INTEGRATION AND TEST OF A MINIATURIZED ION MOBILITY SPECTROMETER IN A MINI-UNMANNED AERIAL VEHICLE (MUAV)

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Objective

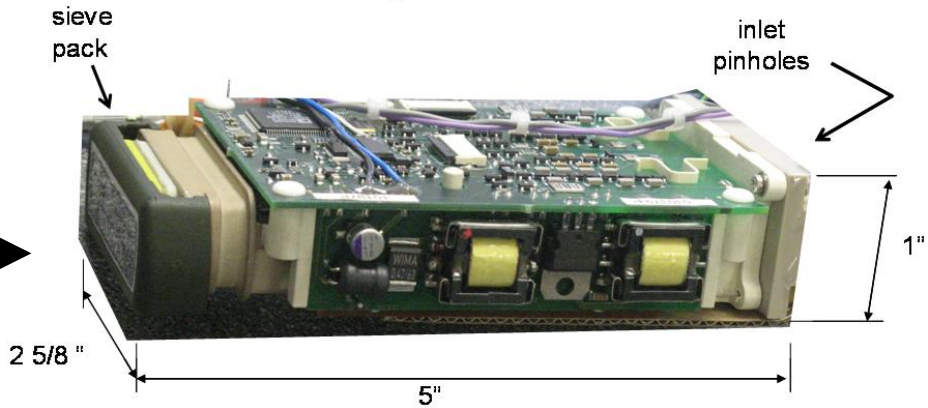
<u>2008</u>:

- Demonstrate capability of a payload compatible with the Raven Unmanned Aircraft System (UAS) to detect, identify and report presence of chemical vapors;
- Use a modified Joint Chemical Agent Detector (JCAD) IMS-based system and a non-standard Raven configuration;
- Incorporate autonomous UAS guidance.

<u>2009</u>:

- Incorporate a miniaturized IMS-based chemical vapor detector into the Raven UAS;
- Use a miniaturized IMS-based system and a near-standard Raven configuration;
- Incorporate autonomous UAS guidance.

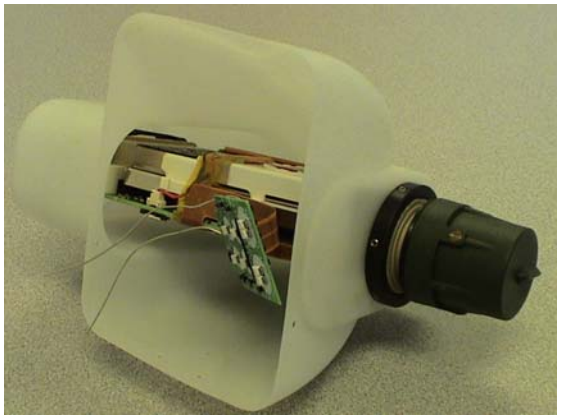
Background



Mass = 8 oz. (226 g)

- Range – 6 miles (10 km)
- Endurance - 60–90 minutes (Rechargeable Battery), 80–110 Minutes (Single Use Battery)
- Speed – 20-50 mph, 32-81 km/h, 17-44 knots
- Operating Altitude (Typ.) - 100-500 ft (30-152 m) AGL, 14,000 ft (4.2 km) MSL max launch altitude
- Wing Span - 4.5 ft (1.4 m)
- Length - 3.0 ft (0.9 m)
- Weight - 4.2 lbs (1.9 kg)
- Payload Weight – 6.5 oz (180 g)
- Launch Method - Hand-launched
- Recovery Method - Deep-stall landing

Background - 2008



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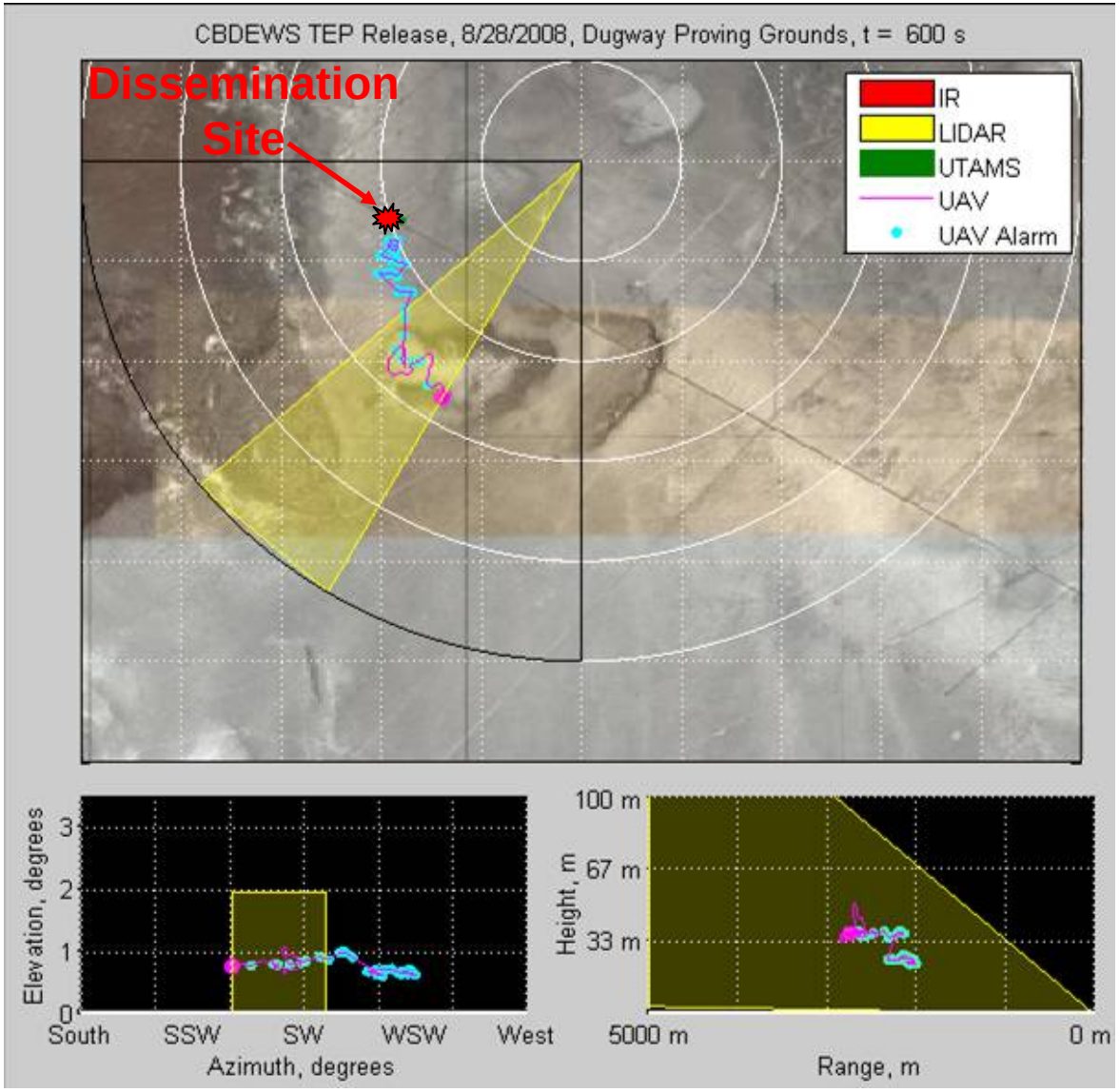

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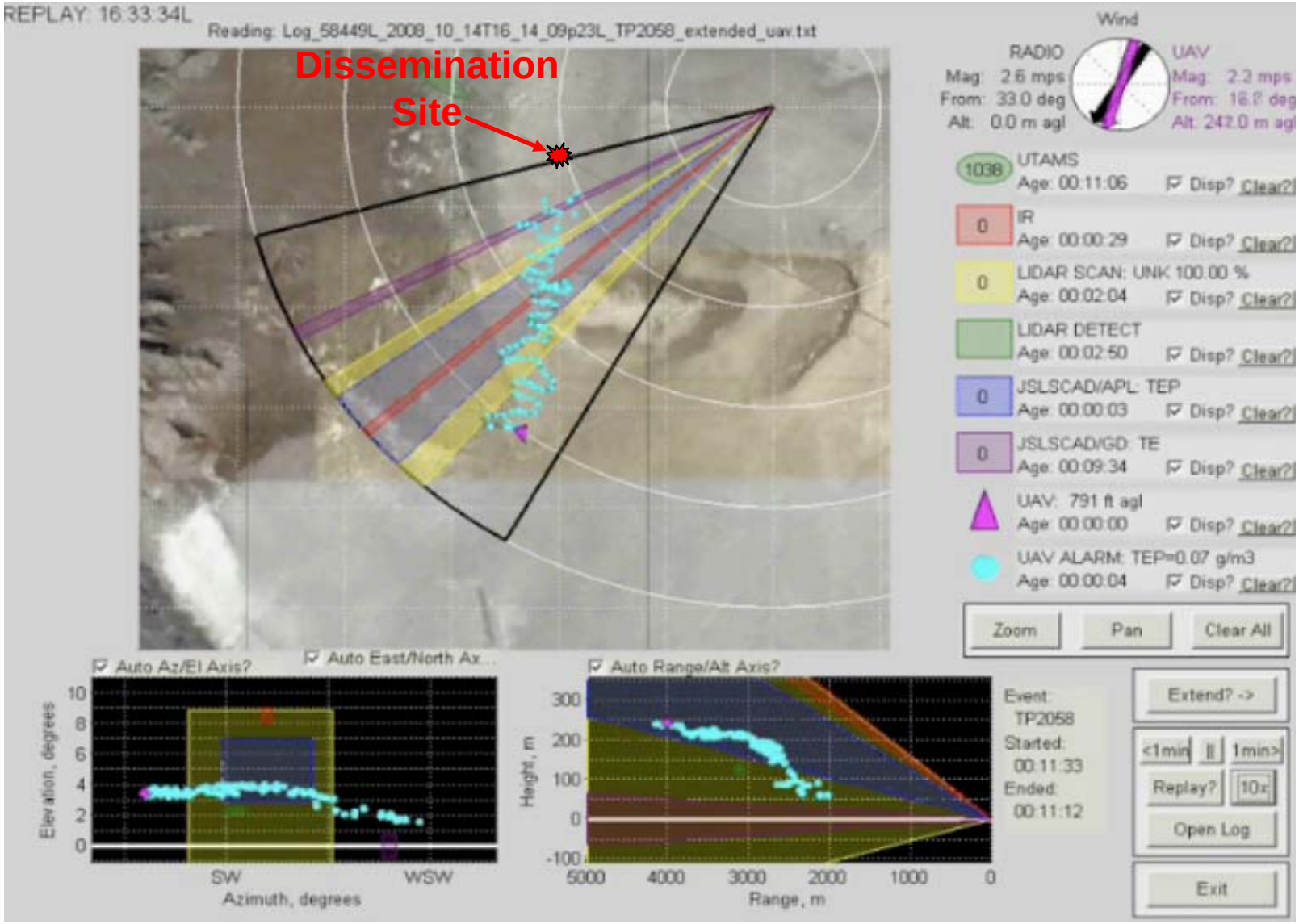
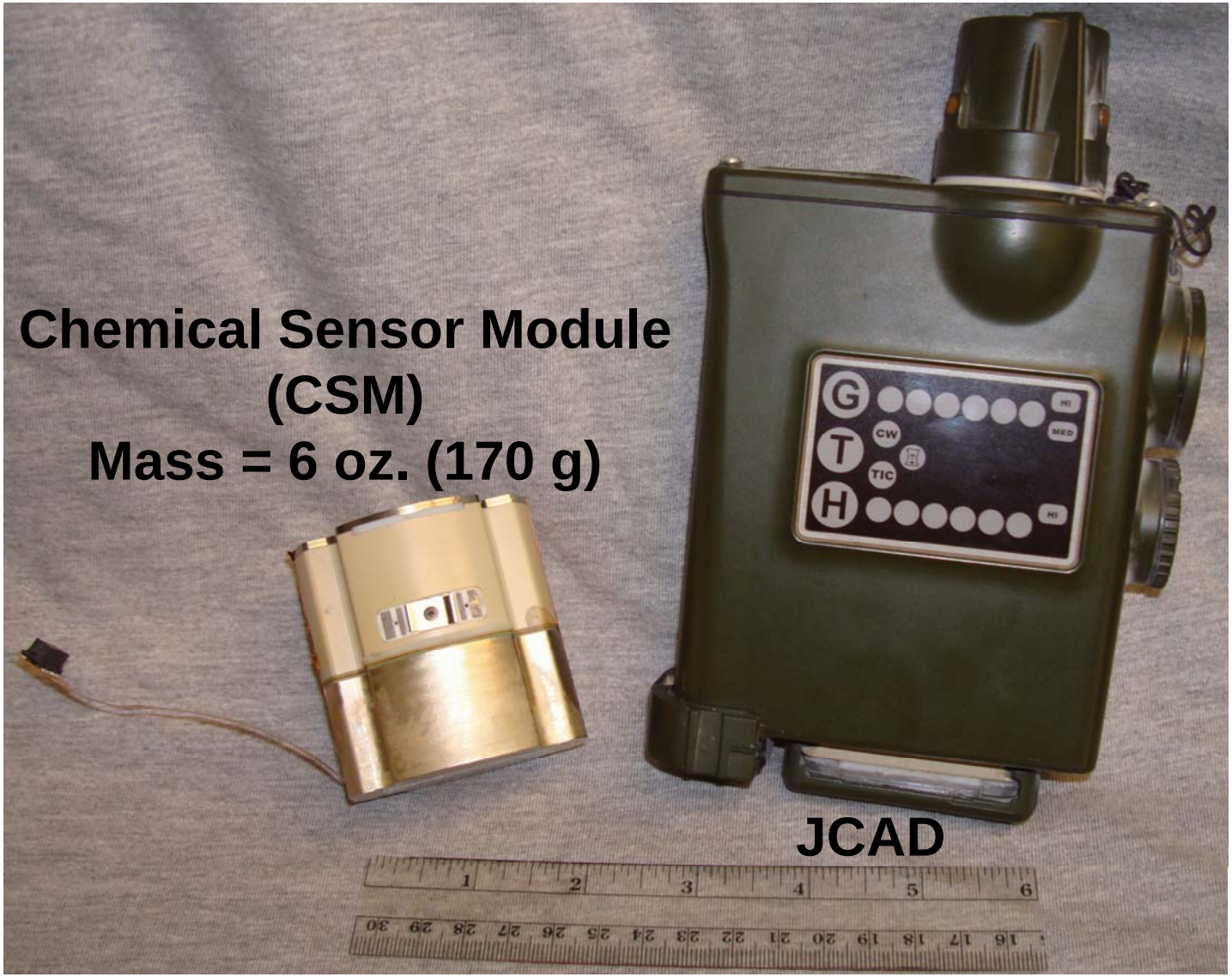


2009



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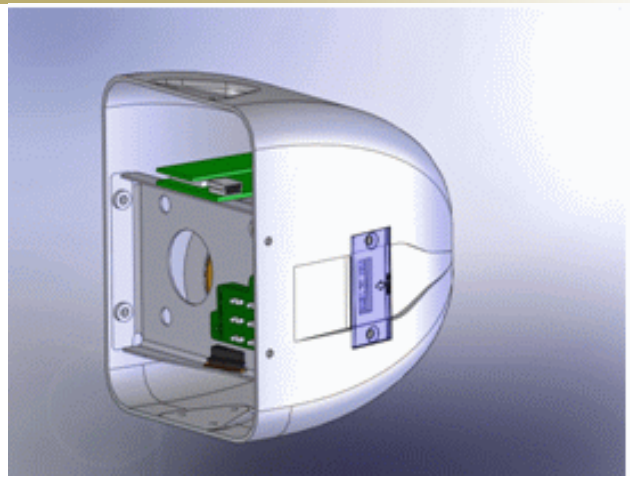

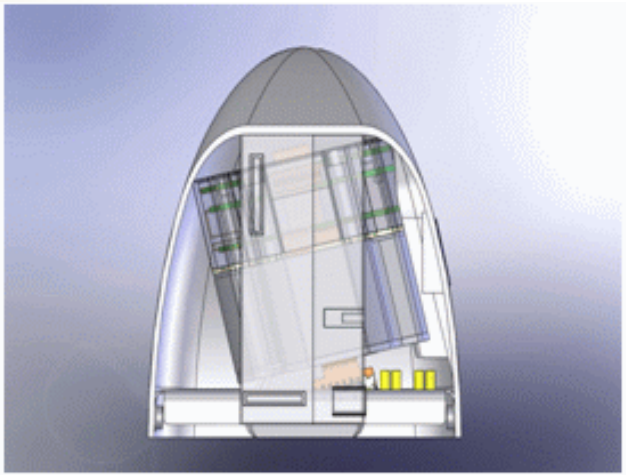

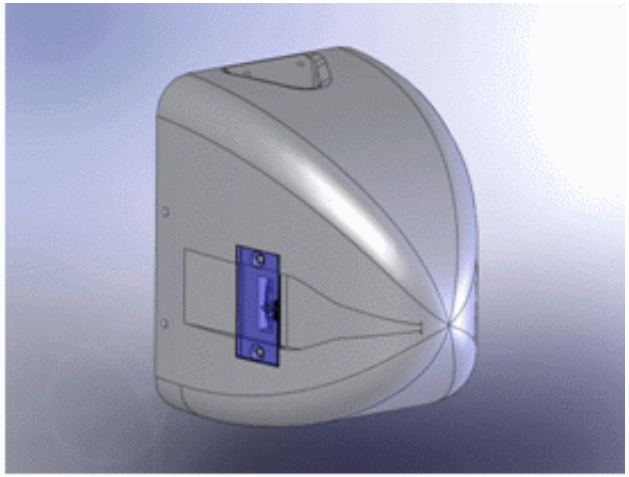

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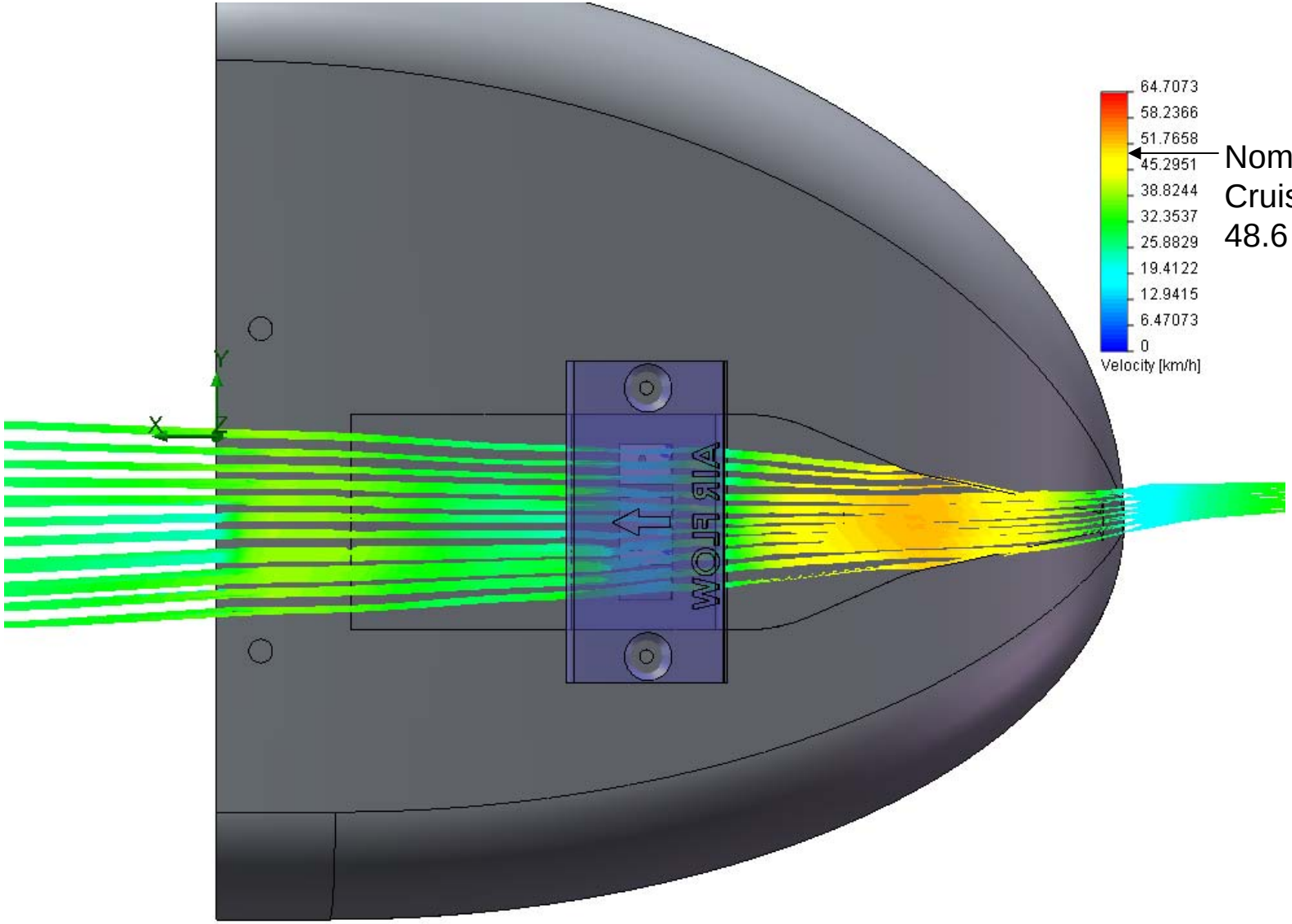

Nominal ChemRaven Cruise Speed = 48.6 km/hr (30.2 mph)

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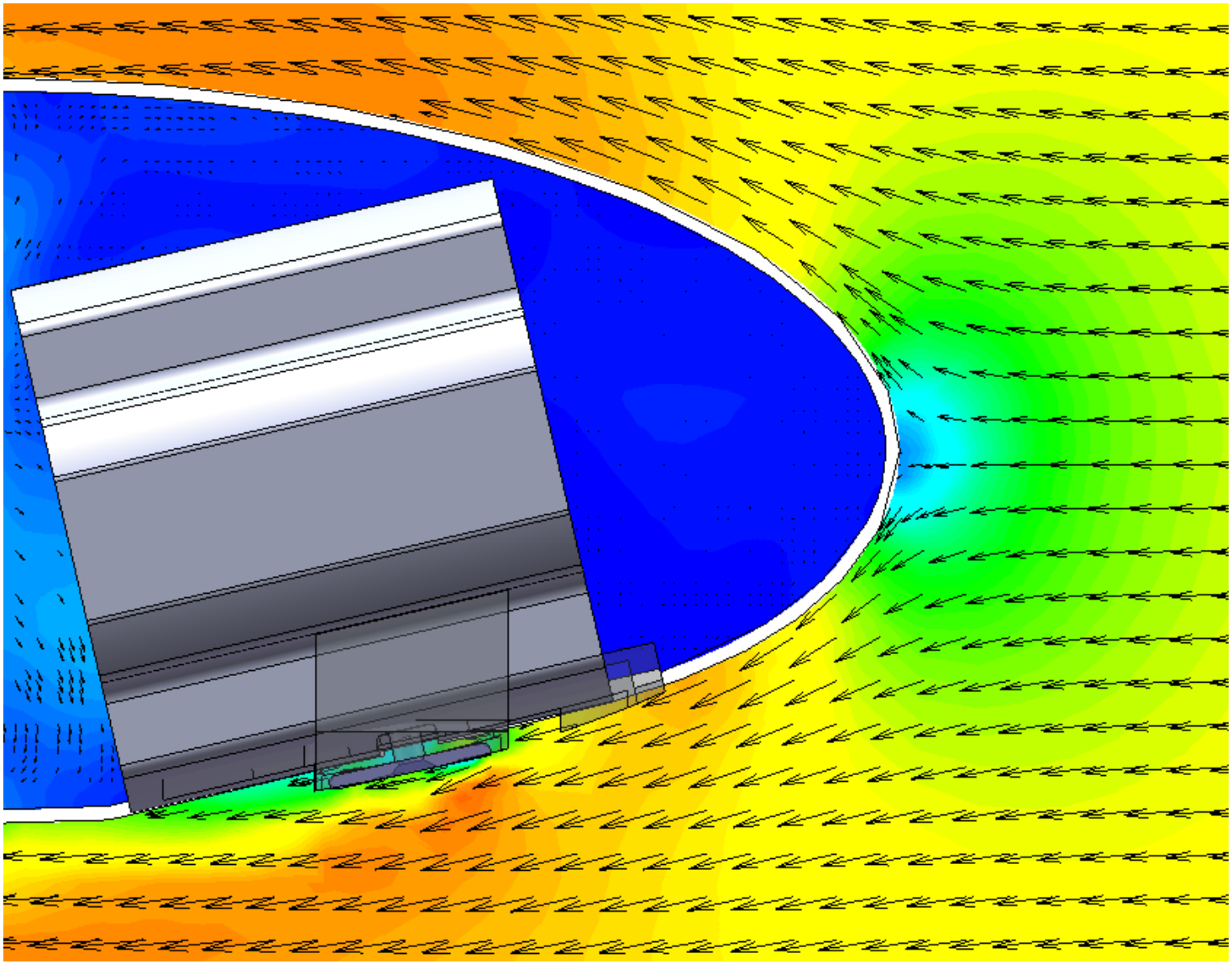
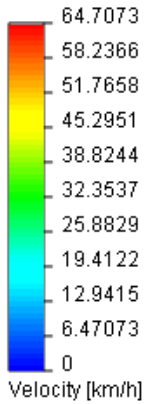


Top View



Vector Plot: Velocity [km/h]

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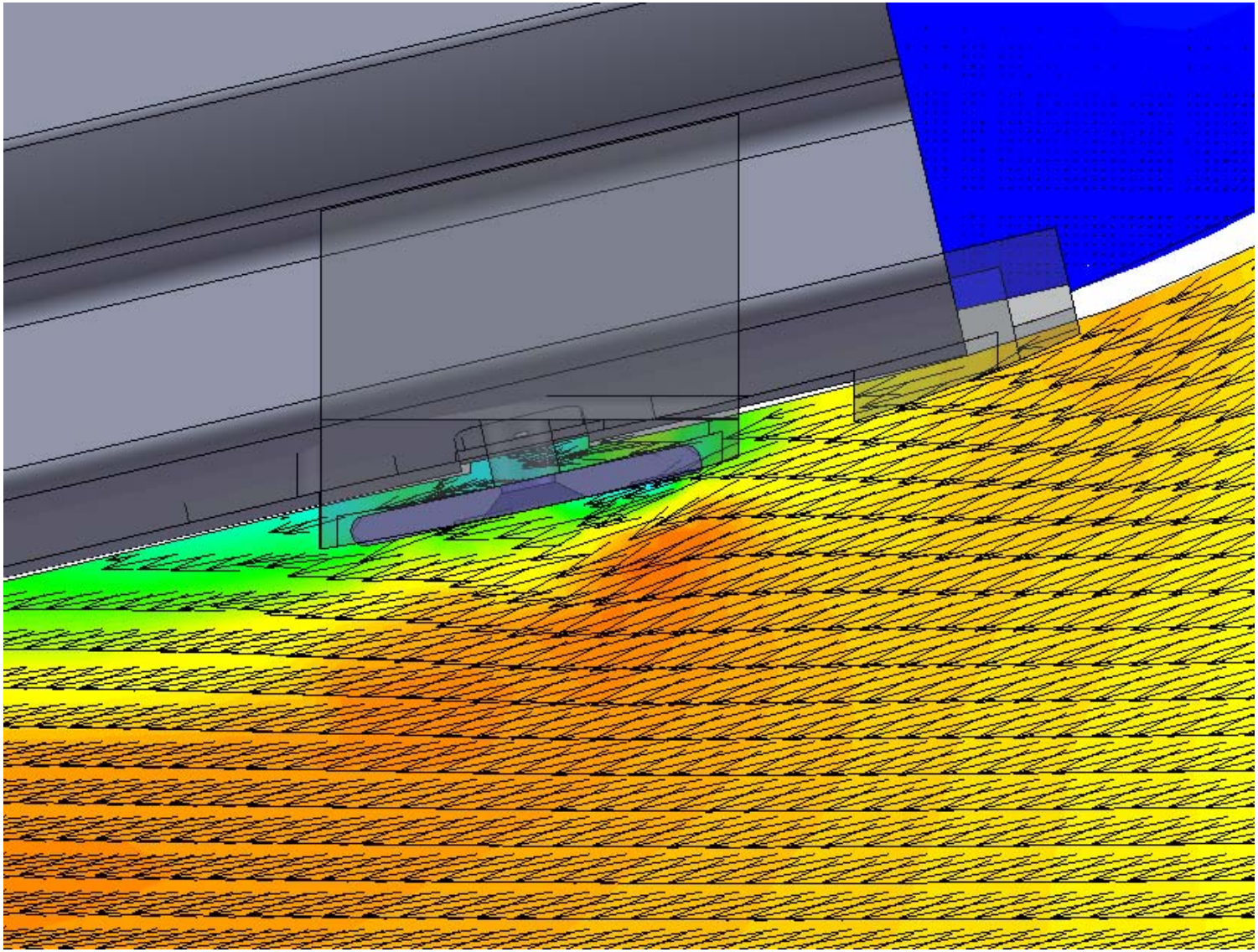

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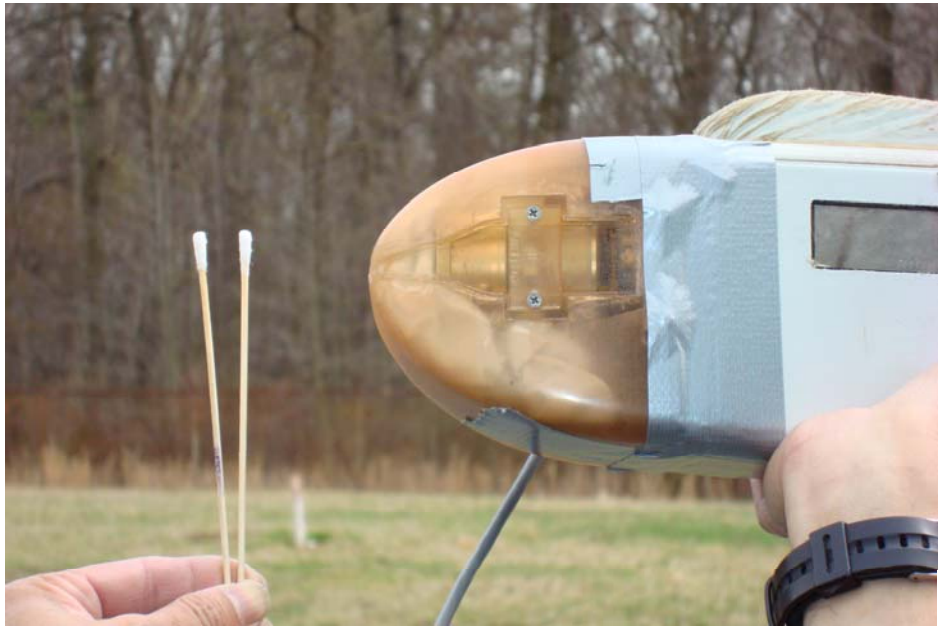

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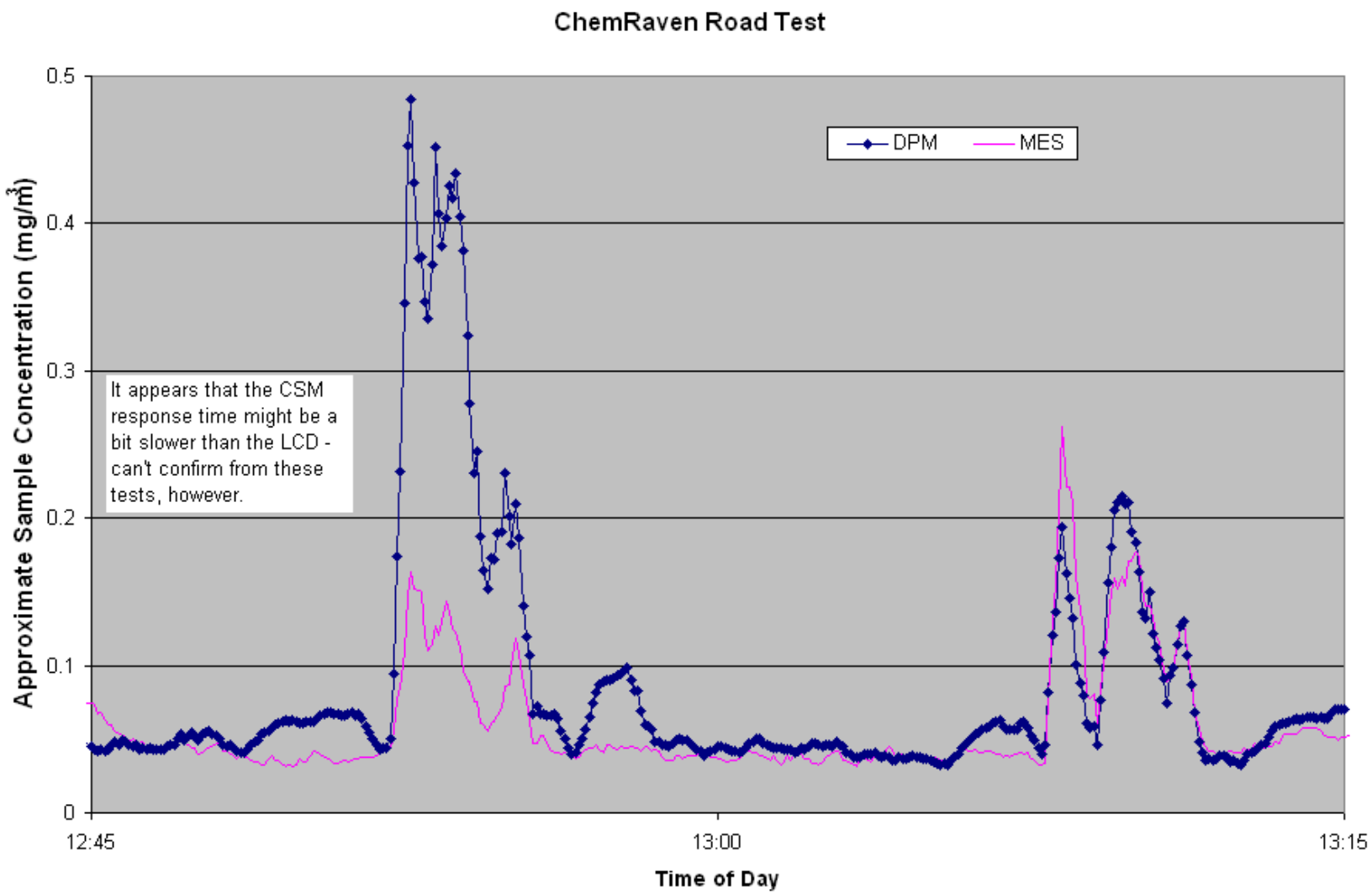

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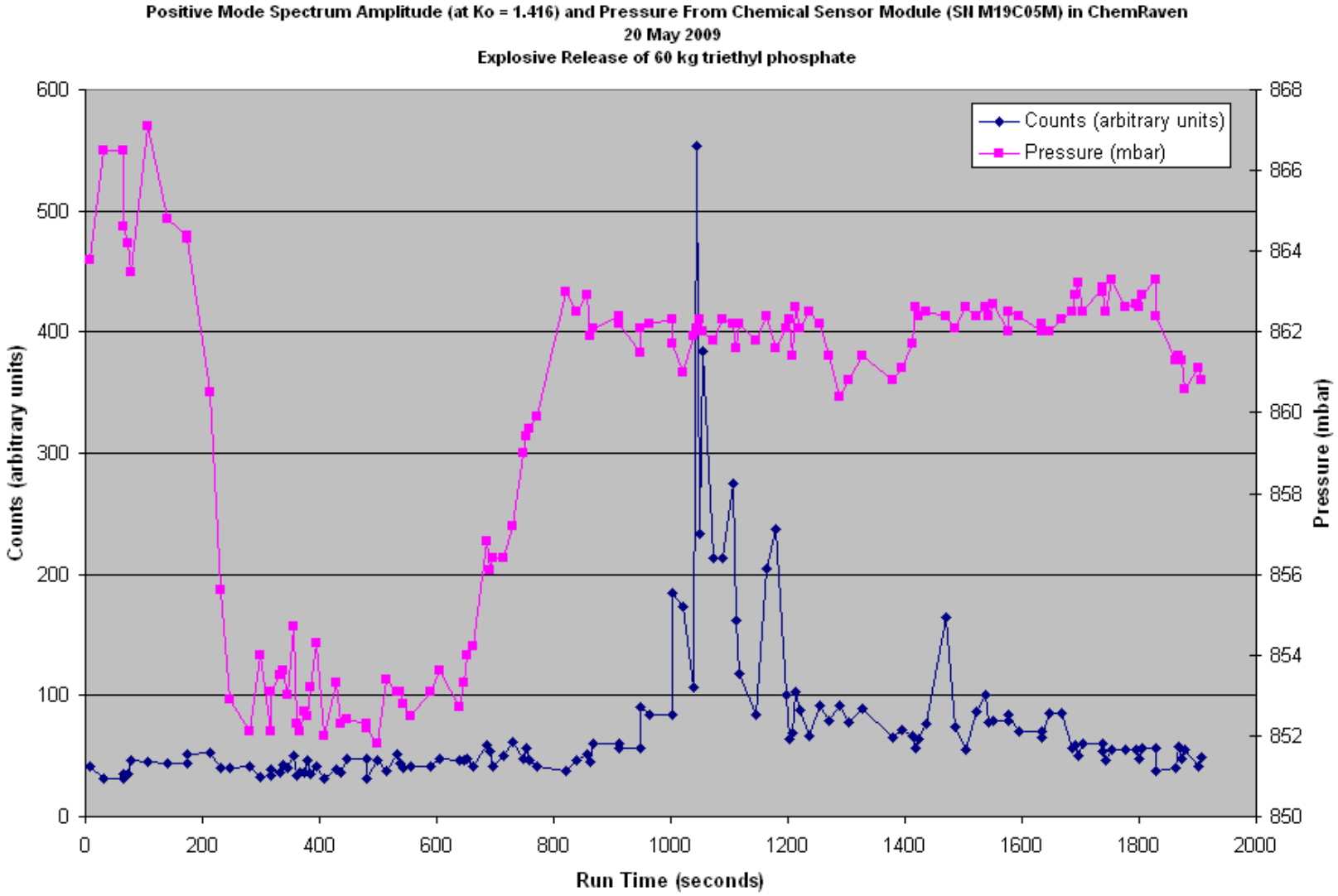

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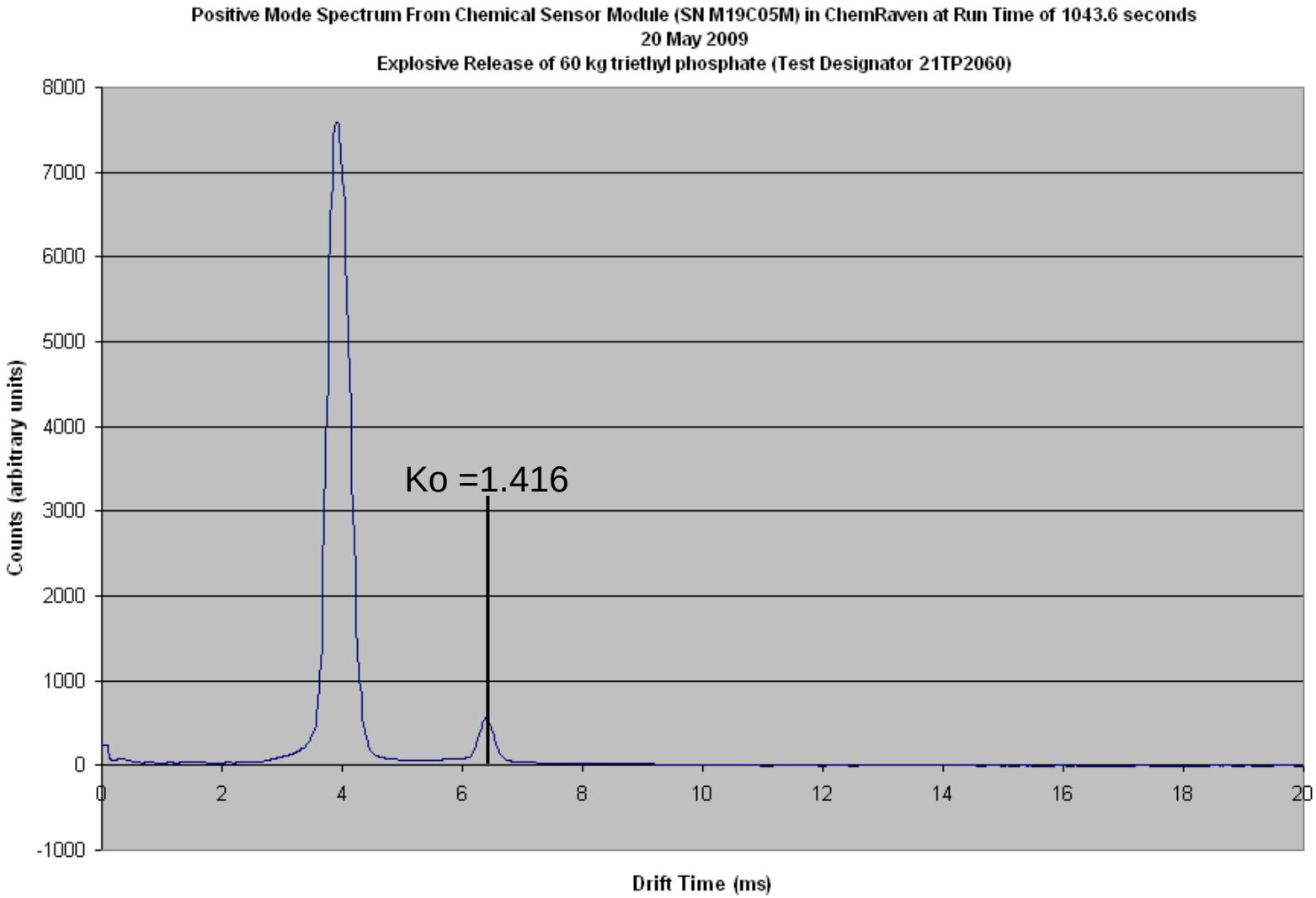

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