

**CERTIFICATION SUMMARY QUICK LOOK**

1. **SYSTEM TITLE:** Image Product Library (IPL) Version 2.1
2. **PROPONENT:** National Imagery and Mapping Agency (NIMA)
3. **PROGRAM MANAGER:** Major Ed Stawarz
4. **TESTERS:** Joint Interoperability Test Command (JITC)
5. **SYSTEM UNDER TEST DESCRIPTION:** IPL is a Department of Defense Intelligence Information Systems (DODIIS) digital imagery storage and retrieval system.
6. **REQUIRED SYSTEM INTERFACES:** Tables 2-1 and 2-2 show the interface requirements matrices for in the Non-Softcopy Exploitation Management (Non-SEM) and SEM environments, respectively. The IPL Program Management Office in coordination with the IPL user community approved the "Operational Impact If Not Successful" evaluation entries. IPL 2.1 uses Broadsword as its primary query and imagery transfer tool. For purposes of this certification letter Broadsword is considered an interfacing system.

**Table 2-1. IPL 2.1 Non-SEM Environment Interface Matrix**

<b>Interfacing System and Version</b>	<b>Interface Developed</b>	<b>Functions Supported</b>	<b>Requirements Document</b>	<b>Operational Impact If Not Successful</b>
Broadsword 2.0	Yes	Query, Imagery Transfer	ICD	Significant
DE 2.2	Yes	Imagery Transfer	ICD	Significant
IPL 1.0	Yes	Imagery Transfer, Query	ICD	Significant
NLB2 1.5	Yes	Imagery Transfer	ICD	Significant

Legend:

DE-Dissemination Element

ICD-Interface Control Document

IPL-Image Product Library

NLB2-National Imagery and Mapping Agency Library Build 2

SEM-Softcopy Exploitation Management

**Table 2-2. IPL 2.1 SEM Environment Interface Matrix**

<b>Interfacing System and Version</b>	<b>Interface Developed</b>	<b>Functions Supported</b>	<b>Requirements Document</b>	<b>Operational Impact If Not Successful</b>
DE 2.2	Yes	Imagery Transfer	ICD	Significant
IESS 4.0	Yes	Message Exchange, Imagery Control	ICD	Moderate

Legend:

DE-Dissemination Element

ICD-Interface Control Document

IESS-Imagery Exploitation Support System

IPL-Image Product Library

SEM-Softcopy Exploitation Management

**7. TEST NETWORK DESCRIPTION:**

a. JITC conducted joint interoperability certification testing of IPL 2.1, in a Non-SEM environment, 6 and 7 and 26 and 27 October 1999, at the 480th Intelligence Group (IG), Langley Air Force Base, Virginia. During the 26 and 27 October test the IPL 2.1 version tested was designated Build 4.02 by the IPL system developer. IPL 2.1 was tested in a SEM environment, 18 through 22 October 1999, at the US Space Command (USSPACECOM), Peterson Air Force Base, Colorado. The SEM testing was conducted as part of the Imagery Exploitation Support System (IESS) Version 4.0 interoperability certification test.

b. The Non-SEM test was configured in the DODIIS Client Server Environment (CSE) Version 1.4.1 operating environment. The SEM test was configured in the DODIIS CSE Version 1.4 operating environment.

**8. SYSTEM CONFIGURATIONS:** Figures 2-1 and 2-2 show the software and hardware suites used during the Non-SEM and SEM interoperability tests respectively. The actual test configuration for the SEM test included additional systems but for purposes of the IPL portion of the test only the DE, IESS, and IPL systems are depicted. See JITC Memorandum, "I-2 Joint Interoperability Certification for the Imagery Exploitation Support System Version 4.0," November 1999.

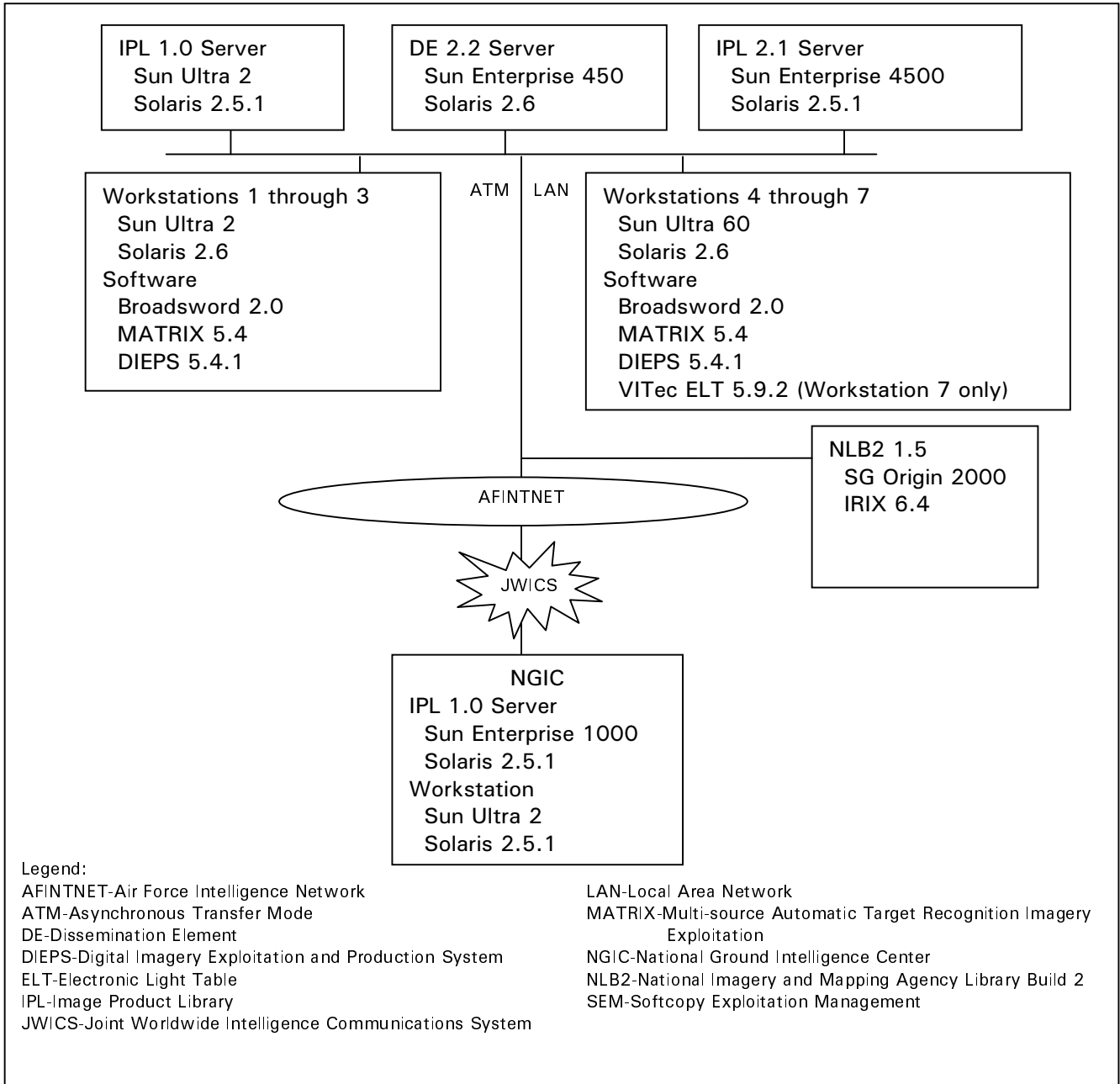
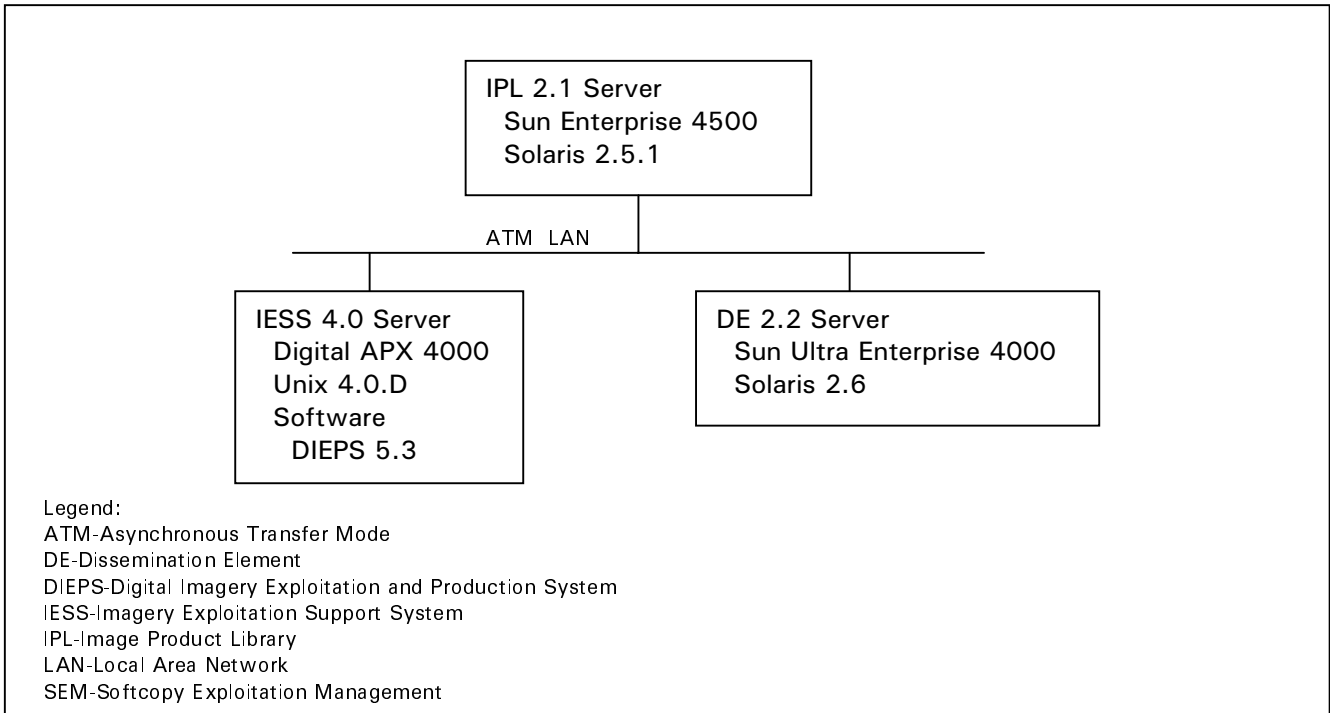


Figure 2-1. IPL 2.1 Non-SEM Environment Test Network



**Figure 2-2. IPL 2.1 SEM Environment Test Network**

**9. ASSESSMENT RESULTS:** Table 2-3 depicts the interoperability assessment results.

**Table 2-3. Certified System Interfaces for IPL 2.1 in Non-SEM and SEM Environments**

Non-SEM Environment					
System Version	Exchange Method	Date Tested	Interface I-Rating	Interface Capabilities	Remarks
Broadsword 2.0	ATM LAN	Oct 99	I-1	Query, Imagery Transfer	
DE 2.2	ATM LAN	Oct 99	I-1	Imagery Transfer	
IPL 1.0	ATM LAN, JWICS	Oct 99	I-2	Query, Imagery Transfer	Query capability functioned properly. One NITFS 2.0 image product failed to auto-ingest from IPL 1.0 to IPL 2.1. Operational impact is minor.
NLB2 1.5	ATM LAN	Oct 99	I-1	Imagery Transfer	
SEM Environment					
DE 2.2	ATM LAN	Oct 99	I-1	Imagery Transfer	
IESS 4.0	ATM LAN	Oct 99	I-2	Message Exchange, Imagery Control	Message exchange functioned properly. Imagery control had a deficiency. Operational impact is minor. See paragraph 9.c for the explanation.

LEGEND:

ATM-Asynchronous Transfer Mode  
DE-Dissemination Element

JWICS-Joint Worldwide Intelligence Communications System  
LAN-Local Area Network

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IESS-Imagery Exploitation Support System

NITFS-National Imagery Transmission Format Standard

IPL-Image Product Library

SEM-Softcopy Exploitation Management

NLB2-National Imagery and Mapping Agency Library Build 2

a. **Broadsword 2.0 (Non-SEM Environment)**

(1) IPL 2.1 met all query and imagery transfer requirements.

(2) Interoperability Rating: I-1

b. **Dissemination Element Version 2.2 (DE 2.2) (Non-SEM and SEM Environment)**

(1) IPL 2.1 met all imagery transfer criteria with DE 2.2.

(2) Interoperability Rating: I-1

c. **IESS 4.0 (SEM Environment)**

(1) IPL 2.1 met all message exchange and some imagery control criteria with IESS 4.0. However, a deficiency occurred when IPL Version 2.1 took incoming Tape Format Requirements Document (TFRD) image files that had other than a 01 in the starting Fast Access Format (FAF) block of the imagery name and changed it to a 01. IPL Version 2.1 then categorized the image file under a different name than stored in DE and IESS. Fifty-eight out of 188 images tested at USSPACECOM had other than a 01 in the starting FAF block.

(2) Interoperability Rating: I-2

(3) Operational Impact: Minor. Imagery Analysts (IAs) will have to insert a wild card instead of FAF block numbers in their imagery name queries via Broadsword to IPL Version 2.1. Also, the IPL database is inaccurate when compared with IESS's and DE's. This may cause numerous images to be returned instead of the one requested. This deficiency primarily impacts IAs who use Broadsword to access IPL Version 2.1 for unexploited images. This situation applies to a small minority of users.

d. **IPL 1.0 (Non-SEM Environment)**

(1) IPL 2.1 met most imagery transfer criteria. The only deficiency noted was the failure to auto-ingest a NITFS 2.0 image. The cause of the deficiency was identified by the PMO and the system developer.

(2) Interoperability Rating: I-2

(3) Operational Impact: Minor.

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e. NLB2 1.5 (Non-SEM Environment)

(1) IPL 2.1 met all imagery transfer criteria.

(2) Interoperability Rating: I-1

f. Additional Findings:

(1) During NIMA Early Interface Testing it was discovered that whenever the image file transfer process between DE and IPL was disrupted, IPL Version 2.1 filed the incomplete image file as complete and notified IESS that the file was ready for exploitation. IAs were unable to exploit the image file and had to request file retransmission from DE. Although this anomaly did not occur during SEM testing at USSPACECOM, it is a recognized SEM problem.

(2) IPL Version 2.1 did not permit the chipping or creating an extract of NITFS 2.0 imagery files. IAs can go through the process of chipping, but the entire imagery file will be transmitted to IA's workstation. NITFS 2.0 chipping will be provided as part of IPL Version 2.5.

(3) IPL Version 2.1 categorized each incoming unexploited Transmission Format Requirement Document (TFRD) and National Imagery Transmission Format Standard (NITFS) 2.0 image file using only one of the possible Target Identification (TGT ID) numbers, instead of categorizing the image file by all possible TGT ID numbers. In one test case, IPL categorized an image file with a non-USSPACECOM TGT ID number. This non-USSPACECOM TGT ID number image file was not available for exploitation using the normal BDS query process. IAs query IPL Version 2.1 for imagery associated with a particular TGT ID. Since the IA only exploits one of many possible TGT ID numbers, IPL Version 2.1 will either send a negative response or a response that does not include all possible replies. This will cause IAs additional effort in locating all imagery associated with a particular TGT ID. This anomaly does not degrade Non-SEM operations or SEM operations because IESS controls the imagery flow by file name vice TGT ID. This finding is not restricted to IPL. Other national level imagery systems (such as DE) also have this problem.

**11. NATIONAL IMAGERY TRANSMISSION FORMAT STANDARD (NITFS):** The JITC's NITFS laboratory tested IPL numerous times for NITFS compliance. JITC has written a limited capability compliance memorandum (see JITC Memorandum, "First Impression Report National Imagery Transmission Format Standard (NITFS) Limited Capability Compliance of the Image Product Library (IPL) Version 2.1," 16 September 1999.) The NITFS laboratory will continue testing of IPL 2.1 and future versions for NITFS compliance.

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**12. YEAR 2000 (Y2K) ASSESSMENT:** The Joint Integration Test Facility (JITF), Air Force Research Laboratory, Rome, New York tested IPL 2.1 for Y2K integration compliance in June 1999. JITC assessed IPL 2.1 in a Y2K environment during the Joint Deployable Intelligence Support System Y2K interoperability assessment in September 1999 at JITF. IPL 2.0.1, an earlier version of IPL 2.1, was also assessed for Y2K compliance during the US Air Force Intelligence, Reconnaissance, and Surveillance Year 2000 (Y2K) Assessment conducted at JITF in June 1999. During all assessments, both IPL 2.0.1 and IPL 2.1 functioned properly in the Y2K environment.