



DEPARTMENT OF THE NAVY
NAVAL SEA SYSTEMS COMMAND
1333 ISAAC HULL AVE SE
WASHINGTON NAVY YARD DC 20376-0001

IN REPLY REFER TO
9070
Ser 05Z/234
17 Mar 16

From: Commander, Naval Sea Systems Command (SEA 05Z34)
To: Commanding Officer, Space and Naval Warfare Systems Center
Atlantic

Subj: LITHIUM BATTERY SAFETY CERTIFICATION; LITHIUM BATTERIES
USED IN THE AN/PRC-152A RADIO SYSTEM

Ref: (a) SSC-ATL ltr 5090 Ser 4125/01960 of 18 Jun 15
(b) NAVSEAINST 9310.1C
(c) NAVSEA ltr 5400 Ser 05B2/118 of 29 Sep 15
(d) OASRDA memo, "Clarification of responsibilities
between NAVSEA and MSC" of 21 Jan 09

Encl: (1) NSWCCD ltr 9077 Ser 63/16-019 of 10 Mar 16

1. In response to your request of reference (a), as the Lithium Battery Certification Authority in accordance with reference (b) and authorized by reference (c), the Naval Sea Systems Command (Code 05Z34) concurs with your use of the Main Power Rechargeable Battery, Harris Part Number (P/N) 12041-2200-02, in the AN/PRC-152A multiband handheld radio. This lithium battery safety certification is based on the Technical Agent's (Naval Surface Warfare Center, Carderock Division) safety evaluation provided in enclosure (1) and applies to use from all Navy shore facilities, as well as all Naval and Military Sealift Command (MSC) surface ships and Naval aircraft.

2. Military Sealift Command (MSC) Code N7, has reviewed the documentation for the Harris P/N 12041-2200-02 battery manufactured by Ultralife and the AN/PRC-152A radio. As responsible agent for the maintenance of MSC platforms per reference (d), they concur with granting lithium battery safety certification to the Harris P/N 12041-2200-02 battery manufactured by Ultralife for use in the AN/PRC-152A radio, including authorization for transport and use aboard all MSC vessels. Concurrence is documented in enclosure (1).

3. Naval Sea Systems Command (SEA-05Z34) has reviewed the documentation for the Harris P/Ns 12041-2200-02 lithium-ion batteries and the AN/PRC-152A radio system. As Technical Warrant Holder for shipboard batteries they concur with this recommendation to grant lithium battery safety certification to

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the batteries for use in this system, including operations and transport on Navy surface ships. Concurrence is documented in enclosure (1).

4. The Naval Air Warfare Center, Code 4.4.5.2, has reviewed the documentation for the Harris P/Ns 12041-2200-02 lithium-ion batteries and the AN/PRC-152A radio system. As designated authority for battery design and suitability for Naval Aircraft, they concur with this recommendation to grant lithium battery safety certification to the batteries for use in this system, including carriage of these items aboard Naval aircraft. Concurrence is documented in enclosure (1).

5. The NAVSEA point of contact is Joseph Vignali (SEA05Z34) on DSN 326-5412, commercial (202) 781-5412 or e-mail: joseph.vignali@navy.mil.


J. VIGNALI
By direction

Copy to:
NSWCCD (Code 636/J. Simmons)
NSWC Crane (Code GXS/M. Tisher)
NAVSEA (SEA05Z34/D. Cherry)
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DEPARTMENT OF THE NAVY
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IN REPLY REFER TO
9077
63/16-019
10 Mar 16

From: Commanding Officer, Naval Surface Warfare Center ,Carderock Division,
To: Commander, Naval Sea Systems Command (SEA05Z34)

Subj: SAFETY REVIEW OF LITHIUM BATTERIES USED IN THE AN/PRC-152A
RADIO SYSTEM

Ref: (a) SSC-ATL ltr 5090, Ser 4125/01960 of 18 Jun 15
(b) NAVSEA TM S9310-AQ-SAF-010 of 15 Jul 10
(c) NAVSEA INST 9310.1c of 12 Aug 15
(d) NOSSA ltr 8020, Ser N841/1293 of 24 Aug 10
(e) NOSSA ltr 8020, Ser N841/886 of 12 Jun 14
(f) OASRDA memo, "Clarification of responsibilities between NAVSEA and MSC," of
21 Jan 09
(g) MSCHQ ltr 4700, Ser N7/1613 of 8 Mar 16
(h) NAVSEA 05Z34 (Mr. D. Cherry)/NSWC Carderock (Ms. J. Simmons) email of
11 Feb 16
(i) NAVAIR 4.4.5.1 (Mr. M. Hurley)/NSWC Carderock (Ms. J. Simmons) email of
11 Feb 16

Encl: (1) "Navy Lithium Battery Safety Testing of the Bren-Tronics MBITR Lithium Ion
Battery" by Alex Askari, Michael Wartelsky and Julie Banner

1. As requested in reference (a), the Naval Surface Warfare Center, Carderock Division, (NSWCCD) Advanced Power and Energy Branch (Code 636), conducted a lithium battery safety review of the lithium batteries used in the AN/PRC-152A multiband handheld radio. This review was conducted in accordance with (IAW) references (b) and (c). As designated technical agent IAW reference (c), Code 636 is redirecting this lithium battery safety evaluation and recommendation to the Naval Sea Systems Command (NAVSEA) Certification Authority for the Navy's Lithium Battery Safety Program, SEA05Z34, for action. This letter conveys our recommendation to grant lithium battery safety certification to the Main Power Rechargeable Battery, Harris Part Number (P/N) 12041-2200-02, and the Crypto Hold-Up Battery, P/N B41-0019-018, for use in the AN/PRC-152A.

2. The AN/PRC-152A is a multiband handheld radio which provides reliable tactical communications performance in a small, lightweight package that maximizes user mobility. The AN/PRC-152A provides multi-band, multi-mode operation that enables a wide variety of applications for the user, including ground to ground, ground to air and Tactical Satellite (TACSAT) communications. Similar Harris radios with different functionality have been granted lithium battery safety certifications as documented in references (d) and (e).

Enclosure (1)

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3. The Main Power Rechargeable Battery, Harris P/N 12041-2200-02, manufactured by Ultralife is composed of six (6) Panasonic 18650 (P/N NCR-18650F) 2.9 Ampere-hour (Ah) cells arranged in a three-in-series, two-in-parallel (3S2P) configuration. This electrical configuration translates to a voltage output of 11.1 volts (V) and a rated capacity of 5.8 Ah, for a total energy content of 64 Watt-hours. The battery includes safety circuits that protect the cells from overcharge, over-discharge and over-current conditions. In addition, each Panasonic 18650 cell has two (2) integrated safety devices: a current interrupt (CID) device and a positive temperature coefficient (PTC). The individual cells are approved by the Underwriters Laboratory (UL) under file MH12210.

4. Although the Harris P/N 12041-2200-02 lithium-ion battery manufactured by Ultralife has not been safety tested IAW references (b) and (c), NSWCCD Code 636 has conducted these safety tests on comparable batteries comprised of Panasonic P/N NCR-18650F cells produced by Bren-tronics as P/N BT-70716BE. Those test results have supported a recommendation for granting battery safety approvals for Navy and USMC use, as documented in reference (e).

5. Navy safety testing was conducted on the Bren-tronics P/N BT-70716BE battery pack, as described in enclosure (1). Tests included evaluation of the batteries' responses to short circuit, overcharge, over-discharge, electrical safety device, high temperature and aging conditions. The batteries responded benignly to short circuit, overcharge, over-discharge, and aging tests; and only responded with venting or fire under high temperature and overcharge abuses with the safety devices bypassed. Much of the safety character of the Bren-tronics P/N BT -70716BE battery, as validated by the tests described above, is attributed to the Panasonic NCR-18650F cell performance under various abuse conditions. Thus, as long as the battery management electronics in the Harris P/N 12041-2200-02 work as designed, similar safety characteristics as those demonstrated on the Bren-tronics P/N BT-70716BE battery should apply to the Ultralife version of the Harris P/N 12041-2200-02 battery. Given that the safety electronics of these batteries are reported to be identical to what was previously fielded in the Harris P/N 12041-2100 batteries used in the AN/PRC-152 radio, Code 636 considers their performance to be verified as well.

6. Based on the acceptable lithium battery safety test results documented for both the previous, fielded versions of Harris radio batteries and a similar battery using the same Panasonic NCR-18650F cell (Bren-Tronics P/N BT-70716BE), as well as the safety history of use of these batteries in the RF-310M-HH radio, NSWCCD Code 636 recommends granting lithium battery safety certification for the use of the Harris P/N 12041-2200-02 battery manufactured by Ultralife in the AN/PRC-152A radio. This recommendation applies to use from all Navy shore facilities, as well as all Naval and Military Sealift Command (MSC) surface ships and Naval aircraft.

7. MSC Code N7 has reviewed the documentation for the Harris P/N 12041-2200-02 battery manufactured by Ultralife and the AN/PRC-152A radio. As responsible agent for the maintenance of MSC platforms per reference (f), they concur with granting lithium battery safety certification to the Harris P/N 12041-2200-02 battery manufactured by Ultralife for use in the AN/PRC-152A radio, including authorization for transport and use aboard all MSC vessels. Concurrence is documented in reference (g).

Subj: SAFETY REVIEW OF LITHIUM BATTERIES USED IN THE AN/PRC-152A
RADIO SYSTEMS

8. Naval Sea Systems Command (SEA-05Z34) has reviewed the documentation for the Harris P/Ns 12041-2200-02 lithium-ion batteries and the AN/PRC-152A radio system. As Technical Warrant Holder for shipboard batteries they concur with this recommendation to grant lithium battery safety certification to the batteries for use in this system, including operations and transport on Navy surface ships. Concurrence was provided via electronic mail given as reference (h).

9. The Naval Air Warfare Center, Code 4.4.5.2, has reviewed the documentation for the Harris P/Ns 12041-2200-02 lithium-ion batteries and the AN/PRC-152A radio system. As designated authority for battery design and suitability for Naval Aircraft, they concur with this recommendation to grant lithium battery safety certification to the batteries for use in this system, including carriage of these items aboard Naval aircraft. Concurrence was provided via electronic mail given as reference (i).

10. NSWCCD Code 636 concurs that the Crypto Hold-Up Battery Harris P/N B41-0019-018 and alternate commercial Crypto Hold-Up Battery P/N BR2330 coin cells are covered by the blanket safety approval of reference (b), section 3-3. No other safety approval is required for these cells used as the HUB batteries in the AN/ARC-152A radio.

11. The Naval Surface Warfare Center, Carderock Division, Advanced Power and Energy Branch, Code 636 point of contact is Ms. Julie Simmons, commercial (301) 227-1853, e-mail: julie.simmons@navy.mil or Ms. Heidi Hansen, commercial (301) 227-1673, e-mail: heidi.hansen@navy.mil.


PETER B. KELLER
By direction



DEPARTMENT OF THE NAVY

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IN REPLY REFER TO:

5090

Ser 4125/01960

18 Jun 2015

From: Commanding Officer, Space and Naval Warfare Systems Center Atlantic

To: Commander, Naval Surface Warfare Center, 9500 MacArthur Boulevard, West Bethesda, MD 20817 (Attn: Ms. J. Simmons, Code 6160)

Subj: Safety Review of Lithium Battery Used in the AN/PRC-152A Radio Systems, AN/PRC-152A (V)5-AN/PRC-152A(V)8 (System Nomenclature Pending)

Ref: (a) NAVSEA Technical Manual S9310-AQ-SAF-010 of 19 Aug 04
(b) NAVSEA Instruction 9310.1B Ser 06/487 of 13 Jun 09

Encl: (1) Ultralife MSDS (PDF) for Main Power Battery, 12041-2200-02, Lithium-Ion ION, Main System Rechargeable Battery

1. In accordance with reference (a) as required by reference (b) the SPAWAR Atlantic PRP ISEA requests that Naval Surface Warfare Center, Carderock Division, Systems and Materials for Power and Protection Branch (Code 616) conduct a safety review of the AN/PRC-152A Main Power Rechargeable Battery P/N 12041-2200-02, Battery Type Lithium-Ion (Li-ION), National Stock Number (NSN) 6140-01-548-7566, 1 required, (5.8 A) The AN/PRC-152A Radio Systems coin cell Crypto Hold-Up Battery, P/N B41-0019-018, Battery Type Li-ION, NSN 6135-01-606-8244, 1 required, (3V, 255 m AH).

2. System Description and Use: The AN/PRC-152A is a multiband handheld radio which provides reliable tactical communications performance in a small, lightweight package that maximizes user mobility. The AN/PRC-152A provides multi-band, multi-mode operation. This enables a wide variety of applications for the user, including ground to ground, ground to air and Tactical Satellite (TACSAT) communications. Since much of this information is highly sensitive, encryption is critical.

3. The AN/PRC-152A will be widely fielded by the Navy and other DoD elements and will be used by active duty and reserve military personnel while in garrison, field environments, during transport operations (aircraft, train, vehicular and shipboard) and in shipboard portable applications. The radio is used in both CONUS and OCONUS mission areas by Navy Expeditionary Forces (NECC/NSW/NBG) and

Reference (a)

Subj: Safety Review of Lithium Battery Used in the AN/PRC-152A
Radio Systems, AN/PRC-152A (V)5-AN/PRC-152A(V)8 (System
Nomenclature Pending)

by shipboard crews for shipboard and portable emergency
communications. This radio is similar with the Harris AN/PRC-152.

4. We requests that this package be reviewed and that a response be
returned. Any questions concerning this request should be addressed
to Michael Le, SPAWAR PRP ISEA Project Team Lead (757)541-5188
Mike.le@navy.mil.

Reuben S. Turner
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By Direction

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