HALLIBURTON

SpyGlass[®] ESP quick start guide



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Begin at the "**My Sizings**" page after opening SpyGlass[™]. This will list all the sizings, scenarios, and performance evaluations that the user has generated in reverse chronological order.

Select one of the sizings to continue working on or begin a new sizing by left-clicking the "**Create Sizing**" button above the table on the right-hand side of the window.

Create a new sizing

- 1. Log into SpyGlass[™]
- 2. Left-click the "Create Sizing" button

	Spyglass					
Spy <mark>G</mark> la	SS™		My Sizings	All Sizings Summit U	ser Legacy Importer	Admin 🛜 Logout 🏘 🌑
PHAHEAD (b5b2eb5)	5)					Report an
् Search by si	sizing name					Advanced Fil
					• Cre	ate Sizing Sync Offline Equipmen
My Sizing	gs					
Name 🕕		Well 11	Customer	Parent Sizing	Last Up	dated ↓ 🗐 🚺
/29/2022 - Demo	o Sizing				8/29/20	22
3/29/2022 - New	Sizing				8/29/20	22
3/24/2022 - New	Sizing				8/24/20	22
3/23/2022 - New	Sizing				8/23/20	22
		LOST HILLS ONE 7623B-4 Showing 1 t	AERA ENERGY LLC-EBUS	> >>	8/19/20:	22
My Scena	arios	Showing 1 t	_	>		
/ly Scena		Showing 1 t	_	> »	8/19/20: Last Updated J, ₹	
Ay Scena Name ↑↓	arios	Showing 1 t	o5of25 « < 1 2 3 4 5	> »>		
Name ↑↓ Name ↑↓	arios Weit 1	Showing 1 t	o 5 of 25 《 《 1 2 3 4 5 Sizing	>	Last Updated ↓ ₹ 1	
Ay Scena Name 11 Demo Scenario 1 Demo Scenario 2 Jew Scenario	arios Weit 1	Showing 1 t	o 5 of 25 << < 1 2 3 4 5 Sizing 8/29/2022 - Demo Sizing 8/29/2022 - Demo Sizing 8/29/2022 - New Sizing	>	Last Updated ↓₹ 8/29/2022 8/29/2022 8/29/2022	
Ay Scenar Name 11 Demo Scenario 1 Demo Scenario New Scenario	arios Weit 1	Showing 1 t	o 5 of 25 << < 1 2 3 4 5 Sizing 8/29/2022 - Demo Sizing 8/29/2022 - New Sizing 8/29/2022 - New Sizing 8/24/2022 - New Sizing	> »	Last Updated ↓₹ ① 8/29/2022 8/29/2022 8/29/2022 8/29/2022 8/24/2022	
Demo Monitoring My Scenario Name 11 Demo Scenario 1 Demo Scenario New Scenario New Scenario	arios Weit 1	Showing 1 t	o 5 of 25 << < 1 2 3 4 5 Sizing 8/29/2022 - Demo Sizing 8/29/2022 - Demo Sizing 8/29/2022 - New Sizing	> »	Last Updated ↓₹ 8/29/2022 8/29/2022 8/29/2022	
Ay Scena Name 11 Jemo Scenario 1 Demo Scenario New Scenario New Scenario	arios Well 7	Showing 1 t	o 5 of 25 << < 1 2 3 4 5 Sizing 8/29/202 - Demo Sizing 8/29/2022 - Demo Sizing 8/29/2022 - New Sizing 8/24/2022 - New Sizing 8/24/2022 - New Sizing 8/24/2022 - New Sizing	> >> > >>	Last Updated ↓₹ ① 8/29/2022 8/29/2022 8/29/2022 8/29/2022 8/24/2022	
My Scenar Name 11 Demo Scenario 1 Demo Scenario 2 New Scenario New Scenario New Scenario	arios Well 7	Showing 1 t	o 5 of 25 << < 1 2 3 4 5 Sizing 8/29/202 - Demo Sizing 8/29/2022 - Demo Sizing 8/29/2022 - New Sizing 8/24/2022 - New Sizing 8/24/2022 - New Sizing 8/24/2022 - New Sizing		Last Updated ↓₹ ① 8/29/2022 8/29/2022 8/29/2022 8/29/2022 8/24/2022	
Ay Scenar Name 11 Demo Scenario 1 Demo Scenario New Scenario	arios weit 1	Showing 1 t	o 5 of 25 << < 1 2 3 4 5 Sizing 8/29/202 - Demo Sizing 8/29/2022 - Demo Sizing 8/29/2022 - New Sizing 8/24/2022 - New Sizing 8/24/2022 - New Sizing 8/24/2022 - New Sizing	> >> Sizing	Last Updated ↓₹ ① 8/29/2022 8/29/2022 8/29/2022 8/29/2022 8/24/2022	

- 3. Enter the associated data for your sizing:
 - a. Enter a Sizing Name
 - b. Select the Well

(

- c. Select the Appropriate Unit System
- d. Select **Save** in the Top Right

ALPHAHEAD (DSD2eD5)								
1 8/29/2022 - Demo Sizing	<u>121</u>	2		 Us Oil Field	C ^r Unk	nown		
Created By Benjamin Hoekstra Saved August-29-202	11:35:22							
Info Well Parameters Schem	atic Evaluations	Demo Scenario 2			~ 🗠 🛙	Ø	Show Diff	Clear D
Created By Benjamin Hoekstra Saved August-29-2022	1:35:06							
Sizing Info								
Name 8/29/2022 - Demo Sizing	Well [TBD]		Customet [TBD]	Unit System US Oil Field		Disposition Unknown		
Notes								
Scenario Info								
Title Demo Scenario 2								
Reason: 🔵 Tender 🧿 Quote								
Installed:								

- 4. The tabs on the top left will be enabled once saved. Select the "**Well**" tab and enter the appropriate input data. The tab key can be used to navigate from one box to the next. Two types of data entry exist in SpyGlass:
 - a. A searchable table nested within the box that is clicked on
 - b. A box for numerical entry

ALPHA/IEAD (D5D2eD5)				
ALPHA/12AU (0302803)				Re
🕲 8/29/2022 - Demo Sizing	<u>^</u>	🥔 Us Oil Field	C ⁴ Unknown	
Created By Benjamin Hoekstra Saved August-29-2022 11:35:22				
Infe Well Parameters Schematic Evaluations Demo Scen	ario 2		v 🗠 🖬 🎯 Show Diff	Clear Diff
Created By Benjamin Hoekstra Saved August-29-2022 11:35:06				
Well Completion				
Top Production Casing			Top Casing Length	
Well Test 🖬 🗒	Calc PI			
- Surface				
Liquid Input	Total Liquid Rate		Water Cut	
O Total Liquid Rate / Water Cut Oli Rate / Water Rate Oli Rate / Water Cut	6	STB/D 🗸	98	3
			Total Liquid Rate	
Gas Input	Cas Pate			
	Gas Rate O	mscf/d 🗸	0	STB/D

5. Once the Well page is completed, select the "Parameters" tab on the top left of the screen

Spy <mark>G</mark> lass™				My Sizings All Sizings Summ	it User Legacy Impor	ter Admin 🛜 Log	jout
ALPHAHEAD (DSD20D5)						_	_
8/29/2022 - Demo Sizing	a <u>a</u> t		÷	🥒 Us Oil Field	C' Unkr	nown	
Created By Benjamin Hoekstra Sa	- wed August-29-2022 11:35:22						
		7					
Info Well Paramet	ters Schematic Evaluations	Demo Scenario 2				Show Diff	lear Di
Created By Benjamin Hoekstra Savi	ed August-29-2022 11:35:06						
Well Completion							
Top Production Casing 7 x 32 (Ib/ft)						Top Casing Length	
7 x 32 (ID/IT)						10,000	
Q 7 × 32	\odot						
Name †1	Name (Metric)	OD (in)	ID (in) †↓	Drift (in) 👔	Coupling OD (in) $\uparrow\downarrow$	PPF 1	
5 × 24.1 (lb/ft)	127 × 35.86 (kG/M)	5	4	3.875	5.563	24.1	
5 × 23.2 (lb/ft)	127 × 34.53 (kG/M)	5	4,044	3.919	5.563	23.2	
5 × 21.4 (lb/ft)	127 × 31.85 (kG/M)	5	4.126	4.001	5.563	21.4	
5 × 18 (lb/ft)	127 × 26.79 (kG/M)	5	4.276	4.151	5.563	18	
5 × 15 (lb/ft)	127 × 22.32 (kG/M)	5	4.408	4.283	5.563	15	
5 1/2 × 28.4 (lb/ft)	139.7 × 42.2592 (kG/M)	5.5	4.44	4.315	6.05	28.4	
5 1/2 × 26.8 (lb/ft)	139.7 × 39.8784 (kG/M)	5.5	4.5	4.375	6.05	26.8	
5 1/2 × 26 (lb/ft)	139.7 × 38.688 (kG/M)	5.5	4.548	4.5	6.05	26	
5 1/2 × 23 (lb/ft)	139.7 × 34.23 (kG/M)	5.5	4.67	4.545	6.05	23	
5 1/2 × 20 (lb/ft)	139.7 × 29.76 (kG/M)	5.5	4.778	4.653	6.05	20	
5 1/2 × 17 (lb/ft)	139.7 × 25.3 (kG/M)	5.5	4.892	4.767	6.05	17	
5 1/2 × 15.5 (lb/ft)	139.7 × 23.07 (kG/M)	5.5	4.95	4.825	6.05	15.5	
5 1/2 × 14 (lb/ft)	139.7 × 20.83 (kG/M)	5.5	5.012	4.887	6.05	14	
6 5/8 × 32 (lb/ft)	168.3 × 47.62 (kG/M)	6.625	5.675	5.55	7.39	32	
7 × 38 (lb/ft)	177.8 × 56.55 (kG/M)	7	5.92	5.795	7.656	38	
7 × 35 (lb/ft)	177.8 × 52.09 (kG/M)	7	6.004	5.879	7.656	35	
7 × 32 (lb/ft)	177.8 × 47.62 (kG/M)	7	6.094	5,969	7.656	32	

- 6. The "**Parameters**" tab is where you will select the equipment for your design. Four additional functionalities may assist you in designing your ESP
 - a. First, you can enable the charts by selecting the **graph icon** next to the scenario dropdown. The pump table and a dropdown menu for other necessary charts will appear

Info Well Pa	rameters Schematic	Evaluations	Demo Scenario 2					(now Diff Clear D
Created By Benjamin Hoekstra	Saved August 29-2022 11:35:0	6							~	Data type Pump
Pump	ROR	Q @ INT	Q @ DIS Gas @ INT	Gas @ DIS	Free Allowed Gas	Lift	Density @ INT	Density @ DIS	Shaft Limit (STD)	Shaft Limit (HS
SF2250 TS3	503 - 2335	2072	2069 0.00 %	0.00 %	28.9 %	4705	56.84	56.91	107	176
SFGH2500 TS3	155 - 2629	2072	2072 0.00 %	0.00 %	84.0 %	277	56.84	56.84	107	176
Target Liquid Rate 2,000		STB/D	Input Liquid Rate	Tubing Pres 150	sure		PSIA	Casing Pressur 100	9	
							Packo	r Installed (All Gas Go	Gas Ente	ring Pump
Intake 🖩										
Intake Type	SEPARATOR TANDEM 400	SERIES H2X ST	AINLESS STEEL INCON	EL SHAFT DURAHAF	RD 15					Length 5.08

 b. Second is the calculator icon which sits next to the charts. This will open the side calculator on the right-hand side of your screen. Each component has a calculator icon which is a quick navigation to the calculations specific to that component

Info Well Parameter	Schematic Evaluati	Demo Scenar	io 2			× K	Show Diff	lear Diff
Created By Benjamin Hoekstra Saved	ugust-29-2022 11:35:06							
Operating Parameters							Equipment Length	Fe
• • • Top Tubing 2 7/8 x 8.7 (lb/ft)					Top Tubing Length 9,000	Feet 🗸	Pumps 🛞	
							Pumps Target Liquid Rate	
Target Liquid Rate 2,000		t Liquid Rate 900 STB/D	Tubing Pressure 150	PSIA 🗸	Casing Pressure	PSIA 🗸	2,000 Required TDH	STB/C
							4,981.67 Produced TDH	Fee
Intake 🗟				Packer Installed (All Gas Goe	s Through Pump) 0 %	Gas Curi	Calculated Gas Head Rerate 100 % Override Gas Head Rerate 0 %	
Summit / GAS SEPARA	TOR TANDEM 400 SERIES H2	2X STAINLESS STEE	L INCONEL SHAFT DURAH	ARD 15		5.08 Feet V	Required Discharge Pressure 3,800.99	PSIA
	Gas Separator STB/D V 94.37 %	r Efficiency	Natural Sept	ration Efficiency	Override Calculated B	Efficiency %	Produced Discharge Pressure 3,800.99	PSIA
Total Flow Rate Entering Intake 2,363.53							Discharge Temperature	
							175.33	
	Hz V	Calc Hz		equired Primary Pump	Selected Primary Pump Stages: 372	Pump Curv	Thrust Load 731.41 lbs	

c. The third function is a toggle on the top right of each piece of equipment. When this is toggled on, a graph related to the performance of that piece of equipment will appear

Created By Benjamin Hoekstra Saved Augu	at 29-2022 11:35:06			
Cables 🖬			Cable Temperat	Equipment Length ture 138-05
			Cable Temperat	
E 188				Cables 🛞
D 160 -				Cables
140 -				Total Cost / Month
				USD Total Cables Voltage Loss
120 -				170.89
100 -				Total Cables Power Loss
				10.42
80 -				Summit / 4 gauge / Cable Length
60 -				5 kv / Flat 9,100
40 -				Average Ambie
	+			145.28
20 -				Cable Tempera 191.48
•				Max Amps at T
•	100 200	300	400	500 128.59 A
Temperature (F)				Volt Loss / 100 18.78
Summit / 4 gauge / 5 kv / Fla	t			Total Volt Loss
Operating Temperature				178.89
191.48 F*				Power Loss
Operating Current 35.18 A				10.42 kW
00110				Cable Pwr Cos 0 USD
	e Voltage Surface kVA		Cost per kWH	
9,000 Feet 2,52	1.38 V 🗸 153.64 kva 🗸			Show Prod Rate

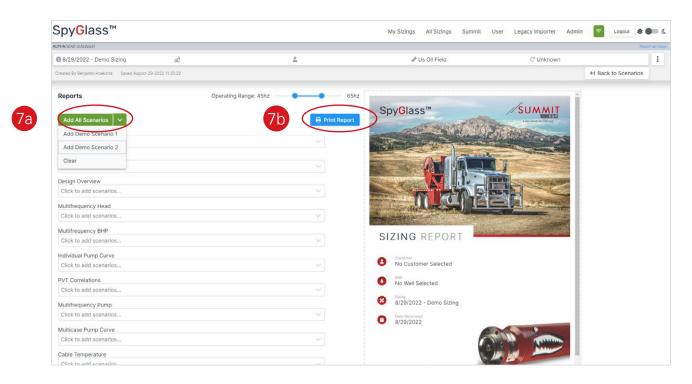
6. d. Lastly, the fourth function is the built-in alerts for each piece of equipment. If there is a caution (orange) or warning (red) relating to the equipment specs, the box surrounding the equipment will appear as the warning color, and the bell at the top left will show the number of total alerts. When the bell is clicked, it will open a window showing the specific alerts

Soygles - scng Parameters - Soyglass Info Well Parameters Schematic Evaluations Demo Scenario 2				1 Show Diff Clea	r Diff Ser
Created By Benjamin Hoekstra Saved August-29-2022 11:35:06					
				HP greater than Pu Limit (STD), high-s pump shaft require	trength
Pump 🖥 48.242556 Hz Calc Hz Calc Flow		Required Primary Pur	np Stages: 372 Selected I	Primary Pump Stages: 372	Pur
Compression Pump			Over 0	ide Gas Head Rerate	x
Summit / SF2250 TS3	Total Stages 372	Pump Length 65.4	Feet V	Show Housing	Show Co
Housing 15/124			Stages 124	Length 21.8	Feet
 House 15 / 124 			Stages 124	Length 21.8	Feet
• Housing 15 / 124			Stages 124	Length 21.8	Feet
191.67					
A Bottom Taper Pump Type Summit / SFGH2600 TS3	Total Stages 75	Pump Length 21.8	Feet \sim	Show Housing	Show Co
• Is / 75			Stages	Length 21.8	

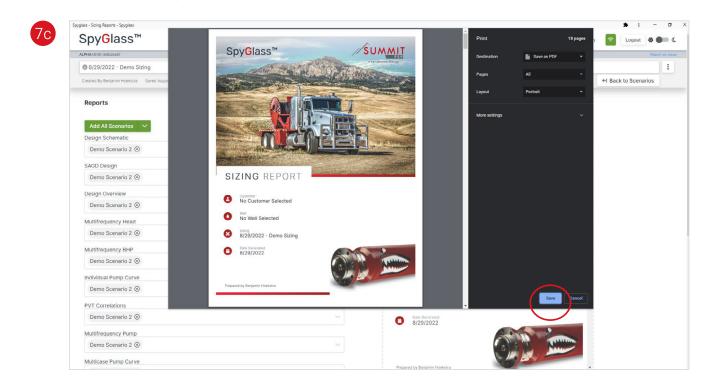
7. Once your sizing is completed, saving all the changes you have made is best. A customizable PDF of the sizing can be created by clicking the three-button menu and selecting the "**Generate Report**" option in the top right of the screen

Curry Class TM									* E
SpyGlass™				My Sizings	All Sizings	Summit U	Jser Legacy Imp	orter Admin	🛜 Logout
ALPHAHEAD (b5b2ob5)									
1 8/29/2022 - Demo Sizing	」 述	2	<u>1</u>	<i>په</i> ا	Js Oil Field		C ⁱ Uni	known	
Created By Benjamin Hoekstra Saved August-29-2022	11:35:22								Generate
Info Well Parameters Schema	atic Evaluations Demo	Scenario 2					~ E	🖬 📮 🚮	now Clone Si
Created By Benjamin Hoekstra Saved August-29-2022 11	1:35:06								Telete Si
Operating Parameters									Copy URI
								Top Tubing Length	± Export JS
• • 2 7/8 x 8.7 (lb/ft)								9,000	n
Intake 🖬						Packer Installe	d (All Gas Goes Throug	Gas Enterin h Pump) 0 %	g Pump
Intake	IM 400 SERIES H2X STAINLE	SS STEEL INCONEL SI	HAFT DURAHARD 15			Packer Installe	d (All Gas Goes Throug)		g Pump Length 5.08
Intake Type	EM 400 SERIES H2X STAINLE Gas Separat STBID 94.37 %	or Efficiency	HAFT DURAHARD 15	Natural Separation Efficience 日:%	C	Packer Installe			Length
O O Intake Type Summit / GAS SEPARATOR TANDE Total Flow Rate Entering Intake	Gas Separat	or Efficiency	HAFT DURAHARD 15				Override Ca	h Pump) 0 %	Length 5.08

- 7. a. On the reporting page, you can select reports only pertinent to the end user. There is an option to select all reports quickly. This is done by selecting the green "**Add All Scenarios**" button on the top left of the reports page
 - b. A report preview will be displayed on the right-hand side of the screen. When ready to print to PDF, click the blue "**Print Report**" button



c. You can save the report to your computer for later use



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