

ATB Technical Report — SDC & COMMS Program

Document ID: ATB-2025-10-SDC-OPTICAL-TERABIT-INTEGRATION-01

Executive Summary

This document summarizes the engineering framework for achieving ≥ 1 Tbps optical throughput between GEO clusters and LEO relays through SpaceX Starlink V3 and Amazon Kuiper optical inter-satellite links. It integrates prior SDC & COMMS architecture, MECSAI control logic, and NASA MCP compliance into one operational concept for multi-provider, redundant optical networking.

Routing Memorandum

TO: ATB Board (SYS-SAFE, ICS-SEC, RELIAB, HFX, STRUCT)
CC: ARCHITECT, MECHWORK, CODEWRITE, MECSAI
FROM: SDC & COMMS Program Office (Gary Spear / "Sam")
DATE: October 21 2025

Subject — Transmission of ATB-2025-10-SDC-OPTICAL-TERABIT-INTEGRATION-01 for Quality-First Gate Review per NASA-STD-7009.

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