

1. GENERAL**1.1 INTENT OF SPECIFICATIONS**

- A. This specification details the requirements for the Autoprime BS-200M Marine Addressable Fire Alarm Control Unit (FACU), a 4 loop addressable control unit utilizing marine addressable detectors and devices for initiation of fire signals. These requirements, combined with good engineering practices must be followed in order to produce safe and effective fire protection for marine applications.
- B. All system components shall be supplied by Kidde Fire Systems, 400 Main Street, Ashland, MA 01721, USA; Phone (508) 881-2000; URL: [http:// www.kiddefiresystems.com](http://www.kiddefiresystems.com)
- C. All materials and equipment shall be new and unused

1.2 GENERAL DESCRIPTION

- A. The Autoprime BS-200M Marine Addressable Fire Alarm System shall perform fire alarm, supervisory, and fault event initiation; occupant notification; event annunciation; and local control functions.
- B. The FACU shall meet SOLAS requirements and shall have four (4) integrated loops that support up to 508 addressable devices; including heat, smoke and multi-sensor detectors as well as manual call points, monitoring devices, and notification appliances. The FACU shall be suitable for connection to up to 8 remote operator units including BS-211 Repeaters, BV-210 Information Units, BU-210 Fire Brigade Panels and/or BUR-200 Mimic Drivers via RS-485 connection.

1.3 CODES AND COMPLIANCE

- A. The design, installation, testing and maintenance of the marine fire alarm system shall be in accordance with the following applicable codes, standards and regulatory bodies:
 - 1. NFPA 70: National Electrical Code (NEC)
 - 2. NFPA 72: National Fire Alarm and Signaling Code
 - 3. SOLAS: Safety of Life at Sea
 - 4. EN 54: Relevant parts per product type
 - 5. Requirements of the Local Authority Having Jurisdiction
 - 6. Manufacturer's Design, Installation, Operation & Maintenance Manuals
- B. The complete system shall have the following applicable listings and approvals:
 - 1. United States Coast Guard (USCG)
 - 2. America Bureau Shipping (ABS)
 - 3. Lloyd's Register
 - 4. DNV/GL
 - 5. Bureau Veritas (BV)
 - 6. FM Approvals (FM)
 - 7. RINA (Registro Italiano navale)
 - 8. Nemko
- C. The proposed equipment shall have been tested, together with associated ancillary equipment, by at least one of the following independent approved third party test houses:
 - 1. FM, United States
 - 2. BOSEC, Belgium
 - 3. DANAK/DBI, Denmark
 - 4. DnV, Norway

1.4 QUALIFICATIONS

- A. Manufacturer / Supplier
 - 1. The manufacturer of the system hardware and components shall have a minimum of fifteen (15) years' experience in the manufacture of systems of similar type.
 - 2. The manufacturer of the equipment shall be approved to NS.EN.ISO9001 Quality system standard for the design and manufacture of the equipment.
 - 3. The manufacturer of the equipment shall be approved to NS-EN ISO 14001:2004, proving implementation and maintenance of an environmental management system.
 - 4. The manufacturer name and part number shall appear on all major components.
 - 5. All equipment shall be provided by the same supplier.

- B. Contractor
 - 1. The system shall be supplied and installed by a factory authorized, Kidde Fire Systems distributor.
 - 2. The Contractor shall be trained by the equipment provider to calculate/design, install, test and maintain the system and shall be able to produce a certificate stating such on request.
 - 3. The Contractor shall employ a person who can show proficiency at least equal to a NICET level III or IV certification in special hazards design.
 - 4. The Contractor shall confirm in writing that they stock a full complement of spare parts and offer 24-hour emergency service for all equipment being furnished.

1.5 WARRANTY

- A. The manufacturer shall warrant the system equipment for 36-months from the date of shipment from the factory
- B. The contractor shall warrant the installation for 12-months from time of customer acceptance or commissioning

1.6 SUBMITTALS

- A. The architect will review all submittals for conformance to the drawings and specifications. The contractor shall be required to resubmit any materials, with appropriate modifications, that are found to be in non-conformance with the requirements of the drawings and these specifications after review by the architect. Approval of the submittals by the architect shall not relieve the Contractor of their responsibility to meet the requirements of the drawings and specifications.
- B. The contractor shall submit the manufacturers' product technical data and catalog cut sheets for each component or device used in the system.
- C. Engineered Design Drawings: The Contractor's NICET-III or IV certified designer shall design the system and provide documents that shall include but are not limited to the following details:
 - 1. Plan and riser drawings showing the location of the FACU and the locations and necessary installation and mounting details of all field devices such as smoke detectors, manual-release stations and notification appliances.
 - 2. A primary-power calculation that details the power requirements for the FACU and all field devices such as smoke detectors, and notification appliances. Include the required capacity of the main AC power-line feed from the vessel generator.
 - 3. A secondary power calculation that shows the quiescent and alarm power requirements for the FACU and all field devices. Include the periods of time for which the quiescent and alarm power requirements shall be supported in order to determine the necessary standby battery capacity.
 - 4. Conduit routings shall be shown, with number of conductors, type of wire, and wire sizes indicated for each conduit segment.
 - 5. Point-to-point wiring diagram showing the termination points for all field-wiring circuits to the internal PCB. All internal wiring and communications cabling shall be shown.
 - 6. Any other requirements of the latest edition of the relevant NFPA codes.
 - 7. A complete component and equipment list with model numbers and Kidde part numbers.
 - 8. Product information sheets for each item of equipment.
 - 9. A document describing the sequence of operation and system functionality.
 - 10. A detailed matrix of all the initiating points, control modules, and field circuits that identifies the labeling of all components and shows the relationships and activation sequences among the various initiating points and the control modules and / or field circuits
- D. Commissioning Equipment List: The Contractor shall provide a commissioning equipment list for each installed system. The equipment list shall identify all installed equipment and configurations.
- E. Test Plan: The Contractor shall submit a test plan that describes how the system equipment shall be tested. This shall include a step-by-step description of all tests and shall indicate type and location of test apparatus to be used. At a minimum, the tests to be conducted shall be per NFPA 72 and any additional supplemental tests required by the AHJ. Tests shall not be scheduled nor conducted until the engineer of record or end users representative approves the test plan.
- F. The Contractor shall submit the following Installation drawings
 - 1. Four (4) sets of installation drawings for each installed system and one (1) set of calculation reports, owner's manuals and product data sheets.
 - 2. A description of system functionality and a detailed matrix of all the initiating points, control modules, and field circuits that identifies the labeling of all components and shows the relationships and activation sequences among the various initiating points and the control modules and/or field circuits.

3. Upon completion of installation and commissioning acceptance, two (2) sets of "As-Built" installation drawings and One (1) set of the calculation report for each installed system.
- G. The Contractor shall submit the following Manuals after complete installation
 1. Two (2) copies of the FACU User Guide, Installation Handbook, Configuration Handbook, and Operator's Handbook.

2. PRODUCT REQUIREMENTS

2.1 FIRE ALARM CONTROL UNIT (FACU):

- A. The FACU shall be a central processing unit of the system, capable of receiving and analyzing signals from fire sensors, providing audible and visual information to the user, initiating automatic alarm response sequences and providing the means by which the user can interact with the system.
- B. The FACU shall be microprocessor based. Operating programs and configuration data shall be contained in non-volatile memory (Flash and/or EEPROM).
- C. The FACU shall incorporate a real time clock to enable events to be referenced against time and date.
- D. It shall be possible to perform configuration updates on site.
- E. The FACU shall meet the requirements of EN54 part 2 and 4 and shall have been tested, together with associated ancillary equipment, by an approved third party test house such as FM (United States), VNIPO, DBI and DNV.
- F. The FACU shall comprise independent loop processors, together with a separate main processor, and be capable of raising an alarm indication even if the loop processor fails.
- G. Up to a total of 127 detectors and input/output points shall be controlled by a single loop processor, and a maximum 508 addressable devices shall be controlled by the FACU.
- H. The FACU shall incorporate an enable key switch to prevent unauthorized access to the manual controls.
- I. The FACU shall support back up power from batteries.
- J. **[OPTIONAL]** The FACU shall support back up power from second AC input source and batteries.

2.2 FACU SYSTEM CONFIGURATION

- A. The FACU shall be capable of operating 'Intelligent Analogue Addressable' detection devices that have in-built automatic dynamic filtering. These features shall include Transient False Alarm Suppression; Pollution Monitoring with automatic adjustment and Slow Burning fire recognition with faster response.
- B. To ensure continuous stability and security of the system, the setting of the addresses in each addressable device shall be by automatic means, based upon permanent electronic tagging that will register the detector type together with its topographical position within the loop.
- C. **[OPTIONAL]** For the increased reliability of the system it shall be possible to install intelligent analogue detectors and I/O units that are fitted with an inbuilt automatic alarm testing facilities that are regularly tested by the FACU against calibrated data. It shall be possible to have this facility fitted to all devices or selective devices that may be difficult to reach for manual testing. Detectors unable to give alarm during this automatic test shall give fault signal on the fire alarm panel.
- D. The FACU shall be capable of operating with analogue addressable detectors and detectors suitable for installation in hazardous areas connected to the same loop.
- E. To ensure complete protection against short circuit faults on the detection loops all devices connected to the loop shall be fitted with short circuit isolators.
- F. It shall be possible to connect and mix automatic detectors, manual call points and addressable modules within the same zone sub-division of an addressable loop.
- G. Provision shall be made for each addressable loop or series of loops to be sub-divided into hierarchical zones as follows:
 1. Detection Zone - one or a number of detector points that logically belongs together (i.e. a room, or number of rooms on part of a floor) and can be used for such functions as plant shutdowns.
 2. Alarm Zone - one or a number of detection zones that require common operation of the alarm sounders.
 3. Operation Zone - one floor or one building, is designed to restrict the operator's share of operation and control over the system from specific locations.
- H. In order to facilitate reconfiguration and system extensions, any additional devices shall be capable of being configured into the system without altering any other device configuration on that loop.
- I. The system shall have provision to drive and monitor operator, information or repeater panels providing a repeat of the indications on the FACU display and, as necessary, incorporate system manual controls and printer.

- J. The FACU shall have provision for redundant communication to AC Main power supply and batteries with sufficient capacity to power the system connected according to EN54 part 4.
- K. The system shall be capable of interfacing directly to a paging system, or to send SMS message to mobile telephone, via an ESPA 4.4.4. pager industry standard protocol, to transmit the same character text contained within the FACU.

2.3 FACU ENCLOSURE

- A. The enclosure(s) containing the FACU and remote displays shall be of similar design and layout.
- B. The enclosure(s) shall be capable of being surface or semi-flush mounted and shall be provided with cable gland plates for top or bottom entry.

2.4 FACU SYSTEM FUNCTIONS:

- A. The FACU shall monitor the status of all devices on the addressable loops for fire, short-circuit fault, open-circuit fault, unauthorized device removal, change of detector type or location, pre-alarm condition and polluted detector condition.
- B. The FACU shall monitor the status of all internal connection and interfaces including charger and battery.
- C. The FACU shall provide the following discrete visual indications:
 - 1. POWER ON
 - 2. FIRE ALARM
 - 3. PREWARNING
 - 4. FAULT
 - 5. FUNCTION DISABLED
 - 6. FUNCTION DELAYED
 - 7. MORE EVENTS
 - 8. FIRE ZONES
 - 9. ALARMS DISABLED
 - 10. ALARMS FAULT
 - 11. FIRE BRIGADE DISABLED
 - 12. FIRE BRIGADE FAULT
 - 13. FIRE BRIGADE SINGALED
 - i. TESTING
 - ii. SYSTEM FAULT
- D. The FACU shall have an integral 8 line x 40 character LCD back-lit alphanumeric display that shall be arranged to show the following information:
 - 1. Event type
 - 2. Time and date
 - 3. Location of event (incl. detector zone)
 - 4. The total number of events
 - 5. The latest and first alarm
 - 6. Event log
 - 7. Menu choice
- E. The FACU shall provide a set of controls to enable an authorized operator to perform the following:
 - 1. SILENCE [stops all currently actuated alarm sounders]
 - 2. RESOUND [restarts the silenced alarm sounders]
 - 3. RESET [returns the FACU to quiescent condition]
- F. The FACU shall provide a facility to manually check all the discrete LED indicators, the display and printer, and be accessible at all times except in alarm mode.
- G. The FACU shall provide a simple to operate alphanumeric keypad to enable a user, interacting with the information on the inbuilt display, to access the various built-in functions. For security reasons, the FACU shall provide a passcode facility for the following levels of access:
 - 1. Observe
 - 2. Operate
 - 3. Service
- H. The FACU shall provide facilities to drive visual indication on LED/display for each of the following zonal status:
 - 1. Alarm
 - 2. Disabled
 - 3. Testing
- I. The FACU shall be capable of controlling remote site devices, such as door release units and relays for the control of dampers.

2.5 FACU ALARM MONITORING FUNCTIONS

- A. The FACU shall continuously interrogate each addressable device for correct operation.
- B. The FACU shall conduct an automatic alarm test for all connected detectors on a daily basis without the need for any additional programming. Missing alarm from a detector shall give a fault signal on the FACU.

2.6 FACU ALARM NOTIFICATION APPLIANCE OUTPUT FUNCTIONS

- A. The FACU Alarm output functions shall provide the necessary outputs to a minimum of two monitored circuits of common system sounders. Each output shall be capable of driving a sounder load of up to 0.5 Amp.
- B. The FACU shall be capable of providing a two-stage alarm sounder facility that can be programmed, either on a zonal basis or common system basis, to meet the requirements of the fire authority. Two possible sound outputs shall be available.
- C. The system shall have the possibility to connect alarm sounders and beacons directly to the detector loop. These sounders/beacons shall be freely programmable from all detector zones in the system.
- D. It shall be possible to program sounder output circuits and loop sounders to common alarm zones.
- E. The FACU shall have the ability to delay the operation of sounders and transmission to the Fire brigade of fire alarm signals from automatic detectors in pre-determined detection zones. There shall be two (2) time delay periods, each of which shall be configurable for.
 - 1. Delay period 1 - Time from alarm to acknowledge
 - 2. Delay period 2 - Time from acknowledge to reset
 - 3. The delays shall be overridden if:
 - i. Manual call point operates
 - ii. Manual activation
 - iii. Time out
 - iv. Outside working periods
 - v. Two detectors in same detection zone are in alarm

2.7 FACU SUPERVISION AND FAULT REPORTING

- A. The FACU shall monitor all critical system components and interconnections, internal and external, such that a failure which would prevent the correct operation of the alarm functions causes the FAULT indicator to light and a message to be displayed on the alphanumeric display within 100 seconds of occurrence.
- B. The following faults shall be reported in the manner described in previous clause above:
 - 1. Loop Short Circuit
 - 2. Loop Open Circuit
 - 3. Device Not Responding
 - 4. Device moved or changed
 - 5. Repeater or Display Failure
 - 6. Processor Fault
 - 7. Charger Fault
 - 8. Battery Fault
 - 9. Battery Capacity Critical
 - 10. Mains Failure
 - 11. Auxiliary PSU Failure
 - 12. Sounder Wiring Open Circuit
 - 13. Sounder Wiring Short Circuit
 - 14. Communication Fault
- C. The FACU shall provide text messages to indicate the precise location of where a fault has occurred in the system.

2.8 FACU SYSTEM MANAGEMENT FUNCTIONS

- A. The FACU shall incorporate the following system management facilities:
 - 1. Disable/restore a particular point
 - 2. Disable/restore a particular detector zone
 - 3. Disable/restore a particular alarm circuit or alarm zone
 - 4. View alarms
 - 5. View fault status
 - 6. View disabled status
 - 7. View and print point and detection zones
 - 8. View and print event log
 - 9. View fire door positions

10. View activated output controls
 11. Changeable display language between English and native.
 - B. The FACU shall have an event log capable to storing up to the last 10,000 events that have occurred. It shall be possible to view the content of the log via the alphanumeric display. Events shall be displayed in chronological order (Last event first), or by date and or event type.
 - C. The FACU shall be capable of manually testing the alarm sounder circuits and loop sounders.
 - D. The FACU shall be capable of isolating groups of selected detection zones in areas of the building where maintenance or contamination is likely to occur on a regular basis. The detectors shall be automatically isolated via a
 1. Programmable timer
 2. Keyswitch
 3. Latched push button
 4. Volt free contact
 - E. The FACU shall have a facility to enable the user to easily change the time and date settings of the system 'real time' clock.
- 2.9 FACU POWER and ENVIRONMENT CONDITIONS
- A. The FACU shall operate on a mains power of 110/230 VAC, -15% to +10%, 47 to 63 Hz and have a temperature compensated charging voltage.
 - B. The FACU and standard repeater units shall comply with the following environmental conditions:
 1. Operating temperature range: 23 to +158 F (-5 C to +70 C)
 2. Relative humidity: up to 95% RH (non-condensing)
 3. IEC protection category: IP30 minimum
- 2.10 REPEATER, INFORMATION, FIRE BRIGADE REMOTE USER PANELS
- A. The FACU shall be capable of supporting with up to 8 remote user panels.
 - B. The Repeater and Information units shall have an 8 line x 40 character LCD Back-lit display, and shall be capable of displaying the same alarm information text as the FACU.
 - C. Displays intended for information only at locations identified on the project drawings shall not provide controls.
 - D. The remote user panels shall communicate with the FACU using RS-485 protocol.
- 2.11 SPOT DETECTORS
- A. Multi-Sensor smoke detectors
 1. The multi-sensor (Optical/Heat) smoke detectors shall be of the intelligent type with inbuilt dynamic filtering.
 2. **[OPTIONAL]** The multi-sensor (Optical/Heat) smoke detectors shall have automatic self testing function
 3. The multi-sensor smoke detectors shall have been tested to meet the requirements of EN54 Pt.15
 4. The detector shall be capable of having its function changed during periods when contamination may be present in the area.
 5. The multi-sensor smoke detectors shall be capable of being locked into the base to prevent unauthorized removal.
 6. The following versions of the multi-sensor smoke detectors shall be provided at locations indicated on the project drawings:
 - i. Analogue addressable
 - ii. Analogue addressable with Self Testing
 - iii. Analogue addressable - intrinsically safe
 7. The detector shall incorporate an LED, clearly visible from the outside, to provide indication of an alarm activation, have an output for a remote LED and be fitted with short circuit isolator.
 - B. Optical smoke detectors
 1. The optical smoke detectors shall be of the interactive type with inbuilt dynamic filtering features.
 2. **[OPTIONAL]** The optical smoke detectors shall have automatic self testing.
 3. The optical smoke detectors shall have been tested to meet the requirements of EN54 Pt.7
 4. The design of the optical smoke detector sensing chamber shall be optimized to minimize the effect of dust deposits over a period of time.
 5. The optical smoke detectors shall incorporate screens designed to prevent all but the very small insects from entering the sensing chamber.

6. The following versions of the optical smoke detectors shall be provided at locations indicated on the project drawings:
 - i. Analogue addressable - normal sensitivity
 - ii. Analogue addressable - high sensitivity
 - iii. Analogue addressable - intrinsically safe - normal sensitivity
 - iv. Analogue addressable with Self Testing
7. The system shall support a means of changing Performance Classes (Ref EN 54-10) of the smoke detectors via software while on site. The Performance Classes are:
 - i. Clean
 - ii. Normal
 - iii. Industrial
8. The detector shall incorporate an LED, clearly visible from the outside, to provide indication of an alarm activation, have an output for a remote LED and be fitted with short circuit isolators.

C. Heat detectors

1. The heat detectors shall be capable of detecting rapid rise in temperature and fixed absolute temperatures.
2. The heat detectors shall meet the requirements of either EN54 Pt. 5 for detectors suitable for normal environment or EN54 Pt. 8 for detectors designed for high ambient temperatures.
3. The heat detectors shall employ thermal characteristics to provide a rate of rise dependent response.
4. **OPTIONAL** The temperature sensing elements and circuitry of the heat detectors shall be coated with epoxy resin to provide environmental protection.
5. The system shall support a means of changing Performance Classes (Ref EN 54-5) of heat detector via software while on site. The following performance classes shall be supported:
 - i. Analogue addressable - grade A1, A1R, A2S, B, C
 - ii. Analogue addressable - grade A1, A1R, A2S, B, C - intrinsically safe
 - iii. Analogue addressable with self testing
6. The detector shall incorporate an LED, clearly visible from the outside, to provide indication of an alarm activation, have an output for a remote LED and be fitted with short circuit isolators.

D. Flame detectors

1. The flame detectors shall be capable of detection of fires involving combustion of carbonaceous materials.
2. The flame detectors shall meet the requirements of EN54 Pt. 10.
3. The flame detectors shall use two infrared sensors to detect the infrared spectrum from a fire.
4. The sensors and circuitry of the flame detectors shall have a protecting housing with minimum IP66 to provide environmental protection.
5. The systems shall support a means of changing Performance Classes (Ref EN 54-5) of the flame detector via software while on site. The following Performance Classes (Ref EN 54-5) shall be supported:
 - i. Class 1
 - ii. Class 2
 - iii. Class 3
6. The detector shall incorporate an LED, clearly visible from the outside, to provide indication of an alarm activation, have an output for a remote LED and be fitted with short circuit isolators.

2.12 Ancillary Equipment

A. Manual call points

1. The manual call points shall monitor and signal to the FACU the status of a switch operated by a 'break glass' assembly.
2. The manual call points shall meet the requirements of EN54 part 11.
3. The call points shall be equipped with the self testing feature and complete with short circuit isolators.
4. The call points shall be capable of operating by means of thumb pressure and not require a hammer.
5. The call points shall be capable of being delivered in weatherproof housing affording protection to IP66.
6. The call points shall provide an alarm response within less than 3 seconds.
7. The call points shall be programmable to trigger either an alert or an evacuate response from the FACU.

8. The call points shall be capable of being tested using a special 'key' without the need for breaking the glass.
 9. The call points shall provide an integral red LED to indicate activation.
 10. **OPTIONAL** Intrinsically safe call points shall be provided at locations indicated on the project drawings.
- B. The following Loop Mounted Input and Output Devices shall be available as follows
1. Door control and monitoring unit for activating of fire doors and monitoring of door open or closed position.
 2. Sprinkler alarm unit. Gives alarm at activated sprinkler system.
 3. Monitored Input Unit NC or NO with self testing and short circuit isolators
 4. Monitored Single Relay output NC or NO with self testing and short circuit isolators
 5. Monitored I/O with 2 inputs and 1 outputs with self testing and short circuit isolators
 6. The units shall be loop powered and mountable in housings with IP54 protection
- C. Remote indicator module
1. The remote indicator module shall provide a remote indication for any analogue addressable detector that may be located in an enclosed or locked compartment.
 2. The remote indicator module shall be driven directly from its associated local detector.

2.13 CONDUCTORS AND CONDUITS

- A. All conductors shall be enclosed in rigid or thin-walled, steel conduit unless open wiring is permitted by the local electrical code.
- B. Any conduit or raceway exposed to dampness or other similar conditions shall be properly sealed and installed to prevent moisture entrapment. Provisions for draining and drying shall be employed as required.
- C. All wiring shall be of the proper size to conduct the circuit current, but shall not be smaller than #18 AWG unless permitted by the local electrical code. Wiring for the signaling line circuit shall be in accordance with the FACU user, installation, operation, and configuration guides/handbooks. Wire that has scrapes, nicks, gouges, or crushed insulation shall not be used. The manufacturer's minimum wire-bending radii shall be observed in all enclosures, raceways, and conduits. Aluminum wire shall not be used.

3. EXECUTION

3.1 ELECTRICAL WORK

- A. All electrical enclosures, raceways, and conduits shall be provided and installed in accordance with applicable codes and intended use, and shall contain only those electrical circuits associated with the fire-detection and control system. No circuit or circuits that are unrelated to the fire alarm or suppression system shall be routed through the enclosures, raceways, and conduits dedicated to the fire alarm or suppression system.
- B. Splicing of circuits shall be kept to a minimum, and is only permitted in an electrical box suitable for the purpose. Appropriate hardware shall be used to make the wire splices. Wires that are spliced together shall have the same color insulation.
- C. White colored wire shall be used exclusively for the identification of the neutral conductor of an alternating-current circuit. Green colored wire shall be used exclusively for the identification of the earth-ground conductor of an AC or DC circuit. Appropriate color-coding shall be utilized for all other field wiring.
- D. All electrical circuits shall be numerically tagged with suitable markings at each terminal point. All circuits shall correspond with the installation drawings.

3.2 ELECTRICAL SYSTEM INSTALLATION

- A. The Contractor shall install the system in accordance with the appropriate user guides, handbook and installation instructions.
- B. Locations of all electrical equipment, the FACU, and all system components are subject to the approval of the ship builder.
- C. All final-acceptance tests shall be performed in the presence of the authority having jurisdiction. The Contractor shall record all equipment, tests and system configurations in a format approved by the manufacturer and/or the local Authority Having Jurisdiction. A copy of the commissioning tests and results shall be provided to the ship builder, the authority having jurisdiction, and the end-user.

3.3 ROUTINE MAINTENANCE

- A. Routine maintenance on equipment shall be performed as recommended by the manufacturer's user, installation, operation, and configuration guides and handbooks, the relevant SOLAS and/or NFPA Codes and the requirements of the local Authority. The routine maintenance shall be performed by a Contractor certified by Kidde Fire Systems.
- B. The Alarm Company responsible for the installation shall operate an approved document control system for the retention of configuration data.