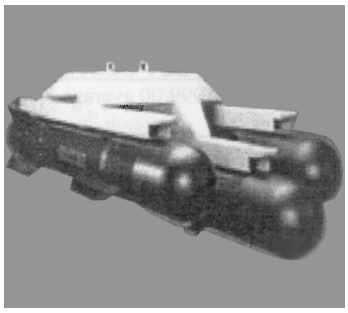
POST-MAIN GATE PROJECT SUMMARY SHEET

ADVANCED AIR-LAUNCHED ANTI-ARMOUR WEAPON (AAAW)



Integrated Project Team Responsible:
Brimstone

SECTION 1: ABOUT THE PROJECT

1a. Project description, progress and key future events

The Advanced Air-launched Anti-armour Weapon (AAAW) is designed to reduce the fighting power of enemy armoured forces as early and as far forward as possible. It replaces the BL755 cluster bomb and will be carried on Tornado GR4/4a, Harrier GR9 and Eurofighter. These fixed-wing aircraft will complement the capability provided by the Apache AH64D armed with the Hellfire anti-armour weapon. Brimstone operates autonomously after launch, which helps reduce the hazard to the attacking aircraft from enemy fire. The longer reach and speed of deployment of fixed-wing aircraft means that they can engage armour far beyond the battlefield area and before it can join the contact battle.

Following an international competition a development and production contract was placed with Alenia Marconi Systems Ltd (formerly GEC Marconi Radar and Defence Systems) in November 1996. The development phase is progressing satisfactorily with all milestones achieved on time. Qualification testing of the launcher leading to a successful first flight of the weapon fitted to a Tornado GR1 was achieved in December 1998. The ground launch development firing programme, which was to have been completed in March 2000, has been delayed to allow certification issues to be resolved by Alenia Marconi Systems and British Aerospace, and is now due to be completed later in 2000. The first 12 missiles are due to be delivered in March 2001.

1b. Associated projects

Critical to Achievement of ISD		Critical to Meet Initial Gate Requirement	
Project Title	Forecast ISD	Project Title	Forecast ISD
Tornado GR4/4a	2002	-	-

1c. Procurement strategy

Contractor(s)	Contract Scope	Contract Type	Procurement Route
Alenia Marconi Systems. Prime Contractor.	Development and production.	Firm price until December 1998, fixed price thereafter.	International competition.
Boeing North American Operations. Sub-contractor.	-	-	-

SECTION 2: PROJECT COSTS

2a. Performance against approved cost

£m (outturn prices)	Procurement Cost
Current Forecast Cost	885
Approved Cost at Main Gate	899
Variation	-14
In-year changes in 1999/2000	-25

2b. Reasons for variation from approved cost

Factor	Increase £m	Decrease £m	Explanation
Changed Budgetary Priorities		19	Delay to ISD, milestone payment and Eurofighter Integration (-£19m).
Changed Requirement	4	3	Reduction in launcher quantities and Service Weapon Test Sets (-£2m); deletion of Tornado Inboard Pylon (-£1m); additional requirement for Emulators (+£4m).
Technical Factors	3	6	Reassessment of Development activities (+£3m); reassessment of Tornado Integration Requirements (-£3m); and Harrier Integration Requirements (-£2m); reassessment of level of Defence Evaluation and Research Agency (DERA) Support (-£1m).
Exchange Rate		6	Change in US Dollar exchange rate quoted in the contract (-£6m).
Inflation	16		Difference between the inflation assumed at contract let and the GDP deflators from the time of approval (+£14m); difference between GDP and inflation on the main contract since placement (+£2m).
Accounting Adjustment		3	Changes due to conversion of cash based approvals and contract details to a resource basis (-£3m).
Total	+23	-37	
Net Variation		-14	

2c. Expenditure to date

Expenditure to 31 March 2000 (£m)	184

2d. Years of peak procurement expenditure

2002/03	2003/04

2e. Unit production cost

Unit Production Cost (£m)[1]		Quantities Required	
at Main Gate	Current	at Main Gate	Current
***	***	***	***

SECTION 3: PROJECT TIMESCALE

3a. Definition of in-service date

ISD Definition:	Delivery of the first *** weapons and associated equipment to a front-line unit, and declaration that the unit is operational.

3b. Performance against approved in-service date

	Date
Current forecast ISD	October 2002
Approved ISD at Main Gate	September 2001
Variation (Months)	+13
In-year changes in 1999/2000	+12

3c. Reasons for variation from approved ISD

Factor	Increase (months)	Decrease (months)	Explanation
Contracting process	1		Delay in letting contract with Alenia Marconi Systems as pricing negotiations took longer than anticipated.
Changed Requirement	12		Equipment Capability Customer request to bring Brimstone ISD into line with that of Tornado GR4a.
Total	+13		
Net Variation	+13		

[1] UPC is cost of 1 weapon, ie launcher plus 3 missiles

3d. Cost resulting from ISD variation

Type of Cost/Saving	Cost £m	Saving £m	Explanation
Support costs of current equipment	0.6		Annual support cost for BL755 (approx 0.6m/pa).
Other		-5.4	Annual support cost for Brimstone (approx £5m/pa).
	11.0		Additional costs to modify BL755.
	8.3		Urgent Operational Requirement for further modifications to BL755.
Total	+14.5		

3e. Operational impact of ISD variation

The ISD delay of 13 months results in the lack of a fully effective anti-armour capability and the run-on of RBL755. However, 12 months of the delay are necessary to align Brimstone ISD with the availability of its Tornado GR4a platform.

SECTION 4: KEY USER REQUIREMENTS

4a. Performance against approved key user requirements

Serial	Key Requirement	Currently forecast to be met (Yes or No)
1	Carriage, launch and jettison from Tornado GR4/4a, Harrier GR9 and Eurofighter.	Yes
2	Autonomous operation after launch.	Yes
3	Detection and attack of Main Battle Tanks, Armoured Personnel Carriers and Self-propelled Guns.	Yes
4	Kill probability as defined in System Requirement Specification (SRS).	Yes
5	Launch from high and low altitude.	Yes
6	Resistance to active and passive countermeasures.	Yes
7	Component lives as defined in SRS.	Yes
8	Compatibility with existing aircraft loads.	Yes
9	Reliability, Maintainability and Testability as SRS.	Yes
10	Minimum Through-life costs.	Yes
	Percentage currently forecast to be met	100%
	Change since previous MPR	-

4b. Reasons for variation against approved key requirements

Key Requirement	Factor	Explanation
-	-	-

SECTION 5: HISTORY UP TO MAIN GATE APPROVAL

5a. Description of the Assessment Phase

Approval was given for feasibility studies to be carried out in 1982, however during Options for Change programme funding was withdrawn while alternatives for a future anti-armour capability were considered. The project was reinstated in 1993 and the revised Staff Requirement, for an Advanced Air-launched Anti-armour Weapon (AAAW), was presented to the Equipment Approvals Committee (EAC) early in 1994.

In June 1994, the EAC gave approval for an Invitation to Tender (ITT) to be issued to industry for an AAAW. Following issue of the ITT in December 1994, proposals were received from GEC Marconi, Hunting Engineering, Texas Instruments, Thorn-EMI and British Aerospace.

Following full technical and commercial assessment of the proposals a further tender round took place in January 1996. This concentrated on the commercial aspects of the bids in line with revised timescales and production quantity requirements.

The tender assessment was completed in February 1996 with the findings being presented to EAC. Brimstone was found to have superior relative performance by a comfortable margin and also provided the most cost-effective solution. In July 1996 the Secretary of State for Defence announced that GEC Marconi had won the AAAW competition with its Brimstone weapon, and would be awarded the contract to develop and produce the weapon system.

5b. Cost of the Assessment Phase

£m (outturn prices)	Assessment Phase cost	Proportion of total estimated procurement expenditure
Actual Cost	23	2.5%
Approved Cost at Initial Gate	20	2.2%
Variation	+3	

5c. Duration of Assessment Phase

Date of Main Gate Approval	March 1996
Target Date for Main Gate Approval	-
Variation (Months)	-

5d. Cost boundaries at Initial Gate and Main Gate Approvals

£m (outturn prices)	Lowest	Most Likely	Highest
Cost of Demonstration and Manufacture Phase forecast at Main Gate	-	892	-
Cost of Demonstration and Manufacture Phase forecast at Initial Gate	-	-	-

5e. ISD boundaries at Initial Gate and Main Gate Approvals

	Earliest	Most Likely	Latest Acceptable
Forecast ISD at Main Gate	-	September 2001	-
Forecast ISD at Initial Gate	-	December 1991	-

POST-MAIN GATE PROJECT SUMMARY SHEET

ADVANCED SHORT RANGE AIR-TO-AIR MISSILE (ASRAAM)

Integrated Project Team Responsible:
Advanced Short Range Air-to-Air Missile (ASRAAM)

SECTION 1: ABOUT THE PROJECT

1a. Project description, progress and key future events

ASRAAM will be carried on Eurofighter, Harrier GR7/9, Tornado F3 and the Royal Navy's Sea Harrier FA2. It will replace Sidewinder AIM-9L albeit that this will remain in service in parallel for a period.

Following competition, a contract for full development and production of the first tranche of missiles was placed with British Aerospace Defence Division (now Matra BAe Dynamics (UK) Ltd (MBD)) in March 1992, with deliveries originally scheduled from 1998. The contract was amended in June 1995 to increase the number of missiles. Further to an Equipment Approvals Committee (EAC) decision in August 1999 the contract on MBD was rescheduled. The programme had slipped by 18 months for technical reasons, but revised platform availability necessitated a further 6 month slippage. Deferring the bulk of production has enabled, at no cost to the Defence Procurement Agency, the integration of a more powerful missile processor offering some performance enhancements, eliminating an obsolescence problem and providing flexibility for performance upgrade. At the same time the contract was converted from fixed to firm price.

The key milestone over the next year is the delivery of the in-service date (ISD) missile quantity in December 2000.

1b. Associated projects

Critical to Achievement of ISD		Critical to Meet Initial Gate Requirement	
Project Title	Forecast ISD	Project Title	Forecast ISD
-	-	-	-

1c. Procurement strategy

Contractor(s)	Contract Scope	Contract Type	Procurement Route
Matra BAe Dynamics (UK) Ltd.	Development & Production Package.	Fixed to 1 September 1999 Firm from 2 September 1999.	International Competition.

SECTION 2: PROJECT COSTS

2a. Performance against approved cost

£m (outturn prices)	Procurement Cost
Current Forecast Cost	823
Approved Cost at Main Gate	828
Variation	-5
In-year changes in 1999/2000	+2

2b. Reasons for variation from approved cost

Factor	Increase £m	Decrease £m	Explanation
Changed Requirements	45	9	Requirement to carry out Service Evaluation Trials (+ £30m); Environmental Round to measure the on-board environment of ASRAAM on various aircraft (+£2m); various studies to clarify the project requirement (+£1m); the purchase of Buffer Connectors providing an interface between the missile and aircraft electronics (+£1m); the decision to convert operational missiles to telemetered missiles (+£2m); an increase in Defence Evaluation and Research Agency support to the development and production package (+£9m); reduction in cost of the rocket motor following selection of a conventional rocket motor (-£9m).
Inflation		4	Difference in price uplift between specific indices and the Gross Domestic Product deflator (-£4m).
Receipts		19	Liquidated Damages and Consideration Payments due to late delivery of missiles (-£19m).
Contracting Process	3	38	Reduction in prices as a result of contractual negotiations (-£38m). Re-negotiation of the contract to convert from fixed to firm price, introduction of a Smart gainshare incentivisation and integration of a new processor (+£3m).
Accounting Adjustments and Re-definitions	17		Derivation of the approved cost on a resource basis (+17m).
Total	+65	-70	
Net Variation		-5	

2c. Expenditure to date

Expenditure to 31 March 2000 (£m)	479

2d. Years of peak procurement expenditure

2001/02	2002/03

2e. Unit production cost

Unit Production Cost (£m)		Quantities Required	
at Main Gate	Current	at Main Gate	Current
0.2	0.2	***	***

SECTION 3: PROJECT TIMESCALE

3a. Definition of in-service date

ISD Definition:	Acceptance of the Certificate of Design and the performance Statement with the subsequent delivery of 60 missiles that are fit for purpose.

3b. Performance against approved in-service date

	Date
Current forecast ISD	December 2000
Approved ISD at Main Gate	December 1998
Variation (Months)	+24
In-year changes in 1999/2000	+12

3c. Reasons for variation from approved ISD

Factor	Increase (months)	Decrease (months)	Explanation
Technical Factors	18		Missile hardware and software technical difficulties.
Changed Requirement	6		To align missile production deliveries with candidate aircraft availability.
Total	24		
Net Variation	+24		

3d. Cost resulting from ISD variation

Type of Cost/Saving	Cost £m	Saving £m	Explanation
Support costs of current equipment	-	-	-
Other	-	-	-
Total	-	-	

3e. Operational impact of ISD variation

The Royal Air Force plan to continue to use Sidewinder AIM-9L stocks for their short range air to air missile capability. The consequence is continued use of a lesser capability for longer.

SECTION 4: KEY USER REQUIREMENTS

4a. Performance against approved key user requirements

Serial	Key Requirement	Currently forecast to be met (Yes or No)
1	Target Discrimination.	Yes
2	Fire and Forget.	Yes
3	All Aspect Acquisition and Track.	Yes
4	Reliability.	Yes
5	Average Missile Velocity.	Yes
6	Launch time.	Yes
7	Probability of Kill.	Yes
8	Countermeasures Resistance.	Yes
9	Multi aircraft interoperability.	Yes
10	Off-boresight Acquisition and Launch.	Yes
	Percentage currently forecast to be met	100%
	Change since previous MPR	-

4b. Reasons for variation against approved key requirements

Key Requirement	Factor	Explanation
-	-	-

SECTION 5: HISTORY UP TO MAIN GATE APPROVAL

5a. Description of the Assessment Phase

ASRAAM was originally a collaborative project under the Family of Weapons Memorandum of Understanding, signed in 1980. However, the programme encountered difficulties in the missile configuration, the establishment of effective collaborative arrangements in industry and the identification of an affordable solution. Our partner nations finally withdrew from the programme during 1989 and 1990 following which ASRAAM was re-endorsed as a National programme in 1990. A competition was then held, the results of which were submitted to the EAC in March 1992.

5b. Cost of the Assessment Phase

£m (outturn prices)	Assessment Phase cost	Proportion of total estimated procurement expenditure
Actual Cost	72	8%
Approved Cost at Initial Gate	83	9%
Variation	-11	

5c. Duration of Assessment Phase

Date of Main Gate Approval	March 1992
Target Date for Main Gate Approval	-
Variation (Months)	-

5d. Cost boundaries at Initial Gate and Main Gate Approvals

£m (outturn prices)	Lowest	Most Likely	Highest
Cost of Demonstration and Manufacture Phase forecast at Main Gate	-	828	-
Cost of Demonstration and Manufacture Phase forecast at Initial Gate	-	-	-

5e. ISD boundaries at Initial Gate and Main Gate Approvals

	Earliest	Most Likely	Latest Acceptable
Forecast ISD at Main Gate	-	December 1998	-
Forecast ISD at Initial Gate	-	December 1994	-

POST-MAIN GATE PROJECT SUMMARY SHEET

AIRBORNE STAND-OFF RADAR (ASTOR)

Integrated Project Team Responsible:
Airborne Stand-Off Radar (ASTOR)

SECTION 1: ABOUT THE PROJECT

1a. Project description, progress and key future events

ASTOR is a new capability, which will provide a long range all weather theatre surveillance and target acquisition system, capable of detecting moving, fixed and static targets. It is designed to meet a joint Army and RAF requirement. The system comprises a fleet of air platforms, each with a radar sensor, and a number of ground stations.

Following a competition with Lockheed-Martin and Northrop Grumman, Raytheon Systems Limited was selected as the preferred bidder for ASTOR in June 1999. Subsequently, contract award was achieved in December 1999. The Prime Contract with Raytheon Systems Limited is for the full development and production of 5 aircraft and the 8 mobile and transportable ground stations. The contract also covers the provision of 10 years contractor logistic support the costs of which are not reported below but amount to around £140m. Bombardier is the major sub-contractor providing the 5 Global Express aircraft.

The first aircraft and ground stations are due to be delivered in 2004 with final deliveries being made in 2008.

1b. Associated projects

Critical to Achievement of ISD		Critical to Meet Initial Gate Requirement	
Project Title	Forecast ISD	Project Title	Forecast ISD
-	-	-	-

1c. Procurement strategy

Contractor(s)	Contract Scope	Contract Type	Procurement Route
Raytheon Systems Limited (Prime Contractor).	Full Development and Production.	Firm.	Competitive (International).
Bombardier Aerospace (Sub-contractor).	Production.	Firm.	Competitive (International).

SECTION 2: PROJECT COSTS

2a. Performance against approved cost

£m (outturn prices)	Procurement Cost
Current Forecast Cost	926
Approved Cost at Main Gate	938
Variation	-12
In-year changes in 1999/2000	-12

2b. Reasons for variation from approved cost

Factor	Increase £m	Decrease £m	Explanation
Contracting Process	6	16	Delay in contract award and reduced costs during Best And Final Offer's and contract negotiation (-£16m) and increase in DERA costs (+£6m).
Accounting Adjustment		2	Derivation of the approved cost on a resource basis (-£2m).
Total	6	-18	
Net Variation		-12	

2c. Expenditure to date

Expenditure to 31 March 2000 (£m)	35

2d. Years of peak procurement expenditure

2002/03	2003/04

2e. Unit production cost

Unit Production Cost (£m)		Quantities Required	
at Main Gate	Current	at Main Gate	Current
-	76.6	5 Aircraft	5 Aircraft
-	14.7	8 Ground Stations	8 Ground Stations

SECTION 3: PROJECT TIMESCALE

3a. Definition of in-service date

ISD Definition:	2 aircraft and 2 ground stations accepted into service supported by the provision of an adequate logistic and training support.

3b. Performance against approved in-service date

	Date
Current forecast ISD	September 2005
Approved ISD at Main Gate	September 2005
Variation (Months)	0
In-year changes in 1999/2000	0

3c. Reasons for variation from approved ISD

Factor	Increase	Decrease	Explanation
-	-	-	-
Total	-	-	
Net Variation	-	-	

3d. Cost resulting from ISD variation

Type of Cost/Saving	Cost £m	Saving £m	Explanation
Support costs of current equipment	-	-	-
Other	-	-	-
Total	-	-	

3e. Operational impact of ISD variation

-

SECTION 4: KEY USER REQUIREMENTS

4a. Performance against approved key user requirements

Serial	Key Requirement	Currently forecast to be met (Yes or No)
1	Endurance: Minimum of ***__hrs__, within which ***__hrs__ at best endurance speed above *** __ft__ above mean sea level. *** __hrs__ at best cruise height and speed.	Yes
2	Altitude and Range: ***x*ft** and ***xkm*³**.	Yes
3	Ground Station Transportability: C130K/J.	Yes
4	Ground Station Responsiveness: Pre-planned tasks within ***__hrs__ of sortie closure.	Yes
5	Radar Range: Radar Range bracket ***x*km** (Min far range) - ***x*km** (Max near radar range).	Yes
6	Air Platform Reaction Time: Turnaround >***__hrs.__	Yes
7	Air Segment Battlefield Mission: **Moving Target Indicator scan rate *x per mins.***	Yes
8	Air Segment Battlefield Mission (1): ***x* Synthetic Aperture Radar Spot *xkms*⁴**.	Yes
9	Air segment Battlefield Mission (2): ***x* Swathe images** per mission.	Yes
10	Ground segment Battlefield Mission: ***x* days crisis and *x* days war.**	Yes
	Percentage currently forecast to be met	100%
	Change since previous MPR	-

4b. Reasons for variation against approved key requirements

Key Requirement	Factor	Explanation
-	-	-

SECTION 5: HISTORY UP TO MAIN GATE APPROVAL

5a. Description of the Assessment Phase

In 1989 a technology demonstration programme (TDP) worth £12m(at 99/00 prices) was agreed with Research Establishments now incorporated into Defence Evaluation Research Agency. This intramural work ran for two years and demonstrated that the concepts used in ASTOR were practicable. A move into Project Definition (PD) was approved in September 1993. This is now deemed to be the equivalent of Initial Gate.

Following open competition, two parallel contracts for an 18 month PD programme were let in February 1995. After assessment of the PD proposals it was considered that the optimum solution would be to invite the two PD consortia to submit Best and Final Offers (BAFOs) for the Development, Production and In-Service Support. This revised procurement strategy was approved by the then Minister for Defence Procurement in March 1997.

During the preparation to invite the two PD consortia to submit BAFOs in September 1997 programming decisions were taken which delayed the availability of funding, particularly in the early years, and the in-service date for the ASTOR capability was delayed by 15 months. During the BAFO phase a decision was taken to consider a third bid based upon the US Joint Surveillance Target Attack Radar System (JSTARS) upgrade programme, the Radar Technology Insertion Programme (RTIP). As a result various unsolicited revisions to the bids were received during the assessment process, further delaying the in-service date by 14 months. Approval for the implementation phase was given after down selection in June 1999.

5b. Cost of the Assessment Phase

£m (outturn prices)	Assessment Phase cost	Proportion of total estimated procurement expenditure
Actual Cost	13	1.4%
Approved Cost at Initial Gate	12	1.3%
Variation	+1	

5c. Duration of Assessment Phase

Date of Main Gate Approval	June 1999
Target Date for Main Gate Approval	March 1998
Variation (Months)	+15

5d. Cost boundaries at Initial Gate and Main Gate Approvals

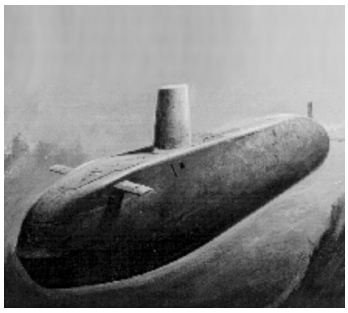
£m (outturn prices)	Lowest	Most Likely	Highest
Cost of Demonstration and Manufacture Phase forecast at Main Gate	-	938	-
Cost of Demonstration and Manufacture Phase forecast at Initial Gate	-	-	-

5e. ISD boundaries at Initial Gate and Main Gate Approvals

	Earliest	Most Likely	Latest Acceptable
Forecast ISD at Main Gate	-	June 2005	September 2005
Forecast ISD at Initial Gate	-	April 2003	-

POST-MAIN GATE PROJECT SUMMARY SHEET

ASTUTE CLASS SUBMARINE



Integrated Project Team Responsible:
Attack Submarine (ASM)

SECTION 1: ABOUT THE PROJECT

1a. Project description, progress and key future events

The Astute Class of submarines is the planned replacement for the Swiftsure Class SSNs (Sub Surface Nuclear). Invitations to tender for the first 3 submarines of the class were issued in July 1994 with competitive bids received in June 1995. GEC-Marconi was identified as the MOD's preferred bidder in December of the same year. Following protracted negotiations, using the policy of No Acceptable Price No Contract (NAPNOC), a contract was placed with GEC-Marconi as the Prime Contractor and announced on 17 March 1997. The contract put in place the first whole boat, Prime Contract for UK nuclear powered submarines. The Prime Contract with GEC Marconi is for the design, build, and initial support of three submarines. The support task will be undertaken by the Prime Contractor for a total of eight submarine years (4.5 calendar years). The Prime Contract requires an integrated Tactical Weapons System with a performance at least as good as the Swiftsure & Trafalgar (S&T) Update Final Phase. As a risk reduction measure, the former MOD contracts for the Final Phase of the S&T Update have been novated into the Prime Contract for Astute. Forthcoming key dates are detailed below. As at 31 March 2000, the Astute project is progressing satisfactorily and is on target to achieve these dates:-

1. Complete critical systems design review - May 2001.
2. Complete whole boat design freeze review - January 2003.

Expenditure in clear prospect - It is anticipated that an order for a further 3 Astute class submarines will be placed in late 2002. This order will be subject to approval by the EAC, Ministers and Treasury. Estimated cost is £1.7bn.

1b. Associated projects

Critical to Achievement of ISD		**Critical to Meet Initial Gate Requirement**	
Project Title	Forecast ISD	Project Title	Forecast ISD
S&T Update Final Phase.	2003	-	-
D154 nuclear submarine refit & refuelling facility at Devonport.	2002	-	-

1c. Procurement strategy

Contractor(s)	Contract Scope	Contract Type	Procurement Route
BAE SYSTEMS (formally GEC Marconi).	Full development, production and initial support.	Fixed price incentive fee with a maximum price.	Competitive (UK).

SECTION 2: PROJECT COSTS

2a. Performance against approved cost

£m (outturn prices)	Procurement Cost
Current Forecast Cost	2768
Approved Cost at Main Gate	2726
Variation	+42
In-year changes in 1999/2000	+29

2b. Reasons for variation from approved cost

Factor	Increase £m	Decrease £m	Explanation
Changed requirement	32		Includes change to fore end design, completion of land attack missile capability and improved tactical data link capability.
Inflation		14	Variation between GDP and VOP.
Accounting adjustments	24		Variation reflects difference between anticipated resource profile at approval and current profile (EP2000).
Total	+56	-14	
Net Variation	+42		

2c. Expenditure to date

Expenditure to 31 March 2000 (£m)	252

2d. Years of peak procurement expenditure

2003/04	2004/05

2e. Unit production cost

Unit Production Cost (£m)		Quantities Required	
at Main Gate	Current	at Main Gate	Current
709	745	3	3

SECTION 3: PROJECT TIMESCALE

3a. Definition of in-service date

ISD Definition:	Stage 1 acceptance from the contractor.

3b. Performance against approved in-service date

	Date
Current forecast ISD	June 2005
Approved ISD at Main Gate	June 2005
Variation (Months)	0
In-year changes in 1999/2000	0

3c. Reasons for variation from approved ISD

Factor	Increase (months)	Decrease (months)	Explanation
Total	-	-	-
Net Variation	-	-	

3d. Cost resulting from ISD variation

Type of Cost/Saving	Cost £m	Saving £m	Explanation
Support costs of current equipment	-	-	-
Other	-	-	-
Total	-	-	

3e. Operational impact of ISD variation

-

SECTION 4: KEY USER REQUIREMENTS

4a. Performance against approved key user requirements

Serial	Key Requirement	Currently forecast to be met (Yes or No)
1	Weapon system effectiveness.	Yes
2	Sonar performance.	Yes
3	Hull strength (survivability).	Yes
4	Top speed.	Yes
5	Endurance, 70 days deeply submerged.	Yes
6	Acoustic signature.	Yes
7	Complement.	Yes
8	Land attack capability.	Yes
9	Special forces capability.	Yes
	Percentage currently forecast to be met	100 %
	Change since previous MPR	-

4b. Reasons for variation against approved key requirements

Key Requirement	Factor	Explanation
-	-	-

SECTION 5: HISTORY UP TO MAIN GATE APPROVAL

5a. Description of the Assessment Phase

The Astute Class of submarines is the planned replacement for the Swiftsure Class SSNs. In June 1991, approval to proceed with a programme of studies at an estimated cost of £6m(91/92 prices) to define the Batch 2 Trafalgar Class Boat (now known as the Astute Class). This programme of studies led to the issue of an invitation to tender for the design and build of an initial batch of 3 Astute Class SSNs and a further approval of £2m(92/93 prices) for contractor and DRA support to MOD during the tendering exercise in 1994.

In July 1994, as a result of concerns over the overall affordability of the programme, Minister (Defence Procurement) and the Treasury approved a further £23.5m(at 93/94 prices) for risk reduction studies to be undertaken in parallel with the formal bid phase of the project. To maintain an effective competition, contracts for risk reduction work were awarded to both bidders, GEC Marconi and Vickers Shipbuilding and Engineering Limited. The successful outcome of these studies led to EAC approval (Main Gate) in March 1997 to place a contract for the design, build and initial support of 3 Astute Class submarines with GEC Marconi.

5b. Cost of the Assessment Phase

£m	Assessment Phase cost	Proportion of total estimated procurement expenditure
Actual Cost	29	1%
Approved Cost at Initial Gate	33	1%
Variation	-4	

5c. Duration of Assessment Phase

Date of Main Gate Approval	March 1997
Target Date for Main Gate Approval	-
Variation (Months)	-

5d. Cost boundaries at Initial Gate and Main Gate Approvals

£m (outturn prices)	Lowest	Most Likely	Highest
Cost of Demonstration and Manufacture Phase forecast at Main Gate	2570	2727	2887
Cost of Demonstration and Manufacture Phase forecast at Initial Gate	-	-	-

5e. ISD boundaries at Initial Gate and Main Gate Approvals

	Earliest	Most Likely	Latest Acceptable
Forecast ISD at Main Gate	-	June 2005	-
Forecast ISD at Initial Gate	-	December 2001	-

POST-MAIN GATE PROJECT SUMMARY SHEET

ATTACK HELICOPTER
WAH-64 APACHE

Integrated Project Team Responsible:
Attack Helicopter

SECTION 1: ABOUT THE PROJECT

1a. Project description, progress and key future events

WAH-64 Apache Attack Helicopter (AH), a version of the US Army AH-64D, will replace the ageing Lynx Mk7 system in the anti-armour role. It will be equipped with Rolls Royce Turbomeca (RTM) 322 engines; the Longbow Fire Control Radar; Semi-Active Laser and Radio Frequency versions of the Hellfire missile; CRV-7 ground suppression rockets; and 30mm cannon.

The procurement strategy was based on an "Off-The-Shelf" buy of the complete weapons system through a Prime Contractor. Following an international competition, a Prime Contract for the supply of 67 WAH-64s and the integration of its weapons was placed with GKN-Westland Helicopters Ltd in March 1996; the project is in the Production Phase. Boeing is the major sub-contractor. A separate contract for the procurement of munitions stocks was placed with Hunting Engineering Ltd on 29 March 1996. Equipments to meet key requirements were added to the Prime Contract in 1999 (i.e. Health and Usage Monitoring System and Communications upgrade).

The first aircraft is expected to be delivered in April 2000; final delivery is due December 2003. Further expenditure to equip the aircraft for Crew & Special-to-Arm Collective Training (£50m) and the Support Re-appraisal Project (£110m) (to generate offset reductions in through life support costs) is in clear prospect.

1b. Associated projects

Critical to Achievement of ISD		Critical to Meet Initial Gate Requirement	
Project Title	Forecast ISD	Project Title	Forecast ISD
AH Training Package - Private Finance Initiative (PFI).	2000 (Ready for Training Date).	-	-

1c. Procurement strategy

Contractor(s)	Contract Scope	Contract Type	Procurement Route
GKN Westland Helicopters Ltd.	Prime Contractor for aircraft production and weapon integration.	Fixed Price.	International Competition.
Boeing, USA.	Sub-contractor.	Fixed price.	Sub-contractor.

SECTION 2: PROJECT COSTS

2a. Performance against approved cost

£m (outturn prices)	Procurement Cost
Current Forecast Cost	2858
Approved Cost at Main Gate	3015
Variation	-157
In-year changes in 1999/2000	-28

2b. Reasons for variation from approved cost

Factor	Increase £m	Decrease £m	Explanation
Exchange Rate	1	70	Movement in US Exchange Rate (ER) on Prime Contract compared with the ER assumed at contract award (-£70m); movement in French Franc ER for sunk costs on Prime Contract compared with the ER assumed at contract award (+£1m).
Inflation		12	Effect of payment of Variation of Price (VOP) on Prime Contract compared to GDP deflator (-£12m).
Changed Requirement	47	137	Reduction of air-to-air missile quantity (-£4m); deletion of funding for US solution on Integrated Helmet (-£44m); deletion of M36 training round (-£8m); descoping of Helmet requirement (-£9m); extra funding for Defensive Aids Suite (+£12m); incorporation of Health Usage and Monitoring System onto AH Prime Contract (+£35m); deletion of funding for a generic air-to-air missile (-£72m).
Changed Budgetary Priorities	93	63	Increased estimate to incorporate necessary Communications upgrade (+£31m); inclusion of funding to provide for an improved Low Height Warning System (+£9m); inclusion of funding to allow for Ordnance Board approval of munitions (+£10m); inclusion of funding to allow Static Code Analysis to be undertaken upon AH software (+£8m); reassessment of cost for Bowman integration study (-£2m); reassessment of cost of Foreign Military Sales (FMS) cases (+£6m); inclusion of funding for the incorporation of Arc Radios onto the aircraft (+£4m); inclusion of funding to incorporate Configuration Changes onto the aircraft (+£7m); reduction in VAT applicability on Prime Contract (-£60m); reassessment of costs to support missile trial (-£1m); reassessment of DERA and CESG support (+£18m).
Contracting Process	14		Outcome of tendering and contractual negotiations (+£14m).

Factor	Increase £m	Decrease £m	Explanation
Accounting Adjustments and Re-definitions	23	53	Inclusion of DERA/CESG costs disaggregated since approval (+£23m); derivation of the approved cost on a resource basis (-£53m).
Total	+178	-335	
Net Variation		-157	

2c. Expenditure to date

Expenditure to 31 March 2000 (£m)	1337

2d. Years of peak procurement expenditure

1999/00	2000/01

2e. Unit production cost

Unit Production Cost (£m)		Quantities Required	
at Main Gate	Current	at Main Gate	Current
28.7	26.2	67	67

SECTION 3: PROJECT TIMESCALE

3a. Definition of in-service date

ISD Definition:	Delivery of the first 9 production standard WAH-64s

3b. Performance against approved in-service date

	Date
Current forecast ISD	December 2000
Approved ISD at Main Gate	December 1999
Variation (Months)	+12
In-year changes in 1999/2000	0

3c. Reasons for variation from approved ISD

Factor	Increase (months)	Decrease (months)	Explanation
Changed Requirement	6		Reflects the selection of a different engine option (RTM322).
Changed Budgetary Priorities	12		Programme slipped by 12 months in order to match the programme to the available Departmental resources.
Total	12[2]		
Net Variation	12[2]		

[2] The 6 months slip acted concurrently with the 12 months slip.

3d. Cost resulting from ISD variation

Type of Cost/Saving	Cost £m	Saving £m	Explanation
Support costs of current equipment	30		Costs of running on Lynx Mk7 and TOW missile during the period of AH ISD slippage.
Savings in Apache support costs		48	Apache support costs not expended due to AH ISD slippage.
Total		-18	

3e. Operational impact of ISD variation

The slip in WAH-64 ISD results in a requirement to extend the service of current Army aircraft: i.e. the Lynx, with its TOW missile, for Anti-Armour and Gazelle for Reconnaissance and Observation. However, whilst ISD is a key milestone for the DPA to achieve, it is the Army's own Operational Availability Date (OAD) of September 2002 which is on the critical path to achieving the 'End State' delivery of the UK Air Manoeuvre Capability by July 2005; the OAD has remained unchanged. The UK specific enhancements, notably the RTM322 engine, will ensure UK fields an aircraft capable of operations across the spectrum of conflict and brings WAH-64 OAD in line with that of 16 Air Assault Brigade.

SECTION 4: KEY USER REQUIREMENTS

4a. Performance against approved key user requirements

Serial	Key Requirement	Currently forecast to be met (Yes or No)
1	Lethality.	Yes
2	Survivability.	Yes
3	Payload/Range - Anti-Armour mission.	Yes
4	Payload/Range - Ferry mission - Internal fuel.	Yes
5	Payload/Range - Ferry mission - Internal and External fuel.	Yes
6	Mission Management.	Yes
7	Night/Adverse Weather Operations.	Yes
8	Overall Aircraft Attributable Fault Rate (AFR).	Yes
9	Aircraft Attributable Mission Failure Rate (MFR).	Yes
10	Attributable Maintenance Man Hours/Flying Hour (MMH/FH).	Yes
11	Time to Rectify Faults (TRF).	Yes
	Percentage currently forecast to be met	100%
	Change since previous MPR	-

4b. Reasons for variation against approved key requirements

Key Requirement	Factor	Explanation
-	-	-

SECTION 5: HISTORY UP TO MAIN GATE APPROVAL

5a. Description of the Assessment Phase

The AH requirement was endorsed as a Cardinal Point Staff Target in June 1991 and called for a competitive Commercial Off-The-Shelf procurement. Six companies submitted bids in 1993 in response to an Invitation To Tender, but only three were invited to submit Definitive Bids in 1995. Bids were assessed against four main criteria: Operational Effectiveness, Life Cycle Costs, Risk and Industrial Participation.

The supportability of each complete helicopter package was evaluated within an Integrated Logistic Support (ILS) approach to supportability, which included a training needs analysis and full evaluation of the training systems offered. The competition recommended to Ministers the selection of Apache to fulfil our AH requirement.

The variation of £3m between the approved cost at Staff Target (Initial Gate equivalent) and actual cost reflects spend on DERA paid by the project after Initial Gate approval.

5b. Cost of the Assessment Phase

£m (outturn prices)	Assessment Phase cost	Proportion of total estimated procurement expenditure
Actual Cost	6	less than 1%
Approved Cost at Initial Gate	3	
Variation	+3	

5c. Duration of Assessment Phase

Date of Main Gate Approval	July 1995
Target Date for Main Gate Approval	-
Variation (Months)	-

5d. Cost boundaries at Initial Gate and Main Gate Approvals

£m (outturn prices)	Lowest	Most Likely	Highest
Cost of Demonstration and Manufacture Phase forecast at Main Gate	-	3015	-
Cost of Demonstration and Manufacture Phase forecast at Initial Gate	-	2768	-

5e. ISD boundaries at Initial Gate and Main Gate Approvals

	Earliest	Most Likely	Latest Acceptable
Forecast ISD at Main Gate	-	December 1999	-
Forecast ISD at Initial Gate	-	December 1997	-

POST-MAIN GATE PROJECT SUMMARY SHEET

CHALLENGER 2

Integrated Project Team Responsible:
Tank Systems Support

SECTION 1: ABOUT THE PROJECT

1a. Project description, progress and key future events

Challenger 2 (CR2) Main Battle Tank (MBT) with CHARM 3 ammunition will replace the current 8 regiments of Challenger 1 (CR1) MBT. The Chieftain MBT was withdrawn from operational service in February 1996 and existing CR1 MBT assets were redeployed to allow 8 regiments of MBT to continue in-service.

There is a link between CR2 and the CHARM 1 project because, when the decision was made to order a follow-on buy of 259 CR2, the contractor was required to use the 230 CHARM guns already procured from Royal Ordnance. This programme is complete and has been fully reported in previous Major Project Reports. It has spent £235m against a MOD approval of £211m (at 99/00 prices).

Following an international competition, a contract was placed in June 1991 for 127 MBTs and 13 Driver Training Tanks (DTTs) to replace Chieftain. There remained a need to upgrade the rest of the MBT fleet (CR1) and it was decided in 1994 that the most cost-effective solution was to purchase further CR2. Options in the contract were taken up in July 1994 for an additional 259 MBTs and 9 DTTs, making a total order of 386 MBT and 22 DTT. The vehicle development programmes are complete.

A trial during October 1995 established that some early production MBTs did not fully meet the contracted level of reliability acceptable for operational service. A Production Reliability Growth Programme was negotiated with Vickers plc, and the company had achieved the four reliability milestones by November 1997. The first Batch Test of regimental tanks was passed in January 1998. The in-service date was achieved in June 1998. As at 31 March 2000 six Batch Tests had been completed successfully and a total of 216 MBTs and 22 DTTs had been delivered.

1b. Associated projects

Critical to Achievement of ISD		Critical to Meet Initial Gate Requirement	
Project Title	Forecast ISD	Project Title	Forecast ISD
-	-	-	-

1c. Procurement strategy

Contractor(s)	Contract Scope	Contract Type	Procurement Route
Vickers plc.	Development & Production.	Fixed Price.	International Competition.

Contractor(s)	Contract Scope	Contract Type	Procurement Route
Royal Ordnance.	CHARM 3 Ammunition Follow-on-Buy.	Firm Price.	Competition.

SECTION 2: PROJECT COSTS

2a. Performance against approved cost

£m (outturn prices)	Procurement Cost
Current Forecast Cost	2325
Approved Cost at Main Gate	2203
Variation	+122
In-year changes in 1999/2000	-3

2b. Reasons for variation from approved cost

Factor	Increase £m	Decrease £m	Explanation
Inflation	41		Difference in annual price uplifts between specific indices/Long Term Costing and Equipment Plan uplift and GDP deflator (+£41m).
Exchange Rate	4		Increases in contract Variation of Price (VOP) due solely to exchange rate variations across a basket of currencies (+£4m).
Changed Requirement	54	2	Relaxation of CHARM 3 requirement (-£1m); Reductions in training aids (-£1m); replacing air conditioning coolant, to comply with Montreal Protocol (+£8m); CHARM 3 stowage modifications and proofing (+£3m); additional Special Test Equipment (+£4m); fire control computer chip upgrade (+£2m); minor tank modifications including Active Noise Reduction, and changes to radio fit (+£5m); and training aids modifications (+£1m); safety case (+£1m); armour additions (+£7m); desert modifications (+£23m).
Changed Budgetary Priorities		5	Reductions in spares (-£5m).
Contracting Process	21	34	Lower contract prices achieved than earlier estimates for Demonstration Phase Equipment (-£15m); follow-on buy contract amendment (-£15m); and CHARM 3 Development (-£3m); a reduction in price due to early payment against the follow-on buy (-£1m); CHARM 3 increase to reflect tender price (+£15m); increase in the estimated cost of works services for training aids (+£6m).

Factor	Increase £m	Decrease £m	Explanation
Receipts		6	Liquidated damages claims (-£3m); and CEL receipts (-£3m).
Accounting Adjustments and Re-definitions	49		Provision for DERA support not in original approvals (+£21m); EP2000 re-profiling to reflect programme slippage (+£1m); derivation of the approved cost on a resource basis (+£27m).
Total	+169	-47	
Net Variation	+122		

2c. Expenditure to date

Expenditure to 31 March 2000 (£m)	2135

2d. Years of peak procurement expenditure

1996/1997	1998/1999

2e. Unit production cost

Unit Production Cost (£m)		Quantities Required	
at Main Gate	Current	at Main Gate	Current
-	3.7	127	386

SECTION 3: PROJECT TIMESCALE

3a. Definition of in-service date

ISD Definition:	Delivery of a proportion of Army Training and Recruiting Agency (formerly Individual Training Organisation) vehicles and one regiment's establishment.

3b. Performance against approved in-service date

	Date
Current forecast ISD	June 1998
Approved ISD at Main Gate	December 1995
Variation (Months)	+30
In-year changes in 1999/2000	0

3c. Reasons for variation from approved ISD

Factor	Increase	Decrease	Explanation
Technical Factors	30		Problems with the delivery of certain essential support elements (training and publications) and with the translation of development reliability standards into production vehicles. The 30-month slip was implemented to ensure that the tank should enter service to the required reliability standard and with the necessary support package (+30 months).
Total	30		
Net Variation	+30		

3d. Cost resulting from ISD variation

Type of Cost/Saving	£m	Explanation
Support costs of current equipment	39	Cost of running on Challenger 1 while awaiting new CR2 in-service date (+£39m).
Other	-	-
Total	+39	

3e. Operational impact of ISD variation

There was minimal operational impact as a result of the ISD slip. The main difference between Challenger 1 and Challenger 2 lies in the latter's use of technology to improve reliability and supportability, creating a more lethal force. The deployment of Challenger 1 during the period of slippage could have been potentially less efficient but any impact on overall operational capability is assessed as minimal. In the event, Challenger 1 was able to meet the deployment requirements of the peace support operations conducted in the Balkans.

SECTION 4: KEY USER REQUIREMENTS

4a. Performance against approved key user requirements

Serial	Key Requirement	Currently forecast to be met (Yes or No)
1	Achieve Batch Test Basic failure criteria.	Yes
2	Achieve Batch Test Mission failure criteria.	Yes
3	Achieve CR2 level of availability agreed with Customer 1.	Yes
	Percentage currently forecast to be met	100%
	Change since previous MPR	-

4b. Reasons for variation against approved key requirements

Key Requirement	Factor	Explanation
-	-	-

SECTION 5: HISTORY UP TO MAIN GATE APPROVAL

5a. Description of the Assessment Phase

The project procurement did not follow a normal Downey Cycle (no Feasibility Study or Project Definition phases); therefore there was no formal Assessment Phase in the sense that applies to Smart Procurement. A Private Venture design was suggested by Vickers for the international competition to replace 2 regiments of Chieftain. Cabinet approval was given in December 1988 for a programme of work in which vehicles were built and trialled to establish whether the Vickers design could meet the Chieftain replacement Staff Requirement and be of benefit to the discrete Challenger 1 Upgrade programme. The design (Challenger 2) did meet the requirement.

The progress of the international competition to replace Chieftain (see Section 1 above) was disrupted considerably by the Gulf War (1990-91) - neither industry nor MOD staff were available to process the competition during the war. The programme was further affected by MOD's Options for Change exercise and budgetary difficulties with Long Term Costing 1991, and put back at least twelve months.

After full consideration of three bids, Challenger 2 was selected in June 1991 to replace Chieftain.

5b. Cost of the Assessment Phase

£m (outturn prices)	Assessment Phase cost	Proportion of total estimated procurement expenditure
Actual Cost	104	4 %
Approved Cost at Initial Gate	116	5%
Variation	- 12	

5c. Duration of Assessment Phase

Date of Main Gate Approval	June 1991
Target Date for Main Gate Approval	December 1990
Variation (Months)	+ 6 months

5d. Cost boundaries at Initial Gate and Main Gate Approvals

£m (outturn prices)	Lowest	Most Likely	Highest
Cost of Demonstration and Manufacture Phase forecast at Main Gate	-	2203	-
Cost of Demonstration and Manufacture Phase forecast at Initial Gate	-	-	-

5e. ISD boundaries at Initial Gate and Main Gate Approvals

	Earliest	Most Likely	Latest Acceptable
Forecast ISD at Main Gate	-	December 1995	-
Forecast ISD at Initial Gate	April 1994	October 1994	-

POST-MAIN GATE PROJECT SUMMARY SHEET

CONVENTIONALLY ARMED STAND-OFF MISSILE (CASOM)

Integrated Project Team Responsible:
Conventionally Armed Stand-Off Missile (CASOM)

SECTION 1: ABOUT THE PROJECT

1a. Project description, progress and key future events

Storm Shadow is a Conventionally Armed Stand-Off Missile which will enhance our stand off precision attack capability against strategic, tactical and infrastructure targets without exposing our aircraft and crews to an unacceptably high level of aircraft attrition.

In February 1997, following an international competition, a development and production contract was awarded to Matra BAe Dynamics (UK) Ltd (MBDUK) for their Storm Shadow missile. Storm Shadow will be integrated onto Tornado GR4, Harrier GR7 and Eurofighter. While the programme is progressing satisfactorily with all development milestones being achieved on time, it has been necessary to delay the in-service date by 6 months to align with the availability of Tornado aircraft able to deliver this system.

The first guided weapon development firing is scheduled for mid 2000 and the first operational missiles will be delivered in April 2002.

Both the French and Italian Governments are also procuring Storm Shadow or SCALP EG (French Designation). The French contract was awarded to MBD (France) in December 1997. The DPA is procuring Storm Shadow on behalf of the Italian Government, through a UK contract, which was placed, with MBDUK in October 1999. MBD have harmonised all national requirements, where possible, to ensure coherency in development work. Environmental interoperability is under investigation to provide worldwide deployability.

1b. Associated projects

Critical to Achievement of ISD		**Critical to Meet Initial Gate Requirement**	
Project Title	Forecast ISD	Project Title	Forecast ISD
Tornado GR4 (Package 2)	2002	Tornado GR4 (MLU)	1998

1c. Procurement strategy

Contractor(s)	Contract Scope	Contract Type	Procurement Route
Matra BAe Dynamics (UK) Ltd.	Development, Production and Initial Contractor Logistics Support.	Firm Price until December 1998. Fixed Price from January 1999 onwards.	International Competition.

SECTION 2: PROJECT COSTS

2a. Performance against approved cost

£m (outturn prices)	Procurement Cost
Current Forecast Cost	987
Approved Cost at Main Gate	1027
Variation	-40
In-year changes in 1999/2000	-21

2b. Reasons for variation from approved cost

Factor	Increase £m	Decrease £m	Explanation
Inflation	24	12	Difference between inflation assumed at contract award and GDP deflators used at time of approval for development and production (+£24m); difference between specific indices and GDP deflator in calculating annual price uplift (-£12m).
Exchange Rates		14	Reduction reflects better rate obtained by Matra BAe in buying forward French Francs than originally estimated (-£14m).
Changed Budgetary Priorities		35	Reassessed estimates for: Harrier Integration (-£4m); DERA support to DPA sponsored tasks (-£5m); Tornado Integration (-£2m); loading systems (-£2m); GFE Items (-£1m); funding provision to support Development programme (-£8m); Funding provision to support Production programme (+£8m); SMART procurement savings, following a re-assessment of DERA support and cost of Service Evaluation Trials (-£21m).
Accounting Adjustments and Re-definitions		3	Derivation of the approved cost on a resource basis (-£3m).
Total	+24	-64	
Net Variation		-40	

2c. Expenditure to date

Expenditure to 31 March 2000 (£m)	266

2d. Years of peak procurement expenditure

2000/01	2001/02

2e. Unit production cost

Unit Production Cost (£m)		Quantities Required	
at Main Gate	Current	at Main Gate	Current
-	***	-	***

SECTION 3: PROJECT TIMESCALE

3a. Definition of in-service date

ISD Definition:	First *** weapons in-service with support equipment

3b. Performance against approved in-service date

	Date
Current forecast ISD	August 2002
Approved ISD at Main Gate	December 2001
Variation (Months)	+ 8
In-year changes in 1999/2000	+ 8

3c. Reasons for variation from approved ISD

Factor	Increase (months)	Decrease (months)	Explanation
Contracting Process	2		Contract placed later than planned due to final pricing negotiations (+ 2 months).
Changed requirement	6		To align missile ISD with Tornado GR4 (Package 2) availability (+ 6 months).
Total	8		
Net Variation	+8		

3d. Cost resulting from ISD variation

Type of Cost/Saving	Cost £m	Saving £m	Explanation
Support costs of current equipment	-	-	New capability
Other	-	-	-
Total	-	-	

3e. Operational impact of ISD variation

The operational impact of the delay is that the enhanced stand off precision attack capability to be provided by Storm Shadow will be achieved 8 months later than planned. However, 6 months of the slippage was necessary to align with the availability of a Tornado GR4 Package 2 aircraft able to deliver this capability. This delay was seen as easing MBD's commercial programme risk, and negotiations commenced to ensure that the MOD gained equivalent benefit by introducing, at no additional cost, some further development work enabling the inclusion of a number of essential operational modifications during the production phase, resulting in an improvement in the operational capability expected from Storm Shadow. These discussions were satisfactorily concluded, and the Storm Shadow contract was amended.

SECTION 4: KEY USER REQUIREMENTS

4a. Performance against approved key user requirements

Serial	Key Requirement	Currently forecast to be met (Yes or No)
1	One individual able to plan the contracted missile attacks in a specified period.	Yes
2	Single pass, multiple launch of missiles (2) from all contracted aircraft types.	Yes
3	The operational missile presents Self Damage 3 risk to the launch aircraft no greater than 1×10^{-3}.	Yes
4	Contracted range at sea level.	Yes
5	Contracted probability of survival to target.	Yes
6	Contracted probability of successful target acquisition.	Yes
7	Warhead capable of perforating contracted thickness of steel reinforced concrete.	Yes
8	Contracted Circular Error of Probability.	Yes
9	Storage to warhead initiation reliability as defined in the Customer Supplier Agreement.	Yes
10	Carriage of 4 missiles in their containers in C-130 aircraft.	Yes
	Percentage currently forecast to be met	100 %
	Change since previous MPR	-

4b. Reasons for variation against approved key requirements

Key Requirement	Factor	Explanation
-	-	-

SECTION 5: HISTORY UP TO MAIN GATE APPROVAL

5a. Description of the Assessment Phase

In parallel with work being undertaken by NATO, the UK separately commissioned a study in 1982 to investigate the feasibility and cost effectiveness of a Long Range Stand-Off Missile (LRSOM) programme. In 1986, LRSOM was subsumed in favour of the Modular Stand-Off Weapon (MSOW) seven nation collaborative programme. The MSOW programme collapsed in 1989 when the US and UK withdrew. Following this withdrawal and the end of the Cold War, the continued military need to acquire a stand-off missile capability was reviewed as part of the "Options for Change" exercise and the Requirement was confirmed. Approval was given in 1994 to issue a Request for Proposals, and responses were received from seven international companies. The assessment of the responses was undertaken against the Requirement under the classical Procurement Cycle approach. The programme is now aligned to the new Smart Procurement Acquisition Cycle.

5b. Cost of the Assessment Phase

£m (outturn prices)	Assessment Phase cost	Proportion of total estimated procurement expenditure
Actual Cost	4	0.4 %
Approved Cost at Initial Gate	4	0.4 %
Variation	0	

5c. Duration of Assessment Phase

Date of Main Gate Approval	August 1996
Target Date for Main Gate Approval	-
Variation (Months)	-

5d. Cost boundaries at Initial Gate and Main Gate Approvals

£m (outturn prices)	Lowest	Most Likely	Highest
Cost of Demonstration and Manufacture Phase forecast at Main Gate	-	1027	-
Cost of Demonstration and Manufacture Phase forecast at Initial Gate	-	-	-

5e. ISD boundaries at Initial Gate and Main Gate Approvals

	Earliest	Most Likely	Latest Acceptable
Forecast ISD at Main Gate	-	December 2001	-
Forecast ISD at Initial Gate	-	December 1994	-

POST-MAIN GATE PROJECT SUMMARY SHEET

EUROFIGHTER

Integrated Project Team Responsible:
EUROFIGHTER

SECTION 1: ABOUT THE PROJECT

1a. Project description, progress and key future events

Eurofighter will be an agile fighter aircraft. Air superiority is the primary design driver, but the aircraft will also have an air-to-ground capability. Eurofighter will thus be able to offer operational capability in response to the uncertain demands of the post-Cold War strategic environment, and will enable the RAF to replace the Tornado F3 and Jaguar aircraft. An all Eurofighter fleet is substantially more cost-effective than any alternative aircraft option or aircraft mix when this multi-role capability is considered alongside costs. It is being developed in a collaborative project with Germany, Italy and Spain, and is managed on behalf of the nations by a NATO agency, NETMA.

The Memoranda of Understanding for the Production and Support Phases were signed on 22 December 1997 and contracts covering Production Investment and Production placed on 30 January 1998. The contracts for the first tranche of 148 aircraft, of which 55 are for the RAF, valued at some £2.5bn to the UK, were signed on 18 September 1998. The first RAF aircraft is due to be delivered in June 2002. Support of the aircraft throughout its life will be conducted using Integrated Logistics Support principles under a series of separate contracts the first of which, covering initial support were placed at the same time as the Production Investment and Production contracts. A number of potential export customers have been identified and Greece announced on 8 March 2000 its intention to procure 60 aircraft with an option for 30.

1b. Associated projects

Critical to Achievement of ISD		Critical to Meet Initial Gate Requirement	
Project Title	Forecast ISD	Project Title	Forecast ISD
-	-	-	-

1c. Procurement strategy

Contractor(s)	Contract Scope	Contract Type	Procurement Route
Eurofighter GmbH Airframe consortium comprising: Alenia BAE SYSTEMS EADS (CASA) EADS (Deutschland).	Development.	Fixed Price for Airframe and equipments and Target Cost Incentive Arrangement for Aircraft Equipment integration.	Non-competitive but with international sub-contract competitive elements, the value of which amounts to some 30% of the overall value of the Prime Contract.

Contractor(s)	Contract Scope	Contract Type	Procurement Route
Eurojet GmbH Engine consortium comprising: FIAT ITP MTU Rolls Royce.		Fixed Price.	Non-competitive but with international sub-contract competitive elements, the value of which amounts to some 10% of overall value of the Prime Contract.
Eurofighter GmbH Airframe consortium see details under development above.	Production Investment/ Production.	Overall Maximum Prices for Production Investment and Production of Airframes and Overall Fixed Prices for Production Investment and Production of Aircraft Equipment. Fixed price for production of 1st Tranche airframe.	Non-competitive but with international sub-contract competitive elements, the value of which amounts to some 30% of the overall value of the Prime Contract.
Eurojet GmbH Engine consortium see details under development above.	Production Investment/ Production.	Overall Maximum Prices for Production Investment and Production of Engines. Fixed prices for Production Investment and Tranche 1 Production.	Non-competitive but with international sub-contract competitive elements, the value of which amounts to some 10% of the overall value of the Prime Contract.

SECTION 2: PROJECT COSTS

2a. Performance against approved cost

£m (outturn prices)	TOTAL
Current Forecast Cost	18832
Approved Cost at Main Gate	17364
Variation	1468
In-year changes in 1999/2000	-73

2b. Reasons for variation from approved cost

Factor	Increase £m	Decrease £m	Explanation
Inflation	378		Difference in annual price uplift between industry specific indices and GDP deflator for Development (+£224m); and Production (+£154m).

Factor	Increase £m	Decrease £m	Explanation
Changed Requirement	239	32	Provision for integration of new weapons and sensors not contained within original approval (includes Conventionally Armed Stand-Off Missile (CASOM), Advanced Anti-Armour Weapon (AAAW), Low Level Laser Guided Bomb (LLLGB), Thermal Imaging Airborne Laser Designator (TIALD)) (+£239m); deletion of gun (-£32m).
Technical Factors	316		Higher than expected Development costs, notably for equipments (+£316m).
Contracting Process	108	165	Reprofiling and adjustment of anticipated Tranche 2 and 3 Airframe, Equipment and Engine prices (+£103m); introduction of benefits to be assumed from planned implementation of Smart procurement processes (-£165m); reassessment of the cost and timing of integrating new weapons (+£5m).
Procurement Strategy	413		German withdrawal from certain equipments (+£106m); Reorientation Development Assurance Programme (DAP) to bridge gap between Development and Production Investment (+£28m); extension of the Integrated Logistic Support (ILS) programme (+£45m); Eurofighter/Eurojet GmbH management costs (+£30m); contract price increases (+£87m); risk provision (+£117m).
Accounting Adjustments	477	218	Changes in accounting rules (inclusion of intramural costs) (+£275m); transfer of costs of industrial consortia management activities from production phase to support phase (-£218m); derivation of approved cost on a resource basis (+£202m).
Exchange Rate		48	Changes in exchange rate since approval. (-£48m).
Total	+1931	-463	
Net Variation	+1468		

2c. Expenditure to date

Expenditure to 31 March 2000 (£m)	4367

2d. Years of peak procurement expenditure

2001/02	2002/03

2e. Unit production cost

Unit Production Cost (£m)		Quantities Required	
at Main Gate	Current	at Main Gate	Current
-	57.8	232	232

SECTION 3: PROJECT TIMESCALE

3a. Definition of in-service date

ISD Definition:	Date of delivery of first aircraft to the Royal Air Force

3b. Performance against approved in-service date

	Date
Current forecast ISD	June 2002
Approved ISD at Main Gate	December 1998
Variation (Months)	42
In-year changes in 1999/2000	0

3c. Reasons for variation from approved ISD

Factor	Increase (months)	Decrease (months)	Explanation
Procurement Strategy	22		Reorientation of the Development phase in response to the changed strategic environment and budgetary pressures of the four nations and delays in signature of the Memoranda of Understanding for the Production and Support phases.
Technical Factors	20		Resulting from the application of complex technologies required to enable the equipment to meet the original Staff Requirement.
Total	+42		
Net Variation	+42		

3d. Cost resulting from ISD variation

Type of Cost/Saving	Cost £m	Saving £m	Explanation
Support costs of current equipment	836		Cost of running on Tornado and Jaguar.
Forecast support costs of new equipment		-668	Estimated support costs of Eurofighter not incurred.
Total	+168		

3e. Operational impact of ISD variation

Key improvements in capability not realised until revised ISD are:

(i) Agility and all altitude performance.
(ii) Autonomous detection, identification and multiple engagement of air to air targets.
(iii) Human computer interface to reduce operator workload.
(iv) Multi role capability.
(v) Survivability through superior airframe and equipment performance.
(vi) Low mean time between failure.

The 42 month delay has been mitigated to a small extent by compressing the entry into service period, but the net effect is a delay of 3 years.

SECTION 4: KEY USER REQUIREMENTS

4a. Performance against approved key user requirements

Serial	Key Requirement	Currently forecast to be met (Yes or No)
1	Take off Distance.	Yes
2	Landing Distance.	No
3	Attributable Failures per 1000 Flying Hours.	Yes
4	Life (Flying Hours).	Yes
5	Sustained Minimum Turn Radii at Sea level, Max Reheat.	Yes
6	Maximum speed at sea level.	Yes
7	Maximum speed at 36,000 ft.	Yes
8	Acceleration Time at Sea level from 200 knots to Mach 0.9.	Yes
9	Instantaneous Turn Rate Sea level, Max Reheat.	Yes
10	Sustained Turn Rate at Mach 0.9 at 5000ft, Max Dry.	Yes
	Percentage currently forecast to be met	90%
	Change since previous MPR	-

4b. Reasons for variation against approved key requirements

Key Requirement	Factor	Explanation
2 Landing Distance.	Technical factors	Refined modelling carried out to support the 1994 reorientation submission indicated that in the most adverse conditions the specified landing distance would not be achieved - this was accepted by the EAC.

SECTION 5: HISTORY UP TO MAIN GATE APPROVAL

5a. Description of the Assessment Phase

Pre-Development, which commenced with the approval of the feasibility study in 1984 comprised a number of activities. Following early concept studies, and various efforts at establishing a collaborative programme, there were two key Eurofighter demonstration activities completed by UK before development: the Experimental Aircraft Programme (EAP), an airframe programme primarily aimed at proving the feasibility of the Eurofighter unstable flight control concepts, and the XG40 engine demonstrator programme at Rolls Royce. The results of these demonstrators and their associated studies, together with the results of similar work within the other Nations were harmonised in a Definition, Refinement and Risk Reduction phase that ran from the end of 1985 when four Nations signed the initial MOU, until 1988 when the development contract was signed.

5b. Cost of the Assessment Phase

£m (outturn prices)	Assessment Phase cost	Proportion of total estimated procurement expenditure
Actual Cost	78	0.4%
Approved Cost at Initial Gate	87	0.5%
Variation	-9	

5c. Duration of Assessment Phase

Date of Main Gate Approval	November 1987
Target Date for Main Gate Approval	-
Variation (Months)	-

5d. Cost and ISD boundaries at Initial Gate and Main Gate Approvals

£m (outturn prices)	Lowest	Most Likely	Highest
Cost of Demonstration and Manufacture Phase forecast at Main Gate	-	17364	-
Cost of Demonstration and Manufacture Phase forecast at Initial Gate	-	-	-

5e. ISD boundaries at Initial Gate and Main Gate Approvals

	Earliest	Most Likely	Latest Acceptable
Forecast ISD at Main Gate	-	December 1998	-
Forecast ISD at Initial Gate	-	-	-

POST-MAIN GATE PROJECT SUMMARY SHEET

HERCULES C-130J

Integrated Project Team Responsible:
HERCULES C-130J (HERCJ)

SECTION 1: ABOUT THE PROJECT

1a. Project description, progress and key future events

The Royal Air Force HERCULES tactical transport fleet is over 30 years old. Aircraft availability has declined and operating costs have risen. A decision was taken in December 1994 to replace the older aircraft and a fixed price contract was placed with Lockheed-Martin in March 1995 for the purchase of 25 Hercules C-130J aircraft together with comprehensive packages for Training and Contractor Logistic Support. The new aircraft embodies many improvements in electronics and propulsion and will return considerable benefits in costs of ownership. The RAF took delivery of its first aircraft in November 1999, together with the training facility. A further 4 aircraft were delivered by 31 March 2000. In addition two aircraft are at DERA Boscombe Down for ongoing test and evaluation. The Department now estimates that the in-service date (delivery of the 12th aircraft) will be June 2000 - some 23 months late. These delays arose due to difficulties experienced in the Contractor's development programme, largely hardware and software integration problems. The additional 1 month in-year delay was caused by minor training system shortfalls. Liquidated damages are being recovered from Lockheed and the cash is being used to cover the unplanned run-on costs of the current aircraft and other consequences of late delivery.

1b. Associated projects

Critical to Achievement of ISD		Critical to Meet Initial Gate Requirement	
Project Title	Forecast ISD	Project Title	Forecast ISD
-	-	-	-

1c. Procurement strategy

Contractor(s)	Contract Scope	Contract Type	Procurement Route
Lockheed-Martin Corporation (Lockheed-Martin Aeronautics Company).	Development & Production.	Fixed.	International Competition.

SECTION 2: PROJECT COSTS

2a. Performance against approved cost

£m (outturn prices)	Procurement Cost
Current Forecast Cost	1042
Approved Cost at Main Gate	1060
Variation	-18
In-year changes in 1999/2000	-4

2b. Reasons for variation from approved cost

Factor	Increase £m	Decrease £m	Explanation
Technical Factors	53	30	Delays to programme resulting in revised funding profile and reduced financing charges (-£30m); wing fatigue test (+£7m); cargo handling system (+£7m); Provision for funding transfers to Support Authority to cover run on costs of C-130K fleet (+£38m); DERA Farnborough (+£1m).
Changed Requirement	5		Additional requirement for 8.33KHz Channel Spacing in VHF radio (+£3m), active noise reduction headsets (+£1m) and new winch (+£1m).
Inflation	50		The difference in annual price uplift between specific indices and the GDP deflator (+£50m).
Exchange Rate		54	Variation in the value of Sterling against the US Dollar (-£54m).
Receipts		52	Forecast Liquidated Damages (-£49m); and Commercial Exploitation Levy (-£3m).
Contracting Process	6	7	Increased costs for Mission Planning System (+£3m); C-130K RAF peculiar modifications to J (+£2m); and Communication Navigation Identification System (+£1m); Above items offset by reduced costs for Fill Gun Port (-£2m); Re-assessment of aircraft payments (-£4m); and documentation (-£1m).
Accounting Adjustments and Re-definitions	24	13	Inclusion of DERA Boscombe Down (BD) Costs disaggregated since approval (+£24m); COSVAT on DERA (BD) to be recovered (-£1m); Derivation of the approved cost on a resource basis (-£12m).
Total	+138	-156	
Net Variation		-18	

2c. Expenditure to date

Expenditure to 31 March 2000 (£m)	916

2d. Years of peak procurement expenditure

1999/00	2000/01

2e. Unit production cost

Unit Production Cost (£m)		Quantities Required	
at Main Gate	Current	at Main Gate	Current
34.8	35.0	25	25

SECTION 3: PROJECT TIMESCALE

3a. Definition of in-service date

ISD Definition:	Delivery of the first twelve aircraft off contract

3b. Performance against approved in-service date

	Date
Current forecast ISD	June 2000
Approved ISD at Main Gate	July 1998
Variation (Months)	+23
In-year changes in 1999/2000	+1

3c. Reasons for variation from approved ISD

Factor	Increase (months)	Decrease (months)	Explanation
Technical factors	23		Late delivery of sub-contracted avionic equipments and difficulties with their integration which caused delay to start of the contractor's flight test programme. Further difficulties were experienced during the flight test programme and included: hardware/software integration problems, unacceptable stall characteristics, engine lubrication problems, cracking of wing web structure, insufficient de-icing coverage on the vertical tail fin, unsatisfactory throttle lever characteristics (+22 months). Minor shortfalls upon delivery of the training system also contributed to the delay (+1 month).
Total	+23		
Net Variation	+23		

3d. Cost resulting from ISD variation

Type of Cost/Saving	Cost £m	Saving £m	Explanation
Support costs of current equipment	39*		C-130K Run on costs including additional maintenance, spares and aircraft operating costs.
Other		-49*	Receipts from Liquidated Damages.
Total		-10	

* These figures [except for the first £1m of support costs borne by the support authority] are also cited in the project costs [section 2b].

3e. Operational impact of ISD variation

The 25 C-130J will replace 25 of the existing elderly C-130K. In terms of performance, the new aircraft provides essentially the same capability as its predecessor. The principal improvements on the new aircraft are the incorporation of a modern 2-pilot flight deck, integrated avionic systems and new engines and propellers. These enhancements will deliver substantial improvements in availability and enable a reduction in the existing 4-man flight crew on the C-130K to 2. Consequently the main impact of the in-service date delay has been the continued reliance on the existing C-130K aircraft with its significantly poorer overall availability.

SECTION 4: KEY USER REQUIREMENTS

4a. Performance against approved key user requirements

Serial	Key Requirement	Currently forecast to be met (Yes or No)
1	Payload/Range.	Yes
2	Troop and pallet loads.	Yes
3	Capable of operation in worldwide climatic conditions.	Yes
4	Capable of worldwide navigation.	Yes
5	Reliability.	Yes
6	Compliant with civil and military requirements for communications.	Yes
7	Capacity for future incorporation of: a) Radar warning receiver. b) Missile warning system. c) Chaff/Infra-Red dispenser. d) Infra-Red countermeasures.	Yes
8	Take-off and landing performance.	Yes
9	Capable of aerial delivery of troops and platforms.	Yes
10	Capable of operation by a crew normally comprising two pilots and one airloadmaster.	Yes
	Percentage currently forecast to be met	100%
	Change since previous MPR	-

4b. Reasons for variation against approved key requirements

Key Requirement	Factor	Explanation
-	-	-

SECTION 5: HISTORY UP TO MAIN GATE APPROVAL

5a. Description of the Assessment Phase

The Royal Air Force Hercules aircraft availability was declining and operating costs rising as the aircraft approached 30 years in service. In 1993, as an alternative to a new build aircraft, Marshall Aerospace was tasked with defining the refurbishment task for the existing RAF C-130Ks. In parallel with the refurbishment study, an Invitation to Tender was issued to Lockheed Martin Aeronautical Company for the supply of 30 new build Hercules aircraft (C-130H or C-130J), together with options for up to a further 25. Expenditure of £0.5 million was approved on studies in support of the above activities. The refurbishment option was subsequently assessed as being more expensive, involving greater technical risk and providing reduced availability both during refurbishment and after, than a new purchase. As a result the C-130J was chosen to meet the requirement.

The costs identified at 5b below relate to the definition of the refurbishment option and supporting studies.

5b. Cost of the Assessment Phase

£m (outturn prices)	Assessment Phase cost	Proportion of total estimated procurement expenditure
Actual Cost	1.4	0.1%
Approved Cost at Initial Gate	1.6	0.2%
Variation	-0.2	

5c. Duration of Assessment Phase

Date of Main Gate Approval	January 1995
Target Date for Main Gate Approval	September 1994
Variation (Months)	+4

5d. Cost boundaries at Initial Gate and Main Gate Approvals

£m (outturn prices)	Lowest	Most Likely	Highest
Cost of Demonstration and Manufacture Phase forecast at Main Gate	-	1060	-
Cost of Demonstration and Manufacture Phase forecast at Initial Gate	-	-	-

5e. ISD boundaries at Initial Gate and Main Gate Approvals

	Earliest	Most Likely	Latest Acceptable
Forecast ISD at Main Gate	-	July 1998	-
Forecast ISD at Initial Gate	-	December 1998	-

POST-MAIN GATE PROJECT SUMMARY SHEET

HIGH VELOCITY MISSILE SYSTEM

Integrated Project Team Responsible:
Ground Based Air Defence

SECTION 1: ABOUT THE PROJECT

1a. Project description, progress and key future events

The High Velocity Missile (HVM) System, commercially known as Starstreak, is an Army Very Short Range Air Defence weapon designed to attack armoured helicopters and low flying aircraft. The missile has a short time of flight and the system has the capability to rapidly re-engage the target. HVM is primarily deployed on a Self Propelled (SP) launcher vehicle (STORMER) although missiles may be fired independently using a separate portable aiming unit, mounted either on a tripod base (lightweight multiple launcher (LML)) or carried on the shoulder of the firer (shoulder launched (SL)). It is deployed with the Air Defence Alerting Device (ADAD), a passive 24 hour automatic surveillance device.

Following a competitive project definition phase between Shorts Missile Systems (SMS) and British Aerospace, the contract for full development and production (Tranche 1) was placed with SMS in November 1986. The in-service date for SP HVM was achieved in September 1997.

Four follow-on orders for missiles have been placed, the latest in December 1999. The LML/SL versions are planned to be brought into service in December 2000 dependant upon a further procurement of LML/SL systems that is currently being negotiated. Successor Identification Friend or Foe (SIFF) and Thermal Sighting (TSS) Systems are planned for both the SP and LML versions for 2003 and 2006/7 respectively. Further expenditure in clear prospect for Missiles, HVM SL/LML, SIFF and TSS is an estimated £300m.

1b. Associated projects

Critical to Achievement of ISD		Critical to Meet Initial Gate Requirement	
Project Title	Forecast ISD	Project Title	Forecast ISD
Air Defence Alerting Device	1994	-	-

1c. Procurement strategy

Contractor(s)	Contract Scope	Contract Type	Procurement Route
Shorts Missile Systems.	Full development and production.	Fixed Price.	UK Competition.
Shorts Missile Systems.	Follow on production.	Firm Price.	Single Tender. No acceptable price, no contract (NAPNOC).

SECTION 2: PROJECT COSTS

2a. Performance against approved cost

£m (outturn prices)	Procurement Cost
Current Forecast Cost	898
Approved Cost at Main Gate	882
Variation	+16
In-year changes in 1999/2000	+18

2b. Reasons for variation from approved cost

Factor	Increase £m	Decrease £m	Explanation
Changed Requirement		10	Reduction in Tranche 1 Practice Missile Kits (-£10m).
Changed Budgetary Priorities	14	7	SP TSS ISD deferred due to budgetary priorities resulting in increased resource cost (+£6m); reprofile of Tranche 3 HVM SL/LML deliveries due to budgetary priorities resulting in increased resource cost (+£8m); reprofile of SIFF for SL/LML deliveries due to budgetary priorities resulting in cost saving (-£7m).
Contracting Process	11	6	Extra contractual payment in settlement of claim regarding provision of Government Furnished Equipment (+£11m); discount obtained against contract for Tranche 1a/b Missiles (-£5m); overestimation of Tranche 1c funding provision (-£1m).
Technical Factors	7		Missile production problems caused a delay in the placement of latest missile contract (+£7m).
Accounting Adjustments	8	1	Inclusion of DERA support costs on Tranche 1 (+£8m). Derivation of the approved cost on a resource basis (-£1m).
Total	+40	-24	
Net Variation	+16		

2c. Expenditure to date

Expenditure to 31 March 2000 (£m)	503

2d. Years of peak procurement expenditure

1989/90	2002/03

2e. Unit production cost

Unit Production Cost (£m)		Quantities Required	
at Main Gate	Current	at Main Gate	Current
N/A	***	135 SP HVM Systems	135 SP HVM Systems

SECTION 3: PROJECT TIMESCALE

3a. Definition of in-service date

ISD Definition:	One HVM battery, fully equipped, trained and supported.

3b. Performance against approved in-service date

	Date
Current forecast ISD	September 1997
Approved ISD at Main Gate	December 1990
Variation (Months)	+81
In-year changes in 1999/2000	0

3c. Reasons for variation from approved ISD

Factor	Increase (months)	Decrease (months)	Explanation
Technical Factors	69		Problems with the dart and carrier missile, including inconsistent performance in dart guidance and second stage motor ignition of the missile. Problems with the vehicle gearbox (+69 months).
Contracting Process	2		Prolonged contractual negotiations on some remaining small contracts, in part because Short Brothers plc underwent a major restructuring in 1993 and 1994 (+2 months).
Changed Budgetary Priorities	7		A delay at the outset of the project arising from the need to match the Very Short Range Air Defence Weapons Systems Programme (including HVM) with available resources (+7 months).
Change in Associated Project	3		Software problems encountered in integrating ADAD into SP HVM caused seven months delay. Four months of this was concurrent with the delays due to technical factors (+3 months).
Total	81		
Net Variation	+81		

3d. Cost resulting from ISD variation

Type of Cost/Saving	Cost £m	Saving £m	Explanation
Support costs of current equipment	-	-	-
Other	-	-	-
Total	-	-	

3e. Operational impact of ISD variation

SP HVM was intended to support units engaged in mobile operations and in particular counter strike forces. The delay in SP HVM ISD from December 1990 to September 1997 resulted in the 1st (UK) Armoured Division having no specific Very Short Range Air Defence capability. A lesser capability was provided by Tracked Rapier and the manportable Javelin systems.

SECTION 4: KEY USER REQUIREMENTS

4a. Performance against approved key user requirements

Serial	Key Requirement	Currently forecast to be met (Yes or No)
1	SP HVM - essential effective range.	Yes
2	SP HVM - minimum unrestricted launcher traverse.	Yes
3	HVM Missile - overall missile reliability.	Yes
4	SP HVM - minimum probability of completing a battlefield day.	Yes
5	SP HVM - wide angle field of view.	Yes
6	HVM Missile - minimum safe missile drop height in launch canister.	Yes
	Percentage currently forecast to be met	100%
	Change since previous MPR	-

4b. Reasons for variation against approved key requirements

Key Requirement	Factor	Explanation
-	-	-

SECTION 5: HISTORY UP TO MAIN GATE APPROVAL

5a. Description of the Assessment Phase

Approval for the project definition phase (now taken to equate to Initial Gate) for a High Velocity Close Air Defence Weapon System was received in July 1984. The phase lasted 12 months and was conducted on the basis of parallel work by 2 contractors, Shorts Missile Systems (SMS) and British Aerospace. The results of the work were accepted as a satisfactory basis for the full Development and Production phase submission (now taken to equate to Main Gate) that received approval in October 1986. A contract was subsequently placed for the Tranche 1 procurement of the High Velocity Missile System (HVM) with SMS in November 1986. Performance was determined against a variety of measures of effectiveness, surveillance and target acquisition, terrain and meteorological visibility.

5b. Cost of the Assessment Phase

£m (outturn prices)	Assessment Phase cost	Proportion of total estimated procurement expenditure
Actual Cost	8	1%
Approved Cost at Initial Gate	10	1%
Variation	-2	

5c. Duration of Assessment Phase

Date of Main Gate Approval	October 1986
Target Date for Main Gate Approval	-
Variation (Months)	-

5d. Cost boundaries at Initial Gate and Main Gate Approvals

£m (outturn prices)	Lowest	Most Likely	Highest
Cost of Demonstration and Manufacture Phase forecast at Main Gate	-	882	-
Cost of Demonstration and Manufacture Phase forecast at Initial Gate	-	-	-

5e. ISD boundaries at Initial Gate and Main Gate Approvals

	Earliest	Most Likely	Latest Acceptable
Forecast ISD at Main Gate	-	December 1990	-
Forecast ISD at Initial Gate	-	December 1989	-

POST-MAIN GATE PROJECT SUMMARY SHEET

LANDING PLATFORM DOCK (REPLACEMENT) (LPD(R))

Integrated Project Team Responsible:
Landing Platform Dock (Replacement) (LPD(R))

SECTION 1: ABOUT THE PROJECT

1a. Project description, progress and key future events

1. The 2 LPD(R)s, HMS Albion and HMS Bulwark, will replace the capability currently provided by HMS Fearless and HMS Intrepid. A Design and Build Prime Contract for the ship-build was awarded to Vickers Shipbuilding and Engineering Limited (VSEL) (now BAE SYSTEMS) in July 1996, following No Acceptable Price No Contract (NAPNOC) negotiations. As a risk reduction measure a separate contract for the design and production of the Integrated Communications System (ICS) had been placed with Redifon MEL in 1994. In May 1998, a further Prime Contract was let to BAe SEMA (now BAE SYSTEMS) for the production of 6 specialised Landing Craft Utility.

2. The ships, ICS and Landing Craft Utility are currently in production. A competitive contract for the procurement of 4 Landing Craft Vehicle and Personnel (LCVP) is planned. Both types of landing craft are required for HMS Albion's trials which are due to begin in February 2002.

3. Industrial loading difficulties at the VSEL Barrow shipyard have caused forecast delays to the Programme Acceptance Dates for both ships. The current reported in-service date of March 2003 includes 12 months delay to HMS Albion. HMS Bulwark has been delayed by 9 months to December 2003. Opportunities to recover the slippage further continue to be explored.

1b. Associated projects

Critical to Achievement of ISD		Critical to Meet Initial Gate Requirement	
Project Title	Forecast ISD	Project Title	Forecast ISD
Command Support System.	1999 (achieved).	-	-

1c. Procurement strategy

Contractor(s)	Contract Scope	Contract Type	Procurement Route
BAE SYSTEMS.	Warship Design & Build & Command System.	Fixed Price.	NAPNOC.
REDIFON MEL Ltd.	Integrated Communications System.	Fixed Price.	UK Competitive.
BAE SYSTEMS.	Landing Craft Utility.	Firm Price.	UK Competitive.

SECTION 2: PROJECT COSTS

2a. Performance against approved cost

£m (outturn prices)	Procurement Cost
Current Forecast Cost	810
Approved Cost at Main Gate	819
Variation	-9
In-year changes in 1999/2000	+21

2b. Reasons for variation from approved cost

Factor	Increase £m	Decrease £m	Explanation
Technical Factors	27		Increase in Interest on Capital charge due to delayed ship delivery profile (+£27m).
Changed Requirement	8		Additional spares required to bring Bulwark's readiness into line with the 1997 assumption for the Maritime Rapid Reaction Force (+£8m).
Changed Budgetary Priorities		10	Reassessment of project costs (-£2m); Reassessment of the level of risk provision (-£8m).
Inflation	5		Variation Of Price indices escalating faster than the GDP deflator (+£5m).
Procurement Strategy		32	Overall impact of changed procurement strategy between approval and contract award (-£32m).
Accounting Adjustments and Re-definitions		7	Derivation of the approved cost on a resource basis (-£7m).
Total	+40	-49	
Net Variation		-9	

2c. Expenditure to date

Expenditure to 31 March 2000 (£m)	293

2d. Years of peak procurement expenditure

2000/01	2001/02

2e. Unit production cost

Unit Production Cost (£m)		Quantities Required	
at Main Gate	Current	at Main Gate	Current
-	388.5	2	2

SECTION 3: PROJECT TIMESCALE

3a. Definition of In-Service Date (ISD)

ISD Definition:	The date by which HMS ALBION acquires an Initial Operating Capability, taken as the Operation Date Inspection.

3b. Performance against approved in-service date

	Date
Current forecast ISD	March 2003
Approved ISD at Main Gate	August 2000
Variation (Months)	+31
In-year changes in 1999/2000	+12

3c. Reasons for variation from approved ISD

Factor	**Increase (months)**	**Decrease (months)**	**Explanation**
Technical Factors	16		Information obtained from industry as part of the LPD(R) procurement investigations indicated that the original estimate for the warship build period was too short, and the programme was adjusted accordingly (+4 months); Computer design and industrial loading difficulties experienced by BAE SYSTEMS (VSEL) (+12 months).
Contracting Process	3		As a risk reduction measure and part of the NAPNOC contract negotiations, agreement was reached on a further extension to the build period to give VSEL further time to develop the warship design before starting fabrication (+3 months).
Procurement Strategy	12		The loss of competition at a late stage in the tendering process resulted in delay, as BAE SYSTEMS (VSEL) revisited their bid to reflect the revised NAPNOC situation (+12 months).
Total	31	-	
Net Variation	+31	-	

3d. Cost resulting from ISD variation

Type of Cost/Saving	Cost £m	Saving £m	Explanation
Support costs of current equipment[3]	55		Estimated additional support costs incurred in running on HMS FEARLESS for 31 months.
Forecast support costs of new equipment[1]		24	Estimated support costs of HMS ALBION not incurred.
Other		6	Anticipated level of Liquidated Damages in respect of delay to Planned Acceptance Dates of HMS Albion and HMS Bulwark.
Total	+25		

3e. Operational impact of ISD variation

On current plans, HMS Fearless will be extended in service until HMS Albion's in-service date in March 2003 to mitigate the loss of capability resulting from the delays to the new ships. The bulk of the existing capability is provided by HMS Fearless and this will remain the case. HMS Intrepid will remain at a low state of readiness and downgraded capability because of her material condition until her planned Out of Service Date (OSD) of June 2001.

The new ships will provide capability improvements in 3 key areas:

(i) considerably improved and increased C4I system which permits integrated command and control within the joint battlespace;
(ii) faster tactical offload of vehicles, troops and stores; and
(iii) increased range, payload and offload performance of the new MK 10 Landing Craft Utility (LCU).

[3] The costs shown relate to HMS FEARLESS and HMS ALBION only.

SECTION 4: KEY USER REQUIREMENTS

4a. Performance against approved key user requirements

Serial	Key Requirement	Currently forecast to be met (Yes or No)
1	The LPD(R) shall be able to transport a part of the amphibious landing force.	Yes
2	The LPD(R) shall be able to off load the Embarked Military Force in a fully combat ready state within the tactical time-scales required by the embarked commanders.	Yes
3	The LPD(R) shall have sufficient endurance that she does not limit the Endurance of the Amphibious Task Force.	Yes
4	The LPD(R) shall provide a combat system that will effectively manage the operational tasks of the embarked commanders.	Yes
5	The LPD(R) shall provide availability to meet all its operational commitments in a 30 day operational period.	Yes
	Percentage currently forecast to be met	100%
	Change since previous MPR	-

4b. Reasons for variation against approved key requirements

Key Requirement	Factor	Explanation
-	-	-

SECTION 5: HISTORY UP TO MAIN GATE APPROVAL

5a. Description of the Assessment Phase

1. The notional Initial Gate approval of this project is taken to be December 1986: the date studies into extending the life of the current ships were approved. These studies concluded that replacement rather than life extension should be the preferred option. Additional feasibility and project definition work was commissioned, addressing affordability problems, before a final resolution was achieved in 1993 and a decision in principle to proceed with the procurement of two new ships was made.

2. Main Gate approval is taken to be June 1994. At this time competitive bids for design and build of 2 ships were invited. Due to the complexity of the Integrated Communications System and in order to reduce the risk to the ship programme, a competitive contract was awarded at the same time to Redifon MEL to ensure the start of essential design work. The assumption was that a competitive Design and Build contract for the ships would be awarded in 1995 but it quickly became apparent that only VSEL would bid. Approval was therefore given to proceed on a single tender basis. Joint MOD/VSEL teams were formed to explore the realism of the cost estimates, VSEL's offer and the scope for modifying the specification to reduce cost. These were successful, a substantial reduction in Unit Production Cost was achieved and approval was given to enter formal NAPNOC negotiations. These negotiations were concluded with the award of a Design and Build contract for 2 ships in July 1996.

5b. Cost of the Assessment Phase

£m (outturn prices)	Assessment Phase cost	Proportion of total estimated procurement expenditure
Actual Cost (F&S + PD)	21	3%
Approved Cost at Initial Gate	15	2%
Variation	+6	

5c. Duration of Assessment Phase

Date of Main Gate Approval (assumed)	June 1994
Target Date for Main Gate Approval	-
Variation (Months)	-

5d. Cost boundaries at Initial Gate and Main Gate Approvals

£m (outturn prices)	Lowest	Most Likely	Highest
Cost of Demonstration and Manufacture Phase forecast at Main Gate	-	819	-
Cost of Demonstration and Manufacture Phase forecast at Initial Gate	-	-	-

5e. ISD boundaries at Initial Gate and Main Gate Approvals

	Earliest	Most Likely	Latest Acceptable
Forecast ISD at Main Gate	-	August 2000	-
Forecast ISD at Initial Gate	-	April 1995	-

POST-MAIN GATE PROJECT SUMMARY SHEET

MEDIUM RANGE TRIGAT

Integrated Project Team Responsible:
Infantry Guided Weapons

SECTION 1: ABOUT THE PROJECT

1a. Project description, progress and key future events[4]

Medium Range (MR) TRIGAT is a crew-portable anti-tank guided weapon system for the infantry and Royal Marines; capable of defeating improved enemy armour at a maximum range of 2400m. Replacing MILAN, it comprises a firing post, missile and thermal sight, allowing effective operation at night and in adverse weather conditions. MR TRIGAT is a multilateral project involving UK, France and Germany as Pilot Nations with Belgium and Netherlands as Associate Nations. It is currently nearing the end of full development.

Industrial qualification trials began in February 1994, completing spring 1998. Multi-national evaluation/user trials and national trials completed in early 1999, testing the performance of the missile system and demonstrating its capability against potential targets. Whilst the programme is behind schedule and areas of technical difficulty remain, there is confidence that the final developed system will meet the requirement.

UK approval for Industrialisation & Production was secured in June 1999; France and Germany had already confirmed their intent to proceed with the programme. Although Belgium and Netherlands have yet to formally commit themselves, it is hoped to place the new contract by September 2000. Industry believes the delay in national approvals can be absorbed within the Industrialisation phase, hopefully maintaining an in-service date (ISD) of June 2005, although latest estimates by the DPA show the ISD as December 2005.

1b. Associated projects

Critical to Achievement of ISD		Critical to Meet Initial Gate Requirement	
Project Title	Forecast ISD	Project Title	Forecast ISD
-	-	-	-

[4] This PSS states the position as at 31 March 2000. However, as a result of continuing and open-ended delays in the nations' agreement of the terms for the next phase, the UK has become progressively less convinced that the programme offers an appropriate solution to our current and future needs in an acceptable timescale; as a result of this, the decision not to proceed to I&P was announced on 28th July 2000.

1c. Procurement strategy

Contractor(s)	Contract Scope	Contract Type	Procurement Route
EMDG (Euromissile Dynamics Group, comprising: Matra BAe Dynamics (UK) Ltd., Aerospatiale and Lenkflugkorpersysteme.	Full Development.	Fixed Price.	Single source, non-competitive Development Contract (French MOD are the Contracting Authority).
Aerospatiale.	Industrialisation & Production.	Firm (Industrialisation) and Fixed (Production) Price.	Single source, non-competitive Industrialisation and Production Contracts (French MOD are the Contracting Authority) Competitive sub-contracting accounts for 30-35% of the contract value.

SECTION 2: PROJECT COSTS

2a. Performance against approved cost

£m (outturn prices)	Procurement Cost
Current Forecast Cost	941
Approved Cost at Main Gate	920
Variation	+21
In-year changes in 1999/2000	+24

2b. Reasons for variation from approved cost

Factor	Increase £m	Decrease £m	Explanation
Inflation		8	Difference in annual price uplifts between specific indices and Approval Assumption [GDP] (-£8m).
Exchange Rates	12	14	Devaluation of Sterling against Deutschmark & French Franc since Development approval (+£12m); overall increase in Sterling value against other programme currencies since Production approval (-£14m).

Factor	Increase £m	Decrease £m	Explanation
Changed Requirement	31	33	Reduction in trials and contingency costs reflecting evolution of the programme (-£26m); increase in requirement for national items - maintenance equipment/ manpacks funding enhancement plus introduction of funding for high pressure pure air charging equipment and Pre-planned Product Improvement (+£29m); revised forecast of requirement for In-Service Batch Acceptance (+£2m); cancellation of the procurement of Vehicle Adapter Mount (-£2m); reductions in the procurement of ancillary equipment (-£5m).
Procurement Strategy	29		Greece, Spain and Italy did not join the programme as had been expected at the time of approval (+£22m); further inflation arising from slippage for realism assumed in Production line during the 2000 planning round (+£7m).
Changed Budgetary Priorities	7	9	Further inflation arising from deliberate slippage to Production funding in the 2000 Long Term planning round (+£7m); realism adjustment from 1999 Long Term planning round reflecting expected future Development expenditure (-£9m).
Accounting Adjustments & Redefinitions	6		Derivation of the approved cost on a resource basis (+6m).
Total	+85	-64	
Net Variation	+21		

2c. Expenditure to date

Expenditure to 31 March 2000 (£m)	107

2d. Years of peak procurement expenditure

2005/06	2006/07

2e. Unit production cost

Unit Production Cost (£m)		Quantities Required	
at Main Gate[5]	Current	at Main Gate	Current
0.31 (Firing Post & TI)	0.31 (Firing Post & TI)	576	576
0.03 (Combat Missile)	0.03 (Combat Missile)	***	***

[5] For the purposes of the UPC, Main Gate is interpreted as Production Approval for this legacy project.

SECTION 3: PROJECT TIMESCALE

3a. Definition of in-service date

ISD Definition:	First Battalion fully equipped with all Firing Posts and first line missile stocks.

3b. Performance against approved in-service date

	Date
Current forecast ISD	June 2005
Approved ISD at Main Gate	December 1995
Variation (Months)	+114
In-year changes in 1999/2000	0

3c. Reasons for variation from approved ISD

Factor	**Increase (months)**	**Decrease (months)**	**Explanation**
Technical Factors	66		Problems with warhead integration and guidance (+12 months); Late equipment deliveries for service trials as a result of further technical problems, and validation of the design against the specification (+32 months); Unresolved risk remaining for future phases, including the potential need for additional reliability and acceptance trials (+22 months).
Procurement Strategy	24		An underestimation of the time required to reach a satisfactory agreement between nations on the arrangements for future phases, resulting in delays to national approvals processes (+24 months).
Changed Budgetary Priorities	24		The need to match the programme with available Departmental resources (+24 months).
Total	114		
Net Variation	+114		

3d. Cost resulting from ISD variation

Type of Cost/Saving	**Cost £m**	**Saving £m**	**Explanation**
Support costs of current equipment	17		Extended support to MILAN.
Other	3		MILAN Life Extension activity, one-off programmes of work, etc.
Total	+20		

3e. Operational impact of ISD variation

The operational life of MILAN has been extended by 5 years and the possibility of a further 5 year extension to 2009 is under consideration. Such measures are of only finite military utility since the system has a limited ability to defeat modern tank armour. Having said this, the delay to MR TRIGAT is not considered to have adversely affected effectiveness in recent deployments, notably in the Balkans; however, if the nature of deployment was different and British troops operating alone were required to hold ground defensively a more effective weapon system than MILAN would be essential.

SECTION 4: KEY USER REQUIREMENTS

4a. Performance against approved key user requirements

Serial	Key Requirement	Currently forecast to be met (Yes or No)
1	Meet minimum Single Shot Kill Probability (SSKP).	Yes
2	Crew-portable system; no part of firing post to weigh more than 15.5kg and munition to be less than 17kg.	No
3	An effective range of at least 200m - 2000m.	Yes
4	The ability to be fired from within buildings.	Yes
5	The agility to engage moving helicopters.	Yes
6	The potential for improved performance to match improved target protection.	Yes
	Percentage currently forecast to be met	83%
	Change since previous MPR	-

4b. Reasons for variation against approved key requirements

Key Requirement	Factor	Explanation
2 (System weight)	Technical Factors	The weight of the missile, excluding nuclear hardening, is 18.1kg, an excess of 1.1kg over the KUR specification.
2 (System weight)	Changed Requirement	A need for nuclear hardening became a requirement after the 1987 approval and as such is not included in the performance requirements. Nuclear hardening raises the weight of the firing post from an acceptable 15.1kg to 16.5kg, an excess of 1kg over the KUR specification. It also raises the weight of the missile from 18.1kg to 18.4kg, an additional 0.3kg over the approval requirement.

Key Requirement	Factor	Explanation
2 (System weight)		Note: Although the system fails to meet the KUR at the level of the individual components, overall portability is achieved. The carried system was envisaged to comprise a firing post, a thermal imager and two missiles, at a total weight of 65kg. The current system weight is 63.5kg (2 missiles at 18.4kg, firing post at 16.5kg, thermal imager plus cooling bottle at 8.5kg + 1.6kg; these figures include nuclear hardening).

SECTION 5: HISTORY UP TO MAIN GATE APPROVAL

5a. Description of the Assessment Phase

Feasibility Study and Project Definition were combined for both the Medium Range and Long Range TRIGAT projects and meaningful separation is not possible for these phases. This has been the accepted assumption in previous MPRs.

5b. Cost of the Assessment Phase

£m (outturn prices)	Assessment Phase cost	Proportion of total estimated procurement expenditure
Actual Cost	Not separable	(see above)
Approved Cost at Initial Gate	Not separable	(see above)
Variation	Not separable	

5c. Duration of Assessment Phase

Date of Main Gate Approval	June 1987
Target Date for Main Gate Approval	Not separable (see above)
Variation (Months)	-

5d. Cost boundaries at Initial Gate and Main Gate Approvals

£m (outturn prices)	Lowest	Most Likely	Highest
Cost of Demonstration and Manufacture Phase forecast at Main Gate	-	920	-
Cost of Demonstration and Manufacture Phase forecast at Initial Gate	-	Not separable	-

5d. ISD boundaries at Initial Gate and Main Gate Approvals

	Earliest	Most Likely	Latest Acceptable
Forecast ISD at Main Gate	-	December 1995	-
Forecast ISD at Initial Gate	-	Not separable	-

POST-MAIN GATE PROJECT SUMMARY SHEET

MERLIN HC Mk3 HELICOPTER

Integrated Project Team Responsible:
Merlin

SECTION 1: ABOUT THE PROJECT

1a. Project description, progress and key future events

The Merlin HC Mk3 helicopter (previously known as the EH101 Support Helicopter) is based on the Utility version of the Anglo-Italian EH101 helicopter. It is designed to carry 24 troops, or a range of vehicles and equipment internally or as underslung loads.

A fixed price contract for 22 Merlin HC Mk3 helicopters was signed on 9 June 1995 with GKN Westland Helicopters Limited (GKNWHL), following an earlier accounting officer direction on 24 March 1995 from Min (DP). This followed a parallel No Acceptable Price No Contract (NAPNOC) competition between GKNWHL and Boeing Helicopters (bidding the Chinook) for the RAF's Medium Support Helicopter requirement.

The in-service date (ISD) has slipped due to a delay in the Anglo-Italian development programme following the loss of Pre-Production EH101 No. 4 in an accident in 1995 and also as the result of resource problems within industry.

The first production aircraft, RAF01, flew on 24 December 1998. RAF02 achieved its first flight on 14 June 1999 and was delivered to DERA Boscombe Down on 19 January 2000. RAF03 made its first flight on 1 December 1999.

The ISD is expected to be achieved in June 2000 with the delivery of six aircraft.

1b. Associated projects

Critical to Achievement of ISD		Critical to Meet Initial Gate Requirement	
Project Title	Forecast ISD	Project Title	Forecast ISD
Merlin HM Mk1 helicopter	1999	-	-
Medium Support Helicopter Aircrew Training Facility	2000	-	-

1c. Procurement strategy

Contractor(s)	Contract Scope	Contract Type	Procurement Route
GKN Westland Helicopters Limited, Yeovil, Somerset.	Development & Production.	Fixed price.	Parallel NAPNOC negotiations, with GKNWHL for Merlin and Boeing Defense & Space Group, for Chinook.[6].

SECTION 2: PROJECT COSTS

2a. Performance against approved cost

£m (outturn prices)	Procurement Cost
Current Forecast Cost	752
Approved Cost at Main Gate	789
Variation	-37
In-year changes in 1999/2000	-19

2b. Reasons for variation from approved cost

Factor	Increase £m	Decrease £m	Explanation
Technical Factors	51	46	Under-estimate of Spares Packaging (+£5m) and Ground Support Equipment (+£11m); under-estimation of costs of Directable Infra-Red Counter Measures (DIRCm) (+£13m); reduction in estimate of Continuing Design Services (-£7m), Risk provision (-£12m); Contractors trials (-£1m) and DTEO provision (-£2m); reassessment of resources required to meet spares requirement (-£18m); additional Defensive Aids Suite changes (+£9m); and reduced Government Furnished Equipment requirement (-£2m); extra minor requirements (+£4m); increase in Ground Support Equipment and Health and Usage Monitoring Systems (HUDS) (+£9m); reassessment of minor requirements (-£4m).
Changed Requirement	8		Revised specification to accommodate safety and airworthiness features covered by Staff Requirement but not in the original contract (+£3m); decision to deploy aircraft attachment to Cyprus (+£5m).

[6] The competitive parallel NAPNOC procedure is judged to have ensured that GKNWHL maximised the use of competition for sub contracts.

Factor	Increase £m	Decrease £m	Explanation
Changed Budgetary Priorities		83	Allocation of ILS funding to specific items (-£25m); correction of an overestimation of ILS provision in Financial Planning Year 1998/99 (-£10m); reduction in IP spares and non-Prime Contract items (-£33m); reprofile of Financial Planning Year 1998/99 (-£15m).
Inflation	28		Difference in annual price uplifts between contract specific indices and GDP deflator (+28m).
Exchange Rate		14	Increase in value of Sterling compared to Italian Lira and French Franc (-£14m).
Contracting Process	4		Reassessment of resources for Reverse Levy (+£4m).
Accounting Adjustment And Re-Definitions	15		Cost of trials at the DTEO, previously intra mural (+£15m); disaggregation of Modular Data Acquisition System (MODAS) equipment (+£1m); derivation of the approval cost on a resource basis (-£1m).
Total	+106	-143	
Net Variation		-37	

2c. Expenditure to date

Expenditure to 31 March 2000 (£m)	382

2d. Years of peak procurement expenditure

2000/01	2001/02

2e. Unit production cost

Unit Production Cost (£m)		Quantities Required	
at Main Gate	Current	at Main Gate	Current
Not Available (development and production package)	-	22	22

SECTION 3: PROJECT TIMESCALE

3a. Definition of in-service date

ISD Definition:	Delivery of six aircraft to the RAF

3b. Performance against approved in-service date

	Date
Current forecast ISD	June 2000
Approved ISD at Main Gate	December 1999
Variation (Months)	+6
In-year changes in 1999/2000	0

3c. Reasons for variation from approved ISD

Factor	Increase (months)	Decrease (months)	Explanation
Technical Difficulties	6		Delay in the EH101 development programme caused by the loss of Pre-Production aircraft No.4 in 1995 (+3 months); Delays due to industrial resource problems (+3 months).
Total	+6		
Net Variation	+6		

3d. Cost resulting from ISD variation

Type of Cost/Saving	Cost £m	Saving £m	Explanation
Support costs of current equipment	-	-	Merlin Mk3 will be a new capability.
Other	-	-	-
Total	-	-	

3e. Operational impact of ISD variation

The delay to the in-service date has reduced the Joint Helicopter Command's operational capability and flexibility for moving troops and stores. Merlin Mk3 will provide an additional capability. Joint Helicopter Command are currently reviewing their plans to manage this capability gap.

SECTION 4: KEY USER REQUIREMENTS

4a. Performance against approved key user requirements

The Key User Requirements have been set on the basis of the performance parameters defined in the contracted Support Helicopter Air Vehicle Specification (SHAVS). These reflect the technical capability of EH101 and what industry is contracted to deliver but differ from the performance requirements originally laid down in the Staff Requirement. In approving the EH101 option for the Medium Support Helicopter, it was recognised that the EH101 would not be able to satisfy the Reference Mission underpinning the original Staff Requirement. The shortfall in performance is due to its troop carrying, lift and loading capacity, and its ferrying and deployment range.

Serial	Key Requirement	Currently forecast to be met (Yes or No)
1	Probability of transporting a specified number of fully equipped Infantry Soldiers over a specified distance.	Yes
2	Probability of transporting a specified number of fully equipped Infantry Soldiers, to the maximum seating capacity of the aircraft, over a specified distance.	Yes
3	Probability of carrying a specified underslung load over a specified distance.	Yes
4	Probability of carrying a specified underslung load, to the maximum lift capacity, over a specified distance.	Yes
5	Probability of carrying a specified internal freight load over a specified distance.	Yes
6	Probability of achieving a specified range with specified payload and mission profile using normal internal fuel.	Yes
7	Probability of achieving a specified range and mission profile using normal internal and auxiliary fuel.	Yes
8	Probability of demonstrating the following by the end of the In Service Reliability Maintainability Demonstration ISRMD): a Mean Time Between Attributable Faults (MTBAF) >=3.25 Flying Hours (FH).	Yes
	Percentage currently forecast to be met	100%
	Change since previous MPR	-

4b. Reasons for variation against approved key requirements

Key Requirement	Factor	Explanation
-	-	-

SECTION 5: HISTORY UP TO MAIN GATE APPROVAL

5a. Description of the Assessment Phase

Not Applicable for this Project: Following approval the project went directly to the Development and Production stages. There was no Project Definition phase.

POST-MAIN GATE PROJECT SUMMARY SHEET

MERLIN HM Mk1 HELICOPTER

Integrated Project Team Responsible:
Merlin

SECTION 1: ABOUT THE PROJECT

1a. Project description, progress and key future events

Merlin Mk1 is an anti-submarine variant of the Anglo-Italian EH101 helicopter. Deliveries commenced in 1998 and the helicopter will progressively replace the Anti Surface Warfare (ASW) Sea King. The collaborative programme began in 1979 through EH Industries (EHI) - the company formed by Agusta of Italy and GKN Westland in the UK. In 1991 the United Kingdom selected IBM-ASIC (now Lockheed-Martin ASIC (LMA)) as Prime Contractor to complete development of the Royal Navy variant, integration of the Mission System and production of 44 aircraft.

Progress on the project was initially hampered by delays on the collaborative programme caused by accidents to 3 prototype aircraft in 1993, 1995 and 1996. The first flight by a production MERLIN was achieved on 6 December 1995 and the first mission system fitted MERLIN flew in January 1997. The Royal Navy Intensive Flight Trials Unit (IFTU) was commissioned in December 1998. The latest endorsed in-service date was met in March 1999 with delivery of the twelfth aircraft.

As at 31st March 2000, 22 aircraft had been delivered and the final aircraft delivery is programmed for early 2002. The most significant future activity is to achieve the embarked operational capability of 814 Squadron by the end of 2001.

1b. Associated projects

Critical to Achievement of ISD		**Critical to Meet Initial Gate Requirement**	
Project Title	Forecast ISD	Project Title	Forecast ISD
-	-	-	-

1c. Procurement strategy

Contractor(s)	Contract Scope	Contract Type	Procurement Route
EH Industries Ltd.	Collaborative Development EH101.	Target Cost + Incentive Fee with a maximum price.	Non-competitive with no competition for principal sub-contracts. Reflects 50/50 workshare agreement between Westland and Agusta.
GKN Westland Helicopters Ltd.	Aircraft Development.	Target Cost + Incentive Fee with a maximum price.	Workshare agreement Principal EHI sub contractor.
EH Industries Ltd.	Production Investment EH101.	Target Cost + Incentive Fee with a maximum price.	Non-competitive, with competition for sub-contracts below Partner Company Principal sub-contracts.
Lockheed Martin ASIC.	Completion of Specific Development, Integration of Mission Systems and Aircraft Production.	Firm Price (Initially Fixed Price, subsequently converted in February 2000).	International Competition.
Lockheed Martin ASIC.	Development & Production, Merlin Training System.	Firm Price (Initially Fixed Price, subsequently converted in February 2000).	Non-competitive.
Lockheed Martin ASIC.	Merlin Support and Spares Availability System (MSSAS).	Firm Price (Initially Fixed Price, subsequently converted in February 2000).	Non-competitive.

SECTION 2: PROJECT COSTS

2a. Performance against approved cost

£m (outturn prices)	Procurement Cost
Current Forecast Cost	4081
Approved Cost at Main Gate	3121
Variation	+960
In-year changes in 1999/2000	+35

2b. Reasons for variation from approved cost

Factor	Increase £m	Decrease £m	Explanation
Technical Factors	513		Over optimism in the collaborative development programme, specific technical problems, the loss of pre-production aircraft No. 2 and substantial restructuring of the development programme caused by accidents to pre-production aircraft No.4 & 7(+£379m); Accidents to pre-production aircraft No. 4 (+£32m); and No. 7 (+£90m); Safety Critical Software Analysis (+£12m).
Changed Requirement	232		Procurement of safety enhancements: specialised Emergency Lighting (+£7m); and the purchase and integration of an Accident Data Recorder (+£15m); Additional funding for Aircraft Special Servicing Equipment and Ground Support Equipment (+£6m); and Merlin Support and Spares Availability System (MSSAS) (+£33m); MSSAS redeployment (+£11m); Revised deployment pattern resulting from cancellation of Batch 2 (+£160m).
Changed Budgetary Priorities	37	28	Revised CESG proposal (-£5m); Military Aircraft Release (MAR) revisions to fund task to MAR5 on time to maintain Merlin Operational Capability (+£11m); Revision of DERA and DTEO costs (+£6m); Reduced spares risk provision, MSSAS (-£6m); 5% cut in uncommitted production (-£9m); Reduction in risk provision, Merlin Prime Contract (MPC) (-£8m); Reduction in MPC contract savings (+£8m); Forecast Integrated Development Programme (IDP) savings not achieved (+£11m); Reassessment of Production Investment Operating Expenses (+£1m).
Contracting Process	183	163	Reassessment of the expected cost of the Merlin Prime Contract (MPC) (+£44m); and the Merlin Training System (MTS) contract (+£81m); reassessment of costs and contract negotiations across the project (-£104m); revised costing for Reverse Levy (+£23m); change in contract pricing base from Fixed to Firm (-£2m); concurrency risk provision (+£30m); EH101 Target and Maximum Price agreements (-£54m); review of the Specific Development programme (-£3m); profile changes due to programme slippage against contract milestones (+£5m).

Factor	Increase £m	Decrease £m	Explanation
Accounting Adjustments and re-definitions	75	170	Correction of an error in the 1997 budget in the calculation of variation of price and VAT on the MPC (+£35m); VAT on Reverse Levy (+£10m); the introduction of funding (previously intramural) for DTEO work (+£26m); and CESG work (+£2m); disaggregation of Modular Data Acquisition System costs to meet Resource Accounting and Budgeting requirements (+£2m). Derivation of the approved cost on a resource basis (-£170m).
Inflation	281		Difference in annual price uplift between specific indices and the GDP deflator (+£281m).
Total	+1321	-361	
Net Variation	+960		

2c. Expenditure to date

Expenditure to 31 March 2000 (£m)	3042

2d. Years of peak procurement expenditure

1995/96	1996/97

2e. Unit production cost

Unit Production Cost (£m)		Quantities Required	
at Main Gate	Current	at Main Gate	Current
Not Available (Development & Production Package)	Not Available (Development & Production Package)	44	44

SECTION 3: PROJECT TIMESCALE

3a. Definition of in-service date

ISD Definition:	The date by which the twelfth helicopter is delivered to the Royal Navy.

3b. Performance against approved in-service date

	Date
Current forecast ISD	March 1999
Approved ISD at Main Gate	December 1993
Variation (Months)	+63
In-year changes in 1999/2000	0

3c. Reasons for variation from approved ISD

Factor	Increase	Decrease	Explanation
Technical Factors	32	-	Technical problems in the early stages of the collaborative programme, the integration of the Automatic Flight Control System and the engine proving more complex than originally expected (+29 months). The accident to Pre-production Aircraft No 7 (+3 months).
Contracting Process	24	-	Restructuring the collaborative development programme and the competition to select a Prime Contractor (+24 months).
Accounting Adjustments and Re-Definitions	-	5	Redefinition of the ISD from 17 to 12 Aircraft. The National Audit Office has agreed to reflect this as an ISD variation decrease (-5 months).
Changed Budgetary Priorities	12	-	The need to match the programme to the available Departmental resources (+12 months).
Total	+68	-5	
Net Variation	+63		

3d. Cost resulting from ISD variation

Type of Cost/Saving	Cost £m	Saving £m	Explanation
Support costs of current equipment	260		Estimated costs associated with the run on of Sea King Mk5 & Mk6.
Forecast support costs of new equipment	233		Estimated support costs of Merlin Mk1 not incurred.
Total	+27		

3e. Operational impact of ISD variation

Because the Royal Navy has been able to run on the Sea King MK6 aircraft an Anti Surface Warfare (ASW) capability has been available to the fleet albeit at a lower level than that expected from the Merlin. This cover has limited the operational impact of the delay in achieving the in-service date of the Merlin helicopter.

The MK6, however, is known to be at the end of its service life and the operational cover is not as effective when compared with the capability of the newly manufactured and technologically advanced Merlin air vehicle. There are capability shortfalls in the Sea King when compared with the performance levels expected from the Merlin particularly in the area of Anti Submarine Warfare and ASW operations.

SECTION 4: KEY USER REQUIREMENTS

4a. Performance against approved key user requirements

Serial	Key Requirement	Currently forecast to be met (Yes or No)
1	Weapon Splash Point Error Range (WSER) from all attacks shall not exceed a specified accuracy.	Yes
2	Probability of achieving passive localisation of the intended target, to the point of gaining an attack solution leading to weapon delivery. WSER shall not exceed a specified accuracy.	Yes
3	Reporting to a specified level of accuracy the position, course and speed of a target ship at a specified range.	Yes
4	Probability of achieving detection of the intended target within a sonobuoy field.	Yes
5	Probability of achieving detection of the intended target on a sonobuoy barrier.	Yes
6	Probability of detecting all specified operational targets within a specified area.	Yes
7	Probability of recovering a survivor or survivors within a specified accuracy and without undue delay.	Yes
8	Probability of transporting an underslung load, lifting troops, stores or injured personnel over a specified distance and up to a defined maximum number or weight.	Yes
	Percentage currently forecast to be met	100%
	Change since previous MPR	-

4b. Reasons for variation against approved key requirements

Key Requirement	Factor	Explanation
-	-	-

SECTION 5: HISTORY UP TO MAIN GATE APPROVAL

5a. Description of the Assessment Phase

In January 1975 (the equivalent of initial gate), two feasibility studies were launched into a suitable replacement for the Sea King Helicopter and its equipment fit. The feasibility studies considered a wide range of avionics fits and airframe development and concluded that, in order to accommodate the avionics system and to provide the long endurance requirements, a helicopter of broadly Sea King size was needed.

In March 1978, approval was given for initial project definition work on a new helicopter and also around this time a memorandum of understanding was set up to look at the prospect of European collaboration.

In February 1983 (the equivalent of main gate) the Staff Requirement was endorsed and approval was given for the development of the EH (101) with an in-service date of December 1993. A collaborative development contract was awarded to EHI Industries Ltd with the assumption that the development costs would be shared with a European collaborative partner.

5b. Cost of the Assessment Phase

£m (outturn prices)	Assessment Phase cost	Proportion of total estimated procurement expenditure
Actual Cost	98	2.3%
Approved Cost at Initial Gate	73	1.7%
Variation	+25	

5c. Duration of Assessment Phase

Date of Main Gate Approval	23 February 1983
Target Date for Main Gate Approval	-
Variation (Months)	-

5d. Cost boundaries at Initial Gate and Main Gate Approvals

£m (outturn prices)	Lowest	Most Likely	Highest
Cost of Demonstration and Manufacture Phase forecast at Main Gate	-	3121	-
Cost of Demonstration and Manufacture Phase forecast at Initial Gate	-	-	-

5d. ISD boundaries at Initial Gate and Main Gate Approvals

	Earliest	Most Likely	Latest Acceptable
Forecast ISD at Main Gate	-	November 1993	-
Forecast ISD at Initial Gate	-	December 1982	-

POST-MAIN GATE PROJECT SUMMARY SHEET

MULTI-ROLE ARMOURED VEHICLE (MRAV)

Integrated Project Team Responsible:
Multi-Role Armoured Vehicle (MRAV)

SECTION 1: ABOUT THE PROJECT

1a. Project description, progress and key future events

The MRAV programme will provide the British Army with a modern and flexible family of armoured utility vehicles that can operate in both high intensity conflict and in rapid reaction peace support and humanitarian operations worldwide. The vehicle affords enhanced protection, larger capacity and greater operational and tactical mobility than the ageing Fighting Vehicle 430 series, Combat Vehicle Reconnaissance (Tracked) utility variants and Saxon General War Role vehicles it replaces. A dismountable mission module atop an 8-wheel drive, 4-wheel steer drive module ensures maximum commonality, whilst allowing the flexibility to design and fit separate mission modules to meet the demands of the multi-role fleet.

MRAV is a bilateral collaborative programme between Germany and the UK. France were also initially involved but withdrew from the programme in September 1999 to pursue a national approach to meet its diverging aspirations. On 5 November 1999, Germany and the UK signed a bilateral development contract with ARTEC GmbH, which included an option to manufacture a first batch of 600 vehicles to be split equally between the nations. The UK is expected to procure more than 1,000 MRAV with a total procurement cost of over £1bn. Following the development phase, between 2002 and 2004, the vehicle will undergo an intensive trials and reliability programme with vehicle deliveries planned to begin in 2006.

The integration of the MRAV programme into the quadrilateral Organisation for Joint Armament Co-operation (OCCAR) was confirmed by the OCCAR Board of Supervisors on 10 December 1999. It is hoped that the Netherlands will join the programme as equal partners by the end of 2000.

1b. Associated projects

Critical to Achievement of ISD		Critical to Meet Initial Gate Requirement	
Project Title	Forecast ISD	Project Title	Forecast ISD
-	-	-	-

1c. Procurement strategy

Contractor(s)	Contract Scope	Contract Type	Procurement Route
ARTEC GmbH (a consortium comprising Alvis Vehicles Ltd, Krauss-Maffei Wegmann and MaK).	Full Development with an option for Initial Production.	Firm Price.	International Competition.

SECTION 2: PROJECT COSTS

2a. Performance against approved cost

£m (outturn prices)	Procurement Cost
Current Forecast Cost	451
Approved Cost at Main Gate	428
Variation	+23
In-year changes in 1999/2000	+23

2b. Reasons for variation from approved cost

Factor	Increase £m	Decrease £m	Explanation
Contracting Process	32		The cost variation has resulted from extensive contract negotiations where a number of UK specific requirements were added to the contract as an option (+£32m).
Changed Budgetary Priorities		5	Reassessment of the cost of the joint project office (-£3m); development of national variants (-£1m); and DERA (-£1m).
Inflation		3	Variation between GDP uplift factor and contract VOP indices (-£3m).
Accounting Adjustment		1	Derivation of the approved cost on a resource basis (-£1m).
Total	+32	-9	
Net Variation	+23		

2c. Expenditure to date

Expenditure to 31 March 2000 (£m)	6

2d. Years of peak procurement expenditure

2007/08	2008/09

2e. Unit production cost

Unit Production Cost (£m)		Quantities Required	
at Main Gate	Current	at Main Gate	Current
1.0	1.1	***	***

SECTION 3: PROJECT TIMESCALE

3a. Definition of in-service date

ISD Definition:	**Original ISD definition:** The operational capability to deploy a Mechanised Brigade HQ and Mechanised Infantry Battalion. **Current ISD definition:** An Initial Operational Capability comprising 54 Armoured Personnel Carriers and 21 Command Vehicles fully operational in a Mechanised Infantry Battalion and Brigade Headquarters. **Reason for Change:** The development contract delivers Armoured Personnel Carriers and Command Posts only and the ISD definition has been amended to reflect this.

3b. Performance against approved in-service date

	Date
Current forecast ISD	August 2008
Approved ISD at Main Gate	March 2011
Variation (Months)	-31
In-year changes in 1999/2000	0

3c. Reasons for variation from approved ISD

Factor	Increase (months)	Decrease (months)	Explanation
Re-definition		31	Difference between the 50% and 90% probability dates reflecting the perceived risk in the programme rather than an actual change in the programme timescales (-31 months).
Total		-31	
Net Variation		-31	

3d. Cost resulting from ISD variation

Type of Cost/Saving	Cost £m	Saving £m	Explanation
Support costs of current equipment	-	-	-
Other	-	-	-
Total	-	-	

3e. Operational impact of ISD variation

-

Note: As there has been no change in the ISD the Department is planning to achieve, there are no cost or operational implications due to the variation.

SECTION 4: KEY USER REQUIREMENTS

4a. Performance against approved key user requirements

Serial	Key Requirement	Currently forecast to be met (Yes or No)
1	Capacity: MRAV will have the minimum useable capacity to carry up to 10 personnel plus adequate supplies to operate over a 48 hour battlefield mission.	Yes
2	Mobility: It is essential that MRAV can be transported by outsize airlift (such as C5, C17 and Future Large Aircraft)	Yes
3	Survivability: MRAV, without add-on armour, must be protected against fragment simulating projectile.	Yes
4	Survivability: Occupants must be protected against effects of blast mine attack containing up to ***kg of explosive.	Yes
5	Survivability: MRAV must be fitted with Enhanced Protection overhead protection (top-attack armour).	Yes
6	Survivability: At night the Commander should be able to identify a NATO standard Target at***m in poor conditions.	Yes
7	Reliability: Each design version shall have a basic reliability of 45% against the UK Battlefield Mission.	Yes
8	Armoured Treatment and Evacuation Vehicle (ATEV): To meet the treatment and evacuation roles, 2 configurations of ATEV are required. MRAV will be able to convert from one configuration to the other at first line.	Yes
9	Armoured Mortar Vehicle (AMV): AMV must mount the in-service mortar and it must be possible to fire that mortar throughout 6400 mils (360 degrees).	Yes
10	Communications Variants (CommV): Comm(V) must be able to mount and fully integrate all future communications equipment standard to role.	Yes
11	Anti-Tank Platoon Vehicle (ATPV): ATPV must be able to carry 2 Firing Posts, 6 personnel and 16 anti-armour missiles.	Yes
	Percentage currently forecast to be met	100 %
	Change since previous MPR	-

4b. Reasons for variation against approved key requirements

Key Requirement	Factor	Explanation
-	-	-

SECTION 5: HISTORY UP TO MAIN GATE APPROVAL

5a. Description of the Assessment Phase

There was no approval equivalent to Initial Gate for MRAV as the UK joined a Franco-German programme after France and Germany had conducted national Feasibility Studies. However, the UK did spend approximately £2m in formulating the Staff Requirement, conducting a Combined Operational Effectiveness and Investment Appraisal (COEIA) and tender assessment. The COEIA assessed the cost and operational effectiveness of the collaborative solution against a range of alternative options. This expenditure has been subsumed by the Main Gate approval.

5b. Cost of the Assessment Phase

£m (outturn prices)	Assessment Phase cost	Proportion of total estimated procurement expenditure
Actual Cost	-	-
Approved Cost at Initial Gate	-	-
Variation	-	

5c. Duration of Assessment Phase

Date of Main Gate Approval	March 1998
Target Date for Main Gate Approval	-
Variation (Months)	-

5d. Cost boundaries at Initial Gate and Main Gate Approvals

£m (outturn prices)	Lowest	Most Likely	Highest
Cost of Demonstration and Manufacture Phase forecast at Main Gate	-	428	-
Cost of Demonstration and Manufacture Phase forecast at Initial Gate	-	-	-

5d. ISD boundaries at Initial Gate and Main Gate Approvals

	Earliest	Most Likely	Latest Acceptable
Forecast ISD at Main Gate	April 2008	August 2008	March 2011
Forecast ISD at Initial Gate	-	-	-

POST-MAIN GATE PROJECT SUMMARY SHEET

NIMROD MARITIME RECONNAISSANCE & ATTACK Mk4 (NIMROD MRA4)

Integrated Project Team Responsible
Nimrod MRA4

SECTION 1: ABOUT THE PROJECT

1a. Project description, progress and key future events

The Nimrod MRA4 will replace the current MR2 as the RAF's new maritime patrol aircraft, providing significantly enhanced Anti-Submarine and Anti-Surface Unit Warfare capability through improved aircraft and sensor performance, a greater degree of system integration and better Human Machine Interface design. The new aircraft will also provide a substantial improvement in availability and supportability. The aircraft, training system and initial support is being procured from BAE SYSTEMS as Prime Contractor. The contract was placed in December 1996 and the aircraft completed the detailed design phase in February 2000. Manufacture and qualification is well underway as part of the concurrent approach to development.

Following difficulties encountered by BAE SYSTEMS in meeting the contractual programme, the contract was re-negotiated in May 1999. BAE SYSTEMS are now pursuing an internal stretch programme, which seeks to improve contracted aircraft delivery timescales. Responsibility for aircraft build moved from FR Aviation to BAe Woodford in October 1999 as part of the drive for programme improvements.

The Air Vehicle Critical Design Review (AV CDR) was held on schedule in September 1999 and all actions from that review have now been closed. The next major programme milestone is first flight of the first definition of Production Aircraft 1 (PA1), which is scheduled for late November 2001.

1b. Associated projects

Critical to Achievement of ISD		Critical to Meet Initial Gate Requirement	
Project Title	Forecast ISD	Project Title	Forecast ISD
-	-	-	-

1c. Procurement strategy

Contractor(s)	Contract Scope	Contract Type	Procurement Route
BAE SYSTEMS (formerly British Aerospace Defence Ltd. Military Aircraft Division).	Development and Production package.	Fixed Price.	Prime Contractor International competition.
Boeing Defence & Aerospace Group, USA.	Tactical Command System and Sensors.	Fixed Price.	Sub-contractor to BAE SYSTEMS.

SECTION 2: PROJECT COSTS

2a. Performance against approved cost

£m (outturn prices)	Procurement Cost
Current Forecast Cost	2817
Approved Cost at Main Gate	2959
Variation	-142
In-year changes in 1999/2000	-32

2b. Reasons for variation from approved cost

Factor	Increase £m	Decrease £m	Explanation
Receipts		46	Recovery of Liquidated Damages (-£46m).
Technical Factors	7		Increase in DERA estimate (+£13m); Reduction in study requirements (-£6m).
Changed Budgetary Priorities		17	Reduction in Risk provision (-£17m).
Contracting Process		103	Reduction in Risk provision (-£56m); and reductions following re-negotiation of contract (-£26m); reduction in programme costs between Main Gate approval and original contract placement (-£37m); original contract let at provisional indices that were below actual indices (+£16m).
Accounting Adjustments	1	18	Increase in cost owing to the creation of a trading fund for the CESG after original approval had been granted (+£1m); derivation of the approved cost on a resource basis (-£18m).
Inflation	34		Difference in annual price uplift between specific indices and GDP deflator (+£34m).
Total	+42	-184	
Net Variation		-142	

2c. Expenditure to date

Expenditure to 31 March 2000 (£m)	428

2d. Years of peak procurement expenditure

2002/2003	2004/2005

2e. Unit production cost

Unit Production Cost (£m)		Quantities Required	
at Main Gate	Current	at Main Gate	Current
Development and Production package	Development and Production package	21	21

SECTION 3: PROJECT TIMESCALE

3a. Definition of in-service date

ISD Definition:	Delivery of the seventh production standard aircraft to the Royal Air Force

3b. Performance against approved in-service date

	Date
Current forecast ISD	December 2004
Approved ISD at Main Gate	April 2003 *
Variation (Months)	+20
In-year changes in 1999/2000	0

***** This was the ISD endorsed by the EAC

3c.Reasons for variation from approved ISD

Factor	**Increase (months)**	**Decrease (months)**	**Explanation**
Technical Factors	23	3	Resource and technical problems at BAE SYSTEMS (+23 months); difference between forecast date reported in MPR99 based upon the 1999 re-approval at 90% confidence (Mar 05) and forecast date reported in MPR2000 based upon the current plan at 50% confidence (-3 months)
Total	23	3	
Net Variation	+20		

3d. Cost resulting from ISD variation

Type of Cost/Saving	**Cost £m**	**Saving £m**	**Explanation**
Support costs of current equipment	61		Additional cost of running on Nimrod MR2.
Other		61	Reductions in MRA4 support costs over the same period.
Total		0	

3e. Operational impact of ISD variation

The consequence of the Nimrod MRA4 ISD slip is that the Nimrod MR2 will remain in service until mid-2008. This slip will delay introduction of the improved Anti-Submarine and Anti-Surface Warfare unit capability of the Nimrod MRA4 and will require the ageing MR2 fleet to be maintained in service longer than expected. The operational impact of this slippage will be partly mitigated by measures already in hand to introduce upgrades to some Nimrod MR2 systems, notably Replacement Acoustic Processors (RAP), navigation systems, datalinks and other communications to address interoperability issues. The RAP programme has benefited by making use of acoustic processors procured for Nimrod MRA4.

SECTION 4: KEY USER REQUIREMENTS

4a. Performance against approved key user requirements

Serial	Key Requirement	Currently forecast to be met (Yes or No)
1	Anti-Submarine Warfare (ASW) Barrier Search - Probability of Detection (PD).	Yes
2	ASW Area Search - Probability of Detection (PD).	Yes
3	ASW Passive Localisation - Weapon Splashpoint Error Range (WSER).	Yes
4	ASW Passive Localisation - Probability of Localisation (PL).	Yes
5	ASW Active Localisation - Weapon Splashpoint Error Range (WSER).	Yes
6	ASW - Time on Station (ToS).	Yes
7	Anti-Surface Warfare (ASuW) - Time on Station (ToS).	Yes
8	ASuW Area Search - Probability of detecting operational targets within a specified area.	Yes
9	ASuW Area Search - Determination of target position, course and speed for third party targeting.	Yes
10	Airfield Performance - achieving defined take off performance.	Yes
	Percentage currently forecast to be met	100%
	Change since previous MPR	-

4b. Reasons for variation against approved key requirements

Key Requirement	Factor	Explanation
-	-	-

SECTION 5: HISTORY UP TO MAIN GATE APPROVAL

5a. Description of the Assessment Phase

In November 1992, the Equipment Approvals Committee (EAC) approved a Request for Information exercise whereby 17 companies were invited to provide responses to the draft Replacement Maritime Patrol Aircraft (RMPA) Staff Requirement.

Following analysis of the industry responses, EAC endorsed the requirement and approved an Invitation to Tender phase whereby four companies (BAe, Lockheed-Martin, Loral and Dassault) were invited to provide detailed technical and commercial proposals for an aircraft to meet the endorsed Staff Requirement. Dassault withdrew from the competition in January 1996, and whilst Lockheed Martin and Loral merged in May 1996, they maintained the two separate proposals until the competition concluded.

Following assessment of these responses, selection of BAe's Nimrod 2000 (later to be re-designated Nimrod MRA4) offer was approved by EAC and Ministers in July 1996. This was the equivalent of Main Gate approval.

5b. Cost of the Assessment Phase

£m (outturn prices)	Assessment Phase cost	Proportion of total estimated procurement expenditure
Actual Cost	5	0.2%
Approved Cost at Initial Gate	4	0.2%
Variation	+1	

5c. Duration of Assessment Phase

Date of Main Gate Approval	July 1996
Target Date for Main Gate Approval	-
Variation (Months)	-

5d. Cost and ISD boundaries at Initial Gate and Main Gate Approvals

£m (outturn prices)	Lowest	Most Likely	Highest
Cost of Demonstration and Manufacture Phase forecast at Main Gate	-	2959	-
Cost of Demonstration and Manufacture Phase forecast at Initial Gate	-	-	-

5d. Cost and ISD boundaries at Initial Gate and Main Gate Approvals

	Earliest	Most Likely	Latest Acceptable
Forecast ISD at Main Gate	April 2003	January 2005	-
Forecast ISD at Initial Gate	-	December 2000	-

POST-MAIN GATE PROJECT SUMMARY SHEET

SEAWOLF MID-LIFE UPDATE

Integrated Project Team Responsible:
Ship Missile Systems

SECTION 1: ABOUT THE PROJECT

1a. Project description, progress and key future events

Seawolf is the only Point Defence Missile System currently in-service with the Royal Navy and is fitted to Type 22 and Type 23 Frigates. The Seawolf Mid-life Update (SWMLU) will maintain the performance of the Seawolf system against the evolving Anti-Surface Ship Missile threat. Additions and modifications to the existing systems are primarily aimed at the Tracking and Guidance Sub-Systems and computer processing. The package of improvements is intended to improve ship survivability against threats well into the 21st century and will ensure that the UK remains at the forefront of close range naval missile technology.

The approval to proceed to Main Gate (Full Development and Production) was achieved in May 1999.

The assessment from the Project Definition phase indicated that competition between the two design authorities, Matra BAE Dynamics and Alenia Marconi Systems, would not result in a value for money solution as neither company would have the necessary expertise in all areas of the programme. Therefore, an alternative strategy of a single source procurement from an alliance between the two companies was formulated and is expected to substantially reduce the financial and technical risk of the programme.

The main contract, expected to be placed in 2000, will be subject to a Target Cost Incentive Fee arrangement which will include incentives for Industry to seek efficiency savings in which the MOD will share. It is estimated that some 50% of the value of the programme will be sub-contracted, largely as a result of competition. The Logistic Support Date for first of class is May 2004 and the in-service date for the first of class ship fitted is March 2005.

1b. Associated projects

Critical to Achievement of ISD		Critical to Meet Initial Gate Requirement	
Project Title	Forecast ISD	Project Title	Forecast ISD
-	-	-	-

1c. Procurement strategy

Contractor(s)	Contract Scope	Contract Type	Procurement Route
Full Development and Production contract not yet awarded.	-	-	-

SECTION 2: PROJECT COSTS

2a. Performance against approved cost

£m (outturn prices)	Procurement Cost
Current Forecast Cost	286
Approved Cost at Main Gate	288
Variation	-2
In-year changes in 1999/2000	-2

2b. Reasons for variation from approved cost

Factor	Increase £m	Decrease £m	Explanation
Inflation		17	A commercial decision to change from using input indices to using the most appropriate output indices reduced anticipated VOP inflation estimate from 3.3% to 2.2% (-£17m).
Changed budgetary Priorities	15		A customer driven slippage of 6 months, due to budgetary constraints, resulting in a change to the delivery profile of the programme (+£15m).
Total	+15	-17	
Net Variation		-2	

2c. Expenditure to date

Expenditure to 31 March 2000 (£m)	2

2d. Years of peak procurement expenditure

2003/04	2004/05

2e. Unit production cost

Unit Production Cost (£m)		Quantities Required	
at Main Gate	Current	at Main Gate	Current
***	***	46	46

SECTION 3: PROJECT TIMESCALE

3a. Definition of in-service date

ISD Definition:	The date by which the first ship system becomes operational with the improved capability having successfully completed Naval Weapon Sea Trials.

3b. Performance against approved in-service date

	Date
Current forecast ISD	March 2005
Approved ISD at Main Gate	December 2004
Variation (Months)	+3
In-year changes in 1999/2000	+6

3c. Reasons for variation from approved ISD

Factor	Increase (months)	Decrease (months)	Explanation
Changed budgetary priorities	6		Slippage by customer organisation due to budgetary constraints (+6 months).
Technical factors		3	Difference between the 50% and 90% probability dates reflecting perceived risk in the programme rather than an actual change in the programme timescale (-3 months).
Total	+6	-3	
Net Variation	+3		

3d. Cost resulting from ISD variation

Type of Cost/Saving	Cost £m	Saving £m	Explanation
Support costs of current equipment	2		Additional costs of support to the existing ship systems falling to the Ship Support Agency (+£2m).
Other			
Total	+2		

3e. Operational impact of ISD variation

Type 22 and Type 23 platforms will have to support the existing system for longer, resulting in a decreased capability against the evolving threat from the current generation of sea skimming missiles and other anti-ship missile threats in all environments, for the period of ISD slippage.

SECTION 4: KEY USER REQUIREMENTS

4a. Performance against approved key user requirements

Serial	Key Requirement	Currently forecast to be met (Yes or No)
1	To provide specified Probability of Escaping ship Hit (PEH) up to Sea State (SS) 4.	Yes
2	To provide specified PEH above SS4.	Yes
3	Provide KUR 1 & 2, in specified jamming scenario.	Yes
4	Retain baseline performance and functionality.	Yes
5	Provide capability in the physical environment of platform.	Yes
6	Provide capability in the Electro Magnetic Compatibility environment of platform.	Yes
7	AR&M performance to be no worse than baseline system.	Yes
8	Optimise the Life Cycle Costs of the system.	Yes
9	Minimise changes to the remainder of the platform.	Yes
	Percentage currently forecast to be met	100 %
	Change since previous MPR	-

4b. Reasons for variation against approved key requirements

Key Requirement	Factor	Explanation
-	-	-

SECTION 5: HISTORY UP TO MAIN GATE APPROVAL

5a. Description of the Assessment Phase

The Feasibility Study (FS) stage of the SWMLU programme was approved in 1989. FS set out to provide a number of options to maintain system performance against the future threat. Twenty five options were considered covering missile improvements through a variety of sub-systems and whole system changes under two feasibility contracts with British Aerospace and GEC-Marconi Radar Defence Systems (GMRDS).

The results, taken into the Project Definition phase (PD), concluded that the Mid-life Update should feature upgraded target acquisition, sensor data fusion, high speed computer processing to provide improved target tracking and missile guidance, with the addition of an electro-optic subsystem to provide an enhanced all weather capability.

It was intended to seek approval for PD in 1991, however, due to programme delays approval was not granted until 1994. A non-competitive contract was placed with the Design Authority of the conventional launch Seawolf system, (GMRDS now Alenia Marconi Systems), in 1996 and the final report was completed in May 1998.

The PD report endorsed the programme predictions from the FS stage, by means of a comprehensive system modelling programme and provided a set of requirement documentation for the Development phase, to enable the MOD to obtain re-endorsement of the Staff Requirement and approval for Main Gate.

5b. Cost of the Assessment Phase

£m(outturn prices)	Assessment Phase cost	Proportion of total estimated procurement expenditure
Actual Cost	16	5%
Approved Cost at Initial Gate	18	6%
Variation	-2	

5c. Duration of Assessment Phase

Date of Main Gate Approval	May 1999
Target Date for Main Gate Approval	December 1993
Variation (Months)	+65

5d. Cost boundaries at Initial Gate and Main Gate Approvals

£m (outturn prices)	Lowest	Most Likely	Highest
Cost of Demonstration and Manufacture Phase forecast at Main Gate	-	288	-
Cost of Demonstration and Manufacture Phase forecast at Initial Gate	-	-	-

5d. ISD boundaries at Initial Gate and Main Gate Approvals

	Earliest	Most Likely	Latest Acceptable
Forecast ISD at Main Gate	-	September 2004	December 2004
Forecast ISD at Initial Gate	-	August 1998	-

POST-MAIN GATE PROJECT SUMMARY SHEET

SPEARFISH HEAVYWEIGHT TORPEDO

Integrated Project Team Responsible:
TORPEDO

SECTION 1: ABOUT THE PROJECT

1a. Project description, progress and key future events

Spearfish is an advanced anti-submarine and anti-ship torpedo. Designed primarily to counter the threat from fast, deep manoeuvring submarines, its speed and endurance enable it to out-manoeuvre fast and deep diving targets. It will replace the Tigerfish torpedo in all Royal Navy submarines.

A contract for the Development and Initial Production (D&IP) of 100 torpedoes was placed with GEC-Marconi in 1982. Deliveries were subsequently suspended for 62 months until 1993, when reliability problems with the torpedo were resolved. In 1994 the design was accepted and Spearfish entered service.

In December 1994 a contract was placed with GEC-Marconi for the Spearfish Main Production Order (MPO). To minimise MOD liability and risk, GEC Marconi is responsible for the In Service Support (ISS) of the Initial Production and MPO weapons until 2004. The Defence Munitions Depot at Beith is the major sub-contractor for this element of the contract. The first MPO deliveries were achieved in July 1999.

The Royal Navy's requirements have been met to date using a combination of Initial Production and Main Production Order Torpedo warshot deliveries.

Significant future milestones:

Fleet Weapon Acceptance	June 2003
Last Weapon Delivery	December 2003

In-year cost changes of -£6m result from deletion of production acceptance trials.

1b. Associated projects

Critical to Achievement of ISD		Critical to Meet Initial Gate Requirement	
Project Title	Forecast ISD	Project Title	Forecast ISD
-	-	-	-

1c. Procurement strategy

Contractor(s)	Contract Scope	Contract Type	Procurement Route
GEC-Marconi Underwater Systems Group (now trading as BAE SYSTEMS Electronics Ltd).	Main Production Order.	Predominately Fixed Price.	Non-Competitive (Competition for sub-contracts amounting to 24% of the overall value of the Prime Contract).

SECTION 2: PROJECT COSTS

2a. Performance against approved cost

£m (outturn prices)	Total Procurement Cost
Current Forecast Cost	1348
Approved Cost at Main Gate	1246
Variation	+102
In-year changes in 1999/2000	-6

2b. Reasons for variation from approved cost

Factor	Increase £m	Decrease £m	Explanation
Technical Factors	26		Programme delays required support costs of first torpedoes to be accounted for against the Project until ISD had been achieved (+£26m).
Inflation	94		Difference in annual price uplift between specific indices and GDP deflator (D&IP +£92M, MPO +£2m).
Changed Requirement	3	20	Approved work added to contract (+£2m); contract let for less than original approval (-£13m); change of items from fixed to firm price (-£1m); post Contract Award Audit adjustment in respect of sub contract pricing (+£1m); deletion of Production Acceptance Trials (-£6m).
Accounting Adjustment		1	Change from constant to output costing (-£1m).
Total	+123	-21	
Net Variation	+102		

2c. Expenditure to date

Expenditure to 31 March 2000 (£m)	1021

2d. Years of peak procurement expenditure

1987/88	1998/99

2e. Unit production cost

Unit Production Cost (£m)		Quantities Required	
at Main Gate	Current	at Main Gate	Current
Dev & I/Prod 1.2	1.5	D&IP 100	100
Main Prod 2.2	2.2	MPO ***	***

SECTION 3: PROJECT TIMESCALE

3a. Definition of in-service date

ISD Definition:	The availability of the first outload of weapons with Certified Design to an RN submarine.

3b. Performance against approved in-service date

	Date
Current forecast ISD	March 1994
Approved ISD at Main Gate	December 1987
Variation (Months)	+75 months
In-year changes in 1999/2000	0

3c. Reasons for variation from approved ISD

Factor	Increase (months)	Decrease (months)	Explanation
Technical Factors	75		Problems with the propulsion system (+9 months); during Contract acceptance trials it became evident that the reliability requirements of the contract were not being met. Following a design audit, a Reliability Assurance Programme was implemented (+62 months). Problems during environmental trials required for safety acceptance (+4 months).
Total	+75		
Net Variation	+75		

3d. Cost resulting from ISD variation

Type of Cost/Saving	Cost £m	Saving £m	Explanation
Support costs of current equipment	47		Additional support of Tigerfish torpedo.
Other		17	Lower cost of RN crew certification trials through use of Tigerfish in lieu of Spearfish weapons.
Total	+30		

3e. Operational impact of ISD variation

The delay to Spearfish ISD from 1987 until 1994 resulted in a significant and extended capability gap in anti-submarine warfare (ASW) and anti-surface warfare (ASuW) weapons for the submarine flotilla and necessitated the retention of the less capable Tigerfish torpedo, (introduced into service in 1973). ***.

SECTION 4: KEY USER REQUIREMENTS

4a. Performance against approved key user requirements
THE KEY USER REQUIREMENTS HAVE NOT BEEN AGREED WITH THE CUSTOMER AND ARE STILL PROVISIONAL.

Serial	Key Requirement	Currently forecast to be met (Yes or No)
1	Torpedo Reliability.	Yes
2	Torpedo ASW Performance – Fast.	Yes
3	Torpedo ASW Performance – Slow.	Yes
4	Torpedo Countermeasure Performance.	Yes
5	Torpedo Speed & Endurance.	Yes
6	Torpedo Radiated Noise Performance.	No
7	Torpedo ASuW Performance.	Yes
	Percentage currently forecast to be met	86%
	Change since previous MPR	-

4b. Reasons for variation against approved key requirements

Key Requirement	Factor	Explanation
Torpedo Radiated Noise Performance	Technical	Unable to meet requirements across whole spectrum

SECTION 5: HISTORY UP TO MAIN GATE APPROVAL

5a. Description of the Assessment Phase

By the mid 1970's there was a requirement to replace the Mk24 heavyweight torpedo with a weapon of increased capability. Approval was given by the Operational Requirements Committee in March 1977 for a Feasibility Study and in February 1980 for Project Definition work. The Feasibility Study was undertaken between May 1977 and June 1979 and examined the potential for developing a new torpedo. This was followed in February 1980 by parallel studies of two options, namely the development of a new UK torpedo and the purchase of the American Mk48 with additional capability. The studies covered aspects such as torpedo noise, speed, warhead capability and endurance.

A Technical Review Committee subsequently prepared an overall technical judgement. Their 1981 report concluded that both the British and American weapon systems would satisfy the requirement. A final decision was taken by the Cabinet Defence and Overseas Policy Committee (OD) who accepted a fixed price package for both heavyweight and lightweight torpedo development and initial production from GEC Marconi. The contract was placed in 1982 combining MOD departmental and Industry expertise from the Sting Ray lightweight torpedo programme.

5b. Cost of the Assessment Phase

£m (outturn prices)	Assessment Phase cost	Proportion of total estimated procurement expenditure
Actual Cost	37	2.7%
Approved Cost at Initial Gate	34	-
Variation	+3	

5c. Duration of Assessment Phase

Date of Main Gate Approval	1982
Target Date for Main Gate Approval	-
Variation (Months)	-

5d. Cost boundaries at Initial Gate and Main Gate Approvals

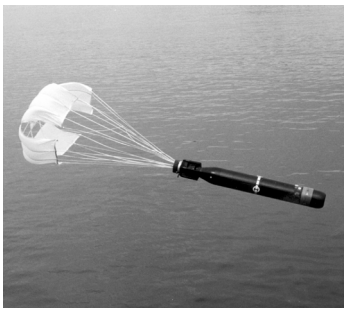
£m (outturn prices)	Lowest	Most Likely	Highest
Cost of Demonstration and Manufacture Phase forecast at Main Gate	-	1246	-
Cost of Demonstration and Manufacture Phase forecast at Initial Gate	-	-	-

5e. ISD boundaries at Initial Gate and Main Gate Approvals

	Earliest	Most Likely	Latest Acceptable
Forecast ISD at Main Gate	-	December 1987	-
Forecast ISD at Initial Gate	-	December 1986	-

POST-MAIN GATE PROJECT SUMMARY SHEET

STING RAY LIGHTWEIGHT TORPEDO
Life Extension and Capability Upgrade



Integrated Project Team Responsible
TORPEDO

SECTION 1: ABOUT THE PROJECT

1a. Project description, progress and key future events

The Sting Ray lightweight torpedo is the main anti-submarine weapon for ships and aircraft. It entered operational service in 1983 with a planned service life of around 20 years. To provide an opportunity for international collaboration on a replacement, Sting Ray will remain in service until around 2025 when it is envisaged that other nations will require replacement lightweight torpedoes. Accordingly, the Sting Ray torpedo needs to be life-extended and its capability enhanced.

The Sting Ray Life Extension programme was approved in May 1995 and a contract for full development was awarded to GEC-Marconi on 10 July 1996. The design is progressing well with the sonar sub-system in water testing completing in December 1999. Some torpedo in-water trials have also been successfully completed. The trials programme is expected to complete with Contract Acceptance Trials in 2003.

Separately, a study was undertaken into a less sensitive warhead for the life-extended Sting Ray. A decision on whether to proceed or not with a new development or commercial Off-The-Shelf insensitive munition warhead is being considered by equipment capability staff within the Department.

Future milestones: submission for production in September 2002; place production contract in April 2003; in-service date (ISD) May 2006 (there was an in year slip of 12 months due to changed budgetary priorities). There is further expenditure in clear prospect for the production contract.

In-year cost changes of +£10m result from: +£9m additional interest on capital following from implementation of the ISD slip of 12 months; +£1m for warhead/trials work.

1b. Associated projects

Critical to Achievement of ISD		Critical to Meet Initial Gate Requirement	
Project Title	Forecast ISD	Project Title	Forecast ISD
-	-	-	-

1c. Procurement strategy

Contractor(s)	Contract Scope	Contract Type	Procurement Route
GEC-Marconi Underwater Systems Group (now trading as BAE SYSTEMS Electronics Ltd).	Full Development & Pre Production.	Fixed Price.	Non-competitive contract with design authority of equipment. No sub contract competition at first tier level.

SECTION 2: PROJECT COSTS

2a. Performance against approved cost

£m (outturn prices)	Procurement Cost
Current Forecast Cost	184
Approved Cost at Main Gate	147
Variation	+37
In-year changes in 1999/2000	+10

2b. Reasons for variation from approved cost

Factor	Increase £m	Decrease £m	Explanation
Changed Requirement	1		Addition of safety case to comply with new Health & Safety regulations for warships (+£1m).
Changed Budgetary Priorities	12		Increase to Interest on Capital due to 12 month ISD delay (+£9m); revised estimate for warhead work (+£1m); and Trials activities (+£2m).
Inflation	1		Difference in annual price uplift between specific indices and GDP deflator (+£1m).
Contracting Process	4		Contract price exceeded estimate at approval (+£4m).
Accounting Adjustment and Re-definitions	19		Inclusion of DERA support previously treated as an intramural charge (+£10m); re-assessment of DERA support expenditure (+£5m); derivation of the approved cost on a resource basis (+£4m).
Total	+37		
Net Variation	+37		

2c. Expenditure to date

Expenditure to 31 March 2000 (£m)	57

2d. Years of peak procurement expenditure

2007/08	2008/09

2e. Unit production cost

Unit Production Cost (£m)		Quantities Required	
at Main Gate 1	Current	at Main Gate 1	Current
0.3	0.3	***	***

SECTION 3: PROJECT TIMESCALE

3a. Definition of in-service date

ISD Definition:	The date when the first 100 production standard weapons have been modified and are ready for issue to an operational unit.

3b. Performance against approved in-service date

	Date
Current forecast ISD	May 2006
Approved ISD at Main Gate	December 2002
Variation (Months)	+41
In-year changes in 1999/2000	+12

3c. Reasons for variation from approved ISD

Factor	Increase (months)	Decrease (months)	Explanation
Changed Budgetary Priorities	24		The need to match the MOD programme to available resources in the overall pattern of MOD priorities (+24 months).
Contracting Process	17		Delay due to contract negotiations taking longer than expected (+9 months); and reassessment of programme timescales following negotiations (+8 months).
Total	41		
Net Variation	+41		

3d. Cost resulting from ISD variation

Type of Cost/Saving	Cost £m	Saving £m	Explanation
Support costs of current equipment	19		Additional In Service Support (ISS) of present Sting Ray torpedo.
Other		14	Reduced ISS for updated torpedo.
Total	+5		

3e. Operational impact of ISD variation

The ISD delay has enabled additional requirements to be incorporated into the weapon. However, the delay has the potential to cause a capability gap with the older and less effective Sting Ray weapon being retained in service with ongoing consequences for reliability. This capability gap should not be critical. ***.

SECTION 4: KEY USER REQUIREMENTS

4a. Performance against approved key user requirements

Serial	Key Requirement	Currently forecast to be met (Yes or No)
1	Overall Torpedo Effectiveness.	Yes
2	Hit Probability.	Yes
3	Automobile Performance.	Yes
4	Torpedo Counter Countermeasure Capability.	Yes
5	Operational Environment.	Yes
6	Water Depth.	Yes
7	Acoustic Environment Capability.	Yes
8	Warhead & Firing Chain.	Yes
9	Availability, Reliability & Maintainability.	Yes
10	Maintenance & Transport Environment.	Yes
	Percentage currently forecast to be met	100%
	Change since previous MPR	-

4b. Reasons for variation against approved key requirements

Key Requirement	Factor	Explanation
-	-	-

SECTION 5: HISTORY UP TO MAIN GATE APPROVAL

5a. Description of the Assessment Phase

The equivalent of the Assessment Phase was undertaken within a number of Definition Studies undertaken between 1993 and 1995 under Sting Ray Post Design Services at a cost of £2.6m. These studies considered six options, which formed part of the dossier submitted to the Equipment Approvals Committee for Full Development and Pre Production (FDPP) approval. Technical, engineering and environmental specifications together with FDPP, production and in service support cost plans were also produced.

5b. Cost of the Assessment Phase

£m (outturn prices)	Assessment Phase cost	Proportion of total estimated procurement expenditure
Actual Cost	-	-
Approved Cost at Initial Gate	-	-
Variation	-	

5c. Duration of Assessment Phase

Date of Main Gate Approval	May 1995
Target Date for Main Gate Approval	-
Variation (Months)	-

5d. Cost boundaries at Initial Gate and Main Gate Approvals

£m (outturn prices)	Lowest	Most Likely	Highest
Cost of Demonstration and Manufacture Phase forecast at Main Gate	***	***	***
Cost of Demonstration and Manufacture Phase forecast at Initial Gate	-	-	-

5e. ISD boundaries at Initial Gate and Main Gate Approvals

	Earliest	Most Likely	Latest Acceptable
Forecast ISD at Main Gate	-	December 2002	-
Forecast ISD at Initial Gate	-	-	-

PRE-MAIN GATE PROJECT SUMMARY SHEET

SWIFTSURE AND TRAFALGAR CLASS SUBMARINE UPDATE (S&T Update)

Integrated Project Team Responsible:
Attack Submarine

SECTION 1: ABOUT THE PROJECT

1a. Project description, progress and key future events

The Swiftsure and Trafalgar (S&T) Update is a four stage incremental project to overcome sonar obsolescence and deliver enhanced military capability to in-service attack submarines.

The Initial Phase (Stages 1 & 2) successfully achieved its in-service date (ISD) in June 1996. It resolves sonar obsolescence, integrates the new submarine command system (SMCS), and delivers an incremental improvement in weapon system performance to the Swiftsure Class and older Trafalgar Class submarines.

The Final Phase (Stages 3 &4) delivers enhanced military capability to the newest four Trafalgar Class submarines, principally via a new integrated sonar suite, SMCS, and significant signature (noise) reduction measures.

BAE SYSTEMS is Prime Contractor for both Astute and S&T Final Phase, and has selected derivatives of the main Final Phase sub-systems for Astute. The new sonar suite (Sonar 2076) is a software intensive system that represents a major step change in both technology and military capability. The sonar contractor (Thomson Marconi Sonar Limited (TMSL)) have struggled to meet the required programme, although recent senior management action by BAE SYSTEMS and TMSL has contained the impact on the programme. Whilst the project is striving hard to meet an ISD of May 2003, the difficulties being encountered and the recent changes to the submarine upkeep programme make the schedule extremely tight.

The only significant milestone remaining to ISD is completion of the HMS Torbay Sonar 2076 Naval Weapons Harbour Trial (Equipment) which is currently forecast for 31 March 2001.

1b. Associated projects

Critical to Achievement of ISD		Critical to Meet Initial Gate Requirement	
Project Title	Forecast ISD	Project Title	Forecast ISD
-	-	-	-

1c. Procurement strategy

Contractor(s)	Contract Scope	Contract Type	Procurement Route
BAE SYSTEMS Astute Class Ltd **For S&T Update Final Phase.**	Management of Novated individual equipment development and production contracts.	Fixed/Firm Price.	UK Competitive.
GEC-Marconi Naval Systems Sonar Systems Division (now trading as Thomson Marconi Sonar Systems Ltd.) **For S&T Update Initial Phase.**	Sonar 2074 development and production.	Fixed/Firm Price.	UK Competitive.

SECTION 2: PROJECT COSTS

2a. Performance against approved cost

£m (outturn prices)	Procurement Cost
Current Forecast Cost	669
Approved Cost at Main Gate	619
Variation	+50
In-year changes in 1999/2000	-15

2b. Reasons for variation from approved cost

Factor	Increase £m	Decrease £m	Explanation
Changed Requirement	31		Additions following Alternative Assumption/Options action (+£31m).
Inflation		18	Differences in annual price uplifts between specific indices and the GDP deflator (-£18m).
Change in Associated Project	53		Additional costs resulting from refit date changes (+53m).
Technical Factors		15	Revisions to payment profiles in line with programme variations (-£15m).
Accounting Adjustments	47	48	Disaggregation of the Defence Evaluation and Research Agency trials funding (+£28m); derivation of the approved cost on a resource basis (+£19m); changed assessment of what is required reflecting better understanding and definition of the programme (-£48m).
Total	+131	-81	
Net Variation	+50		

2c. Expenditure to date

Expenditure to 31 March 2000 (£m)	360

2d. Years of peak procurement expenditure

1997/98	2000/01

2e. Unit production cost

Initial Phase

Unit Production Cost (£m)		Quantities Required	
at Main Gate	Current	at Main Gate	Current
Not available	5.7	8	8

Final Phase

Unit Production Cost (£m)		Quantities Required	
at Main Gate	Current	at Main Gate	Current
Not available	86.6	4	4

SECTION 3: PROJECT TIMESCALE

3a. Definition of in-service date

ISD Definition:	Final Phase ISD is based upon the completion of HMS Torbay's second Dockyard Assistance Maintenance Period when a stage 4 upgrade will complete.

3b. Performance against approved in-service date

	Initial Phase	Final Phase
Current forecast ISD	June 1996	May 2003
Approved ISD at Main Gate	October 1994	May 2002
Variation (Months)	+20	+12
In-year changes in 1999/2000	0	0

3c. Reasons for variation from approved ISD

Initial Phase

Factor	Increase (months)	Decrease (months)	Explanation
Contracting Process	12		Financial constraints delayed the placement of contracts (+12 months).
Delays in Associated Projects	12	2	Changes to fit opportunities resulting from changes to the submarine refit programme (+12 months and -2 months).
Total	+22[7]	-2	
Net Variation	+20		

[7] A proportion of the procurement delays and delays to associated projects acted concurrently

Final Phase

Factor	Increase (months)	Decrease (months)	Explanation
Contracting Process	5		Financial constraints delayed the placement of contracts (+5 months).
Delays in Associated Projects	7		Changes to fit opportunities resulting from changes to the submarine refit programme (+7 months).
Total	+12		
Net Variation	+12		

3d. Cost resulting from ISD variation

Type of Cost/Saving	Cost £m	Saving £m	Explanation
Support costs of current equipment	-	-	ISD delays may result in additional costs incurred in maintaining and repairing obsolescent equipment. However, there is no reliable evidence currently available to confirm the existence of any such costs.
Other	-	-	
Total	-	-	

3e. Operational impact of ISD variation

The capability enhancements will be unavailable for a further year from May 2002. The capabilities are the detection and prosecution of quiet submarine targets and the avoidance and evasion of hostile anti-submarine warfare attacks. The are needed to provide improved effectiveness of submarines in modern demanding missions.

SECTION 4: KEY USER REQUIREMENTS

4a. Performance against approved key user requirements

Serial	Key Requirement	Currently forecast to be met (Yes or No)
1	Weapon System Effectiveness.	Yes
2	Survivability.	Yes
3	Sonar Performance.	Yes
4	Radiated Narrowband Acoustic Signature.	Yes
5	Target Echo Strength.	Yes
6	Tactical Information Management.	Yes
7	Weapon Effectiveness.	Yes
	Percentage currently forecast to be met	100%
	Change since previous MPR	-

4b. Reasons for variation against approved key requirements

Key Requirement	Factor	Explanation
-	-	-

SECTION 5: HISTORY UP TO MAIN GATE APPROVAL

5a. Description of the Assessment Phase

The Ship Submersible Nuclear (SSN) is a multi-role platform with a number of unique capabilities, which allow flexibility in its employment. The S&T Class Update programme began in 1986 with the aim of matching the rapidly improving performance of the threat of that time. Pre-Main Gate studies assessed requirements for updates to System Engineering, Submarine Layout, Sonar, Submarine Command System and the introduction of a Tactical Weapon System Highway.
Feasibility studies were completed in November 1990, following cost/capability trade off investigations and concluded that a phased approach, in four stages, would progressively satisfy the operational requirement in a way that would reduce technical and programme risk and would fully exploit remaining submarine hull lives.

5b. Cost of the Assessment Phase

£m (outturn prices)	Assessment Phase cost	Proportion of total estimated procurement expenditure
Actual Cost	51	7%
Approved Cost at Initial Gate	74	10%
Variation	-23	

5c. Duration of Assessment Phase

	Initial Phase	Final Phase
Date of Main Gate Approval	February 1991	January 1994
Target Date for Main Gate Approval	-	-
Variation (Months)	-	-

5d. Cost boundaries at Initial Gate and Main Gate Approvals

£m (outturn prices)	Lowest	Most Likely	Highest
Cost of Demonstration and Manufacture Phase forecast at Main Gate	-	619	-
Cost of Demonstration and Manufacture Phase forecast at Initial Gate	-	-	-

5e. ISD boundaries at Initial Gate and Main Gate Approvals

	Lowest	Most Likely	Highest
Initial Phase Forecast ISD at Main Gate	-	October 1994	-
Initial Phase Forecast ISD at Initial Gate	-	-	-
Final Phase Forecast ISD at Main Gate	-	May 2002	-
Final Phase Forecast ISD at Initial Gate	-	December 1998	-

PRE-MAIN GATE PROJECT SUMMARY SHEET

BEYOND VISUAL RANGE AIR-TO-AIR MISSILE (BVRAAM)

Picture Not Available

Integrated Project Team Responsible:
Beyond Visual Range Air-To-Air Missile (BVRAAM)

SECTION 1: ABOUT THE REQUIREMENT

The Beyond Visual Range Air-to-Air Missile (BVRAAM) will provide Eurofighter with the capability to combat projected air-to-air threats throughout the life of the aircraft and contribute to the air superiority requirements of UK and NATO operations. The weapon is required to operate in all weather conditions and will complement the Advanced Short Range Air-to-Air Missile (ASRAAM) already in procurement for Eurofighter.

The key features of the requirement include stealthy launch, enhanced kinematics, which will provide the missile with sufficient energy to chase and destroy a highly agile manoeuvring target, robust performance in countermeasures and the ability for the launch aircraft to fire and disengage at the earliest opportunity thus enhancing survivability.

Eurofighter partner nations (Germany, Italy, Spain), Sweden (for the JAS 39 Gripen aircraft) and France (for Rafale) have a similar requirement and discussions have taken place to explore the possibility of achieving a co-operative programme. Likewise, discussions have also been held with the US Government who have proposed a co-operative programme based on their current Advanced Medium Range Air to Air Missile (AMRAAM) including the alignment of both countries' future requirements.

SECTION 2: THE ASSESSMENT PHASE

2a. Description of the Assessment Phase

On 2 October 1995, Minister (DP) gave approval for the issue of an Invitation to Tender (ITT) for BVRAAM. The ITT was issued on 5 December 1995. Two bids were received; one from a consortium led by Matra BAe Dynamics UK Ltd, and one from Raytheon Systems Ltd. After extensive analysis, it was decided that both bids contained areas of risk which needed to be addressed before a development and production contract could be placed. In May 1997, a Project Definition & Risk Reduction (PDRR) phase was approved and contracts were placed on both bidders for a period of one year with the results to be technically and operationally assessed before a final decision was made. Both PDRR contracts were let in August 1997 and revised bids were received in May 1998.

Due to the complexity of the BVRAAM assessment, the need to accommodate the requirements of the Prospective Partner Nations and the need to go for Best And Final Offers (BAFOs) primarily as a result of the French request to join the programme, Ministerial approval is planned for May 2000. It is hoped to place a demonstration and manufacture contract by the end of 2000.

2b. Cost of the Assessment Phase

£m (outturn prices)	Assessment Phase cost
Forecast Cost	20
Approved Cost at Initial Gate	14
Variation	+6

2c. Duration of Assessment Phase

Current forecast date of Main Gate Approval	May 2000
Target date for Main Gate Approval	-
Variation (Months)	-

2d. Boundaries of future Demonstration and Manufacture phase costs

	Lowest	Most Likely	Maximum	Range
Current forecast cost of Demonstration and Manufacture phase	-	1268	-	-
Forecast cost of Demonstration and Manufacture phase at Initial Gate	-	1264	-	-
% Change	-	0.32%	-	-

2e. Boundaries of future project in-service dates

	Earliest	Most Likely	Latest	Range
Current forecast ISD	-	March 2008	-	-
Forecast ISD at Initial Gate	-	March 2005	-	-
% Change	-	-	-	-

PRE-MAIN GATE PROJECT SUMMARY SHEET

BOWMAN

Integrated Project Team Responsible:
BOWMAN & Land Digitization (BLD)

SECTION 1: ABOUT THE REQUIREMENT

Bowman will provide the armed forces with a tactical communications system for all 3 Services in support of land and littoral operations. It will replace the Clansman combat radio, in service since the mid 1970's and now becoming increasingly obsolete, and the Headquarters infrastructure element of the PTARMIGAN trunk system.

SECTION 2: THE ASSESSMENT PHASE

2a. Description of the Assessment Phase

Bowman was first approved in 1988. At this stage, Main Gate approval was expected in 1993 with an ISD of 1995. Feasibility Studies were split into two stages, Feasibility Stage 1 (FS1) completed in August 1993. Following international competition in 1993, contracts were placed with two competing consortia; YEOMAN (Siemens Plessey Systems Ltd and Racal) and Crossbow (led by ITT Defence (UK) Ltd) for Feasibility Stage 2 (FS2) and the first Project Definition stage (PD1).

FS2 indicated that the risk of procuring and integrating the communications harness for Bowman, known as the Local Area Sub-system (LAS), (previously Vehicle Integrated Communications and Distribution System), would be best managed by placing the responsibility on the Bowman contractors, rather than developing a MOD solution. This change in procurement strategy was approved in February 1997, when approval was also given for Bowman core Risk Reduction work.

In November 1996, the two consortia formed a Joint Venture Company (JVC) known as ARCHER (now trading as Archer Communications Systems Ltd (ACSL)), to bid jointly for the Bowman supply contract. Following a review of the procurement options open to the Department, approval for a revised, single source, procurement strategy for Bowman and the remainder of the risk reduction work was granted in March 1997. A risk reduction contract was placed with ACSL in July 1997.

A further package of work (Package 0) valued at £185m was placed with ACSL in October 1998. This will enable ACSL to build on current work to define systems integration requirements and demonstrate technical progress prior to major production commitment (Package 1) at Main Gate in November 2000.

2b. Cost of the Assessment Phase

£m (outturn prices)	Assessment Phase cost
Forecast Cost	336
Approved Cost at Initial Gate	130
Variation	206

2c. Duration of Assessment Phase

Current forecast date of Main Gate Approval	November 2000
Target date for Main Gate Approval	December 1993
Variation (Months)	83

2d. Boundaries of future Demonstration and Manufacture phase costs

	Lowest	Most Likely	Maximum	Range
Current forecast cost of Demonstration and Manufacture phase	-	1950	-	-
Forecast cost of Demonstration and Manufacture phase at Initial Gate	-	-	-	-
% Change	-	-	-	-

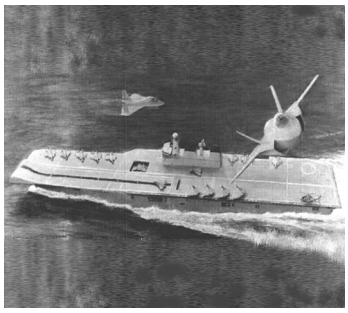
2e. Boundaries of future project in-service dates

	Earliest	Most Likely	Latest	Range
Current forecast ISD	-	*	-	-
Forecast ISD at Initial Gate	-	December 1995	-	-
% Change	-	-	-	-

* In December 1999, having reviewed progress on the Bowman project, the Department decided that they could not confirm a revised in-service date with confidence until Main Gate approval, but they are seeking to maintain the current planned date of late 2003/early 2004.

PRE-MAIN GATE PROJECT SUMMARY SHEET

FUTURE AIRCRAFT CARRIER (CVF)



Integrated Project Team Responsible:
CVF

SECTION 1: ABOUT THE REQUIREMENT

The requirement for the Future Aircraft Carrier (CVF) was endorsed in the Strategic Defence Review (SDR). The need for rapidly deployable forces with the reach and self-sufficiency to act independently of host-nation support confirmed the requirement for aircraft carriers, but SDR also concluded that the ability to deploy offensive air- power would be central to future force projection operations, with carriers operating the largest possible range of aircraft in the widest possible range of roles. The current Invincible Class of carriers were designed for Cold War anti-submarine warfare operations. With helicopters and a limited air-defence capability provided by a relatively small number of embarked Sea Harriers, it was judged that this capability would no longer meet future UK requirements. It was therefore decided to replace the Invincible Class with two larger and more capable aircraft carriers able to operate up to 50 aircraft, both fixed-wing and helicopters. It is planned that CVF's offensive air-power will be provided primarily by the Future Carrier Borne Aircraft (FCBA). The carrier air group will also operate the Future Organic Airborne Early Warning (FOAEW) system together with helicopters from all three Services in a variety of roles.

SECTION 2: THE ASSESSMENT PHASE

2a. Description of the Assessment Phase

CVF received Initial Gate approval in December 1998 and Invitations to Tender were issued in January 1999. Responses were received in May 1999 from industry teams led by British Aerospace (now BAE Systems) and Thomson-CSF. Following tender evaluation, competitive firm price contracts for the Assessment Phase, each potentially worth some £30m, were awarded to both teams in November 1999. The Assessment Phase breaks down into two stages. The first involves the examination of various carrier designs including conventional take-off and landing, short take off and vertical landing, and short take-off but arrested recovery. The second stage will involve detailed work to determine CVF design parameters and reduce technological risk for the preferred carrier option that is to be taken forward. The progress of the industry teams to this second stage will be subject to the satisfactory completion of the first based on a review of performance, and the timeliness and quality of deliverables.

2b. Cost of the Assessment Phase

£m (outturn prices)	Assessment Phase cost
Forecast Cost	96
Approved Cost at Initial Gate	118
Variation	-22

2c. Duration of Assessment Phase

Current forecast date of Main Gate Approval	December 2003
Target date for Main Gate Approval	December 2003
Variation (Months)	0

2d. Boundaries of future Demonstration and Manufacture phase costs

	Lowest	Most Likely	Maximum	Range
Current forecast cost of Demonstration and Manufacture phase	-	2596	-	-
Forecast cost of Demonstration and Manufacture phase at Initial Gate	2283	2617	2886	603
% Change	-	-0.8%	-	-

2e. Boundaries of future project in-service dates

	Earliest	Most Likely	Latest	Range
Current forecast ISD	-	August 2012	-	-
Forecast ISD at Initial Gate	-	August 2012	-	-
% Change	-	-	-	-

PRE-MAIN GATE PROJECT SUMMARY SHEET

FUTURE CARRIER-BORNE AIRCRAFT (FCBA)

Integrated Project Team Responsible:
Future Carrier Borne Aircraft (FCBA)

SECTION 1: ABOUT THE REQUIREMENT

Following the Strategic Defence Review, options are being examined for a successor to the Royal Navy Sea Harrier and the Royal Air Force Harrier GR7 from 2012. FCBA is to provide the Joint Force 2000 (joint command for all Harrier forces) with a multi-role fighter/attack aircraft. The FCBA in-service date will coincide with the first of the new aircraft carriers (CVF) to enter service. The current planning assumption is the Short Take Off Vertical Landing (STOVL) variant of the Joint Strike Fighter (JSF) being developed for US Air force, Navy and Marine Corps.

SECTION 2: THE ASSESSMENT PHASE

2a. Description of the Assessment Phase

Following approvals given in November 1996, the UK is contributing $200m as a full collaborative partner to the $2bn JSF Concept Demonstration Phase (CDP) under a Memorandum of Understanding (MOU) signed in December 1995. The phase began in November 1996, and is expected to last four years. During CDP, the two competing US Prime Contractors (Boeing and Lockheed-Martin) for the next phase, Engineering and Manufacturing development (EMD), will design and fly demonstration aircraft, evolve their preferred weapon system concepts for the production designs and submit competing proposals for EMD. The Prime Contracts are Cost Plus Fixed Fee, subject to Maximum Price.

Providing UK decides to participate in EMD, the intention will be to sign the MOU currently being negotiated for such participation, and be fully involved in the contractor down selection process, due to commence in late 2000.

Feasibility Studies into alternative options to JSF for a cost effective solution to the FCBA requirement are also being conducted. These options are the Conventional Carrier Variant of JSF, the US F18E, the French Rafale-M, a 'navalised' Eurofighter and an advanced Harrier. The plan is to submit a Business Case in October 2000, seeking approval to either sign the MOU or to carry out further work on the non-JSF options.

2b. Cost of the Assessment Phase

£m (outturn prices)	Assessment Phase cost
Forecast Cost	142
Approved Cost at Initial Gate	150
Variation	-8

2c. Duration of Assessment Phase

Current forecast date of Main Gate Approval[8]	October 2000
Target date for Main Gate Approval	-
Variation (Months)	-

2d. Boundaries of future Demonstration and Manufacture phase costs

	Lowest	Most Likely	Maximum	Range
Current forecast cost of Demonstration and Manufacture phase	-	***	-	-
Forecast cost of Demonstration and Manufacture phase at Initial Gate	-	-	-	-
% Change	-	-	-	-

2e. Boundaries of future project in-service dates

	Earliest	Most Likely	Latest	Range
Current forecast ISD	-	December 2012	-	-
Forecast ISD at Initial Gate	-	December 2012	-	-
% Change	-	-	-	-

[8] If participation in the JSF EMD phase is the selected way ahead, the Main Gate will be 'tailored' for a development approval only, to line up with US decision points

PRE-MAIN GATE PROJECT SUMMARY SHEET

FUTURE TRANSPORT AIRCRAFT (FTA)

A400M

C-17

C-130J

Integrated Project Team Responsible:

AIRLIFT & FUTURE STRATEGIC TANKER AIRCRAFT

SECTION 1: ABOUT THE REQUIREMENT

The aircraft which fulfils the Future Transport Aircraft (FTA) requirement will provide tactical and strategic mobility to all three Services. The capabilities required of FTA include: the ability to operate from well established airfields and semi-prepared rough landing areas in extreme climates and all weather by day and night; to carry a variety of vehicles and other equipment, freight, and troops over extended ranges; to be capable of air dropping paratroops and equipment; and to be capable of being unloaded with the minimum of ground handling equipment. Furthermore, the Strategic Defence Review strategic lift work confirmed a requirement for an airlift capability to move large single items such as attack helicopters and some Royal Engineers' equipment and concluded that this requirement would be met, in the latter part of this decade, by FTA.

SECTION 2: THE ASSESSMENT PHASE

2a. Description of the Assessment Phase

The Government announced in December 1994 that it would procure 25 C-130J's from Lockheed-Martin, as an initial step to replace its ageing C-130K Hercules aircraft. It also announced that, subject to certain conditions, the UK would rejoin the next phase of the collaborative Future Large Aircraft (FLA) programme (now known as A400M), which it expected would replace the remainder of the C-130K fleet. Initial Gate approval was achieved in July 1997. A Request For Proposals (RFP) was issued to Airbus in September 1997 on behalf of the seven FLA nations (UK, France, Germany, Italy, Spain, Belgium, Turkey). Subsequently, in July 1998, four nations (UK, France, Spain, Belgium) issued a "competitive RFP" for a FTA to Airbus Military Company (A400M), Boeing (C-17) and Lockheed-Martin (C130-J).

Proposals were received on 29 January 1999 and since then parallel national and international assessments have been undertaken. These covered Combined Operational Effectiveness & Investment Appraisal, technical compliance, risk assessment, Integrated Logistic Support, certification basis and an appraisal of commercial terms and conditions and pricing arrangements. At the direction of the project steering group and Equipment Approvals Committee (EAC) additional work has been undertaken to inform the Main Gate submission. A Main Gate submission (which also covered the separate Short Term Strategic Airlift (STSA) programme) was made to the Equipment Approvals Committee in early 2000. As at 31 March Ministerial decisions were awaited.

2b. Cost of the Assessment Phase

£m (outturn prices)	Assessment Phase cost
Forecast Cost	1.4
Approved Cost at Initial Gate	2.0
Variation	-0.6

2c. Duration of Assessment Phase

Current forecast date of Main Gate Approval	May 2000
Target date for Main Gate Approval	March 1999
Variation (Months)	+14

2d. Boundaries of future Demonstration and Manufacture phase costs

	Lowest	Most Likely	Maximum	Range
Current forecast cost of Demonstration and Manufacture phase	-	***	-	-
Forecast cost of Demonstration and Manufacture phase at Initial Gate	-	-	-	-
% Change	-	-	-	-

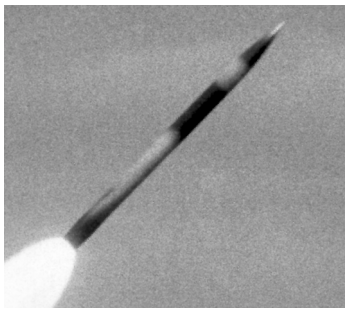
2e. Boundaries of future project in-service dates

	Earliest	Most Likely	Latest	Range
Current forecast ISD[9]	December 2005	December 2008	December 2009	48
Forecast ISD at Initial Gate	-	December 2005	-	-
Variation (%)	-	46	-	-

[9] Dates are solution dependent

PRE-MAIN GATE PROJECT SUMMARY SHEET

GUIDED MULTIPLE LAUNCH ROCKET SYSTEM (GMLRS)



Integrated Project Team Responsible:
Future Artillery Weapon Systems

SECTION 1: ABOUT THE REQUIREMENT

The Guided Multiple Launch Rocket System (GMLRS) will replace existing unguided MLRS M26 bomblet rockets as they reach the end of their shelf life from 2004. GMLRS rockets will be fired from the Army's existing MLRS M270 launchers. The requirement is for a rocket, which will increase MLRS' range from about 30km to at least 60km and which, in comparison to the current rocket, will be more difficult to detect, and will have reduced impact on the environment. The rocket will use the Global Positioning System and inertial guidance in order to increase significantly its accuracy and effectiveness. The payload is expected to consist of bomblets and these will have self destruct fuzes to comply with humanitarian concerns. GMLRS will be of a modular design to allow other payloads (such as smart anti-armour sub-munitions) to be fitted cost effectively.

The increased effectiveness of GMLRS will reduce the amount of ammunition required to defeat a target. This should allow stocks of GMLRS to be significantly lower than those for the M26 rocket, thus reducing the logistic burden and eventual disposal costs. A decision on final rocket numbers will be taken during the Assessment Phase, following further assessment of the ability of GMLRS to fulfil the capability.

SECTION 2: THE ASSESSMENT PHASE

2a. Description of the Assessment Phase

An approval equivalent to Initial Gate was obtained in July 1998 for the UK to participate in a collaborative GMLRS Assessment Phase with the other MLRS Partner Nations (France, Germany, Italy and the US). As part of this phase, and acting on behalf of the Partner Nations, the US Department of Defense awarded a Prime Contract to Lockheed Martin Missiles and Fire Control (LMMFC) to develop a GMLRS carrier rocket in November 1998. The UK is contributing 12.5% of the cost of this Engineering and Manufacturing Development (EMD) contract, which is planned to extend until 2002. The aims of EMD are to reduce costs and risk by making use of Off-The-Shelf components and sub-assemblies, and by maximising the use of sub-contractor competition. All MLRS Partner Nations will have equal rights to the design resulting from the contract, and have expressed a wish to enter into a collaborative production phase.

In parallel with this contract, and to complete Assessment Phase activities, the MLRS Partner Nations are evaluating the options to meet the payload requirement, and the manufacturing arrangements that could be employed during the subsequent production phase.

2b. Cost of the Assessment Phase

£m (outturn prices)	Demonstration phase cost
Forecast Cost	19
Approved Cost at Initial Gate (EAC submission)	19
Variation	0

2c. Duration of Assessment Phase

Current forecast date of Main Gate Approval	July 2002
Target date for Main Gate Approval	December 2002
Variation (Months)	-5

2d. Boundaries of future demonstration and manufacture costs

	Lowest	Most Likely	Maximum	Range
Current forecast cost of Demonstration and Manufacture phase	449	511	596	147
Forecast cost of Demonstration and Manufacture phase at Initial Gate	399	419	503	104
% Change	13%	22%	19%	41%

2e. Boundaries of future project in-service dates

	Earliest	Most Likely	Latest	Range
Current forecast ISD	December 2007	June 2009	December 2010	36 months
Forecast ISD at Initial Gate	December 2007	June 2009	December 2010	36 months
% Change	-	-	-	-

PRE-MAIN GATE PROJECT SUMMARY SHEET

MICROWAVE LANDING SYSTEMS (MLS)

Integrated Project Team Responsible
Sensor, Avionic and Navigation Systems (SANS)

SECTION 1: ABOUT THE REQUIREMENT

The Microwave Landing System (MLS) project aims to procure a new Precision Approach Landing System (PALS) for MOD aircraft and airfields, underpinning air operations by facilitating safe runway approaches in adverse weather and at night. The requirement is to provide precision guidance equivalent to International Civil Aviation Organisation (ICAO) Category I (that is, to a Decision Height of 200ft, or 150ft for helicopters), so achieving world-wide interoperability with civil and military airfields.

Previously, two types of PALS (which MLS will ultimately replace) were used: the Instrument Landing System (ILS), operated mostly by civilian airports, and Precision Approach Radar (PAR), the current standard NATO approach aid. Interference problems with ILS plus the combined problems of worn out mechanical and electrical systems and obsolescence of current PAR equipment have led to the need for a replacement.

MLS is the main element of the PALS strategy, which also includes some replacement PARs, as it is a versatile system that is fully developed, proven to be safe and reliable, specified as an international standard under ICAO documentation, and can be operated under national control. Other solutions examined included ILS only, PAR only, a future Global Positioning-based Landing System (GLS), and various combinations of these options.

MLS is currently expected to come into service in January 2006.

SECTION 2: THE ASSESSMENT PHASE

2a. Description of the Assessment Phase

MLS was first approved in 1993, when the EAC endorsed a 27 month Project Definition (PD) period. The expected in-service date (ISD) at the time was December 2002.

During initial project definition (PD1) studies, the emergence of satellite navigation-based PALS (e.g. the US Global Positioning System - GPS) caused ICAO and NATO to change direction. In early 1995, both rescinded their MLS transition plans, agreeing that each nation should select the PALS best suited to their requirements. They decided that interoperability with ILS, MLS or GLS ground stations was to be achieved through airborne PALS Multi-Mode Receivers (MMRs); consequently, PD1 study duration and objectives were revised.

In 1998, MOD re-endorsed MLS as the long term future PALS solution, and recommended non-MLS equipped aircraft be supported (until their out-of-service dates) by retaining a PAR capability. In 1999, in light of the conclusions of PD1 and the Strategic Defence Review, the EAC approved the requirement for the fitting of MMRs to 280 aircraft and MLS to 31 airfields (ISD April 2005), together with the procurement of 28 replacement PARs (ISD June 2001) and PD studies. At the time of approval of PD1 in 1993, it was not envisaged that replacement PARs would be needed to complement MLS. When PD2 (ground and aircraft assessment) is completed (October 2002), the Department will have a detailed programme and cost estimates for implementing MMR and MLS installations for Main Gate approval.

Both the replacement PARs and PD studies are being procured on a competitive basis.

2b. Cost of the Assessment Phase

£m (outturn prices)	**Assessment Phase cost**
Forecast Cost	80
Approved Cost at Initial Gate[10]	14
Variation	+66

2c. Duration of Assessment Phase

Current forecast date of Main Gate Approval	October 2002
Target date for Main Gate Approval	December 1995
Variation (Months)	+82

2d. Boundaries of future Demonstration and Manufacture phase costs

	Lowest	**Most Likely**	**Maximum**	**Range**
Current forecast cost of Demonstration and Manufacture phase	-	349	-	-
Forecast cost of Demonstration and Manufacture phase at Initial Gate	-	473	-	-
% Change	**-**	-26%	**-**	**-**

2e. Boundaries of future project in-service dates

	Earliest	**Most Likely**	**Latest**	**Range**
Current forecast ISD	**-**	January 2006	-	-
Forecast ISD at Initial Gate	-	December 2002	-	-
% Change	-	+44%	-	-

[10] Approved cost is for PD1 and PD2 only. Forecast cost is for PD1, PD2 and replacement PARs

PRE-MAIN GATE PROJECT SUMMARY SHEET

NEXT GENERATION LIGHT ANTI-ARMOUR WEAPON (NLAW)

Integrated Project Team Responsible
Dismounted Close Combat (DCC)

SECTION 1: ABOUT THE REQUIREMENT

The Strategic Defence Review Armour-Anti-Armour Study confirmed that a short range anti-armour weapon will remain an essential component of UK's anti-armour capability for the foreseeable future. The current capability is provided by LAW 80, which cannot defeat modern explosive reactive armour.

NLAW will primarily be used in the close battle to defeat armour. Its secondary use will be to attack the enemy in defended positions and, owing to growing urbanisation of warfare, it must be capable of being fired from within buildings. NLAW will be used by the infantry at short ranges (up to 600m) in conjunction with medium range (2000-3000m) weapons but will be the only individual anti-armour weapon for other arms and services.

As a point defence weapon, operational analysis has indicated that a large number of NLAW will be required in order to ensure there is sufficient coverage of the battlefield and rear areas.

SECTION 2: THE ASSESSMENT PHASE

2a. Description of the Assessment Phase

NLAW is being acquired via an Enhanced Off-The-Shelf procurement strategy (EOTS).

Following approval to issue an Invitation to Tender in September 1997, equating to Initial Gate under Smart Procurement, competitive firm price contracts were awarded in October 1999 to Matra BAe Dynamics in the UK and Celsius in Sweden. Each contract lasts 22 months with delivery at month 16 of tenders for the Demonstration, Production and Support phases.

Contractors are to confirm the performance of their baseline system and develop prototype training systems and weapon enhancements needed to meet NLAW requirements. Risk reduction and trade-off studies will be undertaken and detailed management, milestone and trials plans produced.

During the current phase, the potential for the separate opportunities that exist for collaboration with other countries (US and Sweden) on NLAW is being explored.

2b. Cost of the Assessment Phase

£m (outturn prices)	Assessment Phase cost
Forecast Cost	18
Approved Cost at Initial Gate	18
Variation	0

2c. Duration of Assessment Phase

Current forecast date of Main Gate Approval	February 2002
Target date for Main Gate Approval	April 2000
Variation (Months)	+22

2d. Boundaries of future Demonstration and Manufacture phase costs

	Lowest	Most Likely	Maximum	Range
Current forecast cost of Demonstration and Manufacture phase	***	***	***	***
Forecast cost of Demonstration and Manufacture phase at Initial Gate	***	***	***	***
% Change	-4%	-4%	-4%	-4%

2e. Boundaries of future project in-service dates

	Earliest	Most Likely	Latest	Range
Current forecast ISD	-	April 2006	August 2006	-
Forecast ISD at Initial Gate	May 2004	June 2005	August 2006	27 months
Variation (%)	-	16%	0%	-

PRE-MAIN GATE PROJECT SUMMARY SHEET

TACTICAL RECONNAISSANCE ARMOURED COMBAT EQUIPMENT REQUIREMENT (TRACER)

Picture Not Available

Integrated Project Team Responsible
TRACER

SECTION 1: ABOUT THE REQUIREMENT

Information dominance will be key to success on the battlefield in the 21st century. TRACER is the land-based component of the information, surveillance, target acquisition and reconnaissance (ISTAR) capability required to meet the land commander's critical information requirements.

TRACER will provide a highly mobile ISTAR capability. It will provide detailed combat intelligence and will cue and direct offensive action by direct and indirect fire systems, ground attack aircraft and attack helicopters. It will have utility in both high intensity conflict and operations other than war by virtue of its deployability, mobility, presence and deterrent effect.

TRACER will include a sophisticated sensor suite to enable it to be deployed at varying ranges and in all conditions. It will also include a balanced survivability package including stealth technology, Defensive Aids Suites and physical protection in the form of advanced armour technologies. TRACER will replace the ageing Combat Vehicle Reconnaissance (Tracked) vehicles, which came into service in 1972.

Operational Analysis has demonstrated that Unmanned Air Vehicle (UAV) technology promises to deliver a significant portion of the required ISTAR capability. A Balance of Investment Study, scheduled to complete in 2002, will inform a decision on the most appropriate mix of sensors required to deliver the capability and the most appropriate platform, manned or unmanned, on which to deploy them.

SECTION 2: THE ASSESSMENT PHASE

2a. Description of the Assessment Phase

The initial feasibility study for TRACER, approved in May 1992, involved three UK industrial consortia and reported in 1994. A further cost and risk study was approved in July 1995 and, as it neared completion in 1996, a similar US requirement emerged. The UK formally entered a collaborative programme with the US on signing a Memorandum of Understanding (MOU) on 7 July 1998. The TRACER MOU provides for the costs of Project Definition (PD) to be divided equally between the UK and US.

Two UK/US industrial consortia formed to participate in the competitive TRACER Project Definition (PD) phase, scheduled to last 42 months. On completion of the tender evaluation exercise, which included a detailed price investigation, in line with No Acceptable Price, No Contract (NAPNOC) principles, Firm Price contracts for Project Definition were awarded on 29 January 1999.

At the end of PD, following evaluation of the technical specifications and costed proposals produced by the consortia, the current planning assumption is that a single firm price contract will be awarded to the successful consortium for the next phase - Demonstration - in early 2003.

2b. Cost of the Assessment Phase

£m (outturn prices)	Assessment Phase cost
Forecast Cost	131
Approved Cost at Initial Gate	130
Variation	+1

2c. Duration of Assessment Phase

Current forecast date of Main Gate Approval	January 2003
Target date for Main Gate Approval	-
Variation (Months)	-

2d. Boundaries of future Demonstration and Manufacture phase costs

	Lowest	Most Likely	Maximum	Range
Current forecast cost of Demonstration and Manufacture phase	-	2042[11]	-	-
Forecast cost of Demonstration and Manufacture phase at Initial Gate	-	-	-	-
% Change	-	-	-	-

2e. Boundaries of future project in-service dates

	Earliest	Most Likely	Latest	Range
Current forecast ISD	-	October 2008	May 2009	-
Forecast ISD at Initial Gate	-	December 2004	-	-
% Change	-	-	-	-

[11] This figure in 2d covers the cost of Demonstration and Manufacture of both the TRACER and WATCHKEEPER programmes. A Balance of Investment Study will inform a decision on the optimum mix of TRACER and UAVs and determine the capability levels and the numbers of the respective platforms. Only when this study has reported will estimates of the costs of the Demonstration and Manufacture Phases be finalised.

PRE-MAIN GATE PROJECT SUMMARY SHEET

TYPE 45 DESTROYER

Integrated Project Team Responsible:
Type 45 Destroyer

SECTION 1: ABOUT THE REQUIREMENT

The Type 45 is a new class of Anti-Air Warfare Destroyer to replace the Royal Navy's existing Type 42s. It will carry the Principal Anti-Air Missile System (PAAMS) capable of protecting the vessels themselves and ships in their company against aircraft and missiles, satisfying the Fleet's need for area air defence capability well into the next century. PAAMS is being procured collaboratively with France and Italy. Work is in progress to define the capability of the warship itself, incorporating trade-offs between cost and capability to ensure that the Type 45 is affordable and offers value for money through-life.

SECTION 2: THE ASSESSMENT PHASE

2a. Description of the Assessment Phase

The Type 45 Destroyer programme builds on the Assessment work carried out in Phase 1 of the collaborative HORIZON project, the warship element of the Common New Generation Frigate programme. Following the decision of the three HORIZON partners (France, Italy and the UK) to proceed with PAAMS, but to pursue national warship programmes, BAE SYSTEMS was appointed Prime Contractor for the Type 45 in November 1999. PAAMS Assessment is complete and the contract for PAAMS Full Scale Engineering Development and Initial Production was placed in August 1999. Work is underway to achieve Main Gate approval for the warship and to place a contract for Demonstration and First of Class Manufacture by September 2000.

2b. Cost of the Assessment Phase[12]

£m (outturn prices)	Assessment Phase cost
Forecast Cost	234
Approved Cost at Initial Gate	213
Variation	+21

[12] Includes expenditure on HORIZON. Excludes PAAMS Full Scale Engineering Development and Initial Production, which is regarded as Post-Main Gate.

2c. Duration of Assessment Phase

Current forecast date of Main Gate Approval	August 2000
Target date for Main Gate Approval	-
Variation (Months)	-

2d. Boundaries of future Demonstration and Manufacture phase costs

	Lowest	Most Likely	Maximum	Range
Current forecast cost of Demonstration and Manufacture phase	-	7924	-	-
Forecast cost of Demonstration and Manufacture phase at Initial Gate	-	8198	-	-
% Change	-	-3.3	-	-

2e. Boundaries of future project in-service dates

	Earliest	Most Likely	Latest	Range
Current forecast ISD	-	November 2007	-	-
Forecast ISD at Initial Gate	-	December 2002	-	-
% Change	-	-	-	-