



Maritime &
Coastguard
Agency

CERTIFICATE OF INSPECTION AND TESTS

Issued under the authority of
the Government of the United Kingdom of Great Britain and Northern Ireland,
by the Maritime and Coastguard Agency,
an Executive Agency of the Department for Transport

**The Secretary of State in exercise of statutory powers is satisfied that
information relating to the product below has been reviewed.**

Information ☐
or Sample ☐

SECTION 1. PRODUCT DETAILS

Product Name / Model	Small Boat Machinery - Stat-X Aerosol Fire Extinguishing System
Manufacturer Details	Fireaway Inc
	5852 Baker Road
	Minnetonka
	MN,55345
	USA
MCA File Reference	MS 47 / 11 / 1042

SECTION 2. Under powers conferred by

SI 1998 No.1609 Reg 8(1), SI 1998 No. 2771 Reg (6), SI 2001 No. 0009 Reg 7(1), SI 2002 No. 2201 Reg 5(1)

Statutory Instrument No. No. Act year and ch.

and has been found satisfactory for the purposes of:-

Continued ☒ (continued overleaf)

1. MGN 280 - Small Vessels in Commercial Use for Sport or Pleasure, Workboats and Pilot Boats - Alternative Construction Standards;

provided that the conditions attached to the Schedule are fulfilled and the product remains satisfactory in service.

SECTION 3. SCHEDULE including conditions or terms, if any, on which the certificate is issued:

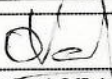
The system has been accepted on the basis of its satisfactory performance during a series of trials devised to simulate typical fire scenarios that can occur in the machinery space of small craft. The trials were carried out on 12 July 2006 at the CIBA Speciality Chemicals Fire Training Ground, Cleckheaton Road, Bradford, Yorkshire, England. The results are contained in the Document Fire test report dated 27 July 2006. The certificate can be renewed on the basis of test reports that are less than 15 years old after which re-testing will be required.

This Certificate is valid until **09 January 2022**

Continued ☒ (continued overleaf)

NOTE: This certificate does not apply to a product which has been varied or modified from the product assessed. The manufacturer must submit modified products for consideration by this Agency if they wish to obtain for them a valid Certificate of Inspection and Test.

Issued at **MCA HQ (UK)**

Signed 
(Signature of Authorised Official issuing the certificate)

Date **05 January 2017**

Name **OLIVER VARDY**



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2. The Codes of Practice for the safety of Small Commercial Motor or Sailing Vessels of up to 24 metres Load Line length;
3. The Codes of Practice for the Safety of Small Workboats and Pilot Boats;
4. MSN 1813 (F) - The Fishing Vessels Code of Practice for the Safety of Small Fishing Vessels;
5. MSN 1770 (F) - The Fishing Vessels Code of Safe Working Practice for the Construction and Use of 15 metre length overall (LOA) to less than 24 metre registered length (L) Fishing Vessels, and
6. The Codes of Practice for Police Boats.

Note: The STAT-X Fixed Aerosol System is considered suitable for installation in normally unoccupied spaces containing fuel having a flash point of not less than 43 degrees C (closed cup test), of vessels of less than 24 metres load line length, where the space to be protected does not exceed a deck height of 4 metres, or an area of 64 square metres.

SCHEDULE including conditions or terms, if any, on which the certificate is issued (Continued from Page 1)**1.0 Performance Testing**

1.1 The System has been accepted on the basis of its satisfactory performance during a series of trials devised to simulate typical fire scenarios that can occur in the machinery space of small craft. The trials were carried out on July 12, 2006 at the CIBA Speciality Chemicals Fire Training Ground, Cleckheaton Road, Bradford, Yorkshire, England. The results are contained in the Document Fire test Report dated 27 July 2006.

1.2 A series of eight tests were requested as follows:-

1.2.1 Open Pool fire - diesel fuel;

1.2.2 Hidden spray fire - diesel fuel;

1.2.3 Hidden Pool fire - lube oil;

1.2.4 Combined open pool/ hidden spray - diesel fuel;

1.2.5 Combined open pool/ hidden spray - lube oil/ diesel fuel;

1.2.6 Combined hidden pool/ hidden spray- lube oil/ diesel fuel;

1.2.7 Combined open pool/ hidden pool/ hidden spray spray - lube oil/ diesel fuel;

1.2.8 Wood Crib (Class A Fire)

Note: Tests 1.2.1 to 1.2.7 are for Class B Fires.

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1.3 The tests were carried out in a combined format agreed with the MCA as follows:

1.3.1 Fire Test 1 : Combined hidden pool (5 litres lube oil/ 5 litres diesel oil) and hidden spray fire (diesel fuel); 2 minute pre-burn.

1.3.2 Fire Test 2: Combined open pool fire (10 litres diesel), hidden pool (5 litres lube oil/ 5 litres diesel fuel) fire and hidden spray fire (Diesel fuel); 2 minutes pre-burn.

1.3.3 Fire Test 3: Wood Crib (Class A Fire); the crib was given a 4 minute pre-burn with Heptane as a starter fuel. Note: Heptane was used as the accelerant agent for pre-ignition.

1.4 The test enclosure comprised a standard 20 foot ISO steel container with internal dimensions of 6m length x 2.41m width x 2.39m height. Total enclosed volume was 34.56 cubic metres. The container had double doors on one end which were left open to provide air flow prior to system activation. Viewing windows were located at four different locations; two per side opposite test fires, to provide visual evidence of extinguishment. Venting was provided by open spaces above the doors.

1.5 Test fires were those specified in the document "MCA Fire Test Procedures - Small Craft Machinery Spaces for Fire Extinguishing Aerosol Systems":-

1.5.1 Open Pool fire located in front of engine mock up (A on MCA Fire Test Container schematic). Pan dimensions 1 200 x 800 x 90 = 0.96 square metres. Pan contained 10 litres of diesel fuel on a water base.

1.5.2 Hidden Pool Fire located under the engine mock up (B on MCA Fire Test Container schematic). Pan dimensions 1000 x 500 x 90 = 0.5 Square metres. Pan contained 5 litres diesel and 5 litres commercial grade lube oil as fuel on a water base.

1.5.3 Hidden Spray Fire located under shielded overhang of engine mock up (C on MCA Fire Test Container schematic). Spray fuel was diesel applied at 3 bar pressure at a rate of one litre per minute. Spray fire was lit 15 seconds prior to system discharge.

1.5.4 Telltale Cans: with dimensions 100mm x 100mm. Fuel was heptane on a diesel base. 2 minute pre-burn.

1.5.5 Wood Crib: composed of 12 members stacked in 4 rows of three 30 mm x 30mm x 190mm.

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1.6 Engine/ Bilge Mock up: was constructed of steel plating. A fuel tray was placed underneath the engine to simulate fuel accumulation (hidden pool). A fuel spray was located at the forward end of the engine mock-up aiming across the engine and shielded by a plate cover (hidden spray). A further tray was placed in the open area beyond the engine (open pool).

1.7 STAT-X Installation; STAT-X units were mounted at ceiling height to provide even distribution of agent throughout the protected area as specified in the STAT-X Design, Installation & Maintenance Manual, version 1.0, P/N 19000, ULC File EX-15004. Class B Fire Tests utilized four 500 gram units for a design concentration of 58 g/cubic metre. Wood crib fire test utilized one 1000 gram and one 1500 gram unit for a design concentration of 72g/cubic metre.

1.8 Instrumentation: Instrumentation was provided by placement of high temperature thermocouples at strategic locations throughout the container. Readings were taken by redundant thermocouples at each location and recorded.

1.8.1 Thermocouples: 14 off Type K wire thermocouples. High temp glassfibre cover and stainless steel over braid. Placed at high, intermediate and low level at the side and rear of the enclosure. Each thermocouple had a secondary backup thermocouple installed 50 mm away as confirmation of a correct temperature reading.

1.8.2 Data Logging: Chauvin Arnoux Pyrotracer Video CA650 18 Channels, of which only 14 were required.

1.9 Performance Testing Protocol/Results:

1.9.1 Pans were filled as per MCA requirements.

1.9.2 Fires were lit by torch and timer started once all fires were started. Fuel spray was lit 15 seconds prior to system discharge and remained flowing for 15 seconds after completion of discharge.

1.9.3 The container doors remained open prior to and during the 2 minute and 4 minute pre-burn period to ensure a ready source of oxygen and that the fires were well established.

1.9.5 The System was activated with a discharge time of 25 seconds.

1.9.6 The time of extinguishment was observed through viewing windows and recorded via data recorders.

1.9.7 Doors were opened and the container vented after a 10 minute hold time.

1.9.8 No re-ignition occurred.

1.9.9 All Class B Fires were extinguished with a design concentration of 58g/cubic metre. The Class A Fire was extinguished with a design concentration of 72g/cubic metre.

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1.10 Underwriters Laboratories Inc. certifies that the Stat-X Models 30E, 60E, 100E, 250E, 500E, 1000E, 1500E and 2500E have been successfully tested in accordance with UL 2775 Fixed Condensed Aerosol Extinguishing System Units.

2.0 System Description

2.1 STAT-X systems are used to suppress fires in specific hazards or equipment located in enclosed areas and confined spaces where an electrically non-conductive agent is required and where low weight/space to extinguishing capacity is a factor. STAT-X systems are suitable for use in unoccupied and normally un-occupied spaces. In spaces where personnel may be present the system shall employ a pre-discharge alarm, and provision for system isolation and manual only activation whenever personnel are in the protected area.

A solid charge of the aerosol composition is contained within the sealed generator. Upon activation of the initiator, the charge begins a controlled burn producing an ultra-fine aerosol. The aerosol passes through a oxidation filter, where Carbon Monoxide is converted to a minor amount of Carbon Dioxide, and then through a cooling bed where the temperature of the aerosol is rapidly reduced before it escapes through the discharge ports of the generator at low pressure. Generator placement within the hazard area provides proper flow and distribution of the aerosol within the protected area.

2.2 Extinguishing Agent: The aerosol produced upon activation of the Fireaway LLC STAT-X system is composed of ultra-fine particles of potassium salts with secondary inert gases, primarily Nitrogen, Carbon Dioxide and very small amounts of water vapour. STAT-X suppresses fire by a combination of chemical and physical mechanisms without any negative effect on the environment. Because of the aerosol's ultra-fine particle size (<2 micron) there is an increase in the surface area interaction between the agent and the fire. The aerosol does not decompose in the presence of fire nor does it extinguish by oxygen deprivation. The aerosol is considered non-toxic to humans when applied in normal design concentrations necessary to extinguish most fires. There is a high obscuration factor and certain safety restrictions should be observed when applying and handling the generators. Exposure to the aerosol should be limited and unnecessary exposure to the particulate should be avoided.

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The main danger is from exposure to the decomposition products of a fire.

Toxicity: Exposure under five minutes at standard design rates are normally considered safe. The aerosol is considered non-corrosive. The aerosol discharged into the protected space, upon activation of the generator is relatively cool. However, the aerosol stream as it leaves the generator is above 100 degrees C for a short distance from the outlet of the generator. Each model has required installation clearance distance. Care should be taken when handling the post discharge generator.

Operating Temperature and Storage: The STAT-X aerosol generator is sealed with a non-permeable membrane and is unaffected by fluctuations in temperature and humidity. The aerosol generator shall be renewed at 10 years and the manufacture/s instructions should be followed.

2.3 Component Description: Each STAT-X aerosol generator is comprised of an insulated double walled stainless steel housing containing aerosol forming compound, initiator, insulator, insulating medium, and internal elements for oxidation and cooling of the aerosol stream prior to its discharge from the unit. The initiator utilizes a patented thermal actuator (thermal units) or a secure two-wire connector for electrical activation. Each generator is sealed with a non-permeable membrane to maintain the internal integrity of the unit.

2.4 System Isolation Switch: A system isolation switch, located outside the protected space, shall be used in spaces where personnel may be present. The operation of the system shall be manual only when personnel are present. The Protected space shall be vacated of all personnel before it is activated. While the system isolation switch is active, the automatic activation of the system is inhibited; but the fire detection and alarm system shall continue to function. The system returns to full automatic control when the switch is reactivated. There shall be visual indication of the status of the isolation switch at the Control Station.

2.5 Control Panel: Actuation of the units shall be achieved by an approved control panel. [SEE SECTION 5]

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Model Part Number Capacity Diameter Length Weight

30E 15100 30 grams 50 mm 78 mm 0.26 kg
 307 1300 30 grams 50 mm 78 mm 0.26 kg
 60E 15110 60 grams 50 mm 11 mm 0.35 kg
 607 15310 60 grams 50 mm 11 mm 0.35 kg
 60ME 15111 60 grams 50 mm 133 mm 0.56 kg
 60MT 15311 60 grams 50 mm 133 mm 0.56 kg
 100E 15120 100 grams 76 mm 121 mm 0.90 kg
 100T 15410 100 grams 76 mm 152 mm 0.90 kg
 250E 15130 250 grams 127 mm 150 mm 2.20 kg
 250T 15510 250 grams 127 mm 150 mm 2.20 kg
 250ME 15530 250 grams 76 mm 184 mm 1.35 kg
 250MT 15511 250 grams 76 mm 184 mm 1.35 kg
 500E 15140 500 grams 127 mm 180 mm 2.90 kg
 500T 15610 500 grams 127 mm 180 mm 2.90 kg
 1000E 15150 1000 grams 203 mm 170 mm 5.40 kg
 1000ME 15550 1000 grams 127 mm 300 mm 5.60 kg
 1000MT 15711 1000 grams 127 mm 300 mm 5.60 kg
 1500E 15160 1500 grams 203 mm 267 mm 6.80 kg
 2500E 15170 2500 grams 203 mm 267 mm 9.00 kg

4.0 Design

The systems are to be installed in accordance with the Approved Design, Installation and Maintenance Manual of the Manufacturer (Version 1.0, P/N 19000).

The Design of a STAT-X Aerosol Fire Suppression System should involve:-

(a) Identify all possible fire hazards within the protected space. Refer to the Manufacturer's manual for installation requirements for use with specific hazards fuel types that may require additional quantities of agent.

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(b) Determine the hazard classification of materials and substrates inside the protected space. The minimum system design quantity for Class B fires is 58 g/ cubic metre and the minimum for surface Class A fires is 72 g/ cubic metre.

(c) Determine the leakage potential of the protected space.

(d) Determine the total geometric dimensions of the protected space (volume, height, floor area).

(e) Determine if any large obstructions exist in the protected space.

(f) Determine if additional agent will be required to compensate for leakage or obstructions. Factors such as non-closeable openings, forced ventilation, and other conditions may affect the quantity of agent required and need to be considered when calculating the minimum system design factor.

5.0 Control Panels

5.1 FPX104C Control Panel manufactured by Logician Ltd - providing monitoring, control and manual activation only of up to four (4) Stat-X aerosol generators and fire detection of up to four (4) multiple combinations of detectors within the engine or machinery enclosure. Installation and user manual, FPX104C/Install/0709.

5.2 FPX108A Control Panel manufactured by Logician Ltd - Dual Loop panel providing monitoring, control and automatic / manual activation of up to four (4) Stat-X aerosol generators and fire detection of up to four (4) multiple combinations of detectors within the engine or machinery enclosure. Installation and user manual, FPX108A/Install/0110.

5.3 SP-1 control panel manufactured by Technor ASA - basic panel for use with automatic and manual activation of up to four (4) Stat-X aerosol generators within the engine or machinery enclosure. Installation and user manual, NF SP-1.

5.4 Nobel SOLO and SOLO compact control panels manufactured by Nobel Fire Systems, Ltd - basic panel for use with automatic and manual activation of up to ten (10) Stat-X aerosol generators within the engine or machinery enclosure. Installation and user manual NFS SOLO.

5.5 RP-2002 control panel manufactured by Notifier - basic panel for use with automatic and manual activation of up to twenty (20) Stat-X aerosol generators within the engine or machinery enclosure. Installation and user manual, Notifier RP-2002.

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5.6 Activation units 243039.005 and 243039.06 manufactured by Eltek - basic panel for use with automatic and manual activation of up to twelve (12) Stat-X aerosol generators within the engine or machinery enclosure. Installation and user manual, Eltek 243039.005/ 243039.06.

5.7 Control panels 257700.001/.002 for activation units manufactured by Eltek - basic panel for use with automatic and manual activation of up to twelve (12) Stat-X aerosol generators within the engine or machinery enclosure. Installation and user manual, Eltek 257700.001/.002.

5.8 AFP005011 Control Panel manufactured by Marinex Fire Protection - providing monitoring, control and manual activation only of up to four (4) Stat-X aerosol generators within a single protected machinery enclosure. Stat-X Marinex Fire Suppression user manual,

5.9 AFP005022 Control Panel manufactured by Marinex Fire Protection - providing monitoring, control and manual activation only of up to four (4) Stat-X aerosol generators within two separate protected machinery enclosures. Stat-X Marinex Fire Suppression user manual.

5.10 AFP006089 Control Panel manufactured by Marinex Fire Protection - providing monitoring, control and manual activation only of up to eight (8) Stat-X aerosol generators within a single protected machinery enclosure. Stat-X Marinex Fire Suppression user manual.

6.0 System Maintenance:

The user should carry out weekly and other inspections of the fire suppression equipment installed as per the manufacturer's instructions. This should include looking out for obstructions of the discharge nozzles, extension/alteration of the protected enclosure, and that the position and orientation of the generators remain in their installed position.

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7.1 Plans for each intended system together with details of components used and Test Certificates are to be submitted to the Maritime & Coastguard Agency prior to installation and survey on the vessel.

7.2 The installation is to be to the satisfaction of the attending surveyor. Certificates of commissioning and acceptance tests are to be submitted on completion.

7.3 Clear and legible instructions for installation, maintenance, testing and operation, applicable to the specific system fitted on the vessel, for use by the operating crew.

7.4 Clear and legible safety labels shall be placed at the entrance to the protected space, inside the protected space, at the system isolation switch and the manual release point. Also, simple operating instructions are to be placed at the system operating position.

7.5 Means are to be provided to close all openings, which may admit air into the protected space.

7.6 A normally unoccupied space is a space that is not occupied by humans under normal circumstances, but may be entered for brief periods. Whenever the protected space is entered, then the isolation method is to be used to de-activate the generators.

7.7 A means should be provided to relieve any initial overpressure in the protected space when the STAT-X generators are activated, to prevent structural damage to the boundaries of the enclosure.

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