

MIL-M-81392(AS)
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MILITARY SPECIFICATION

MARKER, LOCATION, MARINE
MK 25 AND MODS 2 and 3

This specification has been approved by the Naval Air Systems Command, Department of the Navy.

1. SCOPE

1.1 This specification covers the manufacture, assembly, preparation for delivery of the Marker, Location, Marine Mk 25 and Mods 2 and 3, and the methods of examination and tests upon which product acceptance shall be based. The marker consists of an aluminum body containing a pyrotechnic composition which produces a yellow flame and white smoke when electrically initiated by a Mk 13 Mod 0 Electric Squib which is activated by a Mk 72 Mod 1 Water Activated Battery. The base of the marker contains a safe-arm feature that seals the battery cavity. The marker is classified as Class B Explosives (Code of Federal Regulations 49 CFR 71-78) and IIC Explosives (Coast Ward Rules and Regulations for Military Explosives and Hazardous Munitions CG 1.08).

1.2 Definitions. The meaning of the terms used in this specification are as listed in 6.4

2. APPLICABLE DOCUMENTS

2.1 Government documents. The following documents, of the issue in effect on date of invitation for bids, form a part of this specification to the extent specified herein.

SPECIFICATIONS

Federal

SS-S-550

Sodium Chloride, Technical, for
Water Softening Units

Military

MIL-I-45607

Inspection Equipment, Supply and
Maintenance of

FSC-1370

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MIL-C-45662

Calibration System Requirements "

Bureau of Naval Weapons

WS 4626

Composition, Starter

WS 4630

Squib, Electric, Mk 13 Mod o

OS 876S

Battery, Water Activated, Mk 72 and Mods

STANDARDS

Military

MIL-STD-105

Sampling Procedures and Tables for
Inspection by Attributes

MIL-STD-129

Marking for Shipment and Storage

MIL-STD-350

Jolt Test for use in Production of
Fuzes

MIL-STD-352

Forty (40) Foot Drop Test for use in
Production of Fuzes

MIL-STD-353

Transportation Vibration Test for use
in Production of Fuzes

MIL-STD-354

Temperature and Humidity Test for use
in Production of Fuzes

DRAWINGS

Bureau of Naval Weapons

LD 282857 Marker, Location, Marine Mk 25 Mod 2 (Assembly)

LD 615141 Marker, Location, Marine Mk 25 Mod 3 (Assembly)

SA Drawing 2522934

Vibration Test Fixture

SA Drawing 2522980

Jolt Test Fixture

(And all LD's, drawings, specifications, standards and publications listed thereon.)

(When requesting specifications, standards and drawings refer to both title and number. Copies of Military Specifications and standards may be obtained upon application to the Commanding Officer, U. S. Naval Supply Depot (Code 105), 5801 Tabor Avenue, Philadelphia, Pa. 19120. Copies of

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Bureau of Naval Weapons specifications and drawings maybe obtained upon application to Commanding Officer, U. S. Naval Ordnance Plant (CTDO), Louisville, Kentucky, 40214.)

2.2 Other publications. The following publications form a part of this specification to the extent specified herein. Unless otherwise indicated, the issue in effect on date of invitation for bids shall apply:

AMERICAN SOCIETY FOR TESTING MATERIALS

ASTM Standard C277-53 Magnesium Sulfate, Technical Grade

(Copies of the ASTM Standard may be obtained from the American Society for Testing Materials, 1916 Race Street, Philadelphia 3, Pa.)

CODE OF FEDERAL REGULATIONS

49 CFR 71-78 Interstate Commerce Commission Rules
and Regulations for Transportation
of Explosive and Other Dangerous
Articles

(Application for copies should be addressed to Superintendent of Documents, Government Printing Office, Washington, D.C. 20360. Orders for the above publication should cite the latest edition and supplement.)

COAST GUARD RULES AND REGULATIONS

CG 108 Rules and Regulations for Military
Explosives and Hazardous Munitions

(Application for copies should be addressed to Superintendent of Documents, Government Printing Office, Washington, D.C. 20360.)

3. REQUIREMENTS

3.1 Manufacture and inspection. The marker shall be manufactured, examined, tested and packed in accordance with contract documents, list of drawings BUWEPS ID 282857 for the Mk 25 Mod 2 and BUWEPS LD 615141 for the Mk 25 Mod 3, as applicable, and this specification.

3.1.1 Preproduction sample. An acceptable preproduction sample of markers shall be furnished by the contractor. The markers, their components and all materials shall be of a single type, grade, class, size and composition and shall comply with all applicable provisions of this document. The samples shall be manufactured at the same location using the same methods proposed for full production. The preproduction sample shall not be applied as part of the quantity specified for delivery by the contract or order.

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3.2 Examinations.

3.2.1 Components, assemblies and materials. All components, assemblies and materials of the marker shall meet all the requirements of their respective specifications or drawings.

3.2.1.1 Squib, The squib shall meet the requirements of the applicable specification.

3.2.1.2 Battery. The battery shall meet the requirements of the applicable specification.

3.2.1.3 Starter composition. The starter composition shall meet the requirements of the applicable specification.

3.2.2 Marker. The marker shall meet the requirements of this specification ,

3.3 Performance and product characteristics.

3.3.1 Performance.

3.3.1.1 Sealing. The marker shall withstand a vacuum of 6.0 ± 1.0 inches of mercury (11.7 psia) for a minimum period of 30 seconds without leakage.

3.3.1.2 Vent release force. When in the armed position the base plugs (two), shall each withstand an axial force of 1.0 pound without pushing into the base cavity.

3.3.1.3 Static functioning. The marker shall meet the following requirements.

- a. Function (produce flame and smoke).
- b. Produce a visible marker within 15 seconds after striking the water.
- c. Produce yellow flame and white smoke for 13.5 minutes minimum to 18.5 minutes maximum,

3.3.1.4 Flight functioning, The marker shall meet the following requirements.

- a. Function (produce flame and smoke).
- b. Produce a visible marker within 15 seconds after striking the water.
- c. Produce yellow flame and white smoke for 13.5 minutes minimum to 18.5 minutes maximum.

3.3.2 Durability and environmental.

3.3.2.1 Jolt. The marker shall withstand jolt without burning, exploding, or becoming unsafe to handle.

3.3.2.2 Forty (40) foot drop. The marker shall withstand 40 foot drop without burning, exploding, or becoming unsafe to handle.

3.3.2.3 Vibration. The marker, in the armed position, shall withstand vibration without burning, exploding, becoming unsafe to handle, displacing components, or damage that will prevent returning to the "SAFE" position and shall be capable of functioning after vibration.

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3.3.2.4 Temperature and humidity. The marker shall withstand temperature and humidity without showing signs of damage or displacement of components and shall be capable of functioning after temperature and humidity.

3.4 Workmanship. The product in all stages of production shall be processed under such inspection control as to assure uniformity in quality. All components shall be free of chips, dirt, grit, or other foreign material. The cleaning methods used shall not be injurious to any of the parts nor shall the parts be contaminated by the cleaning agents employed.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the supplier is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified, the supplier may utilize his own facilities or any commercial laboratory acceptable to the Government. The Government reserves the right to perform any of the inspections set forth in the specification where such inspections are deemed necessary to assure supplies and services conform to prescribed requirements.

4.1.1 Preproduction sample. The contractor shall deliver 72 markers of one mark and mod, to the destination specified (see 6.2), for examination, testing, evaluation, and acceptance as specified in 4.2 and Table I as applicable. Any production of the item prior to production of an acceptable preproduction sample by the contractor or authorization by the procuring agency shall be at the risk of the contractor. The sample shall be prepared for delivery as specified in Section 5.

4.1.2 Production lot. A production lot shall consist of 1201 to 10,000 markers of one mark and mod offered for delivery at one time including test samples. The test samples shall not be applied as part of the quantity specified for delivery by the contract or purchase order. Each production lot shall contain only batteries from one production lot and squibs produced during one year by one manufacturer. Sampling, examination, testing and acceptance of production lots shall be performed as specified in the steps

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given below. Upon rejection of any lot, the next lot, in addition to the applicable sampling plan, shall be examined, tested and accepted for the requirement(s) which caused the rejection, unless the requirement(s) is included in the applicable inspection plan.

STEP 1. Upon starting production or delivery of an acceptable preproduction sample, as applicable, the first two production lots shall be examined as required in 4.2, tested in the sequence and accepted in conformance with Table I, Sampling Plan A.

STEP 2. Production lots other than those defined in Steps 1 and 3 shall be examined as required in 4.2, tested in the sequence and accepted in conformance with Table I, Sampling Plan B, except that one lot shall be randomly selected from each five consecutive production lots and examined as required in 4.2, tested in the sequence and accepted in conformance with Table I, Sampling Plan A.

STEP 3. After continuous production of lots containing a maximum total of ten production lots, the next production lot shall be examined as required in 4.2, tested in the sequence and accepted in conformance with Table I, Sampling Plan C. Upon failure of the temperature and humidity test sequence, corrective action must be incorporated into the production process immediately. The first complete lot incorporating the corrective action must meet the requirements of the temperature and humidity test sequence.

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TABLE I
INSPECTION PLANS

PLAN ¹				SECTION REFERENCE	TESTS	PREPRODUCTION SAMPLING PLANS		PRODUCTION LOT SAMPLING PLANS	
PRE-PROD	A	B	C		TEST SEQUENCE	SAMPLE SIZE	ACCEPTANCE CRITERIA ²	SAMPLE SIZE	ACCEPTANCE CRITERIA ²
x			x	4.1.1 4.1.2 4.3.2.1 3.3.2.1	1 2 Jolt Test	5 Markers	Ac 0 Re 1	MIL-STD-105 Inspection Level S-1	Ac 0 Re 1
x			x	4.3.2.2 3.3.2.2	Forty (40) Foot Drop Test	5 Markers	Ac 0 Re 1	MIL-STD-105 Inspection Level S-1	Ac 0 Re 1
x	x		x	4.3.1.2 3.3.1.2	Vent Release Force Test ³	5 Markers	Ac 0 Re 1	MIL-STD-105 Inspection Level S-1	Ac 0 Re 1
x	x		x	4.3.2.3 3.3.2.3 4.3.1.3 3.3.1.3	Vibration Test Static Functioning Test	8 Markers	Ac 0 Re 1 (a) Ac 0 Re 1 (b&c) Ac 1 Re 2	MIL-STD-105 Inspection Level S-3	Ac 0 Re 1 (a) see note 4 (b&c) AQL 4.0
x			x	4.3.2.4 3.3.2.4 4.3.1.3 3.3.1.3	Temperature and Humidity Test Static Functioning Test	8 Markers	Ac 0 Re 1 (a) Ac 0 Re 1 (b&c) Ac 1 Re 2	MIL-STD-105 Inspection level S-3	Ac 0 Re 1 (a) See Note 4 (b&c) AQL 4.0
x	x		x	4.3.1.1 3.3.1.1 4.3.1.3 3.3.1.3	Sealing Test Static Functioning Test	20 Markers	Ac 1 Re 2 (a) Ac 1 Re 2 (b&c) Ac 2 Re 3	MIL-STD-105 Inspection Level S-3	AQL 2.5 (a) See Note 4 (b&c) AQL 4.0
x	x		x	4.3.1.1 3.3.1.1 4.3.1.4 3.3.1.4	Sealing Test Flight Functioning Test	20 Markers	Ac 1 Re 2 (a) Ac 1 Re 2 (b&c) Ac 2 Re 3	MIL-STD-105 Inspection Level S-4	AQL 2.5 (a) See Note 4 (b&c) AQL 4.0
x				4.3.2.5	Grouped Data	36 Markers	(a) Ac 1 Re 2 (b&c) Ac 3 Re 4		None

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TABLE I (continued)

NOTES:

- ¹ X = Denotes tests applicable to plan.
- ² Ac = Acceptance number
- ³ Re = Rejection number
- Samples used from the vent release force test shall not be returned to the lot.
- ⁴ For requirement (a) on the Mk 25 Mod 2 Marker, use an AQL of 1.5 percent defective and on the Mk 25 Mod 3 Marker, use an AQL of 2.5 percent defective.

4.1.3 Test equipment and gages. All test equipment and gages shall be supplied and maintained by the contractor as specified in Specification MIL-I-45607. The contractor shall maintain a calibration system as specified in Specification MIL-C-45662.

4.1.5.1 Test conditions. The maximum allowable tolerances on test conditions specified herein shall be as follows:

1. Temperature: Plus or minus 3°C, 5.4°F.
2. Relative humidity: Plus 5 percent, minus 0 percent.
3. Vibration amplitude Plus or minus 10 percent.
4. Vibration frequency: Plus or minus 2 percent.

4.2 Examinations. Random samples shall be selected and examined as specified in 4.1.1 or 4.1.2 as applicable.

4.2.1 Components; assemblies and materials examinations. Prior to assembly all components, assemblies and materials used in the marker shall meet the requirements of 3.2.1.

4.2.1.1 Squib examinations. In the absence of previous inspection of the Squib, Electric, Mk 13 Mod 0, inspection shall be performed as specified in Specifications 4630.

4.2.1.2 Battery examinations. In the absence of previous inspection of the Battery, Water Activated, Mk 72 Mod 1, inspection shall be performed as specified in Specification OS 8765.

4.2.1.3 Starter composition examinations. In the absence of previous inspection of the starter composition inspection shall be performed as specified In Specification WS 4626.

4.2.2 Marker examinations. Examinations shall be made to ascertain that markers meet the requirements of 3.2.2. If the number of defective markers equals or exceeds the rejection number for any category the lot represented shall be rejected. Only markers containing none of the defects listed in Table II shall be used for further testing or returned to the lot.

TABLE II

CLASSIFICATION OF DEFECTS - Marker, Location, Marine, Mk 25 and Mods

CATEGORIES ¹	DEFECTS ²
<u>CRITICAL</u> ³	<u>Reject on one or more</u>
1.	Cover not set on "SAFE" position.
2.	Base plugs not in position (2 plugs).
3.	Arming instructions missing, incorrect or illegible.
4.	Color code marking not as specified.
5.	Marker, without G-Ring, does not pass freely through a 2.990 maximum diameter tube 25.000 \pm 1.000 inches long.
<u>MAJOR</u>	<u>None Defined</u>
<u>MINOR</u>	<u>AQL 2.5 Percent</u>
201.	Overall length not as specified.
202.	Descriptive marking missing, incorrect, or illegible.

NOTES:

¹Inspection shall be in accordance with Standard MIL-STD-105.

²Reference: (a) Marker, Location, Marine Mk 25' Mod 2, BUWEPS LD 282857, BUWEPS Dwg. 1332017.

(b) Marker, Location, Marine Mk 25 Mod 3, BUWEPS LD 615141, BUWEPS Dwg. 1332145,

³Sampling for critical shall be as follows:

(a) Single sampling shall be used (double or multiple sampling and reduced inspection are prohibited).

(1) For inspection lot sizes of 200 or less, use 100 percent of the lot.

(2) For inspection of lot sizes of 201 to 3200, use 200 units.

(3) For inspection of lot sizes greater than 3200, use the sample size from Table II indicated by the sample size letter from Level III of Table I.

4.2.3 Packing and marking examinations. The packing and marking of the containers shall meet the requirements of the following Classification of Defects. When the number of defective packs equals or exceeds the rejection

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number for any category, the preparation for delivery of the lot of markers represented still be rejected. Only packs meeting the acceptance criteria of Table III may be returned to the lot.

CLASSIFICATION OF DEFECTS⁴ - Packing and marking

CATEGORIES ¹	DEFECTS ²
<u>CRITICAL³</u>	<u>Reject on one or more.</u>
1.	Special marking not as specified (par 5.3.1).
<u>MAJOR</u>	<u>AQL 1.0 Percent.</u>
101.	Not a firm pack.
<u>MINOR</u>	<u>AQL 2.5 Percent.</u>
201.	Normal marking, illegible, incorrect, or missing (par 5.3.2).
202.	Quantity of contents not as specified.
203.	Container not taped as specified.

NOTES:

¹Inspection shall be in accordance with Standard MIL-STD-105.

²Reference: BUWEPS LD 615123, BUWEPS Dwg. 1332115 for the Marker, Location, Marine, Mk 25 Mod 2 or BUWEPS ID 615153, BUWEPS Dwg. 1332144 for the Marker, Location, Marine, Mk 25 Mod 3 as applicable.

³Sampling for Critical shall be as follows:

(a) Single sampling shall be used (double or multiple sampling and reduced inspection are prohibited).

- (1) For inspection lot sizes of 200 or less, use 100 percent of the lot,
- (2) For inspection lot sizes of 201 to 3200, use 200 units,
- (3) For inspection lot sizes greater than 3200, use the sample size from Table II indicated by the sample size letter from Level III of Table I.

⁴In the absence of previous inspection on the shipping container, prior to use, inspection shall be performed as required by BUWEPS Dwg. 1332114.

4.3 Tests. Random samples of markers shall be selected and tested as specified in 4.1.1 or 4.1.2 as applicable.

4.3.1 Performance tests.

4.3.1.1 Sealing test. The marker shall be tested in a water tank equipped for observation under vacuum.

CAUTION: The water tank shall be equipped so that the marker must be raised above the water level while still under vacuum before releasing the vacuum and removing the marker.

The uppermost surface of the marker shall be submerged 2 to 6 inches below the water surface and subjected to a vacuum of 6.0 ± 1.0 inches of mercury for a minimum period of 30 seconds. Leakers are indicated by a constant stream of air bubbles issuing from the marker. Do not mistake the escape of occluded air for leakage. Defective are markers failing to meet the requirements of 3.3.1.1.

4.3.1.2 Vent release force test. The marker, in the armed position, shall have a measured axial force of 1.0 pound applied to each of the two base plugs. Defectives are markers having one or both base plugs failing to meet the requirements of 3.3.1.2.

4.3.1.3 Static functioning test. The marker shall be tested by rotating the cover clockwise from the "SAFE" position to the extreme "ARMED" position. Push the two base plugs into the marker by applying pressure on the base plugs with the thumb and finger.

CAUTION: Markers with base plugs pushed in must be tested or disposed of if not stored with the adaptor kit assembled on the marker.

Drop the marker into sea water of sufficient quantity to float the marker. For each marker tested, record markers failing to function, delay time from striking the water to emission of smoke and flame and the duration of smoke and flame emission. Defective are markers failing to meet the requirements of 3.3.1.3.

4.3.1.4 Flight functioning test. The marker shall be tested by launching from aircraft. One-half of the markers shall be launched using an Aero Ejector 1A or 1B and the remainder of the sample shall be gravity released using the S2F3 Aircraft Store Dispenser and the adaptor kit. All launchings and drops shall be at an altitude of 500 feet and an indicated air speed of 150 to 200 knots, into sea water of a depth not less than 12 feet. For each marker tested, record markers failing to function, delay time from striking the water to emission of smoke and flame and the duration of smoke and flame emission. Markers that fail to load and eject because of malfunction of the adaptor kit, ejector or store dispenser shall not be

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considered a defective and a retest of another marker shall be made. Defective are markers failing to meet the requirements of 3.3.1.4.

4.3.2 Durability and environmental tests.

4.3.2.1 Jolt test. The marker shall be subjected to the jolt test prescribed in Standard MIL-STD-350. The marker shall be assembled to the test equipment using Test Fixture, SA Drawing 2522980, for mounting. Defectives are markers failing to meet the requirements of 3.3.2.1.

4.3.2.2 Forty (40) foot drop test. The marker shall be subjected to the forty foot drop test prescribed in Standard MIL-STD-352, except the markers shall be dropped free-fall without guidance system or associate equipment. Defective are markers failing to meet the requirements of 3.3.2.2.

4.3.2.3 Vibration test. The marker, in the armed position, shall be subjected to a vibration test using the equipment specified in Standard MIL-STD-353. The marker shall be assembled to the test equipment using Test Fixture SA Drawing 2522934, for mounting. The marker shall be tested at a single vertical amplitude of $0.030 + 0.002$ inches throughout a frequency range of 1100 to 3000 cycles per minute in increments of 100 cycles per minute. The running time for each increment shall be 10 minutes. This schedule shall be repeated with the marker in each of the following three positions: (1) base end down, (2) base end up and (3) longitudinal axis horizontal. Each marker shall receive a total of 10 hours vibration. Defective are markers failing to meet the requirements of 3.3.2.3.

CAUTION: The marker shall be returned to the "SAFE" position when vibration test is completed.

4.3.2.4 Temperature and humidity test. The marker shall be subjected to one 14 day temperature and humidity cycle prescribed in Standard MIL-STD-354. Defectives are markers failing to meet the requirement of 3.3.2.4.

4.3.2.5 Grouped data acceptance. Data shall be grouped for static functioning on the sample of 36 markers composed of the following groups:

- | | |
|-----------|----------------------------------------------------------------------|
| Group (a) | Eight (8) markers from the vibration test of 4.3.2.3, |
| Group (b) | Eight (8) markers from the temperature and humidity test of 4.3.2.4, |
| Group (c) | Twenty (20) markers from the sealing test of 4.3.1.1. |

Acceptance shall be as specified in Table I.

5. PREPARATION FOR DELIVERY

5.1 Preservation and packaging. Not applicable.

5.2 Packing.

5.2.1 Level A. In addition to the following, Level A packing shall be in accordance with the Code of Federal Regulations 49 CFR 71-78.

5.2.1.1 Eight (8) markers shall be packed in containers as specified on BUWEPS Drawing 1332115 or BUWEPS Drawing 1332144 as applicable.

5.3 Marking.

5.3.1 Special marking. Special marking shall be In accordance with the Code of Federal Regulations 49 CFR 71-78 for Class B Explosives (Special Fireworks).

5.3.2 Normal marking of the pack. In addition to any requirements of the contract or order shipping containers shall be marked in accordance with Standard MIL-STD-129.

6. NOTES

6.1 Intended use. The Marker, Location, Marine Mk 25 and Mods 2 and 3 are intended for use by aircraft to mark surface locations. The markers may be launched from the Aero Ejector, aircraft store dispenser or launched by hand.

6.2 Ordering data. Procurement documents shall specify:

- a. Title, number,, and date of this specification.
- b. Mark and Mod of marker required.
- c. Quantity of markers being ordered,
- d. Test facility where preproduction sample is to be shipped for evaluation,
- e. QE Laboratory coordinating surveillance,
- f. Test facility where flight tests are to be shipped,
- g. Data information required. (See 6.3)

6.3 Data. For the information of contractors and Contracting Officers, any data specified in (a) subparagraph below, (b) applicable documents listed

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in Section 2 of this specification, or (c) referenced lower-tier documents, need not be prepared for the Government and shall not be furnished to the Government unless justified and specified in the contract or order. The data to be furnished still be listed on DD Form 1423, which shall be attached to and made a part of the contract or order. NAVWEPS Form 4200/15 shall be attached where applicable.

6.3.1 Date cards. Data cards, 5" x 8" made of white bristol board approximately 110 lbs. ream weight, in accordance with Figure I, shall be furnished by the contractor for each lot of markers. The contractor shall fill in all required information, including all information for the following components.

Component
Battery
Squib
Starter Composition

The Government Inspector shall endorse the data card and distribute one each as follows:

- (a) Procuring activity,
- (b) Ships Parts Control Center (SPCC), Code 730, Mechanicsburg, Pa. (if different than the procuring activity),
- (c) Q.E. Laboratory coordinating surveillance (see 6.2),
- (d) The designated test activity (see 6.2).

6.4 Definitions. The meaning of the terms used in this specification shall be as listed below:

6.4.1 Marker. The term "marker" shall mean Marker, Location, Marine, Mk 25 Mod 2, BUWEPS LD 282857, BUWEPS Drawing 1332017 or Marker, Location, Marine, Mk 25 Mod 3, BUWEPS LD 615141, BUWEPS Drawing 1332145, as applicable.

6.4.2 Base plug. The term "base plug" shall mean the component depicted on BUWEP Drawing 1212761.

6.4.3 Ejector. The term "ejector" shall mean the Aero Ejector 1A or

6.4.4 Store dispenser. The term "store dispenser" shall mean the S2F3 aircraft store dispenser.

6.4.5 Adaptor Kit. The term "adaptor kit" shall mean the Adaptor Kit, Marine Marker, Mk 34 Mod 0, BUWEPS LD 282828, BUWEPS Drawing 1212853.

6.4.6 Battery. The term "battery" shall mean the Battery, Water Activated Mk 72 Mod 1 as depicted in OS 8765.

6.4.7 Squib. The term "squib" shall mean the Squib, Electric, Mk 13 Mod 0 depicted in Specification WS 4630.

6.4.8 Starter composition. The term "starter composition" shall mean the starter composition depicted in Specification WS 4626.

6.4.9 Sea water. The term "sea water" as used in the static function-ing test shall mean a sea water solution prepared by the following formula:

<u>Ingredients</u>	<u>Grams</u>
Sodium Chloride, Federal Spec SS-S-550, Type II, Grade A	32.0 ± 0.1
Magnesium Sulfate Heptahydrate ASTM C 277-53	4.0 ± 0.03

Dissolve the above ingredients in 500 + 5 milliliters of distilled waters then dilute the solution to volume of 1 ± .01 liter. As much solution as needed may be made in multiples of this quantity.

6.5 Conflicting requirements. Conflicting requirements arising between this specification and any specification or publication listed herein shall be referred in writing to the procuring agency for clarification.

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6.6 General safety precaution. The loading, assembly and handling of the item covered by this specification, and the Sub-assemblies thereof, involve hazardous operations and therefore require suitable explosives safety precaution. Use of this Specification will not be construed as to relieve the contractor or manufacturer of responsibility for the safety of his operations. Listed below are certain minimum provisions which a contractor or manufacturer (which explosively loads the item covered) should observe in order to fulfill his responsibility for safety. At Bureau of Naval Weapons, Navy Department, and other Government plants, these provisions are mandatory. Such other warnings and precaution, pertinent to the operational effectiveness or safety during use or loading of the specified item, are included in the detail technical requirements of the specification.

6.6.1 All loading operations should be conducted in a neat and orderly manner.

6.6.2 Safe equipment and methods should be utilized for transporting and handling explosives and loaded parts. Where required, remote control barricaded handling equipment shall be used for explosives operations, such as mixing, pouring, weighing, charging, sifting, drying, pressing, oasting, orimping, etc.

6.6.3 Personnel handling detonators, primers, delay elements, lead-ins, boosters, and related parts which affect functioning, should insofar as practicable, avoid using bare fingers or improper equipment in order to prevent damage, corrosion, or deterioration from perspiration or other contaminating deposits.

6.6.4 The exposure of explosive materials and related parts should be so controlled as to minimize the absorption of moisture from the atmosphere or other sources during loading and handling operations.

6.6.5 All explosives and completely or partially loaded item should be stored in suitable storage magazines located in accordance with the American Table Of Distances (ATD) or other applicable safety standards; and, while in process, in safety lockers and chests if in loading rooms, or in adequate ready or service magazines located in accordance with Intraplant distances when outside of loading rooms. For Navy managed explosives loading plants, the provisions of the Armed Services Explosives Safety Board covering quantity-distance relations for explosives will apply.

6.6. 7 Proper care must be exercised at all times to protect personnel from accidents, fires or explosions, and to limit damage to equipment and loading area. In this connection, the precautionary measures in the following paragraphs should be observed.

6.6.7.1 Employ properly proportioned and properly located protective barricades, screens or shields at all required points.

6.6.7.2 Keep only minimum limited quantities of explosives and completed or partially loaded parts present at each stage of operations.

6.6.7.3 Keep explosives and explosive parts in approved covered receptacles with covers in place when material is not being taken out of or put into the receptacles, Where necessary, receptacles should be conductive to ground electrostatic charges

6.6.7.4 Protect operations from electrostatic charges by effectively grounding all machinery, equipment, and fixtures; and where necessary, employ suitable grounded conductive covering for floors, work benches and tables, and Workers conductive shoes. Workers clothing of a type to minimize the accumulation of static charges should be employed. Fabrics such as silk and nylon, which promote static generation should be avoided. Additional grounding devices such as grounded bracelets for workers should be employed where operations are conducted with items which are unusually sensitive to initiation by static electricity. Such items include initiating explosives, tracer mixtures, and low-energy type electric primers, detonators, and squibs. The latter types of items should have the free ends of lead wires bared and twisted together, and be packed in relatively small groups Wrapped in bare non-insulated aluminum foil or other uncoated metal foil. During assembly and processing operations such sensitive electric item should be short circuited by clips or other devices until installed with safety shunt in the final device. Additional precautions for these items should include mechanical shielding to contain or deflect fragments and blast, also electrical shielding of these items from induced electric currents generated by sources such as lightning, static radiations from communications apparatus, radar, or high frequency heat apparatus, etc. Where necessary for safety, humidity of work rooms should be appropriately increased, as required to lessen electrostatic effects but without inducing excessive moisture absorption by any of the components of the item being loaded.

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6.6.7.5 Protect all explosive operations from effects of electric current originating from equipment such as soldering irons, heaters, Switches, wiring, motors, lights, tests instruments, etc., by suitable insulation, grounding separation or shielding. Such electric sources may initiate explosives by heat, sparks, arcs, or due to completing an electric circuit through an electric primer, detonator, or squib. Circuits may be inadvertently completed, for example, from a defective electric soldering iron through a grounded contact. All electric type primers, detonators or squibs provided with wire leads should have the free ends of the wires bared and twisted together to short circuit each unit, except when in process of assembly into a finished item. Where **practicable**, removable short circuiting clips, or other devices should be employed during manufacturing operations involving electric primers, detonators or squibs.

6.6.7.6 Enforce where necessary, the wearing of suitable safety footwear, gloves, goggles, respirators, and impregnated garments to protect personnel against burns, poisoning and associated industrial hazard.

6.6.7.7 Allow no fires or exposed electrical or other sparking equipment, and little or no flammable material to be present in loading, handling and storage spaces. Enforce proper "Match" and "No Smoking" rules where necessary.

6.6.7.8 Enforce good housekeeping and maintain effective policing, inspection and supervisory methods throughout the loading area and surroundings. Employ effective cleaning methods periodically to minimize the accumulation of explosives or dust and other contamination upon, and assure its removal from floors, walls, ceilings, ledges, tables, benches, piping, and equipment or the items loaded; also, clean up any spilled material immediately.

Notice. When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the U.S. Government thereby incurs no responsibility nor any obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way specified the said drawings, specifications, or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permissions to manufacture, use, or sell any patented invention that may in any way be related thereto.

SPECIFICATION ANALYSIS SHEET		Form Approved Budget Bureau No. 119-R004	
<u>INSTRUCTIONS</u>			
<p>This sheet is to be filled out by personnel either Government or contractor, involved in the use of the specification in procurement of products for ultimate use by the Department of Defense. This sheet is provided for obtaining information on the use of this specification which will insure that suitable products can be procured with a minimum amount of delay and at the least cost. Comments and the return of this form will be appreciated. Fold on lines on reverse side, staple in corner, and send to preparing activity (as indicated on reverse hereof).</p>			
SPECIFICATION			
ORGANIZATION (Of submitter)		CITY AND STATE	
CONTRACT NO.	QUANTITY OF ITEMS PROCURED	DOLLAR AMOUNT \$	
MATERIAL PROCURED UNDER A			
<input type="checkbox"/> DIRECT GOVERNMENT CONTRACT <input type="checkbox"/> SUBCONTRACT			
1. HAS ANY PART OF THE SPECIFICATION CREATED PROBLEMS OR REQUIRED INTERPRETATION IN PROCUREMENT USE? A. GIVE PARAGRAPH NUMBER AND WORDING.			
B. RECOMMENDATIONS FOR CORRECTING THE DEFICIENCIES.			
2. COMMENTS ON ANY SPECIFICATION REQUIREMENT CONSIDERED TOO RIGID			
3. IS THE SPECIFICATION RESTRICTIVE? <input type="checkbox"/> YES <input type="checkbox"/> NO IF "YES", IN WHAT WAY?			
4. REMARKS (Attach any pertinent data which may be of use in improving this specification. If there are additional papers, attach to form and place both in an envelope addressed to preparing activity)			
SUBMITTED BY (Printed or typed name and activity)		DATE	

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