

The system was created out of the need to meet the requirements and recommendations issued by

[illegible]



The Versatility of the System

The system is versatile and is capable of interacting with other systems of the Brazilian Navy, employing different communication technologies and protocols such as FTP, TCP/IP and Web-Server. Some of its multiple entries are listed below:

- 1- Travel information of the merchant ships;
- 2- Information on docking and undocking of the merchant ships (MOVMEC message), originated from the Captainies (Capitanias), Delegacies and Agencies of the Captainies;
- 3- Contact information of the ships and aircrafts of the Brazilian Navy (contact message) during Naval Patrol operations;
- 4- Contact information of the aircrafts of the Second Air Force, during Maritime Patrol operations;
- 5- Contact information of the Brazilian Navy ships and land points which have the AIS² equipment (AIS message);

6- Maritime traffic information of the navies of the CODEFTRAMI Plan³ (RAINFORM message);

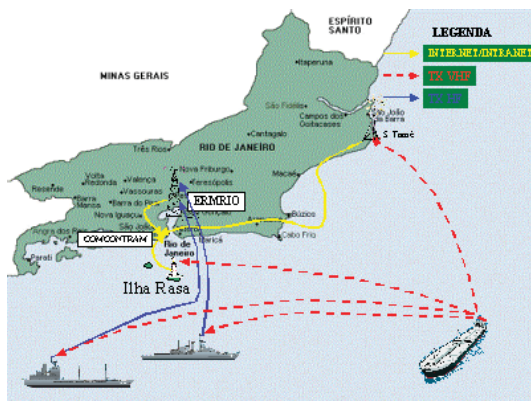
7- Information on the arrival and departure of merchant ships at the port of Rio de Janeiro, originated from the Port Entrance Control Post (PCEP); and

8- Information on the Maritime Monitoring System of Support to Oil Activities (SIMMAP⁴).

All information of movement of the merchant ships is stored in SISTRAM's high-capacity data bank, allowing different types of research and functionality, including the production of statistic reports.

Integration with the AIS Project

The AIS Project of the Brazilian Navy consists of the installation of "AIS kits", comprised of an AIS equipment, a high-frequency modem, a computer and a graphic software which processes the information received by the equipment, generating a file for transmission to



COMCONTRAM via e-mail through the intranet/internet, in the case of installations located at focal points distributed along the Brazilian coast, or through messages transmitted by HF via the Navy Radio Stations, in the case of Brazilian Navy ships patrolling at sea.

The great advantage of the AIS message compared to other system entries is that it allows for a more precise follow-up with a smaller update interval, which has increased the amount of information processed by

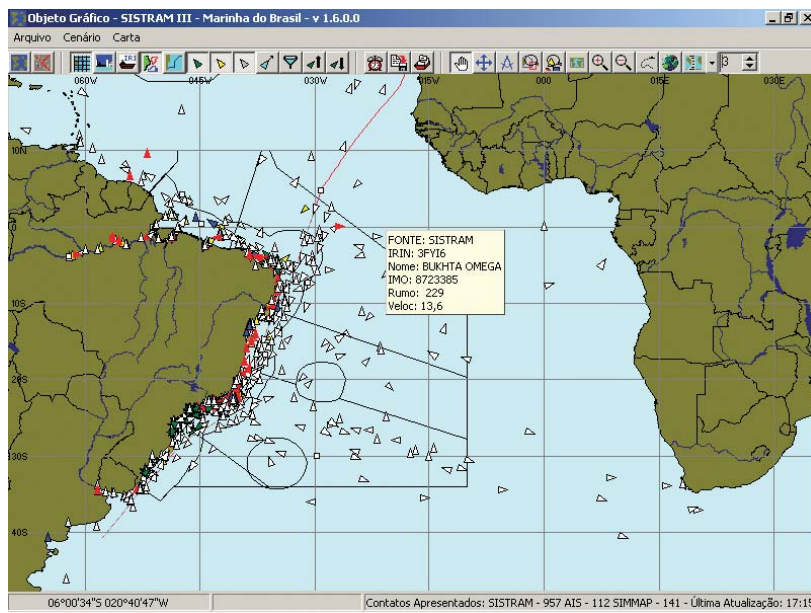
SISTRAM, contributing for the precision and reliability of its follow-ups.

Since it was integrated to the AIS Project of the Brazilian Navy, SISTRAM has carried out follow-ups of approximately 1,100 merchant ships a day and the tendency is to increase, as new AIS equipment are being installed on ships and also on new land posts in order to cover the entire Brazilian coastline.

Sistram Contributions

In addition to feeding the Naval Command and Control System (SISNC²) with information on the location of merchant ships, other contributions of SISTRAM can be mentioned:

- Maritime traffic forecast for support to SAR;
- Forecast of arrival of ships at ports;
- Traffic forecast in maritime areas;
- Maritime traffic forecast for the Second Air Force;
- Information on merchant ship movement to jurisdictional waters of countries which belong to the CODEFTRAMI Plan; and
- Information on merchant ship movement for federal agencies (National Waterway Transport Agency - ANTAQ and Federal Police Department - DPF).



MARINHA DO BRASIL
NAVAL COMMAND OF MARITIME TRAFFIC CONTROL

**MARITIME TRAFFIC INFORMATION
SYSTEM**



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1. INTRODUCTION

Signatory of International Convention for the Safety of Life at Sea and Maritime Search and Rescue, Brazil has committed to use the resources available to assist vessels (NM), of any nationality, in an emergency situation within the maritime area your responsibility, known as "Area SAR (Search and Rescue) Brazilian."

In this sense, Brazil's navy has an Information System for Maritime Traffic - SISTRAM, which uses electronic data processing and tracking of NM in this region, both in long-haul routes, either in coastal or inland waters. Monitoring systems of maritime traffic in the world, primarily aimed at providing the necessary support to ships in emergencies, known as SAR incidents and contribute to security, to combat the so-called "accident protection". The SISTRAM AMVER system is similar to the U.S. and other SAR systems in other countries, which aim to allow in the event of a SAR incident, the rapid location and activation of nearby vessels, able to assist and provide or direct, by the most expeditious means, medical assistance, as appropriate. It also allows the direct COMCONTRAM National Traffic and chartered merchant to avoid areas of risk to safety.

The greater the number of vessels System employees, most reliable and effective it becomes and contributes to increase the safety of life at sea and inland waters.

For this reason, all NM are invited to attend the SISTRAM. For NM Brazilian flag and chartered by Brazilian shipping such participation is mandatory, even when out of the Brazilian SAR area. This will allow the Navy of Brazil to support them in any region of the globe.

The merchant ships flying a foreign flag are invited to voluntarily join the SISTRAM, which can be done by sending their position and navigation data for the Naval Command Control of Maritime Traffic (COMCONTRAM). However, when traveling in the territorial sea or in inland waters in Brazil are required to adhere to SISTRAM. It is worth noting that despite the existence of other systems that allow automatic and independent entries of information relating to merchant traffic, such as the Maritime Monitoring System to Support Activities Petroleum (SIMMAP), System Monitoring and Identification of the Long Ships Distance (LRIT) and Automatic Identification System (AIS), the merchant ships are not exempt from fulfilling the procedures for accession to the SISTRAM.

2. PROCEDURES FOR THE ACCESSION SISTRAM

2.1 - Purpose of SISTRAM

Follow the movement of ships in SAR maritime area of responsibility in Brazil. For Brazilian flagged ships or chartered by a Brazilian company, the monitoring will be conducted across the globe. Monitoring is accomplished through standard navigation information, provided by the ship. The data provided may be used in SAR incident, both those in which the ship is involved and in those where their assistance is needed.

2.2 - Benefits of adherence to SISTRAM

- 1) - Rapid start of SAR operations.
- (2) - Appointment of NM that are near the position of a wrecked vessel, to provide assistance.
- (3) - Medical care or emergency medical advice for the NM that have no doctor.

2.3 - Area of Operation SISTRAM

The monitor SISTRAM NM SAR area of Brazil (Figure 1). Regarding the Brazilian flag ships or chartered by a Brazilian company, the monitoring will be conducted in any region of the planet.

2.4 - participation

The International Convention recommend that NM, any flag, participating in the system for their own safety. To join SISTRAM, MN should send your Trip Planner for each singradura within the coverage area of the SISTRAM even when on the move navigation. The Travel Plan should be transcribed in the form of messages from Type 1 to 4.

The routing information for these COMCONTRAM (see subsection 2.7) is governed by the Rules of the Maritime Authority for Traffic and Permanence of vessels in waters under national jurisdiction (NORMAN-08), as mentioned in paragraph g of section 3 of this newsletter, (Brazilian legislation).

2.5 - Types of Messages

TYPE 1 - Trip Planner

It is the basic information for starting up and estimate the vessel's position and may be sent at the time the ship SISTRAM adhere to, an action that should be performed when the ship suspended from a Brazilian port or, when proceeding from foreign ports, enter the Brazilian territorial sea. When the foreign ship to enter the Brazilian SAR area, immediately, you can join the system voluntarily. Recalls that the Brazilian flag ships must always adhere to SISTRAM, sending a message by e-mail TYPE1

NOTE

The Travel Plan should be sent as soon as possible, preferably before the suspend, or before the entry into the Brazilian SAR area. When sent before the suspend method can be done by mail or through the Office or Agency or the Port Authority closer.

TYPE 2 - Position Report

It is information that allows you to confirm if the ship suspended or that its position is consistent with the Trip Planner. Must be sent within 24 hours after the scheduled start of the message type singradura 1.

NOTE

A ship in bad weather or adverse conditions can send the instant message and position in the time that suits you best.

TYPE 3 – Change of route

Is the information necessary to make corrections along the planned route, when changing the port of destination, when deviate by more than 25 miles from the original route or there is another change that alters the Trip Planner.

TYPE 4 – Final Message

It contains information that participation in SISTRAM. Should be sent to an hour before the time set for entry into the port of destination or when leaving the Brazilian SAR area (Figure 1).

**FOR THE PREPARATION OF MESSAGES, VIEW
EXAMPLES OF MESSAGES (page 6 and 7)**

2.6 – how to Participate

Participation in the system when the ship starts to send your Trip Planner (message type 1) and ends when you submit your Final Message (Type 4).

NOTE:

Any ship which is within the area of monitoring, without yet having joined the SISTRAM, you can do it anytime, just send your Trip Planner (message type 1), from the position in which

the decision is taken. If, otherwise, is already participating in the system and want to terminate your membership, simply end the Final Message (Type 4), completing the line X - Comments by the information it is ending its participation.

2.7 – Sending messages SISTRAM

Messages for SISTRAM should be addressed to the Naval Command Control of Maritime Traffic - COMCONTRAM, Organ Navy based in Brazil Rio de Janeiro.

They may also be transmitted by facsimile, telephone or through the Stations of RENEC (listed in Table 1), at any time.

For more details get in touch with:

Naval Command Control of Maritime Traffic
Building Almirante Tamandaré - 6th floor of the Square barão de Ladário, s / n, Centro
Rio de Janeiro - RJ - Brazil CEP: 20091-000
Tel. (55-21) 2104-6353 / 6337 FAX: (55-21) 2104-6341
- Home Page - <http://www.comcontram.mar.mil.br>



FIGURE 1 - THE SAR AREA FROM BRAZIL / AREA MONITORING BY SISTRAM

2.8 - Transmission Formats

Trip Planner - (Message Type 1)

Sailing Plan					NOTES
Required data items					
System Name	Type of Message	Date-Time-Month-Year Transmission			
SISTRAM /	1 /	Z//			(1)
Intl Radio Call Sign	Ship's Name	Flag	Type		(2)
A /	/	/	/	//	
Date-Time of Departure					(1)
B /	Z//				
Port of Departure		Latitude (φ)	Longitude (λ)		(3)
G /	/	/	/	//	
Port of Destination		Latitude (φ)	Longitude (λ)	ETA	
I /	/	/	/	Z//	(4)
Latitude (φ)		Longitude (λ)	Route Information	ETA	
L /	/	/	/	Z//	
L /	/	/	/	Z//	
L /	/	/	/	Z//	
L /	/	/	/	Z//	
L /	/	/	/	Z//	
On Board Medical Resources					(5)
V /	//				
Current Coastal Radio Station		Optional Data	Items		(6)
M /	/	//			
Comments - up to 65 characters					(7)
X /	//				
Comments					(7)
Y /	//				

Position Report - (Message Type 2)

Position Report					NOTES
Required Data Items					
System Name	Type of Message	Date-Time-Month-Year Transmission			
SISTRAM /	2 /	Z//			(1)
Intl RadioCall Sign	Ship's Name	Flag	Type		(2)
A /	/	/	/	//	
Date-Time of Position					(1)
B /	Z//				
Latitude (φ)		Longitude (λ)			(3)
C /	/	/	/	//	
Current Course		Optional Data	Items		(6)
E /	//				
Estimated Average Speed					
F /	//				
Current Coastal Radio Station		Next Coastal Radio Station			
M /	/	//			
Comments - up to 65 characters					(7)
X /	//				
Comments					(7)
Y /	//				

Deviation Report - (Message Type 3)

Deviation Report			
Required Data Items			
System Name	Type of Message	Date-Time-Month-Year Transmission	
SISTRAM /	3 /	Z//	
Intl Radio Call Sign	Ship's Name	Flag	Type
A /	/	/	//
Deviation Course Data Items			
Port of Destination	Latitude (φ)	Longitude (λ)	ETA
I /	/	/	Z//
Route Information			
Latitude (φ)	Longitude (λ)	ETA	
L /	/	Z//	
L /	/	Z//	
L /	/	Z//	
Optional Data Items			
Current Coastal Radio Station	Next Coastal Radio Station		
M /	//		
Comments - up to 65 characters			
X /	//		
Comments			
Y /	//		

NOTES

(1)

(2)

(8)

(4)

(6)

(7)

(7)

Final Report - (Message Type 4)

Final Report			
Required Data Items			
System Name	Type of Message	Date-Time-Month-Year Transmission	
SISTRAM /	4 /	Z//	
Intl Radio Call Sign	Ship's Name	Flag	Type
A /	/	/	//
Arrival Port or Exit Point	Latitude (φ)	Longitude (λ)	ETA
K /	/	/	Z//
Optional Data Items			
Comments - up to 65 characters			
X /	//		
Comments			
Y /	//		

NOTES

(1)

(2)

(3)

(7)

(7)

NOTES:

(1) Date-Time Group

Must be expressed in groups of six digits, with the first two digits are the day of the month, and the following four hours and minutes. The date-time group to use Greenwich Mean Time (GMT), followed by "Z".

Example: 201200Z-->1200 horas do dia 20 (HMG).

Fill in the date-time group must be added the month, represented by the three initial letters, and the year, represented the last two digits.

Example: 201200Z MAR 07.

(5) Type of Ship

TM - General Cargo; BMT - Tank; TMB - Grain; TMF - Ferry; TU - Fishing; TMT - Tug; TMC - Container; TME - RO-RO; TMM - Research; PLAT - Platform; TMGB - break - ice ; TMK - submarine cables; TMH - Crane; TMOS - Special Liquids; FPSO - Ship Platform; OTR - Other.

(6) Latitude and Longitude

The Latitude is expressed in groups of four digits, consisting of degrees and minutes, and suffixed with "N" for north or "S" for south.

Longitude is expressed in groups of 5 digits, consisting of degrees and minutes, and suffixed with "E" for East or "W" for west.

Example: 1830S para lat. 18°30'S, e 03815W para long. 038° 15' W.

(7) Route Information

Information from the planned route, the line L, is expressed between the points of turn, at least three points.

A ship to enter the SAR area, should express L in the first line of the message type to a lat / long from that point and time of entry date.

For message Deviation (type 3) in the first line L are given data point or the first turn point observed confirming the removal (greater than 25 miles) from the planned route.

(8) Medical Resources Board

Select as appropriate from the following: MD - Physician, PA - Physician's assistant or supervisor health nurse - nurse; None - No.

(9) Optional Data

These data are useful but not required. In the message type 2, the current direction is expressed in the E line, in groups of three digits, and the estimated average speed line F, in groups of three digits, in us and tenths of knots.

Example:

E/234// to direction 234°

F/153// to speed of 15.3 Knots

(10) Lines X and Y (Comments)

Completing optional.

They are usually included in the X reference data useful for SISTRAM, as the estimated date-time of the next transmission, the type of load, the number and INMARSAT EPIRB etc.

The line Y can be used for any communication at the discretion of NM.

(11) Items of Deviation Course

I change the line specifies the destination port, the message type 3.

Example:

I / SALVADOR / 1258S / 03831W / 051800Z / / in case of port to be changed to SALVADOR.

3. BRAZILIAN LEGISLATION

The instructions listed above are in accordance with the laws and decrees presented below:

a) Legislative Decree No 11 of 16 April 1980. Published in the Official Gazette of April 18, 1980, section I, p.6730, approves the text of the International Convention for the Safety of Life at Sea (SOLAS 74), concluded in London on 1st November 1974.

b) Legislative Decree no 34 of May 21, 1982. Published in the Official Gazette of May 26, 1982, section I, p. 9529, approving the text of the International Convention on Maritime Search and Rescue (SAR-79 IMO) concluded at Hamburg on 17 April 1979.

c) Act in 8617, to January 4, 1993. Published in the Official Gazette of January 5, 1993, section I, p. 057 and 058, available on the Territorial Sea, Exclusive Economic Zone and Continental Shelf Brazilian, and other measures.

d) Law No. 9537 of December 11, 1997, provides for the safety of waterway traffic in waters under national jurisdiction (East).

e) Decree No. 2596 of May 18, 1998, approves the Regulation of the Law of Maritime Traffic Safety in waters Under national jurisdiction.

f) Ministerial Decree No. 67, March 18 1998.

Brazilian Maritime Authority delegates responsibility for implementing the Law on Maritime Traffic Safety by the Commanders of Naval Districts, Corps Commanders, Director of Ports and Coasts and Directorate of Hydrography and Navigation.

g) Standards Authority for Maritime Traffic and Permanence of vessels in waters under national jurisdiction, (NORMAN-08), available at the site of the Diretoria de Portos e Costas (DPC): www.dpc.mar.mil.br

Importantly, according to the document mentioned in paragraph g above, all Brazilians and NM chartered by Brazilian shipping, long distance and cabotage (sailing anywhere on the planet) and foreign-flagged sailing NM Brazilian territorial sea (12M) shall report position, course, speed, origin, destination and ETA. The foreigners who joined the NM SISTRAM, and have informed the points of defeat within 12M on the message type 1, need not do it again to enter the Brazilian territorial sea..

EXAMPLE OF MESSAGE:

EXAMPLE 1

The ship KNFG / SEA WOLF, departs Santos (23° 56' S / 046° 19' W) at 0900 hours (GMT), on March 1, bound for New York (40° 42' N / 074° 01' W). Estimated exit from Brazilian SAR area (10° 00' N / 044°

02' W) at 1340 hours (GMT) on March 8, and arrived in New York at 1410 hours (GMT) on March 14.



Note - Point **P** represents the ship's location in the Position Report (Type 2 message) sent within the first 24 hours after departure from a Brazilian port, and the **L** points represent ship's intended track.

(1) Departed from Santos to point **L1** (23° 46' S / 039° 45' W) at an average speed of 15 knots with an estimated arrival at point **L1** of 0900 hours (GMT) on March 2.

(2) The ship will head from point **L1** to point **L2** (05° 24' S / 031° 55' W) at an average speed of 15 knots with an estimated arrival at point **L2** 1630 hours (GMT) on March 5.

(3) At point **L2**, the ship will turn to course 322° with average speed of 17 kts. The estimated arrival time at point **L3** (10° 00' N / 044° 02' W) is 1340 hours (GMT) on March 8. This will mark the departure of the ship from the Brazilian SAR area.

EXAMPLE 2

American ship KNFG / SEA WOLF departs from CAPE TOWN (33° 58' S / 018° 36' E) bound for SALVADOR (12° 58' S / 038° 31' W) at 0900 hours (GMT) on March 1. Estimated entry into the Brazilian SAR area is at point L1 (26° 00' S / 010° 00' W) at 1700 hours (GMT) on March 5. Estimated arrival time in SALVADOR is 1630 hours (GMT) on March 10. At 0900 hours (GMT) on March 7, at position L'1 (21° 40' S /

019° 47' W), the ship needs to change destination to the port of VITÓRIA (20° 20' S / 040° 19' W). The estimated arrival at VITÓRIA is 1400 hours (GMT) on March 10.

PLANO DE VIAGEM



Note - The points on the routes above represent the following situation:

L1 - 26° 00'S / 010° 00'W at 1700 hours (GMT) on March 5 - entered on SAR area;
L2 - 22° 30'S / 017° 50'W at 0100 hours (GMT) on March 7 - estimated position in the Sailing Plan;
L3 - 19° 37'S / 024° 44'W at 0510 hours (GMT) on March 8 - estimated position in the Sailing Plan;

L'1 - 21° 40'S / 019° 47'W at 0900 hours (GMT) on March 7 - position where the course changed;
L'2 - 21° 12'S / 027° 02'W at 1200 hours (GMT) on March 8 - estimated position in the Deviation Report;
L'3 - 20° 47'S / 033° 27'W at 1200 hours (GMT) on March 09 - estimated position in the Deviatin Report.

TABLE 1

National Network Coastal Radio Stations from Embratel - RENEK

STATION NAME	CALL SIGN	WATCH FREQUENCIES	REMARKS	REMOTE STATIONS	CALL SIGN
RIO RÁDIO LAT: 22°57' 53" S LONG: 043° 40'23" W TEL: 08007012141	PPR	500 KHz 2;4;8;12;16;22;25 MHz 156 A 174 MHz	VOICE, MORSE AND RTLX	MANAUS RÁDIO	PPM
				ITACOATIARA RÁDIO	PTM
				PARINTINS RÁDIO	PRM
				BELÉM RÁDIO	PPL
				MACAPÁ RÁDIO	PTL
				BREVES RÁDIO	PRL
				S. LUIS RÁDIO	PPB
				SANTARÉM RÁDIO	PPT
				ALMERIM RÁDIO	PTT
				OLINDA RÁDIO	PPO
				F. DE NORONHA RÁDIO	PTO
				ARACAJÚ RÁDIO	PTA
				ILHÉUS RÁDIO	PPI
				SALVADOR RÁDIO	PPA
				SÃO MATEUS RÁDIO	PVR
				RIO NOVO SUL RÁDIO	PRI
				T. DE FREITAS RÁDIO	PTI
				CAVALINHO RÁDIO	PPE
				FORTALEZA RÁDIO	PPF
				VITÓRIA RÁDIO	PPV
				NATAL RÁDIO	PPN
				MOSSORÓ RÁDIO	PRQ
				MACEIÓ RÁDIO	PRO
				ARACATI RÁDIO	PTF
				CABEDELLO RÁDIO	PTN
				PORTO ALEGRE RÁDIO	PPP
				PARANAGUÁ RÁDIO	PPG
				MORRO REUTER RÁDIO	PRP
				OSÓRIO RÁDIO	PTP
				CAMPOS RÁDIO	PTV
				A. DOS REIS RÁDIO	PTR
				C. DE ABREU RÁDIO	PRR
				SANTOS RÁDIOS.	PPS
				SEBASTIÃO RÁDIO	PTS
				ITAJÁI RÁDIO	PPC
				JOINVILLE RÁDIO	PRD
				FLORIANÓPOLIS RÁDIO	PTC
				LAGUNA RÁDIO	PRC
				JUNÇÃO RÁDIO	PPJ