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**MIL-STD-3001 DTD**  
**TAGGING GUIDELINES**

**VERSION 1.0**

**CONTRACT # N68936-01-D-0007**  
**TASK 3A36**

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# MIL-STD-3001 DTD

## TAGGING GUIDELINES

### 1.0 INTRODUCTION

This document provides guidance in tagging basic constructs as defined in the MIL-STD-3001 DTDs and specified in the Military Standard MIL-STD-3001-1 through MIL-STD-3001-8. These guidelines are applicable to the "Full" XML; and the "Legacy" SGML DTDs. An explanation of the purpose for these DTD versions is provided in Sections 1.2 and 1.3. A TMCR should clearly indicate which DTD is to be used to convert, revise, or create a TM in compliance with MIL-STD-3001.

#### 1.1 PREREQUISITE

While every effort has been made to ensure the completeness of this document, users are cautioned that they must review and meet all specified requirement documents cited in Sections 3, 4, and 5 of MIL-STD-3001-1 through MIL-STD-3001-8. These Tagging Guidelines are in no way a substitute for MIL-STD-3001. In addition, these guidelines assume the reader has a working knowledge of tagging SGML/XML data.

#### 1.2 THE "FULL" VERSION.

The "Full" MIL-STD-3001 DTD strictly enforces all content specific requirements of MIL-STD-3001. It should be used primarily for new weapon systems or for major revisions.

#### 1.3 THE "LEGACY" VERSION.

Like the "Full" version, the "Legacy" MIL-STD-3001 DTD enforces the structure of TMs conforming to MIL-STD-3001. However, some of the content specific requirements are less restrictive than the "Full" version. The Legacy DTD should be used for legacy TMs that can first be converted into the new structure prescribed by MIL-STD-3001. Refer to Section 10 for constructs that are unique to the Legacy DTD.

### 2.0 GENERAL

Throughout these guidelines, the term "manual" refers to the tagged file (or tagged instance) that conforms to one of the MIL-STD-3001 DTDs. In addition, where sample markup is provided, it must be noted that indents and line breaks serve no purpose other than for illustrating various data relationships (such as

nesting levels). Such indents may not be evident in an actual authoring session. The sample markup provided in these guidelines are XML compliant.

The following guidelines are general in nature and are applicable to all parts of Technical Manuals conforming to MIL-STD-3001.

## 2.1 WORK PACKAGE TITLE BLOCK

The following guidelines are relevant to all Work Packages containing a Title Block, with the exception of a Fault Isolation Manual (Refer to Section 5.1 of this document).

A Work Package Title Block <titleblk> contains a Work Package Title <wptitle> and optional Work Package Notices <wpnotices>. The Work Package Title <wptitle> consists of a Maintenance Level <maintlvl>, Work Package type <wptype>, Subject <subject>, and End Item Nomenclature <sysnomen>. Note that the End Item Nomenclature <sysnomen> and Work Package Subject <subject> must be identified for each Work Package Title Block in order for the Alphabetical Index to be automatically generated.

System Components <syscomp> may also be identified for further clarification in the Title Block. Refer to Section 3.1.2.2 of this document.

### 2.1.1 Sample Markup of Work Package Title Block

The following is sample markup of a Work Package Title Block. Formatted Output is provided in Figure 1.

```
<titleblk>
  <wptitle>
    <maintlvl>Organizational Maintenance</maintlvl>
    <subject>System Maintenance with IPB</subject>
    <sysnomen>
      <name>LANDING GEAR CONTROL UNIT</name>
      <effect effecttype="Tail Number">
        <unboundedrange lowrange="162394"/>
        <boundedrange lowrange="161" highrange="161987"/>
      </effect>
    </sysnomen>
  </wptitle>

  <wpnotices>
    <super><para>This WP supersedes WP003 01, dated 15 April
    1992.</para></super>
  </wpnotices>
</titleblk>
```

## 2.2 NUMBERING OF WORK PACKAGES

The number of the Work Package will also be automatically supplied by the FOSI and will be placed in the header of the WP, once assembled into the manual (tagged instance). The FOSI will not provide a final WP Number for WPs that are “stand alone” and have not been assembled into the manual DTD. The FOSI will automatically enumerate the WPs as WP 003 00, WP 004 00, WP 005 00, etc. If it is desired that WPs be numbered with an extension (ex. WP 003 01, WP 003 02), then the WP number must be assigned by the author. The method of supplying the assigned WP number is by using the “label” attribute that is available on every Work Package type element. For example, in order for a Description and Principles of Operation to be enumerated as “WP 004 01”, the markup should be:

```
<descwp label="WP 004 01" id="xxwp">
```

Every subsequent Work Package after that point, until Work Package that would be numbered WP 005 00 should be tagged using the Label attribute. Once the WP for 005 00 is encountered, then the FOSI can take over auto-numbering WPs. Since Work Package numbers are automatically generated (by either "auto-numbering" or author supplied via a "label" attribute), Work package numbers should **NOT** be identified within the Work Package Title Block.

## 2.3 NUMBERING OF FIGURES, TABLES, AND PARAGRAPHS

The number of a figure, table, paragraph, or WP should not be typed into the tagged instance directly. The FOSI will enumerate the pieces of the manual, and generate the appropriate text. For example, for a figure tagged as:

```
<figure id="fidid"><title>Figure Title</title><graphic boardno="fig1"/></figure>
```

The FOSI will place the figure title beneath the graphic art, and will provide the text "Figure" followed by the number as required by the standard. For example:

**Figure 10. Figure Title**

Similarly, for a Table that is tagged as:

```
<table id="tableid"><title>Table Title</title>.....</table>
```

the FOSI will place the table title above the Table, and will provide the word “Table” and its number as required by the standard. For example:

**Table 10. Table Title**

## 2.4 CROSS REFERENCES

Cross-reference information such as “See WP 004 01 for more information” should not be entered directly. Cross References should always be tagged using either the `<xref>` or `<figref>` elements. The element `<figref>` is used for cross-references to figures, while the element `<xref>` is used for cross-references to a textual unit of information (e.g. WPs, Tables, Paragraphs, and Steps). In order to understand the markup of cross-references, it is important to understand "ID Values."

### 2.4.1 ID VALUES

The cross-reference elements `<figref>` and `<xref>` are actually pointers to a tagged piece of information that will be found within the manual. In order for the pointer to work, the piece of information being pointed to must have a unique identifier assigned to it. Therefore, it is a good practice to identify unique IDs to all Work Packages, Tables, and Figures. Since IDs are optional on most elements, it is necessary to “modify attributes” of the element being inserted. The text that is entered in an ID field must be unique compared to ID values of all other elements in the assembled manual (tagged instance). Therefore, it is wise to devise an “ID Assignment” methodology. For example, the Title of the table could be used as the ID value (being careful to remove all blank spaces) and adding the text “tab” at the end of the ID. This could make the table’s ID value unique compared to a figure or titled paragraph containing the same title. For example:

```
<table id="oxygenleadingparticularstab"><title>Leading Particulars</title>
... </table>
```

**Note:** Attributes are limited to 32 characters and cannot **start** with a number. ID values are case sensitive.

### 2.4.2 USING `<XREF>` TO REFERENCE TEXT WITHIN THE SAME WP

Cross-references to figures are tagged with `<figref>`; all other cross-references to pieces of information contained in the assembled manual are tagged as `<xref>`. Assuming that the ID value of the element that is to be referenced has been assigned (Refer to section 2.4.1 of this document), insert the `<xref>` element at the place where it would be desired to make a reference. The element `<xref>` requires that the attribute “xrefid” be filled out. This field must be filled in with the exact ID (case sensitive) value of the element being pointed to. So, in the case where a cross-reference is desired to point to the table as tagged in section 2.4.1, the markup would be tagged as:

```
See Table <xref xrefid="oxygenleadingparticularstab" xidtype="table"/>.
```

**Note (1):** The attribute “xidtype” is optional, but may be of use to ETM browsers that render a reference to a figure differently from a reference to a Table or Procedure. The other choices for “xidtype” are “paragraph”, “step”, and “table-footnote”. If the reference is to a separate WP, then this attribute should be left unspecified.

**Note (2):** There are also attributes that can supply text that is to appear immediately before and immediately after the cross-reference. This might be desired for cross-references that appear inside a paragraph title. The cross-reference that is tagged above could also be tagged as:

```
<xref xrefid="oxygenleadingparticularstab" xidtype="table" pretext="See Table"
posttext="."/>
```

**Note (3):** External cross-references to other manuals are tagged using the <extref> element.

### 2.4.3 USING <XREF> TO REFERENCE STEPS

Cross-references to steps that are within the same procedure are tagged in the same way as described above; the step being referenced must have an ID value assigned, and the cross-reference tag <xref> would identify that ID value. For example, text such as:

```
1. If AWM-101 has SWVER 1.11, perform step 14
...
14. Proceed with procedure.
```

Would be tagged as:

```
<step>
  <para>If AWM-101 has SWVER 1.11, perform step <xref xrefid="s4p2-
1s14" xidtype="step"/></para>
</step>
...
<step id="s4p2-1s14">
  <para>Proceed with procedure. </para>
</step>
```

A reference to a step that lies outside the procedure must be tagged differently in order for the printed page to identify the paragraph number as well as the step number; and for an electronic manual to provide a single “link” to the targeted step. For example, the following illustrates a step (1) that contains a cross-reference to a step found in a different procedure in the manual. The cross-reference <xref> contains 2 attribute values: 1) “xrefid” points to the ID value of the step being referenced; 2) “otherprocedure” points to the ID value of the procedure that contains the step.

	Formatted text in Manual/Checklist	Markup
xref→	1. Time GAU-17/A gun and feeder. See paragraph 9-6, step 2.	<step> <para>Time GAU-17/A gun and feeder <xref xrefid="s9p9-6s2" xidtype="step" otherprocedure="s9p9-6"/>. </para> </step>

Link→ End	9-6. AIRCRAFT PREPARATION/INSPECTION. 1. Verify that Preloading checks have been performed. 2. Open weapon pylon access panel.	<insp id="s9p9-6"> <title>Aircraft Preparation/Inspection</title> <step> <para>Verify that preloading checks have been performed. </para> </step> <step id="s9p9-6s2"> <para>Open weapon pylon access panel.</para> </step> </insp>
--------------	---	--

#### 2.4.4 Using <xref> To Reference Text Outside The WP

Cross-references to text contained in a separate WP are tagged the same as text within a WP (refer to Section 2.4.2), with an additional attribute “otherwp” added, which contains the ID value of the referenced WP. This will tell a FOSI/Style Sheet that the cross-reference must resolve the WP number for paper output. Therefore, the markup

**See <xref xrefid="paraid" otherwp="wpid"/>for more information.**

would result in

**See WP 007 00, Paragraph 2-1 for more information.**

with the assumption that the referenced text has a unique identifier (*id="paraid"*) and is contained in a WP that has a unique identifier (*id="wpid"*) and is enumerated “WP 007 00” upon publication of the complete assembled manual.

#### 2.5 Tagging Figures And Figure References

Figures are to be tagged at the end of the WP, in order for the FOSI to place the Titled, Numbered Figures at the rear of the WP, as required by MIL-STD-3001. Most Work Packages have a “Figure Section” <figsect> and “Foldout Section” <foldsect> before the end of the WP where all the figures <figure> and foldouts <foldout> are assembled. Once a figure <figure> is entered, a unique “ID” attribute must be entered in order to supply a unique ID value for the figure. Again, a methodology for uniquely assigning an ID value to figures must be established such as using the figure title, being careful to remove blank spaces, and end the ID with the text “fig”. After the ID value is supplied, insert the figure <title>. For example,

**<figure id="BOSAssemblyfig"><title>Backup Oxygen System (BOS)  
Assembly</title>....</figure>**

After the title is entered, either the element <graphic> or element <subfig> is entered. The <graphic> element is to be used if the figure contains only a single piece of graphic art; <subfig> is to be used if the figure contains multiple sheets of graphic art. If the <subfig> element is selected, at least two graphic elements <graphic> must be entered. Since <subfig> contains a single graphic, the following instructions are used to enter a single piece of art.

Other than warning icons, the **<graphic>** element is the only element that the FOSI will use to print a piece of art. Once the **<graphic>** element is selected, the user will either be prompted to fill out the “boardno” attribute, or else the user will be presented a window where the user can browse to select the piece of art being included. Refer to Section 2.5.1 for a description of attributes that can control the size of the displayed graphic.

Figure references found within the body of the WP are tagged using the **<figref>** element. Position the cursor where the figure reference is desired, and insert the tag **<figref>**. There are two attributes required for this tag: “boardno” and “idref.” The purpose of the “boardno” attribute is to allow an ETM to place an icon representing the graphic art in the middle of WP text: ETM users can click on this icon to launch the graphic in a separate window, if desired. The FOSI will ignore this attribute since it is NOT desired that the graphic be printed in the middle of text. Likewise, the attribute “idref” serves the purpose of a cross-reference pointer to the ID value of the figure that is tagged at the end of the WP. The ETM will ignore this reference – it is not necessary for ETM users to have to move to the end of a WP to view a graphic. However, this “idref” pointer to the figure’s ID allows the FOSI to place the referenced figure number in the text stream. Similar to the **<xref>** element, the attributes “pretext” and “posttext” can be used to provide the text that is to appear immediately before and after the figure reference.

```
<figref boardno="fig1" idref="BOSAssemblyfig" pretext="(See Figure "  
posttext=".)"/>
```

renders the text:

**(See Figure 1.)**

### 2.5.1 Attributes for displaying a Graphic **<graphic>**

When a graphic is inserted, users may control the source graphic is displayed in the published manual. There are two attributes available to adjust the size of the displayed graphic: "reprowid" and "reprodep." "Reprowid" regulates the width of the graphic and "reprodep" regulates the depth or height. To adjust the width, enter a measurement value (for example 6in) at the Reprowid field. To adjust the height of the graphic, enter a measurement value at the Reprodep field. When entering a measurement value, do not enter a space between the number and the measurement. Measurements can be inches ("in"), centimeters ("cm"), millimeters ("mm"), points ("pt"), or picas ("pi").

## 2.6 TASK LEVEL ELEMENTS

The MIL-STD-3001 DTDs contain many content elements that share the same content model. For example, the DTD for Description, Principals of Operation, and Operation Information; as well as for Testing and Troubleshooting contain an element for “Preparation for Use Procedures” **<prepuse>**. This element shares the same content model as many other task-level content elements such as "Stowage" **<stowage>** found in the DTD for Maintenance Information.

The Task-level elements all share the same model. This model is:

- Title <**title**>
- Procedural-Type Content (Refer to Section 2.7)
- Task introduction <**taskintro**>
- Step <**step**>
- Procedure <**proc**>

### 2.6.1 Task Introduction <**taskintro**>

The element "Task Introduction" should be used only when in-depth introductory information regarding the task is necessary. The element <**taskintro**> introduces another level of hierarchy in the task-level content. The following elements are contained within <**taskintro**>:

- Title <**title**>
- Paragraph-Type Content (Refer to Section 2.8)
- Sub-paragraph(s) <**sub-paras**>

### 2.6.2 Sample Markup of a Task Level Element

The following is sample markup of a task level element - using a Repair <**repair**> procedure found in the Maintenance Information DTD.

```
<repair>
  <title>Repair</title>
  <proc>
    <title>Tank Exterior Surface</title>
    <step>
      <para>Repair minor scratches and roughness by burnishing.</para>
    </step>
    <step>
      <para>Repair small dents by straightening and burnishing.</para>
    </step>
    <step>
      <para>Repair minor corrosion.</para>
    </step>
  </proc>
  <proc>
    <title>Electrical Fitting</title>
    <step>
      <para>For repair of wire contact points, refer to <extref>NAVAIR 01-1A-
```

```

505 </extref>.</para>
</step>
<step>
<para>Corrosion damage is non-reparable.</para>
</step>
</proc>
</repair>

```

This markup would yield the following:

#### 1-1 REPAIR.

#### 1-2 TANK EXTERIOR SURFACE.

1. Repair minor scratches and roughness by burnishing.
2. Repair small dents by straightening and burnishing.
3. Repair minor corrosion.

#### 1-3 ELECTRICAL FITTING.

1. For repair of wire contact points, refer to NAVAIR 01-1A-505.
2. Corrosion damage is non-reparable.

### 2.6.3 Listing of All MIL-STD-3001 Task Level Elements

The following is a list of all Task-level Content Elements in the MIL-STD-3001 DTDs:

#### 1. DESCRIPTION, PRINCIPLES OF OPERATION, AND OPERATION INFORMATION (MIL-STD-3001-2)

Start-up Information <startup>	Emergency Operation Procedures <emerg-proc>
Built-in-Test or Self-test Procedures <bit-st-op>	Post-operational Shut-down Procedures <post-op-proc>
Operating Procedures <op-proc>	Emergency Shut-down Procedures <emshut-proc>
Pre-operational Setup Procedures <preop>	

#### 2. TESTING AND TROUBLESHOOTING (MIL-STD-3001-3)

General Procedures < <b>genproc</b> >	Engine Test Procedures < <b>engtest</b> >
Pretest Procedures < <b>pretest</b> >	Engine Test Preparation Procedures < <b>testprep</b> >
Shutdown Procedures < <b>shutdown</b> >	Engine Start < <b>engstart</b> >
Emergency Shutdown Procedures < <b>emergshdn</b> >	Engine Operating Limits < <b>oplimit</b> >
Engine Post-Test Procedures < <b>postest</b> >	Engine Inspection Procedures < <b>enginspect</b> >
Shutdown Procedures < <b>shutdown</b> >	Engine Operation Under Unusual Conditions < <b>unusualcond</b> >
Operational Procedures - Narrative < <b>optest</b> >	Emergency Shutdown Procedures < <b>emergshdn</b> >

### 3. MAINTENANCE (MIL-STD-3001-4)

Preparation for use and assembly < <b>prepuse</b> >	Adjustment < <b>adjust</b> >
Handling < <b>handling</b> >** (See 6.0 for definition of <handling>)	Calibration < <b>calibrate</b> >
Stowage < <b>stow</b> >	Fueling < <b>fuel</b> >
Removal < <b>remove</b> >	Defueling < <b>defuel</b> >
Disassembly < <b>dissam</b> >	Canning < <b>canning</b> >
Cleaning and corrosion control < <b>clncorr</b> >	De-Canning < <b>decanning</b> >
Inspection < <b>insp</b> >	Preparation for storage or shipment < <b>pss</b> >
Repair < <b>repair</b> >	Environmental conditioning < <b>envircond</b> >
Service < <b>service</b> >	Safety information < <b>safe</b> >
Alignment < <b>align</b> >	Engine start-up and run-up < <b>engstart</b> >
Painting < <b>paint</b> >	Software loading < <b>softload</b> >

Lubrication < <b>lube</b> >	Fabrication < <b>fabricate</b> >
Assembly < <b>assem</b> >	Packing < <b>packing</b> >
Test and inspect < <b>test-inspect</b> >	Unpacking < <b>unpacking</b> >
Installation < <b>install</b> >	Rigging < <b>rig</b> >
Preservation < <b>preserve</b> >	Tracking < <b>track</b> >
Ground Operations < <b>grndop</b> >	

#### 4. AIRCRAFT WIRING INFORMATION (MIL-STD-3001-5)

Maintenance procedure <**maintproc**>

#### 5. STRUCTURAL REPAIR INFORMATION MODULE (MIL-STD-3001-6)

Structural repair procedure < <b>structrepair</b> >	Aircraft specific repair procedure < <b>specrepproc</b> >
Typical repair procedure < <b>typrepproc</b> >	Primary NDI procedure < <b>priproc</b> >
Damage identification and evaluation data < <b>damage</b> >	Backup NDI procedure < <b>bkupproc</b> >

## 2.7 Procedural-Type Content

“Procedure-type” content occurs in all procedural constructs in the MIL-STD-3001 DTDs. Procedure-type content consists of the following: One or more Warnings <**warning**> may be entered followed by one or more Cautions <**caution**>. After the <**warning**> and <**caution**> elements, Paragraphs <**para**>, Definition Lists <**deflist**>, Random Bulleted Lists <**randlist**>, Sequential Numbered Lists <**seqlist**>, Notes <**note**>, Tables <**table**> and Figures <**figure**> may be entered in any order any number of times.

### 2.7.1 Warnings (Hazardous and Non-Hazardous)

The Warning <**warning**> element has an attribute to indicate the type of warning (**warning-type**). One type (the default value) is **warning-type="non-hazmat"**. It is used for non hazardous materials and contains paragraph text. The heading WARNING is automatically generated above the paragraph text. The

other type of warning is for hazardous material as is indicated as **warning-type="hazmat"**. This warning will not generate the "WARNING" heading, and should contain an icon-set **<icon-set>** followed optionally by the material nomenclature **<nomen>**, Part Number **<partno>** or Spec Number **<spec>**, and Sequence Number **<seqno>**. In addition, for ETM interactivity, the hazardous material warning can be linked using attribute "xrefid" to the hazardous description **<hazard>** found in the Hazardous Materials Warning Page **<hmwswp>**.

## 2.8 Paragraph-Type Content

"Paragraph-type" content occurs in all informational constructs in the MIL-STD-3001 DTDs. Paragraph-type content may consist of the following elements:

- Paragraph **<para>**
- Definition Lists **<deflist>**
- Random Bulleted Lists **<randlist>**
- Sequential Numbered Lists **<seqlist>**
- Notes **<note>**
- Tables **<table>**
- Changed Text **<change>**
- Emphasis Text **<emphasis>**
- Blocked Text **<block-text>**
- External References **<extref>**
- Graphic **<graphic>**
- Part Numbers **<partno>**
- Verbatim Text **<verbatim>**
- Cross-References **<xref>**
- Figure References **<figref>**.

## 2.9 Steps <step> And Sub-Steps <sub-steps>

The hierarchical organization for dividing procedural information is tasks, procedures, steps, and sub-steps (if required). MIL-STD-3001 provides content specific task-level elements, which consist of procedures, steps, and sub-steps. With the exception of some content-specific testing and troubleshooting steps, most steps are tagged as <step>, regardless of its hierarchical organization. If a series of steps are subordinate to a step, those subordinate steps are surrounded with a <sub-steps> element.

```
<insp>
<title> IN-CONTAINER INSPECTION </title>
<step><para>Attach ground to container.</para></step>
<step><para>Relieve container pressure by pressing manual relief button on breather valve. </para>
</step>
<step><para>Remove upper shell as follows:</para>
  <sub-steps>
    <step><para>Loosen the tee head bolt adjustment nuts.</para></step>
    <step><para>Rotate the tee head bolts 90 degrees to align with upper shell assembly slots.
  </para> </step>
    <step><para> Remove upper shell assembly and place on ground open side up.</para></step>
  </sub-steps>
</step>
<step><para>Visually check container interior for battery electrolyte. Electrolyte would probably leak from
the control section vent holes.</para></step>
</insp>
```

The above markup will produce the following output:

### 1-1 IN-CONTAINER INSPECTION.

1. Attach ground to container.
2. Relieve container pressure by pressing manual relief button on breather valve.
3. Remove upper shell as follows:
  - a. Loosen the tee head bolt adjustment nuts.
  - b. Rotate the tee head bolts 90 degrees to align with upper shell assembly slots.
  - c. Remove upper shell assembly and place on ground open side up.
4. Visually check container interior for battery electrolyte. Electrolyte would probably leak from the control section vent holes

## 2.10 TITLED PARAGRAPH <TITLEDPARA>

A Titled Paragraph is a numbered hierarchical level of a narrative-type paragraph. It occurs at all levels of a Work Package hierarchy, with the exception of an Introduction Work Package (Refer to Section 2.11) and

task oriented Work Packages. The element `<titledpara>` groups a title `<title>`, with paragraph content, and its sub-paragraphs `<sub-para>`.

### 2.10.1 Sub-Paragraphs `<sub-para>`

If a Titled Paragraph `<titledpara>` contains subordinate titled paragraphs, those subordinate titled paragraphs are surrounded by the wrapper element `<sub-para>`. Each of the subordinate titled paragraphs is tagged as `<titledpara>`. Many 'content' elements (i.e. "Introduction" `<intro>`) contained in the MIL-STD-3001 DTDs consist of a title, paragraph content, and `<sub-para>`.

### 2.10.2 Sample Markup of Titled Paragraph

The following is sample markup of a titled paragraph - using an Introduction `<intro>` found at the start of a WP.

```

<intro>
<title> INTRODUCTION </title>
<para> This work package (WP) contains a brief description of the Common
Target Auxiliary Systems (CTAS) installed in the BQM-34S Target.</para>
<para> The BQM-34S target consists of a basic airframe, propulsion system, fuel
system, electrical system, flight control system, recovery system, and CTAS.
</para>
<sub-para>
  <titledpara>
    <title> CTAS EQUIPMENT</title>
    <para> CTAS [also referred to as Target Auxiliary and Augmentation
Systems (TA/AS)] equipment is designed for use in the test and
evaluation of weapon systems. CTAS provides the BQM-34S with
enhanced performance capabilities and affords the target user flexibility
in configuring the target with various combinations of TA/AS equipment.
This includes: radar identification, miss distance calculation, and realistic
threat simulation, which provides the weapons community with the ability
to evaluate the effectiveness of weapon systems in countering existing
and potential threat capabilities.
    </para>
  </titledpara>
</sub-para>
</intro>

```

This markup will produce the following output:

#### 1-1 INTRODUCTION.

1-2 This work package (WP) contains a brief description of the Common Target Auxiliary Systems (CTAS) installed in the BQM-34S Target.

1-3 The BQM-34S target consists of a basic airframe, propulsion system, fuel system, electrical system, flight control system, recovery system, and CTAS.

**1-4 CTAS EQUIPMENT.** CTAS [also referred to as Target Auxiliary and Augmentation Systems (TA/AS)] equipment is designed for use in the test and evaluation of weapon systems. CTAS provides the BQM-34S with enhanced performance capabilities and affords the target user flexibility in configuring the target with various combinations of TA/AS equipment. This includes: radar identification, miss distance calculation, and realistic threat simulation, which provides the weapons community with the ability to evaluate the effectiveness of weapon systems in countering existing and potential threat capabilities.

## 2.11 INTRODUCTION PARAGRAPH <INTROPARA>

Titled paragraphs contained in the Introduction Work Package are tagged Introductory Paragraphs <intropara>. The element <intropara> groups a title <title>, introductory paragraph content, and its sub-paragraphs <sub-introparas>. Introductory paragraph content consists of the same elements as paragraph type content (Refer to Section 2.8) with the additional elements Warning Sample <warningsample>, Caution Sample <cautionsample>, Note Sample <notesample>, Abbreviation List <abbrevlist>, and Use On Code list <useonodelist>.

## 2.12 CHANGES (WORK PACKAGE/TEXT)

A changed Work Package must be indicated as changed using attributes which are available on each “WP” type element. The change level is indicated using the attribute “chgnum”; the change date must be indicated using the attribute “chgdate”. This will generate the change level and change date on the first page of the printed WP. Within the changed WP, the changed text should be surrounded by the <change> element. This will generate a change bar around the changed text.

## 3.0 THE ASSEMBLED TECHNICAL MANUAL

All versions of the MIL-STD-3001 DTDs are organized as modules, with each WP and TM front matter represented as a separate module (DTD). Once all pieces of a TM are created, they may be assembled together using the “Assembly DTD” (milstd1.dtd).

The following guidelines are applicable to front matter of an assembled Technical Manual. Readers should already be familiar with the requirements of MIL-STD-3001-1.

### 3.1 TITLE PAGE <TITLEPG>

A title page <titlepg> is prepared for all manuals. A sample formatted title page is shown in Figure 2. Its markup is provided in Section 3.1.4. The following is provided for further guidance.

### 3.1.1 Change number <chgnum> and Change date <chgdate>

If applicable, the change number and change date for a pickup revision is identified. The Change Number <chgnum> should specify the number only; the word "Change" is automatically generated.

For example, the markup

```
<chgnum>6</chgnum><chgdate>15 June 1994</chgdate>
```

will generate text

**Change 6 - 15 JUNE 1994**

on the TM Cover Page. Refer to paragraph 2.12 for guidelines on identifying Changed Work Packages, and changed text.

### 3.1.2 Publication Title <prttitle>

The Publication Title consists of the level of maintenance <maintlvl>, the manual type <manualtype>, and the end item nomenclature <sysnomen>. The words "TECHNICAL MANUAL" are not to be tagged as they will be automatically generated by the FOSI and/or Style Sheet.

#### 3.1.2.1 Manual Type <manualtype>

If applicable, the manual type such as "PRINCIPLES OF OPERATION" that indicates the manual type shall be indicated on the title page.

#### 3.1.2.2 End Item Nomenclature <sysnomen>

The end item nomenclature such as the system, subsystem, or equipment shall be identified. The end item nomenclature includes the System/Subsystem/Equipment Name <name>, the Type Designation <typedes>, the Model Designation <modeldes>, Part Number <partno>, and effectivity <effect>.

When a single manual is authorized to cover components for a system, those system components <syscomp> shall be identified.

#### 3.1.2.3 Model Number <modeldes>

Model Designator <modeldes> of the end item nomenclature may be identified on the TM title page or WP title block. Attribute "type" indicates whether model is for "aircraft" or "other". Model designators for aircraft are preceded by automatically generated text "NAVY MODEL". Model designators for Non-aircraft are preceded by automatically generated text "MODEL NUMBER". If no text is desired before the

model designator, the attribute "modelno-head" is set to "off" (i.e. <modeldes modelno-head="off">1</modeldes>).

### 3.1.2.4 Effectivity <effect>

If applicable, effectivity information <effect> reflecting tail numbers, bumper numbers, etc., covered by the TM shall be identified for the end item nomenclature <sysnomen> or system components <syscomp>. The Effectivity Type (e.g. "Tail Number") is captured in the attribute "effecttype." The Effectivity information is identified as

1) A single number (e.g. "Tail Number 161425"). The number is captured as an attribute value of <single>. For example:

```
<effect effecttype="Tail Number">
  <single number="161425"/>
</effect>
```

2) A Bounded Range (e.g. "Tail Numbers 161540 through 161556"). The low and high range of tail numbers are captured as attribute values of <boundedrange>. For example:

```
<effect effecttype="Tail Number">
  <boundedrange lowrange="161540" highrange="161556"/>
</effect>
```

3) An Unbounded Range (e.g. "161353 and Subsequent"). The "low range" or "high range" is captured as an attribute of <effect>. For example:

```
<effect effecttype="Tail Number">
  <unboundedrange lowrange="161353"/>
</effect>
```

**NOTE:** These values may be combined together within an effectivity group. For example: 161540 through 161556 and 161600 would be marked up as:

```
<effect effecttype="Tail Number">
  <boundedrange lowrange="161540" highrange="161556"/>
  <single number="161600"/>
</effect>
```

### 3.1.3 Notices <notices>

The element <notices> is a Collection of Notices as part of the Title Page of an Assembled Technical Manual. It can consist of a Cognizant Facility Activity (CFA) Notice <cfa>, Supersedure Notice <super>, Cross-reference notice to supplements notice <suppl>, Continuation Notice <continue>, Interim Rapid Action Change (IRAC) Incorporation Notice <irac>, Distribution Notice <distrib>, Destruction Notice <destr>, Export Control Notice <export>, and Authority Notice <authnote>. Each of these notices consist of one or more paragraphs <para>. The Heading of the Notice is automatically generated. For example, the destruction notice that is found in Figure 2:

**DESTRUCTION NOTICE** - For unclassified, limited documents, destroy by any method that will prevent disclosure of contents or reconstruction of the document.

is tagged as:

```
<destr>
  <para>For unclassified, limited documents, destroy by any method that
  will prevent disclosure of contents or reconstruction of the document.
  </para>
</destr>
```

The Distribution Notice must identify the "type" as being A, B, C, D, E, F, or X. The appropriate heading will be automatically generated. For example:

```
<distrib type="c">
  <para> Distribution authorized to U.S. Government agencies and their contractors
  to protect publications required for official use or for administrative or
  operational purposes only, determined on 1 May 1995. Other requests for this
  document shall be referred to Commanding Officer, Naval Air Technical Data
  and Engineering Service Command, Naval Air Station North Island, P.O. Box
  357031, Building 90 Distribution, San Diego, CA 92135-7031. </para>
</distrib>
```

will generate the notice:

**DISTRIBUTION STATEMENT C.** Distribution authorized to U.S. Government agencies and their contractors to protect publications required for official use or for administrative or operational purposes only, determined on 1 May 1995. Other requests for this document shall be referred to Commanding Officer, Naval Air Technical Data and Engineering Service Command, Naval Air Station North Island, P.O. Box 357031, Building 90 Distribution, San Diego, CA 92135-7031.

### 3.1.4 Sample Markup of Title Page <titlepg>

The following is sample markup of a Title Page. Refer to Figure 2 for sample output.

```
<titlepg>
  <tmidno>A1-F18AC-130-100</tmidno>
  <pubdate>1 May 1995</pubdate>
  <prtitle>
    <maintlvl>ORGANIZATIONAL MAINTENANCE</maintlvl>
    <manuatype>PRINCIPLES OF OPERATION </manuatype>
    <sysnomen><name>LANDING GEAR AND RELATED
    SYSTEMS</name> </sysnomen>
  </prtitle>
  <notices>
    <cfa><para>This manual prepared by NAVSURFWARCENDIV
    Crane, IN, Code 8024.</para></cfa>

    <super>
    <para>This manual supersedes A1-F18AC-130-100, dated 1 June
```

1989, changed  
1 October 1994.</para></sup>

<distrib type="c">  
<para>Distribution authorized to U.S. Government agencies and their contractors to protect publications required for official use or for administrative or operational purposes only, determined on 1 May 1995. Other requests for this document shall be referred to Commanding Officer, Naval Air Technical Data and Engineering Service Command, Naval Air Station North Island, P.O. Box 357031, Building 90 Distribution, San Diego, CA 92135-7031.</para>  
</distrib>

<destr>  
<para>For unclassified, limited documents, destroy by any method that will prevent disclosure of contents or reconstruction of the document.</para>  
</destr>

<authnote>  
<para>Published by Direction of the Commander, Naval Air Systems Command</para>  
</authnote>

</notices>

<nsn>0801LP3105060</nsn>  
</titlepg>

### 3.2 Alphabetic Index Work Package <alphaindxwp>

The alphabetical index WP <alphaindxwp> is the first WP of the assembled Technical Manual. This WP consists of an element <auto-alphaindx> that serves as a place holder; an automatically generated alphabetic index that provides access to the technical content work packages contained in the manual; and further access to the primary technical content information contained within each work package.

Generation of the automatically generated alphabetic index relies on the correct markup of the Title Blocks of all WPs contained in the manual. All WPs must contain a Subject <subject> and System Nomenclature <sysnomen><name>. The generated alphabetical index will list all WPs sorted by System Name <sysnomen> as the first level and by WP Subject <subject> as the second level of index. The first and second levels of hierarchy of the WPs will then be listed beneath the WP Subject. Resulting Work Package and Page Numbers will be automatically generated. It is important to note that the generated alphabetical index will generate each index level exactly the way it was keyed in in the WP. In other words, if a particular title is keyed in as all caps, then it will appear as all caps in the alphabetical index.

### 3.3 Numerical index of part numbers work package <partnoindxwp>

Part of "Supporting Information" <supportinfo>, this work package contains a complete list of part

numbers consolidated from all maintenance work packages containing group assembly parts lists (GAPLs). The primary purpose of this index is to provide direct access to the maintenance WP and figure related to a specific part number. The FOSI will automatically generate this table for paper output with the **<auto-partnoindx>** element. The generated Part Number Index will list all Group Assembly Part Number **<gaplpartno>** that are contained in the Illustrated Parts Breakdown either in a separate WP **<ipbwp>** or as part of an individual Maintenance Work Package. Figure Numbers and Index Numbers will be automatically listed in the Numerical Index of Part Numbers also based on the markup of the IPB data.

### 3.4 Numerical Index of Reference Designations Work Package

#### **<refdesindxwp>**

Part of “Supporting Information” **<supportinfo>**, this work package shall contain a complete list of reference designations consolidated from all maintenance work packages containing GAPLs. The primary purpose of this index is to provide direct access to the maintenance WP and figure related to a specific reference designation. The FOSI will automatically generate this table for paper output with the **<auto-refdesindx>** element. Similar to the part number index listed in Paragraph 3.4, the generated Reference Designations Index will list all reference designators **<refdes>** as contained in the Illustrated Parts Breakdown either in a separate WP **<ipbwp>** or as part of an individual Maintenance Work Package.

## 4.0 DTDS FOR DESCRIPTION, PRINCIPALS OF OPERATION, AND OPERATION INFORMATION (MIL-STD-3001-2)

The following guidelines are applicable to the DTD for Description, Principals of Operation, and Operation Information. Readers should be familiar with the requirements defined in MIL-STD-3001-2.

### 4.1 DESCRIPTION WORK PACKAGE **<DESCWP>**

A separate description work package **<descwp>** shall be developed for each aircraft system, aeronautical equipment, airborne weapons/equipment, support equipment, and engine system. The work package shall contain system descriptive data, tagged as **<sysdesc>**, that includes the system's purpose, type, content, and main features. If the system is broken down into subsystems, descriptive data shall be provided for the subsystem as well, although still tagged as **<sysdesc>**. Similarly, if one of the subsystems is further broken down into components or equipment, then that descriptive data is denoted as **<sysdesc>**. The hierarchical order of the **<sysdesc>** elements indicates the relationships between the equipment, components, subsystems, and system.

### 4.1.1 The <sysdesc> Element

The <sysdesc> element consists of a title <title>, which is the System Name, followed by the descriptive information, tagged as <desc>. The descriptive information <desc> can be a collection of paragraphs, lists, tables, and notes.

The following example is a System Description for the "High-speed Anti-Radiation Missile". The description includes 2 paragraphs. Notice that the 2 paragraphs <para> are contained within the description <desc> element.

```
<sysdesc>
<title> High-speed Anti-Radiation Missile.</title>
<desc>
  <para>HARM is a supersonic air-to-ground guided missile designed to
  detect, attack and destroy radars associated with enemy anti-aircraft
  systems.</para>
  <para>These sections from nose to tail are: guidance, warhead, control,
  and rocket motor.</para>
</desc>
</sysdesc>
```

In the next example, 2 subsystems of the High-speed Anti-Radiation Missile system are described. In addition, the second subsystem "CONTROL SECTION" includes a subordinate component "UMBILICAL CABLE" description. The placement of these additional <sysdesc> elements is crucial to maintain the system's hierarchical structure. Note that in order for a System Description to be identified as subordinate, it must be nested within the higher-level system description. In other words, it must occur before the completion of the parent's system description (which would be denoted by </sysdesc>).

```
<sysdesc>
<title> High-speed Anti-Radiation Missile</title>
<desc>
  <para>HARM is a supersonic air-to-ground guided missile designed to detect,
  attack and destroy radars associated with enemy anti-aircraft systems.</para>
  <para>These sections from nose to tail are: guidance, warhead, control, and
  rocket motor.</para>
</desc>

  <sysdesc>
  <title>Guidance Section</title>
  <desc>
    <para>Located at the nose of the missile, the guidance section performs
    several functions. Prior to launch, it receives RF data for cockpit display.
    In its internal memory, the guidance section stores mission modes and
    alternate targets. In flight, it supplies target-tracking commands to the
    control. The WGU-2B/B allows software reprogramming via the EEPROM
    memory board at the intermediate maintenance level. The WGU-2C/B was
    redesigned to counter the expected threats of high pulse densities, wide
    frequency
    agility, complex pulse patterns and multiple engagement radars.</para>
```

```

        <note>
            <para>The 704AS109 dash numbers are used to identify AGM-88B
            missile hardware configurations. The 704AS111 dash numbers are
            used to identify AGM-88C missile hardware configurations.</para>
        </note>
    </desc>
</sysdesc>

<sysdesc>
<title>Control Section</title>
<desc>
    <para>The control section is located between the warhead and rocket
    motor. In the control section, tracking commands from the guidance
    section are converted into wing commands by electrically driven linear
    actuators. The wings attach to splined hubs that are part of the actuator
    housing on the control section. Attitude reference and altitude indication
    for target acquisition, midcourse and terminal guidance, and operation of
    the roll control system are implemented by the control section's inertial
    reference guidance system. Captive flight power for the missile along with
    avionics communications are provided through the umbilical cable
    connector. The control section also houses the battery for free-flight
    power, the ground support equipment test connector, and target detector
    (TDD).</para>
</desc>
    <sysdesc>
    <title>Umbilical Cable</title>
    <desc>
        <para>The umbilical cable connects the control section to the
        missile launcher and provides all electrical interfaces between the
        missile and the carrying aircraft.</para>
    </desc>

    <techchars>
    <title>Technical Characteristics </title>
    <para>The following table includes technical characteristics of the
    Umbilical Cable.</para>
    <table>.....</table>
    </techchars>
    </sysdesc>
</sysdesc>

```

**NOTE:** System Description can also include Technical Characteristics <techchars> and Additional Description <adddesc>.

**NOTE:** After a System Description, Control and Indicator Description data <ctrlinddesc> for equipment may be provided.

Refer to Figure 3 for sample formatted output of the above example.

## 4.2 PRINCIPLES OF OPERATION WORK PACKAGE <POPWP>.

A separate "Principles of Operation Work Package" <popwp> shall be developed for each aircraft system. The work package shall contain the system's functional operation, tagged as <systhry>. If a system is broken down into its subsystems and components, those subsystems' and components' functional operation data shall be provided and tagged as <systhry>. The hierarchical order of the <systhry> elements indicates the relationships between the equipment, components, subsystems, and system.

### 4.2.1 The <systhry> element

The System Theory element <systhry> consists of a title <title>, which is the System Name, followed by theory data <thry>. The theory information <thry> can be a collection of paragraphs, lists, tables, and notes. Similar to <sysdesc> in Section 4.1.1, the nesting of the <systhry> elements is crucial to maintain the system's hierarchical structure. Note that in order for a System Theory to be identified as subordinate, it must be nested within the higher-level system theory. In other words, it must occur before the completion of the parent's system theory (which would be denoted by </systhry>).

```

<popwp>
<titleblk>...</titleblk>
<wpinfo>...</wpinfo>
<systhry>
<title>DC Power Distribution</title>
  <thry>
    <note>
      <para>All voltages referred to as 28 Vdc in this WP, are not
      absolute values. If the helicopter is powered by battery only, the
      voltage will be approximately 24 Vdc.</para>
    </note>
    <para>DC power distribution is provided by means of electrical buses,
    consisting of copper bars or heavy duty power wires. These buses are
    distinctly depicted in the illustrations throughout this WP. Battery No. 1 is
    connected to terminal A1 of the battery No. 1 relay with a power feeder
    wire. Battery No. 2 is connected to terminal A2 of battery No. 2 relay with a
    power feeder wire. A voltmeter is connected via the DCVM select switch
    and BAT 1 VM and BAT 2 VM circuit breakers to terminal A1 of battery No.
    1 relay, and terminal A2 of battery No. 2 relay. This enables monitoring of
    the battery voltage, before any switch of the dc system is set to ON.
    </para>
  </thry>
</systhry>
<systhry>
<title>External Power Provision</title>
<thry>
  <para>External power is applied through the external power receptacle to
  the external power relay and to the sensor control If the external power
  has the correct polarity, proper voltage range (18-30 Vdc), and without
  excessive ripple, the sensing circuit will energize the sensor control. The
  energized sensor routes the external power to the external power relay
  coil, which energizes and applies external power to the essential
  bus.</para>

```

```

    </thry>
  </systhry>
</systhry>
</popwp>

```

Refer to Figure 4 for sample output of this markup.

#### 4.2.2 The Description Group <descgrp> and Principles of Operation Group <popgrp> elements.

Detailed physical descriptions of the systems and components may be included in the Principles of Operation WP when usability is enhanced (Refer to MIL-STD-3001-2 Section 5.2.4.2.1). When descriptive data is included, it is not necessary to prepare separate description work packages. The descriptive data tagged as <descgrp> shall precede the narrative for the principles of operation (tagged as <popgrp>). The following example shows the System Theory as created above but proceeded by Descriptive Data.

```

<popwp>
<titleblk>...</titleblk>
<wpinfo>...</wpinfo>

<descgrp>
<title>DC POWER SYSTEM DESCRIPTION</title>
  <sysdesc>
  <title>DC POWER SYSTEM</title>
  <desc>
  <para>DC power to the helicopter electrical system is supplied by two
  generators, two batteries, or by an external 28 Vdc power source. DC power
  distribution is provided by five electrical bus systems.</para> </desc>
  </sysdesc>
</descgrp>

<popgrp>
<title>DC POWER PRINCIPLES OF OPERATION</title>
  <systhry>
  <title> DC POWER SYSTEM </title>
  <thry>
    <note>
    <para>All voltages referred to as 28 Vdc in this WP, are not absolute
    values. If the helicopter is powered by battery only, the voltage will be
    approximately 24 Vdc.</para> </note>
    <para>DC power distribution is provided by means of electrical buses,
    consisting of copper bars or heavy duty power wires. These buses are
    distinctly depicted in the illustrations throughout this WP. Battery No. 1 is
    connected to terminal A1 of the battery No. 1 relay with a power feeder
    wire. Battery No. 2 is connected to terminal A2 of battery No. 2 relay with a
    power feeder wire. A voltmeter is connected via the DCVM select switch
    and BAT 1 VM and BAT 2 VM circuit breakers to terminal AI of battery No.
    1 relay, and terminal A2 of battery No. 2 relay. This enables monitoring of

```

```

        the battery voltage, before any switch of the dc system is set to ON.
        </para>
    </thry>
    <systry>
    <title>External Power Provision</title>
    <thry>
        <para>External power is applied through the external power
        receptacle to the external power relay and to the sensor control If
        the external power has the correct polarity, proper voltage range
        (18-30 Vdc), and without excessive ripple, the sensing circuit will
        energize the sensor control. The energized sensor routes the
        external power to the external power relay coil, which energizes
        and applies external power to the essential bus.</para>
    </thry>
    </systry>
</popgrp>
</popwp>

```

Refer to Figure 5 for sample output of this markup.

### 4.3 OPERATING INSTRUCTION WORK PACKAGES <OPERWP>

These work packages shall contain step-by-step operation instructions for the equipment, including all safety precautions, covering the complete pre-operational to post-operational cycle. The DTD allows for specific operating instructions/procedures:

- Preparation for use procedures <prepuse>
- Pre-operational setup procedures <preop>
- Control and Indicator Description <ctrlinddesc>
- Start-up information <startup>
- Built-in-test or self-test procedures <bit-st-op>
- Operating procedures (normal sequence of operation) <op-proc>
- Emergency operation procedures <emerg-proc>
- Emergency shut-down procedures <emshut-proc>
- Post-operational shut-down procedures <post-op-proc>

**NOTE:** These elements are considered "Task-Level" elements as defined in Section 2.6.

If necessary, for systems or equipment that have more than one method of operation or several modes of operation, the procedures listed above can be repeated for each method or mode in the same work package. The method or mode is indicated by the title `<title>` of `<op-type>`.

```

<operwp>
<titleblk>...</titleblk>
<wpinfo>...</wpinfo>

<op-type>
<title>Operational Mode 1</title>
  <prepuse>
    <title> Preparation for use </title>...</prepuse>
  <op-proc>
    <title>Operational Procedures</title>...</op-proc>
</op-type>

<op-type>
<title>Operational Mode 2</title>
  <prepuse>
    <title> Preparation for use </title>...</prepuse>
  <op-proc>
    <title>Operational Procedures</title>...</op-proc>
</op-type>

</operwp>

```

## 5.0 DTD FOR TESTING AND TROUBLESHOOTING PROCEDURES

The following guidelines are applicable to the DTD for Testing and Troubleshooting Procedures. Readers should be familiar with the requirements defined in MIL-STD-3001-3.

### 5.1. FAULT ISOLATION TITLE BLOCK `<FITITLEBLK>`

Markup for Fault Isolation Work Packages differ slightly from the Title Block defined above. A Fault Isolation Work Package Title Block `<fititleblk>` contains a Fault Isolation Title `<fititle>` and optional Work Package Notices `<wpnotices>`. The Fault Isolation Title `<fititle>` consists of a Maintenance Level `<maintlvl>`, Work Package type `<wptype>`, Subject `<subject>`, Troubleshooting Symptom `<trblshtsym>`, and optional End Item Nomenclature `<sysnomen>`. System Components `<syscomp>` may be identified in the Title Block. Refer to Section 3.1.2.2 of this document.

### 5.1.1 Sample Markup of a Fault Isolation Work Package Title Block

The following is sample markup of a Fault Isolation Work Package Title Block. Formatted Output is provided in Figure 1.

```
<fititleblk>
  <fititle>
    <maintlvl>Intermediate Maintenance</maintlvl>
    <subject>Fault Isolation Troubleshooting Procedures</subject>
    <trblshtsym>Code 827, Cabin Air Too Cold</trblshtsym>
  </fititle>
</fititleblk>
```

## 5.2 COMBINED OPERATIONAL CHECKOUT AND TROUBLESHOOTING PROCEDURES <OPCHK-TRBLPROC>

Combined Operational Checkout and Troubleshooting Work Package <tst-trblwp> contains Combined Operational Checkout and Troubleshooting Procedures <opchk-trblproc>. According to MIL-STD-3001-3, combined operational checkout and troubleshooting procedures <opchk-trblproc> shall consist of a series of test procedures <testproc> that lead to an indication or condition <condition>. When a normal indication is obtained, the operational checkout continues until the entire checkout is completed or until an abnormal condition or indication is observed. When the test procedure results in an abnormal indication or condition, a malfunction <malfunction> or a series of malfunctions is provided. For each malfunction, the possible corrective actions <corr-action> shall be provided. When required, the corrective action may include a reference <reference> to the work package or paragraph that contains the data to perform the corrective action.

### 5.2.1 Sample Markup of a Combined Operational Checkout and Troubleshooting Procedure <opchk-trblproc>

The following is sample markup of a Combined Operational Checkout and Troubleshooting Procedure. Formatted Output is provided in Figure 6.

```
<opchk-trblproc>
  <testproc>
    <title>Computer Processor Operational Checkout and Troubleshooting</title>

    <step><para>Remove computer processor top cover.</para></step>

    <step-with-indication>
    <step><para>Apply power to test set and place test set POWER switch to ON position.</para></step>

    <indicationgrp>
      <condition><para>Test set power indicator is illuminated.</para>
      </condition>
      <corr-action><action>
        <para>If power indicator does not light, check power source for 28 VDC.</para>
```

```

        </action></corr-action>
    </indicationgrp>
</step-with-indication>

<step-with-indication>
<step><para>Place UUT POWER switch in CP position. </para></step>

<indicationgrp>
    <condition><para>CP LEDS momentarily flash.</para></condition>
    <corr-action>
    <action><para>If LEDS do not flash briefly, check test set
wiring.</para></action>
    </corr-action>
</indicationgrp>
</step-with-indication>

<step>
<para> Place Test Set UUT POWER switch in CP position. </para>
</step>

<step-with-indication>
<step><para> Quickly press and release the CP BIT button on the system
interface card. Observe the 10 LEDs on the system I/F CCA.</para></step>

<indicationgrp>
    <condition><para>BIT test routine runs for 30 seconds. During the first
15 seconds the CP LEDS (DS1 DS10) will flash. The second 15 second
period is the status reporting period. All LEDS are OFF during the second
15 second period. After the BIT routine is complete, all LEDS will return to
the original OFF state.</para> </condition>
    <corr-action>
        <action><para>If DS1 is illuminated, perform DS1 testing. Refer to
table <xref xrefid="table1" xidtype="table"/>.</para>
        </action>
    </corr-action>

    <corr-action>
        <action><para>If DS2 is illuminated, perform DS2 testing. Refer to
table <xref xrefid="table2" xidtype="table"/></para></action>
    </corr-action>
</indicationgrp>
</step-with-indication>

</testproc>
</opchk-trblproc>

```

### 5.3 OPERATIONAL CHECKOUT PROCEDURES <OPCHK>

When it is determined that the operational checkout procedures shall be separate from the troubleshooting procedures, the operational checkout procedures shall be included under the heading "OPERATIONAL CHECKOUT." Operational checkout procedures shall be developed in accordance with MIL-STD-3001-3, 5.3.4.6.3 d.

Operational checkout procedures <opproc> shall consist of a series of Steps grouped with Indications <step-indicationgrp> where steps <step> lead to an indication or condition <condition>. Based on these indications or conditions, a corrective action <action> is provided. This corrective action can either be stated as a specific remedy or can be a reference to a detailed troubleshooting procedure work package. This process is continued until the entire operational checkout procedure is completed.

### 5.3.1 Sample Markup of a Operational Checkout Procedure <opchk>

The following is sample markup of an operational checkout procedure. Formatted Output is provided in Figure 7.

```
<opchk>
  <opproc>
    <title>Arresting Gear System Operational Checkout Procedure</title>

    <step><para>Make sure door 103 is installed (<extref>A1-F18AC-LMM-010</extref>).</para></step>

    <step><para>Make sure arresting HOOK manual control lever is set to up.</para></step>
    <step-with-indication>
    <step><para>Read, record and reset nose wheelwell DDI (<extref>A1-F18AC-LMM-000</extref>).</para></step>

    <indicationgrp>
      <condition><para>No maintenance code exists.</para></condition>
      <corr-action>
        <reference><extref> A1-F18AC-LMM-050</extref>. Maintenance Code 916</reference>
        <action><para>Perform troubleshooting</para></action>
      </corr-action>
    </indicationgrp>
    </step-with-indication>
    <step-with-indication>
    <step><para>If arresting hook is not up, manually raise and latch arresting hook.</para></step>

    <indicationgrp>
      <condition><para>Arresting hook latches in up position.</para></condition>
      <corr-action>
        <reference><extref>(A1-F18AC-130-300).</extref></reference>
        <action><para>Do arresting hook push-pull control assembly rigging or replace push-pull control assembly </para></action>
      </corr-action>
    </indicationgrp>
    </step-with-indication>
  </opproc>
</opchk>
```

## 5.4 TROUBLESHOOTING PROCEDURE. METHOD "A" <TRBLPROC-A>

Troubleshooting procedures <trblproc-a> for specific fault symptoms <symptom> shall combine text and logic and consist of a series of numbered steps and substeps <trbl-step> which leads to an indication or condition <condition> (usually stated in the form of a question). Based on these indications or conditions, a "YES" or "NO" response <decision> is provided that will guide the technician to the next step or a series of steps, leading to a final action <finalaction>. This process is continued until the entire troubleshooting procedure is completed. The corrective action may include a reference <reference> to the applicable technical manual and work package containing the procedures to correct the discrepancy.

### 5.4.1 Sample Markup of a Troubleshooting Procedure - Method "A" <trblproc-a>

The following is sample markup of a troubleshooting procedure. Formatted Output is provided in Figure 8.

```
<trblproc-a id="a">
  <symptom>Pressure leak in the filler cap.</symptom>
  <condition><para>Is filler cap properly seated?</para></condition>
  <decision>
    <no idref="firstno"/>
    <yes idref="firstyes"/>
  </decision>
  <finalaction id="firstno">
    <action>
      <para>Reseat Filler Cap.</para>
    </action>
  </finalaction>

  <trbl-step id="firstyes">
    <step><para>Inspect tank filler cap and filler cap seating area.</para></step>

    <condition><para>Is there any reparable damage?</para></condition>

    <decision>
      <no idref="secondno"/>
      <yes idref="secondyes"/>
    </decision>
  </trbl-step>
  <trbl-step id="secondno">
    <step><para>Check filler cap lever tension.</para></step>
    <condition><para>Tension sufficient to prevent pressure
      leak?</para></condition>
    <decision><no idref="thirdno"/><yes idref="thirdyes"/></decision>
  </trbl-step>
  <finalaction id="secondyes">
    <reference><xref xrefid="wp00700"/> </reference>
    <action>
      <para>Repair filler cap or tank filler cap seating area </para>
    </action>
  </finalaction>
  <trbl-step id="thirdyes">
    <step><para>Substitute new filler cap</para></step>
```

```

        <condition><para>Is there still a pressure leak?</para></condition>
        <decision><no idref="thirdno"/><yes idref="fourthno"/></decision>
    </trbl-step>
    <finalaction id="fourthno">
        <action>
            <para>Replace filler cap</para>
        </action>
    </finalaction>
    <finalaction id="thirdno">
        <action>
            <para>Adjust cap lever tension</para>
        </action>
    </finalaction>
</trblproc-a>

```

## 5.5 TROUBLESHOOTING PROCEDURE. METHOD "B" <TRBLPROC-B>

Troubleshooting procedures (Method B) <trblproc-b> shall consist of an all inclusive series of specific fault symptoms <symptom> for the system/equipment being troubleshot. For each fault symptom, the probable malfunction or series of malfunctions <malfunction> that may have caused the fault shall be listed. For each probable malfunction identified, a corrective action <action> shall be stated with a reference to the work package or paragraph that contains the data to perform the corrective action.

### 5.5.1 Sample Markup of a Troubleshooting Procedure - Method "B" <trblproc-b>

The following is sample markup of a troubleshooting procedure. Formatted Output is provided in Figure 9.

```

<trblproc-b>
<title>No Start (Gas Generator Turning)</title>
<symptomgrp>
    <symptom>No fuel flow or fuel pressure.</symptom>
    <malfuncgroup>
        <malfunction><para>No Fuel in tanks.</para></malfunction>
        <action><para>Inspect main fuel inlet connection. Reconnect mail
            fuel-in line.</para></action>
    </malfuncgroup>
    <malfuncgroup>
        <malfunction><para>No fuel to engine</para></malfunction>
        <reference><xref xrefid="wpid01"/></reference>
        <action><para>Be sure speed control shaft moves away from
            stopcock when the speed control lever is advanced. Repair speed
            control lever linkage </para> </action>
        <action><para>Be sure fuel valves are not shut off. Turn on
            valves.</para></action>
    </malfuncgroup>
</symptomgrp>

<symptomgrp>
    <symptom>Fuel or ignition problems: Speed control lever at IDLE,
    Ng of 3646-4010 rpm (20-22%) and fuel flow of 100-130 lb/hr.</symptom>
    <malfuncgroup>
        <malfunction><para>Fuel manifold drain stuck

```

```

open.</para></malfunction>
<reference><xref xrefid="wpid02"/></reference>
<action><para>Check for fuel draining from fuel flow divider valve
during start.
Replace fuel flow divider, if fuel leakage continues during
motoring</para>
</action>
</malfuncgroup>
<malfuncgroup>
<malfunction><para>Faulty igniter plug.</para></malfunction>
<reference> <xref xrefid="wpid03"/></reference>
<action><para>Check both igniter plugs for audible ignition.
Replace faulty igniter plug(s).</para></action>
</malfuncgroup>
</symptomgrp>
</trblproc-b>

```

## 6.0 MAINTENANCE INFORMATION MODULE

The following guidelines are applicable to the DTD for Maintenance Information. Readers should be familiar with the requirements defined in MIL-STD-3001-4.

Work packages shall be developed in a logical order for the maintenance tasks specified in MIL-STD-3001-4; Section 5.3.1.1. All these tasks, with the exception of "Handling" <handling> follow the "Task-level" content model (Refer to Section 2.6). The content element "Handling" <handling> consists of the following model.

The <title> is required and may be followed by Procedure-Type Content and a Task Introduction <taskintro>. After this, any of the following specific procedures may be entered in any order:

• Folding and unfolding <fold>	• Cockpit entry and safety check <cock>
• Towing <tow>	• Moving <move>
• Parking <park>	• Mooring <moor>
• Jacking <jack>	• Hoisting <hoist>
• Leveling <level>	• Protective covers <procover>
• Ground safety locks and pins <safelock>	• Carrier deck and handling <cardckhdl>

<ul style="list-style-type: none"> <li>• Preparation for catapulting &lt;prepcat&gt;</li> </ul>	<ul style="list-style-type: none"> <li>• Loading &lt;load&gt;</li> </ul>
<ul style="list-style-type: none"> <li>• Unloading &lt;unload&gt;</li> </ul>	<ul style="list-style-type: none"> <li>• Arrested land operation &lt;arrlndop&gt;</li> </ul>
<ul style="list-style-type: none"> <li>• Fuel &lt;fuel&gt;</li> </ul>	<ul style="list-style-type: none"> <li>• De-fuel &lt;defuel&gt;</li> </ul>

## 7.0 Illustrated Parts Breakdown (ipb)

The following guidelines are applicable to the preparation for IPB Data. Readers should be familiar with the requirements defined in MIL-STD-3001-4 and MIL-STD-3001-8.

IPB data shall be prepared as an integral part of the maintenance tasks (refer to MIL-STD-3001-4 5.3.11.1); as a separate work package (Refer to MIL-STD-3001-4, Section 5.3.11.2) or as a separate manual (refer to MIL-STD-3001-8). The following guidelines are applicable to IPB data regardless of where it resides.

A Group Assembly Parts List <gapl> must contain at least one End Item <enditem> followed by at least one Detailed Part <detlparts> and/or Assembly <assy>. The following identifies elements that are allowed within each of these elements:

END ITEM (MAIN) ASSEMBLY: <enditem>

- Part number <gaplpartno>
- Part description <partdesc>
- Units <units>
- Useable on code <useoncode>
- SMR code <smrcode>

DETAILED PART <detlparts>

- Part Information

- Index number <**indexno**>
- Part number <**gaplpartno**>
- Part description <**partdesc**>
- Units <**units**>
- Useable on code <**useoncode**>
- SMR code <**smrcode**>
  
- Alternate part information <**altpart**>
- Equivalent part information <**eqvpart**>
- Substitute part information <**substpart**>
- Attaching part information <**attachingparts**>

**ASSEMBLY <assy>**

- Part Information
  - Index number <**indexno**>
  - Part number <**gaplpartno**>
  - Part description <**partdesc**>
  - Units <**units**>
  - Useable on code <**useoncode**>
  - SMR code <**smrcode**>
  
- Alternate part information <**altpart**>
- Equivalent part information <**eqvpart**>
- Substitute part information <**substpart**>

- Attaching part information <attachingparts>
- Detailed parts <detlparts>
- Sub-assembly <subassy>

ALTERNATE PART <altpart>, EQUIVALENT PART <eqvpart>, and SUBSTITUTE PART <substpart>:

- GAPL part number <gaplpartno>
- Part description <partdesc>
- Units <units>
- Useable on code <useoncode>
- SMR code <smrcode>

ATTACHING PARTS <attachingparts>:

Attaching Part <attachpart> (repeatable)

- Part Information <partinfo>
  - Index number <indexno>
  - Part number <gaplpartno>
  - Part description <partdesc>
  - Units <units>
  - Useable on code <useoncode>
  - SMR code <smrcode>
- Alternate part information <altpart>

- Equivalent part information <eqvpart>
- Substitute part information <substpart>

SUB-ASSEMBLY (OR DEPENDING ON NESTING LEVEL, SUB-SUBASSEMBLY, ETC.) <subassy>:

- Part information <partinfo>
  - Index number <indexno>
  - Part number <gaplpartno>
  - Part description <partdesc>
  - Units <units>
  - Useable on code <useoncode>
  - SMR code <smrcode>
- Alternate part information <altpart>
- Equivalent part information <eqvpart>
- Substitute part information <substpart>
- Detailed parts <detlparts>
- Attaching Parts <attachingparts>
- Sub-assembly (or sub-subassembly, etc.) <subassy>

## 7.1 Part Description <partdesc>

Part descriptions, which traditionally are listed as an entry under the GAPL heading "DESCRIPTION", consist of the following elements.

- Nomenclature <nomen> (required)

- Next Higher Assembly Note <nhanote>
- Cage code <cage>
- Reference designator <refdes>
- Contract drawing specification <specdwg>
- External reference <extref>
- Tolerances for electrical/electronic parts <tolerance>
- Oversize and undersize parts <size>
- Undrilled or untrimmed parts <drilltrim>
- Description note <descnote>

The part nomenclature must be identified first. The remaining elements may be included in any order. When the data is formatted, parenthesis will be automatically placed around the additional elements. For example, the markup

```
<partdesc>
  <nomen> LEADING EDGE ASSY, VERTICAL STABILIZER</nomen>
  <cage>12345</cage>
  <extref>AA-001-XXX-01</extref>
  <partdescend/>
</partdesc>
```

will be formatted as:

**LEADING EDGE ASSY, VERTICAL STABILIZER/ 12345/ AA-001-XXX-01**

## 7.2 ASSEMBLY <ASSY>, DETAILED PARTS <DETLPARTS>, AND SUB-ASSEMBLY <SUBASSY> HIERARCHY

The element “Assembly” <assy> is used to tag all first level assemblies in a GAPL, after the end-item is identified. Sub-assemblies to the first level of assembly are identified as <subassy>; while detailed parts of the assembly are identified as <detlparts>. Once a sub-assembly is identified, its sub-assemblies are also tagged as <subassy>, making sure that the hierarchical organization of the elements mirrors the organization of the assemblies.

### 7.2.1 Sample markup of Assembly <assy>, Detailed Parts <detlparts>, and Sub-assembly <subassy> hierarchy

The following is sample markup which demonstrates the hierarchical organization of an Assembly entitled "SHIELDING ASSEMBLY, ELECTRONIC" which consists of a detailed part entitled "BOLT, INTERNAL WRENCHING", a detailed part entitled "WASHER," and a sub-assembly entitled "WAVEGUIDE ASSEMBLY TRANSMITTER". Note that the "assembly" is not closed (</assy>) until all these parts are identified. Sample output for this markup is provided in Figure 10. Similar to <sysdesc> in Section 4.1.1, the nesting of the <subassy> and <detlparts> elements is crucial to maintain the system's hierarchical structure. Note that in order for a Detailed Part <detlparts> to be identified as subordinate to an assembly, it must be nested within the higher-level assembly. In other words, it must occur before the completion of the parent's assembly (which would be denoted by </assy>).

```

<gapl>
<std6colhd><stdhead1/><stdhead2/><stdhead3/><stdhead4/><stdhead5/><stdhead6/>
</std6colhd>
<enditem>
<gaplpartno>19-12-4322-1221 </gaplpartno>
<partdesc>
<nomen>LEADING EDGE ASSY, VERTICAL STABILIZER</nomen>
<partdescend/></partdesc>
<units>1</units>
<smrcode>PAOZZ</smrcode>
</enditem>

<assy>
<partinfo>
  <indexno>1</indexno>
  <gaplpartno>AIC485-1</gaplpartno>
  <partdesc>
  <nomen>SHIELDING ASSEMBLY, ELECTRONIC</nomen>
  <cage>18565</cage>
  <partdescend/></partdesc>
  <units>4</units>
  <smrcode>PAOZZ</smrcode>
</partinfo>

  <detlparts>
  <partinfo>
    <indexno>2</indexno>
    <gaplpartno>D791184-8-14</gaplpartno>
    <partdesc>
    <nomen>BOLT, INTERNAL WRENCHING</nomen>
    <specdwg>HUGHES SPEC 965834-1</specdwg>
    <partdescend/></partdesc>
    <units>4</units>
    <useoncode idref="uoca">A</useoncode>
    <smrcode>PAOZZ</smrcode>
  </partinfo>
  </detlparts>

  <detlparts>

```

```

    <partinfo>
      <gaplpartno>74886-12</gaplpartno>
      <partdesc>
        <nomen>WASHER</nomen>
        <partdescend/></partdesc>
        <units>4</units>
        <smrcode>PAOZZ</smrcode>
    </partinfo>
  </detlparts>

  <subassy>
    <partinfo>
      <indexno>3</indexno>
      <gaplpartno>3542156-2</gaplpartno>
      <partdesc>
        <nomen>WAVEGUIDE ASSEMBLY TRANSMITTER</nomen>
        <partdescend/></partdesc>
        <units>1</units>
        <useoncode idref="uocb">B</useoncode>
        <smrcode>PAOZZ</smrcode>
    </partinfo>
  </subassy>
</assy>
</gapl>

```

### 7.3 ATTACHING PARTS <ATTACHINGPARTS>

Attaching Parts <attachingparts> may be indicated for an assembly <assy>, Sub-Assembly <subassy>, and Detailed Part <detlparts>. Similar to the hierarchical structure of Assemblies, Sub-assemblies, and detailed parts, Attaching Parts are hierarchically subordinate to its "parent." Each attaching part is tagged separately, and the appropriate symbols are generated upon formatting. Sample output is provided in Figure 11.

```

<assy>
  <partinfo>
    <indexno>1</indexno>
    <gaplpartno>AIC485</gaplpartno>
    <partdesc>
      <nomen>TURBINE ASSEMBLY</nomen>
      <partdescend/></partdesc>
      <units>4</units>
    </partinfo>

    <attachingparts>
      <attachstart/>
        <attachpart>
          <partinfo>
            <gaplpartno>D791184-8-14</gaplpartno>
            <partdesc>
              <nomen>BOLT, INTERNAL WRENCHING</nomen>
              <partdescend/></partdesc>
              <units>4</units>
            </partinfo>

```

```

</attachpart>

<attachpart>
<partinfo>
  <gaplpartno>74886-12</gaplpartno>
  <partdesc>
  <nomen>WASHER</nomen>
  <partdescend/>
  </partdesc>
  <units>4</units>
</partinfo>

</attachpart>
<attachend/>
</attachingparts>
</assy>

```

## 8.0 CONTENT (STANDARD) TABLES

MIL-STD-3001 identifies multiple “Standard Tables,” which is a collection of “content tagged” data that may be formatted as a table. Each row and each “cell” within a row is uniquely identified by its content. Column Heads are NOT tagged and will be automatically generated.

The following represents a standard table known as “Record of Applicable Technical Directives.” This table contains entries <ratdentry>, which groups a Type Number <typeno>, Date <date>, Title ECP Number <titlecpno>, and Date Incorporated <dateinc>.

```

<ratd>
<ratdentry>
  <typeno> AAC 855</typeno>
  <date> 31 May 91 </date>
  <titlecpno> Launcher Guided Missile Aircraft</titlecpno>
  <dateinc> 1 Sep 84 </dateinc>
</ratdentry>
...
</ratd>

```

**Record of Applicable Technical Directives**

TD Type/No.	TD Date	Title and EPC/RAMEC No.	Date Inc.	Remarks
<i>AAC 855</i>	<i>31 May 91</i>	<i>Launcher Guided Missile Aircraft</i>	<i>1 Sep 84</i>	

### 8.1 CALS TABLE

A “CALS” Table is a method of tagging rows and cells to be formatted as a table. Column Heads ARE tagged. If the Record of Applicable Technical Directives were tagged as a CALS table, it would look like:

```
<table>
```

```

<thead>
<row>
  <entry>TD Type No.</entry>
  <entry>TD Date</entry>
  <entry>Title and ECP/RAMEC No.</entry>
  <entry>Date Inc.</entry>
  <entry>Remarks</entry> </row>
</thead>
<tbody>
<row>
  <entry> AAC 855</entry>
  <entry> 31 May 91 </entry>
  <entry> Launcher Guided Missile Aircraft</entry>
  <entry> 1 Sep 84 </entry></row>
...
</tbody>
</title>

```

## 8.2 CALS TABLE FOOTNOTES

Footnotes are tagged in a CALS table using the elements `<tfnid>`, `<tfhref>`, and `<tfndisplay>`. When a footnote is first referenced, the element `<tfnid>` is used as both the reference, and as the footnote text. A unique ID value must be entered for the `<tfnid>`. If the same footnote is referenced within the same table, the element `<tfhref>` is used as a pointer to the first reference. The element `<tfndisplay>` is used as a placeholder for the footnotes to be printed in the hard copy output. For example, the markup:

```

<table>
<tgroup cols="2"><colspec colname="col1"/><colspec colname="col2"/>
<tbody>
<row>
  <entry><para>A table entry and a footnote<tfnid id="tfn1">Here's the
  footnote text. The element "tfndisplay" is used to generate footnotes at
  the end of the table.</tfnid></para></entry>

  <entry><para>A table entry that references a footnote that has already
  been defined.<tfhref xrefid="tfn1"/></para></entry>
</row>

<row>
  <entry namest="col1" nameend="col2"><tfndisplay/></entry>
</row>

</tbody>
</tgroup>
</table>

```

generates the table:

A table entry and a footnote <sup>1</sup>	A table entry that references a footnote that has
---	---

	already been defined. <sup>1</sup>
1. Here's the footnote text. The element “tfndisplay” is used to generate footnotes at the end of the table	

**NOTE:** Users can control how the footnote is to be enumerated using attributes of the element <tfnid>. Attribute “**tfntype**” determines whether the footnote is indicated with a number (1,2,3, etc), a letter (a, b, c), or a symbol. By default, footnotes are numbered. If a user determines that the table footnotes are to be indicated with a symbol, then the desired symbol must be entered (as a character reference) in the attribute value “**tfnsymbol**”.

### 8.3 MIL-STD-3001 STANDARD (CONTENT) TABLES

The following lists all “Standard” tables in MIL-STD-3001.

#### 1. Front Matter.

<ul style="list-style-type: none"> <li>Change History &lt;<b>chghist</b>&gt; as part of the Numerical Index of Effective Work Packages/pages.</li> </ul>	<ul style="list-style-type: none"> <li>Technical publication deficiency list. &lt;<b>tpd</b>&gt;</li> </ul>
<ul style="list-style-type: none"> <li>Consolidated List of Support Equipment Required &lt;<b>sel</b>&gt;</li> </ul>	<ul style="list-style-type: none"> <li>Maintenance Allocation Table as part of the Maintenance Allocation Work Package. &lt;<b>maintable</b>&gt;</li> </ul>

#### 2. Common Elements.

<ul style="list-style-type: none"> <li>Record Of Applicable Technical Directives &lt;<b>ratd</b>&gt;</li> </ul>	<ul style="list-style-type: none"> <li>Support Equipment Required List &lt;<b>selist</b>&gt;</li> </ul>
<ul style="list-style-type: none"> <li>Facilities Required List &lt;<b>faclist</b>&gt;</li> </ul>	<ul style="list-style-type: none"> <li>Materials Required List &lt;<b>matlist</b>&gt;</li> </ul>
<ul style="list-style-type: none"> <li>Abbreviation List. &lt;<b>abbrevlist</b>&gt;</li> </ul>	<ul style="list-style-type: none"> <li>Useable On Code List &lt;<b>useoncodelist</b>&gt;</li> </ul>

#### 3. Illustrated Parts Breakdown.

- IPB GAPL <**gapl**>

**4. Description, Principals of Operation, and Operation Information.**

- Control and Indicator Table <ctrlindtab>

**5. Testing and Troubleshooting Procedures.**

<ul style="list-style-type: none"> <li>• Maintenance Code Listing Table &lt;maintcdtable&gt;</li> </ul>	<ul style="list-style-type: none"> <li>• Voice Alert Messages Listing &lt;valrttable&gt;</li> </ul>
<ul style="list-style-type: none"> <li>• <b>Indications Fault Table</b> &lt;indfltable&gt;</li> </ul>	<ul style="list-style-type: none"> <li>• Listing of all indicator panel indications &lt;pnlindtable&gt;</li> </ul>
<ul style="list-style-type: none"> <li>• Listing of all fault indicators &lt;wrafltable&gt;</li> </ul>	<ul style="list-style-type: none"> <li>• Fault Descriptor Table &lt;fltdesctable&gt;</li> </ul>
<ul style="list-style-type: none"> <li>• Symbology Table &lt;symtable&gt;</li> </ul>	

**6. Maintenance Information With Illustrated Parts Breakdown**

- Numerical Index of External Part Numbers <compind>

**7. Aircraft Wiring Information**

Aircraft Cable Assembly <accableassy>	<ul style="list-style-type: none"> <li>• Access Information List &lt;accesslist&gt;</li> </ul>
<ul style="list-style-type: none"> <li>• Wire Bundle Assembly Parts List &lt;bunroutepl&gt;</li> </ul>	<ul style="list-style-type: none"> <li>• Wiring System Component Repair Tool List &lt;comprelist &gt;</li> </ul>
<ul style="list-style-type: none"> <li>• Aircraft Specific Wiring Systems Repair Kit List &lt;reprkitlist &gt;</li> </ul>	<ul style="list-style-type: none"> <li>• Wire Type List &lt;wtypelist&gt;</li> </ul>

**8. Structural Repair Information**

<ul style="list-style-type: none"> <li>• Structural Group Repair Index &lt;repindxlist&gt;</li> </ul>	<ul style="list-style-type: none"> <li>• Corrosion Control Materials Requirements List &lt;cormatlist&gt;</li> </ul>
<ul style="list-style-type: none"> <li>• Nondestructive Inspection Index List</li> </ul>	

<code>&lt;ndindxlist&gt;</code>	
---------------------------------	--

**9. Periodic Maintenance Requirements**

<ul style="list-style-type: none"> <li>• ALSS maintenance requirements card applicable equipment list <code>&lt;alsselist &gt;</code></li> </ul>	<ul style="list-style-type: none"> <li>• Removal/Replacement Schedule and Special Tracking List <code>&lt;rrschlist&gt;</code></li> </ul>
<ul style="list-style-type: none"> <li>• System Index <code>&lt;sysindex&gt;</code></li> </ul>	<ul style="list-style-type: none"> <li>• Conditional Inspection List <code>&lt;condinsplist&gt;</code></li> </ul>

**8.4 STANDARD TABLE FOOTNOTES.**

All standard tables have the ability to have “footnotes” that appear in paper output in the last row. The ‘footnote reference’ is tagged using the cross reference `<xref>` element, with the “xidtype” indicated as ‘table-footnote’ ( i.e. `<xref xrefid="xx" xidtype="table-footnote">`). The footnote text is entered as `<notesentry id="xx">` contained in the element `<notelist>`. For example, the markup:

```

<ctrlindtab>
<ctrlindentry>
  <indexno>1</indexno>
  <nomen>Nomenclature<xref xrefid="stnote1" xidtype="table-
  footnote"/></nomen>
  <function>Function</function>
</ctrlindentry>
<noteslist>
  <notesentry id="stnote1">Footnote Text</notesentry>
</noteslist>
</ctrlindtab>
    
```

generates the table:

1	Nomenclature <sup>1</sup>	Function
<b>NOTES</b>		
1. Footnote Text		

**9.0 AUTOMATICALLY GENERATED TEXT**

The FOSI/Style Sheet processes a tagged instance and generates a paper or electronic technical manual. Part of that process includes automatically generating text based on a particular XML tag. The tables below identify all FOSI/Style Sheet automatically generated text.

NOTE: These tables do not include the standard tables as listed in Section 8.0. Column heads are automatically generated for Standard tables.

**TABLE 1. FRONT MATTER AUTO-GENERATED TEXT**

NOTE: Some of the constructs listed here are also applicable to the Title Block of a WP.

DTD CONSTRUCT	EXPLANATION OF AUTO-GENERATED TEXT	SAMPLE (if applicable)
Title page's Publication Title <prtitle>.	The words "TECHNICAL MANUAL" are automatically generated and placed before the maintenance level.	
Publication Number (Technical Manual ID Number) of the Assembled Technical Manual.<tmidno>	Attribute "service" generates Service name before number e.g.: <tmidno service="navair">A1-FA18AC-130-100</tmidno>	<b>NAVAIR A1-FA18AC-130-100</b>
Former Publication Number of the Assembled Technical Manual <pretmidno>	Attribute "service" generates service name. Also "Formerly" placed before text. E.g.: <pretmidno service="navair">A1-FA18-130-100</pretmidno>	<b>Formerly NAVAIR A1-FA18-130-100</b>
The Change Number <chgnum> and <chgdate>. should specify the number only.	The word "Change" is automatically generated.. Change date is preceded by "dash". E.g. <chgnum>6</chgnum><chgdate>15 June 1994</chgdate>	<b>Change 6 - 15 June 1994</b>
Model Designator <modeldes> of the end item nomenclature may be identified on the TM title page or WP title block.	The text "NAVY MODEL" is auto-generated if attribute "type" indicates model is for "aircraft". E.g. <modeldes type="aircraft">F18AC</modeldes>  The text "Model Number" will be automatically generated if attribute "type" is left to default value AND attribute "modelno-head" is left to default value "on".	<b>NAVY MODEL</b>  <b>F18AC</b>  <b>MODEL NUMBER 1234</b>

Part Number <partno>	The text “PART NUMBER” is automatically generated, when used as part of the title page or title block.	
Distribution Notice <distrib> as part of the Title Page of the Assembled Technical Manual	The heading is automatically generated. The attribute “type” must be identified. E.g. <distrib type="c"><para>Distribution is authorized</para></distrib>	<b><u>DISTRIBUTION STATEMENT C</u></b> . Distribution is authorized...
Destruction Notice <destr> as part of the Title Page of the Assembled Technical Manual	The heading is automatically generated. E.g. <destr><para>For unclassified...</para></destr>	<b><u>DESTRUCTION NOTICE</u></b> – For unclassified...
Export Notice <export> as part of the Title Page	The heading is automatically generated. E.g. <export><para>For...</para></export>	<b><u>EXPORT NOTICE</u></b> – For..
Hazardous Materials Icons Explanation List <hazmatexp>	The heading is automatically generated prior to the first Hazardous Materials Icons Explanation <exp>	<b>EXPLANATION OF HAZARDOUS MATERIALS ICONS</b>
Hazardous Materials Warnings.<hazmatwarns>	The heading is automatically generated prior to the first Hazard <hazard>	<b>HAZARDOUS MATERIALS WARNINGS</b>

TABLE 2. “GENERAL” AUTO-GENERATED TEXT

DTD CONSTRUCT	EXPLANATION OF AUTO-GENERATED TEXT
Steps <step> and all task level elements (see section 2.6) may indicate they are Quality Assurance checks “qap”, Hardness Critical information “hci”, Hardness Critical Procedure “hcp” and ESD sensitive “esd”.	Attributes for “qap”, “hci”, and “hcp”, “esds” if equal to “1” (meaning “yes”) generate text (QA), (HCI), (HCP), and (ESD) after the step text or task-level title. e.g. <remove qa="1"><title>Remove</title> would be formatted as:  <b>1-1 (QA) Remove.</b>

Random (Bulleted) Lists < <b>randlist</b> >	Bullets are automatically generated for list items.
Numbered List Items < <b>seqlist</b> >.	Numbers are automatically generated for list items.
Note < <b>note</b> >	Heading “Note” is automatically generated.
Warning < <b>warning</b> >	Heading “Warning” is automatically generated.
Caution < <b>caution</b> >	Heading “Caution” is automatically generated.
Table < <b>table</b> >Heads.	Text “Table” is generated and followed by automatically generated number.
Figure < <b>figure</b> > heads.	Text “Figure” is generated and followed by automatically generated number.
Work Package Numbers	Work Package numbers are automatically generated. Refer to Section 2.2.
Procedure, step, and Paragraph numbers	All numbers are automatically generated.
Cross references < <b>xref</b> > and Figure references < <b>figref</b> >.	Appropriate text for resolving cross reference is automatically generated. Refer to Section 2.4
Effectivity < <b>effect</b> > can be part of a Title Page, Title Block, or Hierarchical level of a WP.	Effectivity text is automatically generated based on contents of < <b>effect</b> >. Refer to Section 3.1.2.4.

TABLE 3. “TESTING AND TROUBLESHOOTING” AUTO-GENERATED TEXT

DTD CONSTRUCT	EXPLANATION OF AUTO-GENERATED TEXT
Indication Group < <i>indicationgrp</i> >, which groups, conditions < <i>condition</i> > and corrective actions < <i>corr-action</i> >.	Generates headings “INDICATION/CONDITION” and “MALFUNCTION/ACTION”. See Section 5.2.1.
Symptom < <b>symptom</b> > as part of a Troubleshooting	Generates heading “SYMPTOM”. See Section 5.4

Procedure.	and 5.5.
As part of a Troubleshooting Procedure - Method "A", decision <decision> of "yes" <yes> or "no" <no> which links user to a step or final action.	Generates heading "YES" or "NO" and automatically resolves the "idref" (cross-reference) link. See Section 5.4.

## 10.0 CONSTRUCTS APPLICABLE SYSTEM DESCRIPTION WORK PACKAGE TO LEGACY DTD ONLY

Unless otherwise noted, all guidelines are applicable to the Full, the Legacy, and the XML MIL-STD-3001 suite of DTDs. In addition, the following are additional constructs that are applicable to the Legacy DTD only.

### 10.1 DESCRIPTION, PRINCIPALS OF OPERATION, AND OPERATION CONSTRUCTS (MIL-STD-3001-2) - LEGACY ONLY

The following Description, Principles of Operation, and Operation Constructs are applicable to the Legacy DTD only.

#### 10.1.1 System Description Work Package <sysdescwp>

MIL-STD-3001-2 defines the System Description Work Package as being broken down by system, subsystem, and component, if applicable. However, for Legacy Data only, the system descriptions contained in a <sysdescwp> may be identified as titled paragraphs <titledpara> and sub-paragraphs <sub-paras> in lieu of a strict system/subsystem hierarchy described in Section 4.1.1.

#### 10.1.2 Principles of Operation Work Package <popwp>

MIL-STD-3001-2 defines the Principles of Operation Work Package as being broken down by system, subsystem, and component, if applicable. However, for Legacy Data only, the principles of operation data found in a <popwp> may be identified as titled paragraphs <titledpara> and sub-paragraphs <sub-paras> in lieu of a strict system/subsystem hierarchy described in Section 4.2.1

#### 10.1.3 Controls and Indicator Constructs for Legacy Manuals Only

In the Full MIL-STD-3001 DTD, "Controls and Indicators" is a content-oriented table <ctrlindtab> that consists of a Call-out, Nomenclature, and Function. For Legacy Manuals that contain Controls and Indicator data not supplied in this form, the Legacy DTD provides the ability to tag the data as a CALS

Table. The Control and Indicator information is tagged as `<ctrlind>` followed by the graphic `<graphic>`, then the CALS table `<table>`.

In addition, a separate "Controls and Indicator Work Package" `<ctrlindwp>` may be supplied for legacy manuals.

## 10.2 TESTING AND TROUBLESHOOTING CONSTRUCTS (MIL-STD-3001-3) - LEGACY ONLY

The following Testing and Troubleshooting constructs are applicable to the Legacy DTD only.

### 10.2.1 Narrative Operational Checkout Procedure `<opchk-text>`

Operational Checkout Procedures that are 'textual' in that they contain no clear and specific indications with associated corrective actions may be tagged as `<opchk-text>`. This element is a standard "Task-level" element (Refer to Section 2.6 of this document).

### 10.2.2 Narrative Troubleshooting Procedures `<trbl-text>`

Troubleshooting Procedures that are 'textual' in that they contain no clear and specific conditions with yes/no decision branches or symptom with malfunction/corrective action may be tagged as `<trbl-text>`. This element is a standard "Task-level" element (Refer to Section 2.6 of this document).

### 10.2.3 Narrative Combined Operational Checkout and Troubleshooting Procedures `<opchk-trbl-text>`

Combined Operational Checkout and Troubleshooting Procedures that are 'textual' in that they contain no clear and specific indications with associated corrective actions may be tagged as `<opchk-trbl-text>`. This element is a standard "Task-level" element (Refer to Section 2.6 of this document).

### 10.2.4 "Sub" Procedures as part of the Operational and Test Procedures

Operational Procedures `<opproc>` and Test Procedures `<testproc>` for Legacy Manuals are allowed an additional level of procedural information entitled "Sub" Procedure `<sub-proc>`.

### 10.2.5 Test Procedures in Tabular Format

The Legacy DTD provides the ability to tag Engine Test Procedures a CALS Table `<test-table>` in lieu of identifying procedural steps grouped with conditions `<condition>` and corrective actions `<corr-action>`.

### **10.2.6 Troubleshooting Procedures in Tabular Format**

The Legacy DTD provides the ability to tag Troubleshooting Procedures as a CALS Table <trbl-table> in lieu of Troubleshooting Procedures “Method A” or Method B” (Refer to Sections 5.4 and 5.5)

### **10.2.7 Operational Checkout Procedures in Tabular Format**

The Legacy DTD provides the ability to tag Operational Checkout Procedures, Combined Operational Checkout and Troubleshooting Procedures as a CALS Table <opchk-table> in lieu of procedures described in Section 5.2.

**ORGANIZATIONAL MAINTENANCE**

**SYSTEM MAINTENANCE WITH IPB**

**LANDING GEAR CONTROL UNIT**

**TAIL NUMBER 162394 AND UP  
TAIL NUMBER 161 THRU 161987**

**THIS WP SUPERSEDES WP003 01, DATED 15 APRIL 1992.**

---

***EXAMPLE OF A MAINTENANCE MANUAL TITLE BLOCK***

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**ORGANIZATIONAL MAINTENANCE**

**FAULT ISOLATION TROUBLESHOOTING PROCEDURE**

**CODE 827, CABIN AIR TEMPERATURE HIGH**

**F/A-18 A/B/C/D**

---

***EXAMPLE OF A FAULT ISOLATION MANUAL TITLE BLOCK***

---

**Figure 1. Sample Title Blocks**

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**A1-F18AC-130-100**1 May 1995

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**TECHNICAL MANUAL****ORGANIZATIONAL MAINTENANCE  
PRINCIPLES OF OPERATION****LANDING GEAR AND RELATED SYSTEMS**

This manual prepared by NAVSURFWARCENDIV  
Crane, IN, Code 8024

This manual supersedes A1-F18AC-130-100, dated 1 June 1989, changed 1 October 1994.

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Commander, Naval Air Systems Command*

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**0801LP3105060****NATEC ELECTRONIC MANUAL**

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**Figure 2. Markup of Title Page**

---

**1-1 HIGH-SPEED ANTI-RADIATION MISSILE.**

**1-2** HARM is a supersonic air-to-ground guided missile designed to detect, attack and destroy radars associated with enemy anti-aircraft systems.

**1-3** These sections from nose to tail are: guidance, warhead, control, and rocket motor.

**1-4 GUIDANCE SECTION.** Located at the nose of the missile, the guidance section performs several functions. Prior to launch, it receives RF data for cockpit display. In its internal memory, the guidance section stores mission modes and alternate targets. In flight, it supplies target-tracking commands to the control. The WGU-2B/B allows software reprogramming via the EEPROM memory board at the intermediate maintenance level. The WGU-2C/B was redesigned to counter the expected threats of high pulse densities, wide frequency agility, complex pulse patterns and multiple engagement radars.

**NOTE**

The 704AS109 dash numbers are used to identify AGM-88B missile hardware configurations. The 704AS111 dash numbers are used to identify AGM-88C missile hardware configurations.

**1-5 CONTROL SECTION.** The control section is located between the warhead and rocket motor. In the control section, tracking commands from the guidance section are converted into wing commands by electrically driven linear actuators. The wings attach to splined hubs that are part of the actuator housing on the control section. Attitude reference and altitude indication for target acquisition, midcourse and terminal guidance, and operation of the roll control system are implemented by the control section's inertial reference guidance system. Captive flight power for the missile along with avionics communications are provided through the umbilical cable connector. The control section also houses the battery for free-flight power, the ground support equipment test connector, and target detector (TDD).

**1-6 Umbilical Cable.**

**1-7** The umbilical cable connects the control section to the missile launcher and provides all electrical interfaces between the missile and the carrying aircraft.

**1-8 TECHNICAL CHARACTERISTICS.** The following table includes technical characteristics of the Umbilical Cable.

**Figure 3. System Description**

**1-1 DC POWER DISTRIBUTION.****NOTE**

All voltages referred to as 28 Vdc in this WP, are not absolute values.  
If the helicopter is powered by battery only, the voltage will be approximately 24 Vdc .

**1-2** DC power distribution is provided by means of electrical buses, consisting of copper bars or heavy duty power wires. These buses are distinctly depicted in the illustrations throughout this WP. Battery No. 1 is connected to terminal A1 of the battery No. 1 relay with a power feeder wire. Battery No. 2 is connected to terminal A2 of battery No. 2 relay with a power feeder wire. A voltmeter is connected via the DCVM select switch and BAT 1 VM and BAT 2 VM circuit breakers to terminal A1 of battery No. 1 relay, and terminal A2 of battery No. 2 relay. This enables monitoring of the battery voltage, before any switch of the dc system is set to ON.

**1-3 EXTERNAL POWER PROVISION.** External power is applied through the external power receptacle to the external power relay and to the sensor control. If the external power has the correct polarity, proper voltage range (18-30 Vdc), and without excessive ripple, the sensing circuit will energize the sensor control. The energized sensor routes the external power to the external power relay coil, which energizes and applies external power to the essential bus.

**Figure 4. System Theory**

**1-1 DC POWER SYSTEM DESCRIPTION.****1-2 DC POWER.**

**1-3** DC power to the helicopter electrical system is supplied by two generators, two batteries, or by an external 28 Vdc power source. DC power distribution is provided by five electrical bus systems.

**2-1 DC POWER PRINCIPLES OF OPERATION.****2-2 DC POWER SYSTEM.****NOTE**

All voltages referred to as 28 Vdc in this WP, are not absolute values. If the helicopter is powered by battery only, the voltage will be approximately 24 Vdc .

**2-3** DC power distribution is provided by means of electrical buses, consisting of copper bars or heavy duty power wires. These buses are distinctly depicted in the illustrations throughout this WP. Battery No. 1 is connected to terminal A1 of the battery No. 1 relay with a power feeder wire. Battery No. 2 is connected to terminal A2 of battery No. 2 relay with a power feeder wire. A voltmeter is connected via the DCVM select switch and BAT 1 VM and BAT 2 VM circuit breakers to terminal A1 of battery No. 1 relay, and terminal A2 of battery No. 2 relay. This enables monitoring of the battery voltage, before any switch of the dc system is set to ON.

**2-4 EXTERNAL POWER PROVISION.** External power is applied through the external power receptacle to the external power relay and to the sensor control. If the external power has the correct polarity, proper voltage range (18-30 Vdc), and without excessive ripple, the sensing circuit will energize the sensor control. The energized sensor routes the external power to the external power relay coil, which energizes and applies external power to the essential bus.

**Figure 5. Description Group and Principles of Operation Group**

**1-1 COMPUTER PROCESSOR OPERATIONAL CHECKOUT AND TROUBLESHOOTING.**

<b>PROCEDURE</b>	<b>NORMAL INDICATION</b>	<b>CORRECTIVE ACTION</b>
1. Remove computer processor top cover.		
2. Apply power to test set and place test set POWER switch to ON position.	Test set power indicator is illuminated.	If power indicator does not light, check power source for 28 VDC.
3. Place UUT POWER switch in CP position.	CP LEDS momentarily flash.	If LEDS do not flash briefly, check test set wiring.
4. Place Test Set UUT POWER switch in CP position.		
5. Quickly press and release the CP BIT button on the system interface card. Observe the 10 LEDS on the system I/F CCA.	BIT test routine runs for 30 seconds. During the first 15 seconds the CP LEDS (DS1 DS10) will flash. The second 15 second period is the status reporting period. All LEDS are OFF during the second 15 second period. After the BIT routine is complete, all LEDS will return to the original OFF state.	If DS1 is illuminated, perform DS1 testing. Refer to table 1.  If DS2 is illuminated, perform DS2 testing. Refer to table 2.

**Figure 6. Combined Operational Checkout and Troubleshooting Procedure.**

**1-1 ARRESTING GEAR SYSTEM OPERATIONAL CHECKOUT PROCEDURE.**

1. Make sure door 103 is installed (A1-F18AC-LMM-010).		
2. Make sure arresting HOOK manual control lever is set to up.		
3. Read, record and reset nose wheelwell DDI (A1-F18AC-LMM-000).	No maintenance code exists.	Perform troubleshooting. (A1-F18AC-LMM-050 Maintenance Code 916)
4. If arresting hook is not up, manually raise and latch arresting hook.	Arresting hook latches in up position.	Do arresting hook push-pull control assembly rigging or replace push-pull control assembly (A1-F18AC-130-300).

**Figure 7. Operational Checkout Procedure**

**Table 3. Pressure leak in the filler cap.**

<b>PROCEDURE</b>	<b>N0</b>	<b>YES</b>
<b>Is filler cap properly seated?</b>	<b>1</b>	<b>2</b>
1. Reseat Filler Cap. (T/S COMPLETED)		
2. Inspect tank filler cap and filler cap seating area.		
<b>Is there any reparable damage?</b>	<b>3</b>	<b>4</b>
3. Check filler cap lever tension		
<b>Tension sufficient to prevent pressure leak?</b>	<b>7</b>	<b>5</b>
4. Repair filler cap or tank filler cap seating area WP 007 00 (T/S COMPLETED)		
5. Substitute new filler cap		
<b>Is there still a pressure leak?</b>	<b>6</b>	<b>6</b>
6. Replace filler cap (T/S COMPLETED)		
7. Adjust cap lever tension (T/S COMPLETED)		

**Figure 8. Troubleshooting Procedure. Method "A"**

**1-1 NO START (GAS GENERATOR TURNING).**

<b>MALFUNCTION</b>	<b>PROBABLE CAUSE</b>	<b>CORRECTIVE ACTION</b>
No fuel flow or fuel pressure.	No Fuel in tanks.	Inspect main fuel inlet connection. Reconnect main fuel-in line.
	No fuel to engine	Be sure speed control shaft moves away from stopcock when the speed control lever is advanced. Repair speed control lever linkage (WP008 01)  Be sure fuel valves are not shut off. Turn on valves.
Fuel or ignition problems: Speed control lever at IDLE, Ng of 3646-4010 rpm (20-22%) and fuel flow of 100-130 lb/hr.	Fuel manifold drain stuck open.	Check for fuel draining from fuel flow divider valve during start. Replace fuel flow divider, if fuel leakage continues during motoring. (WP 009 00)
	Faulty igniter plug.	Check both igniter plugs for audible ignition. Replace faulty igniter plug(s). (WP 009 02)

**Figure 9. Sample Markup of a Troubleshooting procedure - Method "B"**

INDEX NO.	PART NUMBER	DESCRIPTION	UNITS PER ASSY	USE ON CODE	SM & R CODE
		1 2 3 4 5 6 7			
1	19-12-4322-1221	LEADING EDGE ASSY, VERTICAL STABILIZER.....	1		PAOZZ
	AIC485-1	• SHIELDING ASSEMBLY, ELECTRONIC /18565 .....	4		PAOZZ
2	D791184-8-14	•• BOLT, INTERNAL WRENCHING/ HUGHES SPEC 965834-1.....	4	A	PAOZZ
3	74886-12	•• WASHER.....	4		PAOZZ
	3542156-2	•• WAVEGUIDE ASSEMBLY TRANSMITTER.....	1	B	PAOZZ

**Figure 10. Assembly <Assy>, Detailed Parts <Detlparts>, And Sub-Assembly <Subassy> Hierarchy**

INDEX NO.	PART NUMBER	DESCRIPTION	UNITS PER ASSY	USE ON CODE	SM & R CODE
		1 2 3 4 5 6 7			
1	AIC485	<ul style="list-style-type: none"> <li>• TURBINE ASSEMBLY.....</li> </ul> <p>(ATTACHING PARTS)</p>	4		
	D791184-8-14	<ul style="list-style-type: none"> <li>• BOLT, INTERNAL WRENCHING.....</li> </ul>	4		
	74886-12	<ul style="list-style-type: none"> <li>• WASHER .....</li> </ul> <p>---*---</p>	4		

**Figure 11. Attaching Parts**