

インドネシア共和国  
運輸省  
海運総局

インドネシア共和国  
船舶航行安全システム開発整備計画  
改訂プロジェクト

報告書（第二編）  
別冊：図表

2023年4月



独立行政法人 国際協力機構（JICA）



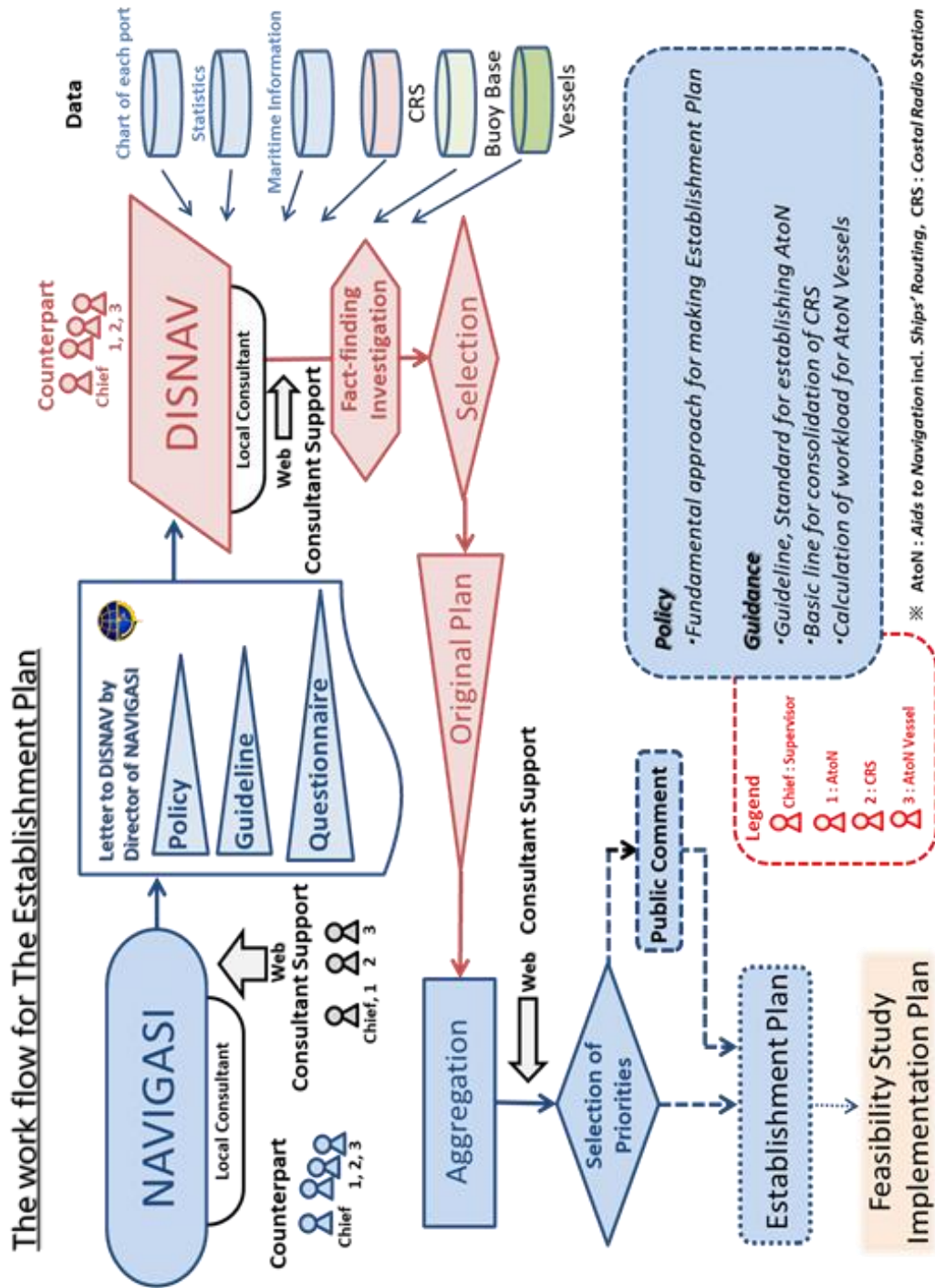
一般財団法人 日本航路標識協会（JANA）

社基
JR
23-051

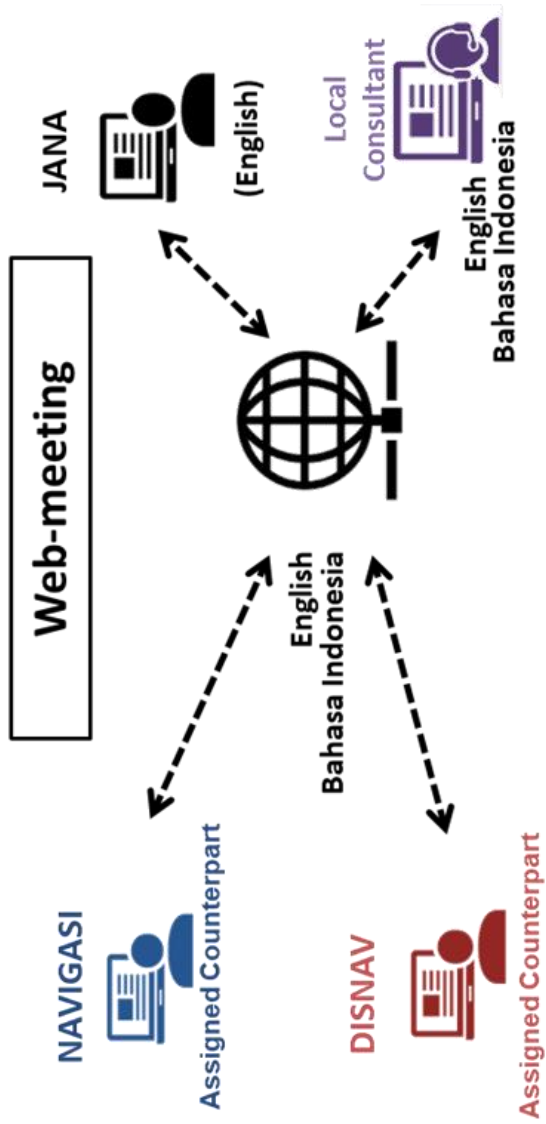
# 第2章

## 業務の内容

2.1 -1 図：作業の流れ



2.2 -1 図 : Web会議



Style of Web-meeting





2.3 -1 図：作業スケジュール

# Schedule for Activities

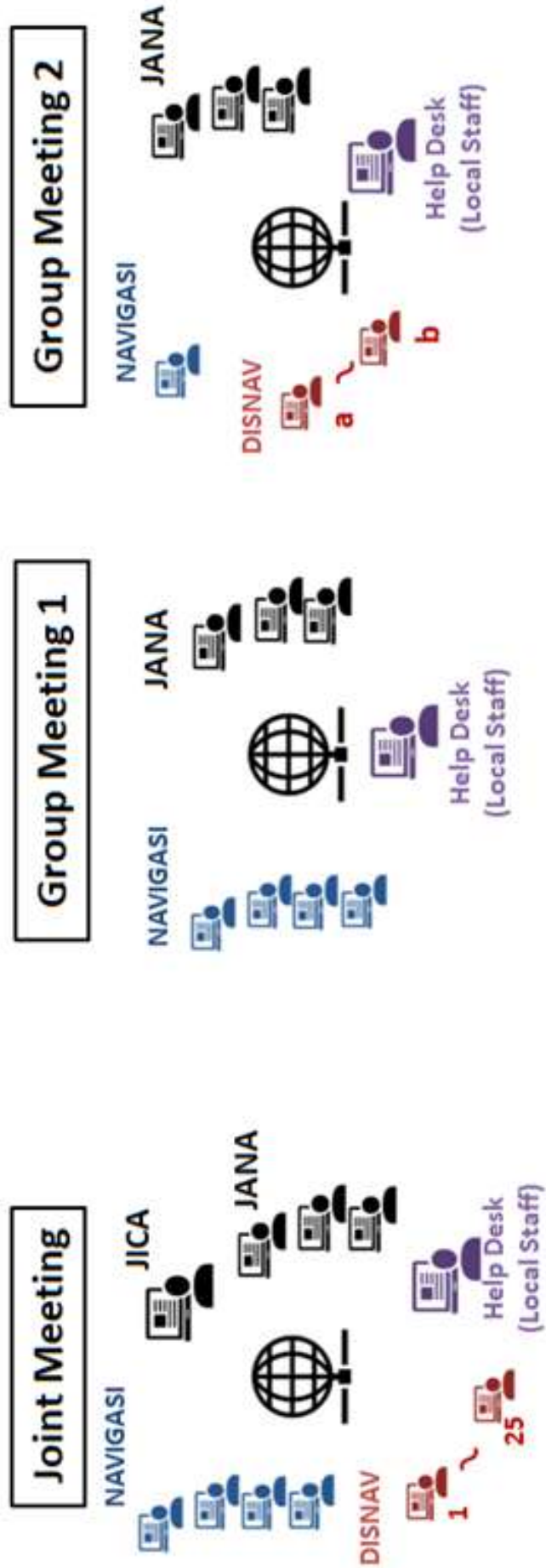
		2022										2023				
		2	3	4	5	6	7	8	9	10	11	12	1	2	3	
	Domestic Work															
Consultant	Oversea Work				Meeting	Workshop				Meeting					Seminar	
NAVIGASI	Activities				Meeting	Workshop				Meeting					Seminar	
DISNAV	Activities					Workshop									Seminar	
Events			▲ 5th JCC			▲ Workshop (IWRAP)									▲ Seminar 6th JCC	

# 第3章

## 業務の進捗

3.2 -1 図 : Web会議形態

### Style of Web-meeting



### 3.7 -1 図 : DISNAVとの個別Web会議

NO	Hari/Tgl	DISTRIK NAVIGASI	WAKTU	KOMPONEN		
				ATON	C R S	VESSEL
				1	2	3
1	Jumat, 21 Okt 2022	1. Disnav Kelas I Sorong	09.30 – 10.30	√	x	√
		2. Disnav Kelas I Tanjung Priok	10.30 – 11.30	√	x	√
		3. Disnav Kelas II Kupang	13.00 – 14.00	√	√	√
		4. Disnav Kelas III Tual	14.00 – 15.00	√	x	√
2	Senin, 24 Okt 2022	5. Disnav Kelas III Merauke	09.30 – 10.30	√	x	√
		6. Disnav Kelas II Teluk Bayur	10.30 – 11.30	√	x	√
		7. Disnav Kelas III Bitung	13.00 – 14.00	√	x	√
		8. Disnav Kelas III Kendari	14.00 – 15.00	√	x	√
3	Selasa, 25 Okt 2022	9. Disnav Kelas II Jayapura	09.30 – 10.30	√	√	√
		10. Disnav Kelas I Makassar	10.30 – 11.30	√	x	√
		11. Disnav Kelas I Samarinda	13.00 – 14.00	√	x	√
		12. Disnav Kelas I Tanjung Perak	14.00 – 15.00	√	x	√
4	Rabu, 26 Okt 2022	13. Disnav Kelas I Ambon	09.30 – 10.30	√	x	√
		14. Disnav Kelas II Banjarmasin	10.30 – 11.30	√	x	√
		15. Disnav Kelas II Sabang	13.00 – 14.00	√	x	√
		16. Disnav Kelas III Tanjung Intan	14.00 – 15.00	√	x	√
5	Kamis, 27 Okt 2022	17. Disnav Kelas III Tarakan	09.30 – 10.30	√	x	√
		18. Disnav Kelas III Pontianak	10.30 – 11.30	√	x	√
		19. Disnav Kelas I Belawan	13.00 – 14.00	√	x	√
		20. Disnav Kelas I Dumai	14.00 – 15.00	√	x	√
6	Jum'at, 28 Okt 2022	21. Disnav Kelas I Tanjung Pinang	09.30 – 10.30	√	x	√
		22. Disnav Kelas I Palembang	10.30 – 11.30	√	x	√
		23. Disnav Kelas II Tanjung Emas	13.30 – 14.30	√	x	√
		24. Disnav Kelas II Benoa	14.30 – 15.30	√	x	√
		25. Disnav Kelas III Sibolga	15.30 – 16.30	√	x	√

Catatan :

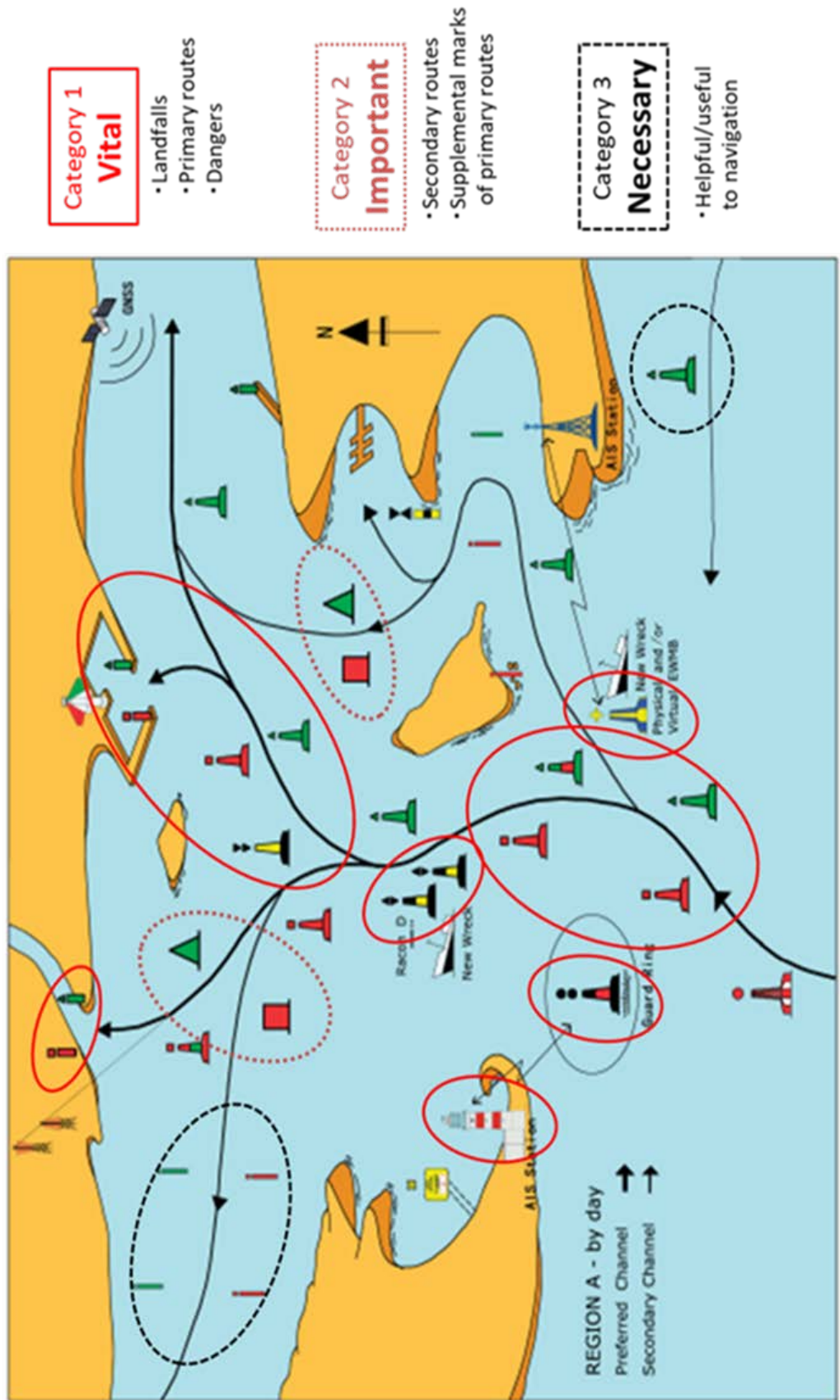
- √ : UPT Distrik Navigasi harap masuk *Breakroom* sesuai pada *ceklis* Komponen 1, 2 dan 3;
- x : UPT Distrik Navigasi tidak diperkenankan masuk *Breakroom*;
- *Breakroom* akan di infokan di *chat message zoom meeting*.

# 第4章 (1/3)

業務分野 (4.1 航路標識)

4.1.2 -1 ☒ : IALA Maritime Buoyage System Region A

**Explanatory Figure** for Classification of significance for the installation



Sheet ① Reporting Format for Nominated Area of Establishing AtoN

Priority	Name (Area/Port) (Fill out)	1. Specific Initiative	2. Category of sea area	Necessary Data/Information				Reference (Fill out)		Note
				3. Nautical Chart	4. AIS Data	5. Conventional Route	6. Stakeholder Demands	Marine Strategy	Special Situation	
<b>Example</b>	<b>Tanjung OOO</b>	<b>b Transformation</b>	<b>a Congested Area</b>	<b>b General Scale Independent Existing</b>	<b>e Sailor, Marine Person</b>	<b>Intersection of Port</b>	<b>Increased traffic flow</b>			
1										
2										
3										

**Drop Down List**

1. Specific Initiative

- 1 a Eliminating Unit
- 2 b Transformation
- 3 c The Goal

2. Category of sea area

- 1 a Offshore Waters
- 2 b Coastal Waters
- 3 c Congested Area
- 3 d Harbor/Port
- 4 e Inland Water (River)

3. Nautical Chart

- 1 a Big Scale
- 2 b General Scale
- 3 c None

4. AIS Data

- 1 a Independent
- 2 b Internet
- 3 c None

5. Conventional Route

- 1 a Existing
- 2 b None

6. Stakeholder Demands

- 1 a Sailor
- 2 b Fisherman
- 2 c Marine Person
- 3 d Sailor, Fisherman
- 4 e Sailor, Marine Person
- 5 f None



Sheet ② Reporting Format for List of Existing AtoN

Name of Sea Area / Port : (Fill out)  
 District :  
 Chart No (Name) : (Fill out)

Reference Number	Name of AtoN		Location (Fill out)		Aid		Category		Type of Marks			Remarks Popular name (Fill out)
	Longitude	Latitude	Type (*1)	Specification (*2)	Sea Area (*3)	Significance (*4)	Lateral (*5)	Cardinal (*6)	Special (*7)	Light Color (*8)		
Example	Cantile Lighthouse	S 05-45.400	E 107-03.850	Lighted Beacon	Landfall Light	Offshore waters	Category 1 (Important)	Not Applicable (n/a)	Not Applicable (n/a)	Not Applicable (n/a)	White	
1												
2												
3												
4												

Drop Down List

No	Name of Aid	Items
1	Type (*1)	Lithouse Breakwater Light Harbor Light Lighted Beacon Lighted Buoy Leading Lights Sector Light Beacon (Unlighted) Buoy (Unlighted) Landmark AtoN AIS

No	Category	Items
3	Sea Area (*3)	Offshore waters Coastal waters Congested area Harbor/Port (Restricted area) Inland waters (River)
4	Significance	Category 1 (Vital) Category 2 (Important) Category 3 (Necessary)

No	Name of Aid	Items
2	Specification (*2)	Landfall Light Long-range Light Medium-range Light Short-range Light Channel Light Leading Lights Radio Aids (Medium-range)

No	Type of Marks	Items
5	Lateral (*5)	Starboard Port Preferred Channel of Starboard Preferred Channel of Port Not Applicable (n/a)

No	Type of Marks	Items
6	Cardinal (*6)	North East South West Not Applicable (n/a)

No	Type of Marks	Items
7	Special (*7)	Special Marks (Work Zone) Special Marks (Quarantine Area) Special Marks (Anchorage) Special Marks (Wreck Marking) Transition Mark Safe Water Mark Approach Mark Not Applicable (n/a)

No	Type of Marks	Items
8	Light Color (*8)	White Red Yellow Green



Sheet ③ Reporting Format for Planned AtoN

Name of Sea Area / Port  
 District  
 Chart No (Name)

List of Planned Aids to Navigation

Sheet ③

Reference Number	Location		Aid	Category			Type of Marks		Remarks		
	Name of AtoN	Position Longitude      Latitude		Specification (*2)	Sea Area (*3)	Significance (*4)	Lateral (*5)	Cardinal (*6)		Special (*7)	Light Color (*8)
Example	ABCDEF	00-25-45.00N 130-23-35.00E	Lighted Beacon	Short range Light	Harbor/Port (Restricted area)	Category 2 (Important)	Port	Not Applicable (n/a)	Special Marks (Quarantine Area)	Red	
1											
2											
3											
4											

No	Name of Aid	Items
1	Type (*1)	Lithhouse Breakwater Light Harbor Light Lighted Beacon Lighted Buoy Leading Lights Sector Light Beacon (Unlighted) Buoy (Unlighted) Landmark AtoN AIS

No	Category	Items
3	Sea Area (*3)	Offshore waters Coastal waters Congested area Harbor/Port (Restricted area) Inland waters (River)
4	Significance	Category 1 (Vital) Category 2 (Important) Category 3 (Necessary)
5	Lateral (*5)	Starboard Port Preferred Channel of Starboard Preferred Channel of Port Not Applicable (n/a)
6	Cardinal (*6)	North East South West Not Applicable (n/a)

No	Type of Marks	Items
7	Special (*7)	Special Marks (Work Zone) Special Marks (Quarantine Area) Special Marks (Anchorage) Special Marks (Wreck Marking) Transition Mark Safe Water Mark Approach Mark Not Applicable (n/a)
8	Light Color (*8)	White Red Yellow Green

Category	Shape
1 LATERAL MARKS	1-1 Single red cylinder (top) 1-2 Single green cylinder (top) 1-3 Single green cone, point upwards 1-4 Single red cone, point upwards
2 CARDINAL MARKS	2-1 2 black cones, one above the other, pointing upward 2-2 2 black cones, one above the other, base to base 2-3 2 black cones, one above the other, points downward 2-4 2 black cones, one above the other, point to point
3 ISOLATED DANGER MARKS	3 2 black spheres, one above the other
4 SAFE WATER MARKS	4 Single red sphere
5 SPECIAL MARKS	5 Single yellow "X" shape (St Andrew's Cross)

Drop Down List

**Sheet ① Reporting Format for Nominated Area of Establishing VTS**

District	1. Main Purpose of VTS		2. VTS Area		Necessary Data/Information			Reference (Fill out)				
	Name (Area/Port) (Fill out)	INS, TOS	General Area	Port/Harbour	3. Nautical Chart	4. AIS Data	5. Conventional Route	6. Traffic Volume	7. Marine Accident Data	8. Stakeholder Demands	National Strategy	Special Situation
		a Existing b INS, TOS	a Existing b Port/Harbour		a Existing b General Area	a Existing b Independent	a Existing b Conventional Route	a Existing b Traffic Volume	a Existing b Accident Data	a Sailor	Timeline	Target of small vessels
1												
2												
3												

**Sheet ② Reporting Format for Nominated Area of Establishing/Planned VTS**

Name of Sea Area / Port  
District  
Chart No (Name)

**Sheet ② List of Existing/Planned VTS**

Reference Number	1. Existing 2. Planning	Name of VTS	Location of Center (Full out)		Type of VTS		3. Facilities (Number)			Legal Basis Regulation/Law (Fill out)		
			Longitude	Latitude	Purpose (Multiple Answers)	Operation Center	Radar	AIS	CCTV		Searchlight Instrument	Transponder Type
Example	a Existing	ABCD	01-27-45.005	123-34-00.256	INS, TOS, NAS, Seawater, Aerial Service	1	2	2	1	2	1	
1	b Planning	GHIJKL	00-56-06.335	133-10-45.106	INS, NAS, Seawater	1	3	2	1	2	3	0
2												
3												
4												

**Drop Down List**

1. Main Purpose of VTS

1	a INS, TOS	INS (Information Service), TOS (Traffic Organisation/Management Service)
2	b INS, TOS, NAS	NAS (Navigation Assistance Service)
3	c INS, NAS	
4	d INS	
5	e TOS	
6	f NAS	
7	g Surveillance	Coastal Surveillance and Maritime Security
8	h Allied Service	Phishing, Immigration, Customs, Coast Guard

2. VTS Area

1	a Coastal Waters	
2	b Port/Harbour	
3	c Inland Water (River)	

3. Nautical Chart

1	a Big Scale	Scale : 1/15000, 1/50,000
2	b General Scale	Scale : 1 / 250000
3	c None	Ocean Seemap, Google Map

4. AIS Data

1	a Independent	Stand-alone, VTS
2	b Internet	Marinetraffic.com
3	c None	

5. Conventional Route

1	a Existing	Regulated route, Traditional lane, Habitual course
2	b None	

6. Traffic Volume

1	a Existing	Number of Vessels in each vessel's type
2	b None	

7. Marine Accident Data

1	a Existing	Number of accidents in each type of accident
2	b None	

8. Stakeholder Demands

1	a Sailor	Navigator, Seaman, Pilot
2	b Fisherman	
3	c Marine Person	People who is engaged in marine activities, business.
4	d Sailor, Fisherman	
5	e Sailor, Marine Person	
6	f None	

4.1.4 -1 表：回答状況

Status of Reply to Questionnaire for Aton As of December 12, 2022

NO	AREA	CLASS	SHEET 1	SHEET 2	SHEET 3	DATA
1	Sabang (1)	Class II	Nonrated Area VTS * (20/10)	Existing Planned VTS * (20/10)	Planned Aton * (20/10)	End Study Report
2	Bekivan (2)	Class I	-	Existing Planned VTS	-	-
3	Sabuga (3)	Class III	-	-	-	Record of Existing Aton (21/11) Master Plan for VTS (20/10)
4	Telik Bayur (4)	Class I	-	Existing Aton * (20/10)	Planned Aton * (20/10)	-
5	Tg. Pliang (5)	Class I	Nonrated Area VTS	Existing Planned VTS & Existing Aton * (20/10)	Planned Aton	-
6	Dumail (6)	Class I	Nonrated Area Aton & Nonrated Area VTS	Existing Aton & Existing Planned VTS	Planned Aton	-
7	Palembang (7)	Class I	-	Existing Planned VTS	-	-
8	Pontianak (8)	Class III	Nonrated Area Aton & Nonrated Area VTS	Existing Planned VTS	-	-
9	Tg. Priok (9)	Class I	Nonrated Area Aton & Nonrated Area VTS	Existing Aton & Existing Planned VTS	Planned Aton	-
10	Giliga (10)	Class III	Nonrated Area Aton	Existing Aton * (20/10)	Planned Aton * (20/10)	-
11	Semarang (11)	Class II	-	Existing Planned VTS	-	Ship Routing Number Existing Route Lajur Lintas Stacking Route, Lajur Lajur Jalur Route, Lajur Route Threat of Collision (Kecelakaan), Feasibility, Monitoring, Services (21/11)
12	Surabaya (12)	Class I	Nonrated Area Aton * (20/10)	Existing Planned VTS	-	Chart 7. Terminal Perikanan Aton 70, Palka 2021 8. Terminal Perikanan Aton 70, Palka 2021 9. Perikanan Aton 70, Palka 2021 10. Perikanan Aton 70, Palka 2021 11. Perikanan Aton 70, Palka 2021
13	Banda (13)	Class II	Nonrated Area Aton * (20/10)	Existing Aton & Existing Planned VTS	Planned Aton * (20/10)	Chart Aur Lajur Lintas Aur Lajur Lintas dan Stacking Aur Lajur Lintas Nautis Chart Existing Aton & Planned Aton (20/11)

NO	AREA	CLASS	SHEET 1	SHEET 2	SHEET 3	DATA
14	Niasang (14)	Class II	-	Existing Aton * (20/10)	-	-
15	Benjarmasin (15)	Class II	Nonrated Area VTS	Existing Aton & Existing Planned VTS	-	-
16	Tarikuan (16)	Class III	Nonrated Area VTS * (20/10)	Existing Planned VTS * (20/10)	-	Chart / Data - Safe Line to enter Port of Tarakan (21/10) - Equipment Port VTS Center - Detailed Chart (20/10), Base Pulau - Bina (21/10) - Safe House 2022 (21/10) - List of Marine Accident (20/10)
17	Samarinda (17)	Class I	Nonrated Area Aton & Nonrated Area VTS * (20/10)	Existing Aton Existing & Planned VTS	Planned Aton	Chart / Data - Nautis Chart (20/10)
18	Malakhar (18)	Class I	Nonrated Area Aton	Existing VTS * (20/10)	Planned Aton * (20/10)	-
19	Mandiri (19)	Class III	-	Existing Planned VTS	-	-
20	Bitung (20)	Class I	-	Existing Aton * (20/10)	-	-
21	Ambon (21)	Class I	Nonrated Area VTS	Existing Planned VTS & Existing Aton * (20/10)	-	-
22	Senang (22)	Class I	-	Existing Planned VTS	-	-
23	Jayapura (23)	Class II	-	Existing Aton * (20/10)	Planned Aton * (20/10)	Nautis Chart (20/10) Nautis Chart Existing Aton (20/10)
24	Merauke (24)	Class III	-	-	-	-
25	Total (25)	Class III	Nonrated Area Aton	Planned VTS	-	-

4.1.5 -1 表：計画基数

Summary Table for Planned AtoN requested by DISNAV

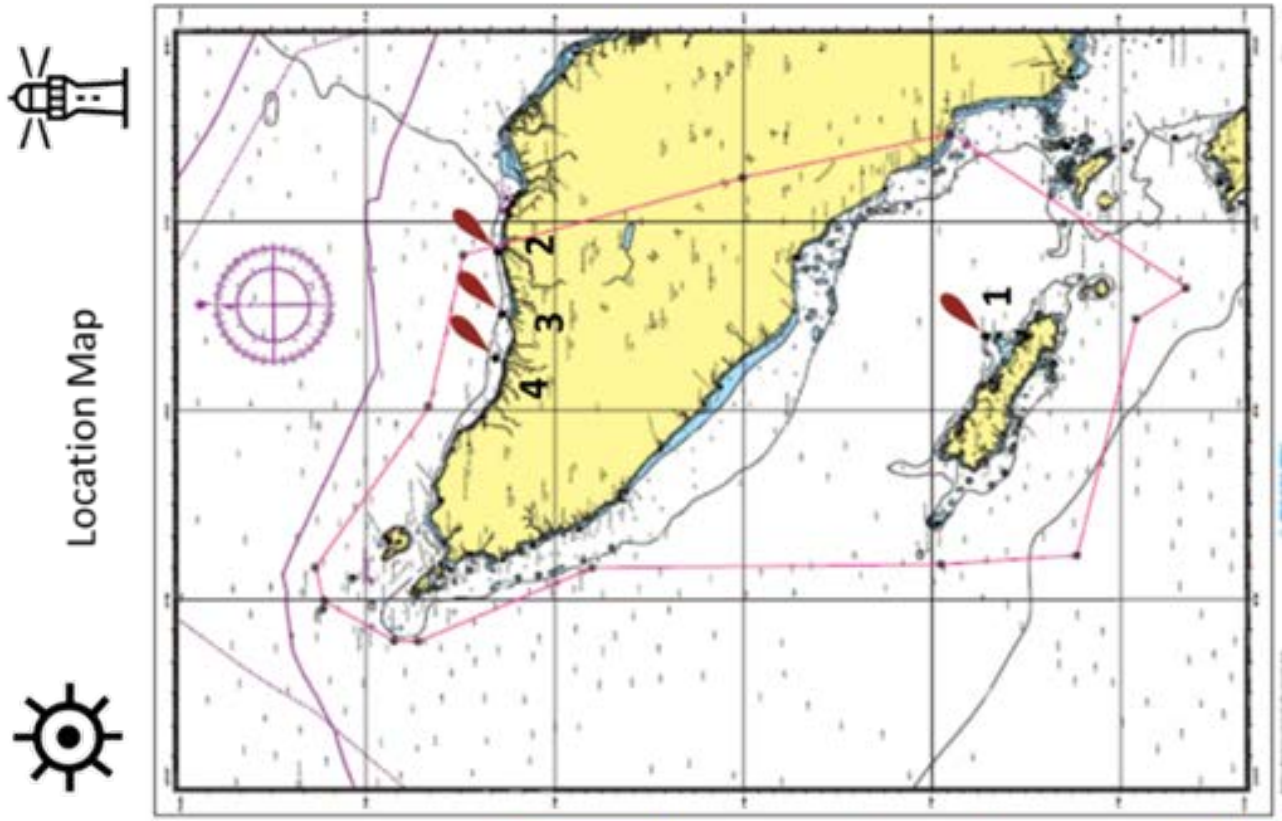
No	DISNAV	Number of Nominated Area	Number of Planned AtoN	Planned AtoN		
				Lighthouse	Lighted Beacon	Lighted Buoy
1	Sabang	2	4	2	2	
2	Belawan	0	0			
3	Sibolga	0	0			
4	Teluk Bayur	2	3		3	
5	Tg. Pinang	3	-----	---	---	---
6	Dumai	3	7		7	
7	Palembang	0	0			
8	Pontianak	1	-----	---	---	---
9	Tg. Priok	2	7		7	
10	Cilacap	2	2		2	
11	Semarang	2	8		4	4
12	Surabaya	1	-----	---	---	---

No	DISNAV	Number of Nominated Area	Number of Planned AtoN	Planned AtoN		
				Lighthouse	Lighted Beacon	Lighted Buoy
13	Benoa	6	15		15	
14	Kupang	0	0			
15	Banjarmashin	0	0			
16	Tarakan	0	0			
17	Samarinda	2	10		3	7
18	Makassar	3	8			8
19	Kendari	0	0			
20	Bitung	0	0			
21	Ambon	2	4	4		
22	Sorong	0	0			
23	Jayapura	5	21	1	12	8
24	Merauke	0	0			
25	Tual	0	0			
Total				36	89	7 55 27

December 12, 2022

4.1.5 -1 図：計画位置図 (Sabang)



1 Sabang ( II )

Planned AtoN

Pulau Siumat

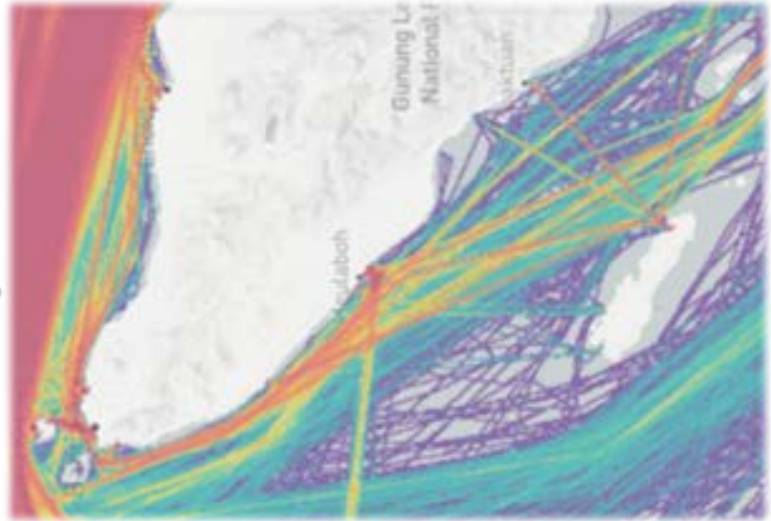
1 Mensu Pulau Siumat Sinabang (L)

Ache

2 Mensu Peusangan Bireun (L)

3 Ramsu Ujung Raja Sigli (LB)

4 Ramsu Merdu Sigli (LB)



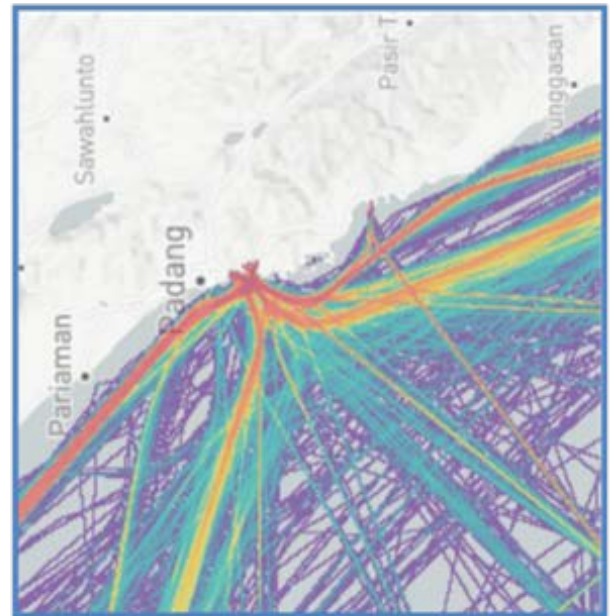


4.1.5 -2 図 : 計画位置図 (Teluk Bayur)

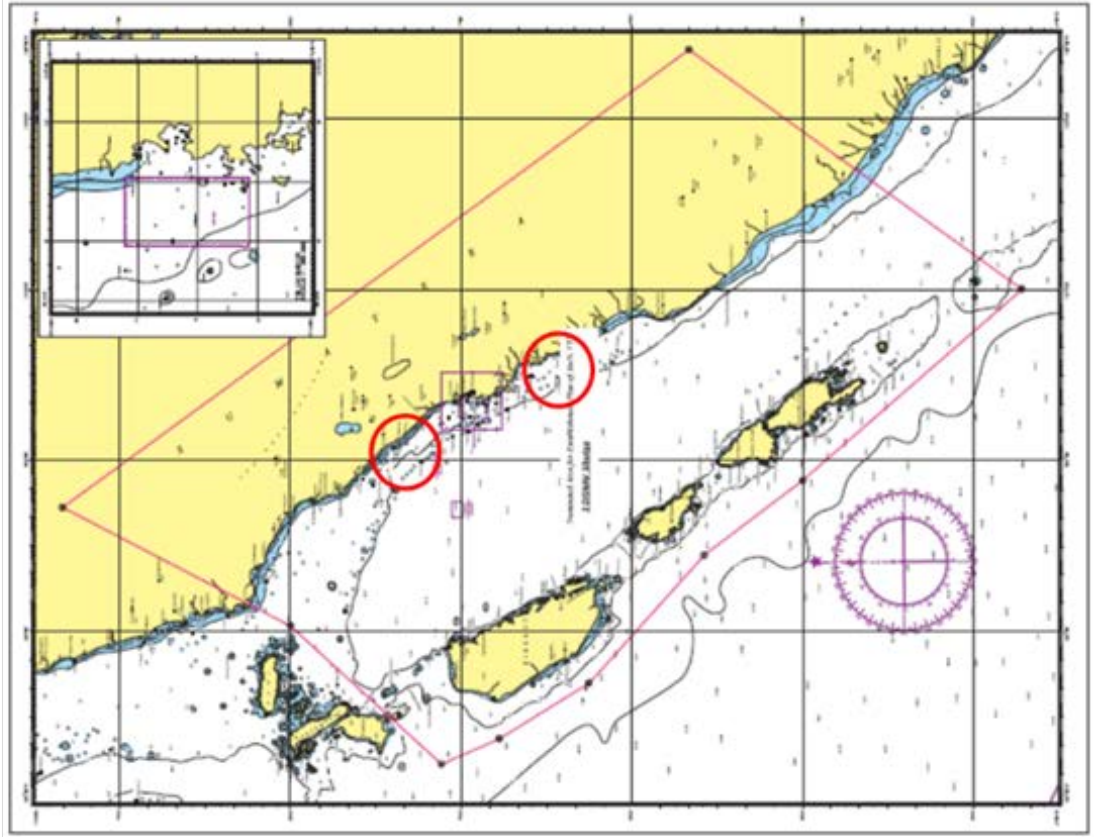
4 Teluk Bayur ( I )

Planned AtoN

- 1 Rs. Ma. Karsik Pariaman  
( Lighted Beacon -- White )
- 2 Rs. Ma. Kambang Hijau I  
( Lighted Beacon -- Green )
- 3 Rs. Ma. Kambang Merah II  
( Lighted Beacon -- Red )



Planned AtoN

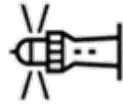


4.1.5 -3 図 : 計画位置図 (Dumai)

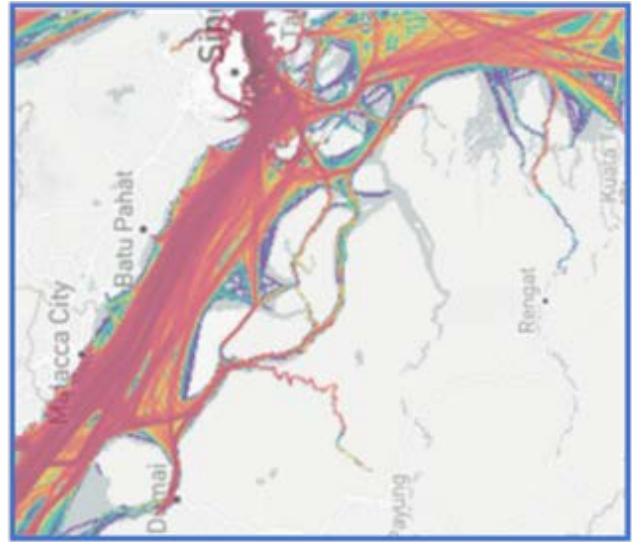
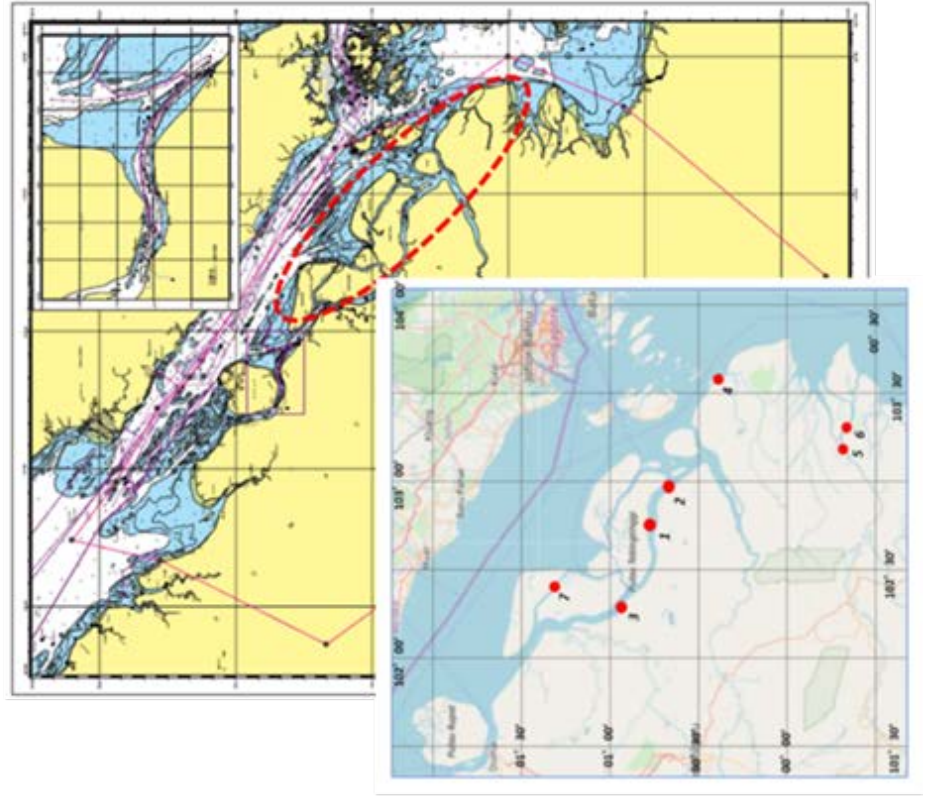
6 Dumai ( I )

Planned AtoN

- 1 Ramsu Selat Panjang
- 2 Ramsu Selat Panjang
- 3 Ramsu Tg. Buton
- 4 Ramsu Sungai Guntung
- 5 Ramsu Sungai Indagiri
- 6 Ramsu Sungai Indagiri
- 7 Ramsu Selat Padang



Location Map



4.1.5 -4 図 : 計画位置図 (Pontianak)



8 Pontianak (Ⅲ)

Planned AtoN (Nominated Area)

1 Dwikora (Inland Water : River)





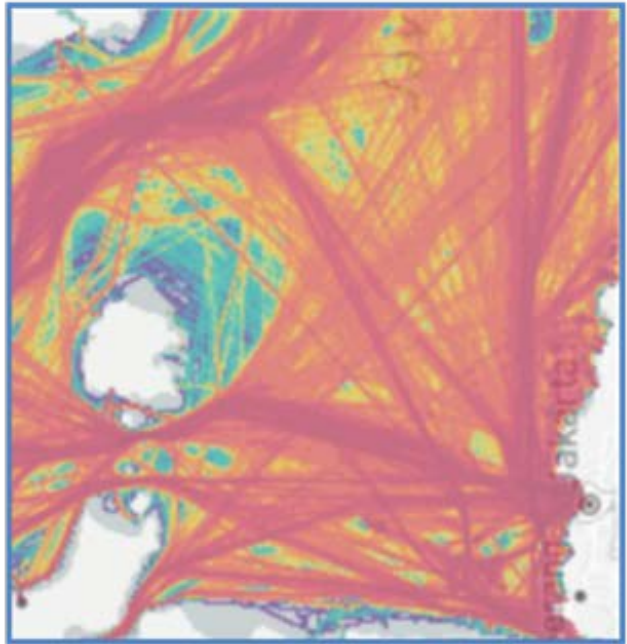
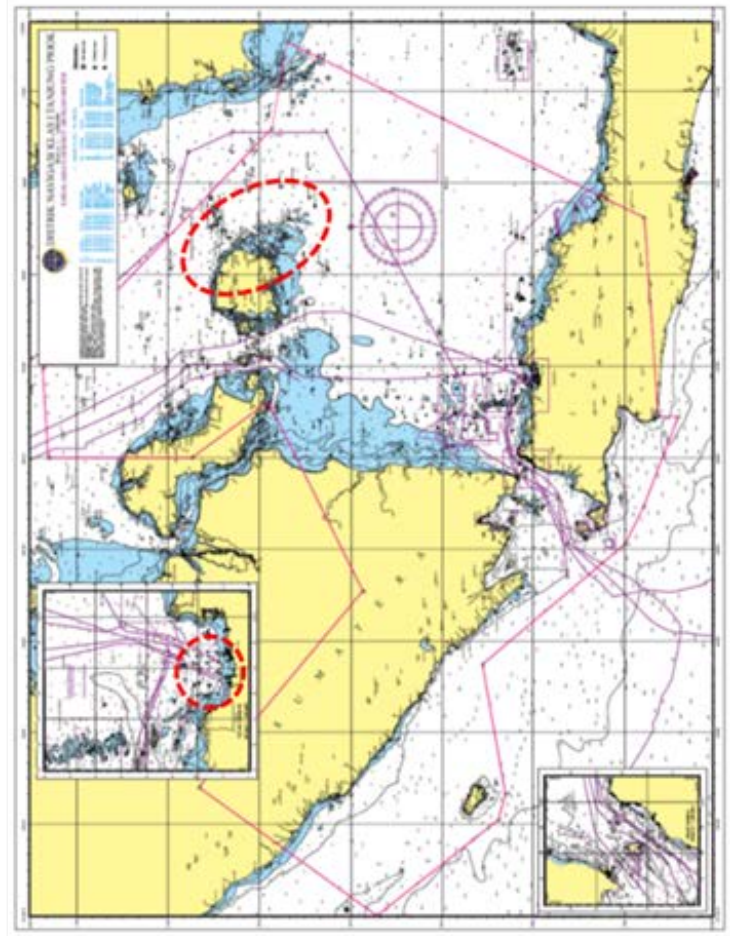
## 9 Tg. Priok ( I )

### Planned AtoN

- 1 KARANG BATUAN (L.B)
- 2 ABADI REEF (L.B)
- 3 KARANG F. ADELEIDE (L.B)
- 4 KARANG JONG (L.B)
- 5 BETINGEKA (L.B)
- 6 BETING RAJA (L.B)
- 7 PULAU PUTRI REEF (L.B)

(L.B : Lighted Beacon)

### Planned AtoN



4.1.5 -5 図 : 計画位置図 (Tg. Priok)

4.1.5 -6 図 : 計画位置図 (Cilacap)

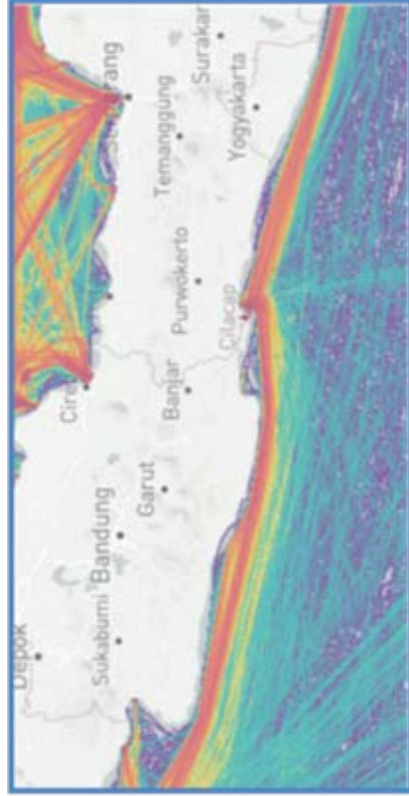
10 Cilacap ( III )

Planned AtoN

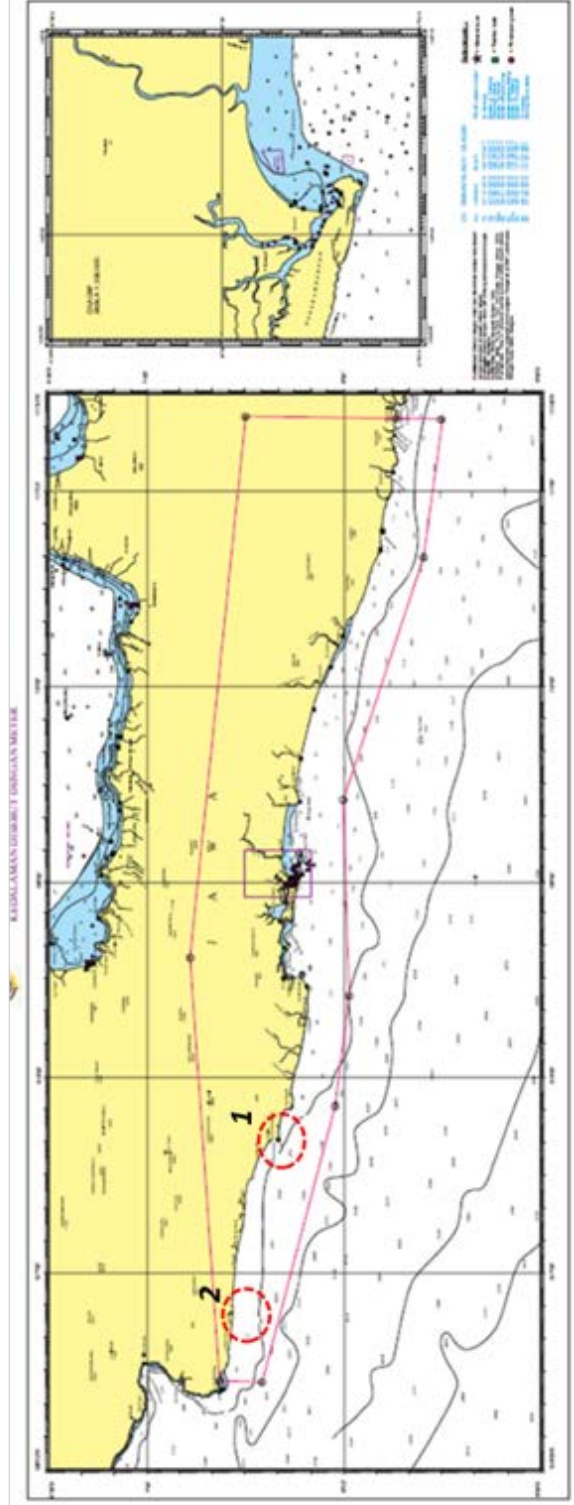
- 1 Sentolo Pamengpeuk (L.B)
- 2 Babadan (L.B)

1 ( 07 ° 39' 44.00" S 107 ° 40' 53.10" E )  
 2 ( 07 ° 25' 22.12" S 106 ° 39' 36.78" E )

(L.B : Lighted Beacon)



Planned AtoN



4.1.5 -7 図 : 計画位置図 (Semarang)

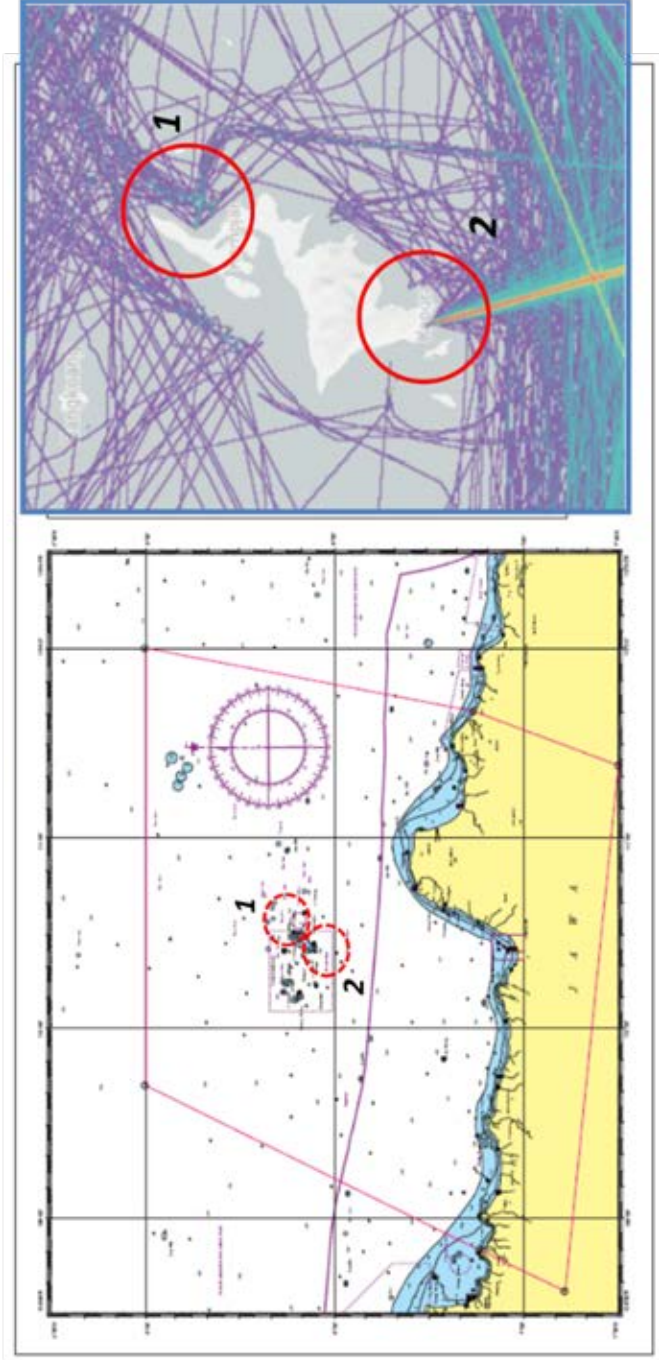
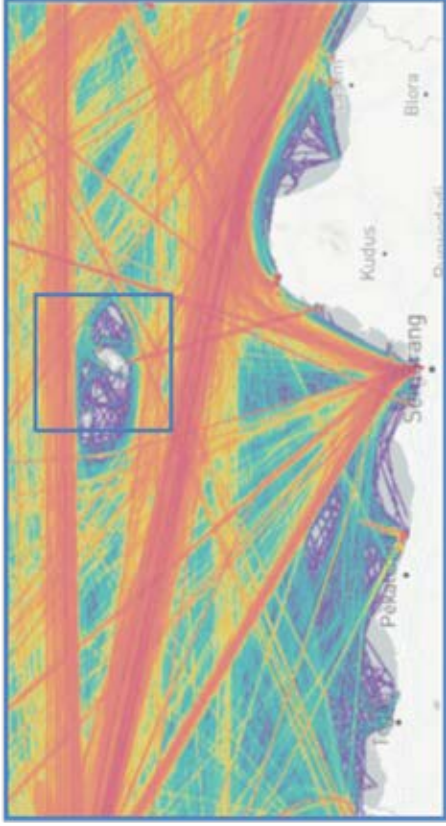
## 11 Semarang ( II )

Planned AtoN

Pulau Karimunjawa

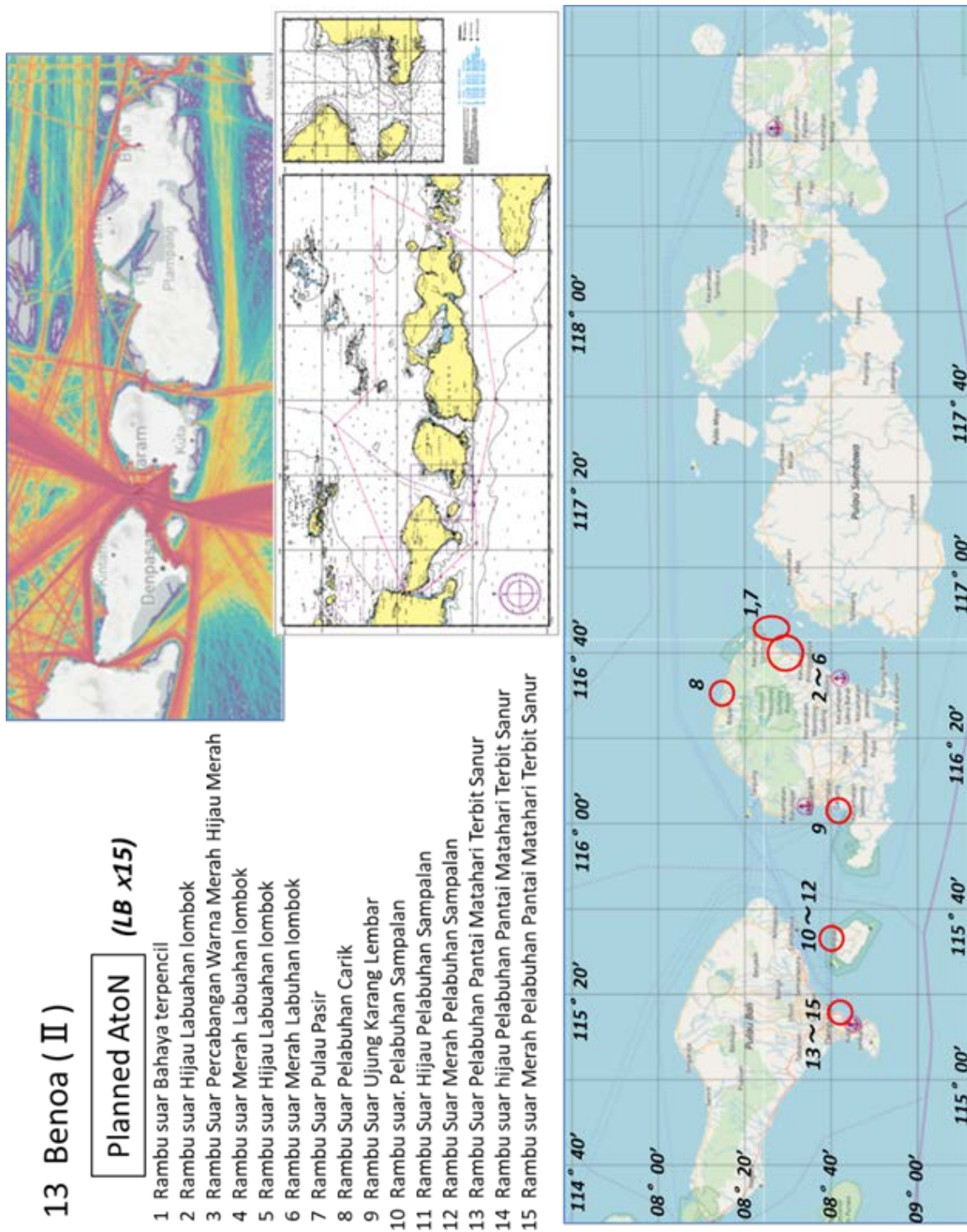
1 Logon Bajak (*Lighted Buoy x 4*)

2 Kalimunjawa (*Lighted Beacon x 4*)

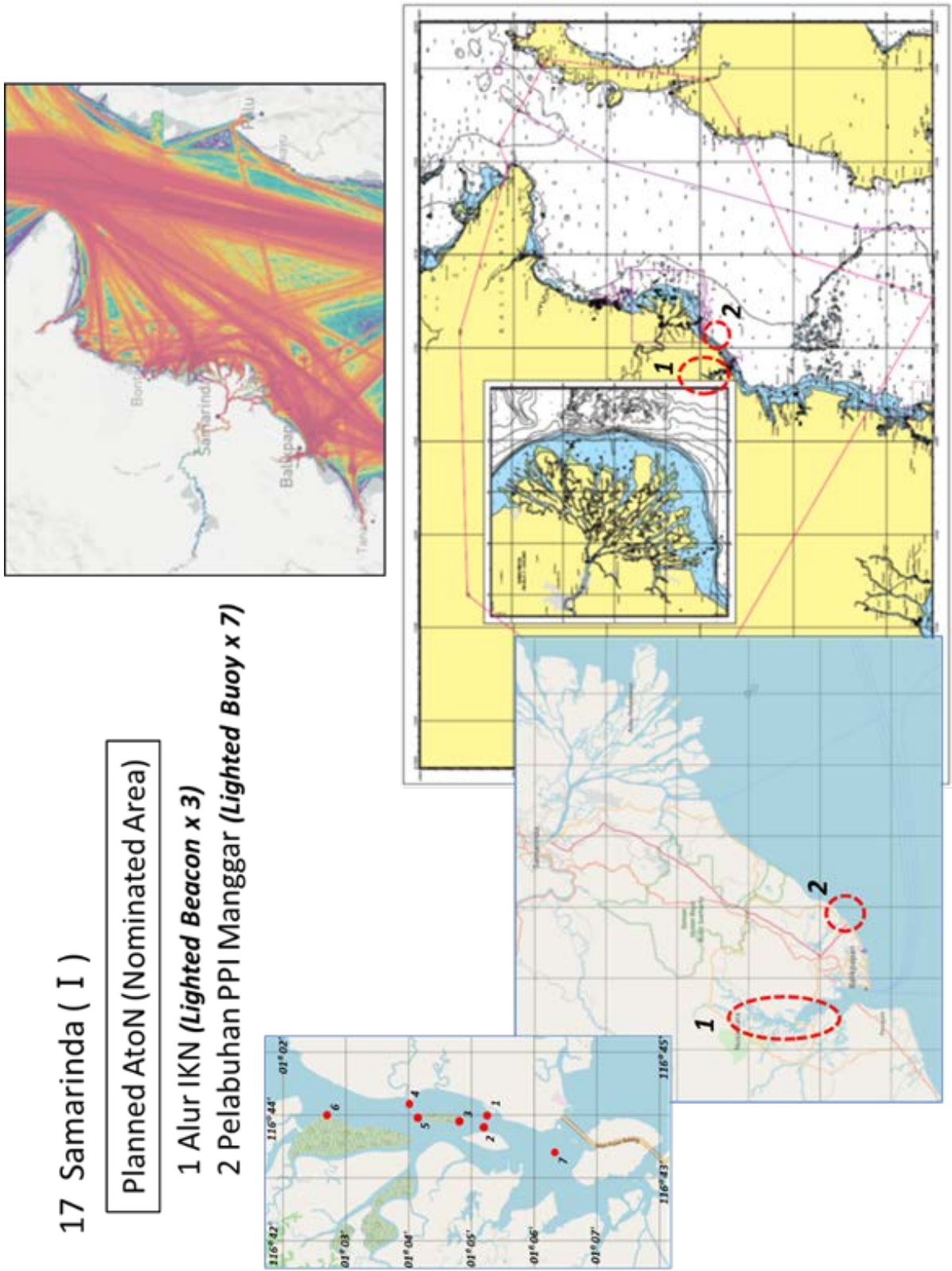




#### 4.1.5 -8 図：計画位置図 (Benoa)

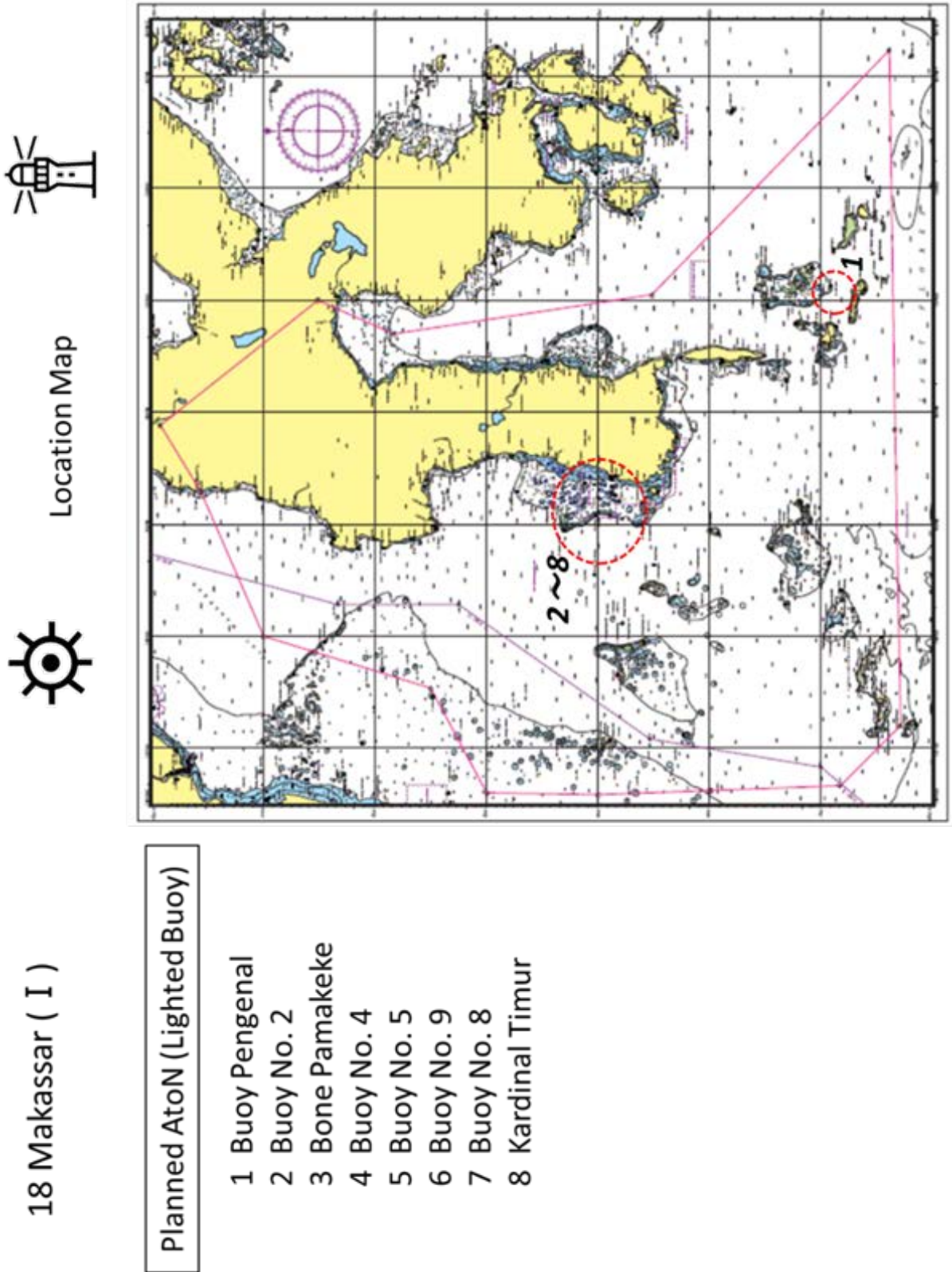


4.1.5 -9 図 : 計画位置図 (Samarinda)



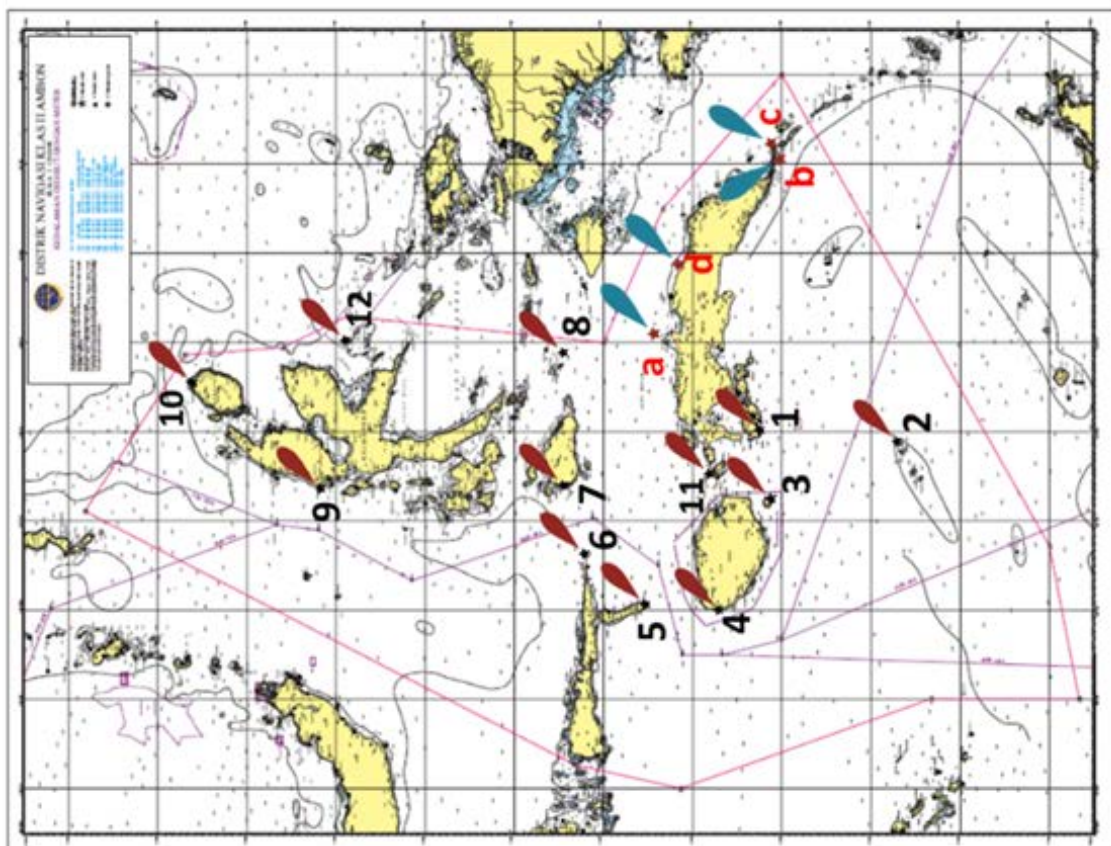


4.1.5 -10 図 : 計画位置図 (Makassar)



4.1.5 -11 図：計画位置図 (Ambon)

1 ~ 12 : Existing AtoN (Lighthouse)



21 Ambon ( I )

Planned AtoN (Lighthouse)

a ~ d : Planned AtoN

<b>a</b>	<b>Mensu Tg. Galala</b>	02°45'24.6" S /	129°30'56.8" E
f	Pelnu Teluk Dalam 2 (Pangkalan TNI AL)	02°45'24.6" S /	129°30'56.8" E
j	Ramsu Pelabuhan Perikanan Nusantara	02°45'24.6" S /	129°30'56.8" E
<b>b</b>	<b>Ramsu Tg. Marthafons</b>	03°53'24.0" S /	130°53'12.0" E
g	Tanda Siang W. Batu Gajah Estuary	03°53'24.0" S /	130°53'12.0" E
k		03°53'24.0" S /	130°53'12.0" E
<b>c</b>	<b>Ramsu Wainitu/Benteng</b>	03°51'58.0" S /	130°53'54.0" E
l	Ramsu Pelabuhan Yos Soedjarto (Pelindo)	03°51'58.0" S /	130°53'54.0" E
<b>d</b>	<b>Ramsu Waisikula</b>	02°53'40.6" S /	129°48'35.0" E
e	Pelnu Teluk Dalam 1 (Pangkalan TNI AL)	02°53'40.6" S /	129°48'35.0" E
i	Ramsu Pelabuhan Pertamina Wayame (Pe	02°53'40.6" S /	129°48'35.0" E
m	Ramsu Pelabuhan Pertamina Wayame (Pe	02°53'40.6" S /	129°48'35.0" E

4.1.5 -12 図：計画位置図 (Jayapura)

23 Jayapura ( II )

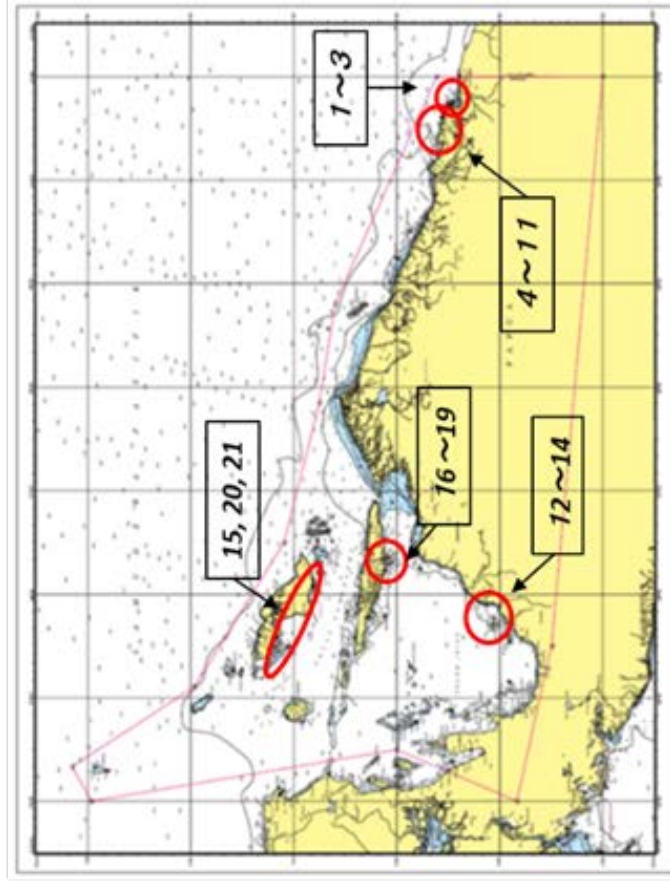
Planned Aton

Total : 21

Lighthouse 1, Lighted Beacon 12, Lighted Buoy 8

Legend L : Lighthouse, LB : Lighted Beacon, Lbo : Lighted Buoy

- 1 Rambu Suar Hijau Tg. Kayu Batu (LB)
- 2 Rambu Suar Hijau Tg. Suaaja (LB)
- 3 Pelampung Suar MPMT (Lbo)
- 4 Menara Suar Tg. Tanah Merah (L)
- 5 Rambu Suar Hijau 01 Alur Plb Depapre (LB)
- 6 Rambu Suar Merah 02 Alur Plb Depapre (LB)
- 7 Rambu Suar Hijau 03 Alur Plb Depapre (LB)
- 8 Rambu Suar Merah 04 Alur Plb Depapre (LB)
- 9 Rambu Suar Merah 06 Alur Plb Depapre (LB)
- 10 Rambu Suar Penuntun 01 Alur Plb Depapre (LB)
- 11 Rambu Suar Penuntun 02 Alur Plb Depapre (LB)
- 12 Pelampung Suar Hijau 03 Alur Plb Nabire (Lbo)
- 13 Emergency Wreck Bouy 01 Alur Plb Nabire (Lbo)
- 14 Emergency Wreck Bouy 02 Alur Plb Nabire (Lbo)
- 15 Pelampung Suar Merah 04 Alur Plb Biak (Lbo)
- 16 Pelampung Suar Hijau 03 Alur Plb Serui (Lbo)
- 17 Rambu Suar Merah 04 Alur Plb Serui (LB)
- 18 Rambu Suar Merah 06 Alur Plb Serui (LB)
- 19 Pelampung Suar Cardinal Selatan Alur Plb Serui (Lbo)
- 20 Pelampung Suar Hijau Alur Plb Korido (Lbo)
- 21 Rambu Suar Cardinal Timur (LB)





4.1.5 -2 表：計画箇所数（VTS）

Summary Table for Planned VTS requested by DISNAV

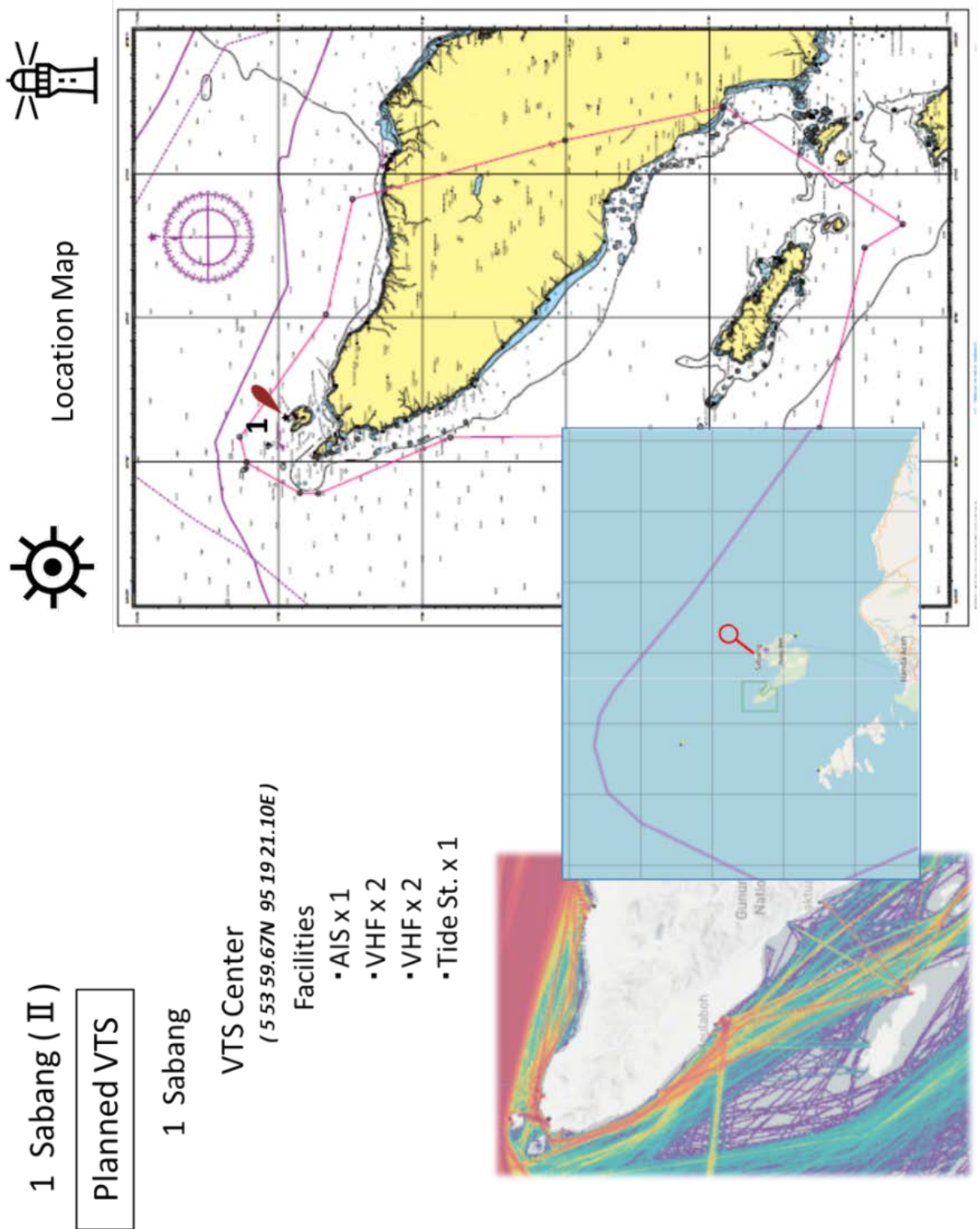
*As of December 12, 2022*

No	DISNAV	Number of Nominated Area	Number of Planned VTS
1	Sabang	1	1
2	Belawan	0	0
3	Sibolga	0	0
4	Teluk Bayur	0	0
5	Tg. Pinang	13	3
6	Dumai	0	0
7	Palembang	0	0
8	Pontianak	2	-----
9	Tg. Priok	1	1
10	Cilacap	0	0
11	Semarang	0	0
12	Surabaya	0	0

No	DISNAV	Number of Nominated Area	Number of Planned VTS
13	Benoa	0	0
14	Kupang	0	0
15	Banjarmashin	0	0
16	Tarakan	1	1
17	Samarinda	2	3
18	Makassar	0	0
19	Kendari	1	1
20	Bitung	0	0
21	Ambon	1	1
22	Sorong	0	0
23	Jayapura	0	0
24	Merauke	0	0
25	Tual	3	3
Total		25	14

4.1.5 -13 図 : 計画位置図 (Sabang)

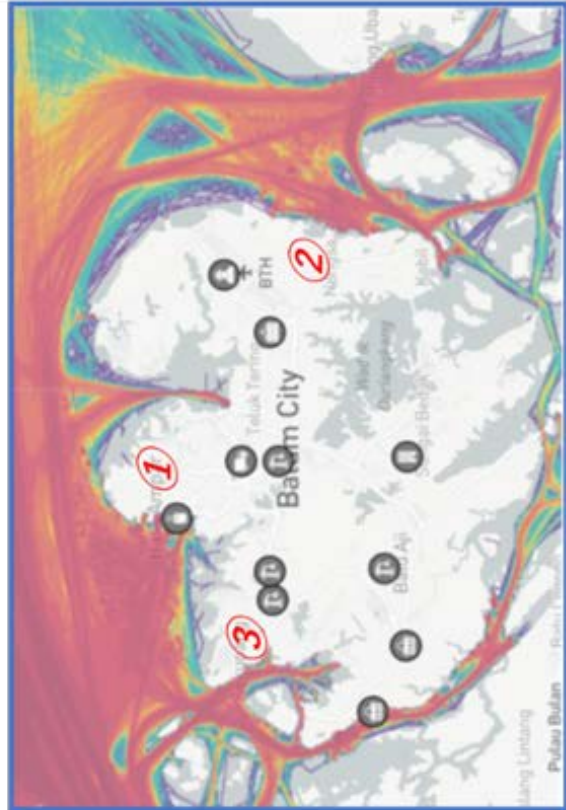
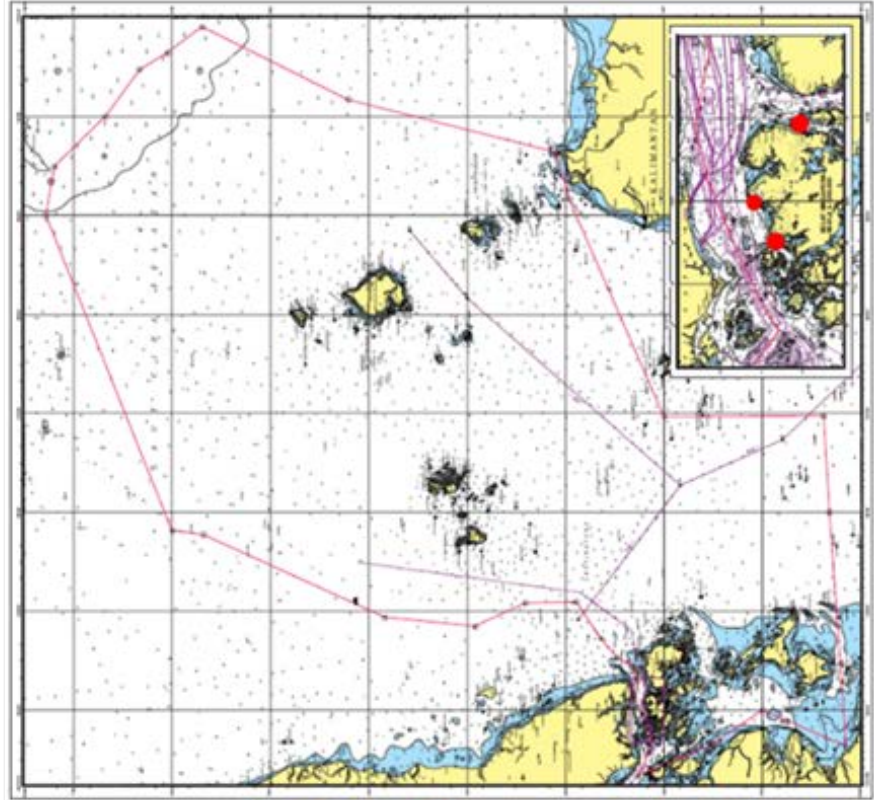


4.1.5 -14 図 : 計画位置図 (Tg. Pinang)

5 Tg. Pinang ( I )

Planned VTS

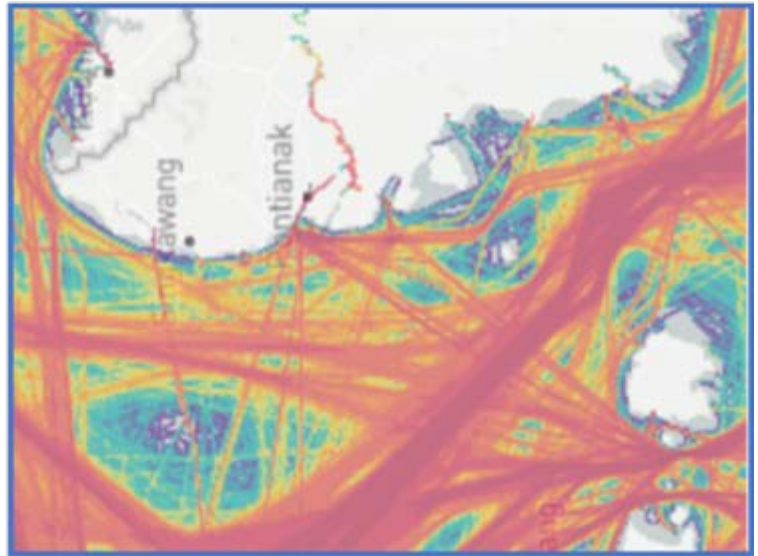
- 1 Pelabuhan Batu Ampar
- 2 Pelabuhan Kabil
- 3 Pelabuhan Sekupang



## 8 Pontianak (Ⅲ)

Planned VTS (Nominated Area)

- 1 Pelabuhan Soekarno (Port/Harbour)
- 2 Dwikora (Inland Water : River)



4.1.5 -15 図 : 計画位置図 (Pontianak)





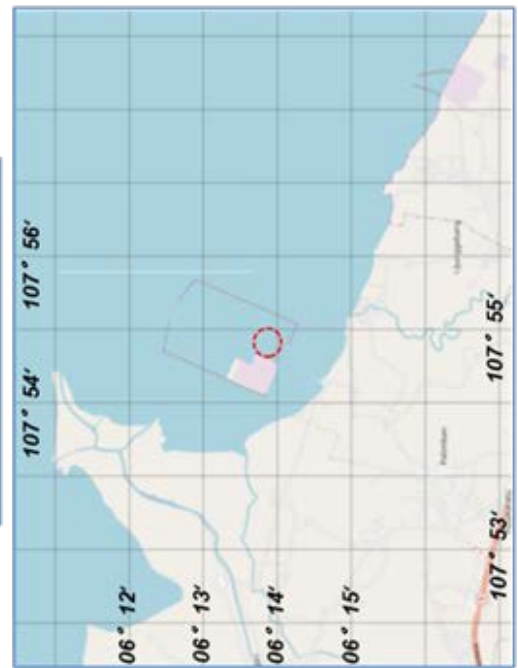
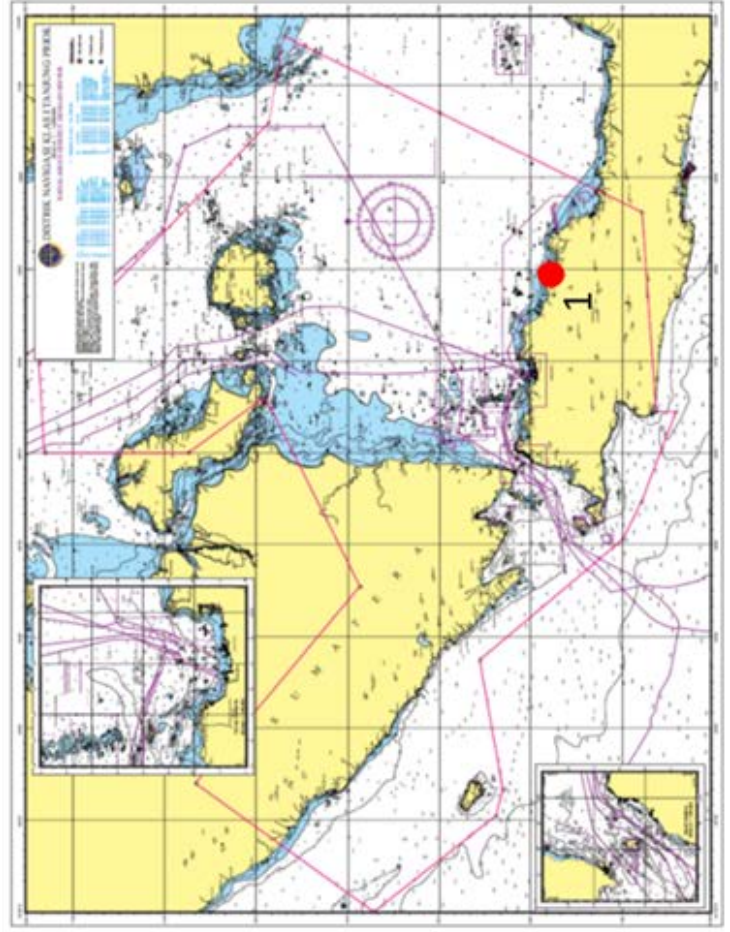
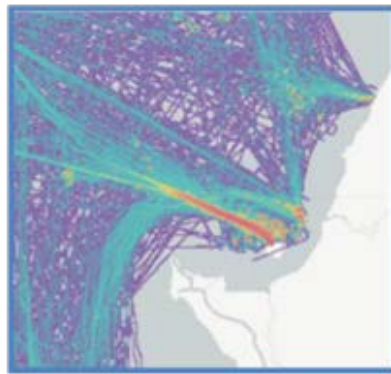
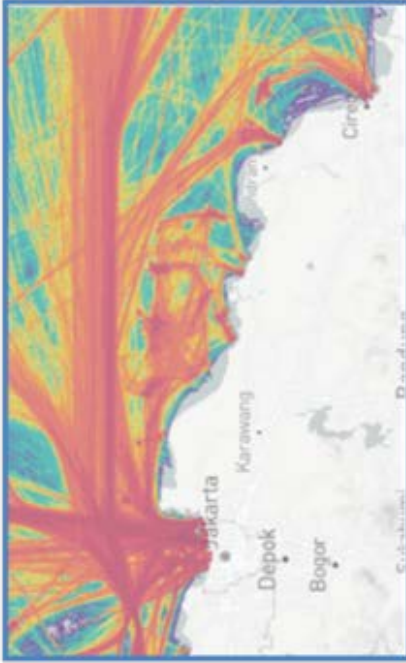
4.1.5 -16 図 : 計画位置図 (Tg. Priok)

9 Tg. Priok ( I )

Planned VTS

1 Patimban VTS

(  $06^{\circ} 13'52.59''S$   $107^{\circ} 54'20.12''E$  )

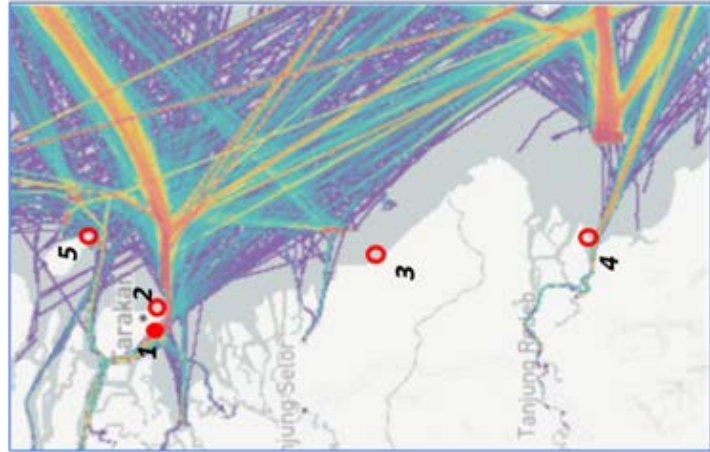


4.1.5 -17 図 : 計画位置図 (Tarakan)

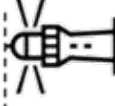
## 16 Tarakan (Ⅲ)

### Planned VTS Sensor

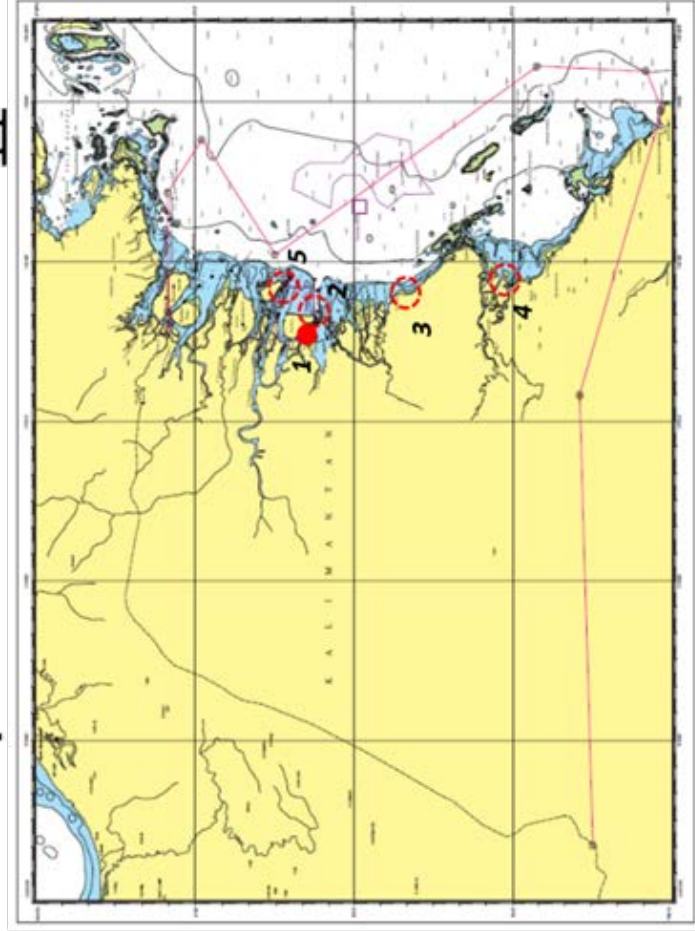
- 1 Tarakan VTS (existing : 1xCe, 1xR, 1xA, 2xC, 1xM, 2xV)
- 2 Tanjung Batu (1xA, 1xC, 1xM, 2xV)
- 3 Tanah Kuning (1xA, 1xC, 1xM, 2xV)
- 4 Berau, Tanjung Redeb (1xCe, 1xR, 1xA, 2xC, 1xM, 2xV)
- 5 Bunyu (1xA, 1xC, 1xM, 2xV)



1	(03° 17' 20" N	117° 35' 25" E)
2	(03° 14' 29" N	117° 38' 41" E)
3	(02° 35' 50" N	117° 49' 38" E)
4	(02° 03' 13" N	117° 50' 11" E)
5	(03° 27' 42" N	117° 50' 13" E)



Location Map



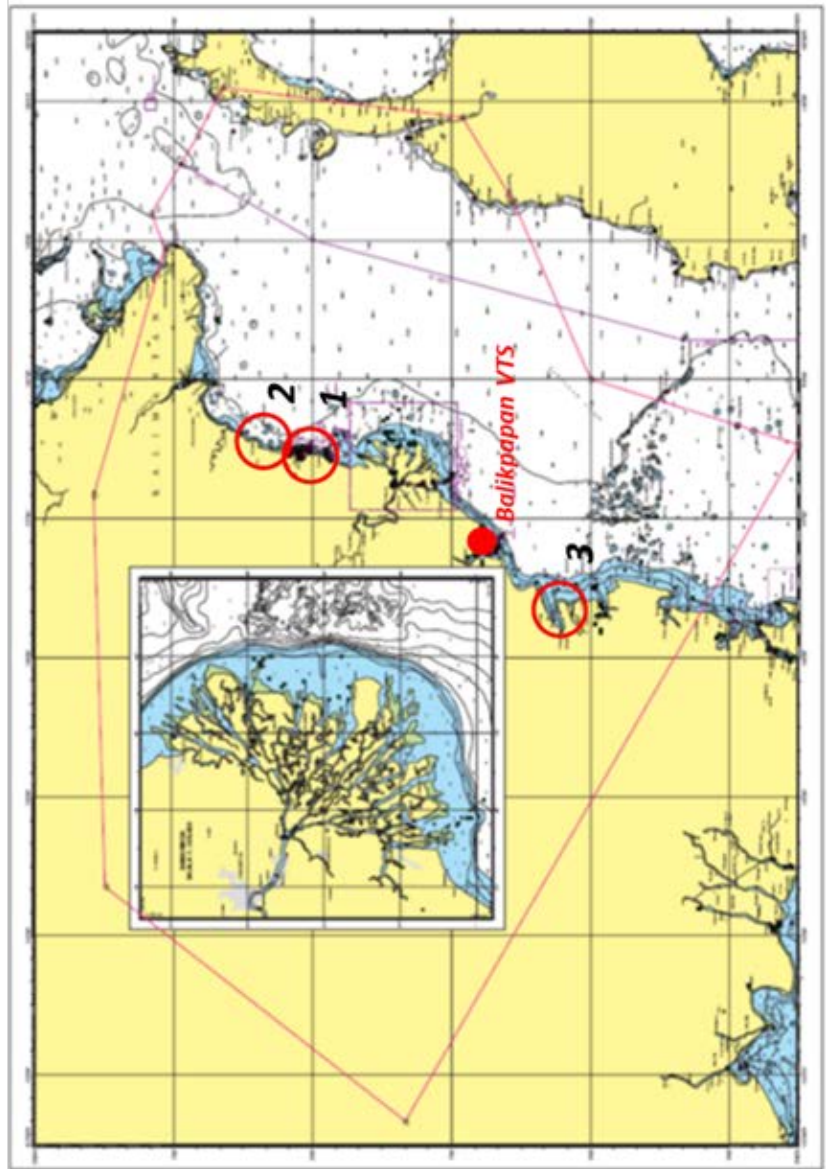
※ Ce: VTS Center, R: Radar, A: AIS, C: CCTV, M: Meteorological Instrument, V: VHF

## 17 Samarinda ( I )

Planned VTS

- 1 Bontang (Port/Habor)
- 2 Sangatta (Coastal Water)
- 3 Tana Grogot Paser (Sensor for Balikpapan)

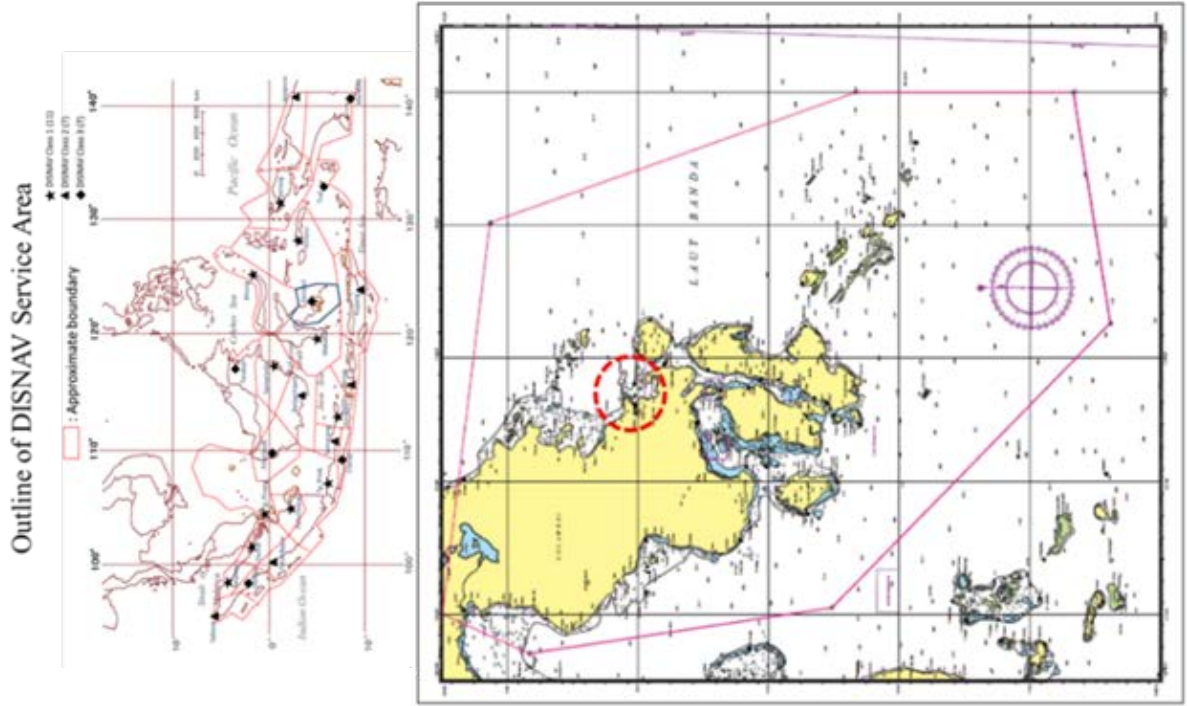
- 1 (  $00^{\circ}06'50.70''$  N  $117^{\circ}29'33.90''$  E )
- 2 (  $00^{\circ}31'26.30''$  N  $117^{\circ}36'23.50''$  E )
- 3 (  $01^{\circ}48'25.02''$  S  $116^{\circ}15'02.59''$  E )



4.1.5 -18 図：計画位置図 (Samarinda)



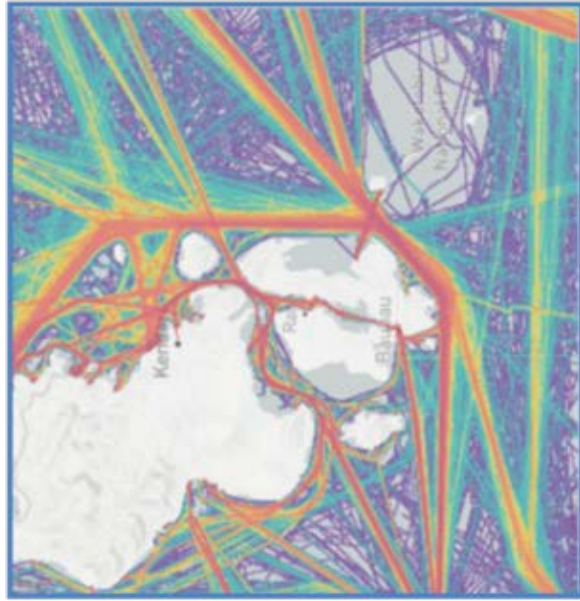
4.1.5 -19 図 : 計画位置図 (Kendari)



### 19 Kendari (Ⅲ)

Planned VTS (Port/Harbour)

Kendari VTS

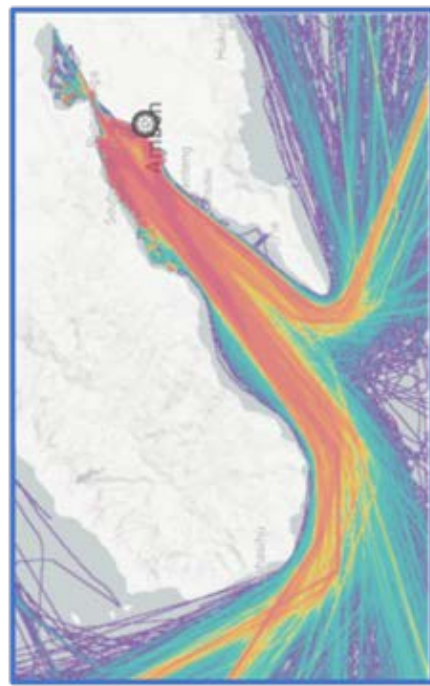




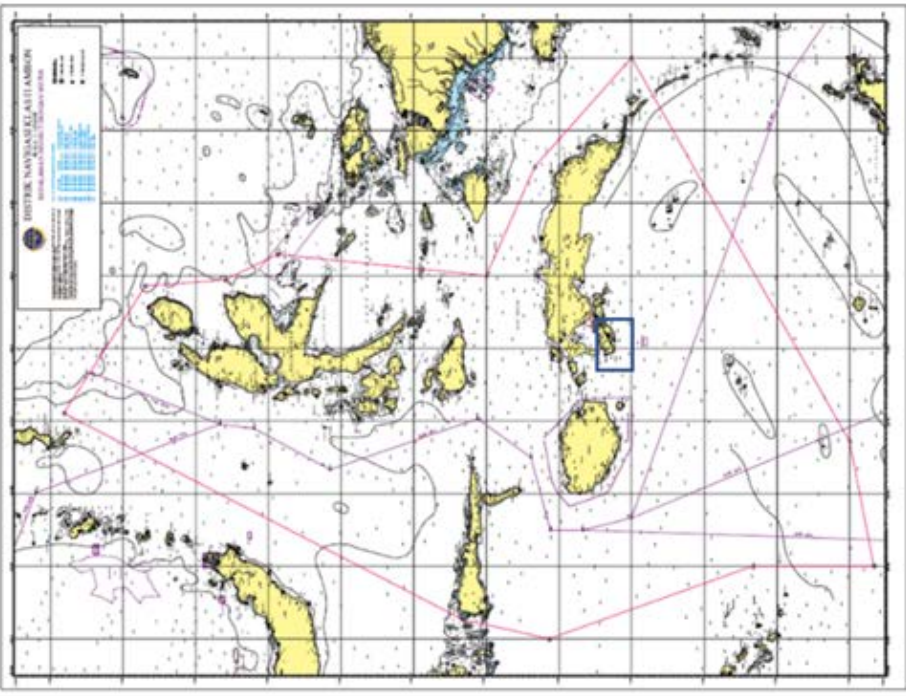
# 21 Ambon ( I )

## Planned VTS

### Ambon VTS (Port/Harbor)



Operation Center / Pusat Operasi	3 Facilities (Jumlah Fasilitas)					Tide Station (stasiun pasang-surut)
	Radar	AIS	CCTC	Meteorological Instrument (Instrumen Meteorologi)	VHF	
1	2	1	2	1	2	0



4.1.5 -20 図 : 計画位置図 (Ambon)

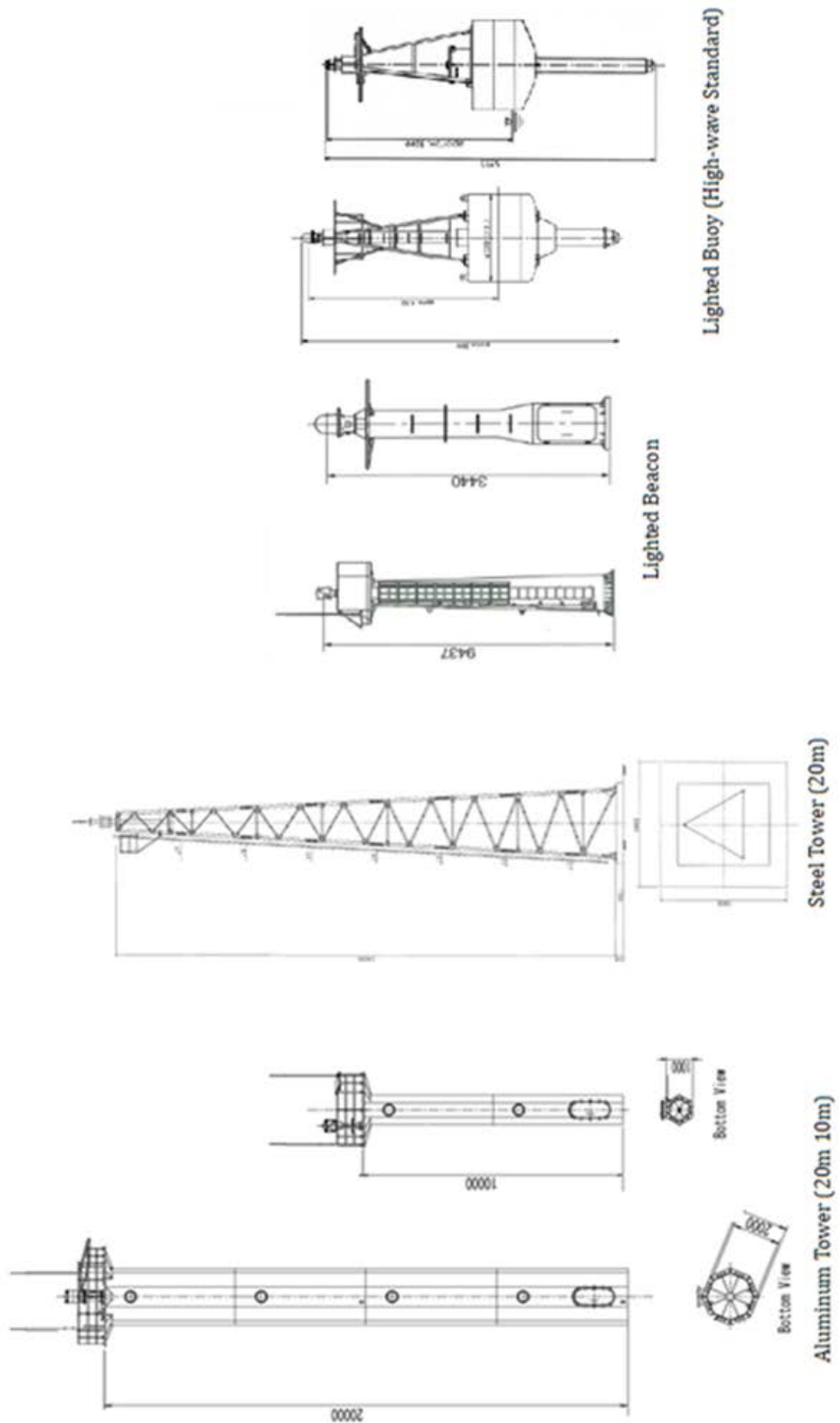
4.1.6 -1 表 : 調査費

Standard Unit Price of Survey			
Item	Type	Price	Reference
1	Hearing Survey	IDR 245M	by Local Staff
2	Feasibility Study (a)	IDR 830M	
3	Feasibility Study (b)	IDR 670M	
4	Implementation Design	IDR 180M	

4.1.6 -2 表 : 価格表 (航路標識) 1/2

Standard Unit Price of Visual Aids for Budget Estimation			
Item	Type	Price	Reference
1	20m Aluminum Tower	IDR 3,000M	
	10m Aluminum Tower	IDR 1,200M	
2	10m Pole Type Aluminum	IDR 1,000M	LED Lantern Solar Battery
	3m Pole Type Aluminum	IDR 750M	
3	High-wave	IDR 1,000M	LED Lantern Solar Battery Mooring Chain
	Standard	IDR 750M	
<b>Reference (Structure for Lighthouse)</b>		<b>IDR 1,800M</b>	<b>Hot-dip galvanizing</b>

4.1.6 -2 表 : 価格表 (航路標識) 2/2



4.1.6 -3 表 : 価格表 (VTS装置) 1/2

Standard Unit Price of VTS for Budget Estimation  
(excluding Power Supply System and Facilities)

Item	Type	Price	Reference
1 Radar System	Antenna (18 Feet Type)	IDR 5,000M	13GHz (Solid state)
	TRX (13GHz)		
	Signal Processor System		
2 AIS Base Station	AIS Transponder & Processor	IDR 1,000M	
	VHF/GPS Antenna		
3 CCTV	Camera	IDR 2,000M	High-resolution Cooperative system with Radar
	Encoder/Stabilizer		
4 Meteorological Sensor	AIS Transponder & Processor	IDR 300M	Sensor, Data Logger
5 MFC System	Operation Console	IDR 14,000M	Multi Function Console
	Server system		
6 VTS Training	SOP, OJT	IDR 710M	

4.1.6 -3 表：価格表（VTS装置） 2/2

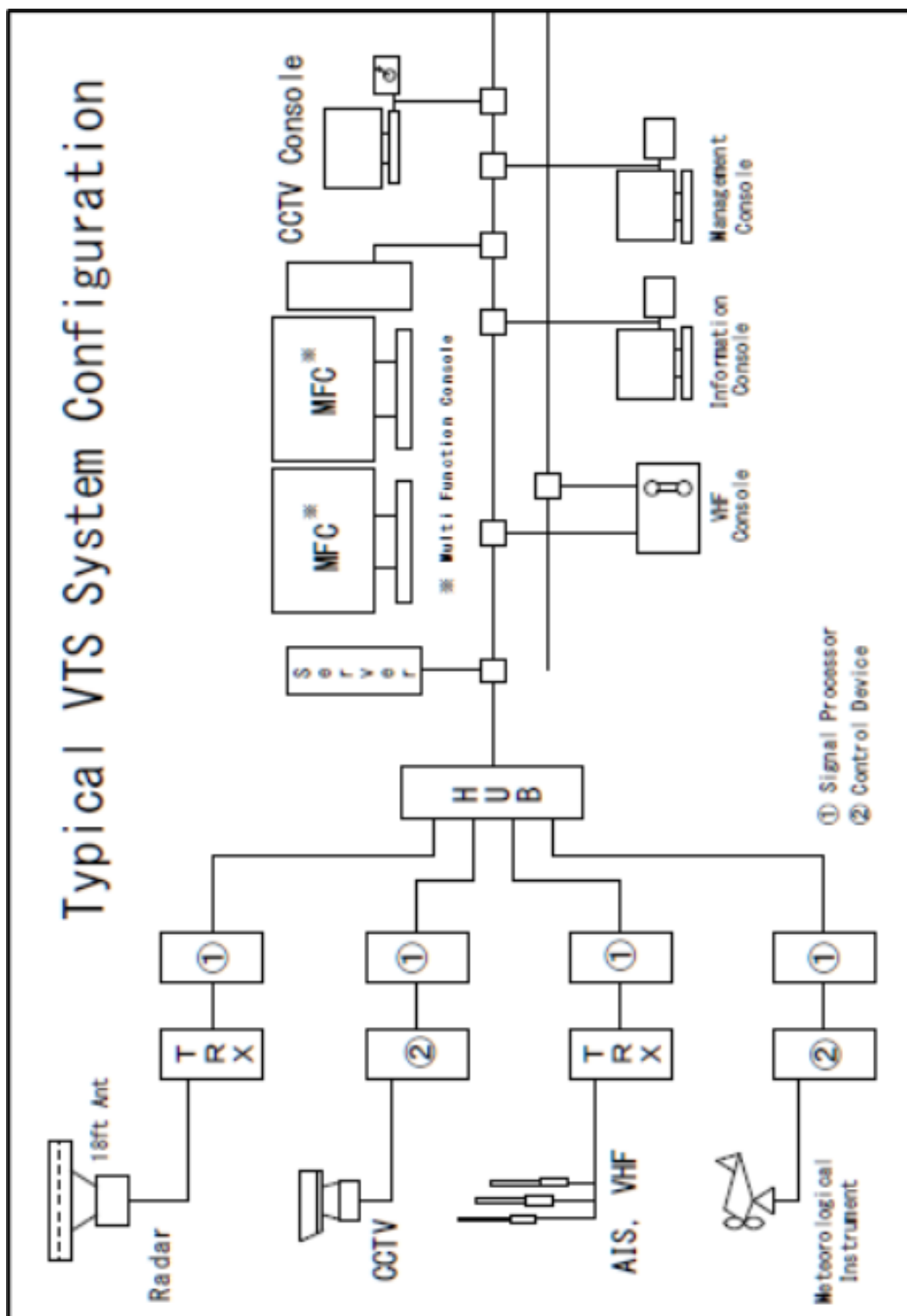




Table of Establishment Plan for AtoN

(1/9)

No.	DISNAV	Nominated Area	Planned AtoN	Item	Implementation (AtoN)						Reference	
					2024	2025	2026	2027	2028	Subsequent Year til 2040		
1	Sabang ( II )	2	4	Hearing Survey						Ox2	Pulau Slumat Ache	
				Feasibly Study	Oa		Oa					
				Implementation Design								
				Construction		OL		OL	OLB x2			
				Budget	IDR 830.M	IDR 3,000.M	IDR 830.M	IDR 3,000.M	IDR 1,750.M	IDR 490.M		IDR 9,900.M
2	Belawan ( I )	0	0	Hearing Survey	O		O		O	Ox2		
				Feasibly Study								
				Implementation Design								
				Construction								
				Budget	IDR 245.M		IDR 245.M		IDR 245.M	IDR 490.M	IDR 1,225.M	
3	Sibolga ( III )	0	0	Hearing Survey	O		O		O	Ox2		
				Feasibly Study								
				Implementation Design								
				Construction								
				Budget	IDR 245.M		IDR 245.M		IDR 245.M	IDR 490.M	IDR 1,225.M	

Table of Establishment Plan for AtoN

(2/9)

No.	DISNAV	Nominated Area	Planned AtoN	Item	Implementation (AtoN)						Reference		
					2024	2025	2026	2027	2028	Subsequent Year til 2040			
4	Teluk Bayur ( I )	2	3	Hearing Survey				○			Ox2		
				Feasibly Study	Oa								
				Implementation Design									
				Construction		OLB	OLB x2						
				Budget	IDR 830.M	IDR 1,000.M	IDR 1,500.M	IDR 245.M	IDR 245.M	IDR 490.M	IDR 4,065.M		
5	Tg. Pinang ( I )	3	-----	Hearing Survey	○		○			○			
				Feasibly Study	Ob								
				Implementation Design									
				Construction									
				Budget	IDR 915.M		IDR 245.M		IDR 245.M	IDR 490.M	IDR 1,895.M		
6	Dumai ( I )	3	7	Hearing Survey			○			○			
				Feasibly Study	Oa								
				Implementation Design									
				Construction		OLB x2	OLB x2	OLB x2	OLB				
				Budget	IDR 830.M	IDR 1,500.M	IDR 1,745.M	IDR 1,500.M	IDR 1,245.M	IDR 490.M	IDR 7,310.M		

Table of Establishment Plan for AtoN

(3/9)

No.	DISNAV	Nominated Area	Planned AtoN	Item	Implementation (AtoN)						Reference		
					2024	2025	2026	2027	2028	Subsequent Year til 2040			
7	Palembang ( I )	0	0	Hearing Survey	○		○		○		OX2		
				Feasibly Study									
				Implementation Design									
				Construction									
				Budget	IDR 245.M		IDR 245.M		IDR 245.M		IDR 245.M		IDR 490.M
8	Pontianak ( III )	1	-----	Hearing Survey			○		○		OX2		
				Feasibly Study									
				Implementation Design									
				Construction									
				Budget			IDR 245.M		IDR 245.M		IDR 245.M		IDR 490.M
9	Tg. Priok ( I )	2	7	Hearing Survey			○		○		OX2		
				Feasibly Study	Oa	Ob							
				Implementation Design			○						
				Construction		OLB x4	OLB x2	OLB					
				Budget	IDR 830.M	IDR 3,670.M	IDR 2,425.M	IDR 1,000.M	IDR 245.M		IDR 490.M		IDR 8,660.M

Table of Establishment Plan for AtoN

(4/9)

No.	DISNAV	Nominated Area	Planned AtoN	Item	Implementation (AtoN)						Reference	
					2024	2025	2026	2027	2028	Subsequent Year till 2040		
10	Cilacap ( III )	2	2	Hearing Survey			○		○	○x2		
				Feasibly Study	Oa							
				Implementation Design								
				Construction		OLB	OLB					
				Budget	IDR 830.M	IDR 1,000.M	IDR 1,245.M		IDR 245.M	IDR 490.M	IDR 3,810.M	
11	Semarang ( II )	2	8	Hearing Survey			○		○	○x2		
				Feasibly Study	Oa	Oa						
				Implementation Design								
				Construction		OLbo x4	OLbo x4					
				Budget	IDR 830.M	IDR 4,830.M	IDR 3,245.M		IDR 245.M	IDR 490.M	IDR 9,640.M	
12	Surabaya ( I )	1	-----	Hearing Survey			○		○	○x2		
				Feasibly Study								
				Implementation Design								
				Construction								
				Budget			IDR 245.M		IDR 245.M	IDR 490.M	IDR 980.M	



Table of Establishment Plan for AtoN

(5/9)

No.	DISNAV	Nominated Area	Planned AtoN	Item	Implementation (AtoN)						Reference		
					2024	2025	2026	2027	2028	Subsequent Year til 2040			
13	Benoa ( II )	6	15	Hearing Survey				○			Ox2		
				Feasibly Study	Oa	Oa	Oa						
				Implementation Design									
				Construction		OLB x3	OLB x5	OLB x4	OLB x3				
				Budget	IDR 830.M	IDR 3,830.M	IDR 4,580.M	IDR 3,245.M	IDR 2,250.M	IDR 490.M	IDR 15,225.M		
14	Kupang ( II )	0	0	Hearing Survey	○		○		○		Ox2		
				Feasibly Study									
				Implementation Design									
				Construction									
				Budget	IDR 245.M		IDR 245.M		IDR 245.M	IDR 490.M	IDR 1,225.M		
15	Banjarmashin ( II )	0	0	Hearing Survey	○		○		○		Ox2		
				Feasibly Study									
				Implementation Design									
				Construction									
				Budget	IDR 245.M		IDR 245.M		IDR 245.M	IDR 490.M	IDR 1,225.M		

Table of Establishment Plan for Aton

(6/9)

No.	DISNAV	Nominated Area	Planned Aton	Item	Implementation (Aton)						Reference		
					2024	2025	2026	2027	2028	Subsequent Year til 2040			
16	Tarakan ( III )	0	0	Hearing Survey		○	○		○		Ox2		
				Feasibly Study									
				Implementation Design									
				Construction									
				Budget		IDR 245.M	IDR 245.M		IDR 245.M		IDR 245.M	IDR 490.M	IDR 1,225.M
17	Samarinda ( I )	2	10	Hearing Survey				○			Ox2		
				Feasibly Study			Oa						
				Implementation Design									
				Construction		OLbo x3	OLbo x4	OLB x3					
				Budget		IDR 830.M	IDR 2,250.M	IDR 3,000.M	IDR 2,495.M		IDR 490.M	IDR 9,065.M	
18	Makassar ( I )	3	8	Hearing Survey					○		Ox2		
				Feasibly Study		Oa	Oa						
				Implementation Design									
				Construction		OLbo	OLbo x4	OLbo x3					
				Budget		IDR 830.M	IDR 1,830.M	IDR 4,830.M	IDR 2,250.M	IDR 245.M	IDR 490.M	IDR 10,475.M	

Table of Establishment Plan for AtoN

(7/9)

No.	DISNAV	Nominated Area	Planned AtoN	Item	Implementation (AtoN)						Reference
					2024	2025	2026	2027	2028	Subsequent Year til 2040	
19	Kendari (III)	0	0	Hearing Survey			○		○	○x2	
				Feasibly Study							
				Implementation Design							
				Construction							
				Budget		IDR 245.M			IDR 245.M		IDR 490.M
20	Bitung ( I )	0	0	Hearing Survey	○		○		○	○x2	
				Feasibly Study							
				Implementation Design							
				Construction							
				Budget	IDR 245.M		IDR 245.M		IDR 245.M		IDR 490.M
21	Ambon ( I )	2	4	Hearing Survey		○		○		○x2	
				Feasibly Study	○b		○b				
				Implementation Design		○		○			
				Construction			○L	○L x2	○L		
				Budget	IDR 670.M	IDR 425.M	IDR 3,670.M	IDR 2,645.M	IDR 3,000.M	IDR 490.M	IDR 10,900.M

Table of Establishment Plan for Aton

(8/9)

No.	DISNAV	Nominated Area	Planned Aton	Item	Implementation (Aton)						Reference		
					2024	2025	2026	2027	2028	Subsequent Year til 2040			
22	Sorong ( I )	0	0	Hearing Survey	○		○		○		○x2		
				Feasibly Study									
				Implementation Design									
				Construction									
				Budget	IDR 245.M		IDR 245.M		IDR 245.M		IDR 245.M		IDR 490.M
23	Jayapura ( II )	5	21	Hearing Survey					○		○x2		
				Feasibly Study	Oa	Oa	Oa						
				Implementation Design									
				Construction		OLB x2, Lbo	OL	OLB, Lbo	OLB, Lbo				
				Budget		IDR 3,330.M	IDR 3,830.M	IDR 3,000.M	IDR 3,000.M	IDR 3,000.M	IDR 3,000.M	IDR 490.M	IDR 13,650.M
24	Merauke ( III )	0	0	Hearing Survey	○		○		○		○x2		
				Feasibly Study									
				Implementation Design									
				Construction									
				Budget	IDR 245.M		IDR 245.M		IDR 245.M		IDR 245.M		IDR 490.M

Table of Establishment Plan for AtoN (9/9)

No.	DISNAV	Nominated Area	Planned AtoN	Item	Implementation (AtoN)						Reference			
					2024	2025	2026	2027	2028	Subsequent Year til 2040				
25	Tual (III)	0	0	Hearing Survey			O		O		Ox2			
				Feasibly Study										
				Implementation Design										
				Construction										
				Budget			IDR 245.M			IDR 245.M		IDR 490.M	IDR 980.M	



Table of Establishment Plan for VTS (1/9)

No.	DISNAV	Nominated Area	Planned VTS	Item	Implementation (VTS)						Reference	
					2024	2025	2026	2027	2028	Subsequent Year til 2040		
1	Sabang ( II )	1	1	Hearing Survey				○		○x2		
				Feasibly Study	Ob							
				Implementation Design		○						
				Construction			○ 1, 2	○ 3, 4, 5	◎		◎ : Training	
				Budget	IDR 670.00M	IDR 180.00M	IDR 6.000.00M	IDR 16.545.00M	IDR 710.00M	IDR 490.00M	IDR 24,595.00M	
2	Belawan ( I )	0	0	Hearing Survey		○		○		○x2	Existing 1	
				Feasibly Study								
				Implementation Design								
				Construction								
				Budget		IDR 245.00M		IDR 245.00M		IDR 490.00M	IDR 980.00M	
3	Sibolga ( III )	0	0	Hearing Survey		○		○		○x2	No VTS	
				Feasibly Study								
				Implementation Design								
				Construction								
				Budget		IDR 245.00M		IDR 245.00M		IDR 490.00M	IDR 980.00M	

Table of Establishment Plan for VTS

(2/9)

No.	DISNAV	Nominated Area	Planned VTS	Item	Implementation (VTS)						Reference	
					2024	2025	2026	2027	2028	Subsequent Year til 2040		
4	Teluk Bayur ( I )	0	0	Hearing Survey		○			○	○x2	Existing 1	
				Feasibly Study								
				Implementation Design								
				Construction								
				Budget		IDR 245.00M			IDR 245.00M		IDR 490.00M	IDR 980.00M
5	Tg. Pinang ( I )	13	3	Hearing Survey	○					○x2	Existing 1	
				Feasibly Study	○b							
				Implementation Design		○						
				Construction			○2, 3	○5, ◎			◎ Training	
				Budget	IDR 915.00M	IDR 180.00M	IDR 6,000.00M	IDR 14,710.00M		IDR 490.00M	IDR 22,295.00M	
6	Dumai ( I )	0	0	Hearing Survey		○			○	○x2	Existing 1	
				Feasibly Study								
				Implementation Design								
				Construction								
				Budget		IDR 245.00M			IDR 245.00M		IDR 490.00M	IDR 980.00M

Table of Establishment Plan for VTS

(3/9)

No.	DISNAV	Nominated Area	Planned VTS	Item	Implementation (VTS)						Reference
					2024	2025	2026	2027	2028	Subsequent Year til 2040	
7	Palembang ( I )	0	0	Hearing Survey		○		○		Ox2	
				Feasibly Study							
				Implementation Design							
				Construction							
				Budget		IDR 245.00M		IDR 245.00M		IDR 490.00M	
8	Pontianak ( III )	2	-----	Hearing Survey	○					Ox2	Existing 1
				Feasibly Study		Ob					
				Implementation Design							
				Construction							
				Budget	IDR 245.00M	IDR 670.00M				IDR 490.00M	
9	Tg. Priok ( I )	1	1	Hearing Survey	○					Ox2	Existing 4
				Feasibly Study	Oa						
				Implementation Design							
				Construction		O1,2,3	O4,5	◎			
				Budget	IDR 1,075.00M	IDR 8,000.00M	IDR 14,300.00M	IDR 710.00M		IDR 490.00M	

Table of Establishment Plan for VTS

(4/9)

No.	DISNAV	Nominated Area	Planned VTS	Item	Implementation (VTS)						Reference
					2024	2025	2026	2027	2028	Subsequent Year til 2040	
10	Cilacap ( III )	0	0	Hearing Survey		○		○		○x2	
				Feasibly Study							
				Implementation Design							
				Construction							
				Budget		IDR 245.00M		IDR 245.00M		IDR 490.00M	
11	Semarang ( II )	0	0	Hearing Survey	○			○		○x2	
				Feasibly Study							
				Implementation Design							
				Construction							
				Budget	IDR 245.00M			IDR 245.00M		IDR 490.00M	
12	Surabaya ( I )	0	0	Hearing Survey	○					○x2	Existing 1
				Feasibly Study		○b					
				Implementation Design							
				Construction							
				Budget	IDR 245.00M	IDR 670.00M				IDR 490.00M	

Table of Establishment Plan for VTS

(5/9)

No.	DISNAV	Nominated Area	Planned VTS	Item	Implementation (VTS)						Reference	
					2024	2025	2026	2027	2028	Subsequent Year til 2040		
13	Benoa ( II )	0	0	Hearing Survey					○	Ox2	Existing 2	
				Feasibly Study								
				Implementation Design								
				Construction								
				Budget					IDR 245.00M	IDR 490.00M	IDR 735.00M	
14	Kupang ( II )	0	0	Hearing Survey	○			○		Ox2	Labuan Bajo	
				Feasibly Study								
				Implementation Design								
				Construction								
				Budget	IDR 245.00M	IDR 670.00M		IDR 245.00M		IDR 490.00M	IDR 1,650.00M	
15	Banjarmashin ( II )	0	0	Hearing Survey		○		○		Ox2	Existing 2	
				Feasibly Study								
				Implementation Design								
				Construction								
				Budget		IDR 245.00M		IDR 245.00M		IDR 490.00M	IDR 980.00M	



Table of Establishment Plan for VTS

(6/9)

No.	DISNAV	Nominated Area	Planned VTS	Item	Implementation (VTS)						Reference	
					2024	2025	2026	2027	2028	Subsequent Year til 2040		
16	Tarakan (III)	1	1	Hearing Survey	O					Ox2		
				Feasibly Study	Ob							
				Implementation Design	O							
				Construction		O1, 2	O3, 4, 5	◎				
				Budget	IDR 915.00M	IDR 180.00M	IDR 6,000.00M	IDR 16,300.00M	IDR 710.00M	IDR 490.00M	IDR 24,595.00M	
17	Samarinda ( I )	2	3	Hearing Survey	O				O	Ox2	Existing 2	
				Feasibly Study		Ob						
				Implementation Design								
				Construction								
				Budget	IDR 245.00M	IDR 670.00M			IDR 245.00M	IDR 490.00M	IDR 1,650.00M	
18	Makassar ( I )	0	0	Hearing Survey				O		Ox2	Existing 1	
				Feasibly Study								
				Implementation Design								
				Construction								
				Budget				IDR 245.00M		IDR 490.00M	IDR 735.00M	

Table of Establishment Plan for VTS

(7/9)

No.	DISNAV	Nominated Area	Planned VTS	Item	Implementation (VTS)						Reference
					2024	2025	2026	2027	2028	Subsequent Year til 2040	
19	Kendari (III)	1	1	Hearing Survey	○			○		○x2	
				Feasibly Study		Ob					
				Implementation Design							
				Construction							
				Budget	IDR 245.00M	IDR 670.00M		IDR 245.00M		IDR 490.00M	<b>IDR 1,650.00M</b>
20	Bitung ( I )	0	0	Hearing Survey		○		○		○x2	
				Feasibly Study							
				Implementation Design							
				Construction							
				Budget		IDR 245.00M		IDR 245.00M		IDR 490.00M	<b>IDR 980.00M</b>
21	Ambon ( I )	1	1	Hearing Survey	○				○	○x2	
				Feasibly Study		Ob					
				Implementation Design							
				Construction							
				Budget	IDR 245.00M	IDR 670.00M			IDR 245.00M		IDR 490.00M

Table of Establishment Plan for VTS

(8/9)

No.	DISNAV	Nominated Area	Planned VTS	Item	Implementation (VTS)						Reference
					2024	2025	2026	2027	2028	Subsequent Year til 2040	
22	Sorong ( I )	0	0	Hearing Survey		○		○		Ox2	Existing 1
				Feasibly Study							
				Implementation Design							
				Construction							
				Budget	IDR 245.00M		IDR 245.00M		IDR 490.00M		
23	Jayapura ( II )	0	0	Hearing Survey		○			○	Ox2	
				Feasibly Study							
				Implementation Design							
				Construction							
				Budget	IDR 245.00M				IDR 245.00M		IDR 980.00M
24	Merauke ( III )	0	0	Hearing Survey	○			○		Ox2	
				Feasibly Study							
				Implementation Design							
				Construction							
				Budget	IDR 245.00M		IDR 245.00M		IDR 245.00M		IDR 735.00M

Table of Establishment Plan for VTS (9/9)

No.	DISNAV	Nominated Area	Planned VTS	Item	Implementation						Reference
					2024	2025	2026	2027	2028	Subsequent Year til 2040	
25	Tual (III)	3	3	Hearing Survey	Ox2			O		Ox2	
				Feasibly Study							
				Implementation Design							
				Construction							
				Budget	IDR 490.00M		IDR 245.00M		IDR 490.00M		IDR 1,225.00M

4.1.7 -19 表：業務別集計金額（航路標識）

Table of Establishment Plan for AtoN

No.	DISNAV	Hominated Area	Planned AtoN	Item	Implementation Cost (AtoN)						Total
					2024	2025	2026	2027	2028	Subsequent Year till 2040	
1	DISNAV (1-25)	36	89	Hearing Survey	IDR 2,205M	IDR 4,900M	IDR 4,410M	IDR 980M	IDR 4,900M	IDR 12,250M	IDR 25,235M
				Feasibly Study	IDR 9,640M	IDR 3,990M	IDR 4,820M				IDR 18,450M
				Implementation Design		IDR 180M	IDR 180M	IDR 180M			IDR 540M
				Construction		IDR 22,250M	IDR 25,750M	IDR 18,400M	IDR 11,000M		IDR 77,400M
				Budget	IDR 11,845M	IDR 26,910M	IDR 35,160M	IDR 19,560M	IDR 15,900M	IDR 12,250M	IDR 121,625M



4.1.7 -20 表：業務別集計金額（VTS）

Table of Establishment Plan for VTS

No.	DISNAV	Nominated Area	Planned VTS	Item	Implementation (VTS)						Total		
					2024	2025	2026	2027	2028	Subsequent Year til 2040			
1	DISNAV (1-25)		14	Hearing Survey	IDR 2,940.00M	IDR 2,695.00M		IDR 3,920.00M	IDR 1,470.00M	IDR 12,250.00M	IDR 23,275.00M		
				Feasibly Study	IDR 2,840.00M	IDR 4,690.00M						IDR 7,530.00M	
				Implementation Design		IDR 540.00M							IDR 540.00M
				Construction		IDR 8,000.00M	IDR 32,300.00M	IDR 48,020.00M	IDR 1,420.00M				IDR 89,740.00M
				Budget	IDR 5,780.00M	IDR 15,925.00M	IDR 32,300.00M	IDR 51,940.00M	IDR 2,890.00M	IDR 12,250.00M			IDR 121,085.00M

#### 4.1.7 -21 表 : DISNAV別集計表 (航路標識)

Table of Budget Plan for AtoN

No.	DISNAV	Nominated Area	Planned AtoN	Implementation Cost (AtoN)						Total
				2024	2025	2026	2027	2028	Subsequent Year til 2040	
1	Sabang (II)	2	4	IDR 830.00M	IDR 3,000.00M	IDR 830.00M	IDR 3,000.00M	IDR 1,750.00M	IDR 490.00M	<b>IDR 9,900.00M</b>
2	Belawan (I)	0	0	IDR 245.00M		IDR 245.00M		IDR 245.00M	IDR 490.00M	<b>IDR 1,225.00M</b>
3	Sibolga (III)	0	0	IDR 245.00M		IDR 245.00M		IDR 245.00M	IDR 490.00M	<b>IDR 1,225.00M</b>
4	Teluk Bayur (I)	2	3	IDR 830.00M	IDR 1,000.00M	IDR 1,500.00M	IDR 245.00M		IDR 490.00M	<b>IDR 4,065.00M</b>
5	Tg. Pinang (I)	3	----	IDR 915.00M		IDR 245.00M		IDR 245.00M	IDR 490.00M	<b>IDR 1,895.00M</b>
6	Dumai (I)	3	7	IDR 830.00M	IDR 1,500.00M	IDR 1,745.00M	IDR 1,500.00M	IDR 1,245.00M	IDR 490.00M	<b>IDR 7,310.00M</b>
7	Palembang (I)	0	0	IDR 245.00M		IDR 245.00M		IDR 245.00M	IDR 490.00M	<b>IDR 1,225.00M</b>
8	Pontianak (III)	1	----			IDR 245.00M		IDR 245.00M	IDR 490.00M	<b>IDR 980.00M</b>
9	Tg. Priok (I)	2	7	IDR 830.00M	IDR 3,670.00M	IDR 2,425.00M	IDR 1,000.00M	IDR 245.00M	IDR 490.00M	<b>IDR 8,660.00M</b>
10	Cilacap (III)	2	2	IDR 830.00M	IDR 1,000.00M	IDR 1,245.00M		IDR 245.00M	IDR 490.00M	<b>IDR 3,810.00M</b>
11	Semarang (II)	2	8	IDR 830.00M	IDR 4,830.00M	IDR 3,245.00M		IDR 245.00M	IDR 490.00M	<b>IDR 9,640.00M</b>
12	Surabaya (I)	1	----			IDR 245.00M		IDR 245.00M	IDR 490.00M	<b>IDR 980.00M</b>
13	Benoa (II)	6	15	IDR 830.00M	IDR 3,830.00M	IDR 4,580.00M	IDR 3,245.00M	IDR 2,250.00M	IDR 490.00M	<b>IDR 15,225.00M</b>
14	Kupang (II)	0	0	IDR 245.00M		IDR 245.00M		IDR 245.00M	IDR 490.00M	<b>IDR 1,225.00M</b>
15	Banjarmashin (II)	0	0	IDR 245.00M		IDR 245.00M		IDR 245.00M	IDR 490.00M	<b>IDR 1,225.00M</b>
16	Tarakan (III)	0	0		IDR 245.00M	IDR 245.00M		IDR 245.00M	IDR 490.00M	<b>IDR 1,225.00M</b>
17	Samarinda (I)	2	10	IDR 830.00M	IDR 2,250.00M	IDR 3,830.00M	IDR 2,495.00M		IDR 490.00M	<b>IDR 9,895.00M</b>
18	Makassar (I)	3	8	IDR 830.00M	IDR 1,830.00M	IDR 4,830.00M	IDR 2,250.00M	IDR 245.00M	IDR 490.00M	<b>IDR 10,475.00M</b>
19	Kendari (III)	0	0			IDR 245.00M		IDR 245.00M	IDR 490.00M	<b>IDR 980.00M</b>
20	Bitung (I)	0	0	IDR 245.00M		IDR 245.00M		IDR 245.00M	IDR 490.00M	<b>IDR 1,225.00M</b>
21	Ambon (I)	2	4	IDR 670.00M	IDR 425.00M	IDR 3,670.00M	IDR 2,825.00M	IDR 3,000.00M	IDR 490.00M	<b>IDR 11,080.00M</b>
22	Sorong (I)	0	0	IDR 245.00M		IDR 245.00M		IDR 245.00M	IDR 490.00M	<b>IDR 1,225.00M</b>
23	Jayapura (II)	5	21	IDR 830.00M	IDR 3,330.00M	IDR 3,830.00M	IDR 3,000.00M	IDR 3,245.00M	IDR 490.00M	<b>IDR 14,725.00M</b>
24	Merauke (III)	0	0	IDR 245.00M		IDR 245.00M		IDR 245.00M	IDR 490.00M	<b>IDR 1,225.00M</b>
25	Tual (III)	0	0			IDR 245.00M		IDR 245.00M	IDR 490.00M	<b>IDR 980.00M</b>
	<b>Total</b>	<b>36</b>	<b>89</b>	<b>IDR 11,845.00M</b>	<b>IDR 26,910.00M</b>	<b>IDR 35,160.00M</b>	<b>IDR 19,560.00M</b>	<b>IDR 15,900.00M</b>	<b>IDR 12,250.00M</b>	<b>IDR 121,625.00M</b>

### 4.1.7 -22 表 : DISNAV別集計表 (VTS)

Table of Budget Plan for VTS

No.	DISNAV	Nominated Area	Planned VTS	Implementation Cost (VTS)						Total
				2024	2025	2026	2027	2028	Subsequent Year til 2040	
1	Sabang (Ⅱ)	1	1	IDR 670.00M	IDR 180.00M	IDR 6,000.00M	IDR 16,545.00M	IDR 710.00M	IDR 490.00M	<b>IDR 24,595.00M</b>
2	Belawan (Ⅰ)	0	0		IDR 245.00M		IDR 245.00M		IDR 490.00M	<b>IDR 980.00M</b>
3	Sibolga (Ⅲ)	0	0		IDR 245.00M		IDR 245.00M		IDR 490.00M	<b>IDR 980.00M</b>
4	Teluk Bayur (Ⅰ)	0	0		IDR 245.00M			IDR 245.00M	IDR 490.00M	<b>IDR 980.00M</b>
5	Tg. Pinang (Ⅰ)	13	3	IDR 915.00M	IDR 180.00M	IDR 6,000.00M	IDR 14,710.00M		IDR 490.00M	<b>IDR 22,295.00M</b>
6	Dumai (Ⅰ)	0	0		IDR 245.00M			IDR 245.00M	IDR 490.00M	<b>IDR 980.00M</b>
7	Palembang (Ⅰ)	0	0		IDR 245.00M		IDR 245.00M		IDR 490.00M	<b>IDR 980.00M</b>
8	Pontianak (Ⅲ)	2	----	IDR 245.00M	IDR 670.00M		IDR 245.00M		IDR 490.00M	<b>IDR 1,650.00M</b>
9	Tg. Priok (Ⅰ)	1	1	IDR 1,075.00M	IDR 8,000.00M	IDR 14,300.00M	IDR 710.00M		IDR 490.00M	<b>IDR 24,575.00M</b>
10	Cilacap (Ⅲ)	0	0		IDR 245.00M		IDR 245.00M		IDR 490.00M	<b>IDR 980.00M</b>
11	Semarang (Ⅱ)	0	0	IDR 245.00M			IDR 245.00M		IDR 490.00M	<b>IDR 980.00M</b>
12	Surabaya (Ⅰ)	0	0	IDR 245.00M	IDR 670.00M		IDR 245.00M		IDR 490.00M	<b>IDR 1,650.00M</b>
13	Benoa (Ⅱ)	0	0					IDR 245.00M	IDR 490.00M	<b>IDR 735.00M</b>
14	Kupang (Ⅱ)	0	0	IDR 245.00M	IDR 670.00M		IDR 245.00M		IDR 490.00M	<b>IDR 1,650.00M</b>
15	Banjarmashin (Ⅱ)	0	0		IDR 245.00M		IDR 245.00M		IDR 490.00M	<b>IDR 980.00M</b>
16	Tarakan (Ⅲ)	1	1	IDR 915.00M	IDR 180.00M	IDR 6,000.00M	IDR 16,300.00M	IDR 710.00M	IDR 490.00M	<b>IDR 24,595.00M</b>
17	Samarinda (Ⅰ)	2	3	IDR 245.00M	IDR 670.00M			IDR 245.00M	IDR 490.00M	<b>IDR 1,650.00M</b>
18	Makassar (Ⅰ)	0	0				IDR 245.00M		IDR 490.00M	<b>IDR 735.00M</b>
19	Kendari (Ⅲ)	1	1	IDR 245.00M	IDR 670.00M		IDR 245.00M		IDR 490.00M	<b>IDR 1,650.00M</b>
20	Bitung (Ⅰ)	0	0		IDR 245.00M		IDR 245.00M		IDR 490.00M	<b>IDR 980.00M</b>
21	Ambon (Ⅰ)	1	1	IDR 245.00M	IDR 670.00M			IDR 245.00M	IDR 490.00M	<b>IDR 1,650.00M</b>
22	Sorong (Ⅰ)	0	0		IDR 245.00M		IDR 245.00M		IDR 490.00M	<b>IDR 980.00M</b>
23	Jayapura (Ⅱ)	0	0		IDR 245.00M			IDR 245.00M	IDR 490.00M	<b>IDR 980.00M</b>
24	Merauke (Ⅲ)	0	0		IDR 245.00M		IDR 245.00M		IDR 490.00M	<b>IDR 980.00M</b>
25	Tual (Ⅲ)	3	3	IDR 490.00M	IDR 670.00M		IDR 245.00M		IDR 490.00M	<b>IDR 1,895.00M</b>
	<b>Total</b>	<b>25</b>	<b>14</b>	<b>IDR 5,780.00M</b>	<b>IDR 15,925.00M</b>	<b>IDR 32,300.00M</b>	<b>IDR 51,940.00M</b>	<b>IDR 2,890.00M</b>	<b>IDR 12,250.00M</b>	<b>IDR 121,085.00M</b>

### 4.1.7 -23 表：総括表 1

Budget Table of Establishment Plan for AtoN/VTS

(Unit : IDR M)

No.	DISNAV		Nominated Area	Planned Number	Implementation Cost						Total
					2024	2025	2026	2027	2028	Subsequent Year til	
1	Sabang (II)	AtoN	2	4	830	3,000	830	3,000	1,750	490	9,900
		VTS	1	1	670	180	6,000	16,545	710	490	24,595
		Total	---	---	1,500	3,180	6,830	19,545	2,460	980	34,495
2	Belawan (I)	AtoN	0	0	245		245		245	490	1,225
		VTS	0	0		245		245		490	980
		Total			245	245	245	245	245	980	2,205
3	Sibolga (III)	AtoN	0	0	245		245		245	490	1,225
		VTS	0	0		245		245		490	980
		Total	---	---	245	245	245	245	245	980	2,205
4	Teluk Bayur (I)	AtoN	2	3	830	1,000	1,500	245		490	4,065
		VTS	0	0		245			245	490	980
		Total	---	---	830	1,245	1,500	245	245	980	5,045
5	Tg. Pinang (I)	AtoN	3	---	915		245		245	490	1,895
		VTS	13	3	915	180	6,000	14,710		490	22,295
		Total	---	---	1,830	180	6,245	14,710	245	980	24,190
6	Dumai (I)	AtoN	3	7	830	1,500	1,745	1,500	1,245	490	7,310
		VTS	0	0		245			245	490	980
		Total	---	---	830	1,745	1,745	1,500	1,490	980	8,290
7	Palembang (I)	AtoN	0	0	245		245		245	490	1,225
		VTS	0	0		245		245		490	980
		Total	---	---	245	245	245	245	245	980	2,205
8	Pontianak (III)	AtoN	1	---			245		245	490	980
		VTS	2	---	245	670		245		490	1,650
		Total	---	---	245	670	245	245	245	980	2,630
9	Tg. Priok (I)	AtoN	2	7	830	3,670	2,425	1,000	245	490	8,660
		VTS	1	1	1,075	8,000	14,300	710		490	24,575
		Total	---	---	1,905	11,670	16,725	1,710	245	980	33,235
10	Cilacap (III)	AtoN	2	2	830	1,000	1,245		245	490	3,810
		VTS	0	0		245		245		490	980
		Total	---	---	830	1,245	1,245	245	245	980	4,790
11	Semarang (II)	AtoN	2	8	830	4,830	3,245		245	490	9,640
		VTS	0	0	245			245		490	980
		Total	---	---	1,075	4,830	3,245	245	245	980	10,620
12	Surabaya (I)	AtoN	1	---			245		245	490	980
		VTS	0	0	245	670		245		490	1,650
		Total	---	---	245	670	245	245	245	980	2,630
13	Benoa (II)	AtoN	6	15	830	3,830	4,580	3,245	2,250	490	15,225
		VTS	0	0					245	490	735
		Total	---	---	830	3,830	4,580	3,245	2,495	980	15,960

No.	DISNAV		Nominated Area	Planned Number	Implementation Cost						Total
					2024	2025	2026	2027	2028	Subsequent Year til	
14	Kupang (II)	AtoN	0	0	245		245		245	490	1,225
		VTS	0	0	245	670	180	6,245	16,300	1,200	24,840
		Total	---	---	490	670	425	6,245	16,545	1,690	26,065
15	Banjamashin (II)	AtoN	0	0	245		245		245	490	1,225
		VTS	0	0		245		245		490	980
		Total	---	---	245	245	245	245	245	980	2,205
16	Tarakan (III)	AtoN	0	0		245	245		245	490	1,225
		VTS	1	1	915	180	6,000	16,300	710	490	24,595
		Total	---	---	915	425	6,245	16,300	955	980	25,820
17	Samarinda (I)	AtoN	2	10	830	2,250	3,830	2,495		490	9,895
		VTS	2	3	245	670			245	490	1,650
		Total	---	---	1,075	2,920	3,830	2,495	245	980	11,545
18	Makassar (I)	AtoN	3	8	830	1,830	4,830	2,250	245	490	10,475
		VTS	0	0				245		490	735
		Total	---	---	830	1,830	4,830	2,495	245	980	11,210
19	Kendari (III)	AtoN	0	0			245		245	490	980
		VTS	1	1	245	670		245		490	1,650
		Total	---	---	245	670	245	245	245	980	2,630
20	Bitung (I)	AtoN	0	0	245		245		245	490	1,225
		VTS	0	0		245		245		490	980
		Total	---	---	245	245	245	245	245	980	2,205
21	Ambon (I)	AtoN	2	4	670	425	3,670	2,825	3,000	490	11,080
		VTS	1	1	245	670			245	490	1,650
		Total	---	---	915	1,095	3,670	2,825	3,245	980	12,730
22	Sorong (I)	AtoN	0	0	245		245		245	490	1,225
		VTS	0	0		245		245		490	980
		Total	---	---	245	245	245	245	245	980	2,205
23	Jayapura (II)	AtoN	5	21	830	3,330	3,830	3,000	3,245	490	14,725
		VTS	0	0		245			245	490	980
		Total	---	---	830	3,575	3,830	3,000	3,490	980	15,705
24	Merauke (III)	AtoN	0	0	245		245		245	490	1,225
		VTS	0	0		245		245		490	980
		Total	---	---	245	245	245	245	245	980	2,205
25	Tual (III)	AtoN	0	0			245		245	490	980
		VTS	3	3	490	670		245		490	1,895
		Total	---	---	490	670	245	245	245	980	2,875
Total					17,625	42,835	67,640	77,500	35,090	25,210	265,900



## 4.1.7 -24 表：総括表 2

Budget Table of Establishment Plan for AtoN including VTS

(Unit : IDR M)

No.	DISNAV	Implementaiotn Cost						Total
		2024	2025	2026	2027	2028	Subsequent Year til 2040	
1	Sabang (II)	1,500.00M	3,180.00M	6,830.00M	19,545.00M	2,460.00M	980.00M	34,495.00M
2	Belawan (I)	245.00M	245.00M	245.00M	245.00M	245.00M	980.00M	2,205.00M
3	Sibolga (III)	245.00M	245.00M	245.00M	245.00M	245.00M	980.00M	2,205.00M
4	Teluk Bayur (I)	830.00M	1,245.00M	1,500.00M	245.00M	245.00M	980.00M	5,045.00M
5	Tg. Pinang (I)	1,830.00M	180.00M	6,245.00M	14,710.00M	245.00M	980.00M	24,190.00M
6	Dumai (I)	830.00M	1,745.00M	1,745.00M	1,500.00M	1,490.00M	980.00M	8,290.00M
7	Palembang (I)	245.00M	245.00M	245.00M	245.00M	245.00M	980.00M	2,205.00M
8	Pontianak (III)	245.00M	670.00M	245.00M	245.00M	245.00M	980.00M	2,630.00M
9	Tg. Priok (I)	1,905.00M	11,670.00M	16,725.00M	1,710.00M	245.00M	980.00M	33,235.00M
10	Cilacap (III)	830.00M	1,245.00M	1,245.00M	245.00M	245.00M	980.00M	4,790.00M
11	Semarang (II)	1,075.00M	4,830.00M	3,245.00M	245.00M	245.00M	980.00M	10,620.00M
12	Surabaya (I)	245.00M	670.00M	245.00M	245.00M	245.00M	980.00M	2,630.00M
13	Benoa (II)	830.00M	3,830.00M	4,580.00M	3,245.00M	2,495.00M	980.00M	15,960.00M
14	Kupang (II)	490.00M	670.00M	425.00M	6,245.00M	16,545.00M	1,690.00M	26,065.00M
15	Banjarmashin (II)	245.00M	245.00M	245.00M	245.00M	245.00M	980.00M	2,205.00M
16	Tarakan (III)	915.00M	425.00M	6,245.00M	16,300.00M	955.00M	980.00M	25,820.00M
17	Samarinda (I)	1,075.00M	2,920.00M	3,830.00M	2,495.00M	245.00M	980.00M	11,545.00M
18	Makassar (I)	830.00M	1,830.00M	4,830.00M	2,495.00M	245.00M	980.00M	11,210.00M
19	Kendari (III)	245.00M	670.00M	245.00M	245.00M	245.00M	980.00M	2,630.00M
20	Bitung (I)	245.00M	245.00M	245.00M	245.00M	245.00M	980.00M	2,205.00M
21	Ambon (I)	915.00M	1,095.00M	3,670.00M	2,825.00M	3,245.00M	980.00M	12,730.00M
22	Sorong (I)	245.00M	245.00M	245.00M	245.00M	245.00M	980.00M	2,205.00M
23	Jayapura (II)	830.00M	3,575.00M	3,830.00M	3,000.00M	3,490.00M	980.00M	15,705.00M
24	Merauke (III)	245.00M	245.00M	245.00M	245.00M	245.00M	980.00M	2,205.00M
25	Tual (III)	490.00M	670.00M	245.00M	245.00M	245.00M	980.00M	2,875.00M
Total		17,625.00M	42,835.00M	67,640.00M	77,500.00M	35,090.00M	25,210.00M	265,900.00M

# 第 4 章 (2/3)

業務分野 (4.2 沿岸無線局)

4.2.2 -1 表：沿岸無線局の分類

Class	Station	Function	GMDSS	Service area	Operation hours	Portion
1	11	Maritime Mobile service including public telecom service, Fixed station	O	A1, A2, A3	24	0.1
2	7		O	A1, A2, A3	16-24	0.0
3	A 42		O	A1, A2	12-16	0.3
	B 7		O	A1, A2	12-16	
4	A 65	Maritime Mobile service and/or Fixed station	Δ	A1, A2	8-12	0.6
	B 26		X	A1		
Total	158					

周波数別区分

MF (kHz)		490	518	2,182	2,187.50		
HF (MHz)	Various channels band	4	6	8	12	16	18
VHF (MHz)		156-174MHz band					

周波数別電波到達範囲（半径）

A1	30-40NM in VHF
A2	150-200NM in MF
A3	Over A2 area covered by HF and mobile satellite communication

4.2.4 -1 表：一方向通信

	DISNAV	CRS	CQ/To all ships							
			VHF	MF	HF	Total	VHF	MF	HF	Total
			Month total count				Daily average			
1	Ambon	Ambon	31	979	31	1,041	1.0	31.6	1.0	33.6
2	Banjarmasi	Banjarmasin	-	-	88	88	-	-	2.8	2.8
3	Banjarmasi	Kumani	-	0	12	12	-	0.0	0.4	0.4
4	Belawan	Pangkalan Susu	26	-	37	63	0.8	-	1.2	2.0
5	Belawan	Tg Balai	-	-	256	256	-	-	8.3	8.3
6	Belawan	Kuala Langsa	1	-	196	197	0.0	-	6.3	6.4
7	Benoa	Benoa	-	3	147	150	-	0.1	4.7	4.8
8	Bitung	Bitung	5	-	81	86	0.2	-	2.6	2.8
9	Cilacap	Cilacap	311	-	213	524	10.0	-	6.9	16.9
10	Dumai	Dumai	66	66	417	549	2.1	2.1	13.5	17.7
11	Kendari	Kendari	31	121	32	184	1.0	3.9	1.0	5.9
12	Kendari	Kolaka	86	-	106	192	2.8	-	3.4	6.2
13	Kupang	Kupang	-	-	-	-	-	-	-	-
14	Makassar	Selayar	30	-	-	30	1.0	-	-	1.0
15	Merauke	Merauke	91	186	372	649	2.9	6.0	12.0	20.9
16	Palembang	Palembang	403	-	-	403	13.0	-	-	13.0
17	Palembang	Tg Pandan	202	199	-	401	6.5	6.4	-	12.9
18	Palembang	Pg Balam	62	62	-	124	2.0	2.0	-	4.0
19	Pontianak	Pontianak	186	155	248	589	6.0	5.0	8.0	19.0
20	Sagabq	Sagabq	-	62	310	372	-	2.0	10.0	12.0
21	Samarinda	Balikpapan	-	-	32	32	-	-	1.0	1.0
22	Samarinda	Samarinda	-	-	115	115	-	-	3.7	3.7
23	Semarang	Jepara	85	-	171	256	2.7	-	5.5	8.3
24	Semarang	Pekalongan	34	-	341	375	1.1	-	11.0	12.1
25	Semarang	Semarang	-	-	500	500	-	-	16.1	16.1
26	Tg Pinang	Batu Ampar	-	-	-	-	-	-	-	-
27	Tg Pinang	Dabo Singkep	-	-	-	-	-	-	-	-
28	Tg Pinang	Sei Kolak Kijang	-	-	-	-	-	-	-	-
29	Tg Pinang	Tarenpa	-	-	-	-	-	-	-	-
30	Tg Pinang	Tg Pinang	-	-	-	-	-	-	-	-
31	Tg Pinang	Tg Uban	-	-	-	-	-	-	-	-
32	Tg Priok	Bengkulu	66	-	160	226	2.1	-	5.2	7.3
33	Tg Priok	Cirebon	44	27	328	399	1.4	0.9	10.6	12.9
34	Tarakan	Nunukan	-	-	-	-	-	-	-	-
35	Tarakan	Tarakan	-	-	29	29	-	-	0.9	0.9
36	Teluk Bayu	Teluk Bayur	-	62	186	248	-	2.0	6.0	8.0
37	Tual	Saumlaki	-	-	242	242	-	-	7.8	7.8
38	Tual	Tual	-	1	252	253	-	0.0	8.1	8.2
	Monthly average		46.32	50.62	129.00	225.93	1.49	1.63	4.16	7.29
	Daily average		1.49	1.63	4.16	7.29				

4.2.4 -2 表：双方向交信

	DISNAV	CRS	QSO					
			VHF	HF	Total	VHF	HF	Total
			Month total count			Daily average		
1	Ambon	Ambon	185	-	185	6.0	-	6.0
2	Banjarmasin	Banjarmasin	-	9	9	-	0.3	0.3
3	Banjarmasin	Kumani	19	-	19	0.6	-	0.6
4	Belawan	Pangkalan Susu	14	-	14	0.5	-	0.5
5	Belawan	Tg Balai	-	58	58	-	1.9	1.9
6	Belawan	Kuala Langsa	-	-	-	-	-	-
7	Benoa	Benoa	-	13	13	-	0.4	0.4
8	Bitung	Bitung	1	37	38	0.0	1.2	1.2
9	Cilacap	Cilacap	43	4	47	1.4	0.1	1.5
10	Dumai	Dumai	-	6	6	-	0.2	0.2
11	Kendari	Kendari	2	22	24	0.1	0.7	0.8
12	Kendari	Kolaka	39	115	154	1.3	3.7	5.0
13	Kupang	Kupang	136	-	136	4.4	-	4.4
14	Makassar	Selayar	26	43	69	0.8	1.4	2.2
15	Merauke	Merauke	-	-	-	-	-	-
16	Palembang	Palembang	-	-	-	-	-	-
17	Palembang	Tg Pandan	48	-	48	1.5	-	1.5
18	Palembang	Pg Balam	178	-	178	5.7	-	5.7
19	Pontianak	Pontianak	-	-	-	-	-	-
20	Sagabg	Sagabg	-	-	-	-	-	-
21	Samarinda	Balikpapan	-	-	-	-	-	-
22	Samarinda	Samarinda	-	3	3	-	0.1	0.1
23	Semarang	Jepara	52	17	69	1.7	0.5	2.2
24	Semarang	Pekalongan	5	-	5	0.2	-	0.2
25	Semarang	Semarang	12	2	14	0.4	0.1	0.5
26	Tg Pinang	Batu Ampar	54	-	54	1.7	-	1.7
27	Tg Pinang	Dabo Singkep	166	-	166	5.4	-	5.4
28	Tg Pinang	Sei Kolak Kijang	156	-	156	5.0	-	5.0
29	Tg Pinang	Tarenpa	74	-	74	2.4	-	2.4
30	Tg Pinang	Tg Pinang	425	-	425	13.7	-	13.7
31	Tg Pinang	Tg Uban	62	-	62	2.0	-	2.0
32	Tg Priok	Bengkulu	219	-	219	7.1	-	7.1
33	Tg Priok	Cirebon	247	-	247	8.0	-	8.0
34	Tarakan	Nunukan	41	-	41	1.3	-	1.3
35	Tarakan	Tarakan	-	1	1	-	0.0	0.0
36	Teluk Bayur	Teluk Bayur	-	-	-	-	-	-
37	Tual	Saumlaki	-	47	47	-	1.5	1.5
38	Tual	Tual	10	23	33	0.3	0.7	1.1
	Monthly average		<b>58.26</b>	<b>10.53</b>	<b>68.79</b>	<b>1.88</b>	<b>0.34</b>	<b>2.22</b>
	Daily average		<b>1.88</b>	<b>0.34</b>	<b>2.22</b>			

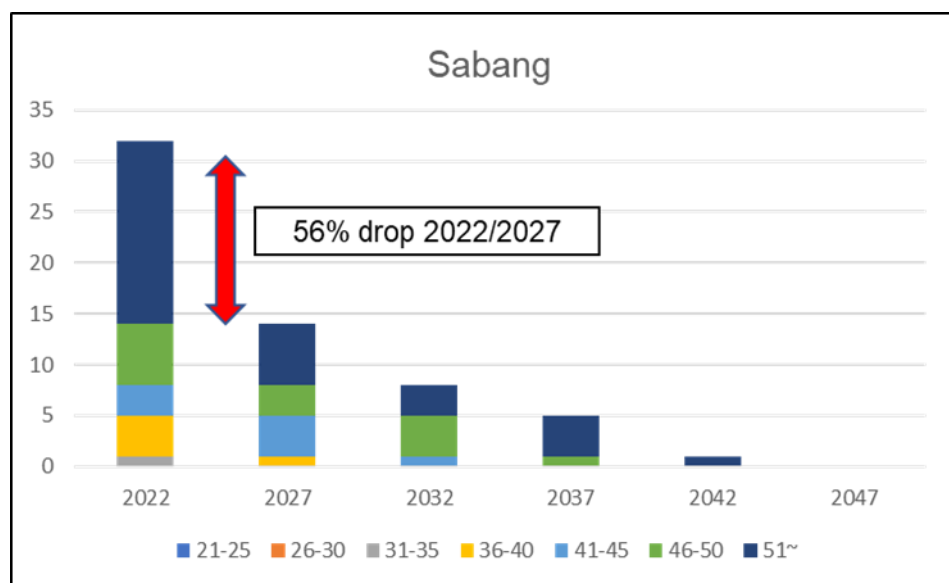
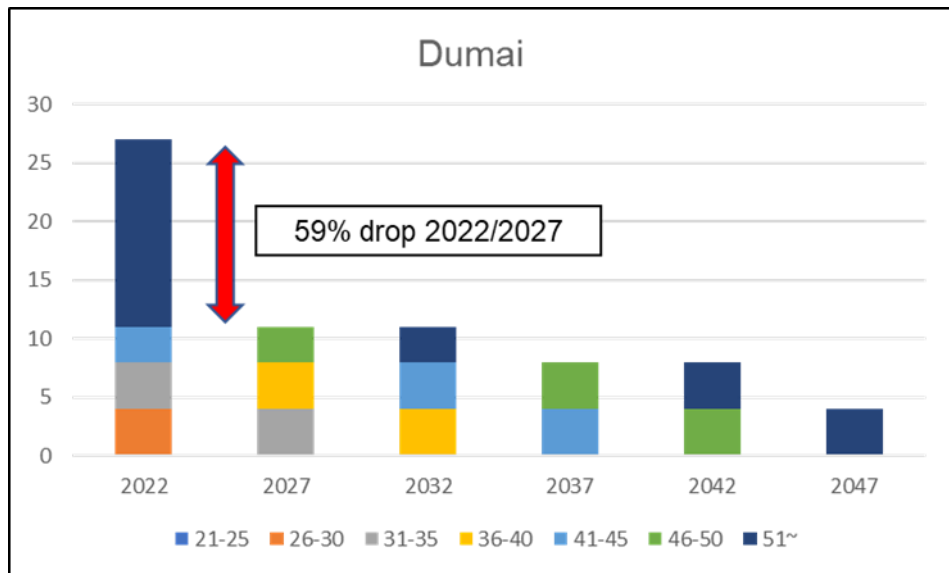
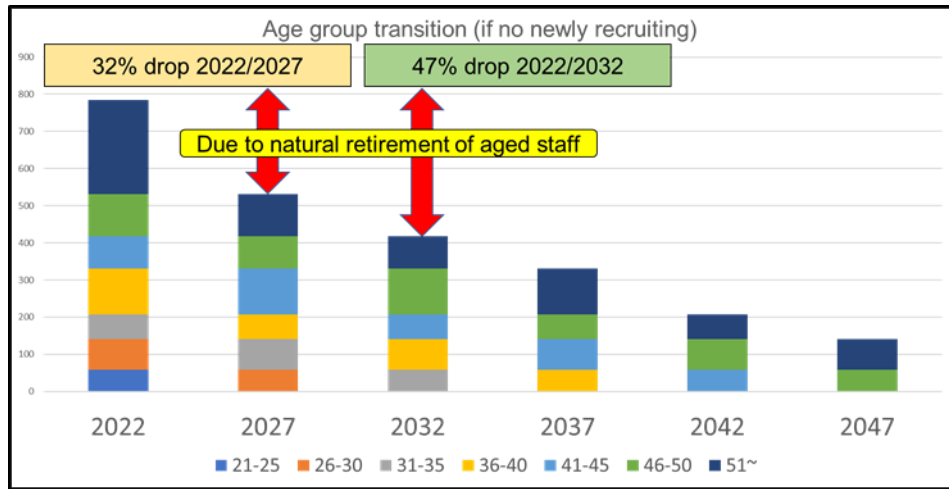


4.2.5 -1 表：年齢グループ別人員数分析

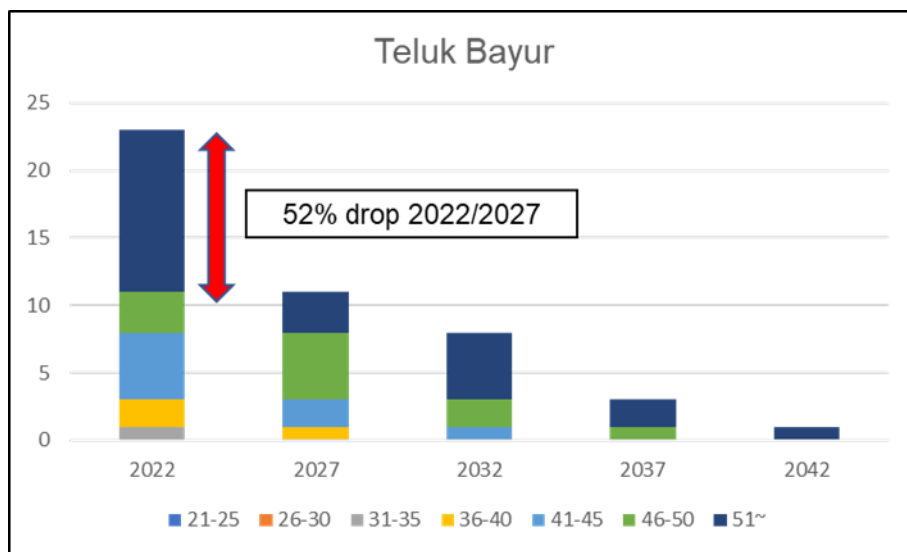
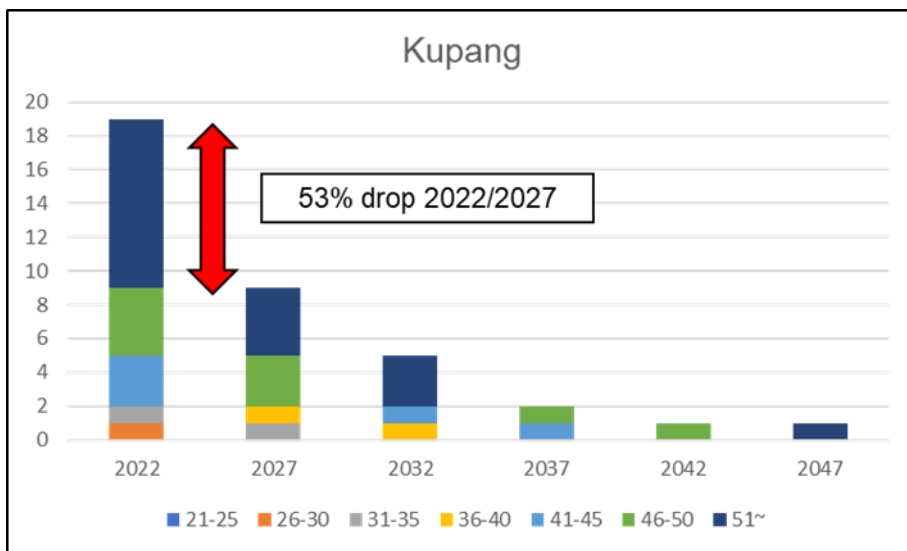
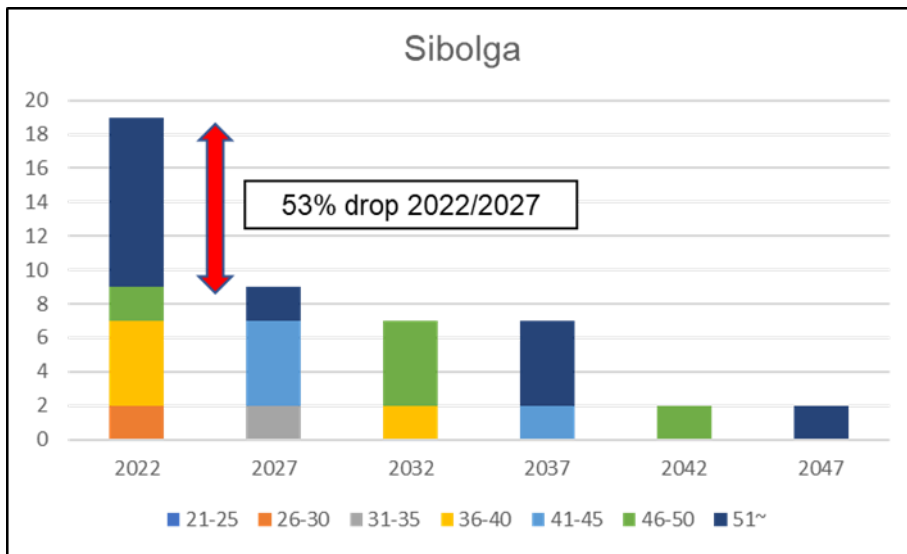
DISNAV	Age group							Gender		Total staff	Technician	Technician Operator *	Employment	
	21-25	26-30	31-35	36-40	41-45	46-50	51~	M	F				Average age	Nos
Sabang	0	0	1	4	3	6	18	31	1	32	8	5	32	0
	0.0%	0.0%	2.9%	11.4%	8.6%	17.1%	51.4%			49.25	46.75		100%	0%
Belawan	0	0	2	14	6	4	9	31	4	35	4	4	35	0
	0.0%	0.0%	5.7%	40.0%	17.1%	11.4%	25.7%			43.59	44.02		100%	0%
Sibolga	0	2	0	5	0	2	10	19	0	19	1	0	17	6
	0.0%	10.5%	0.0%	26.3%	0.0%	10.5%	52.6%			46.45	54.50		74%	26%
Dumai	0	4	4	0	3	0	16	22	5	27	7	7	29	12
	0.0%	14.8%	14.8%	0.0%	11.1%	0.0%	59.3%			45.91	45.61		71%	29%
Tg Pinang	5	4	5	4	2	3	16	35	4	39	1	1	39	15
	12.8%	10.3%	12.8%	10.3%	5.1%	7.7%	41.0%			41.91	54.50		72%	28%
Teluk Bayur	0	0	3	3	12	3	16	37	0	37	7	0	37	6
	0.0%	0.0%	8.1%	8.1%	32.4%	8.1%	43.2%			46.88	50.36		86%	14%
Palenbang	0	0	2	2	1	3	5	10	3	13	1	0	13	0
	0.0%	0.0%	15.4%	15.4%	7.7%	23.1%	38.5%			45.96	54.50		100%	0%
Tg Priok	1	1	4	6	8	8	19	21	26	47	6	0	47	55
	2.1%	2.1%	8.5%	12.8%	17.0%	17.0%	40.4%			45.97	39.50		46%	54%
Semarang	5	11	6	8	6	11	12	54	5	59	6	1	36	24
	8.5%	18.6%	10.2%	13.6%	10.2%	18.6%	20.3%			39.69	47.90		60%	40%
Cilacap	2	2	0	0	6	5	9	24	0	24	4	3	19	5
	8.3%	8.3%	0.0%	0.0%	25.0%	20.8%	37.5%			45.13	48.50		79%	21%
Surabaya	2	3	4	9	2	7	10	31	6	37	3	3	29	8
	5.4%	8.1%	10.8%	24.3%	5.4%	18.9%	27.0%			42.09	50.50		78%	22%
Benoa	2	9	7	3	2	7	15	37	8	45	4	1	28	18
	4.4%	20.0%	15.6%	6.7%	4.4%	15.6%	33.3%			41.50	48.50		61%	39%
Kupang	0	1	1	0	3	4	10	18	1	19	3	1	19	0
	0.0%	5.3%	5.3%	0.0%	15.8%	21.1%	52.6%			48.55	43.17		100%	0%
Pontianak	0	3	1	2	3	5	6	17	3	20	1	0	12	8
	0.0%	15.0%	5.0%	10.0%	15.0%	25.0%	30.0%			44.10	47.50		60%	40%
Banjarmasin	0	0	5	7	2	2	9	22	3	25	3	2	25	0
	0.0%	0.0%	20.0%	28.0%	8.0%	8.0%	36.0%			43.82	50.50		100%	0%
Samarinda	0	1	1	6	2	2	11	17	6	23	2	0	36	12
	0.0%	4.3%	4.3%	26.1%	8.7%	8.7%	47.8%			46.28	46.00		75%	25%
Tarakan	0	1	0	7	3	5	2	17	1	18	3	3	18	8
	0.0%	5.6%	0.0%	38.9%	16.7%	27.8%	11.1%			42.44	45.83		69%	31%
Makassar	0	0	0	5	6	5	13	22	7	29	5	0	29	0
	0.0%	0.0%	0.0%	17.2%	20.7%	17.2%	44.8%			47.88	53.10		100%	0%
Kendari	12	11	2	3	0	10	7	37	8	45	2	2	17	29
	26.7%	24.4%	4.4%	6.7%	0.0%	22.2%	15.6%			35.70	54.50		37%	63%
Bitung	6	11	8	12	7	3	16	56	7	63	2	1	35	28
	14.0%	25.6%	18.6%	27.9%	16.3%	7.0%	37.2%			39.04	30.00		56%	44%
Ambon	0	0	2	7	7	12	6	30	4	34	5	0	36	14
	0.0%	0.0%	5.9%	20.6%	20.6%	35.3%	17.6%			44.76	45.50		72%	28%
Tual	0	0	1	5	6	0	0	12	0	12	1	0	12	0
	0.0%	0.0%	8.3%	41.7%	50.0%	0.0%	0.0%			39.58	42.50		100%	0%
Sorong	4	2	2	4	3	3	5	20	3	23	6	4	15	19
	17.4%	8.7%	8.7%	17.4%	13.0%	13.0%	21.7%			39.24	37.00		44%	56%
Jayapura	0	3	0	10	2	8	9	30	2	32	8	0	21	10
	0.0%	13.0%	0.0%	43.5%	8.7%	34.8%	39.1%			44.16	49.33		68%	32%
Merauke	0	0	2	4	3	3	5	16	1	17	4	4	17	0
	0.0%	0.0%	11.8%	23.5%	17.6%	17.6%	29.4%			44.56	37.50		100%	0%
G.total	39	69	63	130	98	121	254	666	108	774	97	42	653	277
Average	5.0%	8.9%	8.1%	16.8%	12.7%	15.6%	32.8%	86%	14%	43.22	38.92	5.4%	70%	30%



グラフ 4.2.5 -1 : 深刻な状況にある DISNAV (1/2)



グラフ 4.2.5 -1 : 深刻な状況にある DISNAV (2/2)



#### 4.2.5 -1 図 : 1~3 人運用者限定の沿岸無線局

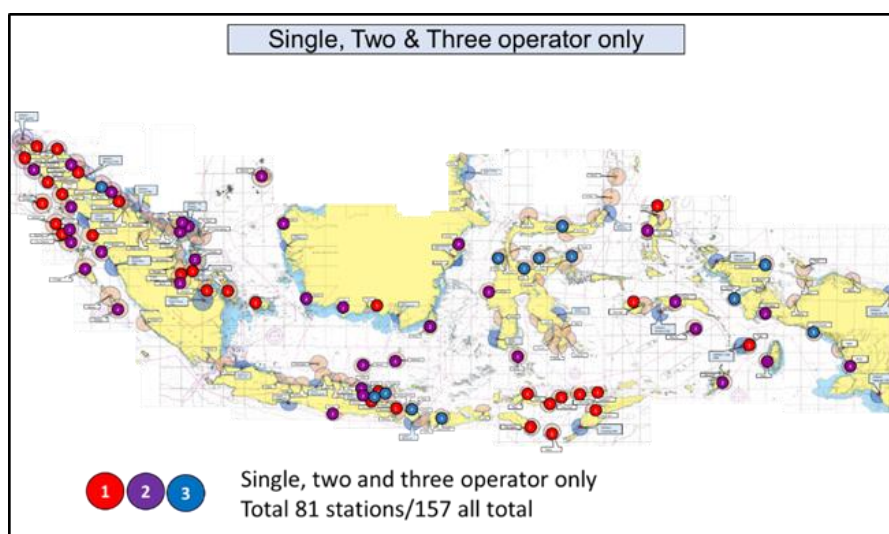
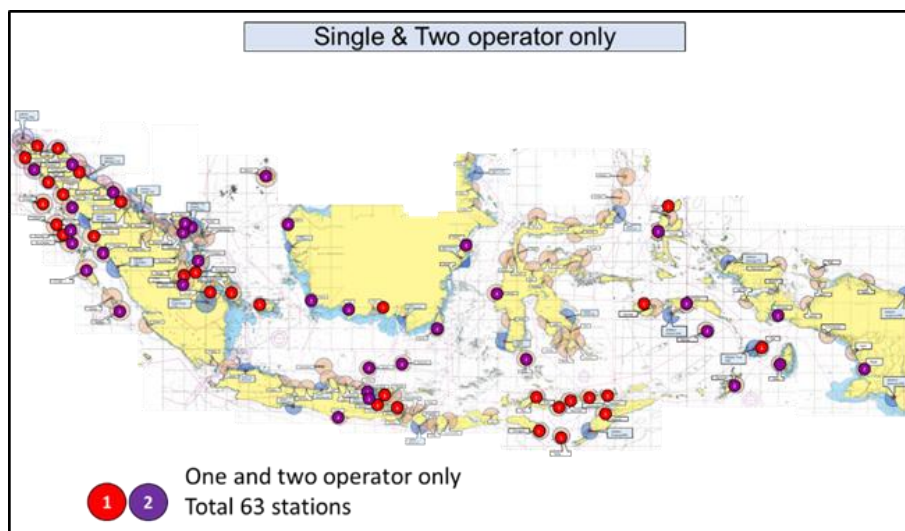
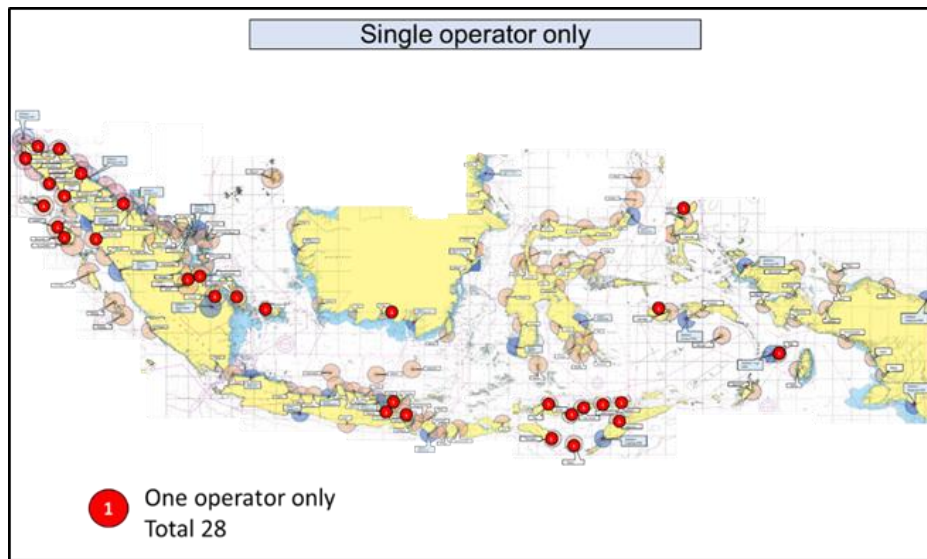
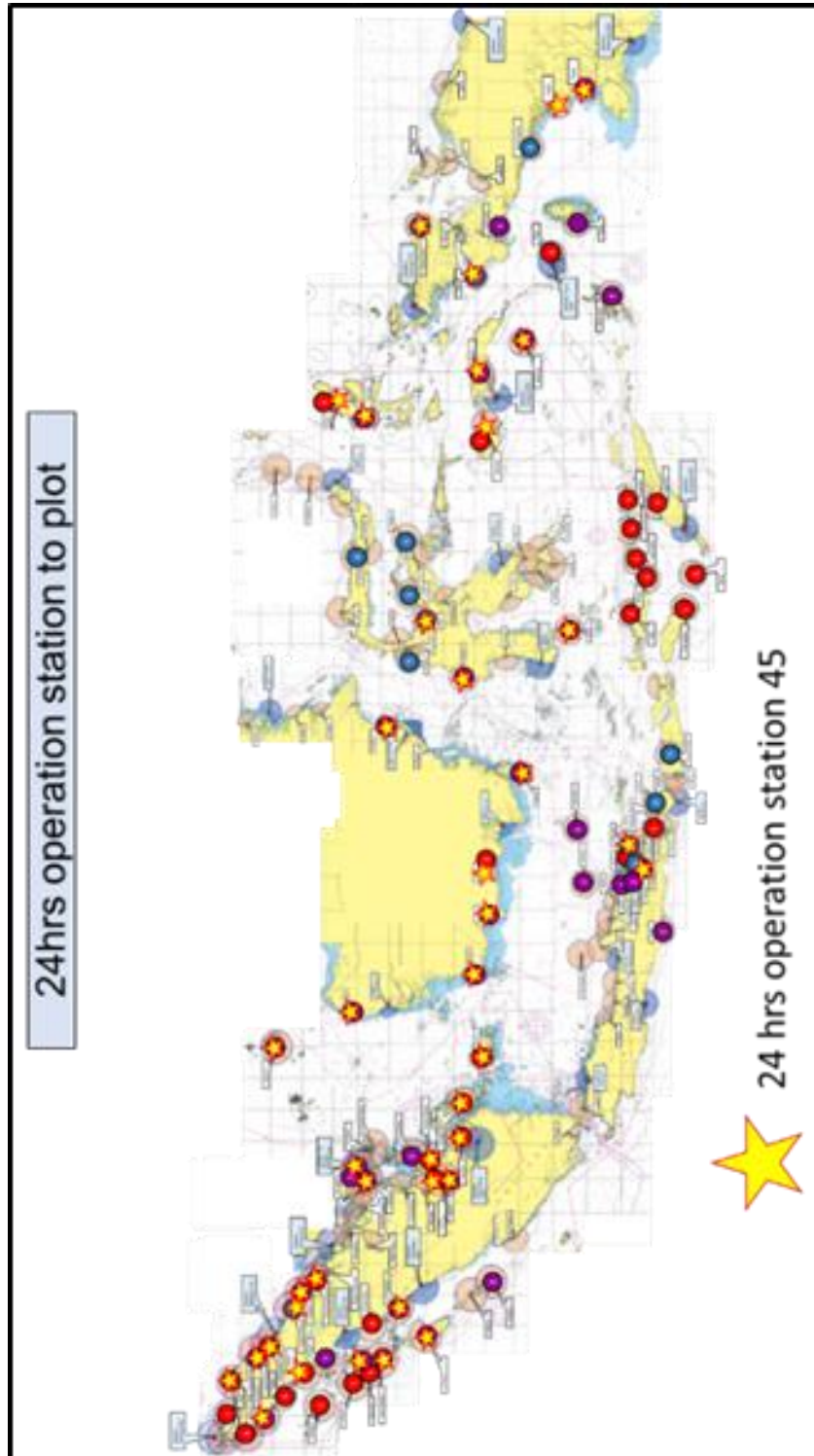


Figure 4.2.5 -2 :



4.2.5 -3 表 : 技術者数及び平均年齢

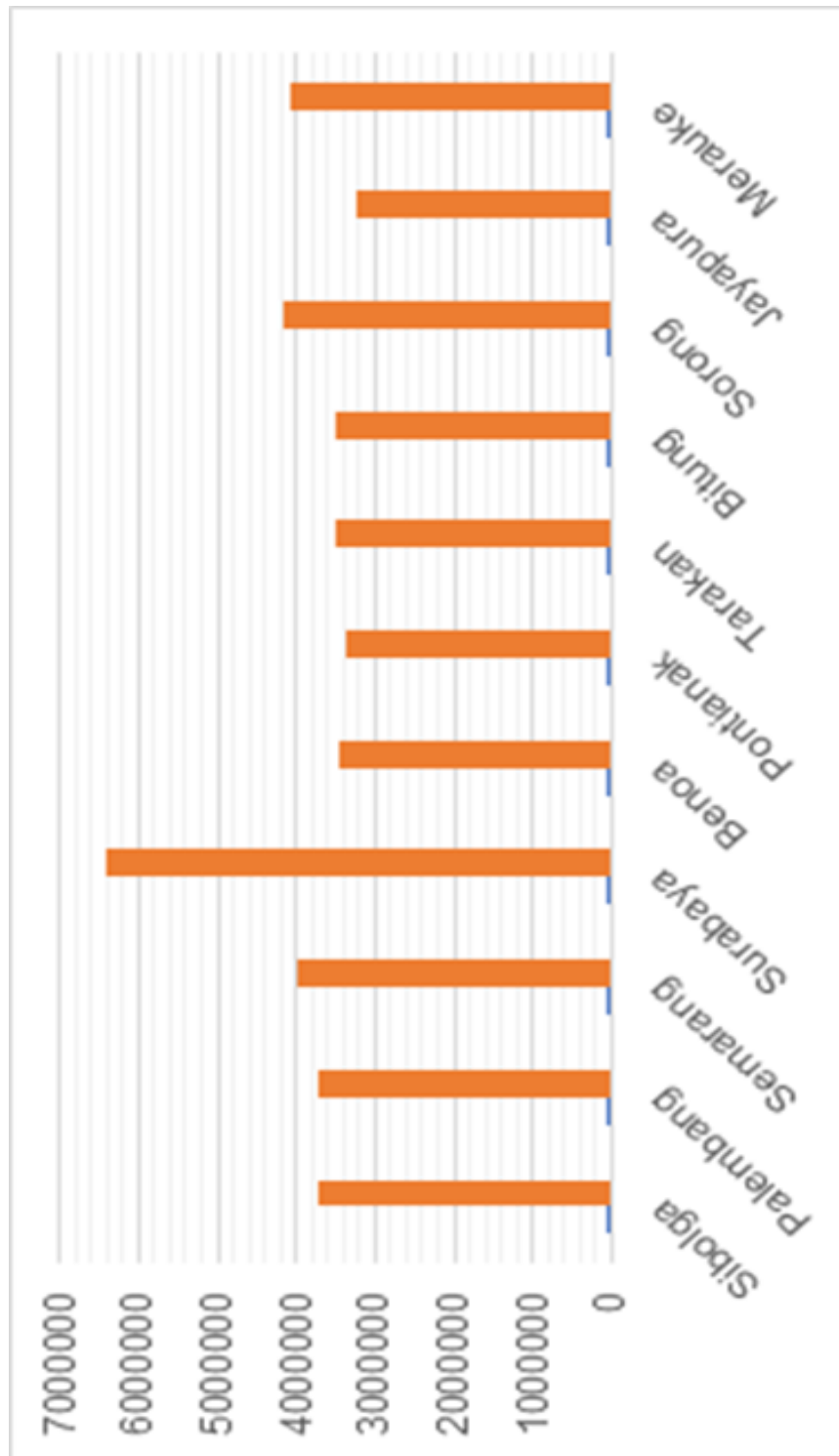
DISNAV	Technician	Ave age	Both Operator/Technician
Sabang	8	46.8	5
Belawan	4	44.0	4
Sibolga	1	55.0	0
Dumai	7	45.6	7
Tg Pinang	1	53.0	1
Teluk Bayur	7	50.4	0
Palembang	1	55.0	0
Tg priok	6	39.5	0
Semarang	6	47.9	1
Cilacap	4	48.5	3
Surabaya	3	50.5	3
Benoa	4	48.5	1
Kupang	3	46.0	2
Pontianak	1	50.0	0
Banjarmasin	3	51.0	2
Samarinda	2	46.0	0
Tarakan	3	45.8	3
Makassar	5	53.1	0
Kendari	2	54.0	2
Bitung	2	43.0	1
Ambon	5	45.5	0
Tual	1	43.0	0
Sorong	6	37.0	4
Jayapura	4	49.3	0
Merauke	4	37.5	4
Total	93	46.0	43

4.2.5 -4 表：出身地別

DISNAV	CRS staff	Same province origin	Portion
Tg Pinang	11	6	55%
Palembang	13	11	85%
Semarang	42	41	98%
Cilacap	24	19	79%
Surabaya	20	20	100%
Pontianak	20	19	95%
Banjarmasin	25	24	96%
Tarakan	18	18	100%
Bitung	49	45	92%
Ambon	36	28	78%
Sorong	32	31	97%
Jayapura	21	14	67%
Merauke	17	17	100%
Total	328	293	89%



グラフ 4.2.5 -2 : 平均月額賃金



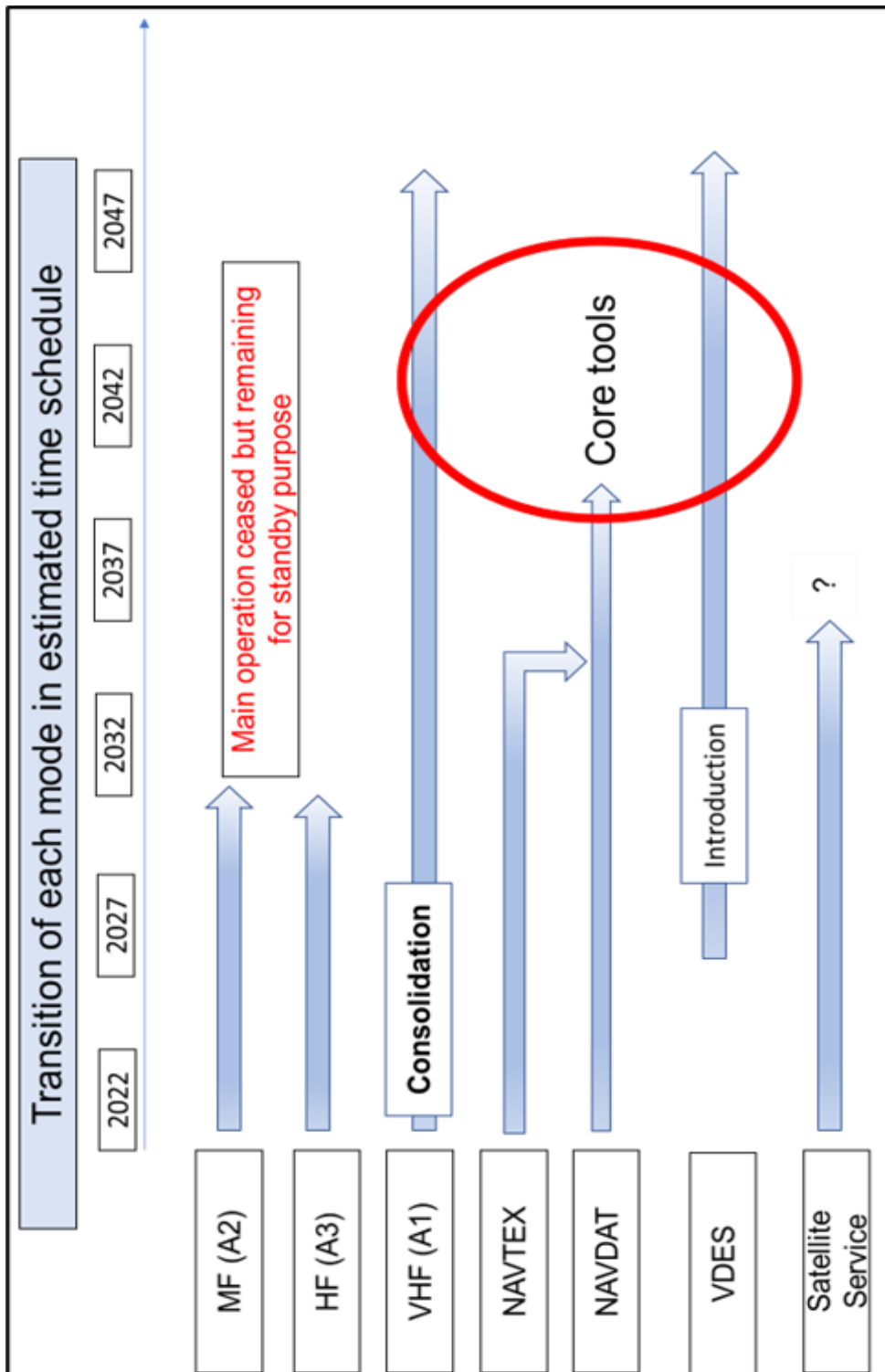
4.2.6 -1 表：予算・経費分析

単位：100万 IDR	2021	2020	2019
回答DISNAV数	13	10	11
配分予算	108,253	113,831	128,957
人件費	65,893	79,267	79,936
維持費	8,216	5,279	8,365
固定費	5,868	5,672	6,860
購入費	130,493	16,276	9,054
小計	102,216	7,336	24,742
歳入	24,130	17,204	22,215
全体収支	-78,086	24,540	46,958

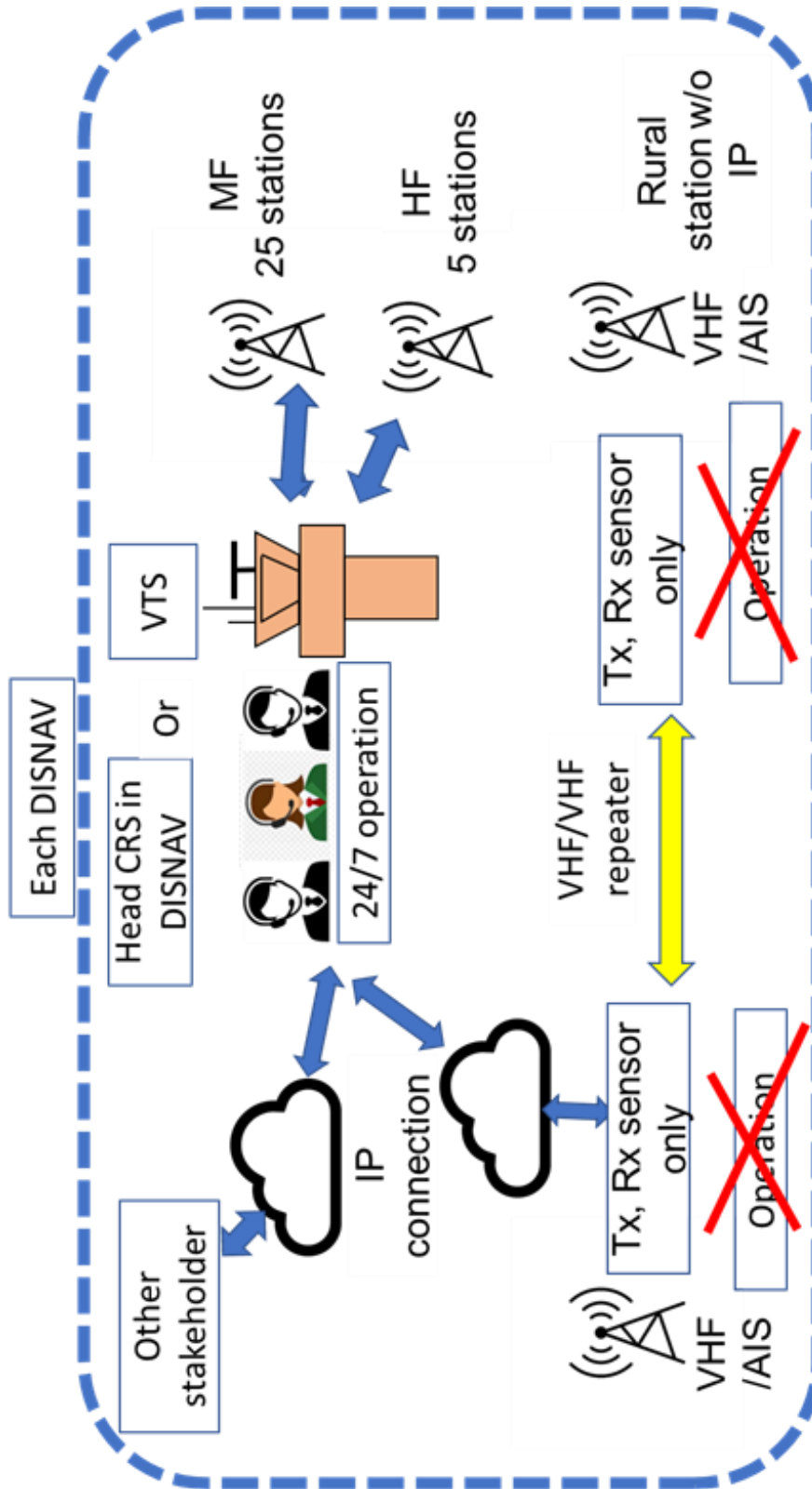
4.2.7 -1 表 : インターネット接続状況

DISNAV	Total CRS	Fibber optic	ADSL	4G	LTE	N.A.	
Sabang	9	5		4			
Belawan	7	6		1			
Sibolga	7	3	1	2		1	P Tello
Dumai	8	8					
Tg Pinang	10	10					
Teluk Bayur	4	2		1		1	Sikakap
Palembang	7	6		1			
Tg Priok	5	5					
Semarang	7	6			1		
Cilacap	2	1				1	Pacitan
Surabaya	11	9	1		1		
Benoa	8	8					
Kupang	9	9					
Pontianak	3	3					
Banjarmasin	4	3				1	Kumai
Samarinda	3	3					
Tarakan	4	4					
Makassar	5	5					
Kendari	6	5		1			
Bitung	14	14					
Ambon	7	7					
Tual	4	2		2			
Sorong	6	6					
Jayapura	5	5					
Merauke	3	1			2		
Total	158	136	2	12	4	4	

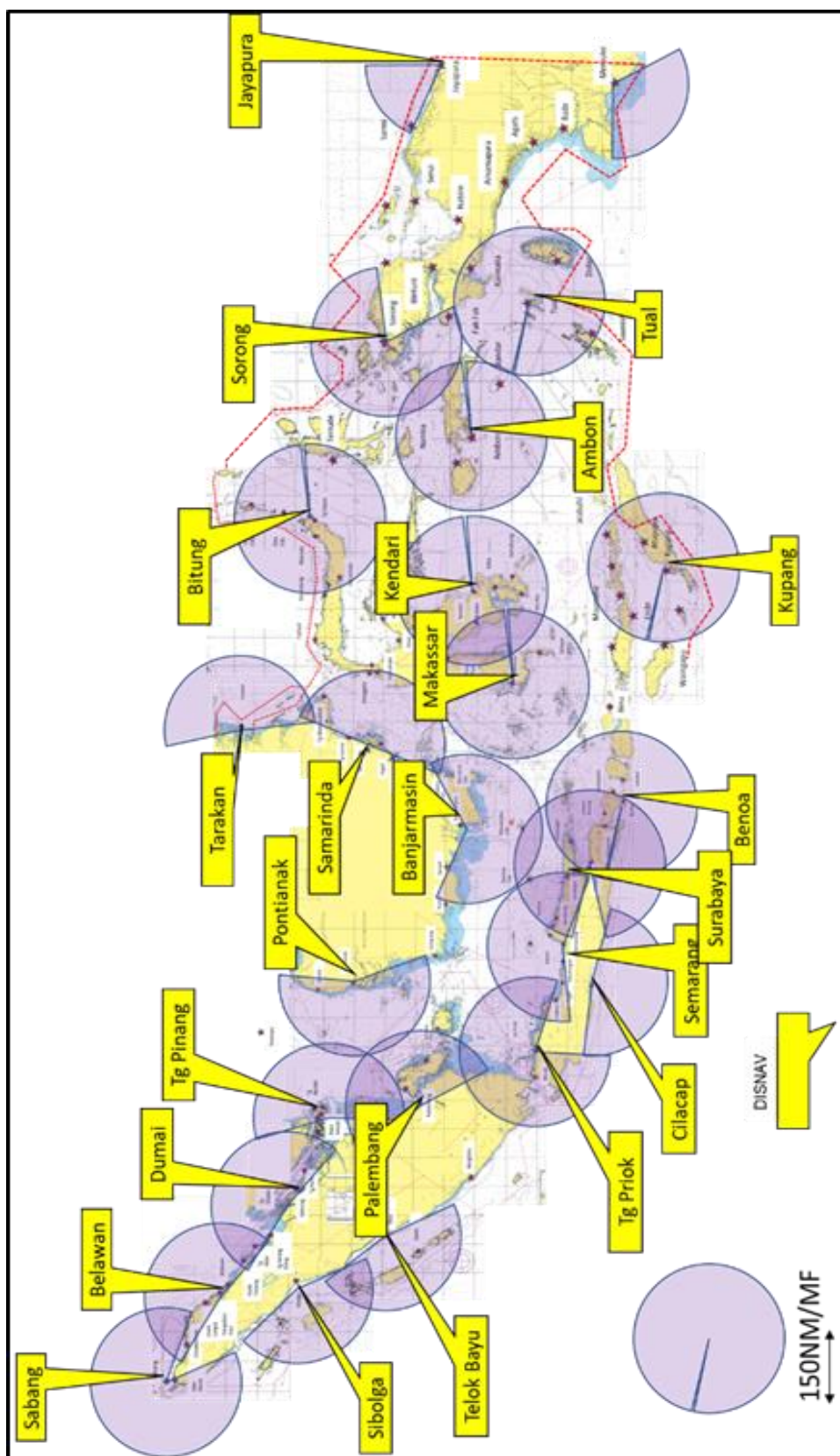
4.2.8 -1 図： 予想される海上無線通信方式の移行



4.2.11 -1 図：統合概念図

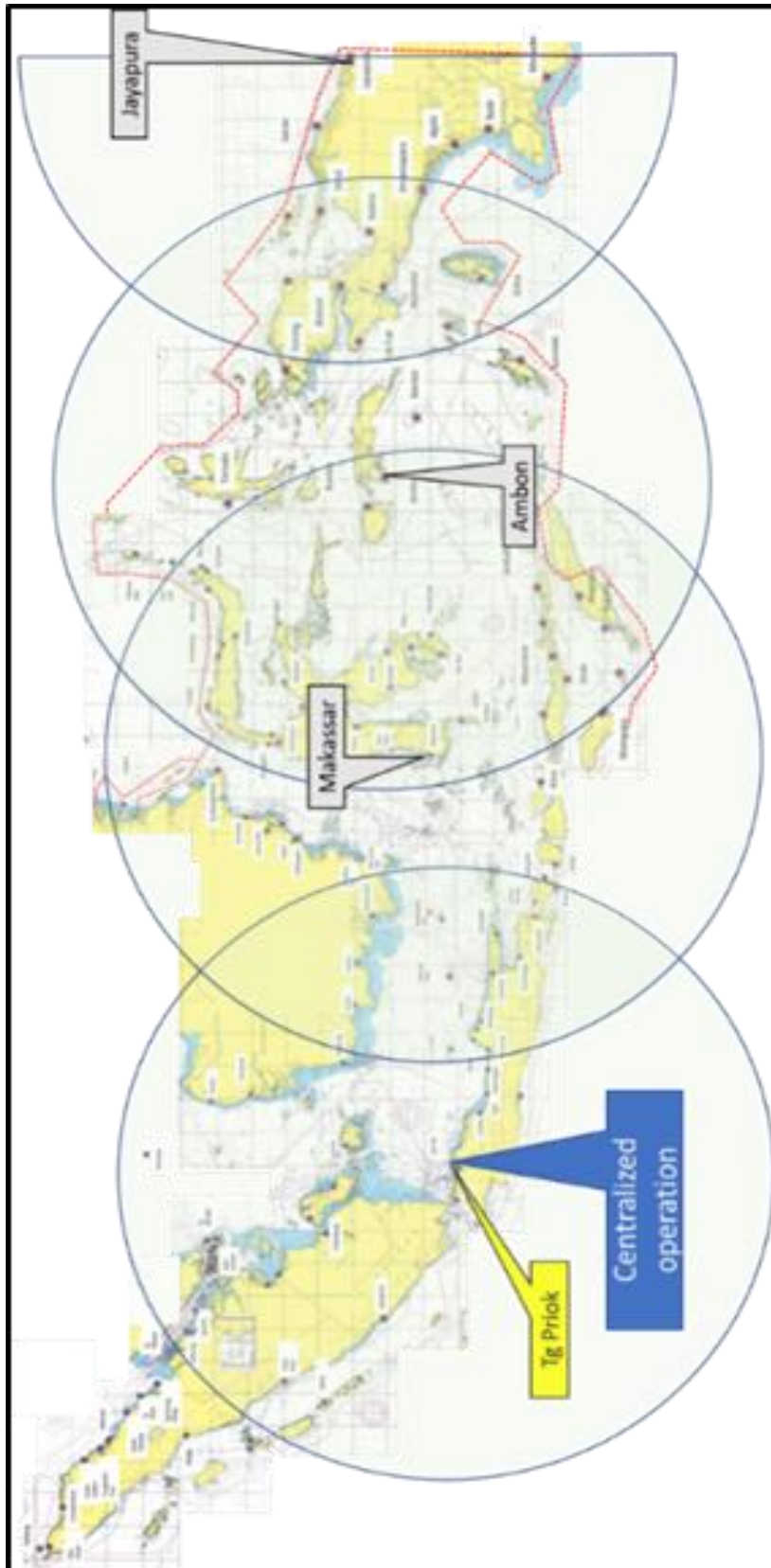


4.2.11 -2 : MF/HF 統合図

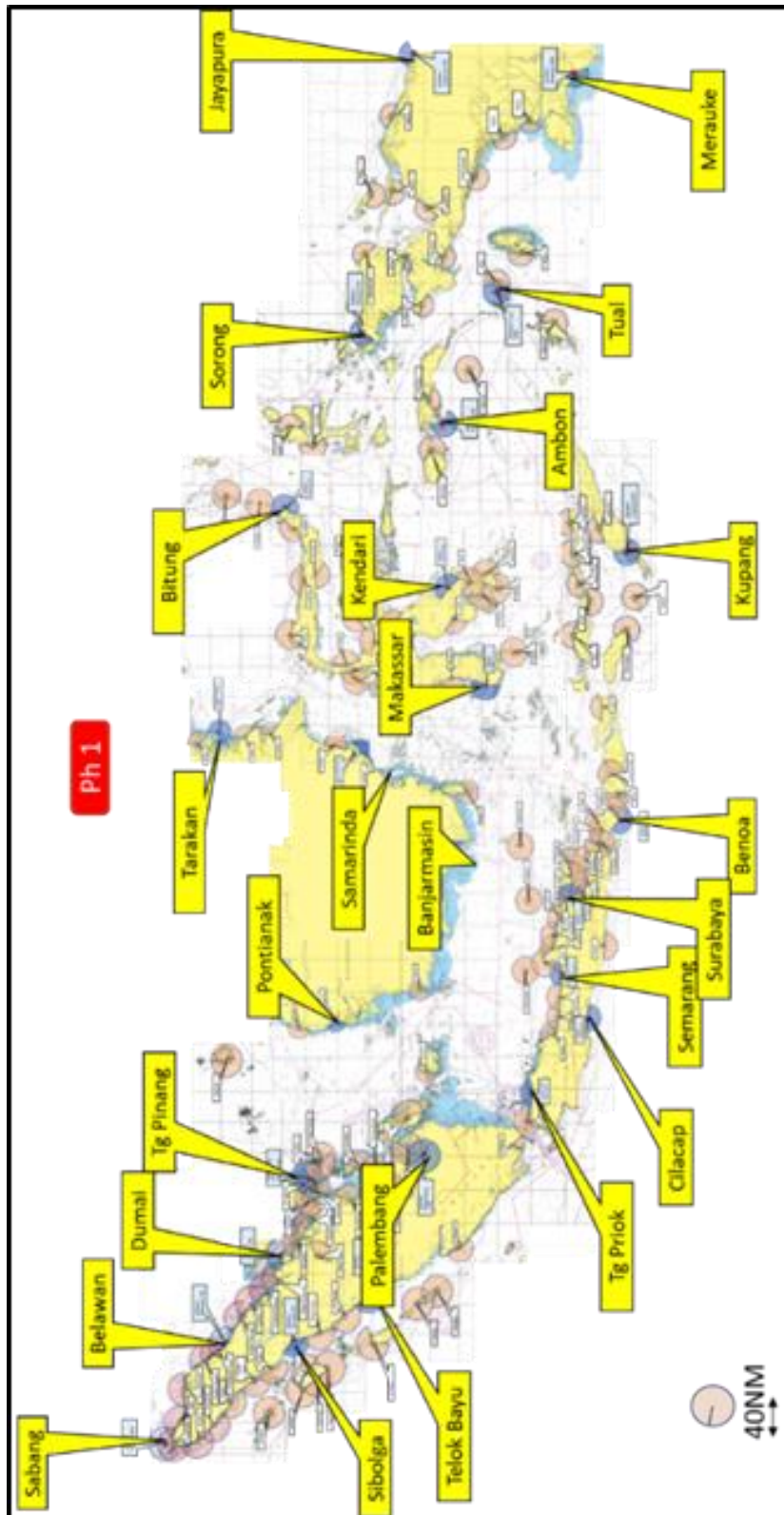




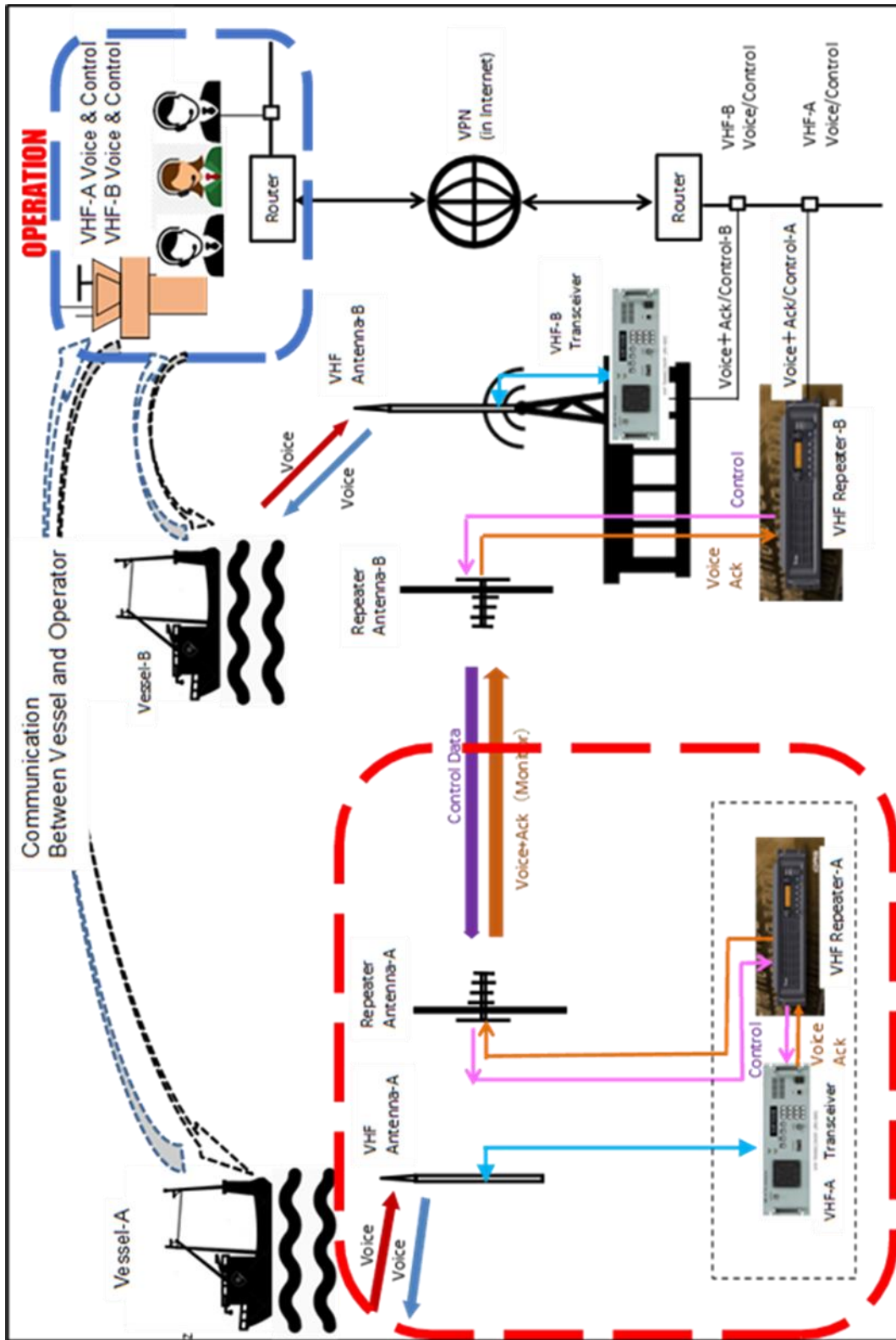
4.2.11 -3 図 : NAVTEX 統合図



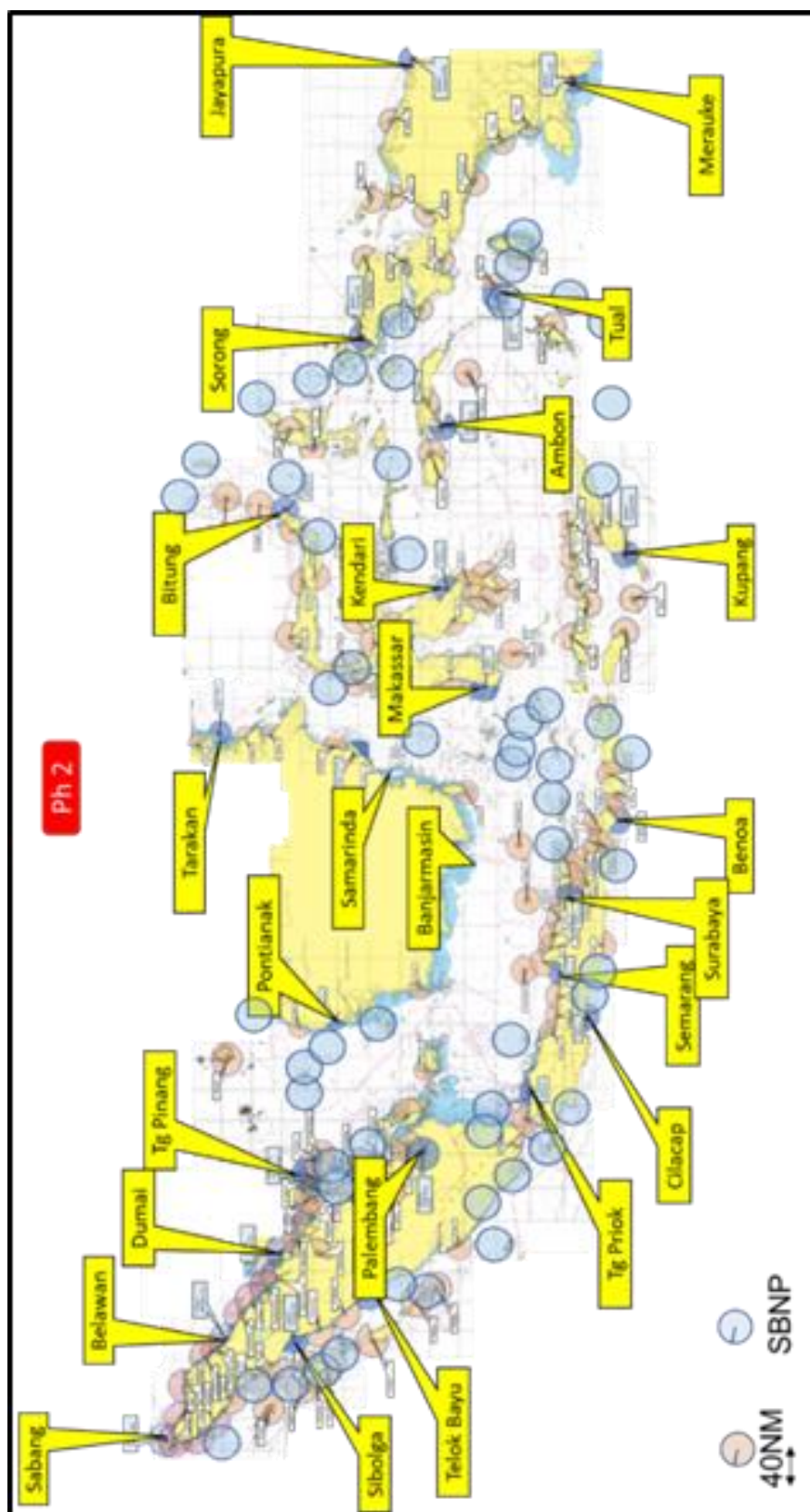
4.2.11 -4 図 : VHF 統合図



4.2.11 -5 図：オプション提案 1 (VHF、VHF 中継局概念図)

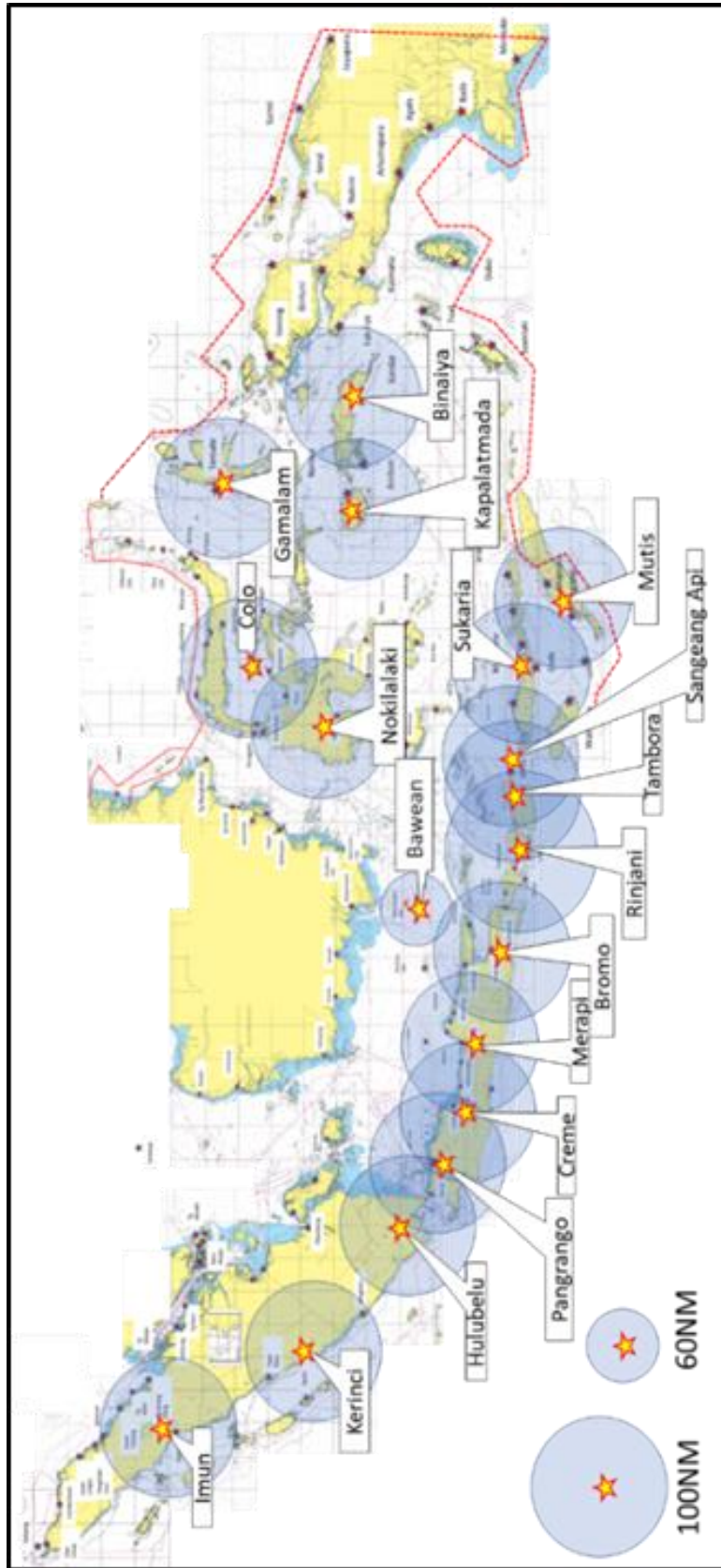


4.2.11 -6 図：オプション提案 1（VHF、VHF 中継局配置図）





4.2.11 -7 図：オプション提案 2（山腹にレピータ局は配置）



#### 4.2.12 -1 表：統合計画の概算コスト (1/2)

##### 1) 統合 158 センサー局と 25 運用局概算積算

単位100万 IDR	単価	数量	計
センサー局	2,500	158	395,000
運用センター	5,000	25	125,000
5 か年分のメンテナンス費用			52,000
合計			572,000
新規投資年次減価償却 (22年間と仮定)			28,000

##### 2) 25 DISNAV 合計経費実績概算

単位100万 IDR	2019	2020	2021
人件費	79,936	79,267	65,893
維持費	8,365	5,279	8,216
運用経費	6,860	5,672	5,868
小計	95,161	90,219	79,977

##### 3) 将来的 VDES 導入による税外歳入

単位100万 IDR	現行	導入後
現行歳入 (年次)	24,130	現行実績はVTS 税込みと推測
VDES導入後	60,000	600,000 寄港(2020年) × IDR100,000/回
予測される歳入合計	84,130	



4.2.12 -1 表：統合計画の概算コスト (2/2)

4) 統合後に予測される経費(年次)

単位100万 IDR	現行	統合後	差
人件費	65,893	21,964	67% 削減
維持費	8,216	2,739	67% 削減
運用経費	5,868	1,956	67% 削減
小計	79,977	26,659	53,318

5) バランスシート合計(年次)

単位100万 IDR	小計額
統合後経費	26,659
年間原価償却	28,000
小計	54,659

歳入	84,130
繰越残	29,472

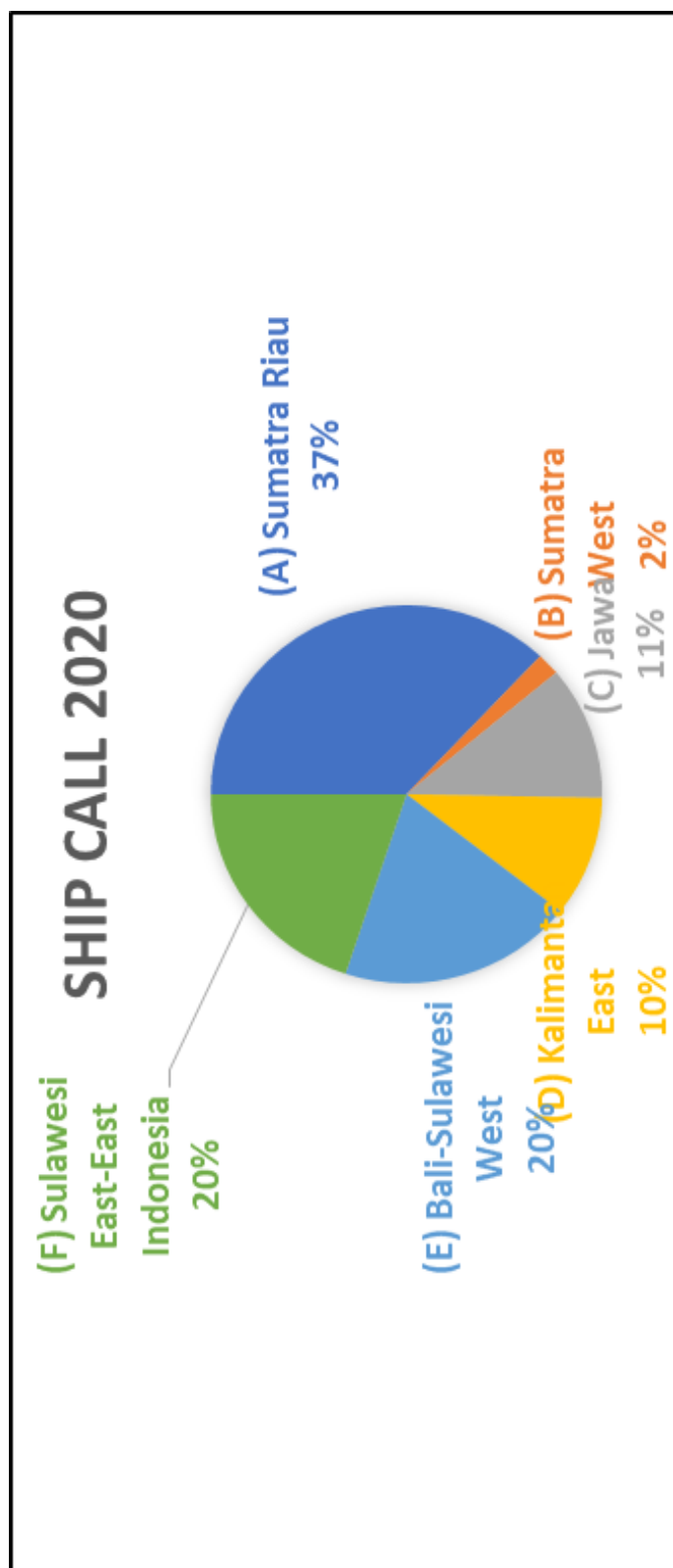
4.2.13 -1 表 : 整備優先ゾーン

Zone	Area	DISNAV	
		Nos	Name
A	Sumatra- Riau	5	Sabang, Belawan, Dumai, Tg Pinang, Palembang
B	Sumatra West	2	Sibolga, Teluk Bayur
C	Jawa	4	Jakarta, Semarang, Surabaya, Cilacap
D	Kalimantan East	2	Pontianak, Banjarmasin
E	Bali-Sulawesi West	5	Benoa, Makassar, Samarinda, Tarakan, Bitung
F	Sulawesi East – East Indonesia	7	Kupang, Ambon, Tual, Kendari, Sorong, Merauke, Jayapura

4.2.13 -2 表：船舶寄港数

Zone	Area	2020 statistics total	
		Numbers	Portion
A	Sumatra- Riau	237,023	37.00%
B	Sumatra West	12,247	1.90%
C	Jawa	73,226	11.40%
D	Kalimantan East	66,088	10.30%
E	Bali-Sulawesi West	124,651	19.40%
F	Sulawesi East - East Indonesia	127,852	19.90%
G. total		641,087	100.00%

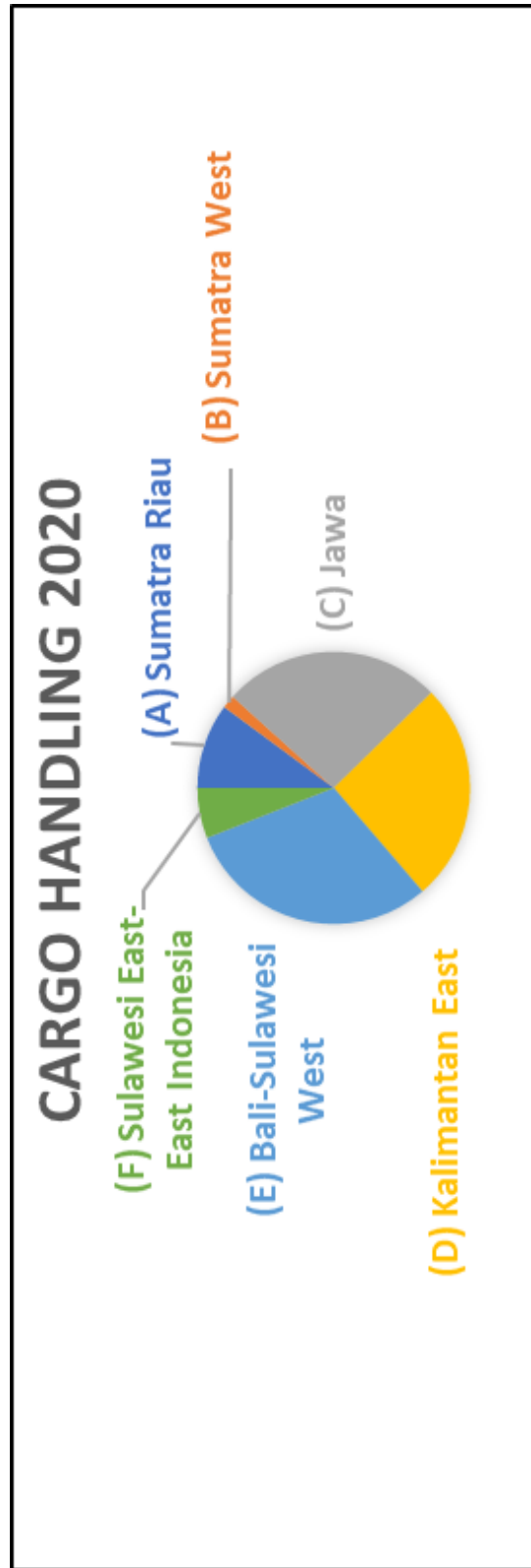
グラフ 4.2.13 -1 : 船舶寄港数



4.2.13 -3 表：貨物取扱量

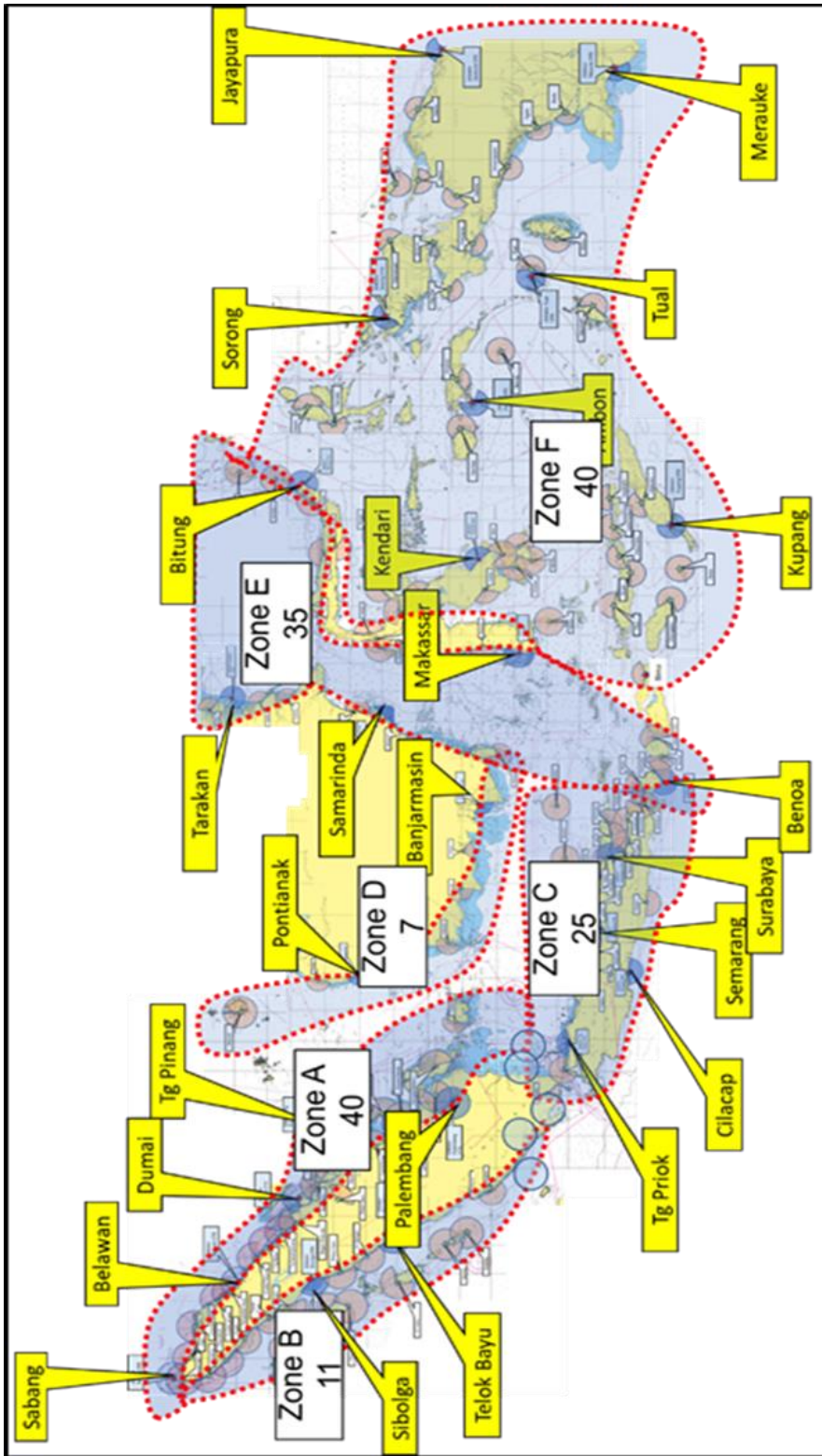
Zone	Area	2020 statistics total	
		Numbers	Portion
A	Sumatra East - Riau	112,832,487	10.10%
B	Sumatra West	17,545,568	1.60%
C	Jawa (all)	289,414,778	26.00%
D	Kalimantan West	290,259,910	26.10%
E	Bali-Sulawesi East, Kalimantan East	337,546,963	30.30%
F	Sulawesi East – Rest of East Indonesia	66,535,233	6.00%
G.total		1,114,134,939	100.00%

グラフ 4.2.13 -2 : 貨物取扱量





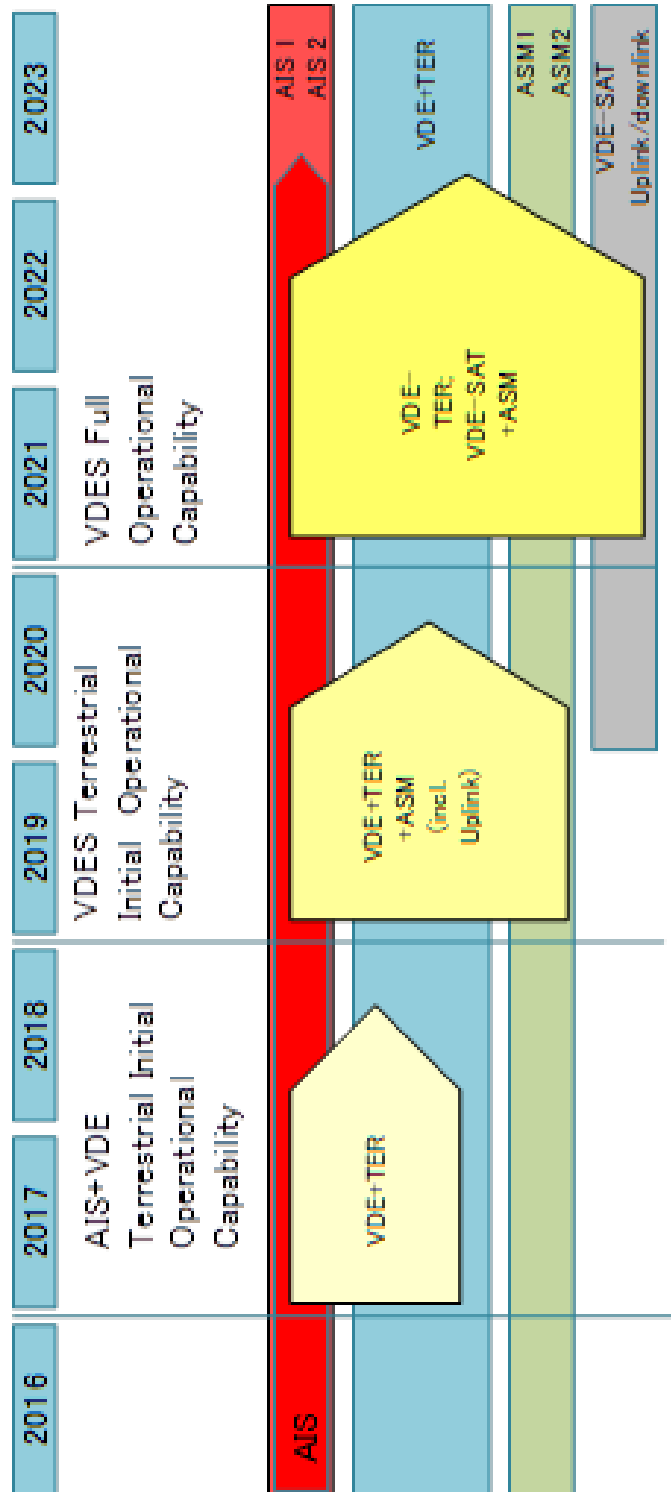
4.2.13 -1 図 :ゾーン図



4.2.13 -4 表：優先度別概算額

ゾーン	エリア	DISNAV	目標統合CRS		概算額
			局数	百万 IDR	
優先度 1					
A	Sumatra- Riau	5	40	125,000	
C	Jawa	4	25	82,500	
E	Bali-Sulawesi West	5	35	112,500	
小計		14	100	320,000	
優先度 2					
B	Sumatra West	2	11	37,500	
D	Kalimantan East	2	7	27,500	
F	Sulawesi East-East Indonesia	7	40	135,000	
小計		11	58	200,000	
	向こう5年間のメンテナンスコスト(10%)			52,000	
<b>合計</b>			<b>158</b>	<b>572,000</b>	

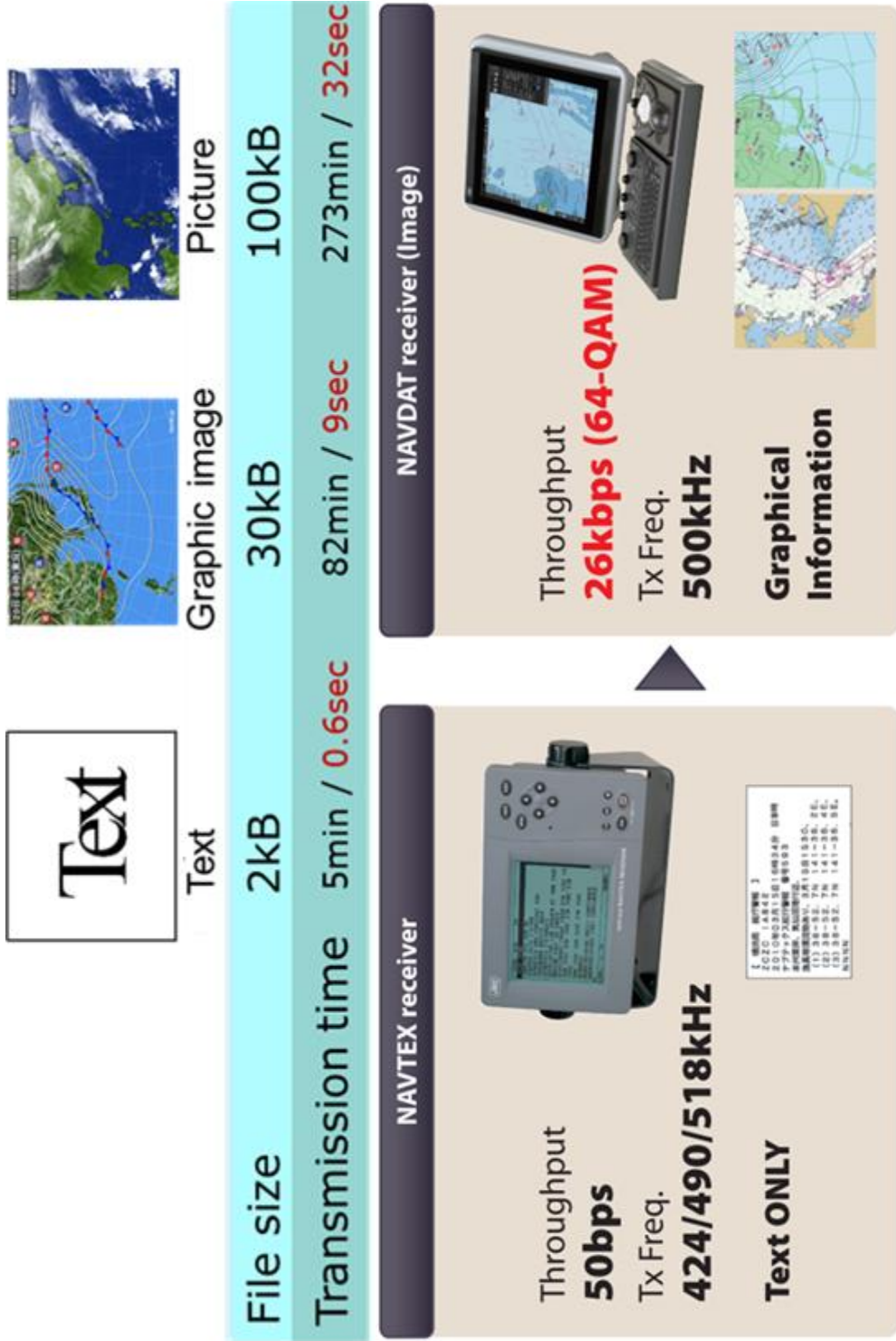
4.2.14 -1 図 : VDES 開発計画



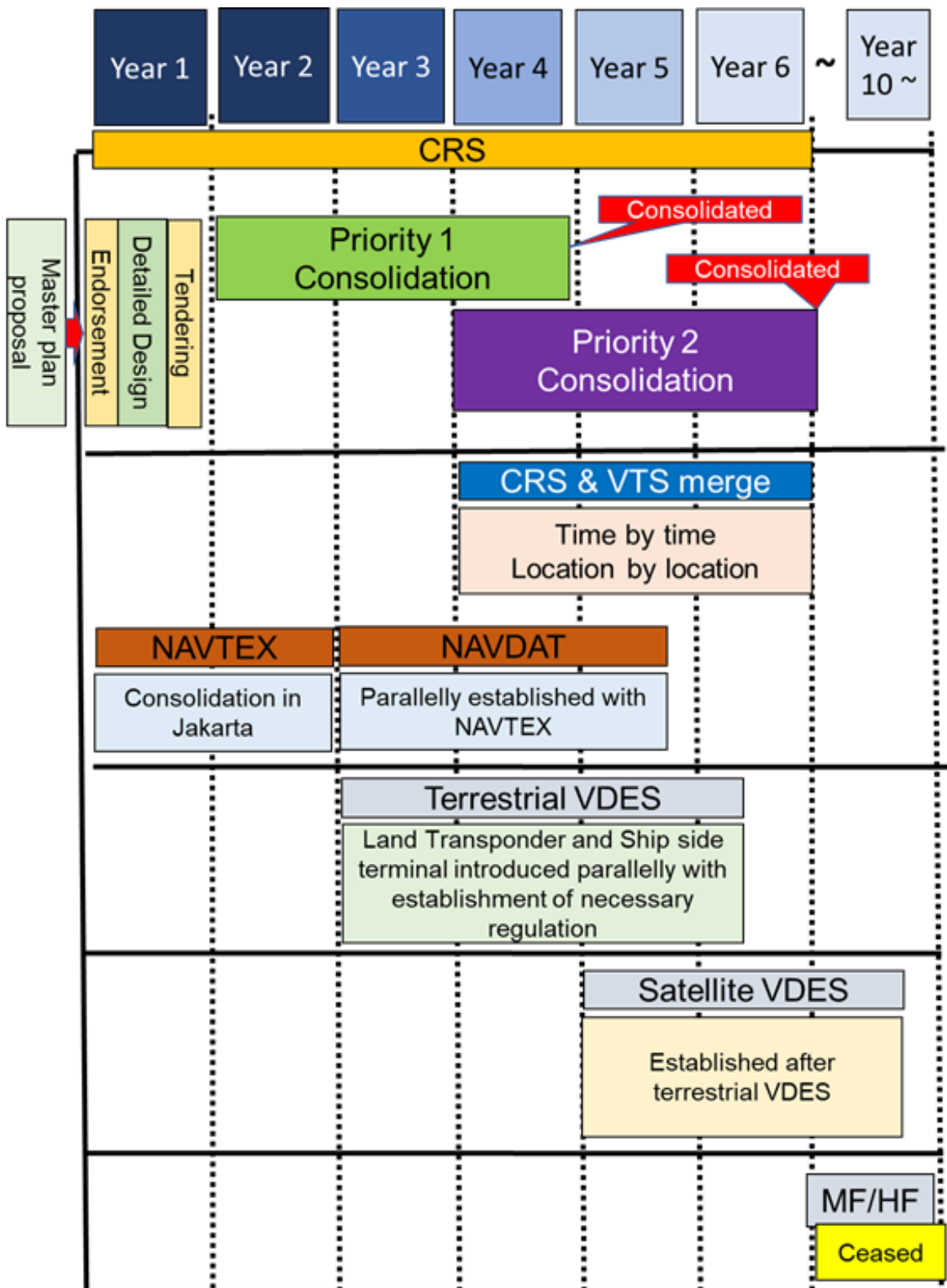
4.2.15 -1 表：主要目

	NAVTEX	NAVDAT
Frequency	424kHz,490kHz, 518 kHz	500 kHz
Output power	1kW	5 kW
Modulation	FSK	OFDM(4,16,64-QAM)

4.2.15 -1 ☒ : NAVTEX and NAVDAT



4.2.16 -1 図：年次整備計画





## 第4章 (3/3)

業務分野 (4.3 航路標識業務用船)









### 4.3.4 -2表: アンケート 1-2 (No 1)

DISNAV	Jenis kapal	Kelas	Nama kapal	Pengantian selampung secara teratur	Kriteria pertukaran	Isi pelatihan pelaut / Frekuensi pelatihan	Perbaikan sebelumnya	Detail perbaikan	Lokasi permasalahan saat ini	Konten permasalahan	Keterampilan teknis kru	Masalah lain	pendapat	Remark	
Semarang	KIP	I	KN Kumba	Nothing	Periksaan dengan menariknya ke atas kapal setahun sekali.	Pelatihan penyelamatan diri / Setahun sekali	Pelatihan pemadaman kebakaran / Setahun sekali	Pengantian seal dan water cooler yang rusak	Mesin	Terjadi permasalahan pada MB 1 dan MB 2 dikarenakan untuk kerja mesin deck	Mereka belum mempunyai keahlian dalam pemadaman kebakaran, namun ada beberapa pemadaman untuk pemadaman orang-orang untuk pemadaman syant.	Perawatan besar (docking) baik deck, mesin dan radio, dan ABK yang memiliki sertifikasi. Kegiatan usulan penggantian kapal Negara Kelas I untuk menggantikan kapal KN, Kumba, pengantian dan Service alat keselamatan	Perawatan besar (docking) baik deck, mesin dan radio. Penambahan ABK yang memiliki sertifikasi. Kegiatan usulan penggantian Kapal Negara Kelas II untuk mengganti kapal KN, B 126. Pengantian dan Service alat-alat keselamatan	Perawatan besar (docking) baik deck, mesin dan radio. Penambahan ABK yang memiliki sertifikasi. Kegiatan usulan penggantian Kapal Negara Kelas II untuk mengganti kapal KN, B 126. Pengantian dan Service alat-alat keselamatan	Perawatan besar (docking) baik deck, mesin dan radio. Penambahan ABK yang memiliki sertifikasi. Kegiatan usulan penggantian Kapal Negara Kelas II untuk mengganti kapal KN, B 126. Pengantian dan Service alat-alat keselamatan
Semarang	KPP	III	KN B-126	Nothing	Pelatihan penyelamatan diri / Setahun sekali	Pelatihan pemadaman kebakaran / Setahun sekali	Dinamo MB 1	Gulungan / lilitan baru dan penggantian kabel 3 phase	Mesin	Terjadi kebocoran oli pada turbo mesin induk	Mereka belum seluruhnya memiliki kualifikasi (pelayaran, mesin) dan dijadwalkan pnsium dalam satu tahun ke depan. Pendidikan teknis dan Pelatihan dipulukan untuk mendapatkan orang-orang muda untuk memenuhi syant.	Kondisi kapal sudah tua, banyak peralatan yang sudah tidak berfungsi dan plat kapal dibawah air sudah tidak standart (keropos/lepis)	Perawatan rutin untuk bagian mesin	Perawatan rutin untuk bagian mesin	Perawatan rutin untuk bagian mesin
Semarang	KPP	III	KN Karimun Jawa	Nothing	Pelatihan penyelamatan diri / Setahun sekali	Pelatihan pemadaman kebakaran / Setahun sekali	Penggantian body kapal dari bawah air sampai ahomodasi /Ahomodasi dik	Penggantian plat yang bocor	Kebocoran bottom	Terjadi kebocoran plat sehingga perlu penggantian plat	Mereka belum seluruhnya memiliki kualifikasi (pelayaran, mesin). Pendidikan teknis dan Pelatihan dipulukan untuk mendapatkan orang-orang muda untuk memenuhi syant.	Perawatan rutin untuk bagian mesin	Perawatan rutin untuk bagian mesin	Perawatan rutin untuk bagian mesin	Perawatan rutin untuk bagian mesin
Semarang	KBP	III	KN Suar II	Nothing	Pelatihan penyelamatan diri / Setahun sekali	Pelatihan pemadaman kebakaran / Setahun sekali	Mi dan ME	Top Overhaul MI & Top Overhaul ME	Mesin	Terjadi kebocoran oli dan keauskan pada MI dan ME sehingga memerlukan banyak penggantian	Mereka belum seluruhnya memiliki kualifikasi (pelayaran, mesin). Pendidikan teknis dan Pelatihan dipulukan untuk mendapatkan orang-orang muda untuk memenuhi syant.	Kondisi kapal sudah tua, banyak peralatan yang sudah tidak berfungsi dan mengalami keauskan sehingga dapat diulasan plat kapal dibawah air sudah tidak standart (keropos/lepis)	Kapal KN, Suar 11 sudah tidak layak dan banyak peralatan yang mengalami keauskan sehingga dapat diulasan plat kapal dibawah air sudah tidak standart (keropos/lepis)	Kapal KN, Suar 11 sudah tidak layak dan banyak peralatan yang mengalami keauskan sehingga dapat diulasan plat kapal dibawah air sudah tidak standart (keropos/lepis)	Kapal KN, Suar 11 sudah tidak layak dan banyak peralatan yang mengalami keauskan sehingga dapat diulasan plat kapal dibawah air sudah tidak standart (keropos/lepis)
Benoa	KIP	I	KN MIZAN	Yes, Rambu suar (setiap 4 tahun). Pelampung suar (setiap 4 tahun)	Periksaan dengan menariknya ke atas kapal setahun sekali.	Pelatihan penyelamatan diri / Setahun sekali	Mesin bantu dan mesin induk	Ganti mesin	Plat Top deck	Sudah keropos	Mereka yang memiliki kualifikasi (Deck dan Mesin) 30% dari Jumlah ABK 27 orang. Pelatihan dipulukan untuk mendapatkan orang-orang muda untuk memenuhi syant.	Body kapal bergeter pada saat berlayar dengan mesin putaran penuh	Body kapal bergeter pada saat berlayar dengan mesin putaran penuh	Body kapal bergeter pada saat berlayar dengan mesin putaran penuh	Body kapal bergeter pada saat berlayar dengan mesin putaran penuh
Benoa	KIP	I	KN NUSA PENIDA	Yes, Rambu suar (setiap 4 tahun). Pelampung suar (setiap 4 tahun)	Periksaan dengan menariknya ke atas kapal setahun sekali.	Pelatihan penyelamatan diri / Setahun sekali	Rollter stack	Pengantian Seal kemudi atas dan bawah	Dinamung steering gear	Kebocoran dari as kemudi	Mereka yang memiliki kualifikasi (Deck dan Mesin) 30% dari Jumlah ABK 27 orang. Pelatihan dipulukan untuk mendapatkan orang-orang muda untuk memenuhi syant.	Body kapal bergeter pada saat berlayar dengan mesin putaran penuh	Body kapal bergeter pada saat berlayar dengan mesin putaran penuh	Body kapal bergeter pada saat berlayar dengan mesin putaran penuh	Body kapal bergeter pada saat berlayar dengan mesin putaran penuh
Sabang	KIP	I	KN Antares	Yes, Pelampung ringin (setiap 4 tahun)	Periksa dengan menariknya ke atas kapal setahun sekali.	Pelatihan penyelamatan diri / Setahun sekali	Bagian Mesin : -Cleaning ruang AC sentral - - Pengantian sirangan udara AC sentral - - Pemasangan pipa pendingin oli pompa AV laut ME/SB - - membuka dinamo start ME-PS untuk diperbaiki - - mengganti oli gear box ME/SB	Service Motor Induk dan Pebaikan sistem Peripapan yang bocor	Mesin	Over Heating	Mereka yang memiliki kualifikasi (pelayaran, mesin) dijadwalkan pnsium dalam lima tahun ke depan. Pendidikan dipulukan untuk mendapatkan orang-orang muda untuk memenuhi syant.	Body kapal bergeter pada saat berlayar dengan mesin putaran penuh	Body kapal bergeter pada saat berlayar dengan mesin putaran penuh	Body kapal bergeter pada saat berlayar dengan mesin putaran penuh	Body kapal bergeter pada saat berlayar dengan mesin putaran penuh







4.3.4 -2表: アンケート 1-2 (No 4)

DISNAV	Jenis kapal	Kelas	Nama kapal	Pengantian selampung secara teratur	Kriteria pertukaran	Isi pelatihan pelaut / Frekuensi pelatihan	Perbaikan sebelumnya	Detail perbaikan	Lokasi permasalahan saat ini	Konten permasalahan	Konten permasalahan	Ketecapilan teknis kru	Masalah lain	pendapat	Remark
Banjarmasin	KBP	I	KN/AE-032	Yes, Pelempung Ringan (4 tahun)	Pelatihan penyelamatan diri daurak / Setiap setiap enam bulan	Pelatihan pemadaman kebakaran / Setiap sekali			Mesin	Getaran terjadi saat mesin diperasikan penuh		Mereka yang memiliki kualifikasi (pelayaran, mesin) dijadwalkan pensiun dalam lima tahun ke depan. Pelatihan diperlukan untuk mendapatkan orang-orang muda untuk memenuhi syarat.			
Tarakan	KIP	III	KN Marabu	Yes, Pelempung Ringan (4 tahun)	Pelatihan penyelamatan diri daurak / Setiap enam bulan	Pelatihan pemadaman kebakaran / Setiap sekali			Mesin	Getaran terjadi saat mesin diperasikan penuh		80 % mempunyai keterampilan, 20 % memerlukan pelatihan			
Tarakan	KBP	III	KN Sarung Aie	Yes, Pelempung Ringan (4 tahun)	Pelatihan penyelamatan diri daurak / Setiap sekali	Pelatihan pemadaman kebakaran / Setiap sekali	2016	Docking	Mesin	Getaran terjadi saat mesin diperasikan penuh		80 % mempunyai keterampilan, 20 % memerlukan pelatihan			
Samarinda	KIP	I	KN Mithuno	Yes, Rambu suar, Pelempung suar (tergantung situasi), Pelempung tanpa cahaya (tergantung)	Tidak ada	Tidak ada	Sistem Perak generator (Kalifornia)	Penggantian seluruh instalasi ke-listrikan dengan menggunakan sistem otomatis	Kamar mesin	Sebagian perlu di ganti plat yang krepas		Mereka yang memiliki kualifikasi (Deck dan Mesin) 30% dari jumlah ABK, 29 orang. Pelatihan diperlukan untuk mendapatkan tenaga ahli di bidang nya untuk memenuhi syarat.	Perlu di adakan perawatan part dan tenaga ahli / dohng secara rutin		
Samarinda	KIP	I	KN Mang Besar	Yes, Pelempung suar (4 tahun), Pelempung tanpa cahaya (4 tahun)	Pelatihan penyelamatan diri daurak / Setiap sekali	Pelatihan pemadaman kebakaran / Setiap sekali		Pernah terjadi kerusakan pada sil-kronasi nya dan itu sudah bisa di atasi pada saat ini dan akan kemudi paitan (sudah di atasi)	Plat yang tipis dan sebagian spare part mesin agak susah di dapat	Sebagian lama di dek sath lapak		Suati ini kru yang masuk kriteria baya 10 persen dari jumlah ABK yang telah ditetapkan menurut KP 342 /DIPU 2019	Masalah besar yang terjadi justru terjadi pada suah nya mendapatkan bahan untuk perawatan seperti cat dll sehingga perawatan kurang maksimal		
Samarinda	KIP	III	KN Suar-010	Nothing	Tidak ada	Tidak ada	Tidak ada	Tidak ada	Deck	Sebagian lama di dek sath lapak		Kurangnya SDM yang sesuai dengan kebutuhan di atas kapal kelas III	Perlu di adakan penggantian plat bagian atas ( dek )	Diharapkan rutinitas dohng	
Samarinda	KPP	III	KN Marapas	Nothing	Tidak ada	Tidak ada	setel Hela Mesin induk serta pengelasan bagian bagian yang krepas misal knaport	Batas antar anjungan dan bodi kapal yang berbeda jenis bahannya antara aluminium dan besi hingga susah di zardkan		1. Anggaran perawatan Kapal yang terbatas 2. Share Part dan tehnik mesin cummin agak sulit di dapat 3. ABK sangat kurang		1. Pipa hisap terleak di bawah lunas 2. Kurang nya akomodasi buat penumpang yang beres dan berada di wilayah Sungai	Kurang Optimal		
Makassar	KIP	I	KN De Billi	Yes, Pelempung ringan (4 tahun)	Safety meeting / 1 - 2 tahun	Pelatihan pemadaman kebakaran / Setiap sekali	1 s/d 2 tahun sekali		Engine Room	Kebocoran air pendingin mesin		Perunya peningkatan kualifikasi jajah pelat khususnya untuk orang mesin	Kekurangan SDM	Perlu nya penambahan SDM baik secara kuantiti dan kualitas	No data entry
Makassar			KN Mengkera												No data entry
Makassar			KN B- 129												No data entry
Makassar			KN Akiamo												No data entry
Kendari			KN Mayang												No data entry
Kendari			KN Andromeda												No data entry
Bitung	KIP	I	KN Mangas	Yes, Pelempung ringan (4 tahun)	Pelatihan penyelamatan diri daurak / Setiap enam bulan	Pelatihan pemadaman kebakaran / Setiap sekali		Penggantian rapan geladak main deck - Service radar dan ECDIS - Penggantian baru GPS - Perbaikan cerobong gas buang - Pemasaan pompa air got - Pemasaan baru pompa air got - Service Fresh water cooler ME 1 dan 2	Mesin	Getaran terjadi saat mesin diperasikan penuh		Mereka yang memiliki kualifikasi (pelayaran, mesin) dijadwalkan pensiun dalam lima tahun ke depan. Pelatihan diperlukan untuk mendapatkan orang-orang muda untuk memenuhi syarat.	- Jendala kaca anjungan sudah lepas perekatnya - Upgrade ECDIS - Bow thruster tidak berfungsi - Radar Shand dan Xband tidak berfungsi dengan baik - Mesin langkur tidak berfungsi dengan baik	Agar mabukan pemeliharaan dan perbaikan	

### 4.3.4 -2表: アンケート 1-2 (No 5)

DISNAV	Jenis kapal	Kelas	Nama kapal	Pengantian selampung secara teratur	Kriteria pertukaran	Pelatihan penyelamatan diri daurak / Sekolah setiap enam bulan	Pelatihan pemadaman kebakaran / Sekolah sekali	Isi pelatihan pelaut / Frekuensi pelatihan	Perbaikan sebelumnya	Detail perbaikan	Lokasi permasalahan saat ini	Konten permasalahan	Ketampilan teknis kru	Masalah lain	pendapat	Remark	
Bilung	KIP	I	KN Merak	Yes, Pelampung ringan (4 tahun)		Pelatihan penyelamatan diri daurak / Sekolah setiap enam bulan	Pelatihan pemadaman kebakaran / Sekolah sekali		- Perbaikan dan penggantian plat - Sandblasting - Perbaikan winlas jangkar - Top overhaul - Perbaikan dan penggantian instalasi rempaman - Penggantian turbin propeller shaft	- Penggantian top plat hullan - Penggantian dudukan winlas - Penggantian pelat luas - Penggantian injektor - Service pulp kran - kran	Mesin	Shaft propeller masih bergelut, Kerka oleh gerak mesin mundur respornya lambat	Mereka yang memiliki mesin diadwakan pensiun dalam lima tahun ke depan. Pelatihan diperlukan untuk mendapatkan orang-orang muda untuk memenuhi syarat.	Als tidak sincron dengan nama kapal	Mengatakan perbaikan dan pemeliharaan		
Bilung	KIP	I	KN Sur-009	Yes, Pelampung ringan (4 tahun)		Pelatihan penyelamatan diri daurak / Sekolah setiap enam bulan	Pelatihan pemadaman kebakaran / Sekolah sekali		- Plat lambung kapal - Radir dan GPS dalam keadaan rusak - Pipa olie untuk kemudi bocor sehingga pada saat olah gerak oli kemudi sering ditambah - Sekoci kapal sudah layak boiler - boiler sekoci lepas / keropos	Mesin	Als baling - baling tidak sesuai ukuran sehingga berpengaruh pada kecepatan kapal	Mereka yang memiliki kualitas (pelayaran, mesin) diadwakan pensiun dalam lima tahun ke depan. Pelatihan diperlukan untuk mendapatkan orang-orang muda untuk memenuhi syarat.	- Mesin bergeser - ada bunyi ketukan pada mesin	Adakan pemeliharaan dan perawatan			
Anban	KIP	I	KN Buan	Nothing		Diklat Peningkatan Kompetensi/ Sekolah sekali	Diklat Pemulihan Sertifikat Proficiency/ Sekolah Saat		Perbaikan Mesin Bantu I	General Overhaul	Belum Pernah Dikembalikan Docking Besar sejak di Serahterimakan ke Distrik Navigasi Kelas I Ambon.	Kondisi Teknis Kapal Menurun Karena tidak pernah dilakukan Docking	Pengawakan Kn. Buan belum sesuai dengan SK Dikontribusi baik secara kualitas maupun kuantitas	Perlu pemeliharaan kapal/Docking dilaksanakan sesuai ketentuan dan berkesinambungan	Perlu pemeliharaan Anggaran suku cadang, pemeliharaan kapal		
Anban	KIP	I	KN Alphard	Nothing		Diklat Peningkatan Kompetensi/ Sekolah sekali	Diklat Pemulihan Sertifikat Proficiency/ Sekolah Saat		Docking 2019	Engine dan deck Cranger	Gangguan pada Mesin induk dan Turbo Cranger	Kapal Tidak maksimal Beroperasi	Pengawakan Kn. Alphard belum sesuai dengan SK Dikontribusi baik secara kualitas maupun kuantitas	Perlu pemeliharaan Anggaran suku cadang, pemeliharaan kapal	Perlu pemeliharaan Anggaran suku cadang, pemeliharaan kapal		
Sorang			KN Pradawana													No data entry	
Sorang			KN Yefyus														No data entry
Sorang			KN Korbau														No data entry
Jayapura			KN Aldabaran														No data entry
Jayapura			KN Bapondi														No data entry
Merauke	KIP	III	KN Meraopi	Nothing		Pelatihan penyelamatan diri daurak / Sekolah setiap enam bulan	Pelatihan pemadaman kebakaran / Sekolah sekali										No data entry
Merauke	KIP	III	KN Bimangur	Nothing													No data entry
Tual	KIP	I	KN Mahkota	Nothing		Pelatihan penyelamatan diri daurak / Sekolah setiap enam bulan	Pelatihan pemadaman kebakaran / Sekolah sekali				Crane	Kekuatan Crane menurun, Tidak dapat mengangkat beban lebih dari 3 ton	ABK KN. Mahkota belum memiliki ijazah teknis yang sesuai sehingga diperlukan peningkatan melalui pendidikan dan pelatihan kepada ABK			Stopped operation in 2018	

### 4.3.4 -3表 : 船舶構成

DISNAV	Class	Type of Vessel	Number of Vessels	Class	Name of Vessel	TOTAL FOR THE YEAR				
						TIME SPENT IN AREA (hour)	PATROL TIME (hour)	ACTION DAYS (day)	Docking period (day)	MILEAGE (Mile/hour)
Sabang	II	KBP	1	I	KN ANTARES	8056.83	663.92	54	69	6013.39
		KPP	1	III	KN BENGALA	7870.08	169.75	37	15	2189.1
Belawan	I	KIP	1	I	KN BERHALA	8147.5	612.5	56	53	3771
		KBP	2	I III	KN ARCTURUS KN SUAR-008					
Sibolga	III	KBP	1	I	KN MANDALIKA					
Teluk Bayur	II	KIP	1	I	KN SIBARU-BARU					
		KBP	1	I	KN MUCI (scrap)					
Tg. Pinang	I	KIP	1	I	KN JADAYAT	6871.67	1166.33	178	53	8937
		KBP	2	I III	KN ADHARA KN MITRA-IV (scrap)	6232.5 8417.99	1063.5 416.42	122 105	44 38	6489.5 2776.07
		KPP	2	III	KN MANTANG	7951	65	28	23	385
Dumai	I	KIP	2	I I	KN PARI KN RUPAT					
		KPP	1	III	KN MARORE					
Palembang	I	KIP	1	I	KN KALIAN	5055.88	490.54	54	42	3265
		KBP	1	III	KN DAIK (D-044)					
		KPP	1	III	KN MOKMER					
Pontianak	III	KBP	1	I	KN ALNILAM	8375	394	45	0	3266.41
		KPP	1	III	KN PENGIKI	8236	144.5	40	0	1644.44
Tg. Priok	I	KIP	2	I I	KN KARAKATA KN EDAM	7893.67	846.33	88	48	7844
		KPP	2	III III	KN MIAPLACIDUS KN ENGGANO	8717	43	10	11	156.6
						7294.75	122.25	37	0	648.4
Cilacap	III	KIP	1	I	KN PRAJAPATI	7294.75	122.25	37	0	648.4
		KIP	1	I	KN KUMBA	1338	605	85	49	1970
		KBP	2	III III	KN SUAR 011 (scrap) KN B-126	8042.5 8096	446.5 634.25	113 128	30 30	1425 1918.75
Semarang	II	KPP	1	III	KN KARIMUN JAWA	8492.25	292.25	72	21	1640
		KIP	2	I I	KN BIMASAKTI UTAMA KN MASALEMBO	7671.75 8442.75	352.25 317.25	53 59	0 0	2301.4 2919.2
		KBP	1	III	KN DAMARA (scrap)	8301.5	458.5	52	0	2248
Benoa	II	KPP	1	III	KN AE-029	8353.5	430.5	68	0	1465.5
		KIP	1	I	KN NUSA PENIDA	8348.5	411.5	68	0	4515.5
Kupang	II	KBP	1	I	KN MIZAN	8607	153	40	0	1049
		KIP	1	I	KN NIPA					
Banjarmasin	II	KBP	1	I	KN KUNYIT	8520.45	263.55	34	0	2316
		KBP	2	I III	KN ALTAIR KN SUAR-003 (scrap)	8601.18 8708.42	182.82 51.58	22 5	0 0	1742 0
		KPP	1	III	KN AE-032 (scrap)	8760		0	0	0
						8287	431.75	76	0	4141.5
Tarakan	III	KIP	1	I	KN MARATUA	8287	431.75	76	0	4141.5
		KPP	1	III	KN SARANG ALOE	7861.25	178.75	32	61	1775.25
Samarinda	I	KIP	2	I I	KN MITHUNA KN MIANG BESAR	8066.5 8183.12	693.5 576.88	76 80	27 30	6257.5 4375.5
		KBP	1	III	KN SUAR-010	8091.92	668.08	106	0	3487
		KPP	1	III	KN MARAPAS	8562	198	65	0	1352.5
						8281.92	478.08	51	0	5250
Makassar	I	KIP	1	I	KN DE BRILL	8281.92	478.08	51	0	5250
		KBP	2	I III	KN MENGKARA KN B-120	8591.77	168.23	16	78	752.7
		KPP	1	III	KN AKELAMO	8660.58	99.42	36	0	963.25
Kendari	III	KBP	2	I I	KN MAYANG KN ANDROMEDA					
		KPP	1	IV	KN WANGI-WANGI					
Bitung	I	KIP	1	I	KN MIANGAS					
		KBP	2	I III	KN MERAK KN SUAR-009					
Ambon	I	KIP	1	I	KN BACAN					
		KBP	1	I	KN ALPHARD					
Sorong	III	KIP	1	I	KN YEFYUS					
		KPP	1	III	KN KOFIAU					
Jayapura	II	KBP	1	I	KN ALDEBARAN					
		KPP	1	III	KN BEPONDI					
Merauke	III	KBP	1	I	KN MERPATI	8386	374	40	0	0
Tual	III	KBP	1	I	KN MAHKOTA					

*KIP*            22  
*KBP*            27    (scrap 5)  
*KPP*            17    (scrap 1)

Total            66

4.3.4 -4表：船舶構成 (DISNAV)

DISNAV	Class	Type of Vessel	Number of Vessels	Class	Name of Vessel	TOTAL FOR THE YEAR				
						TIME SPENT IN AREA (hour)	PATROL TIME (hour)	ACTION DAYS (day)	Docking Period (day)	MILEAGE (Mile/hour)
Sabang	II	KBP	1	I	KN ANTARES	8056.83	663.92	54	69	6013.39
		KPP	1	III	KN BENGGALA	7870.08	169.75	37	15	2189.1
Tg. Pinang	I	KIP	1	I	KN JADAYAT	6871.67	1166.33	178	53	8937
		KBP	2	I	KN ADHARA	6232.5	1063.5	122	44	6489.5
				III	KN MITRA-IV (scrap)	8417.99	416.42	105	38	2776.07
KPP	2	III	KN MANTANG	7951	65	28	23	385		
Pontianak	III	KBP	1	I	KN ALNILAM	8375	394	45	0	3266.41
		KPP	1	III	KN PENGIKI	8236	144.5	40	0	1644.44
Cilacap	III	KIP	1	I	KN PRAJAPATI	7294.75	122.25	37	0	648.4
Semarang	II	KIP	1	I	KN KUMBA	1338	605	85	49	1970
		KBP	2	III	KN SUAR 011 (scrap)	8042.5	446.5	113	30	1425
				III	KN B-126	8096	634.25	128	30	1918.75
KPP	1	III	KN KARIMUN JAWA	8492.25	292.25	72	21	1640		
Surabaya	I	KIP	2	I	KN BIMASAKTI UTAMA	7671.75	352.25	53	0	2301.4
				I	KN MASALEMBO	8442.75	317.25	59	0	2919.2
		KBP	1	III	KN DAMARA (scrap)	8301.5	458.5	52	0	2248
KPP	1	III	KN AE-029	8353.5	430.5	68	0	1465.5		
Benoa	II	KIP	1	I	KN NUSA PENIDA	8348.5	411.5	68	0	4515.5
		KBP	1	I	KN MIZAN	8607	153	40	0	1049
Banjarmasin	II	KIP	1	I	KN KUNYIT	8520.45	263.55	34	0	2316
		KBP	2	I	KN ALTAIR	8601.18	182.82	22	0	1742
				III	KN SUAR-003 (scrap)	8708.42	51.58	5	0	0
KPP	1	III	KN AE-032 (scrap)	8760	0.00	0	0	0		
Tarakan	III	KIP	1	I	KN MARATUA	8287	431.75	76	0	4141.5
		KPP	1	III	KN SARANG ALOE	7861.25	178.75	32	61	1775.25
Samarinda	I	KIP	2	I	KN MITHUNA	8066.5	693.5	76	27	6257.5
				I	KN MIANG BESAR	8183.12	576.88	80	30	4375.5
		KBP	1	III	KN SUAR-010	8091.92	668.08	106	0	3487
		KPP	1	III	KN MARAPAS	8562	198	65	0	1352.5
Merauke	III	KBP	1	I	KN MERPATI	8386	374	40	0	0





4.3.4 -5表: 乘員年齡構成 (No 2)

NO	DISNAV	Vessel name	Age group											TOTAL	Remarks		
			Under 20	20-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	Over 60					
			24	Palembang	KN Kallian	0	0	0	0	0	0	0	0			0	0
25	Palembang	KN Daik (D-044)	0	1	0	0	1	1	3	2	0	0	0	0	0	8	No Remarks
26	Palembang	KN Mokmer	0	0	0	0	0	0	0	0	0	0	0	0	0	0	No data entry
27	Pontianak	KN Alnilam	0	0	1	0	2	7	3	5	3	0	0	0	21	No Remarks	
28	Pontianak	KN Pengiki	0	0	1	1	0	2	3	4	1	0	0	0	12	No Remarks	
29	Pontianak	KN AE-012	0	0	0	0	0	0	0	0	0	0	0	0	0	No data entry	
30	Tg. Priok	KN Karakata	0	0	4	1	0	5	6	6	0	0	0	0	22	No Remarks	
31	Tg. Priok	KN Edam	0	1	2	2	2	0	1	6	3	0	0	0	17	Total Crew are 19 persons / 2 persons with no data age listed	
32	Tg. Priok	KN Miaplacidus	0	0	0	0	1	1	0	3	0	0	0	0	5	No Remarks	
33	Tg. Priok	KN Enggano	0	0	2	0	2	1	0	0	1	0	0	0	6	No Remarks	
34	Cilacap	KN Prajapati	0	0	0	2	0	4	6	5	4	0	0	0	21	No Remarks	
35	Cilacap	KN Suar-005	0	0	0	0	0	0	0	0	0	0	0	0	0	No data entry	
36	Cilacap	KN Suar-007	0	0	0	0	0	0	0	0	0	0	0	0	0	No data entry	
37	Surabaya	KN Bimasakti Utama	0	0	0	0	0	0	0	0	0	0	0	0	0	No data entry	
38	Surabaya	KN Maslembo	0	0	0	0	0	0	0	0	0	0	0	0	0	Data only has crew names and no date of birth information.	
39	Surabaya	KN Damara	0	0	0	0	0	0	0	0	0	0	0	0	0	No data entry	
40	Surabaya	KN AE-029	0	0	0	0	0	0	0	0	0	0	0	0	0	No data entry	
41	Kupang	KN Nipa	0	0	0	0	0	0	0	0	0	0	0	0	0	No data entry	
42	Kupang	KN Mina	0	0	0	0	0	0	0	0	0	0	0	0	0	No data entry	
43	Banjarmasin	KN Kunyit	0	1	0	2	1	3	3	1	1	0	0	0	12	No Remarks	
44	Banjarmasin	KN Altair	0	1	0	1	2	2	5	2	0	0	0	0	13	Total Crew are 16 persons / 3 persons with no data age listed	
45	Banjarmasin	KN Suar-003	0	0	0	0	0	0	0	0	0	0	0	0	2	No Remarks	
46	Banjarmasin	KN AE-032	0	0	0	0	0	0	1	1	1	0	0	0	3	No Remarks	
47	Tarakan	KN Maratua	0	2	1	2	6	4	4	6	0	0	0	0	25	No Remarks	
48	Tarakan	KN Sarang Aloe	0	0	0	0	1	3	1	3	0	0	0	0	8	No Remarks	

4.3.4 -5表：乗員年齢構成 (No 3)

NO	DISNAV	Vessel name	Age group											TOTAL	Remarks
			Under 20	20-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	Over 60			
49	Samarinda	KN Mithuna	0	0	0	0	1	4	2	5	4	0	0	16	No Remarks
50	Samarinda	KN Miang Besar	0	0	0	1	2	1	1	7	1	0	0	13	No Remarks
51	Samarinda	KN Suar-010	0	0	0	1	0	0	0	1	3	0	0	5	No Remarks
52	Samarinda	KN Marapan	0	0	0	0	0	1	1	1	0	0	0	3	No Remarks
53	Makassar	KN De Brill	0	0	0	2	8	5	2	3	0	0	0	20	No Remarks
54	Makassar	KN Mengkara	0	0	0	1	3	7	1	2	2	0	0	16	No Remarks
55	Makassar	KN B-129	0	0	0	0	0	0	0	0	0	0	0	0	No data entry
56	Makassar	KN Akelamo	0	0	0	0	0	0	0	0	0	0	0	0	No data entry
57	Kendari	KN Mayang	0	0	0	0	0	0	0	0	0	0	0	0	No data entry
58	Kendari	KN Andromeda	0	0	0	0	0	0	0	0	0	0	0	0	No data entry
59	Bitung	KN Miangas	0	0	0	0	0	0	0	0	0	0	0	0	No data entry
60	Bitung	KN Merak	0	0	0	0	0	0	0	0	0	0	0	0	No data entry
61	Bitung	KN Suar-009	0	0	0	0	0	0	0	0	0	0	0	0	No data entry
62	Ambon	KN Bacan	0	0	0	1	2	5	4	3	1	0	0	16	No Remarks
63	Ambon	KN Alphard	0	0	0	0	2	2	12	1	0	0	0	17	No Remarks
64	Sorong	KN Pradawana	0	0	0	0	0	0	0	0	0	0	0	0	The data same with KN. YEFYUS
65	Sorong	KN Yefyus	0	0	0	0	1	3	6	7	0	0	0	17	No Remarks
66	Sorong	KN Kofiau	0	1	0	0	1	2	1	4	1	0	0	10	No Remarks
67	Jayapura	KN Alcebaran	0	0	0	1	3	0	4	1	0	0	0	9	No Remarks
68	Jayapura	KN Bepondi	0	0	0	0	0	0	0	0	0	0	0	0	No data entry
69	Merauke	KN Merpati	0	0	0	0	5	4	5	4	2	0	0	20	No Remarks
70	Merauke	KN Bintangur	0	0	0	0	0	0	0	0	0	0	0	0	No data entry
71	Tual	KN Mahkota	0	0	0	6	11	4	0	0	1	0	0	22	No Remarks

4.3.4 -6表 : 航路標識業務用船廃棄及び移管計画

NO	DISNAV	DISNAV Class	Vessel type	Vessel Class	Name of Vessel	Year of Built	Age as of 2022
5	Tg. Pinang	I	KBP	III	KN MITRA-IV	1975	47
7	Teluk Bayur	II	KBP	I	KN MUCI	1975	47
10	Semarang	II	KBP	III	KN SUAR 011	1980	42
11	Surabaya	I	KBP	III	KN DAMARA	1953	69
			KPP	III	KN AE-029	1969	53
14	Banjarmasin	II	KBP	III	KN SUAR-003	1971	51
			KPP	III	KN AE-032	1971	51
22	Sorong	III	KIP	I	KN PRADAWANA	1979	43
24	Merauke	III	KPP	IV	KN BINTANGUR	1967	55

According to DISNAV Surabaya, KN AE-029 continues to operate.

Plan to move to DISNAV Sorong (replacement of KN PRADAWANA)

19	Kendari	III	KBP	I	KN MAYANG	1996	26
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4.3.4 -7表 : 航路標識業務用船一覽表

NO	DISNAV	Class	Navigation Vessel						AtoN managed by Vessel			
			Type of Vessel	Number of Vessels	Class	Name of Vessel	Year of Built	Age as of 2023	Light-House	Light-Beacon	Light-Buoy	Unlighted Buoy
1	Sabang	II	KBP	1	I	KN ANTARES	1999	24				
			KPP	1	III	KN BENGALA	2016	7				
2	Belawan	I	KIP	1	I	KN BERHALA	2017	6				
			KBP	2	I	KN ARCTURUS	1999	24				
3	Sibolga	III	KBP	1	I	KN MANDALIKA	1975	48				
			KIP	1	I	KN SIBARU-BARU	2017	6				
4	Teluk Bayur	II	KIP	1	I	KN JADAYAT	2003	20				
			KBP	1	I	KN ADHARA	1999	24				
5	Tg. Pinang	I	KIP	2	III	KN MANTANG	2000	23				
			KPP	2	V	KN NONGSA	2014	9				
6	Dumai	I	KIP	2	I	KN PARI	1978	45				
			KPP	1	III	KN RUPAT	2017	6	2	3	10	3
7	Palembang	I	KIP	1	I	KN MARORE	2011	12				
			KBP	1	I	KN KALIAN	2017	6	4	89	39	
8	Pontianak	III	KBP	1	III	KN DAIK (D-044)	1953	70		32	23	
			KPP	1	III	KN MOKMER	1999	24				
9	Tg. Priok	I	KBP	1	I	KN ALNILAM	2008	15	2	3	10	3
			KPP	1	III	KN PENGIKI	2016	7	7		10	
10	Cilacap	III	KIP	2	I	KN KARAKATA	1972	51				
			KPP	2	I	KN EDAM	2017	6				
11	Semarang	II	KIP	2	III	KN MIAPLACIDUS	2008	15				
			KBP	1	III	KN ENGGANO	2016	7				
12	Surabaya	I	KIP	1	I	KN PRAJAPATI	1971	52			10	3
			KBP	1	I	KN KUMBA	1972	51	3	15	10	
13	Benoa	II	KBP	1	III	KN B-126	1961	62	2	10	8	
			KPP	1	III	KN KARIMUN JAWA	2016	7	2	10	8	
14	Kupang	II	KIP	2	I	KN BIMASAKTI UTAMA	2008	15				
			KBP	1	I	KN MASALEMBO	2017	6	6	18	41	13
15	Banjarmasin	II	KPP	1	III	KN AE-029	1969	54				
			KIP	1	I	KN NUSA PENIDA	2017	6	16	93	42	1
16	Tarakan	III	KBP	1	I	KN MIZAN	1996	27	16	93	42	1
			KIP	1	I	KN NIPPA	2017	6				
17	Samarinda	I	KBP	1	I	KN MINA	1997	26				
			KIP	1	I	KN KUNYIT	2017	6	5	7	10	3
18	Makassar	I	KBP	1	I	KN ALTAIR	1999	24	5	7	10	3
			KPP	1	III	KN SARANG ALOE	2010	13			11	12
19	Kendari	III	KIP	1	I	KN MARATUA	2017	6	3	53	17	
			KBP	1	III	KN SARANG ALOE	2010	13			11	12
20	Bitung	I	KIP	2	I	KN MITHUNA	1975	48	3	22	43	1
			KBP	1	I	KN MIANG BESAR	2017	6	3	47		
21	Ambon	I	KBP	1	III	KN SUAR-010	1975	48	1	22	23	
			KPP	1	III	KN MARAPAS	1999	24	1	21	17	
22	Sorong	III	KIP	1	I	KN DE BRILL	2017	6	16	121	20	
			KBP	2	I	KN MENGKARA	1996	27				
23	Jayapura	II	KPP	1	III	KN B-120	1961	62				
			KIP	1	III	KN AKELAMO	2012	11				
24	Merauke	III	KBP	2	I	KN MAYANG	1996	27				
			KPP	1	IV	KN ANDROMEDA	2017	6				
25	Tual	III	KBP	1	IV	KN WANGI-WANGI		2023				
			KIP	1	I	KN MIANGAS	2017	6	5	7	10	3
Sub-Total			KBP	22								
			KPP	22								
Total			KBP	16								
			KPP	60								
									168	1,258	473	



4.3.6 -2表：航路標識業務用船整備計画

DISNAV	Class	Navigation Vessel						
		Type of Vessel	Class	Name of Vessel	Year of Built	Age as of 2023	Annual Operating Rate	Operating Rate Total
Pontianak	Ⅲ	KBP	I	KN ALNILAM	2008	15	14	26
		KPP	Ⅲ	KN PENGIKI	2016	7	12	
Cilacap	Ⅲ	KIP	I	KN PRAJAPATI	1971	52	11	11
Semarang	II	KIP	I	KN KUMBA	1972	51	27	95
		KBP	Ⅲ	KN SUAR-011	1980	43	34	
		KBP	Ⅲ	KN B-126	1961	62	39	
		KPP	Ⅲ	KN KARIMUN JAWA	2016	7	22	
Surabaya	I	KIP	I	KN BIMASAKTI UTAMA	2008	15	16	34
			I	KN MASALEMBO	2017	6	18	
		KBP	Ⅲ	KN SUAR-003	1971	52	16	37
		KPP	Ⅲ	KN AE-029	1971	52	21	
Benoa	II	KIP	I	KN NUSA PENIDA	2017	6	21	21
		KBP	I	KN MIZAN	1996	27	12	12
Banjarmasin	II	KIP	I	KN KUNYIT	2017	6	11	9
		KBP	I	KN ALTAIR	1999	24	7	
		KBP	I	KN SUAR-003	1971	52	2	
		KBP	I	KN AE-032	1971	52	0	
Tarakan	Ⅲ	KIP	I	KN MARATUA	2017	6	23	23
		KPP	Ⅲ	KN SARANG ALOE	2010	13	11	11
Samarinda	I	KIP	I	KN MITHUNA	1975	48	23	47
			I	KN MIANG BESAR	2017	6	24	
		KBP	Ⅲ	KN SUAR-010	1975	48	32	52
		KPP	Ⅲ	KN MARAPAS	1999	24	20	
Merauke	Ⅲ	KBP	I	KN MERPATI	1997	26	12	12