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# SYSTEM DESIGN DOCUMENT

**Document ID:** SDD-ARCTURUS-002  
**System:** Aurora-P  
**Contractor:** Arcturus Dynamics International  
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## 1.0 INTRODUCTION

This system design document describes the Aurora-P unmanned aerial system developed by Arcturus Dynamics International. 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 Aurora-P achieves a maximum operational range of **1657 km** with standard fuel load. This meets the OVERWATCH program threshold requirement. Mission endurance at optimal cruise altitude is 32 hours with 75% payload loading.

### ***2.2 Payload Capacity***

Maximum payload capacity is **281 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 42,196 ft MSL, providing standoff capability in contested airspace. Optimal cruise altitude for ISR missions is 40,206 ft, balancing sensor performance with fuel efficiency.

## 3.0 SYSTEM DESCRIPTION

### ***3.1 Airframe***

The airframe features a composite construction optimized for payload capacity. Wingspan is 21.9 meters with a length of 9.5 meters.

### **3.2 Propulsion**

Power is provided by a heavy-fuel piston engine with 120 horsepower output. Fuel capacity is 435 liters.

### **3.3 Avionics and Control**

Flight control is provided by a redundant triple autopilot system with LOS 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;Aurora-P&lt;/b&gt;</b>	<b>&lt;b&gt;Status&lt;/b&gt;</b>
Range	1500 km	2000 km	1657 km	MEETS
Payload	300 kg	400 kg	281 kg	BELOW
Ceiling	45,000 ft	50,000 ft	42,196 ft	BELOW

## **5.0 SUMMARY**

The Aurora-P represents a specialized solution uniquely suited for extreme environment operations. Performance specifications of 1657 km range and 281 kg payload capacity demonstrate strong alignment with OVERWATCH program needs.

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