



NOTIFIED BODY
No 0191

CERTIFICATE OF TYPE APPROVAL

(EC Certificate of Type Examination - Module B)
(Marine Equipment Directive - 96/98/EC, as amended*1)

Applicant:-
Northrop Grumman Sperry Marine B.V.
118 Burlington Road, New Malden
Surrey, KT3 4NR
United Kingdom

Manufacturer:-
Northrop Grumman Sperry Marine B.V.
118 Burlington Road, New Malden
Surrey, KT3 4NR
United Kingdom

This is to certify that the applicant has submitted details of a:-

Shipborne Radar Equipment with Automatic Radar Plotting Aid (ARPA)
(COMMISSION DIRECTIVE 2002/75/EC – ITEM A.1/4.34)

Of system type known and designated as:-

- a) VisionMaster FT, ARPACR25, - 250mm Display Chart Radar Systems
 - b) VisionMaster FT, ARPACR34, - 340mm Display Chart Radar Systems
- (Comprising component parts and having technical characteristics shown in schedules 1 to 5)

and that these have been assessed, tested and when used in a combination of component parts as described in the attached schedules, is CERTIFIED as complying with the relevant parts of:

- EN 60936-1:2000, "Marine Shipborne Radar Equipment"
- EN 60936-3:2002, "Part 3: Radar with Chart facilities"
- EN 60872-1:1998, "Automatic Radar Plotting Aid (ARPA)"
- EN 60945 : 2002, "General Requirements for Marine Navigation Equipment"

(being European Standards for Technical Characteristics and Methods of measurements equivalent to IEC 60936-1, IEC 60936-3, IEC 60872-1 and IEC 60945, published by the International Electrotechnical Commission).

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It is also RECOGNISED that the equipment conforms to performance standards not inferior to those adopted by the International Maritime Organisation, and which are contained in the relevant parts of Resolution MSC 64(67) Annex 4, Resolution A823(19) and Resolution A694(17).

SIGNED:

P J Goddard

Authorised Signatory

DATE of ISSUE:

29th September 2006

DATE of EXPIRY :

17th September 2011

Certificate Number:

QQ-MED-19/06-01R

EU/USCG Mutual Recognition Agreement
Council Decision 2004/425/EC

USCG Approval Number: 165.120/EC0191/1906-01
(ARPA display and function only)

This Certificate is Valid until expiry date shown, subject to the standard conditions of issue printed on the attached schedule
Northrop Grumman Sperry Marine BV are Module D registered with QinetiQ in accord with standard condition 3, ref; Certificate DQAS-16/04-NGS001.

QinetiQ
Cody Technology Park
Ively Road, Farnborough
Hampshire. GU14 0LX



Under the terms of the United Kingdom Statutory Instrument, No 1957 : 1999, the QinetiQ Group PLC (formerly known as DERA) has been Notified to the European Commission by the Maritime and Coastguard Agency as a Body authorised to conduct Conformity Assessment procedures under the provisions of the European Council Directive 96/98/EC on Marine Equipment and issue Certificates of Type Approval.

Certificate of Type Approval - Schedule 3

VisionMaster FT, ARPACR34, - 340mm Display, X-Band Chart Radar Systems

The applicant declared that the following units comprise the radar equipment of the system designation b) given above. These units have been assessed & tested, and satisfactory details of these units were included in the technical file. These units form systems consistent with the Item Description A1/4.34, given in Annex A1 of Commission Directive 2002/75/EC. The system is also consistent with the Item Description A2/4.21, given in Annex A2 of Commission Directive 2002/75/EC but this is not yet harmonised for full MED Wheelmarking under this description.

MAIN UNIT Comprising:-

Radar Display - LCD Monitor (Kit form only)	65823A or 4301009-1		
or Radar Display - LCD Monitor	65923C or 65923M		*1
Processor - Radar/ARPA	65901AR		*1
VMFT PCIO Interface Unit	65900AA or AB		*1
Control Panel (Kit form only)	65903 KF		
Control Panel (Deck console only)	65903AA or AF		*1
Security Device	32SDV002		*1
Transceiver/Turning Unit (10kW)	65810#A#		*2, 3, 4
or Transceiver/Turning Unit (25kW)	65825#A#		*2, 3, 4
or Transceiver Bulkhead (10kW)	65810A, B, E, F, G, H, L, P, T or W		
or Transceiver Bulkhead (25kW)	65825A, B, E, F, G, H, L, P, T or W		
and Turning Unit	65801BAR or CA#		*3, 4
X-Band Antenna (4, 6 or 8ft)	65604A or 65606A or 65608A		
SOFTWARE:- Main System Software	Version 1.0.0		*5, 6

----- End of List -----

And which may include items from the list of optional items found in schedule 5 on sheet 6.

NOTES:-

1. These units are kit-form for inclusion in a shipyard supplied navigation console. For a Sperry, stand alone deck mount console see schedule 5.
2. A 1st letter (#) suffix (M, N, P, T or W) is used to denote the choice Bias limiter, extra short pulse transmit or additional facilities
3. A 3rd letter (#) suffix (R, T or U) is used to denote the choice of pulse or syncro azimuth signal.
4. This item is link selectable on installation to 24 or 48 RPM antenna speed
5. This approval remains valid for equipment including subsequent Minor software amendments, as allowed by the 1.x.0 format (x represents a numeral), where written details of any such modifications have been submitted to and accepted by QinetiQ.
6. This software incorporates provision for the display of AIS information symbols on the radar screen in accordance with the interim guidelines of SN/Circ 217 and IEC/PAS 60936-5. Such functions are not yet recognised in the Annexes of the Marine Equipment Directive and therefore cannot be formally included in this approval.

Technical Characteristics

FREQUENCY OF OPERATION	9.410 GHz	±30MHz
PULSE REPETITION FREQUENCY (PRF)	1800, 1800, 785	3000 on 'G', 'L', 'P' & 'T' 1 st Suffix TxRx
PULSE LENGTHS	0.05µs, 0.25µs, 0.75µs	
EMISSION CODE	3M00P0NAN	
POWER CHARACTERISTIC	10kW or 25kW	(PEP)
RADAR DISPLAY CIRCLE	≥340mm	Effective Diameter
IEC 61162-1 SERIAL (NMEA) PORTS	Listner - 6 Talker - 6 Listner - 3	Conformity to IEC 61162-1:2000. Conformity to IEC 61162-2:2001.
TEMPERATURE RANGE Exposed & IEC 60945 CLASS Protected	-25°C to +70°C -15°C to +55°C.	-- Turning Units & Antenna -- All other units
POWER SOURCE	100-240V AC, 50/60Hz	

Conditions of Issue of this certificate are printed the reverse of sheet 7.

QinetiQ
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Certificate Number QQ-MED-19/06-01R



Certificate of Type Approval - Schedule 4

VisionMaster FT, ARPACR34, - 340mm Display, S-Band Chart Radar Systems

The applicant declared that the following units comprise the radar equipment of the system designation b) given above. These units have been assessed & tested, and satisfactory details of these units were included in the technical file. These units form systems consistent with the Item Description A1/4.34, given in Annex A1 of Commission Directive 2002/75/EC. The system is also consistent with the Item Description A2/4.21, given in Annex A2 of Commission Directive 2002/75/EC but this is not yet harmonised for full MED Wheelmarking under this description.

MAIN UNIT Comprising:-

Radar Display - LCD Monitor (Kit form only)	65823A or 4301009-1	
or Radar Display - LCD Monitor	65923C or 65923M	*1
Processor - Radar/ARPA	65901AR	*1
VMFT PCIO Interface Unit	65900AA or AB	*1
Control Panel (Kit form only)	65903 KF	
Control Panel (Deck console only)	65903AA or AF	*1
Security Device	32SDV002	*1
Transceiver/Turning Unit (30kW)	65830M§R or N§≠	*2, 3
or Bulkhead Transceiver (30kW)	65831A or B	
and Turning Unit	65830B§R or C§≠	*2, 3
Scanner Control Unit	65837Aø	*4
S-Band Antenna 12ft	65612A	
SOFTWARE:- Main System Software	Version 1.0.0	*5, 6

----- End of List -----

And which may include items from the list of optional items found in schedule 5 on sheet 6.

NOTES:-

1. These units are kit-form for inclusion in a shipyard supplied navigation console. For a Sperry, stand alone deck mount console see schedule 5.
2. A 2nd letter (§) suffix (E, F, G, H, I, J, K, L, M, P, Q, R or S) is used to denote the choice of operating voltage and 24 or 48 RPM antenna speed.
3. A 3rd letter (≠) suffix (R, T or U) is used to denote the choice of pulse and/or syncro azimuth signal.
4. A 2nd letter (ø) suffix (B, C, E, F or H) is used to denote the choice of operating voltage and 24 or 48 RPM antenna speed.
5. This approval remains valid for equipment including subsequent Minor software amendments, as allowed by the 1.x.0 format (x represents a numeral), where written details of any such modifications have been submitted to and accepted by QinetiQ.
6. This software incorporates provision for the display of AIS information symbols on the radar screen in accordance with the interim guidelines of SN/Circ 217 and IEC/PAS 60936-5. Such functions are not yet recognised in the Annexes of the Marine Equipment Directive and therefore cannot be formally included in this approval.

Technical Characteristics

FREQUENCY OF OPERATION	3.050 GHz	±10MHz
PULSE REPETITION FREQUENCY (PRF)	1800, 1800, 785	
PULSE LENGTHS	0.05µs, 0.25µs, 0.75µs	
EMISSION CODE	3M00P0NAN	
POWER CHARACTERISTIC	30kW	(PEP).
RADAR DISPLAY CIRCLE	≥340mm	Effective Diameter
IEC 61162-1 SERIAL (NMEA) PORTS	Listner - 6 Talker - 6 Listner - 3	Conformity to IEC 61162-1:2000. Conformity to IEC 61162-2:2001.
TEMPERATURE RANGE Exposed & IEC 60945 CLASS Protected	-25°C to +70°C -15°C to +55°C.	-- Turning Units & Antenna -- All other units
POWER SOURCE	100-240V AC, 50/60Hz	Turning Unit can be 1 or 3 phase

Conditions of Issue of this certificate are printed the reverse of sheet 7.

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Certificate Number **QQ-MED-19/06-01R**

Certificate of Type Approval - Schedule 5

VisionMaster FT Radar Systems - Ancillary and Optional Units

The applicant declared that the following units may be added to the basic radar systems illustrated in schedules 1 to 4. These units have been assessed & tested in conjunction with various Sperry Marine , VisionMaster and/or Bridgemaster E, systems, and satisfactory details are included in the technical files.

ANCILLARY UNITS:-

Monitor Chassis	65923605	*1
Pedestal (340mm Display Monitor)	65923665 or 65923675	*1
6 way Interswitch Unit (6x6)	65846A	
2 way Interswitch Unit (2x4)	65842A	
Slave Junction Box	65849A	
Transceiver Compatibility Unit	65841A	*2, 3

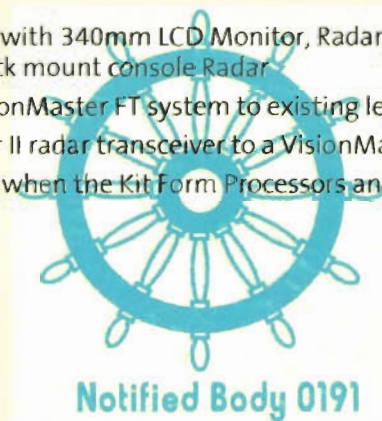
MODULAR UNITS :-

USB Port	65900635	*4
Trackerball	65900614 or 65900615 or 65900650	*4
On/Off Switch	65900625	*4

----- End of List -----

*** NOTES:-**

- 1 Standard items when used together with 340mm LCD Monitor, Radar/ARPA processor, PCIO interface unit and Control Panel to form integrated Deck mount console Radar.
- 2 Units required when interfacing VisionMaster FT system to existing legacy equipment onboard.
- 3 Used when interfacing Bridgemaster II radar transceiver to a VisionMaster FT Display.
- 4 These units are identified individually when the Kit Form Processors and Monitors are used in a system



Conditions of Issue of this certificate are printed the reverse of sheet 7.

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Certificate of Type Approval - Schedule 6

Statement on Spurious and Out of Band Emissions and the Boundary between these emissions

The following Radar Transceivers, which form part of the systems shown on earlier schedules, have been subject to a measurement procedure as detailed in IEC 60936-1, Annex D, as contained in Amendment 1, dated July 2002 and the guidelines contained in ITU-R Recommendation M.1177. This standard defines the test method and requirements for shipborne radar to meet in order to comply with Appendix S3 of the Radio Regulations and ITU-R Recommendations SM.1539 and SM.1541.

The results of the measurement procedure were satisfactory and provide sufficient evidence that these Radar Transceivers are compliant with the criteria contained in the stated standards.

The Transceivers Measured were:-

Description	Model No.	Modulator PCB	Magnetron
Transceiver/Turning Unit (10kW)	65810### *1	65810812	MG5473
or Transceiver/Turning Unit (25kW)	65825### *1	65825812	MG 5424
Transceiver/Turning Unit (30kW)	65830### *1	65830812	MG5223 or M1302A

The test reports detailing the tests and test results obtained are:-

QinetiQ/FST/CMT/CR012225
QinetiQ/FST/CMT/TR022173

These also detail the magnetron, modulator circuit, rotary joint*2 and any filters fitted to the test unit to which the results specifically apply.

The Transceiver Modules contained in the above Transceiver/Turning units are also found in the following Bulkhead units. Since the applicable electronic circuitry and component parts are identical and the addition of the waveguide/helix feeder is known to have band limiting properties, a presumption of conformity can be applied by analogy

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Transceiver Bulkhead (10kW)	65810#*1
Transceiver Bulkhead (25kW)	65825#*1
Bulkhead Transceiver (30kW)	65831#*1

Note *1 The symbol # or ### denotes a 1 or 3 letter suffix detailing aspects of the build standard. Details of the suffixes are provided on the appropriate equipment schedule pages.

*2 The manufacturer declared that the build standard of the rotary joint is suitably defined by the turning unit designation.

Conditions of Issue of this certificate are printed overleaf.

QinetiQ
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Certificate Number **QQ-MED-19/06-01R**

Certificates of Type Approval
Conditions of Issue

1. Each Certificate will be used in its entirety and not reproduced in part.
2. This certificate remains valid until the date shown (normally 5 years) unless cancelled or revoked, provided:-
 - i) the design and manufacture remain unmodified from the specimen tested and recorded in the Technical Construction File;
 - ii) any conditions contained in the schedule are complied with;
 - iii) Should the specified regulations or standards be amended during the validity of this certificate, the product(s) is/are to be re-approved prior to it/they being placed on board vessels to which the amended regulations or standards apply;
 - iv) and, the equipment remains satisfactory in service.
3. The mark of conformity may only be affixed to the equipment listed on this certificate and a manufacturer's Declaration of Conformity issued when the production Quality Assurance requirements laid down in Annex B, of the Directive (96/98/EC) is fully complied with and controlled by a written inspection agreement with a Notified Body. The use of the QinetiQ Notified Body Number (0191) in combination with the Wheelmark implies that the manufacturer is Registered with the QinetiQ Quality Assurance Scheme. A Certificate of Registration is issued to the manufacturer and should be made available on request. The manufacturer is responsible for ensuring that certification renewal and periodic surveillance are maintained.
4. USCG Approval Number, A Mutual Recognition Agreement (MRA) on marine equipment exists between the European Commission and the US Coastguard but only applies to equipment types included in the listing of marine equipment annexed to the MRA. For included equipment a USCG Approval number may be issued. This can be found under the MED certificate number on the first page and should be used on the main identity label of the equipment. Radio and Radar equipment continues to need separate or additional approval by the USA FCC.
4. This certificate does not confer any approval status to this equipment other than defined by, and tested according to the specifications listed on sheet 1.
5. The labeling requirements of IMO Resolution A694(17) shall be met. Descriptions of each unit of apparatus forming part of the equipment will be as given on this Certificate. Each unit of equipment will be marked with the minimum safe distance at which it should be mounted from a standard and steering magnetic compass.
6. No unit of apparatus shall be advertised or labeled as "approved" or "certified" on behalf of the Maritime and Coastguard Agency, the Department of Transport or the QinetiQ Group in any sense other than that it is a type that has been assessed as satisfactory against the specification;
7. The manufacturer must advise QinetiQ of any intended changes to the design or production of the equipment which might affect the equipment performance.
8. Minor Modifications to the equipment will be considered on a case-by-case basis. QinetiQ will review any factory test results, in consultation if necessary, with the test facility that conducted the original Type Approval testing on the equipment. QinetiQ will advise the manufacturer if any further testing is required to maintain valid certification.
9. If an equipment manufacturer wishes to have the type approved equipment designated under alternative names (e.g. agent/distributor's name and model number), a separate application should be completed and sent to QinetiQ.

QinetiQ Ltd
Marine Approval and Testing Service
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