U.S.S. PRAIRIE (AD-15)
FPO SAN FRANCISCO 96601

PRAIRIEINST 4885.1
REP:as

USS PRAIRIE INSTRUCTION 4885.1

From: Commanding Officer

Subj: Quality Assurance Program for Receipt, Handling, Storage and Transfer of Special Forms Radioactive Material

Ref: (a) U.S. Nuclear Regulatory Commission Rules and Regulations, Title 10, Code of Federal Regulations, Part 71
(b) PRAIRIEINST 5100.1 (series)

Encl: (1) Request for Transfer of Radioactive Material
(2) Maintenance Requirement Cards A-501, M-1 and A-502, M-1 monthly operational tests of Radiation Detection units

1. Purpose. To establish and maintain a Quality Assurance Program governing the handling, shipping, storing, operating, maintenance and inspecting of shipping/storage containers for packaging of Radioactive Material for transport as required by reference (a).

2. Cancellation. None.

3. Discussion. This instruction sets forth the procedure to provide the necessary assurance that shipping storage containers received, maintained and/or transferred by USS PRAIRIE (AD-15) meet the minimum operating and safety requirements as established by the Nuclear Regulatory Commission. This procedure deals with the handling, shipping, storing, operating, maintaining and inspecting of shipping/storage containers only. The designing, fabricating, assembling, testing, repairing and modifying of any container intended for the purpose of shipping or storing Radioactive Material is strictly prohibited by this instruction and shall not be accomplished by USS PRAIRIE (AD-15).

4. Action. This instruction is effective upon receipt and will be strictly adhered to by all personnel involved in handling special form Radioactive Material for receipt and transfer.

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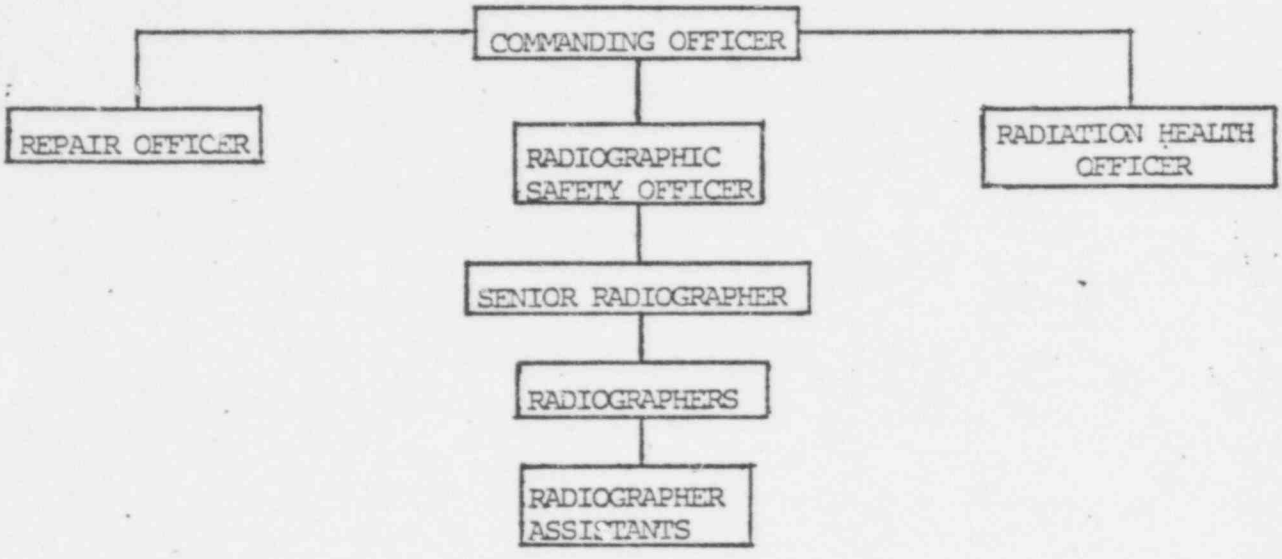
5. Organization. The chain of command aboard USS PRAIRIE (AD-15) for utilization of sealed sources for Industrial Radiography is as follows:



a. Commanding Officer - The overall responsibility for control and accountability of all sealed sources and associated equipment in the custody of USS PRAIRIE rests with the Commanding Officer. He shall designate in writing those individuals who will serve as Repair Officer, Radiographic Safety Officer and Radiation Health Officer and the duties and responsibilities they are assigned. He shall also designate in writing individuals assigned to investigate causes of incidents and shall determine and implement necessary preventive action.

b. Repair Officer - The Repair Officer shall ensure the proper security and utilization of all Radioactive sources and associated equipment assigned to the Repair Department.

c. Radiation Health Officer - The Radiation Health Officer is directly responsible to the Commanding Officer for maintenance of Radiation exposure records for all personnel working in Radiation areas and for ensuring that personnel Radiation physicals are kept current. He shall maintain a personnel monitoring program in accordance with BUMED Instructions.

d. Radiographic Safety Officer - The Radiographic Safety Officer is directly responsible to the Commanding Officer for the safety training of personnel in the use of sealed sources and associated equipment. He is responsible to the Repair Officer for the use, safety and maintenance of the by-product material listed in the Nuclear Regulatory

Commission License for Radiography. He is responsible to ensure that all provisions of the license are strictly adhered to. He shall act in advisory capacity to the management and radiography personnel and serve as the Command's Liaison Officer with the Nuclear Regulatory Commission on Licensed matters. He, in conjunction with the Senior Radiographer, shall develop and maintain up-to-date operating and emergency procedures. He shall conduct quarterly inventories. He shall maintain the internal inspection system of all records, personnel qualifications, procedural compliance and equipment maintenance and shall cause corrective action of all audit discrepancies noted. The Radiographic Safety Officer shall designate in writing the Senior Radiographer and the duties and responsibilities he is assigned. He shall be a graduate of the Radiographic Safety Officers course given by Non-Destructive Testing of Metals School, Service School Command, San Diego, California, or the Radiation Safety Officer course given at Naval Nuclear Power Unit (NNPU), Port Hueneme, California and shall be designated in writing by the Commanding Officer.

e. Senior Radiographer - The Senior Radiographer shall be a graduate of the Non-Destructive Testing of Metals Course, Course IV, Service School Command, San Diego, Ca. and shall be designated in writing by the Radiographic Safety Officer. He shall be responsible to the Radiographic Safety Officer for the training of Radiographers and Radiographer Assistants, safe operation and maintenance of radiographic inspection equipment, compliance to NRC Rules and Regulations and the maintenance of all shop records concerned with the use and handling of Radiographic Isotopes. He shall procure and maintain radiation survey instruments, ensure that source replacements and source tagging operations are performed, and maintain utilization logs.

f. Radiographers - Each Radiographer shall be a graduate of Non-Destructive Testing of Metals School, Course IV, Service School Command, San Diego, Ca. and shall be so designated as a qualified Radiographer by the Radiographic Safety Officer. He is responsible for full compliance with all regulations pertaining to Radiological Control, license requirements and the operating and emergency procedures associated with Radiographic Isotopes. He shall perform or personally supervise, at the site where the sealed source is being exposed, radiographic operations. He shall report immediately to the Senior Radiographer and Radiographic Safety Officer any casualty situation encountered.

g. Radiographer's Assistant - The Radiographer's Assistant shall be qualified in accordance with Appendix A of CFR 10, Part 34 and shall be designated as Radiographer's Assistant by the Radiographic Safety Officer. He shall operate radiographic equipment only under the supervision of a Radiographer.

6. Quality Assurance Program.

a. The responsibility for the Quality Assurance Program for receipt, handling, storage and transfer of special forms radioactive material by USS PRAIRIE is defined as:

(1) The Radiographic Safety Officer will be responsible for establishing and implementing the Quality Assurance Program.

(2) The Radiographic Safety Officer will be responsible for ensuring that all personnel involved in the program have received the required training and that they receive periodic training on any new material incorporated into the program.

(3) The Radiographic Safety Officer will be responsible for ensuring any changes or revisions found to be necessary in the Quality Assurance Program are incorporated as required.

(4) The Radiographic Safety Officer shall ensure that all defined QC procedures, engineering procedures and specific provisions of the package design approval are satisfied.

(5) The Senior Radiographer will be responsible for the actual performance of the QC operations under the guidance of the Radiographic Safety Officer.

7. Document Control

a. The Senior Radiographer shall maintain all pertinent certificates of compliance for the shipping packages used by this activity. These certificates shall be maintained in the files in the NDT Lab with all other records required by this instruction.

b. The Senior Radiographer shall be responsible for entering changes to the certificates of compliance immediately upon receipt.

8. Receiving, Handling, Storage and Shipment

a. Procedures to be followed upon receipt of radioactive shipment.

(1) All radioactive materials used for industrial radiography will be delivered to the ship under the cognizance of the naval supply system.

(2) Immediately upon arrival of the radioactive material the Radioactive Safety Officer and Senior Radiographer will be notified. The Senior Radiographer will cause accomplishment of the following:

(a) Monitor the shipping container with a radiation detection instrument to ascertain that the radiation levels do not exceed 200mr/hr at the surface or 10mr/hr at one meter.

(b) Visually inspect the external surface of the container for possible damage incurred in shipping. While wearing rubber gloves, remove the container from the transporting vehicle and place in a polyethelyne bag. THE SHIPPING CONTAINER SHALL BE TREATED AS CONTAMINATED MATERIAL UNTIL PROVEN TO BE NOT CONTAMINATED.

(c) Remove the shipping container to the radiographic exposure/stowage vault in compt B-0207-E and swipe test the external surface of the container. This swipe test shall be read by a U.S. Nuclear Commissioned Licensed Radiac Repair Facility.

(d) Upon receiving the test results that indicate that the shipping container is not contaminated, remove the container from the polyethelyne bag.

(e) Further inspect the container for any damage that would impair its proper functioning.

(f) Inspect the shipping documents, shipping container certificate of compliance and leak test report and maintain copies on file. If the leak test report indicates the container has not been leak tested within the past 6 months or that the leak test results indicate a presence of .005 microcuries or more of removable radioactive material a leak test will be immediately conducted in accordance with reference (b).

(g) If any of the above tests indicate that there is excessive radiation present or that the container is contaminated, the container shall be isolated in the radiographic exposure/stowage vault and the Radiographic Safety Officer, Commanding Officer, the shipper, the Naval Nuclear Power Unit, Port Hueneme, Ca., and the U.S. Nuclear Regulatory Commission will be notified.

b. Handling of Shipping Containers. While a shipping container is on board PRAIRIE it shall be handled by the Senior Radiographer or a PRAIRIE radiographer under the supervision of the Senior Radiographer or the Radiographic Safety.

c. Storage of Shipping Containers. All radioactive material shipping containers, while on board USS PRAIRIE, will be stored in the radiographic exposure/stowage vault in compt B-0207-E.

d. Procedures to be Followed for Shipment of Radioactive Material

(1) Prior to shipment of a radioactive source from this activity, the Senior Radiographer will cause accomplishment of the following:

(a) A Leak Test shall be performed on the special form Radioactive Material to be shipped in accordance with the procedures outlined in reference (b).

(b) The storage container shall be inspected to ascertain that there is no damage that would preclude its being used to transport special form Radioactive Material.

(c) Upon receipt of satisfactory Leak Test results the Radioactive Material will be loaded into the shipping container.

(d) A copy of the satisfactory Leak Test and certificate of compliance for the shipping container shall be included in the shipping container.

(e) The shipping container will be monitored with a Radiation Detection instrument to determine that no exterior surface reading is above 200mr/hr and that no reading at 1 meter distance is above 10mr/hr.

(2) Using information supplied to him by the Senior Radiographer, the Radiographic Safety Officer shall prepare and submit a "Request for Transfer of Radioactive Material" (enclosure (1)) to the Supply Officer.

(3) Upon notification from the Supply Officer that the required shipping documents for shipping of the radioactive material shipping container is ready, the Senior Radiographer will:

(a) Affix to the shipping container any and all labels necessary.

(b) Be available at the time appointed for pick-up and expedite moving of the shipping container from the Radiographic Exposure/ Stowage vault to the carrier's vehicle.

(c) Make certain that the carrier has signed all of the required documents necessary for the proper transfer and deliver all copies of documents required by the carrier to the carrier's representative.

(d) Maintain a copy of all tranfer documents on file in the NDT Lab.

9. Inspection, Test and Operating Status

a. Inspections to be performed upon receipt of a shipping container.

(1) The Senior Radiographer shall cause the inspection of the shipping container upon receipt to insure that there is no damage to the container which would impair it's use and that no radiation hazard exists.

b. Inspections to be performed prior to shipment.

(1) The Senior Radiographer shall cause the inspection of the shipping container prior to loading for shipment to be certain that there is no damage that would cause a radiation hazard to be present.

c. Tests to be performed prior to receipt of a shipping container.

(1) The Senior Radiographer shall cause a swipe test of the external surface of the shipping container.

(2) The Senior Radiographer shall cause accomplishment of a Leak Test of the special form Radioactive Material if a Valid Leak Test report has not accompanied the shipment.

d. Tests to be performed prior to shipment.

(1) The Senior Radiographer shall cause accomplishment of a Leak Test on the special form Radioactive Material prior to shipment.

e. Operating status of the equipment to be shipped.

(1) The Senior Radiographer shall cause accomplishment of an Operational Test on the shipping container to be certain that there are no malfunctions.

f. Conformance to Inspections and Tests on Equipment.

(1) The Radiographic Safety Officer will ensure that the required inspections and tests are performed.

10. Control of Measuring and Test Equipment

a. Calibration of Test Instruments.

(1) Each Radiation Detection Instrument that is utilized in this program is to be calibrated at intervals not to exceed three months. Calibration and servicing will be accomplished by a NRC Licensed Radiac Repair Facility.

(2) Each Radiation Detection Instrument must have a label attached bearing the last calibration date and records shall be maintained to show calibration and servicing dates of all instruments.

b. Periodic Testing of Test Instruments.

(1) Each Radiation Detection Instrument will be tested for proper operation once each month utilizing the procedure given in enclosure (2).

11. Quality Assurance Records

a. The Senior Radiographer shall maintain in his files:

(1) A signed copy of all Leak Test reports.

(2) The shipping documents received from the shipper that arrived with the shipping container.

(3) A copy of the pertinent documents relative to the shipment of the shipping container.

(4) A copy of each radiation detection unit's calibration and servicing record.

b. The Radiographic Safety Officer shall maintain in his files:

(1) A copy of the U.S. Nuclear Regulatory Commission License governing use of Radioactive Material for industrial radiography by USS PRAIRIE.

(2) A detailed description of procedures used in the receipt and transfer of a Radioactive Materials Shipping container.

(3) A summary of the Qualifications of the Senior Radiographer.

(4) A list of all equipment utilized in the shipment of a Radioactive Materials shipping container.

(5) Copies of all audit reports and any correspondence dealing with the audit of this Quality Assurance Program.

c. Location where the records are to be maintained.

(1) The records of the Senior Radiographer and the Radiographic Safety Officer shall be maintained in the Non-destructive Testing Laboratory in compartment B-0207-E.

(2) All Quality Assurance records will be identified and retrievable.

12. Audits

a. Periodicity of Audits:

(1) The Audits of the Quality Assurance program set forth in this instruction shall be conducted not less than once each year.

b. Personnel to conduct the Audit:

(1) The Audits specified by this instruction shall be performed by an Auditor having no direct responsibility associated with the implementation and execution of this program. He shall be knowledgeable of the contents of this instruction, the references used in this isntruction and the applicable portions of U.S. Nuclear Regulatory Commission Rules and Regulations.

c. Areas to be covered in the audit shall include the responsibilities and records of:

(1) Radiographic Safety Officer.

(2) Senior Radiographer.

(3) Training Activities.

(4) Records Keeping (General).

(5) Compliance to operating and emergency instructions pertaining to compliance with Nuclear Regulatory Commission rules involving receipt, handling, stowage and tranfer of radioactive materials.

(6) Compliance to current Quality Assurance program for receipt, handling, stowage and transfer of radioactive materials

(7) Previous Audit reports on file, with replies concerning necessary corrective action.

(8) Records of required periodic radiac test instrument calibration.

(9) Radiographic equipment/shipping containers, certificate of compliance for containers used and letter of authorization from the Nuclear Regulatory Commission to use the container.

(10) Proper receipt and transfer of documents.

(11) Adequate equipment for conducting swipe/leak test.

(12) Swipe and Leak Test results signed by a representative of the Radiac Calibration Facility conducting the survey of the test mediums.

d. Personnel to receive copy of Audit:

(1) The Auditor shall send the report his audit to the Radiographic Safety Officer and a copy to the Senior Radiographer.

e. Reply to Audit deficiencies:

(1) The Senior Radiographer shall reply in writing to the adutior via the Radiographic Safety Officer concerning any audit deficiency.

f. Maintenance of Audit reports:

(1) The Radiographic Safety Officer shall maintain a copy of all audit reports.

g. Responsibility for causing accomplishment of the Audit:

(1) The Radiographic Safety Officer shall ensure audits are conducted in accordance with this instruction at the periodicity indicated in paragraph 12.a.(1) of this instruction.

R. E. HELMS, JR.

Distribution:
PRAIRIEINST 5605.1 (List I, Case 7)

OPNAV 5216/144 (REV. 6-70)
S/N 0107-LF-778-8099

DEPARTMENT OF THE NAVY

Memorandum

DATE

FROM: Radiographic Safety Officer, USS Prairie (AD-15)

TO: Supply Officer, USS Prairie (AD-15)
VIA: Repair Officer, USS Prairie (AD-15)

SUBJ: Transfer of Radioactive Material; request for

REF: (A) Title 10 CFR, NRC Rules and Regulations
(B) Title 49 CRF, DOT Rules and Requlations

1. It is requested that a shipping container containing a radioactive source be shipped to:

TECH/OPS
Radiation Products Division
40 South Ave.
Burlington, Mass. 01338

2. The following information is submitted for the container:

a. Shipping Container - TECH/OPS Model ( ), Ser. No. ( )
b. Isotope - Iridium - 192
c. Source Serial Number - ( )
d. Source Activity - ( ) Curies
e. Surface Reading of Container - ( ) mr/hr
f. Transportation Index - ( )
g. Transportation Group - III
h. Labeling - YELLOW ( )
i. Cubic Feet - ( )
J. Weight - ( ) lbs.

3. The following two statements are required to be on the shipping documents:

"THIS IS TO CERTIFY THAT THE ABOVE NAMED MATERIALS ARE PROPERLY CLASSIFIED, DESCRIBED, PACKAGED, MARKED AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO THE APPLICABLE REGULATIONS OF THE DEPARTMENT OF TRANSPORTATION."

"ALL APPLICABLE PROVISIONS OF TITLE 10 CFR, PART 21 HAVE BEEN COMPLIED WITH."

4. When the required shipping document is ready, please contact ( ) at ( )

Enclosure (1)

SHIP SYSTEM	SUBSYSTEM	MRC CODE	
		A-501	N-1
SYSTEM	EQUIPMENT	MAN-HOURS	MAN
	AN/PDR-27CY,D,E,F,G H,J,P,Q,R Radiac Set	HT2	0.2

MAINTENANCE REQUIREMENT DESCRIPTION

1. Test operate radiac set.

TOTAL M/H 0.2

ELAPSED TIME 0.2

SAFETY PRECAUTIONS

1. Forces afloat comply with Navy Safety Precautions for Forces Afloat, OPNAVINST 5100 series.

TOOLS, PARTS, MATERIALS, TEST EQUIPMENT

1. Headphones
2. TS-1189( )/PD Test chamber (nuclear power installation only) (6CAT 6270)
3. MRC R-1 (nuclear power installation only)
4. Yardstick

(nuclear power installation only) FOR 2037-77

PROCEDURE

NOTE 1: Nuclear-powered ships and tenders with nuclear support facilities perform this MRC requirement with periodicity listed in NAVSHIPS 389-0153, if specified therein.

1. Test Operate Radiac Set.

NOTE 2: This test procedure utilizes natural background radiation. Test sample or test chamber with procedure from technical manuals may be utilized if available.

a. Remove radiac meter from case.

NOTE 3: If batteries check unsatisfactorily, replace the batteries. If batteries check satisfactorily, go to next step. If corrosion is apparent when replacing batteries, turn in the radiac set to the nearest radiac facility for maintenance.

b. Set RANGE switch to BATT COND; meter pointer should deflect to right of center line marked BATT.
c. Set RANGE switch to 0.5.

NOTE 4: Conventional (non-nuclear power) ships perform only steps 1.d. through 1.k.; nuclear power ships and tenders with nuclear support facilities perform only steps 1.l. through 1.w. with periodicity as specified in NAVSHIPS 389-0153.

d. Connect headphones to radiac set.
e. Listen for clicks while observing meter; meter pointer should swing irregularly at low end of scale whenever a click or a group of clicks is heard.

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LOCATION	DATE	
B-0207-E (93A)	May 1978	N

MAINTENANCE REQUIREMENT CARD (3-M)

PROCEDURE (CONTD)

f. Set RANGE switch to 5.0.
g. Listen for clicks while observing meter; meter pointer swing should be greatly reduced from step 1.e., but clicks in headset should continue at same rate.
h. Set RANGE switch to 50.
i. Listen carefully for clicks; clicks may be as slow as 1 every minute or 1 every two minutes, generally there will be no movement of meter pointer.
j. Set RANGE switch to OFF.
k. Return equipment to current readiness condition.
l. Connect headset to radiac set, background clicks should be heard on all positions of RANGE switch.
m. Disconnect headset from radiac set.
n. Set RANGE switch to 50.
o. Place the high range (small cylinder) probe horizontally across the open top of the TS-1189( )/PD. The AN/PDR-27 indication should be within ±20% of the recorded indication on MRC R-1, table 1 for the 50 range.
p. Set RANGE switch to 5.
q. Place yardstick on deck with one end against the outer base ring of TS-1189( )/PD. Position it so that end lines up under the radiation trifoil marker on the radiation warning label.
r. Position the low range (large cylinder) probe with the end cap flat on the yardstick. Rotate low range probe so that it shields the high range probe from the TS-1189( )/PD test chamber.
s. Place the low range (large cylinder) probe at the distance recorded on MRC R-1 table 1 for the 5 range; AN/PDR-27 should indicate 4 ±0.8 mR/h.
t. Set RANGE switch to 0.5.
u. Place the low range (large cylinder) probe at the distance recorded on MRC R-1 table 1 for the 0.5 range; AN/PDR-27 should indicate 0.4 ±0.08 mR/h.
v. Set RANGE switch to OFF.
w. Return TS-1189( )/PD and AN/PDR-27 to current readiness condition.

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Enclosure (2)

A-501-0220

SYSTEM	SUBSYSTEM	MRC CODE
	Radiation Detetion Measurement Inst.	A-502 M-1

SYSTEM	EQUIPMENT	RATES	MAN
Electronic Test& Radiac Equipment	AN/PDR-43,43A,B,C,D,E Radiac Set	MT2	0.2

MAINTENANCE REQUIREMENT DESCRIPTION

1. Test operate radiac set.

TOTAL MAN 0.2

ELAPSED TIME 0.2

TEST PRECAUTIONS

1. Forces afloat comply with Navy Safety Precautions for Forces Afloat, OPNAVINST 5100 series.

M.R. PARTS, MATERIALS, TEST EQUIPMENT

One

PROCEDURE

NOTE 1: Nuclear-powered ships perform this MRC requirement with periodicity listed in NAVSHIPS 389-0153, if specified therein.

1. Test Operate Radiac Set.

NOTE 2: If batteries check unsatisfactorily, replace the batteries. If batteries check satisfactorily, go to next step. If corrosion is apparent when replacing batteries, turn in the radiac set to nearest radiac facility for maintenance.

a. Turn range selector switch to BATT; meter should deflect to or beyond BATT index mark.
b. Depress LIGHT switch, located on front panel; meter should illuminate.
c. Measure radiation of source test sample.
   (1) Hold function switch in CHECK position.
   (2) Set range selector switch to 5; meter should indicate within ±20% of the value recorded on the source correction label (found on the radiacmeter) or on the instrument's Certificate of Calibration.
   (3) Set range selector switch to 50; meter should indicate within ±20% of the value recorded on the source correction label (found on the radiacmeter) or on the instrument's Certificate of Calibration.
   (4) Set range selector switch to 500; meter pointer may occasionally deflect up scale slightly.
d. Turn range selector switch to OFF.
e. Return equipment to current readiness condition.

FROM	1	0	1				77	M425	

NAVPERS	DATE
B-0207-E (93-A)	July 1977

MAINTENANCE REQUIREMENT CARD (MRC)
OPNAV 4700-1 (1 1/70)

Enclosure (2)