

**REPORT ON THE STATUS OF HYDROGRAPHY AND AtoNs
IN THE UNION OF COMOROS**

(24 AUGUST 2011)

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I SAIHC QUESTIONNAIRE

N°	Questions	Answers
1	<p>RHC Involvement.</p> <p>Note whether the country is an IHO member, and/or a member of the RHC.</p> <p>Note whether it was represented at the most recent Regional Conference, and whether a National Report was available to the RHC Study Team.</p> <p>Where none of these apply, note whether there is any routine liaison with the HO of a RHC or IHO member nation.</p>	<p>Comoros is not an IHO member state, but participates since 2009 to SAIHC conferences and similar events, provided that there is donors' support, (Norway, WIOMHP, etc.)</p> <p>Comoros intends for the first time to produce a national report to the 8th SAIHC meeting.</p> <p>Since Mr Said Anfane's appointment, a closer relation has been established with the SAIHC, WIOMHP, IOC and SHOM.</p>
2	<p>Preliminary Liaison.</p> <p>Record any local assistance with co-ordination of the visit.</p>	<p>The visit was made possible, thanks to the support of the SAIHC Chairman. Preliminary contacts were established between the experts and Mr Said Anfane who established a detailed programme of visit (in French – Annex 1).</p>
3	<p>Points of Contact.</p> <p>Confirm the accuracy of details in the IHO Year Book of the local first point of contact for hydrographic and MSI matters.</p> <p>Comment on any recommendations for change.</p> <p>Note any local difficulties in line accountability, and loss of top -level awareness and support for the national hydrographic capability, which will be discussed later in the report.</p> <p>Report any changes in local legislation or organisation which will result in changes to information published by the IHO.</p>	<p>See list below:</p> <p>Union of Comoros is neither registered in the IHO Year Book (28 July 2011 version) as an IHO member state nor as a non-member.</p> <p>It is proposed to insert a new entry in the Year Book's next issue, to reflect the present situation as reported by Annex 2.</p> <p>There seems to be a rising awareness of the interest of Hydrography triggered amongst other consideration by the need to delineate the country maritime borders and improve the State control on the Comoran EEZ.</p> <p>1/ The Comoran Government intends to establish a Hydrographic & Oceanographic Centre. The project (in French) has been appended at Annex 3. The outcome shall very much depend on opportunities and individuals' sense of achievement and continuity.</p> <p>2/ Union of Comoros is considering entering a cooperation agreement with SHOM</p>

Main Points of Contact

Name	Title	Telephone and email address	Remarks
Mr Anfane Said Mchangama	Deputy Director General Comoran Ports Authority, in charge of hydrography & MSI (Originally: Mohéli Pilot)	+ 269 333 42 14 anfanesaid@yahoo.fr	Key person (SAIHC, IOC, WIOMHP, training, AIS, hydrography)
Captain/Colonel Said Hamza	Head of the National Border Committee	+ 269 323 45 01 + 33 6 30 94 98 34 saidhamouza@yahoo.fr	Key person (policy), graduate from the French naval and war colleges
Ms Mariama Madi	University graduate (Earth sciences), identified as a valid candidate to be put in charge of the Comoran AIS	arhzim@yahoo.fr Home: + (269) 773 2195 Mob: + (269) 331 68 42	Fluently conversant in Arabic, English and French, Ms Madi has followed the “cat. C” hydrographic course on board the <i>Beautemps-Beaupré</i> and intends to remain in the picture.

Other PoCs

Mr Nassur Radjabou	Directorate of national infrastructures	338 90 65 arsen1981@hotmail.com	
Major Anzize Ibrahima	Police station (<i>Gendarmerie</i>) Moroni	+ 269 332 97 63	
Mr Abdou Salim	Port of Mutsamudu authority	+ 269 332 12 99	
Mr Abdourahim Said Abdou	Port of Moroni authority	+ 269 324 71 38	
Mr Ali Mohamed Assoumani	Comoran Ports Authority	alimohamedassoumani@yahoo.fr	
Major Chamsiddine Mohamed	Coast Guards	+ 269 335 26 89	
Mr Bacha Chefou	Harbour Master Comoran Ports Authority	chefouport@yahoo.fr	
Mr Hassani Ahamada Soilihii (AJAX)	Ministry of environment, agriculture & fisheries	Hassani.ahamada@gmail.com + 269 334 63 29	

DESCRIPTION OF MARITIME ACTIVITIES

4 **National Maritime Affairs.**

Provide a thumb-nail sketch of the significance and salient features of the maritime sphere in the country visited.

Note any individuals who have been especially helpful in building up this picture.

National Maritime Affairs organisation chart

This chart was discussed during the meeting organised by Mr Said Anfone with Comoros key representatives.

5 **Trade and Maritime Traffic.**

Where possible provide statistics on shipping transit and port calls.

Describe the main components of sea-borne traffic, and the patterns of activity in national waters, under the following headings:

a. Through Routes.

Note any regional through routes which pass through the country's waters.

b. Transshipment.

Comment on the existence of any hub ports.

General

The Comoran Ports Authority establishes a detailed annual report on maritime traffic & trade.

a. Maritime Traffic and trough-routes (§ a)

b. Transshipment

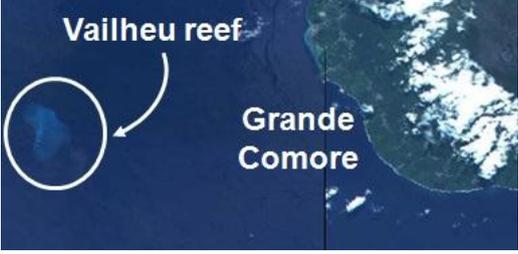
Each island has a main port and several smaller ports or moorings.

Anjouan (Mutsamudu), Mayotte (Longoni) and Grande Comore (Moroni) to a lesser extent are local hubs, which redistribute most of the international traffic. Once discharged, containers are delivered by road.

List of ports and moorings

Grande Comore	Moroni (main port), Mitsamiuli, Salimani, Pidjani & Bandamadji and Chindini
Anjouan	Mutsamudu (main port), Ouani, Pomoni, Bambao and N'Dragani
Mohéli	Fomboni/Bangoma (main port), Hoani, South coast moorings

	<p>c. <u>Bulk Trades.</u></p> <p>Comment on the significance of this element of international shipping and any impact on port development plans.</p> <p>Note the existence of refineries and of bulk-loading facilities.</p> <p>c. <u>Feeder, Coasting and Local Trade.</u></p> <p>Comment on volume and patterns, and list significant ports, including ferry ports.</p> <p>d. <u>Offshore Supply and Support.</u></p> <p>Comment on significance and on any particular influence on MSI and GMDSS requirements.</p> <p>e. <u>Tourism - Cruise Liners.</u></p> <p>List all local ports of call and anchorages.</p> <p>f. <u>Tourism - Small Craft.</u></p> <p>Comment on the significance of leisure cruising, and note major cruising areas and concentrations of marina developments. In some smaller island states this may be the most significant maritime segment of the economy.</p> <p>g. <u>Fisheries.</u></p> <p>Note the volume and type of fishing in national and adjacent waters.</p> <p>Include both local artisanal and pelagic fisheries, and the presence of foreign vessels.</p>	<p>c. & d. Trade figures, volume & patterns</p> <p>The Port Authority has issued the following statistics:</p> <p>Volume:</p> <table border="1" data-bbox="746 338 1485 443"> <thead> <tr> <th>2008</th> <th>2009</th> <th>2010</th> </tr> </thead> <tbody> <tr> <td>138,051 tons</td> <td>219,396 tons</td> <td>265,508 tons</td> </tr> </tbody> </table> <p>Trade figures:</p> <table border="1" data-bbox="746 495 1485 772"> <thead> <tr> <th></th> <th>2008</th> <th>2009</th> <th>2010</th> </tr> </thead> <tbody> <tr> <td>Bulk trade (thousand tons)</td> <td>74</td> <td>72</td> <td>101</td> </tr> <tr> <td>Container (thousand tons)</td> <td>485</td> <td>98</td> <td>164</td> </tr> <tr> <td>Vehicles (units)</td> <td>1,054</td> <td>1,237</td> <td>1,767</td> </tr> <tr> <td>Cattle (heads)</td> <td>3,608</td> <td>2,543</td> <td>3,453</td> </tr> <tr> <td>Oil (thousand tons)</td> <td>31</td> <td>34</td> <td>52</td> </tr> <tr> <td>Passengers in</td> <td>16,726</td> <td>21,641</td> <td>22,521</td> </tr> <tr> <td>Passengers out</td> <td>13,422</td> <td>18,455</td> <td>18,215</td> </tr> </tbody> </table> <p>There are no oil refineries but oil depots in Anjouan and Grande Comore.</p> <p>e. & f. Tourism</p> <p>Tourism has almost disappeared. This should be redressed because the islands have plenty to offer (friendly atmosphere, no harassment, peace and quiet, trekking, lovely sceneries, good weather, etc.).</p> <p>Leisure sailing is now almost exclusively concentrated in Mayotte.</p> <p>g. Fisheries</p> <p>There are environment-friendly artisanal fisheries (no trawlers or pelagic nets) using lobster pots and cages.</p> <p>There is a fishing agreement with the EU (tuna), but significant poaching is reported from Japanese, Korean and Chinese vessels.</p>	2008	2009	2010	138,051 tons	219,396 tons	265,508 tons		2008	2009	2010	Bulk trade (thousand tons)	74	72	101	Container (thousand tons)	485	98	164	Vehicles (units)	1,054	1,237	1,767	Cattle (heads)	3,608	2,543	3,453	Oil (thousand tons)	31	34	52	Passengers in	16,726	21,641	22,521	Passengers out	13,422	18,455	18,215
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6	<p>Responsibility for Safety of Navigation.</p> <p>Record the authority which is responsible for the maintenance of channels, removal of wrecks, provision and maintenance of navigaids, and the promulgation of Notices to Mariners.</p> <p>Note any difficulties in conducting these tasks e.g. defective buoy-tenders.</p>	<p>The Service of Maritime Affairs is theoretically in charge (see organisation chart above), but is deprived of any means (buoy-tender, for instance) and can do next to nothing.</p> <p>Dredging can be performed under contract, depending of resources available.</p> <p>Mayotte is offering limited assistance (noticeably the Moroni channel buoys, still waiting to be moored...).</p> <p>The AtoN status has been further investigated for the WIOMHP. It is depicted at Annex 5.</p>																																						

<p>9 (cont^d)</p>	<p>Make particular note of any coastal areas which are charted purely from lead-line surveys.</p> <p>Note any offshore banks or other shoal areas which require sidescan sonar coverage to bring the area to full modern standards. Note the need to obtain co-ordinates for offshore oil and gas fields.</p>	<p>Special attention has to be given to the Vailheu reef (4.9 m below chart datum), in the WSW of Grande Comore, which was surveyed and fixed in 1985 but unsuitably charted. This reef should be redrawn from the RapidEye satellite image as a well-defined space chart object:</p> 
<p>10</p>	<p>Collection and Circulation of Nautical Information.</p> <p>Assess the effectiveness of this crucial process, based on information from the HO with charting responsibility as well as the national co-ordination point.</p> <p>Note any advice which has been given to local authorities, and detail any assistance which is required from the HO with charting responsibility.</p>	<p>Navarea warnings and port information are collected by the Port authorities and passed to the zone VIII coordinator (South Africa) and/or to SHOM.</p> <p>In future, MSI responsibility should be assumed by the Hydrographic & Oceanographic Centre (National co-ordination POC to be assigned by Mr Said Anfone).</p>
<p>11</p>	<p>Survey Capability.</p> <p>Comment on the state of any local hydrographic service/unit, and draw attention to any supporting documentation in accompanying Attachments e.g. Mission and Output Plan documentation.</p> <p>Summarise the future plans of the unit, and assess the sufficiency of manpower and equipment resources.</p>	<p>None for the moment.</p> <p>It is envisaged however to establish a small survey unit within the future Hydrographic & Oceanographic Centre, capable of conducting limited control surveys in the Comoran ports to help SHOM updating its INT charts & ENC.</p> <p>The survey unit could also provide ground control to the future space charts (see Prioritised Survey & Charting Schemes at Annex 4).</p>
<p>12</p>	<p>Independent Chart Production Capability.</p> <p>Note any charts which are being produced locally, and comment on their standard.</p> <p>Summarise discussion of implementation of the INT chart scheme in the region, noting local comment on proposals for coverage.</p> <p>Report clearly any local proposals for modification or extension of coverage of</p>	<p>No paper charts or ENC production capability.</p> <p>Union of Comoros relies entirely on SHOM charting production, which is consistent with the recommended IHO capacity building strategy, phase 3.</p> <p>To this effect, the Ports Authority envisages entering a bi-lateral agreement for charting with SHOM, as recommended by the IHO.</p> <p>Should France opt to abandon some of its chart production in the South Indian ocean, this would create a serious gap in the regional charting coverage as no alternative has been</p>

	<p>INT small- scale, large-scale and port schemes.</p> <p>Report proposals for local surveys within the area of coverage of proposed new charts.</p>	<p>considered.</p> <p>Bearing in mind this unattractive contingency and the need to simplify chart production, a proposal for modification of the existing chart coverage and surveys has been included in the Prioritised Survey & Charting Schemes, at Annex 4.</p>
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PROPOSALS FOR CO-ORDINATION AND CAPABILITY BUILDING

<p>13</p>	<p>National Hydrographic Committee.</p> <p>Note the existence of any high- level co-ordinating bodies, and assess their awareness of the contribution of hydrography to national policy- making.</p> <p>State whether the Team has advised creation of a more focussed committee, and note any proposals for reporting route and frequency.</p> <p>Note whether the local hydrographic service/unit is making a technical contribution to delimitation, offshore resource exploitation, environmental management, maritime traffic control, or any other areas of National Maritime Policy</p>	<p>National Hydrographic Committee</p> <p>There is no such institution, however, this sensitive issue is being addressed by the national project to establish a Hydrographic & Oceanographic Centre (see §3 and Annex 3).</p> <p>Delimitations</p> <p>Delineations with Mozambique, Tanzania and Seychelles have been identified as a Comoran top priority, assigned to the National Border Committee headed by Captain/Colonel Said Mchangama, one of the main POCs (see §3)</p>
<p>14</p>	<p>MSI Organisation and GMDSS.</p> <p>Summarise any proposals for improvement of liaison and effective passage of information between national and regional charting agencies.</p> <p>Comment on the requirement for liaison with Transport Ministries or Port Authorities.</p> <p>a. <u>MSI (Navigational Warnings).</u></p> <p>Note the existence of local navigational warnings and Notices to Mariners and other publications e.g. Lists of Major Nav aids, Tide Tables.</p> <p>Comment on their reliability.</p> <p>Comment on discussions with local authorities, and summarise proposals offered for improvement of MSI in national waters.</p> <p>b. <u>Information on Ports and Harbours.</u></p>	<p>See also § 10</p> <p>Judging by the Moroni Harbour Master’s new premises, inaugurated in 2010 (see photo hereafter), it could be assumed that the Union of Comoros takes Maritime Affairs very seriously. It is to be hoped that the reorganisation efforts engaged presently will be brought to fruition. In this respect, the SAIHC might have a leading role to play, by keeping track of the Comoran progresses and providing advices and introductions.</p> <p>Tides</p> <p>An IOC automated tide gauge has been installed, but the port of Moroni has no usable tide pole and there are no tide tables.</p> <p>AIS</p> <p>In parallel with the present visit, the World Bank (SAMSA/South African Maritime Security Agency) has commissioned an expert to examine the possibility of locating an AIS station in Grande Comore.</p> <p>If the expert’s report is deemed conclusive, a containerised AIS could be set next to the Harbour Master’s office & lookout in Moroni:</p>

	<p>Comment on discussions with government representatives concerning the legal requirement and economic importance of timely supply of plans and co-ordinates of new development to responsible charting agencies. Note where the local hydrographic service/unit or port authorities need better top -level support in collation and dissemination of this information. Where there is no hydrographic unit comment on the capacity of the Land Survey Department to advise port authorities and other agencies.</p> <p>c. <u>GMDSS Status.</u></p> <p>Summarise the status of GMDSS in local waters, and any advice offered to local authorities.</p>	 <p>Future containerised AIS Station</p> <p>c. GMDSS</p> <p>The Ports authority intends to develop a GMDSS capacity and has liaised with <i>la Réunion</i> to have six operators trained.</p>
<p>15</p>	<p>Hydrographic Capability.</p> <p>Comment on the adequacy of top-level support and resourcing for the local hydrographic service/unit.</p> <p>Summarise any proposals which the Team has made for revision of line accountability of the unit.</p> <p>Where there is no local hydrographic unit, comment on the requirement for independent capability.</p> <p>a. <u>Provision of Survey Data.</u></p> <p>Clarify accountability for this task.</p> <p>Note any commitment to pass data to other HOs with INT or primary charting responsibility in the area.</p> <p>List any data which has been passed to the Team for onward transmission.</p> <p>b. <u>Survey Capability.</u></p> <p>Summarise the Team's judgment of current and potential capability.</p> <p>Comment on advice given by the Team. Identify areas where RHC members</p>	<p>Although the future Comoran Hydrographic & Oceanographic Centre comprises a Hydrographic service, there are no FIG/IHO qualified hydrographers, or survey equipment in Comoros, let alone a survey launch.</p> <p>Bearing in mind the maritime nature of the archipelago, there is clearly a requirement for a small survey unit, capable of performing limited controls in any of the islands.</p> <p>a. Survey data</p> <p>The Comoros original data are exclusively produced by France. Until the nineties, all fair sheets were analogic and are currently kept by SHOM in its Brest repository.</p> <p>The surveys, even ancient, are professional and should not be discarded, but completed in the ports and moorings as appropriate, especially with regards to topography which could be improved at low cost, thanks to modern space charts techniques.</p> <p>b. Survey capability</p> <p>The Comoran survey capability should be limited, flexible, and adapted to the archipelago constrained budget and simple geomorphic setting, which is characterised by a narrow continental shelf and stable coastlines.</p> <p>RHC members could assist by providing sensible guidance</p>

	<p>could assist by loan of experts or equipment.</p> <p>Note opportunities for regional collaboration.</p> <p>c. <u>Chart Production.</u></p> <p>Summarise the Team's judgment on current and potential capability, and on viability of local chart production.</p> <p>Comment on advice given by the Team.</p> <p>Assess quality of routine data management, paying particular attention to such measures as assessment of density of sounding coverage and development of capability in plotting bottom contact detail from side-scan sonar.</p> <p>Comment on the balance of effort devoted to data collection compared to local production of publications.</p> <p>d. <u>Potential for Regional Activity.</u></p> <p>Comment on volume of work in local waters and remaining capacity to assist other states in the region.</p> <p>Make recommendations on the ability of the hydrographic service/unit to provide technical hydrographic advice to neighbouring states.</p> <p>Note any potential for regional burden-sharing e.g. DGPS provision.</p>	<p>aimed at avoiding overkill, flexible training courses, advices to minimise survey costs and moreover, by encouraging mutualised regional approach, starting in the archipelago, and similar to the oil spill contingency plans developed within the Indian Ocean Commission and WIOMHP.</p> <p>c. Chart production</p> <p>The same could be said of chart production and regional training, as seen at § 16.</p> <p>Whilst high-quality products such as INT charts of main ports & maritime routes and ENC's should remain within well-established HOs such as Hydrosan, SHOM or the UKHO, a great deal of national charting could be performed at reasonable cost, regionally, by combining valid ancient surveys and modern satellite imagery into a simple GIS.</p> <p>A potential production capacity of this kind has been identified in the region and is further developed in the Madagascar report.</p> <p>Conclusion: Making hydrography look simpler</p> <p>To sum up the previous considerations, there is a feeling that Capacity Building in Comoros (and in Madagascar) is somewhat blurred by stringent IHO performance standards, unsustainable state-of-the-art technologies (typical example: MBES where SBES would be affordable and amply sufficient) and hydrographers over-qualification.</p> <p>By making hydrographer's common sense prevail over impractical requirements, and giving mutualisation precedence over stand-alone capacities, SAIHC could render a great service to countries like Comoros, who do not really know how to start whilst being open to regional cooperation, and help them regain confidence in their own abilities.</p>
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PROPOSALS FOR ASSISTANCE

<p>16</p>	<p>Training.</p> <p>Identify training priorities, and comment on advice given by the Team.</p> <p>Note the status of any National Indicative Plan.</p> <p>Comment on response to any assistance offered by IHB e.g. reserved places on the IMA Cat B Course.</p>	<p>Mr Said Anfone has been responsive to the team suggestions:</p> <p>Comoran needs for trained hydrographers could be met inexpensively in the region, by raising progressively the technical level of port operators and staff of the future Comoran Hydrographic & Oceanographic Centre.</p> <p>The "cat. C" on-job training (SHOM <i>Aide-Hydrographe</i> certificate) provides a good start, which could be completed for the happy few by a FIG/IHO compliant "cat. B" training, dispensed by the "ENEM" Madagascan Merchant Navy college (Note: Several Comoran Maritime agents have already</p>
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<p>Summarise proposals for training available from other RHC or IHO member states.</p>	<p>been trained in ENEM, which currently accommodates 100 French-speaking students).</p> <p>Serious thoughts have been given to organise this course, in liaison, notably, with ENEM, SHOM and the WIOMHP Regional Coordinator, but there is still work to be done (appointment of a qualified SHOM instructor, TORs, budget identification, etc.).</p> <p>Participation to refreshing courses in Europe and/or in English speaking countries should be avoided, except for those who hold posts of responsibility and can overcome the language barrier (Mr Said Anfone, Colonel Said, Ms Mariama Madi...).</p>
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ENEM Bridge simulator, class room, language resource centre and radio communication room

<p>17</p>	<p>Equipment.</p> <p>Summarise any advice given for equipment procurement options, or for technical advice.</p> <p>Note where any special conditions (e.g. local topography and disruptive masking of GPS) need to be taken into account.</p>	<p>Amongst the option envisaged, the team recommends</p> <ul style="list-style-type: none"> - Approaching the Coastmap-IO project manager to obtain a donation of a SBES and GPS station similar to those procured for Madagascar. - Exploring the possibility of lending equipment (SBES, OTT tide gauges, etc.) no longer in use in large HOs. This could be facilitated by the bilateral arrangement envisaged between Comoros and SHOM. - Encouraging mutualisation of resources, equipment and survey vessels & boats in the SAIHC region. <p>It further recommends paying extreme attention to equipment sustainability.</p>
<p>18</p>	<p>Funding.</p> <p>Confirm that local authorities are aware of the information in IHO Paper M-2.</p> <p>Note any specific proposals for advice or lobbying by RHC or IHB.</p>	<p>The Minister of communication in charge of transport is aware of the importance of hydrography, which must find a space in the country's long list of urgent needs.</p> <p>Lobbying to develop regional cooperation by making use of Indian Ocean Commission initiatives and implementing WIOMHP phase 2 would be welcomed by Island States.</p>
<p>19</p>	<p>Encouragement of Formation of a NHC, Development of a National Hydrographic Strategy, and RHC Membership.</p> <p>Summarise recommendations for contacts, or supply of documentation.</p>	<p>Active participation to the SAIHC and sustained effort is the best that can be expected until the Comoran Hydrographic & Oceanographic Centre is firmly established. The formation of a NHC, which is also being considered, should follow suite.</p> <p>To conclude, IHO membership seems premature, and less urgent at this juncture than reinforcing regional cooperation, participating to further WIOMHP expansion and developing close technical relations with SHOM, ENEM, Hydrosan, and within the Comoran archipelago.</p>

<p>20</p>	<p>Encouragement of Effective and Timely Collection and Promulgation of Hydrographic Information.</p> <p>a. Note any commitment by the Team to forward Hydrographic Notes with urgent MSI.</p> <p>Note where copies are to be supplied to Hydrographic Unit and Maritime Services/Port Authorities to give them a format for subsequent routine communication of updates.</p> <p>(ACTION: Study Team.)</p> <p>b. Note any requirement for MSI/SAR liaison with local authorities.</p> <p>(ACTION: NAVAREA Co-ordinator.)</p>	<p>a. There is no such commitment (premature, until the Comoran Hydrographic & Oceanographic Centre has been set up, budgeted and staffed).</p> <p>In the meantime, a close relationship is to be maintained with Mr Said Anfone.</p> <p>b. The Ports Authority (Mr Said Anfone) coordinates with <i>la Réunion</i> to develop a GMDSS capacity.</p> <p>Language barrier issues must be taken seriously and addressed properly.</p>
<p>21</p>	<p>Encouragement of Development of Hydrographic Capability.</p> <p>Note areas where the Hydrographic Unit merits assistance:</p> <p>a. Options for provision of consultative support including temporary secondments.</p> <p>(ACTION: RHC Members.)</p> <p>b. Options for transfer or loan of equipment.</p> <p>(ACTION: RHC Member States.)</p> <p>c. Assessment of the case for regional investment in equipment purchase e.g. DGPS.</p> <p>(ACTION: RHC.)</p> <p>d. Recommendations for follow-up technical assistance in development of a National Indicative Plan for training funding.</p> <p>(ACTION: RHC and IHB.)</p>	<p>The so-called Hydrographic Unit consists presently of a one-man-band, i.e. Mr Said Anfone.</p> <p>a. Consultative support must be given to him to make the future Comoran Hydrographic & Oceanographic Centre happen. This could be facilitated by the SHOM/Comoros bilateral agreement, and by the impending decision to install an AIS station in Comoros</p> <p>b. See § 17.</p> <p>c. Mutualisation of resources within the SAIHC area is viewed as essential.</p> <p>d. Developing a National Plan for training, aggregating all maritime issues with hydrography, is a good idea for a small country like Comoros. With a few exceptions, training should take place in most cases at the Madagascan ENEM.</p> <p>Coordination between support organisations (SAIHC, WIOMHP, Coastmap-IO, etc.), which is sometimes ineffective, must absolutely be reinforced, preferably under the leadership of the SAIHC Chairman.</p>

II WORLD BANK QUESTIONNAIRE

1. Project Description.

The objectives are as follows:

Visit the Recipient States, Comoros and Madagascar, and engage in discussions with the relevant maritime authorities to establish the following to enable electronic nautical charts to be produced of identified ports and approaches and to improve the provision of aids to navigation, communications, search and rescue and other maritime safety services:

N°	Questions	Answers
WB 2.1	The major ports of Moroni and Moheli that may require hydrographic surveying to be able to produce electronic nautical a chart or charts of the port and its approaches.	See Part I, § 12 Union of Comoros cannot produce ENCs. An ENC of the Comoran ports and moorings, which is required by High Speed Ships (HSS), is due to be released by SHOM in 2014.
WB 2.2	the status of the current data in specific areas of the ports and their approaches to enable electronic nautical charts to be made. The areas where the data is insufficient or unacceptable for this purpose are to be identified and the necessary surveys undertaken.	See Part I, § 15.a, and Annex 4
WB 2.3	the status of essential aids to navigation in and around the port are to be assessed and where possible they are to be repaired, upgraded or replaced	There are only few AtoNs worth reporting in the Union of Comoros (see Annex 5). The central beacon, at the entrance of the port of Moroni has been damaged in a collision and needs repairing. The 2 green and red conical buoys donated by Mayotte more than a year ago to mark the entrance channel are still stocked ashore while waiting to be moored. See also Part I, § 6
WB 2.4	the necessity to install of Automatic Information System (AIS) stations in the Comoros and in Madagascar. If such a station is required specific site information to enable a contractor to install a base station must be determined	AIS site information is available in Pierre Mouscardes' expert report to SAMSA. See also Part I, § 14.
WB 2.5	the support necessary to improve the communications between the Maritime Search and Rescue Stations in the region if applicable	See Part I, § 7 and §14.c
WB 2.6	the need for training in both operation and maintenance of any work undertaken or equipment installed	See Part I, § 16 All maritime & hydrographic trainings should be coordinated and dispensed, as far as possible, in Madagascar ENEM.

In accordance with the Project Objectives (Paragraph 2) the report shall include recommendations in accordance with international standards as set by the IMO, IHO and IALA, on the following:

WB 3.1	What national administrations are responsible for the provision of up to date nautical charts, aids to navigation and other maritime safety information.	See Part I, § 12 The national administration in charge is the Comoran Ports Authority (organisation chart in Part I, § 4)
WB 3.2	Do they have an official mandate and are they adequately funded?	Lack of funds is a chronic and serious Comoran disease; however the Ports Authority seems to address the issue seriously. See Part I, § 14
WB 3.3	Is there an official hydrographic policy and how is it administered?	See Part I, § 15 and Capacity Building Strategy at Annex 2
WB 3.4	Is the coastal State a member of the IHO and/or IALA and what IMO conventions is the coastal State a party to?	Although signatory to the IMO SOLAS convention, Comoros is neither an IHO, nor an IALA, member state. See Part I, § 1.
WB 3.5	What is the status of surveys, the quality of existing data and its compliance with standards for the production of electronic nautical charts (ENCs) and on the ability of local technical institutions to maintain such charts?	See Part I, § 9 (status of surveys), § 15.a (Survey data) and § 12 & 15.c (chart production).
WB 3.6	Evaluate national and international nautical chart and navigation publication series and make recommendations for improvement.	Comoran charts worldwide are all based on French original surveys. See Annex 4 (Prioritised Survey & Charting Schemes)
WB 3.7	Confirm that existing charts cover the required port and approach areas and if not recommend areas, defined by co-ordinates that should be surveyed for incorporation of the proposed ENCs.	See Annex 4 (Prioritised Survey & Charting Schemes)
WB 3.8	Review the current situation for the upkeep of existing charts and of the manner of promulgation of both chart and maritime safety information.	Comoran charting relies entirely on France's (SHOM) chart production, chart updating and survey capacity. See also Part I, § 12 (chart production)
WB 3.9	Report on the current situation for the provision and distribution of radio navigation warnings, its co-ordination, the processing of incoming navigation warnings both coastal and NAVAREA.	See Part I, § 10 (MSI, Nautical Information)
WB 3.10	Report on the ability of the designated national authority to issue Hydrographic Instructions.	No capability to issue Hydrographic Instructions.

WB 3.11	Report on whether a national tidal network exists, the efficiency of any tidal stations and on the processing and promulgation of the data recorded.	No tide tables and no tidal observations. A GLOSS/Coastmap-IO automated tide gauge has been installed recently in Moroni.
WB 3.12	Report on the provision of hydrographic information to the public.	No such facilities.
WB 3.13	Investigate other maritime safety needs.	Priorities could be listed as follows: <ul style="list-style-type: none"> - Complete SAR equipment (§ 7) - Develop a national Security plan (§ 7) - Encourage Regional cooperation, whenever possible, including within the archipelago

The consultant shall also establish the following.

WB a	What national Administration is responsible for AtoN & AIS along the coast and within Ports & Harbours	See organisational chart at Part I, § 4
WB b	Have they been formally delegated and adequately funded?	There is a Government project to establish a Hydrographic & Oceanographic Centre, not funded yet.
WB c	What other bodies, if any, have responsibility for AtoN and/or AIS?	All these responsibilities are assumed either by the Directorate General for Transport or the Ports Authority.
WB d	What international recommendations and guidelines in respect of AtoN and VTS are reflected in the Administration's policies and procedures?	These recommendations will be eventually centralised and dispatched by the new Hydrographic & Oceanographic Centre.
WB e	What national legislation is in place to support the provision of and compliance with AtoN and AIS systems?	None yet.
WB f	What measures are taken to evaluate the effectiveness of AtoN and AIS (e.g. service availability, AtoN & AIS planning and inspections)?	Only few AtoNs are worth mentioning (see Annex 5). Any future progresses are pending on the decision to install an AIS station in Comoros.
WB g	Does the Administration use a recognized quality management system, e.g., ISO 9001:2000, for AtoN or AIS?	Obviously not.
WB h	The operational status of each current AtoN and AIS installations as listed by the authority	The AtoN status is depicted at Annex 5. Operational status of AIS is still to be developed.

WB i	If the current AtoN & AIS meet the requirements, such as the traffic volumes, relevant risks and user requirements. This should include, but not limited to: the height, range, character, day mark, power supply for the equipment & availability.	Not relevant yet
WB j	How are the information dissemination and the upkeep of all information done which is necessary for safe navigation?	See Part I, § 10
WB k	Identify any requirements/improvements/additions in order for the AtoN & AIS systems to meet international & local requirements.	<p>The first step should be to repair the Moroni central beacon and moor the entrance buoys (see Annex 5).</p> <p>Further improvements must be developed by the future Hydrographic & Oceanographic Centre.</p>
WB l	Is it possible to maintain and sustain an acceptable system and if necessary what additional resources are required in order to ensure that the AtoN & AIS meet international & local requirements, including availability?	<p>Yes, definitely (cf. Pierre Mouscardes' AIS report to SAMSA).</p> <p>Attention is required on the two following recommendations:</p> <ol style="list-style-type: none"> 1. The AIS must be virtually autonomous (containerised station). 2. A local individual has to be appointed to assume routine operation and maintenance responsibilities, under Mr Said Anfane's overall supervision.
WB m	What are the training needs?	<p>See Part I, § 16</p> <p>Specific AIS training is correctly addressed by SAMSA's AIS Invitation To Tender.</p>

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Annex 1

PROGRAMME OF VISITS

MORONI – 18 & 19 JULY 2011

Programme de l'arrive des experts aux Comores le 18 au 19 Juillet 2011 sur l'évaluation d'états de besoins dans le service d'hydrographie au Comores, aide a la navigation et en formations.

- 6h 30 Mn Arrive des experts

- 8h 00 mn Installation à l'hôtel

- 9h 15 mn Visite Des Courtoisie au Ministre des transports et du tourisme

- 9 h 30 mn Visite Des courtoisies au PDG de l'autorité portuaire des Comores

- 9h 30 à 11h00mn début des travaux avec les techniciens concerné tel que
 - La commission chargée de délimitations (La mise à jour des cartes marine)

 - Le SIG

 - L'autorité portuaire des Comores

 - La direction de travaux publique

 - La garde cote

- 11h00mn à 11h15mn : pause café

- 14h30 à 15h30Mn Visite du tour de control et les installations des balisages sur l'aide à la navigation

- 16h 30 revu des travaux et fin des travaux

- Continuation des travaux le 19 juillet à 9 heures 30

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Annex 2

CORRECTION PROPOSAL TO THE IHO YEAR BOOK

COMOROS (UNION OF THE) – COMORES (UNION DES)



HYDROGRAPHIC & OCEANOGRAPHIC CENTRE Comoran Ports Authority Harbour Master's Office MORONI – UNION OF COMOROS	
Department of which the Hydrographic & Oceanographic Centre is part - <i>Ministère dont dépend le Centre d'hydrographie et d'océanographie</i>	Ministry of Communications, in charge of Transport and Tourism - <i>Ministère des Postes & Télécommunications, de la Promotion des nouvelles technologies de l'information et de la communication, chargé des Transports et du Tourisme</i>
Principal functions of the Hydrographic & Oceanographic Centre - <i>Attributions principales du Centre d'hydrographie et d'océanographie -</i>	<ul style="list-style-type: none"> • Chart & ENC update – <i>Tenue à jour des cartes et ENC</i> • Safety of navigation – <i>Sécurité de la navigation</i> • MSI – <i>Information Nautique</i> • AtoN – <i>Aides à la navigation</i> • Marine delineations – <i>Délimitations</i> • Support to State action at sea (Coast guards and control of natural resources) – <i>Soutien à l'Action de l'État en mer (surveillance et contrôle des ressources naturelles)</i>
National day - <i>Fête nationale</i>	
Telephone: Email:	+ 269 333 42 14 anfanesaid@yahoo.fr
Date of establishment and Relevant National Legislation - <i>Date de fondation et législation nationale concernée</i>	The Centre is in the process of being created (August 2011) – <i>Le Centre est en cours de création (août 2011)</i>
Name and rank of the Director or Head - <i>Nom et grade du directeur</i>	Mr SAID Anfane, presently interim Director General of the Comoran Ports Authority – <i>M. SAID Anfane, DG par interim de la Direction des Ports des Comores</i>
Tonnage	177 Merchant vessels (source : CIA World Factbook 2010) – <i>177 navires de commerce (source: CIA World Factbook 2010)</i>
Total Budget- <i>Budget total</i>	Not decided yet (August 2011) – <i>Pas encore défini (août 2011)</i>
Staff employed - <i>Effectifs</i>	
Capacity Building Strategy - <i>Stratégie en matière de renforcement des capacités</i>	<ol style="list-style-type: none"> 1. MSI : centralised and reported by the Hydrographic & Oceanographic Centre – <i>Information nautique gérée par le Centre d'hydrographie et d'océanographie -</i> 2. Surveys : survey capacity in support of SHOM limited to satellite ground truth and selected port controls – <i>Capacité limitée au soutien du SHOM (vérité terrain satellitale et contrôles portuaires)</i> 3. Chart production : entrusted to SHOM, as per bilateral agreement (in progress August 2011) – <i>Confiée au SHOM dans le cadre d'un arrangement technique (en cours en août 2011)</i>

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Annex 3

THE COMORAN HYDROGRAPHIC & OCEANOGRAPHIC CENTRE

(Project)

Projet de texte pour la mise en place d` un centre d`hydrographie et d`océanographie

Plan de texte

- I. Création**
- II. Objectifs**
- III. Missions**
- IV. Composition**
- V. Institutions concernées**
 - 1. Aviation civile**
 - 2. centre de contrôle et de surveillance de la pêche**
 - 3. SIG Mde**
 - 4. CNDRS**
 - 5. AND**
 - 6. APC**
 - 7. T.P**
- VI. rôle de chaque institution (semi autonome)**
- VII. Model de fonctionnement du centre avec toutes les institutions concernées.**
- VIII. Siege**
- IX. Profils du personnel**
- X. Financements du centre**
- XI. Conseil d`administration**
- XII. Partenariat**
 - XII.1 Régional**
 - XII.2 International**

Plan de texte

I. Création.

Il est crée un centre d'hydrographie et d'océanographie en Union des Comores.

II. Objectifs

Le centre a pour objectif de mettre a la disposition du pays et des partenaires les données des études hydrographiques et océanographiques des Comores.

III. Missions

Le centre a pour mission de :

En hydrographie ;

- Mettre a jour des cartes marines ;
- Réaliser des cartes électroniques ;
- Sécuriser la navigation maritime ;
- Alerter rapidement les obstacles a la navigation ;
- Mettre a jour le système de balisage portuaire ;
- Faciliter la délimitation des espaces marins ;
- Renforcer les capacités humaines ;
- Aider a la surveillance et au contrôle des ressources ;
- Aider a l'exploration et a l'exploitation rationnelle des ressources naturelles océaniques ;

Océanographie :

- Etudier les océans

(Voir définition classique et améliorer conformément au contexte national)

IV. Composition

Le centre est compose de :

1. Un coordinateur
2. Un service océanographie
3. Un service hydrographie
4. Un service des études

V. Institutions concernées

1. Aviation civile
2. centre de contrôle et de surveillance de la pêche
3. SIG Mde
4. CNDRS/UNIVERSITE
5. AND
6. APC
7. T.P
8. MIREX

VI. Rôle de chaque institution (semi autonome)

VII. Model de fonctionnement du centre avec toutes les institutions concernées.
(Présenter un organigramme)

VIII. Siege

IX. Profils du personnel

Peuvent être désignés membres du centre, les fonctionnaires ou les spécialistes dans les domaines suivants :

- Océanographie ;
- Hydrologie ;
- Géologie ;
- Géographie ;
- Topographies ;
- Officier de la marine ;
- Sciences de l'environnement ;
-

X. Financements du centre

Le financement du centre provient des financements propres, des subventions de l'Etat, des institutions nationales concernées, des appuis d'organismes internationaux.

XI. Conseil d'administration

Il est mis en place un conseil d'administration qui a pour mission de :

- Donner les orientations relatives au fonctionnement du centre
- Valider le programme annuel et le budget du centre

XII. Le conseil d'administration est composé de 8 membres repartis comme suit

1. Un représentant du Ministère des transports Président
2. Un représentant de l'Aviation Civile
3. Un représentant de l'Autorité portuaire
4. Un représentant du centre de contrôle et surveillance de la pêche
5. Un représentant du CNDRS
6. Un représentant de l'Université
7. Un représentant du Système d'aide à la prise des décisions (SIG)
8. Un représentant de la direction générale des infrastructures
9. Un juriste spécialisé dans le domaine
10. L'Armée Nationale de Développement

Le conseil peut inviter des personnes ressources spécialisées dans les domaines pour les appuyer.

XIII. Partenariat

- a. Régional
- b. international

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Annex 4

COMOROS PRIORITISED SURVEY & CHARTING SCHEMES

1. General

All the charts of the Comoros archipelago are based on French original surveys, which represent the only source of international charting.

This annex deals solely with the Union of Comoros' charts and surveys.

Should SHOM have to simplify its Indian Ocean charts series, it is essential that the transition be organised in the best possible way, so as not to disrupt international navigation and local usage.

The details of such an efficient transition should be broached in the bilateral agreement envisaged between SHOM and the Comoran Ports Authority.

2. The existing chart portfolio

Although based on ancient, but professional surveys, including lead line's, the Comoran charting is sufficient for the safety of navigation, but should be modernised, mainly by implementing the WGS 84 geodetic system and integrating those recent surveys that have not been incorporated yet.

It should be noted that though resurveys are often desirable, no modern MBES surveys of the Comoros have shown significant differences. Modernisation takes place when occasions occur, usually following the deployment of a SHOM survey vessel in the region. For instance, the French commitment to the WIOMH Project was critical to resurvey Anjouan in 2010 and plan a new ENC of Comoros for 2014. More might follow if the WIOMHP enters into a second phase.

SHOM existing chart portfolio is composed of the following charts:

Chart Nr	Title	Scale	Edition	Geodetic system
5983	Comoros Archipelago	1:465,500	1960	Local geodetic system
6239	Grande Comore	1:156,700	1959	Grande Comore geodetic system
6238	Islands of Anjouan & Mohéli	1:156,400	1959	IGN 1950 geodetic system

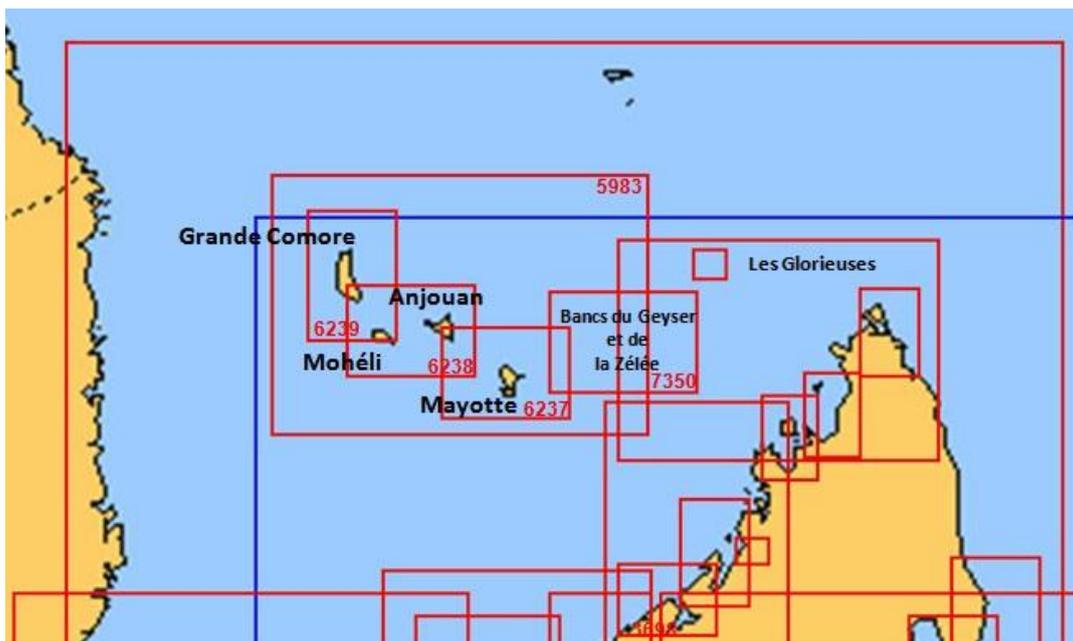


Chart Nr	Title	Scale	Edition	Geodetic system
3698	Comoros Archipelago - Grande Comore & Mohéli:		1960	Various geodetic systems
	Grande Comore: Mitsamiuli mooring	1:20,000		
	Grande Comore: Port of Moroni	1:10,000		
	Mohéli: Fomboni mooring	1:20,000		
	Mohéli: South coast moorings	1:50,000		
4806	Comoros Archipelago: Anjouan:		1987	Anjouan geodetic system
	Moorings of Mutsamudu & Ouani	1:20,000		
	Bambao mooring	1:15,000		
	Pomoni mooring	1:20,000		
	Port of Mutsamudu	1:5,000		



3. The Prioritised Survey Scheme

The requirements for new surveys, or resurveys, have been collected during the expertise and completed by an analysis conducted jointly with the SHOM representative (Ing. Gen 2S Laporte), which concluded that only limited new surveys were required. These can be listed as follows:

Nr	Name of Island	Recommended surveys
Grande Comore:		
1		Port of Moroni (control & accesses)
2		Bay of Salimani
3		Bays of Pidjani & Bandamadji
4		Bay of Chindini

Mohéli :	
5	Bay of Hoani
6	MBES survey around the island (similar to the one performed in 2010 in Anjouan and Grande Comore)
Anjouan:	
7	Bay of Ouani (extension to the bay of the 2010 survey)
8	Bay of N'Drangani

4. The Prioritised Charting Scheme

The Prioritised Charting Scheme is not very different from the SHOM existing portfolio, as can be seen on the following plot:

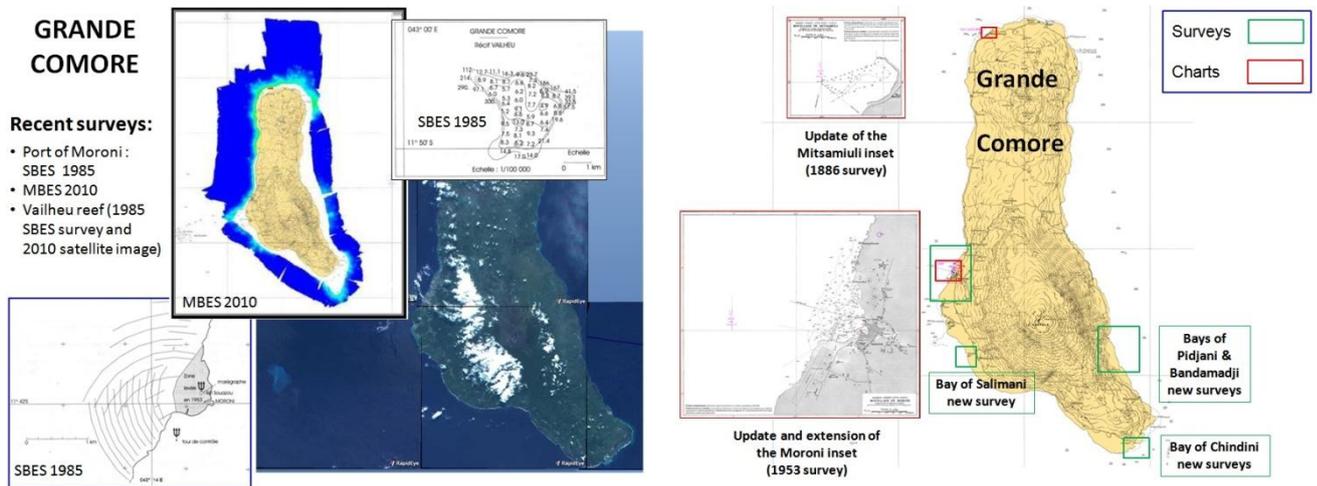


It consists of the 6 following charts:

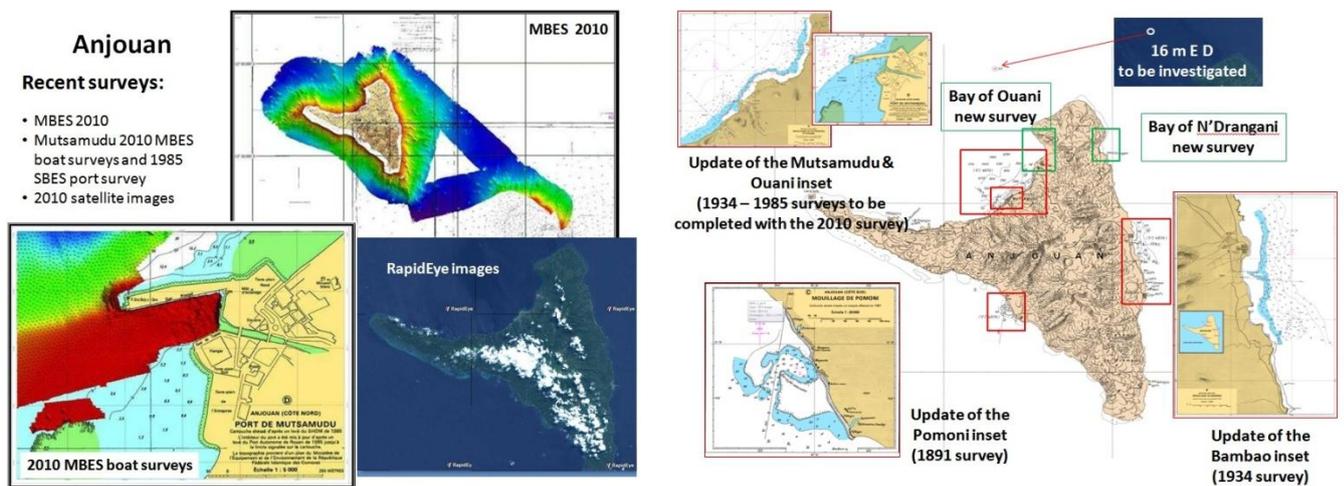
	Usage band	Chart	Scale	Observations
			1:	
1	General	Comoros archipelago	500,000	Should include the insets of the approaches to the 3 main ports (represented in yellow). Scale chosen in the band's upper tier so as to include the whole archipelago and a portion of the Marine Highway.
		Approaches to the 3 main ports	30,000	The Moroni approach must include the dangerous Vailheu reef.
2	Coastal	Grande Comore	150,000	
3	Coastal	Anjouan & Mohéli	150,000	

4	Harbour	Grande Comore moorings	Various (5 to 20,000)	Scale adjusted to the type and importance of moorings
5	Harbour	Anjouan moorings		
6	Harbour	Mohéli moorings		

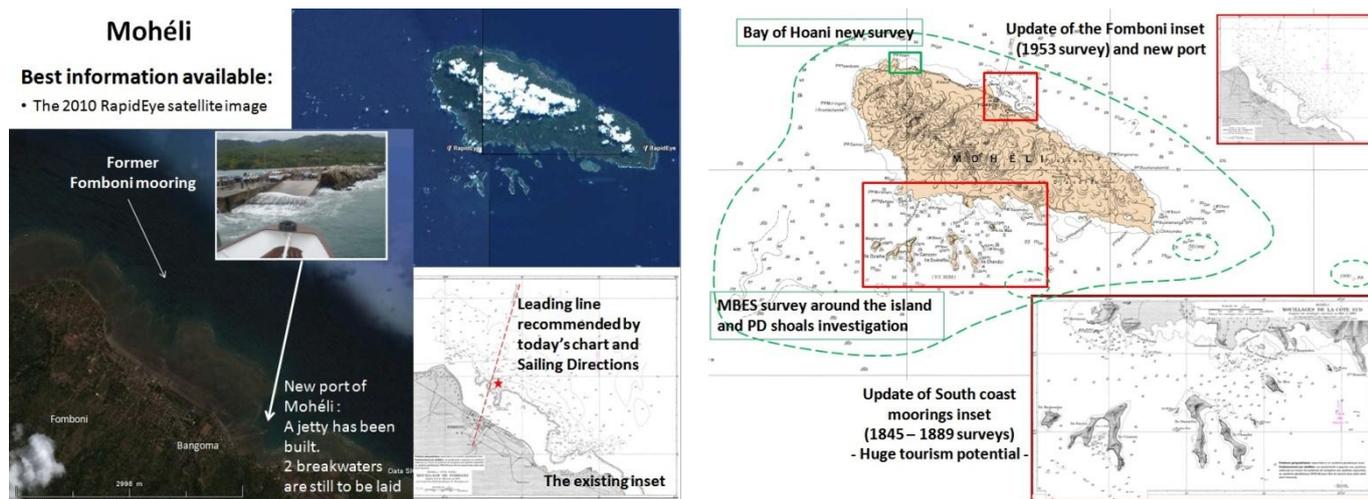
5. Recommended scheme updates



Grande Comore's recent surveys and recommended scheme updates



Anjouan's recent surveys and recommended scheme updates



Mohéli's changes and recommended scheme updates

6. Way-ahead

Use of satellite techniques

Maximum use of recent satellite images (space charts) is recommended so as to minimise unnecessary coastal surveys. This issue is further developed in the Madagascar expert report.

Charting

In consistence with the IHO Capacity Building strategy, phase 3, charting (ENCs and paper charts) should be entrusted to a larger HO, SHOM in the present case. This issue should be discussed in the future bilateral agreement.

A value-for-money chart production capacity (vectorisation of paper charts, contribution to the production of space charts, data integration into a GIS, etc.) has been identified in the region and is also further developed in the Madagascar report.

Surveys

Deep sea MBES surveys can only be conducted by ocean survey vessels and are not urgent, thanks to the Comoran minimal continental shelf. They should be performed on an opportunity base (e.g. SHOM occasional deployments, WIOMHP phase 2, etc.).

Should the Comoran Hydrographic & Oceanographic Centre, cat. B training and provision of sustainable survey equipment materialise, the survey unit's tasks could consist of, and be limited to, providing space charts ground control, performing occasional verifications in ports and participating to restricted coastal surveys contracted at minimum costs.

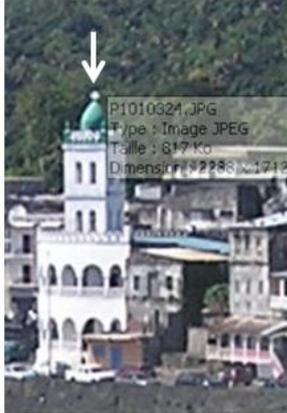
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Annex 5

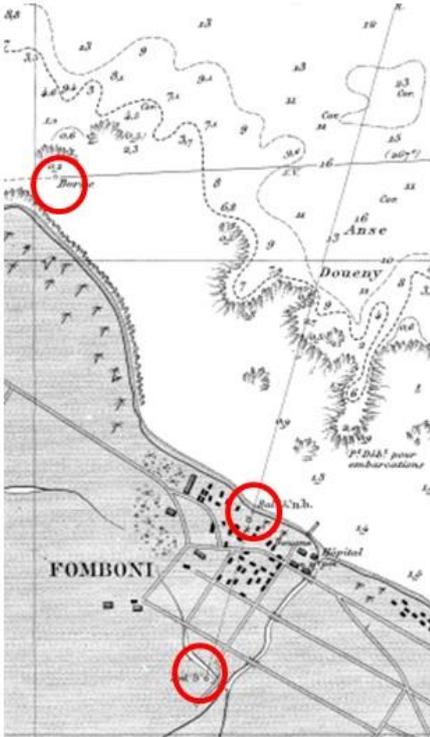
COMOROS AtoN STATUS

1. GRANDE COMORE – Port of Moroni

1	<p>F.sc.r. Beacon, Souazou Islet (leading line bearing to 105°)</p> <p>L = 11° 42' 05.9'' S - G = 043° 15' 00.6'' E</p>	
2	<p>R B Beacon, port entrance, (ruined)</p> <p>L = 11° 42' 09.9'' S - G = 043° 14' 56.5'' E</p>	
3	<p>Red and green port entrance buoys: the two buoys have been lifted and stowed on the half-sunk wreck of the only Comoran trawler</p>	
4	<p>Minaret, F.sc.r. top light (Leading line bearing to 105°)</p> <p>L = 11° 42' 07.8'' S - G = 043° 15' 06.0'' E</p>	

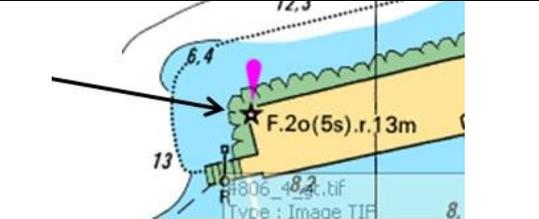
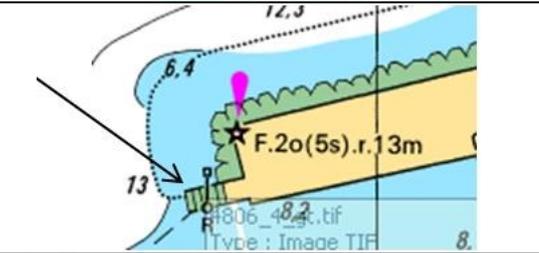
5	<p>Green light, at the end of the main jetty</p> <p>$L = 11^{\circ} 42' 09.8''$ S - $G = 043^{\circ} 15' 53.6''$ E</p>		
6	<p>Minaret, F.sc. top light</p> <p>$L = 11^{\circ} 42' 13.1''$ S - $G = 043^{\circ} 15' 05.6''$ E</p>	 <p>P1010324.JPG Type : Image JPEG Taille : 817 Ko Dimensions : 1278x1712</p>	

2. Moheli – Fomboni mooring

7	<p>The leading line bearing at 195° on two beacons is no longer in use. The beacons are ruined, so is the mark supporting the transit bearing utilised for mooring.</p>	
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2. Anjouan – Port of Mutsamudu

The 3 following AtoNs have been checked by SHOM (*Beautemps-Beauprê*) in 2010.

<p>8</p>	<p>Light [F.2o(5s).r.13m]: Effective.</p>	
<p>9</p>	<p>Beacon, topped by a red cylindrical mark: in good state.</p>	
<p>10</p>	<p>Three concrete beacons marking the leading lines to the <i>Fontaine</i> mooring: in reasonable state.</p>	