Understanding and Troubleshooting Corrupt Solid Edge Files for Potential Repair v2

Contents

1 Introduction

In this article we will discuss understanding the Solid Edge file format and how to troubleshoot corrupted Solid Edge files. This article will not attempt to determine specific root causes for file corruptions and is only intended as a guide to help determine if corrupted files can either be independently repaired or can be forwarded to the Solid Edge Development team for potential repair.

By having a better understanding of the Solid Edge file format and how to work with corrupted files it is hoped this knowledge will help reduce time lost with corrupted files – either the file can be quickly identified as corrupted beyond repair, or it can be manually repaired, or it may need forwarding to Solid Edge development for further analysis and potential repair.

This document uses examples from previous file repair IRs and PRs to compile a working knowledge of corrupted Solid Edge files that can either be repaired manually or forwarded to Solid Edge Development for repair. As such this is intended to be a living document and additional examples of corrupt files will be added as such examples are encountered.

1.1 Caveat

Although this document will show you how to manually modify the content of the Solid Edge file structure and content, Siemens PLM will not support issues with corrupted files where it is evident that manual editing of the content of those files has occurred. Manual editing of the Solid Edge file content through third party tools is an unsupported process.

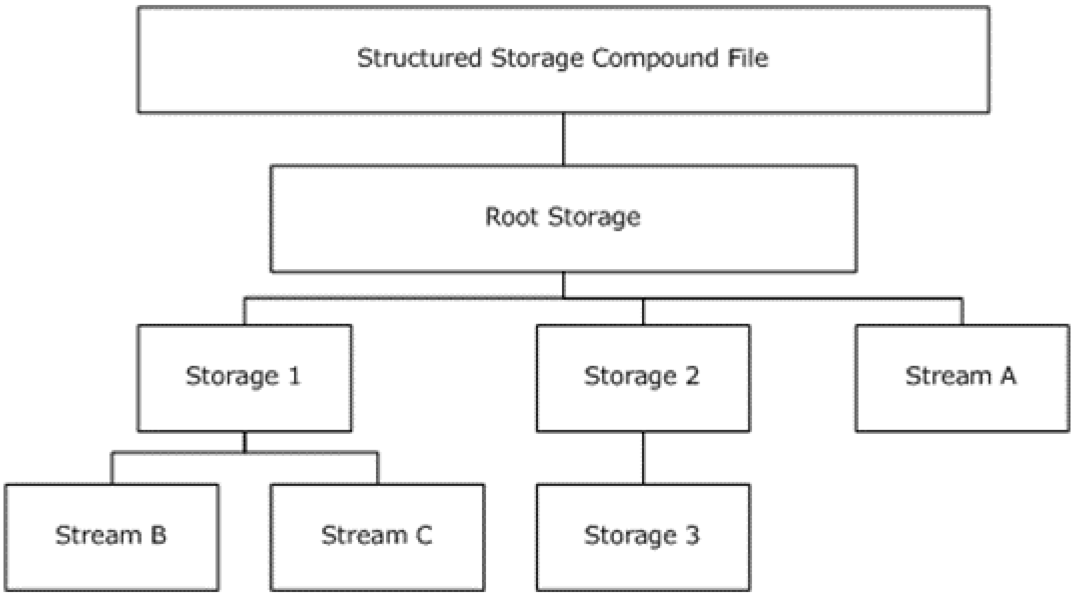
2 Background

Solid Edge files use the Microsoft COM Structured Storage technology as the basis for the Solid Edge file types.

The purpose of Structured Storage is to provide a solution for storing multiple hierarchical objects that comprise of different data types within a single file. By combining all the related data and objects into a single hierarchical file this then reduces the performance penalties and overhead associated with storing separate related data and objects in multiple files.

Essentially Structured Storage allows an "internal file system" to be created within a single file, where the terms Storage and Stream correspond to folder/directory and file respectively. Such files are often called Compound Files, although this term is slightly more restrictive.

The following figure shows a compound file which is a single file that contains a nested hierarchy of storage and stream objects, with storage objects analogous to directories/folders, and stream objects analogous to files:



For a brief overview on Microsoft COM Structured Storage, please visit the following Wikipedia site:

https://en.wikipedia.org/wiki/COM_Structured_Storage

For more in-depth detail on Microsoft COM Structured Storage, please see the following Microsoft resources:

https://docs.microsoft.com/en-gb/windows/desktop/Stg/structured-storage-start-page

3 Viewing the Content of COM Structured Storage Files

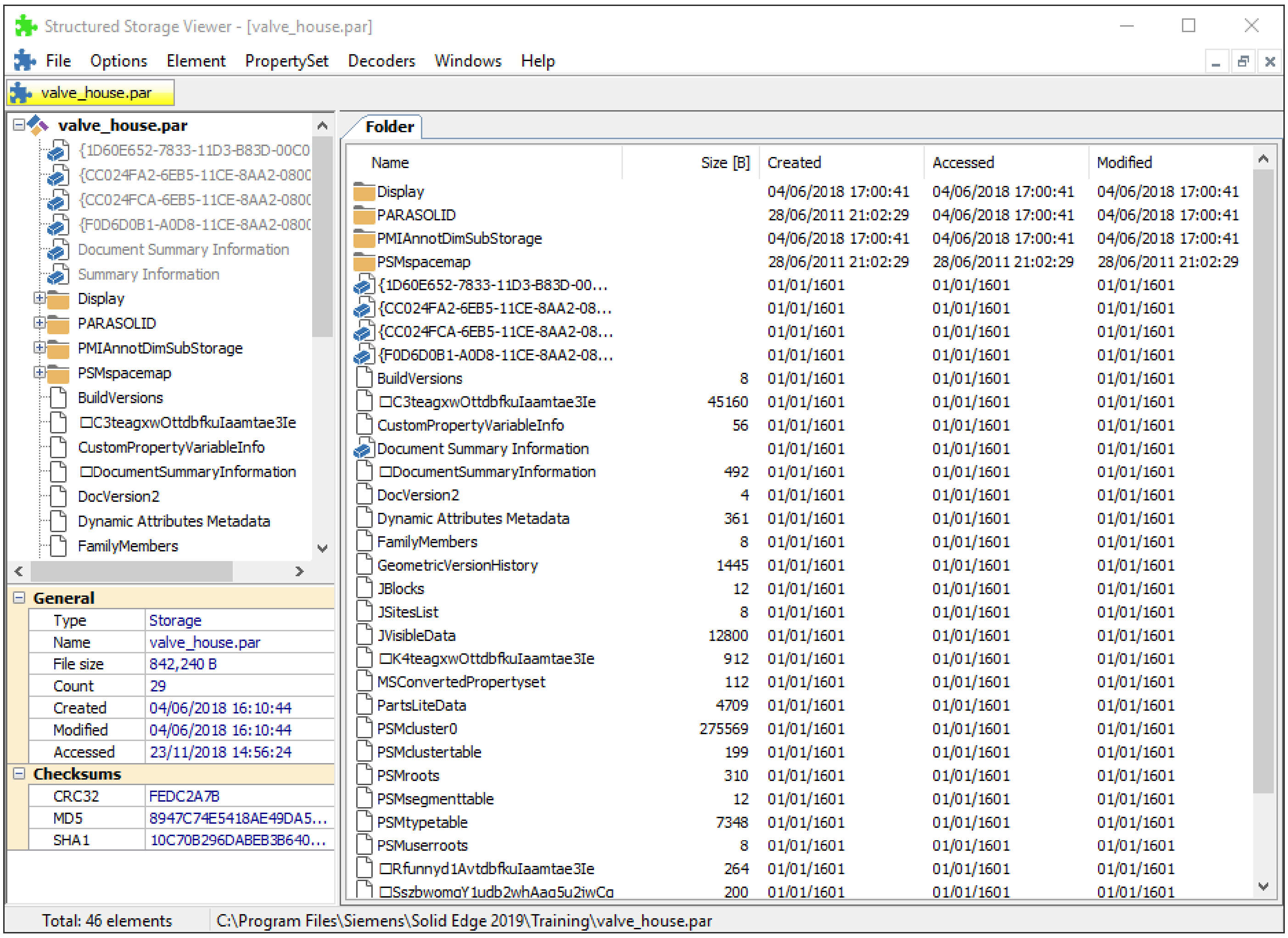
There are many tools available for viewing the content of Microsoft COM Structured Storage files. Each tool will have its pluses and minuses.

3.1 Structured Storage Viewer

One such freely available viewing tool is "Structured Storage Viewer". Structured Storage Viewer can be download from:

http://www.mitec.cz/ssv.html

With Structured Storage Viewer installed, you can then run the "SSView.exe" executable to view the content of Solid Edge files. In the following example we have opened the "valve_house.par" file found in the Solid Edge training folder ("C:\Program Files\Siemens\Solid Edge 2019\Training\valve_house.par"):



Structured Storage Viewer - [valve_house.par]
File Options Element PropertySet Decoders Windows Help
valve_house.par
Folder

valve_house.par
- {1D60E652-7833-11D3-B83D-00C0
- {CC024FA2-6EB5-11CE-8AA2-080
- {CC024FCA-6EB5-11CE-8AA2-080
- {F0D6D0B1-A0D8-11CE-8AA2-080
- Document Summary Information
- Summary Information
- Display
- PARASOLID
- PMIAnnotDimSubStorage
- PSMspacemap
- BuildVersions
- □C3teagxwOttdbfkuIaamtae3Ie
- CustomPropertyVariableInfo
- □DocumentSummaryInformation
- DocVersion2
- Dynamic Attributes Metadata
- FamilyMembers

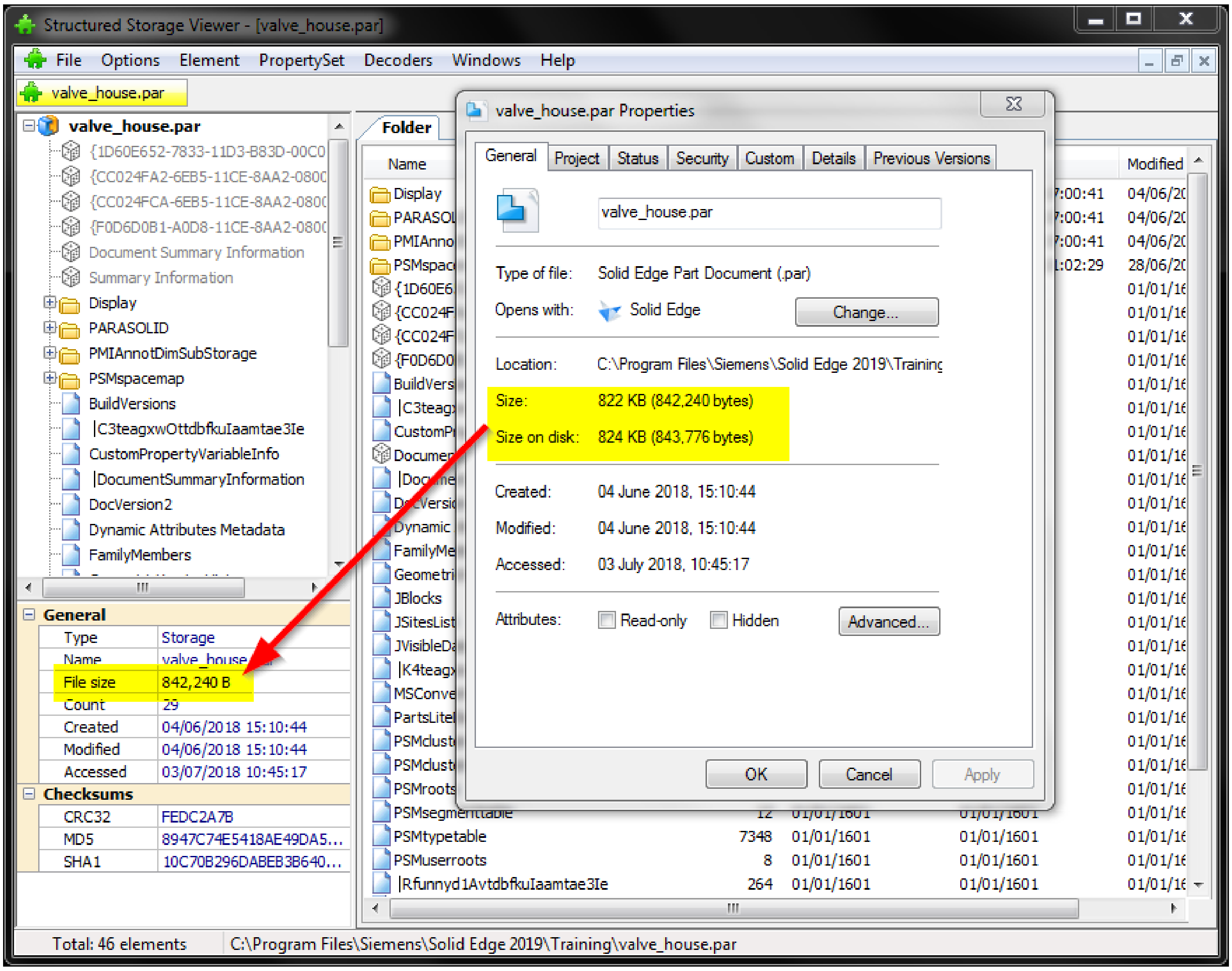
General	
Type	Storage
Name	valve_house.par
File size	842,240 B
Count	29
Created	04/06/2018 16:10:44
Modified	04/06/2018 16:10:44
Accessed	23/11/2018 14:56:24
Checksums	
CRC32	FEDC2A7B
MD5	8947C74E5418AE49DA5...
SHA1	10C70B296DABEB3B640...

Name	Size [B]	Created	Accessed	Modified
Display		04/06/2018 17:00:41	04/06/2018 17:00:41	04/06/2018 17:00:41
PARASOLID		28/06/2011 21:02:29	04/06/2018 17:00:41	04/06/2018 17:00:41
PMIAnnotDimSubStorage		04/06/2018 17:00:41	04/06/2018 17:00:41	04/06/2018 17:00:41
PSMspacemap		28/06/2011 21:02:29	28/06/2011 21:02:29	28/06/2011 21:02:29
{1D60E652-7833-11D3-B83D-00...		01/01/1601	01/01/1601	01/01/1601
{CC024FA2-6EB5-11CE-8AA2-08...		01/01/1601	01/01/1601	01/01/1601
{CC024FCA-6EB5-11CE-8AA2-08...		01/01/1601	01/01/1601	01/01/1601
{F0D6D0B1-A0D8-11CE-8AA2-08...		01/01/1601	01/01/1601	01/01/1601
BuildVersions	8	01/01/1601	01/01/1601	01/01/1601
□C3teagxwOttdbfkuIaamtae3Ie	45160	01/01/1601	01/01/1601	01/01/1601
CustomPropertyVariableInfo	56	01/01/1601	01/01/1601	01/01/1601
Document Summary Information		01/01/1601	01/01/1601	01/01/1601
□DocumentSummaryInformation	492	01/01/1601	01/01/1601	01/01/1601
DocVersion2	4	01/01/1601	01/01/1601	01/01/1601
Dynamic Attributes Metadata	361	01/01/1601	01/01/1601	01/01/1601
FamilyMembers	8	01/01/1601	01/01/1601	01/01/1601
GeometricVersionHistory	1445	01/01/1601	01/01/1601	01/01/1601
JBlocks	12	01/01/1601	01/01/1601	01/01/1601
JSitesList	8	01/01/1601	01/01/1601	01/01/1601
JVisibleData	12800	01/01/1601	01/01/1601	01/01/1601
□K4teagxwOttdbfkuIaamtae3Ie	912	01/01/1601	01/01/1601	01/01/1601
MSConvertedPropertyset	112	01/01/1601	01/01/1601	01/01/1601
PartsLiteData	4709	01/01/1601	01/01/1601	01/01/1601
PSMcluster0	275569	01/01/1601	01/01/1601	01/01/1601
PSMclustertable	199	01/01/1601	01/01/1601	01/01/1601
PSMroots	310	01/01/1601	01/01/1601	01/01/1601
PSMsegmenttable	12	01/01/1601	01/01/1601	01/01/1601
PSMtypetable	7348	01/01/1601	01/01/1601	01/01/1601
PSMuserroots	8	01/01/1601	01/01/1601	01/01/1601
□Rfunnyd1AvtdbfkuIaamtae3Ie	264	01/01/1601	01/01/1601	01/01/1601
□SszbwomqY1udb2whAaq5u2iwCq	200	01/01/1601	01/01/1601	01/01/1601

Total: 46 elements   C:\Program Files\Siemens\Solid Edge 2019\Training\valve_house.par

In the above screenshot, we have opened a valid Solid Edge into Structured Storage Viewer and you can clearly see the various objects that comprise a Solid Edge file.

Additionally, Structured Storage Viewer will provide a summation of the overall size of the Storage objects within the file.



valve_house.par
{1D60E652-7833-11D3-B83D-00C0
{CC024FA2-6EB5-11CE-8AA2-080
{CC024FCA-6EB5-11CE-8AA2-080
{F0D6D0B1-A0D8-11CE-8AA2-080
Document Summary Information
Summary Information
Display
PARASOLID
PMIAnnotDimSubStorage
PSMspacemap
BuildVersions
|C3teagxwOttdbfkuIaamtae3Ie
CustomPropertyVariableInfo
|DocumentSummaryInformation
DocVersion2
Dynamic Attributes Metadata
FamilyMembers

General

Type	Storage
Name	valve_house
File size	842,240 B
Count	29
Created	04/06/2018 15:10:44
Modified	04/06/2018 15:10:44
Accessed	03/07/2018 10:45:17

Checksums

CRC32	FEDC2A7B
MD5	8947C74E5418AE49DA5...
SHA1	10C70B296DABEB3B640...

valve_house.par Properties

General | Project | Status | Security | Custom | Details | Previous Versions

valve_house.par

Type of file:	Solid Edge Part Document (.par)
Opens with:	Solid Edge
Location:	C:\Program Files\Siemens\Solid Edge 2019\Training
Size:	822 KB (842,240 bytes)
Size on disk:	824 KB (843,776 bytes)
Created:	04 June 2018, 15:10:44
Modified:	04 June 2018, 15:10:44
Accessed:	03 July 2018, 10:45:17
Attributes:	Read-only Hidden

Change... Advanced... OK Cancel Apply

Name				Modified
Display			:00:41	04/06/20
PARASOL			:00:41	04/06/20
PMIAnno			:00:41	04/06/20
PSMspac			:02:29	28/06/20
{1D60E6				01/01/16
{CC024F				01/01/16
{CC024F				01/01/16
{F0D6D0				01/01/16
BuildVers				01/01/16
|C3teag				01/01/16
CustomP				01/01/16
Documen				01/01/16
|Docume				01/01/16
DocVersi				01/01/16
Dynamic				01/01/16
FamilyMe				01/01/16
Geometri				01/01/16
JBlocks				01/01/16
JSitesList				01/01/16
JVisibleD				01/01/16
|K4teag				01/01/16
MSConve				01/01/16
PartsLite				01/01/16
PSMclust				01/01/16
PSMclust				01/01/16
PSMroots				01/01/16
PSMsegmenttable	12	01/01/1601	01/01/1601	01/01/16
PSMtypetable	7348	01/01/1601	01/01/1601	01/01/16
PSMuserroots	8	01/01/1601	01/01/1601	01/01/16
|Rfunnyd1AvtdbfkuIaamtae3Ie	264	01/01/1601	01/01/1601	01/01/16

Total: 46 elements C:\Program Files\Siemens\Solid Edge 2019\Training\valve_house.par

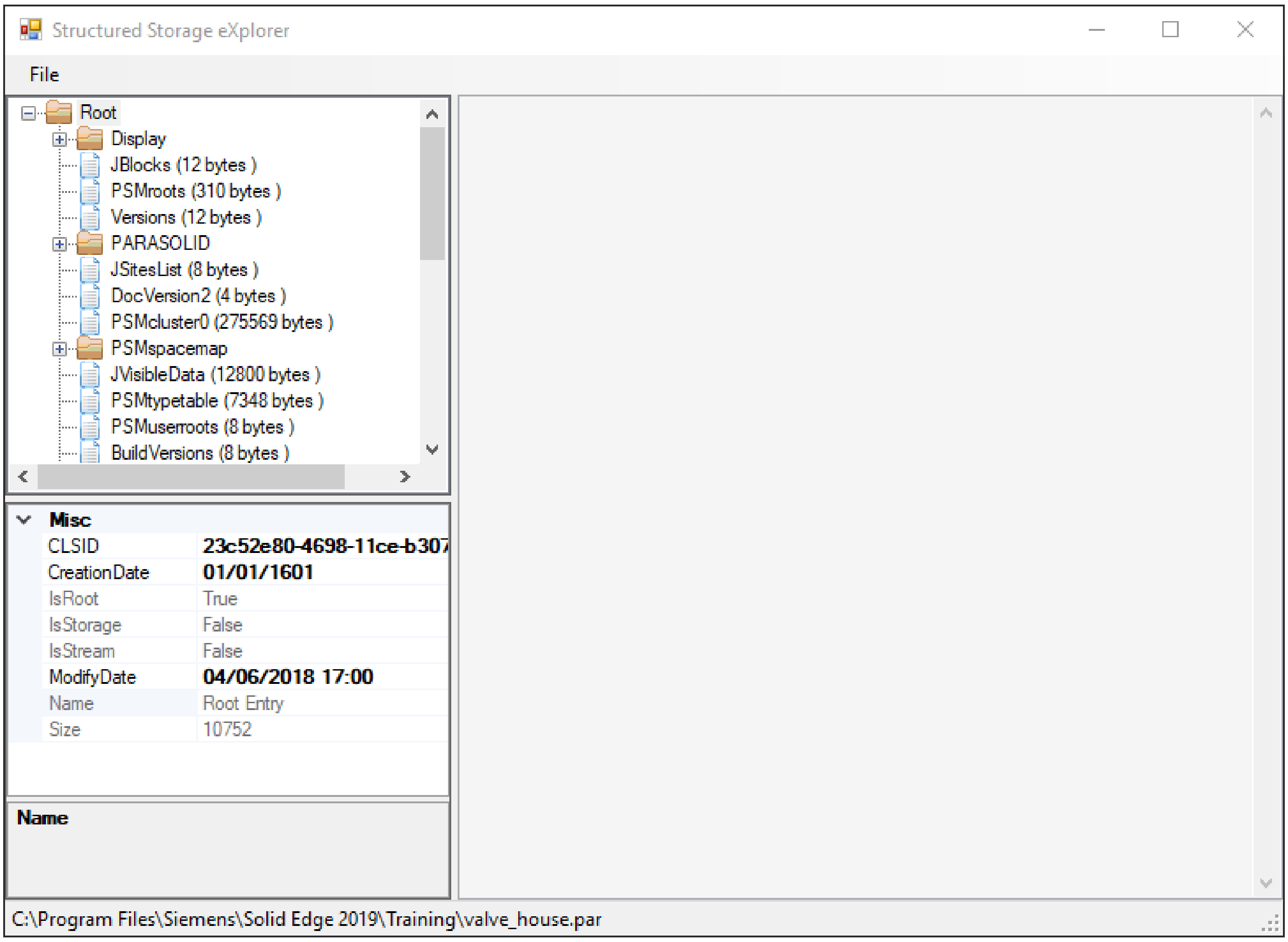
Although Structured Storage Viewer is a very good tool for viewing and modifying the content stored within the physical Structured Storage files, Structured Storage Viewer is not a good tool for viewing the content stored at the root level of the file or for viewing the CLSID values within the file

3.2 Structured Storage eXplorer

Another freely available viewer is "Structured Storage eXplorer". Structured Storage eXplorer can be downloaded from:

https://sourceforge.net/projects/openmcdf/files/Sample%20Compound%20File%20Viewer/

With Structured Storage eXplorer installed, you can then run the “StucturedStorageExplorer.exe” executable to view the content of Solid Edge files. In the following example we have opened the “valve_house.par” file found in the Solid Edge training folder (“C:\Program Files\Siemens\Solid Edge 2019\Training\valve_house.par”):



```
Root
  Display
  JBlocks (12 bytes )
  PSMroots (310 bytes )
  Versions (12 bytes )
  PARASOLID
  JSitesList (8 bytes )
  DocVersion2 (4 bytes )
  PSMcluster0 (275569 bytes )
  PSMspacemap
  JVisibleData (12800 bytes )
  PSMtypetable (7348 bytes )
  PSMuserroots (8 bytes )
  BuildVersions (8 bytes )
```

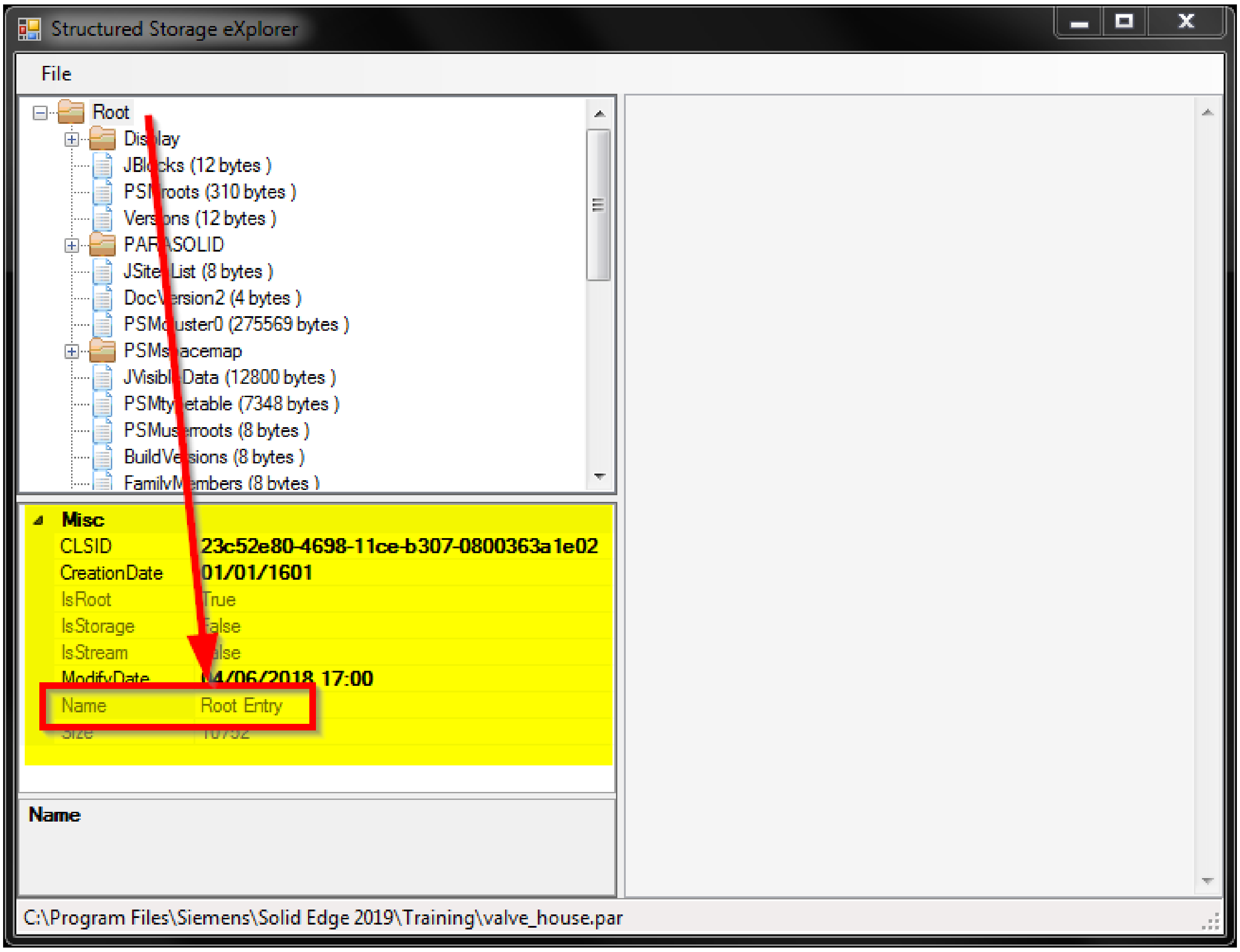
Misc	
CLSID	23c52e80-4698-11ce-b307
CreationDate	01/01/1601
IsRoot	True
IsStorage	False
IsStream	False
ModifyDate	04/06/2018 17:00
Name	Root Entry
Size	10752

Name

C:\Program Files\Siemens\Solid Edge 2019\Training\valve_house.par

Note that although this is the same file that we opened in the previous section using Structured Storage Viewer, the exact same file is displayed differently between the two tools.

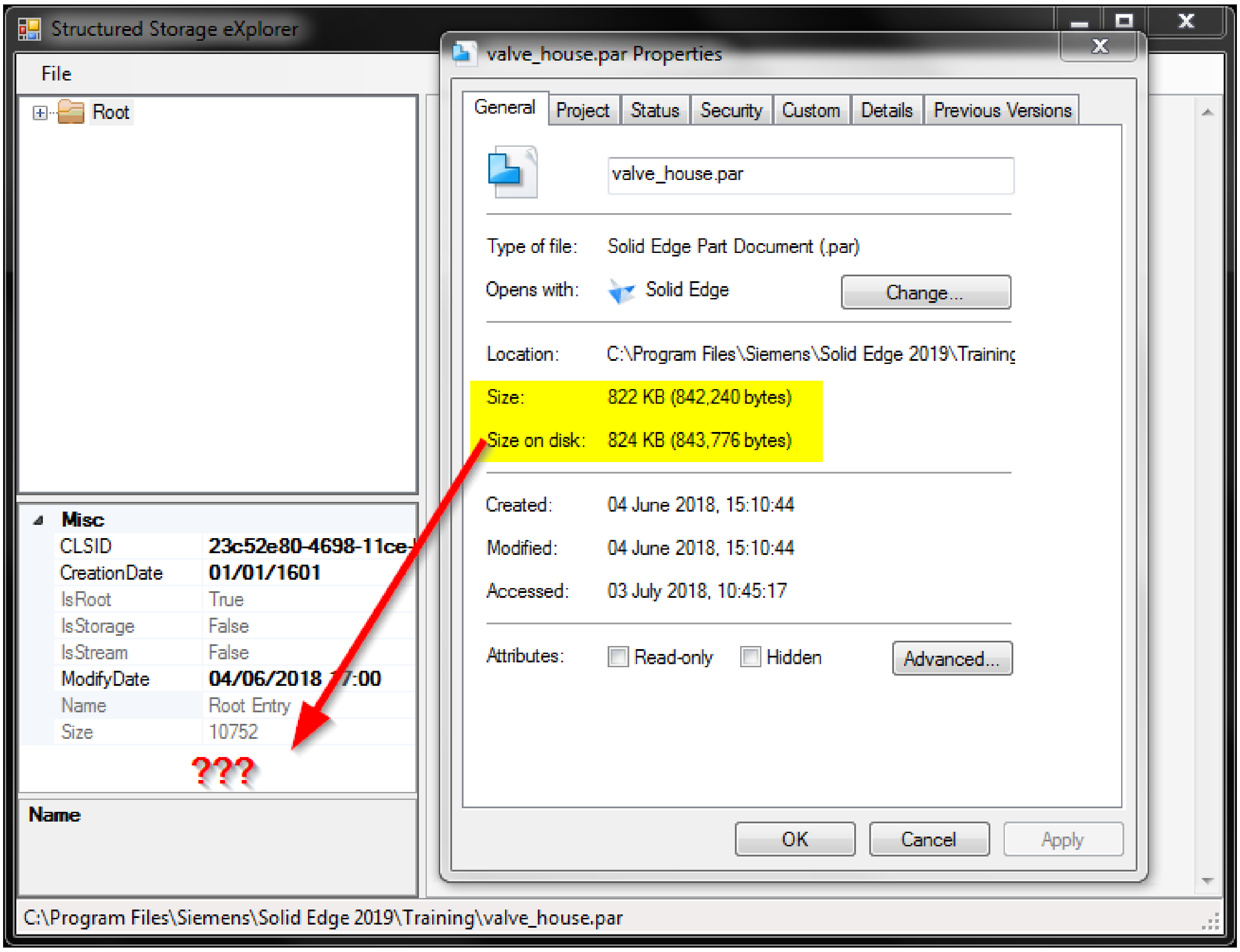
With this Structured Storage eXplorer tool we are now able to see the content stored at the Root level of the file including the CLSID. This data was not visible in the Structured Storage Viewer tool.



CLSID	23c52e80-4698-11ce-b307-0800363a1e02
CreationDate	01/01/1601
IsRoot	True
IsStorage	False
IsStream	False
ModifyDate	04/06/2018 17:00
Name	Root Entry
Size	10752

C:\Program Files\Siemens\Solid Edge 2019\Training\valve_house.par

However, Structured Storage eXplorer will not provide a summation of the overall size of the Storage objects within the file compared to Structured Storage Viewer.



Misc	
CLSID	**23c52e80-4698-11ce-**
CreationDate	**01/01/1601**
IsRoot	True
IsStorage	False
IsStream	False
ModifyDate	**04/06/2018 17:00**
Name	Root Entry
Size	10752

valve_house.par

Type of file:	Solid Edge Part Document (.par)
Opens with:	Solid Edge
Location:	C:\Program Files\Siemens\Solid Edge 2019\Training
Size:	822 KB (842,240 bytes)
Size on disk:	824 KB (843,776 bytes)
Created:	04 June 2018, 15:10:44
Modified:	04 June 2018, 15:10:44
Accessed:	03 July 2018, 10:45:17
Attributes:	☐ Read-only ☐ Hidden

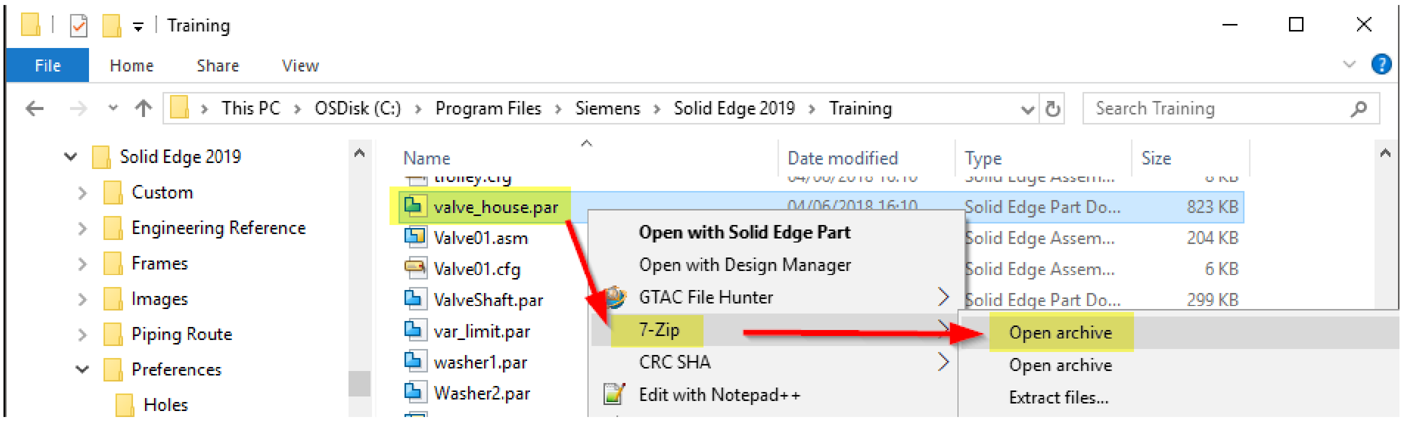
C:\Program Files\Siemens\Solid Edge 2019\Training\valve_house.par

3.3 File Archiving Tools

Instead of using a structured storage viewer, it is also possible to use file archiving tools to view the content of the of Microsoft COM Structured Storage files. One such freely available file archiving tool is 7-Zip. 7-Zip can be downloaded from:

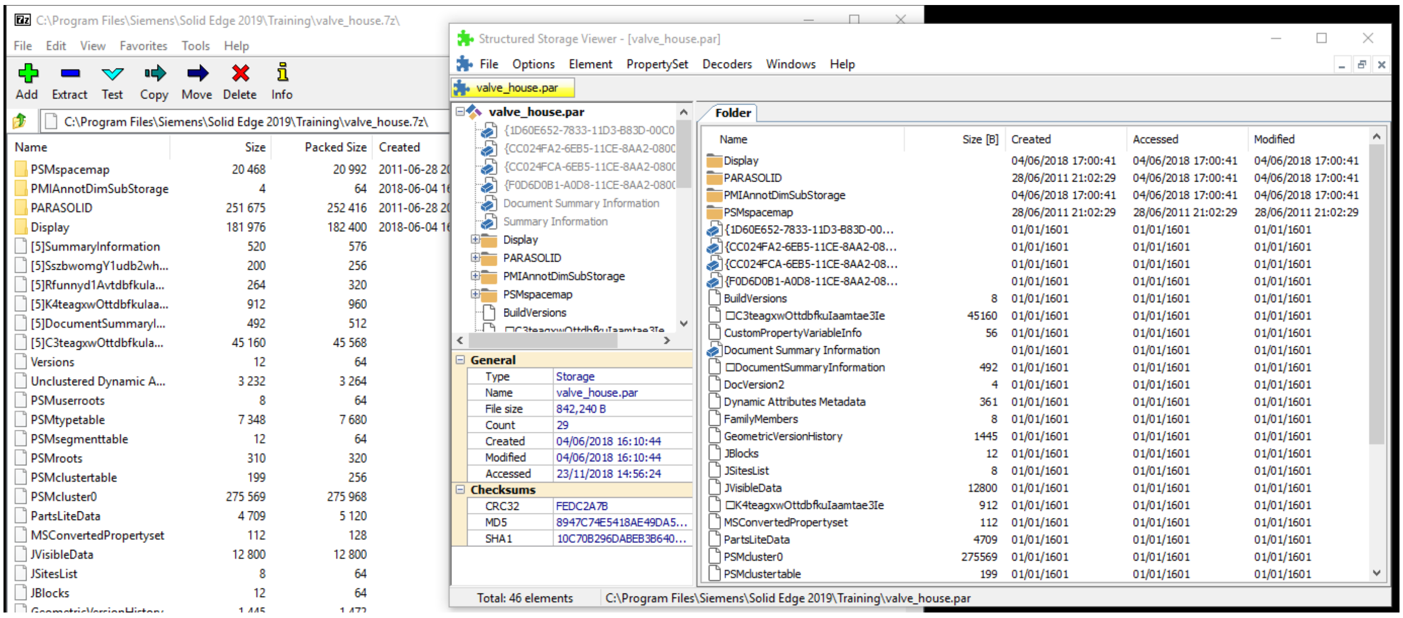
http://www.7-zip.org/

With 7-Zip installed, to open and view the content of a Solid Edge file, in Windows Explorer right-click on the .7z file and open the file into 7-Zip:



Note: Depending on your operating system configuration, it may not be possible to open Solid Edge files directly in to 7-Zip. In this instance, simply copy or rename the Solid Edge file to the .7z file extension.

Once opened in 7-Zip, you can see that the objects displayed in 7-Zip are very similar to the objects displayed in Structured Storage Viewer for the Solid Edge file:



C:\Program Files\Siemens\Solid Edge 2019\Training\valve_house.7z\
File
Edit
View
Favorites
Tools
Help
Add
Extract
Test
Copy
Move
Delete
Info
C:\Program Files\Siemens\Solid Edge 2019\Training\valve_house.7z\
Structured Storage Viewer - [valve_house.par]
File
Options
Element
PropertySet
Decoders
Windows
Help
valve_house.par
valve_house.par
{1D60E652-7833-11D3-B83D-00C0
{CC024FA2-6EB5-11CE-8AA2-0800
{CC024FCA-6EB5-11CE-8AA2-0800
{F0D6D0B1-A0D8-11CE-8AA2-0800
Document Summary Information
Summary Information
Display
PARASOLID
PMIAnnotDimSubStorage
PSMspacemap
BuildVersions
Folder
Total: 46 elements
C:\Program Files\Siemens\Solid Edge 2019\Training\valve_house.par

Name	Size	Packed Size	Created
PSMspacemap	20 468	20 992	2011-06-28 2
PMIAnnotDimSubStorage	4	64	2018-06-04 1
PARASOLID	251 675	252 416	2011-06-28 2
Display	181 976	182 400	2018-06-04 1
[5]SummaryInformation	520	576	
[5]SszbwomgY1udb2wh...	200	256	
[5]Rfunnyd1Avtdbfkula...	264	320	
[5]K4teagxwOttdbfkulaa...	912	960	
[5]DocumentSummaryI...	492	512	
[5]C3teagxwOttdbfkula...	45 160	45 568	
Versions	12	64	
Unclustered Dynamic A...	3 232	3 264	
PSMuserroots	8	64	
PSMtypetable	7 348	7 680	
PSMsegmenttable	12	64	
PSMroots	310	320	
PSMclustertable	199	256	
PSMcluster0	275 569	275 968	
PartsLiteData	4 709	5 120	
MSConvertedPropertyset	112	128	
JVisibleData	12 800	12 800	
JSitesList	8	64	
JBlocks	12	64	

General	
Type	Storage
Name	valve_house.par
File size	842,240 B
Count	29
Created	04/06/2018 16:10:44
Modified	04/06/2018 16:10:44
Accessed	23/11/2018 14:56:24
Checksums	
CRC32	FEDC2A7B
MD5	8947C74E5418AE49DA5...
SHA1	10C70B296DABEB3B640...

Name	Size [B]	Created	Accessed	Modified
Display		04/06/2018 17:00:41	04/06/2018 17:00:41	04/06/2018 17:00:41
PARASOLID		28/06/2011 21:02:29	04/06/2018 17:00:41	04/06/2018 17:00:41
PMIAnnotDimSubStorage		04/06/2018 17:00:41	04/06/2018 17:00:41	04/06/2018 17:00:41
PSMspacemap		28/06/2011 21:02:29	28/06/2011 21:02:29	28/06/2011 21:02:29
{1D60E652-7833-11D3-B83D-00...		01/01/1601	01/01/1601	01/01/1601
{CC024FA2-6EB5-11CE-8AA2-08...		01/01/1601	01/01/1601	01/01/1601
{CC024FCA-6EB5-11CE-8AA2-08...		01/01/1601	01/01/1601	01/01/1601
{F0D6D0B1-A0D8-11CE-8AA2-08...		01/01/1601	01/01/1601	01/01/1601
BuildVersions	8	01/01/1601	01/01/1601	01/01/1601
□C3teagxwOttdbfkuIaamtae3Ie	45160	01/01/1601	01/01/1601	01/01/1601
CustomPropertyVariableInfo	56	01/01/1601	01/01/1601	01/01/1601
Document Summary Information		01/01/1601	01/01/1601	01/01/1601
□DocumentSummaryInformation	492	01/01/1601	01/01/1601	01/01/1601
DocVersion2	4	01/01/1601	01/01/1601	01/01/1601
Dynamic Attributes Metadata	361	01/01/1601	01/01/1601	01/01/1601
FamilyMembers	8	01/01/1601	01/01/1601	01/01/1601
GeometricVersionHistory	1445	01/01/1601	01/01/1601	01/01/1601
JBlocks	12	01/01/1601	01/01/1601	01/01/1601
JSitesList	8	01/01/1601	01/01/1601	01/01/1601
JVisibleData	12800	01/01/1601	01/01/1601	01/01/1601
□K4teagxwOttdbfkuIaamtae3Ie	912	01/01/1601	01/01/1601	01/01/1601
MSConvertedPropertyset	112	01/01/1601	01/01/1601	01/01/1601
PartsLiteData	4709	01/01/1601	01/01/1601	01/01/1601
PSMcluster0	275569	01/01/1601	01/01/1601	01/01/1601
PSMclustertable	199	01/01/1601	01/01/1601	01/01/1601

However, using a file archiving tool such as 7-Zip will only show the storage and streams. A file archiving tool will still show the property set objects but will not display the property values under those property sets. This is the difference between using a structured storage viewing tool and a file archiving tool. Although it appears that using a structured storage viewer would be the better tool, there are times that using a file archiving tool can be beneficial to help reinforce what is being observed with a structured storage viewer.

4 Using Our Structured Storage Knowledge

Using the above tools, we have demonstrated how to view the structured storage for Solid Edge files. We can now use this knowledge to help investigate corrupted Solid Edge files and determine if the corrupted Solid Edge files are suitable candidates for manually repairing ourselves or by forwarding to Solid Edge Development.

For the remainder of these instructions we will work with the tools outlined above to help investigate various file repair examples. However, you can use other comparable tools and achieve similar results.

5 Anatomy of the Structured Storage File

By having a general base knowledge of the COM structured storage format that comprises a Solid Edge file this then can be useful to help determine if corrupted Solid Edge files are potential candidates for file repair. In this section we review a brief anatomy of the Solid Edge structured storage.

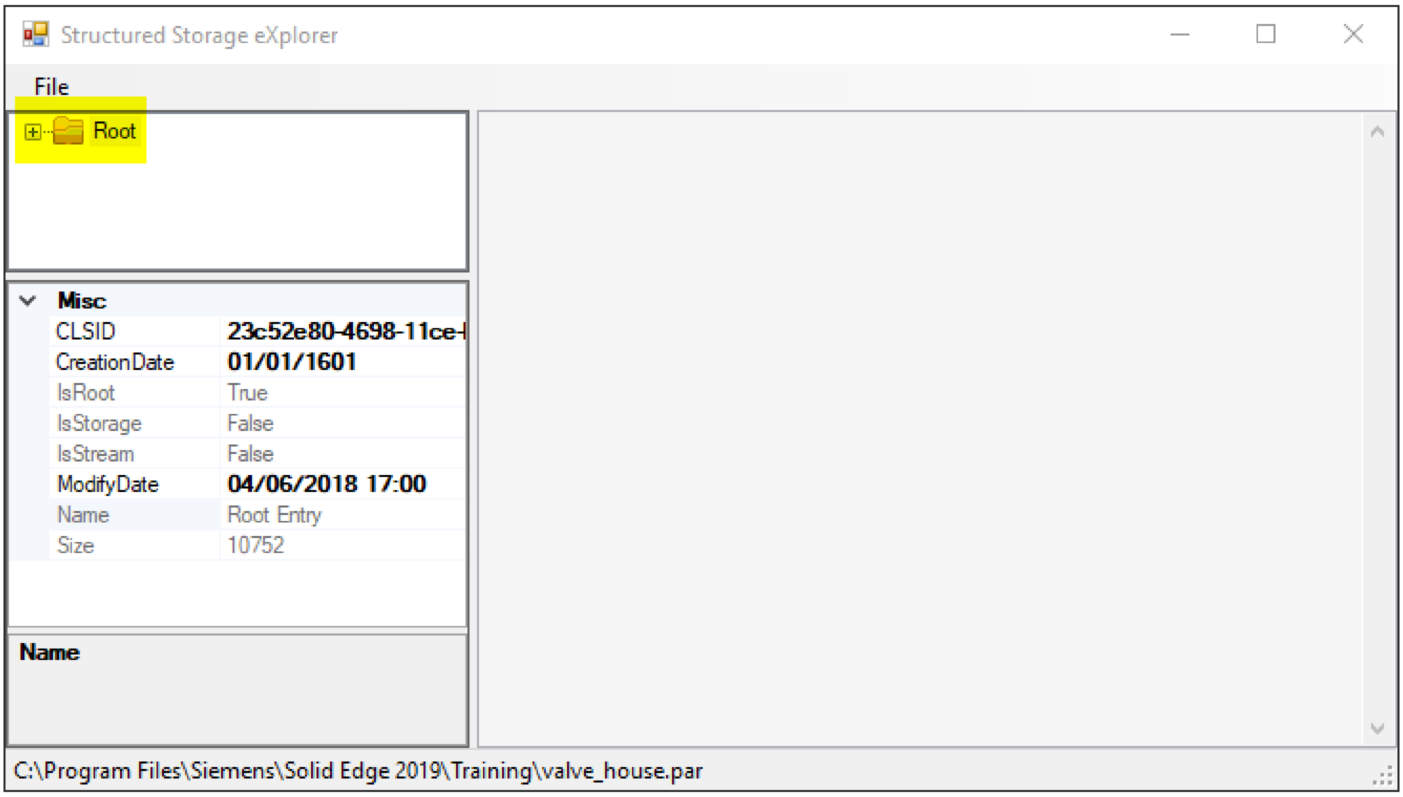
There are multiple object types that comprise the structured storage within the Solid Edge file:

- Root Storage
- Property Sets
- Properties
- Storage
- Streams

It is possible to interrogate and view these objects to have a better understanding of the Solid Edge file storage, which in turn can then be useful in determining if corrupted Solid Edge files are potentially suitable for file repair.

5.1 Root Storage

The top level of the structured storage containing the Property Sets, Properties, Storage, and Streams is called the Root storage.



Misc	
CLSID	23c52e80-4698-11ce-
CreationDate	01/01/1601
IsRoot	True
IsStorage	False
IsStream	False
ModifyDate	04/06/2018 17:00
Name	Root Entry
Size	10752

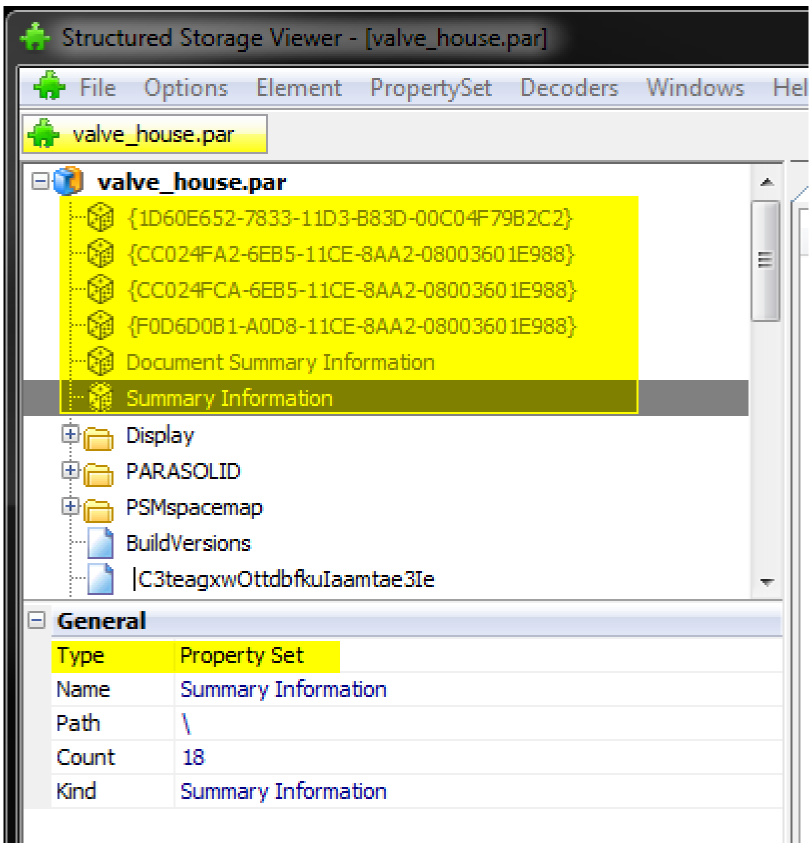
Name

C:\Program Files\Siemens\Solid Edge 2019\Training\valve_house.par

5.2 Property Set

Property Sets are objects used as containers for storing Property objects under. There are several different Property Sets that comprise a Solid Edge file and the Property Sets will differ slightly between the various Solid Edge file types.

For the valve_house.par used in the previous sections above, when opened in Structured Storage Viewer we see six Property Set objects:



valve_house.par
- {1D60E652-7833-11D3-B83D-00C04F79B2C2}
- {CC024FA2-6EB5-11CE-8AA2-08003601E988}
- {CC024FCA-6EB5-11CE-8AA2-08003601E988}
- {F0D6D0B1-A0D8-11CE-8AA2-08003601E988}
- Document Summary Information
- Summary Information
- Display
- PARASOLID
- PSMspacemap
- BuildVersions
- |C3teagxwOttdbfkuIaamtae3Ie

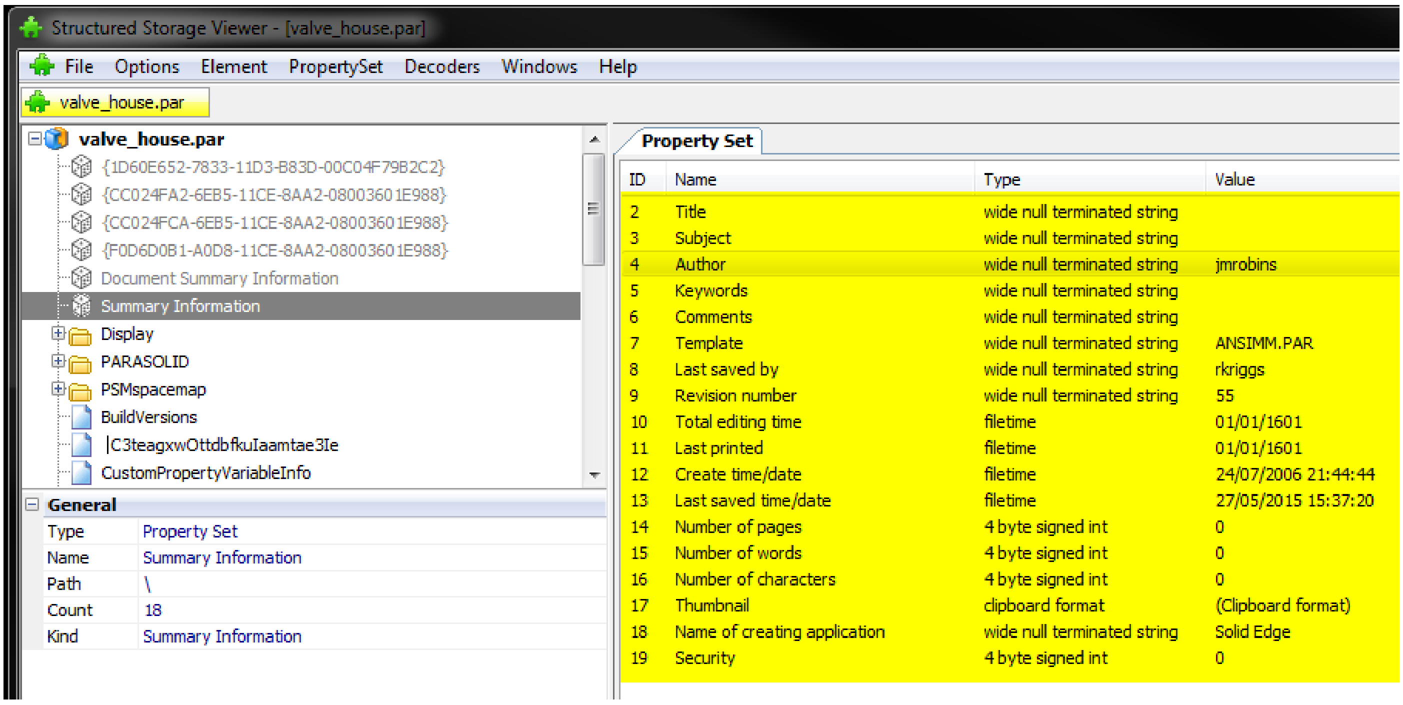
General

Type	Property Set
Name	Summary Information
Path	\
Count	18
Kind	Summary Information

5.3 Property

Property objects are stored within the Property Set object and contain the various metadata or property attributes associated with the Solid Edge file. There are many different properties that comprise a Solid Edge file and will vary depending on the Solid Edge file type.

Continuing with our example valve_house.par, we can select the "Summary Information" Property Set and see all the Properties stored within this Property Set:

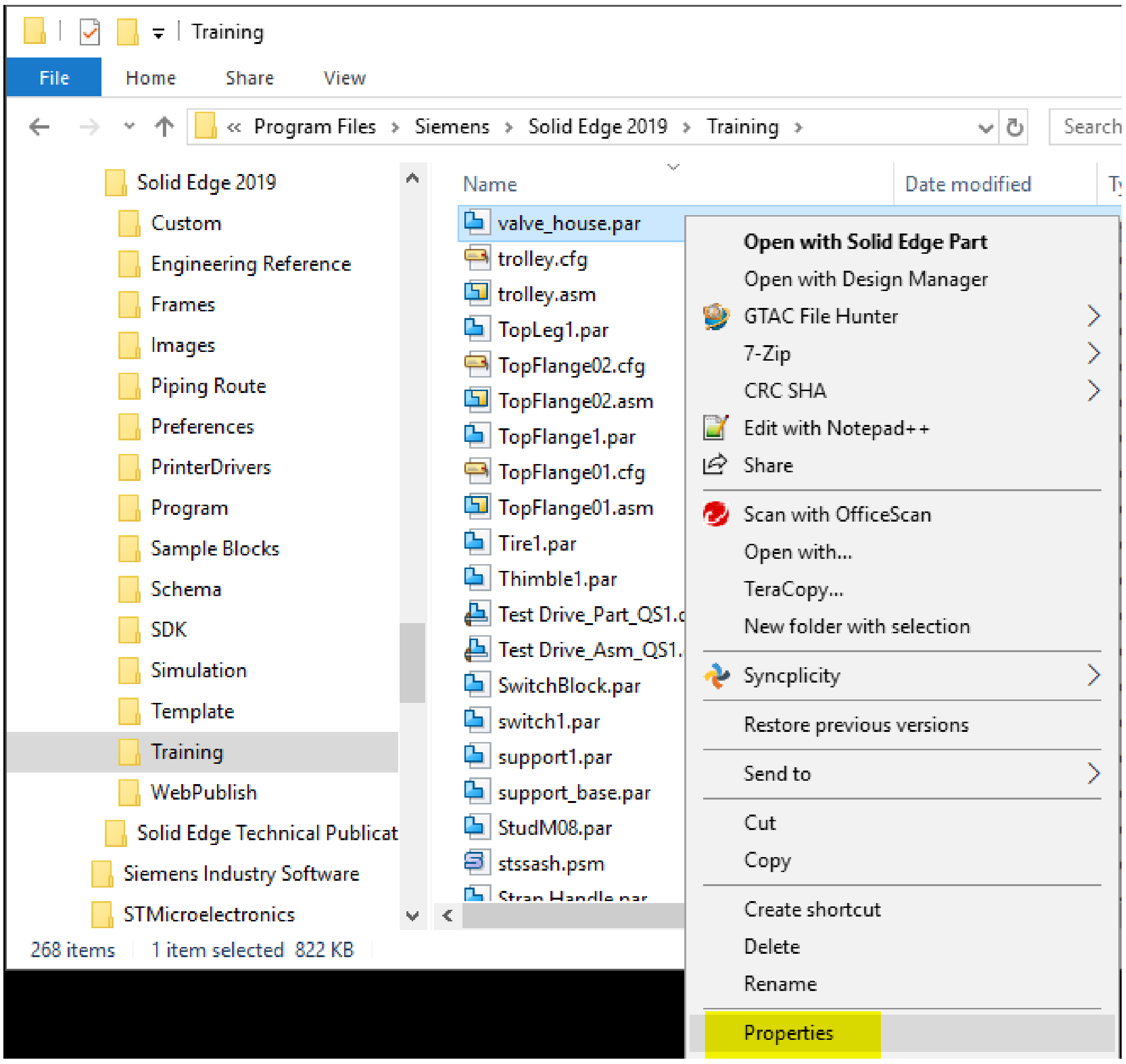

Structured Storage Viewer - [valve_house.par]
File Options Element PropertySet Decoders Windows Help
valve_house.par
valve_house.par
{1D60E652-7833-11D3-B83D-00C04F79B2C2}
{CC024FA2-6EB5-11CE-8AA2-08003601E988}
{CC024FCA-6EB5-11CE-8AA2-08003601E988}
{F0D6D0B1-A0D8-11CE-8AA2-08003601E988}
Document Summary Information
Summary Information
Display
PARASOLID
PSMspacemap
BuildVersions
|C3teagxwOttdbfkuIaamtae3Ie
CustomPropertyVariableInfo
Property Set

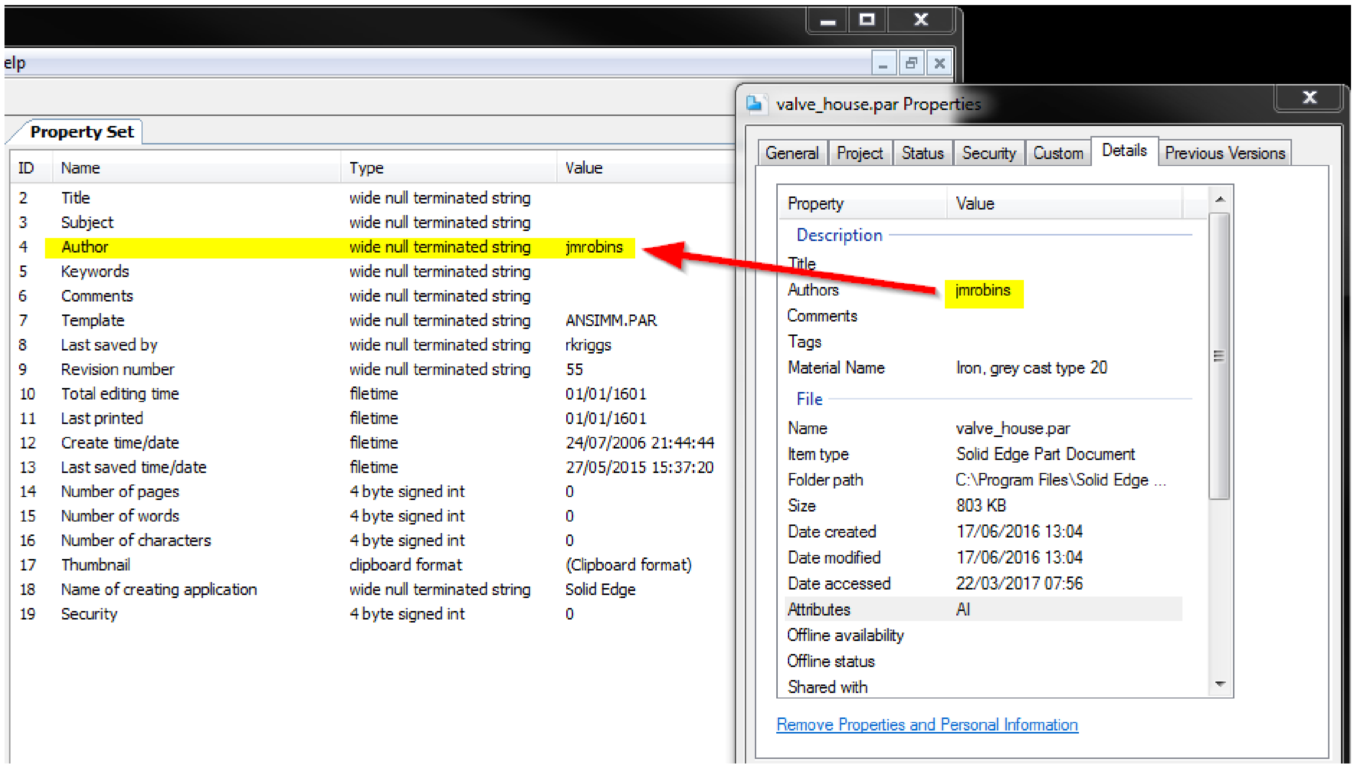
General

Type	Property Set
Name	Summary Information
Path	\
Count	18
Kind	Summary Information

ID	Name	Type	Value
2	Title	wide null terminated string	
3	Subject	wide null terminated string	
4	Author	wide null terminated string	jmrobins
5	Keywords	wide null terminated string	
6	Comments	wide null terminated string	
7	Template	wide null terminated string	ANSIMM.PAR
8	Last saved by	wide null terminated string	rkriggs
9	Revision number	wide null terminated string	55
10	Total editing time	filetime	01/01/1601
11	Last printed	filetime	01/01/1601
12	Create time/date	filetime	24/07/2006 21:44:44
13	Last saved time/date	filetime	27/05/2015 15:37:20
14	Number of pages	4 byte signed int	0
15	Number of words	4 byte signed int	0
16	Number of characters	4 byte signed int	0
17	Thumbnail	clipboard format	(Clipboard format)
18	Name of creating application	wide null terminated string	Solid Edge
19	Security	4 byte signed int	0

Note that in the example used above, there is an Author property with a value of "jmrobins". This matches the property on the file in Windows Explorer when you select the file and right-click -> Properties:

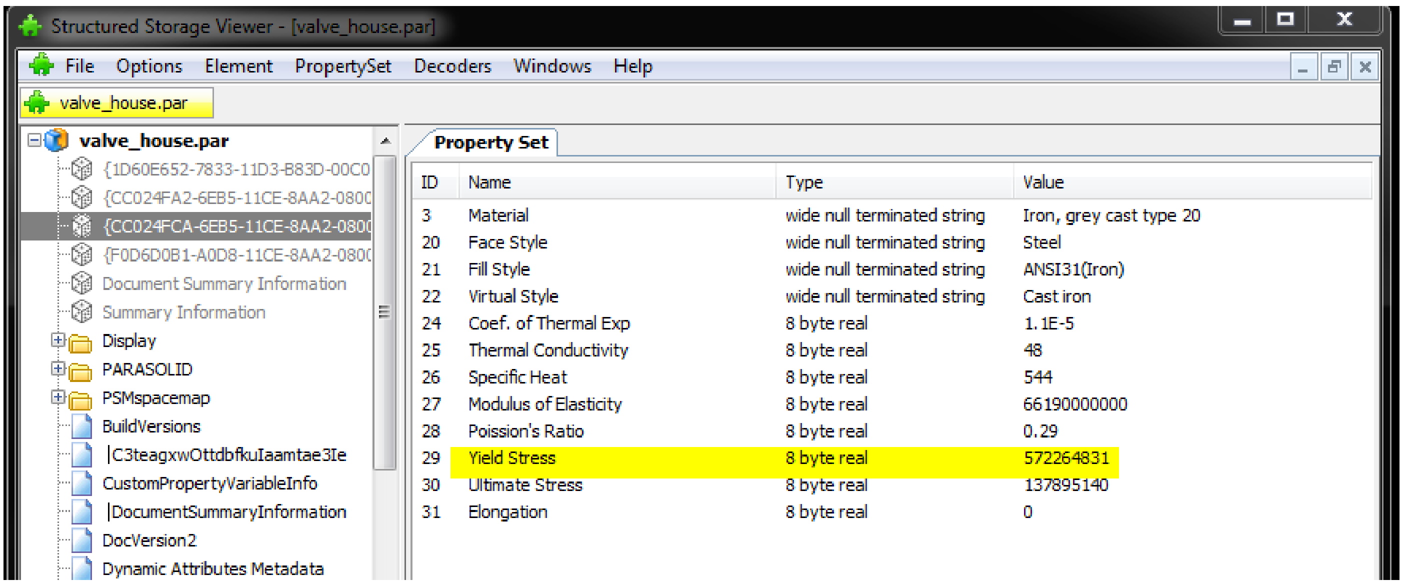




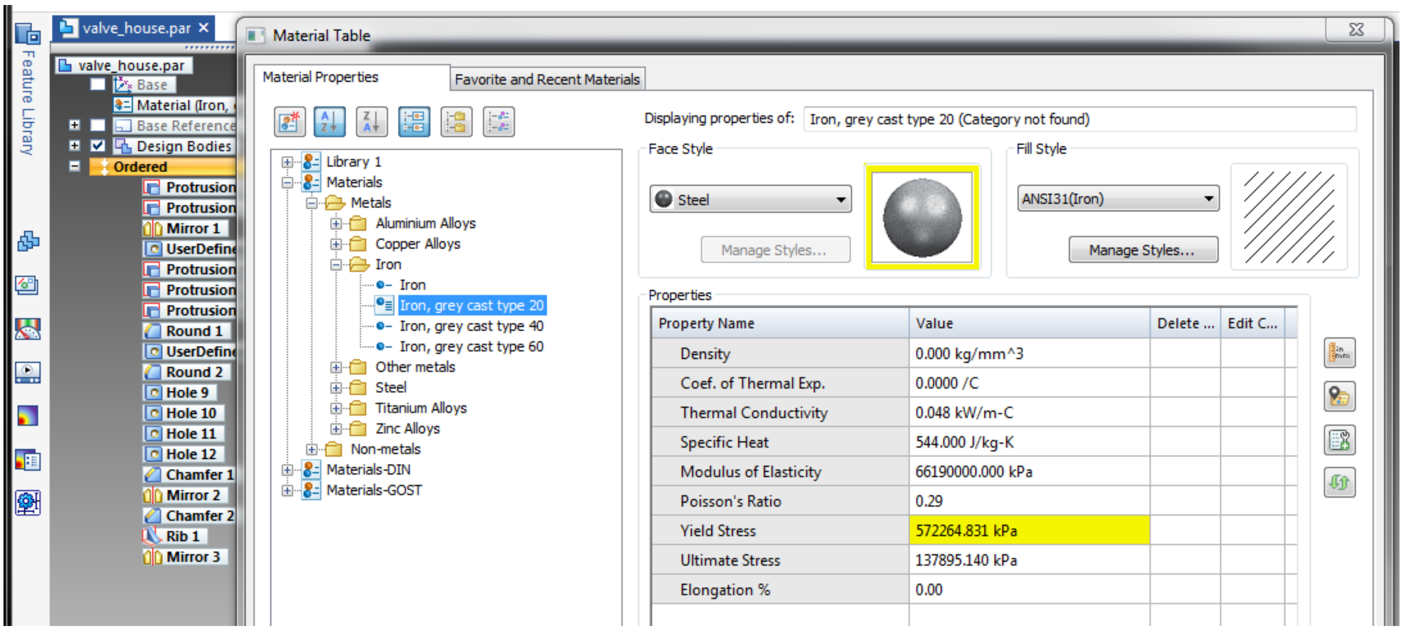
ID	Name	Type	Value
2	Title	wide null terminated string	
3	Subject	wide null terminated string	
4	Author	wide null terminated string	jmrobins
5	Keywords	wide null terminated string	
6	Comments	wide null terminated string	
7	Template	wide null terminated string	ANSIMM.PAR
8	Last saved by	wide null terminated string	rkriggs
9	Revision number	wide null terminated string	55
10	Total editing time	filetime	01/01/1601
11	Last printed	filetime	01/01/1601
12	Create time/date	filetime	24/07/2006 21:44:44
13	Last saved time/date	filetime	27/05/2015 15:37:20
14	Number of pages	4 byte signed int	0
15	Number of words	4 byte signed int	0
16	Number of characters	4 byte signed int	0
17	Thumbnail	clipboard format	(Clipboard format)
18	Name of creating application	wide null terminated string	Solid Edge
19	Security	4 byte signed int	0

Property	Value
Description	
Title	
Authors	jmrobins
Comments	
Tags	
Material Name	Iron, grey cast type 20
File	
Name	valve_house.par
Item type	Solid Edge Part Document
Folder path	C:\Program Files\Solid Edge ...
Size	803 KB
Date created	17/06/2016 13:04
Date modified	17/06/2016 13:04
Date accessed	22/03/2017 07:56
Attributes	AI
Offline availability	
Offline status	
Shared with	

If we interrogate the Property objects of other Property Sets we can see other useful information. In the below example we see the Property Set “{CC024FCA-6EB5-11CE-8AA2-08003601E988}” which contains the various material properties used within this Solid Edge file:


Structured Storage Viewer - [valve_house.par]
File Options Element PropertySet Decoders Windows Help
valve_house.par
valve_house.par
{1D60E652-7833-11D3-B83D-00C0
{CC024FA2-6EB5-11CE-8AA2-0800
{CC024FCA-6EB5-11CE-8AA2-0800
{F0D6D0B1-A0D8-11CE-8AA2-0800
Document Summary Information
Summary Information
Display
PARASOLID
PSMspacemap
BuildVersions
|C3teagxwOttdbfkuIaamtae3Ie
CustomPropertyVariableInfo
|DocumentSummaryInformation
DocVersion2
Dynamic Attributes Metadata
Property Set

ID	Name	Type	Value
3	Material	wide null terminated string	Iron, grey cast type 20
20	Face Style	wide null terminated string	Steel
21	Fill Style	wide null terminated string	ANSI31(Iron)
22	Virtual Style	wide null terminated string	Cast iron
24	Coef. of Thermal Exp	8 byte real	1.1E-5
25	Thermal Conductivity	8 byte real	48
26	Specific Heat	8 byte real	544
27	Modulus of Elasticity	8 byte real	66190000000
28	Poission's Ratio	8 byte real	0.29
29	Yield Stress	8 byte real	572264831
30	Ultimate Stress	8 byte real	137895140
31	Elongation	8 byte real	0



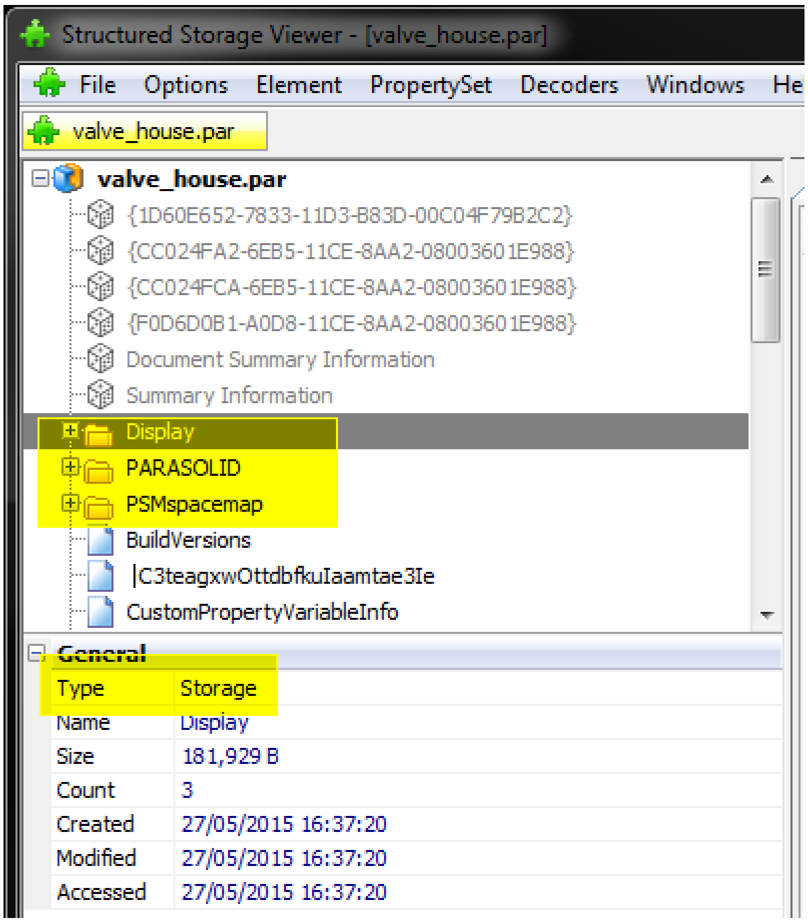
Displaying properties of: Iron, grey cast type 20 (Category not found)

Property Name	Value	Delete ...	Edit C...
Density	0.000 kg/mm^3		
Coef. of Thermal Exp.	0.0000 /C		
Thermal Conductivity	0.048 kW/m-C		
Specific Heat	544.000 J/kg-K		
Modulus of Elasticity	66190000.000 kPa		
Poisson's Ratio	0.29		
Yield Stress	572264.831 kPa		
Ultimate Stress	137895.140 kPa		
Elongation %	0.00		

5.4 Storage

Storage is an object type used for organizing and collating related Stream object types. A Storage object for structured storage can be thought of as being equivalent to a folder in Windows Explorer.

In our working example we can see three different Storage objects:



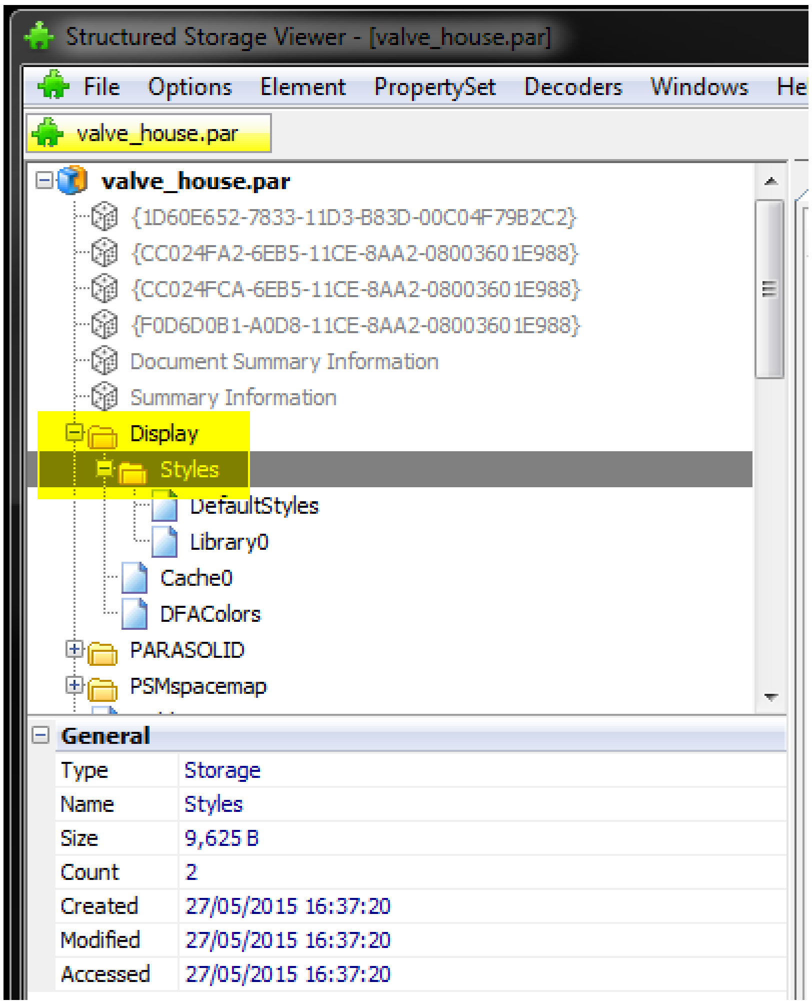
valve_house.par
- {1D60E652-7833-11D3-B83D-00C04F79B2C2}
- {CC024FA2-6EB5-11CE-8AA2-08003601E988}
- {CC024FCA-6EB5-11CE-8AA2-08003601E988}
- {F0D6D0B1-A0D8-11CE-8AA2-08003601E988}
- Document Summary Information
- Summary Information
- Display
- PARASOLID
- PSMspacemap
- BuildVersions
- |C3teagxwOttdbfkuIaamtae3Ie
- CustomPropertyVariableInfo

General

Type	Storage
Name	Display
Size	181,929 B
Count	3
Created	27/05/2015 16:37:20
Modified	27/05/2015 16:37:20
Accessed	27/05/2015 16:37:20

Note there is a "+" symbol next to each of these Storage objects.

The + can be selected and expanded to show us the related objects for that Storage object and just like folders in Windows Explorer, Storage objects can be nested under other Storage objects. In our working example we have expanded the Display Storage object which then contains another Storage object, “Styles”, which in turn then contains various Stream objects:



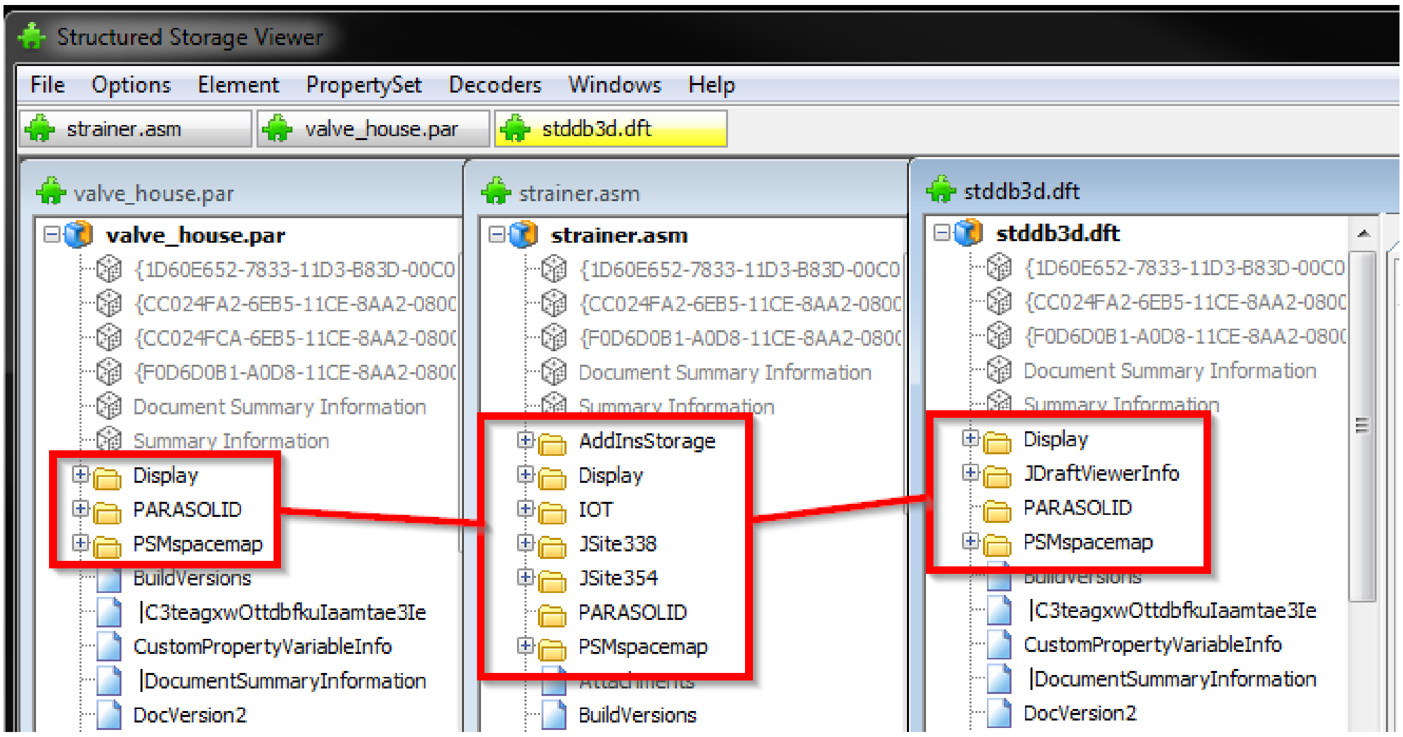
valve_house.par
{1D60E652-7833-11D3-B83D-00C04F79B2C2}
{CC024FA2-6EB5-11CE-8AA2-0800360 1E988}
{CC024FCA-6EB5-11CE-8AA2-0800360 1E988}
{F0D6D0B1-A0D8-11CE-8AA2-0800360 1E988}
Document Summary Information
Summary Information
Display
Styles
DefaultStyles
Library0
Cache0
DFAColors
PARASOLID
PSMspacemap

General

Type	Storage
Name	Styles
Size	9,625 B
Count	2
Created	27/05/2015 16:37:20
Modified	27/05/2015 16:37:20
Accessed	27/05/2015 16:37:20

Depending on the Solid Edge file type there will be many differing Storage types viewable within the structured storage.

If we open the training files “strainer.asm” (“C:\Program Files\Siemens\Solid Edge 2019\Training\strainer.asm”) and “stddb3d.dft” (“C:\Program Files\Siemens\Solid Edge 2019\Training\stddb3d.dft”) and compare them to our valve_house.par file we have been interrogating earlier, we can see that there are similar but also different Storage objects being used within each Solid Edge file type:


Structured Storage Viewer
File Options Element PropertySet Decoders Windows Help
strainer.asm
valve_house.par
stddb3d.dft

valve_house.par
- valve_house.par
  - {1D60E652-7833-11D3-B83D-00C0
  - {CC024FA2-6EB5-11CE-8AA2-080C
  - {CC024FCA-6EB5-11CE-8AA2-080C
  - {F0D6D0B1-A0D8-11CE-8AA2-080C
  - Document Summary Information
  - Summary Information
  - Display
  - PARASOLID
  - PSMspacemap
  - BuildVersions
  - |C3teagxwOttdbfkuIaamtae3Ie
  - CustomPropertyVariableInfo
  - |DocumentSummaryInformation
  - DocVersion2

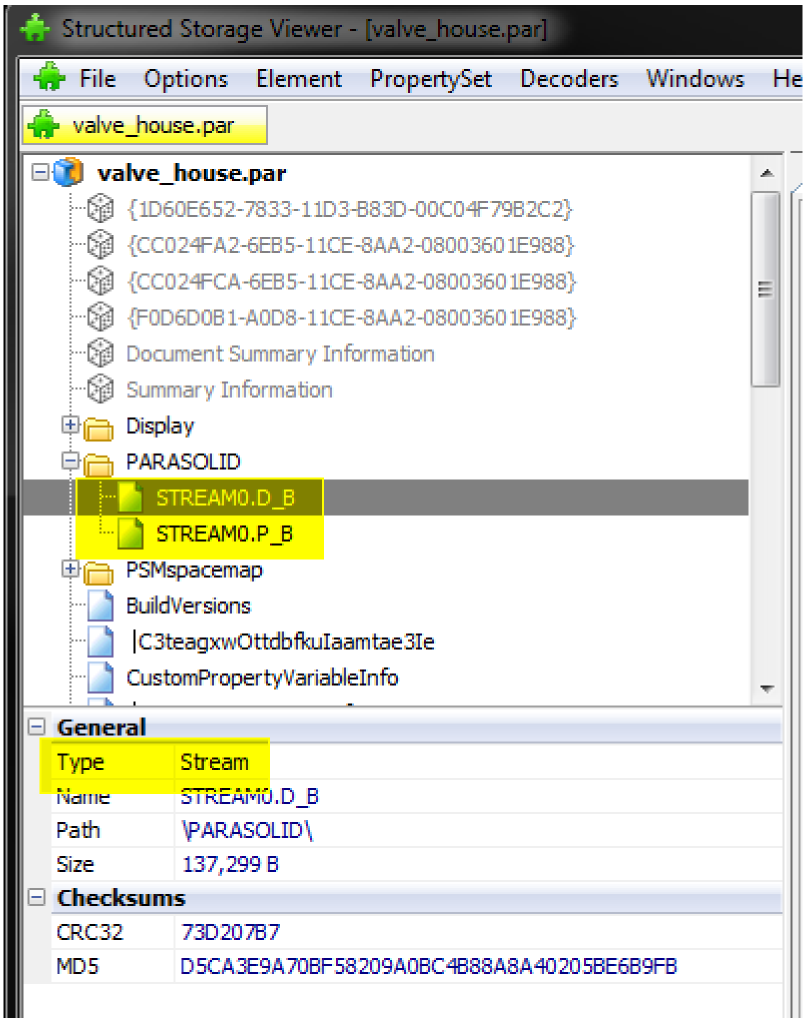
strainer.asm
- strainer.asm
  - {1D60E652-7833-11D3-B83D-00C0
  - {CC024FA2-6EB5-11CE-8AA2-080C
  - {F0D6D0B1-A0D8-11CE-8AA2-080C
  - Document Summary Information
  - Summary Information
  - AddInsStorage
  - Display
  - IOT
  - JSite338
  - JSite354
  - PARASOLID
  - PSMspacemap
  - Attachments
  - BuildVersions

stddb3d.dft
- stddb3d.dft
  - {1D60E652-7833-11D3-B83D-00C0
  - {CC024FA2-6EB5-11CE-8AA2-080C
  - {F0D6D0B1-A0D8-11CE-8AA2-080C
  - Document Summary Information
  - Summary Information
  - Display
  - JDraftViewerInfo
  - PARASOLID
  - PSMspacemap
  - BuildVersions
  - |C3teagxwOttdbfkuIaamtae3Ie
  - CustomPropertyVariableInfo
  - |DocumentSummaryInformation
  - DocVersion2

5.5 Stream

Streams are the object types used to contain the physical object data within that makes up a Solid Edge file. There are many different streams that comprise a Solid Edge structured storage file.

In our working example valve_house.par we can see a Storage object called “PARASOLID”. This storage object when expanded then contains two Parasolid object streams that contain the Parasolid data that comprises the Solid Edge geometry:


Structured Storage Viewer - [valve_house.par]
File Options Element PropertySet Decoders Windows He
valve_house.par
valve_house.par
{1D60E652-7833-11D3-B83D-00C04F79B2C2}
{CC024FA2-6EB5-11CE-8AA2-08003601E988}
{CC024FCA-6EB5-11CE-8AA2-08003601E988}
{F0D6D0B1-A0D8-11CE-8AA2-08003601E988}
Document Summary Information
Summary Information
Display
PARASOLID
STREAM0.D_B
STREAM0.P_B
PSMspacemap
BuildVersions
|C3teagxwOttdbfkuIaamtae3Ie
CustomPropertyVariableInfo

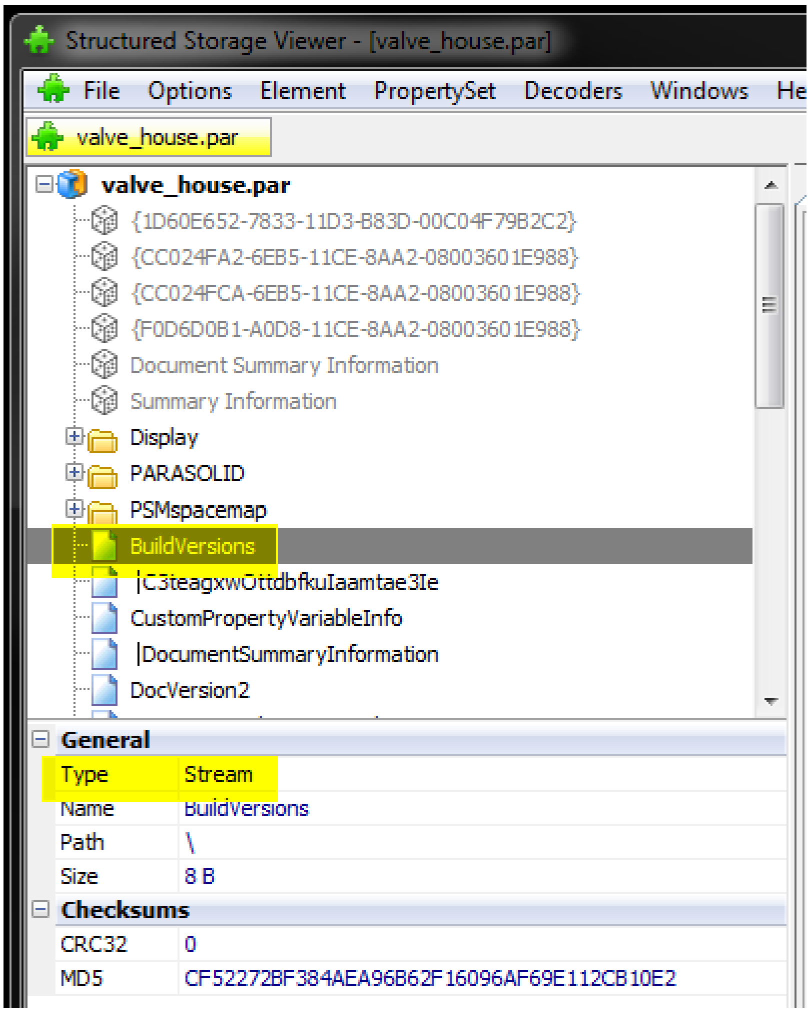
General

Type	Stream
Name	STREAM0.D_B
Path	\PARASOLID\
Size	137,299 B

Checksums

CRC32	73D207B7
MD5	D5CA3E9A70BF58209A0BC4B88A8A40205BE6B9FB

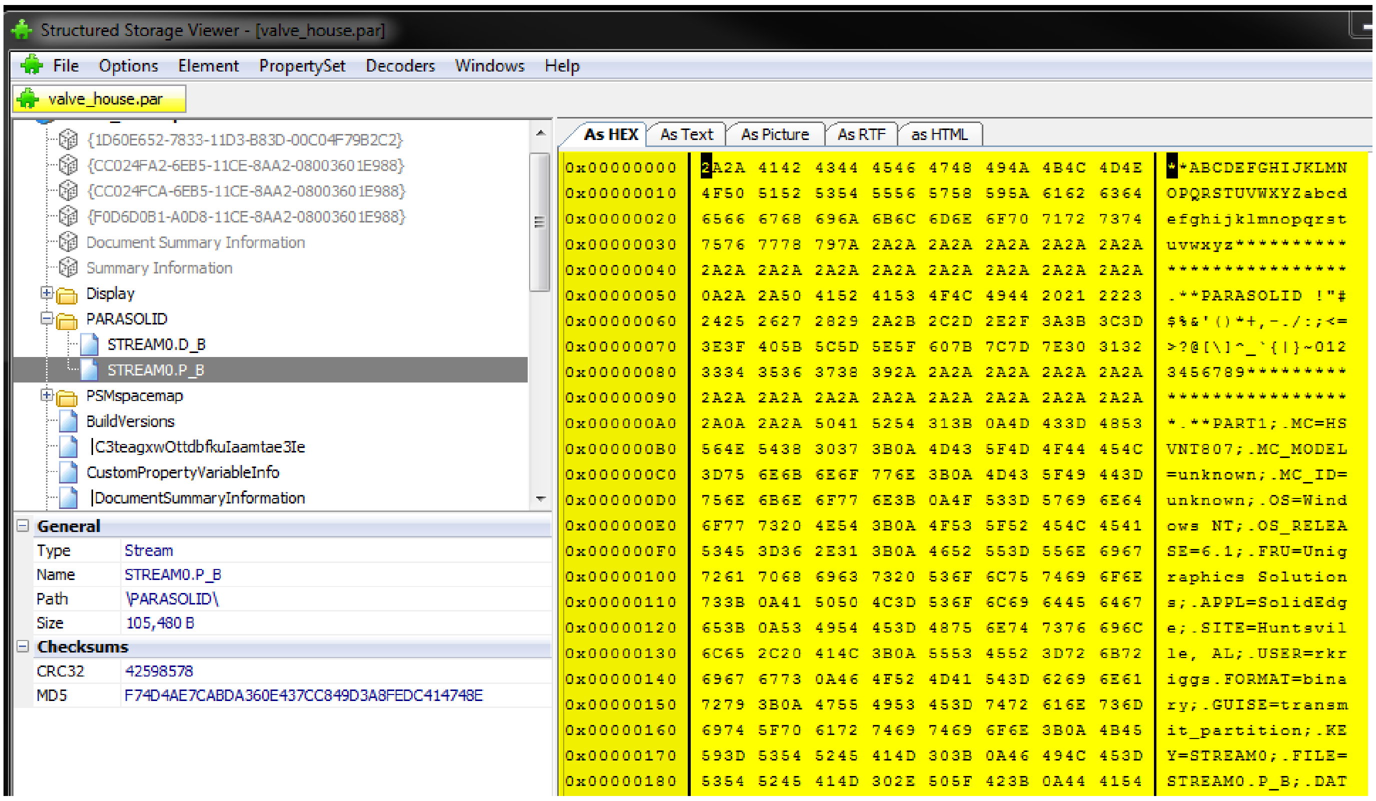
Streams do not have to be stored under Storage objects. Streams can also exist under the root level of the file:



```
valve_house.par
  {1D60E652-7833-11D3-B83D-00C04F79B2C2}
  {CC024FA2-6EB5-11CE-8AA2-080036 01E988}
  {CC024FCA-6EB5-11CE-8AA2-080036 01E988}
  {F0D6D0B1-A0D8-11CE-8AA2-080036 01E988}
  Document Summary Information
  Summary Information
  Display
  PARASOLID
  PSMspacemap
  BuildVersions
  |C3teagxwOttdbfkuIaamtae3Ie
  CustomPropertyVariableInfo
  |DocumentSummaryInformation
  DocVersion2
```

General	
Type	Stream
Name	BuildVersions
Path	\
Size	8 B
Checksums	
CRC32	0
MD5	CF52272BF384AEA96B62F16096AF69E112CB10E2

The Stream object can be interrogated in a structured storage viewing tool. However, as the Stream object data is machine code it will typically only reveal limited information of use to the human reader:



```
{1D60E652-7833-11D3-B83D-00C04F79B2C2}
{CC024FA2-6EB5-11CE-8AA2-080036 01E988}
{CC024FCA-6EB5-11CE-8AA2-080036 01E988}
{F0D6D0B1-A0D8-11CE-8AA2-080036 01E988}
Document Summary Information
Summary Information
Display
PARASOLID
  STREAM0.D_B
  STREAM0.P_B
PSMspacemap
BuildVersions
|C3teagxwOttdbfkuIaamtae3Ie
CustomPropertyVariableInfo
|DocumentSummaryInformation
```

General	
Type	Stream
Name	STREAM0.P_B
Path	\PARASOLID\
Size	105,480 B
Checksums	
CRC32	42598578
MD5	F74D4AE7CABDA360E437CC849D3A8FEDC414748E

```
0x00000000  2A2A 4142 4344 4546 4748 494A 4B4C 4D4E  **ABCDEFGHIJKLMN
0x00000010  4F50 5152 5354 5556 5758 595A 6162 6364  OPQRSTUVWXYZabcd
0x00000020  6566 6768 696A 6B6C 6D6E 6F70 7172 7374  efghijklmnopqrst
0x00000030  7576 7778 797A 2A2A 2A2A 2A2A 2A2A 2A2A  uvwxyz**********
0x00000040  2A2A 2A2A 2A2A 2A2A 2A2A 2A2A 2A2A 2A2A  ****************
0x00000050  0A2A 2A50 4152 4153 4F4C 4944 2021 2223  .**PARASOLID !"#
0x00000060  2425 2627 2829 2A2B 2C2D 2E2F 3A3B 3C3D  $%&'()*+,-./:;<=
0x00000070  3E3F 405B 5C5D 5E5F 607B 7C7D 7E30 3132  >?@[\]^_`{|}~012
0x00000080  3334 3536 3738 392A 2A2A 2A2A 2A2A 2A2A  3456789*********
0x00000090  2A2A 2A2A 2A2A 2A2A 2A2A 2A2A 2A2A 2A2A  ****************
0x000000A0  2A0A 2A2A 5041 5254 313B 0A4D 433D 4853  *.**PART1;.MC=HS
0x000000B0  564E 5438 3037 3B0A 4D43 5F4D 4F44 454C  VNT807;.MC_MODEL
0x000000C0  3D75 6E6B 6E6F 776E 3B0A 4D43 5F49 443D  =unknown;.MC_ID=
0x000000D0  756E 6B6E 6F77 6E3B 0A4F 533D 5769 6E64  unknown;.OS=Wind
0x000000E0  6F77 7320 4E54 3B0A 4F53 5F52 454C 4541  ows NT;.OS_RELEA
0x000000F0  5345 3D36 2E31 3B0A 4652 553D 556E 6967  SE=6.1;.FRU=Unig
0x00000100  7261 7068 6963 7320 536F 6C75 7469 6F6E  raphics Solution
0x00000110  733B 0A41 5050 4C3D 536F 6C69 6445 6467  s;.APPL=SolidEdg
0x00000120  653B 0A53 4954 453D 4875 6E74 7376 696C  e;.SITE=Huntsvil
0x00000130  6C65 2C20 414C 3B0A 5553 4552 3D72 6B72  le, AL;.USER=rkr
0x00000140  6967 6773 0A46 4F52 4D41 543D 6269 6E61  iggs.FORMAT=bina
0x00000150  7279 3B0A 4755 4953 453D 7472 616E 736D  ry;.GUISE=transm
0x00000160  6974 5F70 6172 7469 7469 6F6E 3B0A 4B45  it_partition;.KE
0x00000170  593D 5354 5245 414D 303B 0A46 494C 453D  Y=STREAM0;.FILE=
0x00000180  5354 5245 414D 302E 505F 423B 0A44 4154  STREAM0.P_B;.DAT
```

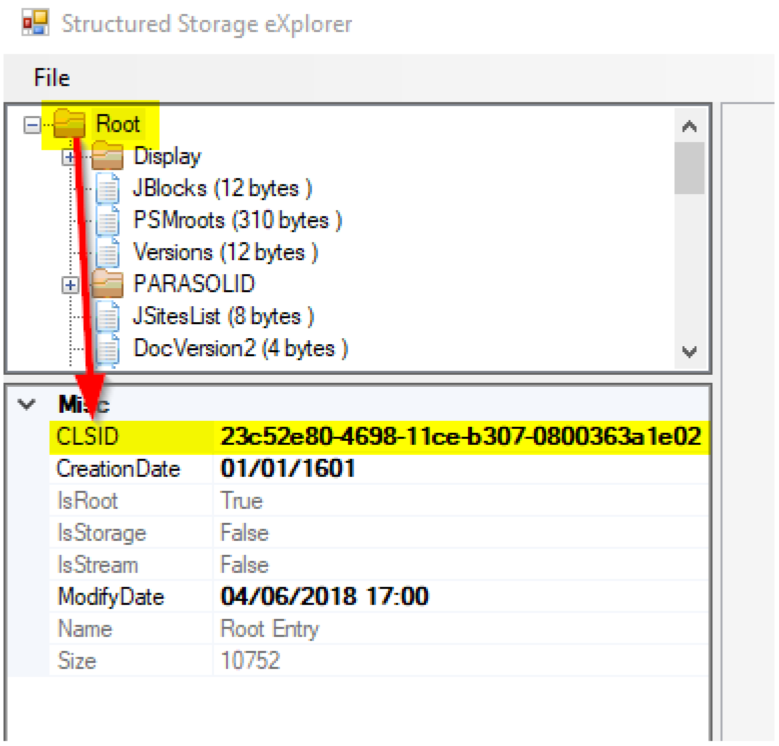
5.6 Class Identifier (CLSID)

Within the Root storage there is an entry called CLSID. The CLSID key, or Class Identifier, is a string of alphanumeric characters that is used globally throughout the Windows operating system to represent a unique value that then identifies an object and its application use within Windows.

In other words, the Root Class Identifier (CLSID) defines what type of file the actual file is and what application it is used with in Windows.

Just because a file has a certain file extension e.g. .asm does not necessarily mean that the file is a Solid Edge Assembly file. The .asm file extension could also be a Pro/E file type. So, if you try to open a Pro/E file directly in Solid Edge how does Solid Edge know that the file is actually not a Solid Edge .asm file? This is one of the functions of the CLSID. Each structured storage file type should have a unique CLSID, and specifically each Solid Edge file type does have its own unique CLSID.

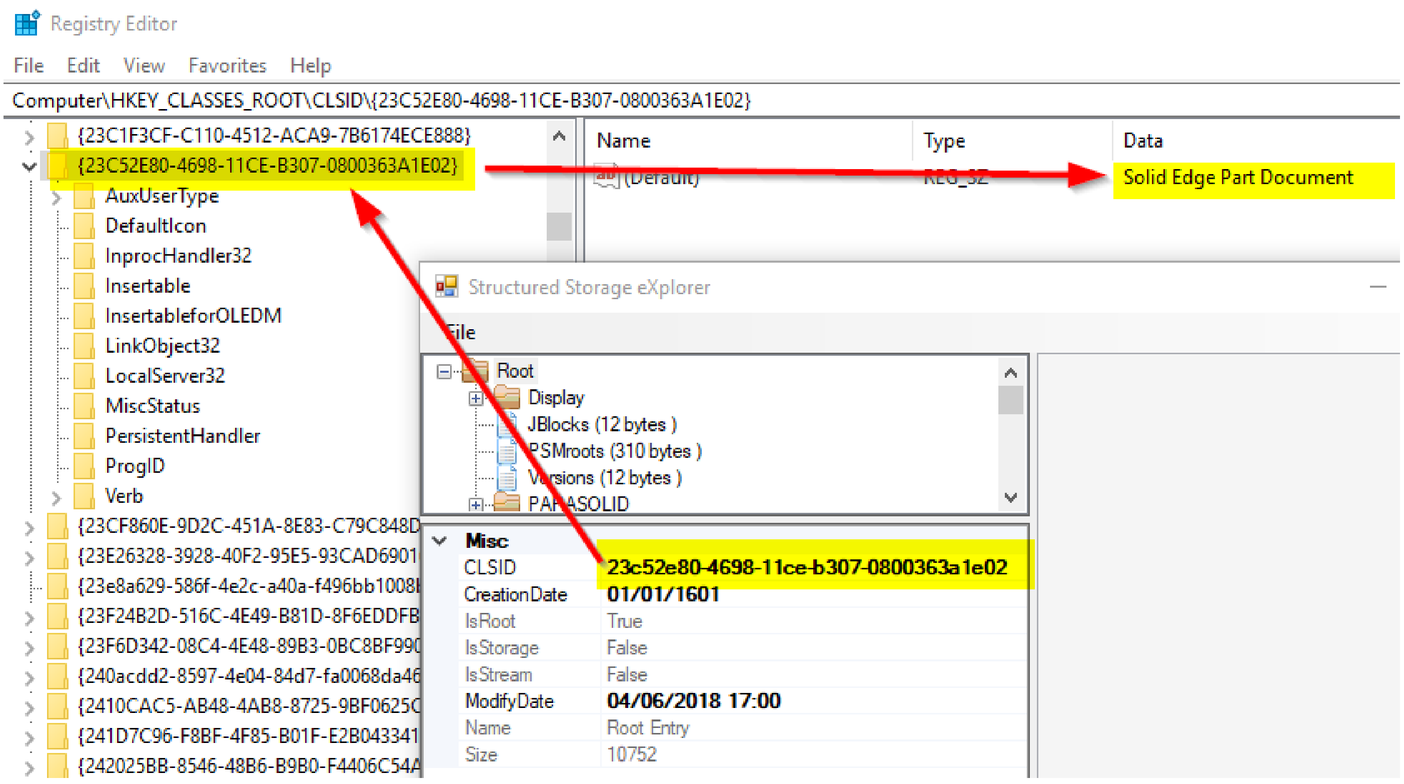
Opening the valve_house.par file used in our previous examples in to the Structured Storage eXplorer tool we can see the CLSID value stored at the Root level:



CLSID	23c52e80-4698-11ce-b307-0800363a1e02
CreationDate	01/01/1601
IsRoot	True
IsStorage	False
IsStream	False
ModifyDate	04/06/2018 17:00
Name	Root Entry
Size	10752

The above CLSID at the top level of the file indicates that this file is internally identified to the Microsoft COM Structured Storage as a Solid Edge part file.

We can query the Windows registry using regedit.exe and locate references to this same CLSID value:


Registry Editor

File Edit View Favorites Help

Computer\HKEY_CLASSES_ROOT\CLSID\{23C52E80-4698-11CE-B307-0800363A1E02}

```
{23C1F3CF-C110-4512-ACA9-7B6174ECE888}
{23C52E80-4698-11CE-B307-0800363A1E02}
    AuxUserType
    DefaultIcon
    InprocHandler32
    Insertable
    InsertableforOLEDM
    LinkObject32
    LocalServer32
    MiscStatus
    PersistentHandler
    ProgID
    Verb
{23CF860E-9D2C-451A-8E83-C79C848D
{23E26328-3928-40F2-95E5-93CAD6901
{23e8a629-586f-4e2c-a40a-f496bb1008
{23F24B2D-516C-4E49-B81D-8F6EDDFB
{23F6D342-08C4-4E48-89B3-0BC8BF990
{240acdd2-8597-4e04-84d7-fa0068da46
{2410CAC5-AB48-4AB8-8725-9BF0625C
{241D7C96-F8BF-4F85-B01F-E2B043341
{242025BB-8546-48B6-B9B0-F4406C54A
```

Name	Type	Data
(Default)	REG_SZ	Solid Edge Part Document

Structured Storage eXplorer

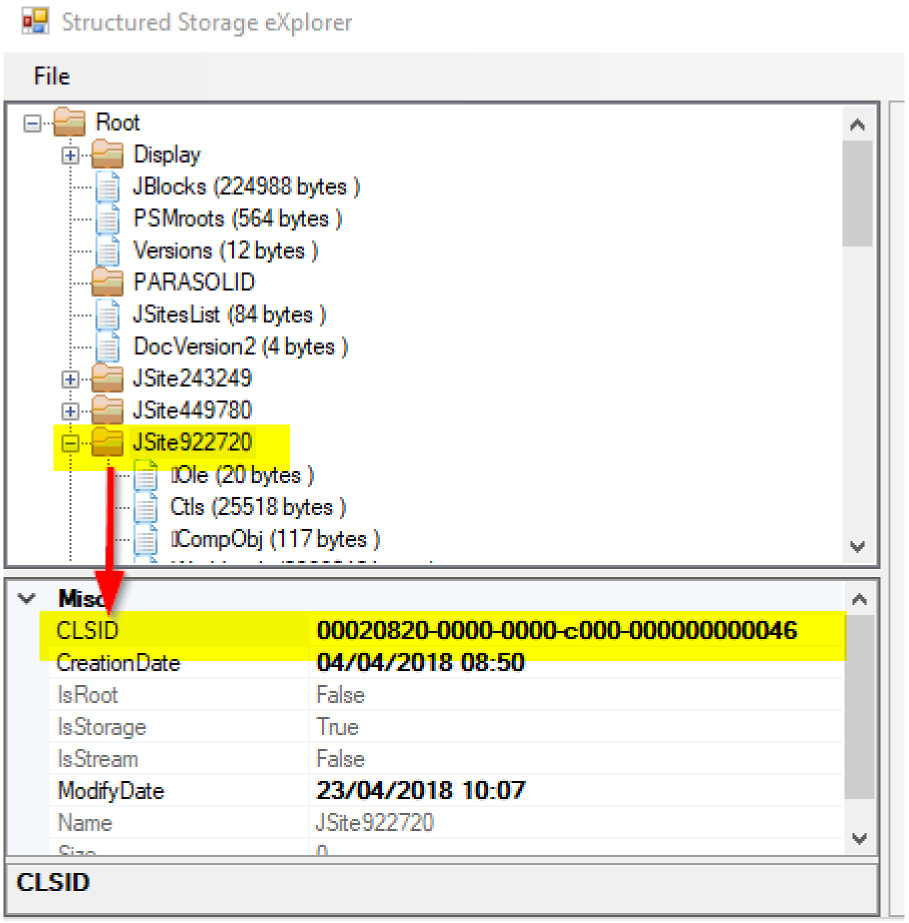
File

```
Root
    Display
    JBlocks (12 bytes )
    PSMroots (310 bytes )
    Versions (12 bytes )
    PARASOLID
```

Misc

CLSID	23c52e80-4698-11ce-b307-0800363a1e02
CreationDate	01/01/1601
IsRoot	True
IsStorage	False
IsStream	False
ModifyDate	04/06/2018 17:00
Name	Root Entry
Size	10752

Similarly, as we interrogate the content of a Solid Edge file we can also see that there are CLSID values on some of the Storage objects. In the following Solid Edge file there is a Storage object with a different CLSID:


Structured Storage eXplorer

File

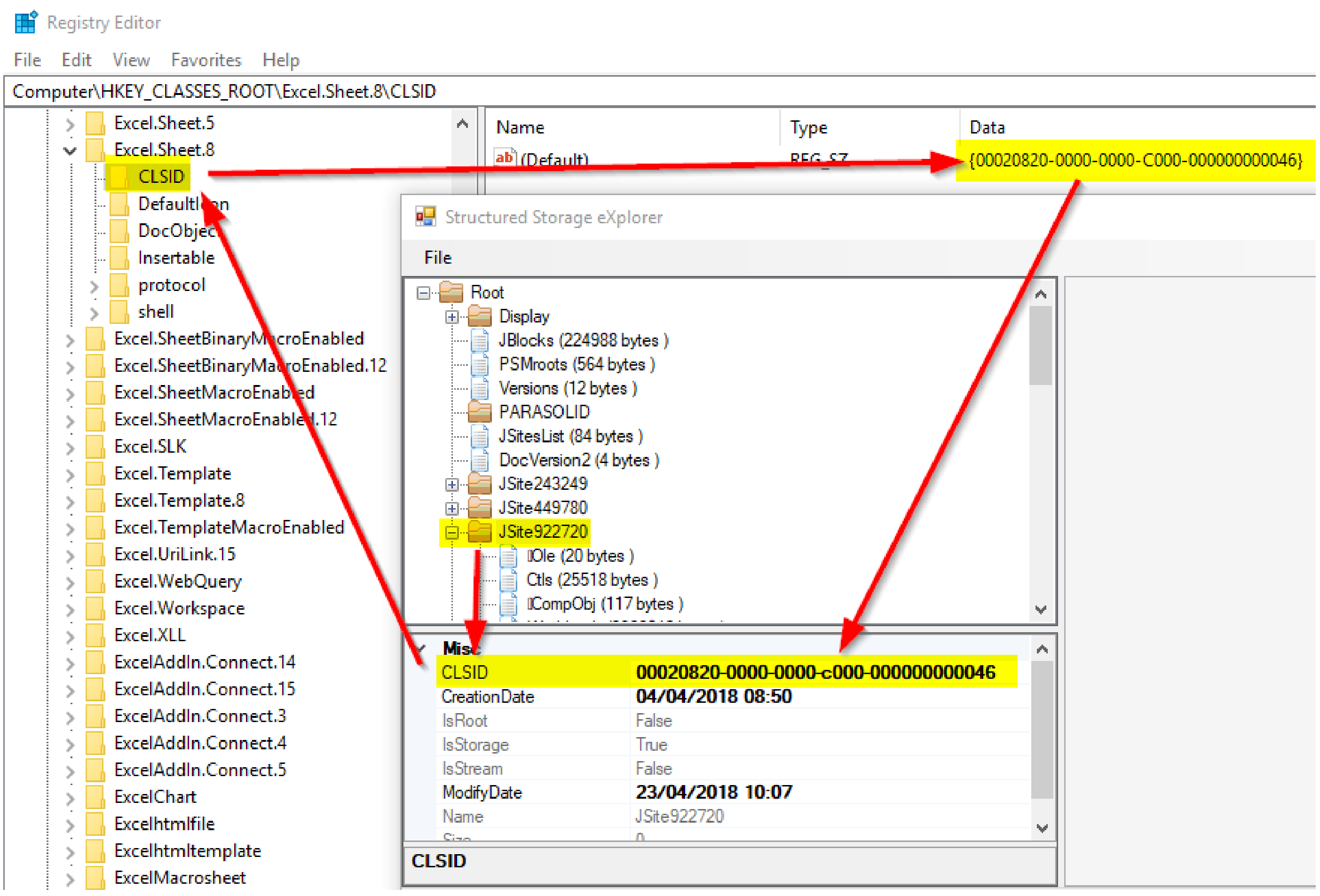
```
Root
    Display
    JBlocks (224988 bytes )
    PSMroots (564 bytes )
    Versions (12 bytes )
    PARASOLID
    JSitesList (84 bytes )
    DocVersion2 (4 bytes )
    JSite243249
    JSite449780
    JSite922720
        Ole (20 bytes )
        Ctls (25518 bytes )
        CompObj (117 bytes )
```

Misc

CLSID	00020820-0000-0000-c000-000000000046
CreationDate	04/04/2018 08:50
IsRoot	False
IsStorage	True
IsStream	False
ModifyDate	23/04/2018 10:07
Name	JSite922720
Size	0

CLSID

If we query the Windows registry for this CLSID value we see the following:



Computer\HKEY_CLASSES_ROOT\Excel.Sheet.8\CLSID

```
Excel.Sheet.5
Excel.Sheet.8
  CLSID
  DefaultIcon
  DocObject
  Insertable
  protocol
  shell
Excel.SheetBinaryMacroEnabled
Excel.SheetBinaryMacroEnabled.12
Excel.SheetMacroEnabled
Excel.SheetMacroEnabled.12
Excel.SLK
Excel.Template
Excel.Template.8
Excel.TemplateMacroEnabled
Excel.UriLink.15
Excel.WebQuery
Excel.Workspace
Excel.XLL
ExcelAddIn.Connect.14
ExcelAddIn.Connect.15
ExcelAddIn.Connect.3
ExcelAddIn.Connect.4
ExcelAddIn.Connect.5
ExcelChart
Excelhtmlfile
Excelhtmltemplate
ExcelMacrosheet
```

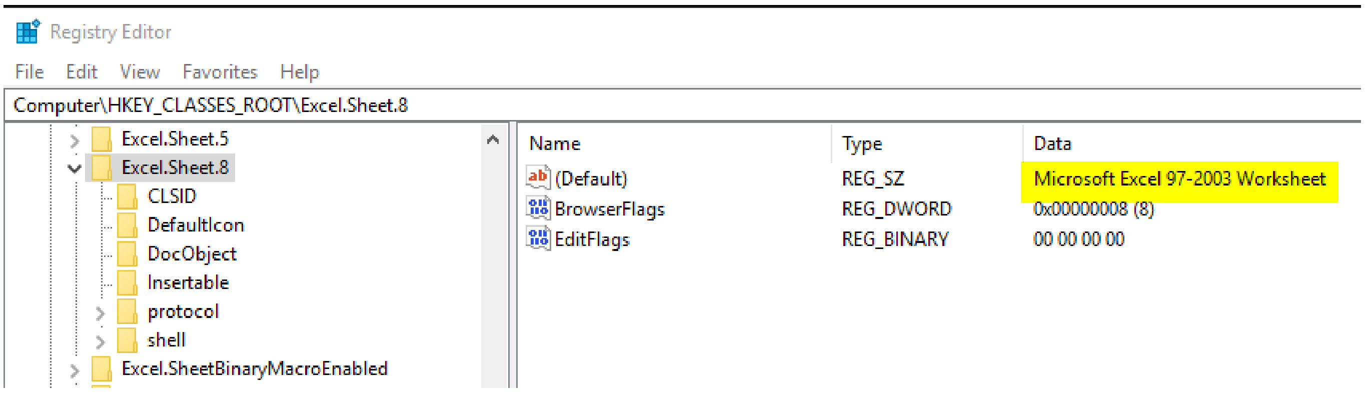
Name	Type	Data
(Default)	REG_SZ	{00020820-0000-0000-C000-000000000046}

```
Root
  Display
  JBlocks (224988 bytes )
  PSMroots (564 bytes )
  Versions (12 bytes )
  PARASOLID
  JSitesList (84 bytes )
  DocVersion2 (4 bytes )
  JSite243249
  JSite449780
  JSite922720
    Ole (20 bytes )
    Ctls (25518 bytes )
    CompObj (117 bytes )
```

Misc	
CLSID	00020820-0000-0000-c000-000000000046
CreationDate	04/04/2018 08:50
IsRoot	False
IsStorage	True
IsStream	False
ModifyDate	23/04/2018 10:07
Name	JSite922720

CLSID

We can then quickly determine that the application registered to this CLSID is Microsoft Excel:



Computer\HKEY_CLASSES_ROOT\Excel.Sheet.8

```
Excel.Sheet.5
Excel.Sheet.8
  CLSID
  DefaultIcon
  DocObject
  Insertable
  protocol
  shell
Excel.SheetBinaryMacroEnabled
```

Name	Type	Data
(Default)	REG_SZ	Microsoft Excel 97-2003 Worksheet
BrowserFlags	REG_DWORD	0x00000008 (8)
EditFlags	REG_BINARY	00 00 00 00

Therefore, there is an Excel file embedded in to the Solid Edge file.

5.6.1 Solid Edge File Type CLSIDs

Each Solid Edge file type has a unique CLSID value. Here is the list of CLSID values for each Solid Edge file type:

Type	File Extension	CLSID
Assembly	.asm	00c6bf00-483b-11ce-951a-08003601be52
Assembly FOA	.asm	04d613a0-a322-40b5-a2a4-36ca0de6f5d9
Assembly Configuration	.cfg	00000000-0000-0000-0000-000000000000
Draft	.dft	016b11fb-cdc0-11ce-a035-08003601e53b
Part *****	.par	23c52e80-4698-11ce-b307-0800363a1e02
Part FOP *****	.par	23c52e80-4698-11ce-b307-0800363a1e02
Sheet Metal	.psm	dd8522e0-2375-11d0-ac05-080036fd1802
Weldment	.pwd	98ccdf9c-213b-11d4-b64c-00c04f79b2bf
Packaged Collaboration File	.pcf	64e909e5-4acc-496c-8e4b-a660dc6a56ec

***** Note: The Part and Part FOP files contain the same CLSID value.

6 Potential Causes of Solid Edge File Corruption

In the following section we will attempt to identify some potential causes for file corruption. Once a file has become corrupted it is not possible to then identify how that file became corrupted. To avoid any future file corruptions will require some investigative analysis on the part of the customer with some potential underlying architecture and/or operating system and/or application changes being required.

The following list of potential causes are not listed in any order of frequency or likelihood of occurrence. Nor will avoiding only one of these potential causes necessarily resolve any ongoing file corruptions in the customer environment. It may take a combination of avoiding multiple potential root causes to resolve all file corruption scenarios in the customer environment.

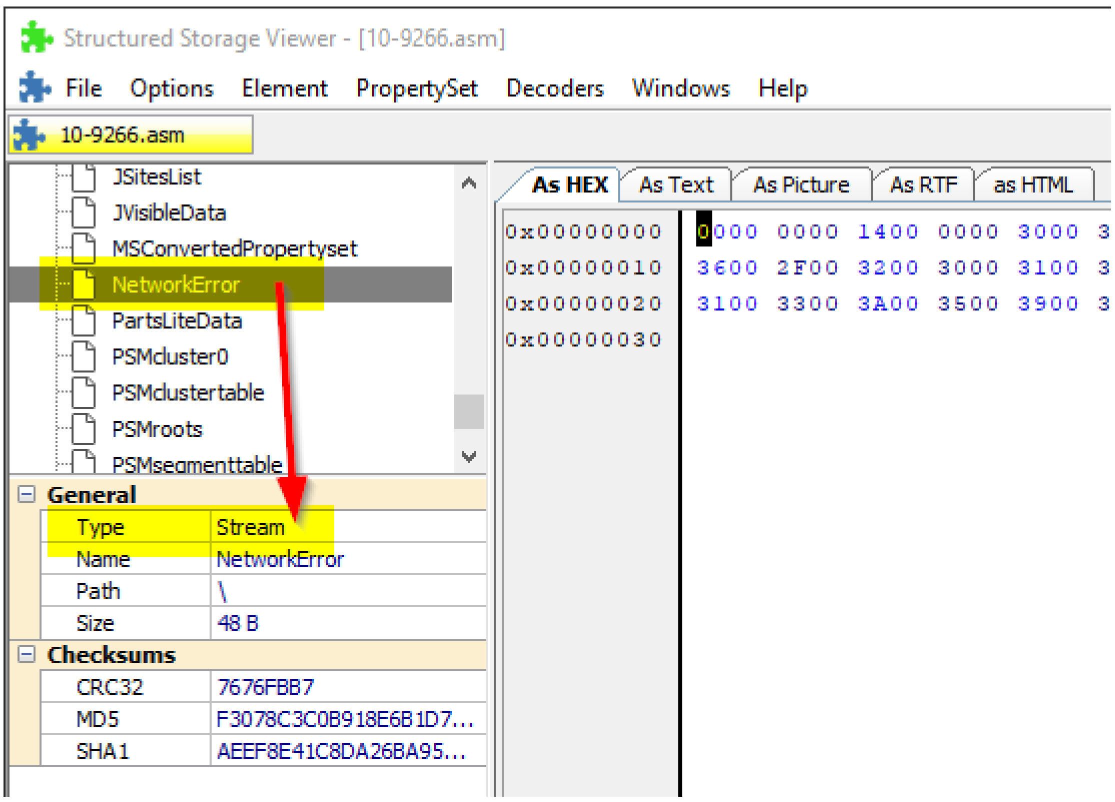
- Network Stability
- Thumbnail Caching
- Anti-Virus
- Disk Write Caching
    - Removable Disk Drives
    - Distributed File System
- Cloud File Syncing
- Disk Compression
- Mapped Drives
- Downstream Usage of Files
- Custom File Save Events
- Family of Assembly Files

6.1 Network Stability

If Solid Edge files are stored on a file server and are accessed by the client across a network, then network stability can be a potential cause for file corruption, especially if the network drops during the process of saving a file.

Note: It is beyond the scope of GTAC to provide support and advice regarding network configuration and investigation of any network related issues.

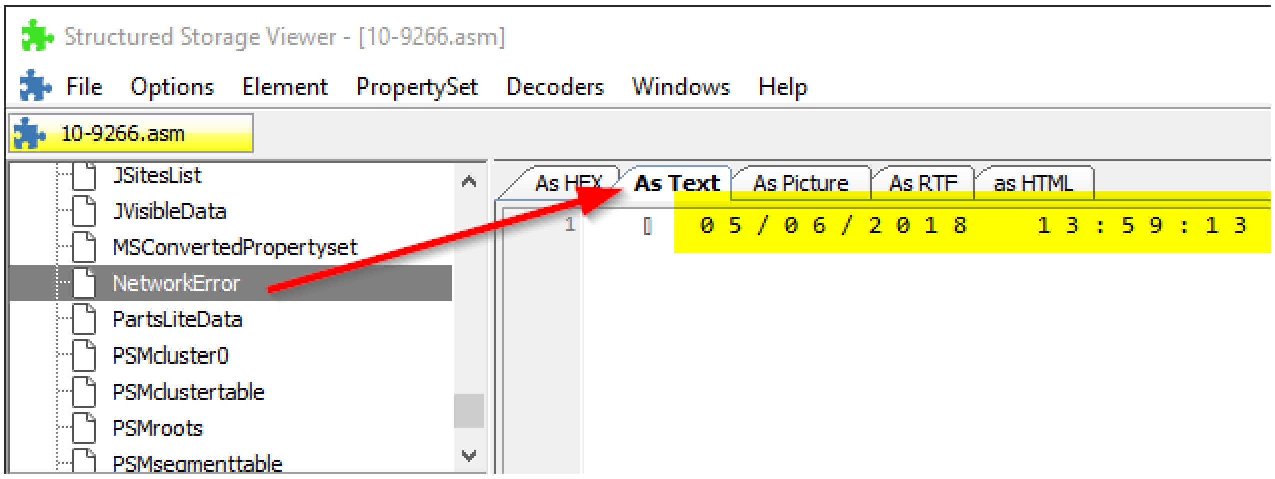
Network save issues may be captured within the Solid Edge file under a separate Stream object. For PR# 9403648, which was submitted for a corrupt assembly file, if we open the assembly file from this PR in our Structured Storage viewing tool we can observe the following "NetworkError" Stream object:


Structured Storage Viewer - [10-9266.asm]
File Options Element PropertySet Decoders Windows Help
10-9266.asm
JSitesList
JVisibleData
MSConvertedPropertyset
NetworkError
PartsLiteData
PSMcluster0
PSMclustertable
PSMroots
PSMsegmenttable
As HEX As Text As Picture As RTF as HTML

General	
Type	Stream
Name	NetworkError
Path	\
Size	48 B
Checksums	
CRC32	7676FBB7
MD5	F3078C3C0B918E6B1D7...
SHA1	AEEF8E41C8DA26BA95...

```
0x00000000  0000 0000 1400 0000 3000 3
0x00000010  3600 2F00 3200 3000 3100 3
0x00000020  3100 3300 3A00 3500 3900 3
0x00000030
```

If we view the content of this stream object in the "As Text" tab of the viewer tool, we can clearly see the timestamp of when a network error was recorded in the Solid Edge file. In this instance, 05/06/2018 at 13:59:13:

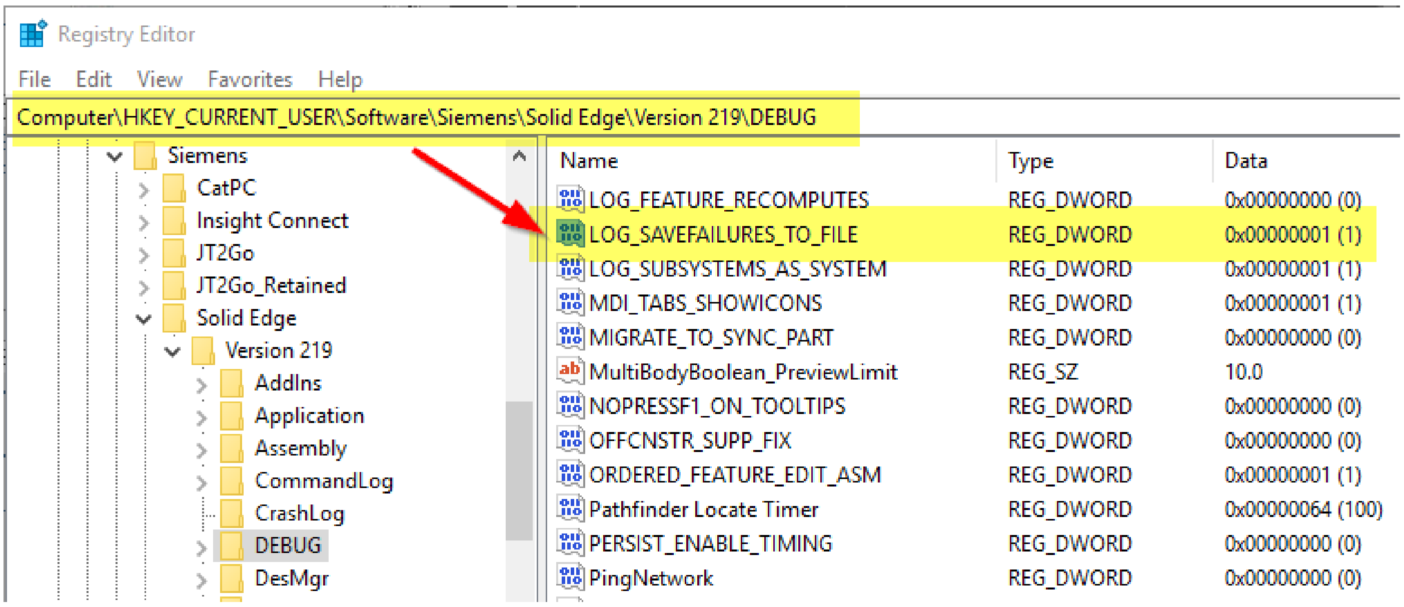

Structured Storage Viewer - [10-9266.asm]
File Options Element PropertySet Decoders Windows Help
10-9266.asm
JSitesList
JVisibleData
MSConvertedPropertyset
NetworkError
PartsLiteData
PSMcluster0
PSMclustertable
PSMroots
PSMsegmenttable
As HEX As Text As Picture As RTF as HTML

```
1    ▯  0 5 / 0 6 / 2 0 1 8    1 3 : 5 9 : 1 3
```

Although this "NetworkError" object exists and tells us when a network issue was detected and recorded, this does not provide any indication as to a root cause for the network stability issues. This object simply indicates that there have been some network stability issues at the customer site at the time this error was recorded. However, if the customer is reporting many corrupted files and the majority of corrupted files have this "NetworkError" object then this is an indicator that there has been network stability within the customer environment.

If network stability during file saving is suspected as a potential cause of file corruption you can enable in the registry the following debug switch:

HKEY_CURRENT_USER\Software\Siemens\Solid Edge\Version 219\DEBUG\LOG_SAVEFAILURES_TO_FILE = 1



Computer\HKEY_CURRENT_USER\Software\Siemens\Solid Edge\Version 219\DEBUG

Name	Type	Data
LOG_FEATURE_RECOMPUTES	REG_DWORD	0x00000000 (0)
LOG_SAVEFAILURES_TO_FILE	REG_DWORD	0x00000001 (1)
LOG_SUBSYSTEMS_AS_SYSTEM	REG_DWORD	0x00000001 (1)
MDI_TABS_SHOWICONS	REG_DWORD	0x00000001 (1)
MIGRATE_TO_SYNC_PART	REG_DWORD	0x00000000 (0)
MultiBodyBoolean_PreviewLimit	REG_SZ	10.0
NOPRESSF1_ON_TOOLTIPS	REG_DWORD	0x00000000 (0)
OFFCNSTR_SUPP_FIX	REG_DWORD	0x00000000 (0)
ORDERED_FEATURE_EDIT_ASM	REG_DWORD	0x00000001 (1)
Pathfinder Locate Timer	REG_DWORD	0x00000064 (100)
PERSIST_ENABLE_TIMING	REG_DWORD	0x00000000 (0)
PingNetwork	REG_DWORD	0x00000000 (0)

With this switch enabled, any save failures should be captured in the %APPDATA%\Siemens\Solid Edge\Version xxx\SaveFailurelog.txt file and this log file can be reviewed to confirm any network disconnects that may be occurring.

6.2 Thumbnail Caching

In Windows Explorer by default the caching of thumbnails of files on network shares is enabled by default. This caching of thumbnails can cause the files to still be considered open by the underlying operating system thereby preventing successful completion of writing of the internal storage objects to the file. This was an issue in an earlier version of Solid Edge.

This should now be resolved in newer Solid Edge versions but should still always be considered as a potential source for future corruption. For more on disabling thumbnail caching see the following Solution Center article:

http://solutions.industrysoftware.automation.siemens.com/view.php?si=002-7004168

For more information on Windows thumbnail caching:

https://en.wikipedia.org/wiki/Windows_thumbnail_cache

6.3 Anti-Virus

Anti-virus scanning can lock a Solid Edge file during the save operation such that Solid Edge then cannot complete the save of all the internal storage objects.

Therefore, the best practice is to configure anti-virus software to exclude Solid Edge file types.

Remember to configure both the server and the clients for the exclusions. It makes no sense to configure the clients with anti-virus exclusions to then still have anti-virus scanning Solid Edge files on the server.

There are several Solution Center articles available that document best practices for configuring anti-virus for use with Solid Edge:

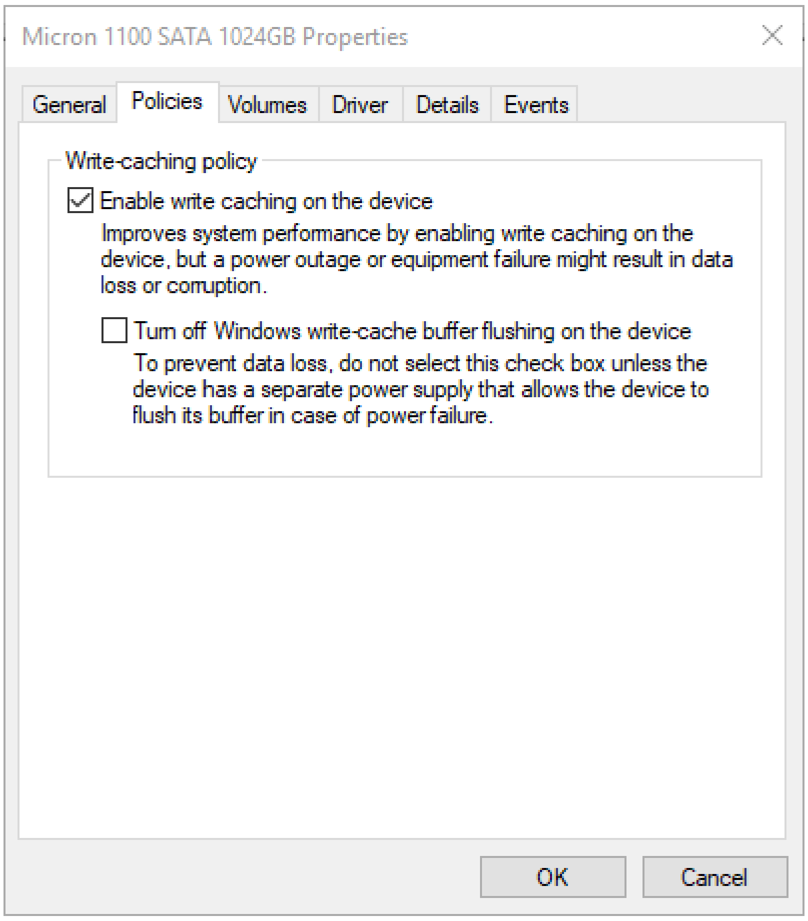
http://solutions.industrysoftware.automation.siemens.com/view.php?si=002-8007557

http://solutions.industrysoftware.automation.siemens.com/view.php?si=002-8007556

6.4 Disk Write Caching

Disk write caching is an operating system feature that improves system performance by using fast volatile memory (RAM) to collect write commands sent to data storage devices and cache those write commands until the slower storage device e.g. hard disk can be written to later. This allows applications to run faster by allowing the application to proceed without waiting for data write-requests to be written to the disk.

While disk write caching may increase both system and application performance, it can also increase the chances of data loss in case of power or system failures before the data from the write-cache buffer is flushed by successfully writing the data to the disk:


Micron 1100 SATA 1024GB Properties

General | Policies | Volumes | Driver | Details | Events

Write-caching policy

☑ Enable write caching on the device
Improves system performance by enabling write caching on the device, but a power outage or equipment failure might result in data loss or corruption.

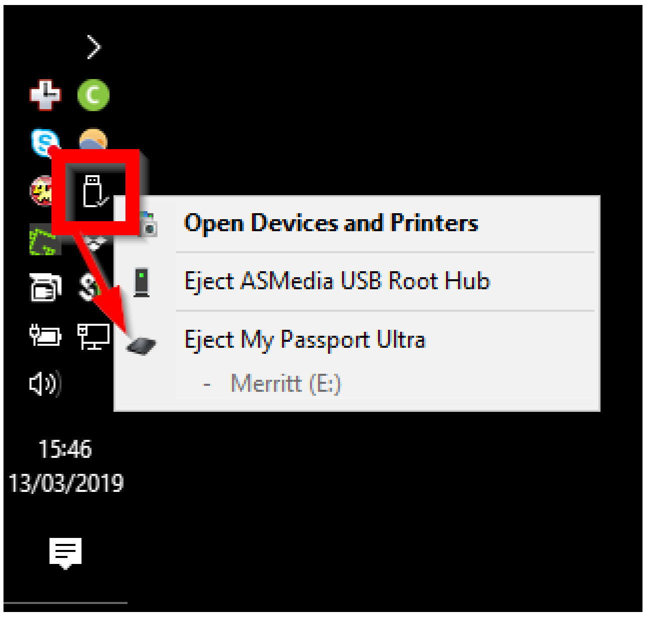
☐ Turn off Windows write-cache buffer flushing on the device
To prevent data loss, do not select this check box unless the device has a separate power supply that allows the device to flush its buffer in case of power failure.

Disk write caching can introduce file corruption if a file is frequently saved and the data stored in RAM is being overwritten before the data has been fully written to disk.

Disk writing caching should always be used with care. The general recommendation to ensure Solid Edge file stability should be to avoid disk caching where appropriate.

6.4.1 Removable Disk Drives

Removable USB drives use disk writing caching to improve performance. However, if disk write caching is enabled then the user must run the operating system “Eject media” command to ensure that the data in RAM is written to the disk before the media is removed.

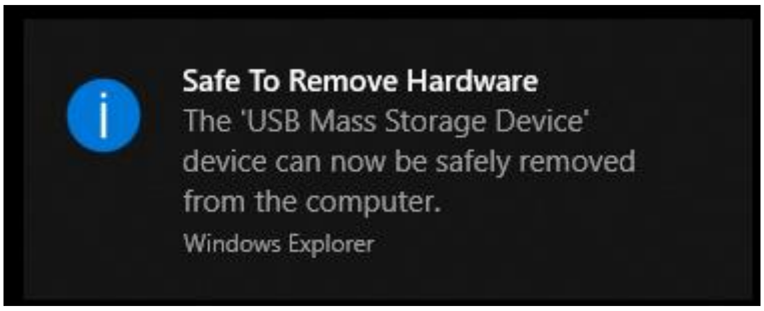


Open Devices and Printers

Eject ASMedia USB Root Hub

Eject My Passport Ultra
- Merritt (E:)

15:46
13/03/2019



Safe To Remove Hardware
The 'USB Mass Storage Device' device can now be safely removed from the computer.
Windows Explorer

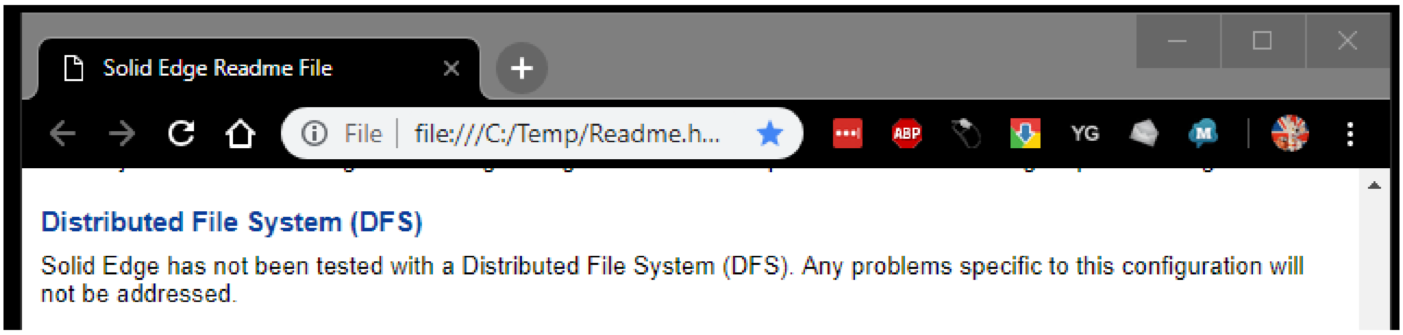
If a USB drive with disk write caching is removed before the data in RAM is finished writing to the disk, this then can cause file corruption.

6.4.2 Distributed File System

A distributed file system (DFS) is a file system with data stored on one or more servers. The data is accessed and processed as if it was stored on the local client machine. The DFS makes it convenient to share information and files among users on a network in a controlled and authorized way. The server allows the client users to share files and store data just like they are storing the information locally. However, the servers have full control over the data and give access control to the clients.

Depending on how the DFS has been configured, it is possible to save a Solid Edge file multiple times and have the data in server RAM changed before the initial data has been fully saved to all server locations. This can then place the Solid Edge file into an inconsistent state resulting in Solid Edge file corruption.

The Solid Edge readme file explicitly states we have not tested Solid Edge with DFS environments and that any issues with Solid Edge in a DFS environment will not be addressed:



Distributed File System (DFS)

Solid Edge has not been tested with a Distributed File System (DFS). Any problems specific to this configuration will not be addressed.

For more on the Microsoft Distributed File System:

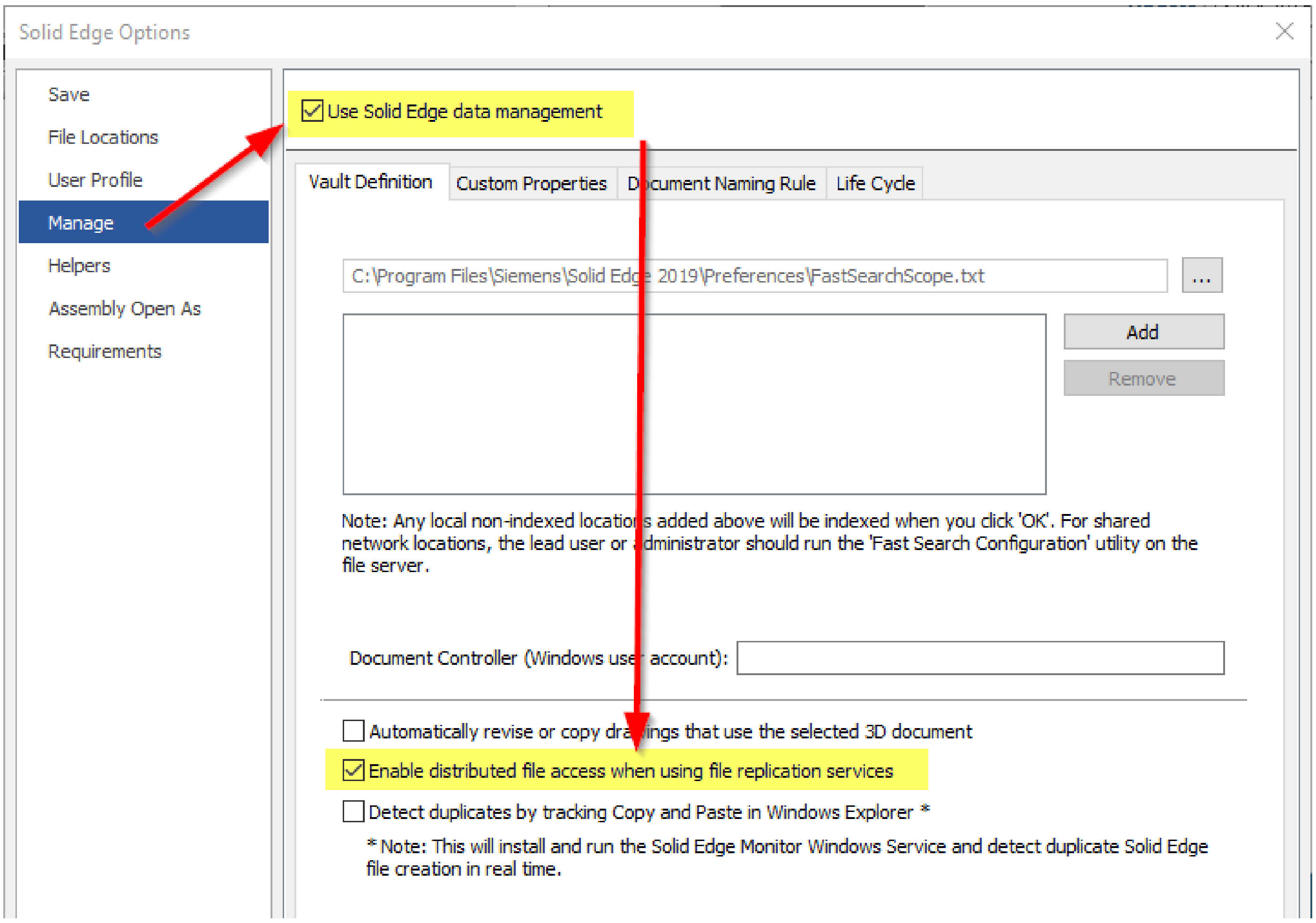
https://docs.microsoft.com/en-gb/windows/desktop/Stg/structured-storage-start-page

6.5 Cloud File Syncing

Cloud file syncing is an application that keeps files in different locations up to date through the cloud. For cloud file syncing, a user sets up a cloud-based folder, to which the desired files are copied. This folder makes the files accessible via an interface for multiple users, on whatever device they are using. When a user updates a file, the changes are automatically synchronized with the corresponding folders on other user devices.

Depending on the cloud storage solution implemented, typically after a file is initially synced to the cloud, further modifications to the file does not result in the entire file being resynced to the cloud but instead only chunks of data based on the changes to the underlying physical file content are synced back into the cloud. This file syncing method is used for performance with the cloud syncing, especially in a multi-user syncing environment. However, for larger file formats, such as Solid Edge files, and with more frequent saves it is possible for these chunks of modified file data to collide resulting in conflicts with the data ultimately resulting in a corrupted file.

Solid Edge does provide support for cloud file syncing services. However, it is important to ensure that the "Enable distributed file access when using file replication services" within the Solid Edge Options is enabled.



☑ Use Solid Edge data management

C:\Program Files\Siemens\Solid Edge 2019\Preferences\FastSearchScope.txt

Note: Any local non-indexed locations added above will be indexed when you click 'OK'. For shared network locations, the lead user or administrator should run the 'Fast Search Configuration' utility on the file server.

Document Controller (Windows user account):

☐ Automatically revise or copy drawings that use the selected 3D document

☑ Enable distributed file access when using file replication services

☐ Detect duplicates by tracking Copy and Paste in Windows Explorer *

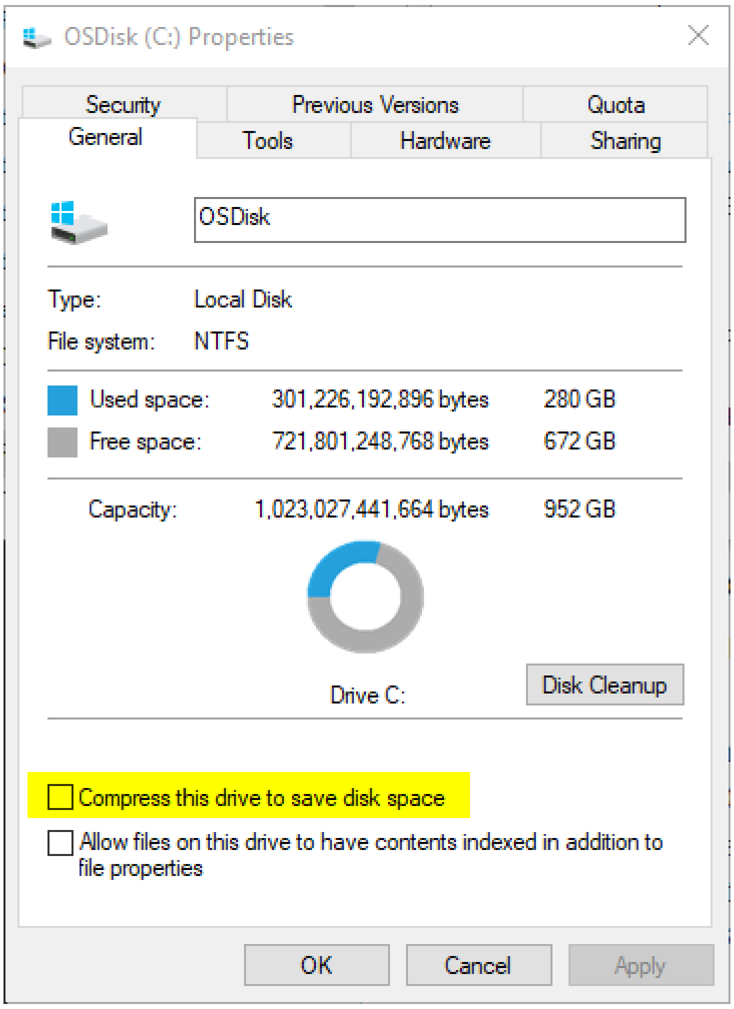
* Note: This will install and run the Solid Edge Monitor Windows Service and detect duplicate Solid Edge file creation in real time.

6.6 Disk Compression

Disk compression is a type of data compression that works by storing compressed versions of files on the hard disk. A disk compression utility sits between the operating system and the disk drive. Whenever the operating system attempts to save a file to disk, the utility intercepts it and compresses it. Likewise, when the operating system attempts to open a file, the disk compression utility intercepts the file, decompresses it, and then passes it to the operating system. Because all applications access files through the operating system, disk compression utilities work with all applications. The entire process is transparent to the user, though opening and closing files may take a little longer. On the other hand, a disk compression utility can double the amount of disk space available.

Because disk compression requires an intermediate software layer to successfully write the file to disk, this in of itself introduces another element of potential failure and corruption in to the system. Additionally, when working with larger file formats and more frequent saves it is possible for the compression layer to become overwhelmed resulting in collision and conflicts with the data, ultimately resulting in a corrupted file.

Although disk compression will increase available hard drive space it is advisable to disable any disk compression for file stability. Disk compression can be in place on either the client or server or both:



OSDisk

Type:	Local Disk	
File system:	NTFS	
Used space:	301,226,192,896 bytes	280 GB
Free space:	721,801,248,768 bytes	672 GB
Capacity:	1,023,027,441,664 bytes	952 GB

Drive C:

☐ Compress this drive to save disk space

☐ Allow files on this drive to have contents indexed in addition to file properties

For more information on disk compression:

https://en.wikipedia.org/wiki/Disk_compression

6.7 Mapped Drives

Windows mapped drives represent shared drives on a file server with those resources being mapped to the client as internal Windows drive letters such that the shared resource appears local to the client. This method offers users an easier way to connect to shared drives because the client operating system will remember the mapping and load it for the user.

Windows mapped drives technology dates back to Windows 3.1. There are certain known inherent issues with using mapped drives, including mapped drive timeouts and disconnects. These automatic timeouts and disconnects then require the underlying operating system to automatically reconnect the mapped drive. This delay in automatically reconnecting a disconnected mapped drive can cause unreliability and stability issues. Because of these inherent issues with mapped drives in the Windows operating system, Microsoft later introduced Universal Naming Convention (UNC) as a replacement to mapped drives.

Under the hood, Solid Edge attempts to uses UNC conventions in place of mapped drive letters. Because of the unreliability of mapped drives, the recommendation is that mapped drive letters should be avoided. Instead the customer should always be accessing network data through UNC paths and using Network Folder shortcuts in place of mapped drive letters.

6.8 Downstream Usage of Files

Many customers will implement their own unique and custom downstream processes on their Solid Edge files. Some examples of downstream processes include providing file viewing capabilities to the shop floor, automatically generating PDF and other file formats, automated release processes, et. al. These downstream processes require accessing the Solid Edge files. Depending on how the downstream process are implemented there is potential for these downstream processes to lock the Solid Edge files thereby preventing access and or potentially corrupting the files.

Part of investigating possible root causes for consistent file corruptions should take in to consideration any downstream process that are implemented. If downstream processing of the file is in place, depending on the analysis of what this downstream processing is doing, then this downstream processing may need to be temporarily paused if no other root cause for file corruptions can be determined.

6.9 Custom File Save Events

Some customers will write their own custom Save events in order to provide either pre- or post- save processing to the file after it is saved to disk. A custom Save event will replace the out-of-the-box Save event. Depending on what the custom Save event is attempting to accomplish, and how the custom code has been written, it is possible to that the file could become corrupted because of this pre- and/or post- processing on the file.

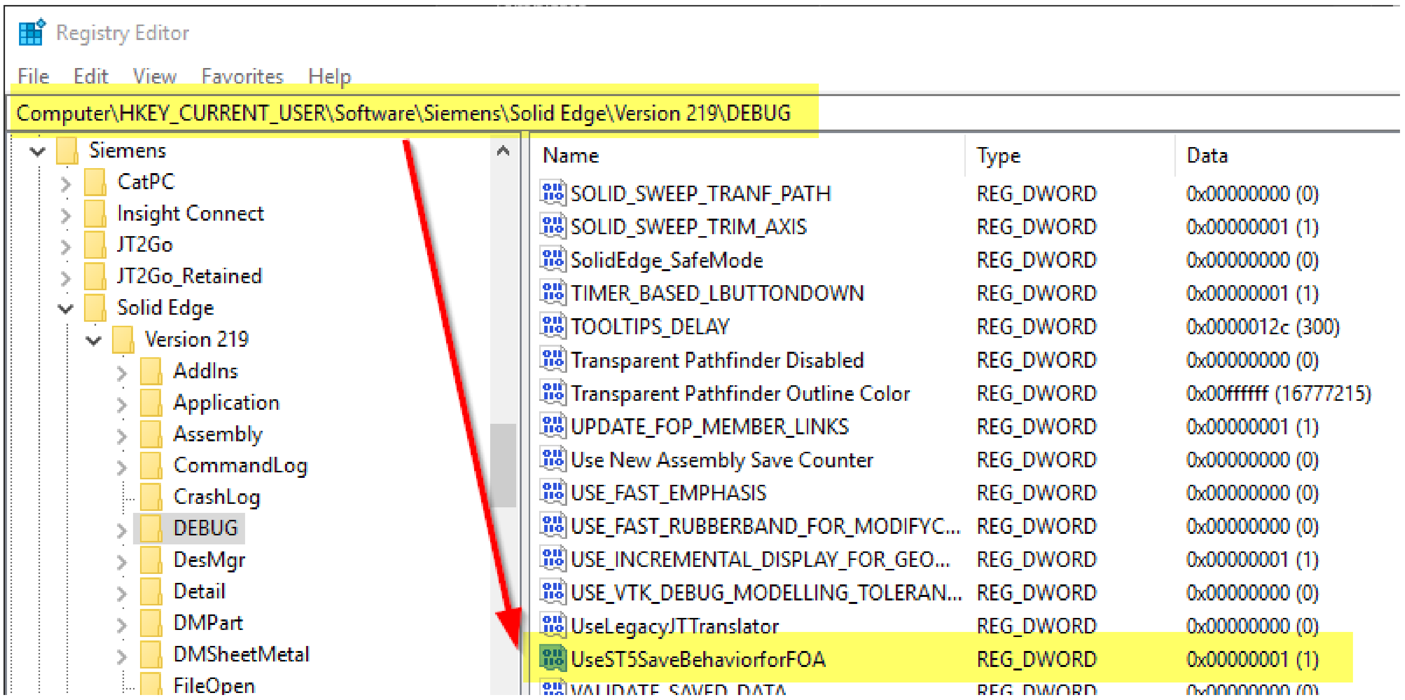
Part of investigating potential root causes for consistent file corruptions should take in to consideration any custom Save event implemented. It may be necessary to temporarily pause using a custom Save event if no other root cause for file corruptions can be determined.

6.10 Family of Assembly Files

If you are experiencing frequent corruption of Family of Assembly (FOA) files, it may be necessary to implement the earlier ST5 save method to help prevent and or reduce FOA file corruptions.

In the user's registry enable the following debug switch:

HKEY_CURRENT_USER\Software\Siemens\Solid Edge\Version XXX\DEBUG\UseST5SaveBehaviorforFOA = 1



Computer\HKEY_CURRENT_USER\Software\Siemens\Solid Edge\Version 219\DEBUG

Name	Type	Data
SOLID_SWEEP_TRANF_PATH	REG_DWORD	0x00000000 (0)
SOLID_SWEEP_TRIM_AXIS	REG_DWORD	0x00000001 (1)
SolidEdge_SafeMode	REG_DWORD	0x00000000 (0)
TIMER_BASED_LBUTTONDOWN	REG_DWORD	0x00000001 (1)
TOOLTIPS_DELAY	REG_DWORD	0x0000012c (300)
Transparent Pathfinder Disabled	REG_DWORD	0x00000000 (0)
Transparent Pathfinder Outline Color	REG_DWORD	0x00ffffff (16777215)
UPDATE_FOP_MEMBER_LINKS	REG_DWORD	0x00000001 (1)
Use New Assembly Save Counter	REG_DWORD	0x00000000 (0)
USE_FAST_EMPHASIS	REG_DWORD	0x00000000 (0)
USE_FAST_RUBBERBAND_FOR_MODIFYC...	REG_DWORD	0x00000000 (0)
USE_INCREMENTAL_DISPLAY_FOR_GEO...	REG_DWORD	0x00000001 (1)
USE_VTK_DEBUG_MODELLING_TOLERAN...	REG_DWORD	0x00000000 (0)
UseLegacyJTTranslator	REG_DWORD	0x00000000 (0)
UseST5SaveBehaviorforFOA	REG_DWORD	0x00000001 (1)
VALIDATE_SAVED_DATA	REG_DWORD	0x00000000 (0)

7 Troubleshooting Examples

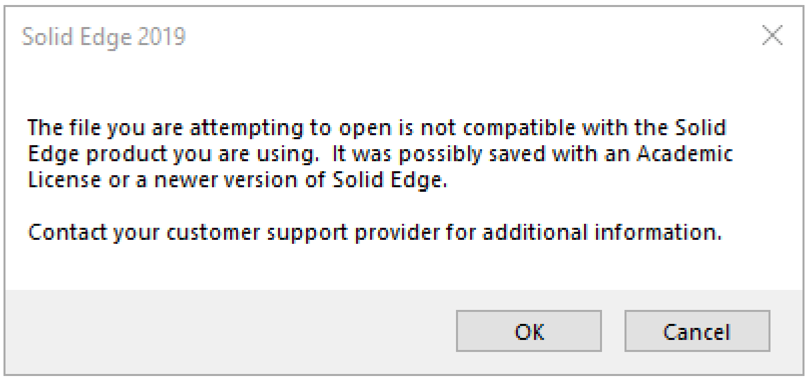
In the following section we will review various corrupted Solid Edge files and investigate if those corrupted Solid Edge files can potentially be repaired by development.

NOTE: The following examples are intended to be guides to help you quickly determine if a corrupted Solid Edge file can potentially be repaired or not. If, at any time when investigating a corrupted Solid Edge file, you are unsure if the file can be repaired or not, assume the file can be repaired and forward on to Development as a PR for file repair.

7.1 Not Compatible with the Solid Edge Product

Reference: IR# 8409865

In Solid Edge when attempting to open the file we receive the message "The file you are attempting to open is not compatible with the Solid Edge product you are using. It was possibly saved with an Academic License or a newer version of Solid Edge. Contact your customer support provider for additional information.":


Solid Edge 2019

The file you are attempting to open is not compatible with the Solid Edge product you are using. It was possibly saved with an Academic License or a newer version of Solid Edge.

Contact your customer support provider for additional information.

This error message appears to be self-evident.

Try opening the file using an educational license.

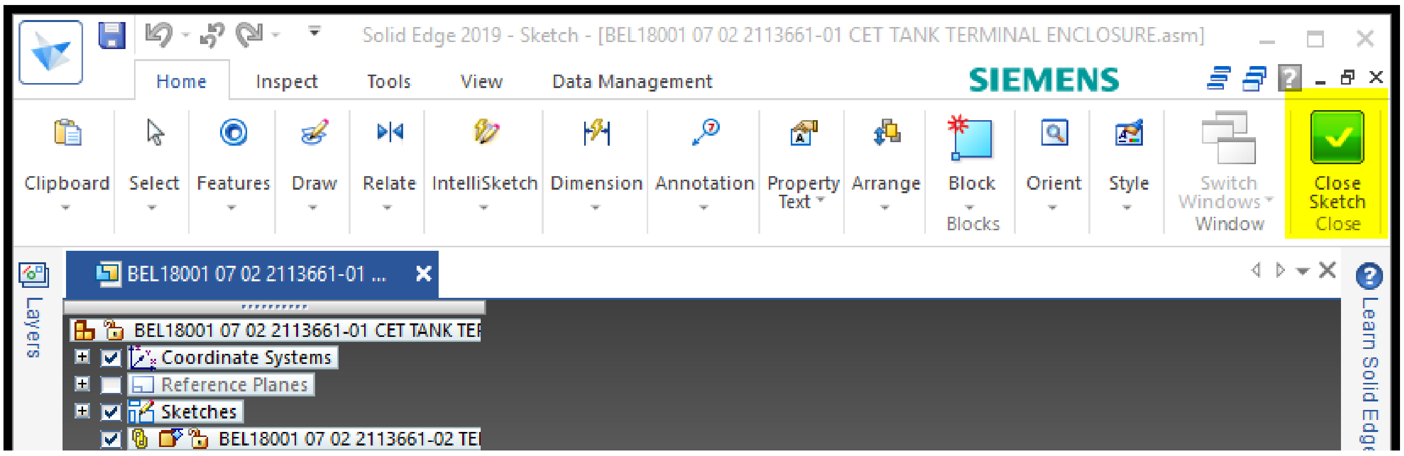
If the file will open using an educational license and/or a newer version of Solid Edge, then this is the cause of the file not opening.

If the file does successfully open with an educational license the file should not be submitted to Development for repair. Instead the customer should obtain a free educational license, open the file using that educational license, and attempt to capture, export, and save whatever they can from the file for recreation into a commercially licensed version of Solid Edge.

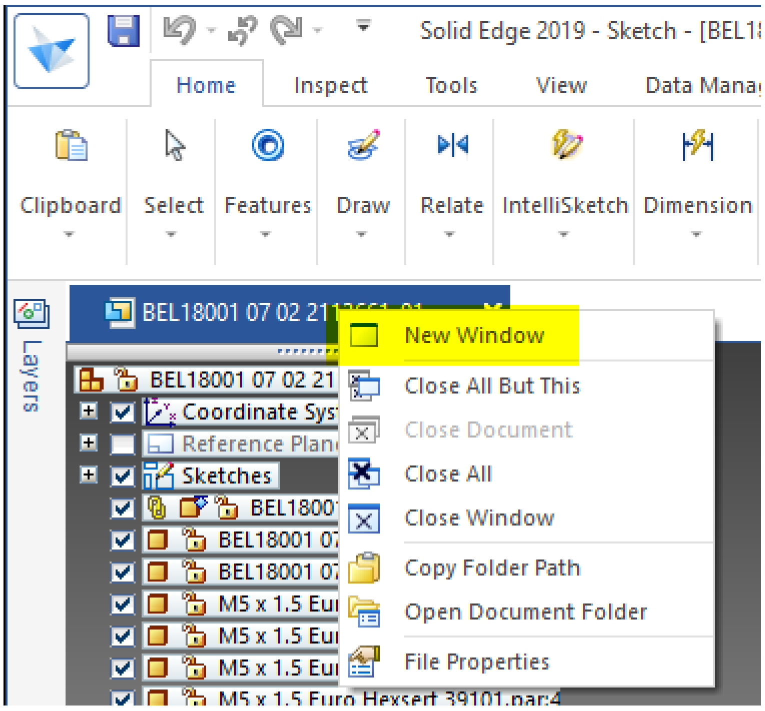
7.2 Stuck in Sketch Environment

Reference: IR# 9411071

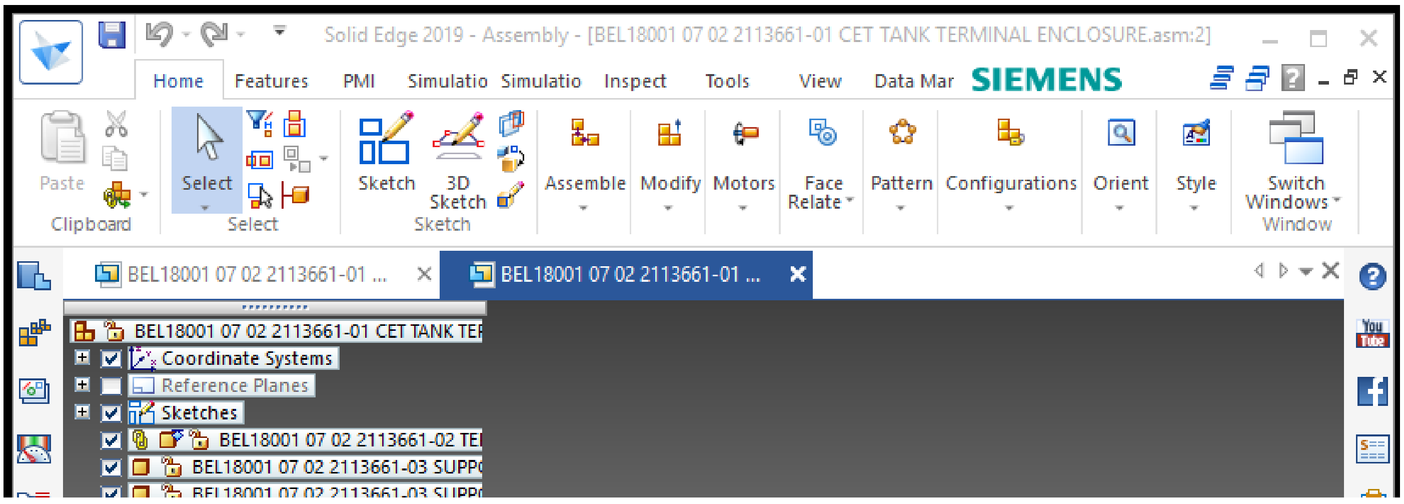
When opening the file in Solid Edge, the file is immediately opened in to the Sketch environment and selecting “Close Sketch” has no impact – the file is permanently “stuck” in the Sketch environment:



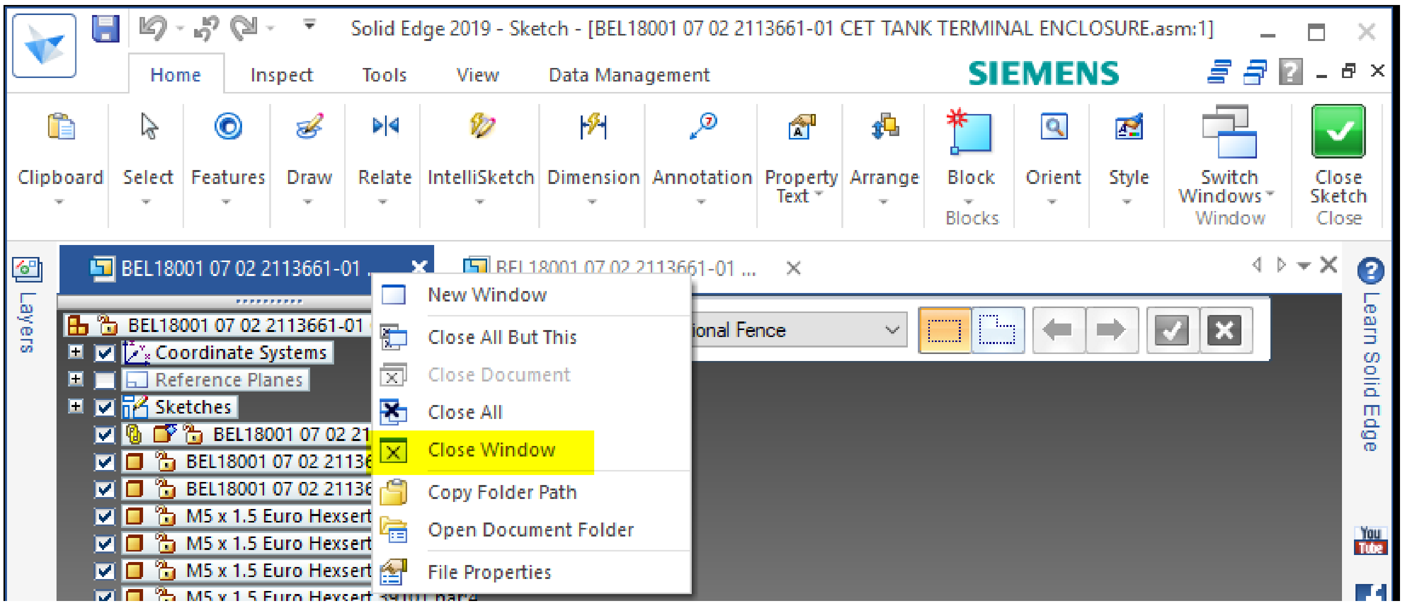
To resolve this issue, on the tab for the file, right-click -> New Window:



In the new window that is opened, the file is no longer opened in the Sketch environment:


Solid Edge 2019 - Assembly - [BEL18001 07 02 2113661-01 CET TANK TERMINAL ENCLOSURE.asm:2]
Home
Features
PMI
Simulatio
Simulatio
Inspect
Tools
View
Data Mar
SIEMENS
Paste
Clipboard
Select
Select
Sketch
3D Sketch
Sketch
Assemble
Modify
Motors
Face Relate
Pattern
Configurations
Orient
Style
Switch Windows
Window
BEL18001 07 02 2113661-01 ...
BEL18001 07 02 2113661-01 ...
BEL18001 07 02 2113661-01 CET TANK TEI
Coordinate Systems
Reference Planes
Sketches
BEL18001 07 02 2113661-02 TEI
BEL18001 07 02 2113661-03 SUPP

Right-click on the original tab which is still stuck in the Sketch environment and select “Close Window”:



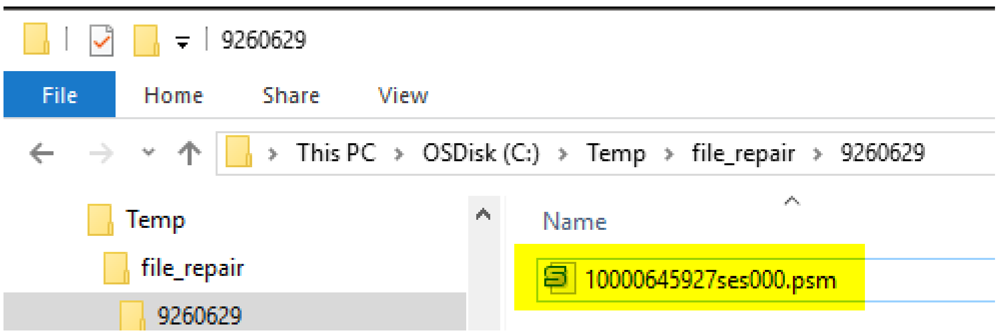
Save and close the file.

The file has now been successfully repaired and is no longer stuck in the Sketch environment.

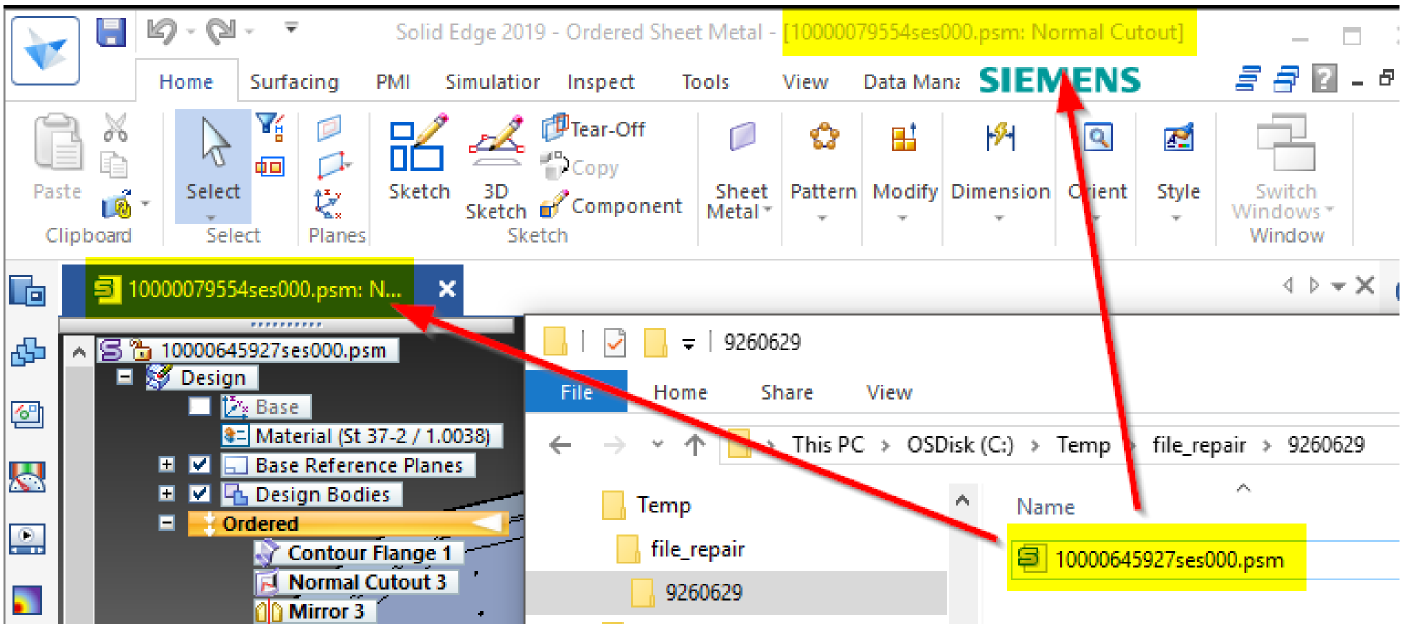
7.3 Filename Display on Tab and Title Bar Are Incorrect

Reference: IR# 9260629

In Windows Explorer the file is named on disk as “10000645927ses000.psm”:

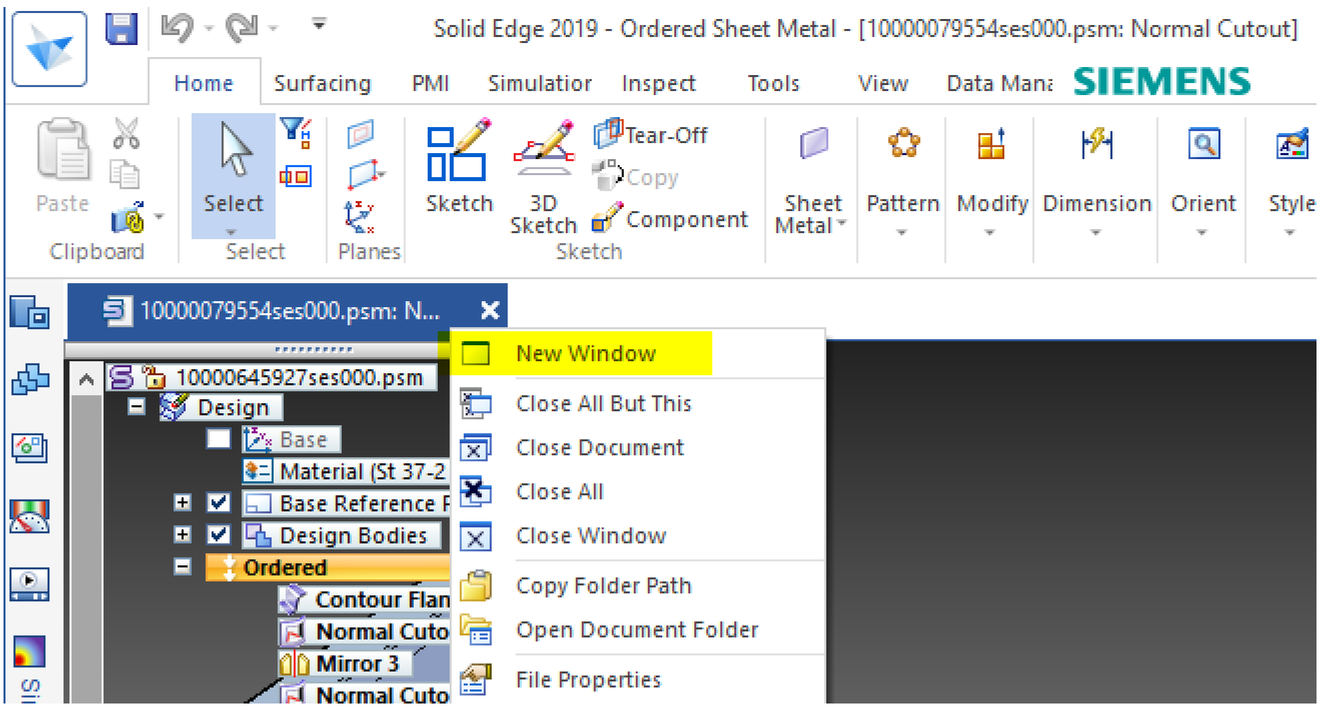


However, when opening the file in Solid Edge, both the file tab and the title bar display the filename as “1000079554ses000.psm Normal Cutout”:


Solid Edge 2019 - Ordered Sheet Metal - [10000079554ses000.psm: Normal Cutout]

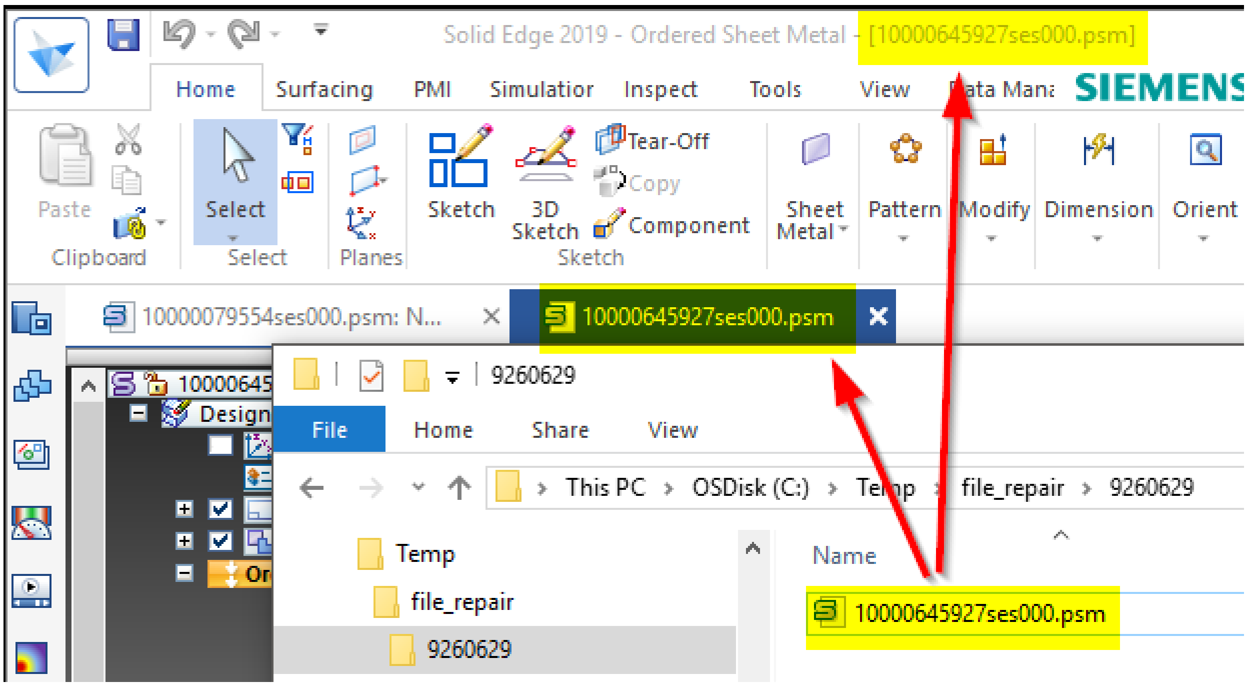
10000079554ses000.psm: N...

To resolve this issue, on the tab for the file, right-click -> New Window:

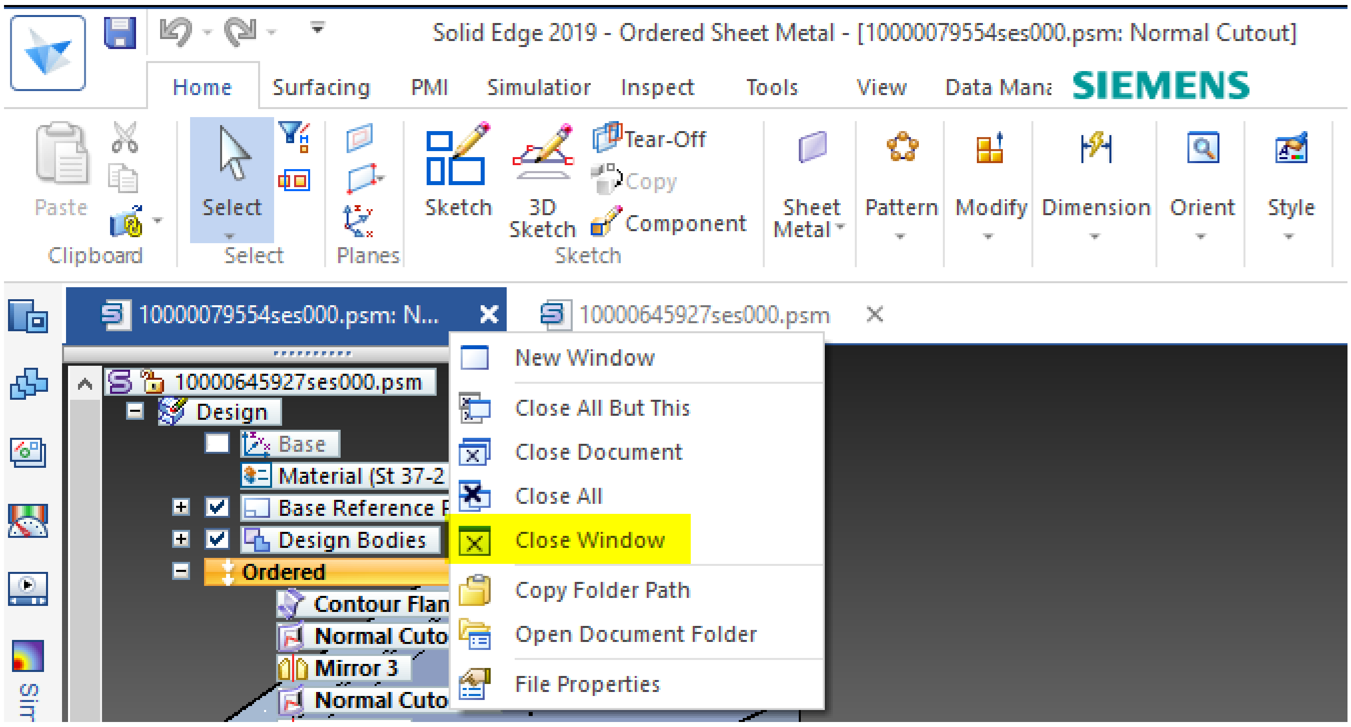

Solid Edge 2019 - Ordered Sheet Metal - [10000079554ses000.psm: Normal Cutout]

10000079554ses000.psm: N...

In the new window that is opened the file tab and title bar now display the correct filename:



Right-click on the original tab which still displays the incorrect filename and select “Close Window”:



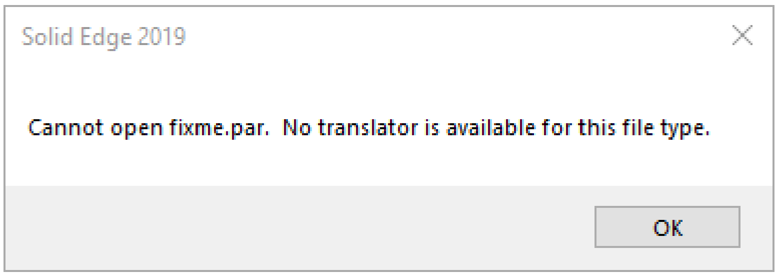
Save and close the file.

The file has now been successfully repaired and the incorrect filename is no longer displayed on the tab and title bar.

7.4 No Translator Is Available for This File Type

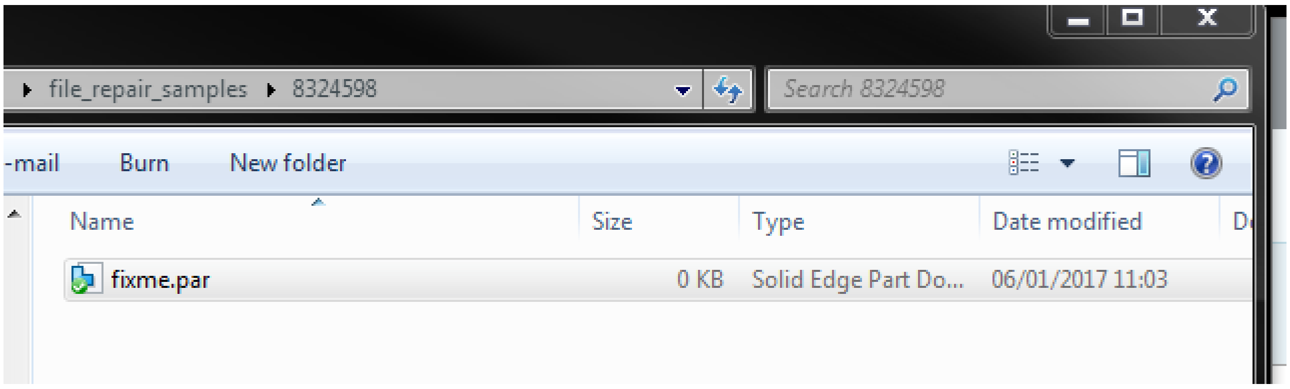
Reference: IR# 8324598

In Solid Edge when attempting to open the file we get the following message:



Cannot open fixme.par. No translator is available for this file type.

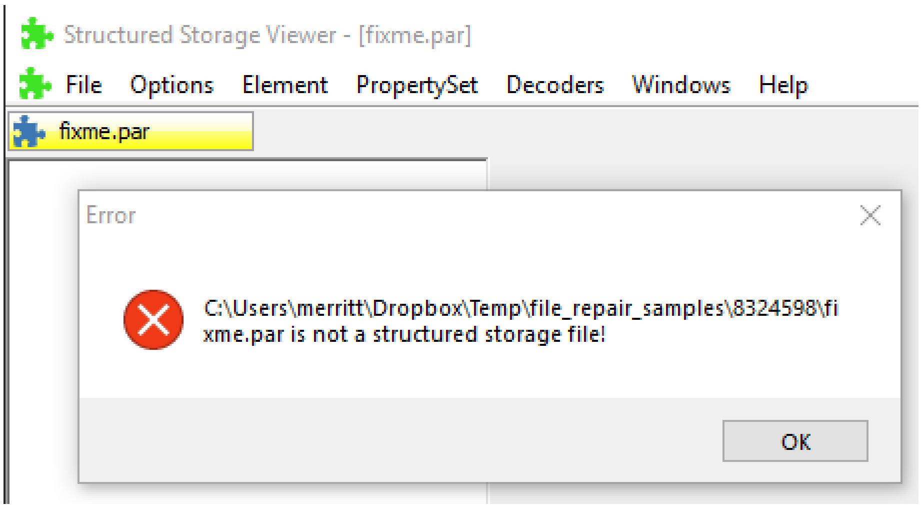
If we look at the file in Windows Explorer, we can see that there is no size to the file – the file is 0 KB in size.



Name	Size	Type	Date modified
fixme.par	0 KB	Solid Edge Part Do...	06/01/2017 11:03

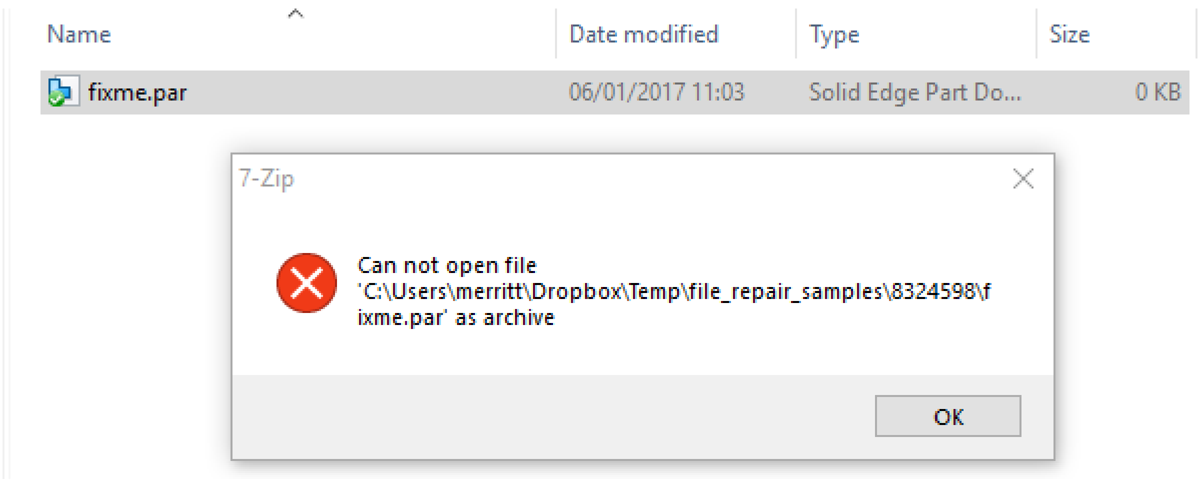
If the file is 0 KB, then there are no objects stored within the file thereby making the file empty of any content. If there is no content, then there is no data that can be recovered. At this point there is no need for any further analysis. However, for the purposes of this document we will continue with further analysis using our tools.

Opening the file in Structured Storage Viewer we see the following:



C:\Users\merritt\Dropbox\Temp\file_repair_samples\8324598\fixme.par is not a structured storage file!

Open the .7z file in 7-Zip we see the following:



Name	Date modified	Type	Size
fixme.par	06/01/2017 11:03	Solid Edge Part Do...	0 KB

7-Zip

Can not open file
'C:\Users\merritt\Dropbox\Temp\file_repair_samples\8324598\fixme.par' as archive

These messages confirm that there is no valid structured storage with the file to be opened and read.

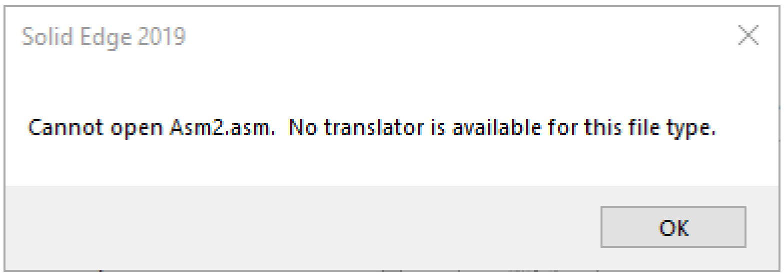
If there is no valid structured storage that can be read by the various tools, then the file cannot be repaired.

This file does not need to be forwarded as a PR to development for further investigation.

7.5 No Translator Is Available for This File Type

Reference: PR# 8898643

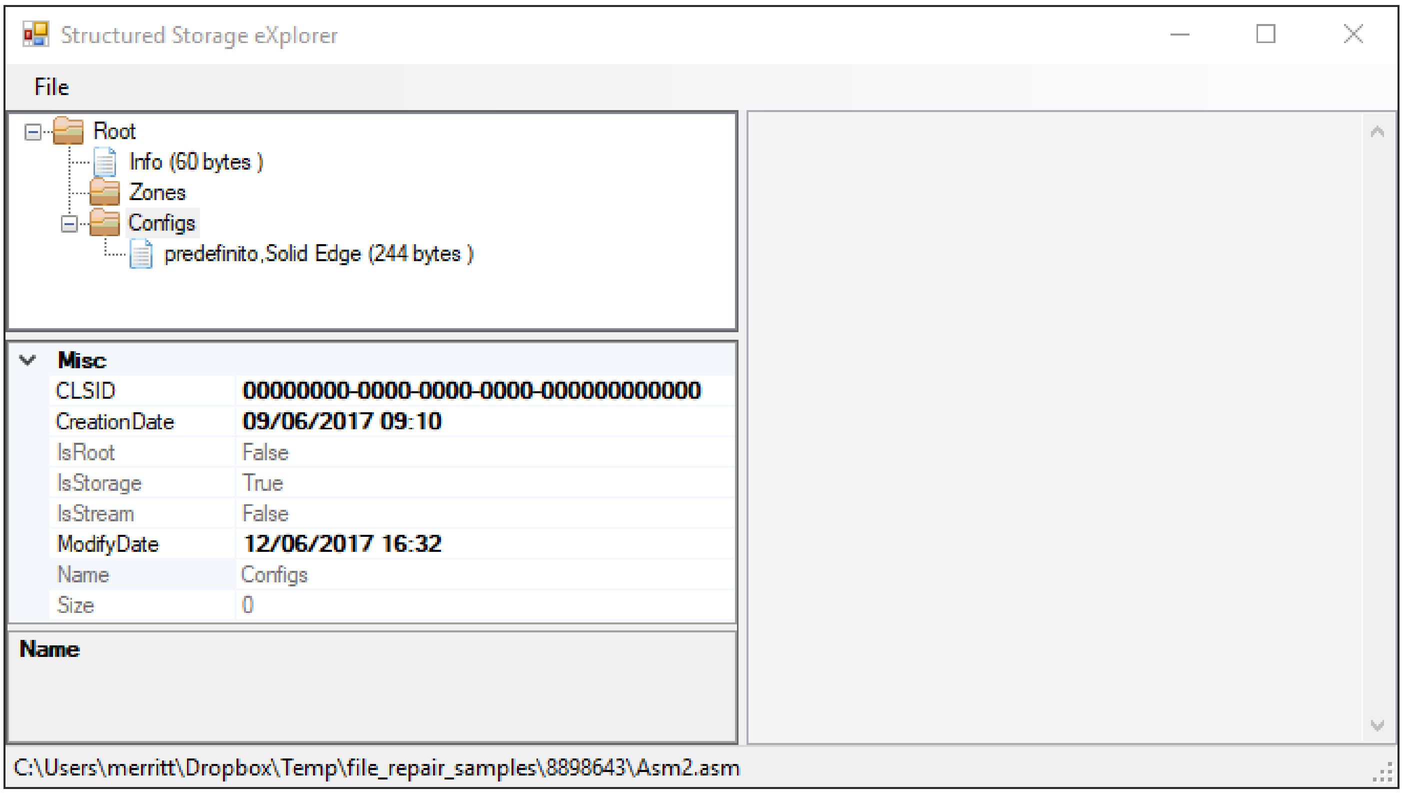
Opening an assembly file, the error message "Cannot open xxxx.asm. No translator is available for this file type." is thrown and the part will not open:



Solid Edge 2019

Cannot open Asm2.asm. No translator is available for this file type.

Opening the assembly file in to one of the structured storage tools we can see that the content of the file is actually an assembly configuration .cfg file that has been incorrectly renamed to the .asm file extension:



```
Root
    Info (60 bytes )
    Zones
    Configs
        predefinito,Solid Edge (244 bytes )
```

Misc	
CLSID	00000000-0000-0000-0000-000000000000
CreationDate	09/06/2017 09:10
IsRoot	False
IsStorage	True
IsStream	False
ModifyDate	12/06/2017 16:32
Name	Configs
Size	0

Name

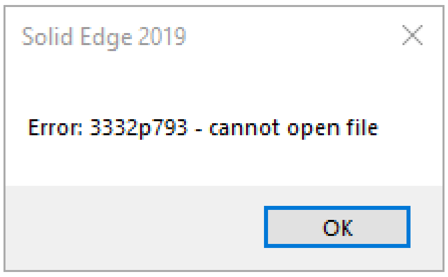
C:\Users\merritt\Dropbox\Temp\file_repair_samples\8898643\Asm2.asm

This is not an assembly file that can be repaired per se. Simply renaming the file extension from .asm to .cfg will allow the configuration file to be reused in Solid Edge.

7.6 Error xxxxxxxx – Cannot Open File

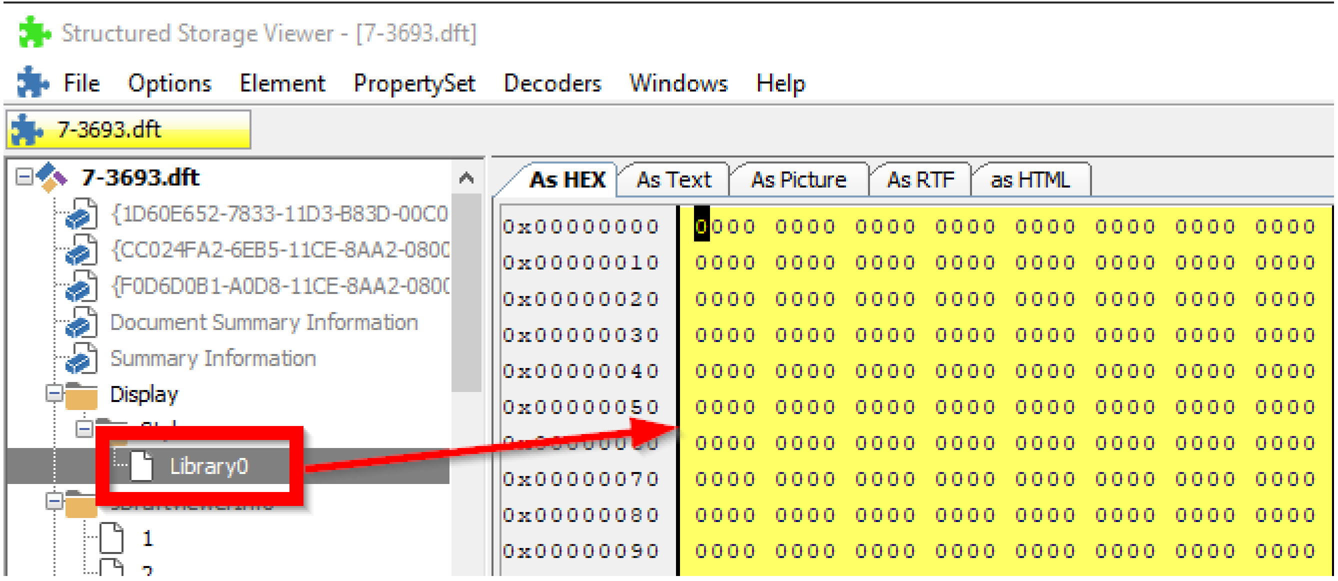
Reference: IR# 9316127

Opening the draft file in Solid Edge will throw an error message dialog with a consistently changing error code:

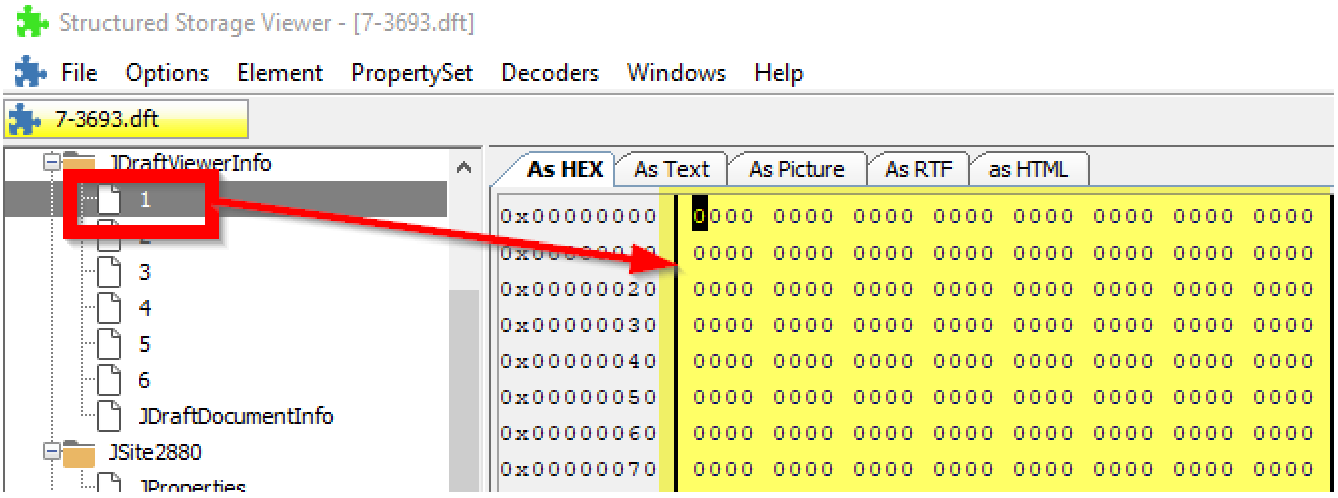


Error: 3332p793 - cannot open file

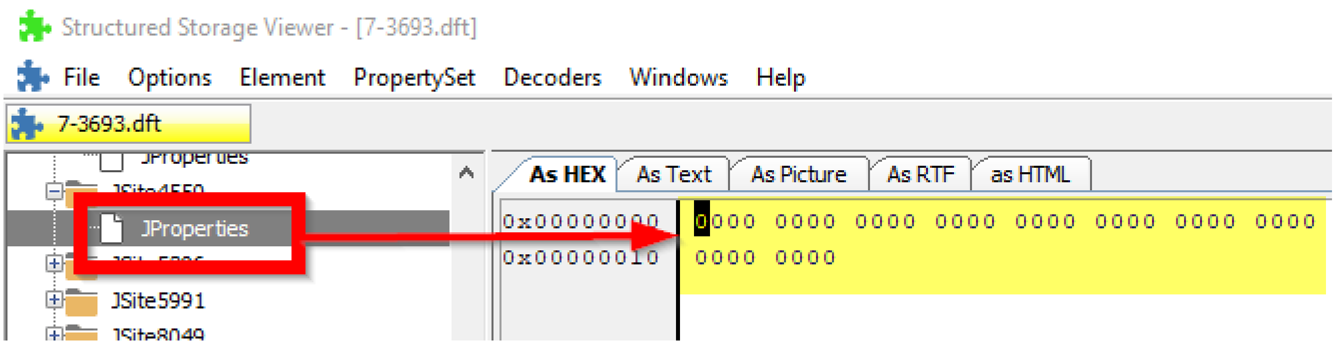
Opening the file into our toolset, and interrogating the various stream objects show that most of the stream objects have size and content, but that content is all zeros:


Structured Storage Viewer - [7-3693.dft]
File
Options
Element
PropertySet
Decoders
Windows
Help
7-3693.dft
{1D60E652-7833-11D3-B83D-00C0
{CC024FA2-6EB5-11CE-8AA2-0800
{F0D6D0B1-A0D8-11CE-8AA2-0800
Document Summary Information
Summary Information
Display
Library0
1
As HEX
As Text
As Picture
As RTF
as HTML

```
0x00000000  0000 0000 0000 0000 0000 0000 0000 0000
0x00000010  0000 0000 0000 0000 0000 0000 0000 0000
0x00000020  0000 0000 0000 0000 0000 0000 0000 0000
0x00000030  0000 0000 0000 0000 0000 0000 0000 0000
0x00000040  0000 0000 0000 0000 0000 0000 0000 0000
0x00000050  0000 0000 0000 0000 0000 0000 0000 0000
            0000 0000 0000 0000 0000 0000 0000 0000
0x00000070  0000 0000 0000 0000 0000 0000 0000 0000
0x00000080  0000 0000 0000 0000 0000 0000 0000 0000
0x00000090  0000 0000 0000 0000 0000 0000 0000 0000
```



```
0x00000000  0000 0000 0000 0000 0000 0000 0000 0000
            0000 0000 0000 0000 0000 0000 0000 0000
0x00000020  0000 0000 0000 0000 0000 0000 0000 0000
0x00000030  0000 0000 0000 0000 0000 0000 0000 0000
0x00000040  0000 0000 0000 0000 0000 0000 0000 0000
0x00000050  0000 0000 0000 0000 0000 0000 0000 0000
0x00000060  0000 0000 0000 0000 0000 0000 0000 0000
0x00000070  0000 0000 0000 0000 0000 0000 0000 0000
```



```
0x00000000  0000 0000 0000 0000 0000 0000 0000 0000
0x00000010  0000 0000
```

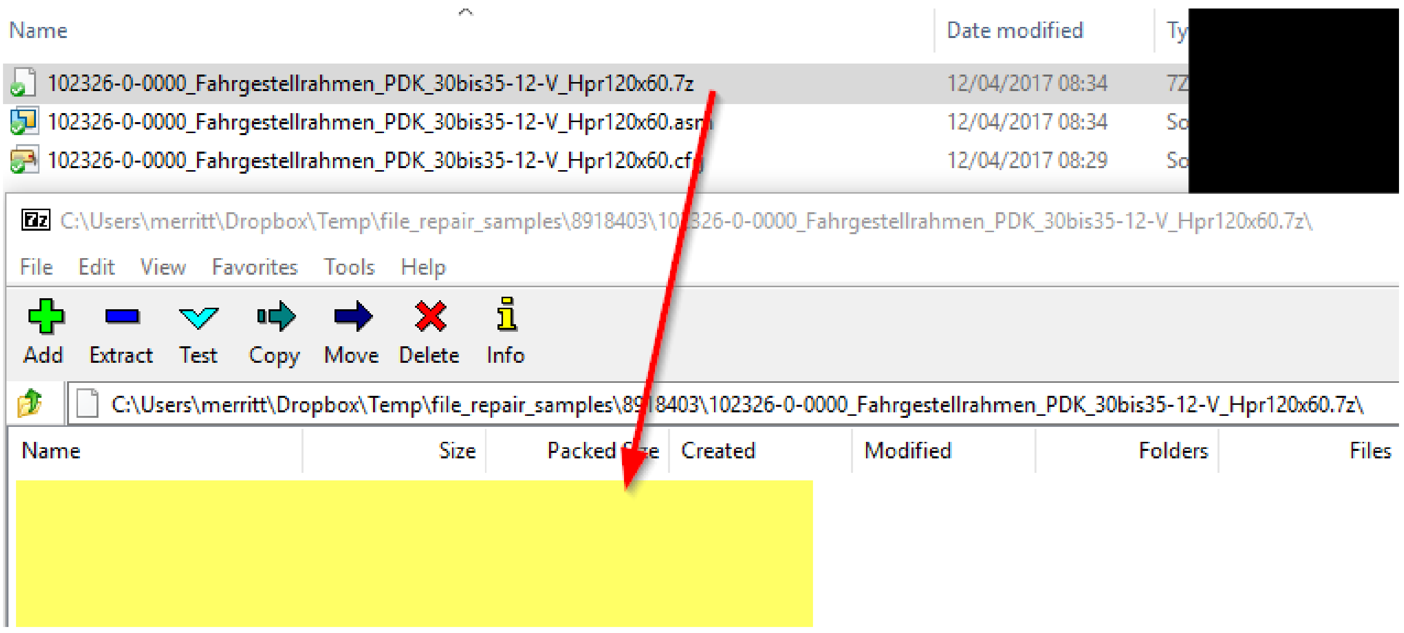
Because so many streams have zeros written over their content, this file cannot be repaired.

7.7 No Error Messages

Reference: PR# 8918403

The assembly file will not open in Solid Edge and Solid Edge does not give any feedback or error message. The file simply does not open.

If you create a copy of the file renamed to the .7z file extension and attempt to open the file in 7-Zip you will notice that there does not appear to be any objects contained within the structured storage:



Name	Date modified	Ty
102326-0-0000_Fahrgestellrahmen_PDK_30bis35-12-V_Hpr120x60.7z	12/04/2017 08:34	7Z
102326-0-0000_Fahrgestellrahmen_PDK_30bis35-12-V_Hpr120x60.asm	12/04/2017 08:34	So
102326-0-0000_Fahrgestellrahmen_PDK_30bis35-12-V_Hpr120x60.cfg	12/04/2017 08:29	So

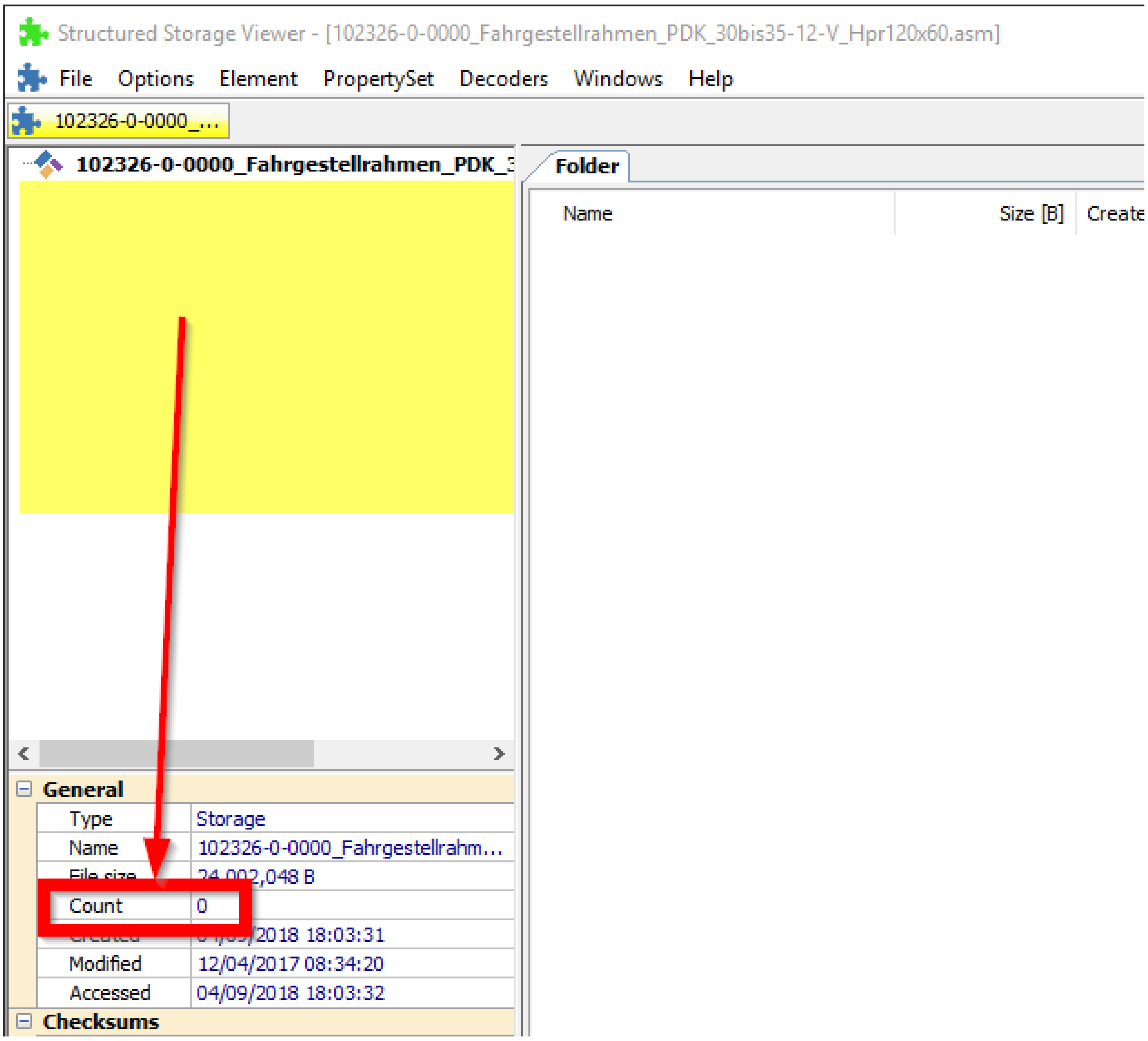
[redacted]

C:\Users\merritt\Dropbox\Temp\file_repair_samples\8918403\102326-0-0000_Fahrgestellrahmen_PDK_30bis35-12-V_Hpr120x60.7z\

C:\Users\merritt\Dropbox\Temp\file_repair_samples\8918403\102326-0-0000_Fahrgestellrahmen_PDK_30bis35-12-V_Hpr120x60.7z\

Name	Size	Packed Size	Created	Modified	Folders	Files

If you open the file in Structured Storage Viewer, you will again the notice the lack of any objects contained within the structured storage:


Structured Storage Viewer - [102326-0-0000_Fahrgestellrahmen_PDK_30bis35-12-V_Hpr120x60.asm]
File
Options
Element
PropertySet
Decoders
Windows
Help
102326-0-0000_...
102326-0-0000_Fahrgestellrahmen_PDK_3
Folder
Name
Size [B]
Create
General
Checksums

Type	Storage
Name	102326-0-0000_Fahrgestellrahm...
File size	24,002,048 B
Count	0
Created	04/09/2018 18:03:31
Modified	12/04/2017 08:34:20
Accessed	04/09/2018 18:03:32

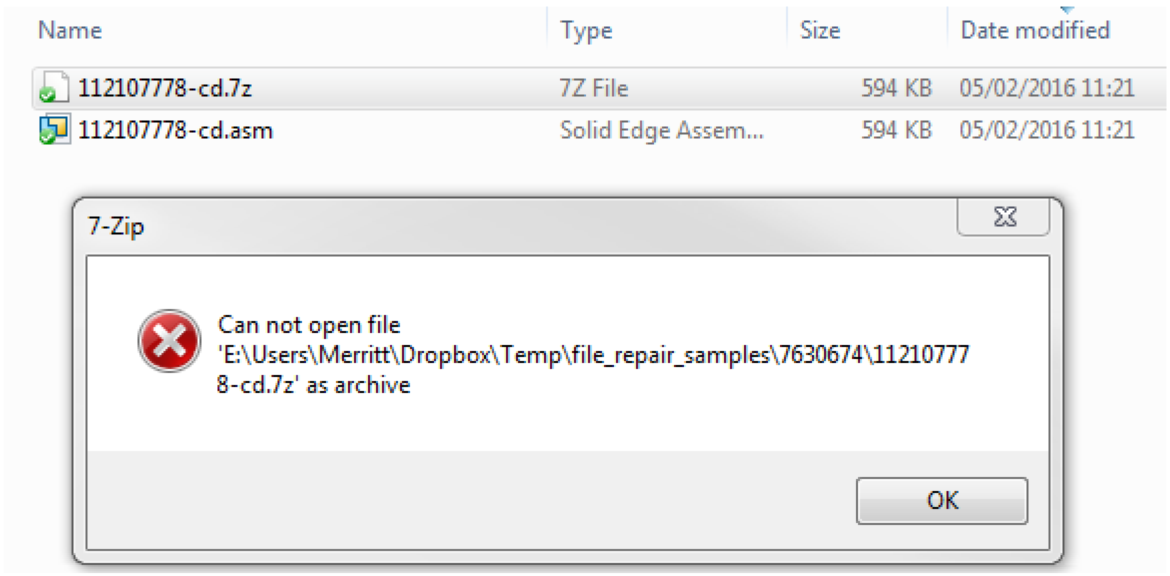
Because there are absolutely no objects continued within the structured storage, this file cannot be repaired.

7.8 No Error Messages

Reference: PR# 7630674

The assembly file will not open in Solid Edge and Solid Edge does not give any feedback or error message. The file simply does not open. Although this behaviour is the same as the previous example, the content of the underlying structed storage is significantly different so warrants different analysis.

If you create a copy of the file renamed to the .7z file extension and attempt to open the file in 7-Zip you see the following:



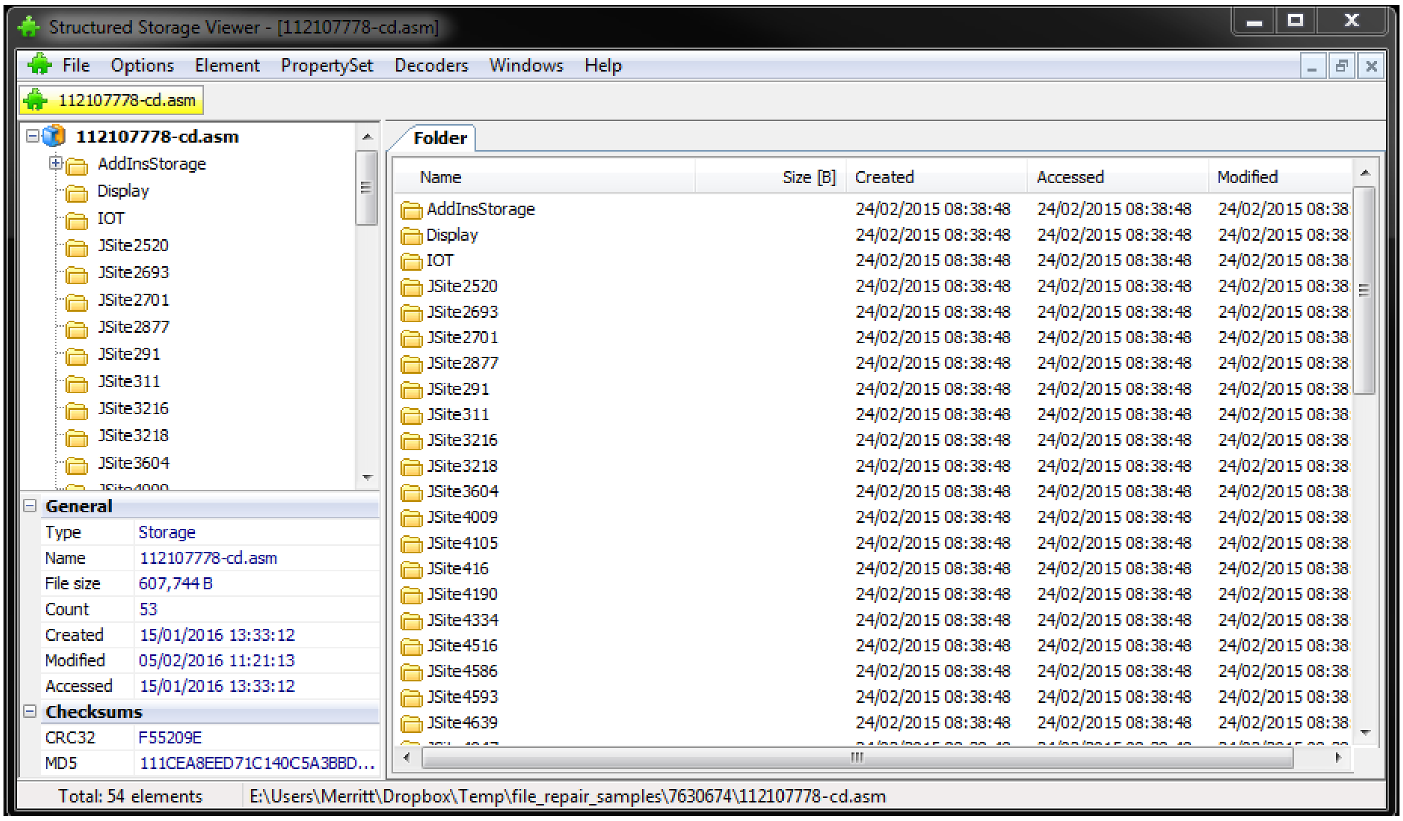
Name	Type	Size	Date modified
112107778-cd.7z	7Z File	594 KB	05/02/2016 11:21
112107778-cd.asm	Solid Edge Assem...	594 KB	05/02/2016 11:21

7-Zip

Can not open file
'E:\Users\Merritt\Dropbox\Temp\file_repair_samples\7630674\11210777
8-cd.7z' as archive

OK

If you open the file in Structured Storage Viewer, unlike 7-Zip, the file will successfully open:



Structured Storage Viewer - [112107778-cd.asm]

File Options Element PropertySet Decoders Windows Help

112107778-cd.asm

- 112107778-cd.asm
  - AddInsStorage
  - Display
  - IOT
  - JSite2520
  - JSite2693
  - JSite2701
  - JSite2877
  - JSite291
  - JSite311
  - JSite3216
  - JSite3218
  - JSite3604

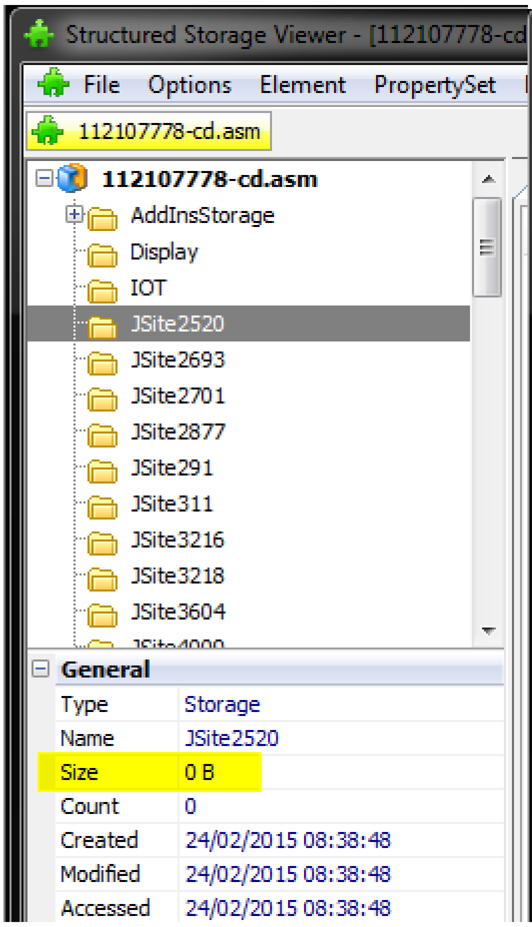
General	
Type	Storage
Name	112107778-cd.asm
File size	607,744 B
Count	53
Created	15/01/2016 13:33:12
Modified	05/02/2016 11:21:13
Accessed	15/01/2016 13:33:12
Checksums	
CRC32	F55209E
MD5	111CEA8EED71C140C5A3BBD...

Folder

Name	Size [B]	Created	Accessed	Modified
AddInsStorage		24/02/2015 08:38:48	24/02/2015 08:38:48	24/02/2015 08:38
Display		24/02/2015 08:38:48	24/02/2015 08:38:48	24/02/2015 08:38
IOT		24/02/2015 08:38:48	24/02/2015 08:38:48	24/02/2015 08:38
JSite2520		24/02/2015 08:38:48	24/02/2015 08:38:48	24/02/2015 08:38
JSite2693		24/02/2015 08:38:48	24/02/2015 08:38:48	24/02/2015 08:38
JSite2701		24/02/2015 08:38:48	24/02/2015 08:38:48	24/02/2015 08:38
JSite2877		24/02/2015 08:38:48	24/02/2015 08:38:48	24/02/2015 08:38
JSite291		24/02/2015 08:38:48	24/02/2015 08:38:48	24/02/2015 08:38
JSite311		24/02/2015 08:38:48	24/02/2015 08:38:48	24/02/2015 08:38
JSite3216		24/02/2015 08:38:48	24/02/2015 08:38:48	24/02/2015 08:38
JSite3218		24/02/2015 08:38:48	24/02/2015 08:38:48	24/02/2015 08:38
JSite3604		24/02/2015 08:38:48	24/02/2015 08:38:48	24/02/2015 08:38
JSite4009		24/02/2015 08:38:48	24/02/2015 08:38:48	24/02/2015 08:38
JSite4105		24/02/2015 08:38:48	24/02/2015 08:38:48	24/02/2015 08:38
JSite416		24/02/2015 08:38:48	24/02/2015 08:38:48	24/02/2015 08:38
JSite4190		24/02/2015 08:38:48	24/02/2015 08:38:48	24/02/2015 08:38
JSite4334		24/02/2015 08:38:48	24/02/2015 08:38:48	24/02/2015 08:38
JSite4516		24/02/2015 08:38:48	24/02/2015 08:38:48	24/02/2015 08:38
JSite4586		24/02/2015 08:38:48	24/02/2015 08:38:48	24/02/2015 08:38
JSite4593		24/02/2015 08:38:48	24/02/2015 08:38:48	24/02/2015 08:38
JSite4639		24/02/2015 08:38:48	24/02/2015 08:38:48	24/02/2015 08:38

Total: 54 elements E:\Users\Merritt\Dropbox\Temp\file_repair_samples\7630674\112107778-cd.asm

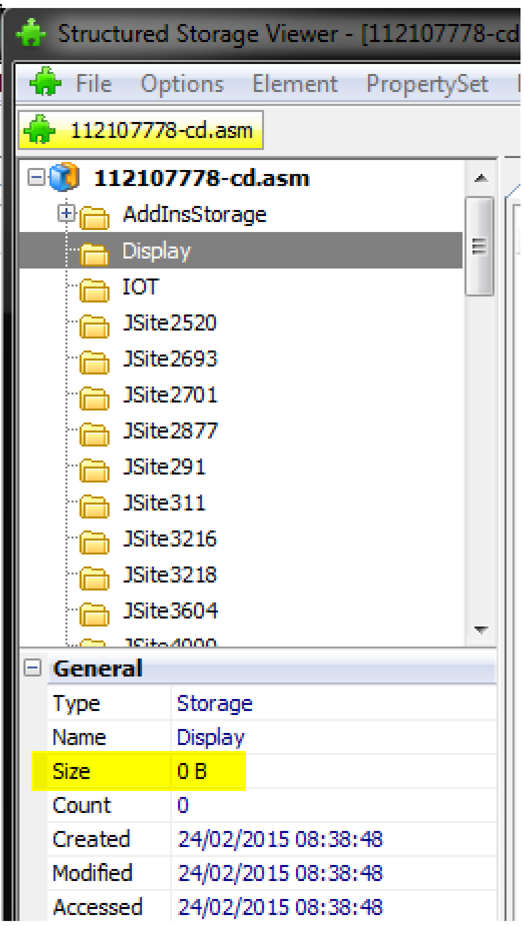
However, further interrogation of the various Storage objects shows that many of the Storage objects e.g. JSitexxx, Dipslay, PSMspacemap, IOT, etc. have zero size:


Structured Storage Viewer - [112107778-cd
File Options Element PropertySet
112107778-cd.asm

112107778-cd.asm
- AddInsStorage
- Display
- IOT
- JSite2520
- JSite2693
- JSite2701
- JSite2877
- JSite291
- JSite311
- JSite3216
- JSite3218
- JSite3604

General

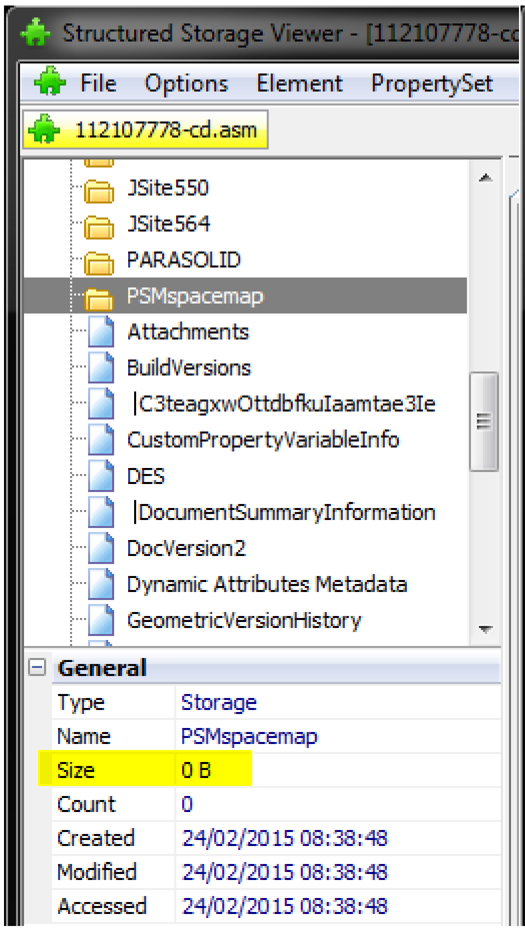
Type	Storage
Name	JSite2520
Size	0 B
Count	0
Created	24/02/2015 08:38:48
Modified	24/02/2015 08:38:48
Accessed	24/02/2015 08:38:48


Structured Storage Viewer - [112107778-cd
File Options Element PropertySet
112107778-cd.asm

112107778-cd.asm
- AddInsStorage
- Display
- IOT
- JSite2520
- JSite2693
- JSite2701
- JSite2877
- JSite291
- JSite311
- JSite3216
- JSite3218
- JSite3604

General

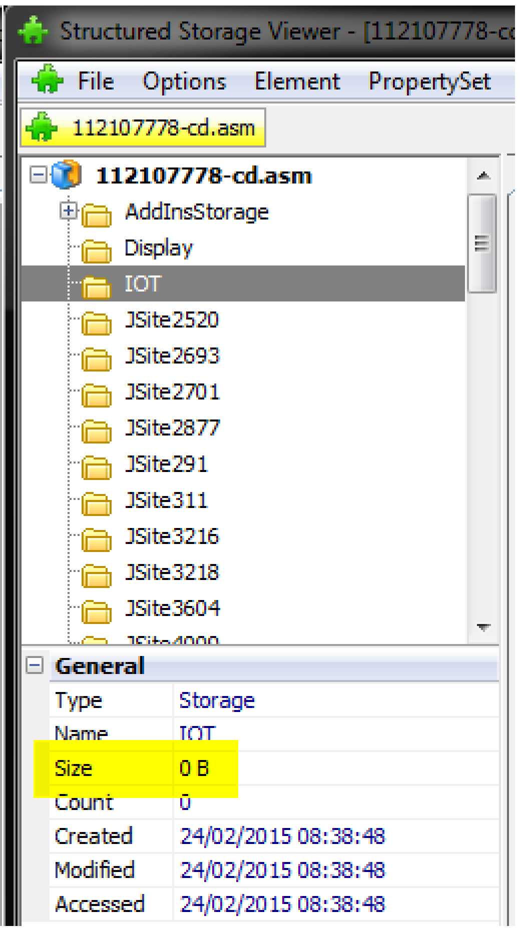
Type	Storage
Name	Display
Size	0 B
Count	0
Created	24/02/2015 08:38:48
Modified	24/02/2015 08:38:48
Accessed	24/02/2015 08:38:48


Structured Storage Viewer - [112107778-c
File Options Element PropertySet
112107778-cd.asm

- JSite550
- JSite564
- PARASOLID
- PSMspacemap
- Attachments
- BuildVersions
- |C3teagxwOttdbfkuIaamtae3Ie
- CustomPropertyVariableInfo
- DES
- |DocumentSummaryInformation
- DocVersion2
- Dynamic Attributes Metadata
- GeometricVersionHistory

General

Type	Storage
Name	PSMspacemap
Size	0 B
Count	0
Created	24/02/2015 08:38:48
Modified	24/02/2015 08:38:48
Accessed	24/02/2015 08:38:48


Structured Storage Viewer - [112107778-c
File Options Element PropertySet
112107778-cd.asm

112107778-cd.asm
- AddInsStorage
- Display
- IOT
- JSite2520
- JSite2693
- JSite2701
- JSite2877
- JSite291
- JSite311
- JSite3216
- JSite3218
- JSite3604

General

Type	Storage
Name	IOT
Size	0 B
Count	0
Created	24/02/2015 08:38:48
Modified	24/02/2015 08:38:48
Accessed	24/02/2015 08:38:48

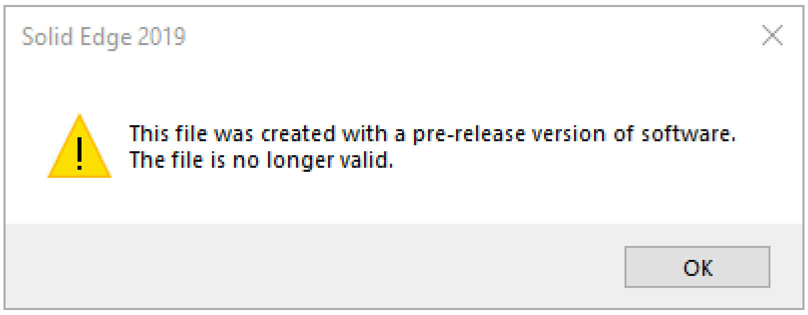
These zero-size storage objects are unexpected and is preventing the file from being successfully opened in Solid Edge.

Primarily, because so many of the streams have zero size and secondly, because the file cannot be opened in 7-Zip, it is assured that this file will not be able to be repaired. Once submitted, Development was unable to repair this file because of so many of the file streams having zero size.

7.9 File Was Created with A Pre-Release Version of Software - Draft

Reference: PR# 1929296

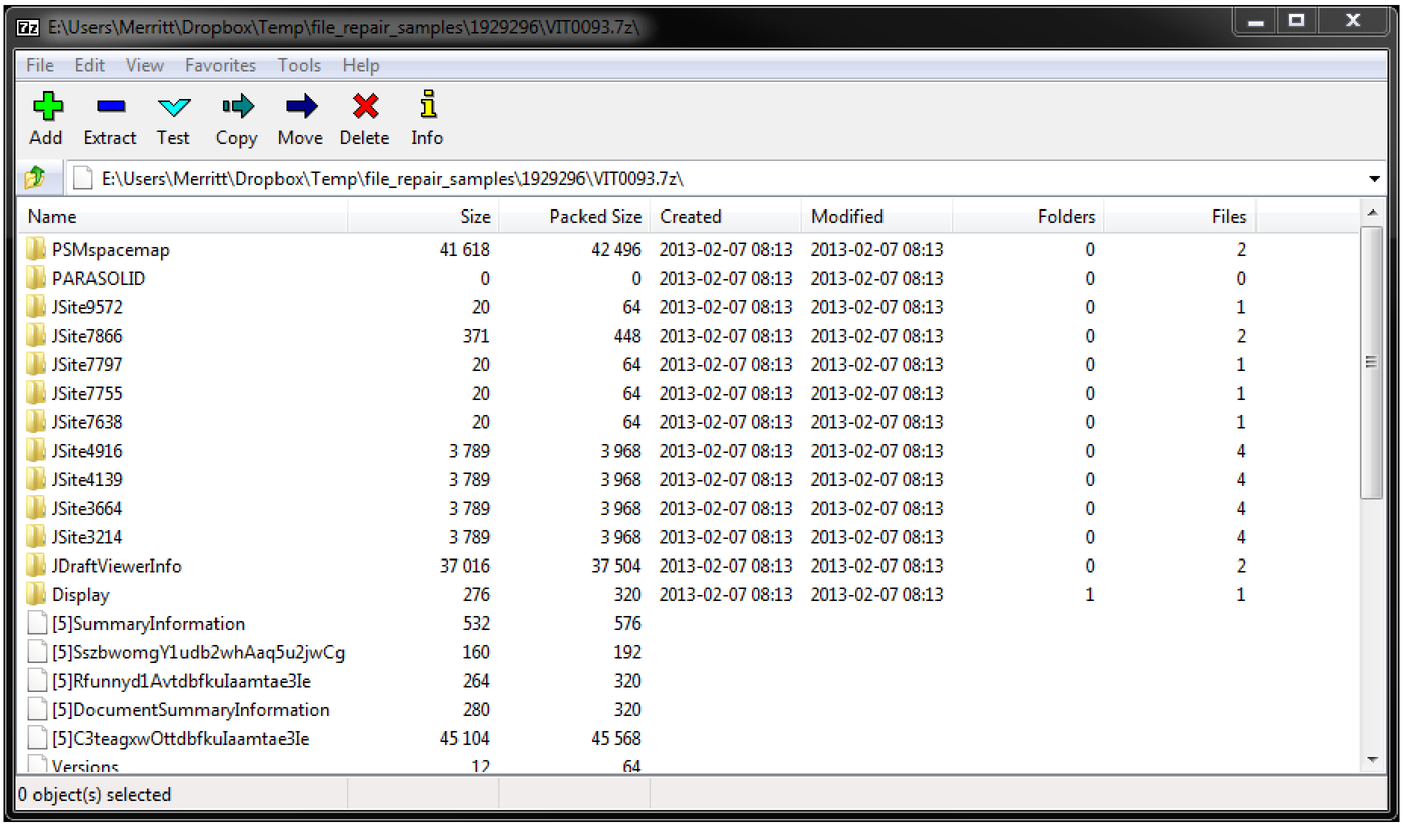
When opening the draft file, we get the error “This file was created with a pre-release version of software. The file is no longer valid.” and the file is not opened:



Solid Edge 2019

This file was created with a pre-release version of software.
The file is no longer valid.

If we attempt to open the file into 7-Zip, we can confirm that the file will successfully open:



E:\Users\Merritt\Dropbox\Temp\file_repair_samples\1929296\VIT0093.7z\

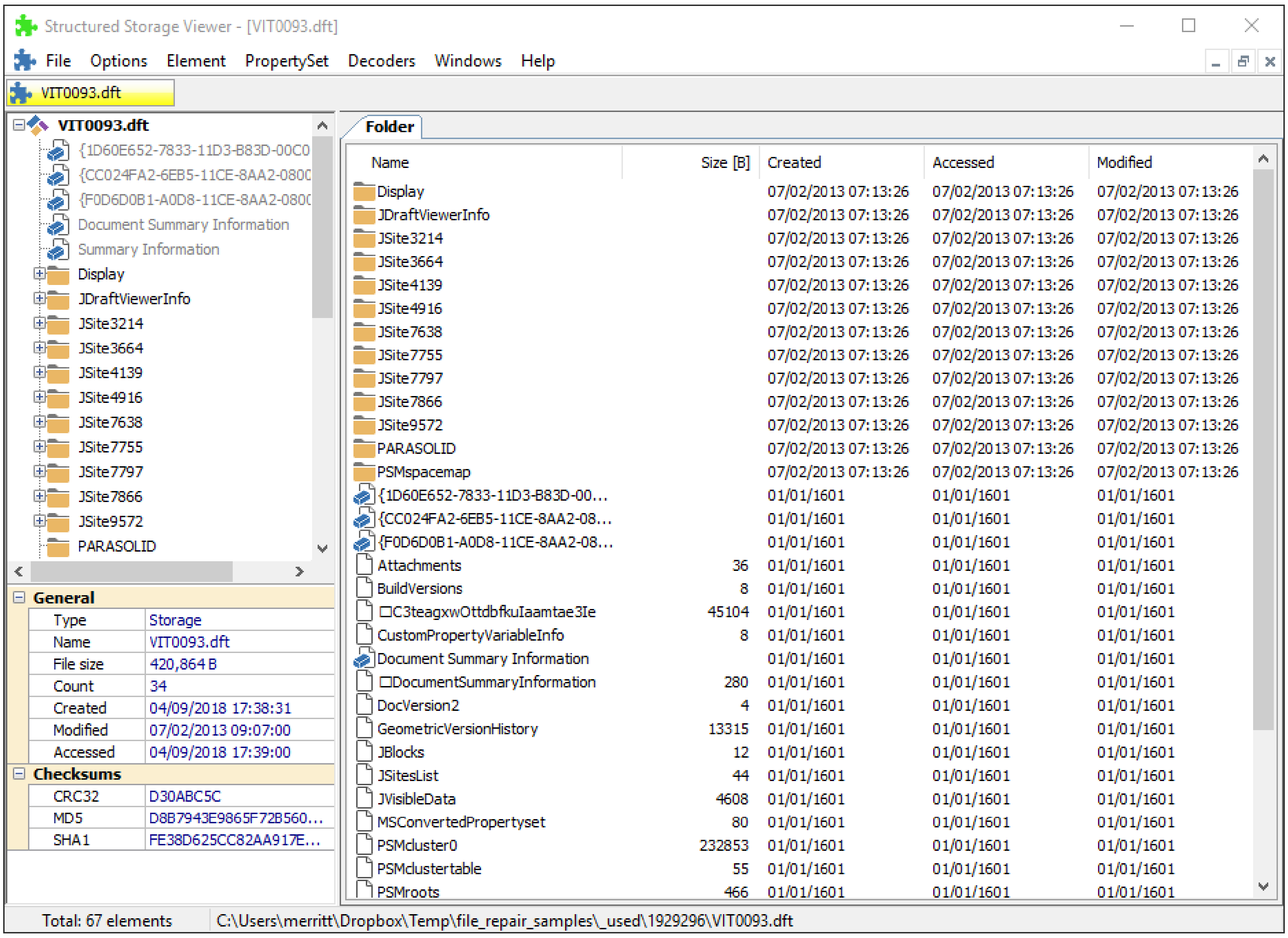
File Edit View Favorites Tools Help
Add Extract Test Copy Move Delete Info

E:\Users\Merritt\Dropbox\Temp\file_repair_samples\1929296\VIT0093.7z\

Name	Size	Packed Size	Created	Modified	Folders	Files
PSMspacemap	41 618	42 496	2013-02-07 08:13	2013-02-07 08:13	0	2
PARASOLID	0	0	2013-02-07 08:13	2013-02-07 08:13	0	0
JSite9572	20	64	2013-02-07 08:13	2013-02-07 08:13	0	1
JSite7866	371	448	2013-02-07 08:13	2013-02-07 08:13	0	2
JSite7797	20	64	2013-02-07 08:13	2013-02-07 08:13	0	1
JSite7755	20	64	2013-02-07 08:13	2013-02-07 08:13	0	1
JSite7638	20	64	2013-02-07 08:13	2013-02-07 08:13	0	1
JSite4916	3 789	3 968	2013-02-07 08:13	2013-02-07 08:13	0	4
JSite4139	3 789	3 968	2013-02-07 08:13	2013-02-07 08:13	0	4
JSite3664	3 789	3 968	2013-02-07 08:13	2013-02-07 08:13	0	4
JSite3214	3 789	3 968	2013-02-07 08:13	2013-02-07 08:13	0	4
JDraftViewerInfo	37 016	37 504	2013-02-07 08:13	2013-02-07 08:13	0	2
Display	276	320	2013-02-07 08:13	2013-02-07 08:13	1	1
[5]SummaryInformation	532	576				
[5]SszbwomgY1udb2whAaq5u2jwCg	160	192				
[5]Rfunnyd1AvtdbfkuIaamtae3Ie	264	320				
[5]DocumentSummaryInformation	280	320				
[5]C3teagxwOttdbfkuIaamtae3Ie	45 104	45 568				
Versions	12	64				

0 object(s) selected

The file will also successfully open into Structured Storage Viewer:



Structured Storage Viewer - [VIT0093.dft]
File Options Element PropertySet Decoders Windows Help
VIT0093.dft
Folder

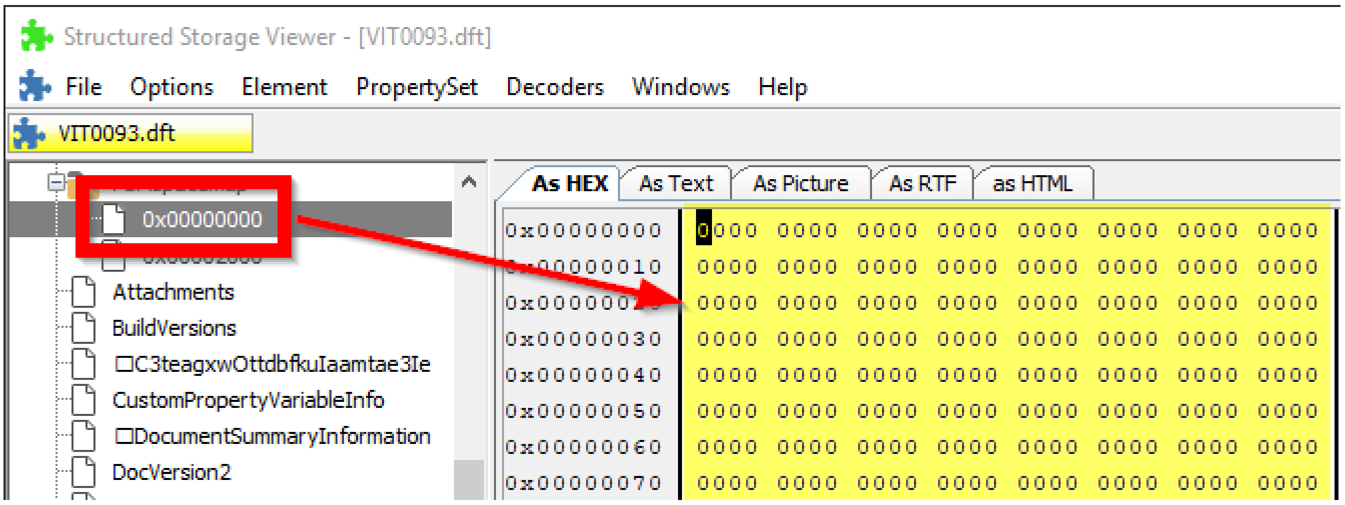
VIT0093.dft
- {1D60E652-7833-11D3-B83D-00C0
- {CC024FA2-6EB5-11CE-8AA2-080C
- {F0D6D0B1-A0D8-11CE-8AA2-080C
- Document Summary Information
- Summary Information
- Display
- JDraftViewerInfo
- JSite3214
- JSite3664
- JSite4139
- JSite4916
- JSite7638
- JSite7755
- JSite7797
- JSite7866
- JSite9572
- PARASOLID

Name	Size [B]	Created	Accessed	Modified
Display		07/02/2013 07:13:26	07/02/2013 07:13:26	07/02/2013 07:13:26
JDraftViewerInfo		07/02/2013 07:13:26	07/02/2013 07:13:26	07/02/2013 07:13:26
JSite3214		07/02/2013 07:13:26	07/02/2013 07:13:26	07/02/2013 07:13:26
JSite3664		07/02/2013 07:13:26	07/02/2013 07:13:26	07/02/2013 07:13:26
JSite4139		07/02/2013 07:13:26	07/02/2013 07:13:26	07/02/2013 07:13:26
JSite4916		07/02/2013 07:13:26	07/02/2013 07:13:26	07/02/2013 07:13:26
JSite7638		07/02/2013 07:13:26	07/02/2013 07:13:26	07/02/2013 07:13:26
JSite7755		07/02/2013 07:13:26	07/02/2013 07:13:26	07/02/2013 07:13:26
JSite7797		07/02/2013 07:13:26	07/02/2013 07:13:26	07/02/2013 07:13:26
JSite7866		07/02/2013 07:13:26	07/02/2013 07:13:26	07/02/2013 07:13:26
JSite9572		07/02/2013 07:13:26	07/02/2013 07:13:26	07/02/2013 07:13:26
PARASOLID		07/02/2013 07:13:26	07/02/2013 07:13:26	07/02/2013 07:13:26
PSMspacemap		07/02/2013 07:13:26	07/02/2013 07:13:26	07/02/2013 07:13:26
{1D60E652-7833-11D3-B83D-00…		01/01/1601	01/01/1601	01/01/1601
{CC024FA2-6EB5-11CE-8AA2-08…		01/01/1601	01/01/1601	01/01/1601
{F0D6D0B1-A0D8-11CE-8AA2-08…		01/01/1601	01/01/1601	01/01/1601
Attachments	36	01/01/1601	01/01/1601	01/01/1601
BuildVersions	8	01/01/1601	01/01/1601	01/01/1601
☐C3teagxwOttdbfkuIaamtae3Ie	45104	01/01/1601	01/01/1601	01/01/1601
CustomPropertyVariableInfo	8	01/01/1601	01/01/1601	01/01/1601
Document Summary Information		01/01/1601	01/01/1601	01/01/1601
☐DocumentSummaryInformation	280	01/01/1601	01/01/1601	01/01/1601
DocVersion2	4	01/01/1601	01/01/1601	01/01/1601
GeometricVersionHistory	13315	01/01/1601	01/01/1601	01/01/1601
JBlocks	12	01/01/1601	01/01/1601	01/01/1601
JSitesList	44	01/01/1601	01/01/1601	01/01/1601
JVisibleData	4608	01/01/1601	01/01/1601	01/01/1601
MSConvertedPropertyset	80	01/01/1601	01/01/1601	01/01/1601
PSMcluster0	232853	01/01/1601	01/01/1601	01/01/1601
PSMclustertable	55	01/01/1601	01/01/1601	01/01/1601
PSMroots	466	01/01/1601	01/01/1601	01/01/1601

General	
Type	Storage
Name	VIT0093.dft
File size	420,864 B
Count	34
Created	04/09/2018 17:38:31
Modified	07/02/2013 09:07:00
Accessed	04/09/2018 17:39:00
Checksums	
CRC32	D30ABC5C
MD5	D8B7943E9865F72B560…
SHA1	FE38D625CC82AA917E…

Total: 67 elements C:\Users\merritt\Dropbox\Temp\file_repair_samples_used\1929296\VIT0093.dft

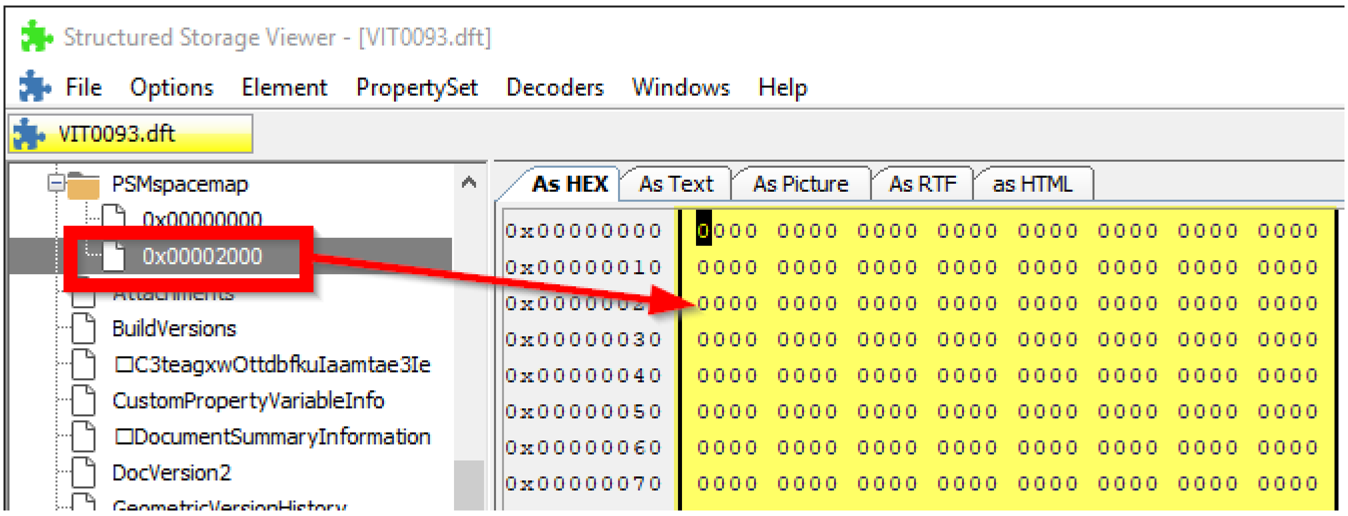
With the file open in Structured Storage Viewer we can then start investigating the various Stream objects. If we interrogate the streams under the PSMspacemap Storage object we can clearly see that these streams have content but that the content contains all zeros:



Structured Storage Viewer - [VIT0093.dft]
File Options Element PropertySet Decoders Windows Help
VIT0093.dft
As HEX
As Text
As Picture
As RTF
as HTML

- 0x00000000
- Attachments
- BuildVersions
- ☐C3teagxwOttdbfkuIaamtae3Ie
- CustomPropertyVariableInfo
- ☐DocumentSummaryInformation
- DocVersion2

```
0x00000000  0000 0000 0000 0000 0000 0000 0000 0000
0x00000010  0000 0000 0000 0000 0000 0000 0000 0000
0x00000020  0000 0000 0000 0000 0000 0000 0000 0000
0x00000030  0000 0000 0000 0000 0000 0000 0000 0000
0x00000040  0000 0000 0000 0000 0000 0000 0000 0000
0x00000050  0000 0000 0000 0000 0000 0000 0000 0000
0x00000060  0000 0000 0000 0000 0000 0000 0000 0000
0x00000070  0000 0000 0000 0000 0000 0000 0000 0000
```


Structured Storage Viewer - [VIT0093.dft]
File Options Element PropertySet Decoders Windows Help
VIT0093.dft
PSMspacemap
0x00000000
0x00002000
Attachments
BuildVersions
□C3teagxwOttdbfkuIaamtae3Ie
CustomPropertyVariableInfo
□DocumentSummaryInformation
DocVersion2
GeometricVersionHistory
As HEX
As Text
As Picture
As RTF
as HTML

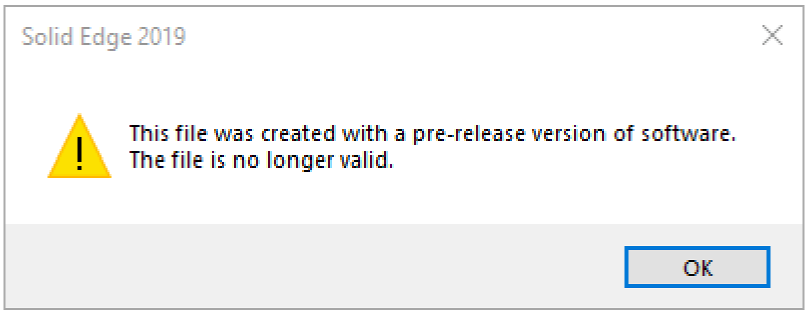
```
0x00000000  0000 0000 0000 0000 0000 0000 0000 0000
0x00000010  0000 0000 0000 0000 0000 0000 0000 0000
0x00000020  0000 0000 0000 0000 0000 0000 0000 0000
0x00000030  0000 0000 0000 0000 0000 0000 0000 0000
0x00000040  0000 0000 0000 0000 0000 0000 0000 0000
0x00000050  0000 0000 0000 0000 0000 0000 0000 0000
0x00000060  0000 0000 0000 0000 0000 0000 0000 0000
0x00000070  0000 0000 0000 0000 0000 0000 0000 0000
```

Something has written zeros of a portion of the file. This file cannot be repaired.

7.10 File Was Created with A Pre-Release Version of Software - Part

Reference: PR# 9045019

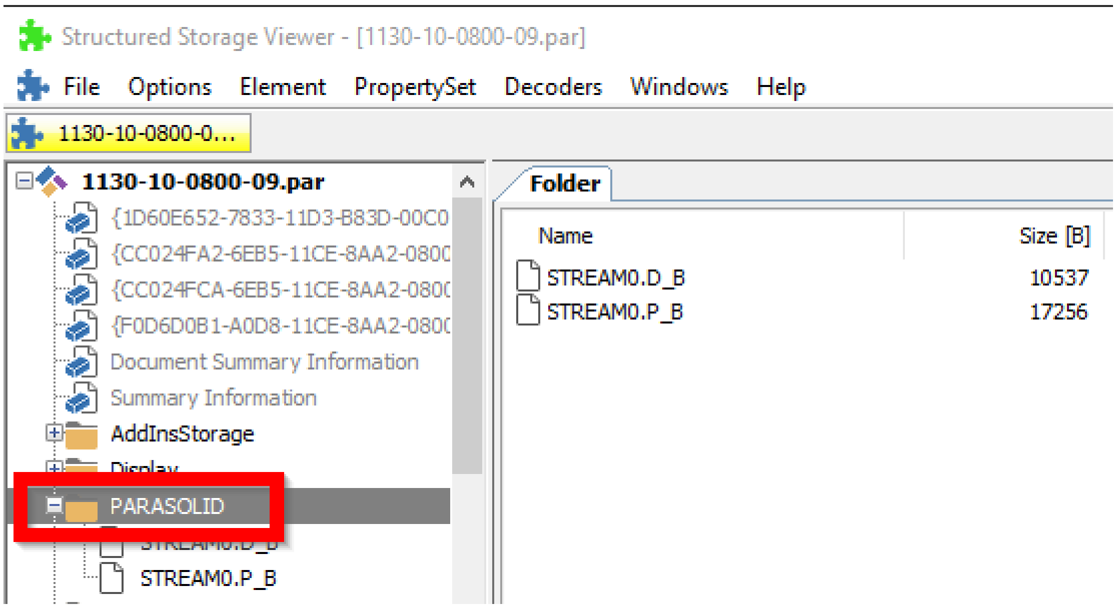
Attempting to open the part file provided under we receive the message “This file was created with a pre-release version of software. The file is no longer valid.” and the file is not opened in Solid Edge:



Solid Edge 2019

This file was created with a pre-release version of software.
The file is no longer valid.

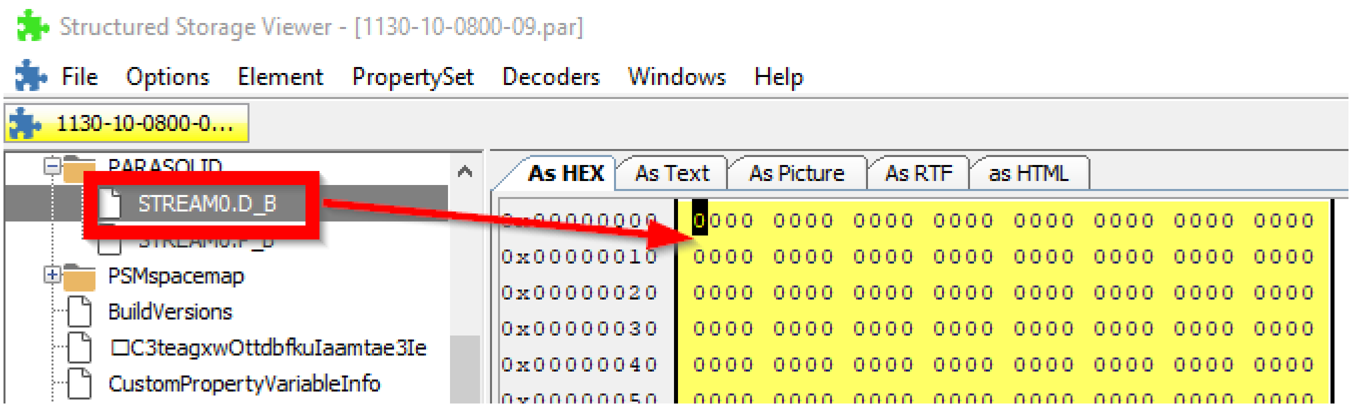
Opening this file in one of our structured storage tools, we can then expand and view the content of the Parasolid Storage object:



Structured Storage Viewer - [1130-10-0800-09.par]

Name	Size [B]
STREAM0.D_B	10537
STREAM0.P_B	17256

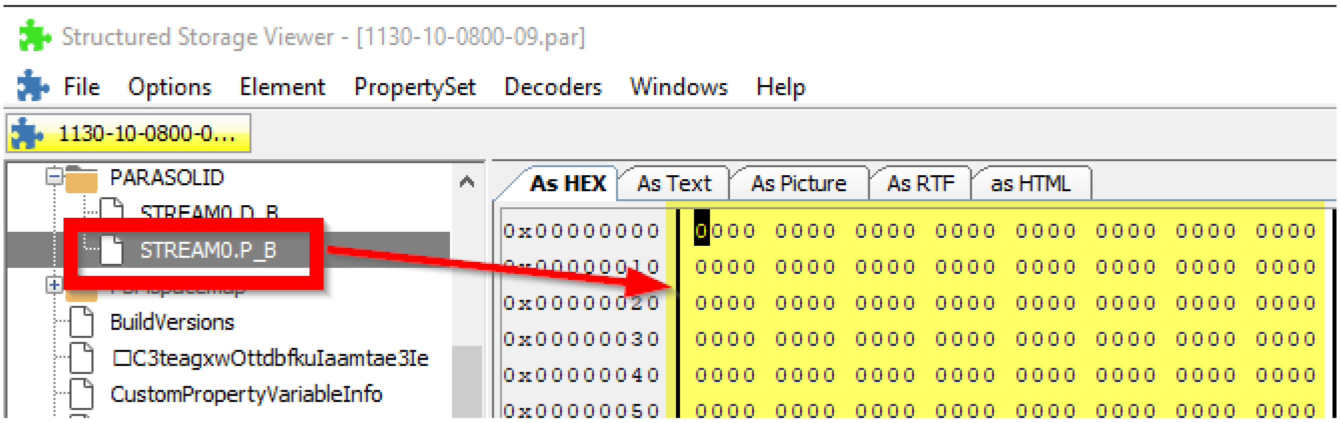
We can then view the content of the underlying Stream objects. For the STREAM0.D_B stream we can see that there is content, but that content contains nothing but zeros:



Structured Storage Viewer - [1130-10-0800-09.par]

```
0x00000000  0000 0000 0000 0000 0000 0000 0000 0000
0x00000010  0000 0000 0000 0000 0000 0000 0000 0000
0x00000020  0000 0000 0000 0000 0000 0000 0000 0000
0x00000030  0000 0000 0000 0000 0000 0000 0000 0000
0x00000040  0000 0000 0000 0000 0000 0000 0000 0000
0x00000050  0000 0000 0000 0000 0000 0000 0000 0000
```

We can also see that the STREAM0.P_B stream also contains nothing but zeros:



```
0x00000000  0000 0000 0000 0000 0000 0000 0000 0000
0x00000010  0000 0000 0000 0000 0000 0000 0000 0000
0x00000020  0000 0000 0000 0000 0000 0000 0000 0000
0x00000030  0000 0000 0000 0000 0000 0000 0000 0000
0x00000040  0000 0000 0000 0000 0000 0000 0000 0000
0x00000050  0000 0000 0000 0000 0000 0000 0000 0000
```

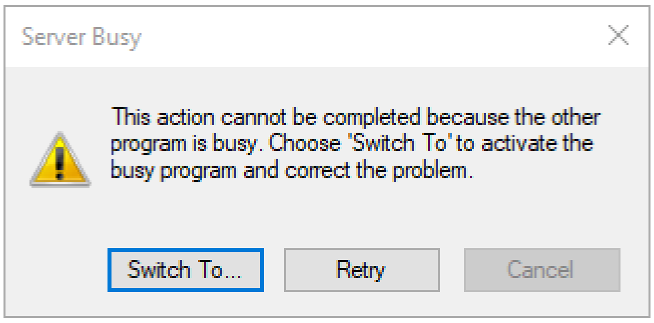
As there is no actual Parasolid content contained within this file, there is no model geometry that can be either repaired or recovered from this file.

This file is unrecoverable and cannot be repaired.

7.11 Server Busy

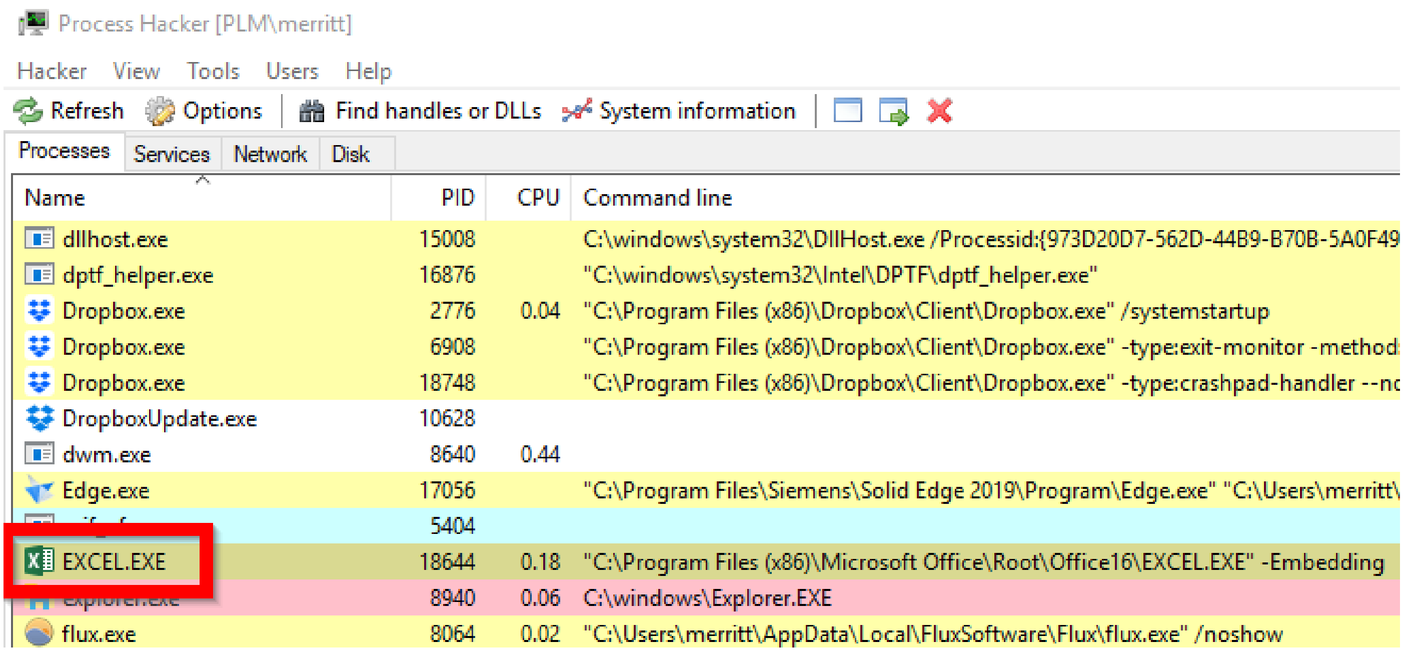
Reference: PR# 9143188

The customer is trying to open a draft file. However, the draft file does not successfully open. Eventually Solid Edge will throw a “Server Busy” message:



This action cannot be completed because the other program is busy. Choose 'Switch To' to activate the busy program and correct the problem.

Further, in Task Manager we can see that Excel is being launched from Solid Edge when opening the file:

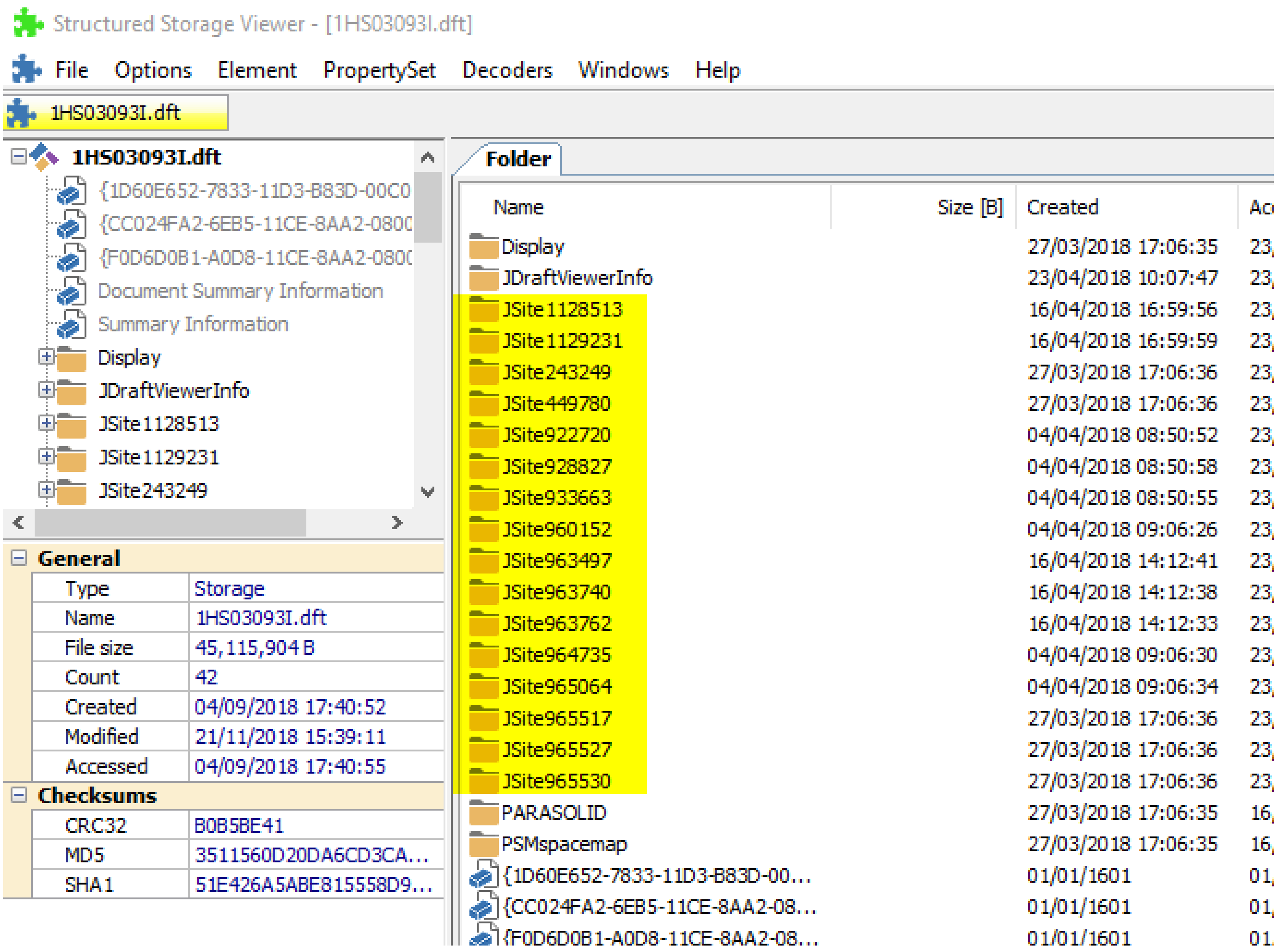


Name	PID	CPU	Command line
dllhost.exe	15008		C:\windows\system32\DllHost.exe /Processid:{973D20D7-562D-44B9-B70B-5A0F49
dptf_helper.exe	16876		"C:\windows\system32\Intel\DPTF\dptf_helper.exe"
Dropbox.exe	2776	0.04	"C:\Program Files (x86)\Dropbox\Client\Dropbox.exe" /systemstartup
Dropbox.exe	6908		"C:\Program Files (x86)\Dropbox\Client\Dropbox.exe" -type:exit-monitor -method
Dropbox.exe	18748		"C:\Program Files (x86)\Dropbox\Client\Dropbox.exe" -type:crashpad-handler --nc
DropboxUpdate.exe	10628		
dwm.exe	8640	0.44	
Edge.exe	17056		"C:\Program Files\Siemens\Solid Edge 2019\Program\Edge.exe" "C:\Users\merritt\
[illegible]	5404		
EXCEL.EXE	18644	0.18	"C:\Program Files (x86)\Microsoft Office\Root\Office16\EXCEL.EXE" -Embedding
explorer.exe	8940	0.06	C:\windows\Explorer.EXE
flux.exe	8064	0.02	"C:\Users\merritt\AppData\Local\FluxSoftware\Flux\flux.exe" /noshow

At this point the file never opens and Solid Edge and Excel need to terminated in Task Manager.

As this issue appears to be related to trying to open Excel linked data within the Draft file we can potentially resolve this using our toolsets.

Open the draft file into one of our structured storage tools e.g. Structured Storage Viewer and expand the objects. Note all the JSite storage objects:



1HS03093I.dft
- {1D60E652-7833-11D3-B83D-00C0
- {CC024FA2-6EB5-11CE-8AA2-080C
- {F0D6D0B1-A0D8-11CE-8AA2-080C
- Document Summary Information
- Summary Information
- Display
- JDraftViewerInfo
- JSite1128513
- JSite1129231
- JSite243249

General

Type	Storage
Name	1HS03093I.dft
File size	45,115,904 B
Count	42
Created	04/09/2018 17:40:52
Modified	21/11/2018 15:39:11
Accessed	04/09/2018 17:40:55

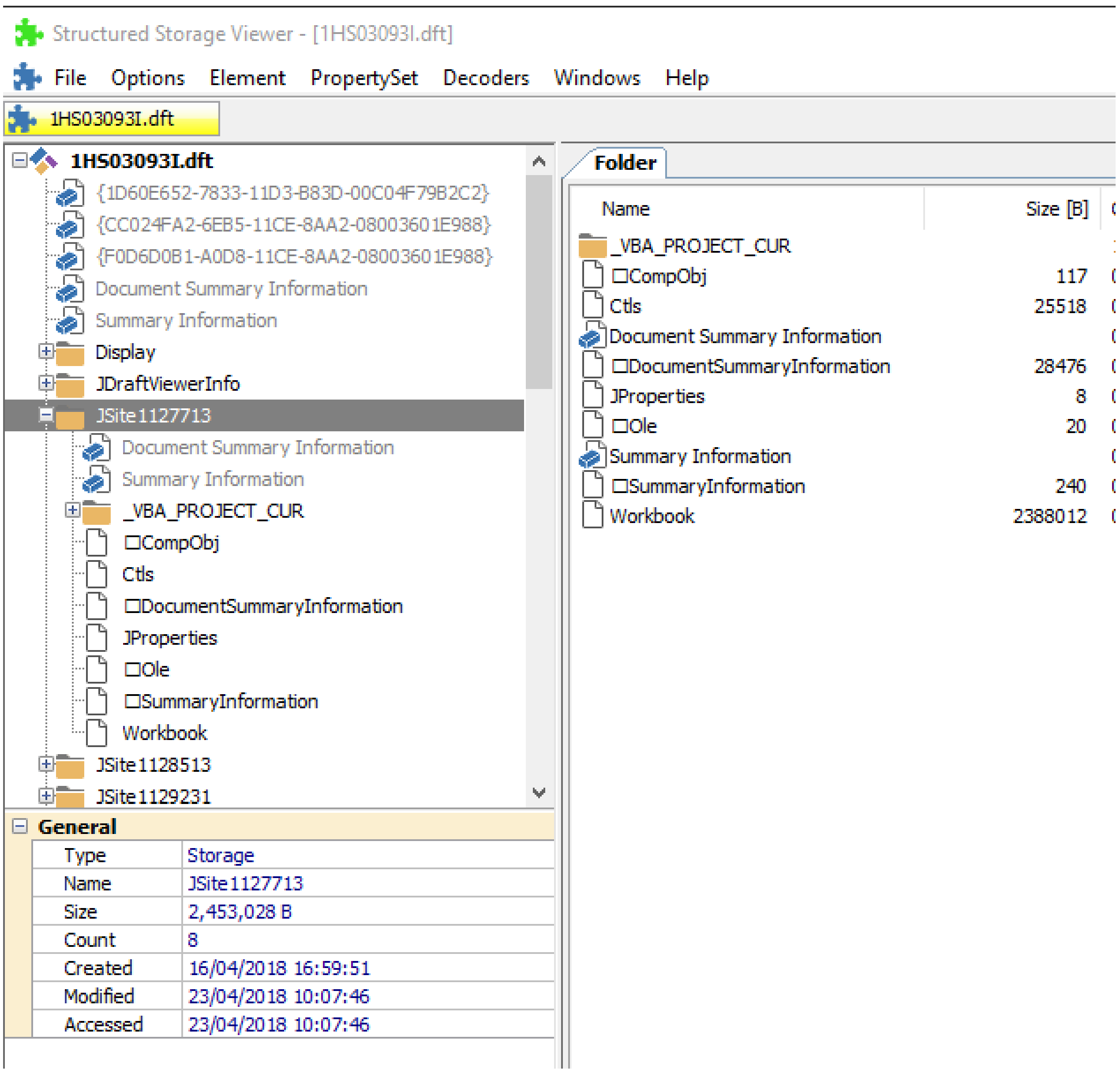
Checksums

CRC32	B0B5BE41
MD5	3511560D20DA6CD3CA...
SHA1	51E426A5ABE815558D9...

Folder

Name	Size [B]	Created	Ac
Display		27/03/2018 17:06:35	23,
JDraftViewerInfo		23/04/2018 10:07:47	23,
JSite1128513		16/04/2018 16:59:56	23,
JSite1129231		16/04/2018 16:59:59	23,
JSite243249		27/03/2018 17:06:36	23,
JSite449780		27/03/2018 17:06:36	23,
JSite922720		04/04/2018 08:50:52	23,
JSite928827		04/04/2018 08:50:58	23,
JSite933663		04/04/2018 08:50:55	23,
JSite960152		04/04/2018 09:06:26	23,
JSite963497		16/04/2018 14:12:41	23,
JSite963740		16/04/2018 14:12:38	23,
JSite963762		16/04/2018 14:12:33	23,
JSite964735		04/04/2018 09:06:30	23,
JSite965064		04/04/2018 09:06:34	23,
JSite965517		27/03/2018 17:06:36	23,
JSite965527		27/03/2018 17:06:36	23,
JSite965530		27/03/2018 17:06:36	23,
PARASOLID		27/03/2018 17:06:35	16,
PSMspacemap		27/03/2018 17:06:35	16,
{1D60E652-7833-11D3-B83D-00...		01/01/1601	01,
{CC024FA2-6EB5-11CE-8AA2-08...		01/01/1601	01,
{F0D6D0B1-A0D8-11CE-8AA2-08...		01/01/1601	01.

Expand the first JSite storage object:



1HS03093I.dft
- {1D60E652-7833-11D3-B83D-00C04F79B2C2}
- {CC024FA2-6EB5-11CE-8AA2-08003601E988}
- {F0D6D0B1-A0D8-11CE-8AA2-08003601E988}
- Document Summary Information
- Summary Information
- Display
- JDraftViewerInfo
- JSite1127713
  - Document Summary Information
  - Summary Information
  - _VBA_PROJECT_CUR
  - ☐CompObj
  - Ctls
  - ☐DocumentSummaryInformation
  - JProperties
  - ☐Ole
  - ☐SummaryInformation
  - Workbook
- JSite1128513
- JSite1129231

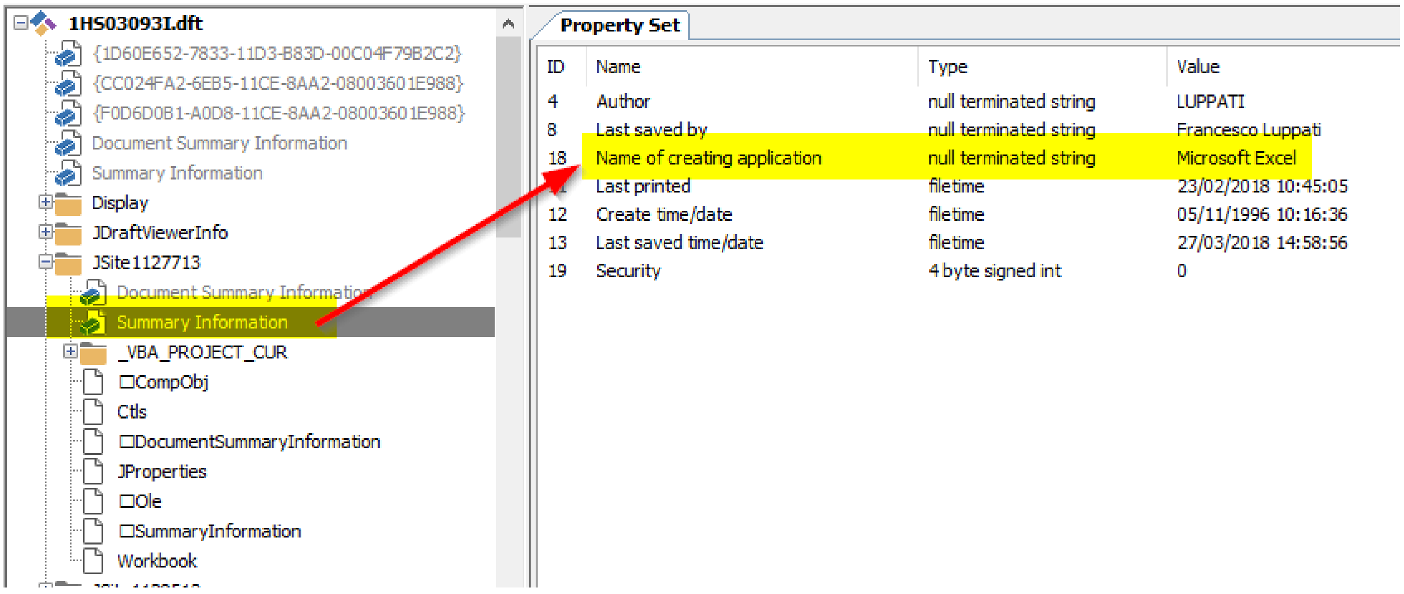
Folder

Name	Size [B]
_VBA_PROJECT_CUR	
☐CompObj	117
Ctls	25518
Document Summary Information	
☐DocumentSummaryInformation	28476
JProperties	8
☐Ole	20
Summary Information	
☐SummaryInformation	240
Workbook	2388012

General

Type	Storage
Name	JSite1127713
Size	2,453,028 B
Count	8
Created	16/04/2018 16:59:51
Modified	23/04/2018 10:07:46
Accessed	23/04/2018 10:07:46

Under this storage we have several PropertySet and Stream objects. If we start interrogating these objects we can see that this storage object appears to be an embedded Excel file:

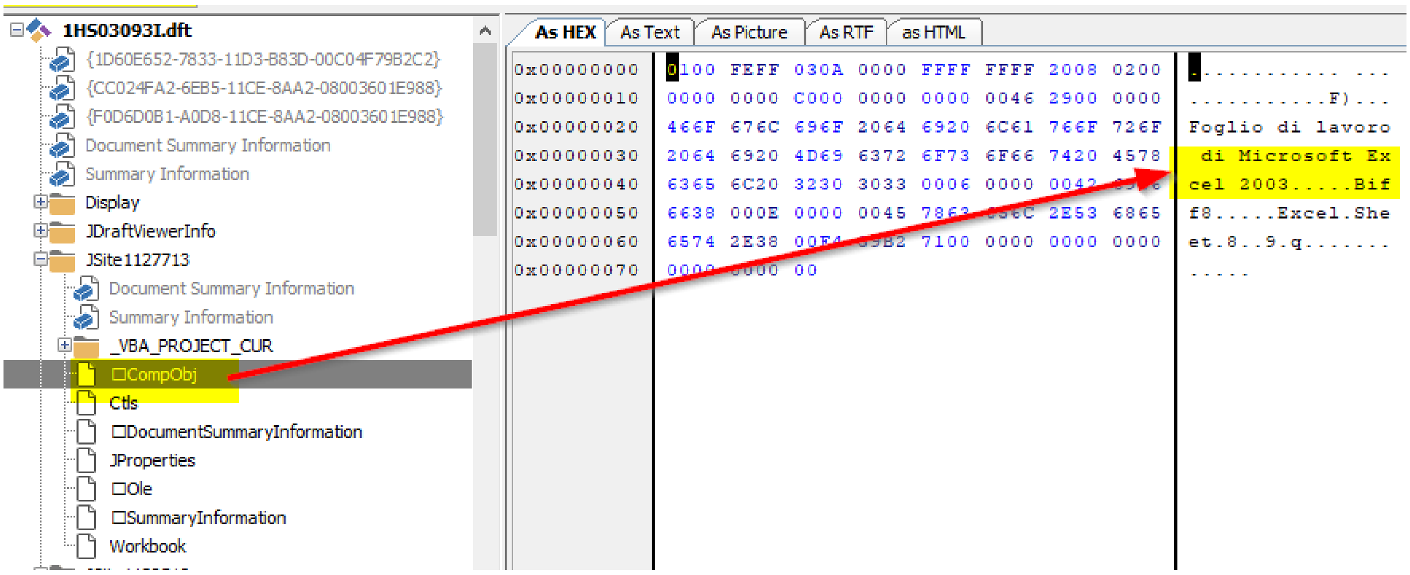


1HS03093I.dft
- {1D60E652-7833-11D3-B83D-00C04F79B2C2}
- {CC024FA2-6EB5-11CE-8AA2-08003601E988}
- {F0D6D0B1-A0D8-11CE-8AA2-08003601E988}
- Document Summary Information
- Summary Information
- Display
- JDraftViewerInfo
- JSite1127713
  - Document Summary Information
  - Summary Information
  - _VBA_PROJECT_CUR
  - ☐CompObj
  - Ctls
  - ☐DocumentSummaryInformation
  - JProperties
  - ☐Ole
  - ☐SummaryInformation
  - Workbook

Property Set

ID	Name	Type	Value
4	Author	null terminated string	LUPPATI
8	Last saved by	null terminated string	Francesco Luppati
18	Name of creating application	null terminated string	Microsoft Excel
11	Last printed	filetime	23/02/2018 10:45:05
12	Create time/date	filetime	05/11/1996 10:16:36
13	Last saved time/date	filetime	27/03/2018 14:58:56
19	Security	4 byte signed int	0

Additionally, this appears to be an Excel 2003 file:

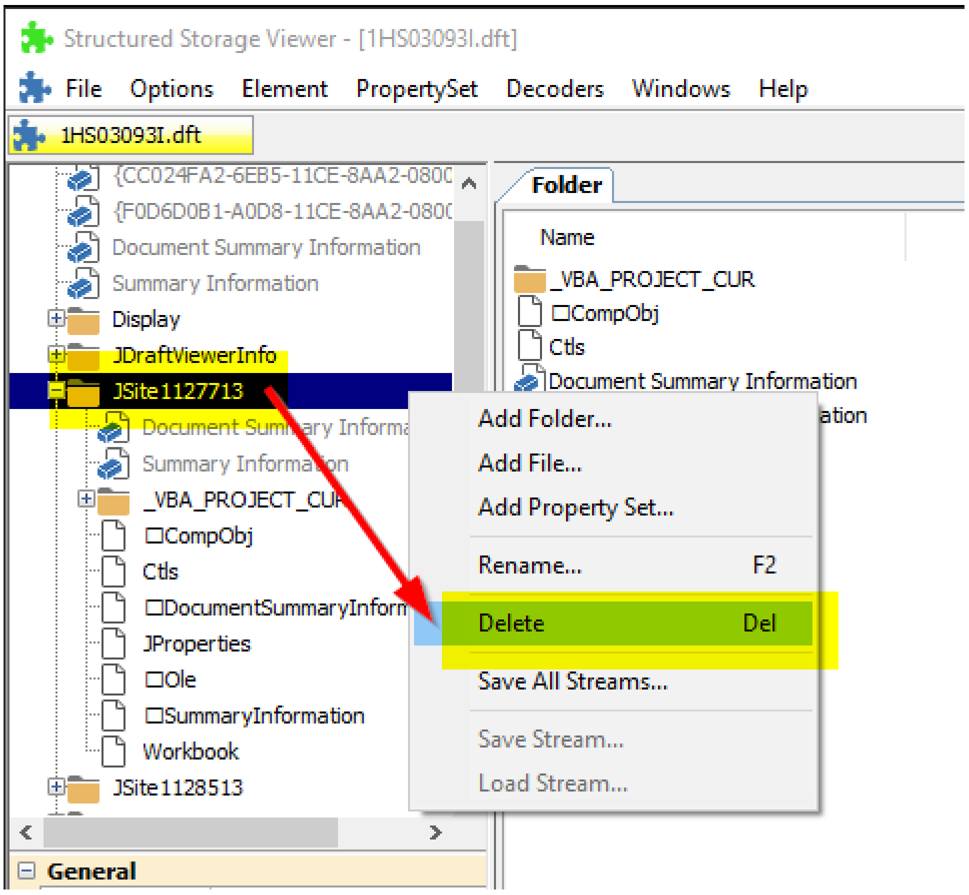


```
1HS03093I.dft
  {1D60E652-7833-11D3-B83D-00C04F79B2C2}
  {CC024FA2-6EB5-11CE-8AA2-08003601E988}
  {F0D6D0B1-A0D8-11CE-8AA2-08003601E988}
  Document Summary Information
  Summary Information
  Display
  JDraftViewerInfo
  JSite1127713
    Document Summary Information
    Summary Information
    _VBA_PROJECT_CUR
    □CompObj
    Ctls
    □DocumentSummaryInformation
    JProperties
    □Ole
    □SummaryInformation
    Workbook
```

```
0x00000000  0100 FEFF 030A 0000 FFFF FFFF 2008 0200  .............  ...
0x00000010  0000 0000 C000 0000 0000 0046 2900 0000  ............F)...
0x00000020  466F 676C 696F 2064 6920 6C61 766F 726F  Foglio di lavoro
0x00000030  2064 6920 4D69 6372 6F73 6F66 7420 4578   di Microsoft Ex
0x00000040  6365 6C20 3230 3033 0006 0000 0042 6966  cel 2003.....Bif
0x00000050  6638 000E 0000 0045 7863 656C 2E53 6865  f8.....Excel.She
0x00000060  6574 2E38 00F4 39B2 7100 0000 0000 0000  et.8..9.q.......
0x00000070  0000 0000 00                             .....
```

It appears that the user has embedded an Excel file into the draft file.

Right click over the JSIte storage object that contains our Excel file data and select Delete:

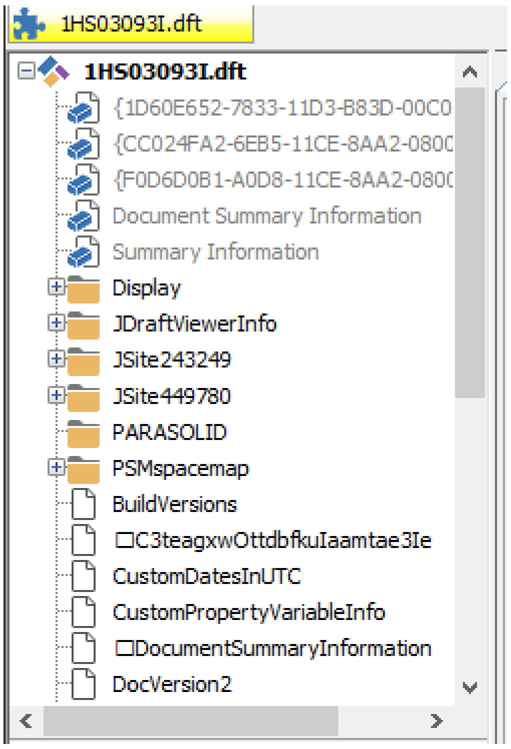


```
{CC024FA2-6EB5-11CE-8AA2-080
{F0D6D0B1-A0D8-11CE-8AA2-080
Document Summary Information
Summary Information
Display
JDraftViewerInfo
JSite1127713
  Document Summary Informa
  Summary Information
  _VBA_PROJECT_CUR
  □CompObj
  Ctls
  □DocumentSummaryInform
  JProperties
  □Ole
  □SummaryInformation
  Workbook
JSite1128513
```

```
_VBA_PROJECT_CUR
□CompObj
Ctls
Document Summary Information
```

The objects containing the embedded Excel file have now been removed.

Continue interrogating the JSite storage objects and delete any remaining objects that containing Excel files in them:



```
1HS03093I.dft
1HS03093I.dft
  {1D60E652-7833-11D3-B83D-00C0
  {CC024FA2-6EB5-11CE-8AA2-080C
  {F0D6D0B1-A0D8-11CE-8AA2-080C
  Document Summary Information
  Summary Information
  Display
  JDraftViewerInfo
  JSite243249
  JSite449780
  PARASOLID
  PSMspacemap
  BuildVersions
  ☐C3teagxwOttdbfkuIaamtae3Ie
  CustomDatesInUTC
  CustomPropertyVariableInfo
  ☐DocumentSummaryInformation
  DocVersion2
```

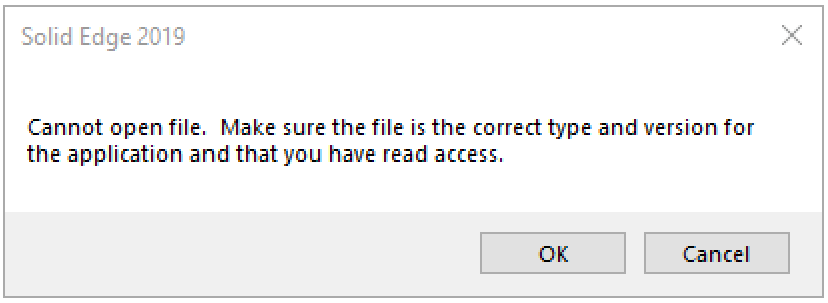
Save the modified file.

Now the repaired file will open into Solid Edge without issue.

7.12 Make Sure the File Is the Correct Type and Version for The Application – Draft

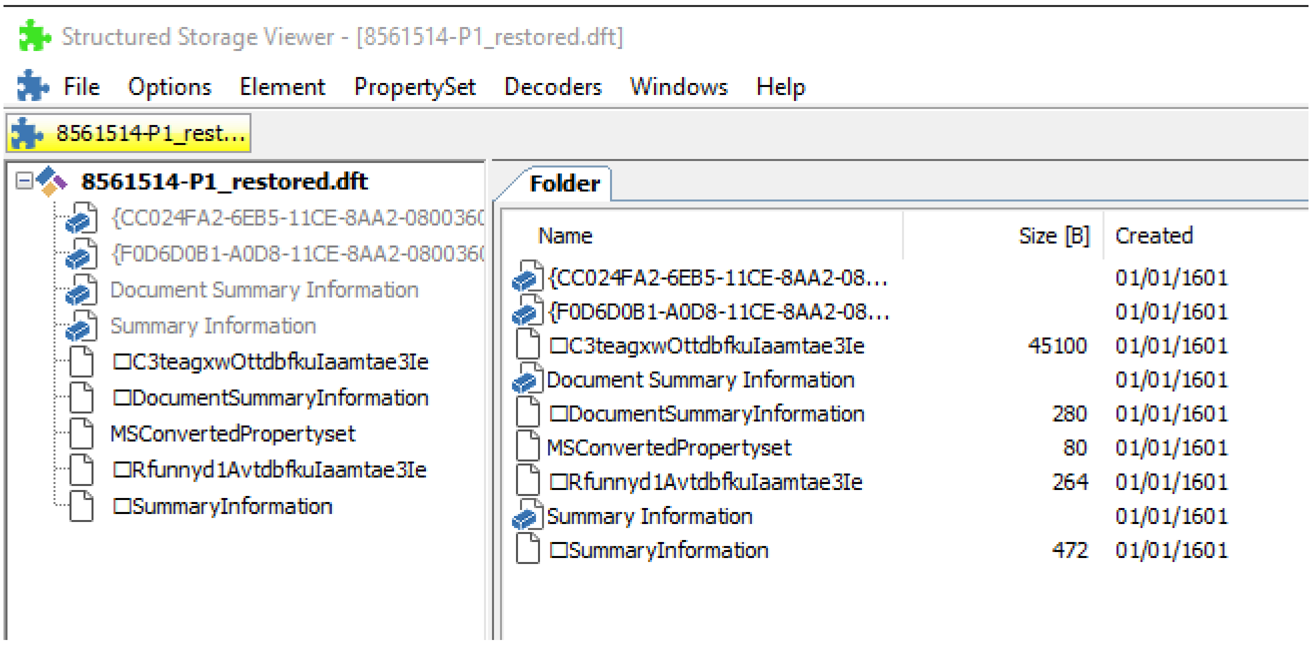
Reference: IR# 9391889

Opening a draft file throws the error message "Cannot open file. Make sure the file is the correct type and version for the application and that you have read access." and the file is not opened:


Solid Edge 2019

Cannot open file. Make sure the file is the correct type and version for the application and that you have read access.

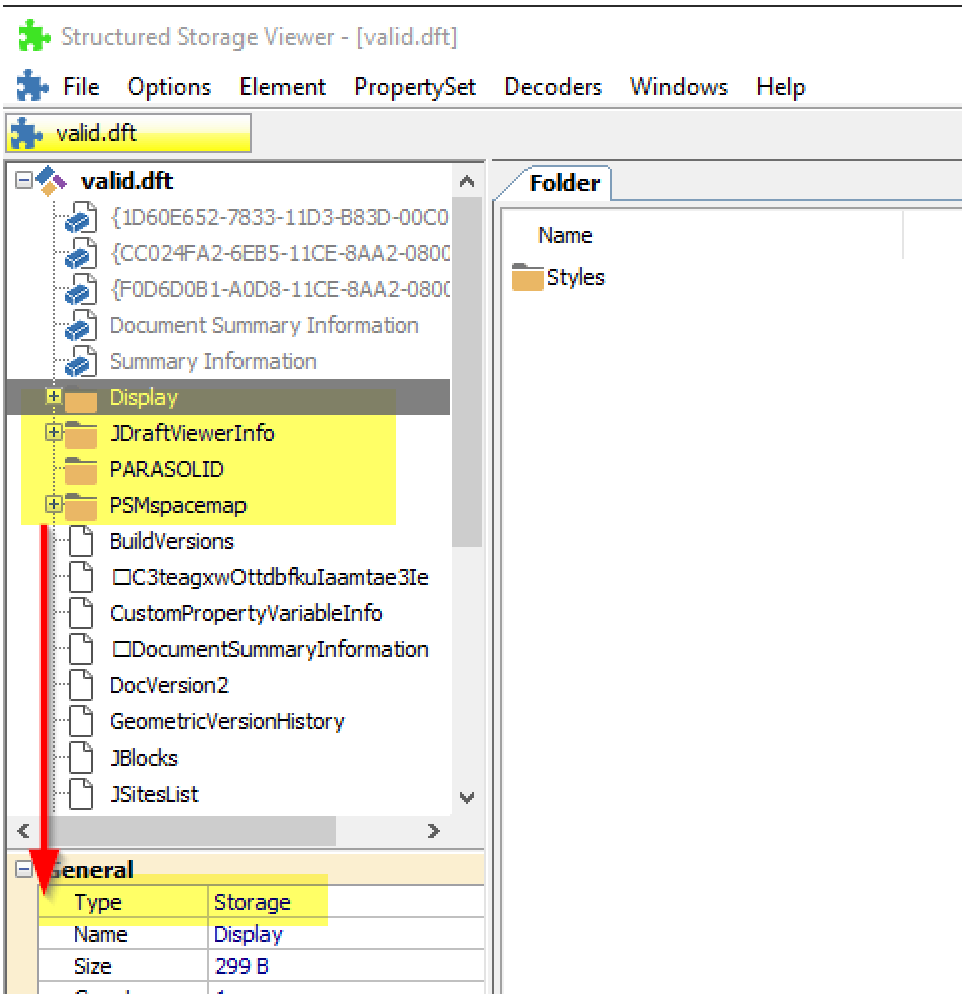
If we open the file in to one of the structured storage tools we can see that there are several PropertySet and Stream objects related to file properties:


Structured Storage Viewer - [8561514-P1_restored.dft]

```
8561514-P1_restored.dft
  {CC024FA2-6EB5-11CE-8AA2-080036(
  {F0D6D0B1-A0D8-11CE-8AA2-080036(
  Document Summary Information
  Summary Information
  □C3teagxwOttdbfkuIaamtae3Ie
  □DocumentSummaryInformation
  MSConvertedPropertyset
  □Rfunnyd1AvtdbfkuIaamtae3Ie
  □SummaryInformation
```

Name	Size [B]	Created
{CC024FA2-6EB5-11CE-8AA2-08…		01/01/1601
{F0D6D0B1-A0D8-11CE-8AA2-08…		01/01/1601
□C3teagxwOttdbfkuIaamtae3Ie	45100	01/01/1601
Document Summary Information		01/01/1601
□DocumentSummaryInformation	280	01/01/1601
MSConvertedPropertyset	80	01/01/1601
□Rfunnyd1AvtdbfkuIaamtae3Ie	264	01/01/1601
Summary Information		01/01/1601
□SummaryInformation	472	01/01/1601

However, we can also see that there are no Storage objects. This is unexpected, as a valid Solid Edge file should have several Storage objects within its content as shown in the following valid draft file:


Structured Storage Viewer - [valid.dft]

File Options Element PropertySet Decoders Windows Help

valid.dft

valid.dft
{1D60E652-7833-11D3-B83D-00C0
{CC024FA2-6EB5-11CE-8AA2-080C
{F0D6D0B1-A0D8-11CE-8AA2-080C
Document Summary Information
Summary Information
Display
JDraftViewerInfo
PARASOLID
PSMspacemap
BuildVersions
☐C3teagxwOttdbfkuIaamtae3Ie
CustomPropertyVariableInfo
☐DocumentSummaryInformation
DocVersion2
GeometricVersionHistory
JBlocks
JSitesList

General

Type	Storage
Name	Display
Size	299 B

Folder

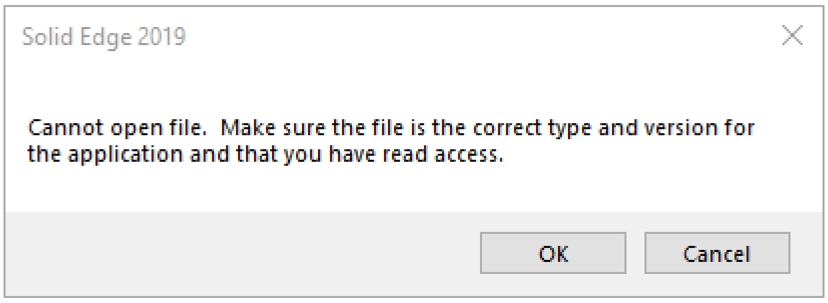
Name
Styles

This corrupted file cannot be repaired as there is no draft related data other than property information available to recover.

7.13 Make Sure the File Is the Correct Type and Version for The Application – Part

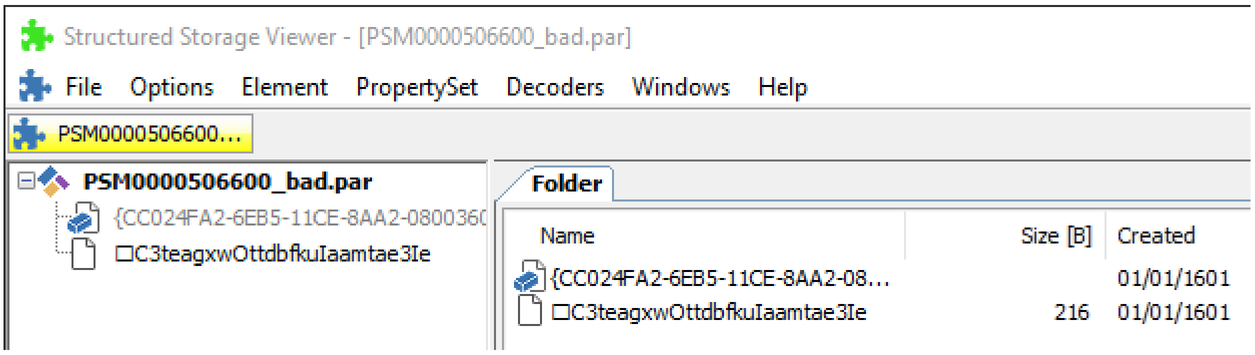
Reference: IR# 9417777

Opening a part file throws the error message "Cannot open file. Make sure the file is the correct type and version for the application and that you have read access." and the file is not opened:



Cannot open file. Make sure the file is the correct type and version for the application and that you have read access.

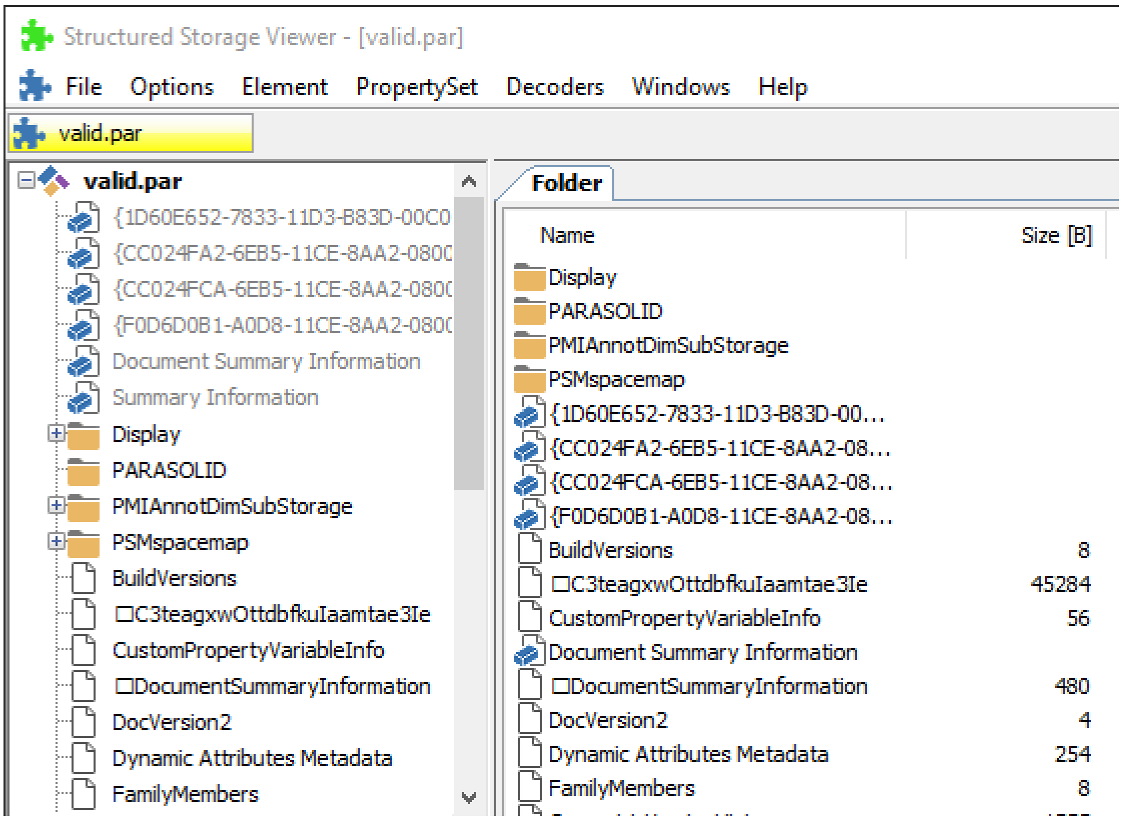
If we open the file in to one of the structured storage tools we can see that there are two objects within the file structure:



PSM0000506600_bad.par
{CC024FA2-6EB5-11CE-8AA2-080036
□C3teagxwOttdbfkuIaamtae3Ie

Name	Size [B]	Created
{CC024FA2-6EB5-11CE-8AA2-08...		01/01/1601
□C3teagxwOttdbfkuIaamtae3Ie	216	01/01/1601

This is unexpected, as a valid Solid Edge file should have many different objects within its content as shown in the following valid part file:



valid.par
{1D60E652-7833-11D3-B83D-00C0
{CC024FA2-6EB5-11CE-8AA2-080
{CC024FCA-6EB5-11CE-8AA2-080
{F0D6D0B1-A0D8-11CE-8AA2-080
Document Summary Information
Summary Information
Display
PARASOLID
PMIAnnotDimSubStorage
PSMspacemap
BuildVersions
□C3teagxwOttdbfkuIaamtae3Ie
CustomPropertyVariableInfo
□DocumentSummaryInformation
DocVersion2
Dynamic Attributes Metadata
FamilyMembers

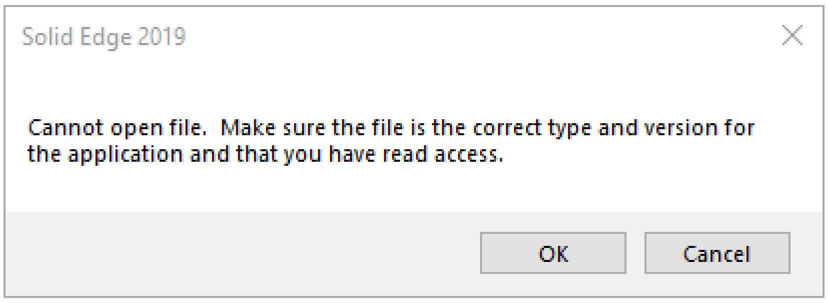
Name	Size [B]
Display	
PARASOLID	
PMIAnnotDimSubStorage	
PSMspacemap	
{1D60E652-7833-11D3-B83D-00...	
{CC024FA2-6EB5-11CE-8AA2-08...	
{CC024FCA-6EB5-11CE-8AA2-08...	
{F0D6D0B1-A0D8-11CE-8AA2-08...	
BuildVersions	8
□C3teagxwOttdbfkuIaamtae3Ie	45284
CustomPropertyVariableInfo	56
Document Summary Information	
□DocumentSummaryInformation	480
DocVersion2	4
Dynamic Attributes Metadata	254
FamilyMembers	8

This corrupted file cannot be repaired as there is no part related data available to recover.

7.14 Make Sure the File Is the Correct Type and Version for The Application – FOA

Reference: IR# 9312193

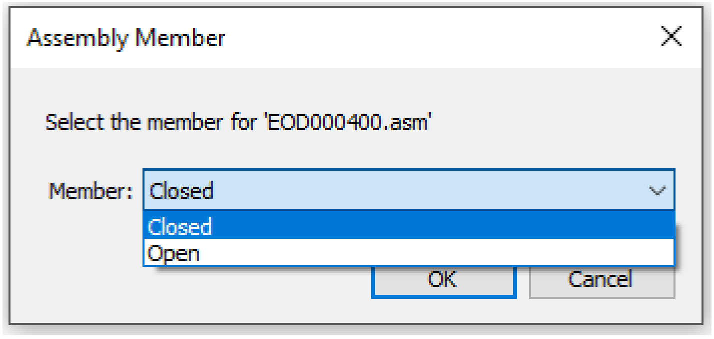
Opening a Family of Assemblies (FOA) assembly file from Windows Explorer throws the error “Cannot open file. Make sure the file is the correct type and version for the application and that you have read access” and the file is not opened:



Solid Edge 2019

Cannot open file. Make sure the file is the correct type and version for the application and that you have read access.

Opening the FOA from within Solid Edge will allow the file to successfully open and the “Assembly Member” dialog will be displayed:

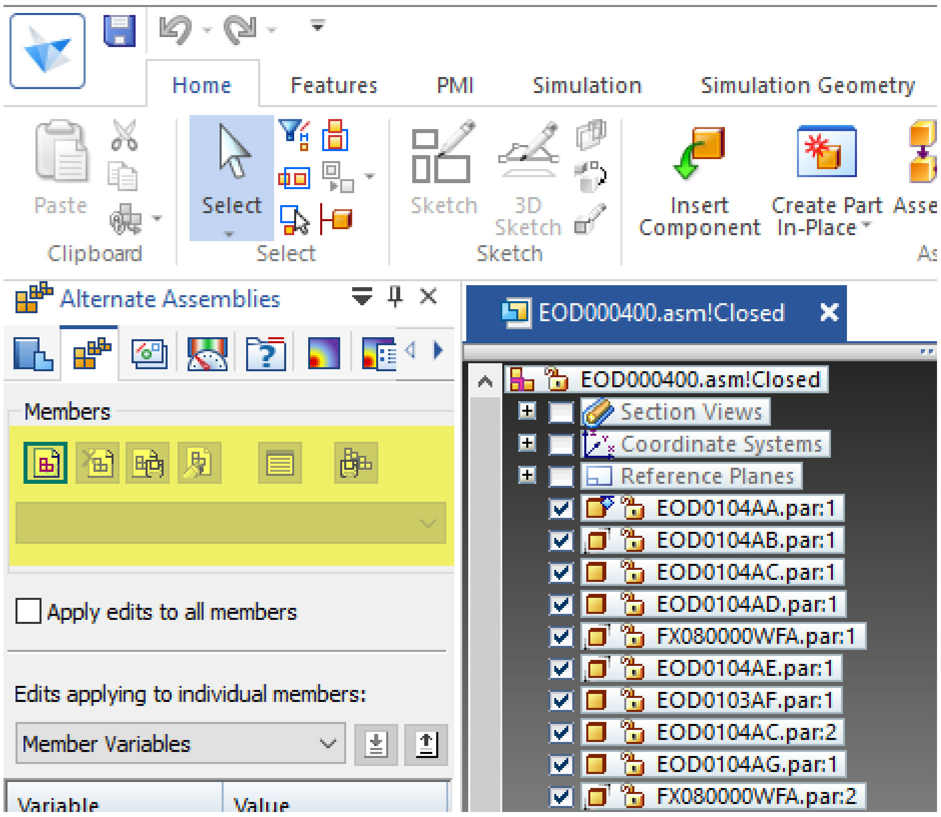


Assembly Member

Select the member for 'EOD000400.asm'

Member: Closed

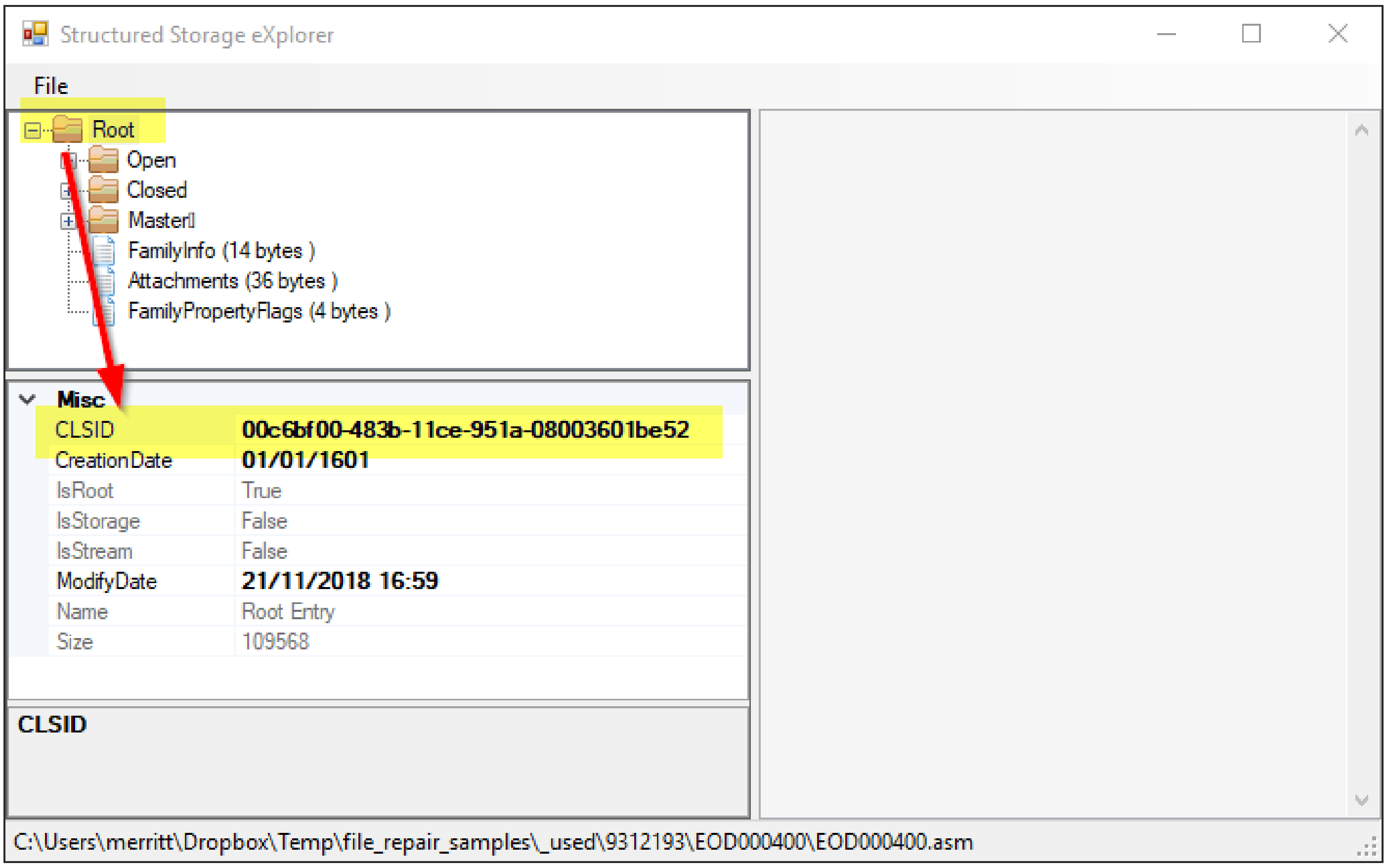
However, after opening, it is then not possible to select and change the FOA members:



EOD000400.asm!Closed
EOD0104AA.par:1
EOD0104AB.par:1
EOD0104AC.par:1
EOD0104AD.par:1
FX080000WFA.par:1
EOD0104AE.par:1
EOD0103AF.par:1
EOD0104AC.par:2
EOD0104AG.par:1
FX080000WFA.par:2

This would appear to indicate the FOA file is not correctly identified or tagged as an FOA file.

Open the file in to the "Structured Storage eXplorer" tool so we can review the CLSID value for this FOA file at the Root level:



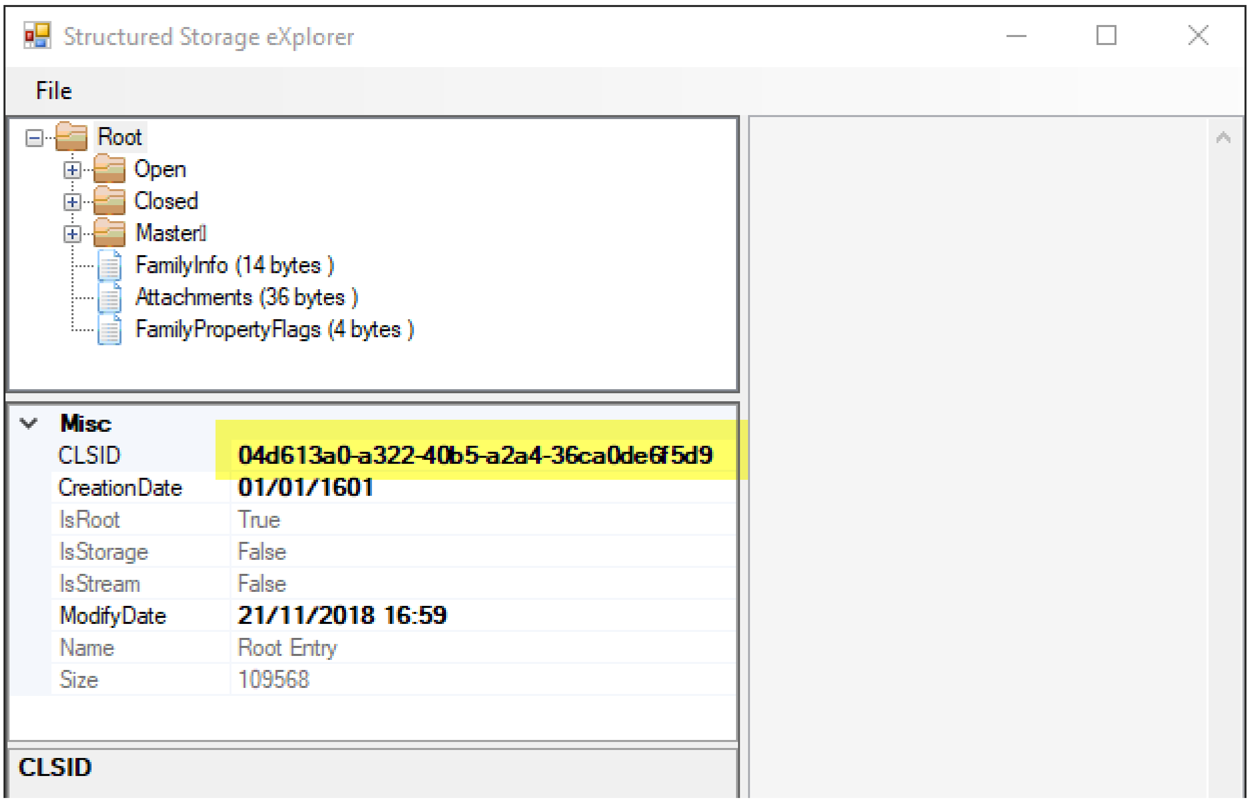
CLSID	00c6bf00-483b-11ce-951a-08003601be52
CreationDate	01/01/1601
IsRoot	True
IsStorage	False
IsStream	False
ModifyDate	21/11/2018 16:59
Name	Root Entry
Size	109568

CLSID

C:\Users\merritt\Dropbox\Temp\file_repair_samples_used\9312193\EOD000400\EOD000400.asm

We can see that the current CLSID value for this file is currently "00c6bf00-483b-11ce-951a-08003601be52". However, if we quickly review the earlier section in this document on CLSID values we know that an FOA file should have a correct CLSID value of "04d613a0-a322-40b5-a2a4-36ca0de6f5d9".

Double-click into the CLSID field and change its value to "04d613a0-a322-40b5-a2a4-36ca0de6f5d9". You can copy and paste the value:



CLSID	04d613a0-a322-40b5-a2a4-36ca0de6f5d9
CreationDate	01/01/1601
IsRoot	True
IsStorage	False
IsStream	False
ModifyDate	21/11/2018 16:59
Name	Root Entry
Size	109568

CLSID

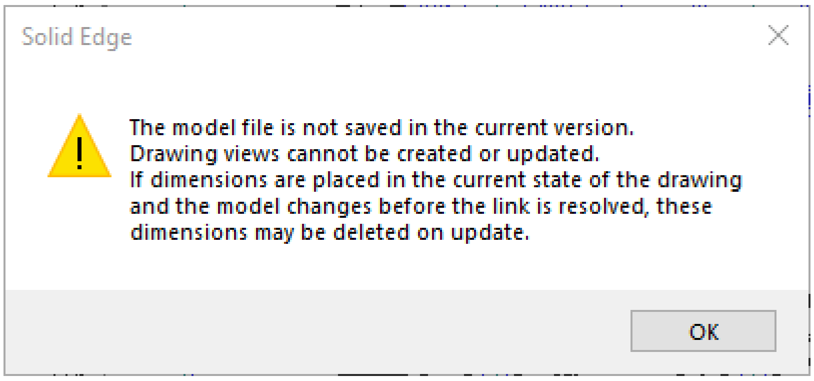
Then select File -> Save to save our modifications.

The CLSID tag has now been corrected and the file repaired. The file should now open and work as expected within Solid Edge without any further issue.

7.15 Model File Is Not Saved in The Current Version. Drawing Views Cannot Be Created or Updated.

Reference: IR# 9417777

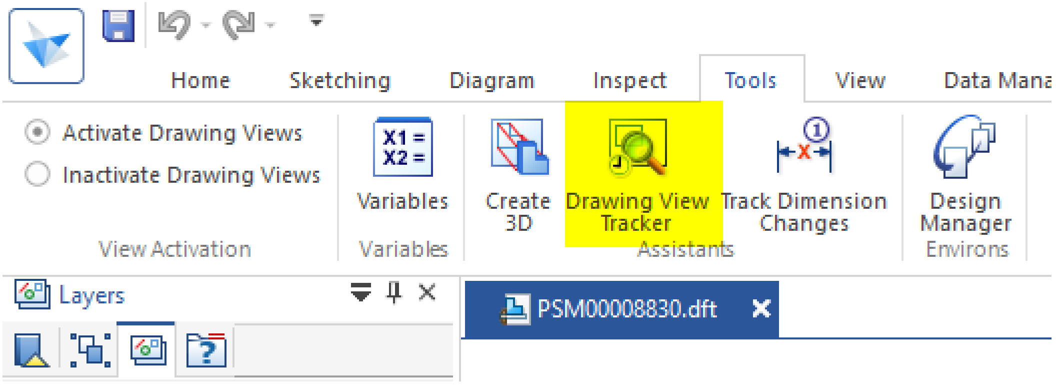
Opening a draft file throws the error message ”The model file is not saved in the current version. Drawing views cannot be created or updated. If dimensions are placed in the current state of the drawing and the model changes before the link is resolved, these dimensions may be deleted on update.”. However, the file is successfully opened:


Solid Edge

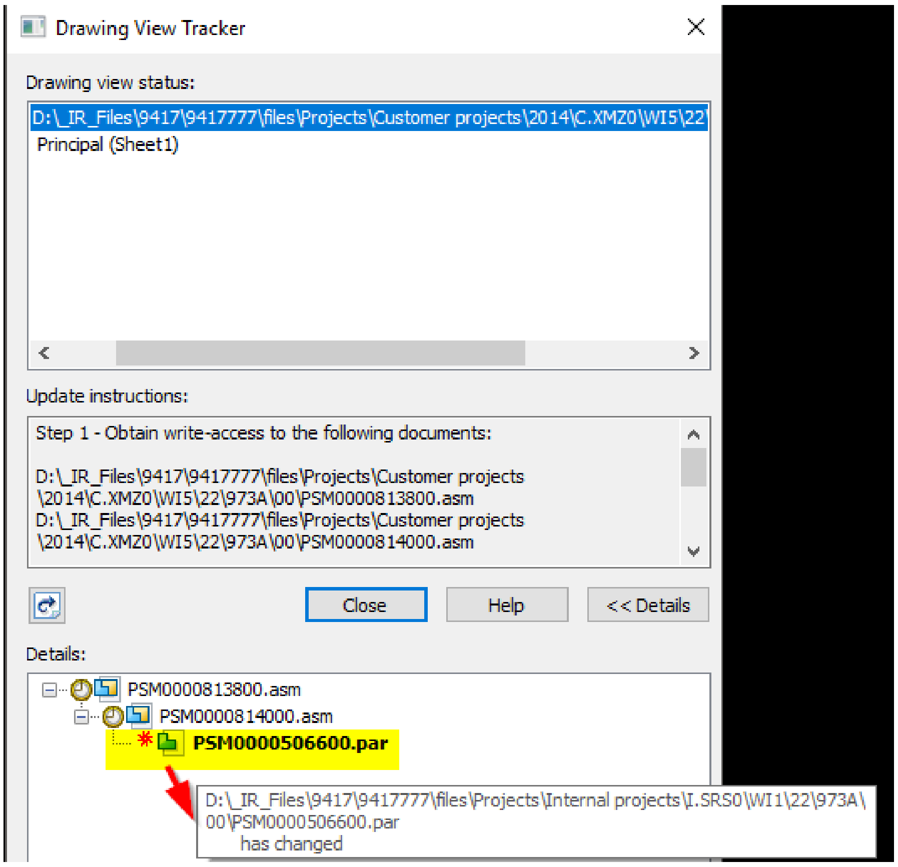
The model file is not saved in the current version.
Drawing views cannot be created or updated.
If dimensions are placed in the current state of the drawing and the model changes before the link is resolved, these dimensions may be deleted on update.

OK

Select Tools -> Assistants -> Drawing View Tracker:



In the Drawing View Tracker we can see that a part within one of the sub-assemblies has changed:


Drawing View Tracker

Drawing view status:

D:_IR_Files\9417\9417777\files\Projects\Customer projects\2014\C.XMZ0\WI5\22\
Principal (Sheet1)

Update instructions:

Step 1 - Obtain write-access to the following documents:

D:_IR_Files\9417\9417777\files\Projects\Customer projects\2014\C.XMZ0\WI5\22\973A\00\PSM0000813800.asm
D:_IR_Files\9417\9417777\files\Projects\Customer projects\2014\C.XMZ0\WI5\22\973A\00\PSM0000814000.asm

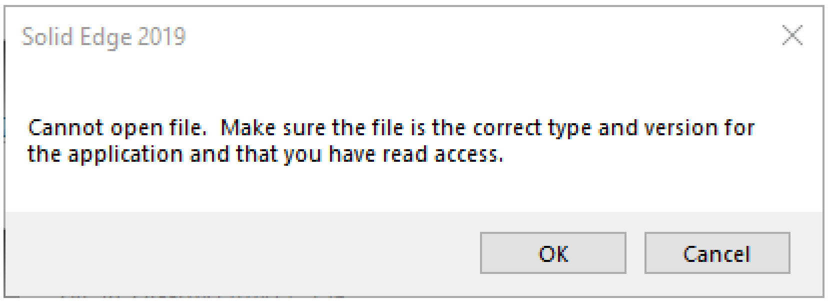
Close Help << Details

Details:

PSM0000813800.asm
PSM0000814000.asm
PSM0000506600.par

D:_IR_Files\9417\9417777\files\Projects\Internal projects\I.SRS0\WI1\22\973A\00\PSM0000506600.par has changed

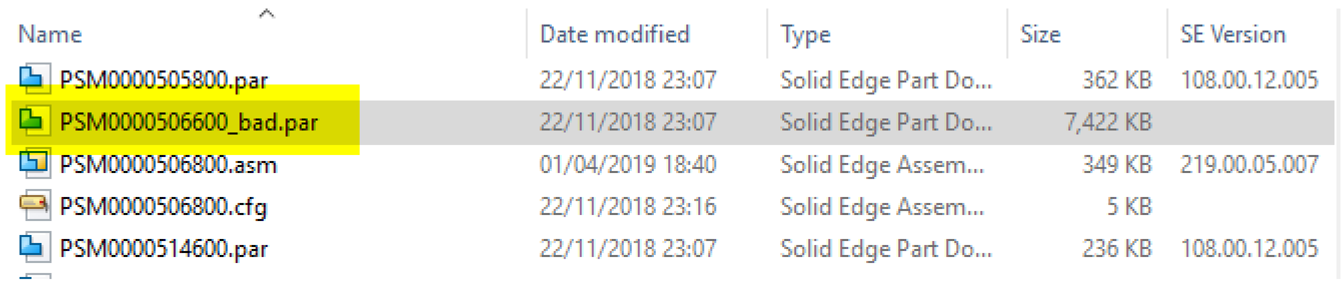
If we attempt to open this changed part file in Solid Edge, we then receive the following error message for the child part:


Solid Edge 2019

Cannot open file. Make sure the file is the correct type and version for the application and that you have read access.

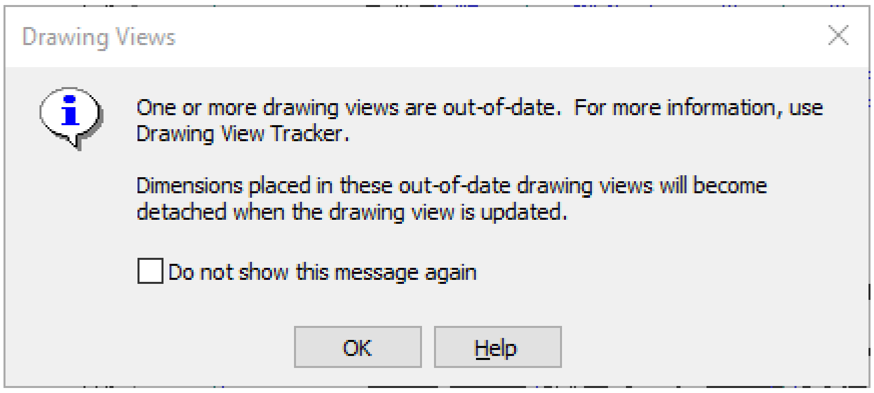
We have already addressed how to interrogate and potentially fix this type of "make sure the file is the correct type and version" error for the part file in an earlier troubleshooting example. It is not necessary to review this corrupted child part file to continue resolving the issue being addressed within this section for the error message when opening the draft file.

We need to remove this corrupted child part file from the assembly structure. In this example we simply rename the corrupted file on disk in Windows Explorer:



Name	Date modified	Type	Size	SE Version
PSM0000505800.par	22/11/2018 23:07	Solid Edge Part Do...	362 KB	108.00.12.005
PSM0000506600_bad.par	22/11/2018 23:07	Solid Edge Part Do...	7,422 KB	
PSM0000506800.asm	01/04/2019 18:40	Solid Edge Assem...	349 KB	219.00.05.007
PSM0000506800.cfg	22/11/2018 23:16	Solid Edge Assem...	5 KB	
PSM0000514600.par	22/11/2018 23:07	Solid Edge Part Do...	236 KB	108.00.12.005

Then when you reopen the draft file, the draft will open without issue and without any error messages. Because we have removed a child from the assembly structure, as expected, the Drawing Views are marked as out of date:


Drawing Views

One or more drawing views are out-of-date. For more information, use Drawing View Tracker.

Dimensions placed in these out-of-date drawing views will become detached when the drawing view is updated.

☐ Do not show this message again

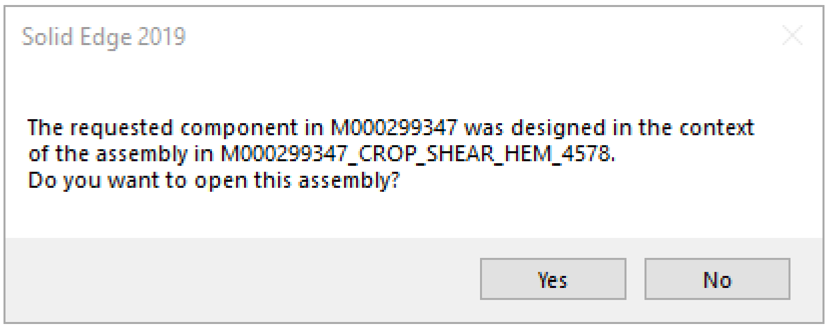
However, at this point the original issue with the draft file is now resolved and we can continue to work with the draft as needed. You will still need to address the underlying root cause for the original error message which is the now identified corrupted child part file.

7.16 Part with Non-Existent Link to Assembly

Reference: PR# 9271478

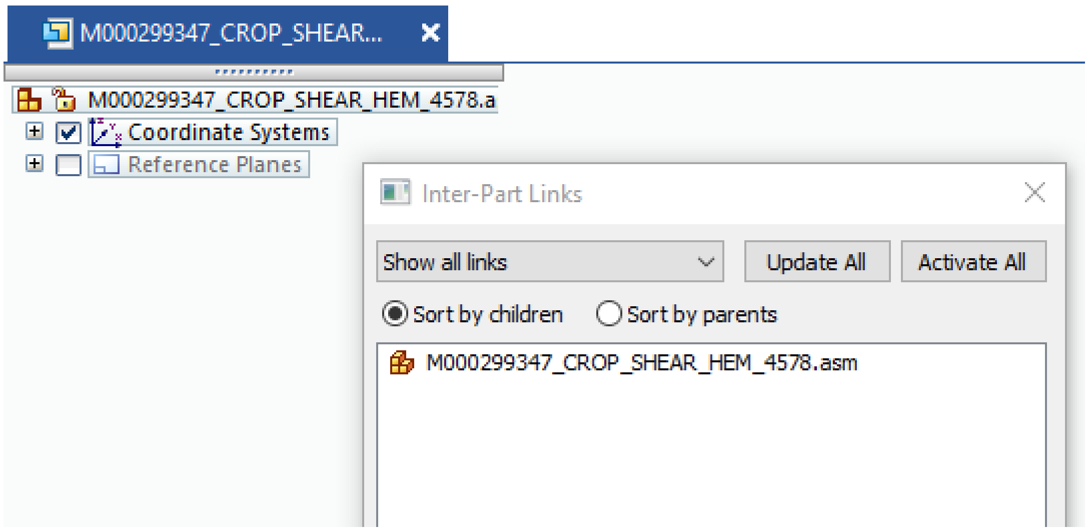
Note this issue is similar to the upcoming next example shown below. This example provides a more complex solution to show how to manually locate and remove links using the structured storage toolsets. The next upcoming example will provide a much simpler solution that will also work for this example.

The part file appears to have a reverse link to an assembly:


Solid Edge 2019

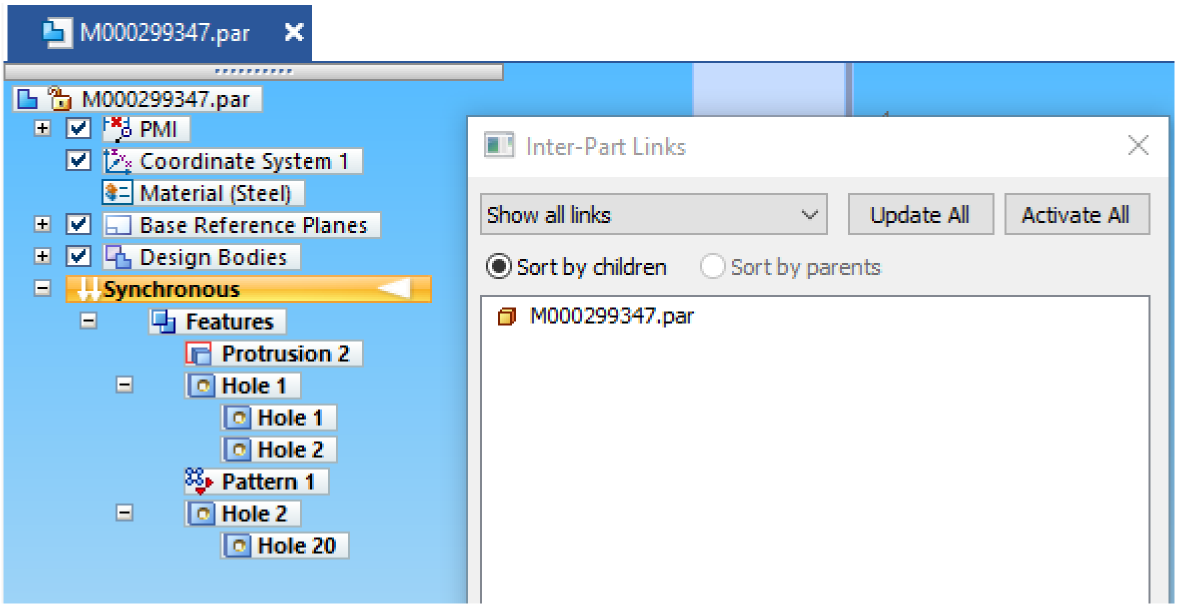
The requested component in M000299347 was designed in the context of the assembly in M000299347_CROP_SHEAR_HEM_4578.
Do you want to open this assembly?

Opening the assembly, we see there are no links to the part:



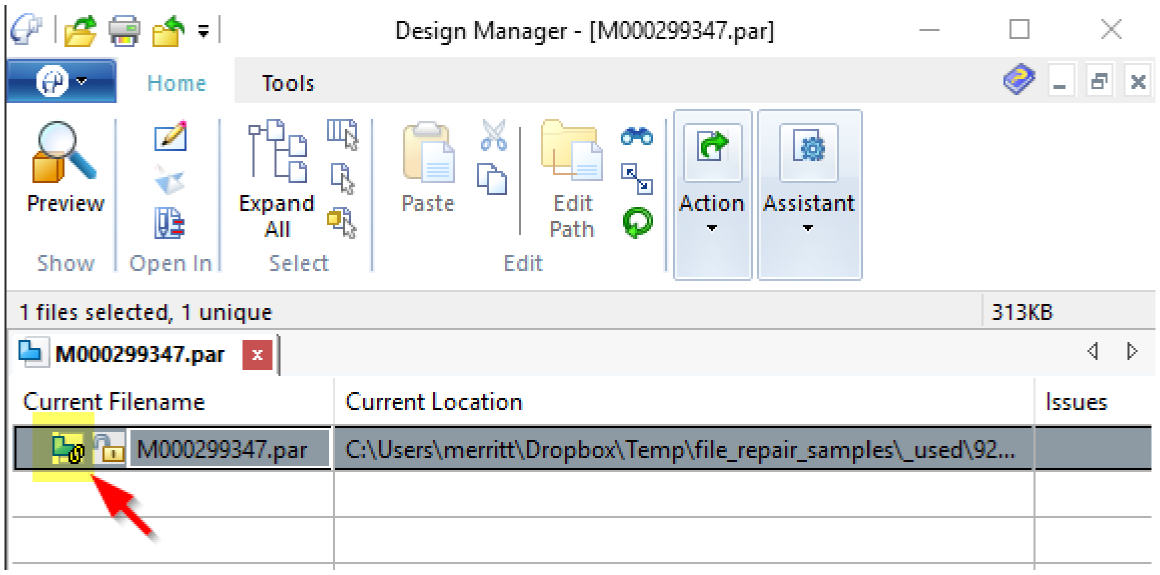
M000299347_CROP_SHEAR_HEM_4578.asm

Open the part and there are no links to the assembly:



M000299347.par

Additionally, open the part file in to Design Manager and the icon appears to indicate there is a linked file:



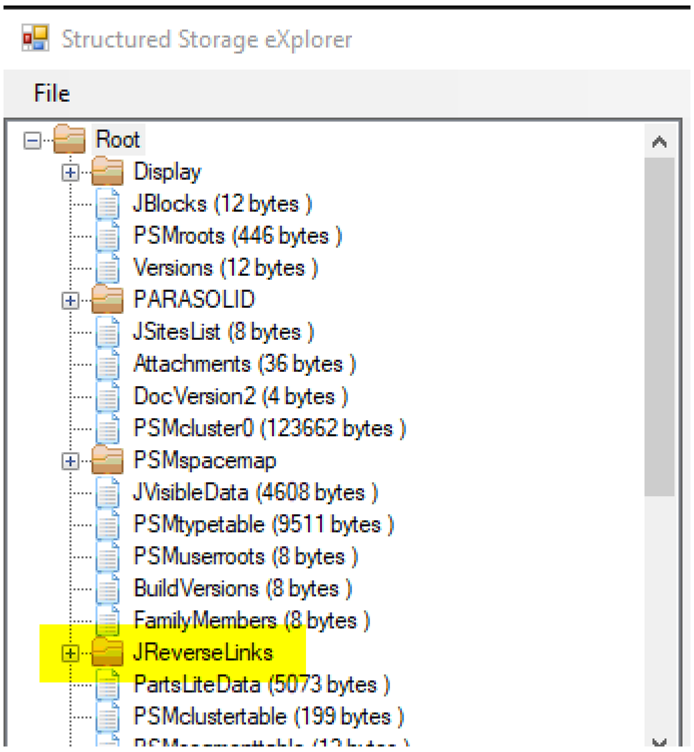
1 files selected, 1 unique 313KB

M000299347.par

Current Filename	Current Location	Issues
M000299347.par	C:\Users\merritt\Dropbox\Temp\file_repair_samples_used\92...	

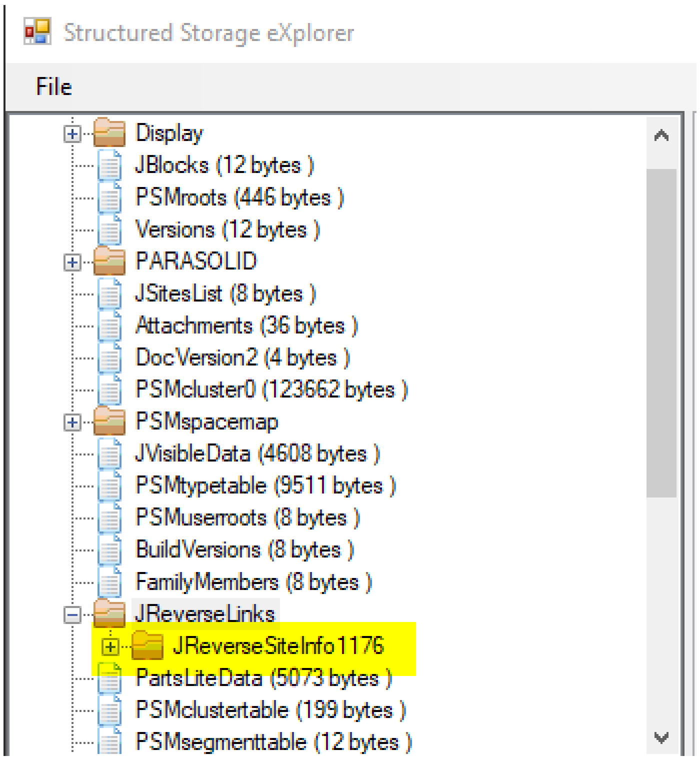
Apparently, there is a non-existent link in the part to the assembly.

Open the part file into a Structured Storage eXplorer and begin interrogating the storage structure. Expand the JReverseLinks storage object:



```
Root
  Display
  JBlocks (12 bytes )
  PSMroots (446 bytes )
  Versions (12 bytes )
  PARASOLID
  JSitesList (8 bytes )
  Attachments (36 bytes )
  DocVersion2 (4 bytes )
  PSMcluster0 (123662 bytes )
  PSMspacemap
  JVisibleData (4608 bytes )
  PSMtypetable (9511 bytes )
  PSMuserroots (8 bytes )
  BuildVersions (8 bytes )
  FamilyMembers (8 bytes )
  JReverseLinks
  PartsLiteData (5073 bytes )
  PSMclustertable (199 bytes )
```

JReverseLinks storage is where the reverse links in Solid Edge are maintained. Under this storage object is another storage object JReverseSiteInfoxxxx:

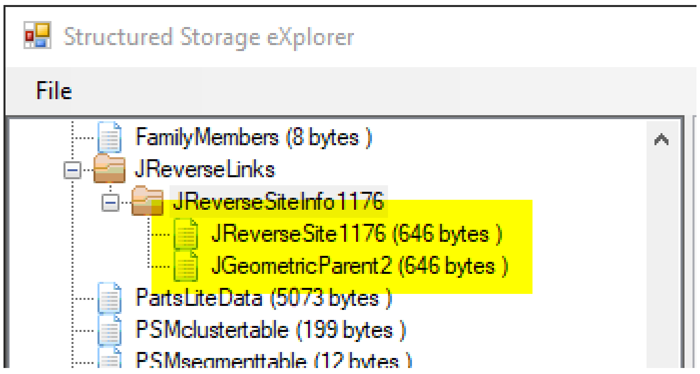


Structured Storage eXplorer

File

```
Display
JBlocks (12 bytes )
PSMroots (446 bytes )
Versions (12 bytes )
PARASOLID
JSitesList (8 bytes )
Attachments (36 bytes )
DocVersion2 (4 bytes )
PSMcluster0 (123662 bytes )
PSMspacemap
JVisibleData (4608 bytes )
PSMtypetable (9511 bytes )
PSMuserroots (8 bytes )
BuildVersions (8 bytes )
FamilyMembers (8 bytes )
JReverseLinks
    JReverseSiteInfo1176
PartsLiteData (5073 bytes )
PSMclustertable (199 bytes )
PSMsegmenttable (12 bytes )
```

If we then expand this JReverseSiteInfo storage we see two streams:

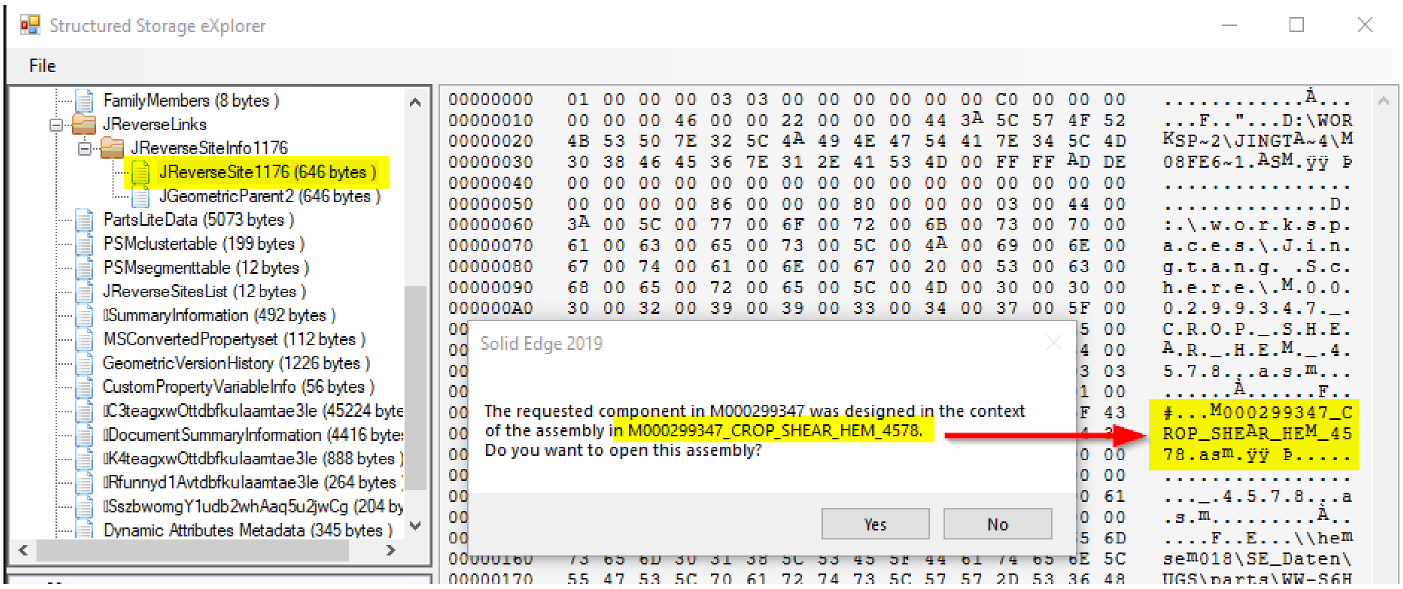


Structured Storage eXplorer

File

```
FamilyMembers (8 bytes )
JReverseLinks
    JReverseSiteInfo1176
        JReverseSite1176 (646 bytes )
        JGeometricParent2 (646 bytes )
PartsLiteData (5073 bytes )
PSMclustertable (199 bytes )
PSMsegmenttable (12 bytes )
```

If we interrogate the content of these streams we can see that there is a link defined back to the assembly file:



Structured Storage eXplorer

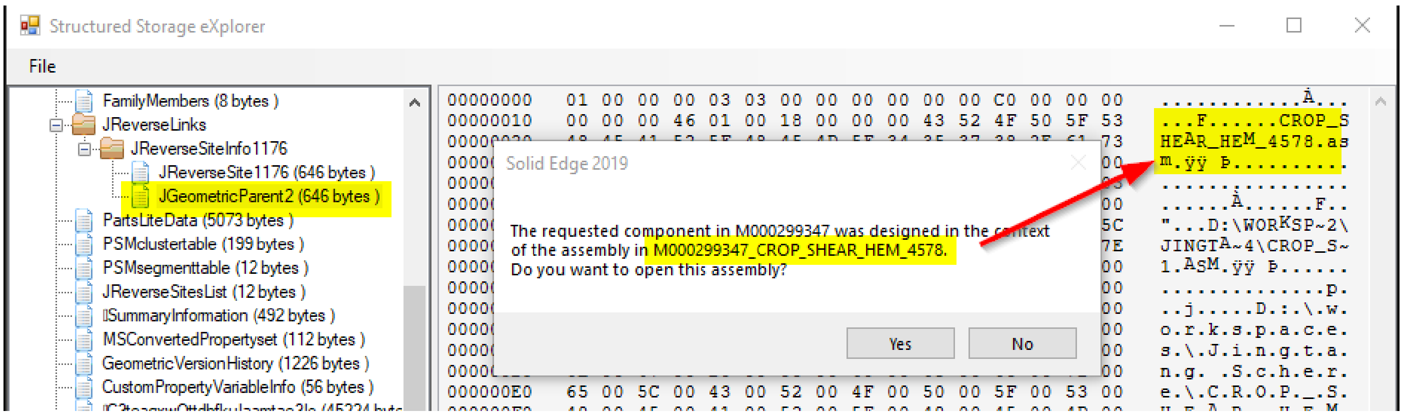
File

```
FamilyMembers (8 bytes )
JReverseLinks
    JReverseSiteInfo1176
        JReverseSite1176 (646 bytes )
        JGeometricParent2 (646 bytes )
PartsLiteData (5073 bytes )
PSMclustertable (199 bytes )
PSMsegmenttable (12 bytes )
JReverseSitesList (12 bytes )
SummaryInformation (492 bytes )
MSConvertedPropertyset (112 bytes )
GeometricVersionHistory (1226 bytes )
CustomPropertyVariableInfo (56 bytes )
C3teagxwOttdbfkulaamtae3le (45224 byte
DocumentSummaryInformation (4416 byte
K4teagxwOttdbfkulaamtae3le (888 bytes )
Rfunnyd1Avtdbfkulaamtae3le (264 bytes
SszbwomgY1udb2whAaq5u2jwCg (204 by
Dynamic Attributes Metadata (345 bytes )
```

```
00000000   01 00 00 00 03 03 00 00 00 00 00 00 C0 00 00 00   ............À...
00000010   00 00 00 46 00 00 22 00 00 00 44 3A 5C 57 4F 52   ...F.."...D:\WOR
00000020   4B 53 50 7E 32 5C 4A 49 4E 47 54 41 7E 34 5C 4D   KSP~2\JINGTA~4\M
00000030   30 38 46 45 36 7E 31 2E 41 53 4D 00 FF FF AD DE   08FE6~1.ASM.ÿÿ Þ
00000040   00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00   ................
00000050   00 00 00 00 86 00 00 00 80 00 00 00 03 00 44 00   ..............D.
00000060   3A 00 5C 00 77 00 6F 00 72 00 6B 00 73 00 70 00   :.\.w.o.r.k.s.p.
00000070   61 00 63 00 65 00 73 00 5C 00 4A 00 69 00 6E 00   a.c.e.s.\.J.i.n.
00000080   67 00 74 00 61 00 6E 00 67 00 20 00 53 00 63 00   g.t.a.n.g. .S.c.
00000090   68 00 65 00 72 00 65 00 5C 00 4D 00 30 00 30 00   h.e.r.e.\.M.0.0.
000000A0   30 00 32 00 39 00 39 00 33 00 34 00 37 00 5F 00   0.2.9.9.3.4.7._.
00                                                  5 00   C.R.O.P._.S.H.E.
00                                                  4 00   A.R._.H.E.M._.4.
00                                                  3 03   5.7.8...a.s.m...
00                                                  1 00   ......À......F..
00                                                  F 43   #...M000299347_C
00                                                  4 3    ROP_SHEAR_HEM_45
00                                                  0 00   78.asm.ÿÿ Þ.....
00                                                  0 00   ................
00                                                  0 61   ...._.4.5.7.8...a
00                                                  0 00   .s.m.........À..
00                                                  5 6D   ....F..E...\\hem
00000160   73 65 6D 30 31 38 5C 53 45 5F 44 61 74 65 6E 5C   sem018\SE_Daten\
00000170   55 47 53 5C 70 61 72 74 73 5C 57 57 2D 53 36 48   UGS\parts\WW-S6H
```

Solid Edge 2019

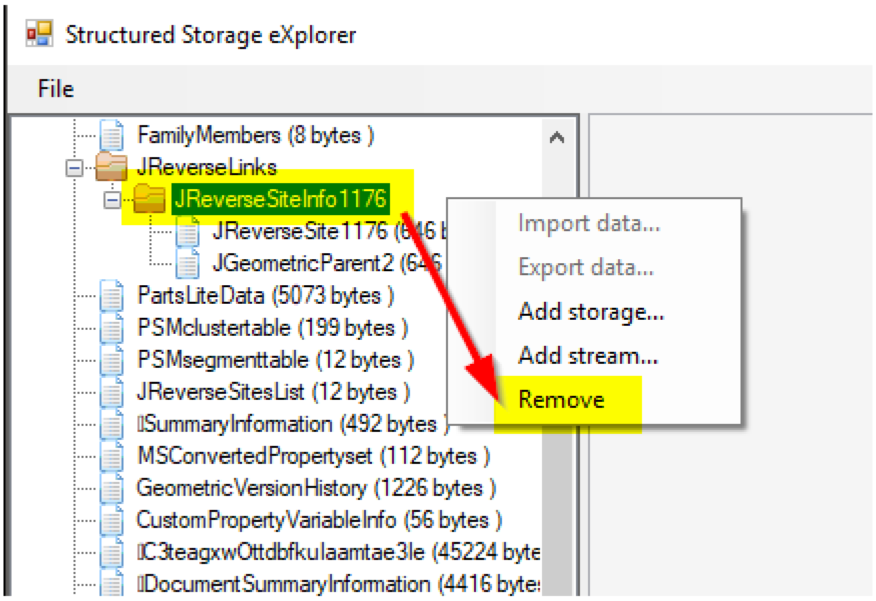
The requested component in M000299347 was designed in the context of the assembly in M000299347_CROP_SHEAR_HEM_4578.
Do you want to open this assembly?


Structured Storage eXplorer
File
FamilyMembers (8 bytes)
JReverseLinks
JReverseSiteInfo1176
JReverseSite1176 (646 bytes)
JGeometricParent2 (646 bytes)
PartsLiteData (5073 bytes)
PSMclustertable (199 bytes)
PSMsegmenttable (12 bytes)
JReverseSitesList (12 bytes)
SummaryInformation (492 bytes)
MSConvertedPropertyset (112 bytes)
GeometricVersionHistory (1226 bytes)
CustomPropertyVariableInfo (56 bytes)
Solid Edge 2019
Yes
No

```
00000000   01 00 00 00 03 03 00 00 00 00 00 00 C0 00 00 00   ............À...
00000010   00 00 00 46 01 00 18 00 00 00 43 52 4F 50 5F 53   ...F......CROP_S
                                                              HEAR_HEM_4578.as
                                                              m.ÿÿ Þ.........
                                                              ...............
                                                              ......À......F..
                                                              "...D:\WORKSP~2\
                                                              JINGTA~4\CROP_S~
                                                              1.ASM.ÿÿ Þ......
                                                              ..............p.
                                                              ..j.....D.:.\.w.
                                                              o.r.k.s.p.a.c.e.
                                                              s.\.J.i.n.g.t.a.
                                                              n.g. .S.c.h.e.r.
000000E0   65 00 5C 00 43 00 52 00 4F 00 50 00 5F 00 53 00   e.\.C.R.O.P._.S.
```

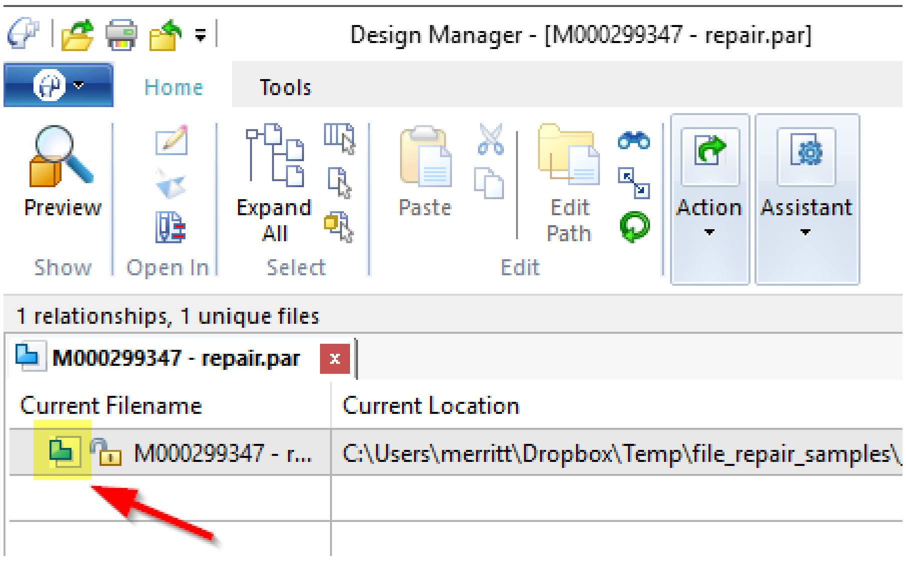
The requested component in M000299347 was designed in the context of the assembly in M000299347_CROP_SHEAR_HEM_4578.
Do you want to open this assembly?

Select the higher level JReverseSiteInfo storage object containing these streams and right-click -> Remove to delete the Solid Edge link data:


Structured Storage eXplorer
File
FamilyMembers (8 bytes)
JReverseLinks
JReverseSiteInfo1176
JReverseSite1176 (646 b
JGeometricParent2 (646
PartsLiteData (5073 bytes)
PSMclustertable (199 bytes)
PSMsegmenttable (12 bytes)
JReverseSitesList (12 bytes)
SummaryInformation (492 bytes)
MSConvertedPropertyset (112 bytes)
GeometricVersionHistory (1226 bytes)
CustomPropertyVariableInfo (56 bytes)
C3teagxwOttdbfkulaamtae3le (45224 byte
DocumentSummaryInformation (4416 byte
Import data...
Export data...
Add storage...
Add stream...
Remove

Save the modified file.

Now the part file will open in Solid Edge without prompting that there is a link to the assembly. This can also be further confirmed in Design Manager as the icon no longer shows a link:



1 relationships, 1 unique files

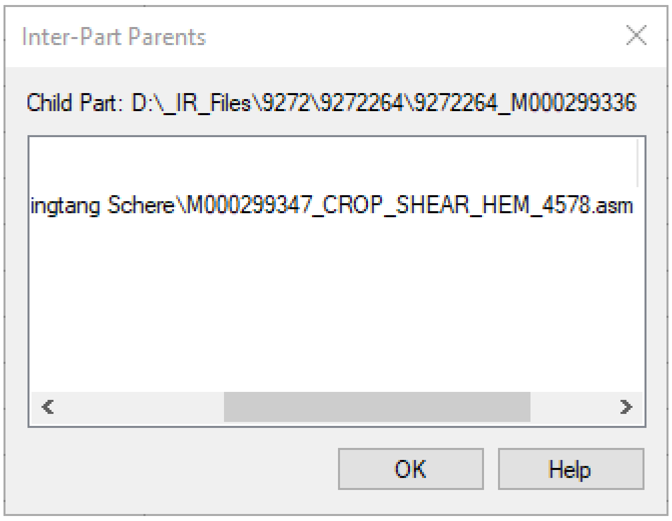
Current Filename	Current Location
M000299347 - r...	C:\Users\merritt\Dropbox\Temp\file_repair_samples\

7.17 Ghost Link in Part to Assembly

Reference: PR# 9272264

Note this example is similar to the previous example shown above. This simpler solution is provided here for reference, with the more complex solution shown above provided to show how to manually locate and remove links with the structured storage toolsets.

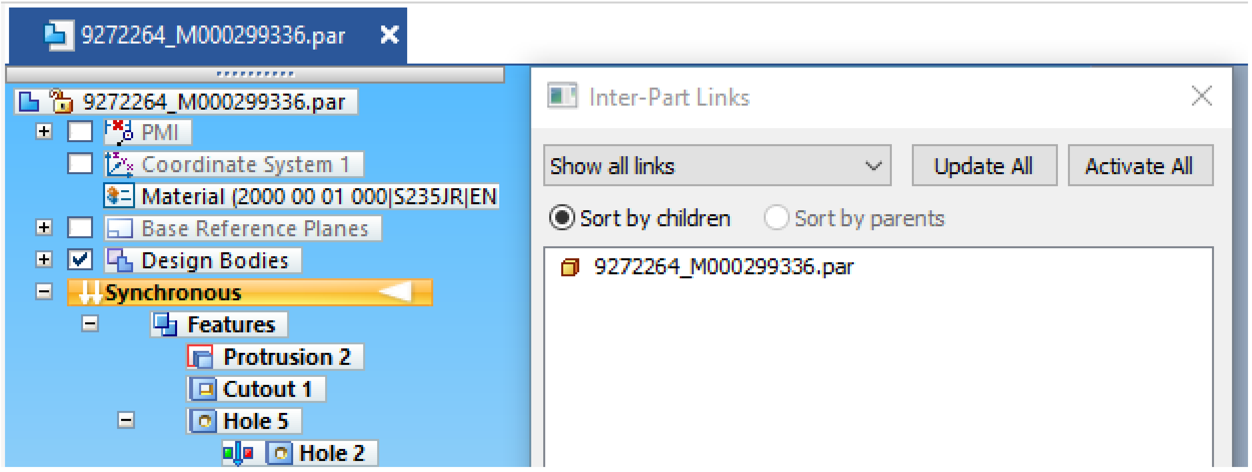
Open the part file in Design Manger and right-click -> "Show Parents". There is a link shown to a parent assembly:



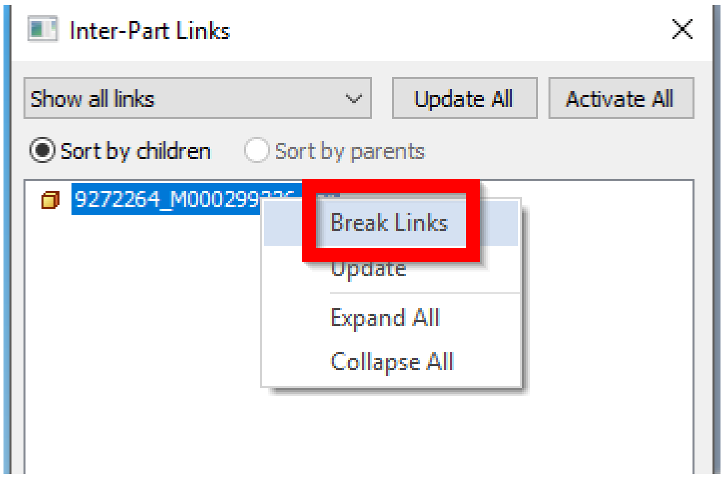
Child Part: D:_IR_Files\9272\9272264\9272264_M000299336

ingtang Schere\M000299347_CROP_SHEAR_HEM_4578.asm

Open the part file in Solid Edge and there are no links to the assembly shown:



In the Inter-Part Links dialog right-click on the part name and select "Break Links":



Close the dialog and save the file. The link to the parent assembly is now removed and the part file has been repaired.

8 Submitting Files for Potential Repair

If after following the troubleshooting examples above, you are able to successfully open and read the content of the Solid Edge file in to the various third-party tools, the corrupted file structured storage is not similar to any the above examples shown, and you cannot manually repair the file yourself, then it may be possible to have the Solid Edge Development team repair the file.

8.1 Customer Submitting IR to GTAC For File Repair

For customers submitting files for repair to GTAC it would be beneficial to complete the following survey to help try to identify a potential root cause for the file corruption. Submit the results of this survey as part of the file repair IR.

1. *Do you use a data management system? If so, which one?*
2. *If you do not use a data management system, do you save files directly to a remote machine on the network or to cloud storage?*
3. *Do you use any automation programs or add-ins that are triggered on Solid Edge save events? If so, what are they?*
4. *Is Automatic Document Preservation enabled on the Solid Edge Options -> Save tab?*
5. *Solid Edge allows users to save files after a crash has occurred. Was the last save made after a crash?*
6. *Has the file been saved to a USB drive or thumb drive prior to the failure to open?*
7. *What anti-virus software are you running? What exclusions, if any, have you made to the anti-virus for Solid Edge?*
8. *Were these files created and saved using the same version of Solid Edge that you are attempting to open them with? If not, what version were the files created in and what version were the files last saved in?*
9. *Is there anything you can add that may provide clues to the cause of the corruption?*

8.2 GTAC Submitting PR to Development for File Repair

For GTAC engineers when submitting a PR to Development for potential repair, please follow the process as documented in the following *internal* Solution Center article:

http://gtac.industrysoftware.automation.siemens.com/view.php?si=002-8008358

After submitting a PR to Development, it may also be beneficial to review with the customer the list of Potential Causes of Solid Edge File Corruption section presented earlier in this document. To briefly reiterate those potential causes:

- Network Stability
- Thumbnail Caching
- Anti-Virus
- Disk Write Caching
    - Removable Disk Drives
    - Distributed File System
- Cloud File Syncing
- Disk Compression
- Mapped Drives
- Downstream Usage of Files
- Custom File Save Events
- Family of Assembly Files

9 Summary

By developing an understanding of how Solid Edge files are constructed and how to read the content of the Solid Edge files, we are now able to better determine the suitability of a corrupted file and the likelihood of success for a repair, including manual repairing for ourselves or by submitting to Solid Edge Development as a PR for file repair.

David C. Merritt

10 Revision History

Version	Date	Change
1.0	14-Mar-2019	Initial release
2.0	02-Apr-2019	Added “Revision History” section
		Added “NetworkError” stream to “Network Stability” section
		Added “Stuck in Sketch Environment” example to “Troubleshooting Examples” section
		Added “Filename Display on Tab and Title Bar Are Incorrect” example to “Troubleshooting Examples” section
		Added “Make Sure the File Is the Correct Type and Version for The Application - Part” example to “Troubleshooting Examples” section
		Added “Model File Is Not Saved in The Current Version. Drawing Views Cannot Be Created or Updated” example to “Troubleshooting Examples” section