

CARTOGRAPHIC SYMBOLS

	Telecommunications cable position, in-service/Out of service/Planned (as-found in magenta)
	Pipeline position, in-service/Out of service/Planned (as-found in magenta)
	Power cable position, in-service/Out of service/Planned (as-found in magenta)
	Maritime boundaries
	Restricted zones and special areas
	Concession block

BATHYMETRY

Bathymetric contours in metres. Contour interval may be reduced to aid in clarity. Downslope gradient in degrees (°) as measured over the shortest significant distance.

Approximate limit of swath bathymetry coverage (shown only in areas of flat seabed)

SEABED FEATURES

	Isolated sonar contact with reference number (length x width x height in metres where measurable; n/m = no measurable height)
	Linear sonar contact, dashed where partially buried
	Pipeline contact determined by seismic profiling system with reference number and description (level at the top of pipeline is stated in metres, +/- equivalent to above or below ambient seabed)
	Unidentified magnetic anomaly with reference number and amplitude (in nano-Tesla)
	Cable/Pipeline position, as determined by magnetometer, with reference number and amplitude (in nano-Tesla)
	Submerged wreck with reference no. (length x width x height in metres where measurable)
	Gravely core (GC), Grab sample (GS) location with reference number
	MiniCPT (C) location with reference number
	Small ROCK outcrop with height in metres (D) in metres, where discernible
	Seabed depression or pocket with diameter (D) and depth (D) in metres, where discernible
	General orientation of sandwave crest (heights on the side where observable, with wavelength and height in metres)
	Orientation of megaridge crest (heights on the side where observable, with wavelength and height in metres)
	Orientation of current lineation (fault with depth below seafloor (heights on footwall))

CHART COMMENT

Cable and Pipelines
Segment EURSTUB runs sub-parallel to the route in the chart.

Hazards and Obstructions
Podmarks are scattered within the survey corridor in the chart. Seabed scars are locally observed within the survey corridor. Fifty-eight (58) unknown magnetic contacts, eleven (11) sonar contacts and three seismic contacts (3) are identified in the survey corridor. One four-point is charted in the central portion of the chart. The route exits the "monitoring area" in the middle of the chart. The security zone and several hazardous areas of soil ground, dredged material, and HODDS disposal sites are mapped in the southern portion of the chart. The route runs within the United States Territorial Sea.

GENERAL NOTES

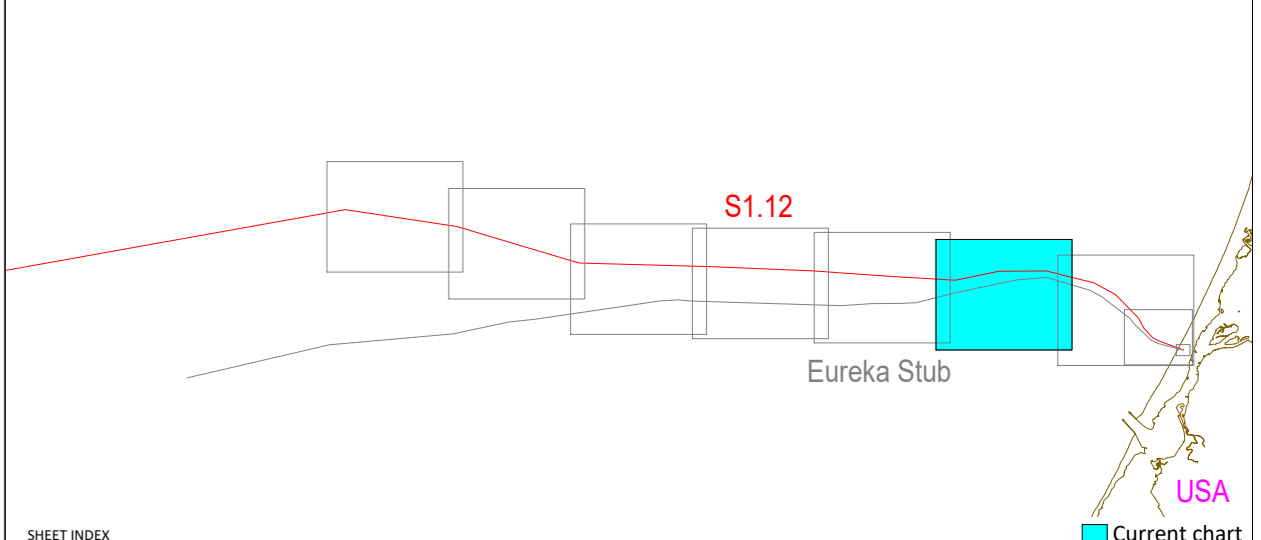
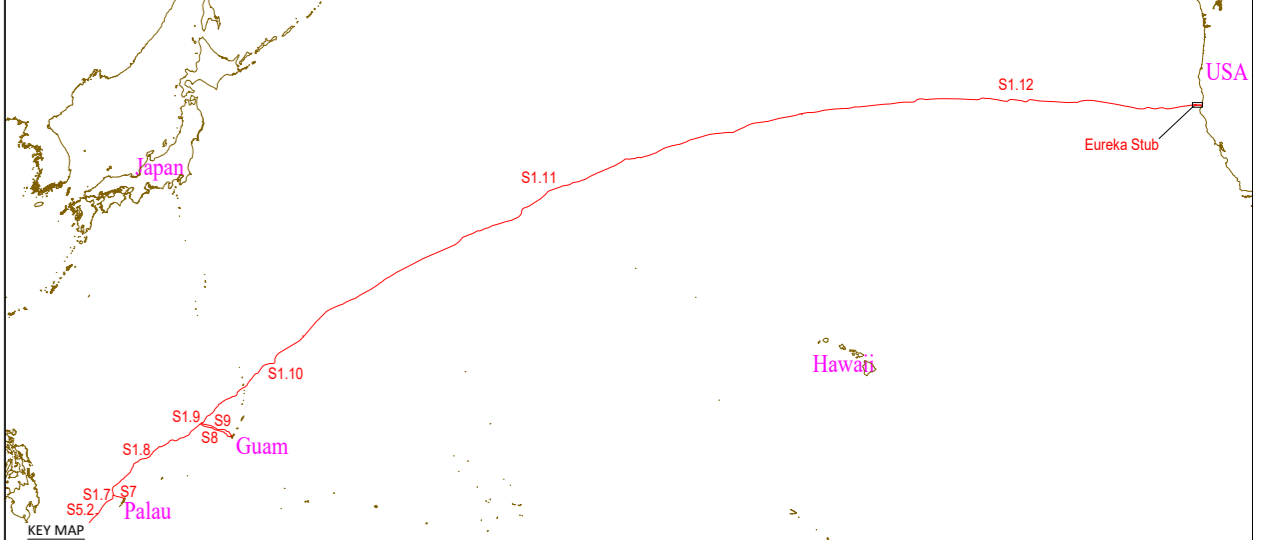
	INDOCHINA	SHALLOW AND DEEP WATER	SHALLOW AND DEEP WATER
Survey vessel	RV JAG	RV Bold Explorer	RV Geo Resolution
Surface positioning system	C-Nav 2020 DGPS System	Kongsberg Seatrak 380 System	Octopus 3185-GPS
Underwater positioning system	QINSY Navigation System	Versipos DGPS System	Versipos DGPS
Bathymetry	R2SONICS 2024 MBES	Kongsberg HYPAP 502 USBL	Kongsberg HYPAP 502F USBL
Morphology and stratigraphy	Edgetech 4200 SSS	Edgetech 2000 DSS	Edgetech TVD 2000
Magnetometer survey	C-Boom Low Voltage Boomer System	Geomatrix 882	Geomatrix 882
Target burial depth:	1.5m up to 1500W	1.5m up to 1500W	1.5m up to 1500W
Descriptive terms and definitions:	The criteria used for interpretations and descriptions are presented in survey reports.		

GEODETIC PARAMETERS

Ellipsoid parameters		Projection parameters		Scale factor	
Ellipsoid	WGS84	Projection	Mercator	Scale factor	1
Semi-major axis (a) (m)	6378137.000	Longitude of origin	180°W	False easting	10 000 000
Inverse flattening (1/f)	298.257223563	Standard parallel	33°N	False northing	5 000 000

VERTICAL DATUM

In landfall and offshore survey charts:
Bathymetry data has been reduced to Lowest Astronomical Tide (LAT) - using tidal predictions from the National Oceanographic and Atmospheric Agency (NOAA) - SAILNET Humboldt Bay, North Spit, CA.
In shallow water survey charts:
Bathymetry data has been reduced to Lowest Astronomical Tide (LAT) - using tidal predictions from the Admiralty Tide Tables North Pacific Ocean Volume 8, 2020 - 9248 Trinidad Head and 9270 North Spit (2020). National Oceanographic and Atmospheric Agency (NOAA) - SAILNET Humboldt Bay, North Spit, CA (2021 Re-Routed).
No tidal reduction was applied to soundings deeper than 1800m.



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Survey date: June - July 2020, Aug - Sep 2021

Scale: **NATURAL SCALE 1 : 10,000 at 33°N**

(At mid latitude of chart)
TRUE SCALE 1 : 9025.13

Contractor: **NEC Corporation** / **EGS Survey Group**

Project name: **ECHO Submarine Cable System Marine Route Survey**

Document title: **Segment 1.12(Eureka to BU11) NORTH UP CHART Chart No. 004 of 050 (KP 8.77 - KP 17.55)**

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Rev Date Prepared by Checked by Approved by

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Provisional