

DATA ITEM DESCRIPTION			Form Approved OMB No. 0704-0188	
1 TITLE Operating Procedures for Hazardous Materials		2 IDENTIFICATION NUMBER DI-SAFT-80402		
3 DESCRIPTION / PURPOSE 3.1 Operating Procedures for Hazardous Materials delineates the standard operating procedures to be utilized in conjunction with hazardous materials. 3.2 Operating Procedures for Hazardous Materials provides clear and concise guidance to operating personnel and serves as a vehicle for training new personnel.				
4 APPROVAL DATE (YYMMDD) 870805	5 OFFICE OF PRIMARY RESPONSIBILITY (OPR) A/AMCCOM/RC	6a DTIC APPLICABLE	6b GIDEP APPLICABLE	
7 APPLICATION / INTERRELATIONSHIP 7.1 This Data Item Description (DID) contains the format and content preparation instructions for the data product generated by the specific and discrete task requirement for this data included in the contract. 7.2 Data Item Description DI-SAFT-80101 "System Safety Hazard Analysis Report" is related to this Data Item Description. 7.3 When applicable, other DIDs (e.g., DI-S-1838, DI-A-1035) should be used.				
8 APPROVAL LIMITATION		9a APPLICABLE FORMS	9b AMSC NUMBER A4169	
10 PREPARATION INSTRUCTIONS 10.1 <u>General</u> . Operating Procedures for Hazardous Materials is referred to as "SOPs" throughout these Preparation Instructions. 10.2 <u>Content and format</u> . Formats are delineated in Figures 1 through 9. Content requirements are as follows: 10.2.1 <u>SOPs for Operations</u> . All SOPs for operations (including laboratory operations and electrical operations over 30 volts) in the production of ammunition, explosives, or any other hazardous material shall contain the following information: a. Complete step-by-step instructions. b. Assignment of responsibilities for specific operations (i.e. foreman, operator). c. Reason(s) why procedures should be followed in the manner delineated and the potential consequences if not followed. d. Adequate warnings at appropriate places. <p style="text-align: right;">(Continued on Page 2)</p>				
11 DISTRIBUTION STATEMENT DISTRIBUTION STATEMENT A: Approved for public release; distribution is unlimited.				

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10. PREPARATION INSTRUCTIONS (Continued)

- e. List of appropriate protective clothing and equipment for each operation.
- f. List of approved tools and equipment for each operation.
- g. Written statements from supervisors and operators attesting they have read and understood each SOP governing work they shall be responsible for. Statements shall also designate the date signed and SOP Number to include revisions and changes.
- h. SOP title (operation name) on each page.
- i. SOP number and date.
- j. SOP change/revision number and date when applicable.
- k. Easily identifiable change/revision indicator, to point out the changes/revisions.
 - l. Signatures, titles, and dates of approving officials of original SOP.
 - m. Date(s) for periodic review.
 - n. Signatures, titles, and dates of approving officials for periodic reviews.
 - o. Emergency procedures.
 - p. Abnormal operation procedures.

10.2.2 SOP's for radioactive operations. All SOP's for radioactive operations involving radioactive material or possible exposure to radiation shall contain the following elements in addition to the requirements listed at 10.2.1:

- a. Maximum permissible levels of radiation in the areas concerned.
- b. Storage of radioactive sources.
- c. Calibration and dosimetry procedures.
- d. Decontamination procedures.

10.2.3 SOP's for demilitarization and disposal. All SOP's for operations involving demilitarization, disposal, furnaces, and magazine areas to include transportation, storage, shipping, packaging, and receipt shall be provided in the following format:

10.2.3.1 Instructions for preparation of SOP cover sheet (non-nuclear). The SOP cover sheet shall be completed as illustrated in Figure 1. Information applicable to each numbered line not listed below is considered self-explanatory.

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Block 10, Preparation Instructions (Continued)

- a. 1--Installation. Insert the name of the installation.
- b. 2--Item. Indicate the Federal Supply Class (FSC), Department of Defense Identification Code (DODIC) and complete nomenclature, hazard classification(s), fire symbol(s), and/or chemical hazard group(s) required for the item to be processed.
- c. 3a--Operation. Indicate the type of activity, e.g., renovation, preservation and packaging, demilitarization, transportation, inspection, or testing, as applicable.
- d. 3b--Estimated Daily Production Rate. Enter number and units such as items, rounds, pounds, gallons, etc.
- e. 4--Organization symbol. Insert the office symbol for the responsible organization.
- f. 5--SOP No. and Date. Numbering system should be consecutive and arranged so as to avoid duplication of numbers by separate organizations of the same installation.
- g. 5a--Rev No. and Date. Enter revision number when complete revision of the SOP is made; e.g., Rev 1.
- h. 5b--Change No. and Date. Insert the change number to either the basic or revised SOP, whichever is applicable.
- i. 6--Authority. Indicate the appropriate technical reference, Depot Maintenance Work Requirement (DMWR), test procedure, etc., from which the SOP was developed.
- j. 10--Concurrences. Indicate the division or office, typed name, signature, and title of each person whose concurrence must be obtained.
- k. 11--Approval. Approval by commander, deputy commanders, executive assistant, or by an individual specifically authorized by the commander to review and approve SOPs.
- l. 12--Biennial Review. Add date, typed name, signature and title at 2-year intervals, indicating review for adequacy.

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Block 10, Preparation Instructions (Continued)

1. RED CREEK ARMY DEPOT

STANDING OPERATING PROCEDURE FOR:

2. ITEM: Cartridge 105mm, HE, M1 3a. OPERATION Renovation
W/Fuse PD M51A5 0.05 Sec b. ESTIMATED DAILY PRODUCTION RATE 80 rnds
delay, 1315-C444 4. ORGANIZATION SYMBOL SDSRC-Y
Class 1.2 Fire Symbol 2 5. SOP No. SDSRC-Y DATE 4 Jun 86
 a. Rev No. _____ Date _____
 b. Change No. 3 DATE 8 Jul 77
 6. Authority _____
7. PREPARED BY _____ TITLE Equipment Specialist
 JOHN A. JONES PHONE EXTENSION 2461
8. REVIEWED BY _____ TITLE Chief, Maintenance Branch
 ROBERT L. SMITH
9. SUBMITTED BY _____ TITLE Chief, Planning Branch
 DAVID T. SOUTH

10. CONCURRENCES:

OFFICE	SIGNATURE	TITLE
<u>Quality</u>	_____ LEO P. HASS	<u>Director for Quality</u>
<u>Ammunition Division</u>	_____ WILL R. FLATT	<u>Chief, Ammunition Division</u>
<u>In-processing Inspection</u>	_____ JOSEPH H. GUNN	<u>Chief, In-Processing Inspection</u>
<u>Safety</u>	_____ JAMES T. ROSY	<u>Chief, Safety Office</u>

11. APPROVAL

 JOHN O. LITTLE
 COL, USA
 Commanding

12. BIENNIAL REVIEW:
DATE

SIGNATURE

TITLE

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Block 10, Preparation Instructions (Continued)

10.2.3.2 Instructions for preparation of supervisor's statement.

The SOP supervisor's statement shall be placed directly beneath the cover sheet and shall have a format similar to that shown in figure 2. The supervisor having the closest supervisory authority over a particular operation shall sign the SOP for that operation:

- a. When he/she is first assigned as supervisor of the operation;
- b. When an approved formal or interim change is made to the SOP;
- c. When an operation is started up after 6 months or more, in an inactive status;
- d. At least once per year.

SOP No. _____ Rev No. _____ Change No. _____ Date _____

I have personally reviewed each of the operational steps of the SOP and have no question in my mind that the operation can be performed safely and efficiently. I have trained the following operators in the details of their part of the operation and have instructed them to follow the SOP without deviation:

<u>NAME</u>	<u>DATE</u>	<u>OPERATION NUMBER</u>
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SUPERVISOR

DATE

FIGURE 2. Sample Format for Supervisor's statement.

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Block 10, Preparation Instructions (Continued)

10.2.3.3 Instructions for preparation of operator's statement.

The SOP operator's statement shall be placed directly beneath the supervisor's statement and shall have a format similar to that shown in figure 3. Each operator will be required to sign this statement:

- a. When he/she is first assigned to the operation;
- b. When an approved formal or interim change is made to the SOP;
- c. When an operation is started up after 6 months or more in an inactive status;
- d. At least once per year.

SOP No. _____ Rev No. _____ Change No. _____ Date _____

I have read or have had read to me and understand the general and specific safety requirements, personnel and explosive limits, work description and inspection requirements necessary to accomplish my operation. I have been thoroughly trained in, and am familiar with, my part of the operation and I agree to abide by these instructions throughout my assignment to the operation.

NAME

DATE

OPERATION NUMBER

FIGURE 3. Sample Format for Operator's statement.

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Block 10, Preparation Instructions (Continued)

10.2.3.4 Instructions for preparation of index of operations (nonnuclear).

The index of operations shall be completed as illustrated in figure 4.

- a. Column 1. Indicate the operation number.
- b. Column 2. Identify the building or site where the operation is being conducted. Identifying numbers shall coincide with site plan drawings submitted.
- c. Column 3. Insert the bay/room number to show the exact location of operation. Bay numbers shall coincide with line layout drawings submitted.
- d. Column 4. Indicate the total explosive limits for individual bays listed in column 3. Small arms ammunition and chemical ammunition without bursters may be listed by number of rounds. Explosive limits in a bay shall include all items in transit; i.e., on conveyors, skids, or trays.
- e. Column 5. Insert a description of the operations; e.g., unpack, disassembly, etc.
- f. Column 6. Page number.
- g. Remarks. Insert a brief description of the work to be performed. List waivers, exemptions, or approved deviations which apply to this operation. Insert the reason for a change or revision. If a SOP supersedes a SOP of another number, an explanatory statement and notice of supersession should be made. List references used to prepare the SOP (in addition to any listed on line 6) of cover sheet.

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Block 10, Preparation Instructions (Continued)

SOP NO. SDSRC-VT-11 DATE 4 MAR 86
 REV NO. _____ DATE _____
 CHANGE NO. _____ DATE _____

INDEX OF OPERATIONS

<u>OPER NO.</u>	<u>BLDG NO. OR SITE</u>	<u>BAY NO.</u>	<u>TOTAL EXPL. ALLOWED IN BAY. (REF COL 3)</u>	<u>DESCRIPTION OF OPERATION</u>	<u>PAGE NO.</u>
<u>1</u>	<u>4650</u>	<u>1</u>	<u>500 lb</u>	<u>Unpack</u>	<u>4</u>
<u>2</u>	<u>4650</u>	<u>2</u>	<u>200 lb</u>	<u>Disassembly</u>	<u>5</u>
<u>3</u>	<u>4650</u>	<u>3</u>	<u>200 lb</u>	<u>Cleaning</u>	<u>6</u>
<u>4</u>	<u>4650</u>	<u>4</u>	<u>200 lb</u>	<u>Painting</u>	<u>7</u>
<u>5</u>	<u>4650</u>	<u>5</u>	<u>200 lb</u>	<u>Reassembly</u>	<u>8</u>
<u>6</u>	<u>4650</u>	<u>6</u>	<u>500 lb</u>	<u>Repack</u>	<u>9</u>

REMARKS:

Operation consists of defuzing, refuzing, and performing maintenance on item and packing material as required.

Exemption E-16-64 is in effect as pertains to the location of Bldg 4650 to guard shelter.

Operation No. 27, Change 1: To provide for receipt of boxes from Operation No. 15; also to provide for receipt of and spray painting of powder drums.

Operation No. 14, Change 2: To add operation to clean and paint base plates.

Operation No. 14, Change 3: To provide for removing of stake burrs from base plates.

This SOP supersedes SSMRC-23, 26 June 1984.

FIGURE 4. Sample Index of Operations (Non-nuclear).

Block 10, Preparation Instructions (Continued)

10.2.3.5 Instructions for preparation of operation_s format (nonnuclear).

The illustrations of operation format, figure 5, is not intended to cover all situations; and the reflected information does not necessarily have complete or accurate steps. The illustration has been provided solely for the purpose of adding clarification to the written instructions below, applicable to lines A through L, figure 5.

- a. A--Standing Operating Procedures For: Indicate the operation and nomenclature of the item being worked; e.g., "Preservation and Packaging of 155-MM HE M107."
- b. C--Bay No.: Show bay, room, or cubicle number.
- c. G--Operation: Indicate the title of the operation; e.g., pull apart complete round, defuze, assemble cartridge case to projectile, etc.
- d. H--Explosive Limits: Indicate the number of units and pounds that have been determined to be necessary, consistent with safe and efficient operation. Where complete items are in the same bay, list the quantity and explosive weight limits for each.
- e. I--Personnel Limits: When used in conjunction with establishing personnel limits, an operator is defined as any individual who is present at a work station on an intermittent basis. A transient is any individual who is present at a work station on an intermittent basis.

Note. Operators as listed on Personnel Limit signs bear no relationship to the total manpower requirements for the job, but are only an indication of the maximum number of personnel which are permitted to be exposed to a particular hazard.

- f. J--Step No., Description of Operation, and Specific Instructions.

(1) The procedural details of work to be performed shall be listed under "Description" of operation in a numbered and logical sequence. Description must be sufficient to allow the operator to accomplish the task in a safe and technically correct manner (figure 5).

(2) "Specific Instructions" are intended to furnish information that applies to one specific step of the operation and which has not been included in the actual description of physical work performed. Items to be listed here include quality checks, specific safety equipment or clothing required, specific safety precautions to be taken, and technical instructions necessary for task accomplishment. Specific instructions shall be located opposite the step in the operation description to which they will

Block 10, Preparation Instructions (Continued)

apply. (Refer to figure 5 for illustration, examples, and explanations.) All specific instructions shall be identified to indicate the step referred to and the type of instruction: Safety (S); Operational (O); and Quality Checks (QC); or any combination of the above.

g. K--Special Requirements. This space shall include instructions which are required and apply to one operation only, or to one particular step of an operation, and which normally do not apply to any other operation. Instructions may concern safety, technical aspects of the operation, defect standards, or equipment inspection requirements (see illustrations, figure 5). Items covered under item J of the SOP need not be duplicated under item K. Surveillance/quality control inspection requirements may be listed under Special Requirements for each operation, or included as a separate operational page covering the surveillance and/or quality control inspections.

h. L--Equipment, tools, gages, and supplies. This space shall include production materials, equipment (both standard APE and all locally fabricated equipment and nonstandard APE), specific hand tools, specific safety equipment or any other items required on the line that are necessary for mission accomplishment. It is important the term "approved type" is not used, e.g., approved type safety shoes. Specific nomenclature shall be used in all cases, e.g., conductive safety shoes, nonsparking beryllium screw driver, etc.

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Block 10, Preparation Instructions (Continued)

A. STANDARD OPERATING PROCEDURE FOR: P & P of 155-MM HE M107

B. OPERATION NO. 3
 C. BAY NO. _____
 D. SOP NO. SDSZZ-MM-100 DATE 5 May 77
 E. REV NO. 1 DATE 10 Aug 77
 F. CHANGE NO. 1 DATE 21 Aug 77

G. OPERATION: Paint Projectile

H. EXPLOSIVE LIMITS: UNITS: 10 EXPLOSIVE LB: 150
 I. PERSONNEL LIMITS: OPERATORS 2 TRANSIENTS: 1

J. Step No.	Description	Specific Instructions (Safety, Operational, Quality Checks)
1.	Receive projectiles by power monorail from Operation No. 2.	1.(0) Activate APE 1045 IAW instructions contained in APE Manual 1045.
2.	Activate paint spray booth.	2.(S) Ensure that filters are clean and exhaust fan in paint spray booth is operating properly prior to start of operation.
3.	Spray paint cleaned projectile.	3a.(0) A primer coat of MIL-P-11414 will be sprayed on to cover bare metal exposed on projectile. b.(0) Spray paint exterior surface of projectile with olive drab TT-E-516, color no. 34087 using finish no. 20.1 of MIL-STD-171.

FIGURE 5. Sample Operations Format (Nonnuclear)..

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Block 10, Preparation Instructions (Continued)

- c.(0) Rotating band cover must be present prior to painting.
- d.(0) Spray primer and paint using APE 1093, using operational instructions contained in the APE Manual.
- e.(QC) Inspect workmanship (DS-3) and paint coverage (DS-4).

4. Projectiles will continue on monorail to Operation No. 4.

K. SPECIAL REQUIREMENTS.

- DS-3: Projectile free of dirt, chips, grease, rust, and other foreign material. Visual-minor, AQL 0.65.
- DS-4. Primer and paint coverage is complete. Visual-minor, AQL 0.65.

Surveillance will perform required grounding/continuity test.

Maintenance personnel will perform required inspection and preventive maintenance on installed equipment. (This type of statement would only be required in the special requirements for the first operation where monorail is used.)

L. Equipment, tools, gages, and supplies.

<u>ITEM</u>	<u>QTY RQRD</u>	<u>SPEC NO. o DW NO.</u>	<u>MCS or NSN</u>
paint, OD enamel	as req	JAN-E-740R MIL-E-10687	
Paint, enamel, green	as req	JAN-E-34087	
Paint spray equipment	1 each		APE 1045
Conveyor, monorail	1 each		APE 1044
Paint system, hot spray, portable	1 each		APE 1093
Respirator, paint spray	1 each	NIOSH APPROVED	NSN 4240-00-36803150

FIGURE 5. Sample Operations format (Nonnuclear). Cont'd

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Block 10, Preparation Instructions (Continued)

10.2.3.6 Instructions for preparation of line layouts (nonnuclear).

A clear, legible line layout must accompany each SOP. The following instructions apply:

a. Line layouts shall be prepared in the format shown in figure 6. A layout should show the structural material of the building, fire protection, location of dividing walls, operational shields, and permanently installed equipment. Operational shields must be detailed to show the type of material used, height, and thickness. Permanently installed equipment must be listed whether or not it is used on the specific operation. Each bay or room must be identified by a numeral or letter. A directional symbol must be used to indicate true north. The building number and the applicable SOP number must also be shown.

b. The operational sequence must be depicted by the use of standardized symbols as illustrated in figure 7. The location of pallets, tables, APE, etc., must be shown where they will be used. A legend must be used to briefly explain the operations, inspections, and location of pallets, tables, APE, etc.

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STANDARDIZED SYMBOLS

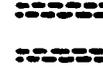
	STORAGE
	OPERATION
	INSPECTION — VERIFICATION OR ACCEPTANCE
	INSPECTION — OPERATION — IN PROCESS
	PRODUCTION EQUIPMENT
	TABLES, DOLLIES, WORK BENCHES, TRUCKS, ETC. PALLET
	VAN
	MONORAIL
	POWER CONVEYOR
	ROLLER CONVEYOR
	PAINT BOOTH
	OPERATIONAL SHIELD

FIGURE 7. Standardized symbols

Block 10, Preparation Instructions (Continued)

10.2.3.7 Instructions for preparation of cover sheet for nuclear SOPs.

The SOP Cover Sheet shall be completed as illustrated in figure 1, except that the building covered shall be entered in block 2. Blocks 3 and 6 shall be left blank. The nuclear surety officer shall be included in block 10.

10.2.3.8 Instructions for preparation of index of operations for nuclear SOPs.

The index of operations shall be completed as illustrated in figure 8.

- a. Column 1. Indicate the operation number.
- b. Column 2. Identify the building or site where the operation is being conducted.
- c. Column 3. Leave blank.
- d. Column 4. Indicate number of units and total explosive units for each worksite in the bay.
- e. Column 5. List the system only.
- f. Column 6. Insert page number.

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Block 10, Preparation Instructions (Continued)

OPER NO.	BLDG NO. OR SITE	BAY ¹ NO.	TOTAL EXPL, ALLOWED ² IN BAY (REF COL 3)	SOP NO. DRSSP-SW-1		DATE
				REV NO.	DATE	
				CHANGE NO.		DATE
				DESCRIPTION OF OPERATION	PAGE NO.	
N/A	353	N/A	500 lb/15 kg			General Rqmts
1	353	N/A	10/15			8"
2	353	N/A	356/1			Sergeant

NOTES:

¹Leave blank.

²In the first row (general requirements) enter the total building limits. In the following rows (weapons systems) enter the worksite explosive limits/number of units. A worksite is the area occupied by a crew while performing a specific task.

FIGURE 8. Sample Index of Operations (Nuclear).

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Block 10, Preparation Instructions (Continued)

0.2.3.9 Instructions for the preparation of nuclear weapons system operations format. An operations format page shall be included for each weapons system to be worked in the building. The operations format (figure 9) shall be completed as follows:

- a. A--Enter applicable weapons system nomenclature.
- b. B--Enter operations number in sequence by SOP page.
- c. C--Enter the worksite number(s) per building layout in which the operation may be conducted. A worksite is the area occupied by a crew while performing a specific operation.
- d. D--Enter SOP number.
- e. E--Self-explanatory.
- f. F--Self-explanatory.
- g. G--Enter operations covered; if all, so state.
- h. H--Enter the permissible number of warheads. If the system does not use warheads, enter permissible number of explosives bearing units. If the system does use a warhead but specific operations do not require the warhead but require other explosive bearing units (i.e., Nike Hercules adaptation kit), the number of permitted units shall be covered in the specific safety information, followed by total quantity of explosives permitted at the worksite.
- i. I--Enter the total number of operators and transients permitted at the worksite.
- j. J--Complete the three columns as follows:
 - (1) Type of Operation. Enter operation's title per technical manual for each operation to be performed.
 - (2) Technical Manual, Section Number. Enter the technical manual number and section number containing procedures for the conduct of the technical operation.
 - (3) Checksheet. Enter the local checksheet number containing the step-by-step procedures for the conduct of the specific operations. If because of the volume of work or other reasons, the particular manual checksheets are not prepared for specific types of operations, these operations will be conducted using the technical manual. This shall be so indicated in the SOP and be carefully considered by all personnel reviewing and concurring in the SOP.
- k. K--Enter specific safety instructions peculiar to the specific weapons systems.

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Block 10, Preparation Instructions (Continued)

A. STANDARD OPERATING PROCEDURE FOR: _____

B. OPERATION NO. _____
 C. BAY NO. _____
 D. SOP NO. _____
 E. REV NO. _____
 F. CHANGE NO. _____

G. OPERATION: All TypesH. EXPLOSIVE LIMITS: UNITS: 15 EXPLOSIVE LB: _____I. PERSONNEL LIMITS: OPERATORS: 8 TRANSIENTS: _____

<u>Type of Operation</u>	<u>Technical Manual, Section No.</u>	<u>Checksheet</u>
periodic inspection	TM 9-1100-218-45/1, 3-4	218-1 & 2
Initial Receipt Inspection	TM 9-1100-218-45/1, 3-2	218-1 & 2
Receipt Inspection	TM 9-1100-218-12, 4-2	218-3
Pre-Issue Inspection	TM-9-1100-218-12, 4-3	214-4
Maintenance	TM-9-1100-218-45/1,5	218-5
	TM 9-1100-218-12, 11	
Modification	MWO 9-1100-218-20/1	N/A
	MWO 9-1100-218-20/2	
	MWO 9-1100-218-40/2	
Inspection and Maintenance of XM83 and XM84 Locking Devices	TB 9-1100-218-15/1	218-6

k. Specific Safety Precautions:

- a. Beryllium dust is toxic when inhaled or ingested and presents an extreme health hazard. Whenever beryllium dust is present, gloves or other protective clothing and appropriate respirators must be worn. Never abrade components or items composed of beryllium.
- b. Remove and destroy any loose explosive in accordance with procedrues in AMCR 385-100.

FIGURE 9. Sample Operations format (Nuclear).