

## Geodetic Datum of Indonesian Maritime Boundaries: Status and Problems

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## Indonesia and its Neighboring Countries



10 countries

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### Status of Indonesia's Maritime Boundary Treaties (1)

Border Country	Type of Boundary	Date (dd-mm-yr)	
		Signing	Ratification
Singapore	Territorial Sea	25-05-73	29-08-74
	Territorial Sea	17-03-70	08-10-71
Malaysia	Continental Shelf (3)	27-10-69	07-11-69
	Continental Shelf (+ Thailand)	21-12-71	16-07-73
	EEZ (Economic Exclusive Zone)	not yet	not yet
Vietnam	Continental Shelf	26-06-03	not yet
	EEZ (Economic Exclusive Zone)	not yet	not yet
Philippines	Continental Shelf	not yet	not yet
	EEZ (Economic Exclusive Zone)	not yet	not yet
Papua New Guinea	Territorial Sea (2)	12-02-73	26-11-74
	Continental Shelf	13-12-80	10-07-82
	EEZ (Economic Exclusive Zone)	not yet	not yet
Australia	Continental Shelf (Seabed) (2)	18-05-71	08-11-73
	Fishing Zone	09-10-72	10-07-82
	Continental Shelf (Zone of Cooperation)	29-10-81	01-02-82
	EEZ (Economic Exclusive Zone)	11-12-89	09-02-91
	EEZ (Economic Exclusive Zone)	14-03-97	not yet

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### Status of Indonesia's Maritime Boundary Treaties (2)

Border Country	Type of Boundary	Date (dd-mm-yr)	
		Signing	Ratification
Timor Leste	Territorial Sea	not yet	not yet
	EEZ (Economic Exclusive Zone)	not yet	not yet
	Continental Shelf	not yet	not yet
India	Continental Shelf	08-08-74	17-12-74
	Continental Shelf	14-01-77	15-08-77
	Continental Shelf (+ Thailand)	22-06-78	02-03-79
	EEZ (Economic Exclusive Zone)	not yet	not yet
Thailand	Continental Shelf (2)	17-12-71	16-07-73
	Continental Shelf	11-12-75	18-02-78
	Continental Shelf (+ Malaysia)	21-12-71	16-07-73
	Continental Shelf (+ India)	22-06-78	02-03-79
Palau	EEZ (Economic Exclusive Zone)	not yet	not yet
	EEZ (Economic Exclusive Zone)	not yet	not yet
	Continental Shelf	not yet	not yet

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### Geodetic Information Inside the Treaties

Border Country	Boundary Type	Information from the Treaty	
		Geodetic Datum	Boundary Determination Method
Singapore	Territorial Sea, 25-05-73	Not stated	Not stated
Malaysia	Territorial Sea, 17-03-70	Not stated	Stated (median line)
	Continental Shelf (3), 27-10-69	Not stated	Not stated
	Continental Shelf (+Thailand), 21-12-71	Not stated	Not stated
Papua New Guinea	Territorial Sea (2), 12-02-73	Not stated	Not stated
	Continental Shelf, 13-12-80	Not stated	Not stated
	Seabed, 18-05-71	Not stated	Not stated
Australia	Seabed, 09-10-72	Not stated	Not stated
	Fishing Zone, 29-10-81	Not stated	Not stated
	ZEE, 14-03-97	Eksplicit (AGD66, WGS84)	Not stated
	Continental Shelf, 08-08-74	Not stated	Not stated
India	Continental Shelf/ZEE, 14-01-77	Not stated	Not stated
	Continental Shelf (+ Thailand), 22-06-78	Not stated	Not stated
	Continental Shelf, 17-12-71	Not stated	Not stated
Thailand	Continental Shelf, 11-12-75	Not stated	Not stated
	Continental Shelf (+Malaysia), 21-12-71	Not stated	Not stated
	Continental Shelf (+ India), 22-06-78	Not stated	Not stated
Vietnam	Continental Shelf, 2003	Stated (WGS84)	Not stated

### Part of RI-SING 1973 Treaty

#### ARTICLE I

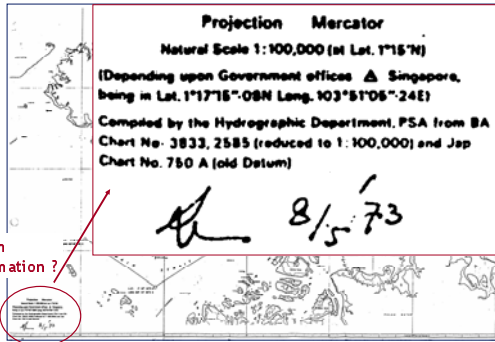
- The boundary line of the territorial seas of the Republic of Indonesia and the Republic of Singapore in the Strait drawn between points, the co-ordinates of which are as follows :

Points	Latitude North	Longitude East
1	1° 10' 46".0	103° 40' 14".6
2	1° 07' 49".3	103° 44' 26".5
3	1° 10' 17".2	103° 48' 18".0
4	1° 11' 45".5	103° 51' 35".4
5	1° 12' 26".1	103° 52' 50".7
6	1° 16' 10".2	104° 02' 00".0

- The co-ordinates of the points specified in paragraph 1 are geographical coordinates and the boundary line connecting them is indicated on the chart attached as Annexure "A" to this Treaty.
- The actual location of the above mentioned points at sea shall be determined by a method to be mutually agreed upon by the competent authorities of the two countries.

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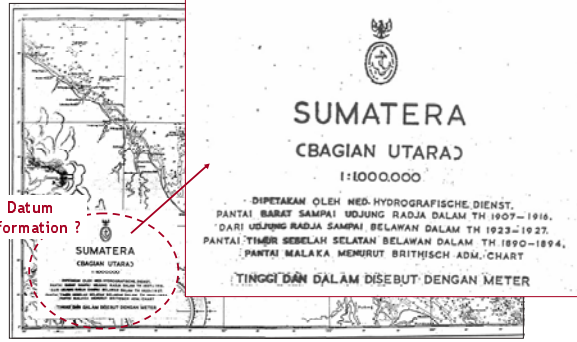
### Treaty Map of RI-SING 1973



Datum Information ?

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### Treaty Map of RI-MAL 1971



Datum Information ?

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### POSSIBLE ORIGINAL GEODETIC DATUM

Border Country	Boundary Type	Signing Date	Possible Geodetic Datum
Singapore	Territorial Sea	25-05-73	1. KERTAU48 2. KERTAU68 3. GENUK
	Territorial Sea	17-03-70	4. SOUTH ASIA
	Continental Shelf, (Malacca St).	27-10-69	1. GENUK
Malaysia	Continental Shelf, South China Sea, Western part	27-10-69	1. KERTAU48 2. KERTAU68
	Continental Shelf, South China Sea, Eastern part	27-10-69	1. TIMBALAI48 2. TIMBALAI68
	Continental Shelf (+ Thailand)	21-12-71	1. GENUK 2. KERTAU68 3. INDIAN54
Papua New Guinea	Territorial Sea (2)	12-02-73	AGD (AUSTRALIAN GEODETIC DATUM) 1966
	Continental Shelf	13-12-80	
Australia	Continental Shelf (Seabed) (2)	09-10-72	AGD (AUSTRALIAN GEODETIC DATUM) 1966
	Fishing Zone	29-10-81	
India	Continental Shelf	08-08-74	1. GENUK 2. INDIAN
	Continental Shelf	14-01-77	
	Continental Shelf (+ Thailand)	22-06-78	
Thailand	Continental Shelf (2)	17-12-71	1. GENUK 2. INDIAN54
	Continental Shelf (+ Malaysia)	21-12-71	
	Continental Shelf (+ India)	22-06-78	

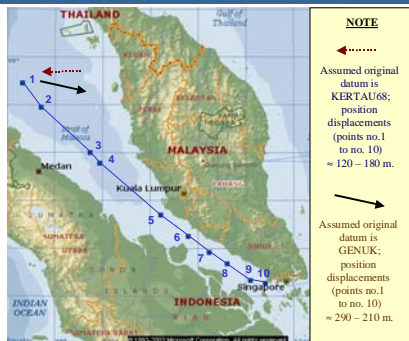
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### IMPLICATIONS CAUSED BY UNCERTAINTY IN GEODETIC DATUM

1. "Displacement" of Boundary Points
2. Effects on the Other Boundary Lines
3. Precise Navigation Requirement
4. Natural Resources Exploration in Border Region

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### Displacements of the 1969 Continental Shelf Boundary Between Indonesia and Malaysia on WGS84 Datum



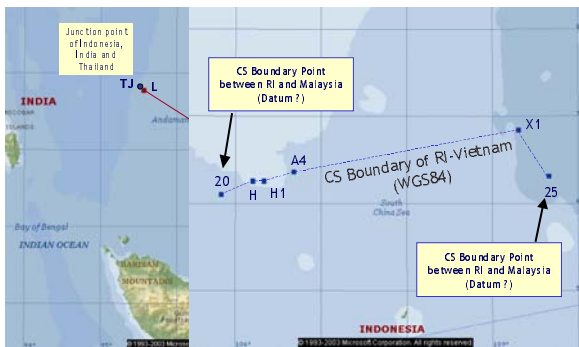
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### DISPLACEMENTS OF INDONESIA'S MARITIME BOUNDARIES

Border Country	Boundary Type	Possible Datum	Boundary Displacement in m (Direction)	Advantage for :
Singapore	Territorial Sea	KERTAU48	190-196 (West)	Indonesia
		KERTAU68	188-193 (West)	Indonesia
		GENUK	210-215 (Southeast)	Singapore
Malaysia	Territorial Sea	SOUTH ASIA	25-36 (West)	Indonesia
		GENUK	220-250 (Southeast)	Indonesia
	Continental Shelf, (Malacca St).	KERTAU68	150-180 (West)	Malaysia
		GENUK	210-290 (Southeast)	Indonesia
		KERTAU68	120-180 (West)	Malaysia
Continental Shelf, South China Sea, Western part	KERTAU68	195-225 (West)	Indonesia	
	KERTAU68	150-220 (West)	Indonesia	
Continental Shelf, South China Sea, Eastern part	TIMBALAI48	417-420 (Southeast)	Indonesia	
	TIMBALAI68	412-415 (Southeast)	Indonesia	
India	Continental Shelf	GENUK	330-360 (Southeast)	India
		INDIAN	400-420 (Northwest)	Indonesia
Thailand	Continental Shelf (2)	GENUK	300-335 (Southeast)	Indonesia
		INDIAN54	380-420 (Northwest)	Thailand
PNG	Territorial Sea (2)	AGD 1966	198-205 (Northeast)	Indonesia
		AGD 1966	200-210 (Northeast)	Australia

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## Effects on the Other Boundary Lines



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## Precise Navigation Requirement

1. In the era of ECDIS and DGPS positioning system :

→ *the need for certainty in geodetic datum of maritime boundary points is increasing.*

2. Since the ENC (Electronic Navigation Chart) of ECDIS, should has a WGS84 datum according to the regulation :

→ *the coordinates of Indonesia's maritime boundary points should also be better expressed in WGS84 datum.*

→ *the original datum has to be firstly decided.*

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## Natural Resources Exploration in Border Region



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## CLOSING REMARKS

1. The uncertainty in geodetic datum of Indonesia's maritime boundaries has to be resolved as soon as possible

2. The things that should be negotiated :

- Original and final geodetic datum of the boundary points' coordinates.
- Coordinate transformation model between the two datum.
- Method and mechanism for estimating the values of transformation parameters.

3. The transformed coordinates of boundary points in WGS84 datum can be spatially in favor to certain country and therefore disadvantageous for the other

→ *has to be anticipated.*

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