



CERTIFICATE NUMBER
03-LD334702-PDA

DATE
7 May 2003

ABS TECHNICAL OFFICE
London ESD

CERTIFICATE OF Design Assessment

This is to Certify that a representative of this Bureau did, at the request of
Pyrogen Limited

assess design plans and data for the below listed product. This assessment is a representation by the Bureau as to the degree of compliance the design exhibits with applicable sections of the Rules. This assessment does not waive unit certification or classification procedures required by ABS Rules for products to be installed in ABS classed vessels or facilities. This certificate, by itself, does not reflect that the product is Type Approved. The scope and limitations of this assessment are detailed on the pages attached to this certificate; and it will remain valid for five years from the date of issue or until the Rules or specifications used in the assessment are revised (whichever occurs first).

PRODUCT: Fixed Aerosol Fire Protection and Detection System
MODEL: PyroSense SP-1 and Aerosol Units Type MAG
ABS RULE: 1-1-4/3.7, 4-7-3/11.5, 4-9-1/9.7 and 4-9-7/13 of SV Rules, 2003
OTHER STANDARD: See attached listing

AMERICAN BUREAU OF SHIPPING

Arturo Revenga

TERMS & CONDITIONS OF ABS Design Assessment

1. AGREEMENT

The issuance and interpretation of this certificate is subject to the terms and conditions of the Request for Product Type Approval and Agreement which are hereby incorporated by reference.

2. REPRESENTATIONS AS TO DESIGN ASSESSMENT

Design Assessment is representation by ABS as to the structural and mechanical fitness for a particular use or service in accordance with its Rules and standards. The Rules of American Bureau of Shipping are not meant as a substitute for the independent judgement of professional designers, naval architects and marine engineers nor as a substitute for the quality control procedures of shipbuilders, engine builders, steel makers, suppliers, manufacturers and sellers of marine vessels, materials, machinery or equipment. ABS being a technical society can only act through Surveyors or others who are believed by it to be skilled and competent. ABS represents solely to the vessel Owner or other client (hereinafter "Client") of ABS that when assigning class it will use due diligence in the development of Rules, Guides, and standards and in using normally applied testing standards, procedures and techniques as called for by the Rules, Guides, standards or other criteria of ABS for the purpose of assigning and maintaining class. ABS further represents to the Client of ABS that its certificates and reports evidence compliance only with one or more of the Rules, Guides, standards or other criteria of ABS in accordance with the terms of such certificate or report. Under no circumstances whatsoever are these representations to be deemed to relate to any third party.

3. SUSPENSION OF CERTIFICATION

Any of the following events will cause immediate suspension of the certificate of design assessment unless the change is submitted to ABS for a new review

- a) Redesign of the product or products covered by this certificate.
- b) Substantial change in management organization;
- c) Failure to pay ABS fees.

4. RESPONSIBILITY AND LIABILITY

It is understood and agreed that the Certificate of Design Review (hereinafter referred to as "certificate") issued as part of the services rendered under the Agreement is a representation only that the vessel, structure, item of material, equipment or machinery or any other item covered by a certificate has met one or more of the Rules or Standards of American Bureau of

Shipping and is issued solely for the use of ABS, its committees, clients or other authorized entities. The validity, applicability and interpretation of a certificate issued under the terms of or in contemplation of the Agreement is governed by the Rules and standards of American Bureau of Shipping who shall remain the sole judge thereof. Nothing contained in this certificate or any report issued in contemplation of this certificate shall be deemed to relieve any designer, builder, owner, manufacturer, seller, supplier, repairer, operator or other entity of any warranty express or implied nor to create any interest, right, claim or benefit in any third party. It is understood and agreed that nothing expressed herein is intended or shall be construed to give any person, firm or corporation, other than the parties hereto, any right, remedy or claim hereunder or any provisions herein contained; all provisions hereof are for the sole and exclusive benefit of the parties hereto.

5. LIMITATION

ABS makes no representations beyond those contained herein and in the provisions of the Agreement regarding its reports, statements, plan review, surveys, certificates or other services.

6. HOLD HARMLESS

The party to whom this certificate is issued, and his assignee and successor in interest, agree to indemnify and hold harmless ABS from and against any and all claims, demands, lawsuits, or actions for damages, including legal fees, to persons or other legal entities and property, tangible, intangible, or otherwise which may be brought against ABS incidental to, arising out of or in connection with the work done, services performed or material to be furnished under this certificate, except for those claims caused solely and completely by the negligence of ABS, its agents, employees, officers, directors or subcontractors.

7. ARBITRATION

Any and all differences and disputes of whatsoever nature arising out of this agreement shall be put to arbitration in the City of New York pursuant to the laws relating to the arbitration there in force, before a board of three persons, consisting of one arbitrator to be appointed by ABS, one by Client, and one by the two so chosen. The decision of any two of the three on any point or points shall be final. Until such time as the arbitrators finally close the hearings either party shall have the right by written notice served on the arbitrators and on an officer of the other party to specify further disputes or difference under this Agreement for hearing and determination. The arbitration is to be conducted in accordance

with the rules of the Society of Maritime Arbitrators, Inc. The arbitrators may grant any relief, other than punitive damages, which they, or a majority of them, deem just and equitable and within the scope of the agreement of the parties, including, but not limited to, specific performance. Awards made in pursuance to this clause may include costs including a reasonable allowance for attorney's fees and judgment may be entered upon any award made hereunder in any court having jurisdiction. ABS and client hereby mutually waive any and all claims to punitive damages in any forum.

Client shall be required to notify ABS within thirty (30) days of the commencement of any arbitration between it and third parties which may concern ABS's work in connection with this Agreement and shall afford ABS an opportunity, at ABS's sole option, to participate in the arbitration.

8. TIME BAR TO LEGAL ACTION

Any statutes of limitation notwithstanding, Client expressly agrees for itself and its affiliated companies that its right to bring or to assert against ABS any and all claims, demands or proceedings whether in arbitration or otherwise shall be waived unless (a) notice is received by ABS within thirty (30) days after Client or its affiliates had notice of or should reasonably have been expected to have had notice of the basis for such claims; and (b) arbitration or legal proceedings, if any, based on such claims or demands of whatever nature are commenced within one (1) year of the date of such notice to ABS.

9. LIMITATION OF LIABILITY

The combined liability of American Bureau of Shipping, its officers, employees, agents or subcontractors for any loss, claim, or damage arising from negligent performance or non-performance of any services under this Agreement, or from breach of any implied or express warranty of workmanlike performance in connection with the services, or from any other reason, to any person, corporation, partnership, business entity, sovereign, country or nation, shall be limited to the greater of a) \$100,000 or b) an amount equal to ten times the sum actually paid for the services alleged to be deficient.

The limitation of liability may be increased up to an amount twenty-five times that sum paid for services upon receipt of Client's written request at or before the time of performance of service and upon payment by Client of an additional fee of \$10.00 for every \$1,000.00 increase in the limitation.

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Manufacturing Plant:

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Russia

Product : Fixed Aerosol Fire Protection and Detection System

Model Name: PyroSense SP-1 and Aerosol Units Type MAG, Model numbers 02, 1, 2, 3, 4, 5, 11, 12, 13, 14, 15, 16 and 17.

Intended Service:

Fixed fire protection for use in normally unoccupied machinery spaces of cargo ships of gross tonnage less than 500, fishing vessels of less than 24 meters, small work boats, pilot boats, motor/sailing pleasure and commercial craft subject to acceptance by the Flag Administration.

Description:

The PyroSense SP-1 is a combined fire detection, alarm monitoring and discharge system consisting of an operator panel which can be connected directly to smoke, heat, water or gas point detectors as well as thermal sensing cables allowing automatic discharge, remote activation after preset time delays or immediate manual discharge of the fire extinguishing medium; Fixed aerosol fire protection system components comprising a non-pressurised container "MAG" unit with either single or double ended plate delivery nozzle, filled with (1) A Chemical coolant. (2) A solid Aerosol generating composition. (3) An electrical and thermal ignition device.

Ratings:

(1) Maximum protected Volume: - 35m³ (2) Maximum height of the protected space: - 4 m. (3) Minimum design density: - 117g/m³ (4) Where the space to be protected does not exceed a deck height of 4 meters or an area of 64 meters squared (64 m²). (5) Nominal operating voltage: 8 - 28 V DC (6) Normal current: 50 mA (7) Enclosure protection for the Control Panel: IP 65

Service Restrictions:

(1) MAG Units are designed for operating temperature range of -50 °C to +65 °C. (2) Installation and spacing of Aerosol units to be in accordance with manufacturer's approved Design, Operation and Maintenance Manual, P/N: D2000-0010, Revision No. 1.3, dated 1 December 2000 and as determined by recognised fire test trial carried out on 9 December 1999 the results of which are contained within test report document PGUK: 3-12/99. (3) The discharge of the Aerosol system shall be prevented by means of a system isolation switch or other means, that shall be manually operated when personnel are present within the protected compartment or adjacent areas which could be rendered hazardous by the discharge of the system. The system isolation switch shall be located outside the protected area close to the system control panel or adjacent to the main entrance to the space protected and shielded from accidental operation. While the system isolate switch is active and the discharge of the system is inhibited, the fire detection and alarm system (if required) shall continue to function. The system shall return to full manual control when the switch is reactivated. The operation of the isolation switch shall initiate a visual indicator at the system control panel. (4) Means are to be provided to close all openings, which may admit air into the protected space. (5) Clear and legible safety labels are to be placed at all the entrances to the protected space, inside the protected space, at the system isolation switch and the manual release point. (6) Simple operation instructions are to be placed at the system operating position. (7) For each installation, the following details are to be submitted to the local ABS Technical office for review: (a) The schematic arrangement of the system. (b) Aerosol generator types, sizes, quantities and locations. (c) Details of the material specifications, wiring diagrams and sources of power for the release systems and alarms. (d) Calculations of the quantity of agent required for the protected space. (i) The content of the dry agent shall be 100g/m³ for completely sealed spaces less than 13m³. (ii) The content of the dry agent shall be 117g/m³ for completely sealed spaces greater than 13m³. (e) Certification for certified components. (f) Manuals and instructions for operation, safety, maintenance and testing. (g) Protocols for testing and inspection of the system. (8) Clear and legible instructions for installation, maintenance, testing and operation, applicable for the specific system fitted on the vessel shall be issued for conclusion in a manual or folder. to be retained onboard the vessel for use by the operating crew. (9) Acceptance by the Flag

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Russia

Administration is required prior to fitting onboard vessels. (10) These Aerosol Units are not to be fitted on vessels certified under SOLAS.

Comments:

The Pyrogen Fixed Aerosol Fire Extinguishing System is considered suitable for installation in normally unoccupied spaces containing fuel having a flash point of not less than 43 °C (closed cup test). Tests and approval are for hardware only with embedded software. Each configuration and external connection to fire detectors is to be specifically approved.

Term of Validity:

This product/model is covered under Product Design Assessment (PDA) Certificate # 03-LD334702-PDA, dated 07/May/2003. This PDA Certificate expires May of 2008. It will remain valid for the 5 years from date of issue or until the Rules or specifications used in the assessment are revised (whichever occurs first).

STANDARDS**ABS Rules:**

2003 Steel Vessel Rules 1-1-4/3.7, 4-7-3/11.5, 4-9-1/9.7 and 4-9-7/13

IMO MSC/Circ. 1007

AS/NZS 4487:1997 - Standard for Pyrogen Fire Suppression Systems; MCA Fire Test Report MS 22/003/0904 of 21 December 1999.

