyde given in the House of Commons on 25 April, Minister for Defence Procurement Phillip Dunne provided some initial insight into where the GPF fits in the RN'S future force structure. Dunne told MPs that the revision to the force mix heralded by SDSR15 "reflects a shift in the navy's focus and posture to delivering the strategic defence outputs of continuous at-sea deterrence and continuous carrier capability with our unique high-end warships: six Type 45 destroyers and eight Type 26 frigates," adding: "A large range of other naval tasks will be undertaken by the GPF."

Those other tasks - characterised as "less high tempo" by Dunne in a subsequent answer - are likely to include: inter alia, maritime security, maritime counter-terrorism and counter-piracy operations, escort duties, and naval fire support. As such, the GPF will sit between the high-end capability delivered by the Type 26 and Type 45, and the constabulary-oriented outputs to be delivered by the five planned River-class Batch 2 OPVs.

Early indications suggest a focus on a sustainable and economical long-range, ocean-going platform focused on above-water capability in low-to-medium threat scenarios. Indicative features include: a medium-calibre gun; a sensor package optimised for air/surface situational awareness; self-defence against air and asymmetric threats; offensive effects against surface and land targets; a flight deck sized for a Merlin helicopter; hangar space for a Wildcat helicopter/small unmanned aerial system (UAS); robust facilities for the launch and recovery of small boats; and connectivity/interoperability with RN, NATO, and allied forces

The exact mix of capabilities required of the GPF is being informed by operational analysis undertaken by the Defence Science and Technology Laboratory in conjunction with MARCAP. This seeks to quantify the extant and emerging 'general purpose' capability gap, and extrapolating how that will influence key GPF user requirements and design attributes.



HMS Argyll, one of five Type 23 frigates roled for general purpose taskings, is planned to leave RN service in 2023. The UK government has said it has no plans to further extend the life of the Type 23 frigates. (Royal Navy)

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Solution space

As of early July 2016, DE&S was finalising contracts for the mobilisation of a core Naval Design Partnering (NDP) team of eight people that will manage a 12-month GPF concept-phase activity. *IHS Jane's* understands that the focus of the NDP's work will be to analyse the capability issues identified by MARCAP, translate these into a ship specification, and then review candidate design solutions.

The idea of a 'pared down' Type 26 was mooted at an early stage, but has latterly garnered less attention. Time and cost work against this option, and it would necessarily still be a large and largely 'unexportable' design.

Another GPF option would be to 'buy-in' an overseas design for construction in the UK. Again, this course is thought unlikely. From a political standpoint, it would fly in the face of the government's growth agenda. Furthermore, it would necessarily require adaptation to meet UK standards and would not yield an 'exportable' UK-badged design.

Hence, the spotlight has fallen on variants or derivations of export designs that UK companies have in development or have already built. BAE Systems Naval Ships and BMT Defence Services

have both - under their own resources - worked to develop MOTS concepts which map onto the broad GPFF 'solution space'.

BAE Systems has over the last six months developed two different ship concepts - extrapolated from the Amazonas-class/River-class Batch 2 (RCB2) OPV and the Project Khareef corvette - that plot different datums on the cost/capability curve. In both cases the company has sought to grow and modify its existing MOTS designs while retaining much of the existing detailed design.



At the lower end of the GPFF requirements space the 111 m Avenger concept has been evolved by BAE Systems from the River Class Batch 2 OPV design. (BAE Systems)

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The lower-end concept, known as Avenger is essentially a Batch 3 River class. While drawing on the design pedigree of the commercially-based RCB2, the 111 m Avenger embodies improved survivability (being designed to more stringent naval standards and introducing greater redundancy in machinery arrangements), an enhanced combat system, improved aviation facilities, and an air weapon magazine.

At the higher end of the cost/capability curve, Cutlass is a significantly stretched and enhanced derivation of the 99 m Al Shamikh-class corvette design, three of which were previously built by BAE Systems for the Royal Navy of Oman (RNO) under Project Khareef. The Cutlass concept design developed with GPFF in mind is, at 117 m, a somewhat larger ship than that built for the RNO, incorporating a 15 m mid-hull stretch, and an additional 3 m on the transom. Cutlass would additionally offer improved resilience and survivability, a more extensive combat system, a higher power electric drive system, replenishment at sea points on either beam, a full NBCD citadel, and space amidships to embark special forces' boats and equipment.



BAE Systems' Cutlass concept is a stretched and enhanced derivative of the Al Shamikh-class corvette design previously delivered to the Royal Navy of Oman. (BAE Systems)

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An artist's render of BMT's Venator-110 concept breaking away from a Tide-class tanker and Queen Elizabeth-class carrier. Venator-110 forms the basis for BMT Defence Services' MOTS solution to the emerging GPFF requirement. (BMT)

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Build location

Final decisions on the ship acquisition strategy and the feasibility of building the Type 26 and GPF in parallel will likely be conditioned by the government's National Shipbuilding Strategy, due to report towards the end of 2016. While BAE Systems is the UK's only manufacturer of complex warships - it is planning significant investment in its Clyde facilities for the Type 26 build - the National Shipbuilding Strategy is expected to take into account the capacities and capabilities of the UK-wide engineering and manufacture base.

Answering a parliamentary question in late February, Julian Brazier, under secretary of state for defence, said the GPF "will be crucial to the longer-term future of the UK's warship-building industry and will form a central part of the National Shipbuilding Strategy", but added that it was too early to make a decision on the build location at this stage.



Venator-110 is characterised by BMT as a globally deployable, flexible and affordable general purpose light frigate. Initial hydrodynamic testing was conducted in April. (BMT)

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BAE Systems is the incumbent supplier and integrator of complex warships to the MoD under a 15-year terms of business agreement (ToBA) that runs to 2024. Naturally, the company sees itself well placed to deliver the GPF programme, given its engineering, manufacturing, and integration resources. The company is confident that, with relatively modest additional investment, its modernised Clyde facilities would be able to deliver Type 26 and GPF concurrently.

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