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SuperSMITH™ 6.0AA

(Released December 2021)and later

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Weibull Library Organization

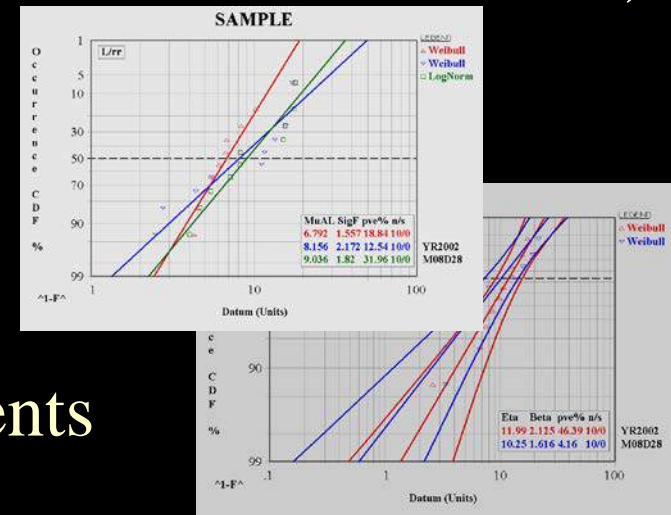
Data Collection Recommendations

Tip: Use <ctrl> L
To view page by page
in full screen mode.

Use <esc> to cancel.

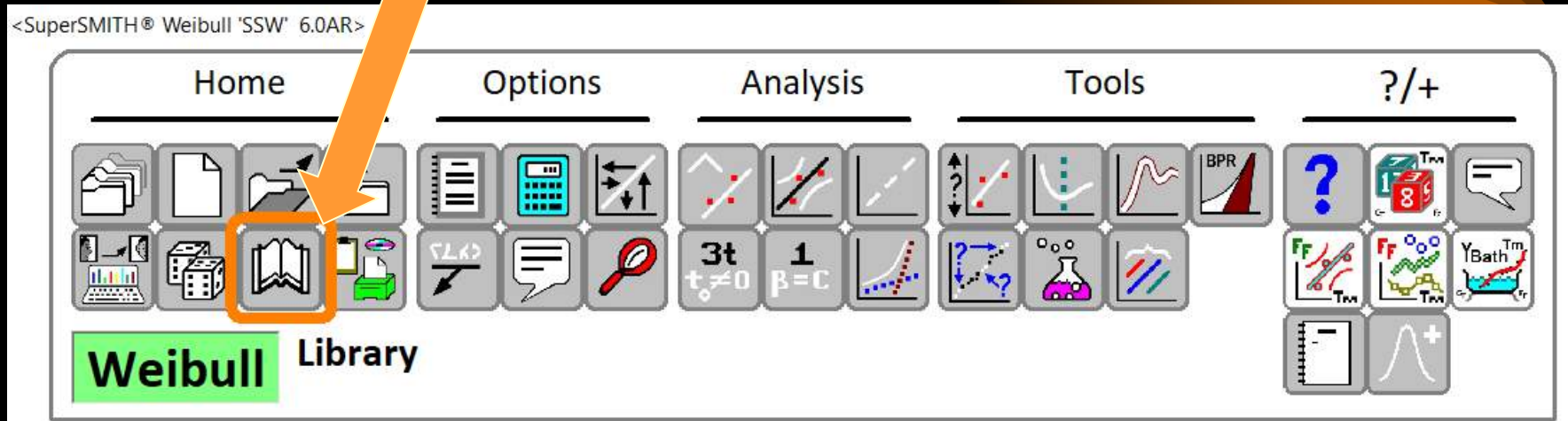
Weibull Library Goals

- Searchable index of previous results
- Summary of analysis + reference to full data
- Simple text format for future flexibility
- Save intermediate file (w/ later verification)
- Standard organization
 - No more than 20 fields
 - Essential universal info
 - Additional info in comments



Weibull Library

Easily Generate Library Items



- Most Important Part of Weibull Engineering
 - Useful as Lessons-Learned database
 - Enables and justifies Weibayes for improved results
- Software Can Help Easily Generate Library Items after Each Analysis

Many Features in New Library

Ref: C:\Smithdat\WLR_Smithdat.csv

Weibull Library



Current Reference file

Enter Text ...



Keyboard: Type <Ctrl>+ <Key>
For Action

Search or reset the reference file

Load a reference file to look for data

Row	Path\File	Title 1	Date	By	Device	Equipr
1	C:\SMITHdat\	The Weibull Data Plot	Y2020M05D09			
2			Y2024M08D22			
3			Y2020M05D09			
4		ture of Failure Mode	Y2020M05D09	rba		
5	C:\SMITHdat\Fig1-5.w	NACA WIND GUST LOADS	Y2020M05D09			
6	C:\SMITHdat\Fig2-1.w	Weibull Probability Plot	Y2020M05D09			
7	C:\SMITHdat\Fig2-2.v	Probability Density Funct				
8	C:\SMITHdat\Fig2-2.w	Probability Density Funct				
9	C:\SMITHdat\Fig2-3.v	MTTF/Eta = Gamma[1+(1/				
10	C:\SMITHdat\Fig2-4.w	RIVET FAILURES	Y2020M05D09			
11	C:\SMITHdat\Fig2-5.w	RIVET FAILURES	Y2020M05D09			
12	C:\SMITHdat\Fig3-1.w	SAMPLE SIZE THREE	Y2020M05D09			
13	C:\SMITHdat\Fig3-2.w	SAMPLE SIZE TEN	Y2020M05D09			
14	C:\SMITHdat\Fig3-3.w	SAMPLE SIZE 100	Y2020M05D09			
15	C:\SMITHdat\Fig3-5.w	Effect of Suspensions	Y2020M05D09			
16	C:\SMITHdat\Fig3-6.w	First and Last Point 90% Range	Y2020M05D09			
17	C:\SMITHdat\Fig3-7.w	Bearings Often Need t zero	Y2020M05D09			
18	C:\SMITHdat\Fig3-8.w	t zero Improves the Fit	Y2020M05D09			
19	C:\SMITHdat\Fig3-9.w	Steel - Fracture Toughness	Y2020M05D09	rba		
20	C:\SMITHdat\Fig3-9-Zoomed.w	Steel - Fracture Toughness	Y2020M05D09	rba		
21	C:\SMITHdat\Fig3-10.w	t zero Improves the Fit	Y2020M05D09			
22	C:\SMITHdat\Fig3-11.w	1971-72-73 Vintage Cables	Y2020M05D09			

B ... Open Library With File
Save *NO/Yes

C ... Copy Data To Clipboard

D ... Load Data File

E ... Edit Header File

G ... Order Grid Column

H ... Header: *NO/yes

L ... Library File:

* = SELECTED Of Options
Same Line Item

Use Menu to Review or Update choices

Each data set gets its own line in the output

Press/release <alt> then number for keyboard selection

Cyan with “Ø”: Data from plot (no change)

Green with “@”: Data Entered. (can change)

Yellow with “O”: Data needed. (Select to change)

S ... Save Library Data To File

1

@ Data Set: *2 Of 3 Sets

2

Ø Path\File: C:\SMITHdat
Ø \FIG3-11.w

3

Ø Title 1: 1971-72-73 Vintage
Ø Cables

4

Ø Date: Y2024M08D23

5

@ By:

6

O Device: ?

7

Fixed List Menu Items

Example when “Device” is selected

Most menu items are from Defined Lists.
Choose the most appropriate

SuperSMITH(R)

o Device: ?
Select New Item From List

Maximize Exit

Accumulator - Hydraulic
Additive
Adhesive
Baffle
Bearing - Ball
Bearing - Fluid
Bearing - Journal
+61
...




Variable Entry items (Comments)

2. Add to the text, or replace it

1. Optional: Click a template.
("Part #:" or "Part Name:")

SuperSMITH(R)

o Comment 1: ?
Select Template And Edit Text

 OK  Maximize  Exit

Part #: 12345

Part #:

Part Name:

Copy/Save the Data

- Each Copy/Save will save one data set from the file. If you have 3 data sets in the file, you will need to do 3 “saves” to save them.

Turn the Headers/Titles On or Off

Copy to clipboard to paste into Excel or other database

Save this Data set to the current Data File

R ... Load Reference File

D ... Load Data File

L ... Library File:

G ... Order Grid Column

H ... Header: *NO/yes

C ... Copy Data To Clipboard

S ... Save Library Data To File

Each Weibull Library Record (= Automatic From Analysis)*

- * **Path\Filename of complete analysis ... (update if changed)**
- * **Title ...** at top of Weibull plot
- * **Date record created ... YYYY-MM-DD**
- * **By ...** person saving the record ... including password ID designation ...
- **Type of device ...** bearing, seal, housing, shaft, solder joint, connector, IC, lamp...
- **Type of equipment ...** actuator, motor, valve, pump, conveyor, controller, display ...
- **Type of mechanism (root cause) ...** fracture, thinning, leaking, open-circuit, mixed ..
- **Type of customer duty cycle ...** continuous, on-off schedule, load level, impact ...
- **Type of environment ...** humid, hot, sub-zero, 20DegC-35DegC, vibration, shock ...
- * **Model type ...** W, N, L, G-, G+ ...
- * **Fit type ...** rr, rrs, mle, RBAMD, ...
- * **Confidence type ...** pvD90, fm-95, ...
- * **Data units ...** hours, cycles, months, miles, inches, degK, ...
- * **Data typical value ...** Eta, Mu, MuAL, Xi (lo-med-hi) ...
- * **Data variability value ...** Beta, Sigma, SigF, Del (lo-med-hi) ...
- * **Data t0 value ...** t0 (lo-med-hi value) ...
- **Comment fields(Qty = 4) ...** customizable for each individual library
- * **Set(Set Number)Set size/Suspensions**

Weibull Library Comment Field Possibilities

- Comment 1: Detailed Item Description
 - Part Number
 - Part Name
- Comment 2: Detailed Application Description
 - Product Line or Product Model
 - Customer
 - Military or Non-Military
- Comment 3: Detailed Time Period
 - Record Reference Number
 - Beginning of Period to End of Period (Calendar Time)
- Comment 4: References
 - Report Number
 - Test Procedure

WLR_Smithdat.csv File

(Typical Weibull Library File)

1 Header Row and 2 Records Shown

Path\File, Title 1, Date, By, Device, Equipment, Cause, Duty, Environment, Model, Fit Method, Confidence, Unit, Typical (Lo/Med/Hi), Variability (Lo/Med/Hi), t0 (Lo/Med/Hi), Comment 1, Comment 2, Comment 3, Comment 4, Set()n/s

C:\Smithdat\18WHEELR.W, 18 Wheeler Steering Failures, Y2020M05D09, rba,,,,,, W2P, RR,, miles, 69362, 3.2569,,,,,, Set(1)10010/10000

C:\Smithdat\BWSOPAC.W, Southern Pacific BiWeibull, Y2020M05D09,,,,,, W2P, RR, U90, units, 242.62, 1.194,,,,,, Set(1)304/238

WLR_Smithdat.csv - Excel

	A	B	C	J	K	L	M	N	O	P	U
	Path\File	Title 1	Date	Model	Fit Met	Confide	Unit	Typical	Variabil	t0 (Lo/M	Set()n/s
1	C:\SMITHdat\Fig1-1.w	The Weibull Data Plot	Y2020M05D09	W2P	RR			1095.9	2.2756		Set(1)15/0
3	C:\SMITHdat\Fig1-2.v	Failure Forecast	Y2024M08D22	W2P	rr		(Months)	0	0		Set(1)60/0
4	C:\SMITHdat\Fig1-3.w	Bearings Often Need t zero	Y2020M05D09	W2P	RR		revolution	82.842	2.617		Set(1)22/0
5	C:\SMITHdat\Fig1-4.w	Cusp, Corners, & Doglegs Indicate a Mixture c	Y2020M05D09	W2P	RR		Hours	895.14	0.55241		Set(1)19/0
6	C:\SMITHdat\Fig1-5.w	NACA WIND GUST LOADS	Y2020M05D09	G+	RR			0.9358	0.16642		Set(1)23/0

NOTE: Can aggregate individual data files into a Master File

Can open data file as a spreadsheet

Under the hood

- In the %appdata% directory, there is an ini
 - SSWLib.ini
 - Stores Definition Files and Reference Files
- Definition File (Usually starts with “WLD”)
 - Defines Data file, Headers, and what user can change.
- Reference File (Usually starts with “WLR”)
 - Typically a modified data file, but can have any number of columns and rows
- Data File (Usually starts with “WD”)
 - Data saved by SuperSMITH™ according to the Definition File.

Example

Ref: C:\Smithdat\WLR_Smithdat.csv

Weibull Library

1. Type "cable" and press <enter> or click the binoculars search

2. Click or tap the filename

3. Exit Library, and click the Open/Import button on the home tab

4. Filename will be filled in, ready for you to select "Open"

Row	Path\File	Title	Variability (Lo/Med/Hi)	t0 (Lo/Med/Hi)
22	C:\SMITHdat\Fig3-11.w	1571-72-73 Vintage Cables Y.	1.4286	47.967
23	C:\SMITHdat\Fig3-11MD_FITS.w	1071-72-73 Vintage Cables Y.	2.7839	
39	C:\SMITHdat\Fig3-11MD_FITS.w	1071-72-73 Vintage Cables Y.	4.341	

Home

Input File

File name: Fig3-11.w

Open

Cancel

Coming Soon..



- Ability to customize Definition Files
- Added documentation on protecting and backing up your reference data. Treat it like product drawing information for backup and security.
- Additional guides to setting up a library.