

# T-12 Phase I Oil Consumption Study

SOUTHWEST RESEARCH INSTITUTE®

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# Revised Study Plan

\*the red parts indicate what changed from the prior stage\*

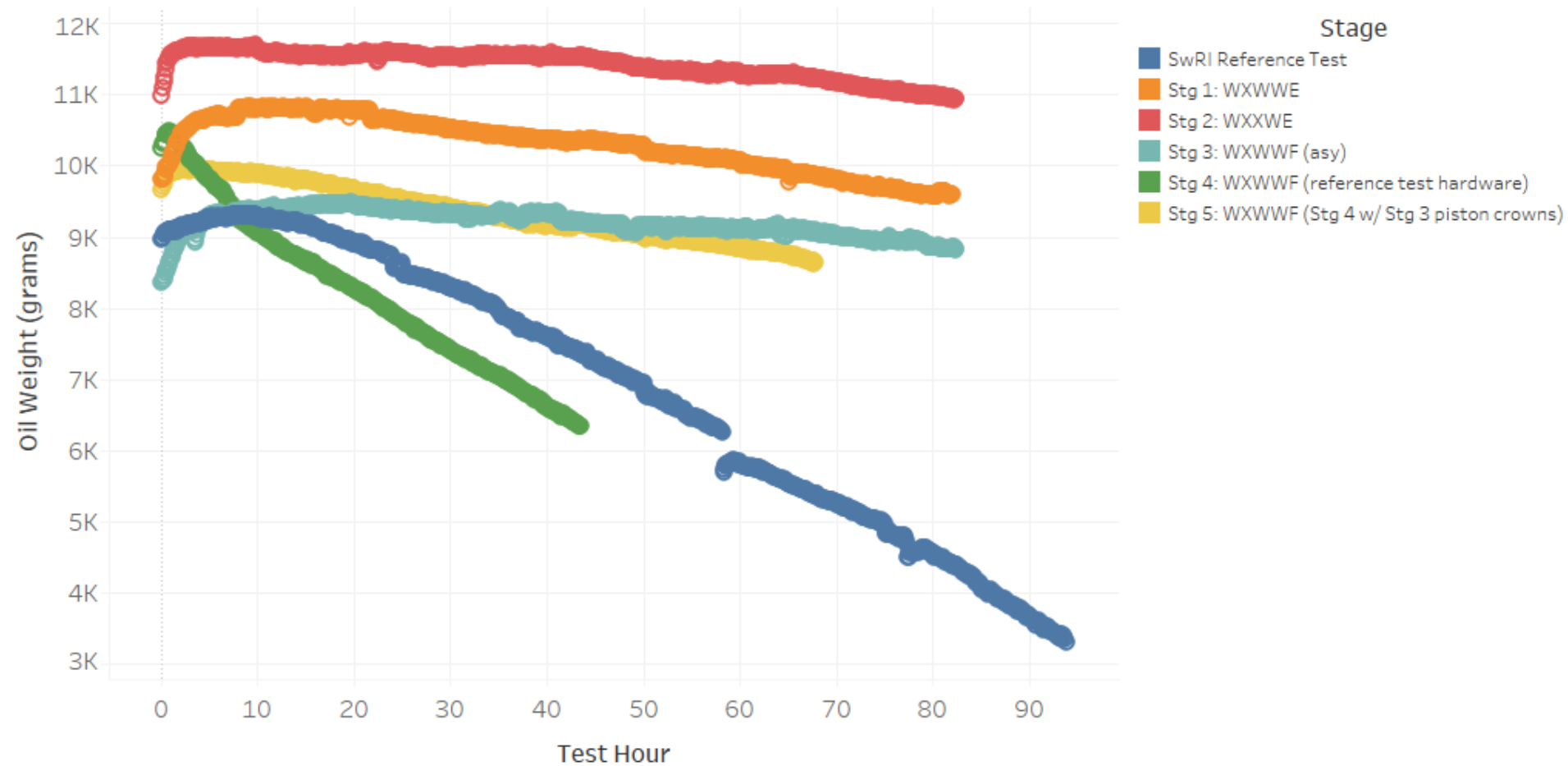
	Stage 1	Stage 2	Stage 3	Stage 4 *Installed SwRI Reference Test Hardware*	Stage 5
Current Hardware	2 <sup>nd</sup> Rings (W) Oil Rings (W) Piston Crowns (E)	Oil Rings (W) Piston Crowns (E)		<b>*All of Cyl 6 and oil rings on Cyl 2 &amp; 4 remained the same as Stage 3*</b>	<b>*Only changed piston crowns to those used in Stage 3. Liners and rings same as Stage 4*</b>
New Hardware	Liners (W-TEI)	Liners (W-TEI) <b>2<sup>nd</sup> Rings (X-TEI)</b>	Liners (W-TEI) 2 <sup>nd</sup> Rings (X-TEI) <b>Oil Rings (X Asymmetric)</b> <b>Piston Crowns (F-TEI)</b>	<b>Liners (W-ref)</b> <b>2<sup>nd</sup> Rings (X-ref)</b> <b>Oil Rings (X-ref)</b> <b>Piston Crowns (F-ref)</b>	Liners (W-ref) 2 <sup>nd</sup> Rings (X-ref) Oil Rings (X-ref) <b>Piston Crowns (F-TEI)</b>
Phase 1 Oil Consumption	20.6 g/hr	21 g/hr	15.2 g/hr Phase 2: 90 g/hr	70 g/hr	19.5 g/hr

Stage 1 to 3 were on hardware provided by TEI. After stage 3 did not produce the expected high oil consumption like in the coordinated references, the hardware that remained after SwRI's terminated reference test were installed for stage 4 to reproduce high oil consumption conditions. Working backwards from the high oil consumption point, the newer-TEI provided piston crowns from Stage 3 were reinstalled for Stage 5 using the same reference-test liners and rings as stage 4, which brought oil consumption back down to reasonable levels.



# Oil Consumption Trends

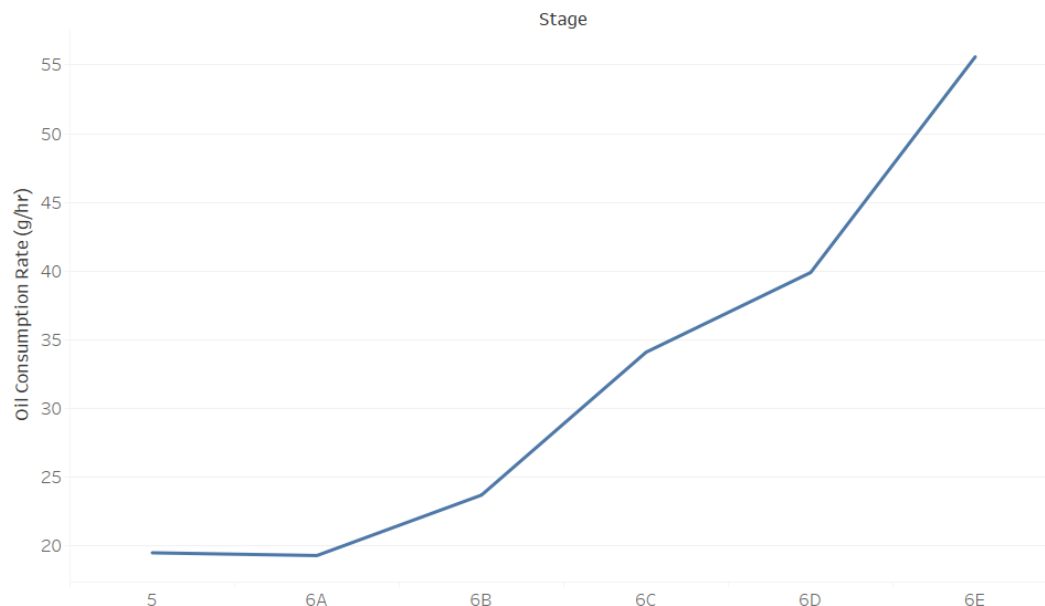
T-12 Phase 1 Consumption



# Stage 6: Piston Crowns

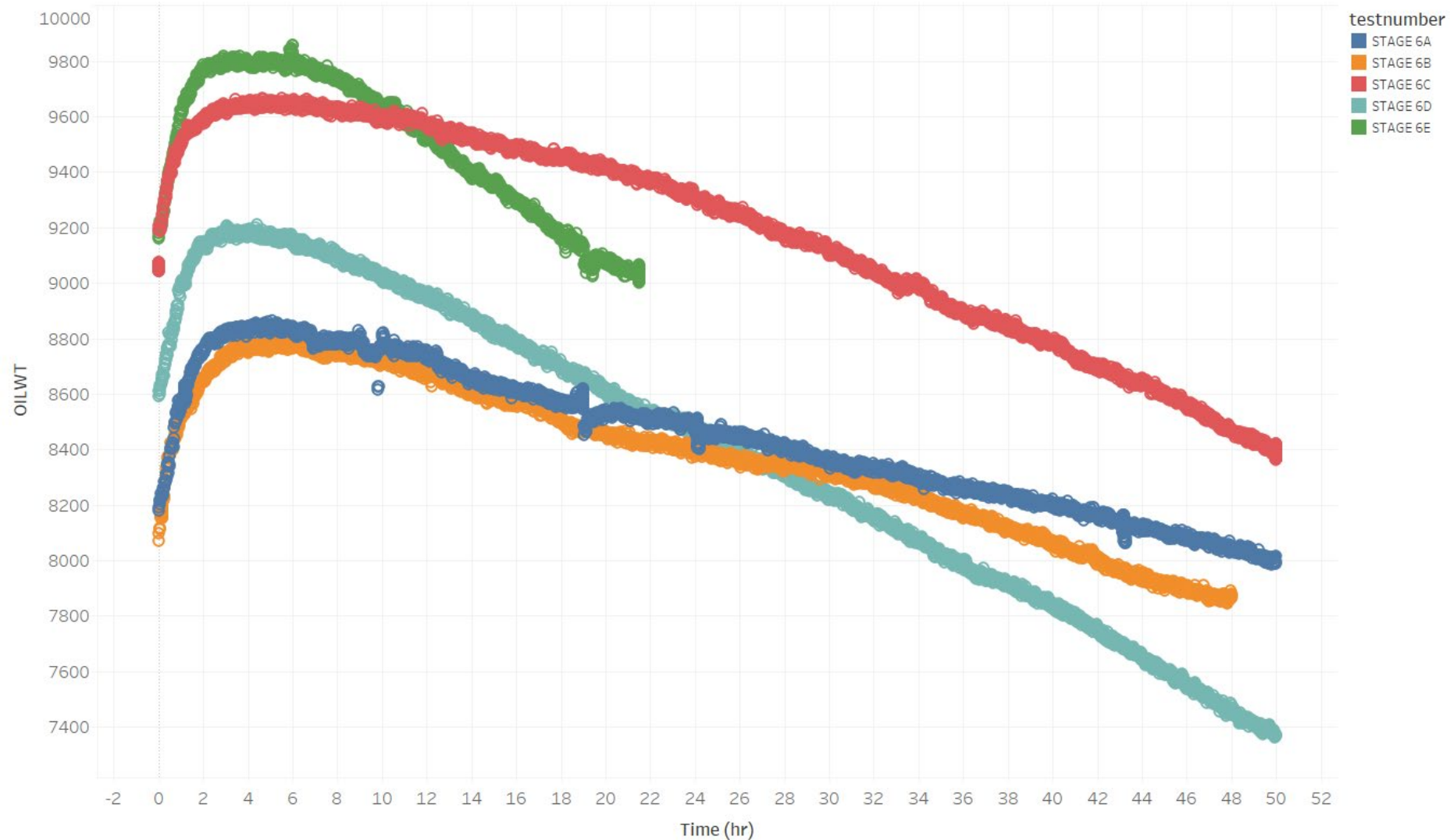
	Stage 4	Stage 5	Stage 6A	Stage 6B	Stage 6C	Stage 6D	Stage 6E
TEI Piston Crowns (Low OC in Stage 3)	Cylinder 6	Cylinders 1-6	Cylinders 2-6	Cylinders 3-6	Cylinders 4-6	Cylinders 5-6	Cylinders 6
SwRI Reference Piston Crowns (High OC in Stage 4)	Cylinder 1-5		Cylinder 1	Cylinders 1-2	Cylinders 1-3	Cylinders 1-4	Cylinders 1-5
Phase 1 Oil Cons. Phase 2 Oil Cons.	70 g/hr	19.5 g/hr	19.3 g/hr	23.7 g/hr	34.1 g/hr	39.9 g/hr 101.5 g/hr	55.6 g/hr

T-12 Oil Consumption Study: Stage 6



# Stage 6: Piston Crowns

T-12 Phase 1 Oil Weight



# Piston Crowns

Cylinder	Stage 4/6E (High OC)	Stage 5 (Low OC)	Stage 7 (New set of Crowns)
Oil Consumption:	55-70 g/hr	19.5 g/hr	19.2 g/hr 90.4 g/hr
1	S4941#167A	S4940#191	S4945#356E
2	S4941#169A	S4944#159D	S4945#472E
3	S4941#145A	S4945#467E	S4945#769E
4	S4941#158A	S4945#479E	S4945#823E
5	S4941#175A	S4945#526E	S4945#918E
6	S4945#850E		S4945#962E