

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

SITES: NAS JRB FORT WORTH AND NAS NORTH ISLAND

1.0 OBJECTIVE

This test plan describes the data collection procedure for testing the Fuji computed radiography system in an operational environment in the Aircraft Intermediate Maintenance Department (AIMD) nondestructive inspection (NDI) labs at Naval Air Station Joint Reserve Base (NAS JRB) Fort Worth, TX and NAS North Island, San Diego, CA. The equipment will be operational at each site for three months and will be used to assist in the radiographic inspection of Navy aircraft and ground support equipment (SE) components. 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-inch 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 or printed on thermal film by a Fuji printer.

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, training, and maintenance. The test site will contact NAWCADLKE if any questions or problems concerning the system arise during the test period. NAWCADLKE will coordinate with Fuji NDT Systems.

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. Data sheets will be completed and submitted for all shots, including training, orientation and practice shots.

The Fuji system phosphorus imaging plates have a serialized bar code on the black side and images are recorded on the white side. The bar code number will be used to track the number of exposures per plate.

- **Date:** Indicate the date the image was recorded.
- **Phosphorous Imaging Plate Number:** Record the bar code number of the phosphorous imaging plate.
- **Operator(s):** List the operator(s) who performed the testing.
- **Object Description:** Record the component being x-rayed (e.g., F/A-18 vertical stab, SEAWARS, HLU-288/E cable, etc.). Additionally, note if the shot is for training, orientation, or practice.
- **Object Material:** Record the component material (e.g., aluminum, steel, composite, etc.).
- **Inspection Name:** Identify the inspection (e.g., AFB-140, unscheduled FOD inspection, etc.).
- **Defect Type:** Identify the type of defect that is sought (e.g., fatigue crack, water entrapment, FOD, proper alignment, etc.).
- **Inspection Location:** Identify whether the inspection is performed in the vault or as an open field shot.
- **X-ray Unit:** Identify the x-ray unit used (e.g., Part Number GXR7.6B, GXR7.6C, 1667AS100-1, 3-000-727).

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

- **Media Size:** Indicate the size of the film and the image cassette.
- **Film Type:** Identify the type of film used (e.g., Kodak M, AGFA D4, etc.).
- **Inspection Settings:** Record the kV, mA, and exposure time used to x-ray the component.
- **Number of Shots Required:** Record the number of times the object was shot to obtain the necessary information.
- **Total Exposure Time:** 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).
- **Time to Develop/Read Image:** Enter either the time it took to develop the film or the time it took for the Fuji AC-3 plate reader to scan the image.
- **Comparison:** Compare the quality of the image obtained from the film versus the Fuji system. (Was either image clearer? Could more information be obtained from one 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 Problem:** Describe what happened.
- **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 cost 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 Recurrences:** 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 the equipment is used. Data will be collected for three months for each site. During this time, periodic status reports on testing will be submitted to NAWCADLKE. Please fax forms as they are completed (or weekly 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.

**DIGITAL RADIOGRAPHIC SYSTEM
Operational Data Sheet**

Site (circle one):	NAS JRB Ft. Worth	NAS North Island
Date:		Phosphorous Plate No.:
Operator(s):		
Object Description:		
Object Material:		
Inspection Name:		
Defect Type:		
Inspection Location (circle one):	VAULT	OPEN FIELD
X-ray Unit:		

	Film Information	Plate Information
Media Size:		
Type of Film:		N/A
kV:		
mA:		
Exposure Time:		
Number of Shots Required:		
Total Exposure Time:		
Time to Develop/Read Image:		

Compare the quality of the image recorded on film versus the Fuji system:

Additional comments:

**DIGITAL RADIOGRAPHIC SYSTEM
Maintenance/Repair Data Sheet**

Date:

Operator:

Description of Problem:

Reason:

Amount of Downtime Due to Failure:

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

Corrections to Prevent Future Recurrences:

Additional Comments:
