DEPARTMENT OF TRANSPORTATION
UNITED STATES COAST GUARD

US. COAST GUARD (G-MVP-5/82)
WASHINGTON. D.C. 20590
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NVIC 1-78

NAVIGATION AND VESSEL INSPECTION CIRCULAR NO. 1-78

Subj: Automation of Offshore Supply Vessels of 100 Gross Tons and Over

1. Purpose. This Circular distributes to all interested and affected members of the marine industry a "Guide to Automation Equipment Installation Aboard Offshore Supply Vessels" built on or after 1 September 1978.

2. Discussion.

a. In view of the increase in number, size and technology of supply boats and the worldwide involvement of shipbuilders, operators, owners, and government, a guide for automated systems on supply vessels is considered necessary to provide a uniform minimum standard throughout the industry and a basis for unattended machinery determinations by the various Officers in Charge Marine Inspection (OCMIs). NVC 1-69 specifies control systems and safety devices which the Coast Guard considers necessary for the various degrees of main propulsion and ship's service machinery automation. That Circular was developed primarily to assist OCMIs and members of industry associated with the inspection, design and operation of large oceangoing vessels with automated machinery installations. Although NVC 1-69 is recognized as a guide and provides a certain degree of flexibility, its provisions are not readily adaptable to the engineering plants on small vessels which operate in conjunction with the offshore mineral and Oil (M&O) industry.

b. The offshore supply vessel, which originally operated almost exclusively in the Gulf of Mexico, has grown with the M&O industry, in numbers,. technology and .areas of: operation. It is commonplace today to find oceangoing supply vessels throughout the world in remote locations. Some modern day supply vessels have main propulsion plants in excess of 10,000 horse-power with commensurate electrical generating plants, hydraulic installations and control and monitoring systems. The design of these vessels includes technology intended to eliminate the need for engineroom watchstanders. Requested for minimum manning levels are being received based on automated control and monitoring systems.

c. The equipment and systems outlined In enclosure (1), or an acceptable equivalent, incorporated Into the design of a supply vessel, will be favorably considered by the Coast Guard as meeting the criteria for elimination of continuous watchstanding In the engineroom. .The minimum required engine department manning level necessary to provide for the safe operation of the propulsion machinery in the unattended mode is the responsibility of the cognizant OCMI, taking into consideration the various other concerns that bear on manning level determinations and will not be addressed in this Circular.

3. Action. Coast Guard Marine Inspection personnel, shipbuilders, ship designers and operators should consider enclosure (1) when addressing automated machinery systems for offshore supply vessels. Constructive comments and suggestions are invited.

W. M. BENKERT
Chief, Office of Merchant Marine Safety

End: (l) Guide to Automation Equipment Installation Aboard Offshore Supply Vessels of 100 Gross Tons and Over

Dist: (SDL No. 107)

A: None
B: n(45); c(l0); q(6); eg(3); bj(2); p(l)
C: em(4); l(1)
D: j(2); k(l)
E: o(2); mn(1)
F: None
G: To be assigned
H: None
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GUIDE TO AUTOMATION EQUIPMENT INSTALLATION ABOARD OFFSHORE SUPPLY VESSELS OF 100 GROSS TONS AND OVER

1. Equipment to be installed at the pilothouse control station:

   a. Means to control and monitor speed and direction of shaft rotation, or propeller pitch if controllable pitch propellers are used.

   b. Means of emergency shutdown of main propulsion machinery. (Immediate shutdown is required - fuel day tank shutoff valve is not acceptable). (Starting capability from the bridge is not required).

   c. Means to start a fire pump and pressurize fire main.

      (1) Fire main pressure gauge

   d. A communication system by which the pilothouse personnel may summon the engineer to the engineroom; i.e., a sound powered telephone system, public address system, or assistance needed alarm - distinct from general alarm - audible in all passageways, lounge areas and engineer's staterooms with doors closed and on after main deck area. A. sound powered phone system$_1$ if installed to meet this requirement, should include the master's stateroom, engineer's stateroom, engine-room and lounge areas.

      (1) If this communication system is not of the sound powered telephone type, the power supply shall be from the emergency switchboard or if there is no emergency switchboard, from an independent battery which is continuously charged by its own battery charger.

   e. Alarm (audible and visual) panel to indicate abnormal operation of each function as follows:

      (1) Loss of pneumatic, hydraulic or electric power to propulsion control system. (includes clutch control)

      (2) Low starting air pressure

      (3) Low lube oil pressure

         (a) Main propulsion engines
         (b) Generators (prime mover)
         (c) Reduction gear
         *(d) Turbo-charger (see note on page 4)

      (4) High lube oil temperature

         (a) Main propulsion engines
         (b) Generators (prime mover)
         (c) Reduction gear

*(d) Turbo-charger (see note on page 4)

(5) High jacket water temperature

(a) Main propulsion engines
(b) Generators (prime mover)

(6) Steering gear pilot light. and overload (46 CFR 111.80-70 (f))

{7) Fuel oil day tank low level

(8) Loss of power to the pilothouse alarm panel

(9) Engineroom fire detector

(10) Machinery bilge pump

(a) If equipped with an automatic bilge pump, an alarm and visual indication of excessive running of pump is required in the pilothouse.

(11) Bilge high level

2. Equipment to be installed in the engineroom accessible to or visible from a central location:

a. Means to control and monitor speed and direction of shaft rotation or propeller pitch if contr6llable pitch propellers are used, unless such control and monitoring equipment is provided at a remote location and is separate and distinct from the pilothouse control.

(1) If this means of control and monitoring is located outside the engineroom, means to monitor speed and direction of shaft rotation shall also be provided In the engineroom.

b. Local means to start main engines

c. emergency shutdown of main propulsion (same as l.b.)

d. Control communications - see 46 CFR 113.35 (Engine Order Telegraph Systems).

e. Means to start a fire pump and pressurize fire main.

f. Bilge level alarm sensors installed port and starboard, fore and aft in all spaces containing main propulsion machinery, propulsion shaft tunnel(s), forward passageway tunnel, electrical generating equipment, vital pumps or emergency systems, unless the size or shape of the space is such that a lesser number of sensors will satisfactorily detect rising water at various angles of trim/heel.

g. Fire detectors installed throughout engineroom. The number and location of the devices shall be based upon their sensitivity and compatibility with the environment.

h. Instruments to monitor (visual display), and alarms (audible and visual) to indicate abnormal operation within the following systems:

	Service	Type of display at Equipment	Alarm Audible-Visual
(1)	Starting air pressure	Continuous	Low
(2)	Propulsion control air	Continuous	Low
(3)	Lube oil pressure		
	a. Main propulsion engine	Continuous	Low
	b. Generator	Continuous	Low
	c. Reduction gear	Demand or Continuous	Low
	*d. Turbo-charger (see note on page 4)	Demand or Continuous	Low
(4)	Jacket water temperature		
	a. Main propulsion engine	Continuous	High
	b. Generator	Continuous	High
(5)	Lube oil temperature		
	a. Main propulsion engine	Continuous	High
	b. Generator	Continuous	High
	c. Reduction gear	Demand or Continuous	High
	*d. Turbo-charger (see note on page 4)	Demand or Continuous	High
(6)	Fuel oil day tank level		High/Low
(7)	Fire main pressure	Continuous	
(8)	Ship service generator voltage and amps	Continuous	
(9)	Engineroom bilge level	N / A	High

3. Plans t6. be submitted for review are as follows:

a. Specifications or description of the equipment

b. General arrangement of equipment in the machinery spaces and control stations

c. Schematic of propulsion control system

d. Wiring diagrams with bills of material

e. Control instrument and alarm panel layouts.

f. Enclosure drawings of panels and consoles

g. Periodic test procedures

4. a. Lamp test switches are required on alarm panels in the pilothouse and in the engineroom.

b. Alarms are required to be of the self-monitoring type; that is, an open circuit should cause an alarm condition.

(1) As an alternative to self - monitoring alarm circuits, alarm circuits may be electrically supervised. An open circuit in an electrically supervised circuit shall automatically be indicated at the pilothouse control station and engineroom control station by sounding of an audible trouble alarm bell and by a visual indicator showing the circuit from which the signal originated.

c. Each alarm circuit or each group of alarm circuits for each engine shall be on an independent branch circuit.

*Those turbo-chargers without a pressurized oil system need not meet the requirements for gauges and alarms of this section.

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NVC 1-78, CH-1
2 JAN 1979

NAVIGATION AND VESSEL INSPECTION CIRCULAR NO. 1-78, CHANGE I

Subj: CH-l to NVC 1-78 of 30 3une 1978, Subj: Automation of Offshore Supply Vessels of 100 Gross Tons and Over.

1. PURPOSE. The purpose of this Circular is to provide clarification to Navigation and Vessel Inspection Circular 1-78 with regard to the implementation date.

2. DISCUSSION. Comments from Coast Guard field offices as well as the marine industry indicate that change and clarification of the implementation date of this NVC is necessary. Accordingly, clarification is provided.

3. ACTION. The following dates shall be taken for action in the implementation of NVC 1-78:

1 September 1978- All vessels having a keel laying date (or similar state of construction) on or after this date should be in full compliance with NVC 1-78 in order to receive favorable consideration by the Coast Guard for the elimination of continuous watchstanding in the engineroom.

30 3une 1979- All vessels contracted for or having a keel laying date (or similar state of construction) prior to 1 September 1978 may be certificated utilizing the previously accepted degree of automation, provided delivery of the vessel is accomplished prior to 30 3une 1979. The automated systems of any vessel delivered after 30 3une 1979 should be in full compliance with NVC 1-78 in order to be favorably considered by the Coast Guard for elimination of continuous watchstanding in the engineroom.

HENRY H. BELL
Chief, Office of Merchant Marine Safety

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