

L^AT_EX Style For Technical Information Reports of the Engineer Research and Development Center *

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Abstract

This package provides class for typesetting Technical Information Reports of the Engineer Research and Development Center, US Army Corps of Engineers.

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1 Introduction

Technical publications for Engineer Research and Development Center, US Army Corps of Engineers follow an elaborate style [1]. This style is accompanied by templates for a popular word processor software. In this class, commissioned by US Army Corps of Engineers, we try to recreate this style for L^AT_EX.

There are several kinds of documents described by [1]: Technical Report, Technical Note, Miscellaneous Paper, Contract Report, Letter Report, Monograph, Special Report, Brochure. In this class we follow the guidelines for Technical Reports (TR). However, it can be used for other kinds of documents as long as they do not differ much from Technical Reports.

2 User Guide

2.1 Installation

The class uses a number of L^AT_EX packages. Normally they should be present in any up-to-date distribution. If you do not have them, you can download them using the links below prior to using the class.

You will need PSFNSS [2]: the L^AT_EX package providing the access to common PostScript fonts. Of course you will need the fonts themselves. You will also need graphics bundle [3], packages geometry [4], caption [5], longtable [6] and fancyhdr [7].

The installation of the class follows the usual practice [8] for L^AT_EX packages:

1. Run latex on `erdc.ins`. This will produce the L^AT_EX class `erdc.cls`.
2. Put the files `erdc.cls`, `red_corps_castle2.eps` and `red_corps_castle2.pdf` to the place where L^AT_EX can find it (see [8] or the documentation for your T_EX system).
3. Update the database of file names. Again, see [8] or the documentation for your T_EX system for the system-specific details.
4. The file `erdc.pdf` provides the documentation for the package (this is the file you are probably reading now).

As an alternative to items 2 and 3 you can just put the file `erdc.cls` in the working directory where your `.tex` file is.

2.2 Invocation

To use the class, put in the preamble of your document

```
\documentclass[<options>]{erdc}
```

The class should work both with latex and pdflatex work flows. Accordingly it is supplied with US Army Corps of Engineers in both EPS and PDF formats.

The class recognizes the standard L^AT_EX options, shared by the most document classes [9]. The default font size changing options (8pt, 9pt, ..., 12pt) have no

options
8pt
9pt
10pt
11pt
12pt

effect other than producing a warning in the log since the font sizes of the class are fixed by the guidelines [1].

2.3 Front Matter

`\frontmatter` . The command `\frontmatter` starts the *Front Matter* of the document. This part includes title page, table of contents, list of figures, list of tables.

`\laboratory` The cover page of the Technical Report should have the center name for Center-level reports or laboratory name for laboratory level reports. By default a technical report is assumed to be a Center-level one, and the center name (Engineering Research and Development Center) is printed in the cover page. The macro `\laboratory{\<Laboratory Name>}` overrides this default, for example:

```
\laboratory{Cold Regions Research and Engineering Laboratory}
```

A line break command `\\` can be used inside this command to achieve a desirable line break in the laboratory name if the automatic one is not right.

`\reportnum` The command `\reportnum{\<Report Number>}` is used to store the project number. For example,

```
\reportnum{ERDC/CRREL SR-05-78}
```

The report number should include the laboratory abbreviation as its prefix.

`\program` The command `\program{\<Program Title>}` is used to store the title of the program. For example,

```
\program{Military Engineering Technology}
```

`\title` The command `\title` is used to store project name: `\title{\<Title>}`. For example:

```
\title{A New Project}
```

`\subtitle` The command `\subtitle{\<Sub Title>}` is used to store the project subtitle. For example,

```
\subtitle{Model Investigation}
```

`\date` The macro `\date` stores the date of the document, for example

```
\date{March 2009}
```

`\author` The macro `\author{\<Authors>}` stores the names of authors that share the same affiliation. The authors with the same affiliation should be listed in the `\affiliation` same `\author` macro, separated by the keyword `\and`. Do not put commas and

the word “and” between the authors’ names: \LaTeX will take care of the proper punctuation. The macro `\affiliation{Affiliation}` stores the affiliation of the authors immediately preceding this command. If a report is prepared by several laboratories, or a laboratory and an outside contractor, then you should list the authors with the same affiliation, then show the affiliation, then repeat for the next affiliation. For example:

```
\author{A. U. Thor \and C. O. R. Respondent \and C. O. Author}
\affiliation{Construction Engineering Research Laboratory\
  U.S. Army Engineer Research and Development Center\
  2902 Newmark Drive\
  Champaign, IL 61826-9005}
\author{John M. Smith}
\affiliation{Coastal and Hydraulics Laboratory\
  U.S. Army Engineer Research and Development Center\
  3909 Halls Ferry Road\
  Vicksburg, MS 39180-6199}
```

Note that the guidelines [1] do not say how to typeset the authors that have several affiliations. Accordingly we do not deal with this case here.

`\coverart` It is recommended to put some artwork on the cover of the title page. It is set up by the command `\coverart[<options>]{<file>}`. The syntax of the command is the same as the syntax of the command `\includegraphics` of the `graphicx` package [3]. The obligatory argument `{<file>}` is the name of the graphics file with the logo, and `[<options>]`, if present, may, for example, set the dimensions of the graphics. By default the graphics is scaled to cover the full width of the page. Note that our class uses the “extended” version `graphicx` of the package with its “key-value” syntax. For example,

```
\coverart[width=2in]{red_corps_castle2.eps}
```

The format of the graphics file depends on the \TeX engine used. If you use `latex`→`dvips`→`pstopdf` route, then you need PostScript files (PS or EPS). If you use `pdflatex` engine, then you need graphics files in JPEG, PNG or PDF formats (see [8] for more information).

`\reporttype` The type of the report is stored in the macro `\reporttype{<type>}`, for example:

```
\reporttype{Final Report}
```

`\distribution` All reports should have a distribution statement. There are several standard distribution statements, approved by Department of Defense Directive 5230.24 [10]. By default the reports have Statement A: *Approved for public release; distribution is unlimited*. To change the default, use the macro `\distribution{<Distribution Statement>}`, for example

```
\distribution{Distribution authorized to U.S. Government Agencies}
```

only; Test and Evaluation; November 2005. Other requests should be referred to U.S. Army Engineer Research and Development Center}

`\preparedfor` By default the reports have the phrase *Prepared for U.S. Army Corps of Engineers, Washington, DC 20314-1000* on the title page. To change this designation, use the command `\preparedfor`, for example,

```
\preparedfor{U.S. Army Engineer Research and Development Center\\
3909 Halls Ferry Road, Vicksburg, MS 39180-6199}
```

To delete this phrase altogether, use `\preparedfor{}`.

`\contractnum` Contract or work unit number is set by `\contractnum` command, for example

```
\contractnum{Work Unit 33143}
```

`\monitoredby` Contract reports are monitored by a controlling laboratory. Its name and address is set by this command, for example

```
\monitoredby{U.S. Army Engineer Research and Development Center\\
3909 Halls Ferry Road, Vicksburg, MS 39180-6199}
```

`\additionalinfo` The command `\additionalinfo{<Additional Information>}` is used to store additional information for the title page, for example,

```
\additionalinfo{Supercedes TR-2345-12345}
```

`abstract` The abstract of the report is set using the environment `abstract`:

```
\begin{abstract}
  This report disusses spins of electrons, protons and other
  fermions.
\end{abstract}
```

`\disclaimer` By default all reports have the standard disclaimer. If its text should be changed for any reason, use the macro `\disclaimer{<New Disclaimer>}`, for example

```
\disclaimer{The contents of this report are not to be used for
advertising, publication, or promotional purposes. Citation of trade
names does not constitute an official endorsement or approval of the
use of such commercial products. All product names and trademarks
cited are the property of their respective owners. The findings of
this report are not to be construed as an official Department of the
Army position unless so designated by other authorized documents.}
```

```
\textbf{DESTROY THIS REPORT WHEN NO LONGER NEEDED. DO NOT RETURN IT
TO THE ORIGINATOR.}}
```

<code>\maketitle</code>	The command <code>\maketitle</code> typesets the cover page, title page and abstract page of the report based on the data supplied by the macros above. It should therefore be issued <i>after</i> these macros.
<code>\tableofcontents</code>	Table of contents is typeset with the usual \LaTeX command [9] <code>\tableofcontents</code> .
<code>\listoffigures</code>	This situation with the list of tables and the list of figures is slightly more involved.
<code>\listoftables</code>	The guidelines [1] require the authors to combine the lists into the common list called “Figures and Tables”, which is subdivided into Figures and Tables. The heading of this joint list is a chapter heading, while the headings of the sublists are on the section level. However, the guidelines say nothing about the situation where a report has only figures or only tables. Therefore we chose the following solution:
<code>\listoffiguresandtables</code>	<ol style="list-style-type: none"> 1. If you have <i>both</i> figures and tables, use <code>\listoffiguresandtables</code>. It will automatically typeset both lists according to the requirements [1] 2. If you have <i>only</i> figures or <i>only</i> tables, use either <code>\listoffigures</code> or <code>\listoftables</code> correspondingly. In this case the heading will be typeset on the chapter level. 3. If you have neither (probably a rare situation), do not use any of these commands.
<code>\chapter</code>	In the front matter the command <code>\chapter</code> produces an <i>unnumbered</i> chapter, so the commands <code>\chapter{Preface}</code> and <code>\chapter*{Preface}</code> give the same result (see also Section 2.4 below).

2.4 Main Matter

<code>\mainmatter</code>	The main matter starts with the macro <code>\mainmatter</code> . The text is divided into chapters, sections and subsections in the usual \LaTeX manner. All familiar \LaTeX commands and packages should work without problems. Note that unlike articles, reports have chapters as the highest subdivisions. The chapters are numbered, while sections and subsections are not.
<code>\chapter</code> <code>\chapter*</code>	<p>One important difference between the standard \LaTeX and our class is the following. In standard \LaTeX the starred command <code>\chapter*</code> produces an unnumbered chapter, that does not go into the table of contents. In our class <i>all</i> chapters, numbered or not, go into the table of contents.</p> <p>Tables should have the caption <i>above</i> the tabular material rather than below it as in standard \LaTeX. The class automatically sets the proper spacing for this arrangement, but it is the user’s responsibility to put the <code>\caption</code> command before the <code>tabular</code> environment, for example</p>

```

\begin{table}
  \centering
  \caption{Yearly Dividends}
  \label{tab:dividends}
  \footnotesize\sffamily
  \begin{tabular}{|l|r|}

```

```

\hline
\bfseries Year & \bfseries Dividends, \%\\
\hline
1880 & 2.5 \\
\hline
1881 & 2.1 \\
\hline
1882 & 2.6 \\
\hline
\end{tabular}
\end{table}

```

Note that the guidelines [1] recommend excessive rules in the tables, with borders around the cells, as shown in the example above. This is usually frowned upon in the good typesetting practice.

The guidelines [1] recommend use `footnotesize sans serif` entries in the tables itself. The class does *not* do this automatically: the users should put `\footnotesize\sffamily` before `\begin{tabular}`, as shown in the example above.

`\fbox` The guidelines [1] require the graphics to be surrounded by a hairline box. This is done by the standard `\fbox` command, for example

```

\begin{figure}
\centering
\fbox{\includegraphics[width=3in]{plot}}
\caption{Plot of  $f(x)$ }
\label{fig:plot}
\end{figure}

```

2.5 Back Matter

`\appendix` Back matter in ERDC reports consists of the bibliography, appendices and distribution forms. The standard \LaTeX command `\appendix` changes the numeration of chapters according to the rules [1]. It should be issued after the bibliography, but before the appendices.

The guidelines [1] do not formally specify all details of bibliographies. The authors are encouraged to use `BibTeX` and `natbib` [11] package for the creation of professional-looking bibliographies.

The reports should contain Form 298 (see, for example, <http://www.ntis.gov/pdf/rdpform.pdf>). This form should be typeset separately.

3 Implementation

3.1 Identification

We start with the declaration who we are. Most `.dtx` files put driver code in a separate driver file `.drv`. We roll this code into the main file, and use the pseudo-guard `<gobble>` for it.

```
1 <class>\NeedsTeXFormat{LaTeX2e}
2 <*gobble>
3 \ProvidesFile{erdc.dtx}
4 </gobble>
5 <class>\ProvidesClass{erdc}
6 [2009/03/20 v0.1 Typesetting Technical Information Reports of
7 the Engineer Research and Development Center (ERDC),
8 US Army Corps of Engineers]
```

And the driver code:

```
9 <*gobble>
10 \documentclass{ltxdoc}
11 \usepackage{array}
12 \usepackage{url,amsfonts}
13 \usepackage[breaklinks,colorlinks,linkcolor=black,citecolor=black,
14             pagecolor=black,urlcolor=black,hyperindex=false]{hyperref}
15 \PageIndex
16 \CodelineIndex
17 \RecordChanges
18 \EnableCrossrefs
19 \begin{document}
20   \DocInput{erdc.dtx}
21 \end{document}
22 </gobble>
23 <*class>
```

3.2 Options

`\erdc@size@warning` The font-changing options are not used in our setup, so we just produce a warning:

```
24 \long\def\erdc@size@warning#1{%
25   \ClassWarning{erdc}{Size-changing option #1 will not be
26     honored}}%
27 \DeclareOption{8pt}{\erdc@size@warning{\CurrentOption}}%
28 \DeclareOption{9pt}{\erdc@size@warning{\CurrentOption}}%
29 \DeclareOption{10pt}{\erdc@size@warning{\CurrentOption}}%
30 \DeclareOption{11pt}{\erdc@size@warning{\CurrentOption}}%
31 \DeclareOption{12pt}{\erdc@size@warning{\CurrentOption}}%
```

All other options are just sent to the main class:

```
32 \DeclareOption*{\PassOptionsToClass{\CurrentOption}{report}}
33 \ProcessOptions\relax
```


3.3 Loading Class and Packages

We start with the base class and some packages

```
34 \LoadClass[12pt,twoside]{report}
35 \RequirePackage{graphicx,color,caption,longtable}
```

3.4 Fonts

We use Times for the main font, matching Helvetica for the sans serifed font, and Courier for the monospaced font:

```
36 \usepackage{mathptmx}
37 \usepackage[scaled]{helvet}
38 \usepackage{courier}
```

3.5 Page Dimensions and Paragraphing

The requirements are 1.25" (top), 1" (bottom), 1.5" (left), and 1.5" (right). However, we need to add for the headers.

```
39 \RequirePackage[letterpaper, top=1in, bottom=1in,
40 left=1.5in, right=1.5in]{geometry}
```

`\parindent` The paragraphs have no indentation...

```
41 \setlength{\parindent}{0pt}
```

`\parskip` ...and there is one baseline skip between paragraphs

```
42 \setlength{\parskip}{\baselineskip}
```

3.6 Headers and Footers

We use fancyhdr:

```
43 \RequirePackage{fancyhdr}
```

`\headrulewidth` Decorative rules:

```
44 \renewcommand{\headrulewidth}{0.1pt}
```

```
45 \renewcommand{\footrulewidth}{0pt}
```

`\fancyhfoffset` Headers are wider than the text

```
46 \fancyhfoffset{35pt}
```

We do not have headers:

```
47 \pagestyle{fancy}
48 \lhead{\textsf{\textbf{\footnotesize \@reportnum}}}}
49 \rhead{\textsf{\textbf{\footnotesize \thepage}}}}
50 \chead{}
```

We do not have footers:

```
51 \lfoot{}
```

```
52 \cfoot{}
```

```
53 \rfoot{}
```

3.7 Main Subdivisions

```

\if@frontmatter The switch whether we are in the frontmatter
54 \newif\if@frontmatter
55 \@frontmatterfalse

\if@appendix The switch whether we are in the appendix
56 \newif\if@appendix
57 \@appendixfalse

\frontmatter Starting front matter
58 \def\frontmatter{%
59   \pagenumbering{roman}%
60   \@frontmattertrue
61   \@appendixfalse}

\mainmatter Starting main matter
62 \def\mainmatter{%
63   \cleardoublepage
64   \pagenumbering{arabic}%
65   \@frontmatterfalse
66   \@appendixfalse}

\appendix Start appendices
67 \def\appendix{%
68   \clearpage
69   \@frontmatterfalse
70   \@appendixtrue
71   \@addtoreset{table}{chapter}%
72   \@addtoreset{equation}{chapter}%
73   \@addtoreset{figure}{chapter}%
74   \@addtoreset{section}{chapter}%
75   \setcounter{chapter}{0}%
76   \setcounter{section}{0}%
77   \gdef\chapapp{\appendixname}%
78   \gdef\thechapter{\@Alph{c}{chapter}}%
79   \gdef\thefigure{\@Alph{c}{chapter}\@arabic{c}{figure}}%
80   \gdef\thetable{\@Alph{c}{chapter}\@arabic{c}{table}}%
81   \gdef\theequation{\@Alph{c}{chapter}\@arabic{c}{equation}}

```

3.8 Cover and Title Pages

```

\laboratory This macro sets up the laboratory name:
82 \def\laboratory#1{\gdef\@laboratory{#1}}
83 \laboratory{Engineer Research and\Development Center}

\reportnum Report number:
84 \def\reportnum#1{\gdef\@reportnum{#1}}
85 \reportnum{ERDC TR-01-01}

```

```

\program Program:
86 \def\program#1{\gdef\@program{#1}}
87 \program{}

\subtitle Subtitle:
88 \newcommand{\subtitle}[1]{\gdef\@subtitle{#1}}
89 \def\@subtitle{}

```

The author and affiliation processing follows the ideas of [12]. We lift most of the code from there.

The general function to convert a list of items in the form

A\and B\and C\and D

to the form ‘A, B, C, and D’ is \xandlist:

\xandlist{, }{ and }{, and }{A\and B\and C\and D}

This is a completely expandable macro, with the return value being the converted list. There is also a ‘no-execute’ version whose fourth argument should be a macro; the text to be converted will be taken from that macro and after conversion will be put back as the macro’s new replacement text.

\nxandlist{, }{ and }{, and }\result

I don’t think I want to explain this except by recommending that you watch it in operation with \tracingmacros if you’re interested. [mjd,1994/10/19]

```

90 \newcommand{\xandlist}[4]{\@andlista{#1}{#2}{#3}}#4\and\and}
91 \def\@andlista#1#2\and#3\and{\@andlistc{#2}\@ifnotempty{#3}{%
92 \@andlistb#1{#3}}
93 \def\@andlistb#1#2#3#4#5\and{%
94 \@ifempty{#5}{%
95 \@andlistc{#2#4}%
96 }{%
97 \@andlistc{#1#4}\@andlistb{#1}{#3}{#3}{#5}%
98 }}
99 \let\@andlistc\@iden
100 \newcommand{\nxandlist}[4]{%
101 \def\@andlistc##1{\toks@{\xp{the\toks@##1}}}%
102 \toks@{\toks@\@emptytoks \@andlista{#1}{#2}{#3}}}%
103 \the\@xp\toks@#4\and\and
104 \edef#4{\the\toks@}%
105 \let\@andlistc\@iden}

```

andify *The \andify function is provided as a convenient abbreviation for the most common case. See also \author@andify (for amsart and amsproc only), which gives better results in cases with a large number*

of authors. Provide a substitutable text string to simplify language-specific modifications.

```

106 \def\@and{and}
107 \newcommand{\andify}{%
108 \nxandlist{\unskip, }\{\unskip\} \@and~\{\unskip, \@and~}}
    Override the funny default definition of \and from LATEX. This is not
    actually used by AMS classes, however.
109 \def\and{\unskip{ }\@and{ }\ignorespaces}

```

This requires some other AMS math macros:

```

110 \let\@xp\expandafter\relax
111 \let\@nx=\noexpand
112 \def\@oparg#1[#2]{\@ifnextchar[#{#1}{#1[#2]}}
113 \long\def\@ifempty#1{\@xifempty#1@..\@nil}
114 \long\def\@xifempty#1#2@#3#4#5\@nil{%
115 \ifx#3#4\@xp\@firstoftwo\else\@xp\@secondoftwo\fi}
116 \long\def\@ifnotempty#1{\@ifempty{#1}}
117 \def\setboxz@h{\setbox\z@\hbox}
118 \def\@addpunct#1{%
119 \relax\ifhmode
120 \ifnum\spacefactor>\@m \else#1\fi
121 \fi}
122 \newtoks\@emptytoks

```

`\authors` The full authors lists

```

123 \def\authors{}

```

`\addresses` The list of authors *and* addresses

```

124 \def\addresses{}

```

`\author` This also follows AMS ideas

```

125 \def\author#1{%
126 \ifx\@empty\authors\gdef\authors{#1}\else
127 \g@addto@macro{\authors}{\and#1}\fi
128 \ifx\@empty\@addresses\gdef\addresses{\author{#1}}\else
129 \g@addto@macro{\addresses}{\par\author{#1}}\fi}

```

`\affiliation` And affiliation

```

130 \def\affiliation#1{%
131 \ifx\@empty\@addresses\gdef\addresses{#1\par}\else
132 \g@addto@macro{\addresses}{#1\par\vspace{\baselineskip}}\fi}

```

`\today` We use only month and year in `\today`:

```

133 \def\today{\ifcase\month\or
134 January\or February\or March\or April\or May\or June\or
135 July\or August\or September\or October\or November\or December\fi
136 \space \number\year}

```

`\coverart` The `\logo` command has the same format as `\includegraphics`. It actually sets up `\includegraphics` in `\maketitle`.

```

137 \newcommand{\coverart}[2] [] {%
138   \def\@tempa{#1}%
139   \ifx\@empty\@tempa
140     \gdef\@coverart{\includegraphics[width=450\p@]{#2}}\else
141     \gdef\@coverart{\includegraphics[#1]{#2}}\fi}
142 \def\@coverart{}%
```

`\reporttype` Type of the report

```

143 \def\reporttype#1{\gdef\@reporttype{#1}}
144 \reporttype{}
```

`\distribution` Distribution of the report

```

145 \def\distribution#1{\gdef\@distribution{#1}}
146 \distribution{Approved for public release; distribution is unlimited.}
```

`\preparedfor` The organization that ordered the report

```

147 \def\preparedfor#1{\gdef\@preparedfor{#1}}
148 \preparedfor{U.S. Army Corps of Engineers\\ Washington, DC 20314-1000}
```

`\contractnum` Contract number

```

149 \def\contractnum#1{\gdef\@contractnum{#1}}
150 \contractnum{}
```

`\monitoredby` Controlling lab

```

151 \def\monitoredby#1{\gdef\@monitoredby{#1}}
152 \monitoredby{}
```

`\additionalinfo` Anything else on the title page

```

153 \def\additionalinfo#1{\gdef\@additionalinfo{#1}}
154 \additionalinfo{}
```

`\abstract` We save abstract till later. Again, this is uses code from [12].

```

155 \newbox\abstractbox
156 \renewenvironment{abstract}{%
157   \global\setbox\abstractbox=\vtop \bgroup
158   \normalfont
159   \list{}{\labelwidth\z@
160     \leftmargin\z@ \rightmargin\leftmargin
161     \listparindent\z@ \itemindent\z@
162     \parsep\z@ \topsep\z@
163     \let\fullwidthdisplay\relax
164   }%
165   \item[\hskip\labelsep\bfseries Abstract:]%
166 }{%
167   \endlist\egroup}
```

`\disclaimer` And disclaimer

```

168 \long\def\disclaimer#1{\long\gdef\@disclaimer{#1}}
169 \disclaimer{The contents of this report are not to be used for
170 advertising, publication, or promotional purposes. Citation of trade
171 names does not constitute an official endorsement or approval of the
172 use of such commercial products. All product names and trademarks
173 cited are the property of their respective owners. The findings of
174 this report are not to be construed as an official Department of the
175 Army position unless so designated by other authorized documents.
176
177 \textbf{DESTROY THIS REPORT WHEN NO LONGER NEEDED. DO NOT RETURN IT
178 TO THE ORIGINATOR.}}
```

`@coverlist` The title page consists of boxes, which are extended beyond the margins. Here we define the margins

```

179 \newenvironment{@coverlist}{\begin{list}}{ }{%
180     \leftmargin40\p@\rightmargin-100\p@%
181     \topsep\z@\partopsep\z@\labelwidth\z@\labelsep\z@}\item{} }{%
182     \end{list}}
```

`@titlelist` Similar to `@coverlist`, but for title page

```

183 \newenvironment{@titlelist}{\begin{list}}{ }{%
184     \leftmargin-20\p@\rightmargin100\p@%
185     \topsep\z@\partopsep\z@\labelwidth\z@\labelsep\z@}\item{} }{%
186     \end{list}}
```

`\if@titleblock` Title block consists of Prepared for, Work Under and Monitored By statements. We need to decide whether to print it:

```

187 \newif\if@titleblock
```

`@titleblock` This is the macro for title block:

```

188 \newenvironment{@titleblock}{%
189     \list{}{\labelwidth80\p@\labelsep10\p@ \leftmargin70\p@
190     \rightmargin-150\p@
191     \let\makelabel\@titleblocklabel}}{\endlist}
```

`\@titleblocklabel` Small labels:

```

192 \newcommand*{\@titleblocklabel}[1]{\hfill\small#1}
```

`\maketitle` The `\maketitle` macro performs all the work of typesetting the information above. First, we typeset the cover page

```

193 \def\maketitle{%
194     \thispagestyle{empty}%
195     \enlargethispage{0.54in}%
196     \vspace*{-0.95in}
197     \makebox[0cm][r]{%
198         \raisebox{-720\p@}{\z@}[\z@]{%
199             \rotatebox{90}{\makebox[\z@][l]{%
```

```

200         \colorbox{red}{\color{white}\parbox{720\p@}{%
201         \rule{0\p@}{85\p@}%
202         \hspace{28\p@}\raisebox{40\p@}{%
203         \parbox[c]{300\p@}{\LARGE\sffamily\@laboratory}%
204         \hspace{60\p@}%
205         \parbox[c]{300\p@}{\hfill\Large\sffamily\@reportnum}}}}}%
206     \hspace*{-14\p@}}%
207     \makebox[0cm][r]{\raisebox{-720\p@}{\z@}{\z@}{\rule{8\p@}{726\p@}%
208     \hspace{-24\p@}}}%
209 \begin{@coverlist}%
210     \sffamily
211     \hfill\parbox{145\p@}{
212     \includegraphics[width=65\p@]{red_corps_castle2}\\
213     {\bfseries
214     US Army Corps\\
215     of Engineers\raisebox{-1\p@}{\scriptsize\textregistered}}\\
216     Engineering Research and\\
217     Development Center}\par
218     \vspace{0.5cm}%
219     {\sffamily\itshape\@program\par}%
220     \vspace{0.3cm}%
221     {\raggedright\LARGE\bfseries\@title\par
222     \vspace{0.3cm}%
223     \normalsize\bfseries\@subtitle\par}%
224     \vspace{0.3cm}%
225     \begin{minipage}[t]{300\p@}\raggedright
226     \nxandlist{\unskip,}{\unskip}{\@and~}{\unskip}{\@and~}\authors
227     \authors\end{minipage}%
228     \begin{minipage}[t]{150\p@}\flushright\@date\end{minipage}\par
229     \vspace{0.3cm}%
230     \@coverart
231 \end{@coverlist}%
232 \vfill
233 \begin{@coverlist}%
234     \sffamily\small\@distribution
235 \end{@coverlist}%
236 \hbox{}\newpage\thispagestyle{empty}\hbox{}\newpage

```

Now title page

```

237 %
238 \thispagestyle{empty}%
239 \setcounter{page}{1}%
240 \begin{@titlelist}%
241     \sffamily
242     \begin{minipage}[t]{275\p@}%
243         \bfseries\@program
244     \end{minipage}%
245     \begin{minipage}[t]{175\p@}%
246         \bfseries\flushright\@reportnum\\\@date
247     \end{minipage}\par

```

```

248     \vspace*{1cm}%
249     {\bfseries\Large\@title\par}
250     {\bfseries\@subtitle\par}
251     \vspace*{0.3cm}%

```

Inside title page we use special processing for authors' names

```

252     \def\author##1{%
253         \def\@tempa{##1}%
254         \nxandlist{\unskip, }{\unskip{ } \@@and~}{\unskip{ } \@@and~}\@tempa
255         {\upshape\@tempa}\par}%
256     \textit{\addresses}\par
257     \vspace{0.3cm}%
258     \@reporttype\par
259     {\small\@distribution\par}%
260 \end{@titlelist}%
261 \vfill
262 \begin{@titlelist}%
263     \sffamily
264     \ifx\@additionalinfo\@empty\else\@additionalinfo\par\fi
265     \@titleblockfalse
266     \ifx\@empty\@preparedfor\relax\else\@titleblocktrue\fi
267     \ifx\@empty\@contractnum\relax\else\@titleblocktrue\fi
268     \ifx\@empty\@monitoredby\relax\else\@titleblocktrue\fi
269     \if@titleblock
270         \begin{@titleblock}%
271             \ifx\@empty\@preparedfor\else
272                 \item[Prepared for]\@preparedfor
273             \fi
274             \ifx\@empty\@contractnum\else
275                 \item[Under]\@contractnum
276             \fi
277             \ifx\@empty\@monitoredby\else
278                 \item[Monitored by]\@monitoredby
279             \fi
280         \end{@titleblock}
281     \fi
282 \end{@titlelist}%
283 \clearpage

```

Now half title page. Again see [12]

```

284 \ifvoid\abstractbox
285 \else
286     \box\abstractbox
287     \prevdepth\z@
288 \fi
289 \vfill
290 \bgroup
291 \setlength{\fboxsep}{5\p@}%
292 \fbox{\parbox{\textwidth}{\fontsize{8.5\p@}{9.5\p@}\selectfont
293     \parskip\baselineskip
294     \textbf{Disclaimer:} \@disclaimer}}%

```



```

295 \egroup
296 \clearpage}

```

3.9 Sectioning

`\cl@chapter` We do *not* reset any counters when stepping chapters, except in appendices:

```

297 \def\cl@chapter{}

\chapter We redefine \chapter to suppress empty page style on chapter opening:
298 \renewcommand\chapter{%
299   \clearpage
300   \global\@topnum\z@
301   \@afterindentfalse
302   \secdef\@chapter\@schapter}

```

`\@chapter` Non-starred chapter:

```

303 \def\@chapter[#1]#2{%
304   \if@frontmatter
305     \addcontentsline{toc}{chapter}{#1}%
306     \@makechapterhead{#2}%
307   \else
308     \refstepcounter{chapter}%
309     \typeout{\@chapapp\space\thechapter.}%
310     \if@appendix
311       \addcontentsline{toc}{chapter}%
312         {\@chapapp\space\thechapter: #1}%
313       \makechapterhead{\@chapapp\space\thechapter: #2}%
314     \else
315       \addcontentsline{toc}{chapter}%
316         {\protect\numberline{\thechapter}#1}%
317       \makechapterhead{\thechapter\quad#2}%
318     \fi
319   \fi
320   \@afterheading}

```

`\@schapter` Starred chapter:

```

321 \def\@schapter#1{%
322   \if@appendix
323     \addcontentsline{toc}{chapter}{\@chapapp: #1}%
324     \makechapterhead{\@chapapp: #1}%
325   \else
326     \addcontentsline{toc}{chapter}{#1}%
327     \makechapterhead{#1}%
328   \fi
329   \@afterheading}

```

`\makechapterhead` This is the macro that actually prints the chapter:

```

330 \def\makechapterhead#1{%
331   \vspace*{15\p@}%

```

```

332 {\hskip-35\p@\parbox{\textwidth}{%
333     \parindent\z@\raggedright
334     \interlinepenalty\@M
335     \LARGE \bfseries\sffamily #1\par}\par\nobreak
336     \vspace*{10\p@}%
337 }}

\theequation We do not use chapter number in equations, except in appendices:
338 \renewcommand \theequation {\@arabic\c@equation}

\thesection We do not use chapter numbers in sections:
339 \renewcommand \thesection {\@arabic\c@section}

secnumdepth We number only chapters and sections:
340 \setcounter{secnumdepth}{1}

tocdepth Only chapters, sections, subsections are in TOC:
341 \setcounter{tocdepth}{2}

\section Sections are in 12pt bold.
342 \renewcommand\section{%
343     \addpenalty\@secpenalty\nobreak
344     \secdef\@section\@ssection}

\@section This is for numbered sections:
345 \def\@section[#1]#2{%
346     \addcontentsline{toc}{section}{#1}%
347     \hskip-35\p@\parbox{\textwidth}{\noindent\raggedright\interlinepenalty\@M
348     \large\sffamily\bfseries#2}
349     \@afterheading
350     \nobreak\par}

\@ssection Unnumbered subsections are here only for compatibility
351 \def\@ssection#1{\@section[#1]{#1}}

\subsection Subsections are also bold
352 \renewcommand\subsection{\par
353     \addpenalty\@secpenalty\nobreak
354     \secdef\@subsection\@ssubsection}

\@subsection Numbered subsections:
355 \def\@subsection[#1]#2{%
356     \addcontentsline{toc}{subsection}{\itshape#1}%
357     {\noindent\raggedright\interlinepenalty\@M
358     \normalsize\sffamily\bfseries#2}\nobreak\par}

\@ssubsection Unnumbered subsections are here for compatibility only
359 \def\@ssubsection#1{\@subsection[#1]{#1}}

```

3.10 Special Chapters and Sections

Since our unnumbered sections go to the TOC, we need to have special ones that do not.

`\specialchapter` A chapter that does not go into TOC...

```
360 \def\specialchapter#1{%
361   \clearpage
362   \global\@topnum\z@
363   \@afterindentfalse
364   \@makechapterhead{#1}\par
365   \@afterheading}
```

3.11 Front Page Lists

Here we define tables of contents, lists of figures, tables and the combined lists.

`\@dotsep` Separation between dots in tables

```
366 \def\@dotsep{0.5}
```

`\l@chapter` Here we define chapter entry in TOC

```
367 \renewcommand\l@chapter[2]{%
368   \addpenalty{-\@highpenalty}%
369   \vskip5\p@
370   \bgroup
371     \parindent\z@\rightskip\@pnumwidth
372     \parfillskip-\@pnumwidth
373     \advance\leftskip2em\relax
374     \leavevmode\bfseries
375     \hskip-\leftskip
376     #1\nobreak\leaders\hbox{$\m@th\mkern\@dotsep
377       mu\hbox{.}\mkern\@dotsep
378       mu$}\hfill\nobreak\hb@xt@\@pnumwidth{\hfill#2}\par
379     \vskip5\p@
380     \penalty\@highpenalty
381   \egroup}
```

`\tableofcontents` TOC:

```
382 \renewcommand\tableofcontents{%
383   \specialchapter{\contentsname}%
384   \def\numberline##1{\hb@xt@\@pnumwidth{##1\hfill}}%
385   {\parskip2.5\p@\footnotesize\sffamily\@starttoc{toc}}}
```

`\listoffigures` LOF:

```
386 \renewcommand\listoffigures{%
387   \chapter{\listfigurename}%
388   \def\numberline##1{Figure ##1. }%
389   {\parskip2.5\p@\footnotesize\sffamily\@starttoc{lof}}}
```

```

\listoftables LOT:
390 \renewcommand\listoftables{%
391 \chapter{\listtablename}%
392 \def\numberline##1{Table ##1. }%
393 {\parskip2.5\p@\footnotesize\sffamily\@starttoc{lot}}}

\listfiguretablename The name for the combined list
394 \def\listfiguretablename{Figures and Tables}

\listoffiguresandtables And the combined LOF and TOC
395 \newcommand\listoffiguresandtables{%
396 \chapter{\listfiguretablename}
397 {\sffamily\bfseries\normalsize Figures\par}%
398 \def\numberline##1{Figure ##1. }%
399 {\parskip2.5\p@\footnotesize\sffamily\@starttoc{lof}}%
400 {\sffamily\bfseries\normalsize Tables\par}%
401 \def\numberline##1{Table ##1. }%
402 {\parskip2.5\p@\footnotesize\sffamily\@starttoc{lot}}}

\bibname We use “References” for bibliography
403 \renewcommand\bibname{References}



### 3.12 Figures and Tables



\thefigure We do not use chapter numbers in figures, except in appendix:
404 \renewcommand \thefigure {\@arabic\c@figure}

\thetable We do not use chapter numbers in tables either:
405 \renewcommand \thetable {\@arabic\c@table}

Setting up captions:
406 \captionsetup{justification=centering,font={footnotesize,sf,bf},
407 labelsep=period}
408 \captionsetup[table]{position=top}

\arraystretch Increase array stretch:
409 \def\arraystretch{1.3}



### 3.13 The final word


410 </class>

```

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