STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL | 97-020

INSTRUCTIONS

1. The preparing activity must complete blocks 1,2, 3, and 8. In block 1, both the document number and revision letter should be given.
2. The submitter of this form must complete blocks 4, 5, 6, and 7.
3. The preparing activity must provide a reply within 30 days from receipt of the form.

NOTE: This form may not be used to request copies of documents, nor to request waivers, or clarification of requirements on current contracts. Comments submitted on this form do not constitute or imply authorization to waive any portion of the referenced document(s) or to amend contractual requirements.

I RECOMMEND A CHANGE:	1. DOCUMENT NUMBER **JIEO Circular 9008**	2. DOCUMENT DATE (YYMMDD) **930630**

3. DOCUMENT TITLE
NITFS Certification Test & Evaluation Program Plan

4. NATURE OF CHANGE *(Identify paragraph number and include proposed rewrite, if possible. Attach extra sheets as needed.)*

See attached sheets.

5. REASON FOR RECOMMENDATION

Currently JIEO Circular 9008 does not allow for the real time compression or collection and dissemination of imagery. This modification will allow systems the ability to disseminate images as they are being compressed or collected. This will bring JIEO Circular 9008 in alignment with real time efforts.

6. SUBMITTER

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Add CLEVEL 7 to Table 5-1, CLEVEL 1 - 6 remain the as.

TABLE 5-1
NITFS CERTIFICATION CRITERIA SUMMARY

Compliance Level	* 1	CLEVEL 2 -5			6	7**
Common Coordinate System Size (Pixels)	0064-1024 V X 0064-1024 H				0064-65536 V X 0064-65536 H	0064-65536 V X 0064-65536 H
Image Blocking	Single				Multiple 32^2, 64^2, 128^2, 256^2, 512^2,1024^2	Multiple any size blocks
Monochrome (uncomp)	8 Bits \ Pixel With & w/o LUT IMODE = B				8 & 16 Bits \ Pixel With & w/o LUT IMODE = B	8 & 16 Bits \ Pixels w/o LUT IMODE = B
JPEG (mono)	8 Bit sample IMODE B				8 & 12 Bit sample IMODE B	8 & 12 bit sample IMODE B
Color 8 Bit (RGB/LUT) No Compression	No				Single Band W/LUT IMODE=B	Single Band W/LUT IMODE=B
Color 24 Bit (RGB) uncomp	No				Three Bands No LUT IMODE=B,P,S	Three Bands No LUT IMODE=B,P,S
JPEG (color RGB)	No				8 Bit Sample IMODE=P	8 Bit Sample IMODE=P
JPEG (YCbCr)	No				8 Bit Sample IMODE=P	8 Bit Sample IMODE=P
Bi-Level Image	1bpp Image w/wo LUT				1bpp image w/wo LUT	1bpp image w/wo LUT
Bi-LEVEL Compression	COMRAT= 1D,2DS,2DH IMODE = B				COMRAT= 1D,2DS,2DH IMODE = B	COMRAT= 1D,2DS,2DH IMODE = B

*** 01 File < 1,213,000 bytes so that it fits on a 3 ½ or 5¼ floppy disk.**
**** 07 Must contain at least one image and the first image must exceed 2048 pixels in either horizonal or verticle direction.**
Note: This Table only provides an overview summary of certification criteria. Proper interpretation of the Table is specified in the text of this chapter. CLEVEL "99" is used to designate an NITF 2.0 file not within the 1 to 6 CLEVEL definition.

TABLE 5-1 (Cont) NITFS CERTIFICATION CRITERIA SUMMARY						
Compliance Level	*** 1**	**2**	**3**	**4**	**6**	**7**
Inset Image Overlays	0-4				0-19	0-19
Symbols	0-100				0-100	0-100
Aggregate Size	128 Kbyte max				1 Mbyte max	1 Mbyte max
Bit Map Symbol Colors (1 BPP)	N,K,W				N,K,W, R,O,B,Y	N,K,W,R,O,B,Y
Object Symbols	Not Allowed				Not Allowed	Not Allowed
CGM SYMBOLS	PREFERRED				PREFERRED	PREFERRED
Labels 1-320 characters each; color options same as for Bit-map Symbols	0-100 2,048 char max				0-100 2,048 char max	0-100 2,048 char max
Text	0-5 Files 100,000 chars max. aggregate				0-32 Files 100,000 chars max. aggregate	0-32 files 100,000 chars max aggregate
Controlled Tags	Controlled tags may appear in the following fields: XHD, IXSHD, SXSHD, LXSHD, TXSHD, and "Controlled Extensions" DES regardless of CLEVEL.					
Registered Tags	Registered tags may appear in the following fields: UDHD, UDID, and "Registered Extensions" DES regardless of CLEVEL.					
Data Extension Segment	FUTURE USE Only for Systems that require use.				FUTURE USE Only for Systems that require use.	FUTURE USE Only for Systems that require use.
Reserved Segment	FUTURE USE Only for Systems that require use.				FUTURE USE Only for Systems that require use.	Yes, Replacement File Header
VQ Compression	4x4 Kernel 4 table w/wo masking				4x4 Kernel 4 table w/wo masking	4x4 Kernel 4 table w/wo masking
VQ Monochrome	w/wo LUT IMODE = B				w/wo LUT IMODE = B	w/wo LUT IMODE = B
VQ 8-bit color	No				with LUT IMODE = B	with LUT IMODE = B
TACO2	ALL SYSTEMS MUST SUPPORT NITF FILE EXCHANGE USING TACO2 PROTOCOL					

* 01 File < 1,213,000 bytes so that it fits on a 3 ½ or 5¼ floppy disk.
Note: This Table only provides an overview summary of certification criteria. Proper interpretation of the Table is specified in the text of this chapter. CLEVEL "99" is used to designate an NITF 2.0 file not within the 1 to 6 CLEVEL definition.

Add Clevel 7 to page 5-13, paragraph 5-6

5-6 BASE IMAGE CRITERIA

D. LEVEL 6-7. For those systems which support CLEVEL 6 & 7 file structures:

~~1. Unpack. The system must support block sizes of 32^2, 64^2, 128^2, 256^2, 512^2, and $1K^2$ comprised of the applicable pixel size range (up to 64k x 64k) and formatted as follows:~~

1. Unpack. Blocked images comprised of the applicable pixel size range (up to 64k x 64k) and formatted as follows:

a. The CLEVEL 6 system must support block sizes of 32^2, 64^2, 128^2, 256^2, 512^2, and $1K^2$.

b. CLEVEL 7 systems will support any block size.

~~a.~~ c. Monochrome, single band, multiple blocks, compressed and uncompressed one-bit-per-pixel, eight bits-per-pixel, 12 bits-per-pixel and when 16 bits-per-pixel:

(1) Eleven significant bits, right justified and left bits filled with zeros.

(2) Twelve significant bits, right justified and left bits filled with zeros.

(3) Thirteen significant bits, right justified and left bits filled with zeros.

(4) Fourteen significant bits, right justified and left bits filled with zeros.

(5) Fifteen significant bits, right justified and left bit filled with a zero.

(6) Sixteen significant bits.

~~b.~~ d. Color (eight-bit), single band RGB with LUT, single and multiple blocks, eight bits- per-pixel, with three LUTs, uncompressed.

~~c.~~ e. Color (24 bit), three bands (RGB), multiple block, eight bits-per-pixel in each band, without LUTs, JPEG compressed and uncompressed, image data ordered as follows:

(1) (B) Band Interleaved by Block.

(2) (P) Band Interleaved by Pixel.

(3) (S) Band Sequential (Only valid for images with multiple blocks and multiple bands).

~~d.~~ f. Color (24 Bit), three bands (YCbCr) multiple blocks, eight bits-per-pixel in each band, without LUTs, JPEG compressed image data ordered as Band Interleaved by Pixel.

~~e.~~ g. VQ compressed (8 bits-per-pixel)

Pack. The system must be able to pack NITF files with either a monochrome image or a color image (if native mode is color, it must do color in NITF) that does not exceed the maximum pixel size and blocking constraints of CLEVEL 6. When packing a color image using JPEG compression, only IMODE P is required. The system may optionally pack one bit-per-pixel images. The system must ensure that the operator cannot create CLEVEL 1 through CLEVEL 6 files that exceed the maximum unpack boundary conditions for the respective CLEVEL. Recompression of decompressed VQ images is prohibited; however, a decompressed VQ image may be packed in its uncompressed state (NC) or in its original compressed form (C4 or M4). When a CLEVEL 7 file is created from a preexisting uncompressed image that is going to be transmitted as it is being compressed (Real Time Compression) and all information in the file is know with the exception of the total file size and first image size (based on compression results of the first image, the lengths of all other data elements are known), only a completed main header will be contained in the "Replacement File Header", and the file itself may contain other data elements. If the CLEVEL 7 file is used for Real Time Collection it will contain only a single image, and the "Replacement File Header" will contain a completed main header, first image subheader and associated tag data included in the overflow area if requirement.

Add to page 5-14 paragraph 5-7 C and D.

C. For CLEVELS 3 through ~~6~~ 7, the SUT interprets files with up to 20 images (one base image plus 19 overlay images).

D. For CLEVELS 3 through ~~6~~ 7, the SUT does not generate files which have more than 20 images (one base image plus 19 overlay images). However, higher level systems must be able to create compliant files that are downward compatible.

Add to page 5-18 paragraph 5-11 B.

B. A system must be able to interpret bit-mapped symbol colors as follows:

CLEVEL	Bits/Pixel	COLOR
1	1	N,K,W
2-~~6~~7	1	N,K,W,R,O,B,Y

Add to page 5-18 paragraph 5-12 A.

A. A system must be able to interpret and use a file containing 0-100 CGM symbols. The maximum aggregate size of symbols (bit-mapped, CGM, or a combination of both) for CLEVEL 1 and CLEVEL 2 is 128 Kbytes, CLEVEL 3 is 0.5 Mbytes, and CLEVELS-4, 5, ~~and~~ 6, and 7 is 1 Mbyte.

Add to page 5-21 paragraph 5-14 L.

A system must be able to interpret combinations of label foreground (text) and background colors as follows:

	Foreground	Background
CLEVEL 1:	**White**	**Transparent**
	Black	**Transparent**
	White	**Black**
	Black	**White**
CLEVEL 2 - ~~6~~7:	**White**	**Black**
	Black	**White**
	Black	**Transparent**
	White	**Transparent**
	Red	**Transparent**
	Orange	**Transparent**
	Blue	**Transparent**
	Yellow	**Transparent**

Add to page 5-15 paragraph 5-15 C.

C. A system must be able to interpret a file containing 0-5 text files for CLEVELs 1 and 2, and 0-32 text files for CLEVELs 3-~~6~~7. The maximum aggregate size of the text files must not exceed 100K characters.

Add to page 5-23 paragraph 5-17.

5-17 RESERVED EXTENSION SEGMENT CRITERIA

A. For CLEVEL 1 - 6 systems

1. ~~Since~~ Reserved Segments are prohibited ~~not yet defined in Version 2.0 of NITF~~, for CLEVEL 1 - 6 systems, files generated by an NITF compliant system must fill the Number Reserved Extension Segments (NUMRES) field with "000".

2. Upon receipt of a file where the NUMRES field contains a count other than "000", the system must otherwise properly interpret the other legal components of the file

B. For CLEVEL 7 systems

1. For CLEVEL 7 the NUMRES will be "001", the RESTAG Unique RES Type Identifier will be "Replacement File Header ", and RESVER Version of the data field definition will be "01". CLEVEL 7 systems must populate length fields in the main header and first image subheaders with negative 0's (for example, "-00000"), when valid data is not available when the file is being packed. CLEVEL 7 files must contain at least one image. The CLEVEL 7 field values in the "Replacement File Header" RES are subject to the same compliance constraints as if located in the main file header/first image subheader and shall not extend beyond what is to be replaced in the main file header or by both the main header and first image subheader. The structure of the CLEVEL 7 "Replacement File Header" and main file header/first image header must be aligned, field by field, byte by byte, with the exception of tag data that may not be know until the image is either collected or compressed. The CLEVEL fielded in the main header of "Replacement File Header" will be marked with the true CLEVEL in accordance with CLEVEL 1 - 6 contraints. The reserved segment data for the "Replacement File Header" will be as follows:

TABLE 5-4
RESERVED EXTENSION SEGMENT DATA

CFHD1-L	Length of Corrected File Header Data (CFHD) 1	7	0000404-9999999	R
CFHD-DELIM1	CFHD Unique Delimiter 1	4	0x0A6E1D97	R
CFHD-RD	CFHD Replacement Data	**		R
CFHD-DELIM2	CFHD Unique Delimiter 2	4	0x0ECA14BF	R
CFHD2-L	Length of CFHD 2	7	0000404-9999999	R

2. Systems supporting CLEVEL 7 must properly interpret the file, using the Reserved Extension Segment Data. **CLEVEL 7 capable applications must be able to interpret the file to the same degree as if the file header was properly populated with the information contained in the "Replacement File Header" RES. For CLEVEL 7 systems, the designated field values in the RES take priority over the same fields as in the main file header and the first image subheader if included. A CLEVEL 7 capable application may re-pack the file to replace the headers with the contents of the RES "Replacement File Header". CLEVEL 7 systems must verify file compliance ensuring the file is marked at the lowest CLEVEL needed to properly interpret the file when repacking. The RES will be removed if the file is repacked. When modifying the file for any reason, the system may not re-pack the file as CLEVEL 7.**

Modify Appendix C.

APPENDIX C

TABLE C-1. FILE HEADER

(R) - REQUIRED, (O) = OPTIONAL, C = CONDITIONAL

FIELD	DESCRIPTION	SIZE	FORMAT VALUES	TYPE
FHDR	File Type & Version	9	NITF02.00	R
CLEVEL	Compliance Level	2	01-~~06~~ 07, 00 & 08 ~~07~~-99 Reserved	R
STYPE	System Type	4	4 Spaces (Reserved)	O
OSTAID	Originating Station ID	10	Alphanumeric (May not be all spaces)	R
FDT	File Date & Time	14	DDHHMMSSZMONYY	R
FTITLE	File Title	80	Alphanumeric	O
FSCLAS	File Security Classification	1	T, S, C, R, or U	R
FSCODE	File Codewords	40	Alphanumeric	O
FSCTLH	File Control and Handling	40	Alphanumeric	O
FSREL	File Releasing Instructions	40	Alphanumeric	O
FSCAUT	File Classification Authority	20	Alphanumeric	O
FSCTLN	File Security Control Number	20	Alphanumeric	O
FSDWNG	File Security Downgrade	6	Alphanumeric "_____",YYMMDD,999998,999999	O
FSDEVT	File Downgrading Event	40	Alphanumeric If FSDWNG="999998"	C
FSCOP	File Copy Number	5	00000 default, or actual copy #	O
FSCPYS	File Number of Copies	5	00000 default, or actual count	O
ENCRYP	Encryption	1	0 = Not Encrypted (This field must contain the value 0)	R
ONAME	Originator's Name	27	Alphanumeric	O
OPHONE	Originator's Phone Number	18	Alphanumeric	O
FL	File Length	12	000000000388-1213000 for CLEVEL 1 000000000388-999999999999 -00000000000 for CLEVEL 7	R
HL	NITF Header Length	6	000388-002736	R

TABLE C-1. FILE HEADER (Continued)

FIELD	DESCRIPTION	SIZE	FORMAT VALUES	TYPE
NUMI	Number of Images	3	000-020 (CLEVEL 07 at least 001) All CLEVELs must pack at least 1 image CLEVEL REQUIREMENT 01-02 pack no more than 5 images 03-07 pack no more than 20 images 01-02 must unpack 0 to 5 images 03-07 must unpack 0 to 20 images 000439-202060 Values calculated in bytes from image sizes ranging from 64 x 64 pixels to: CLEVEL REQUIREMENT 01 1K x 1K pixels by 1 & 8 bits (total file size not to exceed 1,213 kbs) 02 1k X 1k pixels by 1,8 & 24 bits 03 2K x 2K pixels by 1,8,24 bits 04 4K x 4K pixels by 1,8,12,16 & 24 bits 05 8K x 8K pixels by 1,8,12,16 & 24 bits 06 64K x 64K pixels 1,8,12 & 16 bits/pixel 07 will be - 000000000 for unknow image sizes, same as appropriate CLEVEL for know image sizes (CLEVEL 2-6 MAX FILE SIZE NOT TO EXCEED 2 GBYTES) 000439-202060 Maximum aggregate of pixels of the 2nd to Nth Image must not exceed that of the maximum common coordinate system allowed per the respective CLEVEL	R
LISH001	Length of 1st Image Sub-Header	6		C
LI001	Length of 1st Image	10		C

LISHnnn	Length of Nth Image Sub-Header	6		C
LInnn	Length of Nth Image	10		C
NUMS	Number of Symbols	3	000-100	R
LSSH001	Length of 1st Symbol Sub-Header	4	0258-0298	C
LS001	Length of 1st Symbol	6	Symbol data CLEVEL MAXIMUM AGGREGATE 01-02 131,072 (128k) 03 524,288 (.5 Meg) 04-06 1,048,576 (1 Meg)	C

LSSnnn	Length of Nth Symbol Sub-Header	4	0258-0298	C
LSnnn	Length of Nth Symbol	6	Symbol data	C

TABLE C-1. FILE HEADER (Continued)

FIELD	DESCRIPTION	SIZE	FORMAT VALUES		TYPE
NUML	Number of Labels	3	000-100		R
LLSH001	Length of 1st Label Sub-Header	4	0212-0252		C
LL001	Length of 1st Label	3	Label data (1-320 Characters) Maximum aggregate size of all 100 labels: 2048 characters		C

LLSHnnn	Length of Nth Label Sub-Header	4	0212-0252		C
LLnnn	Length of Nth Label	3	Label data (1-320 characters)		C
NUMT	Number of Text Segments	3	000-005 CLEVEL 01-02 000-032 CLEVEL 03 - ~~06~~ 07		R
LTSH001	Length of 1st Text Sub-Header	4	0282-0322		C
LT001	Length of 1st Text Segment	5	Text data (1-99,999 characters) Maximum aggregate size of all text files: 100,000 characters		C

LTSHnnn	Length of Nth Text Sub-Header	4	0282-0322		C
LTnnn	Length of Nth Text Segment	5	Text data		C
NUMDES	Number of Data Extension Segments (DES)	3	000 (Will be 000 unless needed for overflow data) must be 001 for CLEVEL 07 when actual data is unknown	However, if receiving other than 0 Data Extension segments, the system must adjust itself to move past data and unpack the remainder of the file correctly	R
LDSH001	Length of 1st Data Extension Segment (DES) subheader	4	0209-9999, must be 0209 for CLEVEL 07 when actual data is unknown		C
LD001	Length of 1st DES Data Field	9	000000000-999999999, must be -00000000 for CLEVEL 07 when actual data is unknown		C
LDSHnnn	Length of Nth data extension segment subheader	4	0209-9999		C
LDnnn	Length of Nth DES Data Field	9	000000000-999999999		C
NUMRES	Number of Reserved Extension Segments (RES)	3	000 (CLEVEL 01-06) 001 CLEVEL 07	However, if receiving other than 0 Data Extension segments, the system must adjust itself to move past data and unpack the remainder of the file correctly	R
LRSH001	Length of 1st RES subheader	4	0000-9999		C
LR001	Length of 1st RES	7	0000000-9999999 -000000 CLEVEL 07		C
LRSHnnn	Length of Nth RES subheader	4	0000-9999		C
LRnnn	Length of Nth RES	7	0000000-9999999		C
UDHDL	User Defined Header Data Length	5	00000	If receiving user defined data, system must at least move past user data and unpack the remainder of the file correctly	R
UDHOFL		3	000-999		C
UDHD	User Defined Header Overflow User Defined Header Data	*	NA		C

TABLE C-1. FILE HEADER (Continued)

FIELD	DESCRIPTION	SIZE	FORMAT VALUES		TYPE
XHDL	Extended Header Data Length	5	00000	If receiving Extended Data, the system must at least to move past Extended Data and unpack the remainder of the file correctly	R
XHDOFL	Extended Header Overflow	3	000-999		C
XHD	Extended Header Data	**	NA		C

* As specified by User Defined Header Data Length
** As specified by Extended Header Data Length

TABLE C-2. IMAGE SUB-HEADER

FIELD	DESCRIPTION	SIZE	FORMAT VALUES	TYPE
IM	File Part Type	2	IM	R
IID	Image ID	10	Must not be all spaces	R
IDATIM	Image Date & Time	14	DDHHMMSSZMONYY	O
TGTID	Target ID	17	BBBBBBBBBBFFFFFCC	O
ITITLE	Image Title	80	Alphanumeric	O
ISCLAS	Image Security Classification	1	T, S, C, R, or U	R
ISCODE	Image Codewords	40	Alphanumeric	O
ISCTLH	Image Control and Handling	40	Alphanumeric	O
ISREL	Image Releasing Instructions	40	Alphanumeric	O
ISCAUT	Image Classification Authority	20	Alphanumeric	O
ISCTLN	Image Security Control Number	20	Alphanumeric	O
ISDWNG	Image Security Downgrade	6	Alphanumeric,"_____",YYMMDD,999999,999998	O
ISDEVT	Image Downgrading Event	40	Alphanumeric, IF ISDWNG=999998	C
ENCRYP	Encryption	1	0= Not Encrypted (This value must be 0)	R
ISORCE	Image Source	42	Alphanumeric	O
NROWS	Number of Significant Rows in image	8	00000064-00065536 (Based on CLEVEL) CLEVEL 07 actual value or -0000000 if unknown	R
NCOLS	Number of Significant Columns in image	8	00000064-00065536 (Based on CLEVEL)	R
PVTYPE	Pixel value type	3	INT,B	R
IREP	Image Representation	8	Alphanumeric Mono, RGB, RGB/LUT, YCbCr601 Monochrome: Pack and Unpack all CLEVELs RGB/LUT: Unpack CLEVELs 2-6 Pack Optional RGB(24 bit color): Unpack CLEVELs 2-6 Pack only if native	R
ICAT	Image Category	8	YC_bC_r(3 bands) compress only (JPEG): Pack if native color Multispectral: TBD VIS,MAP,SAR,IR,MS,FP,MRI,XRAY, CAT	R
ABPP	Actual Bits-per-pixel Per Band	2	01,08,11,12,13,14,15,16	O
PJUST	Pixel Justification	1	R	O
ICORDS	Image Coordinate System	1	U, G, C, or N	R
IGEOLO	Image Geographic Location	60	ddmmssXdddmmssY (4 times) or ggXYZmmmmmmmmmm (4 times)	C

TABLE C-2. IMAGE SUB-HEADER (Continued)

FIELD	DESCRIPTION	SIZE	FORMAT VALUES	TYPE
NICOM	Number of Image Comments	1	0-9	R
ICOM1	Image Comment 1	80	Alphanumeric	C

ICOMnn	Image Comment N	80	Alphanumeric	C
IC	Image Compression	2	NC - No Compression, C1- Bi-Level C3 - JPEG, C4 - VQ(not masked), M4 - VQ(masked), NM, M0, M3 IC COMRAT C1 1D, 2DS, 2DH C3 00.0, 00.1, 00.2, 00.3, 00.4, 00.5 C4 nn.n M4 nn.n	R
COMRAT	Compression Rate	4		C
NBANDS	Number of Bands	1	1 or 3 CLEVEL NBANDS 1 1 2-67 1 or 3	R
IREPBAND1	1st Band Component Representation	2	Alphanumeric "__" (2 spaces) or "R_", or "Y_"	R
ISUBCAT1	1st Band Significance for Image Representation	6	Alphanumeric - (Default 6 spaces)	R
IFC1	1st Band Image Filter Condition	1	N	R
IMFLT1	1st Band STD Image Filter Code	3	Reserved - 3 spaces	R
NLUTS1	1st Band Number of LUTS	1	0 (mono w/o LUT), 1 (mono w/LUT), 3 (RGB/LUT)	R
NELUT1	1st Band Number of LUT Entries	5	Calculated	C
LUTD1	1st Band Data of 1st LUT	£	LUT data	C

LUTDmm	1st Band Data of mmth LUT	£	LUT data	C

IREPBANDnn	nnth Band Component Representation	2	For N=2 G or Cb, For N=3 B or Cr	C
ISUBCATnn	nnth Band Significance for Image Representation	6	6 spaces	C
IFCnn	nnth Band Image Filter Condition	1	N	C
IMFLTnn	nnth Band STD Image Filter Code	3	Reserved - 3 Spaces	C
NLUTSnn	nnth Band Number of LUTS	1	0 (No LUT except in band 1	C
NELUTnn	nnth Band Number of LUT Entries	5	Calculated	C
LUTD1	nnth Band Data of 1st LUT	£	LUT Data	C

LUTDmm		£	LUT Data	C

TABLE C-2. IMAGE SUB-HEADER (Continued)

FIELD	DESCRIPTION	SIZE	FORMAT VALUES		TYPE
	nnth Band Data of mmth LUT				
ISYNC	Image Sync Code	1	0		R
IMODE	Image Mode	1	B (Band interleaved by block), P (Band interleaved by pixel), S (Band sequential (only valid for multiple block images and multiple bands))		R
NBPR	Number of blocks per row	4	0001-0256		R
NBPC	Number of blocks per column	4	0001-0256		R
NPPBH	# of pixels per block(horiz.)	4	CLEVEL 07 actual value or -000 if unknown 0032-8192		R
NPPBV	# Of pixels per block(vert.)	4			R
NBPP	# Of bits-per-pixel per band	2	0032-8192		R
IDLVL	Display Level	3	01,08,12,16		R
IALVL	Attachment Level	3	001-999		R
ILOC	Image Location	10	000-998		R
IMAG	Image Magnification	4	RRRRRCCCCC relative to AL origin Alphanumeric 1.0, /2 for 1/2, /4 for 1/4, /8 for 1/8 /16 for 1/16, /32 for 1/32, /64 for 1/64, /128 for 1/128		R
UDIDL	User def. Img. data length	5	00000-99999	If receiving user defined data, the system must at least move past user data and unpack the remainder of the file correctly	R
UDOFL	User def overflow	3	000-999		C
UDID	User defined image data	*	Registered tagged record extensions		C
IXSHDL	Extended Subheader data	5	00000-99999, must be 00003 for CLEVEL 07 when actual tag data is not known.	If receiving Extended Data, the system must at least move past the data and unpack the remainder of the file correctly	R
IXSOFL	Extended Subheader overflow	3	000-999, must be 001 for CLEVEL 07 when actual tag data is not known.		C
IXSHD	Extended Subheader data	**	Controlled tagged record extensions		C

£ One byte each entry
* As specified by UDIDL
** As specified by IXSHDL

TABLE C-7. RESERVED EXTENSION SEGMENT SUB-HEADER

FIELDS	DESCRIPTION	SIZE	FORMAT VALUES	TYPE
RE	FILE PART TYPE	2	RE	R
RESTAG	UNIQUE DES TYPE IDENTIFIER	25	Alphanumeric For Clevel 07 "Replacement File Header " (quotes are not included)	R
RESVER	VERSION OF THE DATA FIELD DEFINITION	2	01	R
RESSG	SECURITY GROUP	†	Refer to (table xviii) of MIL-STD-2500 NITF Version 2.0	R
RESSHL	LENGTH OF USER-DEFINED SUBHEADER FIELDS	4	0000	R
RESDATA	RESERVED DATA FIELD	**	As defined in Table 5-4	R

Example of Caboose file layout:

Main NITF Header

FHDR	9 bytes	NITF02.00	
CLEVEL	2 bytes	07	

OPHONE	18 bytes	520 538-5458 ex378	
FL	12 bytes	-00000000000	(always -0's for CLEVEL 07)
HL	6 bytes	000404	
NUMI	3 bytes	001	(at least 1 for CLEVEL 07)
LISH001	6 bytes	000443	(may change based on tag information)
LI001	10 bytes	-000000000	
NUMS	3 bytes	000	
NUML	3 bytes	000	
NUMT	3 bytes	000	
NUMDES	3 bytes	001	(indicates unknown tag length at time of collections, tags in overflow area only)
LRSH001	4 bytes	0209	(always 209 for CLEVEL 07)
LR001	9 bytes	-00000000	(indicates unknown tag length at time of collection)
NUMRES	3 bytes	001	(always 1 for CLEVEL 07)
LRSH001	4 bytes	0200	(always 200 for CLEVEL 07)
LR001	7 bytes	-000000	(indicates unknown tag length at time of collection)
UDHDL	5 bytes	00000	
XHDL	5 bytes	00000	

NITF Image Subheader

IM	2 bytes	IM	

NROWS	8 bytes	-0000000	(always -0's for CLEVEL 07 Real Time Collectors)

NBPC	4 bytes	-000	(always -0's for CLEVEL 07 Real Time Collectors)

IXSHDL	5 bytes	00000	

NITF Image Data to be collected

NITF Data Extension Segment Subheader

DE	**2 bytes**	**DE**
DESTAG	**25 bytes**	**"Controlled Extensions"**
DESVER	**2 bytes**	**01**
---	**167 bytes**	**Security information**
DESOFLW	**6 bytes**	**IXSHD**
DESITEM	**3 bytes**	**001**
DESSHL	**4 bytes**	**0000**

NITF Data Extension Segment Data to be collected

NITF Reserved Extension Segment Subheader

RE	**2 bytes**	**RE**
RESTAG	**25 bytes**	**"Replacement File Header "**
RESVER	**2 bytes**	**01**
----	**167 bytes**	**security information**
RESSHL	**4 bytes**	**0000**

NITFS Reserved Extension Data

CFHD1-L	**7 bytes**	**0102139**
CFHD-DELIM1	**4 bytes**	**0x0A6E1D97**
CFHD-RD	**102139 bytes**	**Replacement Data**

Replacement Main NITF Header

FHDR		**9 bytes**	**NITF02.00**
CLEVEL		**2 bytes**	**04** **"Actual CLEVEL size"**

OPHONE		**18 bytes**	**520 538-5458 ex378**
FL		**12 bytes**	**000003219514**
HL		**6 bytes**	**000404**
NUMI		**3 bytes**	**001**
	LISH001	**6 bytes**	**000446**
	LI001	**10 bytes**	**0003015036**
NUMS		**3 bytes**	**000**
NUML		**3 bytes**	**000**
NUMT		**3 bytes**	**000**
NUMDES		**3 bytes**	**001**
	LDSH001	**4 bytes**	**0209**
	LD001	**9 bytes**	**000101080**
NUMRES		**3 bytes**	**001**
	LRSH001	**4 bytes**	**0200**
	LR001	**7 bytes**	**0102139**
UDHDL		**5 bytes**	**00000**
XHDL		**5 bytes**	**00000**

Replacement NITF Image Subheader

IM	**2 bytes**	**IM**

NROWS	**8 bytes**	**00004096**

NBPC	**4 bytes**	**0008**

IXSHDL	**5 bytes**	**00003**
IXSOFL	**3 bytes**	**001**

Replacement NITF Data Extension Segment Subheader

DE	**2 bytes**	**DE**
DESTAG	**25 bytes**	**"Controlled Extensions"**
DESVER	**2 bytes**	**01**
---	**167 bytes**	**Security information**
DESOFLW	**6 bytes**	**IXSHD**
DESITEM	**3 bytes**	**001**
DESSHL	**4 bytes**	**0000**

Replacement NITF Data Extension Segment Data

DESDATA	**101,080 bytes**	**Overflowed Support Tag Data**

CFHD-DELIM2	**4 bytes**	**0x0ECA14BF**
CFHD2-L	**7 bytes**	**0102139**