

A Study on the Reform of Taiwan's Maritime SAR Organisation

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ABSTRACT

This study is an initial look at the current state of the Taiwanese domestic search and rescue system and its linkages with the international system. The objective of this study is to review existing legislation, policies and facilities in order to make recommendations on improving the effectiveness of the Taiwanese Search and Rescue System. It will assess legislation, policy and infrastructure. The study will identify the key components of an effective system and areas for change or enhancement. The goal is to increase effectiveness and to work towards a seamless integration with international protocols and procedures.

1 Introduction

Taiwan straddles the Tropic of Cancer, about 200 kilometres off the eastern shore of the Chinese mainland. It is strategically located in the East China Sea, between Japan and Korea to the North, and Hong Kong and the Philippines to the South. With a land area of 36,000 square kilometres, it is comparable in size to the Netherlands. As far as the politics and economy are concerned, the shipping industry in Taiwan is extremely important.

To a large extent, a community depend on reliable, cost effective and safe shipping services. Almost 99% of import and exports in Taiwan are transported by sea. Taiwan is the fifteenth largest trading nation in the world, therefore, in addition to the Taiwanese domestic fleet, there are well over two hundred ships with foreign flags sailing in Taiwan waters daily. Taiwan harbors are very busy shipping and trans-shipment points. Many other vessels pass by close to Taiwan passing from the Pacific Ocean to the South China Sea.

Taiwan has in excess of thirty-eight thousand registered vessels ranging from very small non-powered craft to very large ships. Eighty-one percent of the vessels are less than twenty tonnes in displacement. However, the lack of well-established aids to navigation systems is increasing the risk to the mariners navigating in this high density sea traffic area, especially for a large amount of poor equipped fishing vessels and small general cargo carriers crossing the Formosa Strait between Taiwan and China.

2 Responsible SAR Area

The area of responsibility of the search and rescue (SAR) service provided by Taiwan includes the Taiwan Strait between Taiwan and China as well as the neighbouring waters around Taiwan. It is bounded on the north from 29° 00'N, 117° 30'E to 29° 00'N, 124° 00'E, on the south from 21° 00'N, 117° 30'E to 21° 00'N, 121° 30'E , on the west from 29° 00'N, 117°

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30'E to 21° 00'N, 117° 30'E , and on the east from 21° 00'N, 121° 30'E extending eastnorthward to 23° 30'N, 124° 00'E then northward to 29° 00'N, 124° 00'E.

Although the international bodies suggest that Search and Rescue Regions (SRRs) be co-incident with FIRs there are some considerations that are equally important. Hence, practically, due to the geographically, politically and SAR capabilities are concerned, the area of responsibility of the SAR service provided by Taiwan is bounded on the north from 29° 00'N, 124° 00'E to the south 23° 00'N, 124° 00'E to 21° 00'N, 121° 30'E and to the west of 21° 00'N, 117° 30'E, and through the middle of Formosa Strait at 24° 00'N, 120° 00'E extending east-northward to 29° 00'N, 124° 00'E.

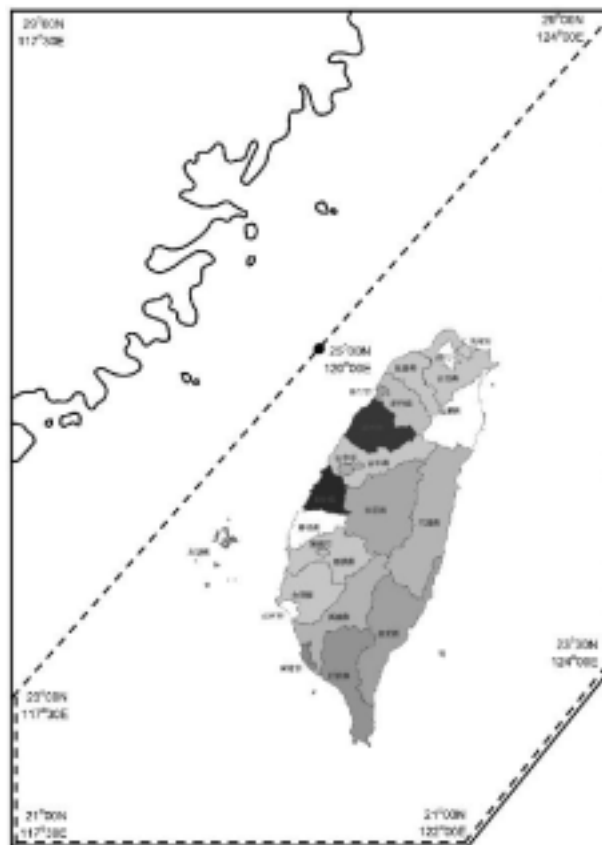


Figure 1 Taipei FIR (black line area) and responsibility of the search and rescue region (dotted line area)

3 Casualty Review

Casualty statistics indicate that the fatality and missing rates are fairly high with no downward trend evident. Statistics shows that maritime casualties occurred in the SAR responsibility area of Taiwan from 1 Jan 1982 to 31 Dec 2000 is about 2669 cases. It is anticipated that the opening of the waters to leisure boats and maritime activities or the direct shipping between mainland China and Taiwan in the future would sharply increase the number.

Table 1. Yearly Statistics of Maritime Casualties
(1.1.1992~31.12.2000)

Year	Keelung Harbour		Kaohsiung Harbour		Taichung Harbour		Hualien Harbour		Total	Vessel Damage	Injured	Vessel Sunk	Death/Missing
	Costal	High Sea	Costal	High Sea	Costal	High Sea	Costal	High Sea					
1992	118	81	59	83	8	0	14	9	372	148	23	63	50
1993	91	50	43	82	14	5	11	3	299	137	7	41	54
1994	78	33	54	68	20	3	22	2	280	153	13	43	32
1995	42	27	53	59	16	4	9	4	214	95	4	39	30
1996	81	32	44	107	17	2	15	3	301	142	8	35	75
1997	71	43	55	99	20	6	11	1	306	143	6	19	15
1998	79	24	56	90	23	4	17	2	295	120	7	40	42
1999	70	37	77	92	12	4	19	4	315	133	13	68	44
2000	106	26	60	68	14	2	11	0	287	142	10	64	112
Total	736	353	501	748	144	30	129	28	2669	1213	91	412	454
Average	81.78	39.22	55.67	83.11	16.00	3.33	14.33	3.11	296.56	134.78	10.11	45.78	50.44

Source : Ministry of Transportation and Communications

Table 2. Statistics of Maritime Casualties – by characteristics
(1.1.1992~31.12.2000)

	Keelung Harbour		Kaohsiung Harbour		Taichung Harbour		Hualien Harbour		Total	Vessel Damage	Injured	Vessel Sunk	Death/Missing
	Costal	High Sea	Costal	High Sea	Costal	High Sea	Costal	High Sea					
Collision	206	56	172	60	78	15	50	8	645	511	18	73	59
Grounding	67	24	55	53	18	4	11	2	234	114	11	55	22
Fire	31	15	67	69	13	2	2	0	199	73	5	112	26
Explosive	4	0	4	1	0	0	0	0	9	6	5	1	3
Oil spill	32	15	15	24	4	1	3	0	94	21	0	58	3
Machinery	173	115	94	435	3	1	13	2	836	295	6	8	3
Weather	8	26	7	3	1	1	10	6	62	25	0	11	20
Abnormal	3	0	28	34	11	2	1	1	80	11	6	38	72
Others	212	102	59	69	16	4	39	9	510	157	40	56	246
Total	736	353	501	748	144	30	129	28	2669	1213	91	412	454
Average	81.78	39.22	55.67	83.11	16.00	3.33	14.33	3.11	296.56	134.78	10.11	45.78	50.44

Source : Ministry of Transportation and Communications

Year	Number of Casualties	No. of vessel Sink/Missing	Death	Serious Injured	Injured	Missing
1992	451	124	89	13	49	73
1993	275	53	70	12	19	38
1994	433	49	69	11	8	43
1995	378	39	65	12	9	40
1996	1032	155	73	10	19	65
1997	441	42	46	12	30	21
1998	552	49	59	12	39	25
1999	527	96	62	6	77	18
2000	519	96	68	16	38	14
Average	512.00	78.11	66.78	11.56	32.00	37.44

Source : Committee of Agriculture, Fishing Administration

It has been suggested that the fatalities and missing figures for fishing vessels may not be representative of current losses near Taiwan due to inaccuracies in reporting the actual number of crew on board and that the actual number of lives lost might be somewhat higher than official statistics provide.

Regardless, in consideration of the sheer volume of traffic, there is an obvious need for a comprehensive and capable Search and Rescue system to be in place to address emergency situations.

4 National SAR Organization

Internationally it is recognized that the provision of search and rescue services is normally fulfilled through a multi-agency approach that results in a full-services rescue system. For the system to work well each of the separate components must be strong. In addition, the separate components must understand what portion of the system they are providing and how it integrates with the elements provided by other agencies. Coordination of the various components is vital to ensuring system integrity. Coordination is the result of high quality communications and teamwork.

It is desirable to have one agency with the authority and accountability for the SAR program. This ensures that gaps are not created as various agencies move in different directions. It also ensures that only one person or agency will be official spokesperson for an event, which leads to clear, consistent messages. The lead agency must also strive to foster collaboration among the many partners in the SAR system.

This does not mean that one agency will be doing all of the planning, programming and operations. It does mean that the lead agency will be in a position to strongly influence those agencies that are partners in the SAR system. They will also have the ability to ensure system integrity.

Research conducted for this paper indicates there is a very good structure in place for executive oversight and management of emergency rescue in Taiwan. This structure is well described in, "The National Search and Rescue Center Operation Manual". The National Search and Rescue Center (NSRC) is under the Executive Yuan and is responsible to integrate

all governmental and civil emergency rescue resources to safeguard the safety of human life and property.

The structure and authorities described in the manual are very comprehensive. There are linkages to all potential resource organizations with a description of the role they would be expected to carry out. Many countries around the world are struggling with how to develop just such a system to assist in the management of incidents where the capabilities of the normal SAR system are overwhelmed. Unlike many other countries, the Taiwanese model is more operational at very high levels rather than a support to the RCC.

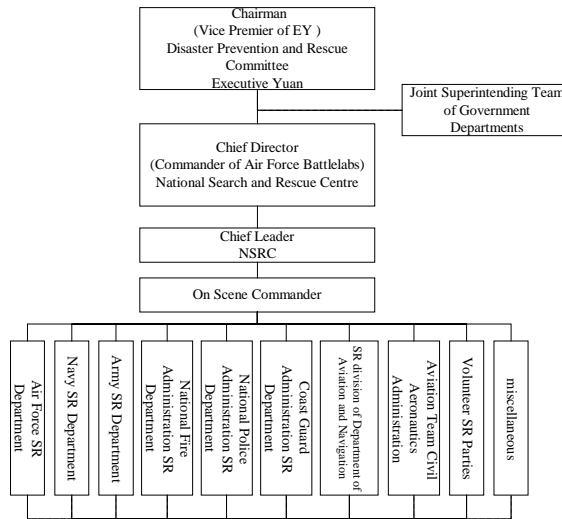


Figure 2 coordination and command relation chart of NSRC

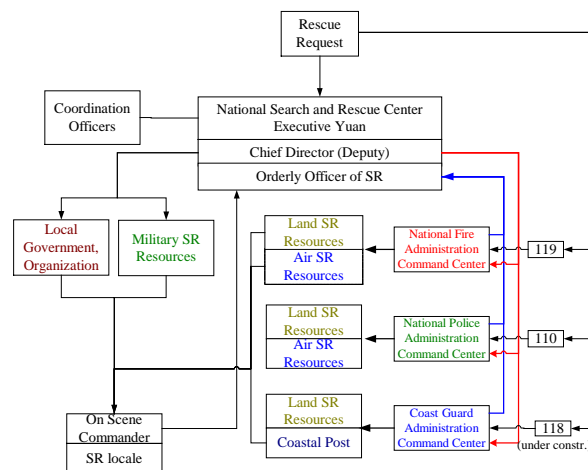


Figure 3 communication and command flow of NSRC

As this system is very new in Taiwan it is very important to take steps that will improve its effectiveness and efficiency. All cooperative models require constant nurturing of the partners and well run exercise programs to develop good working relationships that will withstand the rigors of a large-scale response. Exercises are useful to ensure that procedures, working systems and co-operative arrangements are used and implemented in a common fashion by a number of agencies. The exercises can also be designed with a training component to them to assist in achieving the co-operative goals.

The NSRC is well positioned to provide an audit and evaluation function for the SAR system. They would be able to look not only at individual agency's readiness but make assessments and recommendations that cross several agencies or that deals with the linkages between the agencies. Being independent of any of the response agencies puts the auditors in a unique position to give unbiased reports that are primarily concerned with the integrity of the whole co-operative system.

5 Maritime SAR Organization

According to Article 12(2) of the Convention on the High Seas (1958) which reads:

"Every coastal states shall promote the establishment and maintenance of an adequate and effective search and rescue services regarding safety on and over the sea where circumstances so require - by way of mutual regional arrangements co-operate with neighbouring States for this purpose."

and Regulation 15, Chapter V(a), of SOLAS(1974) which reads:

"Each contracting government undertakes to ensure that any necessary arrangements are made for coast watching and for the rescue persons in distress round 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 as possible, afford adequate means of locating and rescuing such persons."

,each contracting government is obligated to provide adequate and effective SAR services mentioned above. Although the ROC was not participating in any of these Conventions, respecting the safety of life and protecting its environments, the government has put lots of efforts to improve its SAR services in recent years by evaluating the SAR organisation and procedures, setting new rules, preventive methods and equipping more comprehensive SAR facilities, etc.

More than the past 40 years, the basic structure of maritime search and rescue organization in Taiwan was established as follows:

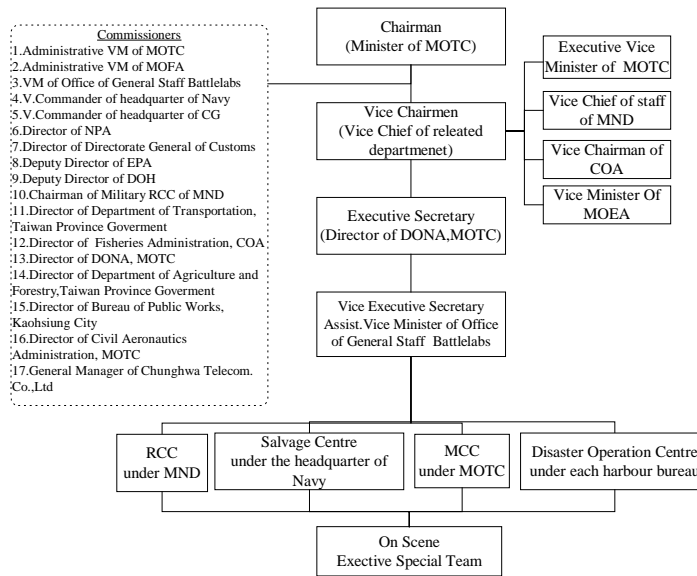


Figure 4 Organisation Chart of Maritime Distress Rescue Committee (before May, 2001)

Due to the strongly request from the public and also questioned on the government SAR capability in many respects, also owing to the restructure of the Taiwan government agencies, such as the new establishment of Taiwan's Coast Guard Administration, the structure of maritime search and rescue organization in Taiwan are finally reformed in May 2001.

Currently the lead role for maritime SAR is resting with the Navigation and Aviation Department of the Ministry of Transportation and Communication. This committee deals with maritime incidents that are not large enough or serious enough to require the management of the NSRC. This committee also organizes an annual SAR meeting between all of the agencies. The purpose of this meeting is to keep communication lines open and to encourage the parties to work to improve the system. This role has been placed on them by having them Chair the Maritime Distress Rescue Committee (MDRC). The new maritime SAR Organisation structured as follow:

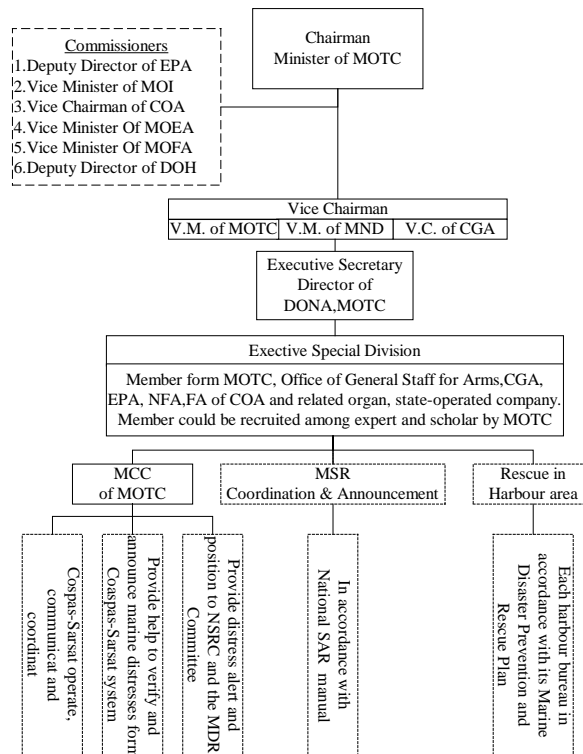


Figure 5 Organisation Chart of Maritime Distress Rescue Committee (after May, 2001)

One of the requirements of the IMO SAR Convention is to forward to the Secretary-General information including the national authority responsible for the maritime search and rescue services. With the current organization of the NSRC and the MDRC it would appear that the Responsible Authority for Maritime SAR is the Ministry of Transportation and Communication while the NSRC has system-wide oversight.

International organizations are only interested in the maritime and aeronautical components of a country's SAR system because they have implications on the global SAR system. Currently, Taiwan is operating a Joint RCC, which is the international designation for a RCC that coordinates both Aeronautical and Maritime SAR cases. The current RCC is not recognized internationally and in internal documents (Maritime Distress Rescue Committee Handbook) it is designated as a Military RCC.

Taiwan currently has the structural outline to make a significant leap forward for search and rescue and disaster response. As the NSRC has total system oversight and the capability to integrate all of the agencies, they could establish an appropriate centre to be a fully functioning and fully integrated RCC and Emergency Disaster Response Centre. This step would create a model for many organizations around the world to look at very seriously and to aspire to.

The establishment of such a centre would entail a significant investment in planning, training and exercising before any roles or responsibilities actually shifted. These investments first and foremost ensure a very professional and capable team that can perform all of the designated tasks to world standards or better. This investment would also, in time, relieve the burden on the MDRC and NSRC of managing individual cases of lesser magnitudes as the highly skilled center staff could run and manage all but the most serious of cases.

6 Conclusion

The global foundation document for marine SAR is the International Convention on Maritime Search and Rescue 1979. The convention was adopted in April 1979. The purpose of the convention is to improve existing arrangements and provide a framework for carrying out search and rescue operations following accidents at sea. Due to the considerable obligations imposed on parties by the Convention the ratification processes for the Convention was not completed until 1985.

Maritime search and rescue operation in Taiwan has been debated in almost all researches and conferences related to marine safety in this country. The conclusions all suggested that structure of the SAR organization is the key problem. As the government of Taiwan has indicated to comply in all respects with the International Convention, this report applied the Convention as a guide for framing the discussion and analysis.

The government of Taiwan has taken an innovative and very integrated approach to search and rescue and disaster management with the development of the National Search and Rescue Centre (NSRC). This model allows for all of the required agencies to work in a cooperative fashion to develop a “best response” to the situation at hand. As it is structured, it acts de facto as a Rescue Coordination Centre for civilian incidents. An opportunity exists to capitalize on this by actually turning it into a full-fledged civilian RCC. The military would still be partners, with obvious strengths in response and logistics support, but they would no longer fulfill the lead roles. The newly established RCC would also serve as a governmental Emergency Response Centre for non-SAR disasters that merit a high level response.

Establishing the NSRC as RCC Taipei would allow important steps to progress such as declaring a Search and Rescue Region. These two moves have the potential to be recognized as a major improvement in the global SAR system particularly if it leads to more detailed discussion and agreements between all of the countries that currently make up the North West Pacific SRR.

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