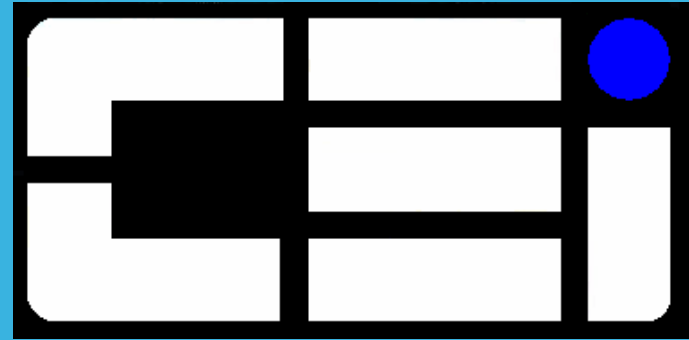


Composite Engineering Inc.

The High Performance
Aerial Target Company



Subsonic Aerial Target System (SSAT)

BACKGROUND

The Navy uses aerial targets as surrogates of Anti-Ship Cruise Missile (ASCM) threats to:

- Test the effectiveness of shipboard Air Defense systems
- Train Fleet forces in the use of Air-to Air Missile (AAM)
- Train Surface-to-Air Missile (SAM) systems.

The SSAT represents the subsonic class of ASCM threats in support of Test and Evaluation (T&E) of weapons systems acquisition programs.

KEY PERFORMANCE PARAMETERS

The Design Meets or Exceeds all KPP's

Key Performance Parameters	Threshold	Objective	SSAT Projected Performance
Maximum Speed at Low Altitude [Mach (M) at feet (ft) above wave crest at WMO Sea State (SS) conditions]	0.90 M @ 10.0 ft @ SS 3	0.95 M @ 6.6 ft @ SS 5	0.90M @ 6.6ft, 0.95M @ 10ft SS3
Minimum Altitude [ft above wave crest]	10.0 ft @ 0.90M @ SS 3	6.6 ft @ 0.95M @ SS 5	0.90M @ 6.6ft, 0.95M @ 10ft SS3
Maneuverability [Constant Gravitational Force (g)]	6.0 g @ 500 ft	8.0 g @ 500 ft	8.0 g @ 500 ft, 50% fuel
Maneuverability During Programmable Weave at Minimum Altitude and Maximum Speed [Instantaneous g]	1.0 - 6.0 g	1.0 - 8.0 g	1.0 - 8.0 g
Target Size Characteristics [inches] [Dimensions During Target Presentation] Length Diameter	149.0 - 258.0 inches 13.0 - 21.0 inches	No Objective Requirement	207 inches 19.6 inches
Radar Cross Section (RCS) Reduction [X-band, monostatic] [Decibels per square meter (dBsm)]±2 dBsm	[-14.6, -10.0, -3.0, 0.0 dBsm] ±2 dBsm	-17.0 dBsm ±2 dBsm	Threshold
Material Availability (A_M)	0.85	0.95	0.85

KEY SYSTEM ATTRIBUTES

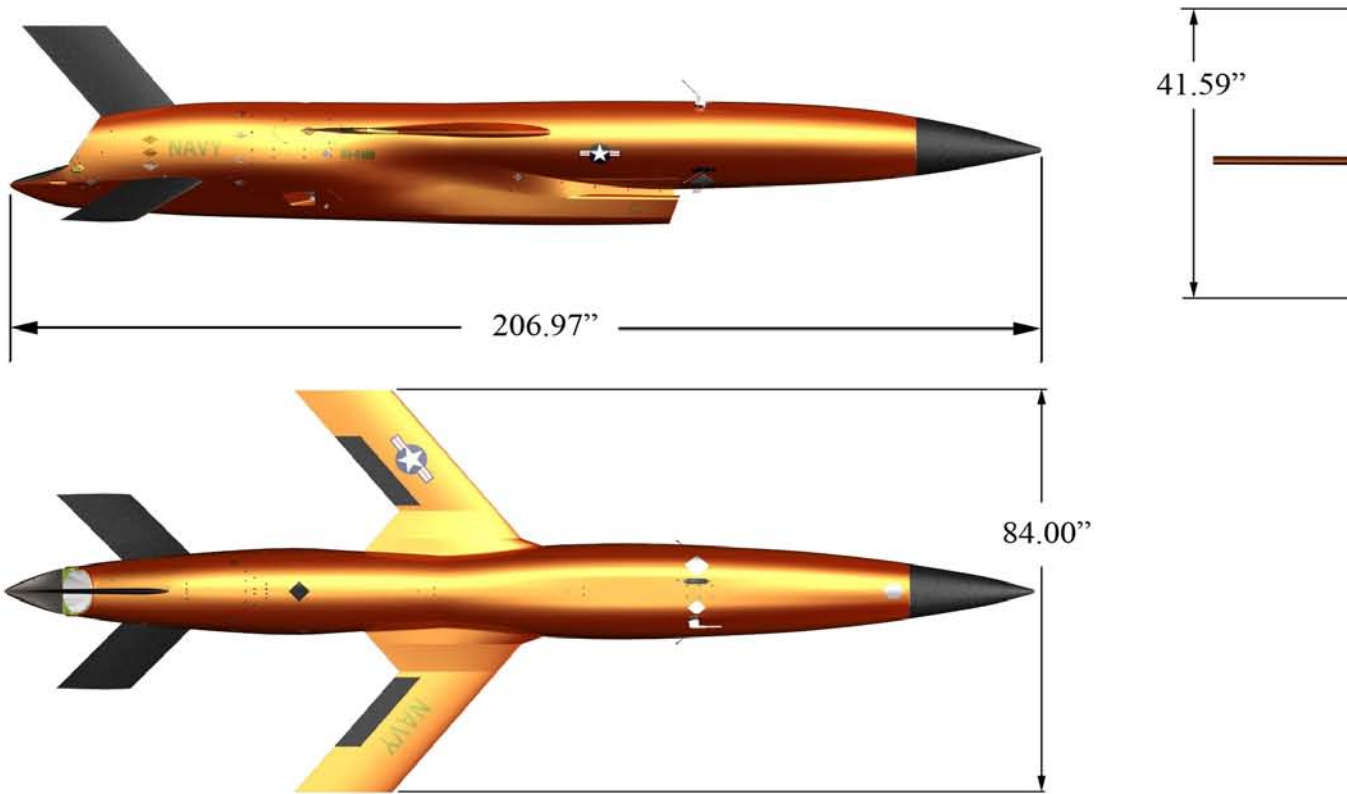
The Design Meets or Exceeds all KSA's

Key System Attributes	Threshold	Objective	SSAT Projected Performance
Reliability (R_M)	0.94	0.98	0.94
Range [nautical miles (nmi)] At most efficient speed at 20,000 ft (Kft) At 0.90M at 50.0 ft Above Ground Level (AGL)	300 nmi 150 nmi	400 nmi 200 nmi	400 nmi 200 nmi
Endpoint Accuracy [Fixed and Moving]	± 100 ft	± 25 ft	± 100 ft
Air Vehicle Retrieval Mode	Land and Sea	NR	Land and Sea
Service Life –Air Vehicle [number of flights (flts)]	20 flts	30 flts	30 flts
Turn-Around Cost [Fiscal Year (FY) 08 \$]	\$11,000	\$ 9,500	\$11,000

KEY VEHICLE SPECIFICATIONS

Length	207 inches
Wingspan	84 inches
Range	217 nmi @ 0.9M, 50 ft. (KPP); 576 nmi @ 400 KTAS, 20k ft. (KPP); 800+ nmi @ 30k ft.
Altitude	6.6 ft AGL – 45k ft MSL
Speed	0.45 – 0.96 Mach @ SL (KPP); Maximum: 1.1 Mach @ 40k ft. MSL
Endurance	120+ min. @ 30k ft.; 22 min @ 0.9M, 50 ft.
Dry Weight	531 – 653 lb.
Fuel Capacity	62 gal.
Max Launch Weight	1,350 lb. w/o RATOs
Engine Thrust	1,000 lb Static Sea level
Fuel	JP-8, JP-5, or Jet-A

OVERALL DIMENSIONS



TARGET SIZE COMPARISON

SSAT

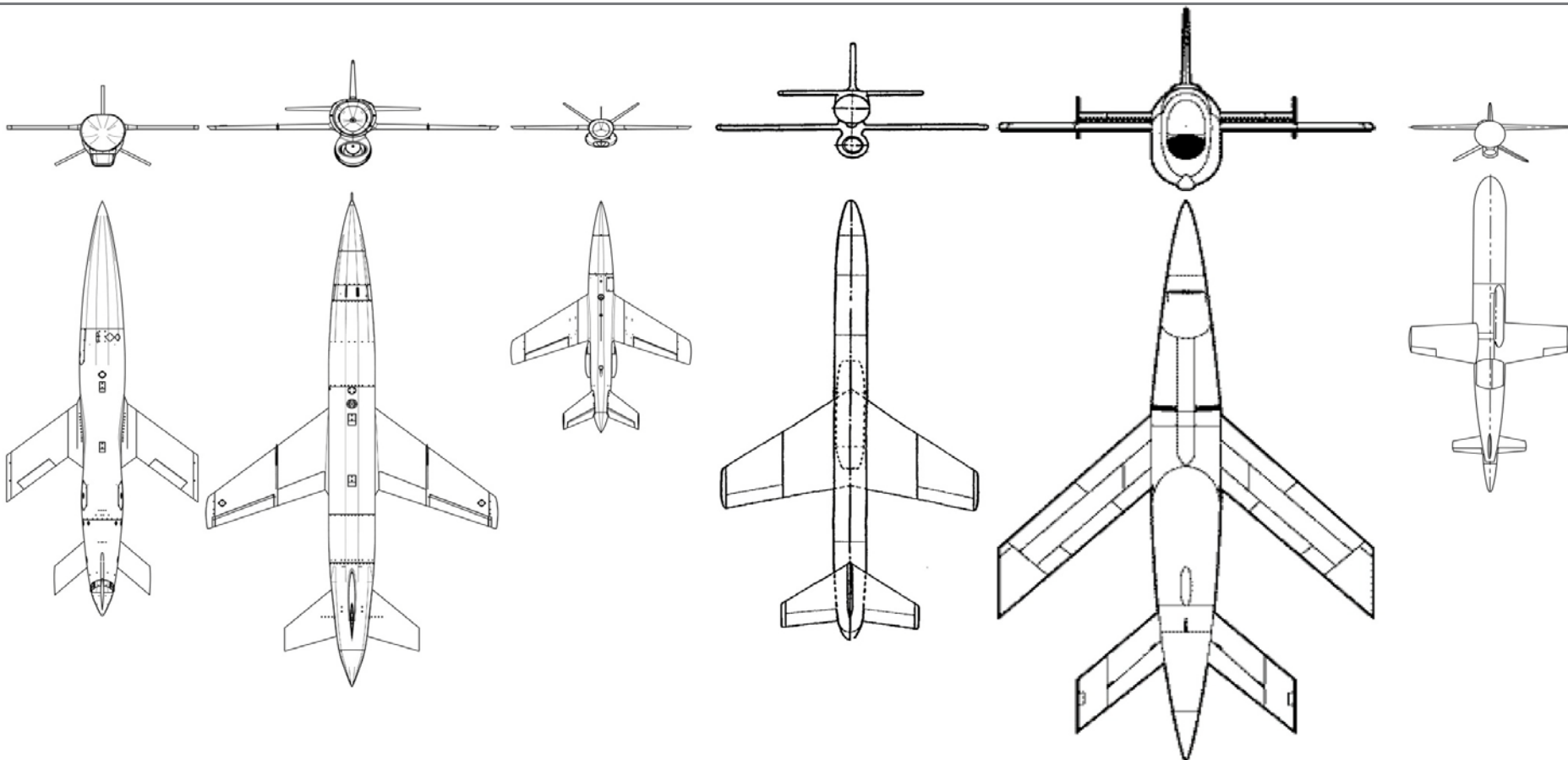
BQM-167A

FireJet

MQM-107

BQM-34

BQM-74



SSAT is the replacement for the BQM-74E and BQM-34S targets.

SURFACE LAUNCHER

- **The Combined Transport Launch Rail (CTLR) provides multiple functions:**
 - **Vehicle Transportation**
 - **Engine Run Test Stand**
 - **Launch Platform**
 - **Maintenance Platform**
- **RATO Assembly**
 - **Controlled, Predicable Separation**
 - **Insensitive to misalignment**
- **The RATO firing assembly is the same GFE as used for the BQM-74E**



Combined Transport Launch Rail (CTLR) Assembly



RATO Assembly



RATO Firing Assembly

FLOATATION / HELO TOW

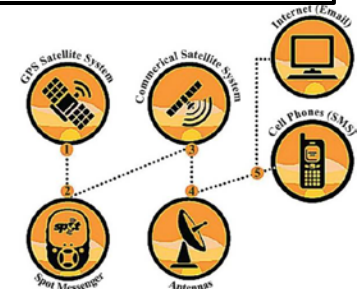
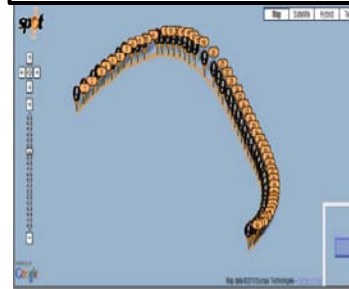
High strength Kevlar® retrieval loop integrated into a water activated flotation bag



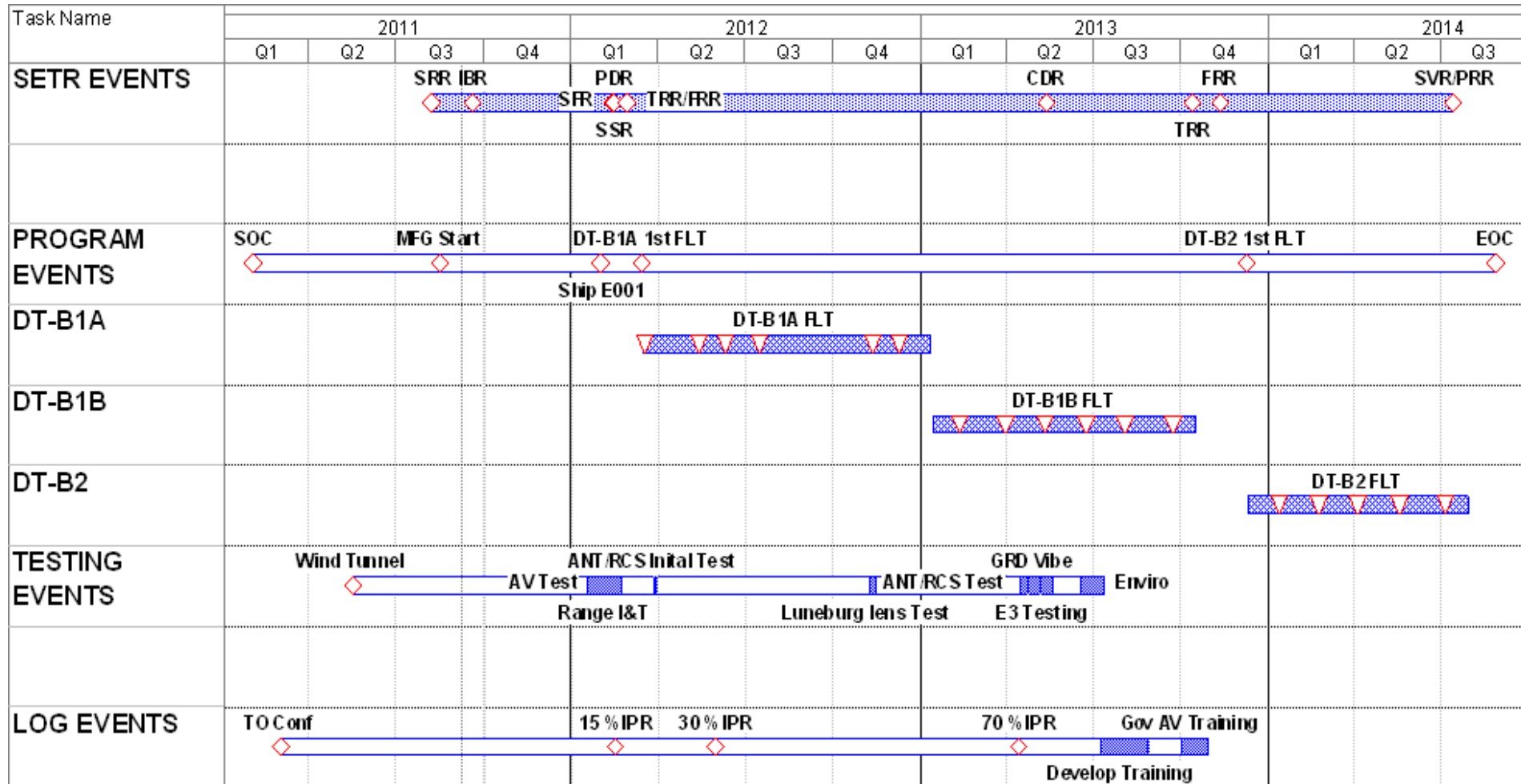
Attachment point provides good attitude for high speed towing- no need for a stabilizing chute



SPOT Personal Tracker with an internal battery mounted with our flotation bag



SSAT PROGRAM SCHEDULE



PROGRAM PROGRESS TO DATE

- **Completed - Systems Requirements Review (SRR) as part of the Systems Engineering Technical Review (SETR) Process**
 - **Completed - Wind Tunnel Testing**
 - **Completed - Aerobatic testing of the CEi Navigation System**
 - **85% complete - air vehicle design**
 - **95% complete - tooling designs**
 - **60% complete - composite tools fabrication**
 - **Began manufacturing of the first Test and Flight Targets**
 - **Began HW/SW Integration**
- 