

Republik Indonesia  
Kementerian Perhubungan  
Direktorat Jenderal Perhubungan Laut

Republik Indonesia  
Proyek Kajian Studi  
Untuk  
Maritime Traffic Safety System  
Development Plan

(Rencana Pengembangan Sistem Keselamatan Lalu Lintas Maritim)

Volume Terpisah (Fase-2)  
(Gambar/Tabel)

April, 2023



Japan International Cooperation Agency (JICA)



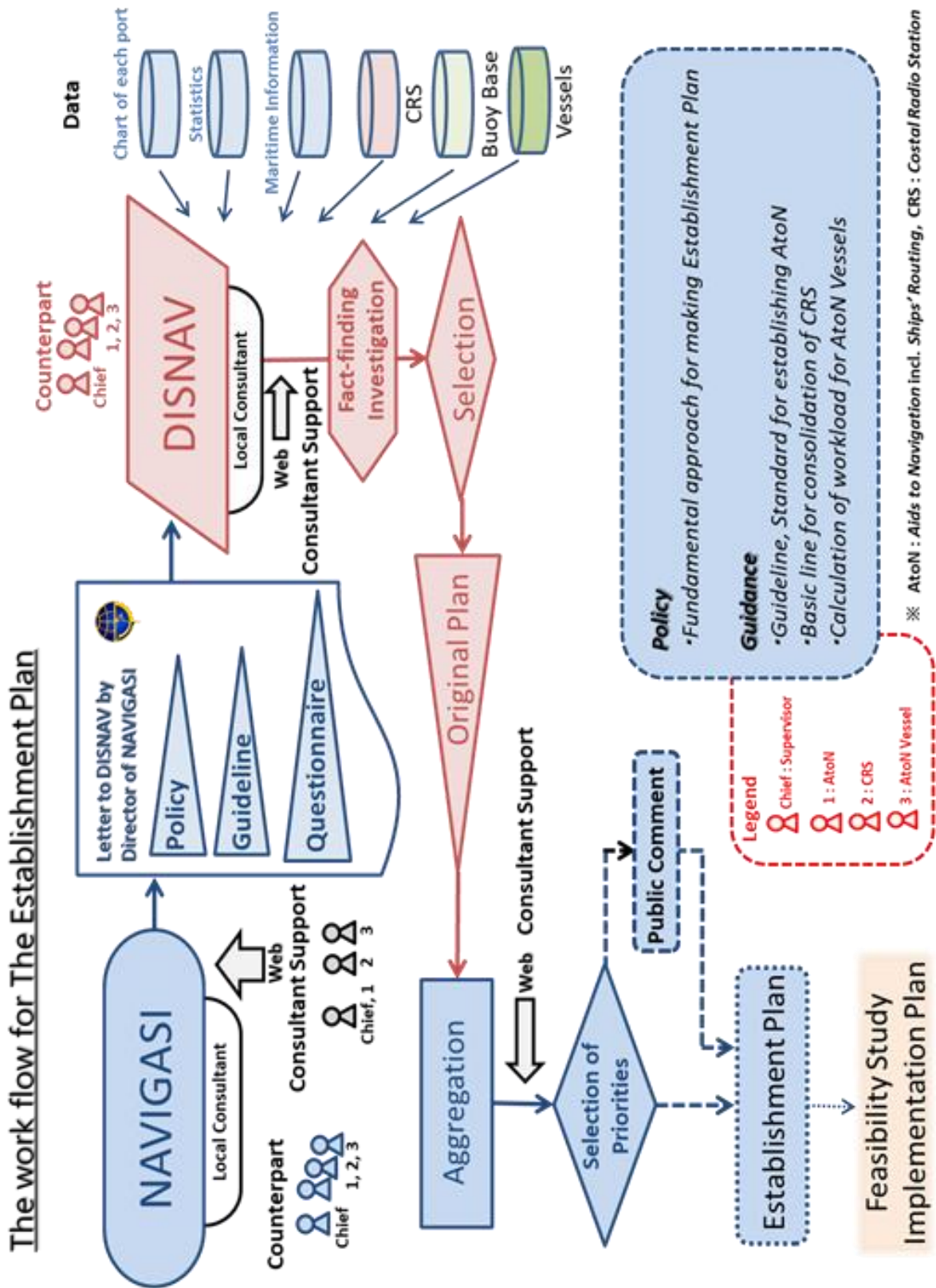
Japan Aids to Navigation Association (JANA)

IM
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23-053

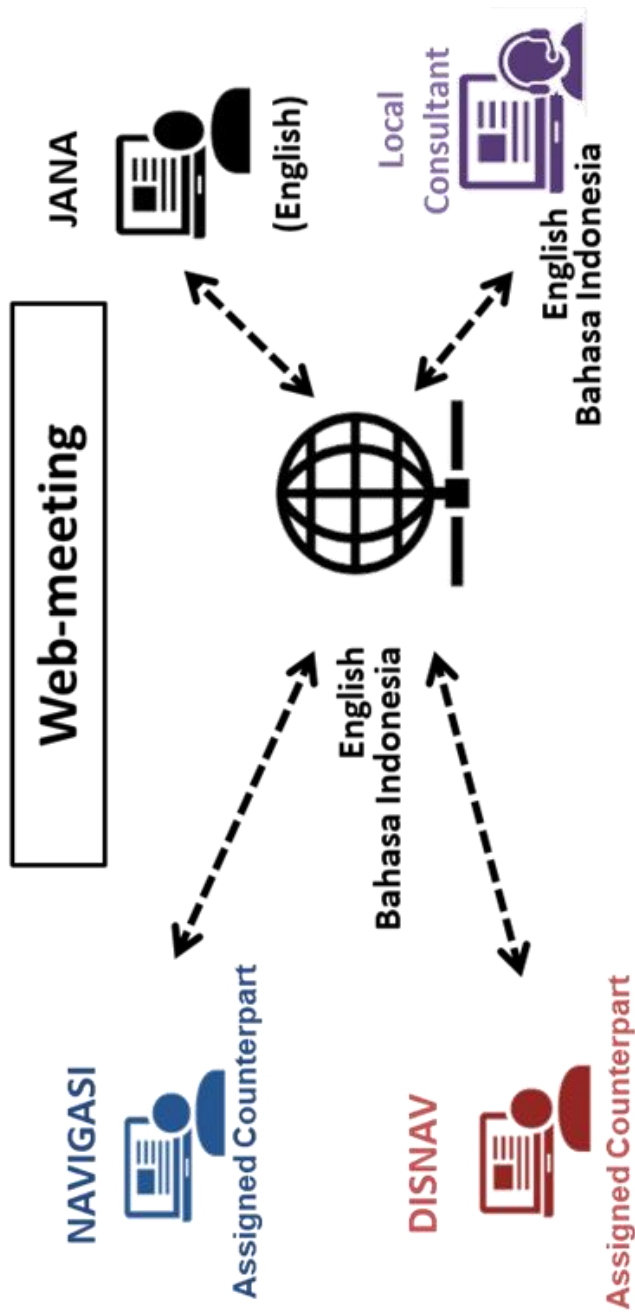
# Bab 2

## Pokok Pekerjaan

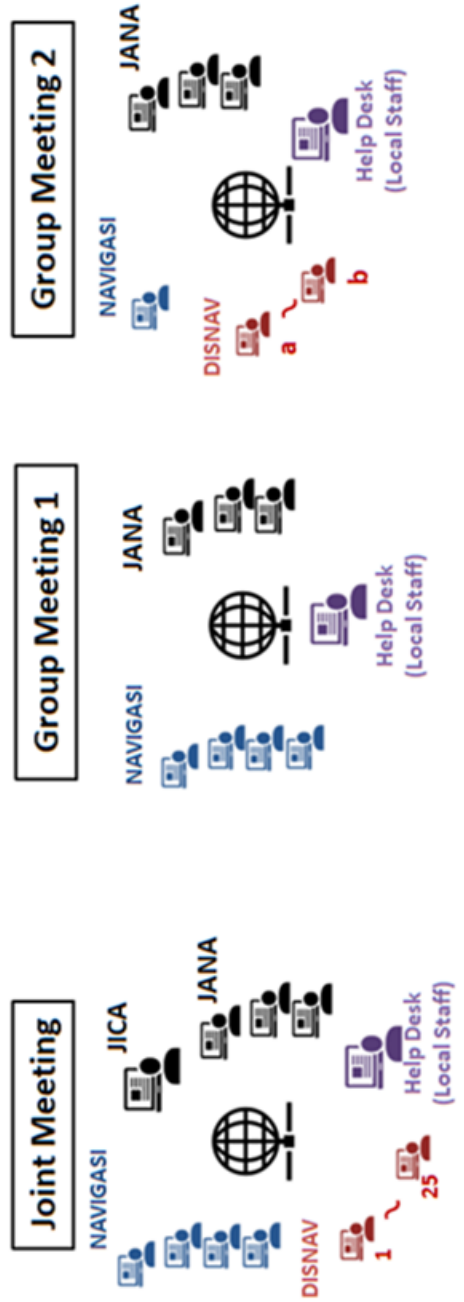
Gambar 2.1 -1 : Alur Pekerjaan



Gambar 2.2 -1 : Model rapat online



Style of Web-meeting



Gambar 2.3 -1 : Kemajuan Pekerjaan

## Schedule for Activities

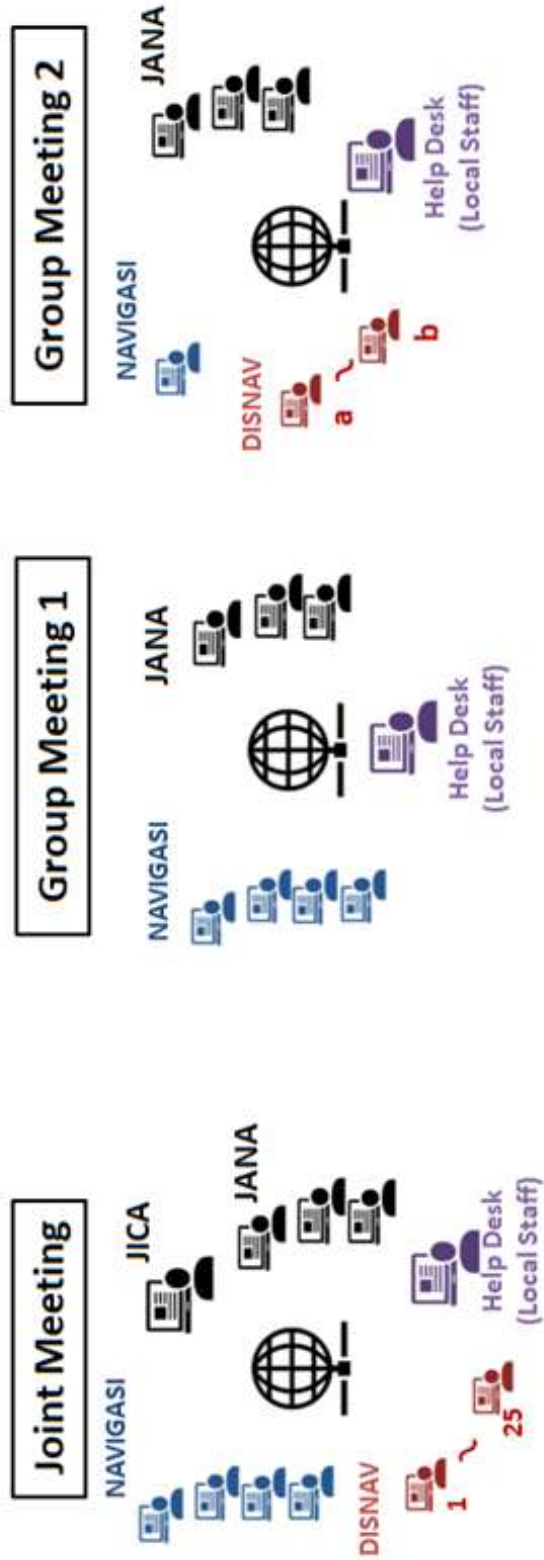
		2022												2023		
		2	3	4	5	6	7	8	9	10	11	12	1	2	3	
Consultant	Domestic Work															
	Oversea Work															
NAVIGASI	Activities															
	Activities															
Events																

# Bab 3

## Kemajuan Pekerjaan

Gambar 3.2 -1 : Bentuk rapat online

### Style of Web-meeting



Tabel 3.7 -1 : Rapat online individu

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*.

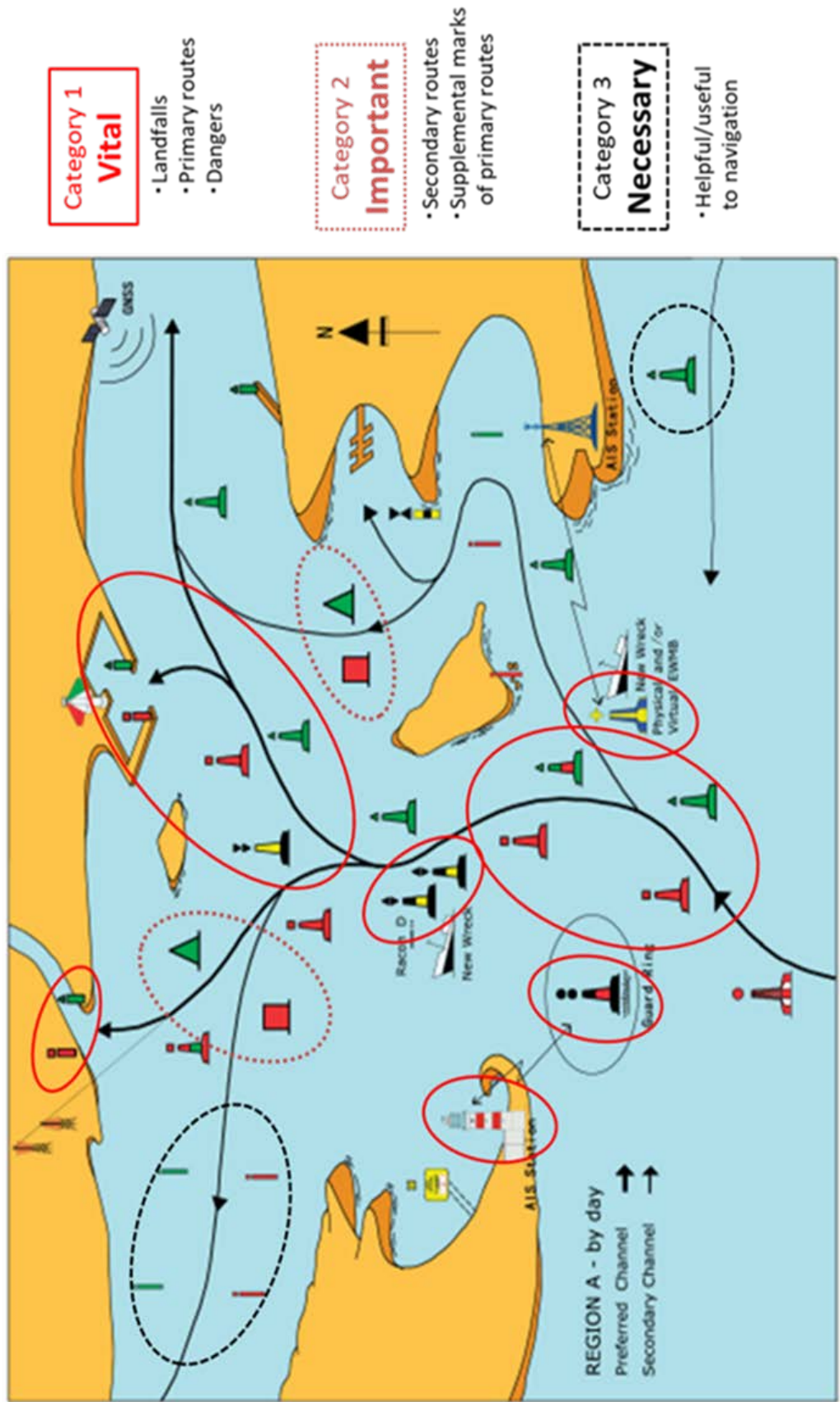


# Bab 4 (1/3)

Komponen (4.1 AtoN)

Gambar 4.1.2 -1 : IALA Maritime Buoyage System Wilayah A

*Explanatory Figure* for Classification of significance for the installation



Gambar 4.1.3 -1 : Lembar-1

Sheet ① Reporting Format for Nominated Area of Establishing AtoN

District		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
Example	Tanjung OOO	b Transformation	a Congested Area	3. Nautical Chart	4. AIS Data	5. Conventional Route	6. Stakeholder Demands	National Strategy	Special Situation
1								Innovation of Port	Increased traffic flow
2									
3									
<b>Drop Down List</b>									
<b>1. Specific Initiative</b>									
1	a Eliminating Unit	Eliminating unit bays and harbors							
2	b Transformation	Transformation into a port where vessels can <i>antar-mula safely</i>							
3	c The Goal	A goal is the port that vessels can navigate							
<b>2. Category of sea area</b>									
1	a Offshore Waters								
2	b Coastal Waters	(Middle/Long range of Radio aid, Notable pair)							
3	c Congested Area	(Short range of Radio aid, Regulated traffic, maneuvering, Edge of narrow waterways, traf							
3	d Harbor/Port	(Indication of entrance of harbor/port, of tra obstacles, of guided route)							
4	e Inland Water (River)								
<b>3. Nautical Chart</b>									
1	a Big Scale	Scale : 1/15000, 1/50000							
2	b General Scale	Scale : 1 / 250000							
3	c None	Ocean Seemap, Google Map							
<b>4. AIS Data</b>									
1	a Independent	Stand-alone, VTS							
2	b Internet	Marinetraffic.com							
3	c None								
<b>5. Conventional Route</b>									
1	a Existing	Regulated route, Traditional lane, Habitual course							
2	b None								
<b>6. Stakeholder Demands</b>									
1	a Sailor	Navigator, Seaman, Pilot							
2	b Fisherman								
2	c Marine Person	People who is engaged in marine activities, business.							
3	d Sailor, Fisherman								
4	e Sailor, Marine Person								
5	f None								

Gambar 4.1.3 -2 : Lembar-2

Sheet ② Reporting Format for List of Existing AtoN

Name of Sea Area / Port : (Fill out)  
 District : (Fill out)

Chart No (Name) : (Fill out)

Buoy/No 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)	Latens (*5)	Cardinal (*6)	Special (*7)		Light Color (*8)
Example	Centric Lighthouse	S 05-45 400	E 107-00 850	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)	Lighthouse 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)

No	Category	Items
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



Gambar 4.1.3 -4 : Lembar-1/Lembar-2

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

District

Priority	Name (Area/Port) (Fill out)	1. Main Purpose of VTS	2. VTS Area	Necessary Data/Information			Reference (Fill out)		
1	a INL, TOS	a AIS Data	a General	b Existing	c Existing	d Existing	e Existing	f Existing	g Existing
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	Name of VTS	Location of Center (Full out)		Type of VTS			3. Facilities (Number)			Legal Basis Regulation/Law (Fill out)		
		Longitude	Latitude	2. VTS Area	Purpose (Multiple Answers)	Operation Center	Radar	AIS	CCIC		Hydrological	Other (fill out)
Example	ABCD	01-27-45.00E	125-34-00.25E	b Port/Harbour	INS, TOS, NAS, Surveillance, Aided Service	1	2	2	1	2	1	
1												
2												
3												
4												

**Drop Down List**

- Main Purpose of VTS
  - INS, TOS
  - INS, TOS, NAS
  - INS, NAS
  - INS
  - TOS
  - NAS
  - Surveillance
  - Allied Service
- Conventional Route
  - Existing
  - None
- Traffic Volume
  - Existing
  - None
- Stakeholder Demands
  - Sailor
  - Fisherman
  - Marine Person
  - Sailor, Fisherman
  - Sailor, Marine Person
  - None
- VTS Area
  - Coastal Waters
  - Port/Harbour
  - Inland Water (River)
- Nautical Chart
  - Big Scale
  - General Scale
  - None
- AIS Data
  - Independent
  - Internet
  - None
- Marine Accident Data
  - Existing
  - None



Tabel 4.1.5 -1 : Jumlah AtoN yang direncanakan

Summary Table for Planned AtoN requested by DISNAV

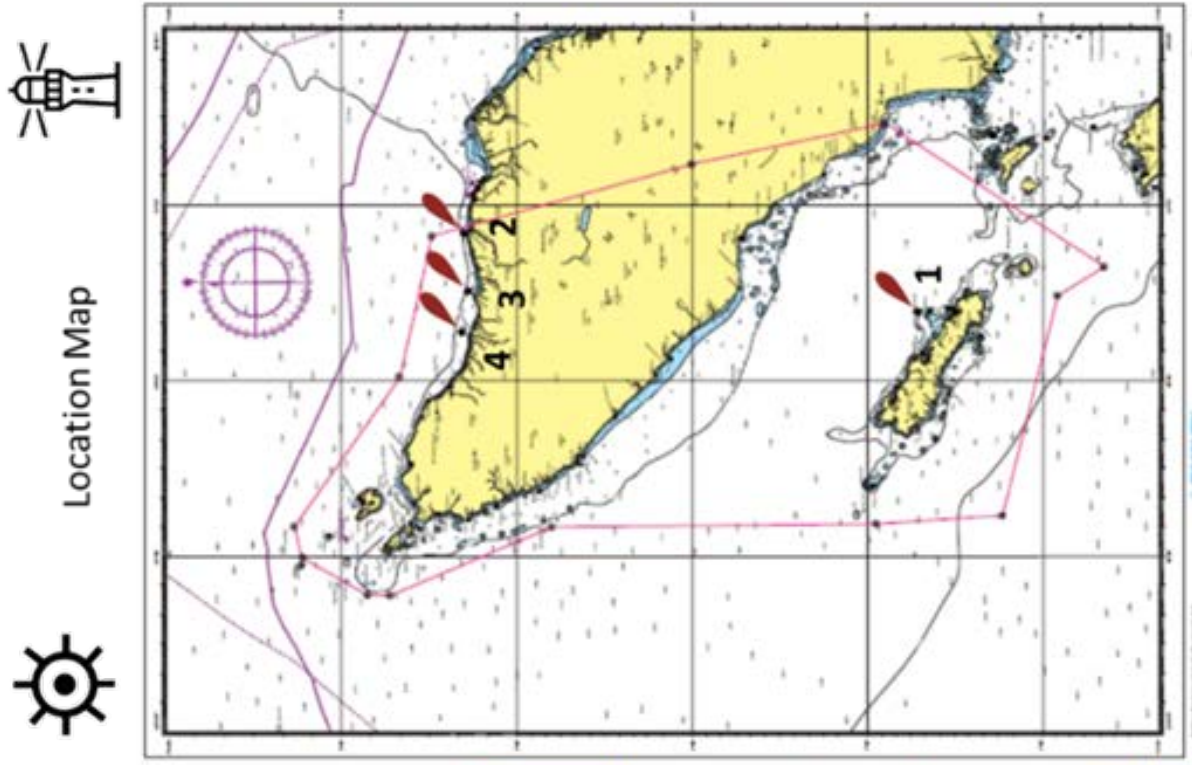
No	DISNAV	Number of Nominated Area	Number of Planned AtoN	Planned AtoN			
				Lighthouse	Lighted Beacon	Lighted Buoy	
1	Sabang	2	4	2	2		
2	Belawan	0	0				
3	Sibolga	0	0				
4	Teluk Bayur	2	3		3		
5	Tg. Pinang	3	.....	....	....	....	
6	Dumai	3	7		7		
7	Palembang	0	0				
8	Pontianak	1	.....	....	....	....	
9	Tg. Priok	2	7		7		
10	Cilacap	2	2		2		
11	Semarang	2	8		4	4	
12	Surabaya	1	.....	....	....	....	
Total							36
Total							89
Total							7
Total							55
Total							27

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
Total							89
Total							7
Total							55
Total							27

December 12, 2022



Gambar 4.1.5 -1 : Peta Lokasi (Sabang)

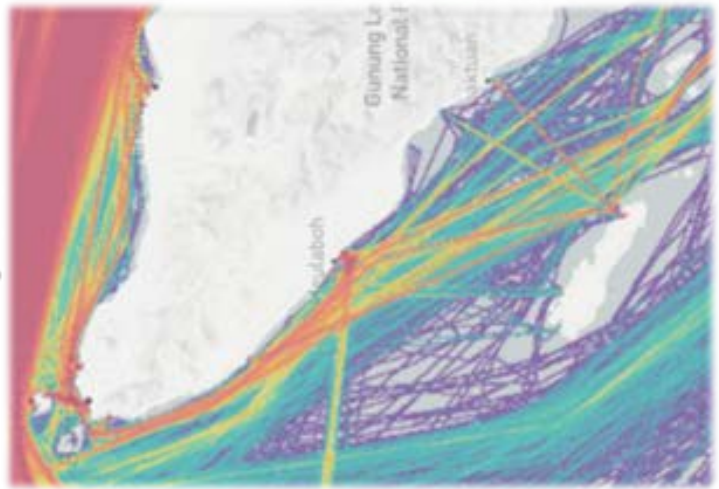


1 Sabang ( II )

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)



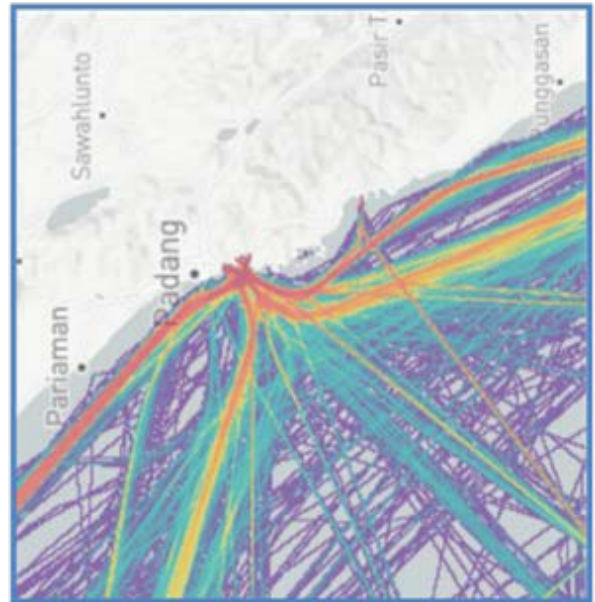
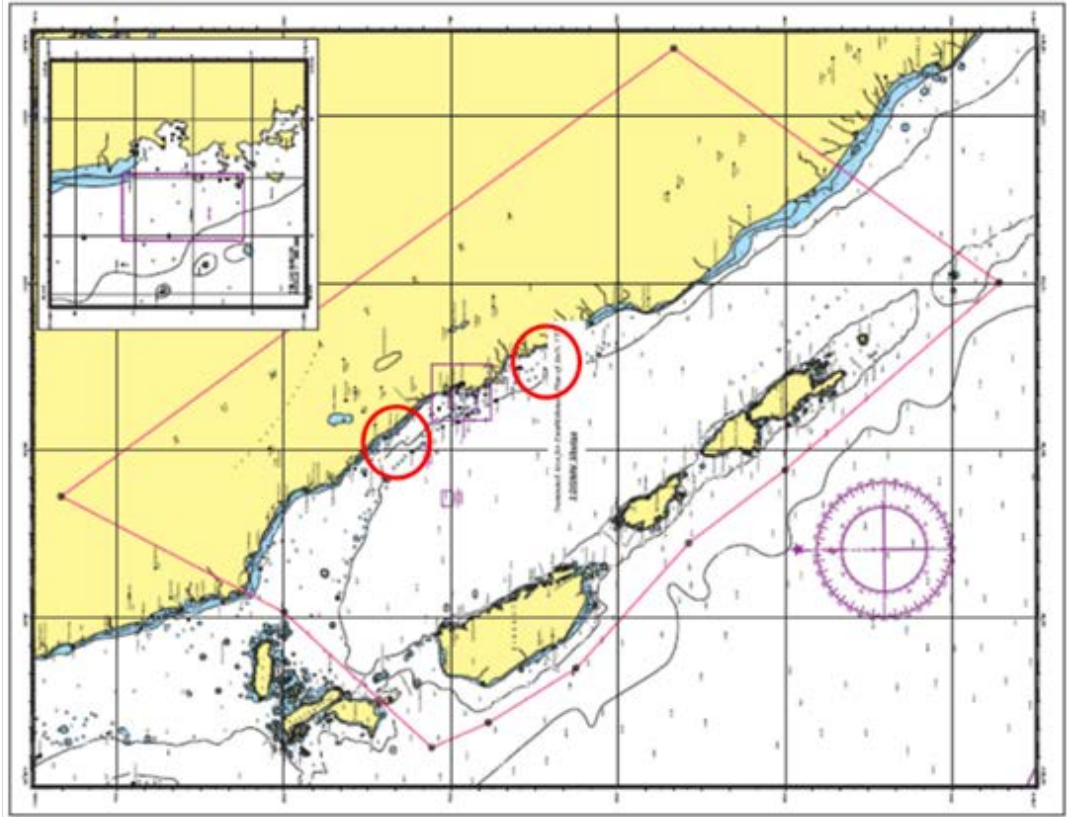
Gambar 4.1.5 -2 : Peta Lokasi (Teluk Bayur)

#### 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 )

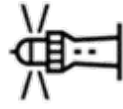
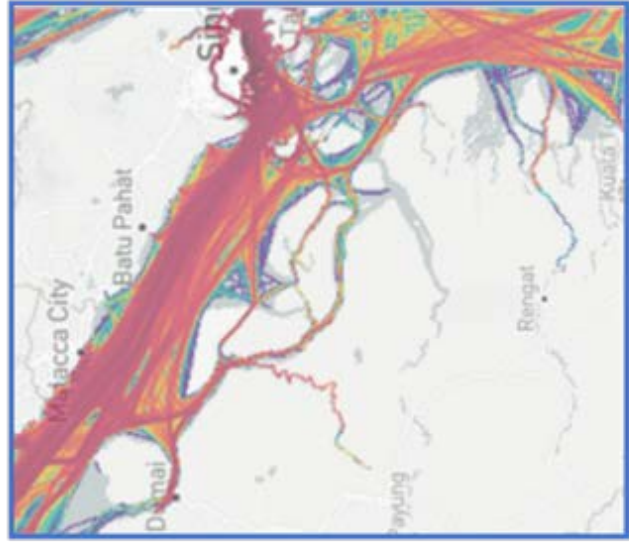
##### Planned AtoN



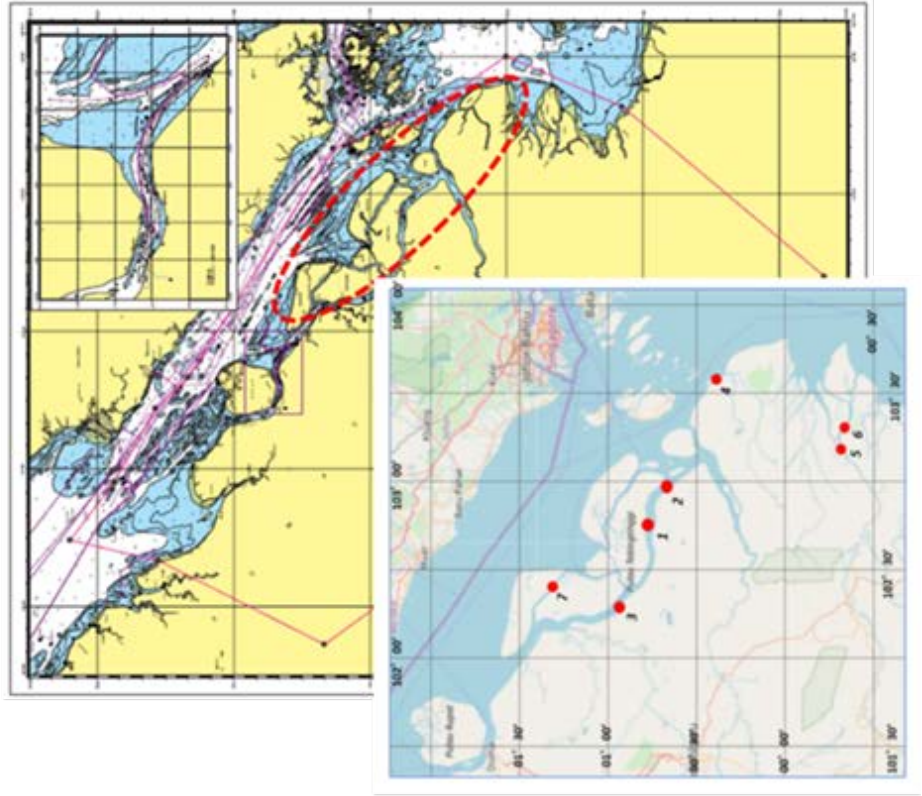
## 6 Dumai ( I )

### 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



Gambar 4.1.5 -3 : Peta Lokasi (Dumai)

Gambar 4.1.5 -4 : Peta Lokasi (Pontianak)



8 Pontianak ( III )

Planned AtoN (Nominated Area)

1 Dwikora (Inland Water : River)



Gambar 4.1.5 -5 : Peta Lokasi (Tg. Priok)

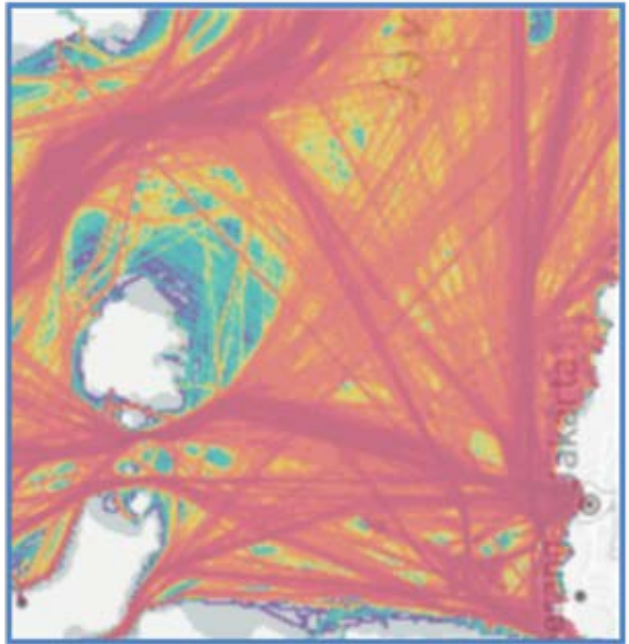
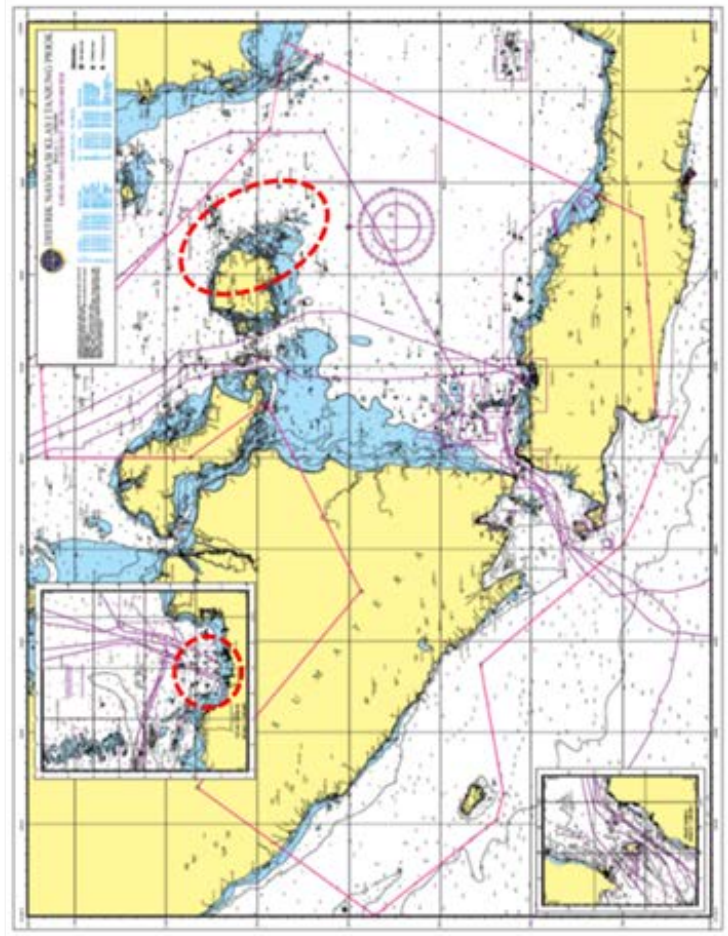
## 9 Tg. Priok ( I )

### 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



Gambar 4.1.5 -6 : Peta Lokasi (Cilacap)

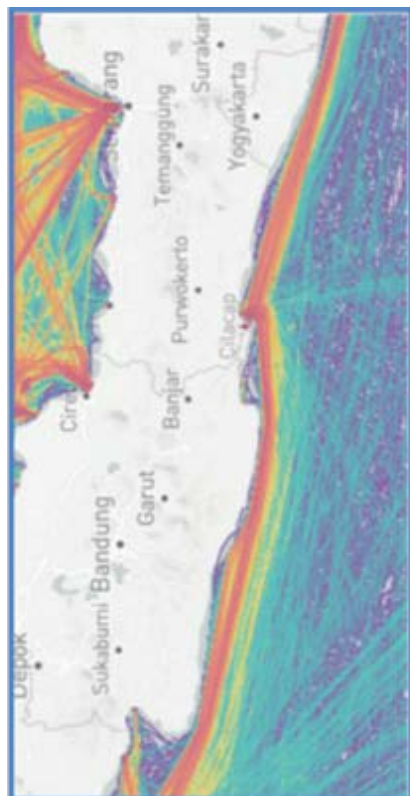
### 10 Cilacap ( III )

Planned AtoN

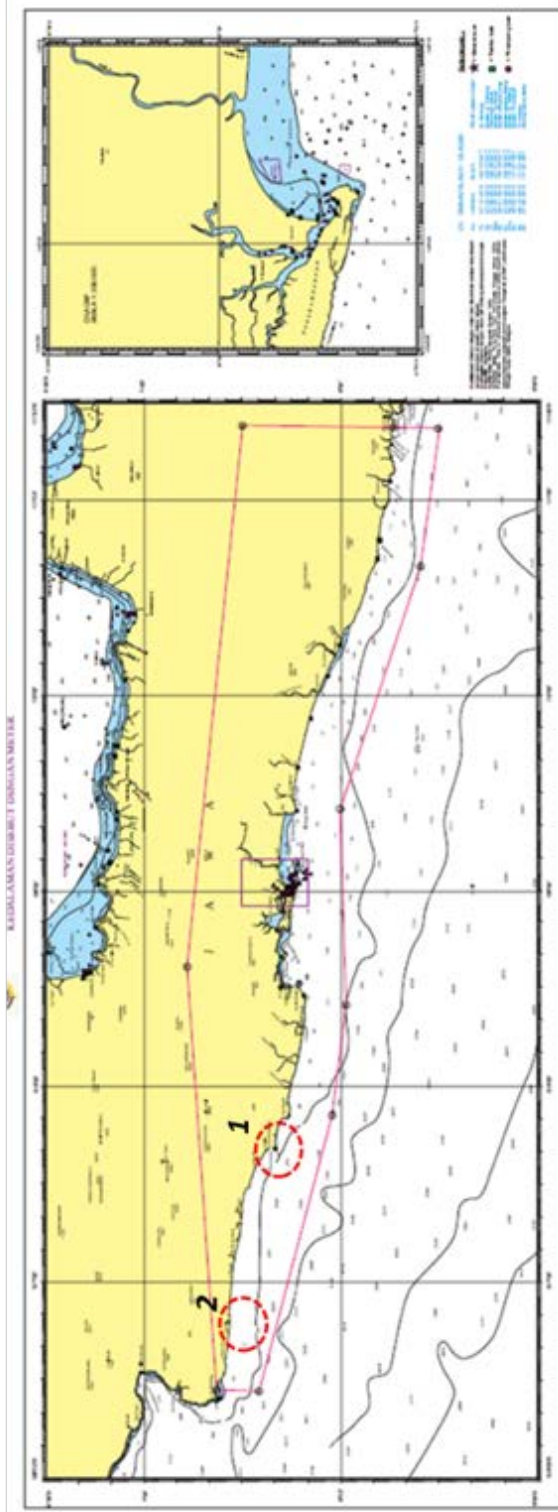
- 1 Sentolo Pamengpeuk (L.B)
- 2 Babadan (L.B)

1 (  $07^{\circ} 39' 44.00'' S$   $107^{\circ} 40' 53.10'' E$  )  
2 (  $07^{\circ} 25' 22.12'' S$   $106^{\circ} 39' 36.78'' E$  )

(L.B : Lighted Beacon)



Planned AtoN



Gambar 4.1.5 -7 : Peta Lokasi (Semarang)

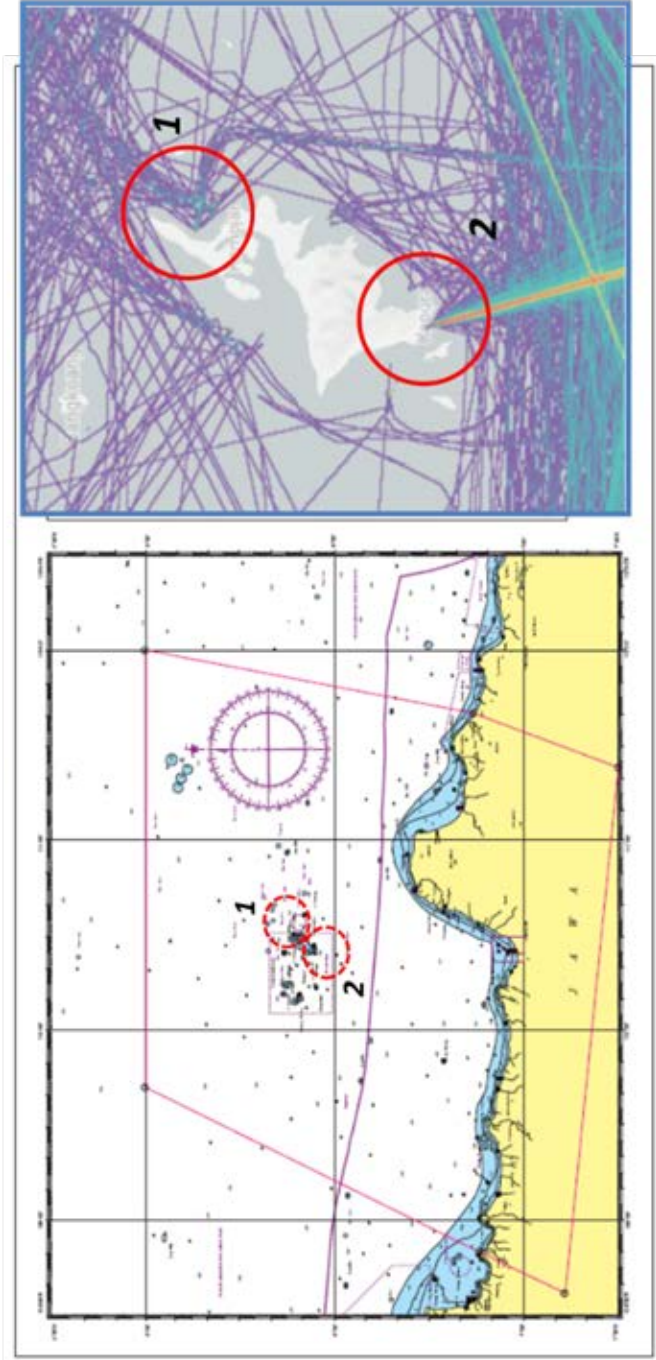
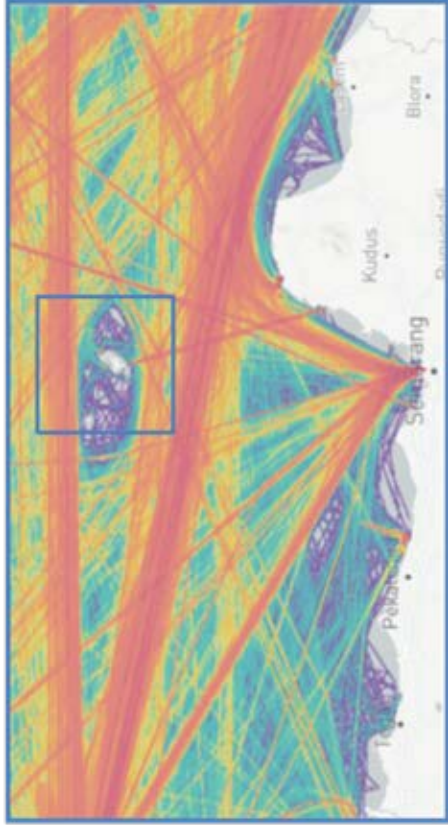
## 11 Semarang ( II )

Planned AtoN

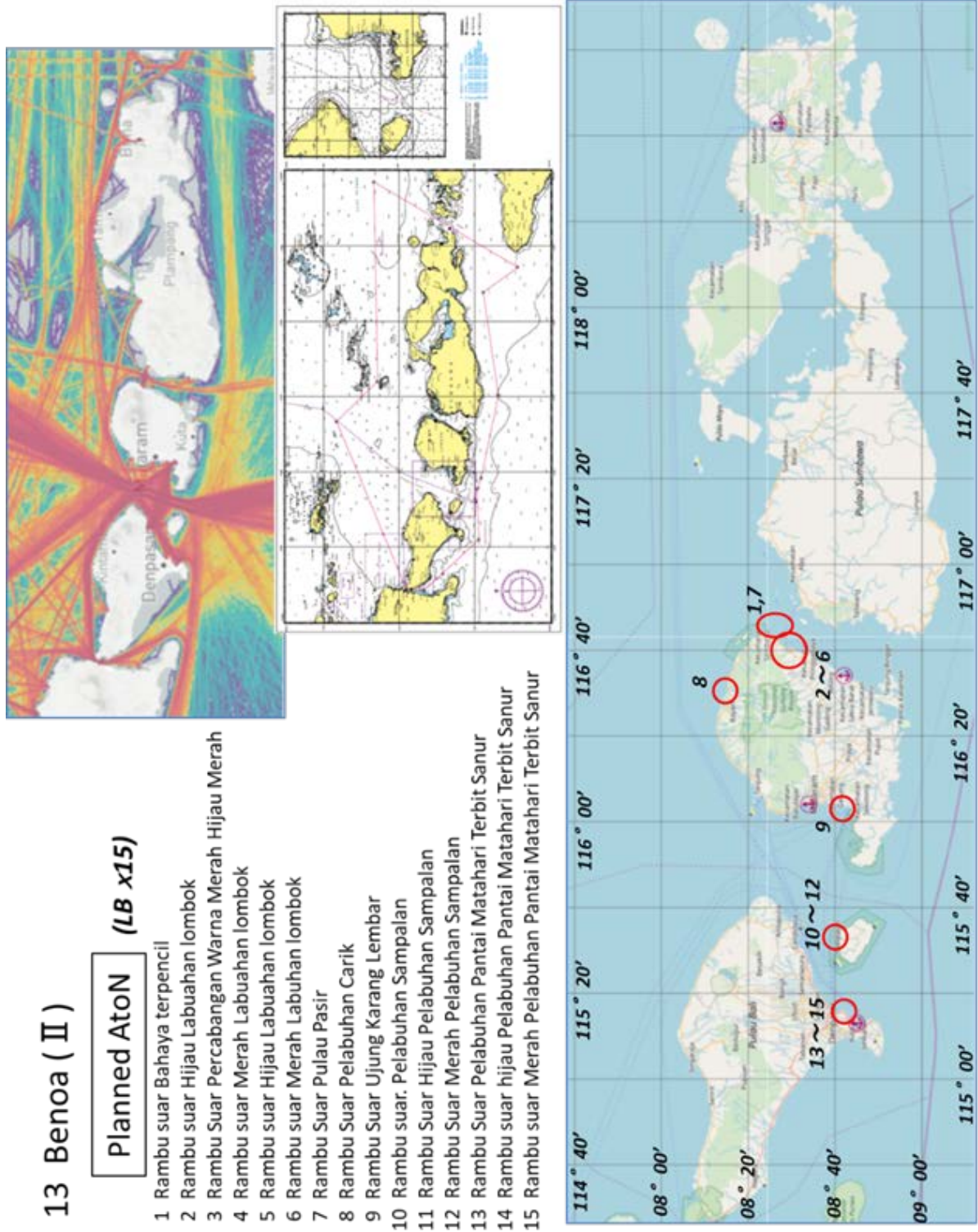
Pulau Karimunjawa

1 Logon Bajak (*Lighted Buoy x 4*)

2 Kalimunjawa (*Lighted Beacon x 4*)

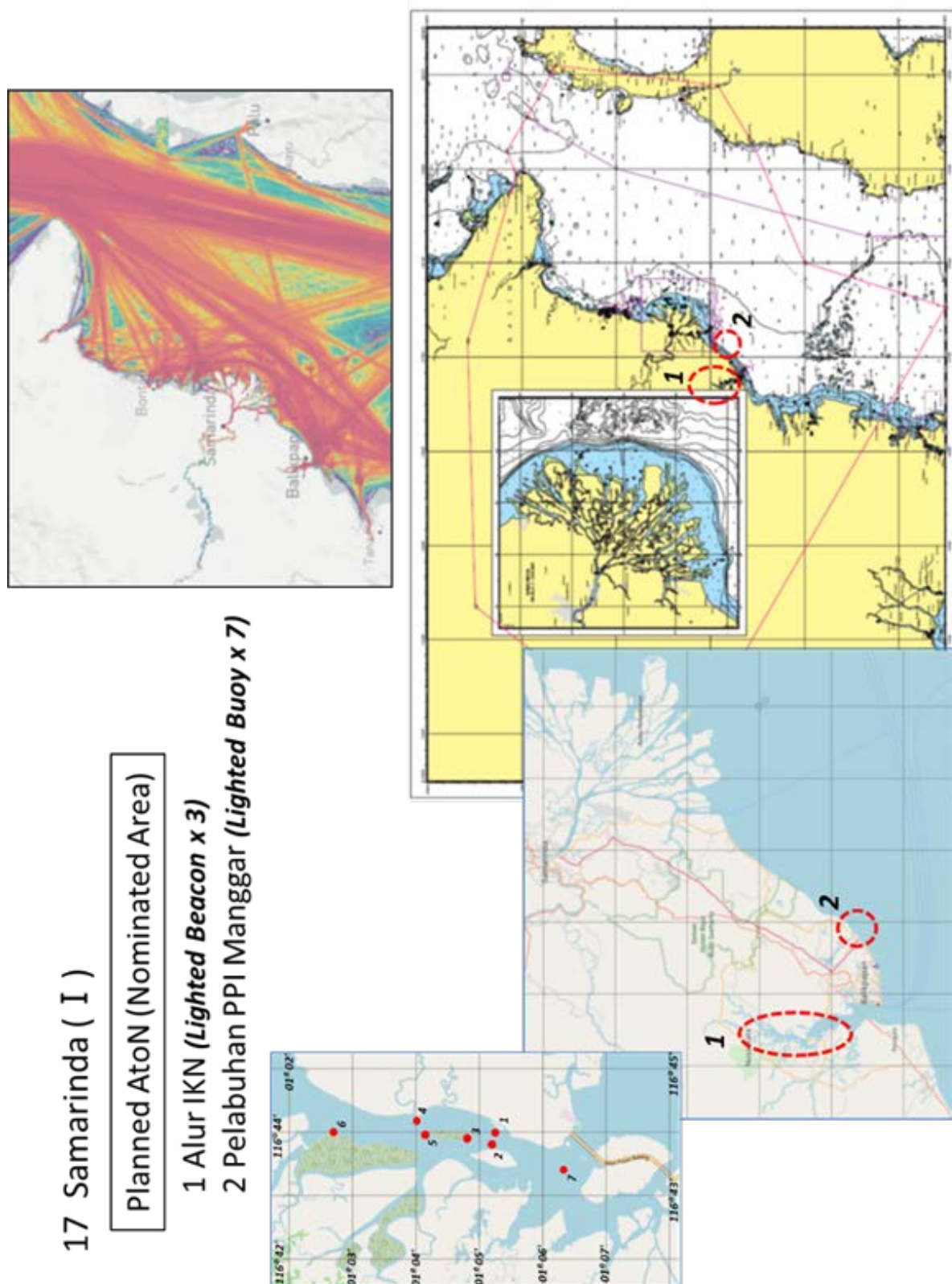


Gambar 4.1.5 -8 : Peta Lokasi (Benoa)

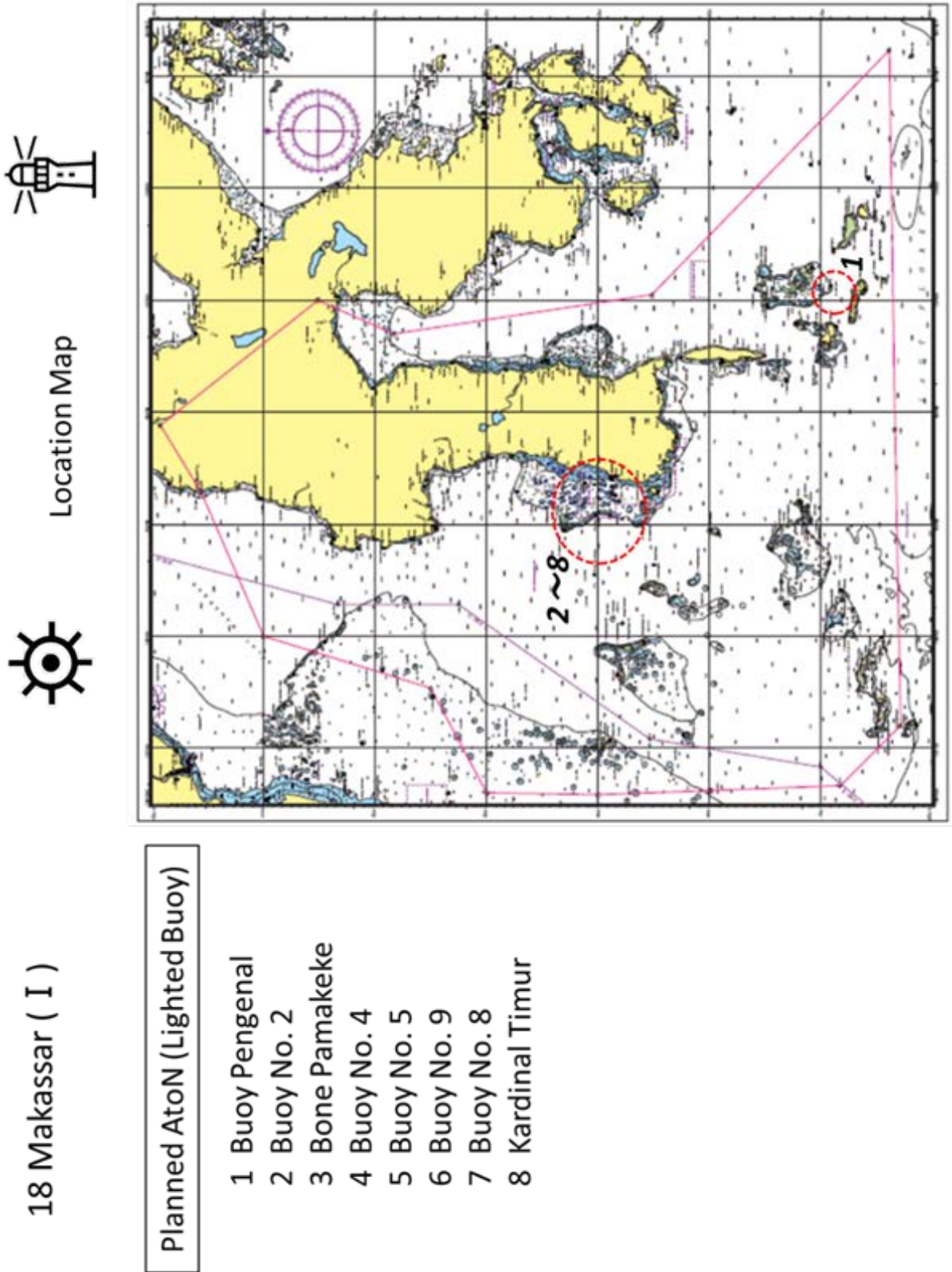




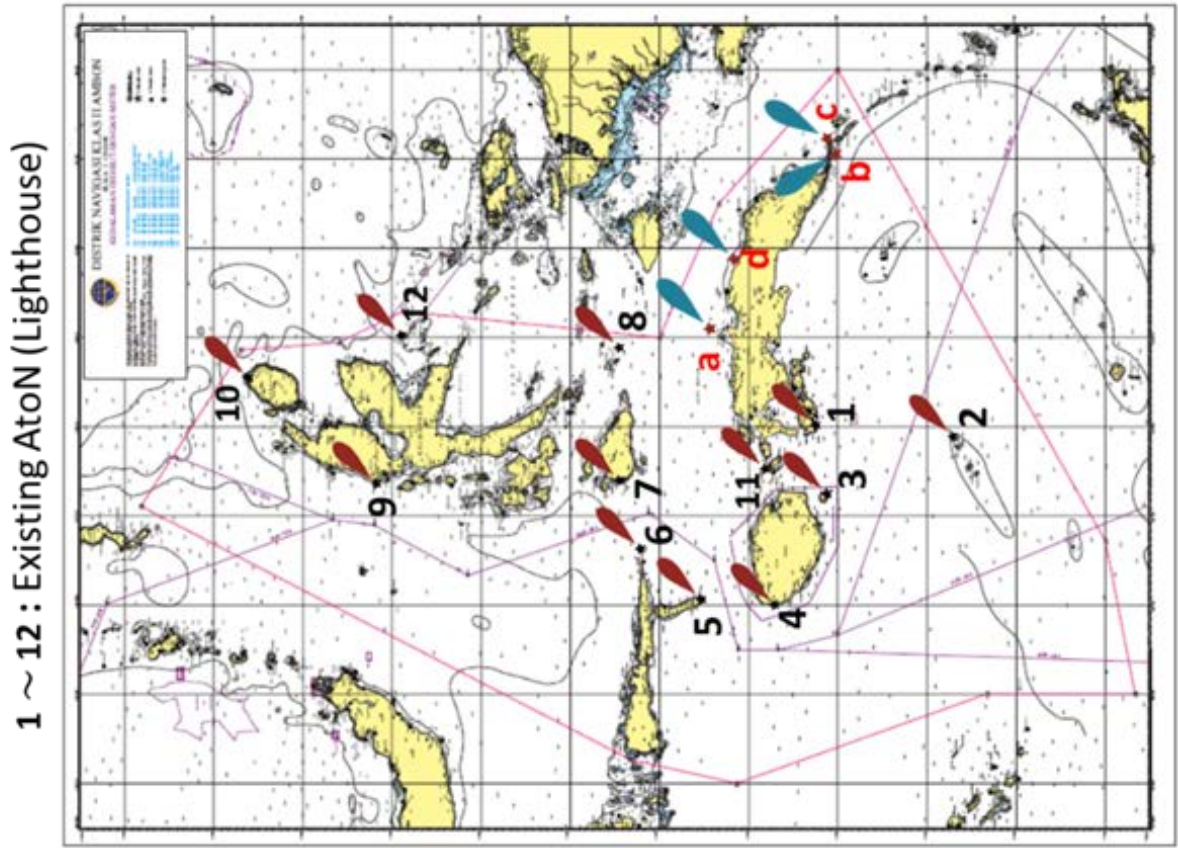
Gambar 4.1.5 -9 : Peta Lokasi (Samarinda)



Gambar 4.1.5 -10 : Peta Lokasi (Makassar)



Gambar 4.1.5 -11 : Peta Lokasi (Ambon)



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	Pelsu 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	Pelsu 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

Gambar 4.1.5 -12 : Peta Lokasi (Jayapura)

## 23 Jayapura ( II )

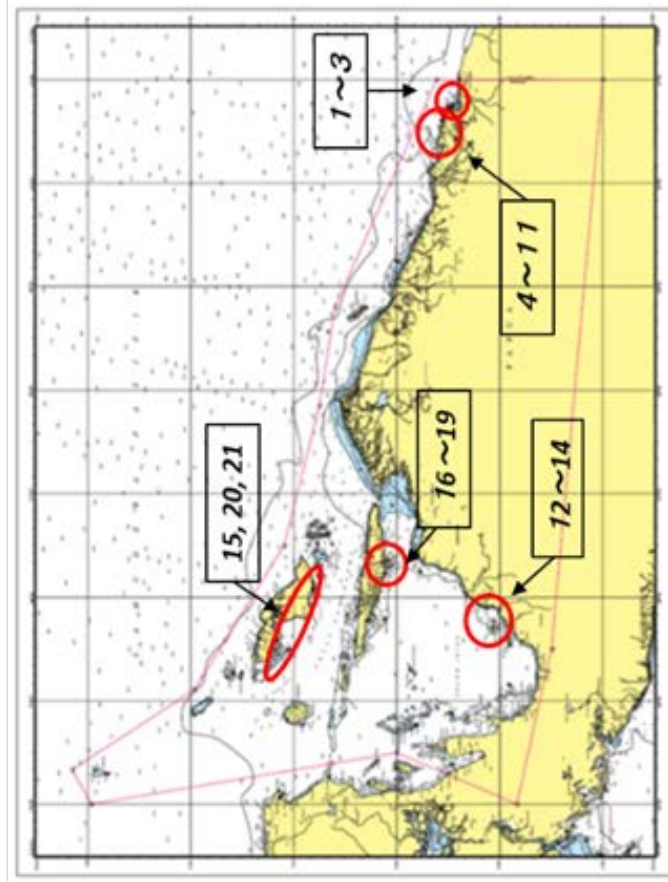
### Planned Aton

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)



Tabel 4.1.5 -2 : Jumlah VTS yang direncanakan

Summary Table for Planned VTS requested by DISNAV

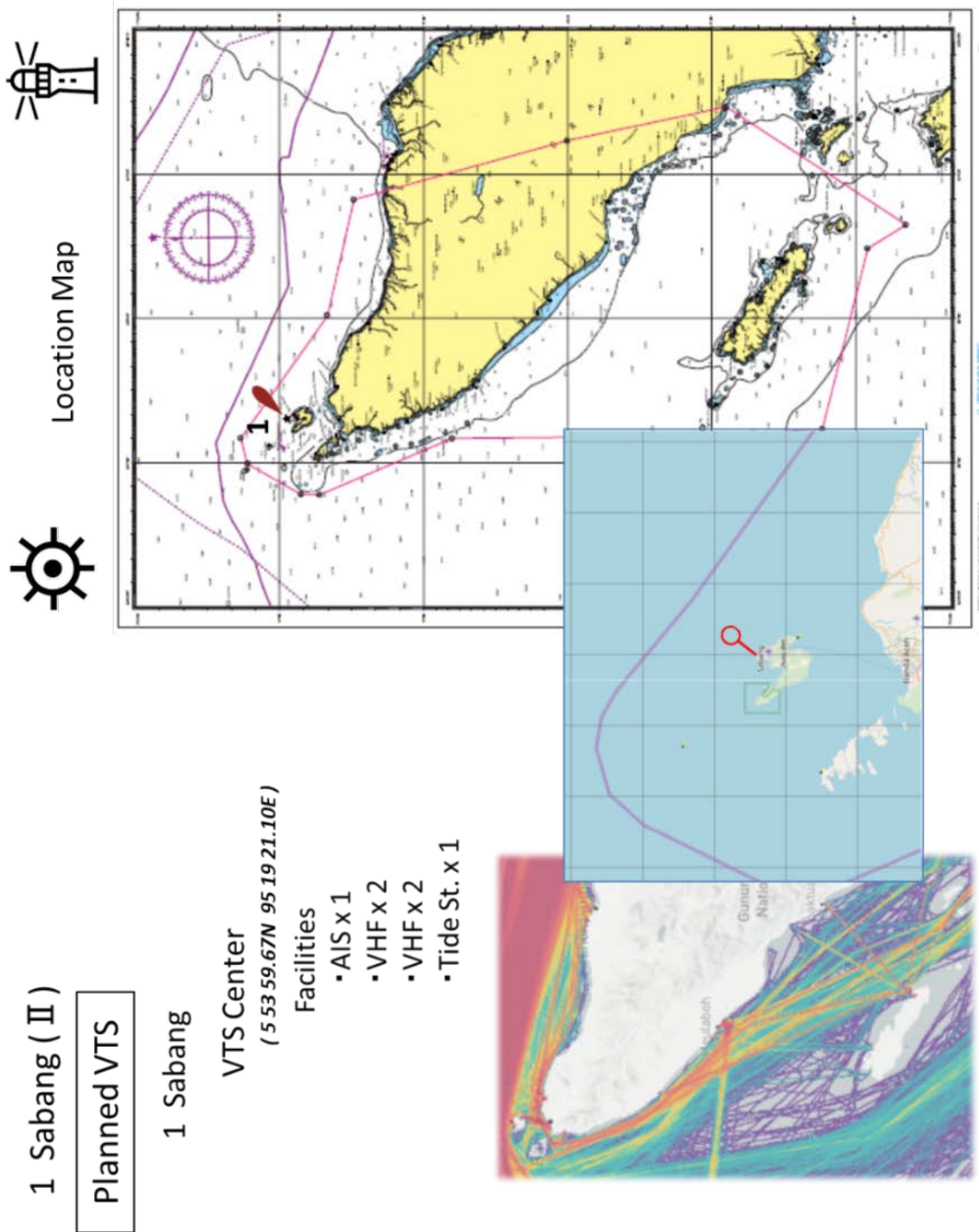
*As of December 12, 2022*

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

Gambar 4.1.5 -13 : Peta Lokasi (Sabang)

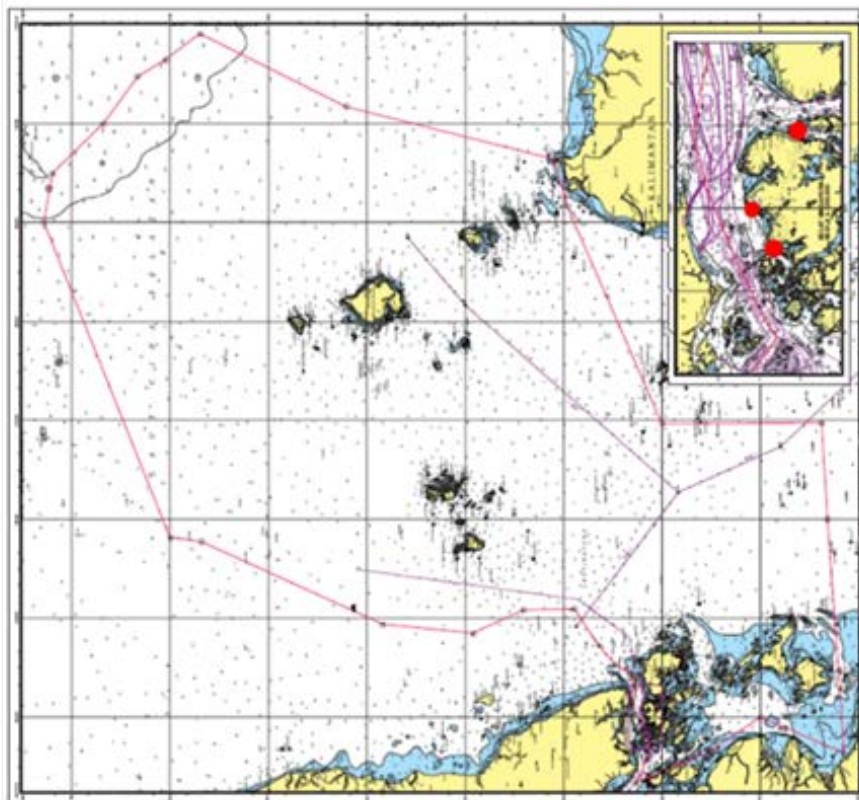
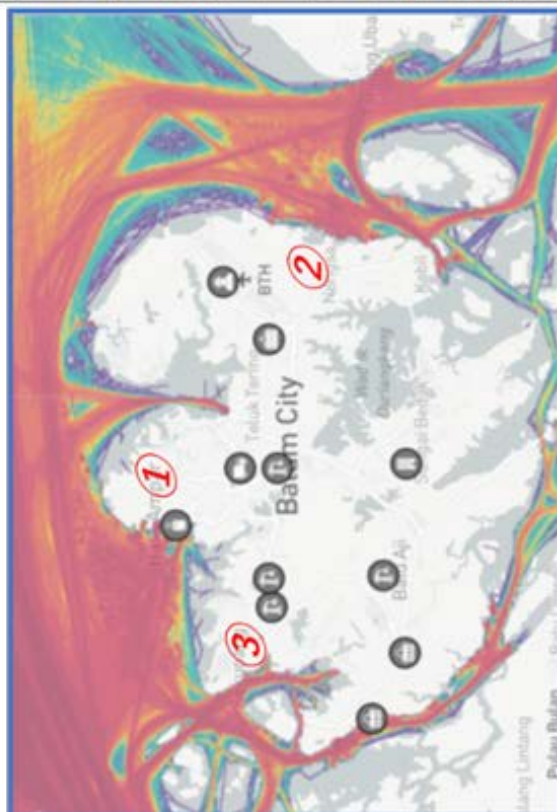


Gambar 4.1.5 -14 : Peta Lokasi (Tg. Pinang)

5 Tg. Pinang ( I )

Planned VTS

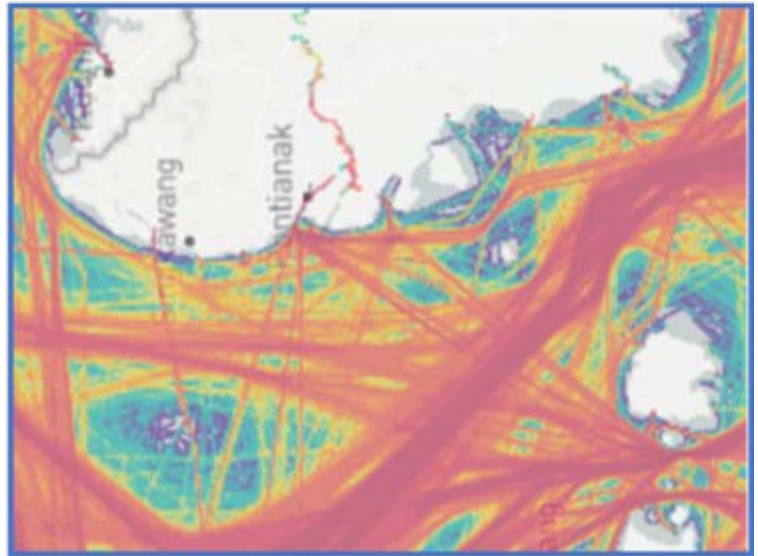
- 1 Pelabuhan Batu Ampar
- 2 Pelabuhan Kabil
- 3 Pelabuhan Sekupang



## 8 Pontianak (III)

Planned VTS (Nominated Area)

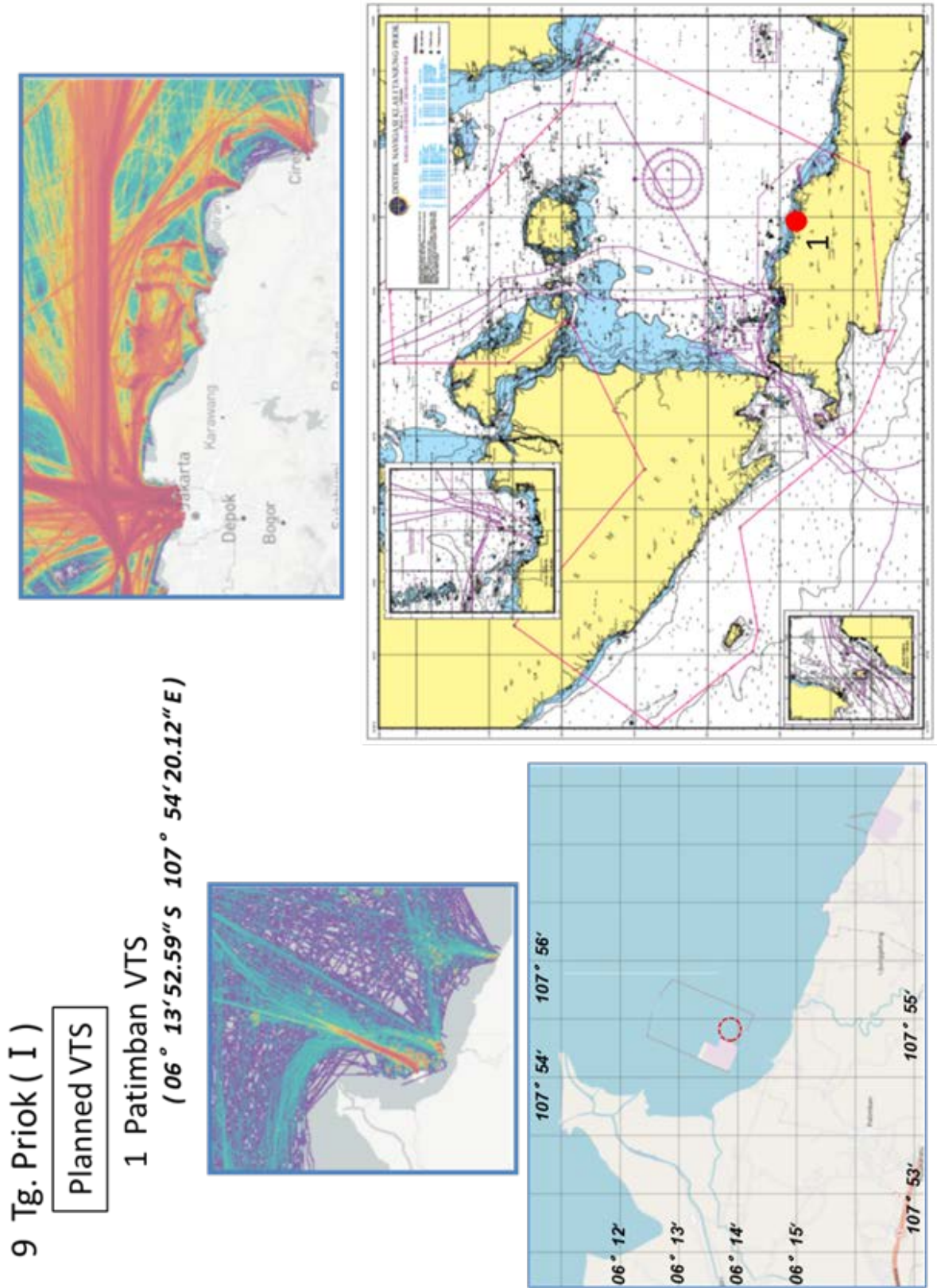
- 1 Pelabuhan Soekarno (Port/Harbour)
- 2 Dwikora (Inland Water : River)



Gambar 4.1.5 -15 : Peta Lokasi (Pontianak)



Gambar 4.1.5 -16 : `Peta Lokasi (Tg. Priok)

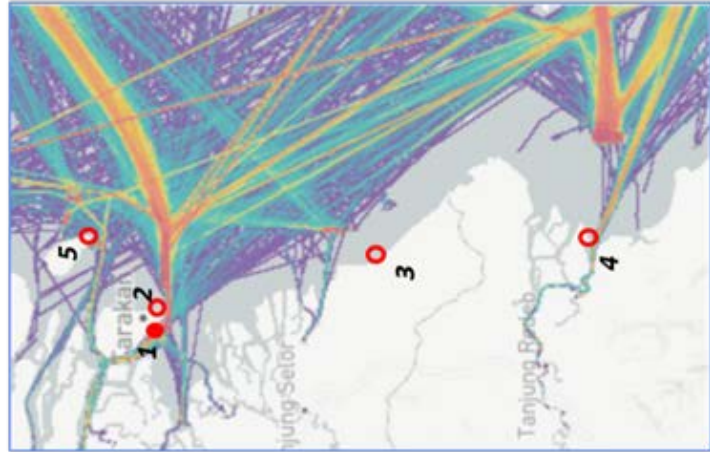


Gambar 4.1.5 -17 : Peta Lokasi (Tarakan)

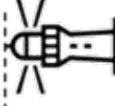
### 16 Tarakan (III)

#### Planned VTS Sensor

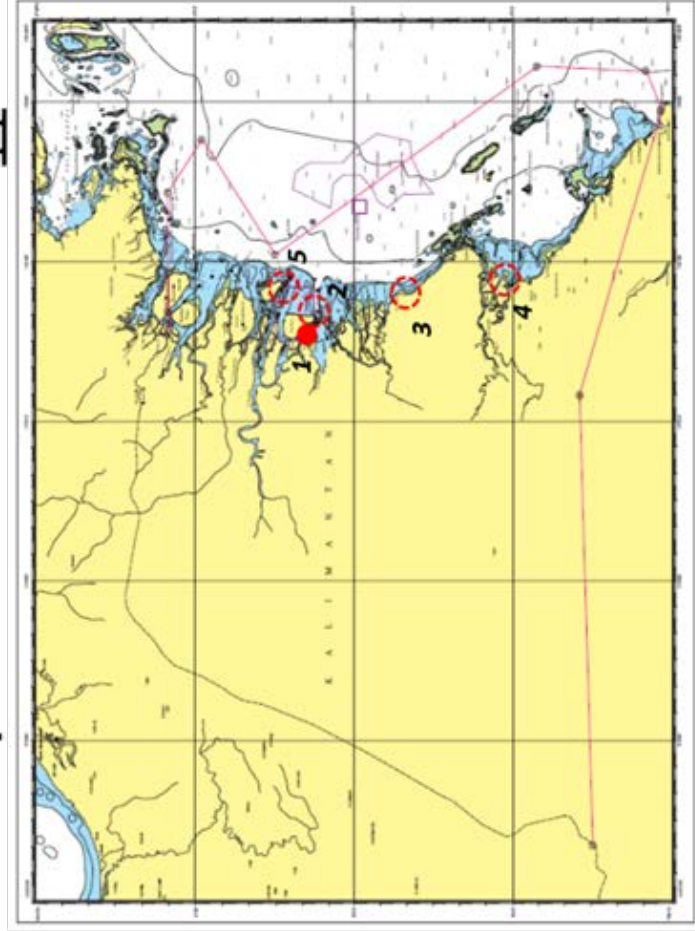
- 1 Tarakan VTS (existing : 1xCe, 1xR, 1xA, 2xC, 1xM, 2xV)
- 2 Tanjung Batu (1xA, 1xC, 1xM, 2xV)
- 3 Tanah Kuning (1xA, 1xC, 1xM, 2xV)
- 4 Berau, Tanjung Redeb (1xCe, 1xR, 1xA, 2xC, 1xM, 2xV)
- 5 Bunyu (1xA, 1xC, 1xM, 2xV)



- |   |                |                 |
|---|----------------|-----------------|
| 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

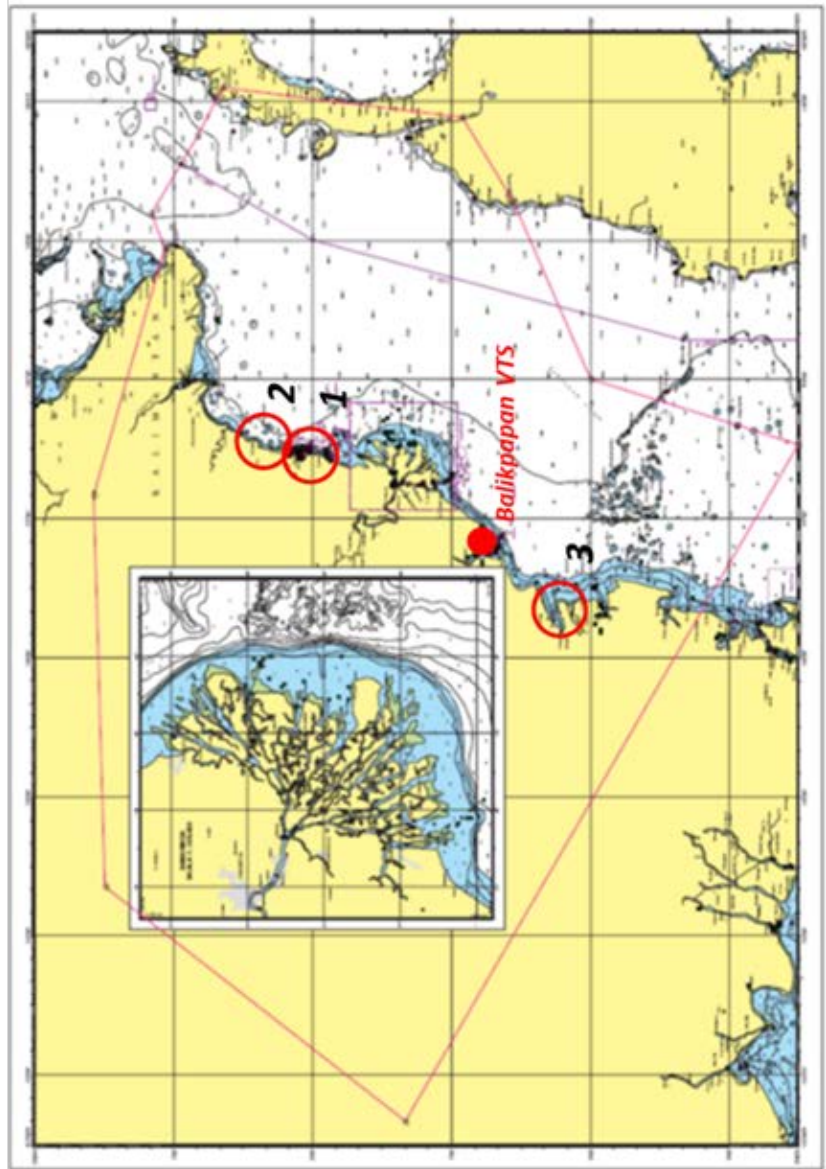


※ Ce: VTS Center, R: Radar, A: AIS, C: CCTV, M: Meteorological Instrument, V: VHF

## 17 Samarinda ( I )

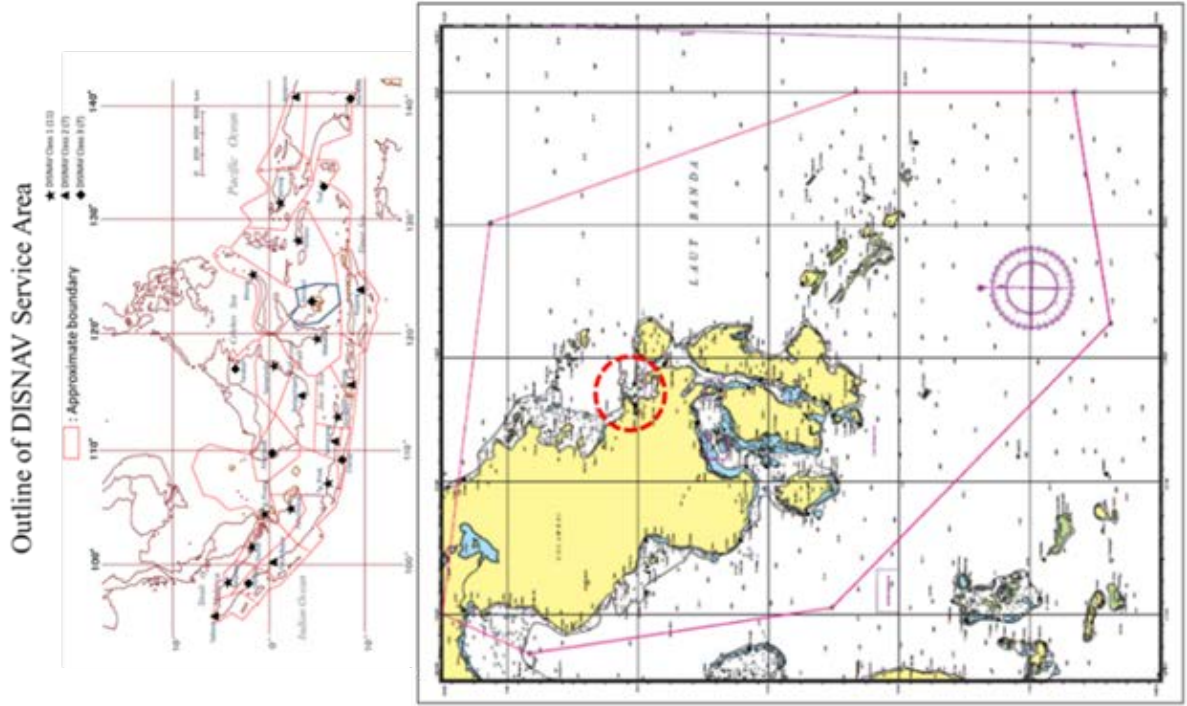
Planned VTS

- 1 Bontang (Port/Habor)
  - 2 Sangatta (Coastal Water)
  - 3 Tana Grogot Paser (Sensor for Balikpapan)
- 1 ( 00° 06' 50.70" N 117° 29' 33.90" E )  
2 ( 00° 31' 26.30" N 117° 36' 23.50" E )  
3 ( 01° 48' 25.02" S 116° 15' 02.59" E )



Gambar 4.1.5 -18 : Peta Lokasi (Samarinda)

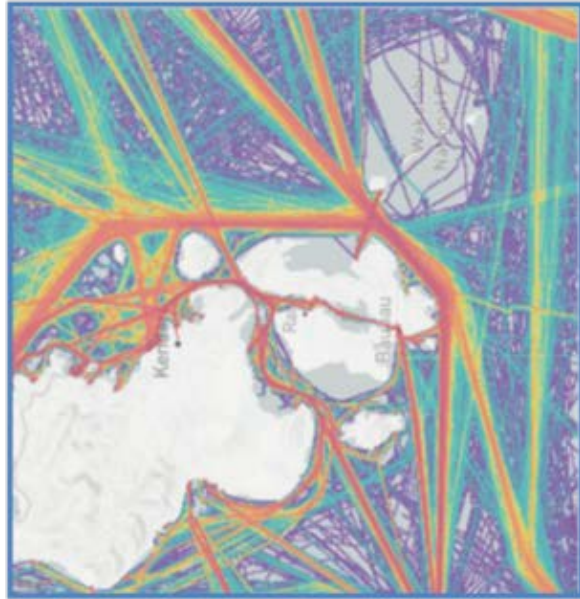
Gambar 4.1.5 -19 : Peta Lokasi (Kendari)



### 19 Kendari (III)

Planned VTS (Port/Harbour)

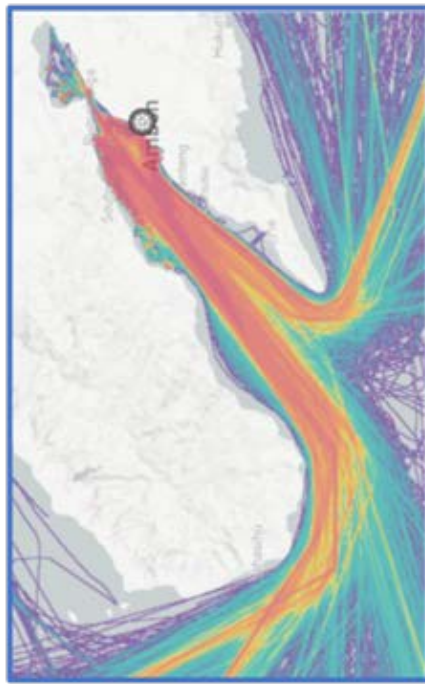
Kendari VTS



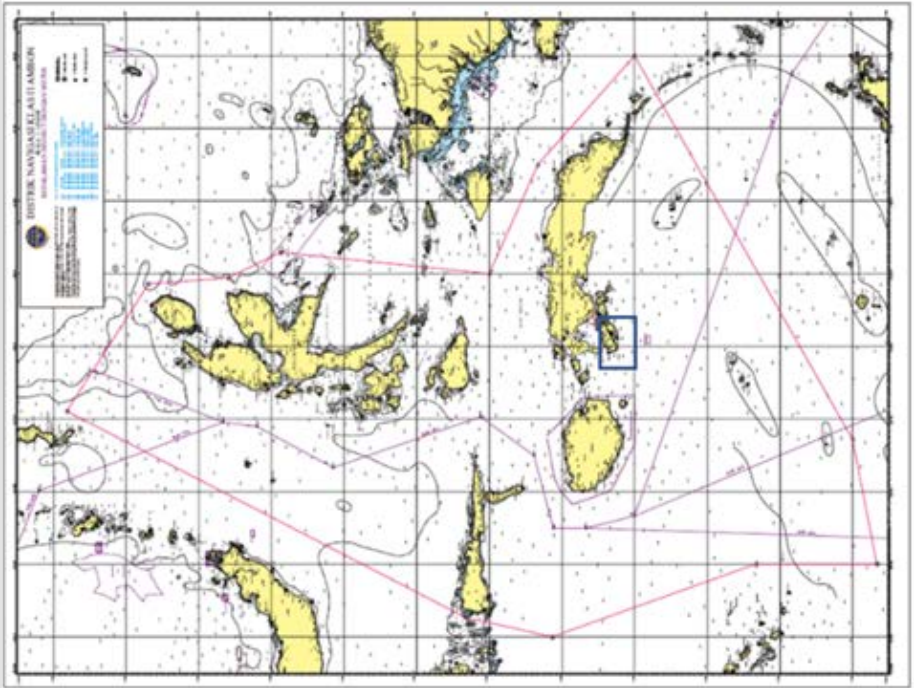
# 21 Ambon ( I )

## 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



Gambar 4.1.5 -20 : Peta Lokasi (Ambon)

Tabel 4.1.6 -1 : Harga Unit dari Survei

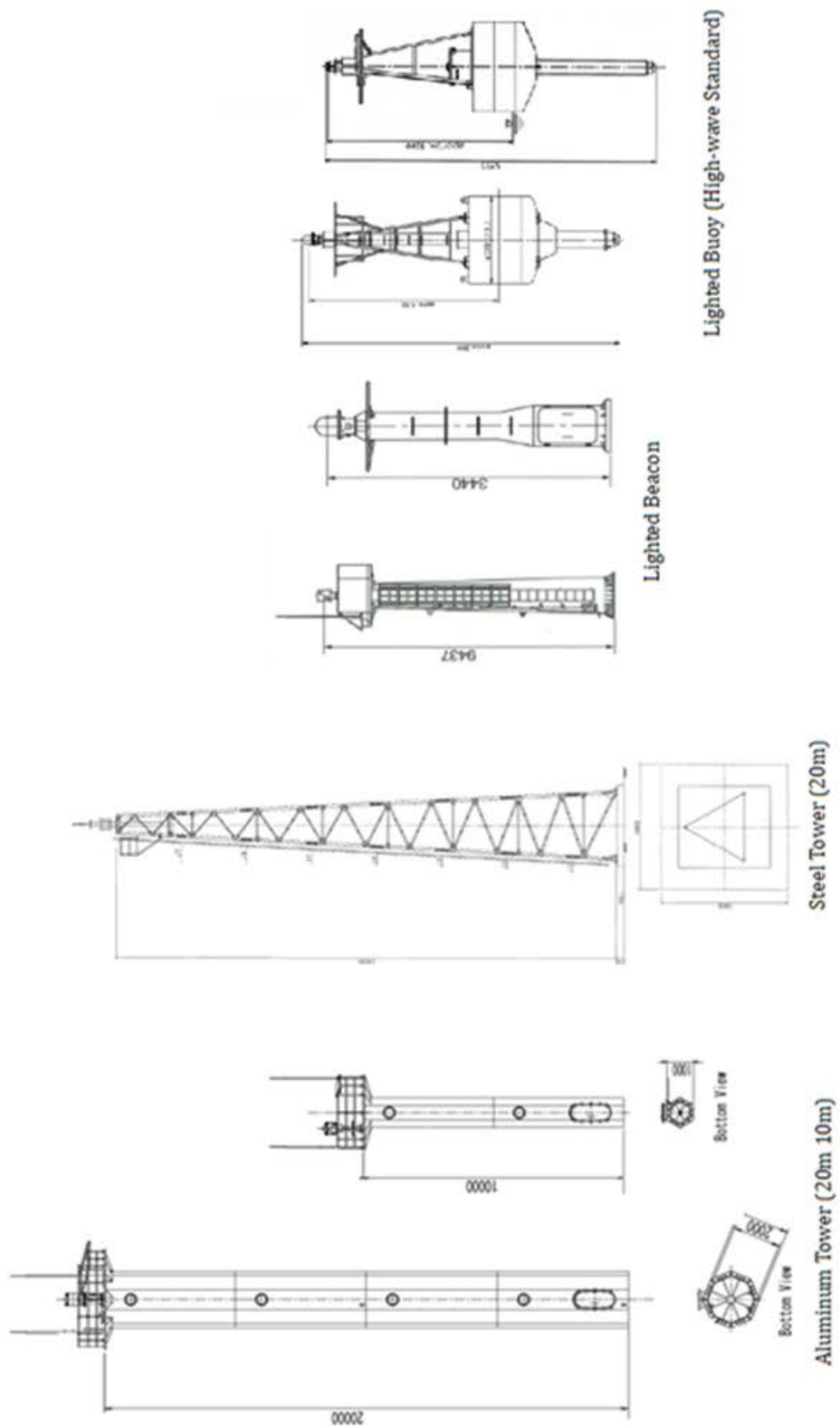
<b>Standard Unit Price of Survey</b>			
Item	Type	Price	Reference
1	Hearing Survey	IDR 245M	by Local Staff
2	Feasibility Study (a)	IDR 830M	
3	Feasibility Study (b)	IDR 670M	
4	Implementation Design	IDR 180M	

Tabel 4.1.6 -2 : Harga Unit untuk AtoN (1/2)

Standard Unit Price of Visual Aids for Budget Estimation

Item	Type	Price	Reference
1 Lighthouse	20m Aluminum Tower	IDR 3,000M	
	10m Aluminum Tower	IDR 1,200M	
2 Lighted Beacon	10m Pole Type Aluminum	IDR 1,000M	LED Lantern Solar Battery
	3m Pole Type Aluminum	IDR 750M	
3 Lighted Buoy	High-wave	IDR 1,000M	LED Lantern Solar Battery Mooring Chain
	Standard	IDR 750M	
<i>Reference (Structure for Lighthouse)</i>	<i>20m Steel Tower</i>	<i>IDR 1,800M</i>	<i>Hot-dip galvanizing</i>

Tabel 4.1.6 -2 : Harga Unit untuk AtoN (2/2)





Tabel 4.1.6 -3 : Harga Unit untuk VTS (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	

Tabel 4.1.6 -3 : Harga Unit untuk VTS (2/2)

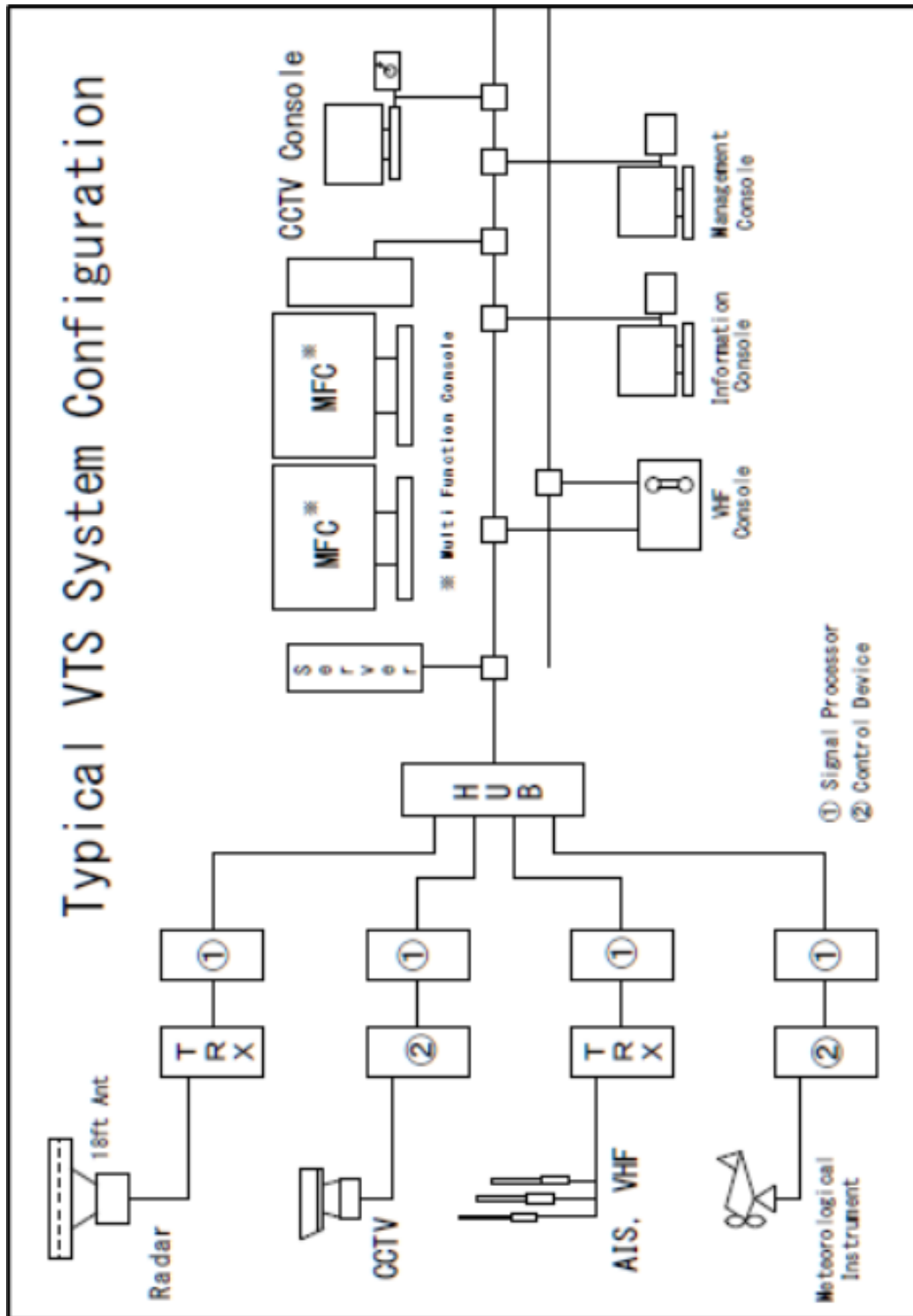


Table of Establishment Plan for AtoN (1/9)

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				O			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	O		O				Ox2		
				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			O				Ox2		
				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

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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	O		O		O		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			O		O		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			O		O		Ox2		
				Feasibly Study	Oa								
				Implementation Design			O						
				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		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
17	Samarinda ( I )	2	10	Hearing Survey				O		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					O	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 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 490.M		IDR 1,225.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	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
23	Jayapura ( II )	5	21	Hearing Survey					O	Ox2		
				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 490.M	IDR 13,650.M	
24	Merauke ( 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 (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				○			Ox2		
				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		○		○			Ox2	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		○		○			Ox2	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

(2/19)

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

(3/9)

Table of Establishment Plan for VTS

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					○	○x2	Existing 2	
				Feasibly Study								
				Implementation Design								
				Construction								
				Budget					IDR 245.00M		IDR 490.00M	IDR 735.00M
14	Kupang ( II )	0	0	Hearing Survey	○			○		○x2	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		○		○		○x2	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	O			O		Ox2	
				Feasibly Study		Ob					
				Implementation Design							
				Construction							
				Budget	IDR 245.00M	IDR 670.00M		IDR 245.00M		IDR 490.00M	<i>IDR 1,650.00M</i>
20	Bitung ( I )	0	0	Hearing Survey		O		O		Ox2	
				Feasibly Study							
				Implementation Design							
				Construction							
				Budget		IDR 245.00M		IDR 245.00M		IDR 490.00M	<i>IDR 980.00M</i>
21	Ambon ( I )	1	1	Hearing Survey	O				O	Ox2	
				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

Tabel 4.1.7 -19 : Total Amount of AtoN

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

Tabel 4.1.7 -20 : Total Amount of VTS

Table of Establishment Plan for VTS

No.	DISNAV	Nominated Area	Planned VTS	Item	Implementation (VTS)						Total		
					2024	2025	2026	2027	2028	Subsequent Year III 2040			
1	DISNAV (1-25)		14	Hearing Survey	IDR 2,340.00M	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

Tabel 4.1.7 -21 : Total Amount of AtoN

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>

Tabel 4.1.7 -22 : Total Amount of 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>



Tabel 4.1.7 -23 : Summary Table-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

Tabel 4.1.7 -24 : Summary Table-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

# Bab 4 (2/3)

## Stasiun Radio Pantai (SROP)

Tabel 4.2.2 -1 : Classification of CRS

Class	Station	Function	GMDSS	Service area	Operation hours	Portion	
1		Maritime Mobile service including public telecom service, Fixed station	O	A1, A2, A3	24	0.1	
2			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	Δ	A1, A2	8-12	0.6	
	B	26	X	A1			
Total		158					

Category of Frequency/Band

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					

Coverage Area

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

## DISNAV (1/6)

Name of DISNAV			Name of CRS	Class	Non-GMDSS	
1	Sabang	Class II	1	Sabang	II	
			2	Ule lee	IIIA	
			3	Tapak Tuan	IVA	
			4	Meulaboh	IVA	
			5	Sinabang	IVA	
			6	Susoh	IVA	
			7	Sigli	IVB	O
			8	Calang	IVB	O
			9	Singkil	IVB	O
2	Belawan	Class I	10	Belawan	I	
			11	Kuala Tanjung	IIIA	
			12	Tg. Balai Asahan	IIIA	
			13	Lhosemawe	IIIA	
			14	Kuala Langsa	IVA	
			15	Sarang Elang	IVB	O
			16	Pangkalan Susu	IVA	
3	Sibolga	Class III	17	Sibolga	IIIA	
			18	Gunung Sitoli	IVA	
			19	Pulau tello	IVA	
			20	Teluk Dalam	IVA	
			21	Lahewa	IVB	
			22	Sirombu	IVB	O
			23	Sikara Kara	IVB	O
4	Dumai	Class I	24	Dumai	I	
			25	Bengkalis	IIIA	
			26	Pekan Baru	IIIA	
			27	Tembilahan	IVA	
			28	Bagan Siapi-api	IVA	
			29	Selat Panjang	IVA	
			30	Rengat	IVA	
			31	Sungai Gunting	IVA	O

## DISNAV (2/6)

Name of DISNAV			Name of CRS	Class	Non-GMDSS	
5	Tg Pinang	Class I	32	Batu Ampar	III A	
			33	Tanjung Uban	III A	
			34	Sei Kolak Kijang	III A	
			35	Natuna	III A	
			36	Tarempa	IV A	
			37	Pulau Sambu	IV A	
			38	Dabo singkep	IV B	O
			39	Tg. Pinang	IV A	
			40	Tg. Balai Karimun	IV A	
6	Teluk Bayur	Class II	41	Teluk Bayur	II	
			42	Sikakap	IV A	
			43	Sipora	IV A	
			44	Air Bangis	IV A	O
7	Palembang	Class I	45	Palembang	I	
			46	Jambi	III A	
			47	Pangkal Balam	III B	
			48	Muntok	III A	O
			49	Muara Sabak	III B	O
			50	Kuala Tungkal	IV B	
			51	Tanjung Pandan	IV B	
8	Tg Priok	Class I	52	Jakarta	I	
			53	Panjang	III A	
			54	Cirebon	III A	
			55	Bengkulu	III A	
			56	Cigading	III A	
9	Semarang	Class II	57	Semarang	I	
			58	Tegal	III A	O
			59	Pekalongan	III A	O
			60	Jepara	IV B	O
			61	Juwana	IV B	O
			62	Karimun Jawa	IV B	
			63	Rembang	IV B	O
10	Cilacap	Class III	64	Cilacap	II	
			65	Pacitan	IV B	O

## DISNAV (3/6)

Name of DISNAV			Name of CRS	Class	Non-GMDSS	
11	Surabaya	Class I	66	Surabaya	I	
			67	Kali Anget	IIIA	
			68	B.wangi (Meneng)	IIIB	
			69	Panarukan	IVA	
			70	Gresik	IVA	
			71	Probolinggo	IVA	
			72	Bawean	IVA	
			73	Pasuruan	IVA	O
			74	Masalembo	IVA	O
			75	Branta	IVB	O
			76	Tuban	IVB	O
12	Benoa	Class II	77	Benoa	II	
			78	Lembar	IIIA	
			79	Bima	IIIA	
			80	Padang Bai	IVA	
			81	Celukun Bawang	IVA	
			82	Badas	IVA	O
			83	Gilimanuk	IVA	
			84	Labuhan Lombok	IVA	
13	Kupang	Class II	85	Kupang	II	
			86	Ende	IIIA	
			87	Maumere	IIIB	
			88	Waingapu	IVA	
			89	Kalabahi	IVA	O
			90	Larantuka	IVA	O
			91	Atapupu	IVA	
			92	Reo	IVA	
			93	Seba	IVA	
14	Pontianak	Class III	94	Pontianak	IIIA	O
			95	Ketapang	IIIA	
			96	Sintete	IVB	



## DISNAV (4/6)

Name of DISNAV			Name of CRS		Class	Non-GMDSS
15	Banjarmasin	Class II	97	Banjar Masin	II	
			98	Sampit	IIIA	
			99	Kumai	IIIB	
			100	Batulicin	IIIB	
16	Samarinda	Class I	101	Balik Papan	I	
			102	Samarinda	IIIA	
			103	Tanjung Santan	IIIA	
17	Tarakan	Class III	104	Tarakan	IIIA	O
			105	Numukan	IVA	O
			106	Tg. Selor	IVB	
			107	Tg Redep	IVB	O
18	Makassar	Class I	108	Makassar	I	
			109	Pare-pare	IIIB	
			120	Mamuju	IVA	O
			111	Palopo	IVA	
			112	Selayar	IVB	
19	Kendari	Class III	113	Kendari	IIIA	
			114	Bau-bau	IIIA	
			115	Pomalaa	IVA	O
			116	Raha	IVA	
			117	Banabungi	IVB	O
			118	Kolaka	IVA	

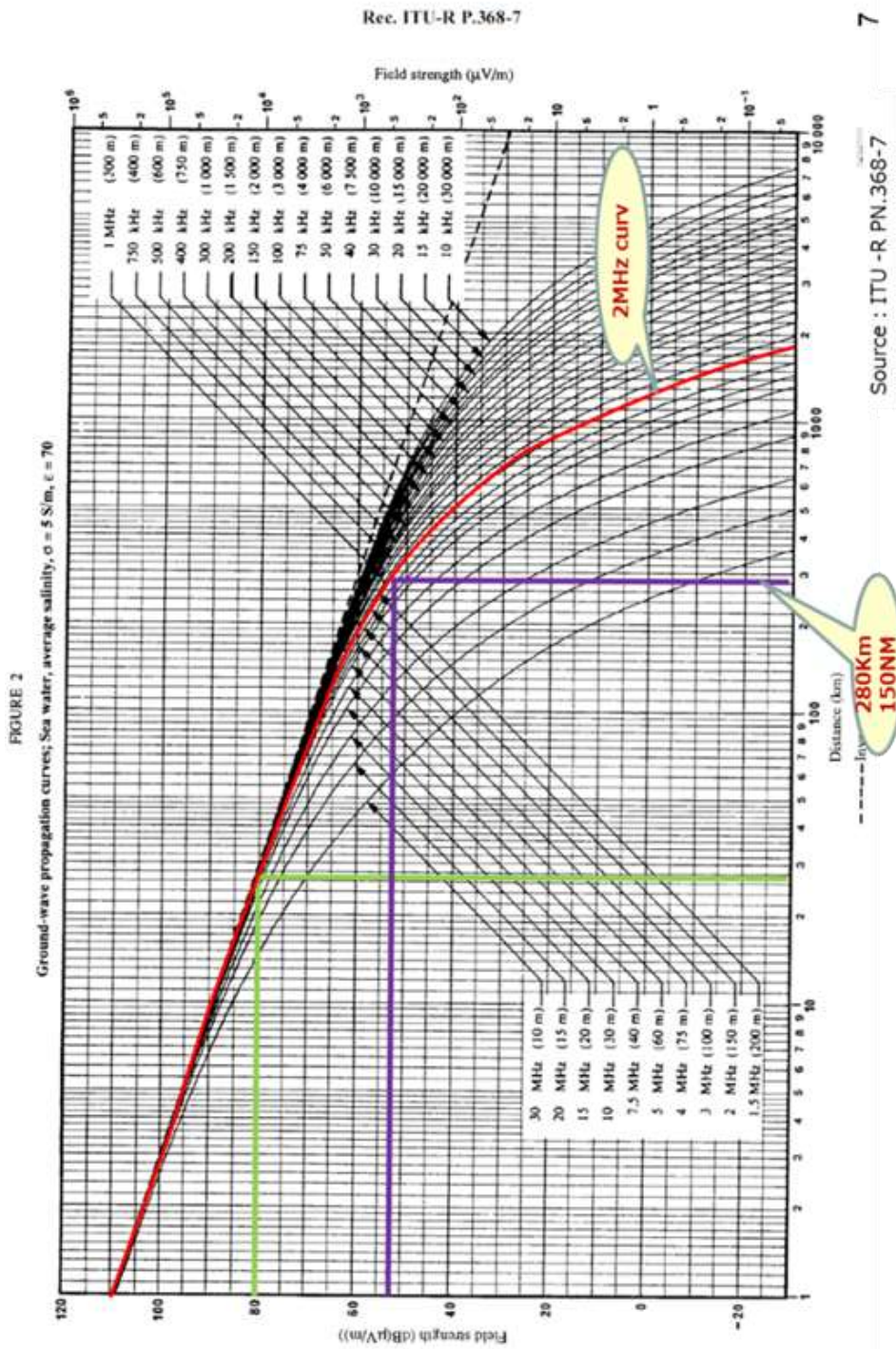
## DISNAV (5/6)

Name of DISNAV			Name of CRS		Class	Non-GMDSS
20	Bitung	Class II	119	Bitung	I	
			120	Poso	III A	
			121	Toli-toli	III A	
			122	Gorontalo	IV A	
			123	Luwuk	IV A	
			124	Ulu Siau	IV A	O
			125	Manado	IV A	
			126	Tahuna	IV A	
			127	Parigi	IV A	
			128	Kolonedale	IV A	O
			129	Kuandang	IV A	
			130	Ampana	IV B	O
			131	Pantoloan	IV B	O
			132	Banggai	IV B	O
133	Donggala	IV B	O			
21	Ambon	Class I	134	Ambon	I	
			135	Ternate	III A	
			136	Sanana	IV A	
			137	Tobelo	IV A	
			138	Banda	IV A	
			139	Namlea	IV A	
			140	Amahai	IV A	O
22	Tual	Class III	141	Tual	III A	
			142	Saumlaki	III A	
			143	Elat	III A	O
			144	Dobo	IV A	
23	Sorong	Class I	145	Sorong	II	
			146	Manokwari	III A	
			147	Fak-fak	III A	
			148	Kaimana	IV A	
			149	Amamapare	IV A	O
			150	Bintuni	IV A	

## DISNAV (6/6)

Name of DISNAV			Name of CRS		Class	Non-GMDSS
24	Jayapura	Class II	151	Jayapura	I	
			152	Biak	III A	
			153	Serui	IV A	
			154	Sarmi	IV A	
			155	Nabire	IV A	O
25	Merauke	Class III	156	Merauke	III A	
			157	Agats	III A	
			158	Bade	IV A	O

Gambar 4.2.2 -1 : MF Propagation Range



Tabel 4.2.4 -1 : Simplex Communication

	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	Banjarmasin	Banjarmasin	-	-	88	88	-	-	2.8	2.8
3	Banjarmasin	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	Jejara	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				

Tabel 4.2.4 -2 : Two-way Communication

	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>
	<b>Daily average</b>		<b>1.88</b>	<b>0.34</b>	<b>2.22</b>			

Tabel 4.2.5 -1 : Age Groups

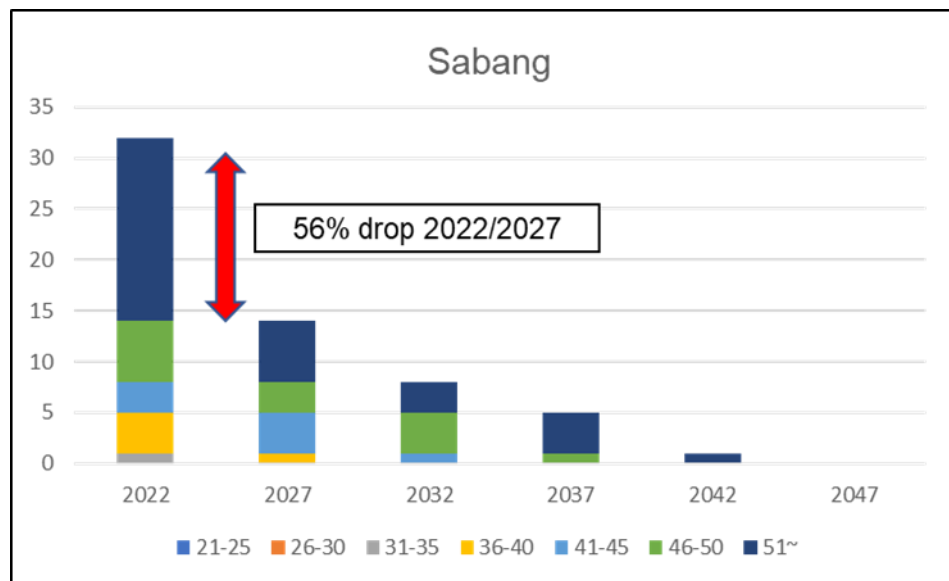
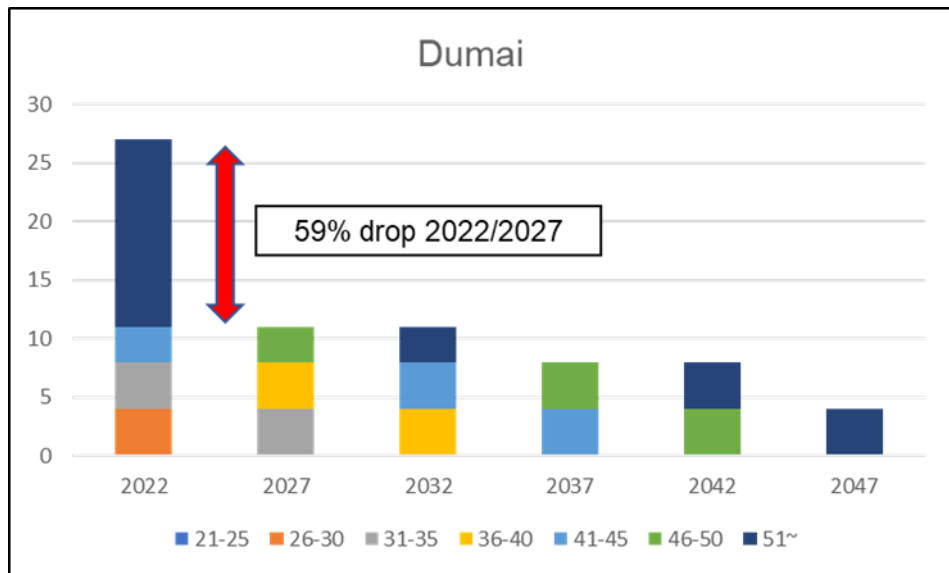
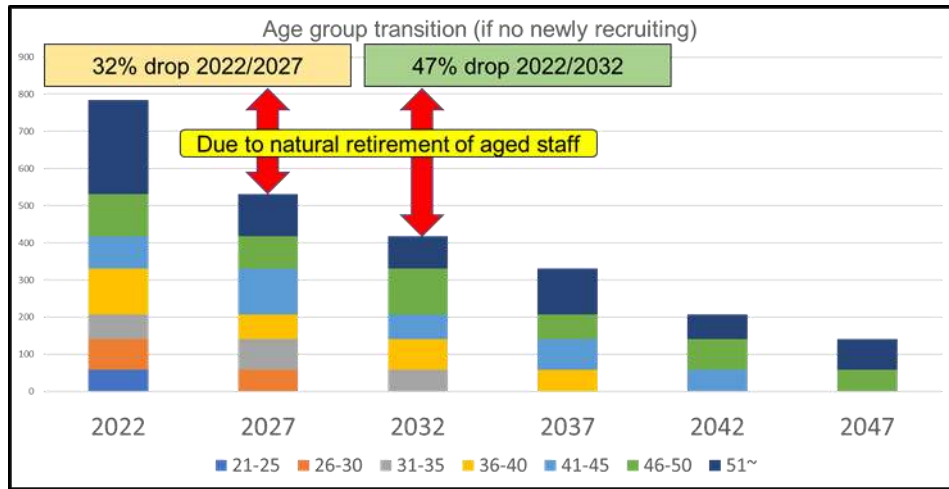
DISNAV	Age group							Gender		Total staff	Technician	Technician Operator *	Employment	
	21-25	26-30	31-35	36-40	41-45	46-50	51~	M	F	Average age	Nos	Fulltime	Honorer	
Sabang	0	0	1	4	3	6	18	31	1	32	8	5	32	0
	0.0%	0.0%	2.9%	11.4%	8.6%	17.1%	51.4%			49.25	46.75		100%	0%
Belawan	0	0	2	14	6	4	9	31	4	35	4	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%

Tabel 4.2.5 -2 : Drop Ratio of total numbers for Workers

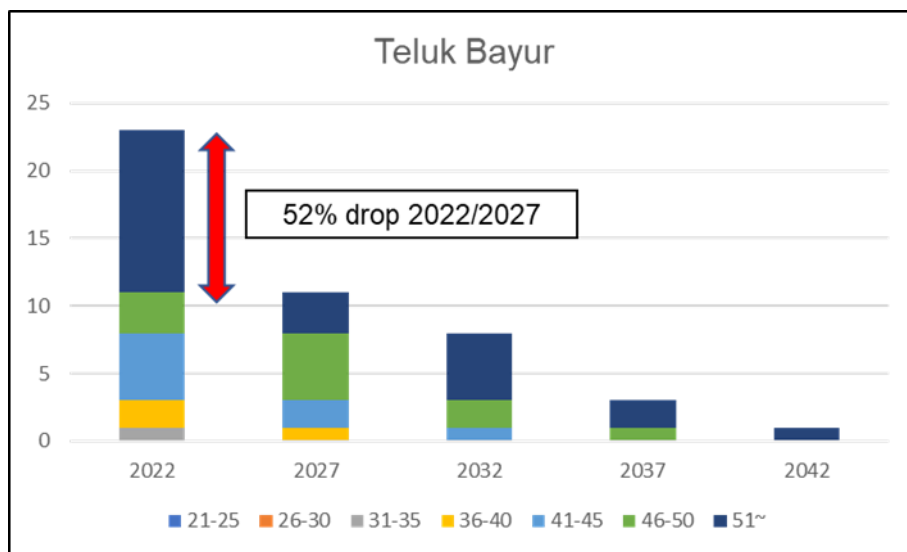
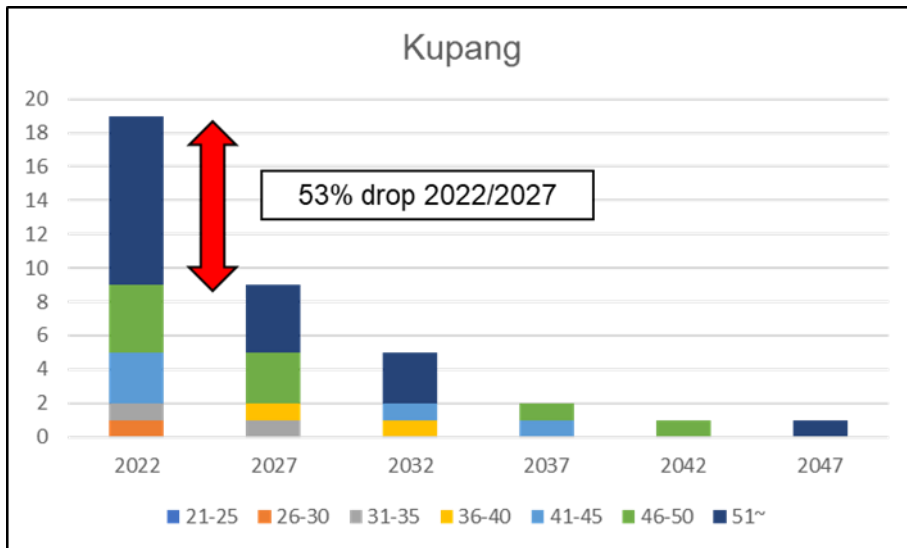
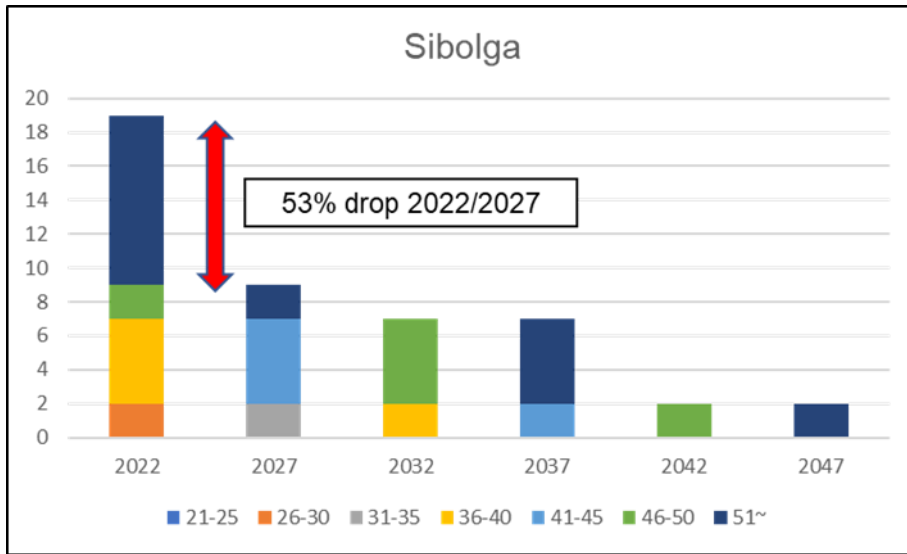
DISNAV	Drop ratio within next 5 years
Sabang	56%
Belawan	26%
Sibolga	53%
Dumai	59%
Tg Pinang	41%
Teluk Bayur	52%
Palembang	38%
Tg Priok	40%
Semarang	20%
Cilacap	38%
Surabaya	27%
Benoa	33%
Pontianak	29%
Banjarmasin	36%
Samarinda	48%
Tarakan	11%
Makassar	45%
Kendari	16%
Bitung	16%
Ambon	18%
Tual	0%
Sorong	22%
Jayapura	28%
Merauke	29%



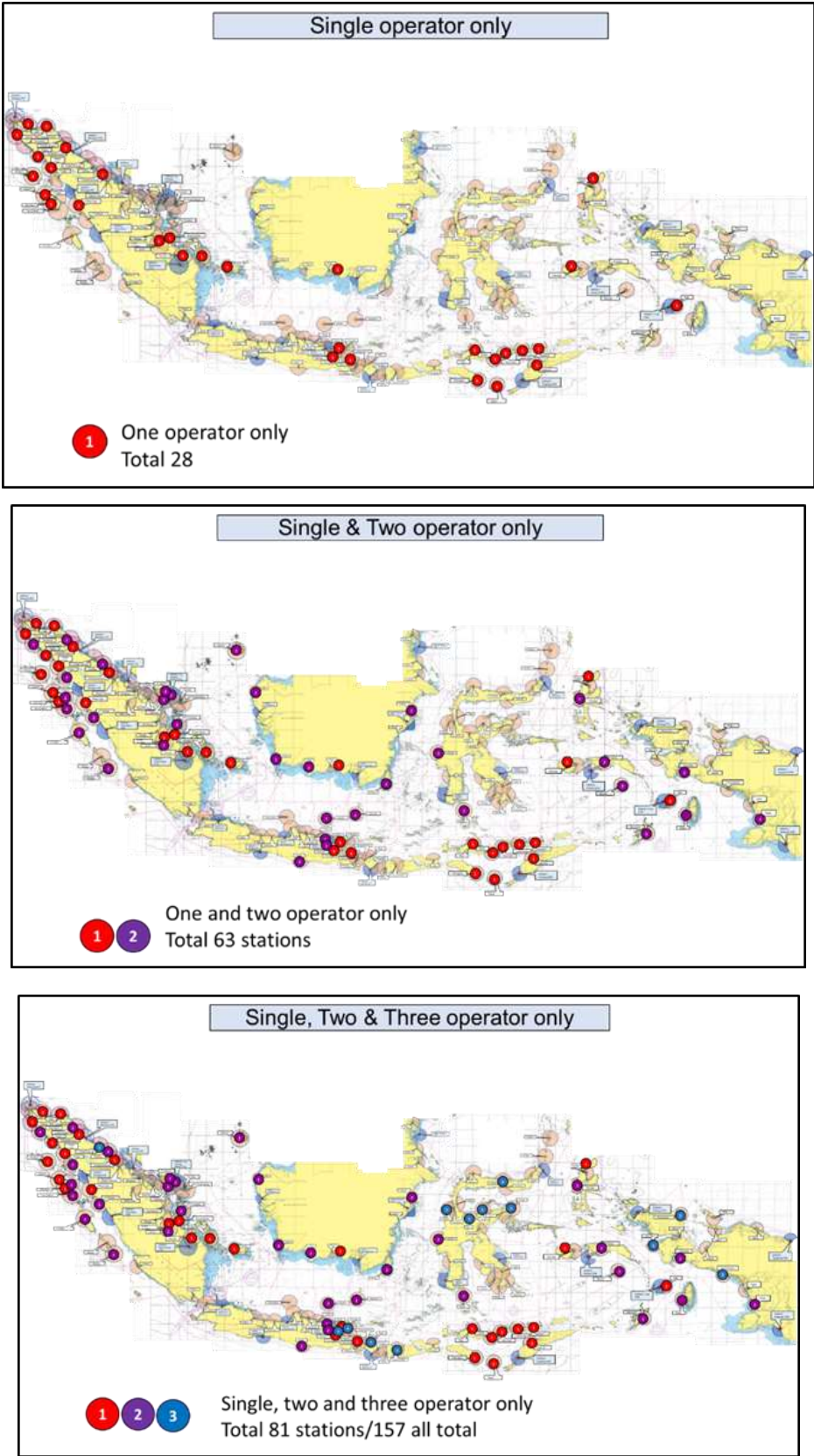
Grafik 4.2.5 -1 : DISNAV in serious situation (1/2)



Grafik 4.2.5 -1 : DISNAV in serious situation (2/2)



Gambar 4.2.5 -1 : CRSs of the Classification by Number of Operators



Gambar 4.2.5 -2 :

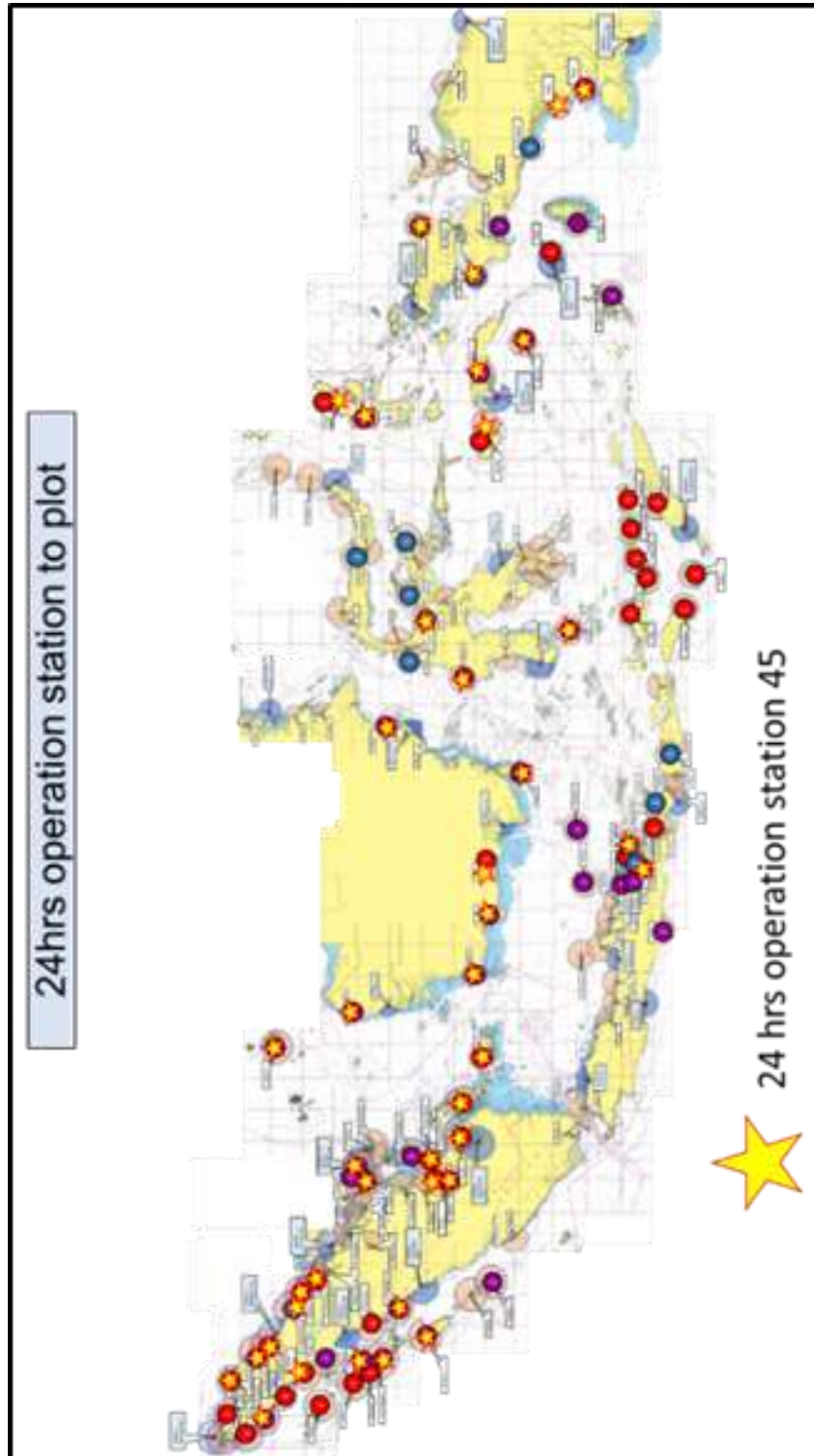


Table 4.2.5 -3 : Number of Technician and their Average Age

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

Tabel 4.2.5 -4 : Origin of Place for Staff

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%

Tabel 4.2.5 -5 : Wages per DISNAV and Age Group (1/2)

(Unit : IDR)

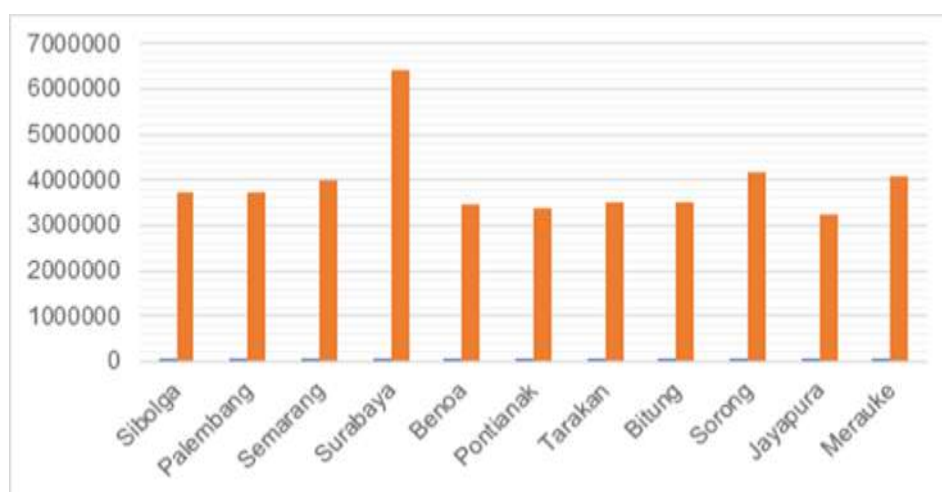
Age group	Average	Highest	Lowest
51~	4,610,480	9,718,100	3,450,600
46-50	4,106,626	8,396,050	2,605,800
41-45	3,355,511	4,211,800	2,600,000
36-40	3,359,745	8,000,000	2,518,200
31-35	3,320,606	8,000,000	2,610,000
26-30	2,937,085	4,006,000	2,523,600
21-25	3,323,052	3,715,245	2,774,897



Tabel 4.2.5 -5 : Wages per DISNAV and Age Group (2/2)

(Unit : IDR)

Disnav	Extract Nos	Average wage	Total wages
Sibolga	17	3,733,394	63,467,700
Palembang	13	3,739,723	48,616,400
Semarang	24	3,983,333	95,600,000
Surabaya	18	6,432,666	115,787,985
Benoa	46	3,466,647	159,465,746
Pontianak	20	3,350,845	67,016,900
Tarakan	18	3,497,283	62,951,088
Bitung	13	3,518,968	45,746,580
Sorong	27	4,182,007	112,914,180
Jayapura	31	3,253,442	100,856,702
Merauke	17	4,083,276	69,415,700





Tabel 4.2.6 -1 : Budget and Expenses Analysis (1/3)

DISNAV	Nos of station	2021					
		Allocated budget	Breakdown				Non-tax revenue income
		IDR	IDR				IDR
		Staff wages	Maintenance	Purchase	Running expenses	Telegram service or others	
Sabang	9	200,000,000					
Belawan	7						
Sibolga	7	1,179,700,000		137,400,000	1,042,300,000		191,854,114
Dumai	7	33,091,183,000		322,352,000	32,768,831,000		2,049,710,720
Tg Pinang	9	244,100,000					2,819,664,498
Teluk Bayur	4						
Tg Priok	5						
Semarang	7	3,188,485,000	2,262,809,000	363,341,000	257,823,000	304,512,000	47,053,642
Cilacap	2	294,850,000		262,997,000		31,853,000	127,869,510
Surabaya	11			341,044,000	144,796,000	529,916,000	1,632,142,382
Benoa	8	5,070,000,000					1,721,334,705
Pontianak	3		1,242,148,800		210,386,000		84,239,910
Banjarmasin	4					200,000,000	
Samarinda	3	700,000,000	6,000,000,000	285,000,000	-	-	2,494,081,879
Tarakan	4	380,404,809	380,404,809	380,404,809	380,404,809	380,404,809	380,404,809
Makassar	5	1,303,435,000					130,412,000
Kendari	6	1,787,640,000		100,000,000	1,594,640,000	93,000,000	771,466,029
Bitung	5						255,281,192
Ambon	7	340,000,000					585,668,129
Tual	4	-		340,523,600	450,000,000	-	-
Sorong	6	8,028,368,000	1,217,427,528	-	-	-	727,240,328
Jayapura	5	283,404,000				283,404,000	
Merauke	3						2,993,440
Total IDR		55,891,569,809	11,102,790,137	2,533,062,409	36,849,180,809	1,539,685,809	14,021,417,287
Average	Per Disnav	4,299,351,524	2,220,558,027	316,632,801	5,264,168,687	219,955,116	934,761,152
Effective station Nos	131	81	23	47	45	39	89
Average per station		690,019,380	482,730,006	53,894,945	818,870,685	39,479,123	157,544,014
Estimated all total		108,253,425,095	65,892,645,813	8,215,610,659	130,492,892,674	5,868,289,686	24,130,491,548

Tabel 4.2.6 -1 : Budget and Expenses Analysis (2/3)

DISNAV	Nos of station	2020					
		Allocated budget	Breakdown				Non-tax revenue income
			IDR	IDR			
			Staff wages	Maintenance	Purchase	Running expenses	Telegram service or others
Sabang	9	200,000,000					
Belawan	7						
Sibolga	7	1,530,629,000		127,500,000	1,403,129,000		158,259,566
Dumai	7	33,091,183,000					1,888,246,815
Tg Pinang	9	169,150,000					59,700,576
Teluk Bayur	4						
Tg Priok	5						
Semarang	7	2,881,118,000	2,252,809,000	100,000,000	287,128,000	241,181,000	10,872,197
Cilacap	2	136,997,000		106,997,000		30,000,000	107,360,818
Surabaya	11			533,124,000	173,147,000	477,732,000	1,577,867,871
Benoa	8	2,185,500,000					1,606,202,595
Pontianak	3		1,505,607,600		200,000,000		79,401,247
Banjarmasin	4					200,000,000	
Samarinda	3	1,116,000,000	6,000,000,000	200,000,000	916,000,000		2,312,509,395
Tarakan	4	380,404,809	-	-	-	-	-
Makassar	5	2,614,769,000					74,522,892
Kendari	6	1,906,152,000		200,000,000	1,479,610,000	226,542,000	527,930,918
Bitung	5	-	-	-	-	-	182,871,426
Ambon	7	400,000,000			414,739,033		
Tual	4	-	-	136,216,000	199,279,800	-	-
Sorong	6	1,947,270,000	1,125,622,128	-	-	-	-
Jayapura	5	136,800,000				131,384,185	
Merauke	3						11,766,689
Total IDR		48,495,972,809	10,884,038,728	1,403,837,000	5,073,032,833	1,306,839,185	8,597,513,005
Average	Per Disnav	4,849,597,281	2,721,009,682	200,548,143	634,129,104	217,806,531	661,347,154
Effective station Nos	131	72	19	40	48	35	76
Average per station		673,555,178	572,844,144	35,095,925	105,688,184	37,338,262	113,125,171
Estimated all total		113,830,825,066	79,267,308,368	5,279,429,861	16,275,980,339	5,672,304,367	17,203,727,946

Tabel 4.2.6 -1 : Budget and Expenses Analysis (3/3)

DISNAV	Nos of station	2019					Non-tax revenue income IDR
		Allocated budget IDR	Breakdown IDR				
			Staff wages	Maintenance	Purchase	Running expenses	
Sabang	9	200,000,000					
Belawan	7						
Sibolga	7	1,220,000,000		234,000,000	986,000,000		105,750,232
Dumai	7	33,091,183,000					1,730,416,640
Tg Pinang	9	253,395,000					2,827,463,904
Teluk Bayur	4						
Tg Priok	5						
Semarang	7	2,881,118,000	2,252,809,000	100,000,000	287,128,000	241,181,000	10,872,197
Cilacap	2	345,617,000		315,617,000		30,000,000	79,576,347
Surabaya	11			820,870,000	142,930,000	755,039,000	1,444,987,806
Benoa	8	7,116,822,000					2,901,146,250
Pontianak	3		1,505,607,600		75,000,000		76,523,263
Banjarmasin	4					200,000,000	
Samarinda	3	285,000,000	6,000,000,000	285,000,000			1,170,923,600
Tarakan	4	380,404,809	-	-	-	-	-
Makassar	5	2,421,792,000					42,701,450
Kendari	6	200,000,000		200,000,000			427,527,382
Bitung	5	-	-	-	-	-	140,199,936
Ambon	7	400,000,000			523,238,049		
Tual	4	-	-	-	189,215,400	-	-
Sorong	6	1,947,270,000	1,217,427,528	-	-	-	960,056,544
Jayapura	5	86,830,000				86,830,000	
Merauke	3						92,311,311
Total IDR		50,629,431,809	10,975,844,128	1,955,487,000	2,203,511,449	1,313,050,000	11,967,755,412
Average	Per Disnav	4,602,675,619	2,743,961,032	325,914,500	367,251,908	262,610,000	854,839,672
Effective station Nos	131	56	19	36	39	29	82
Average per station		904,096,997	577,676,007	54,319,083	56,500,294	45,277,586	145,948,237
Estimated all total		128,957,107,968	79,935,917,432	8,365,138,833	9,054,172,044	6,859,554,310	22,215,406,605

Tabel 4.2.6 -2 : Summarized and Estimated Overall Budget

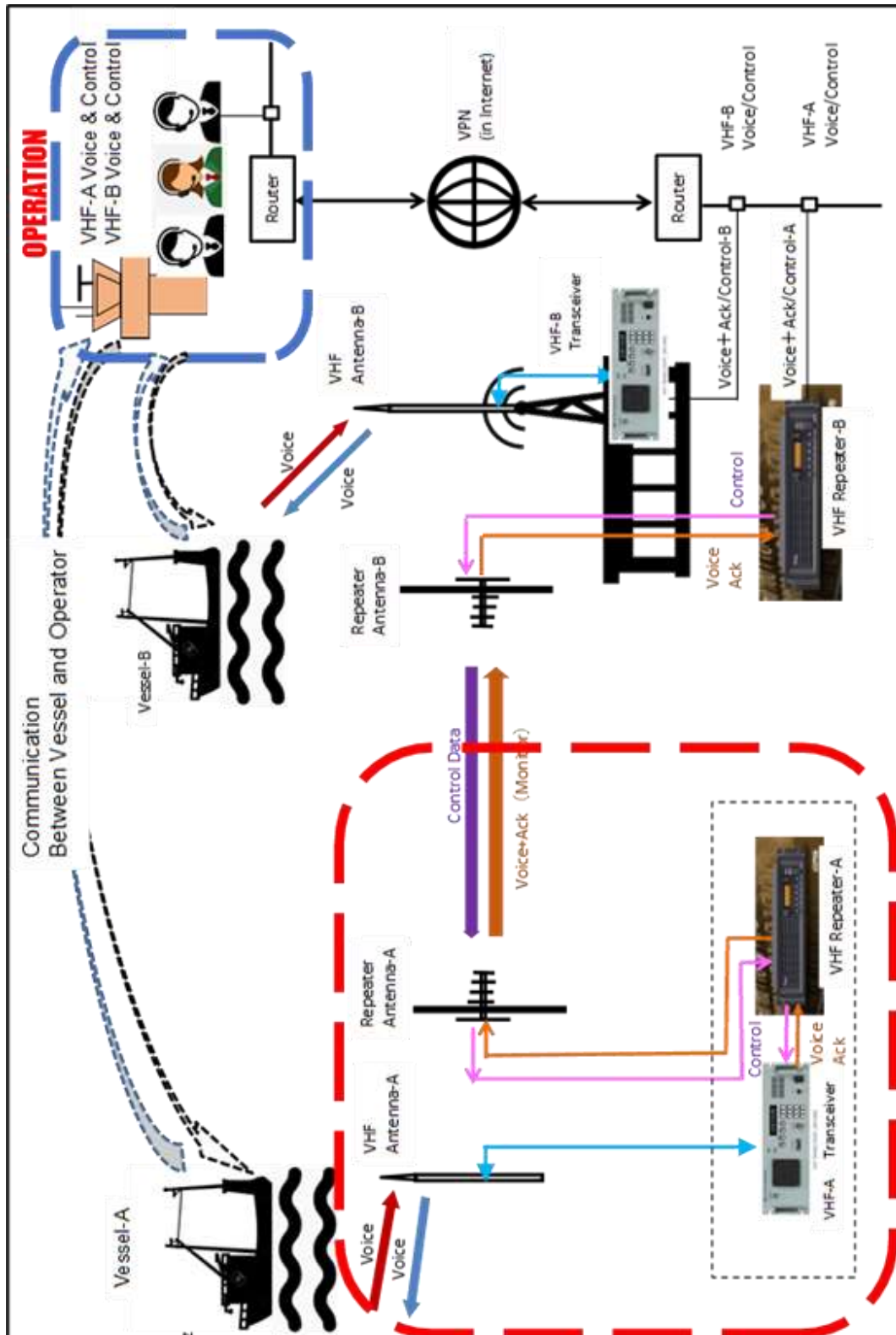
Unit: Million IDR	2021	2020	2019
Answered DISNAV number	13	10	11
Allocated budget	108,253	113,831	128,957
Wages	65,893	79,267	79,936
Maintenance	8,216	5,279	8,365
Running expenses	5,868	5,672	6,860
Purchase	130,493	16,276	9,054
Sub total	-102,216	7,336	24,742

Revenue	24,130	17,204	22,215
Overall	-78,086	24,540	46,958

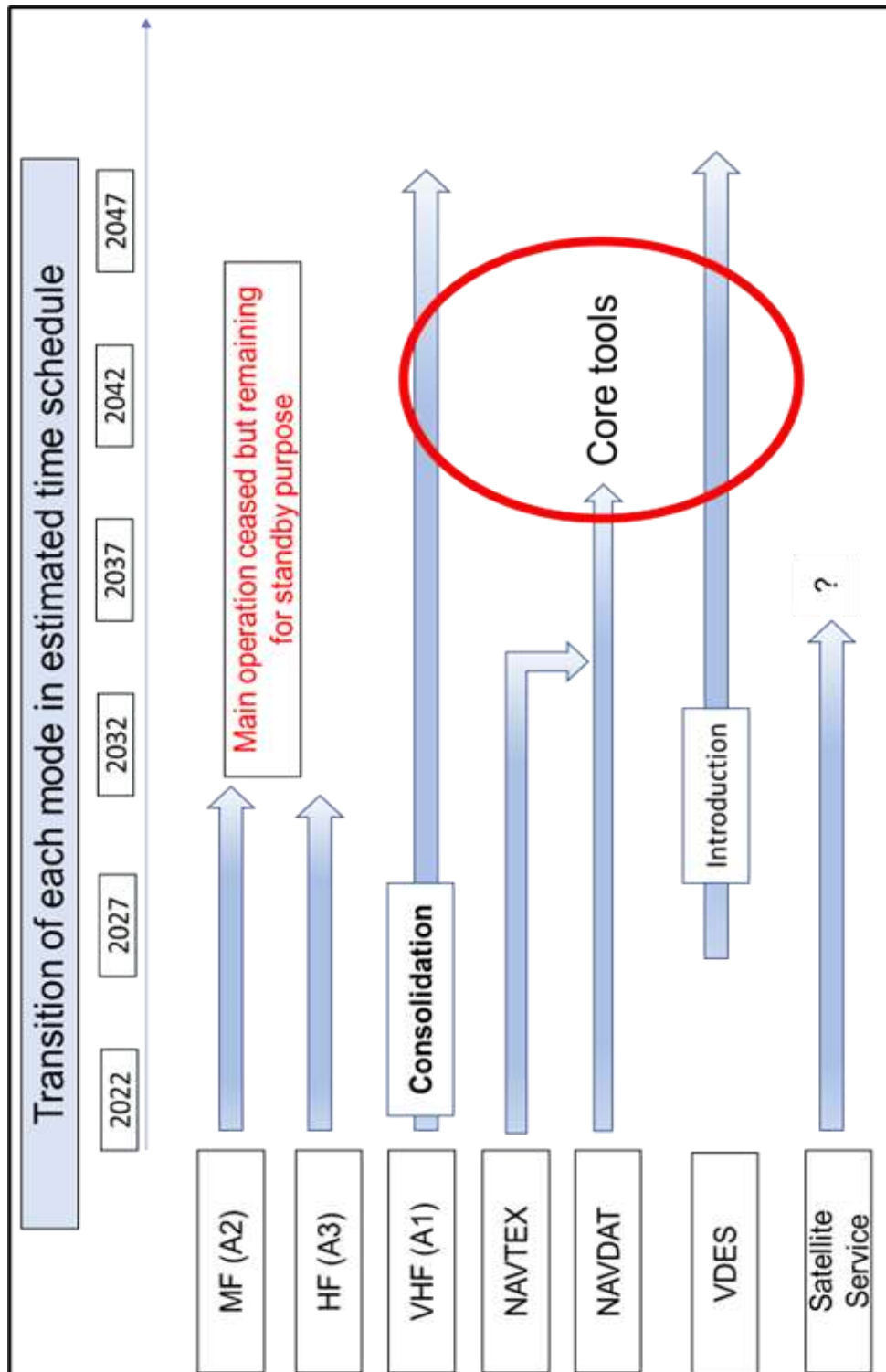
Tabel 4.2.7 -1 : Data of Internet Connectivity

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	

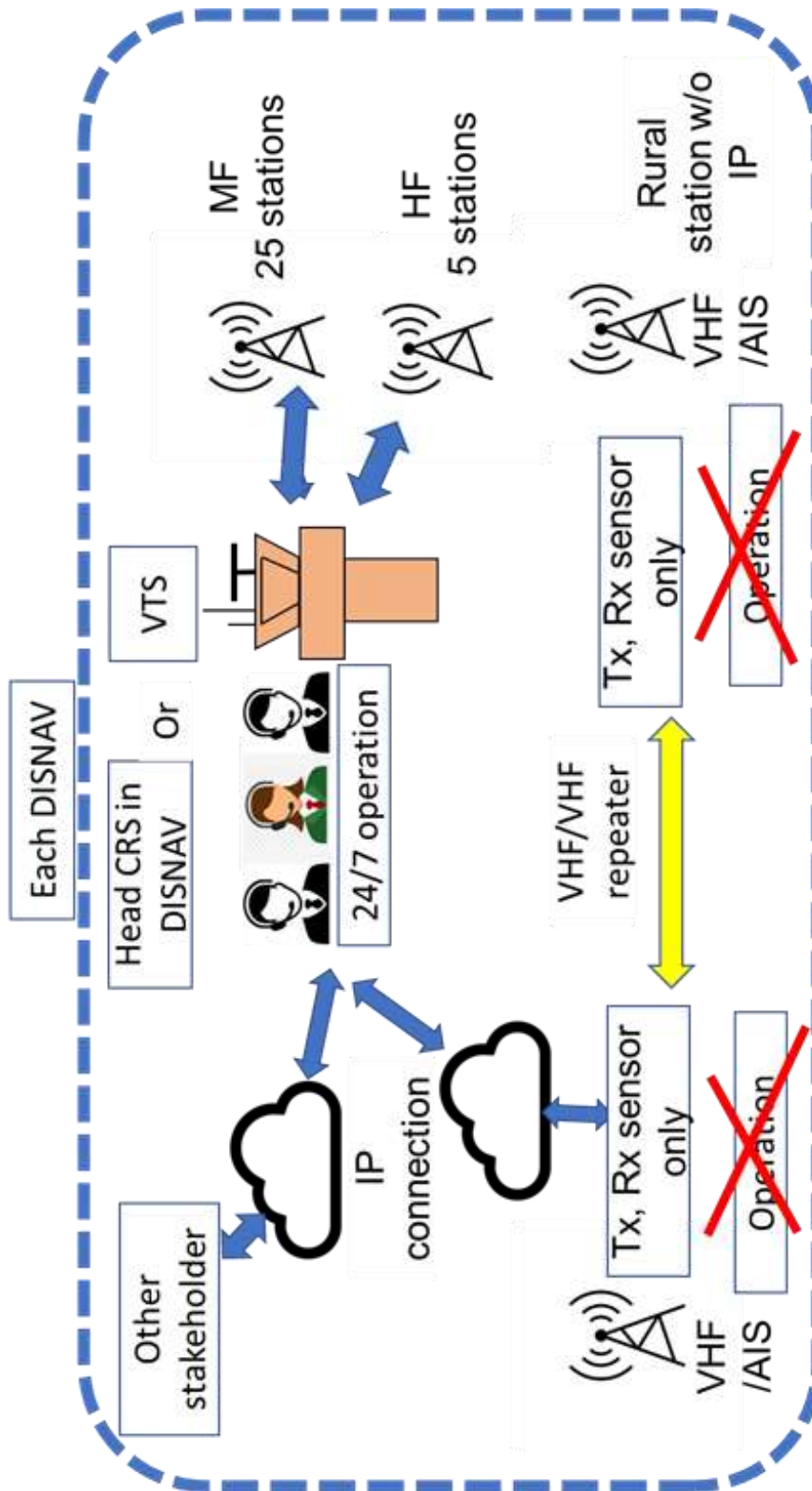
Gambar 4.2.7 -1 : VHF to VHF Repeater Connection



Gambar 4.2.8 -1 : Transition Plan for Future Maritime Radio Communications

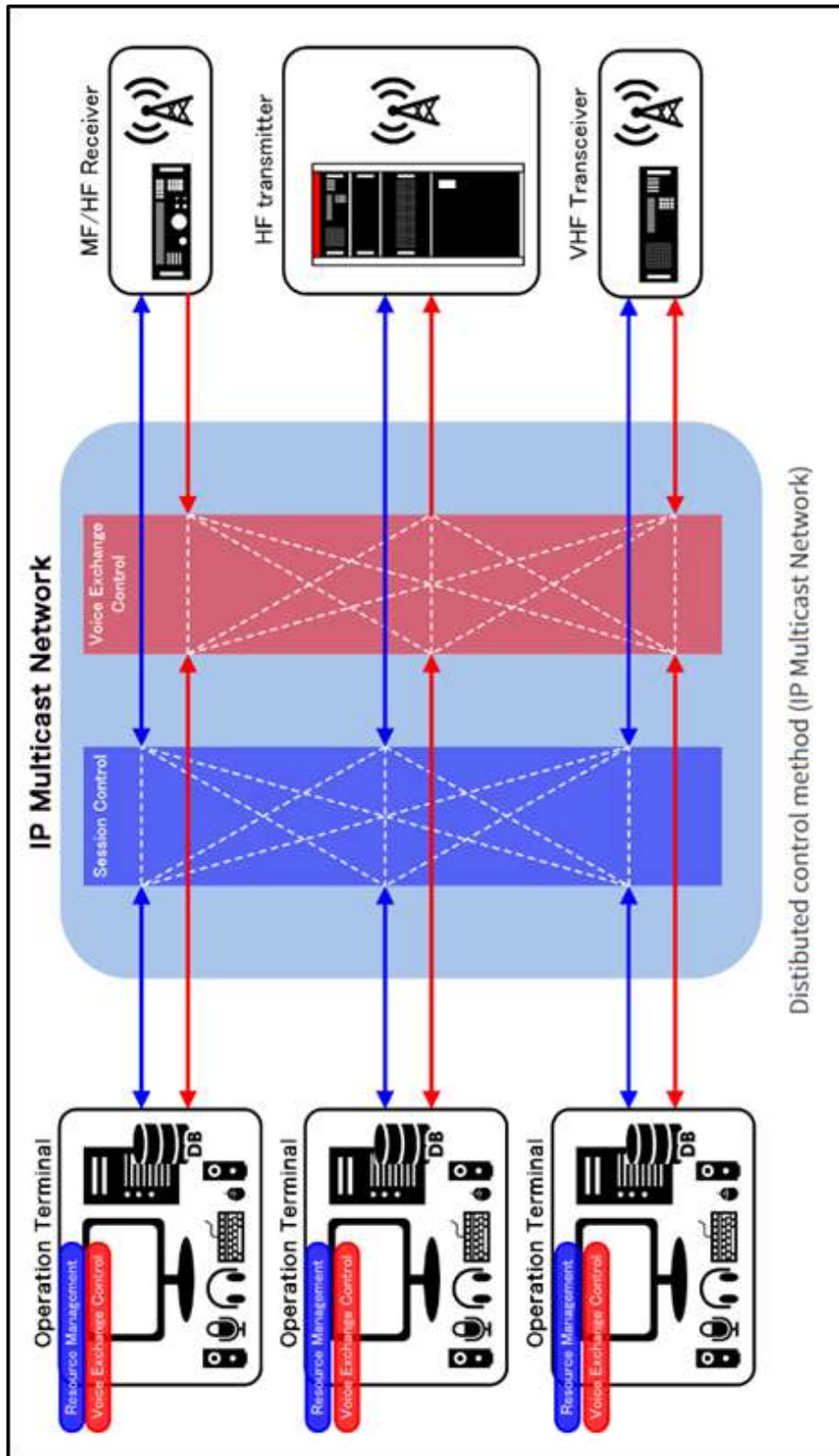


Gambar 4.2.11 -1 : Concept of Integration

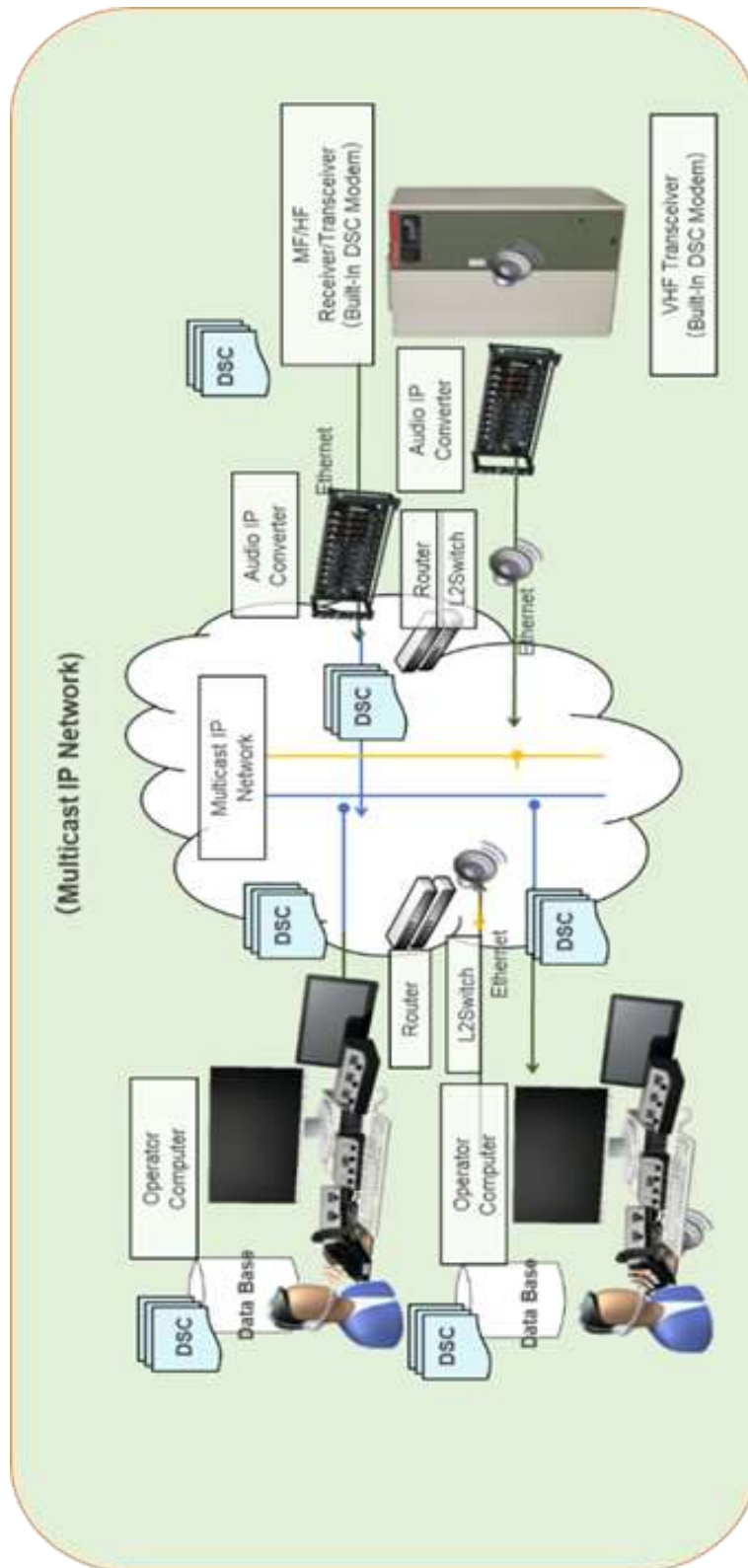




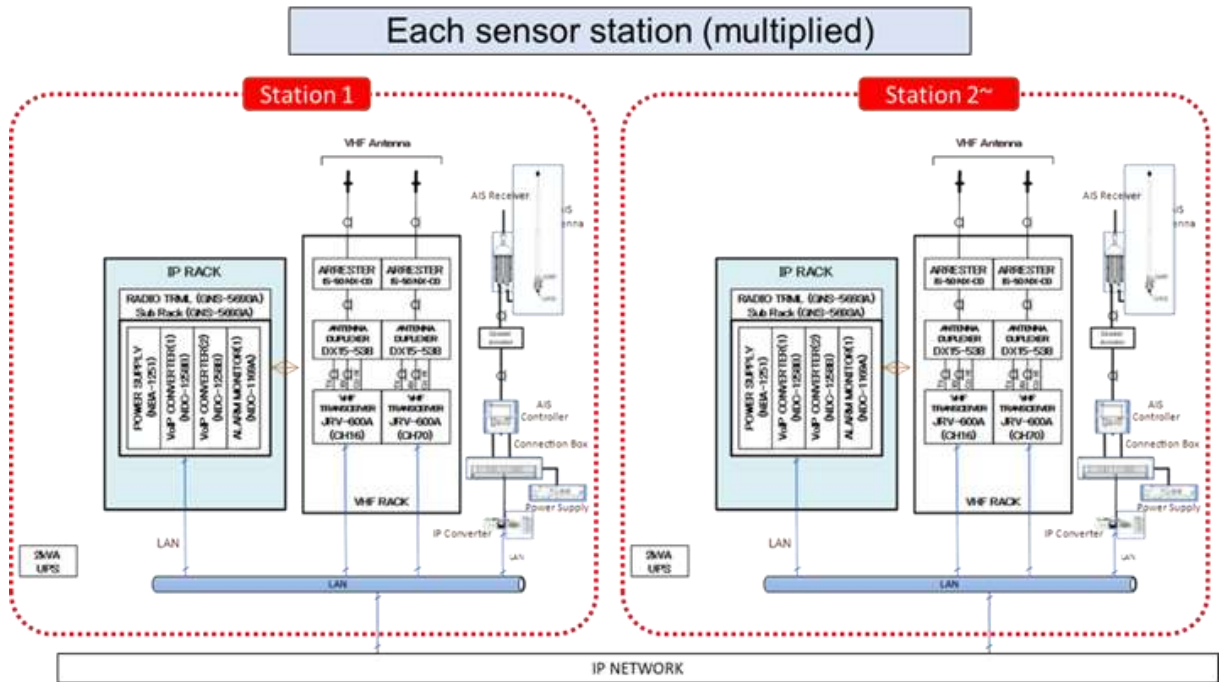
Gambar 4.2.11 -2 : Concept of IP Multicast Network



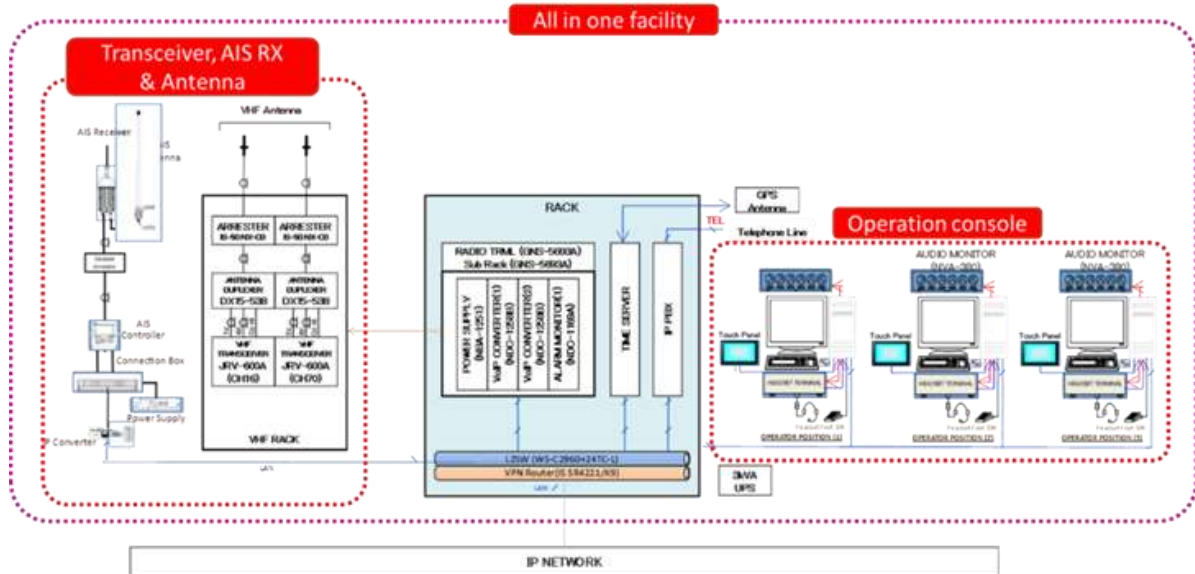
Gambar 4.2.11 -3 : System Diagram of IP Multicast Network



Gambar 4.2.11 -4 : System Diagram for Stations



**DISNAV head CRS with TX/RX**



Gambar 4.2.11 -5 : Sample of Control Screen in Operation

### Features of operation console display (sample)

The screenshot displays a complex control interface for radio operations. It features several main sections:

- Channel Selection:** Four panels for transmitting and receiving on different channels (CH3, CH0, CH4, CH0).
- Frequency Control:** A central panel showing frequency (2,182.000 kHz), mode (3.0 kHz), and various filters (0.3, 0.5, 1.0, 3.0, 6.0 kHz).
- Mode and Power Settings:** Controls for USB, LSB, CW, RTTY, and other modes, along with power and gain settings.
- Control Buttons:** Numerous buttons for functions like ATT, AGC, and various filters.
- System Status:** Indicators for TX/RX status, PTT (Push-to-Talk), and other system parameters.

### Communication (QSO) log (sample)

The screenshot shows a detailed communication log interface. It includes a table with the following columns:

Date & Time	Sta	Site	Qr/Freq	Format	From	Category	To	1st Followup	Operator
2023/03/16 18:18:18	RCV	鏡子送信機	2,182.000	DistricMail	27300001	Safety	00403000	Test	管理科/第三管区 船政事務所
2023/03/16 18:18:14	RCV	鏡子送信機	2,182.000	DistricMail	27300001	Safety	00403000	Ship position	管理科/第三管区 船政事務所
2023/03/16 18:18:04	RCV	鏡子送信機	2,182.000	DistricMail	27300001	Safety	00403000	Unable to comply	管理科/第三管区 船政事務所
2023/03/16 18:18:19	RCV	鏡子送信機	2,182.000	DistricMail	27300001	Safety	00403000	JM 3P	管理科/第三管区 船政事務所
2023/03/16 18:18:11	RCV	鏡子送信機	2,182.000	DistricMail	27300001	Safety	00403000	JM 3P	管理科/第三管区 船政事務所
2023/03/16 18:18:09	RCV	鏡子送信機	2,182.000	DistricMail	27300001	Safety	00403000	JM 3P	管理科/第三管区 船政事務所
2023/03/16 18:18:10	RCV	鏡子送信機	2,182.000	DistricMail	27300001	Beeline	00403000	Porting	管理科/第三管区 船政事務所
2023/03/16 18:18:14	RCV	鏡子送信機	2,182.000	DistricMail	27300001	Beeline	00403000	Porting	管理科/第三管区 船政事務所
2023/03/16 18:18:18	RCV	鏡子送信機	2,182.000	DistricMail	27300001	Beeline	00403000	Unable to comply	管理科/第三管区 船政事務所
2023/03/16 18:18:18	RCV	鏡子送信機	2,182.000	DistricMail	27300001	Beeline	00403000	Beeline	管理科/第三管区 船政事務所
2023/03/16 18:18:17	RCV	鏡子送信機	2,182.000	DistricMail	27300001	Beeline	00403000	F3X/J2B TTY-FEC	管理科/第三管区 船政事務所
2023/03/16 18:17:09	RCV	鏡子送信機	2,182.000	DistricMail	27300001	Beeline	00403000	F3X/J2B TTY-FEC	管理科/第三管区 船政事務所
2023/03/16 18:14:18	RCV	鏡子送信機	2,182.000	DistricMail	27300001	Beeline	00403000	Beeline	管理科/第三管区 船政事務所
2023/03/16 18:13:13	RCV	鏡子送信機	2,182.000	DistricMail	27300001	Beeline	00403000	F3X/J2B TTY-FEC	管理科/第三管区 船政事務所
2023/03/16 17:18:42	RCV	鏡子送信機	2,182.000	DistricMail	27300001	Beeline	00403000	F3X/J2B TTY-FEC	管理科/第三管区 船政事務所

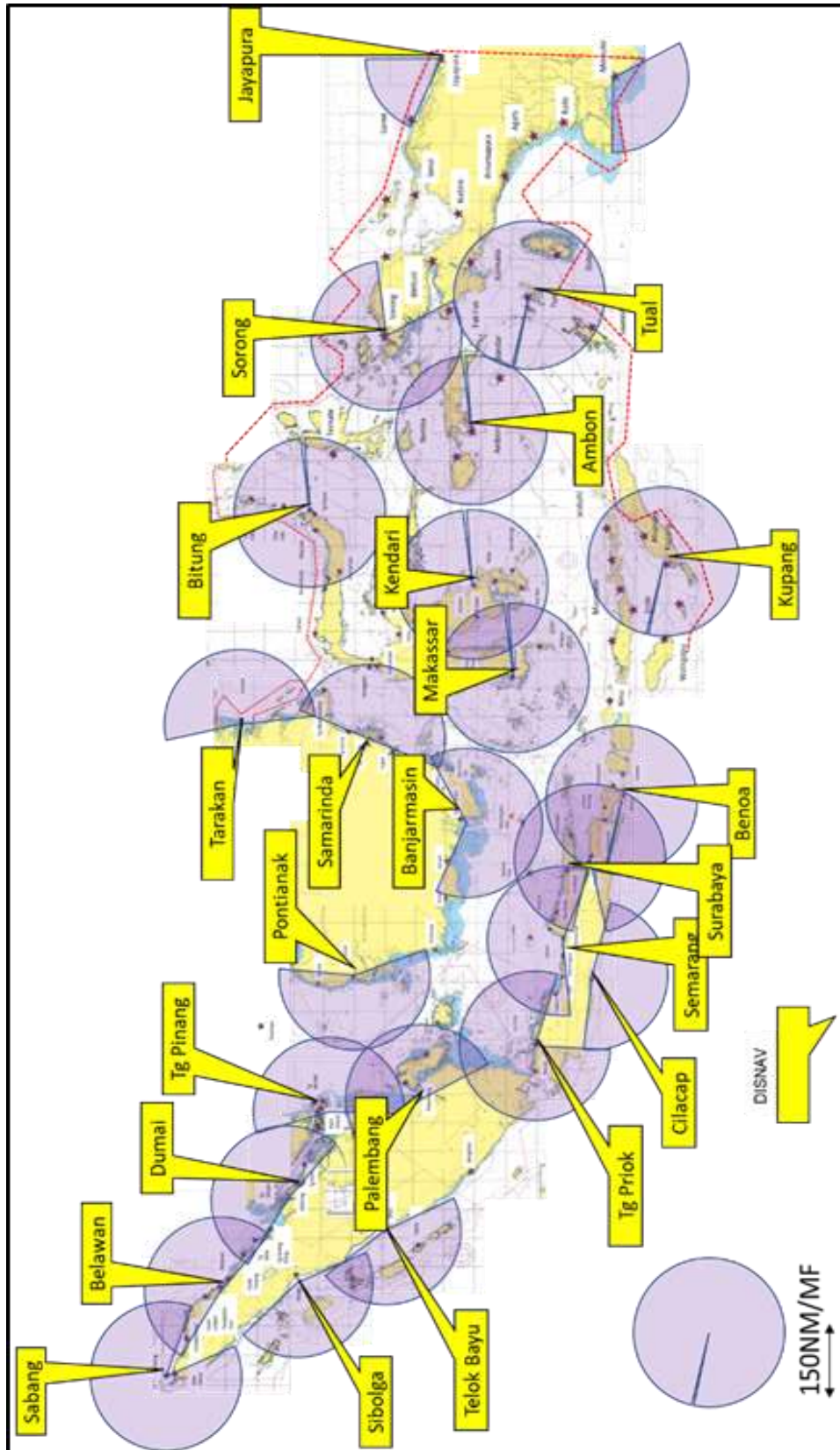
Below the table, there are sections for 'Ship Information' and search filters.

### Multi station communication status (sample)

The screenshot displays a multi-station communication status interface. It features a grid of activity for various stations, including:

- Station List:** A list of stations such as 鏡子送受, 下田送受, 帆波送受, 武山送受, and 須崎送受.
- Activity Indicators:** A grid of colored bars (red, yellow, green) indicating communication activity for each station.
- Control Elements:** Buttons for 'MUTE' and 'PTT' for each station, along with volume and power controls.
- Visual Feedback:** A large vertical bar on the left side showing the overall status or volume of the communication.

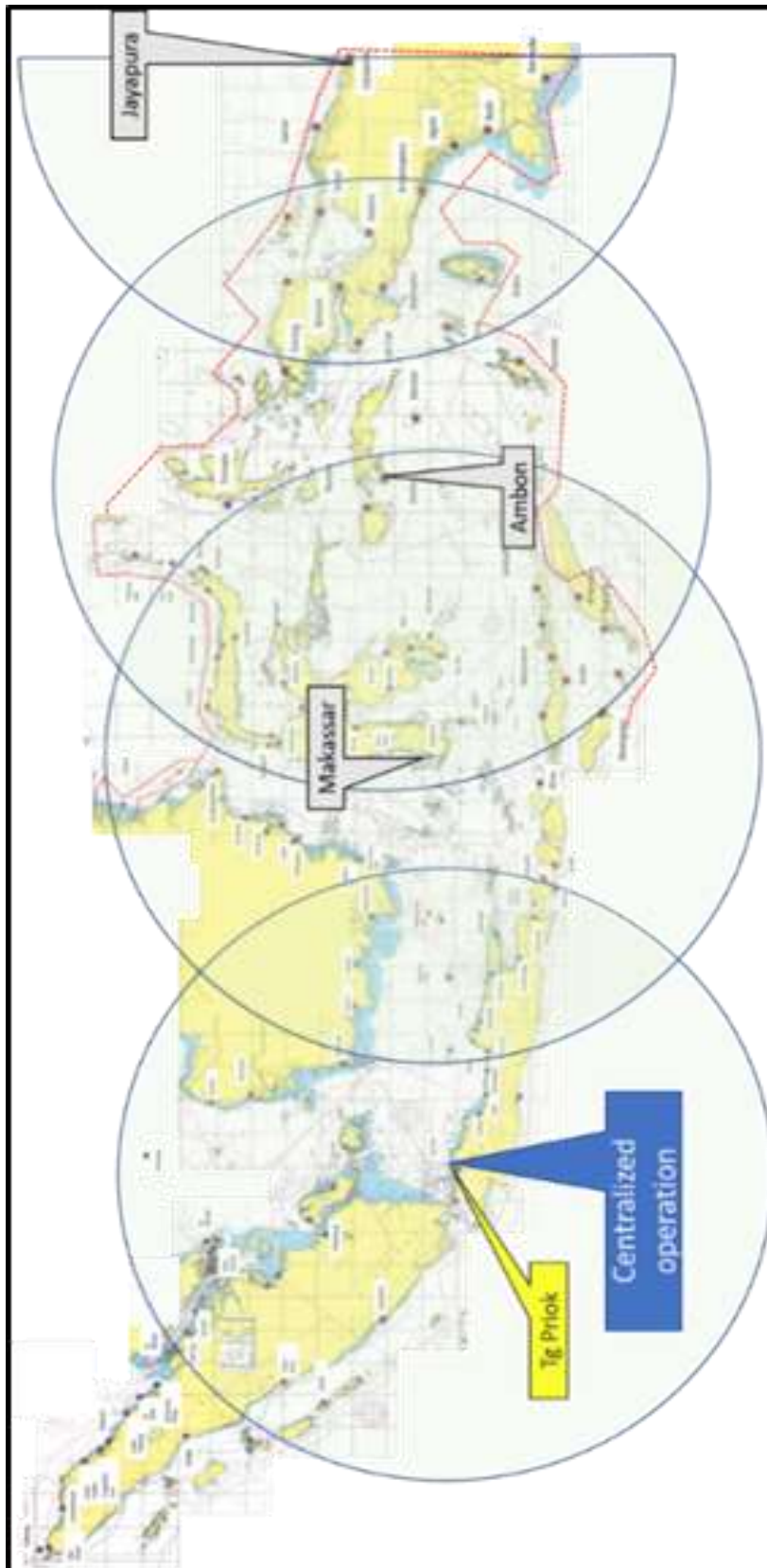
Gambar 4.2.11 -6 : MF consolidated minimized operation in DISNAV head only



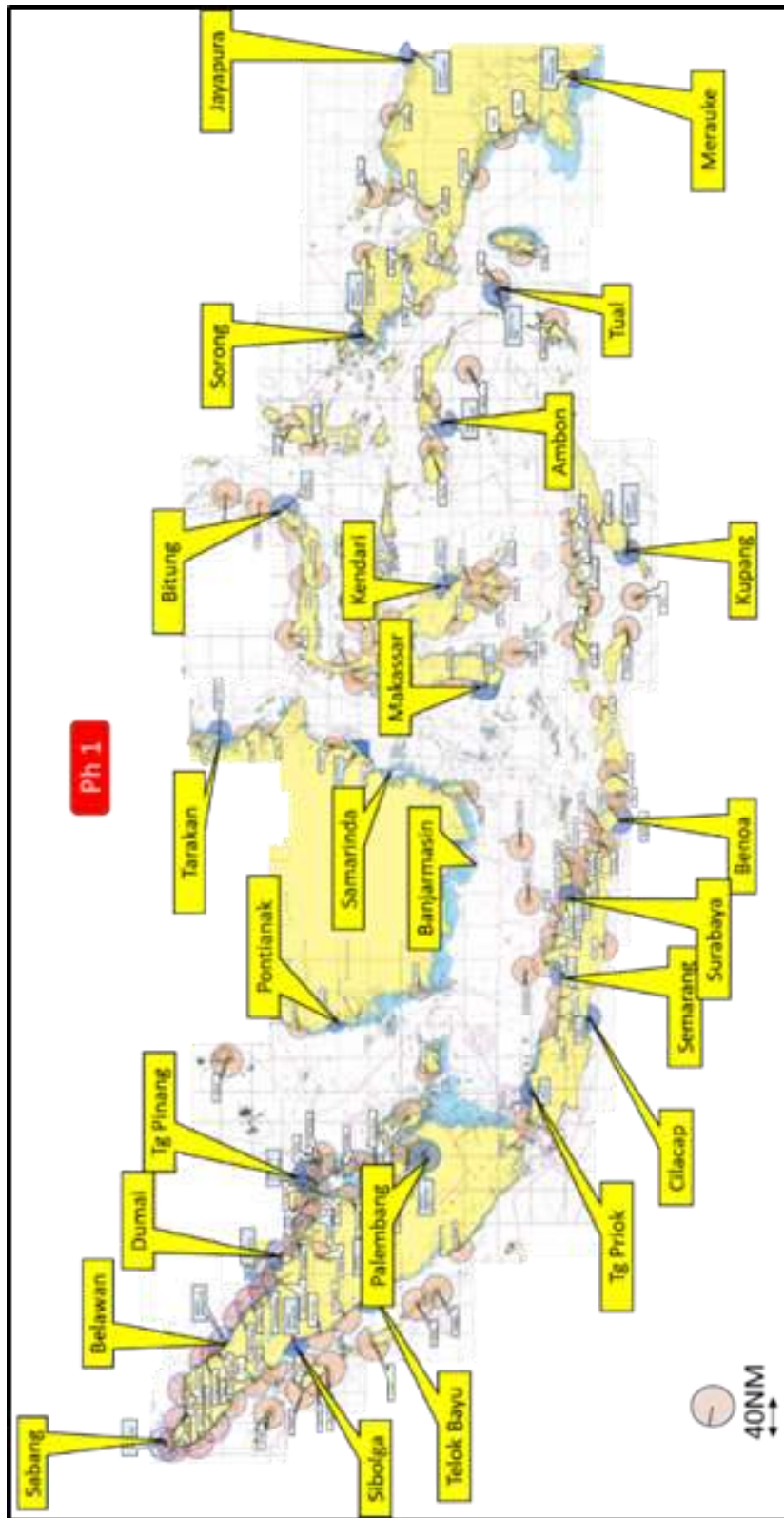
Gambar 4.2.11 -7 : Re-organized to only 5 VTS/CRS (Existing HF)  
(Belawan, Tg Priok, Makassar, Ambon, Jayapura)



Gambar 4.2.11 -8 : NAVTEX

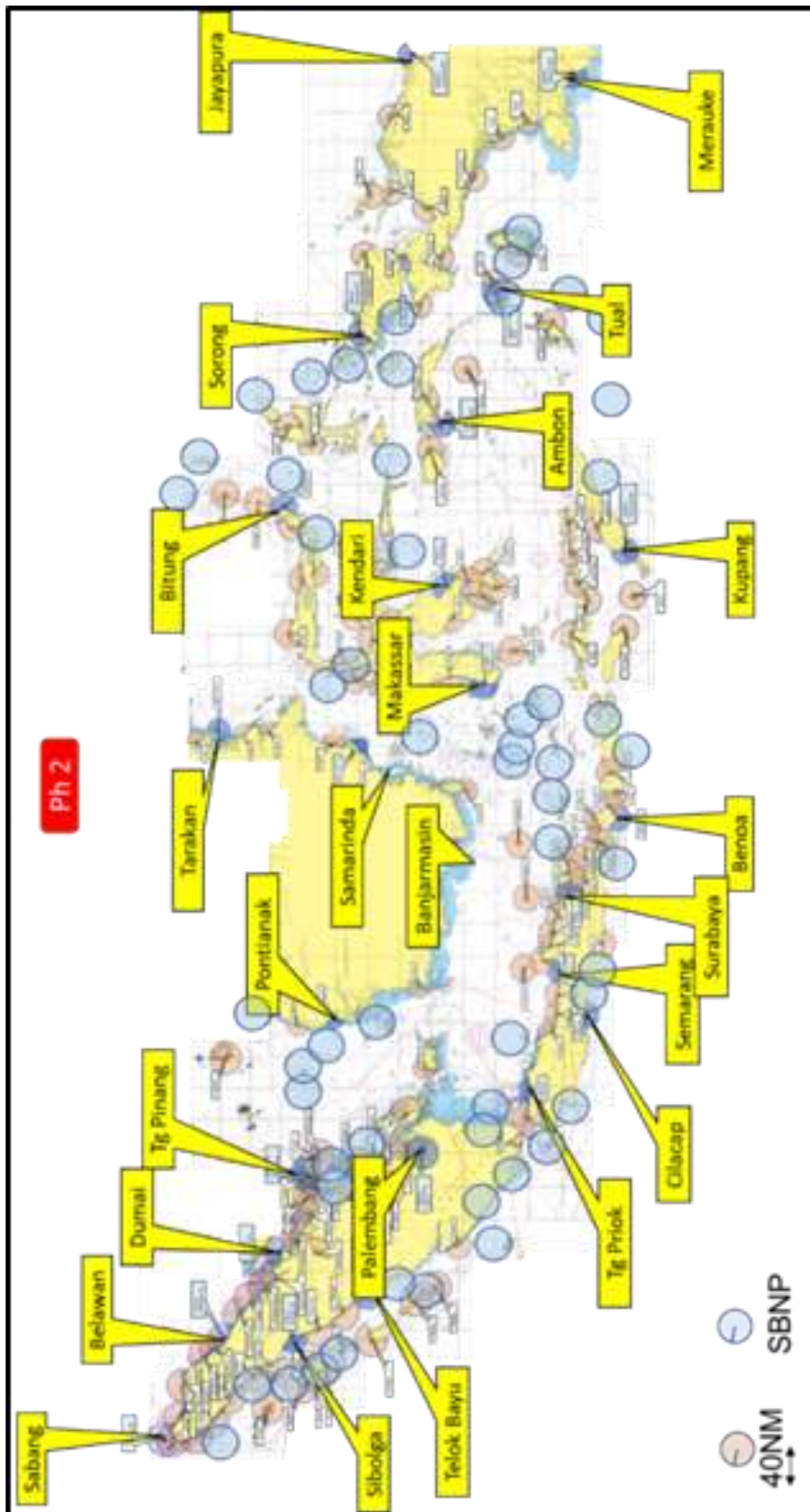


Gambar 4.2.11 -9 : VHF

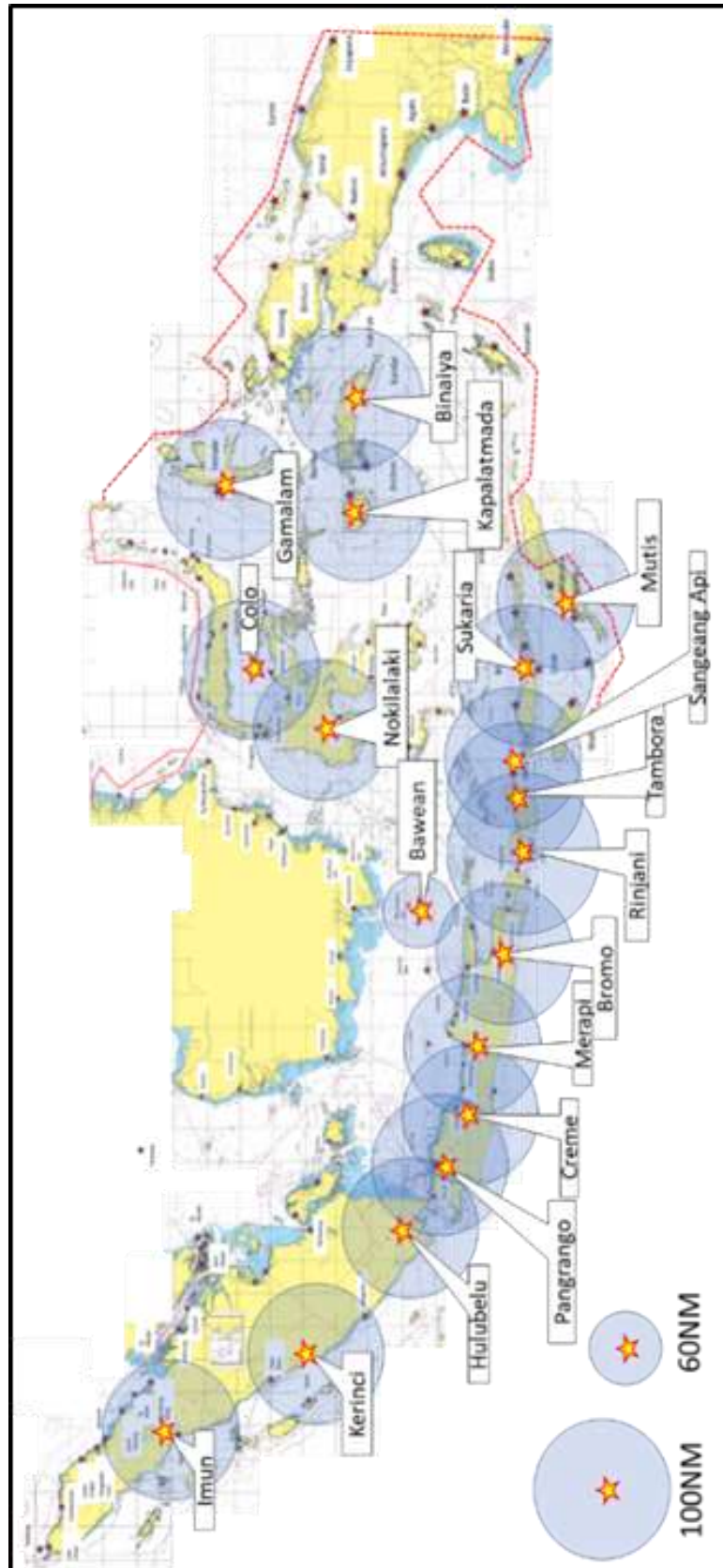




Gambar 4.2.11 -10 : SNBP locations as per “Asset Mensu” of SNBP in each DISNAV



Gambar 4.2.11 -11 : Ideal Layout of VHF Station from its Effective Range



Tabel 4.2.12 -1 : Estimated Cost of Consolidation System (1/2)

Optionally case of financing by Japanese government loan if applicable

Unit: Million IDR	Unit cost	Qty	Total
Sensor stations	2,500	158	395,000
Operation centre	5,000	25	125,000
System maintenance 5 years			52,000
Gross total			572,000
Annual repayment for 22 years loan 1% interest (Ave)			28,000

Repayment schedule of government loan in 23 years (if available) with 1% interest (average) excluding the factor of ex-rate fluctuation matter

Year	Principal	Repayment	Balance c/f
1	572,000,000,000	28,000,000,000	544,000,000,000
2	549,440,000,000	28,000,000,000	521,440,000,000
3	526,654,400,000	28,000,000,000	498,654,400,000
4	503,640,944,000	28,000,000,000	475,640,944,000
5	480,397,353,440	28,000,000,000	452,397,353,440
6	456,921,326,974	28,000,000,000	428,921,326,974
7	433,210,540,244	28,000,000,000	405,210,540,244
8	409,262,645,647	28,000,000,000	381,262,645,647
9	385,075,272,103	28,000,000,000	357,075,272,103
10	360,646,024,824	28,000,000,000	332,646,024,824
11	335,972,485,072	28,000,000,000	307,972,485,072
12	311,052,209,923	28,000,000,000	283,052,209,923
13	285,882,732,022	28,000,000,000	257,882,732,022
14	260,461,559,342	28,000,000,000	232,461,559,342
15	234,786,174,936	28,000,000,000	206,786,174,936
16	208,854,036,685	28,000,000,000	180,854,036,685
17	182,662,577,052	28,000,000,000	154,662,577,052
18	156,209,202,823	28,000,000,000	128,209,202,823
19	129,491,294,851	28,000,000,000	101,491,294,851
20	102,506,207,799	28,000,000,000	74,506,207,799
21	75,251,269,877	28,000,000,000	47,251,269,877
22	47,723,782,576	28,000,000,000	19,723,782,576
23	19,921,020,402	19,921,020,402	0

Tabel 4.2.12 -1 : Estimated Cost of Consolidation System (2/2)

Overall expenses in 25 DISNAV total

Unit: Million IDR	2021	2020	2019
Wages	65,893	79,267	79,936
Maintenance	8,216	5,279	8,365
Running expenses	5,868	5,672	6,860
Sub total	79,977	90,219	95,161

Estimated revenue income by VDES newly

Unit: Million IDR	Current	After
Current revenue	24,130	VTS due suspect to include
Future VDES revenue (after 5 years onward)	60,000	600,000 service x IDR100,000
Expected total	84,130	

Estimated overall expenses after consolidation completed

Unit: Million IDR	Current	After	Difference
Wages	65,893	21,964	67% cut
Maintenance	8,216	2,739	67% cut
Running expenses	5,868	1,956	67% cut
Sub total	79,977	26,659	53,318

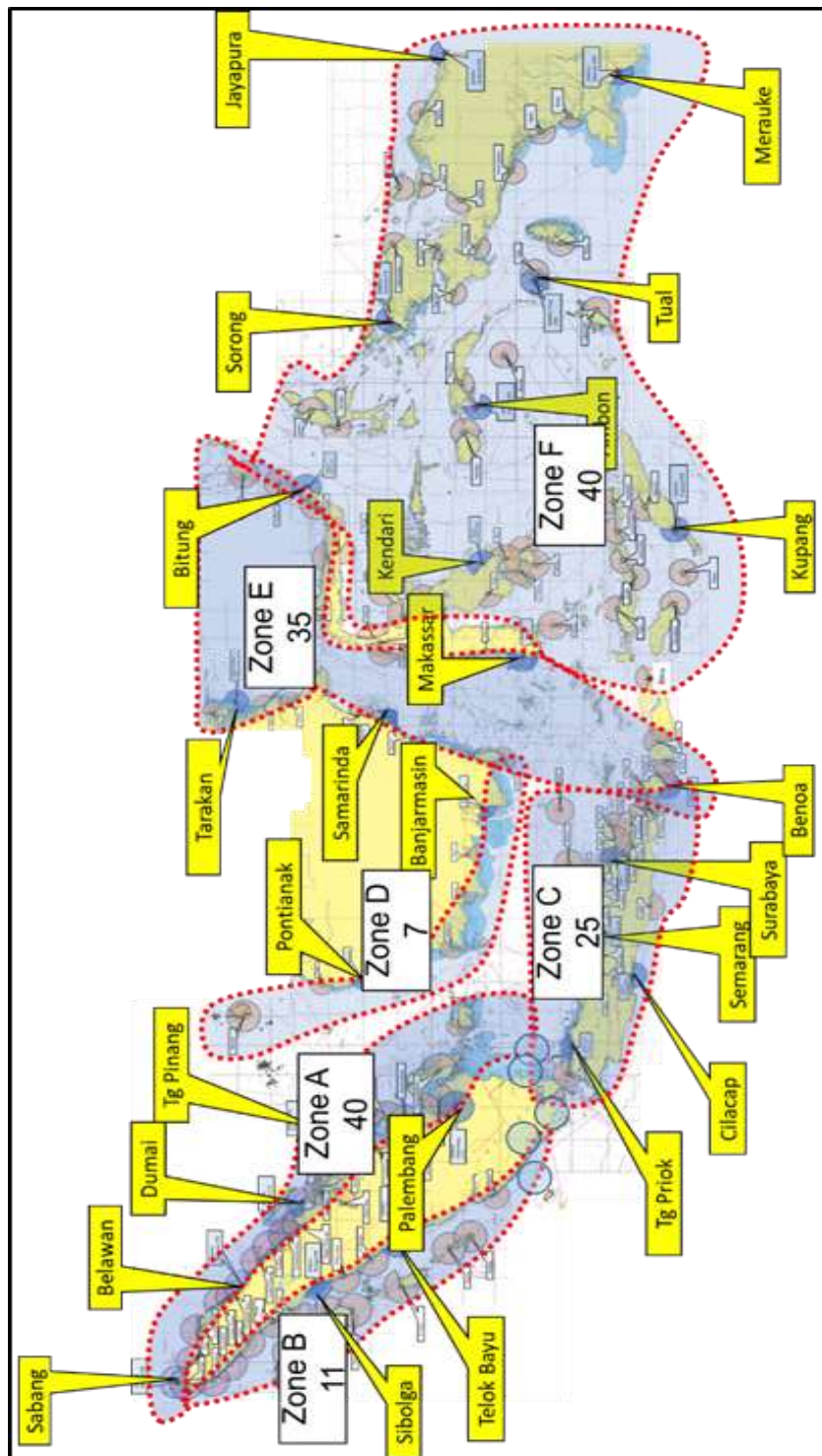
Overall balance sheet

Unit: Million IDR	Unit amount
Annual expenses	26,659
Annual repayment	28,000
Sub total	54,659
Expected revenue	84,130
Positive balance	29,472

Tabel 4.2.13 -1 : Proposed Priority Zone

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

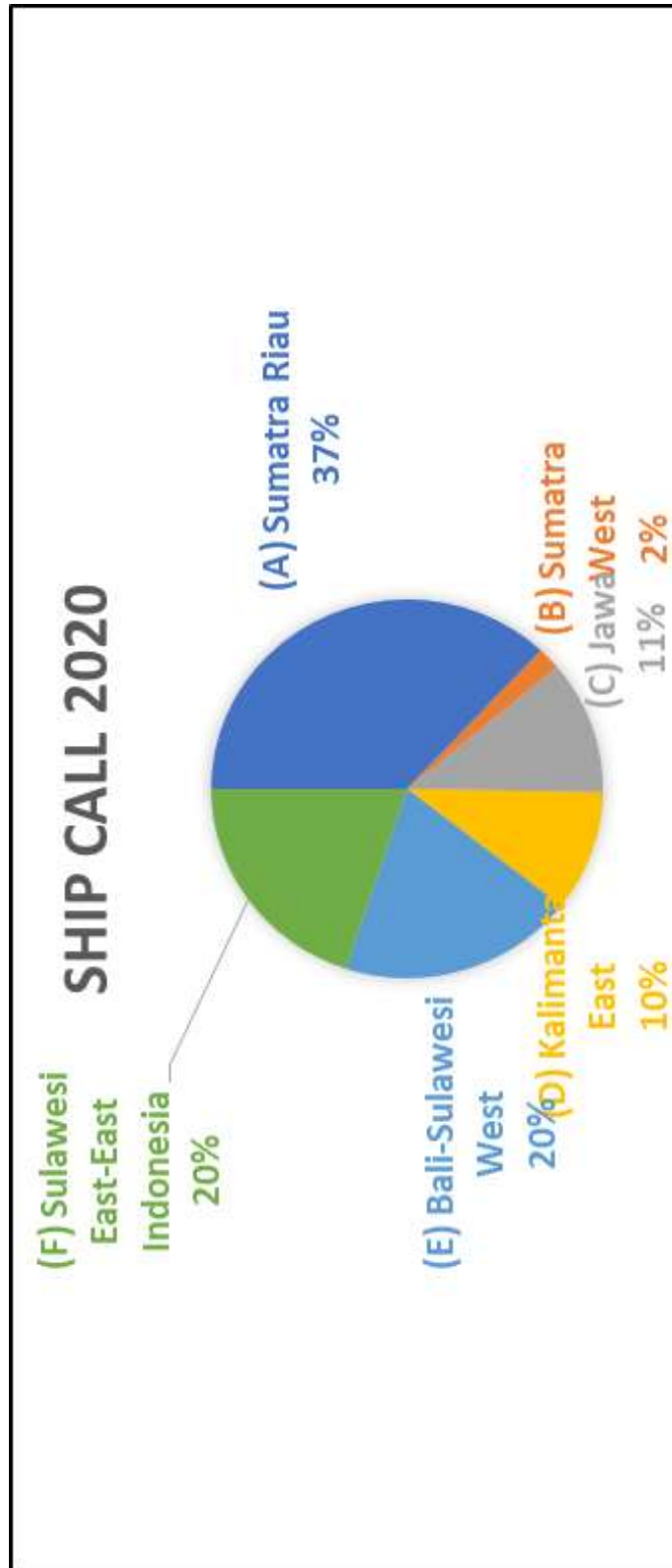
Gambar 4.2.13 -1 : Image of Zoning in 6 areas  
(Total Nos of CRS in each DISNAV)



Tabel 4.2.13 -2 : Number of Ship Calls

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%

Grafik 4.2.13 -1 : Number of Ship Calls

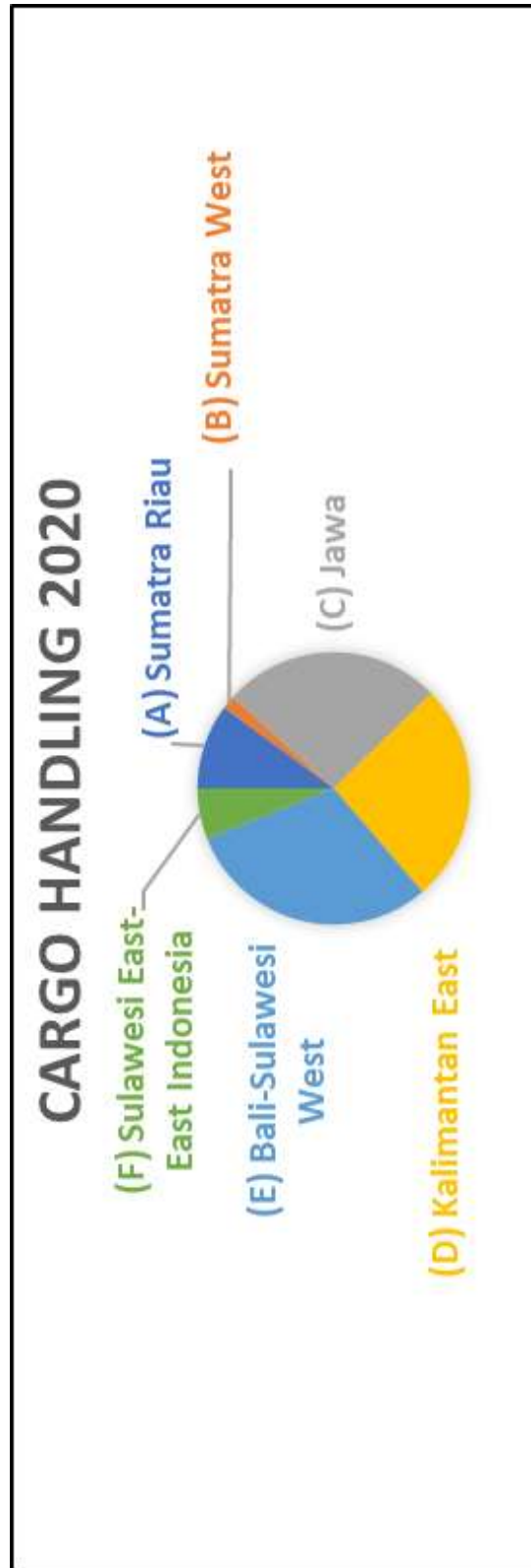




Tabel 4.2.13 -3 : Total Cargo Handling

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%

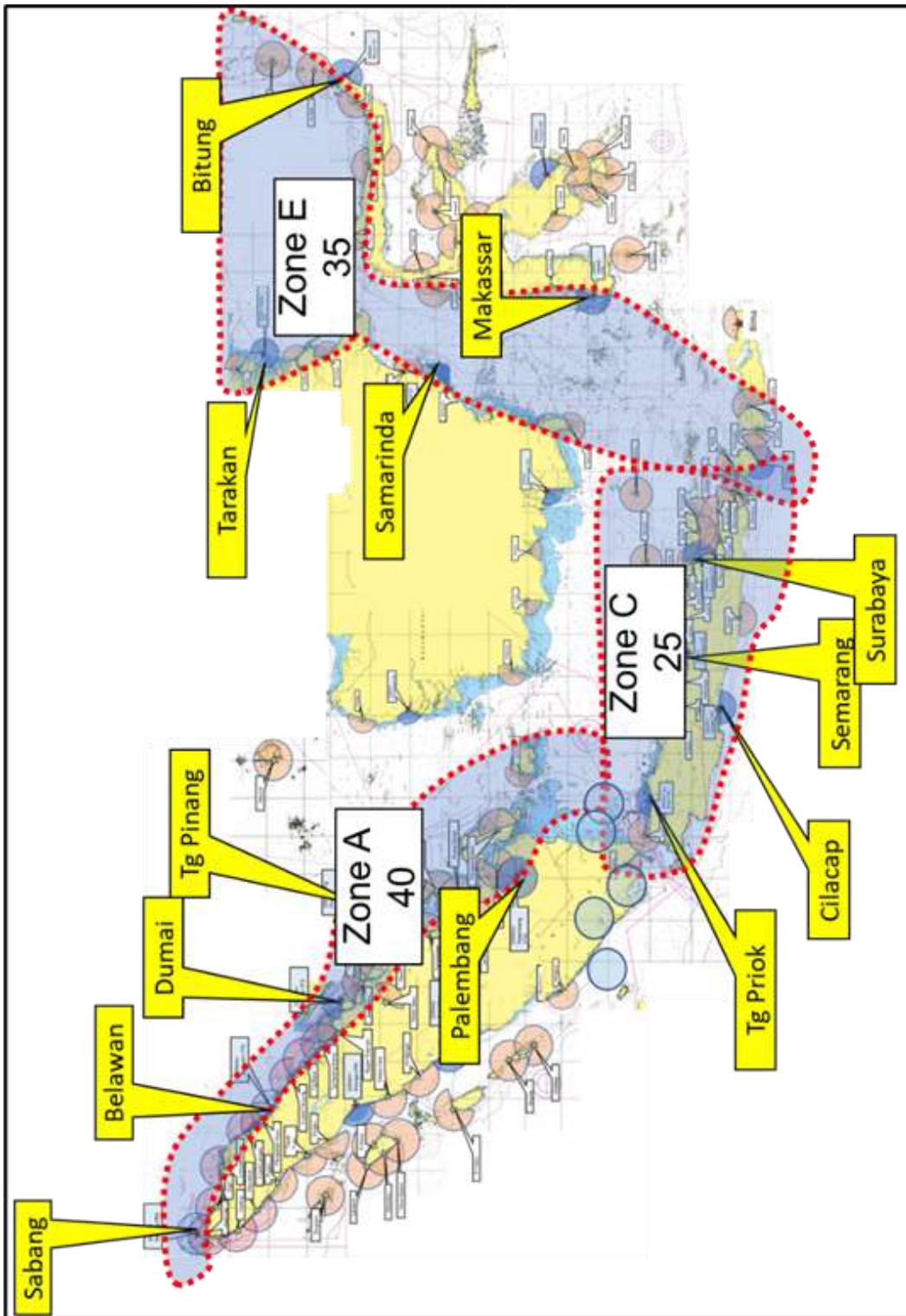
Grafik 4.2.13 -2 : Total Cargo Handling



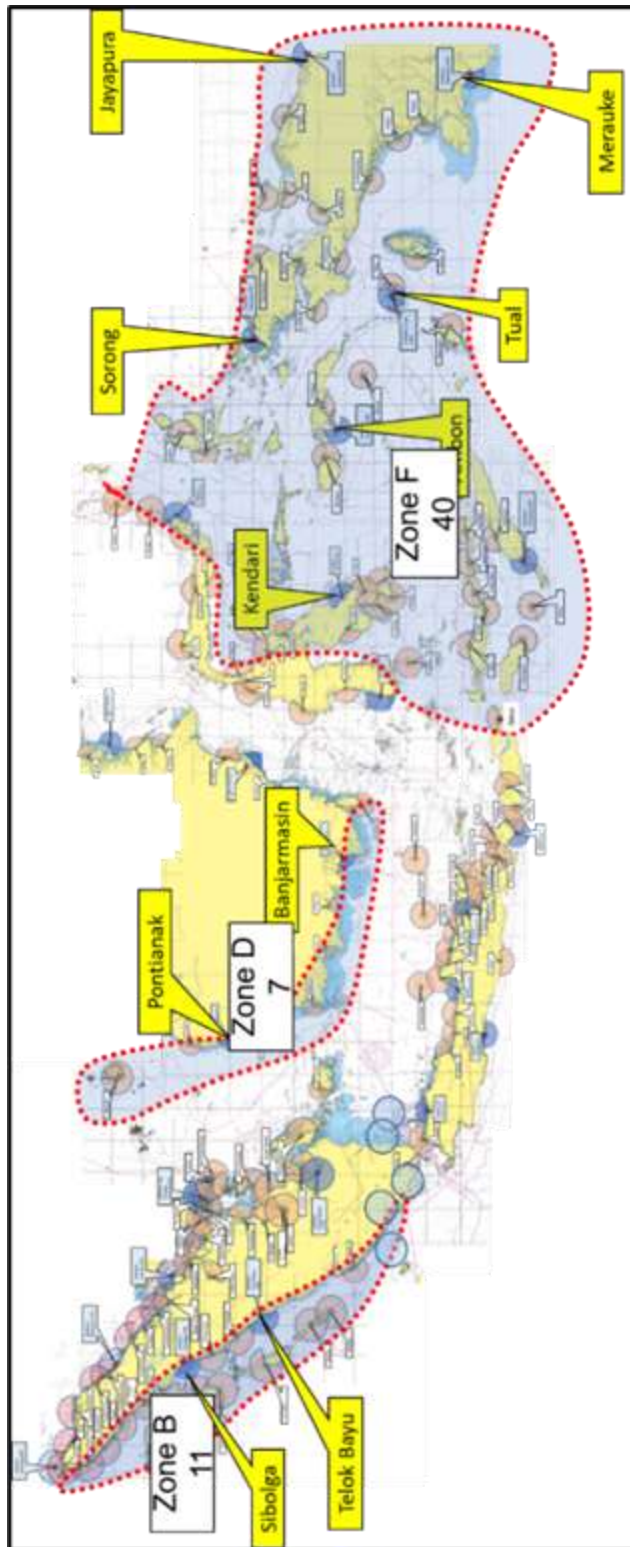
Tabel 4.2.13 -4 : Consolidation Plan

Zone	Area	DISNAV		Target CRS
		Nos	Name	
Priority 1				Consolidated
A	Sumatra East - Riau	5	Sabang, Belawan, Dumai, Tg Pinang, Palembang	40
C	Jawa (all)	4	Jakarta, Semarang, Surabaya, Cilacap	25
E	Bali- Sulawesi West, Kalimantan East	5	Benoa, Makassar, Samarinda, Tarakan, Bitung	35
S. total		14		100
Priority 2				
B	Sumatra West	2	Sibolga, Teluk Bayur	11
D	Kalimantan East	2	Pontianak, Banjarmasin	7
F	Sulawesi East – Rest of East Indonesia	7	Kupang, Ambon, Tual, Kendari, Sorong, Merauke, Jayapura	40
S. total		11		58
G. total		25		158

Gambar.2.13 -2 : Priority 1



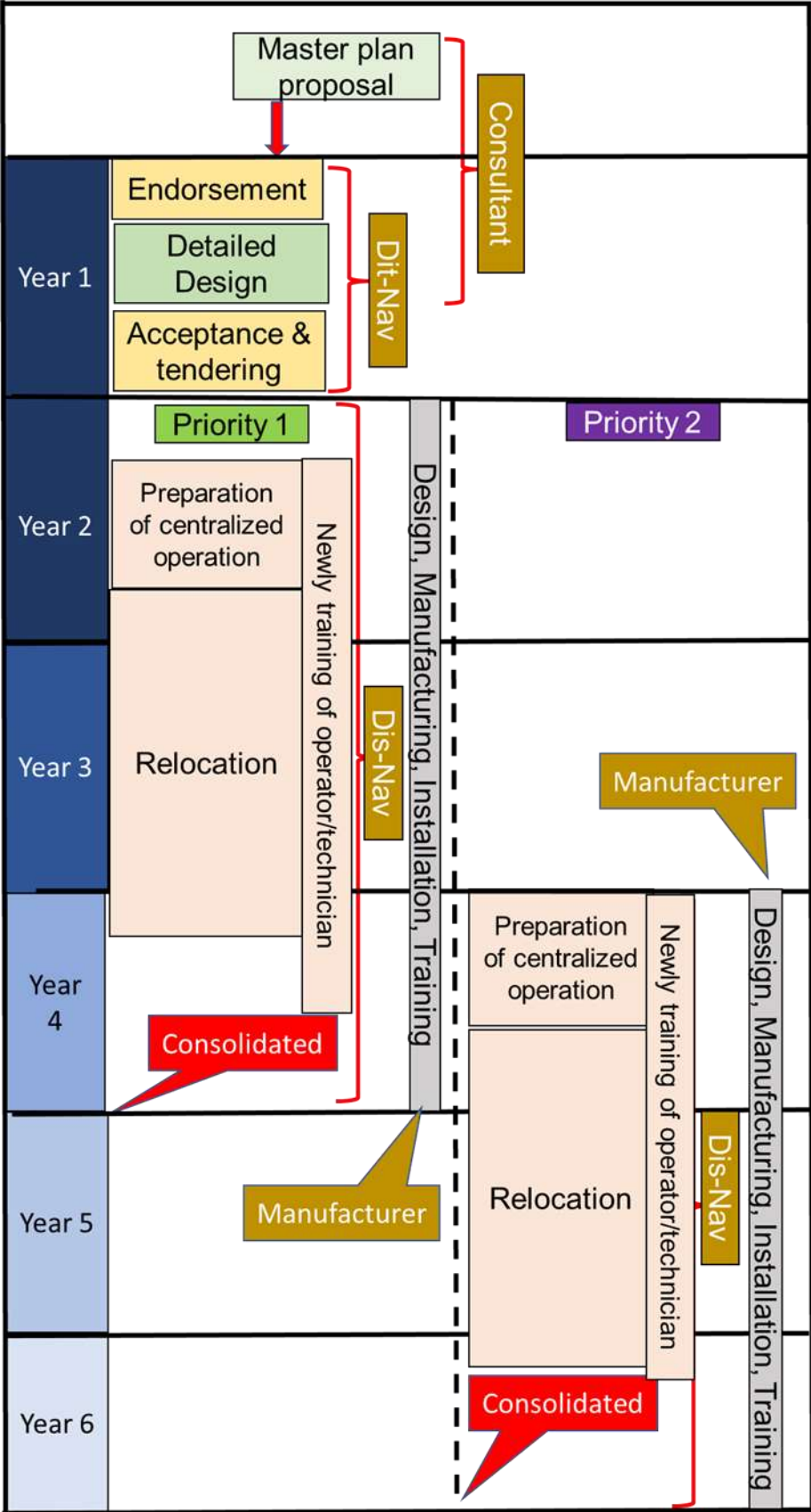
Gambar 4.2.13 -3 : Priority 2



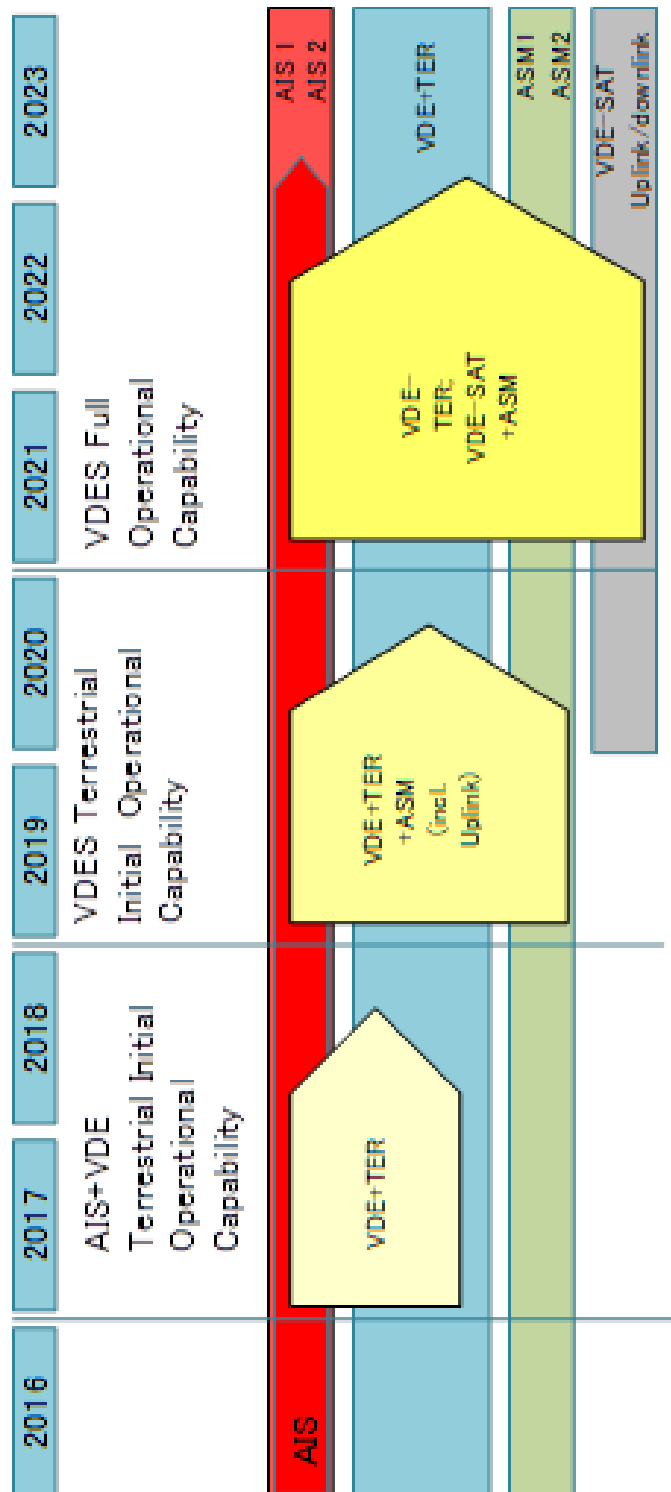
Tabel 4.2.13 -5 : Budget Plan for Priority 1 and Priority 2

Zone	Area	DISNAV	Target CRS	Approx cost
		Nos	Consolidated	Million IDR
<b>Priority 1</b>				
A	Sumatra- Riau	5	40	125,000
C	Jawa	4	25	82,500
E	Bali-Sulawesi West	5	35	112,500
S.Total		14	100	320,000
<b>Priority 2</b>				
B	Sumatra West	2	11	37,500
D	Kalimantan East	2	7	27,500
F	Sulawesi East-East Indonesia	7	40	135,000
S.Total		11	58	200,000
Nex 5 years maintenance cost (10%)				52,000
<b>G.Total</b>				<b>572,000</b>

Gambar 4.2.13 -4 : Establishment Work Flow Schedule for Priority 1 and 2



Gambar 4.2.14 -1 : Development Schedule of VDES





Tabel 4.2.15 -1 : Main Point

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

Gambar 4.2.15 -1 : NAVTEX and NAVDAT

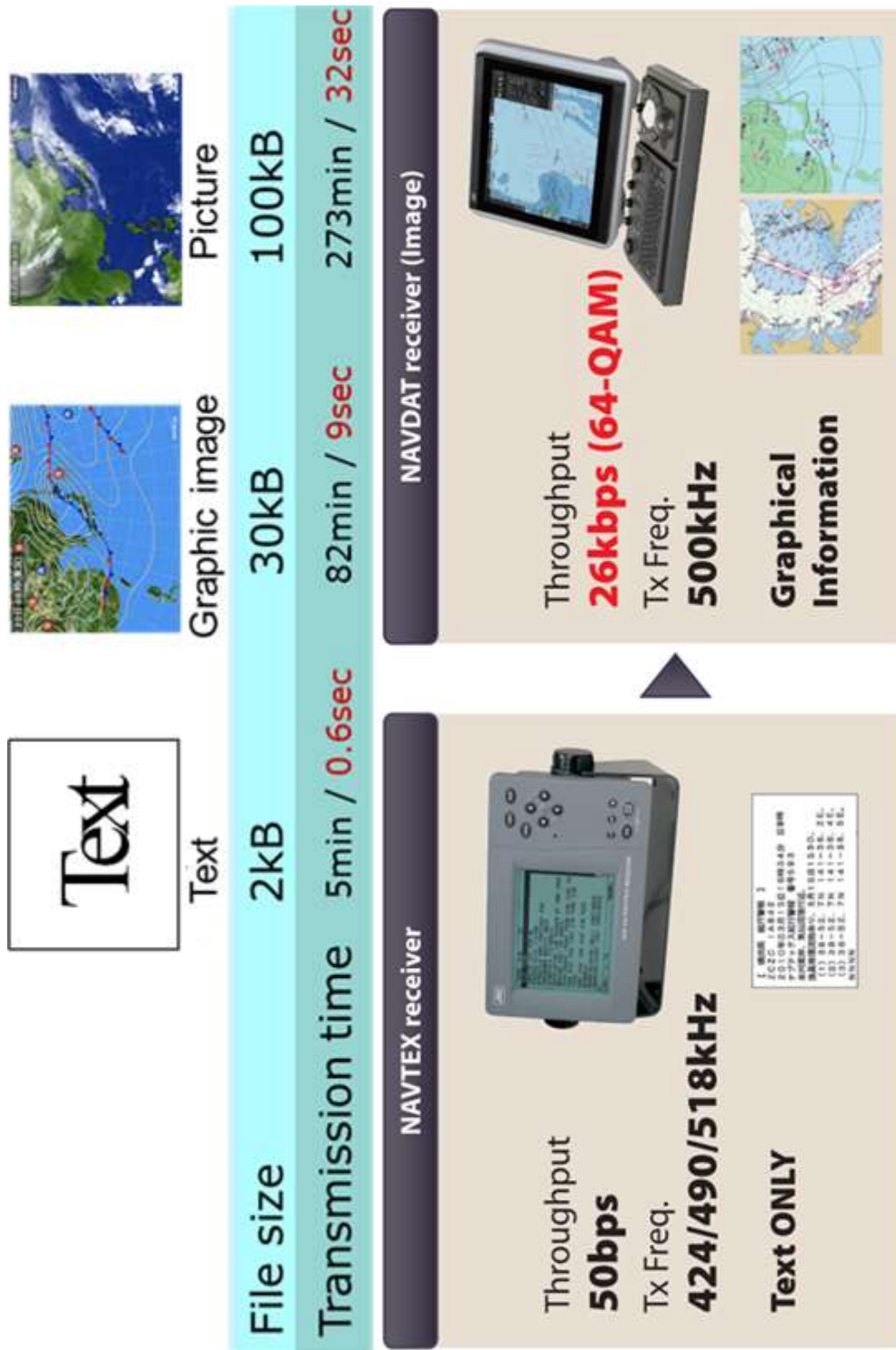
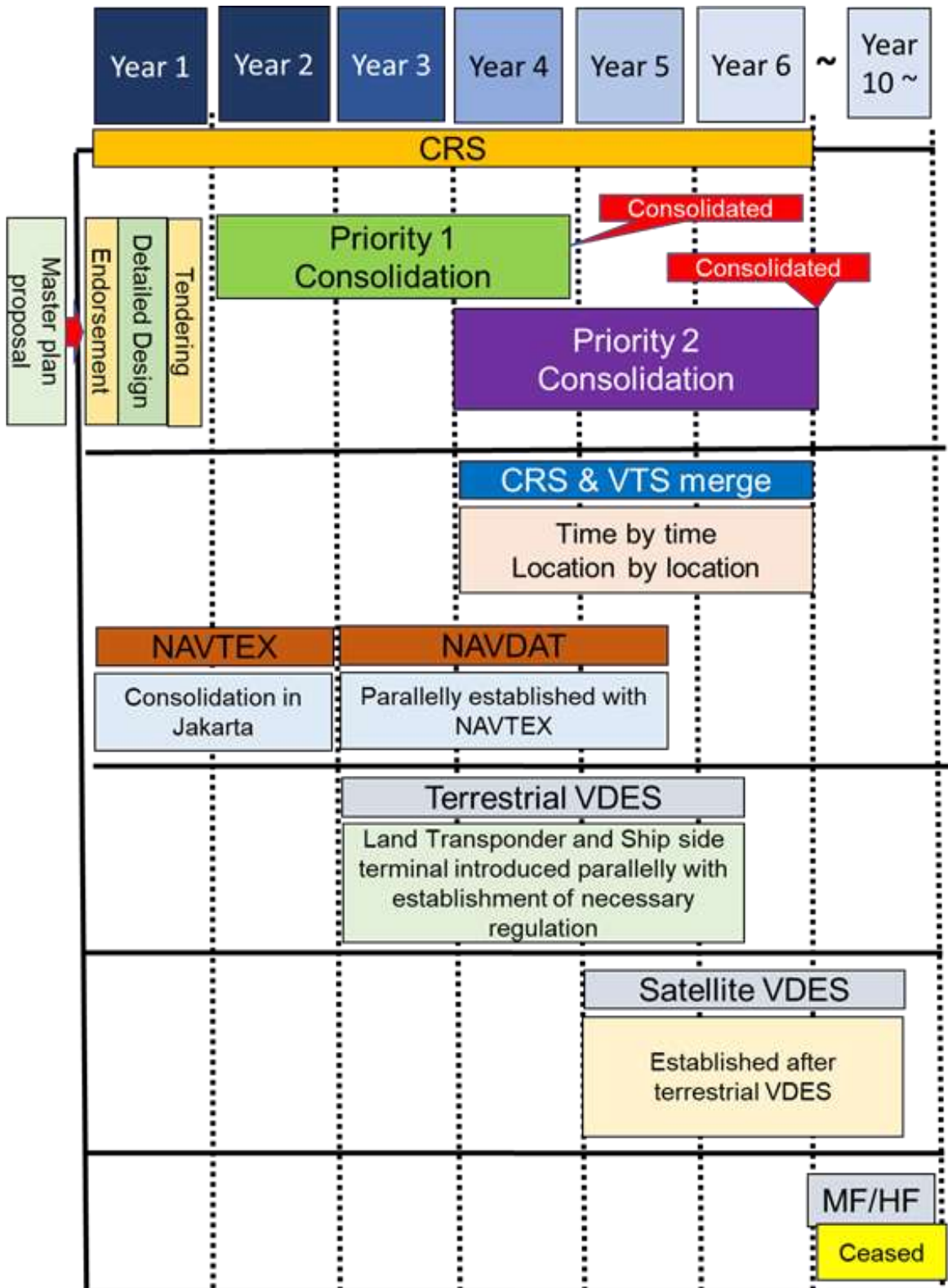


Figure 4.2.16 -1 : Time Flow of Each Project



# Bab 4 (3/3)

Kapal untuk Alat Bantu Navigasi





Tabel 4.3.4 - 1 : Kuesioner 1-1 (No 3)

DISNAV	Jenis kapal	kelas	Nama kapal	basis	Tahun dibangun	usia kapal (2022)	Bismillah sejak pambatan sampai pendaratan	Dock interval	Dock duration	Catu daya saat pengkalan ditambatkan	Isi pekerjaan										Number of AtoNs managed by Vessel				Remark		
											Instalasi buoy baru	Penggantian buoy	Underwater survey of buoys	Perbaikan buoy	Transportasi untuk pengisian mercusuar	Penggantian battery	Transportasi bahan bakar untuk generator	AtoN maintenance	Operasi selain untuk kepentingan AtoN	Light House	Light Beacon	Light Buoy	Unlighted Buoy	Day sign			
Surabaya	KIP	I	KN Masalemo	Surabaya	2017	5	HF MF VHF Mobile Phone	1	60	Generator Engine	Instalasi buoy baru	Penggantian buoy	Underwater survey of buoys	Perbaikan buoy	Transportasi untuk pengisian mercusuar	Penggantian battery	Transportasi bahan bakar untuk generator	AtoN maintenance	Operasi selain untuk kepentingan AtoN	6	18	41	13				
Surabaya			KN Damar			2022																				No data entry	
Surabaya			KN AE-029			2022																					No data entry
Kupang			KN Nipa			2022																					No data entry
Kupang			KN Mina			2022																					No data entry
Banjarmasin	KBP	I	KN Kunyit	Banjarmasin	2016	6	Mobile Phone			Generator Engine	Instalasi buoy baru	Penggantian buoy	Underwater survey of buoys	Perbaikan buoy	AtoN maintenance	Transportasi supply yang dibutuhkan AtoN	Operasi selain untuk kepentingan AtoN										
Banjarmasin	KBP	I	KN Altair	Banjarmasin	1999	23	Mobile Phone			Generator Engine	Instalasi buoy baru	Penggantian buoy	Underwater survey of buoys	Perbaikan buoy	AtoN maintenance	Transportasi supply yang dibutuhkan AtoN	Operasi selain untuk kepentingan AtoN										
Banjarmasin	KBP	I	KN Suar-003	Banjarmasin	1971	51	Mobile Phone			Generator Engine	Instalasi buoy baru	Penggantian buoy	Underwater survey of buoys	Perbaikan buoy	AtoN maintenance	Transportasi supply yang dibutuhkan AtoN	Operasi selain untuk kepentingan AtoN										
Banjarmasin	KBP	I	KN AE-032	Banjarmasin	1971	51	Mobile Phone			Generator Engine	Instalasi buoy baru	Penggantian buoy	Underwater survey of buoys	Perbaikan buoy	AtoN maintenance	Transportasi supply yang dibutuhkan AtoN	Operasi selain untuk kepentingan AtoN										
Tarakan	KIP	III	KN Maratua	Tarakan	2015	7	HF VHF Mobile Phone	1	30	Generator Engine	Perbaikan buoy	AtoN maintenance	Transportasi untuk pengisian mercusuar	Transportasi bahan bakar untuk generator	Penggantian battery	Operasi selain untuk kepentingan AtoN	Operasi selain untuk kepentingan AtoN			3	53	17					
Tarakan	KBP	III	KN Sarang Abee	Tarakan	2010	12	Mobile Phone	2	25	Generator Engine	Instalasi buoy baru	Penggantian buoy	Underwater survey of buoys	Perbaikan buoy	AtoN maintenance	Transportasi supply yang dibutuhkan AtoN	Operasi selain untuk kepentingan AtoN										
Samarinda	KIP	I	KN Mithuna	Samarinda	1974	48	HF VHF MF	1	30	Generator Engine	Instalasi buoy baru	Penggantian buoy	Underwater survey of buoys	Perbaikan buoy	AtoN maintenance	Transportasi supply yang dibutuhkan AtoN	Operasi selain untuk kepentingan AtoN			3	22	43	1				
Samarinda	KIP	I	KN Miang Besar	Samarinda	2017	5	HF VHF MF	1	25	Generator Engine	Perbaikan buoy	Penggantian buoy	Underwater survey of buoys	Perbaikan buoy	AtoN maintenance	Transportasi supply yang dibutuhkan AtoN	Operasi selain untuk kepentingan AtoN			3	47						
Samarinda	KIP	III	KN Suar-010	Samarinda	1976	46	HF VHF MF	1	25	Generator Engine	Instalasi buoy baru	Penggantian buoy	Underwater survey of buoys	Perbaikan buoy	AtoN maintenance	Transportasi supply yang dibutuhkan AtoN	Operasi selain untuk kepentingan AtoN			1	22	23					
Samarinda	KPP	III	KN Marapan	Samarinda	1998	24	HF VHF MF	1	30	Instalasi buoy baru	Penggantian buoy	Underwater survey of buoys	Perbaikan buoy	AtoN maintenance	Transportasi supply yang dibutuhkan AtoN	Operasi selain untuk kepentingan AtoN					1	21	17				
Makassar	KIP	I	KN De Brill	Makassar	2018	4	HF VHF MF	2	90	Commercial Power	Instalasi buoy baru	Penggantian buoy	AtoN maintenance	Transportasi untuk pengisian mercusuar	Transportasi bahan bakar untuk generator	Penggantian battery	Transportasi untuk inspektor maintenance AtoN	Transportation of supervisor maintenance AtoN			16	121	20				





Tabel 4.3.4 -2 : Kuesioner 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 menarknya ke atas kapal setahun sekali.	Pelatihan penyelamatan diri / Setahun sekali	Perbaikan 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 dia pernah ikut pelatihan pemadaman kebakaran untuk orang-orang muda.	Perawatan besar (docking) baik deck, mesin dan radio. Perawatan ABK yang memiliki sertifikat. Pengujian usulan penggantian kapal Negara Kelas I untuk mengganti kapal KN, Kumba, Pengantian dan Service alat keselamatan	Perawatan besar (docking) baik deck, mesin dan radio. Penambahan ABK yang memiliki sertifikat. Pengantian 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 sertifikat. Pengantian 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 / lilin baru dan pengantian kabel 3 phase	Mesin	Terjadi kebocoran oli pada turbo mesin induk	Mereka belum seluruhnya memiliki kualifikasi (pelayaran, mesin) dan dijadwalkan pensiun dalam satu tahun ke depan. Pendidikan teknis dan Pelatihan dipulukan untuk mendapatkan orang-orang muda untuk memenuhi syarat.	Kondisi kapal sudah tua. Banyak peralatan yang sudah tidak berfungsi dan sudah dibawahi air sudah tidak standart (keropos/lepis)	Perawatan rutin untuk bagian mesin	Top overhaul MI dan ME serta instalasi pipa. Penambahan ABK yang memiliki sertifikat. Pengantian dan Service alat-alat keselamatan dan alat navigasi. Pemeliharaan 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	Pengantian plat yang bocor	Kebocoran bottom	Terjadi kebocoran pada ME sehingga perlu pengantian plat	Mereka belum seluruhnya memiliki kualifikasi (pelayaran, mesin). Pendidikan teknis dan Pelatihan dipulukan untuk mendapatkan orang-orang muda untuk memenuhi syarat.	Perawatan rutin untuk bagian mesin	Perawatan rutin untuk bagian mesin	Top overhaul MI dan ME serta instalasi pipa. Penambahan ABK yang memiliki sertifikat. Pengantian dan Service alat-alat keselamatan dan alat navigasi. Pemeliharaan rutin untuk bagian mesin
Semarang	KBP	III	KN Sura 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 pengantian	Mereka belum seluruhnya memiliki kualifikasi (pelayaran, mesin). Pendidikan teknis dan Pelatihan dipulukan untuk mendapatkan orang-orang muda untuk memenuhi syarat.	Kondisi kapal sudah tua. Banyak peralatan yang sudah tidak berfungsi dan mengalami kerusakan sehingga dapat diulaskan plat kapal dibawah air sudah tidak standart (keropos/lepis)	Kapal KN, Sura II sudah tidak layak dan banyak peralatan yang mengalami kerusakan sehingga dapat diulaskan plat kapal dibawah air sudah tidak standart untuk dilakukan mekanisme penghapusan (scrapping)	
Benoa	KIP	I	KN MIZAN	Yes, Rambu suar (setiap 4 tahun). Pelempung suar (setiap 4 tahun)	Periksaan dengan menarknya 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 syarat.	Body kapal bergeter pada saat berlayar dengan mesin putaran penuh	perlu penambahan gading gading dan tiang penyangga pada ruangan kosong	
Benoa	KIP	I	KN NUSA PENIDA	Yes, Rambu suar (setiap 4 tahun). Pelempung suar (setiap 4 tahun)	Periksaan dengan menarknya ke atas kapal setahun sekali.	Pelatihan penyelamatan diri / Setahun sekali	Rollder 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 syarat.	Body kapal bergeter pada saat berlayar dengan mesin putaran penuh	perlu penambahan gading gading dan tiang penyangga pada ruangan kosong	
Sabang	KIP	I	KN Antares	Yes, Pelempung ringin (setiap 4 tahun)	Periksa dengan menarknya 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 pensiun dalam lima tahun ke depan. Pelatihan dipulukan untuk mendapatkan orang-orang muda untuk memenuhi syarat.	Body kapal bergeter pada saat berlayar dengan mesin putaran penuh	perlu penambahan gading gading dan tiang penyangga pada ruangan kosong	





Tabel 4.3.4 -2 : Kuesioner 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	Ketampilan teknis kru	Masalah lain	pendapat	Remark
Banjarmasin	KBP	I	KN/AE-032	Yes, Pelempung Ringan (4 tahun)	Pelatihan penyelamatan diri daurak / /Setahun sekali enam bulan	Pelatihan pemadaman kebakaran /Setahun 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 / /Setahun sekali enam bulan	Pelatihan pemadaman kebakaran /Setahun sekali	2016	Docking	Mesin	Getaran terjadi saat mesin diperasikan penuh		80 % mempunyai keterampilan, 20 % memerlukan pelatihan			
Tarakan	KBP	III	KN Sarung Aie	Yes, Rambu suar, Pelempung suar (tergantung situasi), Pelempung tanpa cahaya (tergantung)	Tidak ada	Tidak ada	Sistem Perahu 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 Mithuna	Yes, Pelempung suar (4 tahun), Pelempung tanpa cahaya (4 tahun)	Pelatihan penyelamatan diri daurak / /Setahun sekali	Tidak ada	Kerusakan ringan dan berat yang sering terjadi terdapat pada AC central dan generator	Pernah terjadi kerusakan pada sistem kromasi 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 /DPU/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 cat		1. Anggaran perawatan Kapal yang terbatas 2. Spare Part dan teknis 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 /Setahun sekali	1 s/d 2 tahun sekali	Mesin dan deck	Engine Room	Kebocoran air pendingin mesin		Perunya peningkatan kualifikasi jajah pelaut 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 / /Setahun sekali enam bulan	Pelatihan pemadaman kebakaran /Setahun sekali	Papan geladak diganti baru / Radir dan ECDIS /Penggantian GPS /Perbaikan cerobong gas buang /Pemasangan pompa air got / Fresh water cooler ME 1 dan 2	Penggantian papan geladak main deck /Service radar dan ECDIS /Penggantian baru GPS /Perbaikan cerobong gas buang ME/J /Pemasangan 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.	- Jendel kaca anjungan sudah lepas perekatnya - Upgrade ECDIS - Bow thuster tidak berfungsi - Radar Shand dan Xband tidak berfungsi dengan baik - Mesin langkur tidak berfungsi dengan baik	Agar mabkukan pemeliharaan dan perbaikan	

Tabel 4.3.4 -2 : Kuesioner 1-2 (No 5)

DISNAV	Jenis kapal	Kelas	Nama kapal	Pengantian selampung secara teratur	Kriteria pertukaran	Pelatihan penyelamatan diri daurak / Sehari setiap enam bulan	Pelatihan pemadaman kebakaran /Seharian sekali	Isi pelatihan pelaut /Fokusasi 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)							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)							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							Belum Pernah	Kondisi Teknis Kapal Menurun Karena tidak pernah dilakukan Docking	Pengawakan Kn. Buan belum sesuai dengan SK Dikonhab baik secara kualitas maupun kuantitas	Perlu pemeliharaan kapal/Docking	Perlu pemeliharaan Anggaran suku cadang, pemeliharaan kapal	
Anban	KIP	I	KN Alphard	Nothing							Garagem pada Mesin induk dan Turbo Charger	Kapal Tidak maksimal Beroperasi	Pengawakan Kn. Alphard belum sesuai dengan SK Dikonhab baik secara kualitas maupun kuantitas	Perlu pemeliharaan kapal/Docking	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 Meraoti	Nothing												No data entry
Merauke	KKP	III	KN Bimangur	Nothing												No data entry
Tual	KIP	I	KN Mahkota	Nothing							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	

Tabel 4.3.4 -3 : Agregasi Pengoperasian Kapal

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
				KIP	1	I	KN PRAJAPATI	7294.75	122.25	37
Semarang	II	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
		KPP	1	III	KN KARIMUN JAWA	8492.25	292.25	72	21	1640
Surabaya	I	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
		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
Kupang	II	KIP	1	I	KN NIPA					
		KBP	1	I	KN MINA					
Banjarmasin	II	KIP	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
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
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 8660.58	168.23 99.42	16 36	78 0	752.7 963.25
				KPP	1	III	KN AKELAMO			
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

Tabel 4.3.4 -4 : Agregasi Pengoperasian Kapal (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





Tabel 4.3.4 -5 : Kelompok usia awak kapal (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	0	0	0	0	No data entry
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	

Tabel 4.3.4 -5 : Kelompok usia awak kapal (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	16	No Remarks
50	Samarinda	KN Miang Besar	0	0	0	1	2	1	1	7	1	0	13	No Remarks
51	Samarinda	KN Suar-010	0	0	0	1	0	0	0	1	3	0	5	No Remarks
52	Samarinda	KN Marapan	0	0	0	0	0	1	1	1	0	0	3	No Remarks
53	Makassar	KN De Brill	0	0	0	2	8	5	2	3	0	0	20	No Remarks
54	Makassar	KN Mengkara	0	0	0	1	3	7	1	2	2	0	16	No Remarks
55	Makassar	KN B-129	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	No data entry
57	Kendari	KN Mayang	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	No data entry
59	Bitung	KN Miangas	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	No data entry
61	Bitung	KN Suar-009	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	16	No Remarks
63	Ambon	KN Alphard	0	0	0	0	2	2	12	1	0	0	17	No Remarks
64	Sorong	KN Pradawana	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	17	No Remarks
66	Sorong	KN Kofiau	0	1	0	0	1	2	1	4	1	0	10	No Remarks
67	Jayapura	KN Alcebaran	0	0	0	1	3	0	4	1	0	0	9	No Remarks
68	Jayapura	KN Bepondi	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	20	No Remarks
70	Merauke	KN Bintangur	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	22	No Remarks

Tabel 4.3.4 -6 : Penghapusan dan Pemindahan Kapal Navigasi

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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Tabel 4.3.4 -7 : Daftar Kapal Navigasi

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	KPP	2	III	KN MANTANG	2000	23				
			KPP	2	V	KN NONGSA	2014	9				
6	Dumai	I	KIP	2	I	KN PARI	1978	45				
			KIP	1	I	KN RUPAT	2017	6	2	3	10	3
7	Palembang	I	KPP	1	III	KN MARORE	2011	12				
			KIP	1	I	KN KALIAN	2017	6	4	89	39	
8	Pontianak	III	KBP	1	III	KN DAIK (D-044)	1953	70		32	23	
			KBP	1	I	KN ALNILAM	2008	15	2	3	10	3
9	Tg. Priok	I	KPP	1	III	KN MOKMER	1999	24				
			KPP	1	III	KN PENGIKI	2016	7	7		10	
10	Cilacap	III	KIP	2	I	KN KARAKATA	1972	51				
			KIP	2	I	KN EDAM	2017	6				
11	Semarang	II	KPP	2	III	KN MIAPLACIDUS	2008	15				
			KPP	2	III	KN ENGGANO	2016	7				
12	Surabaya	I	KIP	1	I	KN PRAJAPATI	1971	52			10	3
			KIP	1	I	KN KUMBA	1972	51	3	15	10	
13	Benoa	II	KBP	1	III	KN B-126	1961	62	2	10	8	
			KBP	1	I	KN KARIMUN JAWA	2016	7	2	10	8	
14	Kupang	II	KIP	2	I	KN BIMASAKTI UTAMA	2008	15				
			KIP	2	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 NIPA	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
			KBP	1	I	KN MARATUA	2017	6	3	53	17	
19	Kendari	III	KPP	1	III	KN SARANG ALOE	2010	13		11	12	1
			KIP	2	I	KN MITHUNA	1975	48	3	22	43	1
20	Bitung	I	KIP	1	I	KN MIANG BESAR	2017	6	3	47		
			KBP	1	III	KN SUAR-010	1975	48	1	22	23	
21	Ambon	I	KPP	1	III	KN MARAPAS	1999	24	1	21	17	
			KIP	1	I	KN DE BRILL	2017	6	16	121	20	
22	Sorong	III	KBP	2	I	KN MENGKARA	1996	27				
			KBP	1	I	KN B-120	1961	62				
23	Jayapura	II	KPP	1	III	KN AKELAMO	2012	11				
			KBP	2	I	KN MAYANG	1996	27				
24	Merauke	III	KPP	1	IV	KN ANDROMEDA	2017	6				
			KPP	1	IV	KN WANGI-WANGI		2023				
25	Tual	III	KIP	1	I	KN MIANGAS	2017	6	5	7	10	3
			KBP	2	I	KN MERAK	1996	27	5	7	10	3
26	Sub-Total		KIP	22								
			KBP	22								
27	Total		KPP	16								
				60								
									168	1,258	473	



Tabel 4.3.6 -2 : Rencana Pembangunan Kapal

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