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

IN REPLY TO

NAVSEAINST 8394.2E
Ser PEO IWS 3.1/655
28 Feb 03

NAVSEA INSTRUCTION 8394.2E

From: Commander, Naval Sea Systems Command

Subj: MK 41 VERTICAL LAUNCHING SYSTEM SAFETY AND DESIGN PRECEPTS

Ref: (a) OPNAVINST 8020.14
(b) NAVSEA Ltr 8394 Ser 410/509 of 18 Nov 85 (NOTAL)

Encl: (1) Exception to Precept 4b.

1. Purpose. Per reference (a), to establish as command policy the precepts used for system safety and design-philosophy of the MK 41 Vertical Launching System (VLS).

2. Cancellation. NAVSEAINST 8394.2D of 20 Mar 00.

3. Background. Reference (b) established a "Blue Ribbon" MK 41 VLS Safety Review. This review addressed all aspects of the MK 41 VLS safety and design philosophy and the Executive Panel found that the system design is safe. Additionally, this panel emphatically stated that the precepts used in the design for MK 41 VLS safety "... must be rigorously emphasized and reinforced during the execution of fleet introduction and life cycle support." These precepts were issued as Naval Sea Systems Command (NAVSEA) policy in NAVSEAINST 8394.2 of 9 July 1986, and amended by subsequent revisions.

4. Policy. It is the policy of the Commander, Naval Sea Systems Command (COMNAVSEASYSCOM) that the MK 41 VLS safety and design are based on the following precepts:

a. That, the MK 41 VLS is operated and maintained only by trained personnel using authorized procedures.

b. That a dead electrical missile interface is always maintained until a missile is intended to be launched with the exception of the procedure outlined by enclosure (1).

c. That no simulators of any type will be mixed with live ordnance except during highly controlled special test and evaluation scenarios.

d. That no Developmental Test (DT) ordnance, programs or Weapons Control Systems (WCS) will be mixed with tactical MK 41 VLS ordnance or programs.

5. Action

a. SEA 00V, Director for DON ordnance safety and DOD explosive ordnance disposal technology and training.

(1) Approve waivers to this instruction when presented with appropriate justification and when supported by appropriate safety precautions.

b. Program Executive Officer for Integrated Warfare System (PEO IWS), IWS 3.1. Program Manager, Surface Launching Systems.

(1) Issue policy, promote, and amplify the safety oriented precepts for the MK 41 VLS throughout the command and fleet.

(2) Develop and maintain, through liaison with the Chief of Naval Operations (CNO), Naval Education and Training (NET) and Fleet and Type Commanders, a program to educate forces afloat in the system precepts noted above.

(3) Ensure that activities, which conduct certifications, fleet training, and inspections of various types, are familiar with these precepts and that discrepancies identified during the periodic fleet visits are promptly reported to this command.

(4) Draft and maintain policy which stipulates how and under what conditions simulators are authorized for use in the MK 41 VLS.

6. Request for Waiver. When waivers to this instruction are required, an official request for waiver must be submitted to SEA 00V via PEO IWS. This waiver request will include justification and note safety precautions to be implemented during the period the waiver is in effect.

P. M. BALISLE

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EXCEPTION TO PRECEPT 4b.

1. This exception allows the TOMAHAWK Weapon Control System (TWCS), the Advanced TOMAHAWK Weapon Control System (ATWCS) and the Tactical TOMAHAWK Weapon Control System (TTWCS) to electrically access the guidance set of conventional BLK II and BLK III missiles to query the missile identification and to reprogram the TLAM Global Positioning System (GPS) receiver and Digital Scene Matching Area Correlator (DSMAC) computer programs if necessary. This exception also allows TTWCS to electrically access the guidance set of conventional BLK IV missiles to query the missile identification and to reprogram the Operational Flight Software (OFS), Navigation Flight Software (NavFS), Anti-Jam Global Positioning System Receiver Flight Software (GFS), Digital Scene Matching Area Correlator Flight Software (DFS) and the Satellite Data Link Flight Software -Controller/Orderwire/ Digital Signal Processing (SFS C/O/D) computer programs if necessary. This will be accomplished outside of the launch sequence in order to prevent adverse impact to the TOMAHAWK launch timeline.

2. The TWCS/ATWCS/TTWCS operator is permitted under the following specific conditions and controls to perform the BLK II/III and BLK IV (TTWCS only) tasks outlined above. The conditions and controls are:

a. The Canister Safe and Enable Switch (CSES) on all loaded MK-14 canisters in the launcher(s) will be in the safe position.

b. Prior to selection of any missile for query or reprogramming, the TWCS/ATWCS/TTWCS program/operator shall verify that:

(1) Authorization has been received from the ship's Commanding Officer or designated representative.

(2) VLS Launch Enable is not enabled for any launcher.

(3) There are no active engagement plans.

(4) All CSES on all loaded MK-14 canisters in all active modules are in the safe position.

c. The TWCS/ATWCS/TTWCS will use the Non-Launch Select Order to select the missile.

d. The TWCS/ATWCS/TTWCS will load no computer program into the missile which is capable of executing launch operations (i.e., neither the BLK II/III missile Operational Flight Program (OFP) nor the BLK IV missile Launch Capable Flight Software (LFS) will be used for this operation.)

e. During operations, the TWCS/ATWCS/TTWCS will periodically monitor the state of the CSES and order deselection of all missiles if the state changes to Enabled.

f. During operations, the TWCS/ATWCS/TTWCS will periodically monitor VLS Launch Enable and will order deselection of all missiles if the Launch Enable Status is reported to be in the Enabled State.

g. The VLS will safe and deselect the missile if the booster not safe condition is detected after cell selection.

h. The missile query/update function will normally be performed only when the ship is at sea. If this function is required to be performed pierside, the ship's Commanding Officer must obtain Type Commander's approval prior to conduct.

i. A dead electrical missile interface for all ordnance, Electro-explosive devices, and arming circuits will be maintained.

j. For BLK II/III missiles (TWCS/ATWCS/TTWCS): "Missile Identification Retrieval Software (MIRS) and Conventional Inventory and DFS/GFS Download Processing" and for BLK IV missiles (TTWCS only): "Missile Inventory and Operational Embedded Software (OES) Update Processing" is not to be used for fault isolation or as a generic diagnostic software for the TOMAHAWK Weapon Control System (TWCS), Advanced TOMAHAWK Weapon Control System (ATWCS), Tactical TOMAHAWK Weapon Control System (TTWCS), MK-41 Vertical Launching System (VLS), or the TOMAHAWK missile either pierside or at sea.