



## Key Supplier Forum Details

### What is the Key Supplier Forum?

- A Forum created to ensure the key stakeholders on the Astute Programme meet on a regular basis.

### When was it created?

- The Key Supplier Forum inaugural meeting was held on the 3rd February 2006 at the MOD in Abbeywood, Bristol.

### Who is involved?

- The customer (MOD), the Prime Contractor (BAE SYSTEMS Submarines), the Government (Department of Trade and Industry) and ten Key Suppliers Partners.

### How often is the Key Supplier Forum held?

- The Forum is held every 6 to 8 weeks. Each stakeholder in the Key Supplier Forum hosts the meeting on a rotational basis.

### Next Meeting >

The next meeting, KSF 8, is on Thursday 29th March 2007, hosted by Alstom in Rugby



Right: Pouring of the Boat 4 Primary Shield Tank Top Casting at Sheffield Forgemasters in January 2007

### What is the purpose of the Key Supplier Forum?

- To ensure the key stakeholders in the industry have a consistent understanding of the current and future Submarine programmes and the affordability issues which must be addressed.

- To create and execute action plans and positively impact the affordability of the Submarine programme.

- To encourage the sharing of best practice.

### What proportion of the submarine spend is represented in the Key Supplier Forum

- The Key Supplier Partners represent around 70% of the Build Programme Material spend. With BAE SYSTEMS over 85% of the Build Costs are scoped. The presence of DLO ensures appropriate focus on Through Life Costs is also achieved. The Key Supplier Partners are also significant contributors in the Through Life scope of work.

## Key Themes of the Seventh Key Supplier Forum



- The Seventh KSF was devoted to providing a detailed progress update to DG Nuclear  
- BAE have undertaken further work on the Performance Partnering Agreement and shared this with the KSF membership.

- The MOD Equipment Procurement budget now has provision for seven Astute Submarines PROVIDING the enterprise delivers the savings committed, and PROVIDING treasury approval is forthcoming.



Key Themes of the seventh Key Supplier Forum  
Turn to page 04 for full details

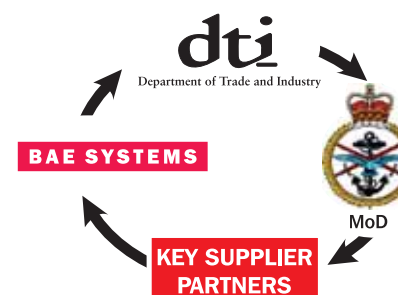
# KEY NOTES



Astute update from the Key Supplier Partners  
Turn to page 03

### Key Supplier update >

More info, see inside



The Key Supplier Forum is a regular meeting involving the key stakeholders in the UK Submarine Industry. The Forum includes the Customer, the Prime Contractor, Industry and Government and is starting to radically improve the way each party interacts with each other and is generating a common understanding of the challenge to consistently deliver affordable submarine programmes.

## Key Supplier Forum Newsletter

The 7th Key Supplier Forum was held at MOD Abbeywood on 18th January 2007, hosted by Rear Admiral Andy Mathews, Director General (Nuclear)

The opportunity was taken to demonstrate to DG Nuclear the significant progress made during 2006 with emphasis placed on the specific innovation deployed by each supplier and on the overall step change in relationships across all Key Supplier Forum members.

DG Nuclear commented that he was very encouraged by the progress made in addressing the affordability challenge on the Astute programme and that the Forum should not underestimate the positive effect it has had on the Submarine Enterprise during 2006. He also asked that BAE SYSTEMS share the background and process of the Forum with CVF and Type 45 programmes, something that has already begun.



Above: First Pour of the Boat 4 NQ1 Castings at Sheffield Forgemasters in Jan 07

### Key Supplier Forum success prompts creation of Second Forum

The success for the Key Supplier Forum during 2006 has seen BAE SYSTEMS launch a second forum scoping 22 suppliers. At the launch of the Astute Supplier Forum (ASF) which took place in Barrow on the 28th February, Ian Burns specifically referred to the success of the Key Supplier Forum (KSF) and said many of its principles and activities would be replicated with the Astute Supplier Forum (ASF).

### KEY SUPPLIER PARTNERS



Welcome >

Welcome to the 6th edition of the Key Supplier Forum newsletter. We aim to keep you up to date with all the developments that take place as we progress towards an affordable Astute Boat 4+ programme

In this edition, we display progress made to date towards reaching an affordable programme and each Key Supplier Partner provides an update on progress from their perspective hope you find our new publication both interesting and informative.

Ian Burns  
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## Key Challenges for the Key Supplier Forum

In order to achieve an affordable and sustainable future submarine industry the Key Supplier Forum membership need to:

- Create a commercial framework that sufficiently engages all parties in to generating and realising cost reduction opportunities.

- Challenge all equipment specifications and documentation requirements - are these excessive and liable to drive cost in to the Platform?

- Generate the best batch buy price available using the most efficient batch programme for each supplier.

- Challenge any commercial terms and conditions that are considered excessive and liable to increase cost.

- Develop partnering approaches that facilitate the sharing of cost model information



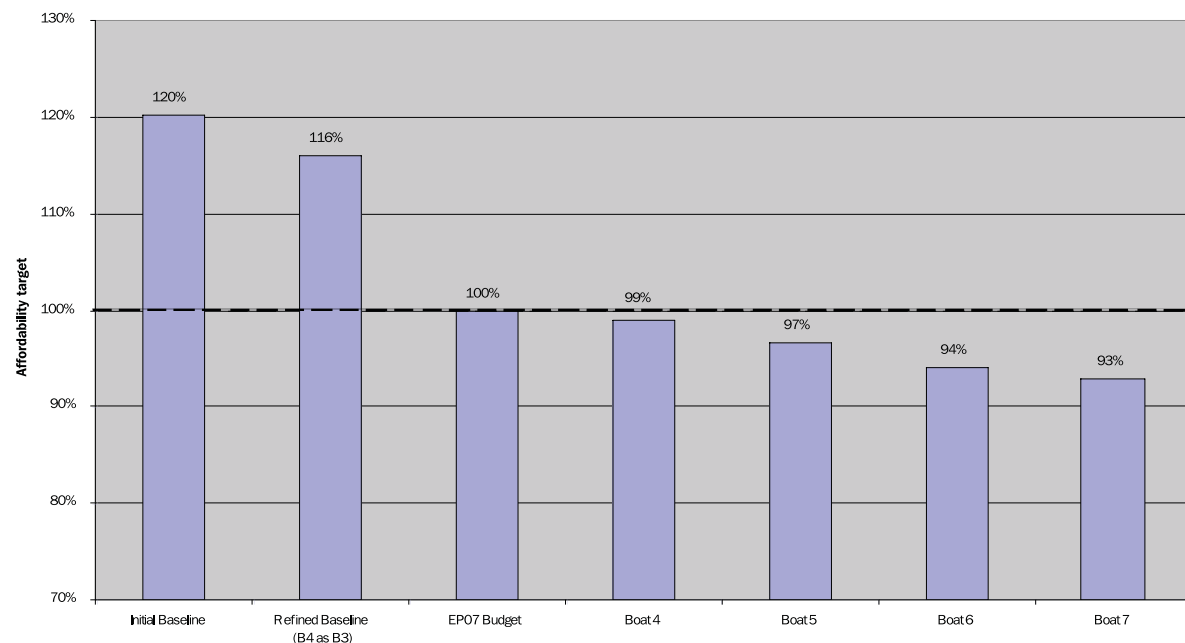
- Develop methods of working more closely together to deliver more effective solutions (removing artificial barriers that may introduce cost).

- Generate a through life perspective in order to ensure optimum decisions are made across the Submarine enterprise.

## Astute Boats 4 to 7 Affordability Progress Update >

### Design for Cost Reduction - Impact on UPC

BAE SYSTEMS



In summary we have an affordable 7 Boat Astute Programme, providing the enterprise delivers the cost saving opportunities identified

## Astute update from the Key Supplier Partners

A monthly update from each Key Supplier Partner outlining progress made on the Astute Boat 4+ Programme

### ALSTOM

Work is progressing ahead of schedule on the contract to design and manufacture Main Turbines and Condensers for Boat 4. A very productive relationship management exercise was undertaken in early March between Alstom and BAE. Work is now focussed on addressing the actions. Work is also underway on assessing a three Boat (Boats 5 to 7) Batch price.

### Rolls-Royce

Around three quarters of the Boat 4 scope of supply is now contracted including the Nuclear Steam Raising Plant (NSRP) and several items of secondary equipment including the Main Coolant Pump Bowls, Large Bore Pipework and Turbo Generators. Work is continuing between Rolls Royce, BAE SYSTEMS Submarine Solutions and MoD to agree on a Boat 5 programme. Positive Board to Board meetings are held between Rolls Royce and BAE SYSTEMS every fortnight.

### WEH STRACHAN & HENSHAW

WS&H are currently contracted for a large element (c. 60% by value) of Astute Boat 4 and are progressing to programme on this scope of work. Significant progress has been made with BAE SYSTEMS in reducing cost and a gain share agreement is now in place between both parties. Work continues to exploit the ideas generated in the Lean Design Workshop and in a Cost Reduction Paper written by WS&H. It is likely further work will be commissioned to simplify the Discharge Air and Hydraulics systems and review the alignment policy. The Air Turbine Pump is currently being tendered with contract award scheduled for June 2007.



### L3 communications

L3 are currently competing to produce an innovative proposal for the Boat 4 Platform Management System with contract award on this package due in the final quarter of 2007.



McTaggart Scott are working closely with BAE SYSTEMS to understand cost saving opportunities on Vent Valves and Mast Control Units.

### YORK A JOHNSON CONTROLS COMPANY

Work continues on the innovative proposal of replacing three conventional chilled water plants with two plants using magnetic bearing technology.

This proposal offers initial Procurement savings of around 35%

and additional Through Life Cost savings. Good progress has been made engaging MoD requirements owners.



Wellman Defence are contracted for the supply of cell stacks and will shortly be contracted to supply a Transformer Rectification Unit (TRU). A significant event occurred recently when Wellman Defence demonstrated their Combined Oxygen Generation System (COGS) prototype to the MOD and BAE SYSTEMS. The proposal is that Astute Boat 4 is the first new build to contain this innovative system.



Sheffield Forgemasters are contracted for the NQ1 Castings, Forgings and Hull Valve Bodies. The first pour occurred in January 2007 and is photographed in this issue.

### THALES

Thales are now actively involved in the Astute Innovative Combat System Rainbow Team. This team, led by BAE Systems Submarines Solutions, comprises the major defence contractors, Insyte, Thales, Qinetiq and SEA. It has the objective of realising an affordable Combat System.

The primary Thales role in the team is to lead the workstream for Sonar 2076 and provide support into the Architecture workstream.

The mainstay for the Sonar 2076 design is Stage 5. This provides an open sonar system design based on Commercial-Off-the-Shelf (COTS) equipment. This has multiple advantages of reduced procurement cost, ease of upgrade and reduced

through life costs. The processing technology used for Stage 5 will from the baseline for the whole Combat system enabling the benefits to be seen across the system.

New technology is also being introduced outboard with an adoption of the new Thin Flank Array. The current Flank Array is the largest acoustic sensor fitted to any submarine, but is heavy and is costly to fit. Improvements in acoustic materials technology will allow a significant reduction in the weight of the array, without losing performance, and a simplification of the installation process. The new Thin Flank Array will be fitted to Astute Boat 4. It is intended that the same technology be used to simplify the design of the existing Bow Array. This would mean that the benefits of reduced weight and a simplification of the installation process would be seen in the Bow Array of Astute Boat 5 and beyond.

The combination of the main players of Combat System equipment in the UK working as a single team is of benefit to all, with the ultimate winner being the submarine programmes of the future.

### Ultra ELECTRONICS

Work continues in reviewing cost saving opportunities across the full Ultra scope of Platform and Combat Systems equipment.

Ultra are currently investigating the option of introducing Cruise Drive on Astute Boat 4.

Discussions are about to commence on a Performance Partnering Agreement between Ultra and BAE SYSTEMS Submarine Solutions.



Left: Ingots being heated prior to rolling of Boat 4 NQ 1 Steel at Industeel