PREPRODUCTION INITIATIVE-NELP
DIGITAL RADIOGRAPHIC SYSTEM (ORDNANCE APPLICATION)
TEST PLAN

NAVEODTECHDIV – INDIAN HEAD, MD

1.0 OBJECTIVE

This test plan describes the data collection procedure for testing the Fuji computed radiography system in an operational environment at Naval Explosive Ordnance Disarmament Technology Division, Indian Head, MD. The equipment will be used to assist in the examination of ordnance. The data will be used to determine the system's efficiency, cost effectiveness, overall performance, and ability to interface with site operations.

2.0 DESCRIPTION

The Fuji computed radiography system stores images digitally rather than on film. A flexible imaging plate stores the data from the x-rayed object. The imaging plate is then fed into the AC-3 plate reader. The information is saved digitally in the computer system. The image can be viewed on the 21 in. monitor. The software allows the operator to use various manipulation tools to better analyze a specific aspect of the subject under study.

The object image can be saved, printed on thermal paper by a Fuji printer, or sent to a VMI workstation. This VMI system can further manipulate the image to allow detailed examination of the x-rayed subject. Because the VMI system is Windows 95-based, images can be printed on a standard printer, saved to the internal Jazz drive, exported to documents, and e-mailed.

3.0 TEST PLAN

The Fuji computed radiography system will be operated according to manufacturer specifications. During the test period, objects to be x-rayed will be recorded by both film and phosphorous plate. A subsequent comparison of the two will demonstrate the effectiveness and quality of the Fuji system.

3.1 Approach

The necessary quantitative and qualitative data will be acquired from data sheets completed during system operation and maintenance.

3.1.1 Instructions for Completing the Operational Data Sheet

The Operational Data Sheet records the information necessary to compare the performance and cost effectiveness of the Fuji computed radiography system versus standard x-ray film methods.

- **Date:** Note the date the image was recorded.
- **Operator(s):** List the operator(s) who performed the testing.
- **Object Description:** Record the type of object x-rayed (e.g., fuse, briefcase, etc.)
- **Object Material:** Record the material of which the casing is constructed (e.g. metal, plastic, composite, etc.).

The following information must be recorded for both film and the Fuji system.

- **Media Size:** Indicate the size of the film and the size of the image cassette.
- **X-ray Source:** Identify the source of the x-ray (i.e., cobalt, standard, etc.).
- **X-ray Energy:** Record the energy level at which the x-ray source is set.
- **Number of Shots Required:** Record the number of times the object was shot to obtain the necessary information.
- **Exposure Duration:** Calculate the total time the object was exposed to x-rays. If the object was shot multiple times, record the total exposure time (e.g., 1 shot x 15 seconds + 1 shot x 45 seconds + 2 shots x 1 minute = 3 minutes total).
- **Number of Pulses:** Record the number of pulses of x-ray source required. If the object was pulsed multiple times, record the total number of times.
- **Time to Develop/Read Image:** Enter either the time it took to develop the film or the time for the Fuji AC-3 to scan the image.
- **Comparison:** Compare the quality of the image obtained from film versus the Fuji system. (Was either image clearer? Could you get more information from either image?)
- **Additional Comments:** Provide any additional comments regarding the Fuji system.

3.1.2 Instructions for Completing the Maintenance/Repair Data Sheet

The Maintenance/Repair Data Sheet should be filled out whenever there is a problem with the system.

- **Date:** Record the date the problem occurred.
- **Operator(s):** List the operator(s) who performed the testing.
- **Description of What Happened:** Describe the problem.
- **Reason:** Describe why the problem occurred.
- **Amount of Downtime Due to Failure:** Record the amount of time the unit was out of service due to the problem.
- **Repair Parts Required/Cost of Repair (if known):** List any parts required and any costs incurred to repair the unit (if known). Note if the repair was covered under warranty and record the estimated cost if not under warranty.

- **Corrections to Prevent Future Occurrences:** List any changes that may prevent a recurrence of the problem. Changes could consist of modifications to the equipment or changes in operational procedures.
- **Additional Comments:** Provide any additional comments concerning the problem.

4.0 REPORTING

The data entry sheets are a concise method of data collection. Sheets should be completed as equipment is used. Data will be collected for a period of six months to one year. During this time, periodic status reports on testing will be submitted to NAWCADLKE. Please fax forms as they are completed (or monthly at a minimum). The final report will include detailed results and observations, assess the efficiency and cost effectiveness of the unit, and evaluate its ability to interface with site operations.

Operational Data Sheet

Date:	
Operator:	
Object Description:	
Object Material:	

	Film Information	**Plate Information**
Media Size:		
X-ray Source:		
X-ray Energy:		
Number of Shots Required:		
Exposure Duration:		
Number of Pulses:		
Time to Develop/Read Image:		

Please compare the quality of the image recorded on film versus the Fuji system:

Additional comments:

Maintenance/Repair Data Sheet

Date:

Operator:

Description of What Happened:

Reason:

Amount of Downtime Due to Failure:

Repair Parts Required/Cost of Repair (if known):

Corrections to Prevent Future Occurrences:

Additional Comments: