



DEPARTMENT OF THE NAVY

NAVAL SEA SYSTEMS COMMAND  
2531 JEFFERSON DAVIS HWY  
ARLINGTON VA 22242-5160

IN REPLY REFER TO

NAVSEAINST 9304.1C  
Ser O3E/028  
14 Aug 95

NAVSEA INSTRUCTION 9304.1C

From: COMMANDER, NAVAL SEA SYSTEMS COMMAND

Subj: SHIPBOARD ELECTRICAL CABLE AND CABLEWAY INSPECTION AND REPORTING PROCEDURES

Ref: (a) DOD-STD-2003, -1, -2, -3, -4, -5, Electrical Plant Installation Standard Methods, Superseding NAVSEA S9300-AW-EDG-010/EPISM Containing NAVSEA Dwg. No. 803-5001027

Encl: (1) Minimum Qualifications for Electrical Cable Installation and Repair Onboard Navy Ships  
(2) Inspection Criteria for Electrical Cables and Cableways  
(3) Inspection Report Format

1. PURPOSE. To modify Naval Sea Systems Command (NAVSEA) technical policy and actions necessary to identify and correct shipboard electrical cable and cableway hazards.

2. CANCELLATION. NAVSEAINST 9304.1B OF 7 September 1990.

3. BACKGROUND

a. A special technical review of the fire onboard USS TATTNALL (DDG 19) in January 1984 identified electrical cable installation deficiencies as the most probable cause of fire. Subsequent inspections of other ships show that improper shipboard cable installation practices are a universal problem.

b. Over the years as ship systems have been added, modified and deleted, numerous violations of the technical requirements for proper installation of cables have occurred. Contributing factors have been (1) lack of knowledge or non-enforcement of technical requirements and installation procedures, (2) mechanical interference, (3) installations shortcuts to reduce cost or meet schedule, (4) poor workmanship, and (5) insufficient attention to cable installation requirements during ship and alteration design.

c. Shipboard electrical cable deficiencies identified fall into three categories:

(1) Immediate Hazard - Those items which are, or have the immediate potential to be, personnel safety hazards, electrical fire hazards, or which negate firebreak integrity are considered CATEGORY 1 items.

(2) Potential Hazard - Those items which require corrective action to ensure continued reliable safe performance or maintain watertight integrity but are not of immediate danger to personnel or equipment are considered CATEGORY 2 items.

(3) Non-hazardous - Those items which are not hazardous to personnel and equipment but are not in compliance with approved standard installation practices are considered CATEGORY 3 items.

#### 4. POLICY

a. New electrical cable plans and/or installations, regardless of planning or installing activity (private or public), shall be in accordance with current NAVSEA technical requirements as set forth in reference (a).

R) b. CATEGORY 1 waivers will not be approved. Authority for CATEGORY 2 and 3 waivers to reference (a) shall be vested in the cognizant Supervisor of Shipbuilding (SUPSHIP) Chief Engineer or Naval Shipyard Chief Engineer with a copy of the approved waiver to the cognizant NAVSEA Ship Acquisition Program Manager for new construction ships and the respective Type Commander (TYCOM) for repair availabilities.

R) c. Shipboard electrical cable installations will be inspected by any team qualified in accordance with paragraph 4e during the Pre-Overhaul Test and Inspection (POT&I) process or pre-availability inspections conducted prior to the ship undergoing an industrial availability longer than 6 weeks. Inspections shall be conducted using the inspection criteria provided in enclosure (2). CATEGORY 1 items identified during a POT&I will be reported to the ship's Commanding Officer. Qualified ship's force personnel should start immediate corrective action of CATEGORY 1 items. Ship's force will ensure that all uncorrected deficiencies are documented in the Current Ship Maintenance Plan (CSMP) for correction during next availability. A copy of the CSMP shall be furnished to the respective TYCOM. Those CATEGORY 1 items not repaired at the availability start will be screened for repair during the upcoming availability. For availabilities longer than 6 weeks, the remaining deficiencies will be screened for repair and scheduled at the TYCOM discretion. The TYCOM may screen these

items to any qualified work force (i.e., SIMAS, naval shipyard, ship's force, or other).

d. Those maintenance or modernization availabilities not receiving a POT&I or "Find and Fix" inspection within 12 months of the availability shall require an "inspect and report" of electrical cableway deficiencies immediately upon arrival for the availability by any team qualified in accordance with paragraph 4e. All deficiencies shall be screened for correction in accordance with availability length and TYCOM discretion as stated in paragraph 4c above. (R)

e. Special inspection teams (i.e., Shore Intermediate Maintenance Activity (SIMA), naval shipyard, ship's force or other) will be established to inspect and repair shipboard cable installations and members of the team shall be qualified in accordance with enclosure (1).

f. Unused (dead-ended) cable for which no known requirement exists, as determined by ship's force, shall be removed or properly sealed on both ends per reference (a) immediately. After unused cable is removed, vacated stuffing tubes, multiple cable penetrations (MCPs), kickpipes, etc., shall be blanked off per reference (a). Cables installed for future use shall be sealed at both ends per reference (a), and labeled at both ends for the specific use. (R)

g. This instruction applies only when reference (a) is invoked in a contract or work package.

h. NAVSEA Code 07Q is the point of contact for issues involving implementation of the electrical cableway improvement program. NAVSEA Code 03E is the point of contact for technical issues involving this instruction. (R)

## 5. ACTION

a. NAVSEA (SEA 07) has developed cable inspection and repair team training courses and qualification requirements. Training material have been distributed and are available to naval shipyards, SUPSHIPS, Ship Repair Facilities (SRFs) and Fleet organizations. Enclosure (1) sets forth the minimum training and qualification requirements for naval shipyards and SUPSHIPS. It also provides the recommended training and qualification requirements for ship's force. TYCOMs are requested to establish inspection and repair teams supported by ship's force to fulfill the requirements of this instruction. When inspections are conducted in preparation for depot availabilities or arrival

inspections where POT&Is are not performed, qualified electrical cableway inspectors shall be inspection team members.

b. NAVSEA Ship Program Managers will ensure that the inspection requirements of paragraphs 4c, d and f are included in all preliminary Ship Alteration and Repair Packages (SARPs) and Overhaul Work Packages (OWPs).

c. TYCOMs are requested to establish a program of inspection and to incorporate provisions for in-process and final inspections in all SARPs and OWPs. These inspections may be conducted by any team qualified in accordance with paragraph 4e.

d. NAVSEA codes responsible for initiating, reviewing, or approving ORDALTs, SHIPALTs, MACHALTs, etc. shall ensure that the requirements of paragraph 4a are included as part of the alteration.

e. SUPSHIPS shall:

(1) Establish a formal quality assurance program to ensure that the work done by private sector facilities conforms with reference (a) and is quality work.

R) (2) Periodically audit contractor practices and conduct and document in-process and final cableway inspections to ensure compliance with NAVSEA technical requirements. All deficiencies identified during these inspections shall be recorded and tracked to ensure proper corrective action is performed.

(3) Ensure that a final electrical cableway inspection, using the criteria of enclosure (2), is conducted on the areas affected by the work package prior to final ship acceptance and/or end of repair availabilities. Final inspection can be accomplished by the following methods:

(a) Use the aggregate of contractor in-process inspections of completed work affected by contract requirements in conjunction with the SUPSHIP in-process inspections to ensure all work has been inspected and accepted; or

(b) Use a one-time final inspection conducted by the contractor and randomly checked by SUPSHIP; or

(c) Perform a one-time final inspection of the areas affected by the contract requirements.

(d) Provide the results of either above paragraphs 5e(3), (a), (b) or (c) to the cognizant NAVSEA Ship Acquisition

Program Manager for new construction ships and the respective TYCOM for repair availabilities.

(4) Notify ship's force in writing that cableway training is available prior to the start of electrical work within the scheduled availability work packages. (R)

f. Naval Shipyards and Ship Repair Facilities shall:

(1) Establish a formal electrical installation quality control (QC) program to ensure that work done is in compliance with reference (a) and is quality work.

(2) Conduct and document in-process and final electrical cableway inspections on the areas affected by the work package. Ensure all reported items are corrected prior to final ship acceptance and/or end of repair availability. (R)

(3) Arrange and make available to ship's force personnel the training in enclosure (1) prior to ship's force starting electrical work within a naval shipyard or CNO scheduled availability work package.

g. Special inspection teams, referenced in paragraph 4e, will take the following action:

(1) Make sure that all CATEGORY 1 deficiencies are immediately corrected, or, at a minimum, corrected to the extent they can be downgraded to a CATEGORY 2.

(2) Ensure that all remaining deficiencies are identified to the Commanding Officer for including in the Ship's CSMP for correction at the next availability. (R)

(3) Provide a complete inspection report, as specified in enclosure (3), with copies to the cognizant NAVSEA Ship Program Manager, Ship's Commanding Officer and the respective TYCOM.

h. All contracting activities will be responsible for the quality assurance of electrical cable installations by the organizations and vendors with which they contract. Especially those contracts not administered by SUPSHIPS or naval shipyards (i.e., SHIPALTS contracted to vendors/contractors with no government oversight). (R)

NAVSEAINST 9304.1C

6. REPORTS. Inspection reports required by this instruction are exempt from reports control as defined in SECNAVINST 5214.2B of 6 December 1988.



L. A. FELTON  
Chief Engineer

Distribution:

SNDL 22A Fleet Commanders  
24 Type Commanders (less 24E and 24J)  
26Z SIMA  
FB30 NAVSHIPREPFAC  
FKP7 NAVSHIPYD  
FKP8 SUPSHIP  
NAVSEA Special List Y2

Copy to:

SNDL A3 CNO  
C84B NAVMATDATASYSGRU  
FL1 COMNAVDAC (Code 82)  
FT88 EDOSCOL  
O9A11 (5)  
O9A115 (50)

Naval Publications and Printing Service Office, NDW

Stocked: (250 copies)  
Aviation Supply Office  
Naval Publications and Forms Center  
5801 Tabor Avenue  
Philadelphia, PA 19120-5099

**MINIMUM QUALIFICATIONS FOR ELECTRICAL CABLE INSTALLATION  
AND REPAIR ON BOARD NAVY SHIPS**

- PART I** Minimum Qualifications Requirements
- PART II** Summary of Training Materials
- PART III** Cableway Qualification Sheet

**PART I. MINIMUM QUALIFICATIONS REQUIREMENTS**

1. Minimum requirements for naval shipyard personnel are as follows:

a. All first and second line supervision involved with electrical cable installations onboard Navy ships will view all videotapes contained in Part II of enclosure (1) and demonstrate proficiency in identifying cable deficiencies and categories to a qualified person designated by the electrical shop superintendent.

b. All electricians involved in the installation and repair of shipboard electrical cables will be required to complete training modules identified in Part II of enclosure (1) and by use of mock-up or shipboard demonstrate proficiency in each repair item. Demonstration to be made to a fully qualified individual.

**NOTE:** Qualifications on individual training modules are acceptable to work that specific item.

c. All shipyard personnel utilized for Quality Assurance of electrical cable installation or repair must be qualified under paragraph 1(a).

d. Part III of enclosure (1) shall be completed and maintained for each individual trained and qualified.

2. Minimum requirements for SUPSHIP personnel:

a. SUPSHIP personnel involved with the inspection or acceptance of electrical cableway work on Navy ships shall be trained using the training modules identified in Part II of enclosure (1). They shall demonstrate, to qualified personnel, proficiency in identifying cable deficiencies and deficiency categories. The original cadre of SUPSHIP electrical cable inspection personnel may be qualified by using qualified personnel from the naval shipyards or fleet maintenance activities. After qualification, the cadre of SUPSHIP personnel may then qualify other SUPSHIP personnel for inspection only.

b. Part III of enclosure (1) shall be completed and maintained for each individual trained and qualified.

3. Minimum requirements recommended for fleet maintenance activities (IMAs, SIMAs, RSGs, etc.):

a. Personnel performing Quality Assurance inspections on electrical cableway work, performed by their maintenance activity (or vendor contracted by their activity) shall be trained using training modules identified in Part II of enclosure (1) and demonstrate proficiency in identification and proper categorizing of cable deficiencies to a fully qualified electrical inspector designated by the maintenance activity. (An official Navy NEC EM-4613 will suffice for qualification.)

b. All electrical personnel involved with electrical cable installation and repairs must be qualified in the work he or she is performing by using the respective training in Part II of enclosure (1). Qualification must be certified by a person fully qualified in electrical cableway repair.

c. Personnel performing "Find and Fix" evaluations shall be fully qualified as electrical cable repair personnel.

d. Applicable sections of Part III of enclosure (1) should be completed, signed by a fully qualified person, and maintained for each individual trained and qualified.

4. Minimum requirements recommended for ship's force personnel:

a. All personnel responsible for Quality Assurance on electrical cable work accomplished on their ship will be trained, using training modules identified in Part II of enclosure (1), and demonstrate proficiency in identification of proper electrical cable work to a qualified person (NEC EM-4613 qualified inspectors are acceptable) designated by the ship's electrical officer.

b. All personnel involved with installation or repair of electrical cableways onboard ship shall be qualified by use of training modules identified by asterisks in Part II of enclosure (1), and demonstrate proficiency in each item of repair to a fully qualified person. An NEC EM-4613 qualified inspector or a qualified petty officer inspector designated by the electrical officer will suffice.

c. Applicable sections of Part III of enclosure (1) should be completed, signed by the electrical officer, or designee, and maintained for each individual trained and qualified.

5. Point of contact for the electrical cableway improvement program is NAVSEA 07Q, (DSN) 332-4222 or (C) 703-602-4222.

## PART II. SUMMARY OF TRAINING MATERIALS

<u>No.</u>	<u>Module Title</u>	<u>Time</u>	<u>SAVPIN</u>	<u>NNSY</u>
1	Wired for Disaster	20:00	802249DN	NE 0292-84-11
* 2	Stuffing Tubes Instructors Guide (IG) Student Guide (SG)	17:11	802250DN	NE 0416-93-09
* 3	Multicable Penetrators (1) Advantages (2) Types (3) Parts Multicable Penetrator (1) Installing a Multicable Penetrator (2) Installing a Multiplug Multicable Penetrator (1) Adding Cable to an Existing MCP (IG, SG)	27:30	802251D	NE 0466-92-01
* 4	Dead-Ending Cables (IG, SG)	7:35	802252DN	NE 0347-92-01
* 5	Cable Splicing (1) Introduction (2) Splicing FSGA9 (3) Splicing 2SWU (4) Splicing MSCU& (IG, SG)	19:55	802253DN	NE 0385-85-02
6	Planning Cable Routes	16:00	802234DN	NE 0386-92-09
* 7	Chafing Rings (IG, SG)	17:00	802255DN	NE 0423-92-03
8	Hangers (IG, SG)	14:20	802256DN	NE 0424-92-01
* 9	Cable Banding (1) Proper Cable Protection (2) Approved Materials (3) Proper Procedures (IG, SG)	22:04	802257DN	NE 0892-91-10

<u>No.</u>	<u>Module Title</u>	<u>Time</u>	<u>SAVPIN</u>	<u>NNSY No</u>
10	Removal and Installation Techniques (Pamphlet)	16:33	802258DN	NE 0427-93-06
* 11	Penetration of Equipment & Connection Boxes (1) Types & Applications of connectors (2) Box (3) Nylon Stuffing and Nylon Terminal tubes (4) Metal Stuffing Tubes (IG, SG)	29:00	802259DN	NE 0449-92-08
* 12	Cable Repairs (1) Introduction (2) Use of Cured Neoprene (3) Cable Jacket Sleeve (4) Shrinkable Repair Sleeve (IG, SG)	16:05	802260DN	NE 0457-92-01
* 13	Testing Cables (1) Introduction & Frisking (2) Insulation Resistance, Test (3) Continuity Test (IG, SG)	13:21	802261DN	NE 0454-93-05
14	Inspection of Cables and Cableways (IG, SG)	No Video		
15	Special Tools and Equipment (1) Introduction (2) Safety Hot Work (3) Cable & Conductor Tools (4) Cable & Conductor Tools (5) Stuffing Tube Tools (6) Penetration Tools (IG, SG)	26:50	802262DN	NE 0456-92-01

\* SEE PARAGRAPH 4b, PAGE 3 OF ENCLOSURE (1)

PART III. CABLEWAY QUALIFICATION SHEET

NAME: \_\_\_\_\_  
 LAST FIRST MIDDLE INITIAL  
 RATE/POSITION: \_\_\_\_\_ SSN: \_\_\_\_\_ CHECK NO: \_\_\_\_\_  
 ACTIVITY: \_\_\_\_\_  
 LOCATION SITE OF TRAINING: \_\_\_\_\_

ATTRIBUTES	CERTIFIER'S SIGNATURE & DATE FOR CLASSROOM TRAINING	CERTIFIER'S SIGNATURE & DATE FOR OUT
1. BANDING WITHOUT CHANNEL RUBBER	_____	_____
A. BANDING WITH CHANNEL RUBBER	_____	_____
B. BANDING COAX CABLES . . . . .	_____	_____
2. TUBE PACKING . . . . .	_____	_____
A. HARD & SOFT PACKING . . . . .	_____	_____
B. RUBBER GROMMETS . . . . .	_____	_____
3. STUFFING TUBE BLANKING . . . . .	_____	_____
4. MCP ASSEMBLY AND DISASSEMBLY . . . . .	_____	_____
5. MCP BLANKING . . . . .	_____	_____
6. SPLICING . . . . .	_____	_____
A. SHIELDING CABLE . . . . .	_____	_____
B. UNSHIELDED CABLE . . . . .	_____	_____
C. ARMOR CABLE . . . . .	_____	_____
D. UNARMORED CABLE . . . . .	_____	_____
7. ENDSEALING CABLE . . . . .	_____	_____
8. CABLE JACKET REPAIR . . . . .	_____	_____
A. NONARMOR TYPE . . . . .	_____	_____
B. ARMOR TYPE . . . . .	_____	_____
9. PACKING NYLON TUBES . . . . .	_____	_____
10. BLANKING NYLON TUBES . . . . .	_____	_____
11. BLANKING UNUSED PENETRATIONS IN EQUIPMENT . . . . .	_____	_____
12. DRIP PROOFING NON-WATERTIGHT CONNECTORS/EQUIPMENT . . . . .	_____	_____
13. INSTALLATION OF ANTICHAFING DEVICES . . . . .	_____	_____
14. MOUNTING EQUIPMENT . . . . .	_____	_____
15. CABLE INSTALLATION (ARMOR, NONARMOR, COAX) . . . . .	_____	_____
16. CABLE REMOVAL (ARMOR, NONARMOR, COAX) . . . . .	_____	_____
17. REINSTALL CABLES PULLED OUT OF CONNECTORS . . . . .	_____	_____
18. INSTALLATION OF STRAPS, HANGERS AND COLLARS . . . . .	_____	_____
19. INSTALLATION OF FIRE STOP MATERIAL . . . . .	_____	_____
20. INSTALLATION OF COVERS . . . . .	_____	_____
21. USE OF PROPER TOOLS FOR TASK . . . . .	_____	_____
22. MINOR MOCK UP (I.E. LIGHTS, POWER, COMMUNICATIONS) . . . . .	_____	_____
23. UNDERSTANDING OF BEND RADIUS AND RADIUS . . . . .	_____	_____

QUALIFIED TO INSPECT ALL OF ABOVE \_\_\_\_\_  
 (CLASSROOM ONLY) Signature Rate/Position Date

QUALIFIED TO PERFORM ALL OF ABOVE \_\_\_\_\_  
 (CLASSROOM & OUT) Signature Rate/Position Date

## INSPECTION CRITERIA FOR ELECTRICAL CABLES AND CABLEWAYS

<u>ITEM</u>	<u>CRITERIA</u>	<u>CATEGORY</u>	<u>BIBLIOGRAPHY ITEM</u> <u>SEE PAGE 8</u>	
I.				
A.	<u>Installation</u>			
	1. Minimum bend radius exceed causing damage to cable.	1	b	(R
	2. Minimum bend radius exceeded; No cable damage.	3		(R
	3. Equipment connector supporting weight of cable (more than 32 inches of cable from last support to end use equipment). (18" from shock mounted motors).	1	a	(R
	4. Cables run on or near hot objects (steam or exhaust pipes, griddles, ovens, etc.)	1	a & c	
	5. Cable run outside of hangers.	3	a	(R
	6. Lack of slack at expansion.	2	a	
	7. Excess slack between hangers. (Minimum distance of 6'4" between deck and cables).	3		(R
	8. Excess cable slack stored in wireway.	3		(R
B.	<u>Damage</u>			
	1. Bulging, bubbling discoloration of cable jacket (evidence of overloading, overheating or hot spots).	1		
	2. Cable chafed or cut through outer jacket only.	2	a	

INSPECTION CRITERIA FOR ELECTRICAL CABLES AND CABLEWAYS

<u>ITEM</u>	<u>CRITERIA</u>	<u>CATEGORY</u>	<u>BIBLIOGRAPHY ITEM</u> <u>SEE PAGE 8</u>
	3. Cable chafed or cut through, inner wire insulation damage.	1	a
R)	4. Cable pulled out of equipment/junction box penetrations and leads exposed.	1	a & c
	5. Armored and unarmored cables in contact at an oblique angle causing chafing of unarmored jacket.	2	a
C. <u>Dead-ended</u>			
	1. Cables dead-ended and not sealed properly at both ends.	1	a & c
R)	2. Cables for future use not properly sealed on both ends and labeled at both ends for the specific use.	1	
	3. Cable dead-ended and end sealed properly.	3	
D. <u>Spliced</u>			
	1. Improper materials/methods used for splicing, or evidence of loose joints.	1	a
	2. Splice located in bend of cable.	2	a
II. <u>Banding</u>			
A. <u>All Cable Runs</u>			
	1. Banding cuts cable outer jacket (banding too tight).	1	a

## INSPECTION CRITERIA FOR ELECTRICAL CABLES AND CABLEWAYS

<u>ITEM</u>	<u>CRITERIA</u>	<u>CATEGORY</u>	<u>BIBLIOGRAPHY ITEM</u> <u>SEE PAGE 8</u>	
2.	Banding compressing outer jacket (banding too tight but not cutting jacket).	3	a	(R)
3.	Plastic tie wraps used in place of banding straps (metal banding strap required).	2		
4.	Cables secured to hanger with bailing wire.	1		(R)
5.	Bands cut and left in wireway.	2		(R)
6.	Channel rubber not installed where required.	2	a	
B. <u>Horizontal Cable Runs</u>				
1.	Banding not installed at breakout hangers before and after penetrations or at change of direction of wireway.	2	a	
C. <u>Vertical Cable Runs</u>				
1.	No banding or loose banding (banding required on every hanger).	2	a	
III.				
A. <u>Cableways</u>				
1.	Cable hangers or hardware cutting into the cable jacket.	1	a	

## INSPECTION CRITERIA FOR ELECTRICAL CABLES AND CABLEWAYS

<u>ITEM</u>	<u>CRITERIA</u>	<u>CATEGORY</u>	<u>BIBLIOGRAPHY ITEM</u> <u>SEE PAGE 8</u>
R)	2. Improper hanger spacing (Cable hangers are required at least every 32 inches except that hangers for multiple tier overhead aluminum decks shall be spaced every 16 inches).	2	a
	3. Inadequate cableway support (hangers, hardware, tiers, or cable straps missing) or welds cracked.	2	a
R)	4. Overload/Overcrowded cable hangers.	3	
R)	5. Maximum no. of tiers exceeded.	3	a
R)	6. Inadequate fastener length.	3	a
	7. 1/2" clearance between cable run and hangers above or structure not provided.	2	a
IV. <u>Equipment</u>			
A. <u>Covers</u>			
R)	1. Junction box or equipment covers loose or missing.	1	c
B. <u>Mounting</u>			
	1. Cable supporting the weight of equipment (power junction boxes, lighting fixtures switch boxes, etc.)	1	a & c
A)	2. Missing loose or improperly installed mounting hardware on equipment.	2	a & c

## INSPECTION CRITERIA FOR ELECTRICAL CABLES AND CABLEWAYS

<u>ITEM</u>	<u>CRITERIA</u>	<u>CATEGORY</u>	<u>BIBLIOGRAPHY ITEM</u> <u>SEE PAGE 8</u>	
<u>C. Cable Entrance</u>				
1.	Watertight penetrators not utilized for entrance to watertight equipment enclosures.	1	a	(R
2.	Drip loops, drip shields plastic sealer or bottom penetration not utilized for entrance to non-watertight drip proof equipment.	1	a	(R
3.	Cable can be moved in and out of tube. Improperly packed or not packed.	1	a	
4.	Nylon tube base loose in enclosure. O-ring missing.	1	a	
<u>V. DECK/BULKHEAD PENETRATIONS</u>				
<u>A. Non-watertight Deck or Bulkhead Cable Penetration</u>				
1.	No plastic sealer around cables through collars where required.	1	a & c	(R
2.	Chafing protection not installed at non-watertight deck or bulkhead cableway penetrations.	2	a	
3.	Chafing ring overloaded.	3		
4.	Inadequate chafing protection and damage evident.	1	a	

## INSPECTION CRITERIA FOR ELECTRICAL CABLES AND CABLEWAYS

<u>ITEM</u>	<u>CRITERIA</u>	<u>CATEGORY</u>	<u>BIBLIOGRAPHY ITEM</u> <u>SEE PAGE 8</u>
<u>B. Watertight Deck or Bulkhead Cable Penetrations</u>			
	1. No plastic sealer around cable at stuffing tubes which are exposed to the weather. Note: If plastic sealer is installed at locations other than those exposed to the weather, it is not required to be removed.	2	a
	2. Stuffing tube or kickpipe not utilized (cable installed without tube).	1	a & c
	3. Unused stuffing tube or kickpipe not plugged.	1	a
	4. Stuffing tube or kickpipe assembly incomplete (missing gland nut, packing, or pipe connector).	1	a
	5. Stuffing tube assembly incorrect (improper packing).	2	a
R)	6. Stuffing tube or kickpipe too large for size of cable.	3	a
	7. Multiple cable in a single stuffing tube or kickpipe.	2	a
	8. Stuffing tube or kickpipe damaged to point where complete assembly not possible (cracked welds, damaged threads, out-of-round, etc.) if firestop material is installed.	2	a

## INSPECTION CRITERIA FOR ELECTRICAL CABLES AND CABLEWAYS

<u>ITEM</u>	<u>CRITERIA</u>	<u>CATEGORY</u>	<u>BIBLIOGRAPHY ITEM</u> <u>SEE PAGE 8</u>
C.	<u>Watertight Deck or Bulkhead Penetrations Utilizing Multiple Cable Penetrations</u>		
1.	Insert blocks, compression bolts or filler blocks missing.	1	a & c
2.	Improper size blocks used for size cable installed violating watertight integrity.	2	a
3.	Incorrect type of RTV used to seal MCP blocks.	1	(R

BIBLIOGRAPHY

ITEM SUBJECT

- A. DOD-STD-2003, -1, -2, -3, -4, -5, ELECTRICAL PLANT INSTALLATION STANDARD METHODS. (Available in hard copy from Naval Publications and Forms Center, 5801 Tabor Ave., Philadelphia, PA 19120-5099; in microfiche and aperture cards from Portsmouth Naval Shipyard, Portsmouth, NH 03801).
- B. Data pertaining to ELECTRIC SHIPBOARD CABLE (Cable Comparison Handbook) MIL-HDBK-299(SH) dtd 3 April 1989 (Available from Naval Publications and Forms Center, 5801 Tabor Ave., Philadelphia, PA 19120-5099).
- C. NAVAL SHIPS' TECHNICAL MANUAL, NAVSEA S9086-KC-STM-000 Chapters 300 and 304. (Available from Naval Publications and Forms Center, 5801 Tabor Ave., Philadelphia, PA 19120-5099).

INSPECTION REPORT FORMAT

DATE: \_\_\_\_\_ HULL NUMBER: \_\_\_\_\_  
 INSPECTED BY: \_\_\_\_\_ INSPECTING ORGANIZATION: \_\_\_\_\_

SER#	COMP	LVL	FRM	P/S	POS	TYPE	CAT	DESCRIPTION	EQUIPMENT
5	6	7	8	9	10	11	12	13	14

1. DATE - Date of Inspection
2. HULL NUMBER - Ship's Hull # (DDG-2, CV-43, FFG-7, etc.)
3. INSPECTED BY - Person or persons performing inspection
4. INSPECTING ORGANIZATION - Activity Inspector is from
5. SER # - Sequential number assigned by Inspection Team Leader
6. COMP - Name or number of compartment inspected
7. LVL - Level of ship (01, 02, 1, 2, etc.)
8. FRM - Frame number where discrepancy located
9. P/S - Port, Starboard or centerline location of compartment on ship
10. POS - Position of discrepancy (in clock format, facing bow 12 o'clock C/L of compartment)
11. TYPE - PVC, armor, low smoke, rubber, etc.
12. CAT - Category of discrepancy - 1, 2, or 3
13. DESCRIPTION - Description of discrepancy (i.e., 3 Bulkhead stuffing tubes not blanked; cable pulled out of box connection in power panel; cable improperly dead-ended in wireway)
14. EQUIPMENT - Nomenclature of equipment (i.e., Power panel 3-103-4P-E; Junction box C-MC23; 400Ms Switchboard; Lighting connection box