



LAUNCHERONE NOW IN ORBIT:

Dedicated Air-Launch Brings Proven, Responsive Space Access with Historic NASA VCLS Demonstration Mission

35th Annual AIAA/USU
Conference on Small Satellites
SSC21-IV-05



Virgin
ORBIT

FLIGHT TEST

Virgin

NASA VCLS Payload Processing Activities in Long Beach & Mojave



NASA VCLS MISSION SUCCESS



MISSION ACCOMPLISHMENTS

SUCCESSFUL ORBITAL MISSION

EXECUTED PROVEN LAUNCH OPERATIONS

AUTONOMOUS FLIGHT SAFETY SYSTEM

IN-AIR IGNITION AND STEADY STATE
OPERATION OF MAIN STAGE ENGINE

CONTROLLED FLIGHT THROUGH ASCENT

NOMINAL STAGE AND FAIRING SEPARATION

IGNITION, STEADY STATE OPERATION,
AND RELIGHT OF UPPER STAGE ENGINE

TELEMETRY LOCK THROUGHOUT MISSION

ACCURATE ORBITAL INSERTION

CONTROLLED POST BOOST ON ORBIT
ACTIVITIES AND THERMAL ROLL

NOMINAL PAYLOAD DEPLOYMENT



Long Beach Rocket Factory: The Engine of a Global Launch Operation



THE WORLD'S FIRST TRULY GLOBAL SPACE SOLUTION



1

***REACH
ANY ORBIT***

2

***ASSURED
ACCESS***

3

***CREATING
SPACEFARING
NATIONS***



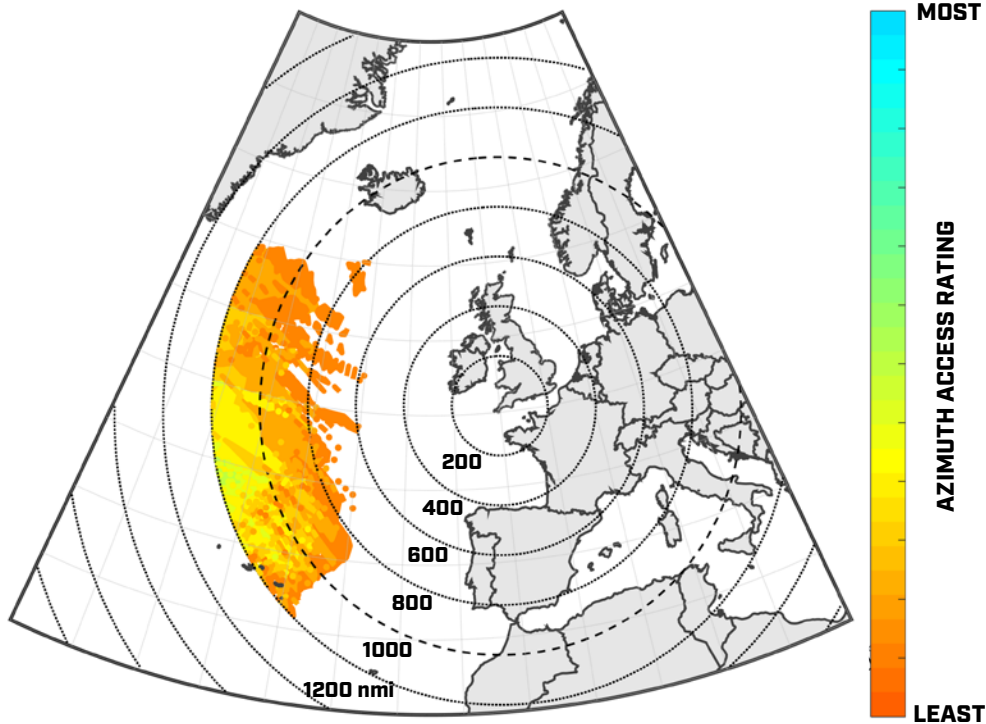
LAUNCHERONE AT THE G7 SUMMIT



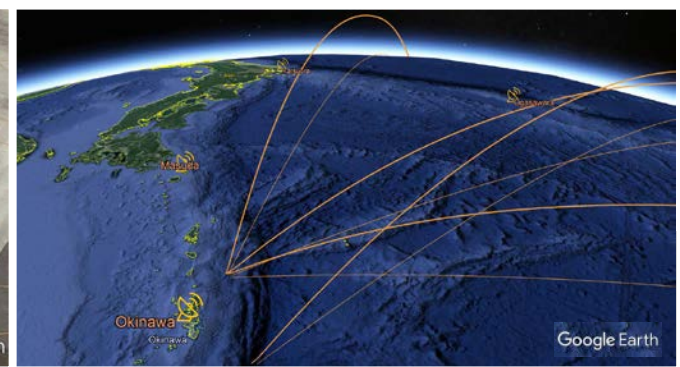
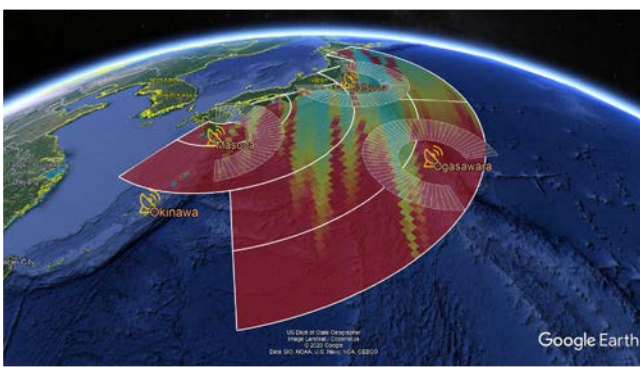
CORNWALL, UK



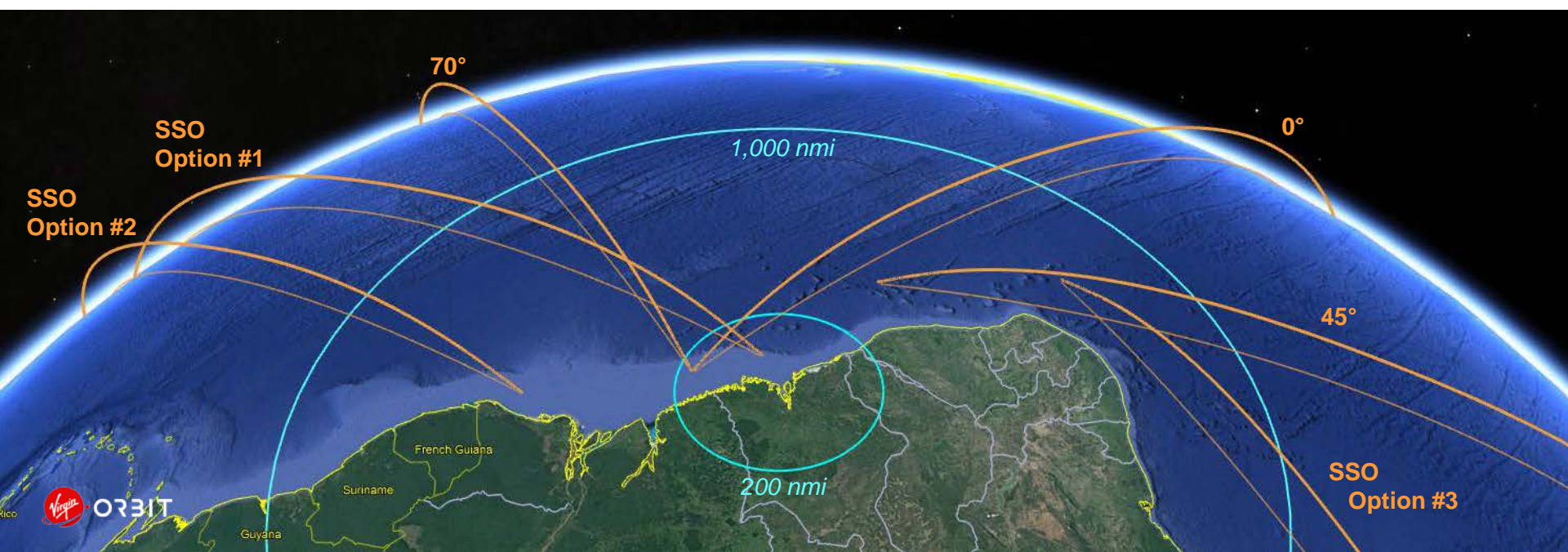
SPACEPORT CORNWALL – REGIONAL ANALYSIS FOR INC $\leq 60^\circ$



- ❑ Westward release sites can support launch to many inclinations and azimuths
- ❑ Telemetry coverage by ground assets also warrants initial selection of release sites near Santa Maria, located at a range of 1,200 nmi from Spaceport Cornwall
- ❑ Regions with most azimuth access are to the southwest, at about 45°N latitude



OITA PARTNERS WITH VIRGIN ORBIT TO ESTABLISH FIRST HORIZONTAL SPACEPORT IN ASIA



WANTED: VACANT RUNWAY APRONS.



We'll Bring the Rest.

LAUNCHERONE: NOW IN ORBIT

- LauncherOne's successful NASA VCLS ELaNa 20 mission: the first ever orbital-class liquid air-launched vehicle, enabled with autonomy and with a completely mobile operational footprint
- All customer payloads deployed at precise injection, with all internal requirements achieved
- LauncherOne is now fully flight-qualified after a world-class staff skilled in all aspects of vehicle design, qualification, operations, business, and program management was assembled from scratch
- The LauncherOne production facility, a factory of the future, was conceived and built to produce LauncherOne vehicles at high rate and low cost
- Several major spaceport initiatives with active work underway to build a truly global launch network. Activities roaring ahead at Mojave, Guam, Cornwall, Japan, and now Brazil
 - **More Mojave launches upcoming in 2021**
 - **First Guam as well as Cornwall launches slated for 2022**
 - **Oita, Japan and potentially Brazil launches to be ready as soon as late 2022**
 - **Other exciting news on the way**
- LauncherOne: The foundation of a Responsive Space ecosystem