

Caterpillar Piston Deposit Test Proposed Limits

CATERPILLAR®



Aluminum Piston Deposit Test

- A wide range of data was evaluated
 - Different companies
 - Different laboratories
 - Different formulations
 - Single and Multi-cylinder



Aluminum Piston Deposit Test

- Conclusions:
 - No definitive data was put forth to alter 1N limits from CG-4 criteria
 - Raising 1N limits was not supported by the data nor by multi-cylinder testing
 - Raising limits could lead to loss of oil control



Aluminum Piston Deposit Test

- **Proposal:**

- Use Cat 1N test with CG-4 limits OR
- Use Cat 1K test with CH-4 limits (multi-pass)



1N Limits

	1 Test Pass	2 Test Pass	3 Test Pass
WDN	286.2	311.7	323.0
TGF	20	23	25
TLHC	3	4	5
Ave OC	0.5	0.5	0.5
Scuffing	None	None	None
Sticking	None	None	None



1K Limits

	1 Test Pass	2 Test Pass	3 Test Pass
WDK	332.0	347.0	353.0
TGF	24	27	29
TLHC	4	5	5
Ave OC	0.50	0.50	0.50
Scuffing	None	None	None
Sticking	None	None	None

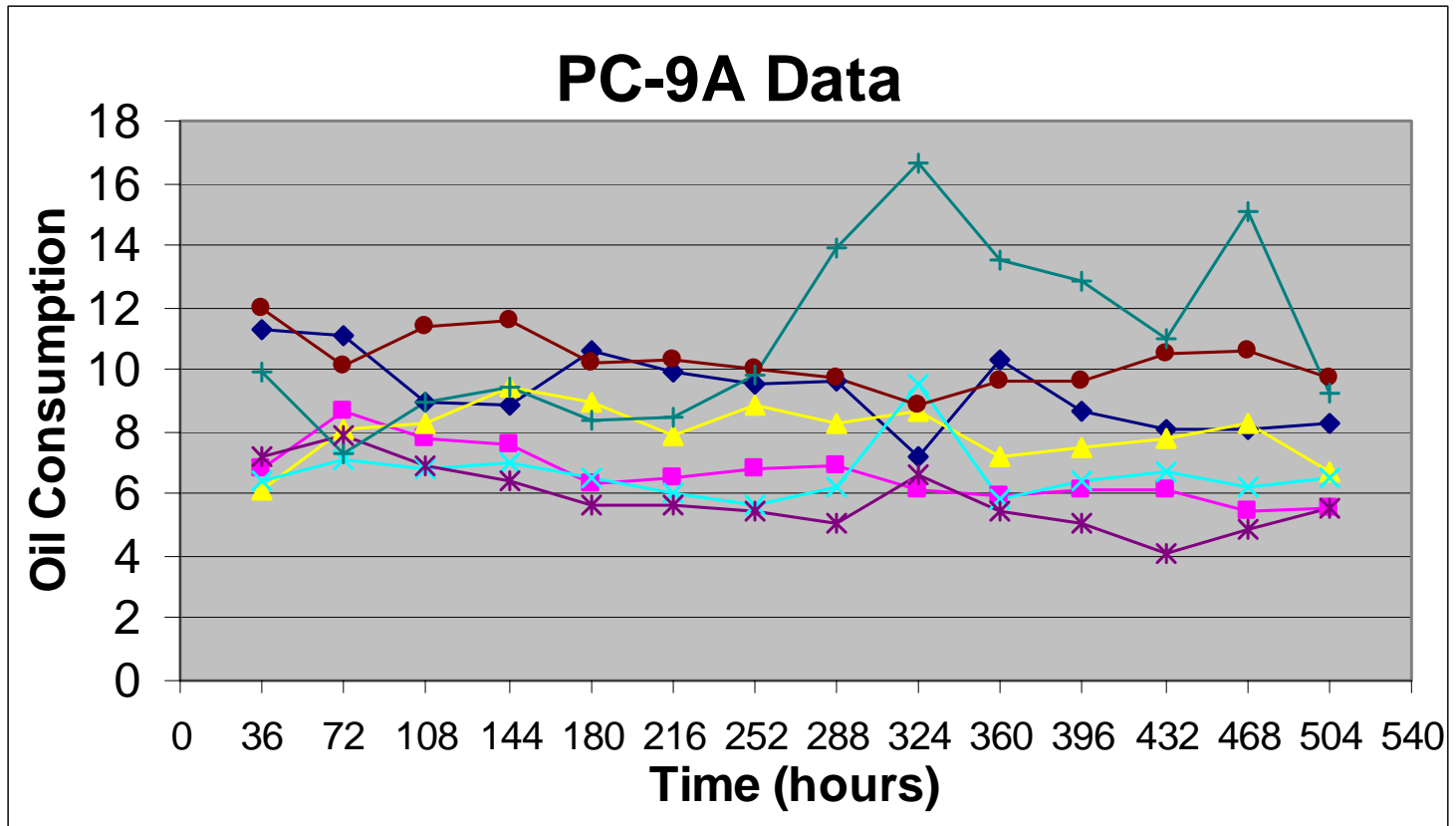


Articulated Steel Piston Deposit Test

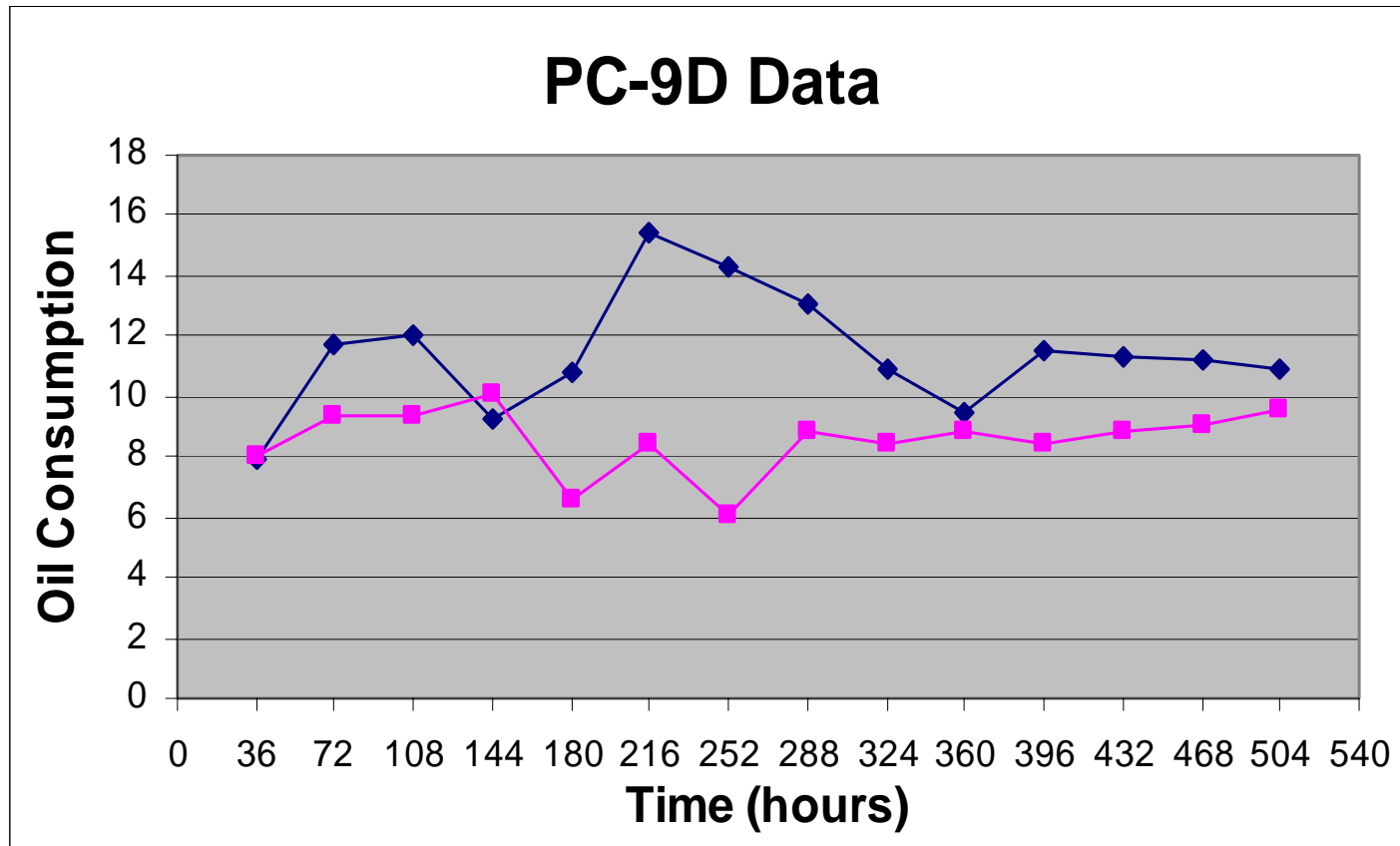
- PC-9 test matrix completed
- Statistical analysis completed and verified
- Set Limits based on past experience with similar oils and matrix oils



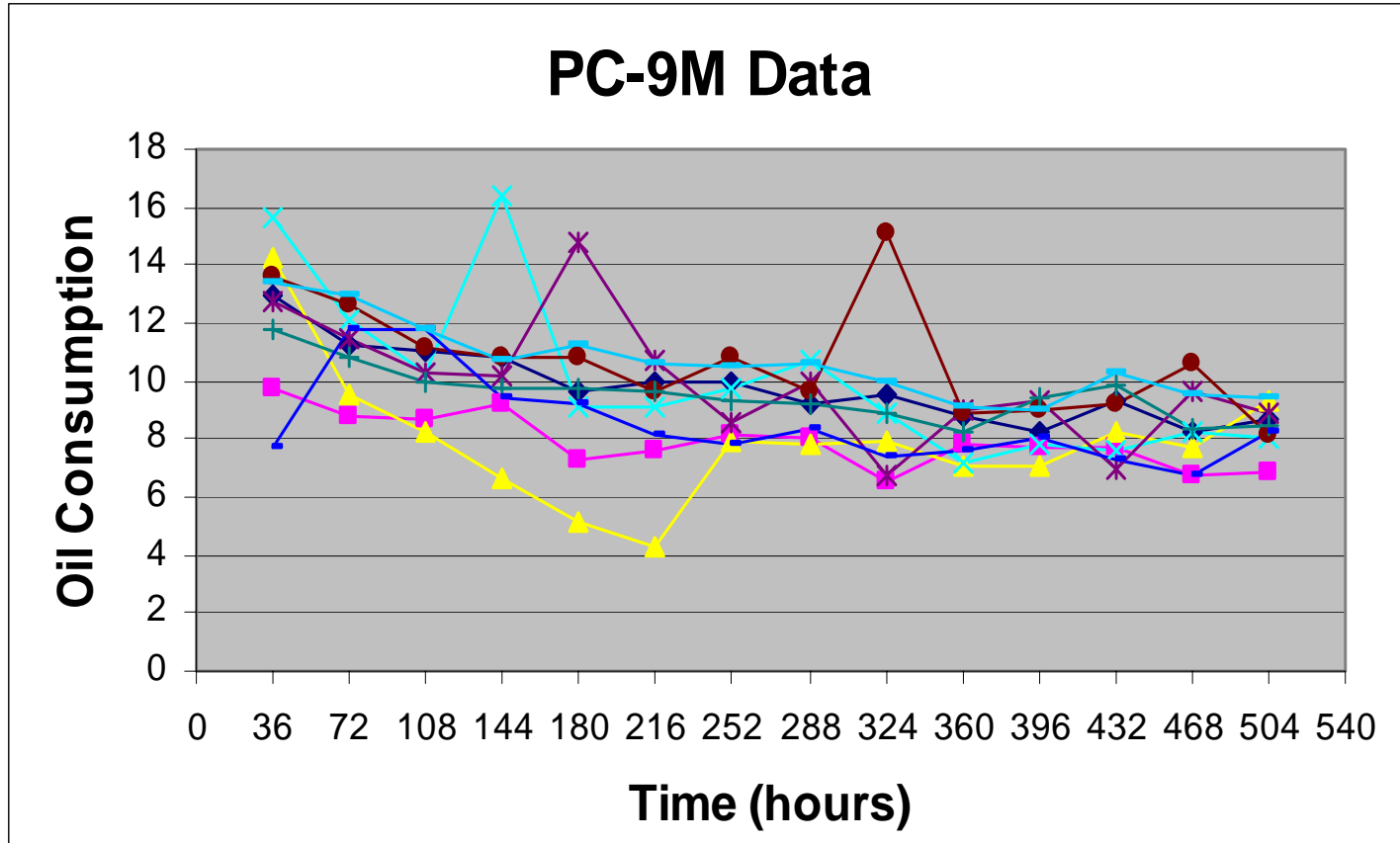
PC-9A Oil Consumption



PC-9D Oil Consumption



PC-9M Oil Consumption



1R Test Limit Proposal

- Matrix data was compared to multi-cylinder engine tests
- Proposed limits:

	1 Test Pass	2 Test Pass	3 Test Pass
WDR	382.0	410.5	433.8
TGC	52	63.0	72.3
TLC	31	36.4	41.0
OC/Ratio	13.1/1.0	13.1/1.0	13.1/1.0
Scuffing	None	None	None
Sticking	None	None	None

