

# Grant Red Book

## Specification for SGML Markup of United States Patent Grant Publications

V2.4

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**U.S. Patent & Trademark Office  
Information Products Division**

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## MARKUP OF U.S. PATENT DOCUMENTS USING SGML

### *INTRODUCTION*

1. This Specification provides for the exchange of U.S. patent documents in machine-readable form in a hardware-, software-, and layout-independent format. Such independence of the representation of the contents of a document from their intended uses is achieved by using *International Standard ISO 8879:1986, Information processing – Text and office systems – Standard Generalized Markup Language (SGML)*, to define generic identifiers which are in turn used to mark the logical structure of each patent document.
2. This Specification defines generic identifiers or "tags" for marking the logical elements of a United States patent document. It also defines content models which indicate the logical relationships between the tags. Because not all rules governing the content can be expressed using SGML, this specification also provides guidance in the markup of text to comply with the specification and with long-established conventions concerning the data itself (what appears between the tags).
3. Markup in compliance with this Specification is independent of layout and formatting. Decisions regarding layout and formatting must be made at the time a document is presented for reading, either on a display screen or on paper. It is at the time of presentation that, for example, text that has been marked as a claim is rendered in an available font at a practical size. It is at the time of presentation that the size of the display page (screen or paper) is determined. Many such decisions which map the generic identifiers in a document to the capabilities of a particular physical display device (whether screen or paper) determine, for example, how many characters will fit on one line or how much text will fit on a display page. As a result, the document may not have exactly the same physical appearance when it is presented on different display devices. The collection of such decisions is commonly recorded in a style sheet that is associated with a particular rendering technology. This specification does not address issues concerned with mapping generic identifiers to a particular display device and contains no style sheets.
4. Documents which conform to this Specification have been marked up in conformance with:
  - International Standard ISO 8879:1986, Information Processing – Text and Office Systems – Standard Generalized Markup Language (SGML);
  - the DTDs contained in Annexes B, C, and D.
5. The Grant Red Book (RB) DTD and the documents that conform to this Specification have been made compliant with the XML 1.0 specification, to the extent possible within SGML. The RB DTD contains tag minimization indicators that are not allowed in XML and it refers to external entities that are not necessarily XML compliant. In document instances, the syntax of empty elements does not comply with the XML specification. Neither the RB DTD nor document instances use Unicode as the their character set at this time.

6. Documents which conform to this Specification use the *reference concrete syntax* defined in International Standard ISO 8879:1986, with the exception that tag names sometimes exceed eight characters in length. See also Annex A: *SGML Declaration for U.S. Patent Documents*.
7. The RB DTD (Annex B) is provided separately from the individual documents in the collection of documents to which it applies. Each document to which the RB DTD applies incorporates the DTD by reference. Reference to the RB DTD shall be made by use of its "public name" which will be registered with the appropriate international authority and is declared below in Annex B.

### **DEFINITIONS**

8. **Markup** is defined as text that is added to the content of a document and that describes the structure and other attributes of the document in a non-system-specific manner, independently of any processing that may be performed on it. Markup includes document type definitions (DTDs), entity references, and descriptive markup (tags).
9. A **document type definition (DTD)** formally defines: the names of all the logical elements that are allowed in documents of a particular type; how often each logical element may appear; the permissible logical contents for each logical element; attributes (parameters) that may be used with each logical element; the correct sequence of logical elements; the names of all external and pre-defined entities that may be referenced in a document; the hierarchical structure of a document; and the features of the SGML standard used.

A DTD defines the vocabulary of the markup for which SGML defines the syntax. The complete set of tags that may be found in a particular document are listed and formally defined in its DTD. Each document in a large set of documents which share the same DTD, that is, documents which are of the same type, usually incorporates the DTD by reference.

10. An **entity** is content that is not part of the text stream in a document but which is incorporated into the text stream by reference to its name. In patent documents, for example, images are external entities. Entity references can also be used to code instances of characters not found in the 'declared' character set.
11. **Tags** define a document's logical structure by labeling elements of the document's content using the generic identifiers declared in the DTD.
12. In some cases, the use of an attribute or element or some other practice is "**deprecated**," that is, frowned upon and actively discouraged, even though it would not be an error to do so.

13. The **hierarchy** of SGML tags used in this specification follows the structure of a United States patent document. The appropriate SGML tag describing a generic logical element indicates the level in the hierarchy. A generic logical element is a component of the text such as the entire document, a specific sub-document, a paragraph, a list, etc. Each generic logical element is described by a start tag and end tag.

Hierarchical level	Nested SGML tags (example)
Document	<PATDOC>
\$ Abstract sub-document	<SDOAB>
\$ \$ Text Component (Paragraph)	<PARA>
\$ \$ \$ Paragraph content	<PTEXT>
\$ \$ \$ \$ Text	<PDAT>
\$ \$ \$ \$ \$ Characters (content)	mouse-catching means
\$ \$ \$ \$ End	</PDAT>
\$ \$ \$ End	</PTEXT>
\$ \$ End	</PARA>
\$ End	</SDOAB>
End	</PATDOC>

14. International Standard ISO 8879:1986 defines an **abstract syntax** and a **reference concrete syntax**. The reference concrete syntax for SGML tags is as follows:

Start Tag	End Tag
--------------	------------

This is <PARA>text</PARA> that will appear as a separate paragraph...

Where

<	is the opening delimiter for Start Tags (1 character)
</	is the opening delimiter for End Tags (2 characters)
>	is the closing delimiter for both Start Tags and End Tags (1 character)
para	is the generic identifier of this particular tag, as defined in the DTD

A generic identifier is a name that identifies a generic logical element. The text between the start tag and the end tag is a specific instance of the generic logical element. Depending upon the generic identifier, attributes may be required. For an explanation of the relationship between reference concrete syntax and abstract syntax, see *International Standard ISO 8879:1986*.

## CHARACTER SETS

15. The data content of the majority of documents, including patents, consists of data characters. The data characters could be in any language consisting of many types of character ('character' is used in its broadest sense here to include graphical symbols). Although Grant Red Book applies to English-language documents only, patent specifications may contain many hundreds of characters not used in English. The character code sets used in Grant Red Book are specified at the start of RB DTD and represent the **minimum required to accommodate U.S. patent documents**.

**REFERENCES**

16. The following documents are relevant to or cited in this Specification:

International Standard ISO 8879:1986, Information processing – Text and office systems – Standard Generalized Markup Language (SGML)

Technical Report ISO/IEC/TR 9573:1988(E) Information processing – SGML support facilities – Techniques for using SGML

International Standard ISO 639:1988, Code for the Representation of Names of Languages

International Standard ISO 646:1991, Information Processing – ISO 7-bit coded character set for information interchange

WIPO Standard ST.3, Two-Letter Code for Countries, Organizations etc.

WIPO Standard ST.9, Recommendation Concerning Bibliographic Data On and Relating To Patent Documents

WIPO Standard ST.16, Standard Code for Identification of Different Kinds of Patent Documents

WIPO Standard ST.32, Recommendation for the Markup of Patent Documents Using SGML (Standard Generalized Markup Language), Revision adopted by the PCIPI Executive Coordination Committee at its seventeenth session on November 24, 1995.

17. For additional information concerning SGML, the following publications may be of interest. There is now a considerable amount of literature on SGML, as well as many user groups. The list below is only a small selection.

Association of American Publishers. *Electronic Manuscript Series : Author's guide to electronic manuscript preparation and markup; Reference manual on electronic manuscript preparation and markup; Markup of mathematical formulas; Markup of tabular material.* Dublin, Ohio : Electronic Publishing Special Interest Group (EPSIG), 1989.

Bryan, Martin. *SGML : an author's guide to the Standard Generalized Markup Language (SGML).* Wokingham : Addison-Wesley, 1988. ISBN 0201175355.

Goldfarb, Charles F. *The SGML handbook.* Oxford : Oxford University Press, 1990. ISBN 0198537379.

Maler, Eve, et al. *Developing SGML DTDs : From text to model to markup.* Prentice Hall, 1996. ISBN 01330098818.

National Information Standards Organization. *Electronic manuscript preparation and markup.* NISO Press, 1995. ANSI/NISO/ISO 12083-1995 (Formerly Z39.59). ISBN 1880124203.

Travis, Brian E., et al. *The SGML implementation guide : A blueprint for SGML migration*. Springer-Verlag, 1995. ISBN 3540577300.

Turner, Ronald C., et al. *README.1ST : SGML for writers and editors*. Prentice Hall, 1996. ISBN 0134327179.

Van Herwijnen, Eric. *Practical SGML. 2nd.ed.* Dordrecht : Kluwer Academic Publishers, 1994. ISBN 0792394348.

Jelliffe, Rick. *The XML & SGML cookbook : recipes for structured information*. Prentice Hall, 1998. ISBN 0136142230.

CALS site: <http://www-cals.itsi.disa.mil/>

James Clark's site (developer of SGML parsers): <http://www.jclark.com/>

SGML Open site: <http://www.sgmlopen.org/>

The newsletter TAG site: <http://tag.sgml.com/>

Washington, DC, metro-area SGML user's group: <http://www.eccnet.com/sgmlug/>

Working Group 3, responsible for XML and MathML: <http://www.w3.org/>

## **ENTRIES**

18. The entries (numbered paragraphs) throughout this document conform to the following model.

### **NNN. <TAG> : TAG name.**

Description of the tag, that is, what it means, in one or more sentences. Contents of the tag, that is, a verbal repetition of the content model, always one sentence (not present if the tag is declared EMPTY). Indication of whether an end tag is required or forbidden.

Additional paragraphs, if present, describe additional rules, conventions, or requirements that are not expressed in the SGML.

#### **Attributes:**

Attribute name                      Text describing the attribute and the values it might have.

#### **Content model:**

Content model verbatim from the RB DTD.

#### **Examples**

19. If it should happen that the verbal description of the content model, the content model as



presented in this specification, and the content model in the RB DTD, do not all agree, then the content model in the corresponding version of the RB DTD should be followed.

### ***DATA DELIVERY***

20. Grant Red Book patents are delivered on DLT magnetic tape on a weekly schedule. Each tape is organized in the manner specified in Annex E. To order a sample tape or a subscription, please contact the Office for Patent & Trademark Information at the following address.

USPTO/IDO/OPTI  
Crystal Park 3, Suite 441  
Washington, DC 20231  
1-703-306-2600 (voice)  
1-703-306-2737 (telefax)

### ***REVISION HISTORY***

21. This specification is adapted from WIPO Standard ST.32. The changes made were those required to limit the more global scope of ST.32 specifically to published United States patent grants. Ultimately, this specification will be submitted to WIPO for inclusion as an Annex to ST.32 representing current practice at the U.S. Patent & Trademark Office.
22. The publication number of this specification corresponds to the version of the Grant Red Book DTD that it documents.
23. Version history.
- The first public version of this specification was v1.8/0, dated 1999 November 16.
  - Version 1.8, dated 2000 January 20, corrected the content model for FGREF and the formatting of the tables on page 63.
  - Version 1.9, dated 2000 March 7, includes modifications to allow for any order of structured or unstructured national classification, to allow text based formula content (as opposed to MATHML) within CWUs, and to expand paragraph type definitions.
  - Version 2.4, dated 2000 September 9, is the first production version of the DTD. Grant Red Book transitioned from test to production with the first issue of 2001 on January 2.
24. This version of the specification is substantially different from the previous version due to the pressure of preparing to publish patent applications starting in 2001 March. Please see the HTML pages at <http://www.uspto.gov/web/offices/ac/ido/oeip/sgml/st32/redbook/index.html> which contains most of the material previously included in this document. It does not, however,

include the tables or an index. However, there are hypertext links among all the elements and you can use your browser's search function to locate specific words. In addition, there are structure diagrams for each element. The HTML pages at the site shown above were generated automatically from a slightly modified version of the DTD using the XMLConsole product of TIBCO Extensibility.

25. Version 2.4 is open for comment until further notice. Comments collected will be consolidated, considered, and accepted or rejected. The accepted revisions will be incorporated in the next version of the document.

26. Please forward any comments about this specification to:

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U.S. Patent & Trademark Office  
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Washington, DC 20231  
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1-703-306-2614

## ANNEX A : Grant Red Book SGML Declaration for U.S. Patent Documents

The SGML Declaration below contains the reference concrete syntax to be applied when using document instances marked up in accord with the DTD contained in this specification.

```
<!SGML "ISO 8879:1986"

CHARSET
  BASESET "ISO 646-1983//CHARSET International Reference Version
          (IRV)//ESC 2/5 4/0"
  DESCSET
    0      9      UNUSED
    9      2      9
    11     2      UNUSED
    13     1      13
    14     18     UNUSED
    32     95     32
    127    1      UNUSED

CAPACITY      SGMLREF
              TOTALCAP 35000

SCOPE         DOCUMENT

SYNTAX
  SHUNCHAR CONTROLS 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
                  17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 127 255
  BASESET "ISO 646-1983//CHARSET International Reference Version
          (IRV)//ESC 2/5 4/0"
  DESCSET
    0      128     0
  FUNCTION
    RE      13
    RS      10
    SPACE   32
    TAB     SEPCHAR 9
  NAMING
    LCNMSTRT ""
    UCNMSTRT ""
    LCNMCHAR "-."
    UCNMCHAR "-."
    NAMECASE GENERAL YES
             ENTITY  NO
  DELIM
    GENERAL SGMLREF
    SHORTREF NONE
  NAMES      SGMLREF
  QUANTITY  SGMLREF
    ATTCNT   100
    ATTSLEN  960
    BSEQLEN  960      -- UNUSED by WordPerfect for Windows 7 --
    DTAGLEN  16      -- UNUSED by WordPerfect for Windows 7 --
    DTEMPLN  16      -- UNUSED by WordPerfect for Windows 7 --
    ENTLVL   16
    GRPCNT   256
    GRPGTCNT 200
    GRPLVL   16
```

LITLEN	2048
NAMELEN	32
NORMSEP	2
PILEN	240
TAGLEN	960
TAGLVL	24

FEATURES

MINIMIZE

DATATAG	NO
OMITTAG	YES
RANK	NO
SHORTTAG	NO

LINK

SIMPLE	NO
IMPLICIT	NO
EXPLICIT	NO

OTHER

CONCUR	NO
SUBDOC	NO
FORMAL	YES

APPINFO NONE

>

## ANNEX C : MathML DTD as Modified for Grant Red Book

```

<!-- Content model for content and presentation -->
<!-- and browser interface tags in MathML -->
<!-- initial draft 9.May.1997          syntax = XML -->
<!-- author = s.buswell sb@stilo.demon.co.uk -->
<!-- -->
<!-- revised 14.May.1997 by Robert Miner -->
<!-- revised 29.June.1997 and 2.July.1997 by s.buswell -->
<!-- -->
<!-- revised 15.December.1997 by s.buswell -->
<!-- revised 8.February.1998 by s.buswell -->
<!-- revised 4.april.1998 by s.buswell -->
<!-- -->
<!-- W3C Recommendation 7 April 1998 -->
<!-- ***** -->

<!-- general attribute definitions for class & style & id & other -->
<!-- : attributes shared by all mathml elements -->

<!ENTITY % att-globalatts      'class CDATA #IMPLIED
                                style CDATA #IMPLIED
                                id ID #IMPLIED
                                other CDATA #IMPLIED' >

<!-- ***** -->
<!-- Presentation element set -->

<!-- presentation attribute definitions -->

<!ENTITY % att-fontsize        'fontsize CDATA #IMPLIED' >
<!ENTITY % att-fontweight      'fontweight (fwnormal | bold) #IMPLIED' >
<!ENTITY % att-fontstyle       'fontstyle (fsnormal | italic) #IMPLIED' >
<!ENTITY % att-fontfamily      'fontfamily CDATA #IMPLIED' >
<!ENTITY % att-color           'color CDATA #IMPLIED' >

<!ENTITY % att-fontinfo        '%att-fontsize;
                                %att-fontweight;
                                %att-fontstyle;
                                %att-fontfamily;
                                %att-color;' >

<!ENTITY % att-form            'form (prefix | infix | postfix) #IMPLIED' >
<!ENTITY % att-fence           'fence (aftrue | affalse ) #IMPLIED' >
<!ENTITY % att-separator       'separator (true | false ) #IMPLIED' >
<!ENTITY % att-lspace          'lspace CDATA #IMPLIED' >
<!ENTITY % att-rspace          'rspace CDATA #IMPLIED' >
<!ENTITY % att-stretchy        'stretchy (astrue | asfalse ) #IMPLIED' >
<!ENTITY % att-symmetric       'symmetric (aytrue | ayfalse ) #IMPLIED' >
<!ENTITY % att-maxsize         'maxsize CDATA #IMPLIED' >
<!ENTITY % att-minsize         'minsize CDATA #IMPLIED' >
<!ENTITY % att-largeop         'largeop (altrue | alfalse ) #IMPLIED' >
<!ENTITY % att-movablelimits   'movablelimits (amtrue | amfalse )
#IMPLIED' >
<!ENTITY % att-accent          'accent (aatrue | aafalse) #IMPLIED'>

<!ENTITY % att-opinfo          '%att-form;
                                %att-fence;
                                %att-separator;
                                %att-lspace;
                                %att-rspace;
                                %att-stretchy;
                                %att-symmetric;
                                %att-maxsize;

```

```

        %att-minsize;
        %att-largeop;
        %att-movablelimits;
        %att-accent;' >

<!ENTITY % att-width          'width CDATA #IMPLIED' >
<!ENTITY % att-height         'height CDATA #IMPLIED' >
<!ENTITY % att-depth          'depth CDATA #IMPLIED' >

<!ENTITY % att-sizeinfo       '%att-width;
                               %att-height;
                               %att-depth;' >

<!ENTITY % att-lquote         'lquote CDATA #IMPLIED' >
<!ENTITY % att-rquote         'rquote CDATA #IMPLIED' >

<!ENTITY % att-linethickness  'linethickness CDATA #IMPLIED' >

<!ENTITY % att-scriptlevel    'scriptlevel CDATA #IMPLIED'>
<!ENTITY % att-displaystyle   'displaystyle (dstrue | dsfalse)
#IMPLIED'>
<!ENTITY % att-scriptsize multiplier 'scriptsize multiplier CDATA
#IMPLIED' >
<!ENTITY % att-scriptminsize   'scriptminsize CDATA #IMPLIED'>
<!ENTITY % att-background     'background CDATA #IMPLIED' >

<!ENTITY % att-open           'open CDATA #IMPLIED' >
<!ENTITY % att-close          'close CDATA #IMPLIED' >
<!ENTITY % att-separators     'separators CDATA #IMPLIED' >

<!ENTITY % att-subscriptshift  'subscriptshift CDATA #IMPLIED'>
<!ENTITY % att-superscriptshift 'superscriptshift CDATA #IMPLIED' >

<!ENTITY % att-accentunder    'accentunder (aaytrue | aayfalse) #IMPLIED'>

<!ENTITY % att-align           'align CDATA #IMPLIED' >
<!ENTITY % att-rowalign        'rowalign CDATA #IMPLIED' >
<!ENTITY % att-columnalign     'columnalign CDATA #IMPLIED' >
<!ENTITY % att-groupalign      'groupalign CDATA #IMPLIED' >
<!ENTITY % att-alignmentscope  'alignmentscope CDATA #IMPLIED' >

<!ENTITY % att-rowspacing      'rowspacing CDATA #IMPLIED' >
<!ENTITY % att-columnspacing   'columnspacing CDATA #IMPLIED' >
<!ENTITY % att-rowlines        'rowlines CDATA #IMPLIED' >
<!ENTITY % att-columnlines     'columnlines CDATA #IMPLIED' >
<!ENTITY % att-frame           'frame (none | solid | dashed)
#IMPLIED' >
<!ENTITY % att-framespacing    'framespacing CDATA #IMPLIED' >
<!ENTITY % att-equalrows       'equalrows CDATA #IMPLIED' >
<!ENTITY % att-equalcolumns    'equalcolumns CDATA #IMPLIED' >

<!ENTITY % att-tableinfo      '%att-align;
                               %att-rowalign;
                               %att-columnalign;
                               %att-groupalign;
                               %att-alignmentscope;
                               %att-rowspacing;
                               %att-columnspacing;
                               %att-rowlines;
                               %att-columnlines;
                               %att-frame;
                               %att-framespacing;
                               %att-equalrows;
                               %att-equalcolumns;
                               %att-displaystyle;' >

```

---

```

<!ENTITY % att-rowspan      'rowspan CDATA #IMPLIED'      >
<!ENTITY % att-columnspan  'columnspan CDATA #IMPLIED'    >

<!ENTITY % att-edge        'edge (left | right) #IMPLIED ' >

<!ENTITY % att-actiontype   'actiontype CDATA #IMPLIED' >
<!ENTITY % att-selection    'selection CDATA #IMPLIED ' >

<!-- presentation token schemata with content-->

<!ENTITY % ptoken "mi | mn | mo | mtext | ms" >

<!ATTLIST mi      %att-fontinfo;
               %att-globalatts;    >

<!ATTLIST mn      %att-fontinfo;
               %att-globalatts;    >

<!ATTLIST mo      %att-fontinfo;
               %att-opinfo;
               %att-globalatts;    >

<!ATTLIST mtext   %att-fontinfo;
               %att-globalatts;    >

<!ATTLIST ms      %att-fontinfo;
               %att-lquote;
               %att-rquote;
               %att-globalatts;    >

<!-- empty presentation token schemata -->

<!ENTITY % petoken "mspace" >
<!ELEMENT mspace - o EMPTY >

<!ATTLIST mspace  %att-sizeinfo;
               %att-globalatts;    >

<!-- presentation general layout schemata -->

<!ENTITY % pgenschema "mrow|mfrac|msqrt|mroot|
                    mstyle|merror|mpadded| mphantom|mfenced" >

<!ATTLIST mrow    %att-globalatts;  >

<!ATTLIST mfrac   %att-linethickness;
               %att-globalatts;    >

<!ATTLIST msqrt   %att-globalatts;  >

<!ATTLIST mroot   %att-globalatts;  >

<!ATTLIST mstyle  %att-fontinfo;
               %att-opinfo;
               %att-lquote;
               %att-rquote;
               %att-linethickness;
               %att-scriptlevel;
               %att-scriptsize-multiplier;
               %att-scriptminsize;
               %att-background;
               %att-open;
               %att-close;
               %att-separators;
               %att-subscriptshift;
               %att-superscriptshift;

```

---

```

        %att-accentunder;
        %att-tableinfo;
        %att-rowspan;
        %att-columnspan;
                                %att-edge;
                                %att-actiontype;
                                %att-selection;
        %att-globalatts;          >
<!ATTLIST merror      %att-globalatts;  >
<!ATTLIST mpadded     %att-sizeinfo;
                    %att-lspace;
                    %att-globalatts;    >
<!ATTLIST mphantom   %att-globalatts;    >
<!ATTLIST mfenced    %att-open;
                    %att-close;
                    %att-separators;
                    %att-globalatts;    >
<!-- presentation layout schemata : scripts and limits -->
<!ENTITY % pscrschema "msub|msup|msubsup|
                    munder|mover|munderover|mmultiscripts" >
<!ATTLIST msub        %att-subscriptshift;
                    %att-globalatts;    >
<!ATTLIST msup        %att-superscriptshift;
                    %att-globalatts;    >
<!ATTLIST msubsup     %att-subscriptshift;
                    %att-superscriptshift;
                    %att-globalatts;    >
<!ATTLIST munder     %att-accentunder;
                    %att-globalatts;    >
<!ATTLIST mover       %att-accent;
                    %att-globalatts;    >
<!ATTLIST munderover %att-accent;
                    %att-accentunder;
                    %att-globalatts;    >
<!ATTLIST mmultiscripts
                    %att-subscriptshift;
                    %att-superscriptshift;
                    %att-globalatts;    >
<!-- presentation layout schemata: script empty elements -->
<!ENTITY % pscreschema "mprescripts|none" >
<!ELEMENT mprescripts - o EMPTY          >
<!ATTLIST mprescripts %att-globalatts;    >
<!ELEMENT none        - o EMPTY          >
<!ATTLIST none        %att-globalatts;    >
<!-- presentation layout schemata: tables -->
<!ENTITY % ptabschema "mtable|mtr|mtd" >

```



---

```

<!ATTLIST mtable      %att-tableinfo;
                      %att-globalatts;      >

<!ATTLIST mtr         %att-rowalign;
                      %att-columnalign;
                      %att-groupalign;
                      %att-globalatts; >

<!ATTLIST mtd         %att-rowalign;
                      %att-columnalign;
                      %att-groupalign;
                      %att-rowspan;
                      %att-columnspan;
                      %att-globalatts; >

<!ENTITY % plschema  "%pgenschema;|%pscrschema;|%ptabschema;" >

<!-- empty presentation layout schemata -->

<!ENTITY % peschema  "maligngroup | malignmark" >

<!ELEMENT malignmark - o EMPTY          >

<!ATTLIST malignmark  %att-edge;
                      %att-globalatts;  >

<!ELEMENT maligngroup - o EMPTY          >
<!ATTLIST maligngroup %att-groupalign;
                      %att-globalatts;  >

<!-- presentation action schemata -->

<!ENTITY % pactions  "maction" >
<!ATTLIST maction    %att-actiontype;
                      %att-selection;
                      %att-globalatts;  >

<!-- Presentation entity for substitution into content tag constructs -->
<!-- excludes elements which are not valid as expressions -->

<!ENTITY % PresInCont "%ptoken; | %petoken; |
                      %plschema; | %peschema; | %pactions;">

<!-- Presentation entity - all presentation constructs -->

<!ENTITY % Presentation "%ptoken; | %petoken; | %pscrschema; |
                      %plschema; | %peschema; | %pactions;">

<!-- ***** -->
<!-- Content element set -->
<!-- attribute definitions -->

<!ENTITY % att-base      'base CDATA "10"' >
<!ENTITY % att-closure   'closure CDATA "closed"' >
<!ENTITY % att-definition 'definitionURL CDATA ""' >
<!ENTITY % att-encoding   'encoding CDATA ""' >
<!ENTITY % att-nargs     'nargs CDATA "1"' >
<!ENTITY % att-occurence  'occurence CDATA "function-model"' >
<!ENTITY % att-order      'order CDATA "numeric"' >
<!ENTITY % att-scope      'scope CDATA "local"' >
<!ENTITY % att-type       'type CDATA #IMPLIED' >

<!-- content leaf token elements -->

<!ENTITY % ctoken "ci | cn" >

```

---

```
<!ATTLIST ci      %att-type;
                %att-globalatts;      >

<!ATTLIST cn      %att-type;
                %att-base;
                %att-globalatts;      >

<!-- content elements - specials -->
<!ENTITY % cspecial "apply | reln | lambda" >
<!ATTLIST apply   %att-globalatts;      >
<!ATTLIST reln   %att-globalatts;      >
<!ATTLIST lambda %att-globalatts;      >

<!-- content elements - others -->
<!ENTITY % cother "condition | declare | sep" >
<!ATTLIST condition %att-globalatts;      >
<!ATTLIST declare   %att-type;
                %att-scope;
                %att-nargs;
                %att-occurrence;
                %att-definition;
                %att-globalatts;      >

<!ELEMENT sep      - o EMPTY >
<!ATTLIST sep      %att-globalatts;      >

<!-- content elements - semantic mapping -->
<!ENTITY % csemantics "semantics | annotation | annotation-xml" >
<!ATTLIST semantics %att-definition;
                %att-globalatts;      >
<!ATTLIST annotation %att-encoding;
                %att-globalatts;      >
<!ATTLIST annotation-xml %att-encoding;
                %att-globalatts;      >

<!-- content elements - constructors -->
<!ENTITY % cconstructor "interval | list | matrix | matrixrow | set |
vector" >
<!ATTLIST interval %att-closure;
                %att-globalatts;      >
<!ATTLIST set      %att-globalatts;      >
<!ATTLIST list     %att-order;
                %att-globalatts;      >
<!ATTLIST vector   %att-globalatts;      >
<!ATTLIST matrix   %att-globalatts;      >
<!ATTLIST matrixrow %att-globalatts;      >

<!-- content elements - operators -->
```

```

<!ENTITY % cfuncoplary "inverse | ident " >
<!ELEMENT inverse      - o EMPTY      >
<!ATTLIST inverse     %att-definition;
                %att-globalatts;      >

<!ENTITY % cfuncopnary "fn |  compose" >
<!ATTLIST fn          %att-definition;
                %att-globalatts;      >

<!ELEMENT ident       - o EMPTY      >
<!ATTLIST ident       %att-definition;
                %att-globalatts;      >

<!ELEMENT compose    - o EMPTY      >
<!ATTLIST compose     %att-definition;
                %att-globalatts;      >

<!ENTITY % carithoplary "abs | conjugate | exp | factorial" >
<!ELEMENT exp         - o EMPTY      >
<!ATTLIST exp         %att-definition;
                %att-globalatts;      >

<!ELEMENT abs        - o EMPTY      >
<!ATTLIST abs        %att-definition;
                %att-globalatts;      >

<!ELEMENT conjugate  - o EMPTY      >
<!ATTLIST conjugate  %att-definition;
                %att-globalatts;      >

<!ELEMENT factorial  - o EMPTY      >
<!ATTLIST factorial  %att-definition;
                %att-globalatts;      >

<!ENTITY % carithoplory "minus" >
<!ELEMENT minus      - o EMPTY      >
<!ATTLIST minus      %att-definition;
                %att-globalatts;      >

<!ENTITY % carithop2ary "quotient | divide | power | rem" >
<!ELEMENT quotient   - o EMPTY      >
<!ATTLIST quotient   %att-definition;
                %att-globalatts;      >

<!ELEMENT divide     - o EMPTY      >
<!ATTLIST divide     %att-definition;
                %att-globalatts;      >

<!ELEMENT power      - o EMPTY      >
<!ATTLIST power      %att-definition;
                %att-globalatts;      >

<!ELEMENT rem        - o EMPTY      >
<!ATTLIST rem        %att-definition;
                %att-globalatts;      >

<!ENTITY % carithopnary "plus | times | max | min | gcd" >
<!ELEMENT plus       - o EMPTY      >
<!ATTLIST plus       %att-definition;

```

```

                                %att-globalatts;    >
<!ELEMENT max                - o EMPTY          >
<!ATTLIST max                %att-definition;    >
                                %att-globalatts;    >

<!ELEMENT min                - o EMPTY          >
<!ATTLIST min                %att-definition;    >
                                %att-globalatts;    >

<!ELEMENT times              - o EMPTY          >
<!ATTLIST times              %att-definition;    >
                                %att-globalatts;    >

<!ELEMENT gcd                - o EMPTY          >
<!ATTLIST gcd                %att-definition;    >
                                %att-globalatts;    >

<!ENTITY % carithoproduct "root" >

<!ELEMENT root                - o EMPTY          >
<!ATTLIST root                %att-definition;    >
                                %att-globalatts;    >

<!ENTITY % clogicoproduct "exists | forall" >

<!ELEMENT exists              - o EMPTY          >
<!ATTLIST exists              %att-definition;    >
                                %att-globalatts;    >

<!ELEMENT forall              - o EMPTY          >
<!ATTLIST forall              %att-definition;    >
                                %att-globalatts;    >

<!ENTITY % clogicoproduct "and | or | xor" >

<!ELEMENT and                 - o EMPTY          >
<!ATTLIST and                 %att-definition;    >
                                %att-globalatts;    >

<!ELEMENT or                  - o EMPTY          >
<!ATTLIST or                   %att-definition;   >
                                %att-globalatts;    >

<!ELEMENT xor                  - o EMPTY          >
<!ATTLIST xor                   %att-definition;  >
                                %att-globalatts;    >

<!ENTITY % clogicoproduct "not" >

<!ELEMENT not                  - o EMPTY          >
<!ATTLIST not                   %att-definition;  >
                                %att-globalatts;    >

<!ENTITY % clogicoproduct "implies" >

<!ELEMENT implies              - o EMPTY          >
<!ATTLIST implies              %att-definition;    >
                                %att-globalatts;    >

<!ENTITY % ccalcop "log | int | diff | partialdiff" >

<!ELEMENT log                  - o EMPTY          >
<!ATTLIST log                   %att-definition;  >
                                %att-globalatts;    >
```

---

```

<!ELEMENT int          - o EMPTY          >
<!ATTLIST int          %att-definition;
                %att-globalatts;         >

<!ELEMENT diff         - o EMPTY          >
<!ATTLIST diff         %att-definition;
                %att-globalatts;         >

<!ELEMENT partialdiff  - o EMPTY          >
<!ATTLIST partialdiff %att-definition;
                %att-globalatts;         >

<!ENTITY % ccalcoplary "ln" >

<!ELEMENT ln           - o EMPTY          >
<!ATTLIST ln           %att-definition;
                %att-globalatts;         >

<!ENTITY % csetop2ary "setdiff" >

<!ELEMENT setdiff      - o EMPTY          >
<!ATTLIST setdiff      %att-definition;
                %att-globalatts;         >

<!ENTITY % csetopnary "union | intersect" >

<!ELEMENT union        - o EMPTY          >
<!ATTLIST union        %att-definition;
                %att-globalatts;         >

<!ELEMENT intersect    - o EMPTY          >
<!ATTLIST intersect    %att-definition;
                %att-globalatts;         >

<!ENTITY % cseqop      "sum | product | limit" >

<!ELEMENT sum          - o EMPTY          >
<!ATTLIST sum          %att-definition;
                %att-globalatts;         >

<!ELEMENT product      - o EMPTY          >
<!ATTLIST product      %att-definition;
                %att-globalatts;         >

<!ELEMENT limit        - o EMPTY          >
<!ATTLIST limit        %att-definition;
                %att-globalatts;         >

<!ENTITY % ctrigop     "sin | cos | tan | sec | csc | cot | sinh
                | cosh | tanh | sech | csch | coth
                | arcsin | arccos | arctan" >

<!ELEMENT sin          - o EMPTY          >
<!ATTLIST sin          %att-definition;
                %att-globalatts;         >

<!ELEMENT cos          - o EMPTY          >
<!ATTLIST cos          %att-definition;
                %att-globalatts;         >

<!ELEMENT tan          - o EMPTY          >
<!ATTLIST tan          %att-definition;
                %att-globalatts;         >

<!ELEMENT sec          - o EMPTY          >
<!ATTLIST sec          %att-definition;

```

---

```

                %att-globalatts;      >
<!ELEMENT csc          - o EMPTY      >
<!ATTLIST csc          %att-definition;
                %att-globalatts;      >

<!ELEMENT cot          - o EMPTY      >
<!ATTLIST cot          %att-definition;
                %att-globalatts;      >

<!ELEMENT sinh         - o EMPTY      >
<!ATTLIST sinh        %att-definition;
                %att-globalatts;      >

<!ELEMENT cosh         - o EMPTY      >
<!ATTLIST cosh        %att-definition;
                %att-globalatts;      >

<!ELEMENT tanh         - o EMPTY      >
<!ATTLIST tanh        %att-definition;
                %att-globalatts;      >

<!ELEMENT sech         - o EMPTY      >
<!ATTLIST sech        %att-definition;
                %att-globalatts;      >

<!ELEMENT csch         - o EMPTY      >
<!ATTLIST csch        %att-definition;
                %att-globalatts;      >

<!ELEMENT coth         - o EMPTY      >
<!ATTLIST coth        %att-definition;
                %att-globalatts;      >

<!ELEMENT arcsin       - o EMPTY      >
<!ATTLIST arcsin      %att-definition;
                %att-globalatts;      >

<!ELEMENT arccos       - o EMPTY      >
<!ATTLIST arccos      %att-definition;
                %att-globalatts;      >

<!ELEMENT arctan       - o EMPTY      >
<!ATTLIST arctan      %att-definition;
                %att-globalatts;      >

<!ENTITY % cstatopnary "mean | sdev | var | median | mode" >

<!ELEMENT mean         - o EMPTY      >
<!ATTLIST mean         %att-definition;
                %att-globalatts;      >

<!ELEMENT sdev         - o EMPTY      >
<!ATTLIST sdev         %att-definition;
                %att-globalatts;      >

<!ELEMENT var          - o EMPTY      >
<!ATTLIST var          %att-definition;
                %att-globalatts;      >

<!ELEMENT median       - o EMPTY      >
<!ATTLIST median       %att-definition;
                %att-globalatts;      >

<!ELEMENT mode         - o EMPTY      >
<!ATTLIST mode         %att-definition;

```

```

        %att-globalatts;      >
<!ENTITY % cstatopmoment "moment" >
<!ELEMENT moment          - o EMPTY      >
<!ATTLIST moment         %att-definition;
                %att-globalatts;      >

<!ENTITY % clalgoplary "determinant | transpose" >
<!ELEMENT determinant    - o EMPTY      >
<!ATTLIST determinant   %att-definition;
                %att-globalatts;      >

<!ELEMENT transpose      - o EMPTY      >
<!ATTLIST transpose     %att-definition;
                %att-globalatts;      >

<!ENTITY % clalgopnary "select" >
<!ELEMENT select        - o EMPTY      >
<!ATTLIST select       %att-definition;
                %att-globalatts;      >

<!-- content elements - relations -->
<!ENTITY % cgenrel2ary "neq" >
<!ELEMENT neq          - o EMPTY      >
<!ATTLIST neq         %att-definition;
                %att-globalatts;      >

<!ENTITY % cgenrelnary "eq | leq | lt | geq | gt" >
<!ELEMENT eq          - o EMPTY      >
<!ATTLIST eq         %att-definition;
                %att-globalatts;      >

<!ELEMENT gt          - o EMPTY      >
<!ATTLIST gt         %att-definition;
                %att-globalatts;      >

<!ELEMENT lt          - o EMPTY      >
<!ATTLIST lt         %att-definition;
                %att-globalatts;      >

<!ELEMENT geq        - o EMPTY      >
<!ATTLIST geq       %att-definition;
                %att-globalatts;      >

<!ELEMENT leq        - o EMPTY      >
<!ATTLIST leq       %att-definition;
                %att-globalatts;      >

<!ENTITY % csetrel2ary "in | notin | notsubset | notprsubset" >
<!ELEMENT in          - o EMPTY      >
<!ATTLIST in         %att-definition;
                %att-globalatts;      >

<!ELEMENT notin      - o EMPTY      >
<!ATTLIST notin     %att-definition;
                %att-globalatts;      >

<!ELEMENT notsubset  - o EMPTY      >
<!ATTLIST notsubset %att-definition;

```

```

                %att-globalatts;    >
<!ELEMENT notprsubset      - o EMPTY    >
<!ATTLIST notprsubset      %att-definition;
                %att-globalatts;    >

<!ENTITY % csetrelnary "subset | prsubset" >

<!ELEMENT subset          - o EMPTY    >
<!ATTLIST subset          %att-definition;
                %att-globalatts;    >

<!ELEMENT prsubset        - o EMPTY    >
<!ATTLIST prsubset        %att-definition;
                %att-globalatts;    >

<!ENTITY % cseqrel2ary "tendsto" >

<!ELEMENT tendsto         - o EMPTY    >
<!ATTLIST tendsto         %att-definition;
                %att-type;
                %att-globalatts;    >

<!-- content elements - quantifiers -->

<!ENTITY % cquantifier "lowlimit | uplimit | bvar | degree | logbase" >

<!ATTLIST lowlimit    %att-globalatts;    >
<!ATTLIST uplimit    %att-globalatts;    >
<!ATTLIST bvar       %att-globalatts;    >
<!ATTLIST degree     %att-globalatts;    >
<!ATTLIST logbase    %att-globalatts;    >

<!-- operator groups -->

<!ENTITY % coplary "%cfuncoplary; | %carithoplary; | %clogicoplary;
                | %ccalcoplary; | %ctrigop; | %clalgoplary;" >

<!ENTITY % cop2ary "%carithop2ary; | %clogicop2ary; | %csetop2ary;" >

<!ENTITY % copnary "%cfuncopnary; | %carithopnary; | %clogicopnary;
                | %csetopnary; | %cstatopnary; | %clalgopnary;" >

<!ENTITY % copmisc "%carithoproot; | %carithoplor2ary; | %ccalcop;
                | %cseqop; | %cstatopmoment; | %clogicopquant;" >

<!-- relation groups -->

<!ENTITY % crel2ary "%cgenrel2ary; | %csetrel2ary; | %cseqrel2ary;" >
<!ENTITY % crelnary "%cgenrelnary; | %csetrelnary;" >

<!-- content constructs - all -->

<!ENTITY % Content "%ctoken; | %cspecial; | %cother; | %csemantics;
                | %cconstructor; | %cquantifier;
                | %coplary; | %cop2ary; | %copnary; | %copmisc;
                | %crel2ary; | %crelnary;" >

<!-- content constructs for substitution in presentation structures -->

<!ENTITY % ContInPres "ci | cn | apply | fn | lambda | reln

```



```

        | interval | list | matrix | matrixrow
        | set | vector | semantics" > <!--dpc-->
<!-- ***** -->
<!-- recursive definition for content of expressions -->
<!-- include presentation tag constructs at lowest level -->
<!-- so presentation layout schemata hold presentation or Content -->
<!-- include Content tag constructs at lowest level -->
<!-- so Content tokens hold PCDATA or Presentation at leaf level -->
<!-- (for permitted substitutable elements in context) -->
<!ENTITY % ContentExpression "(%Content; | %PresInCont;)* " >
<!ENTITY % PresExpression "(%Presentation; | %ContInPres;)* " >
<!ENTITY % MathExpression "(%PresInCont; | %ContInPres;)* " >
<!-- content token elements (may hold embedded presentation constructs) -->
<!-->
<!ELEMENT ci - - (#PCDATA | %PresInCont;)* >
<!ELEMENT cn - - (#PCDATA | sep | %PresInCont;)* >
<!-- content special elements -->
<!ELEMENT apply - - (%ContentExpression;) >
<!ELEMENT reln - - (%ContentExpression;) >
<!ELEMENT lambda - - (%ContentExpression;) >
<!-- content other elements -->
<!ELEMENT condition - - (%ContentExpression;) >
<!ELEMENT declare - - (%ContentExpression;) >
<!-- content semantics elements -->
<!ELEMENT semantics - - (%ContentExpression;) >
<!ELEMENT annotation - - (#PCDATA) >
<!ELEMENT annotation-xml - - (%ContentExpression;) >
<!-- content constructor elements -->
<!ELEMENT interval - - (%ContentExpression;) >
<!ELEMENT set - - (%ContentExpression;) >
<!ELEMENT list - - (%ContentExpression;) >
<!ELEMENT vector - - (%ContentExpression;) >
<!ELEMENT matrix - - (%ContentExpression;) >
<!ELEMENT matrixrow - - (%ContentExpression;) >
<!-- content operator element (user-defined) -->
<!ELEMENT fn - - (%ContentExpression;) >
<!-- content quantifier elements -->
<!ELEMENT lowlimit - - (%ContentExpression;) >
<!ELEMENT uplimit - - (%ContentExpression;) >
<!ELEMENT bvar - - (%ContentExpression;) >
<!ELEMENT degree - - (%ContentExpression;) >
<!ELEMENT logbase - - (%ContentExpression;) >
<!-- ***** -->
<!-- presentation layout schema contain tokens, layout and content
schema -->
<!ELEMENT mstyle - - (%PresExpression;) >
<!ELEMENT merror - - (%PresExpression;) >

```

---

```

<!ELEMENT mphantom - - (%PresExpression;) >
<!ELEMENT mrow - - (%PresExpression;) >
<!ELEMENT mfrac - - (%PresExpression;) >
<!ELEMENT msqrt - - (%PresExpression;) >
<!ELEMENT mroot - - (%PresExpression;) >
<!ELEMENT msub - - (%PresExpression;) >
<!ELEMENT msup - - (%PresExpression;) >
<!ELEMENT msubsup - - (%PresExpression;) >
<!ELEMENT mmultiscripts - - (%PresExpression;) >
<!ELEMENT munder - - (%PresExpression;) >
<!ELEMENT mover - - (%PresExpression;) >
<!ELEMENT munderover - - (%PresExpression;) >
<!ELEMENT mtable - - (%PresExpression;) >
<!ELEMENT mtr - - (%PresExpression;) >
<!ELEMENT mtd - - (%PresExpression;) >
<!ELEMENT maction - - (%PresExpression;) >
<!ELEMENT mfenced - - (%PresExpression;) >
<!ELEMENT mpadded - - (%PresExpression;) >

<!-- presentation tokens contain PCDATA or malignmark constructs -->

<!ELEMENT mi - - (#PCDATA | malignmark )* >
<!ELEMENT mn - - (#PCDATA | malignmark )* >
<!ELEMENT mo - - (#PCDATA | malignmark )* >
<!ELEMENT mtext - - (#PCDATA | malignmark )* >
<!ELEMENT ms - - (#PCDATA | malignmark )* >

<!-- ***** -->
<!-- browser interface definition -->

<!-- attributes for top level math element -->

<!ENTITY % att-macros 'macros CDATA #IMPLIED' >
<!ENTITY % att-mode 'mode CDATA #IMPLIED' >

<!ENTITY % att-topinfo '%att-globalatts;
%att-macros;
%att-mode;' >

<!-- attributes for browser interface element -->

<!ENTITY % att-name 'name CDATA #IMPLIED' >
<!ENTITY % att-height 'height CDATA #IMPLIED' >
<!ENTITY % att-width 'width CDATA #IMPLIED' >
<!ENTITY % att-baseline 'baseline CDATA #IMPLIED' >
<!ENTITY % att-overflow 'overflow
(scroll|elide|truncate|scale) "scroll"' >
<!ENTITY % att-altimg 'altimg CDATA #IMPLIED' >
<!ENTITY % att-alttext 'alttext CDATA #IMPLIED' >

<!ENTITY % att-browif '%att-type;
%att-name;
%att-height;
%att-width;
%att-baseline;
%att-overflow;
%att-altimg;
%att-alttext;' >

<!-- the top level math element -->
<!-- math contains MathML encoded mathematics -->
<!-- math has the browser info attributes iff it is the
browser interface element also -->

<!ELEMENT math - - (%MathExpression;) >

```

```
<!ATTLIST math      %att-topinfo;  
                   %att-browif;  >  
  
<!-- end of DTD fragment -->  
<!-- ***** -->
```

## ANNEX D : CALS Table DTD

```

<!-- ***** CALS TABLE TAGS - ELEMENTS AND ATTRIBUTES ***** -->

<!-- The following declarations may be referred to using a public
entity as follows:

<!ENTITY % tablepac PUBLIC
        "-//USA-DOD//DTD CALS MIL-M-28001 TABLEPAK 950127 //EN">

-->

<!ENTITY % bodyatt          "id          ID          #IMPLIED" >
<!ENTITY % yesorno         "NUMBER" >

<!-- ***** CALS TABLE TAGS - MAIN STRUCTURES ***** -->

<!ELEMENT (table) - -      ((%titles;), tgroup+) -(table) >
<!ATTLIST (table)  tabstyle  NMTOKEN          #IMPLIED
                tocentry   %yesorno;         "1"
                shortentry %yesorno;         #IMPLIED
                frame       (top | bottom |
                             topbot | all |
                             sides | none)    #IMPLIED
                colsep     %yesorno;         #IMPLIED
                rowsep     %yesorno;         #IMPLIED
                orient      (port | land)     #IMPLIED
                pgwide     %yesorno;         #IMPLIED
                %bodyatt;
                >

<!ELEMENT tgroup          - o      (colspec*,
                spanspec*,
                thead?, tfoot?,
                tbody) >
<!ATTLIST tgroup  cols      NUMBER          #REQUIRED
                tgroupstyle NMTOKEN         #IMPLIED
                colsep     %yesorno;         #IMPLIED
                rowsep     %yesorno;         #IMPLIED
                align      (left | right |
                             center | justify
                             | char )      "left"
                charoff    NUTOKEN          "50"
                char       CDATA           ""
                >

<!ELEMENT colspec        - o      EMPTY>
<!ATTLIST colspec  colnum   NUMBER          #IMPLIED
                colname   NMTOKEN         #IMPLIED
                align     (left | right |
                             center | justify
                             | char)      #IMPLIED
                charoff   NUTOKEN          #IMPLIED
                char      CDATA           #IMPLIED
                colwidth  CDATA           #IMPLIED
                colsep    %yesorno;         #IMPLIED
                rowsep    %yesorno;         #IMPLIED>

<!ELEMENT spanspec      - o      EMPTY >
<!ATTLIST spanspec  namest  NMTOKEN         #REQUIRED
                nameend   NMTOKEN         #REQUIRED

```

ST.32/US/Grant

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```

spanname  NMTOKEN          #REQUIRED
align     (left|right|
           center|justify
           |char)          "center"
charoff   NUTOKEN          #IMPLIED
char      CDATA            #IMPLIED
colsep    %yesorno;        #IMPLIED
rowsep    %yesorno;        #IMPLIED>

<!ELEMENT (thead | tfoot)      - o      (colspec*, row+)      -(entrytbl) >
<!ATTLIST thead  valign (top | middle | bottom) "bottom" >
<!ATTLIST tfoot  valign (top | middle | bottom) "top" >

<!ELEMENT tbody      - o      (row+) >
<!ATTLIST tbody  valign (top | middle | bottom) "top" >

<!ELEMENT row      - o      (entry | entrytbl)+ >
<!ATTLIST row  rowsep %yesorno; #IMPLIED >

<!ELEMENT entry      - o      (para | %paracon;)+>
<!ATTLIST entry  colname  NMTOKEN          #IMPLIED
                namest   NMTOKEN          #IMPLIED
                nameend  NMTOKEN          #IMPLIED
                spanname NMTOKEN          #IMPLIED
                morerows  NUMBER          "0"
                colsep    %yesorno;        #IMPLIED
                rowsep    %yesorno;        #IMPLIED
                rotate    %yesorno;        "0"
                valign    (top | bottom |
                           middle)         "top"
                align     (left | right |
                           center | justify
                           | char )        #IMPLIED
                charoff   NUTOKEN          #IMPLIED
                char      CDATA            #IMPLIED >

<!ELEMENT entrytbl  - - (colspec*, spanspec*, thead?, tbody)+      -(entrytbl)>
<!ATTLIST entrytbl  cols          NUMBER          #REQUIRED
                tgroupstyle  NMTOKEN          #IMPLIED
                colname      NMTOKEN          #IMPLIED
                spanname     NMTOKEN          #IMPLIED
                colsep       %yesorno;        #IMPLIED
                rowsep       %yesorno;        #IMPLIED
                align        (left | right |
                              center | justify
                              | char )        #IMPLIED
                charoff      NUTOKEN          #IMPLIED
                char         CDATA            #IMPLIED >

```

## ANNEX E : Specification of file names for Grant Red Book data.

Grant Red Book data is delivered weekly. Each tape contains approximately 3,000 patents (800 megabytes) on one DLT IIIXT (TK85XT) magnetic tape. All files associated with a specific patent are compressed and zipped into a single patent zip file. Zipped patent files are grouped by type within a pre-determined directory scheme and re-zipped with path information (but not compressed) into a single weekly update file. The weekly update file is then copied to a DLT tape using the UNIX TAR facility.

Patent grouping is based on the following directory tree:

```

YYYYMMDD
| -UTIL0601
|   | -US0601nnnn-YYYYMMDD.ZIP
|   | -US0601nnnn-YYYYMMDD.ZIP
|   | - . . .
| -UTIL0602
|   | -US0602nnnn-YYYYMMDD.ZIP
|   | - . . .
| -UTIL0603 . . .
| -PLANT
|   | -USP0nnnnnn-YYYYMMDD.ZIP
|   | - . . .
| -DESIGN
|   | -USD0nnnnnn-YYYYMMDD.ZIP
|   | - . . .
| -REISSUE
|   | -USREnnnnnn-YYYYMMDD.ZIP
|   | - . . .
| -SIR
|   | -USH0nnnnnn-YYYYMMDD.ZIP
|   | - . . .
| -DTDS
| -ENTITIES

```

Where:

1. The root directory is the issue date;
2. Utility patents are distributed into subdirectories "UTIL" plus the first four characters of the patent number. This assures a maximum of 1000 zipped patent files within a single directory.
3. Plant, Design, Reissue, and Sir patents are distributed into their respective directories listed above. Note that if the weekly issue does not have a specific patent type, then the patent type sub-directory will be omitted.
4. Sub-directory DTDS contains the DTDs and catalogs used to parse the issue.
5. Sub-directory ENTITIES contains the entity files and glyphs referenced by the Grant Red Book DTD.

Each patent zip file contains all the files for that one patent. Within the zip file, there will be exactly one \*.SGM file and any number of associated files for complex work units (CWUs, which includes chemical structures, mathematical formulae, tables, and gene sequence listings), for

drawings, and for any characters which are rendered as bitmaps (so-called "pullouts"). In addition to the SGML markup of all text content and references to pullouts, the \*.SGM file includes MathML markup for formulas (made SGML-compliant), CALS Table markup for tables, SGML markup for sequence listings, and references to each of the associated files. For further details about SGM file content, see the Grant Red Book specification.

File names consist of the following components, as needed, in the order shown.

aacccccccc-nnnnnnnn-annnnn-nnnn.aaa

AA	Issuing country (US)
CCCCCCCC	Patent number (8 characters or numbers)
-	Dash
NNNNNNNN	Issue date as YYYYMMDD (MM and DD left-padded)
-	Dash
A	Content type (D, C, M, T, S, or P)
NNNNN	Left-padded sequence number
-	Dash
NNNN	Left-padded page number
.	Period
AAA	File format (ZIP, SGM, TIF, CDX, MOL, NB)

The sequence numbers represents the order in which the CWUs of a given type appear in the printed document. If a CWU is so large that more than one page is required for the printed document, then the image of each printed page will be in a separate file and numbered as shown below.

#### Examples:

US06000000-19990120.ZIP	The compressed file
US06000000-19990120.SGM	SGML and other markup
USD0367557-19990120-D00001.TIF	First drawing image
US06000000-19990120-C00001.TIF	First chemistry image
US06000000-19990120-C00001.CDX	CDX file for same
US06000000-19990120-C00001.MOL	MOL file for same
US06000000-19990120-M00001.TIF	First math image
US06000000-19990120-M00001.NB	Mathematica file for same
US06000000-19990120-T00001.TIF	First table image
US06000000-19990120-T00002-0001.TIF	Second table image, first page
USRE035111-19990120-T00002-0002.TIF	Second table image, second page
US06000000-19990120-S00001.TIF	First sequence listing
US06000000-19990120-S00002-0001.TIF	Second sequence listing, first page
US06000000-19990120-S00002-0002.TIF	Second sequence listing, second page
USPP023555-19990120-P00039.TIF	Thirty-ninth pullout image