

2020 Koenen Round Robin Results

JASON J. PHILLIPS, ALLIE SNYDER, & MITCHELL CHING
ENERGETIC MATERIALS ORG. (2555)
ALBUQUERQUE, NM



Test Setup



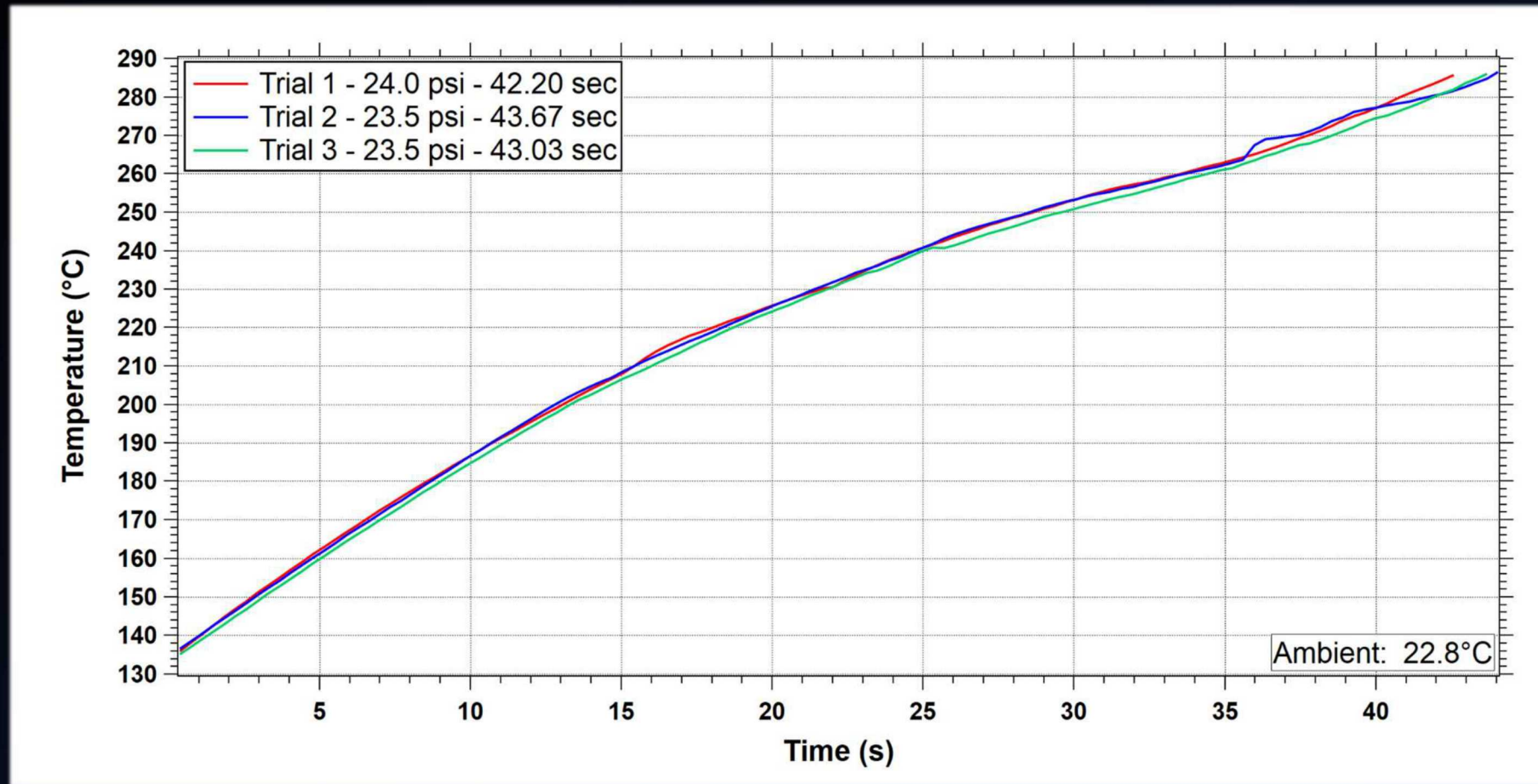
- Tests conducted in an indoor firing pad
- Recorded via a Phantom VEO 640S at 1400fps

Test Materials

- Silicone oil (calibration material)
- Luperox® P (*tert*-Butyl peroxybenzoate)
- Materials procured as recommended per ETUG-205, ETUG Round Robin Procedure for Koenen (26 June 2020)



Triplicate Calibration Results



- Spec: $3.3^{\circ} \pm 0.3^{\circ}\text{C/sec}$ (135-285°C in 41.7 - 50 sec)



Luperox[®] P Test Results

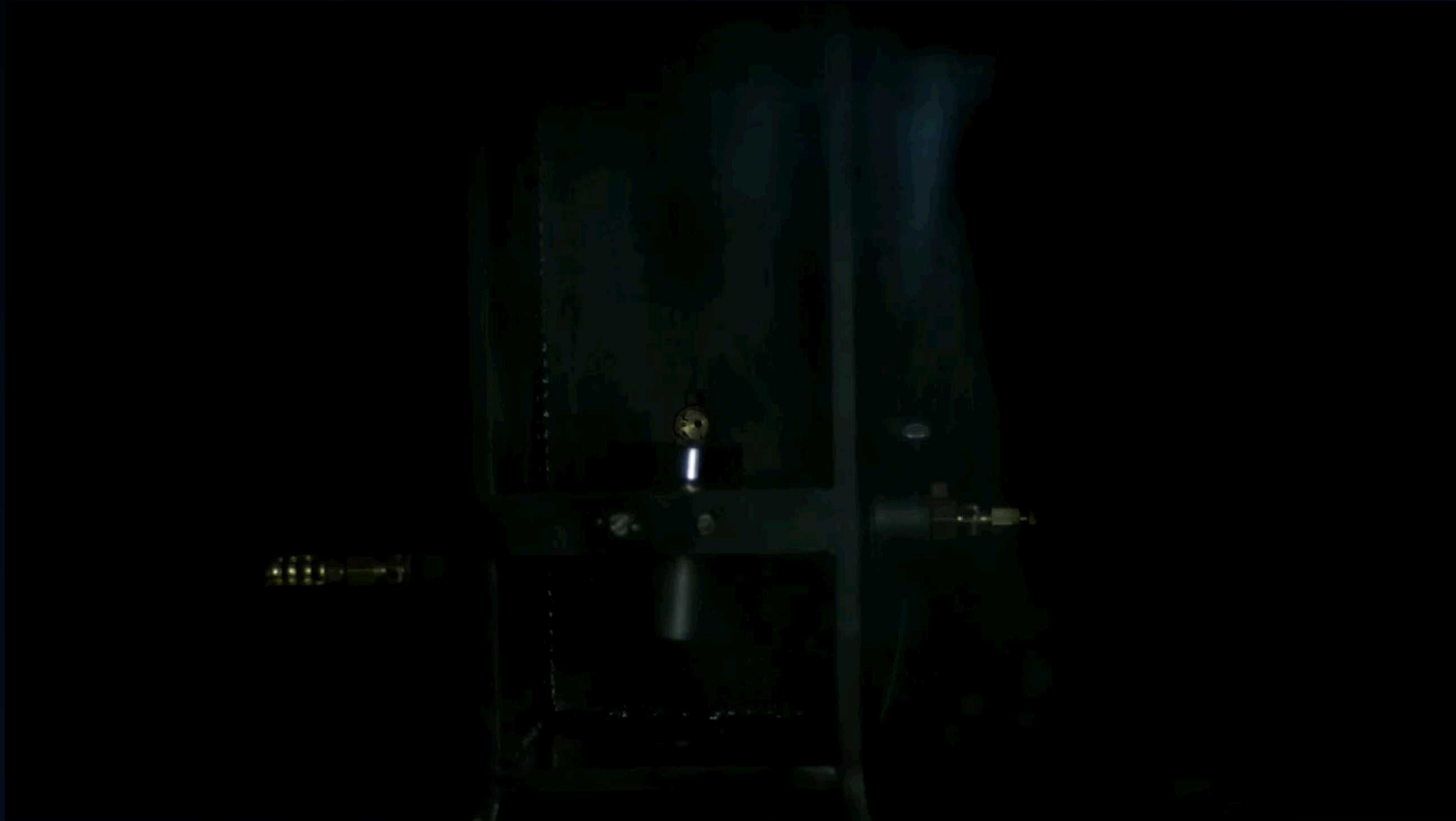
5 mm Orifice – PASS



5 mm Orifice - PASS



3 mm Orifice - FAIL



3 mm Orifice - FAIL





Trial 2



Trial 3



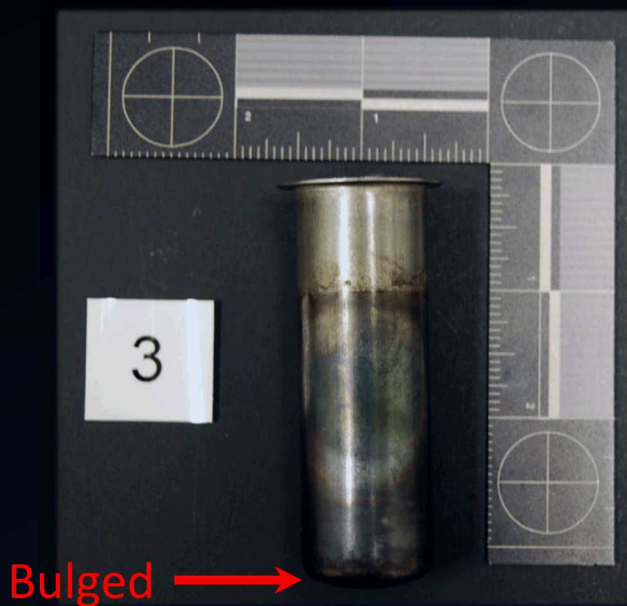
Trial 4



Trial 1



Trial 5



Results Summary

Trial #	Orifice Size (mm)	Sample Mass (g)	Pre-shot Tube Mass (g)	Post-shot Tube Mass (g)	Time to Reaction (s)	# of Fragments	Result*
1	3	27.504	27.255	27.224	30	3	F - Fail
2	5	27.530	27.168	27.207	36	-	A - Pass
3	5	27.558	27.125	27.282	32	-	A - Pass
4	5	27.555	27.024	27.067	23	-	A - Pass
5	3	27.560	27.254	27.083	22	3	F - Fail

*Categorized by letter per UN Test 1(b), *Manual of Tests and Criteria* (7th ed.)

Acknowledgements

- Darryl Benally and Hannah Thigpen for use of their firing pad facilities and high-speed recording equipment

