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WORLD MARITIME UNIVERSITY
Malmö, Sweden

**EXAMINING THE IMPLEMENTATION OF
THE IMO'S SEARCH AND RESCUE (SAR)
CONVENTION IN LIBERIA**

prospects and challenges

By
JOHN EMMETT QUAWAH
The Republic of Liberia

A dissertation submitted to the World Maritime University in partial
fulfilment of the requirements for the reward of the degree of

MASTER OF SCIENCE
In
MARITIME AFFAIRS
(MARITIME LAW AND POLICY)

2020

DECLARATION

I certify that the material in this dissertation that is not my own work has been identified and that no material is included for which has been previously conferred on me.

The contents of this dissertation reflect my own personnel views, and are not necessarily endorsed by the University.

Signature:

Date:

22 September 2020

Supervised by:

Associate Professor, Henning Jessen

Supervisor's affiliation

Maritime Law and Policy Specialization

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With immeasurable pleasure and enormous gratitude, I take this special time to convey my thanks and appreciation to my Supervisor, Associate Professor, Dr. Henning Jessen, for his valuable contribution to the success of my research.

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John Emmett Quawah

September 22, 2020

ABSTRACT

Title of Dissertation: **Examining the Implementation of the IMO's Search and Rescue Convention in Liberia: Prospect and Challenges**

Degree: Master of Science in Maritime Affairs

This dissertation is an examination of the implementation of the SAR Convention by the Liberia Maritime Administration given its stated objective. The 1979 SAR Convention was adopted at a conference in Hamburg with the aimed at developing an international SAR plan to coordinate the rescue of persons in distress at sea, regardless of the scene of an accident, by a SAR organization and, where appropriate, through cooperation between neighbouring SAR organizations. The Republic of Liberia is a ratifying member of the 1979 SAR Convention and, in accordance with its international obligations, established the national legal framework for hosting one of the Five Regional MRCCs, which was enacted in 2008.

The Liberia Maritime Authority is the competent Authority that administered the Maritime SAR Program in Liberia, through its Department of Monitoring, Surveillance, and Rescue, within the Division of Maritime Safety of the Authority. The Center covers the whole region encompassing the territorial waters of Liberia and its Four neighbouring countries as of the signing of the November 2007 Multilateral Agreement between the respective Governments of Cote d'Ivoire, Ghana, Guinea, Liberia, and Sierra Leone.

The dissertation examined the implementation of the SAR Convention by the Liberian Maritime Administration in terms of prospects and challenges. The general overview of the SAR and the role of the IMO in promoting maritime safety, a review of Liberia's history, and maritime programme; the study is divided into five chapters, which identified issues related to the research topic with several recommended suggestions for management's appropriate actions.

KEYWORDS: Search and Rescue (SAR), Liberia, Administration, Implementation, Co-ordination

TABLE OF CONTENTS

CONTENTS

DECLARATION.....	ii
ACKNOWLEDGEMENTS	iii
ABSTRACT	iv
TABLE OF CONTENTS	v
LIST OF TABLES	vii
LIST OF FIGURES	viii
LIST OF ABBREVIATIONS	ix
Chapter One.....	1
INTRODUCTION	1
1.1. Legal Framework	2
1.2. Background of Liberia’s Maritime Profile	4
1.3. Transportation	5
Chapter Two	7
THE HISTORICAL DEVELOPMENT OF THE INTERNATIONAL SEARCH AND RESCUE CONVENTION	7
2.1. Background	7
2.2. Rules of International Law	10
2.3. The United Nations Convention on the Law of the Sea 1982 (UNCLOS)	11
2.4. International Convention on Maritime Search and Rescue (SAR) 1979.....	12
2.5. Review of SAR Convention:	13
2.6. The 1998 Amendments:.....	14
2.6.1. The International Aeronautical and Maritime SAR (IAMSAR) Manual	15
2.6.2. The 2004 Amendments:	15
2.6.3. Amendments to SOLAS	16
2.6.4. Additional Amendments to SAR	16
2.6.5. Search and Rescue Communications	17
2.6.6. GMDSS Transformations	18
2.6.7. Distress Signals.....	20
2.6.8. GMDSS Operational Areas.....	21
2.6.9. AMSAR General Concept for SAR Services	23
SEARCH AND RESCUE IMPLEMENTATION IN LIBERIA	25
GENERAL BACKGROUND	25
3.2. Liberia Maritime Authority Mandate and Structure	26

3.3. International Obligations	28
Search and Rescue Co-ordination Centre	28
3.3.1. Minimum Requirements for SAR- RCC	29
3.4. SAR Regional Framework	30
3.4.1. Parties Areas of Co-operation.....	30
3.4.2. Financial Agreements (Regional)	31
3.4.3. Regional SAR Coordinating Committee.....	32
3.5. Institutional Framework.....	33
3.6. National Search and Rescue Committee (NSARC).....	33
3.6.1. SAR Stakeholders Responsibilities.....	34
3.6.2. The On-Scene Coordinator (OSC)	37
3.6.3. National SAR Plan General Terms	38
3.6.4. Funding Support and Resources	38
3.6.5. Reception for Survivors.....	38
3.6.6. Identification of Survivors	39
3.6.7. Authorization Procedure for Assistance	39
3.6.8. SAR operations in Coastal Waters.....	40
3.7. Voluntary and Commercial SAR Organizations.....	40
3.7.1. Private First Responder	40
3.7.2. Charging for SAR Services	41
3.7.3. SAR Coordinators.....	41
3.7. 4. SAR Training	42
3.8. SAR Region of Responsibility	43
3.9. SAR Assets	45
3.10. Comparison of Monrovia, MRCC, and Lagos, RMRCC	47
Chapter Four	49
PROSPECTS AND CHALLENGES OF THE IMPLEMENTATION OF SAR	
CONVENTION BY LIBERIAN MARITIME ADMINISTRATION.....	49
Chapter Five.....	55
CONCLUSION AND RECOMMENDATIONS.....	55
RECOMMENDATIONS	58
Reference List	61
Appendices	67
Appendix 1- WMU Research Ethics Committee Protocol.....	67
Appendix 2 – Interview Questions	68
Appendix 3 - SAR Regional Multilateral Agreement (cover and signature pp.)....	69

LIST OF TABLES

Table 1: GMDSS Development	19
Table 2: Amendments to the SAR Convention	21
Table 3: Minimum Requirement for SAR – RCC	29
Table 4: Maritime SAR Region (Liberia SRR)	43
Table 5: SAR Incidents Report (2017-2018)	45

LIST OF FIGURES

Figure 1: The Republic of Liberia Map	6
Figure 2: Iridium Satellite Constellation	20
Figure 3: GMDSS Operational Areas	22
Figure 4: LiMA Organizational Structure	27
Figure 5: Liberia SAR Region	44
Figure 6: Gulf of Guinea Maritime Security and Information Sharing Architecture	46
Figure 7: SAR Implementation Coastal Radio Station	46
Figure 8: Nigeria Maritime Agency Organogram	48

LIST OF ABBREVIATIONS

ACC	Area Control Center
ACO	Aircraft Coordinator
AES	Area Control Center
AIS	Aeronautical Information Services
AMSS	Aeronautical mobile satellite service
AMVER	Automated Mutual Assistance Vessel Rescue System
ARCC	Aeronautical Rescue Coordination Center
ARSC	Aeronautical Rescue Sub-center
ATC	Air Traffic Control
CES	Costal Earth Station
COSPAS-SARSAT	Space System for Search of Distress Vessel, Search and Rescue Satellite aided Tracking
CRS	Coastal Radio Station
DSC	Digital Selective Calling
DVIU	Disaster Victim Identification Unit
EGC	Enhance Group Calling
EPIRB	Emergency Position Indicating Radio Beacon
FIC	Flight Information Center
FIR	Flight Information Region
FM	Frequency Modulation
GES	Ground Earth Station
GHz	Gigahertz
GMDSS	Global Maritime Distress and Safety System
GNSS	Global Navigation Satellite Systems

GPS	Global Positioning System
HF	High Frequency
IAMSAR	International Aeronautical and Maritime Search and Rescue Manual
ICAO	International Civil Aviation Organization
IHO	International Hydrographic Organization
IMO	International Maritime Organization
IMSO	International Mobile Satellite Organization
IMOSAR	IMO Search and Rescue Manual
Inmarsat	Satellite Communication Service Provider for the GMDSS
INS	Inertial Navigation System
ITU	International Telecommunication Union
JRCC	Joint (Aeronautical and Maritime Rescue Co-ordination Centre
LES	Land Earth Station
LiMA	Liberia Maritime Authority
MCC	Mission Control Center
MERSAR	Merchant Ship Search and Rescue Manual
MF	Medium Frequency
MMSI	Maritime Mobile Service Identity
MRCC	Maritime Rescue Co-ordinating Center
MRMRCC	Monrovia Regional Maritime Rescue Coordination Center
MRO	Maritime Rescue Operation
MRSC	Maritime Rescue Sub-Center
MSC	Maritime Safety Committee
MSC	Maritime Surveillance Center
MSI	Maritime Safety Information
MSRR	Maritime Search and Rescue Region

NAVTEX	Telegraph System for Transmission of Maritime Safety Information, navigational text messages
NSARC	National SAR Committee
OSC	On-Scene Commander
PLB	Personal Locator Beacon
RCC	Rescue Co-ordinating Center
RSC	Rescue Sub-Center
SAR	International Convention on Search and Rescue (SAR) of 1979
SC	Search and Rescue Coordinator
SCC	SAR Co-ordinating Committee
SDP	SAR data provider
SES	Ship Earth Station
SART	Search and Rescue Transponder
Sarsat	Search and Rescue Satellite –Aided Tracking
SOLAS	International Convention on Safety of Life at Sea
SMC	SAR Mission Coordinator
SPOC	SAR Point of Contact
SRR	Search and Rescue Region
SRS	Search and Rescue sub-region
SRU	Search and Rescue Unit
UHF	Ultra High Frequency
UNCLOS	United Nations Convention on the Law of the Sea
UNHCR	United Nations High Commission for Refugees
VHF	Very High Frequency
VOR	VHF Omnidirectional Radio Range
WMO	World Meteorological Organization

Chapter One

INTRODUCTION

The objective of this Dissertation is to examine the implementation of the IMO Search and Rescue (SAR) Convention in Liberia, in accordance with best practices;

- To assess the Search and Rescue program outcomes as compared to stated objectives;
- To assess the challenges for Liberia in implementing the SAR Convention and proffer appropriate recommendations to the Liberia Maritime Authority.

In achieving the specified objective of this research, the following questions are addressed:

1. Why does Liberia need the Search and Rescue Coordination Center?
2. What are the current challenges the Authority is faced with for the implementation of the SAR Convention?
3. What are the impediments to efficient information sharing with Regional SAR Authority?

Methodology

In meeting the goal of this dissertation, the research is carried out using the qualitative research methodology, which provides a descriptive analysis of information collected from the combination of primary and secondary sources. The qualitative research method seeks to provide an understanding of human experience, perceptions, motivations, intentions in different contexts, and behaviors which is also based on the exploratory, description, and observation. This interview method remains one of the best methodological approaches for sufficient and solid findings (Berg, B. L, 2001). Descriptive research is usually concerned with describing a situation concerning important variables, Berg, B. L. (1998). The research uses the questionnaires and interviews carried out with five (5) chosen participants from the Liberia Maritime

Authority (LiMA) and maritime stakeholders for its Primary data collection. The selection of these participants is based on their professional experience in the Maritime Sector. While the secondary data collection tools used include a literature review of relevant IMO instruments, the World Maritime University Library, Online sources, other research, and lecture materials allied with the topic under review, were utilized.

The rules and procedures of the World Maritime University (WMU) Research Ethics Committee are fully followed. The limitation of this research is that some resource documents were difficult to obtain for analysis due to the current geographical location coupled with the Covid-19 Pandemic. In achieving the goal of the research, the dissertation is divided into five 5 chapters, as described below:

Chapter 1 contains the introduction, background, limitation, research methods, objective, and general content;

Chapter 2, the Historical Development of the International Maritime Rescue Convention. The general overview of the SAR and the role of the IMO in promoting maritime safety, the history of Liberia and its maritime programme;

Chapter 3 highlights the general background and implementation of the Search and Rescue Convention in Liberia;

Chapter 4 discusses the challenges and prospects of implementation of the SAR Convention by the Liberian Government;

Chapter 5 contains the conclusion and recommendations on the implementation of the search and rescue programme.

1.1. Legal Framework

The Maritime Rescue Coordination Centers (MRCCs) were originally intended to assist in rescue operations in the event of accidents, but due to the increased threat of piracy, the International Maritime Organization (IMO) agreed on measures that would facilitate the use of MRCCs to promote safety. At its 72nd session, the Maritime Safety Committee approved the measure that would allow governments to give their MRCCs powers to

respond to acts of violence against ships. Governments were called upon to establish MRCCs and mechanisms to deal with safety issues and acts of violence against ships that may occur suddenly and anywhere (Resolution A.919(22)).

The Government of Liberia, in compliance, created the national legal basis for hosting one of the five regional MRCCs when it enacted 'the National Maritime Search and Rescue Law in 2008. On 23 April 2009, the Monrovia Regional Maritime Rescue Coordination Center (MRMRCC-Monrovia) became the fourth Regional Center in West Africa to be inaugurated by Honorable Efthimios E. Mitropoulos, IMO Secretary-General Emeritus (former), following RMRCC-Mombasa (in 2006), RMRCC-Cape Town (2007), and RMRCC-Lagos (2008).

The Liberia Maritime Authority, through its Department of Monitoring, Surveillance & Rescue (DMSR) within the Division of Maritime Safety, is the national responsible authority for maritime SAR and Surveillance activities. RMRCC-Monrovia, the heart of DMSR's operations, covers the whole region encompassing the territorial waters of Liberia and its four neighboring countries as of the signing of the November 2007 Multilateral Agreement between the respective governments of Cote d'Ivoire, Ghana, Guinea, Liberia, and Sierra Leone. This fills a sizable coverage gap in the middle Atlantic Ocean, an area in which many ships of all nations regularly transits, thereby giving the center a vital part to play in the larger scheme of providing effective Search and Rescue coverage on the West Coast of Africa. Liberia is also a signatory to other instruments that seek a regional approach to fighting piracy, armed robbery, and all maritime crimes in the region, including the Yaounde Code of Conduct, signed by 25 west and central African states in 2013 (IMO resolution A.1025(26)).

In light of the obligations the States accepted under the IMO for the provision of SAR functions within Liberia and its neighboring States (RLM-107-Series-2018), this research, therefore, examines the implementation of the Maritime SAR in Liberia and

made needed recommendations to policymakers, maritime practitioners, who may have an interest or desire to improve the Maritime Program.

1.2. Background of Liberia's Maritime Profile

The Liberian Maritime Program was established in 1948 with strong support from the United States of America. In 1949, Liberia became a founding member of the IMO and has over the years played a significant role in promulgating maritime safety, security, and environmental protection. Formerly, the Bureau of Maritime Affairs (BMA) administered the program under the supervision of the Ministry of Finance and later the Ministry of Transport. With the passage of the Liberia Maritime Authority Act of 2010, the BMA then transitioned into the Liberian Maritime Authority (LiMA); a public corporation with greater responsibility for managing all commercial activities within the maritime domain of Liberia. The rationale for this transition was to diversify the Authority's activities from its long-standing focus of being a nation with a leading maritime shipping and corporate registry program, to a nation that strategically focuses on building and, or supporting enterprises across the domestic maritime domain for greater economic and social benefits to the Nation and its People (LiMA Act, 2010).

Its activities are governed by the Liberia Maritime Laws [Title 21 of the Liberian Code of Laws revised], with a mandate to regulate all foreign and domestic waterborne commerce, enforce maritime treaties, including Safety of Life at Sea (SOLAS); Prevention of Pollution from Ships (MARPOL); the Standards for Training, Certification, and Watchkeeping for Seafarers (STCW) and the Maritime Labour Convention, MLC.

In total, Liberia comprises 110,000 square kilometres (43,000 sq mi) of which 96,300 square kilometres (37,190 sq mi) is land and 15,000 square kilometres (5,810 sq mi) is water. Liberia extends from between 4.21°N and 8.34°N to 7.27°W and 11.31°W. It is roughly rectangular measuring about 510 km (317 mi) in length from northwest to southeast, with a width of about 275 km (171 mi). The coastline is about 680 km

(423 mi), including river mouths and inlets up to one kilometre wide. The Liberian coast is heavily occupied with fishing and coastal trade.

Drainage of the whole country is direct to the sea, with a series of short rivers flowing directly into the sea. These are, from west to east, the Mano River on the border with Sierra Leone, the Mafa River, the Lofa River, the Saint Paul River, the Mesurado River, the Farmington River, the Saint John River, the Timbo River, the Cestos River, the Sehnkwehn River, the Sinoe River, the Dugbe River, the Dubo River, the Grand Cess River and the Cavalla River on the border with Ivory Coast. The total length of Liberia's land borders is 1,587 kilometres (986 mi): 310 kilometres (190 mi) with Sierra Leone on the northwest, 560 kilometres (350 mi) with Guinea to the north, and 716 kilometres (445 mi) with Ivory Coast. Liberia claims an Exclusive Economic Zone of 249,734 km² (96,423 sq mi) and 200 nmi (370 km; 230 mi).

In the west, the coast is low and sandy, but in the central and eastern parts of the country, it is sandy and rocky and of moderate relief, frequently broken by the mouths of the rivers. The coastal plain varies in width, being narrow between Monrovia and Buchanan, but being much wider in the west and the Cestos Valley in the centre, narrowing again in the eastern end of the country (Liberia country profile, 2019a).

1.3. Transportation

Only a small percentage of Liberian roads are paved. Primary roads connect administrative and economic centers and provide access to the road systems of neighbouring countries. Monrovia is the principal commercial port, and it also has facilities for transshipping iron ore and liquid latex. Nimba Range iron ore is shipped from Buchanan, while the ports at Greenville and Harper are used primarily for the shipment of rubber and forest products. All ports are administered by the National Port Authority of Liberia. Liberia has two major airports, Roberts field International Airport, and James Spriggs Payne Airport, both near Monrovia. More than 100 airfields and airstrips around the country's interior (Source: Liberia-Country profile, 2019b).

Figure 1: Republic of Liberia Map



Source: britannica.com/place/Liberia.

Chapter Two

THE HISTORICAL DEVELOPMENT OF THE INTERNATIONAL SEARCH AND RESCUE CONVENTION

2.1. Background

In 1914, two years after the Titanic incident, one of the most remarkable maritime disasters, Maritime nations gathered to develop the first international shipping safety Convention. The Convention focus was not only on the prevention of ship accidents but also on improving the chances of survival in the case of accidents. The conference resulted in the adoption of the International Convention for the Safety of Life at Sea (SOLAS), which prompted the provision of life-saving equipment and safety of navigation (Focus on IMO, 1999). As accident prevention became one of the major goals of the organization, IMO concentrated its effort on developing a globally integrated safety system to respond to shipping emergencies with the efficient communication support needed, which led to the creation of these International Convention on Maritime Search and Rescue (SAR) and the Global Maritime Distress and Safety System (IMO, 1979a).

Despite these measures, the issue of safety and rescue at sea became not only a maritime issue but a matter of concern to other International Humanitarian regimes, based on the increasing number of migrants coupled with increasing global incidents. For better conditions, every year many people leave their country of origin to start a new life to a different place by the use of different forms of transport, to reach their respective destinations, according to where they are going. In the 1970s many asylum seekers left south-east Asia by sea. Owing to their unseaworthy boats, most of these asylum seekers found themselves in distress situations and had to be rescued by passing vessels. While some felt victims of attacks by pirates, and others perished at sea. Many of these incidents occurred in south-east Asia, and these cases attracted the most public interest, including

the international community. According to international best practices, the disembarkation point for these asylum seekers should normally be the next place of safety. Notwithstanding, problems began to arise as several states indicated the lack of capacity to accommodate the grown number of these asylum seekers and started rejecting them access to disembarking. Other countries permitted disembarkation only after a lengthy and under difficult procedures for asylum seekers. Based on these developments, passing ships began to ignore many refugee boats and ships in distress. In reaction to this growing disaster, the United Nations General Assembly at its 30th session in 1979: Called upon all States to ensure that masters of vessels sailing under their flag to observe, established rules regarding rescue operations, and to take all necessary action to rescue refugees and displaced persons leaving their country of origin on boats or ships to seek asylum and who are in distress (Ozcayii, Z.O. (2006).

Also, the General Assembly endorsed the recommendation of the Sub-Committee on International Protection of Refugees. Having considered that States should be guided by the following considerations:

- That States use their best actions to grant asylum to bonafide asylum seekers;
- An action whereby a refugee is obliged to return or is sent to a country where he has reason to fear persecution constitutes a grave violation of the recognized principle on non-refoulement;
- That it is a humanitarian obligation of all coastal States to allow vessels in distress to seek haven in their waters and to grant asylum, or at least temporary refuge, to persons on board wishing to seek asylum;
- That decisions by States about the granting of asylum shall be made without discrimination as to race, religion, political opinion, nationality, or country of origin;
- That in the interest of family reunification and for humanitarian reasons, States should facilitate the admission to their territory of at least the spouse and minor

or dependent children of any person to whom temporary refuge or durable asylum has been granted;

- In cases of large-scale influx, persons seeking asylum should always receive temporary refuge. States which because of their geographical situation, or otherwise, are faced with a large-scale influx should as necessary and at the request of the State concerned receive immediate assistance from other States in accordance with the principle of equitable burden-sharing. Such states should consult with the Office of the United Nations High Commissioner for Refugees as soon as possible to ensure that the persons involved are fully protected, are given emergency assistance, and that durable solution is sought; and
- Other States should take appropriate measures individually, jointly with other international bodies to ensure that the burden of the first asylum country is equitably shared (UNHCR. (1979).

The Tampa incident also presented a new chapter within the international community as it relates to safety and rescue at sea. In June 2002, the Nansen Refugee Award was presented by UNHCR to the master, crew, and shipowner of the MV Tampa for distinguished work on behalf of refugees. Captain Arne Rinnan had rescued 433 boat people from the Indian Ocean, incurring extra financial costs to the company at the time Australian government had challenged the maritime rules in dealing with this issue, first by ordering the Tampa vessel to leave the Australian waters in a dangerous condition as determined by the Captain and his country's maritime safety authority, and second, by having the Special Air Service board to ensure that passengers were not allowed to disembark (UN, 1982). Other offenses were committed against other vessels in similar fashion including the use of the Navy to divert boat people heading or found in some coastal States territorial waters, which has over the years resulted in a serious humanitarian crisis, contrary to jurisdictional compromises reached in the Law of the Sea Convention of 1982 (UNHCR, 2002); (Papastavridis, E. (2020).

2.2. Rules of International Law

The first international convention dealing with rescue at sea was the Convention for Unification of Certain Rules of the Law Relating to Assistance and Salvage at Sea of 1910. Article 10 of the Convention states that: Every master is bound as possible as he can without any danger to his ship, crew member and passengers on board to render assistance to everyone including an enemy found at sea in danger or distress situation of being lost and that vessel owner shall incur no liability by reason of infringement of the stated provision (Brussels 1910; IMO, 1989).

General Maritime law also explicitly imposes liability on a vessel for its failure to rescue, whether its conduct has placed another vessel and/or its crew in a hazardous position. Although this duty has been codified by some nations including the United States of America statute for incidents occurring in territorial waters, it is also recognized as existing independently under general maritime law. Liability has also been made obligatory under general maritime law were for alleged rescuer acting in a negligent manner to worsen the position of the victim. This liability is an extension of the “Good Samaritan” rule which requires a person to come to the aid of a stranger in peril recognized by maritime. Also, in the world of commerce, there are situations in which the duty to assist as mandated by law. Title 46, USC 2303, 2304, and 2306 require in certain circumstances, that the master of a vessel provides assistance to save lives and property or risk fines or imprisonment (Bland III, W. 2011).

2. 3. The United Nations Convention on the Law of the Sea 1982 (UNCLOS)

The Duty to render Assistance:

The provision for Search and Rescue in the SOLAS Convention are entrenched by Article 98 of the Law of the Sea Convention “Duty to render assistance”, which states:

1. That every State shall require the master of a ship flying its flag, in so far as he can do so without serious danger to the ship, the crew or the passengers:

(a) to render assistance to any person found at sea in danger of being lost;

(b) to proceed with all possible speed to the rescue of persons in distress, if informed of their need of assistance, in so far as such action may be reasonably expected of him;

(c) after a collision, to render assistance to the other ship, its crew and its passengers and, where possible, to inform the other ship of the name of his ship, its port of registry, and the nearest port at which it will call.

2. That every Coastal State shall promote the establishment, operation, and maintenance of an adequate and effective search and rescue, by way of mutual regional arrangements to co-operate with neighboring States for this purpose (IMO Assembly Resolution A.920(22)).

With this provision, UNCLOS provides the legal framework for search and rescue operations, but the details of such actions are also provided under different International Maritime Organization (IMO) conventions. Chapter V of the Safety of Life at Sea (SOLAS) Convention of 1960, stated the require obligation on a ships master to render assistance:

“The master of a ship at sea, in receiving a signal from any source that a ship or aircraft or survival craft thereof is in distress, is bound to proceed with all speed to the assistance of the persons in distress informing them if possible that he is doing so. If he is unable or, in the special circumstances of the case, consider it unreasonable or unnecessary to proceed to their assistance, he or she must enter in the logbook the reason for failing to proceed to the assistance of the persons in distress”

The SOLAS Convention, Chapter V also clarifies the duty of States to provide assistance for the rescue of persons in distress at sea that:

- a) each contracting government undertakes to ensure that any necessary arrangements are made for coast watching and the rescue of persons in distress at

sea around its coast. These arrangements should include the establishment, operation, and maintenance of such maritime safety facilities as are deemed practicable and necessary having regard to the density of the seagoing traffic and the navigational dangers, and should, so far possible, afford adequate means of locating and rescuing such persons.

- b) each contracting government undertakes to make available information concerning its existing rescue facilities and the plans for changes therein if any.

2.4. International Convention on Maritime Search and Rescue (SAR) 1979

The duty to assist ships is stated in many IMO conventions, but until the International Convention on Maritime Search and Rescue (SAR), no international system covered search and rescue operations. The lack of international cooperation in search and rescue operations triggered difficulties in practice. Search and Rescue Coordination operations were planned by each country according to its requirements and the available resources. There was no global standardized procedure in place that could be applied.

Giving the above, in 1979, a Conference organized by the International Maritime Organization (IMO) in Hamburg adopted the Search and Rescue Convention (SAR), which entered into force in 1985. The key objective of the Convention was to provide a framework for global Search and Rescue operations that could be applied wherever an accident occurs and to make sure that the rescue of persons in distress at sea will be coordinated by SAR organization and, when necessary, by cooperation between neighbouring SAR organizations. The Convention imposed considerable obligations on parties, such as:

- to make the necessary arrangements to provide adequate SAR services in their coastal waters;
- to enter into SAR agreements with neighbouring states about the establishment of SAR regions pooling facilities, the establishment of common procedures, training, and liaison visits

- to take measures to expedite entry into its territorial waters of rescue coordination centres
- to establish ship reporting systems, under which ships report their position to a coast radio station.

The main aim of all these requirements is to ensure that search and rescue operations are conducted with maximum speed and efficiency, regardless of the location of the incident. Following the subsequent adoption of the Convention, IMO's Maritime Safety Committee (MSC) divided the oceans into 13 search and rescue areas. Each area delimited search and rescue regions were given the responsibility of countries concerned (IMO, (1979b).

2.5. Review of SAR Convention:

To reflect current reality, the SAR Convention continue to experience improvement, the first amendments to the SAR Convention were made in 1998. It was agreed that the following issues related to the convention must be taken into consideration:

- lessons learned from SAR operations;
- experiences of states which had implemented the convention;
- questions and concerns of developing states which were still not a party to the convention;
- need to harmonize the IMO and International Civil Aviation Organization (ICAO) SAR provisions further;
- inconsistent use of terminology and phraseology.

Also, the technical annex to the convention was revised by the IMO's Sub-Committee on Radio Communications and Search and Rescue (COMSAR). The draft text of the amended technical annex was approved by the 68th session of MSC in May 1997 and adopted by the 69th session of the MSC in May 1998 (IMO Resolution MSC.70 (69a)

2.6. The 1998 Amendments:

The revised technical annex of the Convention was adopted on May 18, 1998, and entered into force on January 1, 2000. The amendment clarified the responsibilities of governments and stressed the importance of a regional approach and coordination between maritime and aeronautical SAR operations. The revised annex was divided into five chapters as follow:

Chapter 1 – Terms and definitions, Chapter 1 updated the original chapter under the same name.

Chapter 2 – Organizations and Co-ordination. This chapter replaces the 1979 chapter on the organization. The responsibilities of governments are made clear. Parties are required, either individually or in cooperation with other states, to establish basic elements of a search and rescue service. Upon the agreement of the parties, concerned parties are required to establish search and rescue regions with each area. Following establishment, parties are required to accept responsibility for providing search and rescue services for a specified area.

Chapter 3 – Cooperation between States. Chapter 3 replaces the original chapter 3 on cooperation. Coordination of search and rescue is operations is described as the responsibility of the parties and, where necessary, should be coordinated by neighbouring states. The new chapter also states that, unless otherwise agreed between the states concerned, the party should authorize applicable national laws, rules, and regulations, that would allow immediate entry or over it territorial sea or territory for rescue units of other parties for search and rescue operations purposes.

Chapter 4: Operating Procedures: This Chapter incorporates the previous chapters 4 and 5 on preparatory measures and operating procedures. Under the new chapter, each rescue coordination centre (RCC) and rescue sub-centre (RSC) is obliged to keep up-to-date information on search and rescue and facilities and communications in the area and to have detailed plans for the conduct of search and rescue operations. It required that parties

either individually or through cooperation should be able to receive distress signals on a 24-hour basis.

Chapter 5 - Ship Reporting systems: Includes recommendations on establishing ship reporting systems for search and rescue purposes and (IMO Resolution MSC.70 (69))

2.6.1. The International Aeronautical and Maritime SAR (IAMSAR) Manual

To enhance global SAR operations, as the revision of the SAR Convention was going ahead, the IMO and the International Civil Aviation Organization (ICAO), also, jointly developed the IAMSAR Manual, published in three volumes covering organization and management: Mission Coordination and Mobile Facilities: The IAMSAR manual revises and replaces the IMO Merchant Ship Search and Rescue Manual (MERSAR) and the IMO Search and Rescue Manual (IMOSAR), published in 1971. The MERSAR Manual is designed to help the master of vessel who might be called upon to conduct SAR operations at sea for persons in distress. The IMOSAR Manual was adopted in 1978 with the main objective to help governments implement the SAR Convention and provided guidelines rather than requirements for a common maritime search and rescue policy. It encouraged all coastal states to develop their organizations on a similar term to enable neighboring or adjacent states to cooperate and provide mutual assistance at all times (IMO, 1979b).

2.6.2. The 2004 Amendments:

In 2004, the MSC adopted further important amendments to the SOLAS and SAR Conventions. These amendments entered into force in July 2006. The committee at the same session adopted the current Guidelines on the Treatment of Persons Rescued at Sea. These amendments were developed in response to IMO Resolution A. 920 (22) 6 on the assessment of safety measures and procedures for the treatment of persons rescued at sea. This resolution was adopted resulting from several incidents that raised major concerns

regarding the treatment of persons rescued at sea, especially immigrants, asylum seekers, refugees, and stowaways.

In 2001, the captain of Tampa vessel took on board his ship more than 400 people from a sinking wooden Indonesian vessel, who were mainly Afghan refugees. The vessel had a facility on board for only 50 people, including its crew of 27 persons. The Ship (Tampa) requested to land the asylum seekers on the Australian territory was refused by the Australian authority. This situation helped focused international community attention on the question of as to who has the responsibility for accepting asylum seekers rescued at sea. The Tampa incident, coupled with other incidents, brought the question of a long term solution to the illegal immigration and rescue issues to the IMO's attention, which further prompted the review of some IMO instruments to find and resolve existing gaps, inconsistencies, ambiguities, vagueness, and any other shortfalls associated with the treatment of persons rescued at sea and search and rescue operations, to take appropriate action. (Ozcayii, Z. O., 2006a (pp. 282-288).

2.6.3. Amendments to SOLAS

Due to the adoption of Resolution A 920 (22), a new chapter, chapter V, was added to SOLAS on the Safety of Navigation with a definition of Search and Rescue services. The obligation to provide assistance was clarified and amendments made to mandate coordination and cooperation between states to assist the ship's master during the delivery of persons rescued at sea to a safe place. This amendment obliged States to provide assistance, for the first time (Resolution A 920 (22)).

2.6.4. Additional Amendments to SAR

The following new paragraphs were made to the Annex of the SAR Convention:

Chapter 2 (organization and coordination) relating to the definition of persons in distress:

The notion of persons in distress also includes in need of assistance who have found

refuge on a coast in a remote location within an ocean area inaccessible to any rescue facility as provided for:

Chapter 3 (cooperation between states) relating to assistance to the master in delivering persons rescued at sea to a place of safety as follow:

Parties shall co-ordinate and co-operate to ensure that masters of ships providing assistance by embarking persons in distress at sea are released from their obligations with minimum further deviation from the ships intended voyage, provided that releasing the master of the ship from these obligations does not further endanger the safety of life at sea. The party responsible for the search and rescue region in which such assistance is rendered shall exercise primary responsibility for ensuring such co-ordination and co-operation occurs, so that the survival assisted are disembarked from the assisted ship and delivered to a place of safety, taking into account the guidelines and relevant Parties shall arrange for such disembarkation to be effected as soon as reasonably practicable.

Chapter 4 (operating procedures) relating to rescue coordination centres initiating the process of identifying the most appropriate place for disembarking persons found in distress at sea: The rescue co-ordination centre or rescue sub-centre concerned shall initiate the process of identifying the most appropriate place(s) for disembarking persons found in distress at sea. It shall inform the ship or ships and other parties concerned (IMO Resolution MSC. 155(78)).

2.6.5. Search and Rescue Communications

To enhancement maritime safety, through effective measure for safety of navigation, reliable communications, and improved search and rescue coordination, IMO continue to carry out amendments to reflect current reality; Since its establishment in 1959, IMO and its Member Governments, in close co-operation with the International Telecommunication Union (ITU) and other international organizations, notably the World Meteorological (WMO), the International Hydrographic Organization (IHO), the International Mobile Satellite Organization (IMSO) and Cospa-Sarsat partners have

endeavored to improve maritime distress and safety radio communications. The most significant of these are the SAR and the Global Maritime Distress and Safety System (GMDSS). Under the GMDSS, all passengers' ships and all cargo ships over 300 gross tonnage on international voyages are required to carry specified terrestrial and satellite radio communications equipment for sending and receiving distress alerts and maritime safety information likewise general communications. Recreational vessels do not need to comply with GMDSS radio carriage requirements but are required to increasingly use the VHF radios with Digital Selective Calling (DSC). Vessels under 300 Gross tonnage (GT) are not subject to GMDSS requirements. The regulations governing the GMDSS are contained in Chapter IV of the International Convention for the Safety of Life at Sea (SOLAS) of 1974. Furthermore, the mandatory GMDSS was adopted in 1988 to ensure full integration of maritime radio and satellite communications so that distress alerts can be generated from anywhere on the world's oceans. The basic concept is that search and rescue authorities ashore, as well as ships in the vicinity of the ship in distress, can be rapidly alerted through satellite and terrestrial communication techniques so that they can assist in a coordinated SAR operation with the minimum of delay (IMO Resolution A.705 (17)).

2.6.6. GMDSS Transformations

Inmarsat satellite system has been the only maritime service provider as it relates to Global Maritime Distress and Safety System (GMDSS). This satellite system has undergone several generations with a wider range of services. Its services related to GMDSS have migrated a new generation of satellite systems in 2018. Also, the Inmarsat system has announced a new service called Inmarsat Fleet Safety that incorporates and provides all functional requirements for the GMDSS which are currently provided by Inmarsat and Inmarsat Fleet 77 terminals. The Maritime Mobile satellite services are provided by the Cospas-Sarsat and Inmarsat systems. The Cospas-Sarsat is only intended for search and rescue with satellite added tracking also established in 1979. However, in

2018, a new satellite system was also recognized as a mobile satellite communication service provider in GMDSS by IMO (GMDSS Manual, 2009;2013).

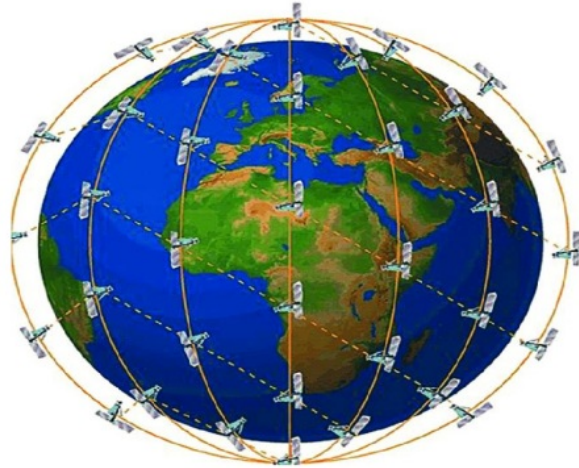
The reorganization by IMO of the Iridium as a second GMDSS satellite service provider will enhance maritime safety and search and rescue communications. This acceptance of a new satellite system by the IMO represents a major achievement that has brought to close the monopoly of the Inmarsat system as the only GMDSS service provider within the maritime industry. The Iridium satellite system consists of three systems: Space or satellite segment; ground segment and users. In addition to the new satellite service of the Inmarsat system, MSC has also approved and satisfied Iridium satellite system as a mobile satellite communication provider in the GMDSS, which include; Safety voice, Short-Brust Data and EGC services, promulgation MSI, navigational and meteorological warnings, meteorological forecasts, SAR information and other urgent safety-related to ships; communications in ship-to-shore, shore-to-ship and ship-to-ship direction via satellite links. Additionally, in IMO quest to enhance global search and rescue operations, it has now required both the Inmarsat and the Iridium satellite system to also provide for four levels of call prioritization as follows: distress; urgency; safety routine and will perform a pre-emption of lower priority communications (IMO regulation A.705(17)).

Table 1: GMDSS Development

February 1, 1992, to February 1, 1999, existing ships complied with Chapter IV of SOLAS in force
April 1, 1993, all ships required to carry a NAVTEX (transmission of maritime safety information) receiver and satellite EPIRBs (emergency position indicating radio beacons).
GMDSS requirements became mandatory to all ships built on or before February 1, 1995
All passenger ships and cargo ships of gross tonnage and above on Internal voyages were required to comply with the GMDSS as of February 1, 1999.

Source: (Focus on IMO. (1999))

Figure 2 Iridium satellite constellation



Source: iridium.com

Also, modern Distress Alerting Indicators are currently being developed and utilize due to the advancement in technology. They include Automatic Identification System –Search and Rescue Transmitter (AIS-Sart); The Automatic Identification System (AIS); Search and Rescue Transmitter (SART), it derives position and time synchronization from a built-in Global Navigation Satellite System (GNSS); the updating of Cospas Sarsat rescue system. (Orolia Maritime, 2020)

2.6.7. Distress Signals

The three spoken emergency signals that are used by vessels and aircraft:

- a continuous sounding with any fog-signaling apparatus;
- rockets or shells, throwing red stars fired one at a time at short interval;
- the international code signal of distress indicated by N.C.;

- Distress signal sent by radiotelephony consisting of the spoken word “MAYDAY”
- A signal made by any signaling method consisting of the group (SOS) (IMO, Resolution A. 1004(25))

Table 2: Amendments to the SAR Convention

	Resolution No.	Date of Adoption	Entry into force
Amendment	A. 919 (22)	04/27/1979	06/22/1985
Amendment	MSC 70 (69)	05/18/1998	01/01/2000
Amendment	MSC.155 (78)	05/20/2004	01/07/2006

Source:(IMO,2004)

Due to the different radio systems incorporated into the GMDSS, it has individual limitations concerning range and services provided, the equipment required to be carried by ship is determined by the ship’s area of operation. The GMDSS system has divided the world’s oceans into four distinct areas. All vessels are required to carry equipment appropriate for the sea area or areas in which they trade or commute (SOLAS regulation V/19.2.4).

2.6.8. GMDSS Operational Areas

Area A1

Within the radiotelephone coverage of at least one VHF coast station in which continuous VHF DSC alerting is available;

Area A2

Within the radiotelephone coverage of at least one MF coast station in which continuous MS DSC alerting is available (excluding sea area A1);

Area A3

Within the coverage area of an INMARSAT geostationary satellite in which continuous alerting is available (excluding sea areas of A1 and A2); and

Area A4

the remaining sea areas outside A1, A2, and A3 (basically, the polar region).

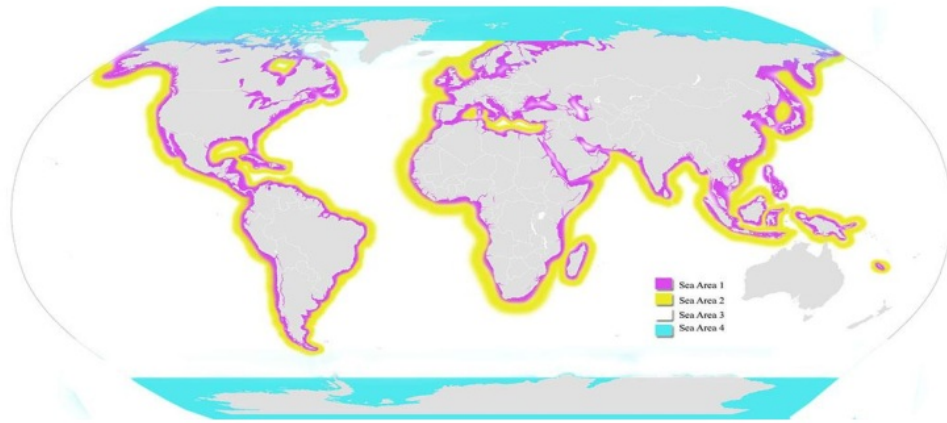


Figure 3: GMDSS operational areas

Source: navcen.uscg.gov/?pageName=gmdssArea

GMDSS Ships are required to carry the following minimum requirement:

A **VHF radio** installation capable of transmitting DSC on channel 70, and radiotelephony on channels 16, 13, and 6.

One **SART** if under 500 GRT, 2 SARTs if over 500 GRT.

Two portable **VHF transceivers** for the use in survival craft if 500 GRT, three if over 500 GRT.

A NAVTEX receiver, if the ship passes in any area where a NAVTEX is provided. An Inmarsat EGC receiver, if the ship is engaged on voyages in any area of Inmarsat coverage where MSI services are not provided by NAVTEX or HF NBDP.

Radio equipment – Sea Area A 1

Every ship engaged on voyage exclusively in sea area A1 shall be provided with the minimum equipment specified above.

Radio equipment – Sea Areas A1 and A2

Every ship engaged on a voyage beyond sea area A1, but remaining within sea area A2, shall be provided with the minimum equipment as a specified plus:

The GMDSS assures the capability of vessels of automatically distress alerting and locating for the cases where there is no time to send an SOS or MAYDAY call (SOLAS Chapter V). (*GMDSS Manual* (2009; 2011 ed. ed.)

2.6.9. AMSAR General Concept for SAR Services

In order to reinforce States' obligation to assist persons in distress, the International Civil Aviation Organization (ICAO) and the International Maritime Organization (IMO) have over the years developed three volumes of the International Aeronautical and Maritime Search and Rescue (IAMSAR Manual), to assist States in meeting their respective search and rescue (SAR) needs as an obligation accepted within the framework of the International Civil Aviation, the International Convention on Maritime Search and Rescue (SAR) and the International Convention for the Safety of Life at Sea (SOLAS). This manual provides guidelines for aviation and maritime search and rescue approach for states and organizations providing rescue services. It is divided into six chapters for the organization and management of the SAR as follows:

- Chapter 1 – presents an overview of the SAR concept, including what is involved in proving operations, exercises;
- Chapter 2 introduces some of the key components of SAR system, which include communications, rescue coordination centres and sub-centeres, operational and support facilities, and on-scene coordinator;
- Chapter 3 took into consideration training, qualification, and certification processes to develop competent SAR personnel and aspects of training required;

- Chapter 4 describe the communications needs of the SAR organization for the reception of distress alerts and means of supporting various coordination among the various components of SAR system;
- Chapter 5 provides an overall management perspective of SAR system; and
- Chapter 6 discusses the necessary factors, recommendations, and a few techniques for developing an organizational environment that fosters improvement of services.

Accordingly, the Manual is published jointly by the International Civil Aviation Organization and the International Maritime Organization and is updated from previous editions (IMO/ICAO, 2008).

Chapter Three

SEARCH AND RESCUE IMPLEMENTATION IN LIBERIA GENERAL BACKGROUND

Search and Rescue is an undertaking that is usually coordinated by a SAR Authority. IMO and ICAO coordinate on a universal basis member States efforts in providing SAR services. The goal of these organizations is to ensure the provision of an effective global system so that wherever people may be in danger whether in the sea or air, that SAR services, as properly referred to in the International Aeronautical and Maritime Search and Rescue (IAMSAR) Manual. The State approach in establishing and providing improved SAR service is an integral part of the international system (IAMSAR, 2008). According to the definition, Search and Rescue services are defined as the performance of distress, monitoring, communication, coordination, and search and rescue functions, which include the provision of medical advice, emergency medical care, or evacuation through the use of public or private resources, including cooperating ships, aircraft, and other facilities. The international framework required that states provide assistance to persons in distress, regardless of nationality, status, or circumstances. (IAMSAR, pp 6, 2008).

Given this universal approach, the Government of Liberia took the responsibility for the establishment and coordination of maritime SAR services in Liberian waters by establishing the Monrovia Regional Maritime Rescue Coordination Center (MRMRCC), with the support of the Regional Maritime Rescue Coordination Centres under the November 2007 Multilateral Agreement, between the following Governments:

- The Government of the Republic of Cote D'Ivoire;
- The Government of the Republic of Ghana;
 - The Government of the Republic of Guinea;

- The Government of the Republic of Sierra Leone and
- The Government of the Republic of Liberia

Jointly referred to as the “Parties” and in the singular, as a “Party” agreed on the coordination of Maritime Search and Rescue services supported with International Aeronautical SAR services as required by IMO and ICAO system. (Multilateral Agreement, 2007).

Furthermore, at the Florence Conference, the sub-regional African Maritime Rescue Coordination Centres sealed a definite commitment to the Multilateral Agreement, which invited African countries bordering the Atlantic and Indian Oceans, from Morocco to Somalia, as well as nearby island States in the Atlantic and Indian Oceans, to establish five sub-regional centres and 26 sub-centres covering the entire coastal area for search and rescue purposes. The conference envisaged that in this way all the proposed centres would work together to ensure SAR coverage in an area that had previously been recognized as one of the areas most affected by the lack of adequate SAR and GMDSS structures (IMO, 2000); (Maritime Executive, 2011).

3.2. Liberia Maritime Authority Mandate and Structure

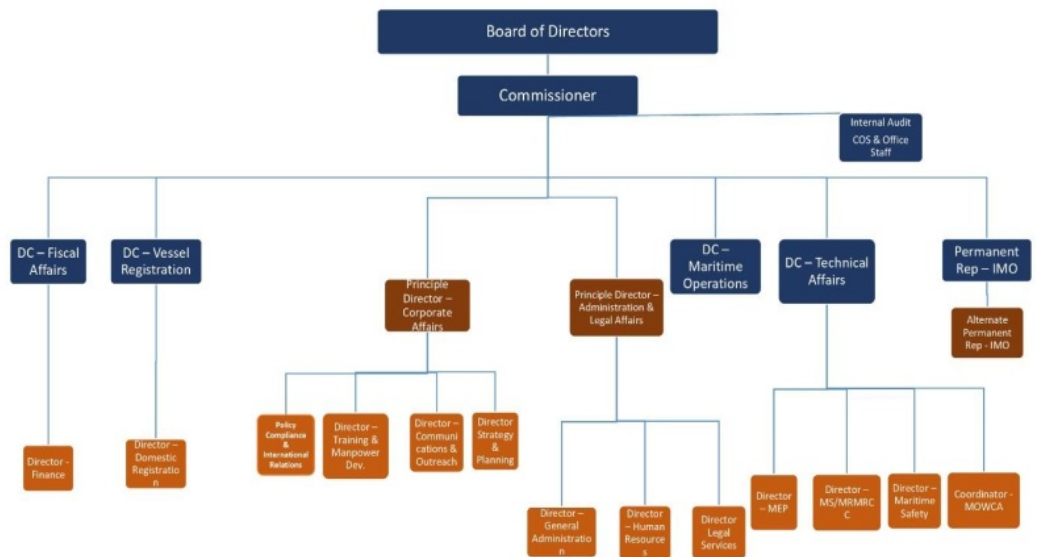
The Liberian Maritime Authority is entrusted with the following tasks for and on behalf of the Government of the Republic of Liberia, in accordance with the LiMA Act of 2010:

- Administer, secure, promote, regulate, enforce, design, and execute policies, strategies, laws, and regulations, plans and programs relating, directly and indirectly to the functioning, growth, and development of the maritime sector, and national maritime awareness;
- Collaborate, coordinate, and consult with the Ministry of National Defense (specifically the Coast Guard), with the Ministry of Justice (police, immigration, and other relevant law enforcement agencies), the Ministry of Finance, (now Liberia Revenue Authority) (Customs), National Port Authority, the Ministry of

Agriculture (Bureau of Fisheries), the National Oil Company of Liberia, the Ministry of Transport and other government institutions engaged in activities related to the maritime sector to collaborate in promoting the country’s social and economic development associated with or growing out of the national maritime, marine and related programs and activities;

- Introduce and promote the enactment of national legislation in the exercise of the rights and discharge of the responsibilities of the Republic of Liberia under the United Nations Convention on the Law of the Sea of 1982 and any other maritime-related international conventions, agreements, and instruments. (LiMA Act 2010, Part II).

Figure 4 Liberia Maritime Organizational Structure:



Source: (lima.gov.lr)

3.3. International Obligations Search and Rescue Co-ordination Centre

It is an international obligation for coastal states to establish facilities and provide search and rescue services under the 1979 IMO Convention on Search and Rescue. SAR Centre should be an operational facility responsible for promoting the efficient organization of all SAR services and the coordination of all SAR operations within SRR. Rescue Coordination Centre can use the accommodation in an appropriate facility based on the capabilities of each country. SAR activities also include the SRU as a unit consisting of trained personnel equipped with appropriate equipment for the rapid and efficient conduct of SAR activities, whether related to air, sea, or land-based facilities. Therefore, the International Maritime Organization (IMO) and the International Civil Aviation Organization (ICAO) have developed rules and requirements to assist states in meeting their respective search and rescue needs, so that SAR operations under the International Civil Aviation (ICAO), the International Convention on Search and Rescue (SAR), can be carried out successfully by member States. To successfully implement the SAR Convention, the 1998 Amendments moreover established the basic requirements for SAR implementation that must be taken into account, which includes:

- Establishing appropriate legislation for SAR services, make use of available resources and other provisions;
- manpower, staff, and training of personnel and other supports for the proper management of the system;
- Establishing the geographic areas of responsibility with related RCCs and RSCs;
- defining working relationships, working agreements to achieve the desired objectives; and
- adequate and functioning communication facilities.

Maritime SAR also includes the provisions for the search and aid of persons in imminent danger or who are expected to lose their lives at sea. SAR operations can take many forms depending on the situation, relative to the size, complexity of the operation, the available personnel, and facilities, which will determine whether or not they are both necessary (IMO, 1998).

3.3.1. Minimum Requirements for SAR- RCC

According to the standards proposed by the IMO and ICAO, a Rescue Coordination Centre (RCC) must have these basic capabilities to be recognized as responsible for the search and rescue region (SRR) by being included in the ICAO-RANP or IMO Global SAR Plan. They include:

Table 3: Minimum Requirements for SAR- RCC

REQUIRED	DESIRED
<ul style="list-style-type: none"> • 24-hour availability; • Trained personnel; • Persons with working knowledge in the English language; • Charts which apply to the SRR (aeronautical, nautical, topographic, and hydrographic Means of plotting • Ability to received distress alerts from MCCs, CESSs, etc <p>Immediate communications with:</p> <ul style="list-style-type: none"> • Associate ATS units • DF and Position-fixing stations • Associate RSCs <p>Rapid and reliable communications with:</p> <ul style="list-style-type: none"> • Parent agencies of SRUs • Adjacent RCCs • Designated meteorological offices • Employed SRUs • Alerting posts • Plans of operation 	<ul style="list-style-type: none"> • Wallchart depicting SRR, SRSs, and neighbouring SRRs, SAR resources • Computer resources • Database

Source: (IAMSAR Manual, 2008)

3.4. SAR Regional Framework

To assist States in implementing the SAR Convention, Chapter 2, Organization and Coordination clarify the responsibilities of Governments and places greater emphasis on a regional approach to coordination between maritime and aeronautical SAR operations. In consideration of the above, the five Member States, including Liberia, have agreed to implement the Regional Agreement; each party recognizes that it must have immediate access to SAR facilities and procedures to deploy external resources to carry out rapid and effective SAR operations; that there shall be MRCC in Liberia to serves the Liberia Maritime SAR region with appropriate delimitations under Article 3 of the Agreement; that there shall also be established MRSCs, as may be necessary, located in the territory of each Party to serve as national requirements.

3.4.1. Parties Areas of Co-operation

Also, for the efficiency of SAR Regional Coordination Center in Liberia, the parties (regional body) agreed as per the agreement to cooperate as follows:

- a) to render mutual support by pooling SAR facilities as appropriate for operations within their respective SRR;
- b) to respond to requests for SAR operational assistance between the (MRCC and the MRSCs of the Parties to the extent of their respective capabilities;
- c) to utilize standard SAR procedures and communications appropriate for co-operation and co-ordination between SAR facilities of the Parties responding to the same distress incident, and for co-operation and co-ordination between the MRCC and ARCCs;
- d) to apply the guidance of the (IAMSAR) operational procedures and communications;

- e) to apply standard agreed SAR procedures which will take account of sovereignty issues in the need to save human life in distress. Entry by SAR units of one party into the territory of the other Parties, shall be on notice and exclusively for SAR operation purposes; and
- f) to enter other collaborative SAR efforts which may include but not limited to:
 - i) mutual visits by AR personnel of the Parties;
 - ii) joint training and other exercises;
 - iii) exchange of pertinent SAR Communications;
 - iv) elaboration and co-operation in the development of SAR procedures, techniques, and pooling of SAR equipment and facilities; and
 - v) the establishment of a joint SAR committee to provide a means for ongoing co-operation in improving SAR effectiveness.

Additionally, in the interest of continuous cooperation for the implementation of the SAR regional agreement, each Party agreed to authorize its MRSC to request assistance from the MRCC or the adjacent MRSC as appropriate and to provide pertinent information on distress and the scope of assistance required and each party shall authorize its MRSC to promptly arrange, or in advance, with other national authorities for territorial entry and departure of SAR units of other Parties as circumstances may dictate (Multilateral Agreement, pp. 5-10, 2007).

3.4.2. Financial Agreements (Regional)

In examining the follow-up to the 2000 Florence Conference, in particular, Resolution No.2 on the establishment of an International SAR Fund, MSC 78 expressed its appreciation for the proactive measures taken by African countries in the provision of SAR facilities and services in their waters and therefore fully supported the need for the establishment of an international SAR fund for the use of expanding and the promotion of such important humanitarian activities. The 93rd session of the Council also took note

of the information on the establishment of the International SAR Fund and, in this context, invited potential donors to contribute generously so that the Organization can continue to support developing countries in improving their respective SAR capacities to ensure the effective implementation of the SAR Plan (IMO, 2004).

That the costs of operating and establishing the MRCC and MRSCs will be determined in consultation with the (IMO) and financed by the International SAR Fund. Also, each party is required to finance its activities as necessary unless otherwise agreed by the Parties in advance. (Multilateral Agreement Art. 6).

3.4.3. Regional SAR Coordinating Committee

According to Art. 8 of the Multilateral Agreement, for smooth implementation of the SAR Convention, Parties agreed on the establishment of the Maritime SAR Coordinating Committee which shall consist of Heads of Units/Organizations responsible for Maritime SAR or their representatives in each Party. The Parties also agreed that the Chairmanship of the Committee shall be appointed on a rotational basis for two years by each party and that this committee responsibility shall include:

- a) submitting from time to time reports and recommendations to the Parties either on its own or upon the request of Parties on the implementation Agreement;
- b) implementing the decisions of the Parties as may be directed;
- c) be responsible for the preparation of a comprehensive implementation programme for the Liberia Maritime SRR;
- d) monitoring and reviewing the implementation of the programmes of Liberia Maritime SRR;
- e) performing any other tasks as may be determined by Parties for the implementation of the Agreement; and
- f) working out specific arrangements for co-operation and co-ordination among the MRSCs and MRCC (Multilateral Agreement, pp. 8-9, 2007).

3.5. Institutional Framework

National SAR Plan:

The IMO and ICAO encourage countries to establish, either on a national or regional basis, a SAR Coordination Plan to support and improve the programme. Liberia, through the NSARC (National Search and Rescue Committee), has drawn up the National SAR Coordination Plan for all SAR Services in line with the IAMSAR Manual on national guidelines for the development of SAR-related systems (IMO, 2008).

3.6. National Search and Rescue Committee (NSARC)

The Republic of Liberia realizing the importance of teamwork for speedy and effective SAR services, consistent with applicable national laws, constituted the National Search and Rescue Committee (NSARC), composed of key maritime actors, for a common maritime and aeronautical SAR approach, aimed at maintaining, coordinating and monitoring the SAR plan for Liberia:

- to provide all available resources for all related maritime, aviation, and SAR missions;
- ensuring the free flow of communication between NSARC members through the Maritime RCC, which is serving as the central command post for the coordination of distress incidents, Aeronautical RCC for aircraft distress incidents, and the Ministry of Internal Affairs for inland distress incidents;
- to serve as a cooperative forum for the exchange of relevant information and to advance strategies for all parties to the Plan;
- provide a common approach with other national and international organizations working in the rescue service;

- define other means to improve the overall effectiveness and efficiency of SAR services and, where necessary, to improve SAR procedures; and
- improving cooperation with the aeronautical SAR components and well as other disaster management authorities for effective SAR services (LiMA NSARP, 2016a).

The NSARC include the following Ministries, State Own Enterprises (SOEs), and agencies:

- a. The Liberia Maritime Authority (LiMA)
- b. Ministry of Internal Affairs (MIA)
- c. Ministry of National Defense (Coast Guard)
- d. Ministry of Justice (MOJ)
- e. Ministry of Health and Social Welfare (MHSW)
- f. Ministry of Information, Cultural and Tourism (MICAT)
- g. Ministry of Transport
- h. Civil Aviation Authority (CAA)
- i. National Port Authority (NPA)
- j. Liberia Meteorological Agency (LMA)
- k. Liberia National Red Cross Society (LiMA NSARP, 2016b)

3.6.1. SAR Stakeholders Responsibilities

To ensure further cooperation in the provision of SAR services, individual responsibility is assigned to the parties involved, including the provision of resources and facilities between these institutions in the implementation of the Maritime SAR Plan in the Republic of Liberia. The following list of tasks of the organizations is taken from the Liberian National SAR Plan:

- a) **Liberia Maritime Authority LiMA** - is the overseer of maritime SAR services in Liberia, with overall responsibility for the planning, personnel, equipment, and management of the maritime SAR system. LiMA is also responsible for

maintaining a fleet of ready and reserved search and rescue vessels and helicopters for use in all SAR operations; ensuring that the center is staffed with sufficient trained personnel; supporting and promoting efficient maritime navigation that emphasizes maritime safety; Collaborate with the National Port Authority and the Ministry of National Defense to provide additional support for SAR operations. LiMA, through its Maritime RCC, will from time to time cooperate with the Aeronautical RCC in alerting and controlling vessels; liaise with the IMO, regional and international institutions to improve and facilitate the operation of the SAR program; chair SAR meetings; establish effective oversight and appropriate control of SAR functions, and ensure regular maintenance of equipment where necessary.

- b) **The Civil Aviation Authority**- has the responsibility to establish and enforce aeronautical safety rules and to operate the air traffic control system; to coordinate aeronautical SAR incidents at sea in collaboration with the MRMRCC; maintain a fleet of ready and reserved search and rescue equipment that can be used in all SAR operations; to set up a system for coordinating aeronautical SAR services that must be coordinated with maritime SAR services, as required by ICAO and IMO; to coordinate the establishment of appropriate areas where necessary for SAR purposes;
- c) **The Ministry of Internal Affairs** – is responsible for the coordination of SAR operations for all disasters/emergencies on land, rail, mountain, floods, and earthquakes within the territorial limits of the Republic in collaboration with other agencies, ministries, and SOEs;
- d) **The Ministry of National Defense (Coastguard)** - Liberia does not have a navy, so the Coast Guard, which is under the Ministry of National Defense, has legal responsibility for providing facilities and other resources to support its operations; providing ships, search aircraft, crews and equipment where Medevac SAR operations are required during a medical evacuation; providing maritime SAR

services to all military ships, personnel, and aircraft; making the military communicant channels available during a maritime SAR operation when they are needed;

- e) **The National Port Authority (NPA)** - is responsible for providing search and rescue resources such as ship berthing, warehouses, heavy lifting equipment when needed, providing navigation warnings and information, ensuring the functioning of all operated lighthouses, providing crews, ships, and equipment as needed during maritime SAR or medical evaluation, liaising with other ports and harbors to provide necessary logistics needed for SAR operation;
- f) **The Ministry of Justice** - The Ministry, through its supporting authorities, is responsible for: Ensuring that the Liberian National Police maintain law and order during SAR operations; that the Office of Immigration and Naturalization discharges its responsibility for providing immigration services or handling survivors involving foreign crews and passengers rescued during SAR missions; that the Liberian National Fire Service is responsible for the necessary provision of fireboats, fire trucks, and firefighters during SAR operations; and ensures that all national security agencies act as SAR alert posts and provide channels of communication in SAR operations:
- g) **The Ministry of Health and Social Welfare:** - This Ministry is responsible for providing emergency medical services during the SAR operation and ensuring the availability of essentials medical needs for rescued persons;
- h) **The Liberia Meteorological Agency** - is responsible for providing maritime SAR operation units with the timely marine environment and warning information for the coastal and high seas weather conditions as may be necessary according to resolution 7 of the SAR Manual;
- i) **The Ministry of Information, Culture, and Tourism (MICAT)** - Is the responsible authority for coordinating and disseminating information related to SAR operations to the media; as well as for publishing government measures in

collaboration with other key stakeholders, gathering information, responding to requests, and providing emergency services when needed; regulating the use of communication channels and radio frequencies and providing guidance; issuing and maintaining a precise database of maritime calls; distributing licenses for maritime radio stations;

- j) **Liberia National Red Cross Society:** Is responsible for providing emergency humanitarian supports to survivors rescued during the SAR operation; and
- k) **The Ministry of Transport** - Is responsible for the collection and evaluation of data on land and rail transport services for onward submission based on a request to the SCs during SAR operation; for the enforcement of standards for transport services provided by private and public transport operators; for the regulation, control, and monitoring of vehicles; and for transport services during SAR operations. (LiMA, NSARP, pp.2-9, 2016a).

3.6.2. The On-Scene Coordinator (OSC)

In accordance with Liberia's National SAR Plan, the following processes have been agreed for the full use of the (SRUs) Search and Rescue Units and other entities involved in SAR operations per IAMSAR Manual volume III IMO/ICAO. (2016):

- that SC s, through the SMC s, designate the OSC, i.e. the person responsible for the SRU, ship, or aircraft participating in a search, or someone in another nearby facility who assumes the OSC responsibilities of all participating assets;
- that the person responsible for the first SAR resources arriving on the ground take responsibility until the SMC orders the transfer of the OSC function;
- that this person knows SAR training, communication skills;
- revision of the search action plan based on prevailing circumstances and taking into account any changes to the plan where practicable; and
- provide relevant information to the SAR plan where necessary;

3.6.3. National SAR Plan General Terms

The general concept of Liberia's SAR required that no provision of the SAR plan or any support plan should be construed as an obstacle to the swift and effective action of any authority, ministry, or state-owned enterprise to assist persons, ships, and aircraft in distress. Under this concept, the cooperation agreements between NSARC participants with operational responsibilities are to ensure the most viable cooperation for SAR services and operations consistent with the capacity of such institutions to act (LiMA, NSARP, pp.2-9, 2016b).

3.6.4. Funding Support and Resources

In order to achieve the SAR objective effectively, the primary resources of each SAR organization are the operational facilities made available to it by different authorities. Although these institutions are administratively under the authority of their respective authorities, their operations for SAR remain coordinated and managed by the Search and Rescue Mission Coordinator SMC. The OSC also has the responsibility to from time to time update the SMC on the status of requests and prevailing circumstances. The SAR system must have financial support in line with national objectives. (IAMSAR Manual pp. 5.4).

3.6.5. Reception for Survivors

In the case of a major, lengthy or complex SAR incident, the SC (s) in consultation with the Ministries of Justice, Health and Social Welfare will establish an EMSC to coordinate with NSARC members to provide the following services by responsible agencies:

- a. short-term shelter for the survivors;
- b. immigration clearance; and
- c. provisions of emergency medical services and necessities.

The reception of survival is also done in consultation with the carrier, operator, or agent of the vessel or aircraft that rendered the SAR services.

3.6.6. Identification of Survivors

Liberia's SAR system has a provision for handling emergencies. In the event of an incident that may result in a large number of victims, the Inspector General of the Liberian National Police, in collaboration with the Ministry of Health and Social Affairs and the Ministry of Internal Affairs, will immediately set up a call center for accident investigation, where necessary, the Disaster Victim Identification Unit (DVIU). In a situation where both are required, CEC is responsible for collecting detailed information on all victims, while the DVIU will be responsible for identifying the deceased if necessary (IAMSAR Vol. II, 2008).

3.6.7. Authorization Procedure for Assistance

In accordance with the principle of coordination, if the SC receives information on ship or aircraft in disputed waters in need of assistance, he will immediately contact the Ministry of Justice and the Ministry of Defense for advice and the SC will also be obliged to provide the details of the vessel or aircraft in distress as follows:

- a. the location of the ship or aircraft in distress;
- b. the nationality and type of ship or aircraft in distress;
- c. the sources of information on the need and the necessary measures;
- d. the nationality of the crew, if necessary the nationality of the passengers;
- e. the number of vessels, aircraft, and other agencies available for the SAR operation in this area of concern;
- f. an estimate of how long it may take for the first rescue vessel or aircraft to reach the scene of the accident; and recommended approach (LiMA NSARP, 2016).

3.6.8. SAR operations in Coastal Waters

In consultation with the Ministries of National Defense and Foreign Affairs, in the event of an incident in the coastal waters of countries forming Liberia's Maritime and Aeronautical SRR, the SC(s), will deploy SAR resources in consultation with all relevant authorities to participate in the rescue operations. Only in exceptional circumstances will a Liberian based ship or aircraft be deployed in these areas and will be considered under best practice only at the request of the authorities (LiMA NSARP, 2016); (IMO, 1998).

3.7. Voluntary and Commercial SAR Organizations

The Liberia SAR system collaborates with other private groups and several expert working groups that play a critical role in Liberia's maritime SAR operations. These voluntary organizations assist by:

- a. providing the communication channels available when needed during SAR operations;
- b. making their crews, vessels, and other equipment available when needed during SAR or medical evaluation.
- c. Provision of facilities and training equipment; etc.

3.7.1. Private First Responder

Many international conventions, including Article 98 of UNCLOS, recommend that each State should require the captain of a ship flying its flag to provide assistance when it receives a message that persons are in distress at sea to assist them, if this is possible, taking into account the safety of the ship in question and the crew. Ships are potential assets, ship reporting and tracking systems enable the Liberian SAR Center to quickly know the exact positions and speeds of ships in the vicinity of an emergency situation and other relevant information about each available vessel (IMO, 1998) ;

3.7.2. Charging for SAR Services

According to the national SAR plan, Maritime stakeholders will participate in the implementation of the SAR plan at their own expense unless otherwise agreed by the stakeholders prior to participation, and the issue of reimbursement will not act as an obstacle in responding to persons in danger or distress, as there is no cost recovery from persons in danger who are supported for maritime SAR services under the LiMA plan

3.7.3. SAR Coordinators

Search and rescue coordinators have overall responsibility for setting up rescue coordination center/rescue sub-centers (RCCs / RSCs) where necessary, manpower and equipment, the management of SAR facilities, the continuous training of personnel to keep them informed of technical and administrative issues related to the operations and services of the SAR system. Only RCCs properly established by the SCs may carry out national and international coordination of SAR services. In view of the above, the Republic of Liberia has a designated coordinator as follows:

- a. The Commissioner of the Liberian Maritime Authority is the SC designate for the coordination of emergencies involving ships and crews in Liberian territorial waters, the search and rescue region (SRR), including inland waterways.
- b. The Executive Director for Navigation and Safety at the Liberian Maritime Authority is the designated SAR Mission Coordinator for Maritime SAR incidents within Liberia's Maritime SRR and Inland Waterways. The (SMC) also has the responsibility to ensure that:
 - information about the incident are being collected and evaluated;
 - notify authorities/ministries that may be involved in the SAR operation and request the deployment of ships or aircraft that may be suitable for such an operation;
 - SAR operations are initiated and monitored;

- to request the use of other RCCs in a particular SAR operation, if necessary;
 - if the situation warrants it, forward the maritime warnings directly and without delay to the relevant RCC;
 - where the prevailing conditions require that ships be located near the SAR incident and that they are asked to proceed to the scene as quickly as possible;
- c. The Director of the Civil Aviation Authority is the designated SC for the coordination of emergencies with aircraft in Liberia. Investigation of all COSPAS SARSAT 406MHz alerts in Liberia maritime and aviation SRR, if alerts are not aviation-related, it is forwarded to the Maritime SAR Authority;
- d. Ministry of Internal Affairs is the designated coordinator for all disasters or emergencies on land, rail floods, etc. (IAMSAR Vol. II, 2008).

3.7. 4. SAR Training

Over the years, IMO has provided funding through Technical Cooperation to address and promote coordinated regional SAR and safety management mechanisms in the least developed countries, including Liberia, with a focus on sustainable maritime development, efficient and safe maritime transport services, and effective environmental protection. As the IMO does not have a regular technical assistance budget, its activities are designed and developed within a partnership for progress between beneficiary countries, the donor community, and the IMO. This technical assistance from the IMO depends on the availability of financial resources. Liberia's SAR program is a recipient of technical assistance to support capacity building for effective implementation of IMO's global maritime standards, mainly through institution-building and maritime human resource development, ensuring that Liberia is adequately equipped to fully comply with its International obligations (source: unohrlls.org).

Despite this assistance, the issue of maintenance and sustainability remains a serious challenge for Liberia. It is therefore important that Liberia fulfils its responsibility by employing the required resources and mechanism. Training is critical to SAR operation,

it increased performance and improve safety. Regardless of training being expensive but inadequate or the absence of training in SAR, is more expensive and may result in low work outputs. Accordingly, the SAR system should be in the position to save persons in distress (Radojević, S., & Kresojević, M. (2020).

Due to the current wave of modernization, SAR specialist that need periodic training include: The SCs, SMCs, and OSCs and the below operational facilities will also need SAR training programme that enhances professionalism:

- RCCs and RSCs
- Aeronautical units
- Maritime units
- Land units
- Specialized units (pararescue, paramedical, desert rescue, mountain rescue, urban SAR teams that deploy to disasters, diver), etc. (SAR Manual, 2010)

3.8. SAR Region of Responsibility

The "SAR Region of Liberia" comprises the maritime areas designated by the Florence Conference in 2000 for Côte d'Ivoire, Ghana, Guinea, Liberia, and Sierra Leone.

Table 4: Maritime Search and Rescue Region (Liberia SRR)

Name	Type	Description
Liberia SRR	Area	Maritime SRR

Index	Latitude	Longitude
1	10° 53.000'N	015° 05.000'W
2	01° 45.000'N	026° 00.000'W
3	06° 22.000'S	016° 00.000'W
4	06° 22.000'S	010° 05.000'W
5	12° 00.000'S	010° 00.000'W
6	10° 00.000'S	004° 40.000'W
7	03° 20.000'S	000° 00.000'E
8	06° 03.050'N	001° 06.120'E

Source: Multilateral Agreement, 2007

Maritime Search and Rescue Sub-Regions
 (Cote D'Ivoire SRS)
 (Ghana SRS)
 (Guinea (SRS)
 (Sierra Leone SRS)

Name	Type	Description
Liberia SRS	Area 4	Maritime SRS
Index	Latitude	Longitude
1	04° 22.000'N	007° 33.000'W
2	01° 00.000'N	007° 33.000'W
3	01° 00.000'N	002° 47.772'W
4	05° 01.373'N	002° 47.000'W

Source: Multilateral Agreement, 2007

Figure 5 Republic of Liberia SAR Region



Source: SAR Contacts; sarcontacts.info/contacts/monrovia-regional-mrcc/

Maritime incidents reported to Monrovia Search and Rescue Co-ordination Center between 2017 and 2018.

Table 5 SAR Incidents Report

No	Nature of Incident	2017	Loss of life	2018	Loss of life
1	Medevac	7	0	3	0
2	Sinking	1	0	0	0
3	Man overboard	2	0	3	1
4	Privacy/Robbery	2	0	11	2
5	Fire	2	0	0	0
6	Missing Fishing Boat	0	0	2	0
7	Ship Abandonment	1	0	0	0
8	Collision/Allision	1	0	0	0
9	Engine/Propeller failure	1	0	0	0
10	Artisanal incident	0	9	0	3
11	Others	3	1	0	0
	Total	20	10	19	6

Source: (MRMRCC report, 2018a)

3.9. SAR Assets

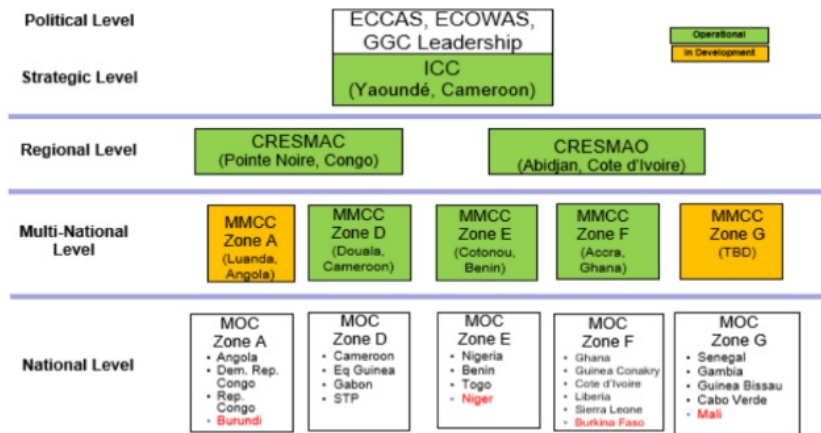
Monrovia Search and Rescue Centre Current Capabilities:

Equipment and Software:

- Maintain a 24-hour watch-keeping
- VHF DSC Marine Radio (Channels 09, 14 & 16/70)
- Two (2) Inmarsat Mini- C terminals (text/data)
- Two (2) BGAN Explorer 710 (Inmarsat Voice)
- Local Area, WIRELESS, and WLAN Networks
- Networked Computer Work Stations
- International Landline & Mobile Phones
- Maritime Safety and Security Information System (MSSIS) Sea vision (Web Base Satellite AIS) & LRIT
- Additional equipment expected (MRMRCC report, 2018b)

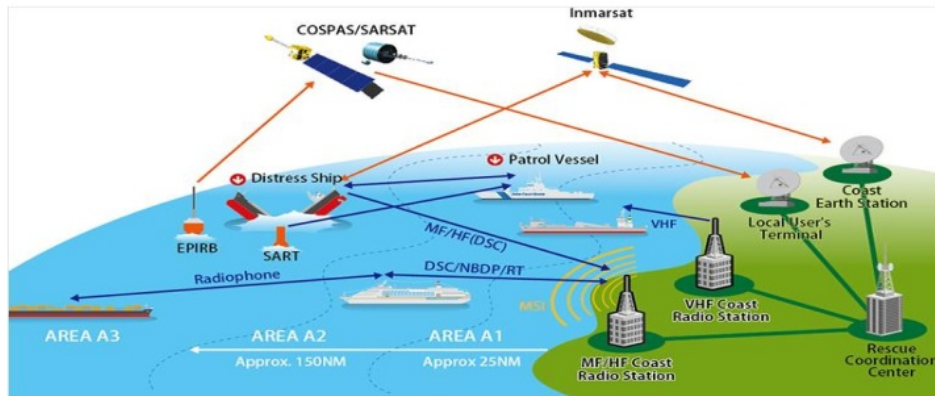
Multinational Maritime Coordination Center (MMCC) Zone F

Figure 6: Gulf of Guinea Maritime Security and Information Sharing Architecture



Source: mmcczonef.org/5274-2/

Figure 7: SAR implementation: Coastal Radio Station



Source: icselectronics.co.uk/support/info/gmdss

3.10. Comparison of Monrovia, MRCC, and Lagos, RMRCC

A comparative view of the capabilities and implementation of the SAR Convention by the SAR Centres, Liberia, and the SAR Centre Nigeria:

Lagos Regional Maritime Coordination Centre, the Lagos RMRCC, which became operational on 27 May 2008, is one of the five designated Regional Maritime SAR Coordination Centres, as it is the case with the Liberia MRCC, which was also approved for Africa at the SAR Conference 2000 in Florence, Italy. Nigeria heads the Secretariat of the West and Central African Search and Rescue Region and coordinates SAR activities in the waters of nine countries in the region, as opposed to the SAR Centre Monrovia, which has a limited scope of activity. Countries within the Lagos RMRCC region include:

- The Republic of Benin;
- The Republic of Cameroon;
- The Republic of Congo
- Congo Democratic Republic
- The Republic of Equatorial Guinea
- The Republic of Gabon
- The Republic of Nigeria
- The Republic of Sao Tome and Principe

Since its inception in 2008, Nigeria has established additional RMRCC, JRCC, and RSCs over the period, which includes:

- RMRCC Lagos;
- JRCC Lagos
- RSC Oron
- RSC Lokoja, as two additional RSCs:
- RSC Escravos and

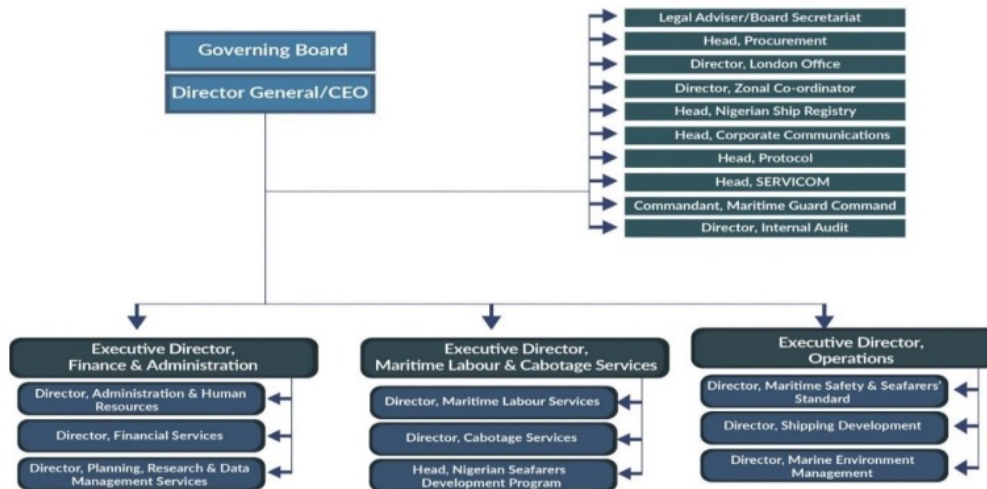
- RSC Bonny to be completed (Source: nimasa.gov.ng/resources/)

Nigeria's SAR Assets

- The RMRCC and the RSCs maintain a 24-hour watch-keeping;
- Nigeria several SAR Boats
- Established MoU with the Nigerian Navy
- Established MoU with the Nigerian Air force
- NAVTEX transmitter
- Established SAR Marshall
- Established SAR Clinic
- NMSAR Committee
- Regional Technical SAR Committee
- Established National SAR Committee
- Maritime Safety Awareness Campaign

Currently, the Nigerian SAR center is better equipped and has a wider coverage and services than the Liberian SAR center.

Figure 8 Nigeria Maritime Agency Organogram



Source: nimasa.gov.ng/resources/

Chapter Four

PROSPECTS AND CHALLENGES OF THE IMPLEMENTATION OF SAR CONVENTION BY LIBERIAN MARITIME ADMINISTRATION.

The execution of the SAR Convention entered into force in 1985. Following its adoption, the IMO Maritime Safety Committee divided the world's seas into 13 search and rescue areas, in which the countries concerned have each defined SAR regions for which they are responsible. Liberia as a responsible Coastal State took the responsibility for supporting and implementing the provisions and guiding principles of the 1979 SAR Convention as amended (IMO Resolution A.919(22));

- resolution A.919(22) on Acceptance and Implementation of the International Convention on Maritime Search and Rescue, 1979, as amended;
- the 1944 Convention on International Civil Aviation Organization (ICAO); the 1982 United Nations Convention on the Law of the Sea (UNCLOS);
- the International Convention for Safety of Life at Sea (SOLAS, 1974, as amended);
- and the 2000 Florence Conference on Maritime Search and Rescue and the Global Maritime Distress and Safety System (GMDSS): and as a signatory to several International Treaties under which Liberia is required to provide SAR services (IMO, 1974).

Given the above, the research examination of the implementation of the SAR Convention by Liberia has shown that Liberia has an established SAR structure with appropriate policies, procedures, and operational plans to ensure effective, efficient, and seamless operation of the SAR programme. Established on 23 April 2009, the SAR Centre is managed by the DMSR Department within the Technical Affairs Division of the Liberian Maritime Authority.

The mandate of the Centre includes but is not limited to, distress alert detection and relay, the identification and transmission of emergencies, ensuring effective and efficient coordination of maritime SAR operations in Liberia, facilitating the provision of medical advice and evacuations, protecting Liberia's maritime space through coastal surveillance and monitoring services, and demonstrating support for the State Authority in meeting its national SAR obligations.

Lesson from the Liberia Maritime SAR tragedy: In the early stage of implementing the SAR Convention, tragedy struck not only the Liberian Maritime Authority (LiMA) but the entire nation when four potentially productive young men drowned in the sea on 27 September 2012, part of an elite team of 13 individuals recruited from more than 60 applicants for the search and rescue program. They were recruited at the beginning of 2012 in preparation for further training abroad. The cadets met from Monday to Friday from 7: 00 to 9: 00 a.m. at the Samuel Kanyan Doe Sports Complex for their physical exercises and from 4: 00 to 6: 00 p.m. at the headquarters of the Liberian Maritime Authority for their academic work. On 27 September 2012, the trainees and their supervisor visited Musa Beach and allegedly swam in the Atlantic Ocean near Monrovia without safety protection and died as a result of drowning.

This incident led to a major lawsuit by lawyers representing the families of the four dead Cadets of the Authority against the Liberian Maritime Authority for damages, for the unlawful death of their relatives, citing negligence on the part of the Maritime Authority for the death of the Cadets. As a result, the Government of Liberia paid the beneficiary of the victims more than one million US dollars in compensation for the final settlement of the matter. This disaster, coupled with a legal dispute lasting for over a year, led to the subsequent cancellation of the planned training program by management.

As it relates to findings on Implementation effectiveness and current performance, the study established that the SAR system and implementation will only work appropriately

through the provision of resources by reflecting such commitment into national legislation, describing responsible for SAR. Given this background, the Government of Liberia continues to exalt all possible efforts in its implementation of the Convention, by the acquiring of an established SAR structure, continuous staffing, and the provision of 24-hour watchkeeping at the Regional Center. The participants further indicated that on 29 November 2015, thirty crew members were rescued from a fishing boat off the coast of Ivory Coast. This operation was made possible based on effective communication between MRCC Monrovia, MRCC Abidjan, and the Ivorian Navy, the United Nations Mission (UNOCI) in Ivory Coast at the time. However, there is still considerable work that needs to be done to keep the Monrovia Regional Maritime Rescue Coordination Center (MRMRCC) on the same level as other Regional Rescue Coordination Centres (Interview with P1 & P2, 2020).

At the moment, due to the computing priority of the government and the delay in obtaining the necessary support, the SAR Programme is currently experiencing challenges in achieving its stated objectives. Also, the government's current fiscal policy of reducing national expenditures, including the 25% reductions in national civil servants' salaries, across-the-board, owing to low revenue performance which Liberia has been on a declining path of revenue development in recent years, coupled with the government bureaucracy in allocating the needed resources within national budgets for institutional operations, has over the period affected SAR Programme as well. Liberia's economic performance is mainly determined by the growth of its GDP, which is directly reflected in rising domestic revenues for its key projects. (Interview with P4, 2020).

On the question of regional and inter-agency cooperation during SAR operations, participants indicated that regional and inter-agency cooperation during maritime SAR operations is one of the effective ways to achieve the desired outcome and that there may therefore be ideas and other resources that can be used. MRMRCC, as a Coordination Center, conducts a monthly virtual coordination test with all RCCs in the region and

national actors to ensure that there is a unified operation in case there a need and free flow of information on maritime affairs. However, as it relates to the conduct of exercises on schedule, there is a serious obstacle, particularly at the regional level, due to limited funding and the Covid-19 pandemic, cooperation and coordination are not very effective at the moment, as some member states are focusing on strengthening their health sectors and infrastructures since the outbreak of the pandemic, while others prioritize their efforts to support the broken economy from the lessons learned. (Interview with P1 & P3, 2020).

Regarding the challenge for the implementation of the SAR Convention as it relates to training and equipment: The key challenge is the lack of financial autonomy at the MRMRCC, so funding tends to be directed towards other pressing needs. Therefore, the SAR Center is under-equipped with basic small glass boats that are limited to 40 miles; the administration lacks Aerial rescue equipment (no helicopter). The Communication facility is currently under-equipped with basic GMDSS equipment. Also, the center is equipped with two (2) 6110 GMDSS systems for data communication; AIS, Explorer 700, and 710 and landline Phones for voice communication and SAILOR 6222VHF Radio Class A, for radio communication. The administration is yet to subscribe to the Global Safetynet system, nor is the Center equipped with Navtex and MF/HF. As such, the Center does not have the broadcasting capability for most sea areas as it should, except for the VHF, that covers only a 30-mile radius within the vicinity of the tower. As a result of these inadequacies, the Monrovia SAR Center is heavily reliant on JRCC Norway to do most of its broadcasting on a mutual basis. Nevertheless, the Kingdom of Norway and the Republic of Liberia have a formal agreement on the exchange of information on tax matters. (Interview with P1 & P2, 2020).

As it relates to personnel, the administration has adequate staff, however, there is a challenge with training and upgrading of the staff to conform with the standard of training qualification requirements as specified by the IAMSAR Manual. As SAR training is very key to performance, it is required that SAR personnel should have complete knowledge

about its operation through regular training, to reduce risks to valued personnel and resources (Interview with P1 & P2, 2020).

Concerning improving the existing Maritime SAR System in Liberia: The participants pointed out that the LiMA administration must take into consideration the following actions:

- strengthen national and regional SAR governance structure; improving SAR coordination and response mechanisms by conducting regular exercises;
- conduct evaluation and review of the overall performance using the SWOT analysis;
- by acquiring and maintaining coastal GMDSS communication and that management should subscribe with the safetynet, to assign emergency numbers for distress calls;
- engaging the Liberia National Telecommunication Authority to assigned numbers for distress calls;
- by developing a national SAR program that would include waterside recreational facilities and pleasure crafts as well as Artisanal fishermen;
- by increasing the capacity of the SAR Center by providing durable rescue vessels, helicopters, and other mobile facilities that will enhance efficiency and effectiveness of SAR operation; and develop training programs that will improve rescuers skills and readiness (Interview with P3 & P2, 2020).

Liberia as a nation, has since been providing SAR Services within the territorial waters and EEZ of Liberia and its delineated Maritime Search and Rescue Region (SRR), in coordination with neighboring coastal states. Being one of the five regional Centres across Africa. Generally, the perception of the existing maritime SAR system in Liberia is good but more needs to be done both at the local and regional levels, to mitigate some

of these fundamental challenges the Liberian Maritime Administration is currently experiencing with the implementation of the SAR Convention (Interview with P1, 2020).

With this development, I take the reader to the next Chapter.

Chapter Five

CONCLUSION AND RECOMMENDATIONS

Since 2000, IMO has made endless efforts in strengthening the global network of SAR services, including the formation of the regional framework for Maritime Rescue Coordination Centres and Maritime Rescue Sub-Centres in Africa for implementing SAR operations as the results of many accidents at sea, including the Titanic incident, one of the world's most remarkable maritime disasters.

Before the espousal of the SAR Convention, International cooperation in SAR operations was a serious challenge, as each country planned its search and rescue operations according to its needs and available resources as there was no global uniform procedure that could be applied until the adoption of the SAR Convention in 1979 at a Hamburg conference in 1979, organized by the IMO. The Convention later entered into force in 1985, obligating States Parties to ensure that assistance is provided to every person in distress, regardless of nationality, status and location through the establishment of a framework for global SAR operations between neighbouring SAR organizations and that the parties make SAR arrangements for the provision of adequate SAR services in their coastal waters through the establishment of coordination centers.

In light of these concepts to global safety, the State of Liberia, as a maritime nation, accepted the commitment of hosting the MRMRCC Regional Maritime Search and Rescue Coordination Center in Monrovia for the execution of SAR services.

Based on the responsibility that Liberia has assumed, the researcher has therefore examined the holistic implementation of the Search and Rescue Convention with

emphasis on prospects and challenges. Predicated on the research results, it has been revealed that despite some improvements Liberia has made in its implementation of the SAR Programme over the years, the research has identified several cardinal issues that need to be addressed and improved, which has hampered the effective implementation of the SAR Convention by the Liberian Maritime Authority over the period under examination. These factors include; lack of sufficient SAR equipment; the lack of adequate trained personnel; lack of SAR exercises; the lack of enforcement of SAR Policy; the lack of adequate supports from the national government due to limited resources, and lack of sustainable and profitable domestic programs, etc.

Given the above, henceforth, for the successful implementation of the SAR Programme, there is an essential need to address these challenges. The SAR Coordination Center human resources gap needs to be addressed by upgrading the Liberia Marine Training Institute (LMTI), as one of the ways forward in achieving its desired result, given the current expansion of global maritime shipping and the fast-changing technology. Furthermore, the study underlines the need to provide appropriate SAR equipment/tools to improve the overall performance of personnel and the effective management of the SAR programme. The current lack of equipment to improve the transmission capacity and to effectively disseminate vital information in most marine areas is a serious challenge that is affecting the overall implementation and requires urgent management attention. LiMA management needs to work in close collaboration with its key maritime stakeholders, global partners, and national governments in identifying sources of supports for SAR operations.

Liberia has come a long way within the global maritime sector: according to the Lloyd's List 2019, more than 4,000 ships are currently sailing under its flag across the oceans, seas, and other waters, and as such Liberia is aware of the importance of maritime safety. Liberia is also a "port state" with four ports serving international and local ships, a "coastal state" with local and international ships trading along its coast. Maritime safety

in the region should therefore be key to Liberia's national priority, together with its international commitment to provide an effective and efficient implementation of the SAR Convention.

In the study momentary comparison with the implementation method of the Abuja SAR, the study concludes that Nigeria is making enormous progress in implementing the SAR Convention because the Nigerian Maritime Safety Authority (NIMASA), is committed to implementing best practices in the provision of its maritime services. According to Dr. Bashir Jamoh, Director General of NIMASA, NIMASA's current focus is on effective management of maritime safety, SAR operations, and the development of maritime capacities (nimasa.gov.ng). This shows that a large part of the Agency's budget has been spent on training its staff in recent years. This strategy by Nigeria is commendable and should serve as a good example for other maritime nations in improving their respective programs, because training and equipment, especially in the area of the SAR, remain a serious challenge for many SAR coordination Centers within the maritime sector. Another way forward, Liberia should draw on the experience of other successful SAR nations such as Australia, the United Kingdom, Norway, etc., in implementing its SAR programme.

Finally, the researcher hopes that the challenges and course of actions identified for effective and efficient implementation of the SAR Convention will be taken into accounts by the Liberian Maritime Authority and that this study is of vital importance for future researchers as raw material for carrying out similar aspects of maritime research.

RECOMMENDATIONS

Based on the research results of the questionnaires given to the participants and individual interactions with some relevant stakeholders and germane materials to the topic, the researcher is pleased to present the following recommendations that will help buttress management's implementation efforts of the Search and Rescue Convention in Liberia;

- That the Government of Liberia should prioritize the provision of adequate resources in its national budget for the support and maintenance of SAR facilities and that the program is considered a national commitment;
- To ensure effective implementation and accurate reporting system, management should equip the Center with ships, helicopters, and other logistical supports needed for routine patrols, wider coverage, and efficient dissemination of SAR information;
- Training is essential for SAR operations in improving the performance and safety of personnel rescuing and for effective monitoring systems, Management should provide an external training opportunity for the Center's leadership to improve their skills, as SAR training is not currently offered in Liberia.
- That the management of the Authority modernize its current Marine Training Institute (LMTI) to provide adequate training in the areas of SAR procedures, techniques, and use of equipment, per the requirements of the SAR manuals;
- Search and rescue exercises are an important aspect of SAR implementation and help identify strengths and weaknesses within the system. Management should, therefore, organize regular exercises;

- That Management develops a financially sustainable business and operational model, whereby a greater proportion of its revenue is derived from internal operations for the upkeep of its facilities.
- As Liberia is responsible for the implementation of the Regional Search and Rescue Plan, it is necessary to re-enforce the current SAR plan to facilitate the efficient and effective coordination of all assets during emergencies;
- That top management conducts need assessment of current facilities to determine its current and future needs. That a regular report be submitted to all major maritime SAR stakeholders setting out all details of SAR operations, including challenges and prospects, as well as immediate plans to ensure maximum cooperation;
- That multilateral conference be held annually to strengthen cooperation;
- Due to the high rate of incidents among Artisanal fishermen, as set out in Table 5, SAR Accident Report 2018, it is necessary for the LiMA Authority to collaborate with the local fishing community in developing potential risk management plans that will prevent or minimize the current accident and death rate among fishermen in its SAR area and beyond; and that Management should include the National Fishery Authority on the National SAR Plan;
- Develop procedures and communications mean suitable for coordination between all parties in response to emergencies and coordination between regional centers;
- That administration should develop a national SAR Manual for the elaboration of all SAR procedures;
- Create Public awareness of SAR safety information and ensuring that its flag vessels and visiting vessels comply with safety requirements and international best practices as it relates to SAR implementation. An example of awareness-raising can be the awarding of some dedicated fishermen for their dedicated services during the annual stakeholder meeting. According to SAR Expert advice;

- Review of SAR responsibilities to ensure appropriate placement of SAR stakeholders with the necessary skills, knowledge, and capabilities;
- To avoid the 2012 Scenario, that gives rise to the loss of lives and financial resources to the country that could have been prevented, the study recommends that Management's takes appropriate measures, including the introduction of a waiver system by requiring all potential applicants to sign waivers, substantially averring the terms and conditions of employment, in order to release the Authority of all future burdens.
- The Researcher had originally considered recommending that the Liberian Maritime Authority contact the IMO Technical Committee to obtain technical assistance in procuring additional equipment to modernize the Center. However, having reviewed the price list for SAR equipment from various sources, including Life Support International, lifesupportintl.com, one of the unique companies specializing in providing the best safety, survival accessories, Search and Rescue, and protection equipment currently available on the market, it appears that the prices for this important equipment are comparatively reasonable, which the country can afford, and therefore proposes that the Authority prioritize the purchase of this much-needed equipment to fulfill its national responsibility for smooth and improved implementation.

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Appendices

Appendix 1- WMU Research Ethics Committee Protocol



WMU Research Ethics Committee Protocol

Name of principal researcher:	John Emmett Quawah
Name(s) of any co-researcher(s):	-
If applicable, for which degree is each researcher registered?	-
Name of Supervisor, if any:	Associate Professor, Henning Jessen
Title of project:	Examining the Implementation of the IMO's Search and Rescue (SAR) Convention in Liberia: Prospects and Challenges
Is the research funded externally?	No
If so, by which agency?	-
Where will the research be carried out?	By Correspondence
How will the participants be recruited?	Based on experience and involvement in the subject matter
How many participants will take part?	Not more than five participants
Will they be paid?	No
If so, please supply details:	-
How will the research data be collected (by interview, by questionnaires, etc.)?	By interview
How will the research data be stored?	Data collected from the interviews will be recorded and save in a secure folder. Whereas, confidential documents will also be secured in a folder.
How and when will the research data be disposed of?	By disposal, data collected will be deleted effective November 2, 2020
Is a risk assessment necessary? If so, please attach	-

Signature(s) of Researcher(s): Date:

Signature of Supervisor:Date:

Please attach:

- A copy of the research proposal
- A copy of any risk assessment
- A copy of the consent form to be given to participants
- A copy of the information sheet to be given to participants
- A copy of any item used to recruit participants

Appendix 2 – Interview Questions

In connection with my MSc Research Dissertation at the World Maritime University (WMU). I am conducting a survey on the topic: **Examining the Implementation of the IMO’s Search and Rescue (SAR) Convention in Liberia: Prospects and Challenges**. I am therefore pleased to inform you that you have been selected as one of my participants for this survey. By answering the below-listed questions based on your understanding and experience. Kindly be aware that any information obtained in connection with this study, will be kept confidential and only intended for this purpose.

Name of Researcher: John Emmett Quawah

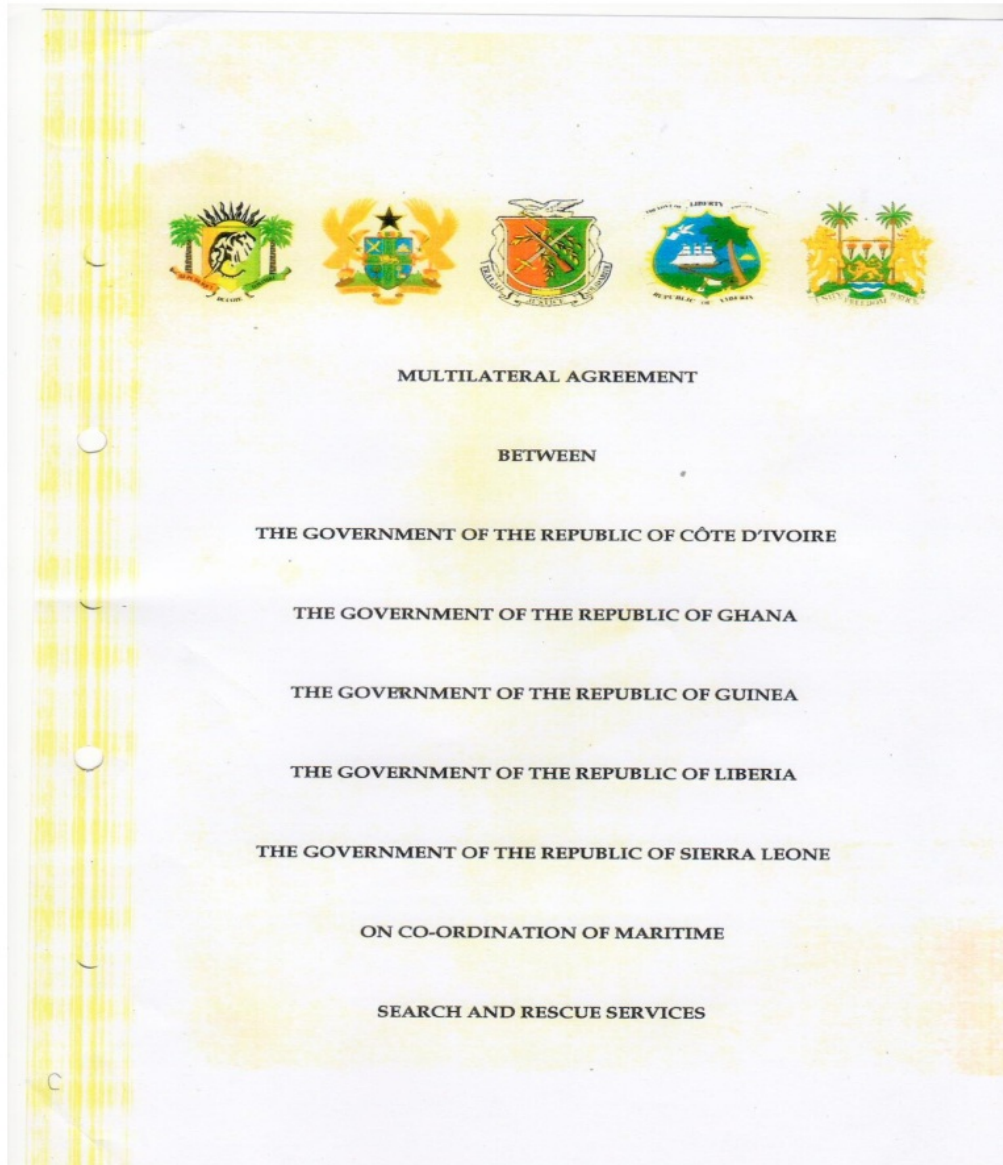
Respondent’s Details:

Name: _____

Questionnaires for Interview





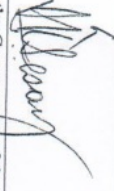
NO	OBJECTIVE	QUESTION	ANSWER
Q-1a Q-1b	Organization and the experience of the respondent	a. Which organization do you belong to? b. Your experience in the current organization?	
Q-2	Level of involvement in Maritime Search and Rescue	What is your involvement in Maritime Search and Rescue?	
Q-3	The confidence of beneficiaries of Maritime SAR	What is your opinion about the implementation effectiveness of the SAR Convention in Liberia?	
Q-4	Perception about SAR Coordination	What is your view on Regional and Inter-Agency collaboration during Maritime SAR operations?	
Q-5	Perception of SAR organization and coordination	What do you consider as a challenge for Administration in implementing the SAR Convention as it relates to staff or equipment?	
Q-6	Perception of Search and Rescue communication	What is your view on existing Maritime Search and Rescue Communication facilities in Liberia?	
Q-7	Input on how to improve the Search and Rescue system	What is your opinion on how to improve the existing Maritime SAR system in Liberia?	
Q-8	The general perception of the existing Maritime SAR system	Is there anything more you would like to add?	

Appendix 3 - SAR Regional Multilateral Agreement (cover and signature pp.)



WITNESS WHEREOF the undersigned, being duly authorized by their respective Governments have signed and sealed this Agreement in English and French languages, all texts being equally authentic.

Done at MONROVIA on this 9th day of NOVEMBER, 2007

 For the Government of the Republic of Côte d'Ivoire Minister responsible for Transport	 For the Government of the Republic of Ghana Minister responsible for Ports, Harbours and Railways	 For the Government of the Republic of Guinea Minister responsible for Transport
 For the Government of the Republic of Liberia Commissioner of Maritime Affairs	 For the Government of the Republic of Sierra Leone Minister responsible for Transport	