

METRIC

MIL-STD-2411-2

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Note - The cover page of this standard has been changed for administrative reasons. There are no other changes to this document.

# DEPARTMENT OF DEFENSE INTERFACE STANDARD

## INTEGRATION OF RASTER PRODUCT FORMAT FILES INTO THE NATIONAL IMAGERY TRANSMISSION FORMAT



AMSC N/A

AREA MCGT

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FOREWORD

DEPARTMENT OF DEFENSE

1. This Military Standard is approved for use by all Departments and Agencies of the Department of Defense.

2. Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Director, Defense Mapping Agency, ATTN: TI, ST A-10, 8613 Lee Highway, Fairfax, VA 22031-2137 by using the Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

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## 1. SCOPE

1.1 Scope.

a. The Raster Product Format (RPF) is a standard data structure for geospatial databases composed of rectangular arrays of pixel values (e.g. in digitized maps or images) in compressed or uncompressed form. RPF is intended to enable application software to use the data in RPF format on computer-readable interchange media directly without further manipulations or transformation, as defined in MIL-STD-2411.

b. The National Imagery Transmission Format Standard (NITFS) is a collection of related standards and specifications developed to provide a foundation for interoperability in the dissemination of imagery and imagery-related products among different computer systems, as defined in MIL-STD-2500 and MIL-HDBK-1300.

c. To facilitate interoperability among users of RPF data, this standard specifies requirements for the integration of RPF files into NITF for recording on computer-readable media or for dissemination via digital communication lines.

1.2 Purpose. This standard is intended to provide a common interchange format for users of RPF data and of NITF data.

1.3 Application. The Military Departments, Office of the Secretary of Defense, Organizations of the Joint Chiefs of Staff, and the Defense Agencies of the Department of Defense (collectively known as DoD components) shall use the information in this standard in preparing and accessing digital geographic data required or specified to be in the integrated RPF/NITFS format.

1.4 Security. This standard is UNCLASSIFIED. The procedures and processes presented herein may be used for classified processing where appropriate security provisions are added.

## 2. APPLICABLE DOCUMENTS

2.1 Government documents.

2.1.1 Specifications, standards, and handbooks. The following specifications, standards, and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the current Department of Defense Index of Specifications and Standards (DODISS) and the supplement thereto, cited in the solicitation (see 6.2).

MIL-HDBK-1300	National Imagery Transmission Format Standard
MIL-STD-2411 MIL-HDBK-1300	Defense Mapping Agency Military Standard, Raster Product Format
MIL-STD-2500	National Imagery Transmission Format for the National Imagery Transmission Format Standard

(Unless otherwise indicated, copies of federal and military specifications, standards, and handbooks are available from the Standardization Documents Order Desk, Bldg. 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094).

2.1.2 Other Government documents, drawings, and publications. This section is not applicable to this standard.

2.2 Non-Government publications. This section is not applicable to this standard.

2.3 Order of precedence. In the event of a conflict between the text of this document and the references cited herein (except for related associated detail specifications or specification sheets) the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained

### 3. DEFINITIONS

This section is not applicable to this standard.

## 4. GENERAL REQUIREMENTS

a. The integration of RPF into NITF shall enable RPF users to meet all of the requirements of MIL-STD-2411.

b. The integration of RPF into NITF shall enable NITF users with appropriate software to receive and interpret RPF data in accordance with MIL-STD-2500.

4.1 Notation.

a. The notation used herein for numbers, file structures, and other items shall be in accordance with MIL-STD 2411, section 4.3. Four additional data types are used in this specification. These are as follows:

Data Type	Abbreviation (used in defining data structures)
Alphabetic string (ASCII character subset)	alph
Alphanumeric string (ASCII character subset)	alnm
Unsigned number (ASCII character subset)	numr
Signed number (ASCII character subset)	snum

b. Appendix 10 contains a mapping of the NITF file and field names given herein (i.e. those beginning with the prefix [nitf ... or <nitf ... ) into those assigned in MIL-STD-2500.

c. Most of the names assigned herein to rpf groups (i.e. those beginning with the prefix [rpf ... ) correspond exactly to those assigned to those groups in MIL-STD-2411. For example, the [rpf location section] group cited herein corresponds exactly to the [location section] group specified in MIL-STD-2411. The names that are not found in MIL-STD-2411 (e.g. [rpf sections and components]) are generic names that are used herein only.

4.2 General Approach to Integration. The [rpf file]s employ a very generalized logical structure that affords the implementor great flexibility in determining the physical arrangement of data within NITF. Consequently, only a few simple rules shall apply:

a. Every [rpf file] shall have an [rpf header section] and an [rpf location section], and other sections and components that depend on the file type, as defined in MIL-STD-2411.

b. The [rpf header section] shall be recorded in a tagged [nitf user-defined header data] (UDHD) segment of the [nitf file]. The [rpf header section] shall identify the physical location of the [rpf location section].

c. The physical locations of the remaining components of the [rpf file] shall be specified in the [rpf location section], so these components may be recorded anywhere in the [nitf file].



consistent with the rules for formatting [nitf file]s. Receiving RPF-compatible system software shall be required to use the information in the [rpf location section] to determine the locations of the remaining components of the [rpf file] for processing.

d. Except for certain designated components, all components of the [rpf file] shall be recorded in user-defined registered data segments of the [nitf file]. Certain designated components in the [rpf frame file] will be recorded in the [nitf image data] area, to enable access by NITF users who do not have the capability to interpret [rpf file]s.

e. Each [rpf file] component shall be recorded in an [nitf file] as a contiguous stream of bytes that can always be processed as a single "atomic" (i.e. indivisible) unit.

## 5. DETAILED REQUIREMENTS

5.1 RPF Files. The RPF encompasses the following file types:

a. Table of contents files delineating the identities and contents of [rpf frame file]s and [rpf external color/grayscale file]s that may be stored on a given interchange volume (or transmitted in a single message stream). An overview of the [rpf table of contents file] structure is as follows:

```
[rpf table of contents file]
  (1)
    [rpf header section]
    [rpf location section]
    [rpf boundary rectangle section] (0, 1)
    [rpf frame file index section] (0, 1)
    [rpf color table index section] (0, 1)
```

b. Frame files containing raster map and image data in compressed or uncompressed form that may be recorded on an interchange volume (or transmitted in a message). An overview of the [rpf frame file] structure is as follows:

```
[rpf frame file]
  (1)
    [rpf header section]
    [rpf location section]
    [rpf coverage section] (0, 1)
    [rpf compression section] (0, 1)
    [rpf color/grayscale section] (0, 1)
    [rpf image section]
      (2)
        [rpf mask subsection] (0, 1)
        [rpf image description sub-header]
        [rpf image display parameters sub-header]
        [rpf spatial data subsection]
  (1)
    [rpf attribute section] (0, 1)
    [rpf related images section] (0, 1)
    [rpf replace/update section] (0, 1)
```

c. External color/grayscale files containing color tables and histograms that are too large to store (or transmit) efficiently in a [rpf frame file], where they would otherwise be normally recorded (or transmitted). An overview of the [rpf external color/grayscale file] structure is as follows:

```
[rpf external color/grayscale file]
  (1)
    [rpf header section]
    [rpf location section]
    [rpf color/grayscale section]
```

5.2 NITF Messages. The [nitf file] encompasses a single file type. An overview of the [nitf file] structure is as follows:

```
[nitf file]
  (1)
    [nitf message header]
      (2)
        [nitf identification and origination group]
        [nitf security group]
        [nitf image description group]
        [nitf symbol description group]
        [nitf label description group]
        [nitf text description group]
        [nitf data extension segment description group]
        [nitf reserved segment description group]
        [nitf user-defined header group]
        [nitf extended header group]
      (1)
        [nitf image] (0, ... many)
          (2)
            [nitf image sub-header]
            [nitf image data]
          (1)
            [nitf symbol] (0, ... many)
            [nitf label] (0, ... many)
            [nitf text] (0, ... many)
            [nitf data extension segment] (0, ... many)
              (2)
                [nitf data extension sub-header]
                [nitf data extension segment data]
              (1)
                [nitf reserved segment] (0, ... many)
```

5.3 NITF/RPF Integration. A given RPF file shall be integrated into an [nitf file] by incorporating RPF file components into the following segments of the [nitf file]:

- a. [nitf user-defined header group];
- b. [nitf image]; and
- c. [nitf data extension segment].

5.3.1 Integration in the [nitf user-defined header group]. The integrated structure shall be as follows:

```
(2)
[nitf user-defined header group]
  (3)
    <nitf user-defined header length>,numr:5
    [nitf user-defined header data]
      (4)
        <nitf user-defined header overflow>,numr:3
        [rpf user-defined data group]
          (5)
            <nitf user-defined data group tag for
              rpf>,alph:6
            <nitf user-defined data group length for
              rpf>,numr:5
            [rpf header section]
            [rpf component] (0, ...many)
```

5.3.2 Integration in [nitf image]. The integrated structure shall be as follows:

```

(1)
[nitf image] (0, ... many)
(2)
[nitf image sub-header]
(3)
[nitf image sub-header data fields]
[nitf user-defined sub-header group]
(4)
<nitf user-defined image data length>,numr:5
<nitf user-defined image data overflow>,numr:3
[nitf tagged data subgroup for rpf]
(5)
<nitf tag>,alph:6
<nitf udid tagged data subgroup for rpf
length>,numr:5
[rpf color/grayscale section] (0, 1)
[rpf image description sub-header]
[rpf component] (0, ... many)
(3)
[nitf extended image sub-header group]
(2)
[nitf-rpf image data]
(3)
<nitf blocked image data offset>,uint:4 (0, 1)
[rpf mask subsection] (0, 1)
[rpf image display parameter sub-header] (0, 1)
[rpf compression section] (0, 1)
[rpf spatial data subsection]

```

5.3.3 Integration in [nitf data extension segment]. The integrated structure shall be as follows:

```

(1)
[nitf-rpf data extension segment] (0, 1)
  (2)
  [nitf data extension sub-header]
    (3)
    [nitf identification and security group]
    <nitf user-defined data extension sub-header length>,numr:4
    [nitf user-defined data extension sub-header] (0, 1)
    (omitted in rpf frame files)
    [nitf user-defined data extension group]
      (5)
      [nitf tagged data subgroup for rpf]
        (6)
        <nitf tag>,alph:6
        <nitf tagged data subgroup length>,numr:5
        [rpf component] (1, ... many)

```

## 6. NOTES

(This section contains information of a general or explanatory nature that may be helpful, but is not mandatory.)

6.1 Intended use. This standard is intended to govern the integration of files written in RPF into the NITF message format, for use in DoD missions.

6.2 Acquisition requirements. When this specification is used in acquisition, the applicable issue of the DODISS must be cited in the solicitation (see 2.1.1 and 2.2).

6.3 International standardization agreements. This section is not applicable to this standard.

6.3.1 International Standardization Agreements (STANAGs). This section is not applicable to this standard.

6.3.2 Quadripartite Standardization Agreements (OSTAGs). This section is not applicable to this standard.

6.3.3 Air Standardization Coordinating Committee Agreements (ASCC). This section is not applicable to this standard.

6.3.4 International MC&G Agreements. This section is not applicable to this standard.

6.3.5 Executive Orders. This section is not applicable to this standard.

6.3.6 InterAgency Agreements. This section is not applicable to this standard.

6.3.7 Other Documentation. This section is not applicable to this standard.

6.4 Subject term (key word) listing.

Data interchange formats  
Geospatial databases  
Image data structures  
Map data structures  
Mapping, charting, and geodesy  
National Imagery Transmission Format  
Raster Product Format



## APPENDIX

MAPPING OF GROUP AND FIELD NAMES BETWEEN  
MIL-STD-2411-2 AND MIL-STD-2500

## 10. GENERAL

10.1 Scope. This appendix lists the cross-reference of Raster Product Format group and field names as described in this standard and the National Imagery Transmission Format as described in MIL-STD-2500 and MIL-HDBK-1300. This information is intended for reference and for ensuring that names that may be assigned in future versions of this standard do not duplicate existing names.

## 20. APPLICABLE DOCUMENTS

This section is not applicable to this standard.

## 30. GROUP OR FIELD NAMES

Group or field name given herein	Mnemonic field names in MIL-STD- 2500
<nitf data item overflowed>	DESITEM
<nitf length of user-defined data extension group>	DESSHL
<nitf overflowed header type>	DESOFLW
<nitf tag>	RETAG
<nitf tagged data subgroup length>	REL
<nitf udid tagged data subgroup for rpf length>	UDIDL
<nitf user-defined data group length for rpf>	REL
<nitf user-defined data group tag for rpf>	RETAG
<nitf user-defined header length>	UDHDL
<nitf user-defined header overflow>	UDOFL
<nitf user-defined image data length>	UDIDL

<nitf user-defined image data overflow>	UDOFI
---	-------

Group or field name given herein	Mnemonic field names in MIL-STD-2500
[nitf data extension segment]	All fields in MIL-STD-2500, TABLE XVII
[nitf data extension segment data]	DESDATA
[nitf data extension segment description group]	NUMDES LDShnnn LDnnn
[nitf data extension sub-header]	DE DESTAG DESVR DESSG DESOFW DESIEM DESSHL DESSHF
[nitf extended header group]	XHDL XHD
[nitf extended image sub-header group]	IXSHDL IXSOFL IXSHD
[nitf identification and origination group]	FHDR CLEVEL STYPE OSTAID FDT FTITLE
[nitf identification and security group]	DE DESTAG DESVR DESSG
[nitf image]	(none)
[nitf-rpf image data]	(none)

Group or field name given herein	Mnemonic field names in MIL-STD-2500
[nitf image description group]	FL HL NUMI LISHnnn LInnn
[nitf image sub-header]	All fields in MIL-STD-2500, TABLE III
[nitf image sub-header data fields]	All fields in MIL-STD-2500, TABLE III except UDIDL, UDOFL, UDID, IXSHDL, IXSODL, IXSHD
[nitf label]	All fields in MIL-STD-2500, TABLE XI
[nitf label description group]	NUML LLSHnnn LLnnn
[nitf file]	(none)
[nitf message header]	All fields in MIL-STD-2500, TABLE XI
[nitf non-rpf data group]	RETAG REL REDATA
[nitf non-rpf image data group]	RETAG REL UDID
[nitf reserved segment]	(none)
[nitf reserved segment description group]	NUMRES LRSHnnn LRnnn

Group or field name given herein	Mnemonic field names in MIL-STD- 2500
[nitf security group]	FSCLAS FSCODE FSCTLH FSREL FSCAUT FSCTLN FSDWNG FSDEVT FSCOP FSCPYS ENCRYP ONAME OPHONE
[nitf symbol]	All fields in MIL-STD-2500, TABLE VI
[nitf symbol description group]	NUMS LSSHnnn LSnnn
[nitf tagged data subgroup for rpf]	RETAG REL UDID
[nitf text]	All fields in MIL-STD-2500, TABLE XIII
[nitf text description group]	NUMT LTSHnnn LTnnn
[nitf user-defined data extension group]	DESDATA
[nitf user-defined data extension sub- header]	DESOFLOW DESITEM DESSHL DESSHF DESDATA

Group or field name given herein	Mnemonic field names in MIL-STD- 2500
[nitf user-defined header data]	UDHD
[nitf user-defined header group]	UDHDL UDHD
[nitf user-defined sub-header group]	UDIDL UDOFL UDID

```

1  APPENDIX 20.  EXAMPLE OF NITF STRUCTURE INTEGRATED WITH RPF FRAME FILE
2  STRUCTURE (MOST ELEMENTARY FIELDS OMITTED).
3
4  [NITF file]
5      (1)
6      [NITF file header]
7          (2)
8          [nitf identification and origination group]
9          [nitf security group]
10         <nitf file length>,numr:12
11         <nitf header length>,numr:6
12         [nitf image description group]
13         [nitf symbol description group]
14         [nitf label description group]
15         [nitf text description group]
16         [nitf data extension segment description group]
17         [nitf reserved segment description group]
18         <nitf user-defined header length>,numr:5
19         [nitf user-defined header]
20             (3)
21             <nitf user-defined header overflow>,numr:3
22             <nitf user-defined header data tag>.alph:6
23             <nitf user-defined header data length>,numr:5
24             [nitf user-defined header data] UDHD
25             (4)
26             --> [rpf frame file components]
27                 (5)
28                 --> [rpf header section]
29             (2)
30             [nitf extended header description group]
31         (1)
32         [nitf image] (0, ... many)
33             (2)
34             [nitf image sub-header]

```

```

35      (3)
36      [nitf identification, security, structure fields]
37      [nitf image geographic location]
38      [nitf comments]
39      [nitf image compression structure]
40      [nitf image band] (1, ... 9)
41      [nitf image table structure fields]
42      [nitf image location]
43      <nitf image magnification>, alnm:4
44      <nitf user-defined image subheader length>, numr:5
45      [nitf user-defined image subheader]
46      (4)
47      <nitf user-defined image subheader overflow>, numr:3
48      <nitf user-defined image subheader tag>, alph:6
49      <nitf user-defined image subheader data length>, numr:5
50      [nitf user-defined image subheader data] UDID
51      (5)
52      --> [rpf frame file components]
53      --> (6)
54      --> [rpf location section]
55      --> [rpf coverage section]
56      --> [rpf color/grayscale section]
57      --> [rpf image description sub-header]
58      --> [rpf related images section]
59      (3)
60      [nitf extended subheader]
61      (2)
62      [nitf image data]
63      (3)
64      <nitf spatial data offset>, uint:4
65      --> [nitf-rpf frame file image data components]
66      --> (4)
67      --> [nitf-rpf mask subsection] (0, 1)
68      --> [nitf-rpf image display parameter sub-header]
69      --> [nitf-rpf compression section] (0, 1)
70      --> [nitf-rpf spatial data subsection]

```



```

71  (1)
72  [nitf symbol] (0, ... many)
73  [nitf label] (0, ... many)
74  [nitf text] (0, ... many)
75  [nitf data extension segment] (0, ... many)
76  (2)
77  [nitf data extension sub-header]
78  (3)
79  [nitf identification and security group]
80  <nitf user-defined data extension sub-header length>.numr:4
81  [nitf user-defined data extension sub-header] (0, 1) (omitted in rpf files)
82  [nitf user-defined data extension group] DESDATA
83  (5)
84  [nitf tagged record for rpf] (0, 1) (may be present in rpf files)
85  (6)
86  <nitf record tag for rpf>.alph:6
87  <nitf tagged record length for rpf>.numr:5
88  --> [rpf frame file components]
89  (7)
90  --> [rpf attribute section]
91  --> [rpf replace/update section]
92  (5)
93  [nitf additional tagged records] (0, ... many) (omitted in rpf files)
94  (1)
95  [nitf reserved segment] (0, ... many)

```

96 APPENDIX 30. DETAILED EXAMPLE OF NITF STRUCTURE INTEGRATED WITH RPF FRAME  
 97 FILE STRUCTURE (ELEMENTARY FIELDS INCLUDED).  
 98  
 99

100 [NITF file]

101 (1)

102 [NITF file header]

103 (2)

104 [nitf identification and origination group]

105 (3)

106 <nitf file type and version>, alnm:9

107 <nitf compliance level>numr:2

108 <nitf system type>, alnm:4

109 <nitf originating station ID>, alnm:10

110 <nitf file date and time>, alnm:14

111 <nitf file title>, alnm:80

112 (2)

113 [nitf security group]

114 (3)

115 <nitf file security classification>, alph:1

116 <nitf file codewords>, alnm:40

117 <nitf file control and handling>, alnm:40

118 <nitf file releasing instructions>, alnm:40

119 <nitf file classification authority>, alnm:20

120 <nitf file security control number>, alnm:20

121 <nitf file security downgrade>, alnm:6

122 <nitf file downgrading event>, alnm:40 (0, 1)

123 <nitf message copy number>, numr:5

124 <nitf message number of copies>, numr:5

125 <nitf encryption>, numr:1

126 <nitf originator's name>, alph:27

127 <nitf originator's phone number>, alnm:18

128 (2)

129 <nitf file length>, numr:12

130 <nitf header length>, numr:6

131 [nitf image description group]

132 (3)

133 <nitf number of image length records>, numr:3

```

134         [nitf image length record] (0, ... many)
135             (4)
136             <nitf image sub-header length>,numr:6
137             <nitf image data length>,numr:10
138     (2)
139     [nitf symbol description group]
140         (3)
141         <nitf number of symbol length records>,numr:3
142         [nitf symbol length record] (0, ... many)
143             (4)
144             <nitf symbol sub-header length>,numr:4
145             <nitf symbol data length>,numr:6
146     (2)
147     [nitf label description group]
148         (3)
149         <nitf number of label length records>,numr:3
150         [nitf label length record] (0, ... many)
151             (4)
152             <nitf label sub-header length>,numr:4
153             <nitf label data length>,numr:3
154     (2)
155     [nitf text description group]
156         (3)
157         <nitf number of text length records>,numr:3
158         [nitf text length record] (0, ... many)
159             (4)
160             <nitf text sub-header length>,numr:4
161             <nitf text data length>,numr:5
162     (2)
163     [nitf data extension segment description group]
164         (3)
165         <nitf number of data extension segment length records>,numr:3
166         [nitf data extension segment length record] (0, ... many)
167             (4)
168             <nitf data extension segment sub-header length>,numr:4
169             <nitf data extension segment data length>,numr:9
170     (2)
171     [nitf reserved segment description group]

```

```

172      (3)
173      <nitf number of reserved segment length records>,numr:3
174      [nitf reserved segment length record] (0, ... many)
175      (4)
176      <nitf reserved segment sub-header length>,numr:4
177      <nitf reserved segment data length>,numr:7
178      (2)
179      <nitf user-defined header length>,numr:5
180      [nitf user-defined header]
181      (3)
182      <nitf user-defined header overflow>,numr:3
183      <nitf user-defined header data tag>,alph:6
184      <nitf user-defined header data length>,numr:5
185      [nitf user-defined header data] UDHD
186      (4)
187      -->      [rpf frame file components]
188      (5)
189      -->      [rpf header section]
190      (6)
191      <rpf little/big endian indicator>,bool:1
192      <rpf header section length>,uint:2
193      <rpf file name>,ascii:12
194      <rpf new/replacement/update indicator>,uint:1
195      <rpf governing specification number>,ascii:15
196      <rpf governing specification date>,ascii:8
197      <rpf security classification>,ascii:1
198      <rpf security country/international code>,ascii:2
199      <rpf security release marking>,ascii:2
200      <rpf location section location>,uint:4
201      (2)
202      [nitf extended header description group]
203      (3)
204      <nitf extended header length>,numr:5
205      <nitf extended header data>,numr:var (0, 1)
206      (1)
207      [nitf image] (0, ... many)
208      (2)
209      [nitf image sub-header]

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210 (3)

211 [nitf identification, security, structure fields]

212 (4)

213 <nitf file part type>,alph:2

214 <nitf image ID>,alnm:10

215 <nitf image date and time>,alnm:14

216 <nitf target ID>,alph:17

217 <nitf image title>,alnm:80

218 <nitf image security classification>,alph:1

219 <nitf image codewords>,alnm:40

220 <nitf image control and handling>,alnm:40

221 <nitf image releasing instructions>,alnm:40

222 <nitf image classification authority>,alnm:20

223 <nitf image security control number>,alnm:20

224 <nitf image security downgrade>,alnm:6

225 <nitf image downgrading event>,alnm:40 (0, 1)

226 <nitf encryption>,numr:1

227 <nitf image source>,alnm:42

228 (4) (continued)

229 <nitf number of significant rows in image>,numr:8

230 <nitf number of significant columns in image>,numr:8

231 <nitf pixel value type>,alnm:3

232 <nitf image representation>,alnm:8

233 <nitf image category>,alnm:8

234 <nitf actual bits per pixel per band>,numr:2

235 <nitf pixel justification>,alph:1

236 <nitf image coordinate system>,alph:1

237 (3)

238 [nitf image geographic location]

239 (4)

240 [nitf image geographic coordinate] (4)

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241
242         (5)
243         <nitf latitude degrees>,numr:2
244         <nitf latitude minutes>,numr:2
245         <nitf latitude seconds>,numr:2
246         <nitf latitudinal hemisphere>,alph:1
247         <nitf longitude degrees>,numr:3
248         <nitf longitude minutes>,numr:2
249         <nitf longitude seconds>,numr:2
250         <nitf longitudinal hemisphere>,alph:1
251     (3)
252     [nitf comments]
253         (4)
254         <nitf number of image comment records>,numr:1
255         <nitf image comment record>,alnm:80 (0, ... 9)
256     (3)
257     [nitf image compression structure]
258         (4)
259         <nitf image compression>,alnm:2
260         <nitf compression rate code>,alnm:4 (0, 1)
261         <nitf number of bands>,numr:1
262     (3)
263     [nitf image band] (1, ... 9)
264         (4)
265         <nitf band representation>,alnm:2
266         <nitf band significance for image category>,alnm:6
267         <nitf image filter condition>,alph:1
268         <nitf standard image filter code>,alnm:3
269         <nitf number of lookup tables>,numr:1
270         <nitf number of lookup table entries>,numr:5
271         [nitf lookup table] (0, ... 4)
272             (5)
273             [nitf lookup entry] (1, ... many)
274                 (6)
275                 <nitf lookup data>,alnm:var (one byte per entry per band)
276     (3)
[nitf image table structure fields]

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277         (4)
278         <nitf image sync code>,numr:1
279         <nitf image mode>,alph:1
280         <nitf number of blocks per row>,numr:4
281         <nitf number of blocks per column>,numr:4
282         <nitf number of pixels per block horizontal>,numr:4
283         <nitf number of pixels per block vertical>,numr:4
284         <nitf number of bits per pixel per band>,numr:2
285         <nitf display level>,numr:3
286         <nitf attachment level>,numr:3
287     (3)
288     [nitf image location]
289         (4)
290         <nitf row offset>,snum:5
291         <nitf column offset>,snum:5
292     (3)
293     <nitf image magnification>,alnm:4
294     <nitf user-defined image subheader length>,numr:5
295     [nitf user-defined image subheader]
296         (4)
297         <nitf user-defined image subheader overflow>,numr:3
298         <nitf user-defined image subheader tag>,alph:6
299         <nitf user-defined image subheader data length>,numr:5
300         [nitf user-defined image subheader data] UDID
301         (5)
302         --> [rpf frame file components]
303             (6)
304             --> [rpf location section]
305                 (7)
306                 <rpf location section length>,uint:2
307                 <rpf component location table offset>,uint:4
308                 <rpf number of component location records>,uint:2
309                 <rpf component location record length>,uint:2
310                 <rpf component aggregate length>,uint:4
311                 [rpf component location table]
312                 (8)
313                 [rpf component location record] (2, ... many)

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(9)
<rpf component id>,uint:2
<rpf component length>,uint:4
<rpf component location>,uint:4
(6)
[rpf coverage section] (0, 1)
(7)
[rpf coverage section subheader]
(8)
<rpf northwest/upper left latitude>,real:8
<rpf northwest/upper left longitude>,real:8
<rpf southwest/lower left latitude>,real:8
<rpf southwest/lower left longitude>,real:8
<rpf northeast/upper right latitude>,real:8
<rpf northeast/upper right longitude>,real:8
<rpf southeast/lower right latitude>,real:8
<rpf southeast/lower right longitude>,real:8
<rpf north-south/vertical resolution>,real:8
<rpf east-west/horizontal resolution>,real:8
<rpf latitude/vertical interval>,real:8
<rpf longitude/horizontal interval>,real:8
(6)
--> [rpf color/grayscale section] (0, 1)
(7)
[color/grayscale section subheader]
(8)
<rpf number of color/grayscale offset records>,uint:1
<rpf number of color converter offset records>,uint:1
<rpf external color/grayscale file name>,ascii:12
(7)
[rpf colormap subsection] (0, 1)
(8)
<rpf colormap offset table offset>,uint:4
<rpf color/grayscale offset record length>,uint:2
[rpf colormap offset table]
(9)
[rpf color/grayscale offset record] (1, ... many)

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351                                     (10)
352                                     <rpf color/grayscale table id>,uint:2
353                                     <rpf number of color/grayscale records>,uint:4
354                                     <rpf color/grayscale element length>,uint:1
355                                     <rpf histogram record length>,uint:2
356                                     <rpf color/grayscale table offset>,uint:4
357                                     <rpf histogram table offset>,uint:4
358
359 (8)
360 [rpf color/grayscale element group]
361     (9)
362     [rpf color/grayscale table] (1, ... many)
363         (10)
364         [rpf color/grayscale record] (1, ... many)
365             (11)
366             <rpf color/grayscale element>,byte:var
367
368 (8)
369 [rpf histogram element group] (0, 1)
370     (9)
371     [rpf histogram table] (1, ... many)
372         (10)
373         [rpf histogram record] (1, ... many)
374             (11)
375             <rpf histogram element>,uint:4
376
377 (7)
378 [rpf color converter subsection] (0, 1)
379     (8)
380     <rpf color converter offset table offset>,uint:4
381     <rpf color converter offset record length>,uint:2
382     <rpf color converter record length>,uint:2
383     [rpf color converter offset table]
384         (9)
385         [rpf color converter offset record] (1, ... many)
386             (10)
387             <rpf color converter table id>,uint:2
388             <rpf number of color converter records>,uint:4
389             <rpf color converter table offset>,uint:4
390             <rpf source color/grayscale offset table offset>,uint:4
391             <rpf target color/grayscale offset table offset>,uint:4

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(9)
[rpf color converter table] (1, ... many)
(10)
[rpf color converter record] (1, ... many)
(11)
<rpf target color/grayscale table entry number>,uint:4
(6)
--> [rpf image description sub-header]
(7)
<rpf number of spectral groups>,uint:2
<rpf number of subframe tables>,uint:2
<rpf number of spectral band tables>,uint:2
<rpf number of spectral band lines per image row>,uint:2
<rpf number of subframes in east-west or left-right direction>,uint:2
<rpf number of subframes in north-south or up-down direction>,uint:2
<rpf number of output columns per subframe>,uint:4
<rpf number of output rows per subframe>,uint:4
<rpf subframe mask table offset>,uint:4
<rpf transparency mask table offset>,uint:4
(6)
--> [rpf related images section] (0, 1)
(7)
[rpf related image section subheader]
(8)
<rpf related image description table offset>,uint:4
<rpf number of related image description records>,uint:2
<rpf related image description record length>,uint:2
(7)
[rpf related images subsection]
(8)
[rpf related image description table]
(9)
[rpf related image description record] (2, ... many)
(10)
<rpf related image file name>,ascii:12
<rpf related image pathname offset>,uint:4
<rpf relationship code>,uint:4
(8)
[rpf related image pathname table]

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428                                     (9)
429                                     [rpf related image pathname record] (2, ... many)
430                                     (10)
431                                     <rpf related image pathname length>,uint:2
432                                     <rpf related image pathname>,ascii:var
433     (3)
434     [nitf extended image sub-header group]
435         (4)
436         <nitf extended image sub-header data length>,alnm:5
437         <nitf extended image sub-header overflow>,numr:3 (0, 1)
438         <nitf extended image sub-header data>,byte:var (0, 1)
439     (2)
440     [nitf image data]
441         (3)
442         <nitf spatial data offset>,uint:4 (0, 1) (offset of [nitf-rpf spatial data
443         subsection] from [nitf image data]; present only for masked images.)
444     --> [nitf-rpf frame file image data components]
445         (4)
446         --> [nitf-rpf mask subsection] (0, 1)
447             (5)
448             [nitf-rpf mask subheader]
449                 (6)
450                 <nitf-rpf subframe sequence record length>,uint:2
451                 <nitf-rpf transparency sequence record length>,uint:2
452                 <nitf-rpf transparent output pixel code length>,uint:2
453                 /nitf-rpf transparent output pixel code/,bits:var (0, 1)
454             (5)
455             [nitf-rpf subframe mask table] (0, 1)
456                 (6)
457                 [nitf-rpf subframe mask spectral group] (1, ... many)
458                     (7)
459                     [nitf-rpf subframe mask row] (1, ... many)
460                         (8)
461                         [nitf-rpf subframe sequence record] (1, ... many)
462                             (9)
463                             <nitf-rpf subframe offset>,uint:4

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464      (5)
465      [nitf-rpf transparency mask table] (0, 1)
466      (6)
467      [nitf-rpf transparency mask spectral group] (1, ... many)
468      (7)
469      [nitf-rpf transparency mask row] (1, ... many)
470      (8)
471      [nitf-rpf transparency sequence record] (1, ... many)
472      (9)
473      <nitf-rpf subframe offset>,uint:4
474      (4)
475      --> [nitf-rpf image display parameter sub-header]
476      (5)
477      <nitf-rpf number of image rows>,uint:4
478      <nitf-rpf number of image codes per row>,uint:4
479      <nitf-rpf image code bit length>,uint:1
480      (4)
481      --> [nitf-rpf compression section] (0, 1)
482      (5)
483      [nitf-rpf compression section subheader]
484      (6)
485      <nitf-rpf compression algorithm id>,uint:2
486      <nitf-rpf number of compression lookup offset records>,uint:2
487      <nitf-rpf number of compression parameter offset records>,uint:2
488      (5)
489      [nitf-rpf compression lookup subsection] (0, 1)
490      (6)
491      <nitf-rpf compression lookup offset table offset>,uint:4
492      <nitf-rpf compression lookup table offset record length>,uint:2
493      [nitf-rpf compression lookup offset table]
494      (7)
495      [nitf-rpf compression lookup offset record] (1, ... many)

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496                                     (8)
497                                     <nitf-rpf compression lookup table id>,uint:2
498                                     <nitf-rpf number of compression lookup records>,uint:4
499                                     <nitf-rpf number of values per compression lookup record>,uint:2
500                                     <nitf-rpf compression lookup value bit length>,uint:2
501                                     <nitf-rpf compression lookup table offset>,uint:4
502
503                                     (6)
504                                     [nitf-rpf compression lookup table] (1, ... many)
505                                     (7)
506                                     [nitf-rpf compression lookup record] (1, ... many)
507                                     (8)
508                                     /nitf-rpf compression lookup value/,bits:var (1, ... many)
509
510 (5) [nitf-rpf compression parameter subsection] (0, 1)
511     <nitf-rpf compression parameter offset table offset>,uint:4
512     <nitf-rpf compression parameter offset record length>,uint:2
513     (6)
514     [nitf-rpf compression parameter offset table]
515     (7)
516     [nitf-rpf compression parameter offset record] (1, ... many)
517     (8)
518     <nitf-rpf compression parameter id>,uint:2
519     <nitf-rpf compression parameter record offset>,uint:4
520
521     (6)
522     [nitf-rpf compression parameter record] (1, ... many)
523     (7)
524     <nitf-rpf compression parameter value>,byte:var
525
526 (4) --> [nitf-rpf spatial data subsection]
527         (5)
528         [spectral group] (1, ... many)
529         (6)
530         [nitf-rpf subframe table] (1, ... many)
531         (7)
532         [nitf-rpf spectral band table] (1, ... many)
533         (8)
534         [nitf-rpf image row] (1, ... many)

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533  
 534 (9)  
 535 [nitf-rpf spectral band line] (1, ... many)  
 536 (10)  
 537 /nitf-rpf image code/,bits:var (1, ... many)  
 538 (1)  
 539 [nitf symbol] (0, ... many)  
 540 [nitf label] (0, ... many)  
 541 [nitf text] (0, ... many)  
 542 [nitf data extension segment] (0, ... many)  
 543 (2)  
 544 [nitf data extension sub-header]  
 545 (3)  
 546 [nitf identification and security group]  
 547 (4)  
 548 <nitf file part type>,alph:2  
 549 <nitf unique data extension type identifier>,alnm:25  
 550 <nitf version of the data field definition>,numr:2  
 551 <nitf data extension security classification>,alph:1  
 552 <nitf data extension codewords>,alnm:40  
 553 <nitf data extension control and handling>,alnm:40  
 554 <nitf data extension releasing instructions>,alnm:40  
 555 <nitf data extension classification authority>,alnm:20  
 556 <nitf data extension security control number>,alnm:20  
 557 <nitf data extension security downgrade>,alnm:6  
 558 <nitf data extension downgrading event>,alnm:40 (0, 1)  
 559 [nitf registered extension overflow] (0, 1) (present in rpf files)  
 560 (5)  
 561 <nitf overflowed header type>,alnm:6  
 562 <nitf data item overflowed>,alnm:3  
 563 (3)  
 564 <nitf user-defined data extension sub-header length>,numr:4  
 565 [nitf user-defined data extension sub-header] (0, 1) (omitted in rpf files)  
 566 [nitf user-defined data extension group] DESDATA  
 567 (5)  
 [nitf tagged record for rpf] (0, 1) (present in rpf files)

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568      (6)
569      <nitf record tag for rpf>.alph:6
570      <nitf tagged record length for rpf>.numr:5
571      --> [rpf frame file components]
572      (7)
573      --> [rpf attribute section]
574      (8)
575      [rpf attribute section subheader]
576      (9)
577      <rpf number of attribute offset records>,uint:2
578      <rpf number of explicit areal coverage records>,uint:2
579      <rpf attribute offset table offset>,uint:4
580      <rpf attribute offset record length>,uint:2
581      (8)
582      [rpf attribute subsection]
583      (9)
584      [rpf attribute offset table]
585      (10)
586      [rpf attribute offset record] (1, ... many)
587      (11)
588      <rpf attribute id>,uint:2
589      <rpf parameter id>,uint:1
590      <rpf areal coverage sequence number>,uint:1
591      <rpf attribute record offset>,uint:4
592      (9)
593      [rpf attribute table]
594      (10)
595      [rpf attribute record] (1, ... many)
596      (11)
597      <rpf parameter value>,byte:var (1, ... many)
598      (8)
599      [rpf explicit areal coverage subsection] (0, 1)
600      (9)
601      <rpf explicit areal coverage table offset>,uint:4
602      <rpf explicit areal coverage record length>,uint:2
603      <rpf corner coordinates record length>,uint:2
604      [rpf explicit areal coverage table]

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[rpf explicit areal coverage record] (1, ... many)

(11)

<rpf number of vertices>,uint:2

[rpf corner coordinates record] (1, ... many)

(12)

<rpf lat>,real:8

<rpf long>,real:8

(7)

--> [rpf replace/update section] (0, 1)

(8)

[rpf replace/update section subheader]

(9)

<rpf replace/update table offset>,uint:4

<rpf number of replace/update records>,uint:2

<rpf replace/update record length>,uint:2

(8)

[rpf replace/update subsection]

(9)

[rpf replace/update table]

(10)

[rpf replace/update record] (1, ... many)

(11)

<rpf new file name>,ascii:12

<rpf old file name>,ascii:12

<rpf replace/update status>,uint:1

(5)

[nitf additional tagged records] (0, ... many) *(omitted in rpf files)*

(1)

[nitf reserved segment] (0, ... many)



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MIL-STD-2411  
CONCLUDING MATERIAL

Custodian:  
DMA - MP

Preparing activity:  
DMA - MP

Agent: AFMC

Review activities:  
Air Force - 09  
Army - PO  
Navy - NO, MC

(Project MCGT-0140)

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1. DOCUMENT NUMBER  
MIL-STD-2411-2

2. DOCUMENT DATE (YYMMDD)  
26 August 1994

3. DOCUMENT TITLE: Military Standard for Integration of Raster Product Format Files into the National Imagery Transmission Format

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

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