

UNCLASSIFIED // FOR OFFICIAL USE ONLY

TRADE STUDY REPORT

Document ID: TSR-MERIDIAN-001

System: Pathfinder-LR

Contractor: Meridian UAV Corporation

Date: 25 July 2024

1.0 INTRODUCTION

This trade study report describes the Pathfinder-LR unmanned aerial system developed by Meridian UAV 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 Pathfinder-LR achieves a maximum operational range of **1768 km** with standard fuel load. This meets the OVERWATCH program threshold requirement. Mission endurance at optimal cruise altitude is 35 hours with 75% payload loading.

2.2 Payload Capacity

Maximum payload capacity is **337 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 34% mean aerodynamic chord.

2.3 Altitude Performance

Service ceiling is 41,548 ft MSL, providing standoff capability in contested airspace. Optimal cruise altitude for ISR missions is 43,516 ft, balancing sensor performance with fuel efficiency.

3.0 SYSTEM DESCRIPTION

3.1 Airframe

The airframe features a composite construction optimized for endurance. Wingspan is 20.5 meters with a length of 11.3 meters.

3.2 Propulsion

Power is provided by a turbodiesel engine with 113 horsepower output. Fuel capacity is 732 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

Requirement	Threshold	Objective	>Pathfinder-LR	Status
Range	1500 km	2000 km	1768 km	MEETS
Payload	300 kg	400 kg	337 kg	MEETS
Ceiling	45,000 ft	50,000 ft	41,548 ft	BELOW

5.0 SUMMARY

The Pathfinder-LR represents a next-generation solution with growth potential beyond current requirements. Performance specifications of 1768 km range and 337 kg payload capacity demonstrate strong alignment with OVERWATCH program needs.

UNCLASSIFIED // FOR OFFICIAL USE ONLY