



National Aeronautics and Space Administration

**NSPIRES User Guide
PDF Guidelines**

**Version 1.1
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1. Introduction

1.1 Background

NASA requires that all documents uploaded to NSPIRES are in Portable Document Format (PDF). Standardizing on PDF allows NASA to deliver these documents to peer reviewers in a format that is independent of any operating system, and can be viewed by users of Microsoft Windows, Apple OS X, and various versions of UNIX.

It is essential that all PDF files generated and submitted meet NASA requirements. This will ensure that the submitted files can be ingested by NSPIRES regardless of whether the proposal is submitted via NSPIRES or Grants.gov. PDF files that do not meet NASA requirements cannot be ingested by the NSPIRES system; such files may be declared noncompliant and not submitted to peer review for evaluation. At a minimum, it is the responsibility of the proposer to ensure that all PDF files are unlocked and that edit permission is enabled; and to ensure that all fonts are embedded in the PDF file.

Uploading unlocked PDF documents (i.e., document with no security features enabled) is necessary to allow NSPIRES to assemble the various submitted files together, along with data entered into the NSPIRES proposal cover page (or, for Grants.gov users, the SF424 R&R and related forms) into a single PDF document. This single document can then be more easily accessed by NASA Program Officers and peer reviewers. Embedding all fonts in the PDF document, and using only Type 1 or TrueType fonts, helps ensure that reviewers will see the proposal document as the proposer intended it to be seen, with all of the proper fonts.

Following the guidelines included in this document will help ensure that PDF documents uploaded as part of your research proposal will meet NASA requirements.

1.2 Purpose and Scope

This document provides instructions to users that are planning to submit research proposals to NASA on how to prepare PDF documents for attachment to their proposal.

1.3 Intended Audience

This document is intended for anyone that will prepare and attach documents to a research proposal to be submitted to NASA via either NSPIRES or Grants.gov.

1.4 References

You should always refer to the NASA solicitation to which you will submit a proposal for program-specific information and document preparation instructions. In addition, the following references and guides will be useful:

NSPIRES Tutorials: Online NSPIRES tutorials that cover the complete range of NSPIRES functions, including uploading proposal documents, can be found at <http://nspires.nasaprs.com/tutorials/index.html>. NSPIRES tutorials use Adobe Flash technology, which can be downloaded for free from Adobe at <http://www.adobe.com/products/flashplayer/>.

Guidebook for Proposers Responding to a NASA Research Announcement (NRA): This Guidebook describes the policies and procedures of the Broad Agency Announcement known as the NASA Research Announcement (NRA) used by the program offices at the Headquarters of the National Aeronautics and Space Administration (NASA) that solicit proposals for basic science and technology research. All applicants who plan to respond to an NRA released by NASA Headquarters should adhere to the guidelines contained in the main Chapters and Appendices of the *NASA Guidebook for Proposers*, unless otherwise noted in the NRA itself. The *NASA Guidebook for Proposers* can be downloaded in PDF and MS Word formats at <http://www.hq.nasa.gov/office/procurement/nraguidebook/>. Be sure to check the specific solicitation to which you are responding to ensure that you follow the correct version of the *NASA Guidebook for Proposers*.

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1.5 Getting Assistance with PDF Generation

For assistance with creating PDF documents on your computer, check with your local desktop system administrator or with the vendor of the PDF software you are using. For clarification on the guidelines and recommendations contained in this document, contact the NSPIRES Help Desk at:

Telephone: 202-479-9376

Email: nspires-help@nasaprs.com

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2. Creating PDF Documents

It is important that proposers create PDF documents that meet NASA formatting requirements. Proposals often contain images, graphics, equations, and various character sets (e.g., Greek letters and symbols). To enable peer reviewers and NASA staff to read your file as you intend it to read, your PDF file must be complete and properly formatted. This means that it must contain embedded in it all the non-standard font characters that you used when creating your proposal.

If you use UNIX or LINUX, you may use TeX/LaTeX technology to format text, which doesn't always work with the Adobe PDF technology. To avoid these potential issues, NASA suggests that TeX/LaTeX users should convert their Tex documents to DVI files, and then to PostScript and PDF when working on a UNIX machine. See Section 4.4, Generating PDF Files from TeX and LaTeX for more information.

Note: To ensure your PDF files meet NASA formatting requirements, please make sure that all security permission for your PDF files are set to No Security before you upload your PDF file to NSPIRES. Failure to do so causes problems with the viewing and printing of your proposal. Uploaded proposal PDF documents that have security permissions enabled are non-compliant, and the proposal may not be considered for funding. See Section 5, Problems to Avoid.

2.1 Software Requirements for Creating PDF Files

The following software is acceptable for creating PDF files that meet NASA formatting requirements, when the guidelines contained in this document are followed (see Section 3, Ensuring That Your PDF Files Meet NASA Formatting Requirements):

- Adobe Acrobat Professional or Standard Version 5 or higher
- Adobe Acrobat Distiller
- Ghostscript (Version 6.5 or higher)
- TeX/LaTeX

See Section 5, Problems to Avoid for information on software and settings that will not properly generate PDF documents that meet NASA requirements.

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3. Ensuring That Your PDF Files Meet NASA Formatting Requirements

To ensure your PDF files meet NASA formatting requirements, you should take these measures, as explained in this section.

3.1 Select Edit and Print Adobe Security Permissions

See the **File → Document** security option in Adobe Acrobat and set the following two security permissions to **Allow**:

- **Edit** permission
- **Print** permission

The Edit permission must be set to **Allow** so that NSPIRES can concatenate your documents into a single file for access by NASA Program Officers and peer reviewers.

3.2 Embed All Fonts

Always embed fonts into the PDF file. Otherwise, PDF viewers and printers may replace your fonts with substitutes and produce unwanted results. For example, a bracket in a mathematical equation might be replaced by a column of letters. The proposer is responsible for ensuring that all necessary fonts are embedded and that the resulting PDF document can be viewed and printed by NASA and its peer reviewers. Proposals that cannot be properly viewed and printed may be downgraded during the evaluation process, and may be returned for non-compliance.

3.3 Use Type 1 or TrueType Fonts

These fonts are commonly available in most applications.

3.4 Subset Fonts

For all applications other than TeX or LaTeX, subset fonts at a threshold of 100%. Subsetting fonts forces the fonts you used to be properly called when individual PDF files are combined into one large PDF proposal file.

3.5 Check Resolution for Figures and Images

Conversion programs to PDF have settings that may affect the resolution of your figures and images, so you should verify that the resulting PDF document will be displayed as you intend.

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4. Generating PDF Documents

To generate a PDF file, use the instructions below for the appropriate software, version, and operating system (OS):

- Microsoft Windows with Adobe Acrobat Professional or Standard Version 5 or higher
- Apple OS X
- Ghostscript
- TeX/LaTeX

4.1 Generating a PDF Document in Windows

To generate a PDF document, you must have installed Adobe Acrobat Standard or Professional Version 5 or higher. You must also embed the fonts used in your word-processing document in the PDF file. The following sample instructions for converting a PDF document on Windows XP Professional were created using MS Word 2003 and Adobe Acrobat Standard 6.0. Depending on the software application used, and the version of Windows and Adobe Acrobat, specific instructions for your computer may differ.

1. Open the document you want to convert to PDF.
2. Select **File → Print**. The **Print** dialog box is displayed (see Figure 4.1.1).
3. In the **Name** box, select **Adobe PDF** (for Acrobat Version 6 or higher) or **Acrobat Distiller** (for Acrobat Version 5).

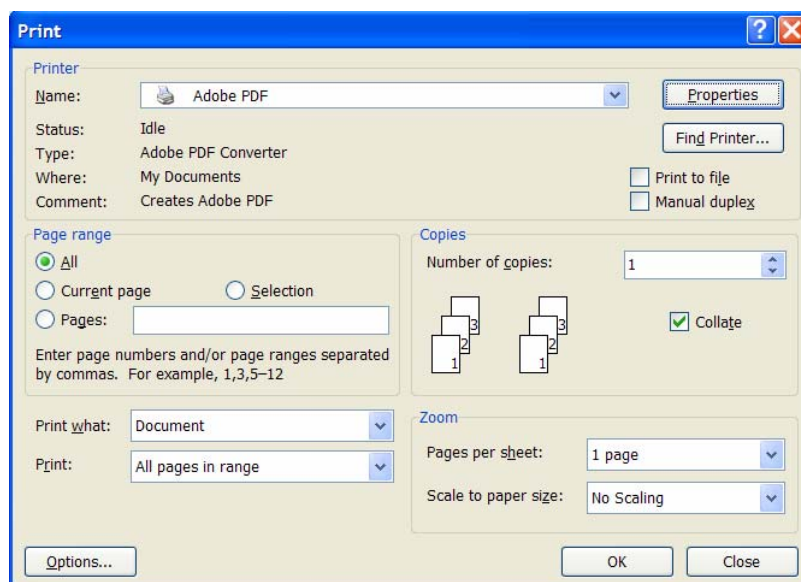


Figure 4.1.1: Windows Print Dialog Box

4. To ensure that your document will not have any security features, and that fonts will be embedded in the PDF document, click on **Properties** in the Print dialog box.
5. Click on the **Adobe PDF Settings** tab (See Figure 4.1.2).
 - a. Under the **Adobe PDF Settings** section, choose **None** for **Adobe PDF Security**.
 - b. Click on the **Edit** button for **Default Settings**.

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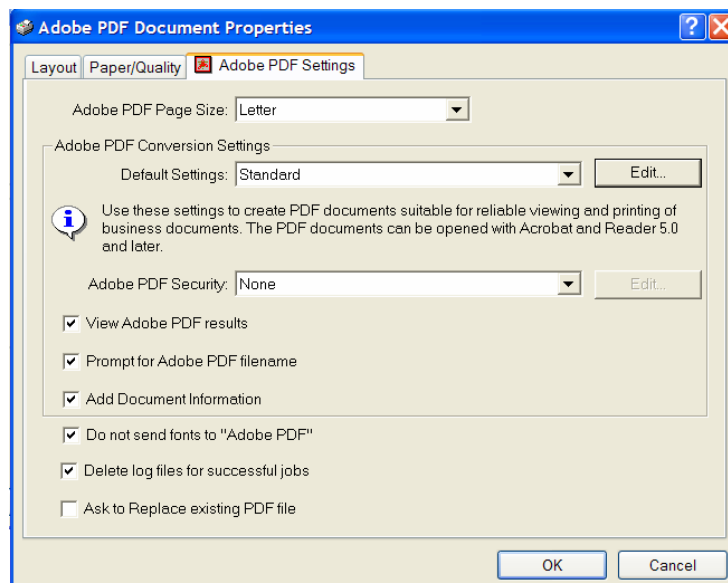


Figure 4.1.2: Adobe PDF Document Properties

- c. Edit the PDF Default Settings.
 - i. On the **General** tab, we recommend choosing **Acrobat 5.0 (PDF 1.4)** for the **Compatibility** setting (see Figure 4.1.3).

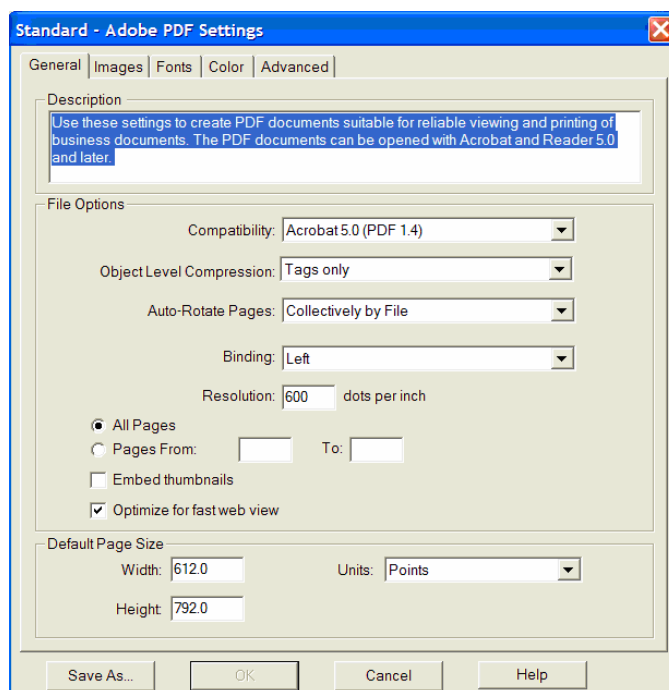


Figure 4.1.3: Adobe PDF Settings General Tab

- ii. Click on the **Fonts** tab (see Figure 4.1.4).
 - 1. Be sure the **Embed all fonts** checkbox is checked.
 - 2. Be sure the **Subset embedded fonts**, and that **100** is entered in the **% field**.

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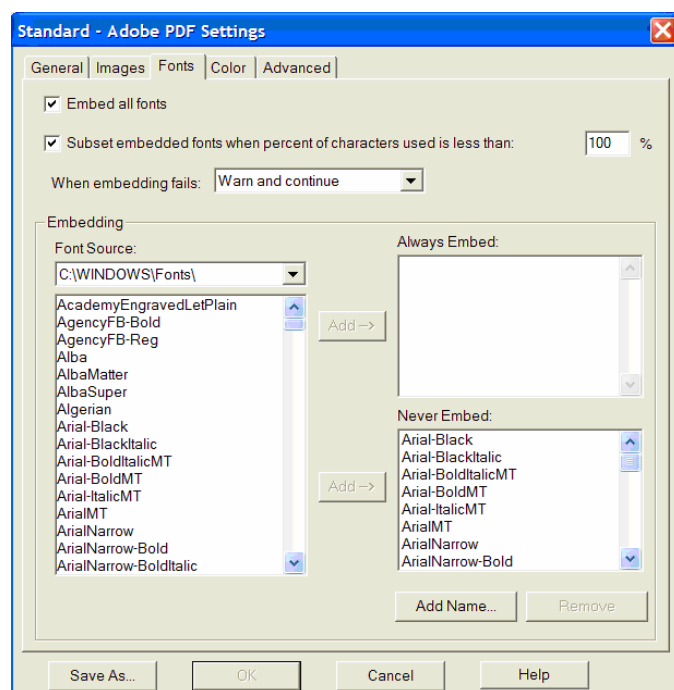


Figure 4.1.4: Adobe PDF Settings Fonts Tab

- iii. If you make any changes to the default settings, click **OK**. You will be prompted to save the default settings. If you prefer, you can save these settings as a separate file for NSPIRES.
 - d. Click **OK** to finish editing the Adobe PDF settings.
6. In the Print Dialog Box, click **OK**. The **Save PDF File As** dialog box will be displayed. Give the file a name and select the directory in which you want to save the PDF document.
7. Click **Save**.
8. Adobe Acrobat will generate the PDF document, and will automatically display the resulting PDF document in an Acrobat window.

Your original document is now in PDF with fonts embedded, and is ready to be uploaded to NSPIRES or attached to your Grants.gov application.

4.2 Generating a PDF File on Macintosh OS X

To embed the fonts in your document, NSPIRES recommends that you first turn a Word or other word-processing document into a PostScript file and then convert the PostScript file to a PDF for uploading to NSPIRES. The following instructions are for Mac OS X versions prior to 10.4.

1. Open your word-processing document.
2. Select **File → Print**.
3. In the dialog box, change Copies and Pages to Output Options (see Figure 4.2.1).

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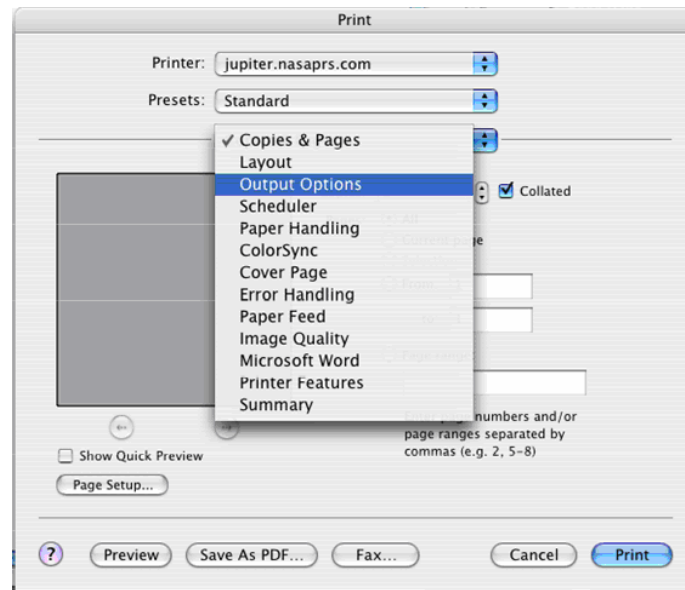


Figure 4.2.1: Print Dialog Box

4. Click Save as file. The Save As box displays.
5. In the dropdown menu, select PostScript (see Figure 4.2.2).

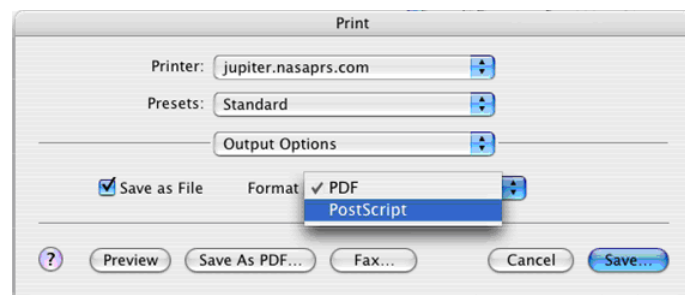


Figure 4.2.2: Select PostScript

6. Click Save.
7. Close the word-processing file.
8. Double-click the PostScript file icon or filename in the folder that you saved it to. A box displays stating the PostScript file is being converted to PDF. When the conversion is finished, the converted document displays as a Preview.
9. In the Preview, select **File → Export** (see Figure 4.2.3).

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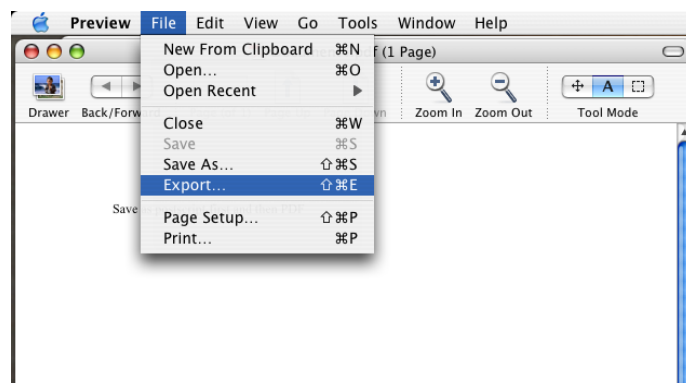


Figure 4.2.3: Exporting a PostScript File to PDF

10. In the Format drop-down box, select PDF (see Figure 4.2.4).

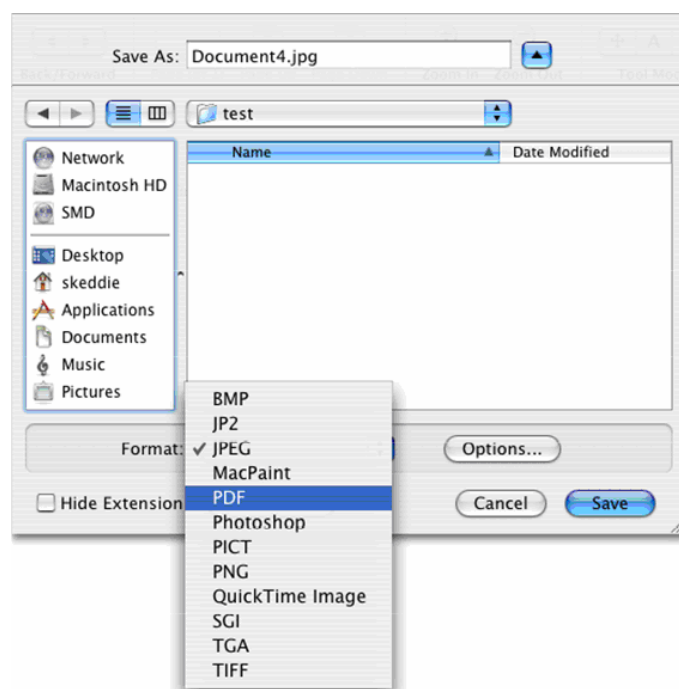


Figure 4.2.4: Exporting to PDF

11. Click Save.

Your original document is now in PDF with fonts embedded, and is ready to be uploaded to NSPIRES or attached to your Grants.gov application.

4.3 Generating PDF Files Using Ghostscript

Instructions and the current version of Ghostscript may be found at the GhostScript home page at <http://www.cs.wisc.edu/~ghost/>. Go to the Ghostscript website for more information on converting PostScript files to PDF documents.

Remember when using Ghostscript to:

- Use Type 1 fonts.

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- Embed all fonts.
- Set the output resolution at a sufficient level for your included images and graphics.
- Since ps2pdf will convert your PostScript file to PDF within Ghostscript, the following settings are recommended:
 - dMaxSubsetPct = 100
 - dCompatibilityLevel = 1.2
 - dSubsetFonts = true
 - dEmbedAllFonts = true

4.4 Generating PDF Files from TeX and LaTeX

Properly generating PDF files from TeX and LaTeX that are compatible with NSPIRES may require several steps, depending on the TeX distribution you are using. We recommend using TeX Live (<http://www.tug.org/texlive/>) which makes generating PDF documents easier, and which seems to result in PDF documents that meet NASA requirements. If you are using other TeX distributions, you may need to follow several steps to generate a DVI file, PostScript file, and then PDF files.

4.4.1 Generating a PDF File Using TeX Live

To generate a PDF document from a TeX or LaTeX file, use the ps4pdf command, as shown in the following example:

```
% ps4pdf sample.tex
```

This will result in a PDF document that can be uploaded to NSPIRES.

4.4.2 Generating a PDF File using Other TeX Distributions

If you are using other TeX distributions, you will need to follow several steps, as explained in the following sections. These steps, in order, are to:

1. Generate a DVI file
2. Create a PostScript file from the DVI file
3. Generate a PDF document from the PostScript file.

4.4.2.1 Generate a DVI File

To generate a DVI file from a TeX file, use one the following UNIX commands:

1. For a plain TeX file use the command:

```
% tex sample.tex
```
2. For a TeX file using LaTeX use the command:

```
% latex sample
```

Note: The examples shown above will create the DVI file sample.dvi.

4.4.2.2 Create PostScript Files with TeX/LaTeX

Now that you have created your DVI file, you need to convert it to PostScript. Make sure that you have a recent version of TeX (we recommend MikTeX if you are not using TeX Live) and that Type 1 fonts are installed.

The following example shows the UNIX command that will generate the PostScript file, sample.ps:

```
% dvips -Ppdf -t letter sample.dvi
```

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In the above example, the following options are specified:

- The -Ppdf option tells "dvips" to generate the PostScript file with options for converting to PDF. Otherwise, you will likely get bad fonts in your PDF document.
- The -t attribute says to explicitly use letter size paper as required.

Note: If your figures use PostScript that cannot be distilled to a PDF file, the conversion will fail. Many applications that produce PostScript output do so imperfectly. Try converting the output to some other format (preferably a raster/bitmap format) and then converting it back to PostScript or Encapsulated PostScript. This can be done with an image manipulation program, such as Gimp (<http://www.gimp.org/>).

4.4.2.3 Generate a PDF Document from PostScript Files

Convert the PostScript file to PDF using Adobe Distiller or Ghostscript. Other options may also exist, but strictly compliant PDF files may not always result.

After generation, check your PDF for the following:

- It does not contain Type 3 fonts.
- It meets PDF specifications.
- All fonts are embedded.

There are two common problems with this approach to converting TeX documents to PDF:

- DVI-to-PS converters use, by default, bitmapped (Type 3) fonts. These fonts are fine for most PostScript printers, but the resulting PDF files are difficult to read when viewed on a monitor.
- Users who have access to PostScript (Type 1) fonts and understand how to get them into their PostScript files may still be using an older version of Ghostscript. Prior to Ghostscript 6, fonts could not be embedded.

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5. Problems to Avoid

5.1 Do Not Use Adobe Acrobat Encryption or Security Settings

Newer versions of Adobe Acrobat allow users to control the security settings of PDF files. Adding security to PDF proposal documents submitted to NASA, either through NSPIRES or Grants.gov, will prevent NASA from assembling the proposal cover page data and the various proposal documents into a single PDF document. This will prevent NASA Program Officers and peer reviewers from accessing and viewing your proposal. Therefore, NASA requires that all PDF documents submitted to NASA, through either NSPIRES or Grants.gov, have no security features enabled.

To turn off Adobe Acrobat security settings, in a PDF document, perform the following steps:

1. Select **File → Document Properties**. The Document Properties box displays (see Figure 5.1.1).
2. In the left sidebar menu, select **Security**.
3. In the **Security Method** box, select **No Security**.
4. Click **OK**.

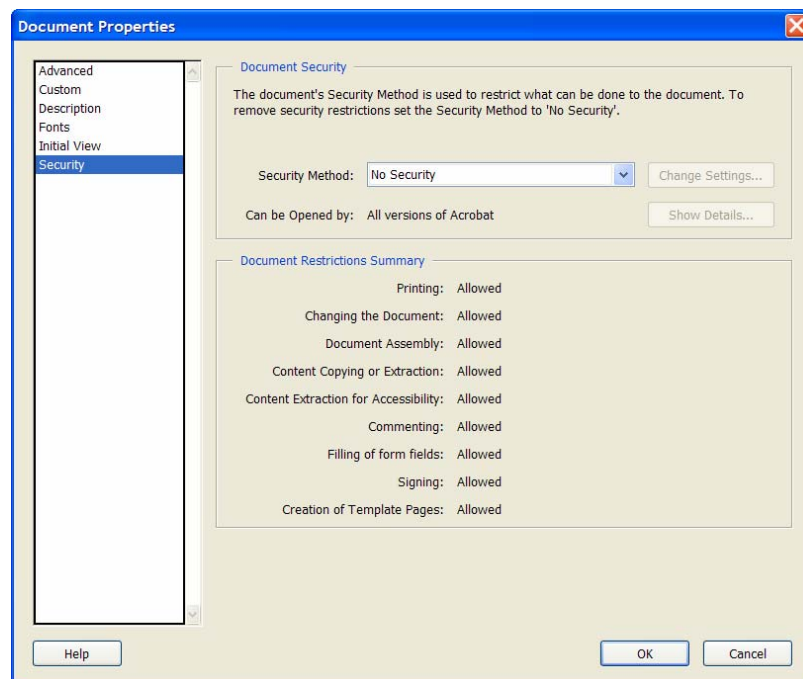


Figure 5.1.1: Setting PDF Document Security

5.2 Do Not Use These PDF Producers

The following PDF producers may generate accurate standalone documents, but in NSPIRES these documents have one of the following problems:

- They cannot be easily concatenated with PDF files created by other producers, and cannot be concatenated with the NSPIRES Proposal Cover Page.
- The embedding of fonts in PDF format is problematic and leads to distortion.
- The resulting concatenated PDF document may not be properly viewable by peer reviewers who will be evaluating the proposal.

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NASA strongly recommends that you do not use the following PDF producers:

- Canvas/Deneba PDF Filter
- Dvipdf(m)
- PDFWriter
- FrameMaker
- Ghostscript versions prior to 6.5
- Hewlett-Packard Intelligent Scanners
- Adobe PhotoShop
- PStill

The following sections explain some of the problems these producers generate, and contain recommendations for how to fix the problem if you have no alternative but to use one of these PDF producers.

5.2.1 *Canvas/Deneba PDF Filter*

Problem: Concatenation.

NSPIRES has encountered significant difficulties when attempting to concatenate PDF files produced with the Deneba PDF filter with other PDF files.

Possible Solution: Re-distill the file with Adobe Acrobat or Ghostscript.

When PDF files produced with the Deneba PDF filter (usually created by Canvas) are re-distilled with Acrobat or Ghostscript, NSPIRES can usually concatenate the resulting files.

5.2.2 *Dvipdf(m)*

Problem: Concatenation.

NSPIRES has encountered significant difficulties when attempting to concatenate PDF files created by dvipdf(m) with other PDF files, including the NSPIRES Proposal Cover Page.

Possible Solution: Convert the DVI files to PostScript, and then to PDF.

5.2.3 *PDFWriter*

Problem: Garbles or gobbles text.

PDFWriter does not produce acceptable PDF files, except under very limited circumstances. The danger is that NASA Program Officers and peer reviewers will see garbled and/or incomplete versions of the proposal.

Possible Solution: Use a supported PDF producer. It is recommended that you use Adobe Distiller (in the same package as PDFWriter) or Ghostscript.

For more information on:

- PDFWriter, go to: <http://www.planetpdf.com/planetpdf/pdfs/issue02.pdf>
- GhostScript, go to: <http://www.cs.wisc.edu/~ghost/>

5.2.4 *Adobe FrameMaker*

Problem: Concatenation.

Even though FrameMaker is an Adobe Product, the "Save as PDF" option produces PDF files that NSPIRES has difficulty accepting because that option uses the PDFWriter drivers. PDFWriter produces PDF files that are difficult to concatenate.

Possible Solution: Convert to PostScript and then to PDF.

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If you have created a document in FrameMaker, choose **File → Print**, and check the Print to File option. This procedure will not send a document to a printer, but it will save a file to the location that you specify as a PostScript (.ps) file. Then you can use Acrobat Distiller or Ghostscript to create the PDF files from the PostScript file.

5.2.5 *GhostScript Versions Prior to 6.5*

Problem: Difficulties with font embedding.

NSPIRES can only accept PDF files produced by GhostScript versions 6.5 and higher, since earlier versions had difficulties with font embedding.

Possible Solution: Download the most recent versions of GhostScript and GSView (a Ghostscript GUI) from Ghostscript from <http://www.cs.wisc.edu/~ghost/>.

5.2.6 *Hewlett-Packard Intelligent Scanners*

Problem: Files cannot be uploaded.

The Save as PDF feature on HP Intelligent Scanners produces PDF files that cannot be uploaded into NSPIRES.

Possible Solution: Save file as JPEG file. Use the following recommended steps:

1. Use the Save As feature of the scanning software to save the document as a JPEG file.
2. Import this .jpg file into word processor software (e.g., Microsoft Word or Corel WordPerfect). It is important to Import or Insert the picture file into the word processing document rather than using the Cut and Paste options.
3. Save the file as a word processing file.
4. Convert your word processing document to PDF as you would with other word processing documents.

5.2.7 *Adobe PhotoShop*

Problem: Concatenation.

Even though PhotoShop is an Adobe Product, the Save as PDF option produces PDF files that NSPIRES has difficulty accepting, because the option uses the PDFWriter drivers. PDFWriter produces PDF files that are difficult to concatenate.

Possible Solution: Save file as JPEG file. Use the following recommended steps:

1. Choose File → Save As, and save the image as a JPEG file.
2. Import this .jpg file into word processor software (e.g., Microsoft Word or Corel WordPerfect). It is important to Import or Insert the picture file into the word processing document rather than using the Cut and Paste options.
3. Save the file as a word processing file.
4. Convert your word processing document to PDF as you would with other word processing documents.

5.2.8 *PStill*

Problem: Concatenation.

NSPIRES has encountered concatenation errors with files produced by the PostScript to PDF converter PStill.

Possible Solution: We recommend that you use Acrobat Distiller or Ghostscript to create the PDF file from the PostScript or Printer file.