2022 GAS LIFT WORKSHOP

Integrated Surveillance System for Gas Lift

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Alex Lach - Occidental

ALRDC Gas Lift Workshop
June 20-23, 2022

Agenda

- Importance of Surveillance and Optimization
- Nexus Data Model: The foundation
- Well Modeling Capabilities
- Surveillance Tools in Nexus
- Well-by-well Optimization and Design using SNAP
- Related Work

Surveillance and Optimization

Why do it?

- Increase production
- Reduce Downtime
- Reduce OPEX
- Reduce CAPEX

Better surveillance enables:

- Faster problem ID
- Production enhancement
- Reduced failure frequency
- Better lift efficiency

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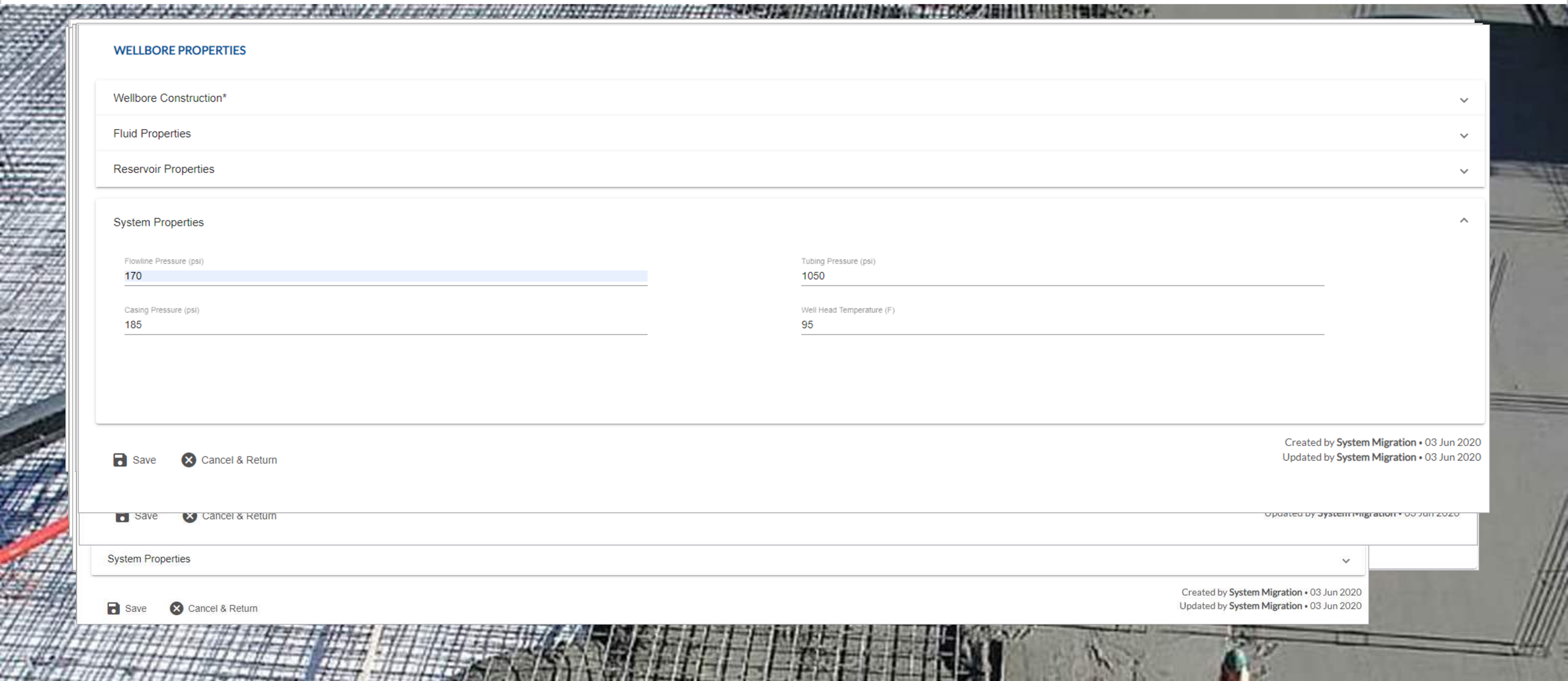
Nexus Data Model: The Foundation



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GL Installation Report Template: The Easy Button

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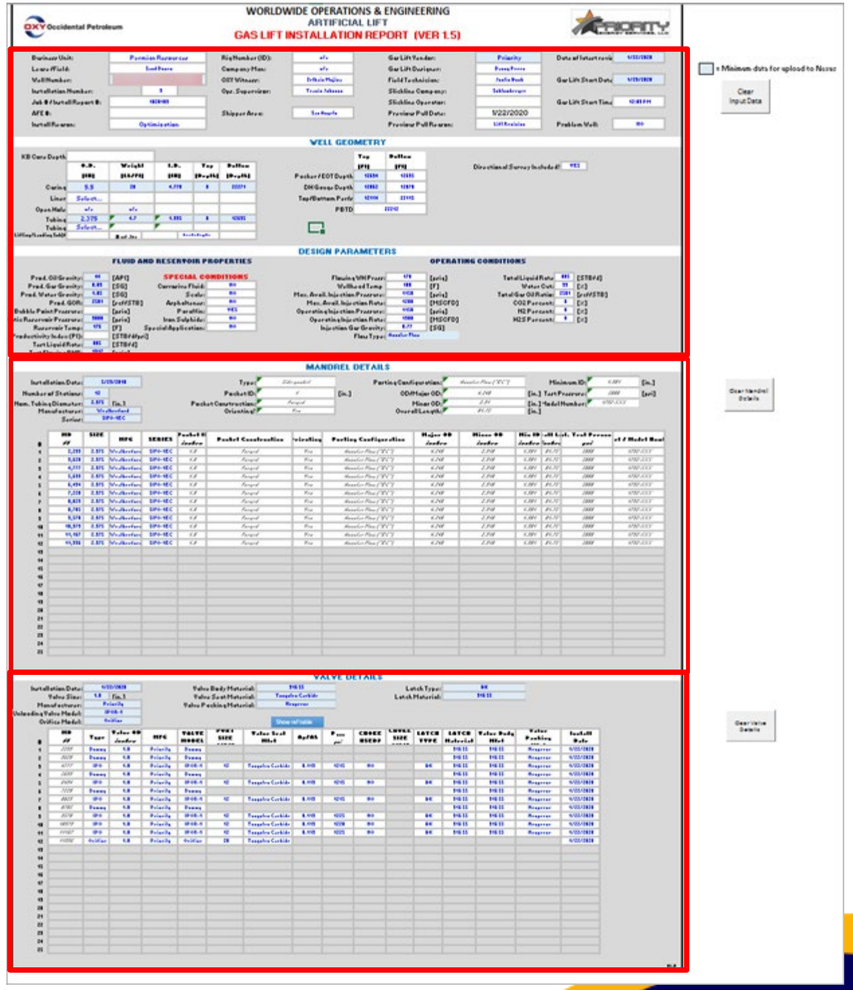
GL Installation Report Template: The Easy Button


WORLDWIDE OPERATIONS & ENGINEERING
ARTIFICIAL LIFT
GAS LIFT INSTALLATION REPORT (VER 1.5)

WELL GEOMETRY

DESIGN PARAMETERS

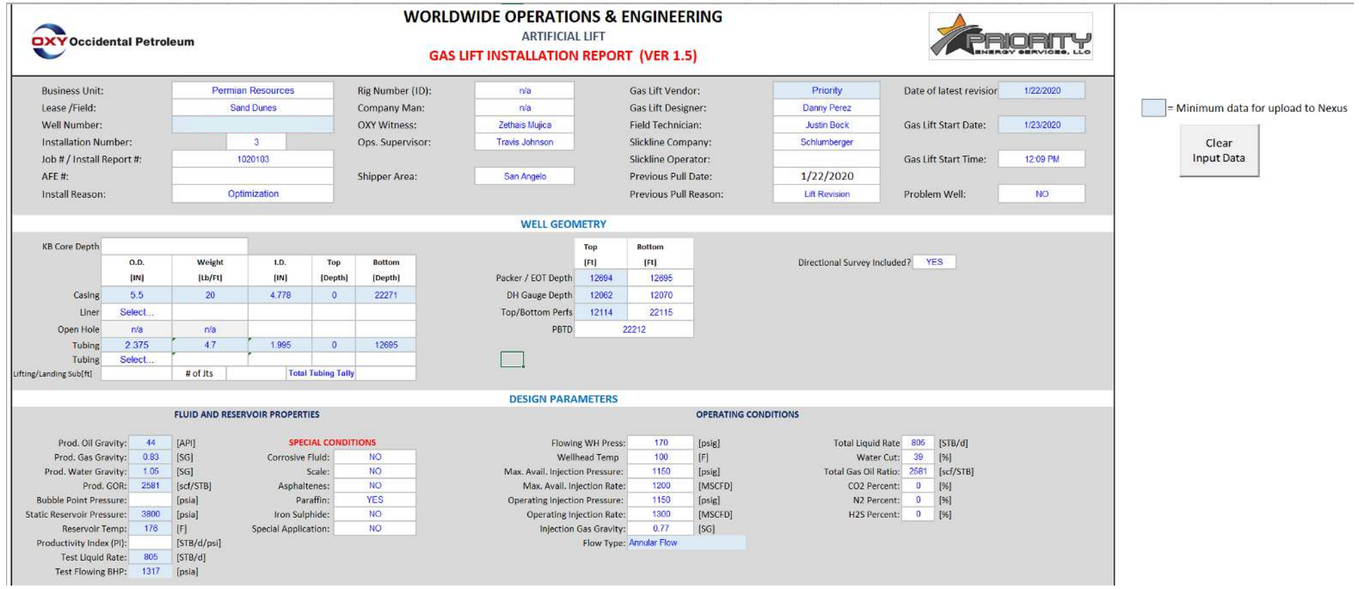
FLUID AND RESERVOIR PROPERTIES

OPERATING CONDITIONS

MANDREL DETAILS

VALVE DETAILS

Step 1: Oxy PE fills out top three sections and sends to vendor with RFQ.



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GL Installation Report Template: The Easy Button

Step 4. Once completion is installed, update as-run depths…

MANDREL DETAILS

Installation Date:	5/29/2018		Type:	Side-pocket		Porting Configuration:	Annular Flow ("EC")		Minimum ID:	1.901	[in.]		
Number of Stations:	12		Pocket ID:	1	[in.]	OD/Major OD:	4.240	[in.]	:xt. Test Pressure:	5000	[psi]		
Nom. Tubing Diameter:	2.375	[in.]	Pocket Construction:	Forged		Minor OD:	2.91	[in.]	rt/Model Number:	1732-XXX			
Manufacturer:	Weatherford		Orienting?	Yes		Overall Length:	81.75	[in.]					
Series:	SIFO-1EC												

#	MD ft	SIZE	MFG	SERIES	Pocket ID inches	Pocket Construction	Orienting?	Porting Configuration	Major OD inches	Minor OD inches	Min ID inches	erall Len inches	Ext. Test Pressure psi	Part / Model Number
1	2,233	2.375	Weatherford	SIFO-1EC	1.0	Forged	Yes	Annular Flow ("EC")	4.240	2.910	1.901	81.75	5000	1732-XXX
2	3,620	2.375	Weatherford	SIFO-1EC	1.0	Forged	Yes	Annular Flow ("EC")	4.240	2.910	1.901	81.75	5000	1732-XXX
3	4,777	2.375	Weatherford	SIFO-1EC	1.0	Forged	Yes	Annular Flow ("EC")	4.240	2.910	1.901	81.75	5000	1732-XXX
4	5,639	2.375	Weatherford	SIFO-1EC	1.0	Forged	Yes	Annular Flow ("EC")	4.240	2.910	1.901	81.75	5000	1732-XXX
5	6,434	2.375	Weatherford	SIFO-1EC	1.0	Forged	Yes	Annular Flow ("EC")	4.240	2.910	1.901	81.75	5000	1732-XXX
6	7,228	2.375	Weatherford	SIFO-1EC	1.0	Forged	Yes	Annular Flow ("EC")	4.240	2.910	1.901	81.75	5000	1732-XXX
7	8,023	2.375	Weatherford	SIFO-1EC	1.0	Forged	Yes	Annular Flow ("EC")	4.240	2.910	1.901	81.75	5000	1732-XXX
8	8,785	2.375	Weatherford	SIFO-1EC	1.0	Forged	Yes	Annular Flow ("EC")	4.240	2.910	1.901	81.75	5000	1732-XXX
9	9,578	2.375	Weatherford	SIFO-1EC	1.0	Forged	Yes	Annular Flow ("EC")	4.240	2.910	1.901	81.75	5000	1732-XXX
10	10,373	2.375	Weatherford	SIFO-1EC	1.0	Forged	Yes	Annular Flow ("EC")	4.240	2.910	1.901	81.75	5000	1732-XXX
11	11,167	2.375	Weatherford	SIFO-1EC	1.0	Forged	Yes	Annular Flow ("EC")	4.240	2.910	1.901	81.75	5000	1732-XXX
12	11,996	2.375	Weatherford	SIFO-1EC	1.0	Forged	Yes	Annular Flow ("EC")	4.240	2.910	1.901	81.75	5000	1732-XXX
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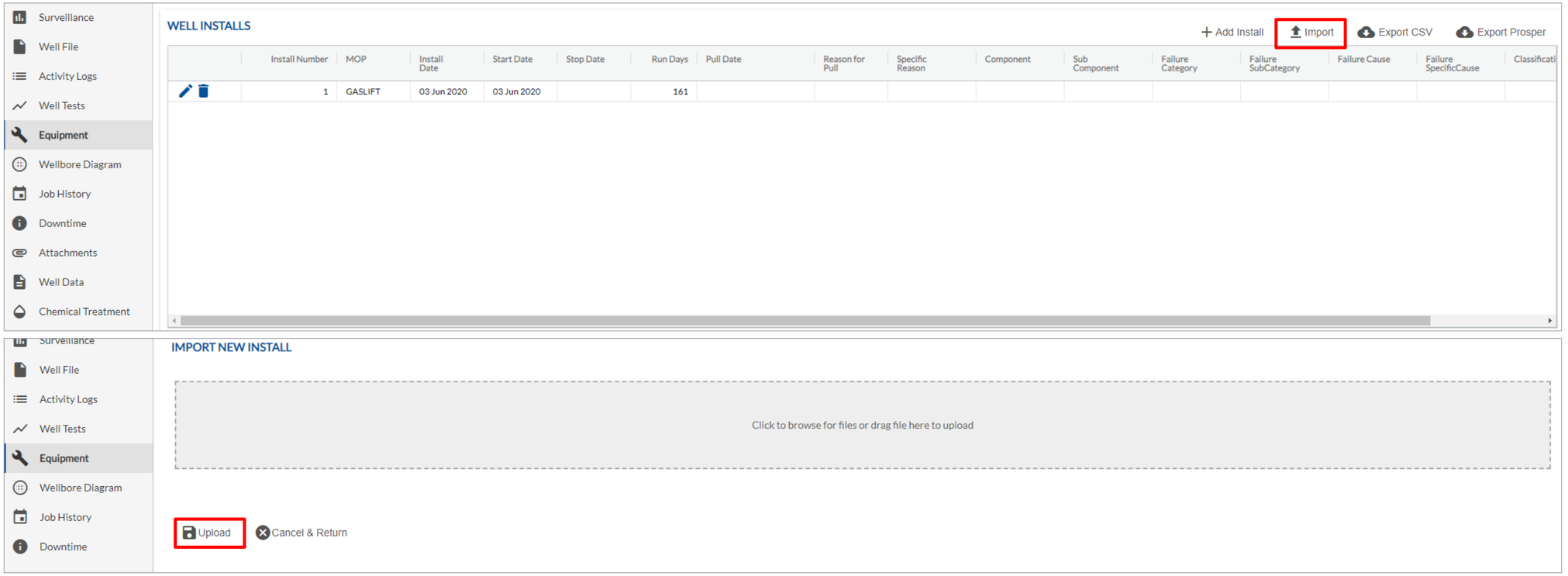
GL Installation Report Template: The Easy Button

Step 5. Drag and drop worksheet into Nexus…



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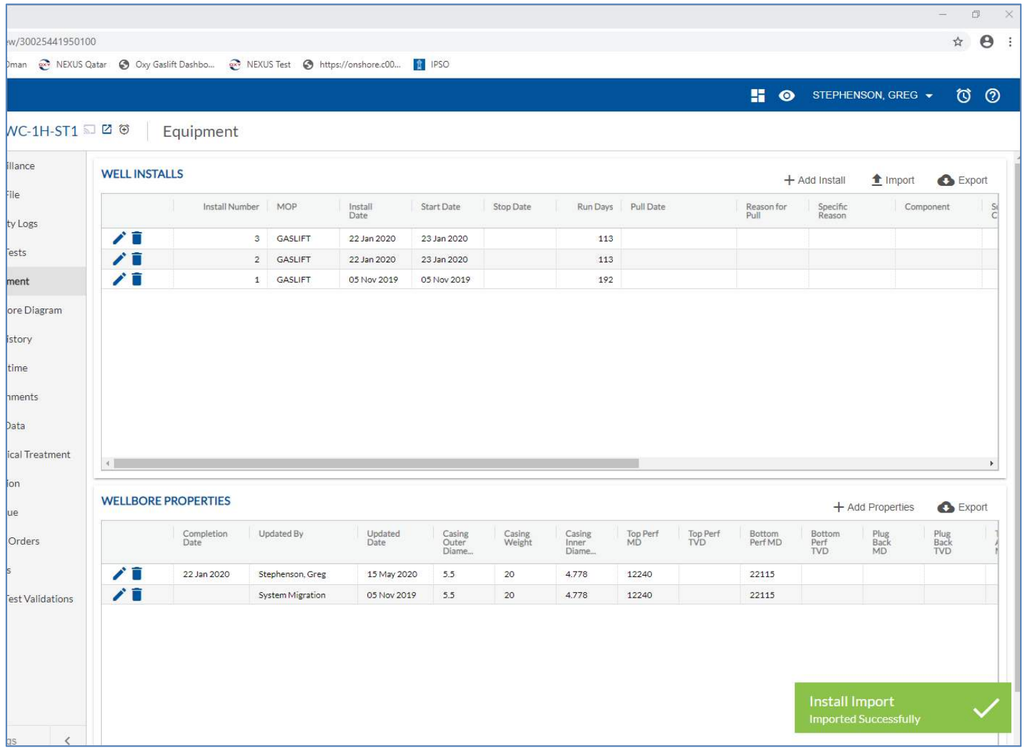
GL Installation Report Template: The Easy Button Success!!!



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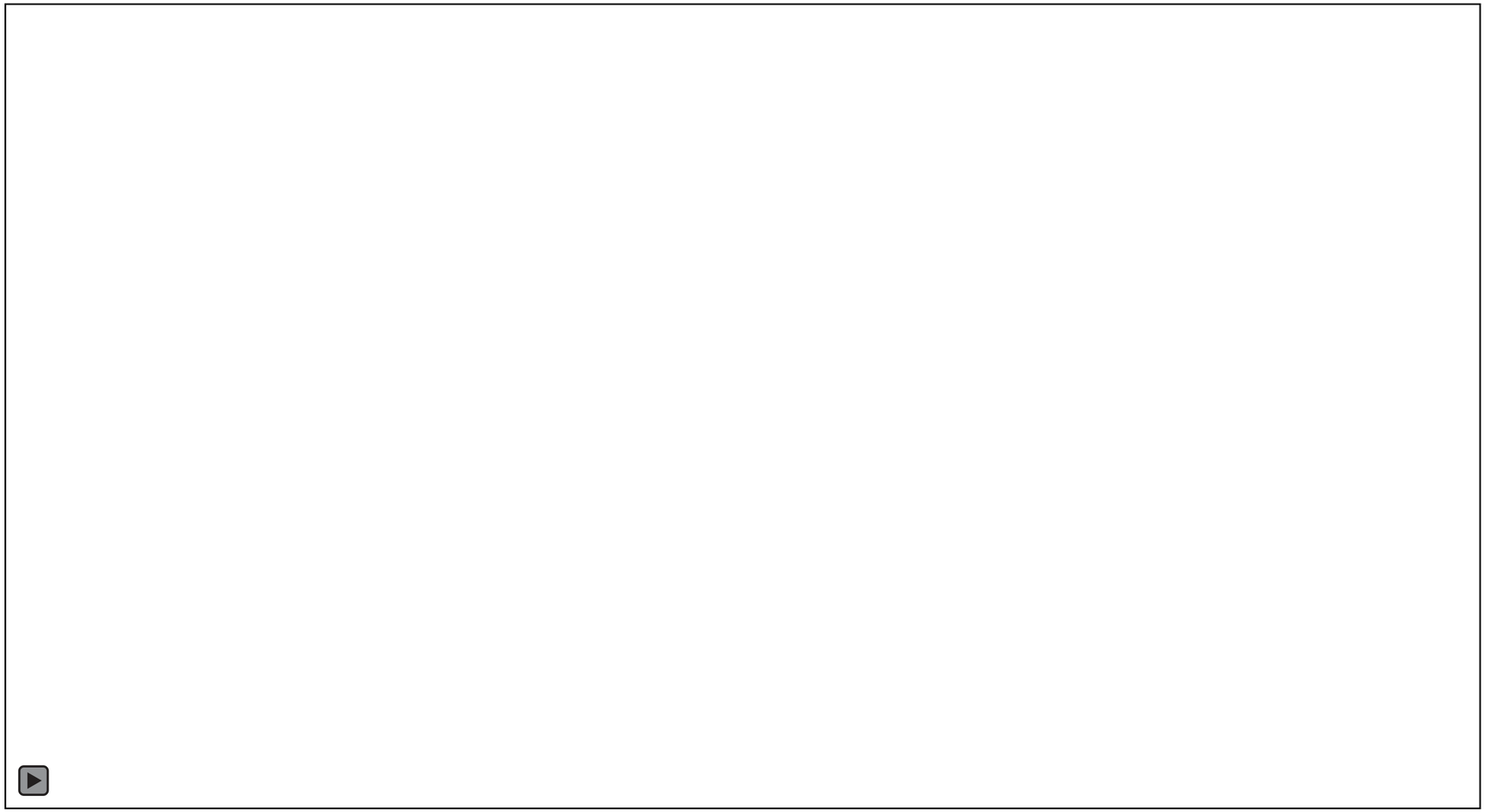
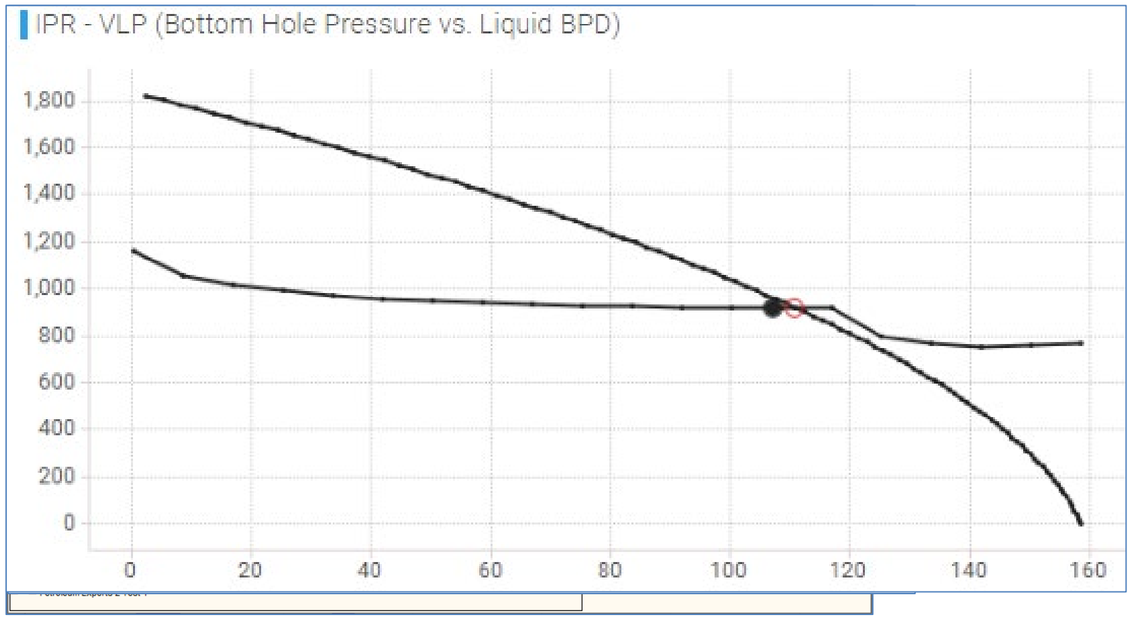
GL Installation Report Template: The Easy Button



Automatic Model Generation

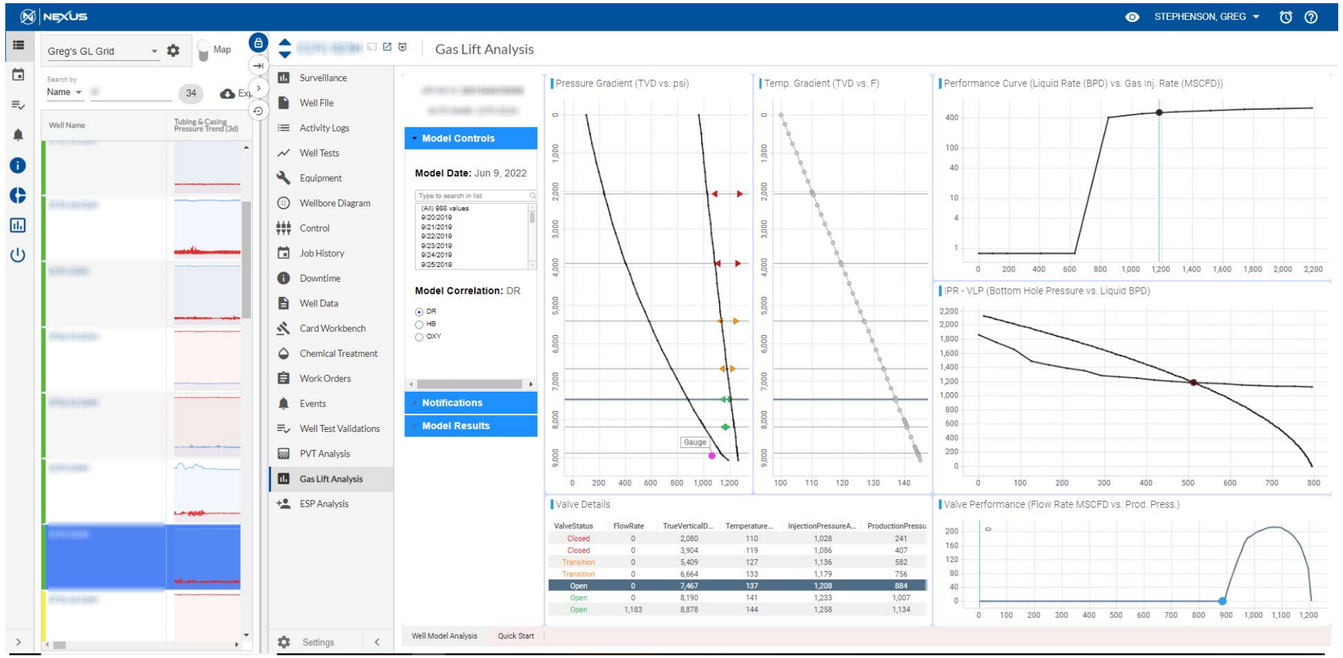
Once data is populated in Nexus, models can be generated automatically through:

- Prosper
- SNAP
- NexusNodal

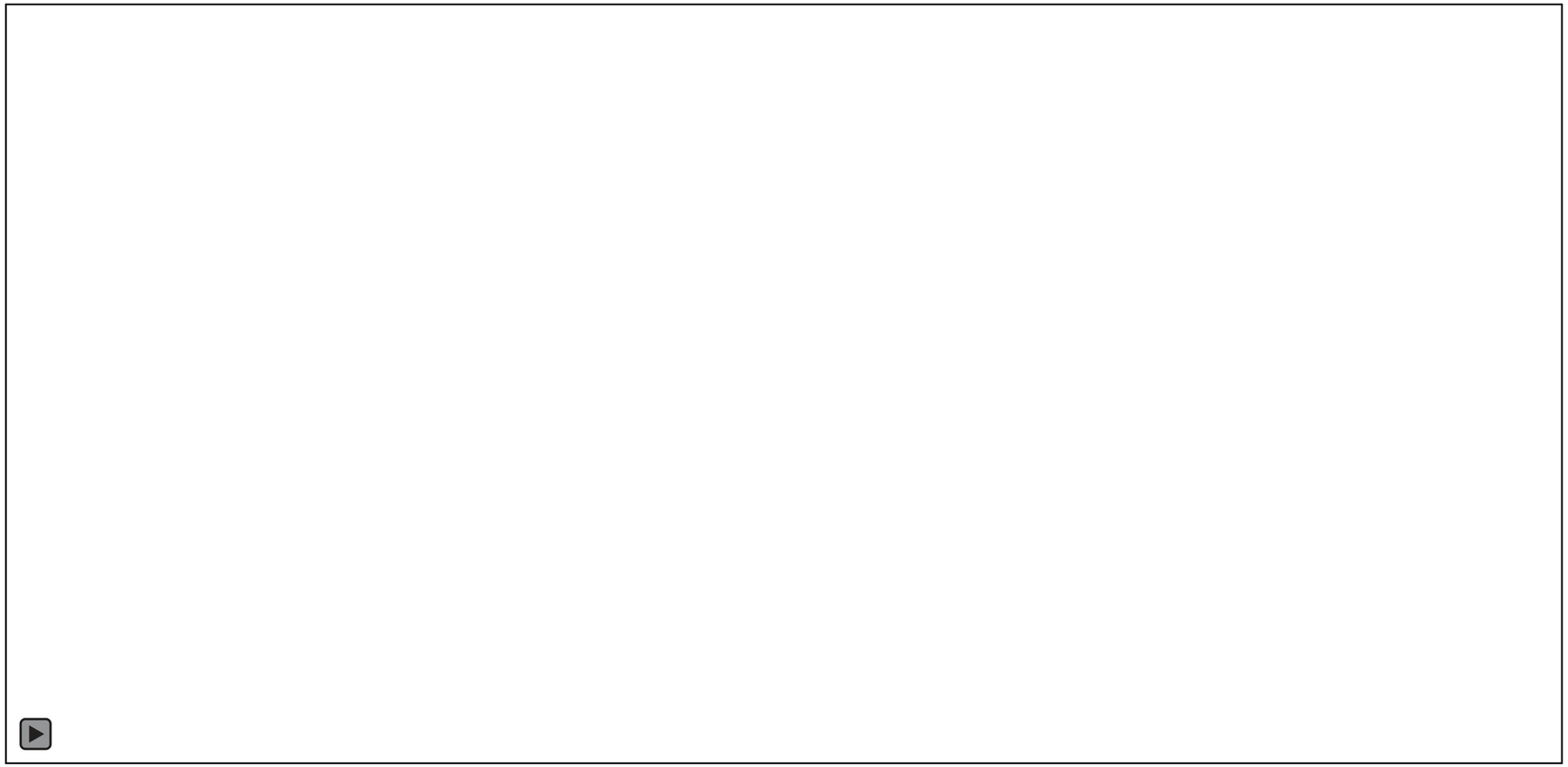


Nexus offers a wealth of gas lift surveillance tools, including:

- Screening tools / management by exception
- Trending
- Well Tests
- Fluid Level History
- Job History
- Activity Log
- Downtime Reporting
- Failure Analysis
- GL Analysis Dashboard



We’ve come a long way from Barton recorders…



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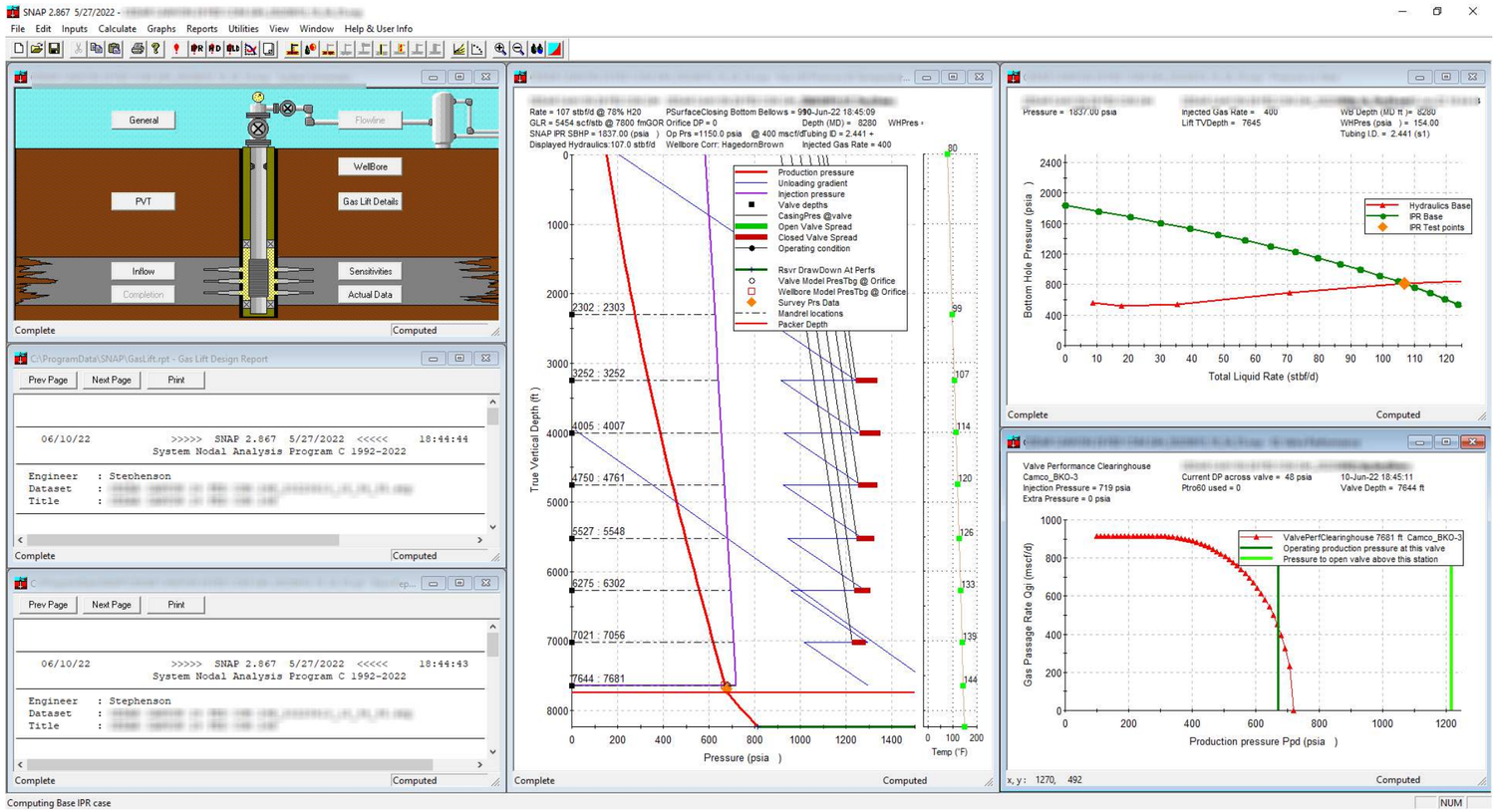
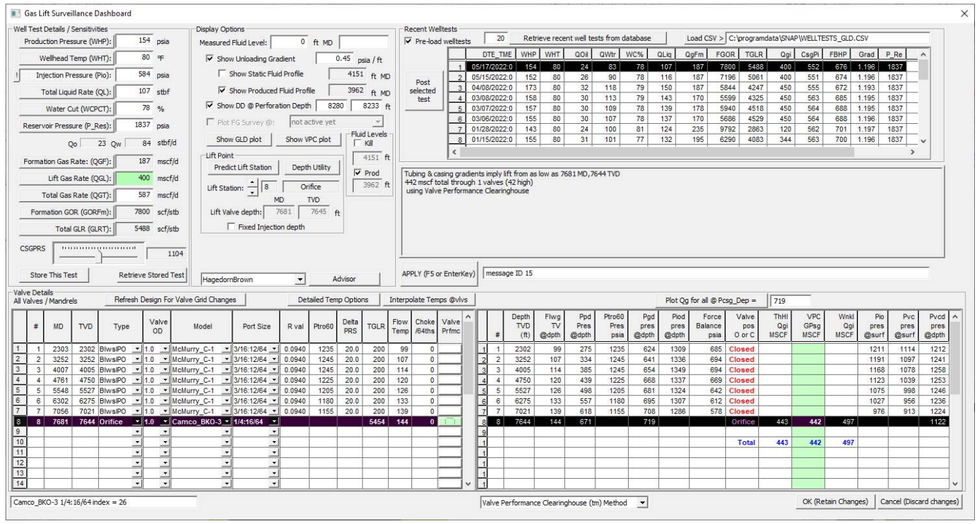
Gas Lift Diagnostics using SNAP





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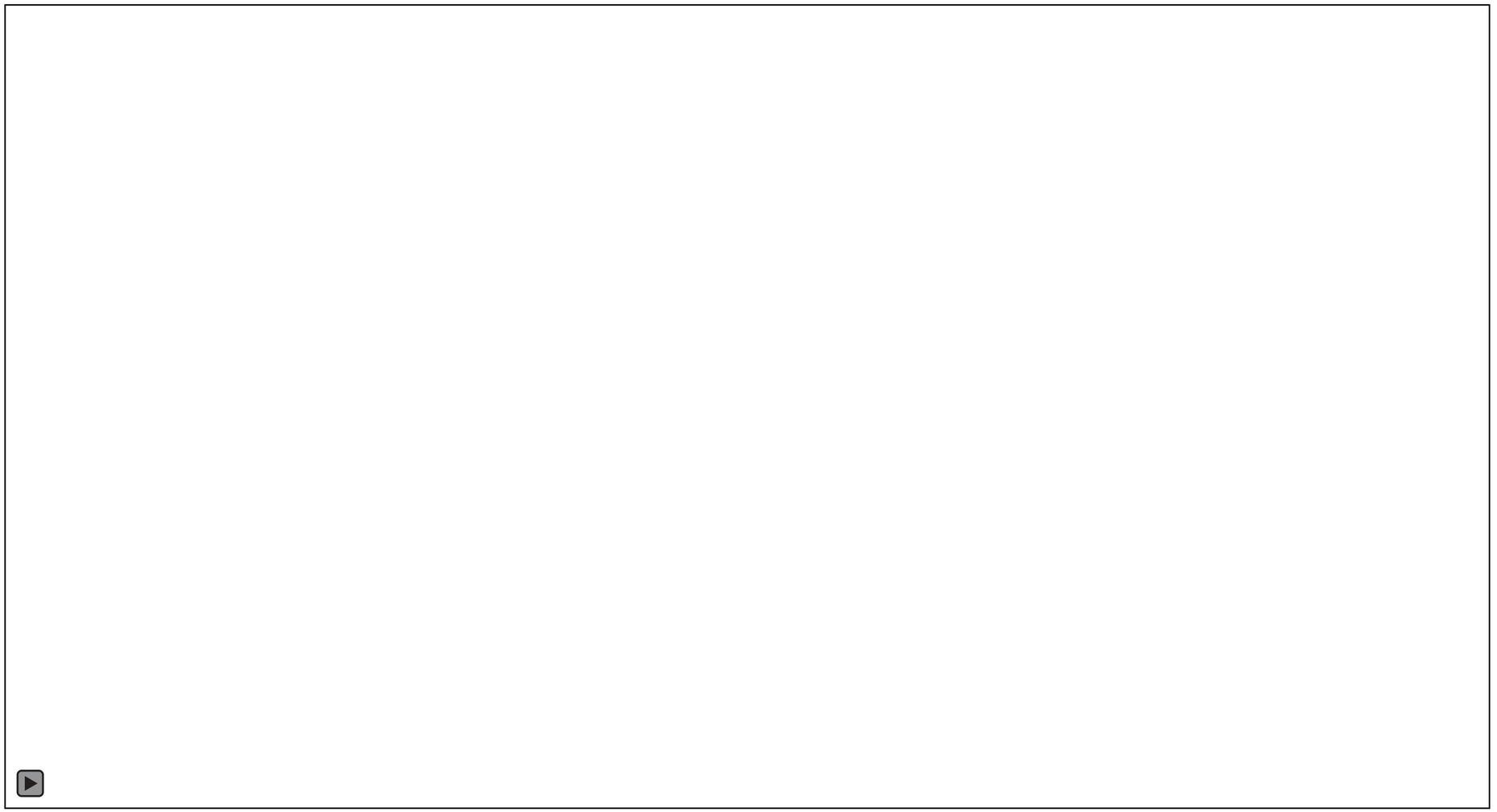

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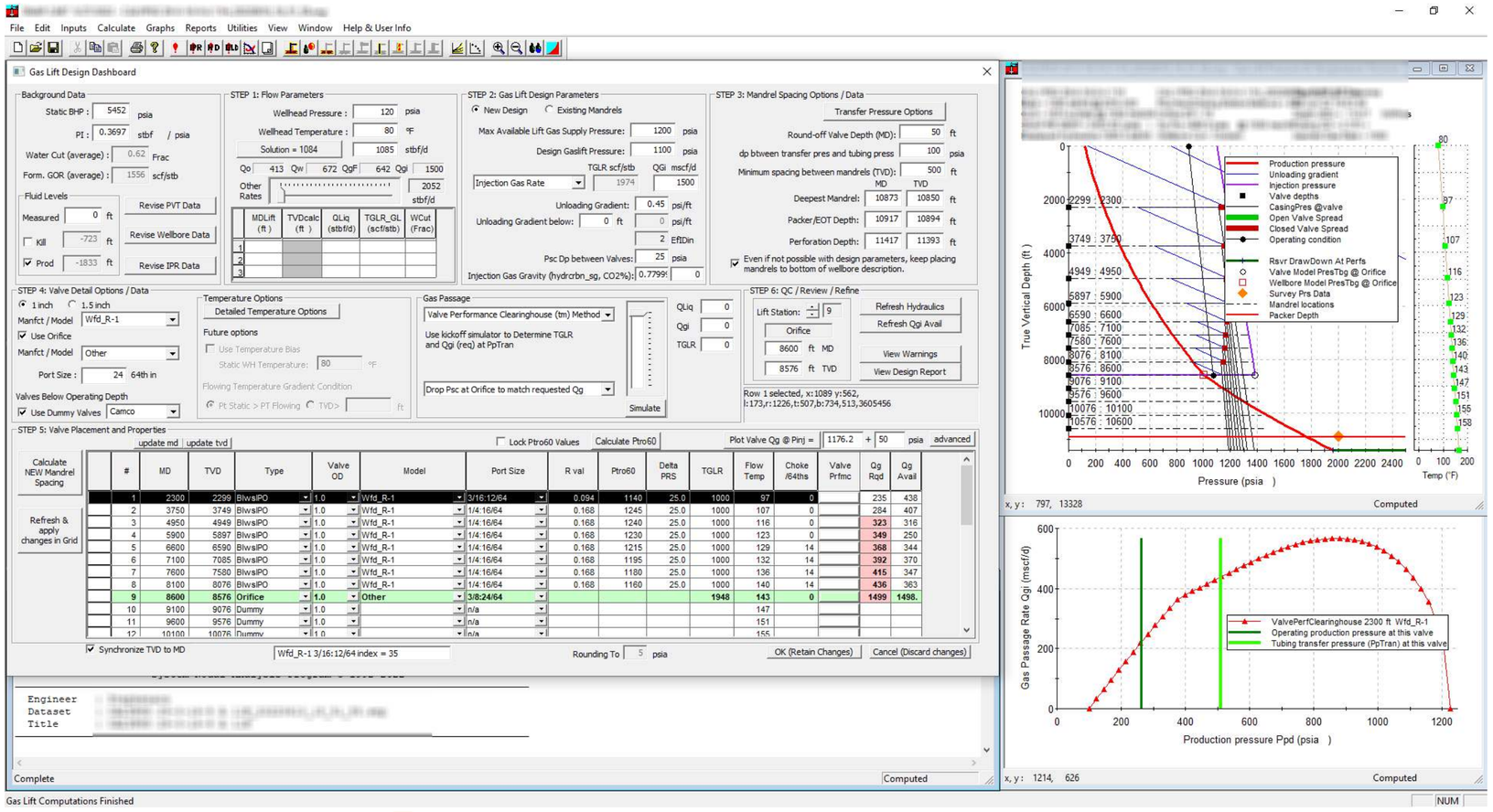
Using Valve Performance in Design



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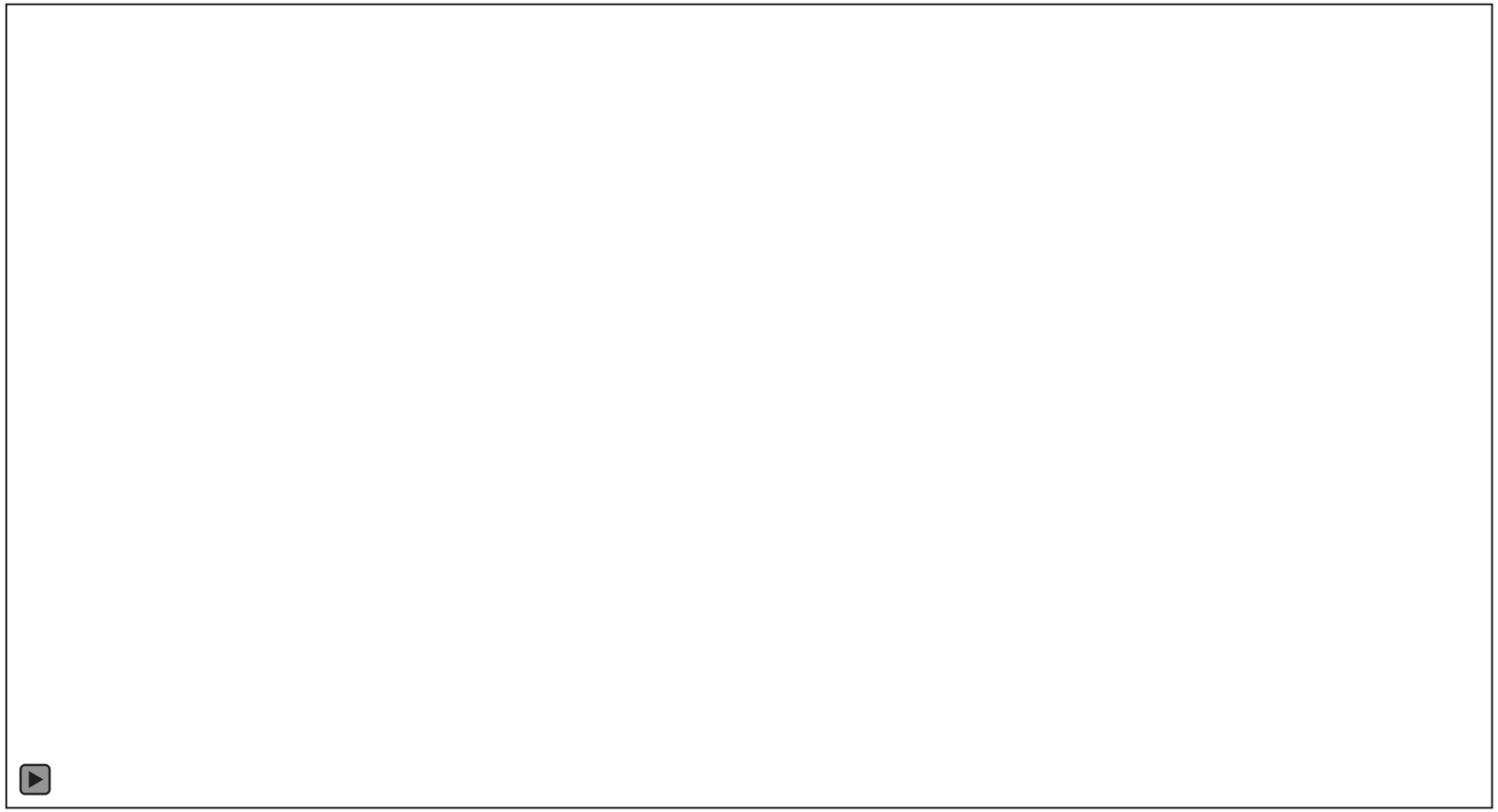
Using Valve Performance in Design



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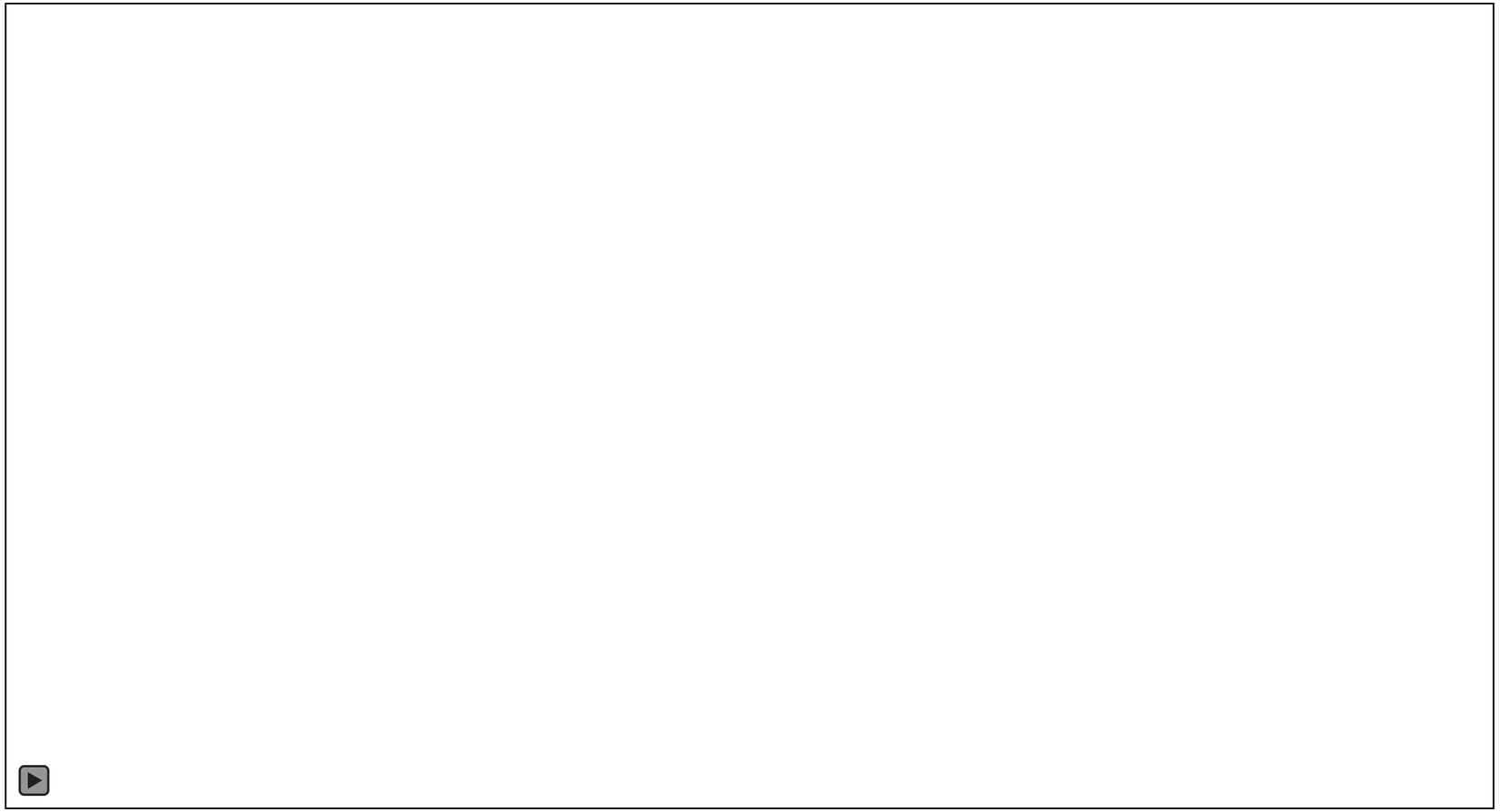
Using SNAP to Evaluate Completion Options



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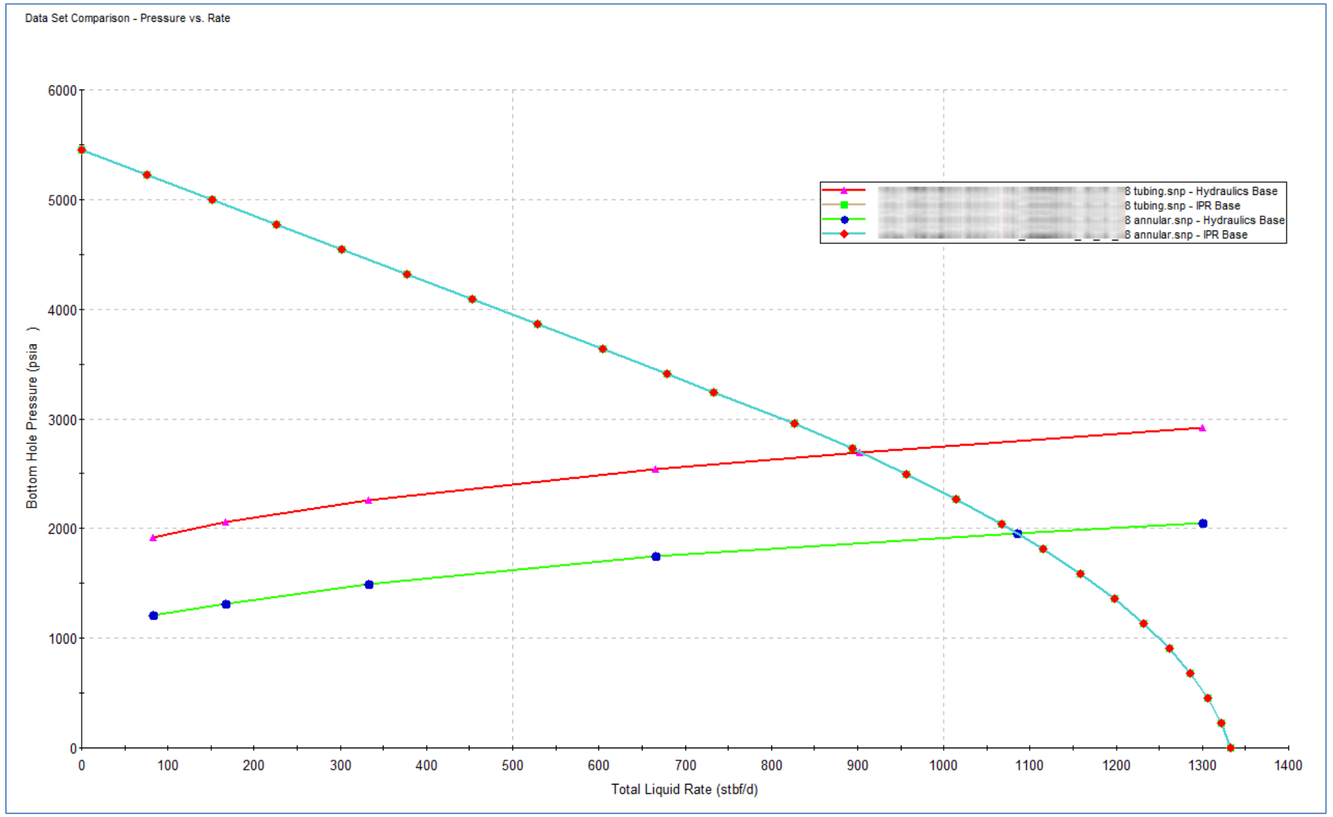
Using SNAP to Evaluate Completion Options



Other Related Surveillance Activities

- Closed-loop GL Optimization (see SPE 209756-MS)
- Realtime Diagnostics
- Dedicated AL Team
- Failure Reviews
- Well Reviews
- Vendor Audits
- Corrosion Management
- Emissions Monitoring and Reduction

Questions?

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