

◆ SENSITIVE // FOR OFFICIAL USE ONLY ◆

MARITIME INTELLIGENCE DOSSIER

Area of Interest Report — GULF OF KUTCH



FIGURE 1 — Full-scene SAR false-colour composite. $R=VV \cdot G=VH \cdot B=Depol \text{ ratio}$. Circles mark all SAR detections.

MISSION ID	MISSION_GULF_OF_KUTCH_20260401T162155
AOI	GULF OF KUTCH
SCENE TIME	2026-04-01 16:21 UTC
TOTAL DETECTIONS	10
DARK VESSELS	0
UNCERTAIN	10
AIS MATCHED	0

PRODUCED	2026-05-26T16:21:11Z
----------	----------------------

SECTION 01

Detection Summary

Scene acquired over **GULF OF KUTCH** on **2026-04-01 at 16:21 UTC**. Sentinel-1A IW GRD processed through the Dark Ships 5-phase calibration and YOLO detection pipeline. 10 vessel(s) resolved above confidence threshold.

ID	LAT	LON	CONF	STATUS	MMSI
DET-2026040116-GULF-000	4.7230	99.4748	65%	UNCERTAIN (AIS DATA GAP)	—
DET-2026040116-GULF-001	4.1663	100.6406	56%	UNCERTAIN (AIS DATA GAP)	—
DET-2026040116-GULF-002	5.5081	100.3746	46%	UNCERTAIN (AIS DATA GAP)	—
DET-2026040116-GULF-003	5.6913	100.3552	45%	UNCERTAIN (AIS DATA GAP)	—
DET-2026040116-GULF-004	4.5260	100.6265	45%	UNCERTAIN (AIS DATA GAP)	—
DET-2026040116-GULF-005	5.4580	100.3093	44%	UNCERTAIN (AIS DATA GAP)	—
DET-2026040116-GULF-006	5.4766	100.2535	42%	UNCERTAIN (AIS DATA GAP)	—
DET-2026040116-GULF-007	6.2610	100.1936	39%	UNCERTAIN (AIS DATA GAP)	—
DET-2026040116-GULF-008	5.2526	100.2696	39%	UNCERTAIN (AIS DATA GAP)	—
DET-2026040116-GULF-009	5.4551	100.3219	38%	UNCERTAIN (AIS DATA GAP)	—

SECTION 02

Per-Vessel Intelligence

Each vessel card below shows the SAR chip, AIS status, and fused confidence score.

Vessel #1 · UNCERTAIN (AIS DATA GAP) · DET-2026040116-GULF-000

[chip not available]

Lat: 4.7230°N

Lon: 99.4748°E

Conf: 65%

MMSI: —

Det ID:

DET-2026040116-GULF-000

Vessel #2 · UNCERTAIN (AIS DATA GAP) · DET-2026040116-GULF-001

[chip not available]	Lat: 4.1663°N
	Lon: 100.6406°E
	Conf: 56%
	MMSI: —
	Det ID:
	DET-2026040116-GULF-001

Vessel #3 · UNCERTAIN (AIS DATA GAP) · DET-2026040116-GULF-002

[chip not available]	Lat: 5.5081°N
	Lon: 100.3746°E
	Conf: 46%
	MMSI: —
	Det ID:
	DET-2026040116-GULF-002

Vessel #4 · UNCERTAIN (AIS DATA GAP) · DET-2026040116-GULF-003

[chip not available]	Lat: 5.6913°N
	Lon: 100.3552°E
	Conf: 45%
	MMSI: —
	Det ID:
	DET-2026040116-GULF-003

Vessel #5 · UNCERTAIN (AIS DATA GAP) · DET-2026040116-GULF-004

[chip not available]	Lat: 4.5260°N
	Lon: 100.6265°E
	Conf: 45%
	MMSI: —
	Det ID:
	DET-2026040116-GULF-004

Vessel #6 · UNCERTAIN (AIS DATA GAP) · DET-2026040116-GULF-005

[chip not available]	Lat: 5.4580°N
	Lon: 100.3093°E
	Conf: 44%
	MMSI: —
	Det ID:
	DET-2026040116-GULF-005

Vessel #7 · UNCERTAIN (AIS DATA GAP) · DET-2026040116-GULF-006

[chip not available]	Lat: 5.4766°N
	Lon: 100.2535°E
	Conf: 42%
	MMSI: —
	Det ID:
	DET-2026040116-GULF-006

Vessel #8 · UNCERTAIN (AIS DATA GAP) · DET-2026040116-GULF-007

[chip not available]	Lat: 6.2610°N
	Lon: 100.1936°E
	Conf: 39%
	MMSI: —
	Det ID:
	DET-2026040116-GULF-007

Vessel #9 · UNCERTAIN (AIS DATA GAP) · DET-2026040116-GULF-008

[chip not available]	Lat: 5.2526°N
	Lon: 100.2696°E
	Conf: 39%
	MMSI: —
	Det ID:
	DET-2026040116-GULF-008

Vessel #10 · UNCERTAIN (AIS DATA GAP) · DET-2026040116-GULF-009

[chip not available]	Lat: 5.4551°N
	Lon: 100.3219°E
	Conf: 38%
	MMSI: —
	Det ID:
	DET-2026040116-GULF-009

SECTION 03

Technical Methodology & Chain of Custody

ACQUISITION

Sentinel-1A IW GRD downloaded from Copernicus Data Space Ecosystem (CDSE).

CALIBRATION

ESA SNAP GPT 6-step chain: orbit → thermal noise removal → radiometric calibration → multilook → terrain correction (SRTM 1Sec) → dB conversion. Output: Sigma-0 dB GeoTIFF, 10 m GSD.

DETECTION

YOLOv8 ship detector (xView3-SAR + SARFish training set). Conf threshold 0.35. CFAR secondary validation (128×128 guard, 5 dB above local mean).

AIS FUSION

Cross-reference within 2 km / ±30 min of scene midpoint. Dark = no AIS. Uncertain = AIS gap at acquisition time.
Matched = confirmed transponder.

FALSE COLOUR

Chip extraction: VV→R, VH→G, (VV–VH)→B, 300×300 px per vessel, 10 m native resolution.

MISSION ID	MISSION_GULF_OF_KUTCH_20260401T162155
REPORT PRODUCED	2026-05-26T16:21:11Z
PIPELINE	Dark Ships v1.0 · Phase 3 Validated (2026-04-13)
VESSELS IN REPORT	10
CLASSIFICATION	SENSITIVE — INTELLIGENCE PRODUCT