

# TECHNOLOGY READINESS ASSESSMENT

**Document ID:** TRA-NORTHWIND-001

**System:** Sentinel-X

**Contractor:** Northwind Aerospace Corporation

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## 1.0 INTRODUCTION

This technology readiness assessment describes the Sentinel-X unmanned aerial system developed by Northwind Aerospace Corporation. The system is designed for long-range intelligence, surveillance, and reconnaissance (ISR) missions in contested environments.

## 2.0 PERFORMANCE CHARACTERISTICS

### *2.1 Range and Endurance*

The Sentinel-X achieves a maximum operational range of **2217 km** with standard fuel load. This exceeds the OVERWATCH program objective requirement. Mission endurance at optimal cruise altitude is 30 hours with 75% payload loading.

### *2.2 Payload Capacity*

Maximum payload capacity is **496 kg**, sufficient for a comprehensive ISR sensor suite. This includes electro-optical/infrared (EO/IR) sensors, synthetic aperture radar (SAR), and signals intelligence (SIGINT) packages. Center of gravity limits accommodate payload distribution from 25% to 35% mean aerodynamic chord.

### *2.3 Altitude Performance*

Service ceiling is 49,910 ft MSL, providing standoff capability in contested airspace. Optimal cruise altitude for ISR missions is 37,986 ft, balancing sensor performance with fuel efficiency.

## 3.0 SYSTEM DESCRIPTION

### *3.1 Airframe*

The airframe features a composite construction optimized for high-altitude performance. Wingspan is 24.9 meters with a length of 8.3 meters.

### **3.2 Propulsion**

Power is provided by a turbodiesel engine with 122 horsepower output. Fuel capacity is 565 liters.

### **3.3 Avionics and Control**

Flight control is provided by a redundant triple autopilot system with SATCOM data link. Navigation uses GPS with INS backup for GPS-denied operations.

## **4.0 REQUIREMENTS COMPLIANCE**

<b>&lt;b&gt;Requirement&lt;/b&gt;</b>	<b>&lt;b&gt;Threshold&lt;/b&gt;</b>	<b>&lt;b&gt;Objective&lt;/b&gt;</b>	<b>&lt;b&gt;Sentinel-X&lt;/b&gt;</b>	<b>&lt;b&gt;Status&lt;/b&gt;</b>
Range	1500 km	2000 km	2217 km	EXCEEDS OBJ
Payload	300 kg	400 kg	496 kg	EXCEEDS OBJ
Ceiling	45,000 ft	50,000 ft	49,910 ft	MEETS

## **5.0 SUMMARY**

The Sentinel-X represents a premium solution with superior performance characteristics. Performance specifications of 2217 km range and 496 kg payload capacity demonstrate strong alignment with OVERWATCH program needs.

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