

REPUBLIC OF YEMEN
YEMENI COAST GUARD

No.

PREPARATORY SURVEY REPORT
ON
THE PROJECT FOR CAPACITY BUILDING
OF THE YEMENI COAST GUARD
FOR
COMBATING PIRACY AND TERRORISM
(BUILDING OF THE PATROL VESSELS)

JANUARY 2011

JAPAN INTERNATIONAL COOPERATION AGENCY

JAPAN MARINE SCIENCE INC.

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PREFACE

Japan International Cooperation Agency (JICA) decided to conduct the Preparatory Survey on the Project for Capacity Building of the Yemeni Coast Guard for Combating Piracy and Terrorism (Building of Patrol Vessels) in the Republic of Yemen and sent the survey team from April 12th to May 16th, 2010 to Yemen.

The team held discussions with the officials concerned of the Government and conducted a field survey at the study area. As the result of further study in Japan and the discussions regarding the draft of the outline design report which were conducted from October 29th to November 8th, 2010 in Yemen, this present report was finalized.

I hope that this report will contribute the promotion of the Project and the enhancement of friendly relations between our two countries.

Finally, I wish to express my sincere application to the officials concerned of the Government of the Republic of Yemen for their close cooperation extended to the team.

January 2011

Atsufumi KONISHI
Director General,
Economic Infrastructure Department
Japan International Cooperation Agency

Summery

Summery

1. Outline of Yemen

The Republic of Yemen (hereafter referred to as “Yemen”) is located at the southwest end of the Arabian Peninsula, from north latitude of 12 to 19 degrees, east longitude 43 to 54 degrees, neighboring Saudi Arabia to the north, and Oman to the east. Its land area is approximately 555,000 m², equivalent to around 1.5 times larger than Japan. Facing the Red Sea and the Arabian Sea, Somalia is located on the opposite shore of the Gulf of Aden.

The climate of Yemen is rich in variety; the land overall is in the arid belt with less rainfall, but the mountainous area including the capital Sana’a is rather like a temperate zone, and the coastal area of the Gulf of Aden is hot and humid throughout the year, having around 20°C of minimum temperature in daytime during winter, and around 33°C of maximum temperature.

The climate and hydrographical conditions of the Gulf of Aden is influenced by the monsoon in the Arabian Sea and Indian Ocean. Northeast monsoon occurs from October to the following May, blowing east or east-northeast wind with swell mostly from the east, and southwest monsoon occurs from June through September, blowing southwest wind with swell mostly from the southwest.

The total population of Yemen is approximately 22 million (statistics by the Government of Yemen, 2008), consisting of mainly Arabians. With regards to the economy of Yemen, the annual GDP growth rate in 2009 was 3.8%, 25 billion US\$ for GNI, 1,060 US\$ for GNI per capita, 3.9% for economic growth rate, and 3.7% for inflation rate (Material by the World Bank, 2009).

The prime industries are agriculture and fishery which mainly exports coffee and seafood product, as well as petroleum. The estimated breakout of GDP in 2008 was 39% for the primary industry, 14% for the secondary industry, and the rest for the tertiary industry.

Petroleum production, which marked approximately 300,000 B/D in 2008 (statistics by BP), is the pillar of the economy of Yemen consisting 90% of the export and more than 60% of the financial income. However, the production volume of petroleum is reducing year by year, and is estimated by the World Bank that petroleum will deplete by around 2017. As a substitution of petroleum, Yemen is developing natural gas, and has started production and export of LNG from October 2009. The maximum production was 6.9 million tons/year, which was exported to Korea, as well as to the United States in the near future. However, the LNG production is not predicted to be sufficient to compensate the financial income loss of petroleum, therefore development of non-energy industries such as fishery or tourism is urged, also for the purpose of securing employment.

2. Background of the Project

The Gulf of Aden is the strategic point in the international maritime traffic connecting the Indian Ocean and the Red Sea where approximately 18,000 commercial vessels cross in a year. However, the number of attacks, robbery against ships, and abduction of crews increased rapidly in the surrounding ocean area of Yemen, caused by infested piracy accompanying the escalating civil war in Somalia and the worsening security situation, which is becoming a threat to the international community.

In addition to the piracy etc. in the Gulf of Aden, illegal immigration and smuggling of weapons or goods and drugs prohibited for import are rapidly increasing on the east ocean area of the Gulf of Aden of Yemen and around the opposite shore of Djibouti, therefore securing order in these waters is an urgent issue.

The Yemeni Coast Guard (YCG) is the only maritime safety organization in the surrounding ocean area. It was established in 2002, initially without equipment, and is making effort to improve its maritime security capacity with the support from the donor countries under severe financial condition. Unfortunately, the organization, facilities, and equipment of Yemeni Coast Guard are still insufficient.

The vessels owned by the Yemeni Coast Guard are small patrol vessels and harbor patrol crafts only in the large exclusive economic zone of Yemen (approx. 460,000 km²) which includes the coastline of approximately 2,500 km and the Gulf of Aden. Therefore, the vessels available for patrolling outside the port are only 3 of 22 m length patrol vessels and 4 of 15 m length patrol vessels.

Under these circumstances, the Government of Yemen requested for assistance to the Government of Japan for strengthening the coastguard (shipbuilding of patrol vessel(s) and related operation, maintenance, and management technologies) for combating piracy and terrorism. In April 2009, Japan International Cooperation Agency (JICA) implemented the "Preparatory Survey for the Coastal Security in Yemen" jointly with the Government of Japan in order to validate the direction of assistance which Japan may provide. As a result of the said survey, it was concluded that from a mid-to-long-term perspective it is highly significant to assist the YCG which is managing the maritime security and safety in Yemen by deploying overall length 30 to 40 m class patrol vessel(s).

3. Overview of the Survey Result and Contents of the Project

Having the above survey result, the Government of Japan decided to conduct a survey, and JICA decided to conduct a preparatory survey for the assistance. From April 11, 2010 to May 17, in the capital Sana'a and Aden, the preparatory survey team conducted the field survey, gathered

related materials, held discussions with the concerned parties of Yemen and resident officers in YCG.

Taking the field survey result into consideration, the contents of the Project, effects, and relevance were reviewed, and these results were summarized as an overview document for the outline design of the preparatory survey for the assistance. It was confirmed that while piracies and illegal immigrations and smuggling of arms and banned drugs to Yemen from African countries on the opposite shore, especially Somalia, as well as west Asia and Pakistan recur, it is necessary to measure these issues which are threats to Yemen and the international community through deployment of patrol vessel(s) in the Gulf of Aden that can carry out patrol activities outside the territorial waters of Yemen. It was planned to confirm the operation system of YCG and the waters under their jurisdiction, as well as the maintenance and management system, thus the basic specification of the 35 m class patrol vessel was planned.

In addition, the United States is under progress for the assistance program to provide two patrol vessels in the Gulf of Aden District. It was determined appropriate for one patrol vessel to be on patrol duty constantly, by integrating these vessels from the U.S. and the two patrol vessels to be provided in this Project, making total of four patrol vessels for the time being. However, since it was necessary to determine the feasibility of the sudden burden arising due to the sudden increase of vessels in YCG, the time of provision of the second vessel shall be determined based on the operation, maintenance, and management conditions of the patrol vessels to be provided from the U.S.

Cost reduction was thoroughly considered upon planning the specification of the patrol vessel. Only the necessary and least operational equipment and accessories are selected to be equipped on board for the patrol activities and law enforcement to be implemented through the Project.

The survey team for the explanation of schematic design carried out the explanation through October 28, 2010 to November 9 at Sana'a, to the concerned parties of Yemen and resident officers of the donor countries in YCG, held discussions with the concerned parties of Yemen, and agreed on the baseline.

The specification of the patrol vessel(s) of the Project is as shown below.

Item	Specifications
Length overall	35.8 m
Molded breadth	6.9 m
Molded depth	3.2 m (of center of length of draft)
Design molded draft	Approx. 1.25m
Volume	
Fuel tank	30 m ³
Potable water tank	4 m ³
Fresh water tank	4 m ³
Complement	17 persons
Maximum speed	25 knots (at 2/3 load, maximum output)
Cruising speed	20 knots (at 2/3 load, 75% of maximum output)
Cruising range	800 nautical miles (at cruising speed)
Main engine	Single acting 4 stroke high-speed diesel engine 1630 kW, 2450 rpm, 2 units

4. Project Implementation Period and Estimated Cost

Concerning the implementation period, the period for detail design is estimated approximately 5.5 months and the period for implementation and procurement is approximately 15 months in each stage, 1st stage (1st vessel) and 2nd stage (2nd vessel).

All cost for building will be borne by the Japan side and there is no particular cost borne by the Yemen side.

5. Expected Outcomes of the Project

The Gulf of Aden and the Red Sea, which leads to the Suez Canal which is connecting Europe and Asia, is the significant corridor for international marine transport, where approximately annually 18,000 vessels pass through including approximately 2,000 vessel owned or operated by the Japanese firms and equivalent to around 12% of the worlds sea freight volume is transported. However, more than 200 piracies occurred in these waters in 2009, which is a threat to the marine traffic, further smuggling of arms and banned drugs from Somalia which is on the opposite shore of the Gulf of Aden to Yemen is infested, which is said to be a breeding ground for terrorists in Yemen. Therefore, maintaining of security in the Gulf of Aden is an urgent issue,

and the purpose of the Project is set to reinforce the YCG's maritime patrol management system and ensure safe navigation of ships in the gulf by deploying vessel(s) that is able to execute patrol activities in the Gulf of Aden.

Although the 35m class patrol vessel has the specification to comply with the patrol activities not only within the territorial waters of Yemen but also at the high seas, provision of patrol vessels of this class is planned only from Japan. The provision of large-scale patrol vessel(s) for additional security capacity in the high sea can contribute to the safety of international marine traffic and the stabilization of Yemen.

Moreover, this Project will contribute to the international cooperation, while the international community such as U.K., U.S.A., and France, etc. are undertaking the physical and technical assistance for building the framework of the Yemeni Coast Guard.

As mentioned above, the implementation of this Project under the Japanese Grand Aid scheme is considered to be highly effective and relevant.

Summery in Arabic

4- مدة تنفيذ المشروع والتكلفة التقديرية

فيما يخص مدة تنفيذ المشروع، فهي تقدر بحوالي 5,5 أشهر للتصميم و15 شهراً تقريباً للبناء والتوريد لكل مرحلة من مراحل المشروع : المرحلة الأولى (الزورق الأول)، المرحلة الثانية (الزورق الثاني).

سيقوم الجانب الياباني بتحمل كل تكلفة المشروع ولن تكون أية تكلفة معينة يقوم الجانب اليمني بتحملها.

5- النتائج المنتظرة من المشروع

تعتبر مياه خليج عدن من أهم الممرات البحرية بعد قناة السويس، حيث تعبر هذه المياه ما يقارب 18000 سفينة وزورق سنوياً من بينها 2000 سفينة يابانية. وما يعادل 12 بالمائة من حجم البضاعة العالمية البحرية ينقل يمر كذلك بهذه المياه التي تعتبر مياهاً عالمية ذات أهمية عالية. ولكن الملاحة في هذه المياه مهددة بعمليات القرصنة التي قدرت ب 200 حالة خلال سنة 2009. إضافة إلى ذلك، يفترض أن تزداد عمليات تهريب الأسلحة والمخدرات من الصومال المتواجدة على الضفة الأخرى لخليج عدن مما يجعل من اليمن أرضاً خصبة للإرهاب. لهذا الشأن، يعتبر توفير السلامة البحرية والأمن في خليج عدن أمراً عاجلاً، وهدف المشروع يتجلى في تقوية نظام تسيير الدوريات البحرية لمصلحة خفر السواحل اليمنية وبذلك يتم توفير السلامة للسفن العابرة للخليج، وذلك عن طريق توفير زورق أو زوارق تستطيع الإبحار في خليج عدن.

بالنسبة لمواصفات زورق من فئة 35 متر، فهي تتلاءم ليس فقط مع دوريات في المياه الإقليمية اليمنية، بل على مدى المياه الدولية في أعالي البحار، وتوفير زوارق من هذه الفئة لا تقوم به إلا اليابان. توفير زوارق دوريات من فئات أكبر كقدرة حمائية إضافية سيسهم في توفير الأمن للملاحة الدولية وسيسهم أيضاً في توفير الاستقرار الأمني داخل الجمهورية اليمنية.

علاوة على ذلك، سيسهم هذا المشروع في التعاون الدولي الذي يصب لفائدة الجمهورية اليمنية، حيث يقوم المجتمع الدولي الممثل في المملكة المتحدة والولايات المتحدة الأمريكية وفرنسا وغيرها بتوفير مساعدات لبناء هيكل عمل لمصلحة خفر السواحل، وذلك من الجانبين المادي والفني.

ونصل من خلال ما ذكر سابقاً إلى أن تنفيذ المشروع تحت نظام المنحة اليابانية يعتبر أمراً ملائماً ذات أهمية عالية جداً.

وباكستان، فيرى أنه من الضروري محاربة هذه المشاكل التي تهدد اليمن والمجتمع الدولي عن طريق نشر زورق أو زوارق دورية في خليج عدن تستطيع القيام بدوريات خارج المياه الإقليمية للجمهورية اليمنية. تم اختيار المواصفات الأساسية لزورق من فئة 35 متر تلاءماً مع نظام عمليات خفر السواحل اليمنية والمياه الموجودة تحت سلطتها، إضافة نظام التسيير والصيانة.

علاوة على ذلك، الولايات المتحدة تستعد لتنفيذ برنامج دعم يتجلى في إدخال زورقي دورية إلى خليج عدن. تم الوصول إلى أنه من المناسب أن يكون زورقاً في دورية مستمرة، ولهذا الغرض يتم إدخال زورقين أمريكيين إضافة إلى الزورقين الذين يتم إدخالهما خلال هذا المشروع ليصبح المجموع أربعة زوارق. ولكن، من الضروري دراسة إمكانية التنفيذ نظراً للعبء الذي سيزداد على مصلحة خفر السواحل اليمنية لزيادة عدد الزوارق. ولهذا سياتم تحديد فترة توفير الزورق الثاني بناءً على نتائج تشغيل وصيانة الزوارق المقدمة من قبل الولايات المتحدة.

تم الأخذ في الاعتبار تخفيض التكلفة خلال دراسة وتحديد مواصفات زورق دورية، حيث تم اختيار فقط ما هو مهم وضروري من أجهزة وتوابع ليكون على متن الزورق للقيام بالدوريات وتنفيذ مهام خفر السواحل عن طريق هذا المشروع.

قام فريق شرح تقرير المسح التمهيدي بشرح محتوى المشروع إلى الجهات المعنية إضافة إلى ضباط الارتباط للدول الداعمة لخفر السواحل اليمنية، وذلك من 28 أكتوبر إلى 9 نوفمبر 2010 في العاصمة صنعاء. كما قام الفريق بعقد جلسات ومناقشات مع المسؤولين من الجانب اليمني، ووافق هذا الأخير مبدئياً على مضمون المشروع.

ويمثل الجدول أسفله المواصفات الأساسية لزورق الدورية:

المواصفات	البند
35.8 م	الطول الكلي
3.2 م (منتصف خط الغاطس)	العمق
1.25 م تقريباً	الغاطس
	الحجم
3م ³ (تحت مقصورة الطاقم)	خزان الوقود
4 م ³	خزان مياه الشرب
4 م ³	خزان مياه عذبة
17 فرد	عدد أفراد الطاقم
25 عقدة (عند ثلثي الحمولة، أقصى قدرة)	السرعة القصوى
20 عقدة (عند ثلثي الحمولة، 75% من أقصى قدرة)	سرعة الإبحار
محرك ديزل بحري سرعة عالية، 1630 ك.و، وحدتين	المحرك الرئيسي

2- خلفية المشروع

يعتبر خليج عدن محورا استراتيجيا لحركة الملاحة البحرية الدولية عبر المحيط الهندي الى البحر الاحمر، لكن مع اشتداد الحرب الأهلية في الصومال ونتيجة تدهور الوضع الأمني هناك، انتشرت ظاهرة القرصنة في المنطقة البحرية للجمهورية اليمنية بما فيها خليج عدن، وازدادت الهجمات على السفن التي تبحر في خليج عدن، وانتشرت أعمال السلب والنهب، واختطاف البحارة بصورة خطيرة مما أصبح يشكل تهديدا كبيرا على المجتمع الدولي. لهذا اتفق المجتمع الدولي على التعاون من أجل مكافحة ظاهرة القرصنة في هذه المنطقة البحرية، وأضحت مسألة تحسين وضع السلامة البحرية الأطوار المجاورة أمراً حيوياً. ولهذا فإننا نساهم في تقديم الدعم الفعلي لتحسين قدرات خفر السواحل في الجمهورية اليمنية.

خفر السواحل اليمنية، هي الهيئة الوحيدة المتواجدة في المنطقة البحرية المحيطة باليمن. وقد أنشأت عام 2002 كهيئة جديدة مسؤولة عن السلامة البحرية، وبدأت بدون معدات كافية حيث واجهت صعوبات مالية شديدة، تلقت على أثرها دعماً من الدول المانحة لتحسين قدراتها على مستوى الحماية البحرية، لكن مازالت المعدات والمنشآت المتاحة غير كافية.

تمتلك خفر السواحل اليمنية زوارق تفتيش صغيرة فقط يقتصر عملها داخل الميناء لا يمكنها القيام بدوريات خارج الميناء، وذلك على مستوى المنطقة الاقتصادية الحصرية التي تبلغ مساحتها حوالي 460000 كيلومتر مربع والتي تضم خط الساحل اليمني الذي يبلغ طوله حوالي 2500 كيلومتر إضافة إلى خليج عدن. أما الزوارق التي يمكنها القيام بدوريات خارج الميناء فهي 3 زوارق دورية طولها 22 متراً و4 زوارق دورية طولها 15 متراً.

تحت هذه الظروف، تقدمت حكومة الجمهورية اليمنية بطلب دعم من الحكومة اليابانية لتحسين قدرات خفر السواحل تتمثل في بناء زوارق دورية إضافة إلى ما يتعلق بها من عمليات التسيير والصيانة، لمحاربة الإرهاب والقرصنة. وفي شهر أبريل 2009 واستجابة لهذا الطلب قامت الوكالة اليابانية للتعاون الدولي تنفيذ مساحاً لمشروع بناء قدرات خفر السواحل اليمنية، وذلك من أجل تأكيد محتوى مشروع الدعم. وكنتيجة لهذا المسح، تم الرسو على أنه من المهم تقديم منحة على مدى أوسط لخفر السواحل اليمنية وذلك عن طريق توريد زورق أو زوارق دورية من فئة 30 إلى 40 متر.

3- نظرة عامة عن نتائج المسح التمهيدي ومحتوى المشروع

اعتماداً على النتائج السابق ذكرها، قررت الحكومة اليابانية إجراء دراسة، وقررت الوكالة اليابانية للتعاون الدولي تنفيذ مساحاً تمهيدياً للمنحة. وخلال الفترة ما بين 11 أبريل و17 مايو 2010، قام فريق المسح التمهيدي بزيارة العاصمة صنعاء ومدينة عدن، وجمع المعلومات والبيانات اللازمة وعقد جلسات مع الأشخاص المعنيين من الحكومة اليمنية بالإضافة إلى ضباط الارتباط في خفر السواحل اليمنية.

تم بعد ذلك إعداد تقريراً للمسح التمهيدي يشمل محتوى المشروع والنتائج المنتظرة بعد التنفيذ وذلك أخذاً في الاعتبار نتائج المسح. وبما أنه تم التأكد من وجود مشاكل متعددة، مثل القرصنة والهجرة غير الشرعية وتهريب الأسلحة والمخدرات تتوكل على اليمن من البلدان الإفريقية المتواجدة على الساحل المقابل، إضافة إلى بلدان غرب آسيا

ملخص

1- لمحة عن الجمهورية اليمنية

تقع الجمهورية اليمنية جنوب غرب شبه الجزيرة العربية وتقع بين خطي عرض 12 درجة و19 درجة شمال خط الاستواء وبين خطي طول 43 و 54 درجة شرق خط جرينتش، وتحاذيها المملكة السعودية شمالاً وسلطنة عمان شرقاً. تبلغ مساحتها حوالي 555000 كم² وهو ما يعادل تقريباً 1,5 أضعاف مساحة اليابان. لها ساحل على البحر الأحمر وبحر العرب وخليج عدن وتقابلها الصومال من الجهة الأخرى لخليج عدن. نظراً لوجود الجمهورية اليمنية في منطقة جافة، فإن نسبة الأمطار عموماً ضعيفة. ولكن مناخ اليمن يختلف من منطقة لأخرى، حيث المناطق المرتفعة كالعاصمة صنعاء تعرف مناخاً معتدلاً بينما تعرف منطقة ساحل خليج عدن مناخاً حاراً مرتفع الرطوبة طوال السنة، حيث درجة الحرارة في النهار خلال فصل الشتاء تتراوح بين 20 و33 درجة مئوية. يتأثر مناخ خليج عدن بالرياح الموسمية الآتية من بحر العرب والمحيط الهندي، حيث تعرف الفترة ما بين شهرية أكتوبر ومايو هبوب رياح موسمية من الشمال الشرقي تؤدي إلى هبوب رياح شرقية أو شمالية شرقية مع حركة الأمواج غالباً من الشرق، بينما خلال الفترة ما بين شهري يونيو وسبتمبر تهب رياح موسمية من الجنوب الغربي تؤدي إلى هبوب رياح جنوبية غربية مع حركة الأمواج غالباً من الجنوب الغربي.

عدد سكان الجمهورية اليمنية يبلغ حوالي 22 مليون نسمة (حسب إحصائيات الجمهورية اليمنية لسنة 2008) تتكون أساساً من العرب. فيما يتعلق باقتصاد اليمن، فقد كانت نسبة نمو الناتج المحلي الإجمالي 3,8 بالمائة، وبلغ الناتج القومي السنوي 25 مليار دولار أمريكي وكان الدخل القومي لكل فرد 1060 دولار أمريكي. إضافة إلى النمو الاقتصادي الذي بلغ 3,9 بالمائة وتضخم بنسبة 3,7 بالمائة (المورد: البنك الدولي، سنة 2009). أهم الأنشطة الاقتصادية في اليمن هي الفلاحة والصيد البحري، حيث يتم تصدير بصفة أساسية البن والموارد السمكية، إضافة إلى البترول. كان تقسيم الناتج المحلي الإجمالي التقديري لسنة 2008 على النحو التالي: حيث 39 بالمائة للصناعة الأساسية، 14 بالمائة للصناعة الثانوية والباقي للصناعة الثالثة. يعتبر إنتاج البترول، الذي بلغ حوالي 300000 برميل في اليوم خلال سنة 2008، أهم صناعة في اليمن حيث يمثل 90 بالمائة من المواد المصدرة و 60 بالمائة من الدخل المالي للبلاد. ولكن، يلاحظ أيضاً تدهور في نسبة الإنتاج سنة بعد سنة، وحسب تقديرات للبنك الدولي سوف يستنفد البترول اليمني في حوالي سنة 2017. وللنهوض بالاقتصاد، وجدت الحكومة اليمنية في الغاز الطبيعي بديلاً للبترول وبدأت في تصنيعه وتصديره وذلك ابتداءً من سنة 2009. وكان الناتج الأقصى للغاز الطبيعي قد بلغ 6,9 مليون طن تم تصديرها إلى كوريا ومرتقب تصديره أيضاً إلى الولايات المتحدة الأمريكية. ولكن الدخل من صناعة وتصدير الغاز الطبيعية لا يرتقب أن تعوض الخسارة من فقدان البترول، وهذا ما يدفع الجمهورية اليمنية للنهوض بالصناعات الأخرى كالصيد البحري والسياحة، ومنح فرص شغل من خلالها.

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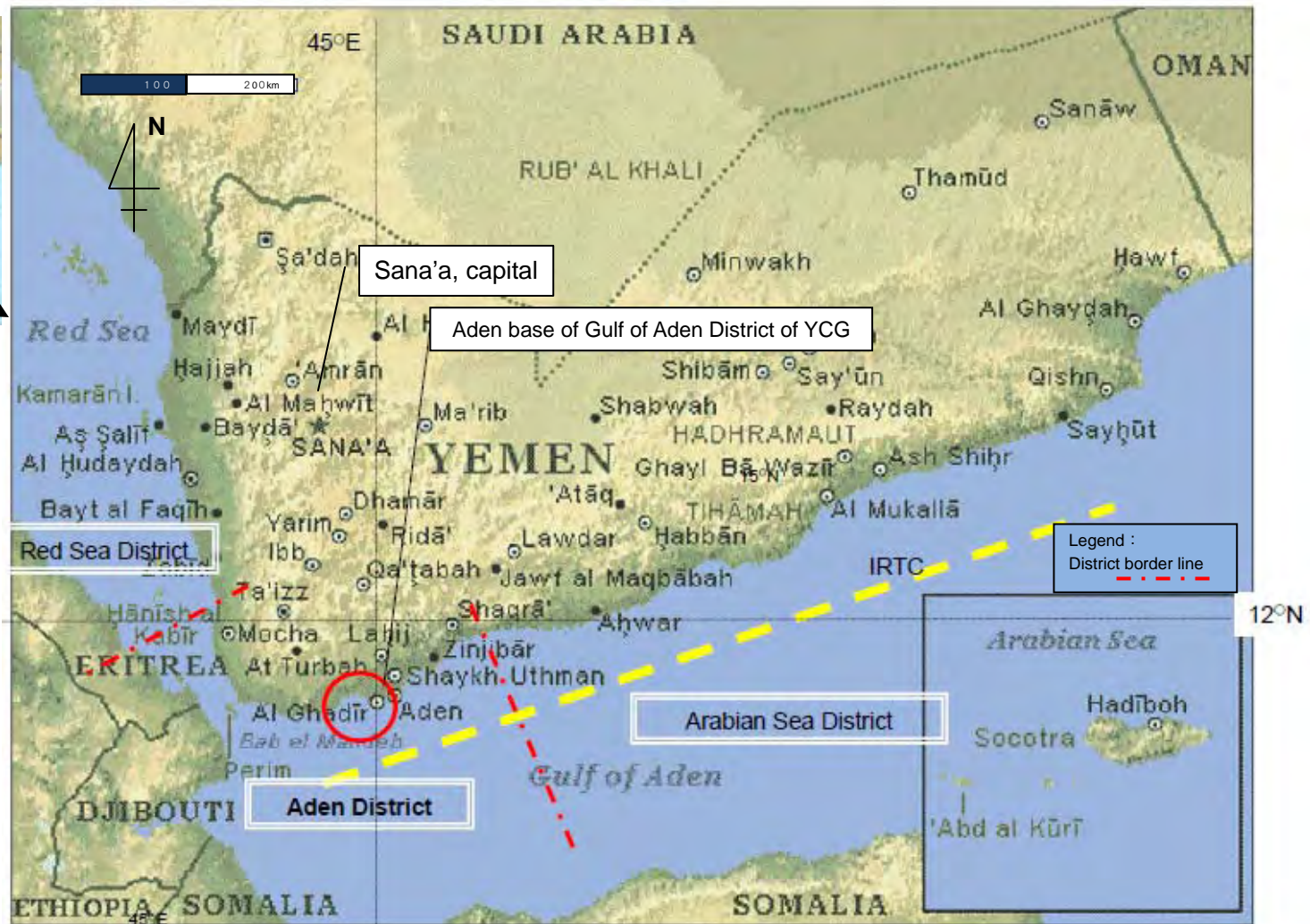
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Location Map of the Project



Perspective of a 35 m class Patrol Vessel

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Abbreviation List

A/P	Authorization to Pay
AIS	Automatic Identification System
B/A	Banking Arrangement
BS	British Standards
EU	European Union
G/A	Grant Agreement
GDP	Gross National Product
GMDSS	Global Maritime Distress and Safety System
GNI	Gross National Income
GPS	Global Positioning System
HF	Hi Frequency
IMB	International maritime Bureau
IMO	International Maritime Organization
LNG	Liquefied Natural Gas
MF	Medium Frequency
RIB	Rubber Inflatable Boat
TI	Training Institute
VHF	Very High Frequency
VTS	Vessel Traffic Service
YCG	Yemen Coast Guard

Chapter 1 Background of the Project

Chapter 1 Background of the Project

1-1 Current Situation and Issues of the Sector

1-1-1 Current Situation and Issues

(1) Geographical Features and Ship Traffic

The Republic of Yemen (hereinafter called to as “Yemen”), which is located on the southwest end of the Arabian Peninsula, has a long coastline running from the Red Sea to the Indian Ocean. The stretch of the coastline of Yemen starts from the border to Saudi Arabia at the east side of the Red Sea and runs through the Bab-el-Mandeb strait which is the important strategic point, leading to the Gulf of Aden, to the border to Oman on the north and east end of the Gulf of Aden. (See Figure 1-1).

The coastline of Yemen is approximately 2,100 km in total excluding those of 112 islands such as Zubayr, Kamaran, Mayyun, and Socotra, with approximately 700 km facing the Red Sea and approximately 1,400 km facing the Gulf of Aden.

These waters are the major strategic zone for the international sea freight that connects the Mediterranean Sea of Europe, and the Arabian Sea and Indian Ocean of Asia, through Suez Canal, and are crossed by approximately 18,000 commercial vessels which are engaging in the international voyage including around 2,000 vessels owned or operated by Japanese firms such as crude oil tankers or container ships a year (See Figure 1-2).

Additionally there is regional ship traffic in these waters such as between Djibouti on the opposite shore of Yemen and Aden or Mocha, between Berbera in Somalia and Jizan, or between Mukalla and Socotra, the total ship traffic in these waters are estimated more than 25,000 vessels in a year.

Furthermore, it was reported that in Port of Aden which is the largest commercial port in the Gulf of Aden, 2,174 vessels in 2008, and, 1,821 vessels and 138 passenger boats in 2009 called at the port.

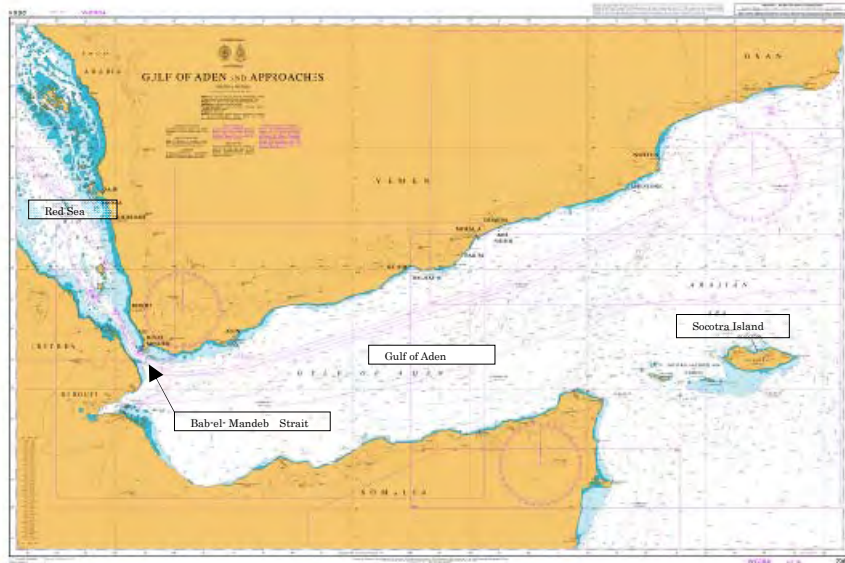


Figure 1- 1 The Gulf of Aden and the Red Sea
 (Duplication of Chart BS2954)

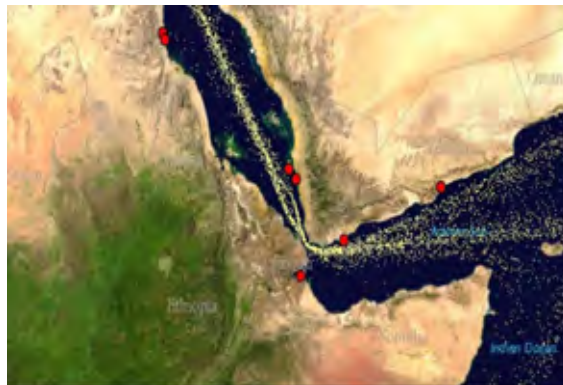


Figure 1- 2 Shipping route in the Gulf of Aden
 (Note: Shipping route as of 2004, less vessels passing on the north side of Socotra Islands at present)

(2) Piracy and Armed robbery

The Gulf of Aden is a significant ocean area for sea freight, however, triggered by the deterioration of public safety due to the civil war in Somalia, piracies increased suddenly in and after 2005 in the Gulf of Aden and offshore Somalia. The international society started to take steps in line to cope with the situation, enacting the resolutions regarding piracies and armed robberies against ships on the waters by the International Maritime Organization (IMO), the United Nations Security Council Resolution 1816 which condemns act of piracy, armed robbery off Somalia’s and authorizes all necessary means to repress such acts, or the United Nations

Security Council Resolution 1838 which calls on nations with vessels in the Somali piracy region to apply military forces as means of repressing acts of piracy. In the result of the collaboration for such piracy measures by the international community, the rate of successful attacks are reducing, however, the tendency of recurring piracies are still continuing (See Table 1-1, 1-2, and Figure 1-3).

Table 1-1 Trend of piracy occurrences off Somalia and in the Gulf of Aden

Year	2003	2004	2005	2006	2007	2008	2009
Number of occurrence	21	10	45	20	44	111	217

(Source: IMB, 2010)

Table 1-2 Trend of piracy occurrences in the Gulf of Aden, the Red Sea, and the Arabian Sea

Year		2007	2008	2009	2010
Number of attacks		25	69	164	36
Attacks succeeded	Number of occurrence	10	42	47	8
	Rate (%)	40	61	29	22

(Source: YCG, Note: Number of attacks in 2010 is as of the of end March)



Figure 1-3 Piracies off the coast of Somalia and in the Gulf of Aden in 2009

(Source: IMB, Note: Red-captivity, Yellow-attack)

(3) Smuggling and illegal immigration

In addition to the piracies etc. in the Gulf of Aden, illegal immigration and smuggling of weapons or goods and drugs prohibited for import are rapidly increasing on the east sea area of the Gulf of Aden of Yemen and around the opposite shore of Djibouti, therefore securing order in these waters is an urgent issue (See Table 1-3.)

The main background of such situation is due to the numerous refugees and activation of Islamic militants caused by the intensifying civil war of Somalia. However, in addition to the above, the improvement of maritime safety in the Middle Eastern countries such as Oman has directed the attention mainly to the coast of Yemen where maritime safety is relatively vulnerable, for instance, banned drugs produced in South Asian region are once transported into Yemen via the coast around the border of Oman, and are then smuggled to the surrounding countries on road (See Figure 1-4 and 1-5).

Table 1-3 Trend of influx of refugees from Somalia

Year	2007	2008	2009 (as of November)
People	29,232	50,091	87,000

(Source: YCG)



Figure 1- 4 Route of influx of refugees from Somalia (left) and route of smuggling drugs via Yemen (right)

(Source: YCG)

1-1-2 Development Plan

In *Chapter 4 “The Good Governance System”* of the *3rd Socio Economic Development Plan for Poverty Reduction (DPPR)* (2006-2010) which is the national development plan of Yemen, equipment and capacity improvement of the Ministry of Interior and organizations related to security enforcement is claimed for the purpose of improving security services, where necessity of the YCG is described as a measure against smuggling and illegal immigration.

YCG has strengthened its awareness to the strategic significance of the waters around Yemen, as well as the terrorism, piracy, smuggling, or illegal immigration being a major threat to the security of Yemen, therefore positioned the decade from 2010 to 2020 as a basic development period of YCG, and the development plan (interim plan) is under establishment at present. The plan document of this strategy includes directions of the development in various fields such as development of facilities, organization framework, crew’s training system, and states variety of patrol vessels are essential to perform the patrol activities within the exclusive economic zone to the coastal waters as well as large-scale patrol vessel is of high priority

1-1-3 Socioeconomic Status

The total population of Yemen is approximately 22 million (statistics by the Government of Yemen, 2008), consisting of mainly Arabians. With regards to the economy of Yemen, the GDP growth rate in 2009 was 3.8%/year, 25 billion US\$ for GNI, 1,060 US\$ for GNI per capita, 3.9% for economic growth rate, and 3.7% for inflation rate (Material by the World Bank, 2009). The prime industries are agriculture and fishery which mainly exports coffee and seafood product, as well as petroleum. The estimated breakout of GDP in 2008 was 39% for the primary industry, 14% for the secondary industry, and the rest for the tertiary industry.

Petroleum production, which marked approx. 300,000 B/D in 2008 (statistics by BP), is the pillar of the economy of Yemen consisting 90% of the export and more than 60% of the financial income. However, the production volume of petroleum is reducing year by year, and is estimated by the World Bank that petroleum will deplete at around 2017. As a substitution of petroleum, Yemen is developing natural gas, and has started to produce and export LNG from October 2009. The maximum production was 6.9 million tons/year, which was exported to Korea, as well as to the United States in the near future. However, the LNG production is not predicted to compensate the financial income loss of petroleum, therefore acceleration of non-energy industries such as fishery or tourism is urged, also for the purpose of securing employment.

1-2 Background and Overview of the Grant Aid

Under the conditions as stated above, the international community is focusing on strengthening maritime security capacity in the waters of the surrounding countries for measuring damages due to piracies increasing year by year. However, among countries facing the coast of Somalia and the Gulf of Aden, only Yemen is having a coastguard as a functioning organization. However, since the YCG was newly established in 2002, both organizational structure and equipment are insufficient, and especially the patrol vessels owned by the YCG are small-scale (maximum 22.5m x 3 vessels), therefore cannot sail to off the coast of Somalia and the Arabian Sea, as a result not being able to perform maritime patrol activity in a sufficiently wide range. Thus, strengthening of its organizational structure and equipments are urgent issues.

Under these circumstances, the Government of Yemen requested for assistance to the Government of Japan for strengthening the coastguard (shipbuilding of patrol vessel(s) and related operation, maintenance, and management technologies) for measuring terrorisms and piracies. In April 2009, in response to this request, Japan International Cooperation Agency (JICA) implemented with the survey team of the government of Japan the “Preparatory Survey of the Coastal Security Project in Yemen” in order to validate the direction of assistance which Japan may provide. As a result of the said survey, the following results were concluded; 1) although various countries are dispatching naval forces to the Gulf of Aden for anti-piracy measures, these are not expected to stay in these waters for a long-term, therefore from a mid-to-long-term perspective, it is highly significant to assist the YCG which is managing the maritime safety in Yemen, 2) when considering shipbuilding of the patrol vessel(s), it is difficult for the existing patrol vessels (maximum 22.5 m long) to perform their duties continuously in a long-term, since they can be influenced by the climate or hydrographical conditions, therefore deployment of overall length 30 through 40 m patrol vessel(s) are necessary for a stable maritime safety activity, and, 3) with regards to the technical assistance, immediate dispatching of Japanese specialists (liaison officers) to the Yemeni Coastguard Authority is not necessarily a must, however, if the patrol vessel(s) etc. shall be built by the assistance of Japan, coordination for acceptance by YCG, capacity building (mooring berth, establishment and promotion of human resource training plan, review of maritime safety activity plans using patrol vessels, etc.) shall be necessary.

1-3 Assistance of the Government of Japan

As shown in Table 1-4, two officers of YCG in 2008, and six officers in 2009 attended the group training program of JICA regarding maritime safety and security, for capacity building of maritime safety of Yemen.

Table 1-4 Assistance of Japan (Maritime safety and security field)

Type of assistance	Year	Project title/ others	Outline
Preparatory survey	2009	Preparatory Survey for Coastal Security Project	Feasibility study of practicable project as a Japan's ODA for improvement of Yemeni coastal security
Acceptance of trainees	2008	Maritime Law Enforcement for East Asian Countries (Group training) (2 persons)	Current state, measures for international maritime crime, and training for practical duties regarding law enforcement (attended in addition to the training aimed for east and southeast Asian countries)
	2009	Maritime Law Enforcement for East Asian Countries (Group training) (6 persons)	Current state, measures for international maritime crime, and training for practical duties regarding law enforcement (attended in addition to the training aimed for east and southeast Asian countries)
	2010	Maritime Law Enforcement for Asian / Middle Eastern Countries (Group training) (Long-term 3 persons, Short-term 3 person)	Current state, measures for international maritime crime, and training for practical duties regarding law enforcement

1-4 Assistance of Other Donor Countries

The Western countries are assisting the YCG in a proactively, particularly the four countries UK, USA, Italy, and France are dispatching resident officers to YCG and are implementing the assistance continuously. Further they hold official and unofficial meetings frequently with Netherland's and Germany's naval attaches to Yemen, as well as EU representatives, Japan's

embassy staff, in order to form a complete coordination system among donors. It is notable that these activities have established a highly efficient framework to proceed with assisting the YCG. The Korean attaché attended the monthly meeting held in April 2010.

Table 1-5 Assistance of Other Donor Countries and Agencies

(Maritime Safety and Security Field)

(Unit of amount: 1,000 US\$)

Implementation year	Donor country	Project title	Amount	Type	Outline
2006 ~ 2010	France	Navigation training & Law enforcement training, etc.	76.0	Technical assistance	Dispatch specialists for a short-term, for continuous basic training of navigation, machine maintenance, and law enforcement
2009	Italy	Radar and communication training	Unknown	Technical assistance	Trainings for operation of radar system and communication equipment, receiving of distress signals and communication between shore and vessels, etc.
2007	Italy	Vessel Traffic Service (VTS)	20Mil Euro	Grant Aid	Develop VTS for Gulf of Aden District, building of monitoring center, YCG authority monitoring center, data transmission network, etc.
2005 ~ 2010	UK	Basic skill training	Unknown	Technical assistance	Training of Training Institute's instructors in navigation and engine control Training of Gulf of Aden Workshop staff in machinery maintenance work (dispatched 17 experts)
2010	UK	Mooring buoy	Unknown	Grant Aid	Installation of three mooring buoys in the base of Gulf of Aden District

2010	UK	Intranet development	Unknown	Grant Aid	Development of intranet in the YCG Headquarter
2009	United States	Navigation training	Unknown	Technical assistance	Navigation training (1 month)
2003 ~ 2008	United States	Provision of small-scale patrol vessels	Unknown	Grant Aid	Provision of four small-scale patrol vessels Provision of eight engine driven lifeboats and ten harbor patrol boats
2008	United States	Construction of Khor Al-Omayra base	Unknown	Grant Aid	Construction of base in Gulf of Aden District
2010 ~ 2011	United States	Shipbuilding of patrol vessels	28,200	Grant Aid	Shipbuilding of two 87' (26.5m) patrol vessels
2010	Oman	Shipbuilding of patrol vessels	4,500	Grant Aid	Financial assistance for procurement of one 22 m class patrol vessel

1-5 Natural Conditions

The climate of the Gulf of Aden can be characterized to the northeast monsoonal climate from October through May and the southwest monsoonal climate from June through September.

In the coast pilot “Admiralty Sailing Directions Red Sea And Gulf Of Aden Pilot NP-64 Sixteenth Edition 2009” published by the United Kingdom Hydrographic Office, it is reported that the ocean waves and swell in the Gulf of Aden are as shown below.

Southwest monsoonal climate (June to September); 10% occurrence frequency of wind higher than force 7 (wind velocity of 28 knots ~ 33 knots, strong wind), 25% occurrence frequency of waves higher than 2m, and swell from the southwest of approx. 2 m.

Northeast monsoonal climate (October to May of succeeding year): hardly none recorded for wind higher than force 7, 16% ~ 21% occurrence frequency of waves higher than 2 m, and swell from the east of approx. 2 m.

From these results, the annual significant wave height in the waters of Gulf of Aden is roughly estimated 2m or lower.

The average monthly sea surface temperature is around between 26°C and 29°C, depending on the season and the location in the Gulf of Aden.

The land overall of Yemen is in the arid belt with less rainfall, and annual rainfall in Aden is 45 mm. The temperature is relatively hot and average monthly temperature is around between 30°C and 37°C of maximum temperature, and between 23°C and 27°C of minimum temperature. Relative humidity is 70% at maximum.

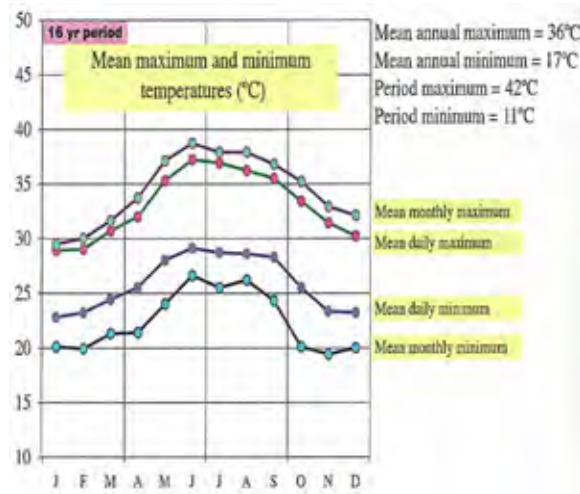


Figure 1- 5 Temperature in the Gulf of Aden
 (Source : RED SEA AND GULF OF ADEN PILOT 2009)

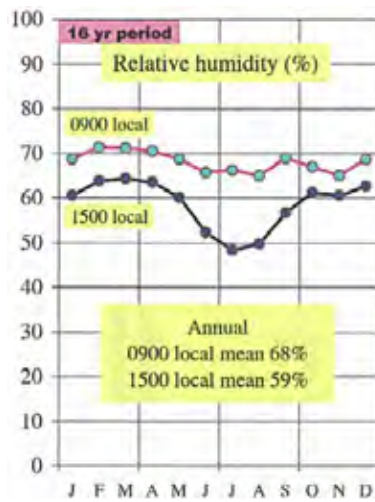


Figure 1- 6 Humidity in the Gulf of Aden
 (Source : RED SEA AND GULF OF ADEN PILOT 2009)

1-6 Environmental and Social Considerations

This is a shipbuilding project and negative impact to the natural environment by implementation of the Project is limited.

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Chapter 2 Contents of the Project

Chapter 2 Contents of the Project

2-1 Basic Concept of the Project

2-1-1 Overall Goal and Project Goal

The Gulf of Aden is the strategic point in the international maritime traffic connecting the Indian Ocean and the Red Sea. However, the number of attack, robbery, and abduction of crews increased rapidly the surrounding ocean area of Yemen caused by piracy accompanying the escalating civil war in Somalia and the worsening public order, which is becoming a threat to the international community. The international community is currently under cooperation to handle the piracy problem in the area, and is proactively supporting to make improvement to the maritime safety of Yemen, since the indispensable and radical solution to this matter is to improve the maritime safety of the surrounding countries.

The Yemeni Coast Guard is the only maritime safety organization in the surrounding ocean area. It was established in 2002, initially without equipage, and is making effort to improve its maritime security capacity with the support from the donor countries under severe financial condition. Unfortunately, the organization, facilities, and equipment of Yemen Coast Guard are still insufficient.

In addition, the waters is often used as a path for unlawful act such as smuggling of banned drugs and human trafficking to the coast of the Gulf of Aden in the Yemen from African countries, establishment of marine security in the Gulf of Aden is an issue of the Yemen.

The vessels owned by the Yemen Coast Guard are small patrol vessels and harbor patrol crafts only in the large exclusive economic zone of Yemen (approx. 460,000 km²) which includes the coastline of approx. 2500 km and the Gulf of Aden. Therefore, the vessels available for patrolling outside the port are only 3 of 22 m length offshore patrol vessels and 4 of 15 m length offshore patrol vessels. This capacity, which can be affected by the hydrographic conditions, is far beyond handling the urgent piracies within the Gulf of Aden, as well as the patrols that are essential for the security duty, thus the development of vessel capacity is an urgent issue.

In such situation, the Yemeni Coast Guard formulated the “YCG strategic plan”, for a development plan of construction of the base facilities, necessary scale, and quantity of vessels and other equipment required in the next decade. One of the major issues of the plan is to build an offshore patrol vessel for the international shipping lanes of the Gulf of Aden in particular.

In this Project, the overall goal is to ensure safe and smooth maritime traffic in the Gulf of Aden, and the project goal is to strengthen the Coast Guard performance of Yemen in the gulf, by newly deploying offshore patrol vessel that is capable of operational patrol services in the Gulf of Aden.

2-1-2 Outline of the Project

In order to achieve the overall goal of the Project, 35m-long patrol vessel(s) shall be provided for the Yemen Coast Guard to patrol waters in the Gulf of Aden, as requested by the Government of Yemen. This is expected to strengthen the coast guard capacity and reduce maritime cases in the waters. Thirty five meter long patrol vessels shall be constructed in this project and deployed to the Aden base of the Gulf of Aden District of the Yemeni Coast Guard.

2-2 Outline Design of the Japanese Assistance

2-2-1 Design Policy

(1) Range of services of the planned patrol vessel

The surrounding ocean area of Yemen is divided into three areas by the Yemeni Coast Guard; Arabian Sea of northwest of the Indian Ocean to the east of the Gulf of Aden under the jurisdiction of the north Arabian District, mainly in the offshore and in the west side of the Gulf of Aden under the jurisdiction of the Gulf of Aden District, and the Red Sea under the jurisdiction of the Red Sea District.

As shown in the figure below, the piracy in the surrounding ocean area of Yemen have been reported in a wide area, from the coast of Yemen in the Gulf of Aden, the Red Sea to the coast of Somalia, and to the Indian Ocean. The waters under the jurisdiction of the Gulf of Aden District including offshore Aden are also frequently used by merchant vessels and are significant waters. Since maritime safety within these waters are an urgent issue, by deploying patrol vessel(s) and executing patrol activities for the maritime safety to perform its presence can be an effective measure against piracy, the waters under the jurisdiction of the Gulf of Aden District are targeted for the major activity range for the patrol vessel to be provided from Japan.



Figure 2- 1 Piracies in the Gulf of Aden and off the coast of Somalia

(Legend: Red: captivity, Yellow: raid) (Source: IMB, 2010)

On the other hand, frequent occurrence of smuggling weapons and illegal drugs or illegal immigration have been reported due to the incomplete development of facilities and equipments in the North Arabian District, especially around the border of Oman. These illegal acts are considered to be highly relevant to international terrorism. Therefore, patrol activities in the coastal area for handling such issues are necessary, thus the activity range of the patrol vessel shall include the east coast of the Gulf of Aden and nearby areas of Socotra Island

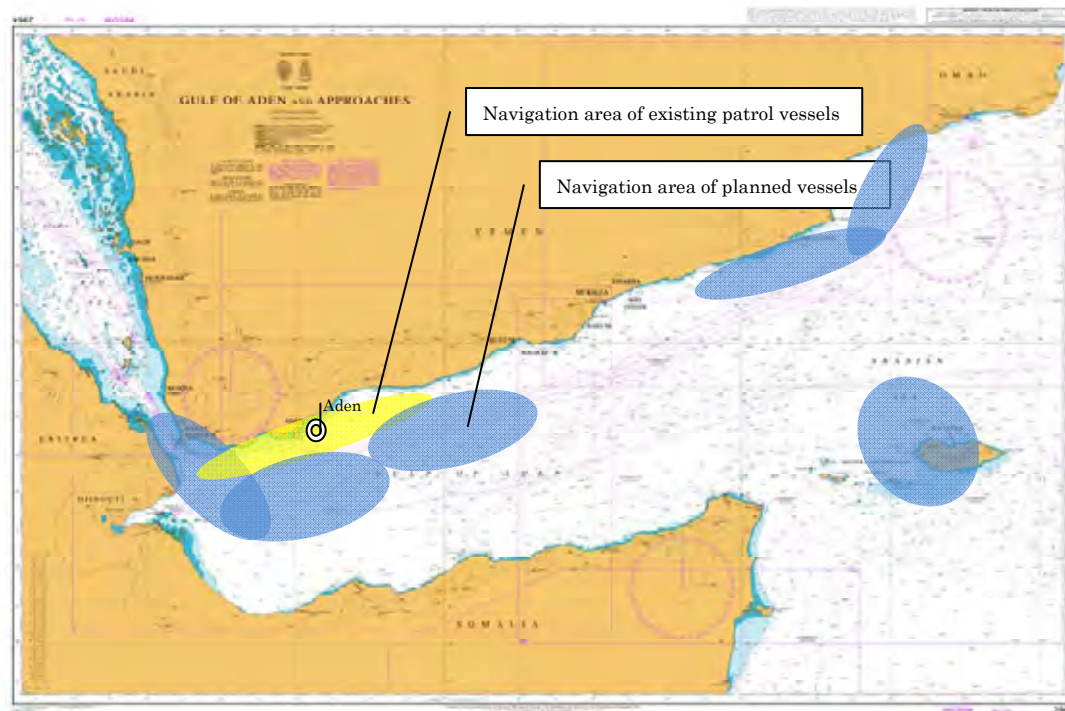


Figure 2- 2 Navigation area of the Patrol vessel (Schematic drawing)

(2) Scale of patrol vessel(s)

The dimension of the planned vessel shall be of the minimum dimension required for the patrol activities in the coast and waters of Yemen as well as the exclusive economic zone. However, there are no applicable technical standards for the scale of patrol vessels for the Yemen Coast Guard, therefore taking performances of Japan into consideration, the vessel shall be a 35 m long patrol vessel.

(3) Number of vessels

The role of the coast guard is to ensure maritime security of the waters of Yemen and its exclusive economic zone, and is significant to constantly perform patrol activities to demonstrate its presence. In the draft of the YCG strategic plan, four large scale patrol vessels shall be deployed within the jurisdiction of the Gulf of Aden District, in order to formulate a system which one of the patrol vessels can constantly perform the patrol activity at the waters.

As a basic duty rotation pattern, one vessel must be on patrol, while others are each on its duty; one for standby at the base for emergencies, one for refueling and maintenance, and one for the crews that are on leave, which makes a total of four vessels. The ones on standby and on repair can be used in the rotation when required, thus at least three vessels are necessary to form a

rotation, consequently, in order to enable one vessel to be on patrol constantly, at least three vessels must be ready for navigation at all times. Considering that all vessels need periodical maintenance for around a month every year, at least three rotations with four patrol vessels are necessary for performing patrols and standby without shortage throughout the year, including the crews' leave.

Although terminating the leave rotation by shifting from fixed crew system to multiple crew system remains as an issue, the primary issue is to ensure number of crews or establish the maintenance and management system. Under such circumstances, changing the current system is extremely difficult, therefore rotation of four vessels is deemed feasible.

Two large scale patrol vessels are planned to be deployed in the Gulf of Aden District by the provision from U.S. in April 2011, and by adding the two vessels planned in the project as a part of the international cooperation for the aid to Yemen, four large scale patrol vessels for the jurisdiction of the Gulf of Aden District is realized.

However, there is a gap between the level of capacity in the capacity required for operation, maintenance, and management of the existing vessels of the coast guard, compared to the capacity for operation, maintenance, and management required for the vessel(s) planned for provision. Time is still necessary for improvement of maintenance skills, and also to assess if the budget can be assured for the operation when enhancing number of vessels that is a sudden increase of burden to the navigation cost. Thus, one patrol vessel shall be provided in the beginning, which shall be assessed to determine the time for provision of the second vessel.

(4) Measures for three basic principles on arms export ban

It has been explained to, and accepted by the Government of Yemen, that guns and combat emplacements shall not be equipped to the patrol vessels, due to the trade embargo described on the appendix chart of the Export Trade Control Order, based on the "Three basic principles on arms export" (April 21, 1967), and "Governmental consensus on arms export" (February 27, 1976).

(5) Policies on natural conditions

The climate of the Gulf of Aden can be characterized to the northeast monsoonal climate from October to May and the southwest monsoonal climate from June to September.

In the coast pilot "Admiralty Sailing Directions Red Sea And Gulf Of Aden Pilot NP64 Sixteenth Edition 2009" published by the United Kingdom Hydrographic Office, it is reported that the ocean waves and swell in the Gulf of Aden are as shown below.

Southwest monsoonal climate (June to September); 10% occurrence frequency of wind higher than force 7 (wind velocity of 28knots ~ 33 knots, strong wind), 25% occurrence frequency of waves higher than 2m, and swell from the southwest of approx. 2m.

Northeast monsoonal climate (October to May of succeeding year): hardly none recorded for wind higher than force 7, 16% ~ 21% occurrence frequency of waves higher than 2m, and swell from the east of approx. 2m.

From these results, the annual significant wave height in the waters of Gulf of Aden is estimated roughly 2m.

The rainfall is little since Yemen is in the arid belt, and the annual rainfall is 45mm. Temperature is extremely high, the average monthly maximum temperature is 30°C~ 37°C, and the minimum is 23°C ~ 27°C.

The average monthly sea surface temperature in the Gulf of Aden depends on the season and the location, from 26°C ~ 29°C.

The analysis results of the above hydrographic conditions indicate that extra severe conditions do not need to be estimated for the design conditions. However, the design temperature condition must be set up separately, thus the temperature surrounding equipments must be at 45°C, and the seawater temperature must be 32°C.

(6) Management of the implementing organization, and measures for maintenance

Maintenance works of the planned vessel can be carried out at the shipyard operated by the Aden Port Corporation in the Aden Port. Additionally, the Yemeni Coast Guard has a workshop where maintenance of small crafts or equipment can be carried out in the Aden base of Gulf of Aden District, therefore general repair of the vessel can be performed. However, the equipment manufacturer's service cannot be provided promptly in Yemen, therefore the implementing organization is storing certain amount of spare parts and consumables.

2-2-2 Basic Plan (Construction Plan/Equipment Plan)

(1) Basic performance requirements of the patrol vessel

The initial request for specifications, etc. of the planned vessel, described in the statement of claims by the Government of Yemen is as shown below.

Item	Specification described in the statement of claims
Length overall	30 – 35 m
Draft	2 – 3 m
Navigation area	Gulf of Aden (estimated sea state: 6-8)
Complement	15 persons
Endurance	7 days

The perspective of the initial requirement of the planned vessel's performance was not claimed by the Government of Yemen at the stage when the request was made. Therefore, together with the Government of Yemen, the basic requirements of the planned vessel were discussed between the Government of Japan and Yemen by focusing on the basic requirements of the vessel, and was confirmed that the following basic specifications were necessary.

1) Dimension of the vessel

The points to consider upon determination of a merchant vessel's dimension, such as a patrol vessel, are the onboard equipment, full complement and characteristics of the ocean area. Since the Gulf of Aden is an area affected by the monsoonal climate, operating the vessel in the waves must be kept in mind.

The performance in heavy weather improves as the dimension, especially the overall length is extended, and the operation ratio increases in waves, however, the maneuverability declines. In addition, the shipbuilding cost, and the maintenance cost rises. Therefore, the patrol vessels of the Japan Coast Guard, or merchant vessels with similar tasks such as the surveillance vessels of the customs must comprehensively review such trade-offs, and employ the most well-balanced 35 m or 37 m in general. Following this example, the vessel of this Project shall also be 35 m class.

2) Maximum speed

With regards to the piracy measures of the planned vessel, pursuing and apprehending the pirates shall be executed by the RIB which can sail at high-speed, and the vessel itself shall support the RIB in general. The planned vessel shall perform patrol activities at low-speed, for protection of commercial vessels navigating in the Gulf of Aden, since the speed of general vessels during normal navigation is at around 20 knots, the maximum output of the

planned vessel shall be 25 knots or higher. Figure 2-3 shows an example of the curve of required horsepower of a light alloy 35 m-long patrol vessel.

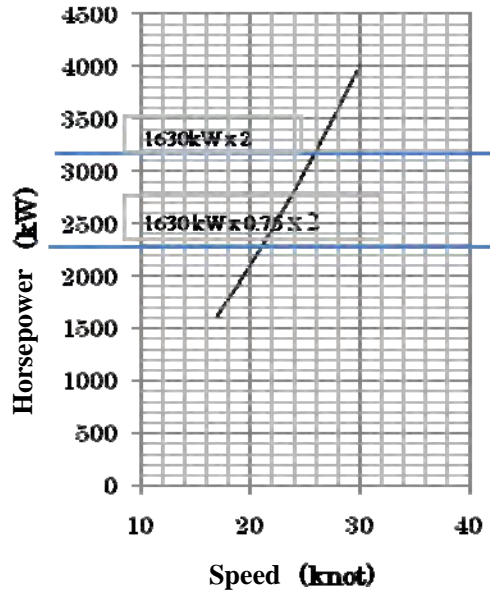


Figure 2- 3 Required horse power
(Source: Consultant)

3) Cruising range

As described in the design policy, the range of patrol of the vessel is mainly the offshore of the Port of Aden, including the west of Gulf of Aden, waters under the jurisdiction of the Yemeni Coast Guard of Gulf of Aden District, as well as west of Gulf of Aden, waters around the border of Oman or waters of Socotra Island.



Figure 2- 4 Cruising range from the base of Gulf of Aden to base of Al-Mukalla
(Source: Consultant)

For patrol activities in the waters near the border of Oman or Socotra Island from the Gulf of Aden, the vessel can be refueled in the naval base of Al-Mukalla. Figure 2-3 shows the conceptual distance for patrolling from base of Gulf of Aden to base in Al-Mukalla, and from base in Al-Mukalla to border of Oman, Consequently, the cruising range of the vessel shall be 800 nautical miles, in order to satisfy these conditions.

4) Complement

Considering that the Government of Yemen strongly requested for a lot of seamanship, say ten or more, which shall be assigned mainly for boarding onto unidentified vessels for urgent inspections, other than the crews for command, navigation, or engineers, complement of the planned vessel shall be 17 persons.

Table 2- 1 Complement of the vessel

Duty	Persons
Commander	1
Executive officer	1
Engineer	1
Communication	1
Electrician	1
Coxswain	2
Seamanship	10
Total	17

5) Endurance

Considering the practical operation of vessels of the similar dimension, the endurance of the planned vessel shall be decided three days, and volume of the drinking water tank, the fresh water, and the provision store, etc. is designed adequate for three days continuous operation.

(2) Principal dimensions

On the basis that the vessel shall be a 35 m class, the length overall shall be finally 35.8 m, confirming that the steering gear room, engine room, crew's cabins, and compartment for air conditioning units, etc. can be arranged satisfactory under the upper deck as well as ensuring space for tanks for fuel and water, etc.

Given the length overall of 35.8 m, the principal dimensions shall be; molded breadth: 6.9 m, molded depth: 3.2 m, molded draft: approximately 1.25 m. The figures of the breadth and depth are based on actual vessels in service, as well as conditions such as habitability or stability.

(3) Hull structure

In general, light alloy or high-tensile steel is used for the structural material for the type of planned vessel.

Below chart is a calculation based on the principal dimensions of above, maximum speed of 25 knots, and maximum cruising range of 800 nautical miles. When selecting light alloy for the material for the hull, the same engine type as the existing vessel (Malaysian vessel) owned by the Yemen Coast Guard can be an option. Having the same engine is an advantage in terms of technical aspects such as maintenance and repair, as well as procurement and management of parts for repair.

Although movement of light alloy vessels may be dynamic in relatively strong waves compared to high-tensile steel vessels, the planned vessel is not a type which is required for high-speed operation in heavy weather, but is advantageous in reducing navigation and fuel cost due to the small horsepower engine and low tonnage. Additionally, the difference in the shipbuilding cost compared to high-tensile structured vessel is small, therefore considering the overall advantages, the hull material shall be of light alloy.

Material of main hull	Light alloy	High-tensile steel
Estimated displacement	116 t	157 t
Required minimum horsepower	3000kW	3800kW
Example of available engines	MTU16V2000M92 1630kW x 2 units	MTU12V4000M93 2340kW x 2 units

(4) Hull form

As for the hull form, the planned vessel shall adopt the Deep-V Omega with hard-chine hull form, which is very common in the single hull high-speed vessel and good in aspect of the sea keeping performance.

(5) Applicable laws and regulations

Laws and regulations to be applied to the design of the planned vessel have been confirmed to the Government of Yemen, however, none has been said to be existing at present. In addition, original regulations or technical standards of the Yemen Coast Guard are also not established, therefore ship construction, and significant equipment for fire control and fighting, etc. of the vessel shall be designed and built after Japan's laws and regulations concerning vessels, such as

the Ship Safety Act, etc.

(6) Communication system, etc

As a general communication system, the Yemen Coast Guard uses HF radio for internal communication and VHF radio for internal and external communication which is equipped both onboard and shore. Contents of the radio communication system equipment including GMDSS shall be decided reflecting the policy of those of the YCG existing vessels.

(7) Protection for the crew

Possession of arms such as automatic weapons have been identified in the incidents of piracies off the coast of Somalia, therefore is necessary to assume weapon attacks from armed pirates when they are pursuing.

In order to protect the crew's life from such incident, a bullet-proof material that can resist automatic weapons shall be installed on the bow and both side walls of the wheelhouse to ensure minimum level of protection.

(8) Mooring equipment

This sort of the vessel uses generally mooring lines to moor on a berth, and it is considered that use of anchor is not frequent. But, the vessel is expected to use the mooring buoys installed the base until the improvement of the mooring facility in the Aden Base is completed; therefore use of anchor is inevitable in case of mooring on buoy. Anchor chain shall be equipped additionally in order to ease the mooring operation in shallow waters.

(9) Monitoring system (monitoring camera)

The Government of Yemen strongly requested for installation of monitoring camera(s), since images are valuable evidences for enforcement of law. A high sensitivity CCD camera shall be equipped to the vessel for the monitoring equipment, which can be used as a night vision device by mounting a near-infrared filter to the searchlight at night, and is also advantageous due to less necessity of maintenance.

(10) Particulars of the planned vessel

With the aforementioned reviews in mind, the basic specification of the patrol vessel which shall be built and procured in the Project has been determined as follows.

1) Main items

Item	Specifications
Nationality	Republic of Yemen
Navigation area	Gulf of Aden Major coast of JG
Principal dimensions	
Length overall	35.8 m
Length of registry	35.2 m
Molded breadth (Design, type)	6.9 m
Molded depth (of center of length of draft)	3.2 m
Design molded draft	Approx. 1.25 m
International gross tonnage	Approx. 208T
Volume	
Fuel tank	30 m ³
Potable water tank	4 m ³
Fresh water tank	4 m ³
Main engine	
Type	High-speed marine diesel engine
Maximum output	1630 kW
Number of engines	2 units
Generator	
Auxiliary engine	High-speed marine diesel engine
Auxiliary engine output, revolution	51 kW x 1500 rpm
Generator	Brushless type AC generator, 2 units
Speed	
Maximum speed	25 knots (at 2/3 load, maximum output)
Cruising speed	20 knots (at 2/3 load, 75% of maximum output)
Cruising range	800 nautical miles (at cruising speed)
Endurance	3 days
Complement	17 persons
Hull material	Light alloy

2) Hull part (1/2)

Item	Q'ty	Specification
Mooring equipment		
Capstan (bow)	2	14.7 kN x 13 m/min, electric
Capstan (stern)	2	14.7 kN x 13 m/min, electric
Anchor	2	260 kg, Danforth
Anchor rode	2	φ32 mm x length 135 m, nylon 8-strand
Anchor chain	1	φ19 mm x length 30 m, stainless wire rope
Tow line	1	φ30 mm x length 135 m, nylon 8-strand
Mooring rope	1	φ20 mm x length 165 m, nylon 8-strand
Mooring rope	1	φ32 mm x length 50 m, nylon 8-strand
Mooring rope	1	φ20 mm x length 50 m, nylon 8-strand
Steering gear		
Rudder	2	Hanging rudder, single stainless plate
Steering gear	1	Motor driven, hydraulic, approx. 19.6 kN-m
Life saving equipment		
Life raft	2	Maximum 15 persons
Life jacket	30	Adult
Hand flare	4	
Self-activating smoke signal	2	
Self-igniting light	2	
Rocket parachute signal	8	
Firefighting equipment		
Portable fire extinguisher	9	Chemical, 50% spare extinguishant
Automatic dispersion type liquid fire extinguisher	4	Fire extinguisher for engine room
Accommodation		
Interior work of cabin area	1 unit	
Galley facilities		
Electric stove	1	IH heater type, approx. 2kW
Microwave oven	1	Approx. 1 kW
Electric water heater	1	Approx. 18 kW
Refrigerator	1	400 L
Freezer	1	200 L
Others	1unit	Sink, cooking table, cupboard, etc.

2) Hull Part (2/2)

Item	Q'ty	Specification
RIB and crane		
RIB	1	Approx. 4.5 m inflatable boat (FRP & rubber) Max. 6 persons, 30 knots or higher speed
RIB davit	1	Light alloy made, load capacity 500 kg load, electric winch driven
Air conditioning unit		
System 1	1	Under deck and deck house area, water cooling packaged type, 37°C, 80% RH—25°C, 50% RH
System 2	1	Wheelhouse, water cooling separate type

3) Machinery part

Item	Q'ty	Specification
Main engine	2	Single acting 4 stroke high-speed diesel engine 1630kW , 2450rpm, 16-cylinder, with starter motor
Reduction gear	2	Reduction and reverse gear, gear ratio 2.41
Propeller shaft	2	Stainless steel
Propeller	2	Fixed pitch 5-blade, approx. ϕ 1200 mm, w/spare propeller, 1each of right and left revolution
Stern tube shaft seal	2	Mechanical seal
Stern tube bearing	2	Seawater-lubricant rubber bearing
Shaft bracket	2	Seawater-lubricant rubber bearing
Intermediate shaft bearing	2	Seawater-lubricant rubber bearing
Grounding device of main shaft	2	
Pumps		
General service/bilge water pump	1	Self suction centrifugal pump 10 m ³ /hr x 20 mAq
Bilge pump	1	Self suction centrifugal pump 10m ³ /h x 20 mAq
Fresh service pump	2	Pump for home use 3.6m ³ /hr x 15 m Aq
Sanitary pump	1	Centrifugal type 5m ³ /hr x 7 m Aq
Waste oil pump	1	Gear type 1 m ³ /h x 0.1 MPa
Lubricator pump	1	Gear type 1 m ³ /h x 0.1 MPa
Manual air purge and dosing pump	1	Wing pump
Oil separator	1	Automatic discharging oil separator, treatment capacity: 0.15m ³ /hr
Water generator	1	Reverse osmosis membrane water generator, 3 tons/day

4) Electric part (1/2)

Item	Q'ty	Specification
Generator	2	64 kVA, 225V, 3-phase, 50Hz, brushless
Rechargeable battery	4	24 V x 200 AH, Starter of main engine and starter of generator, emergency light, alarm and radio, 2 each for engine starter motor
Main distribution board	1	Self-standing or wall mounted, aluminum, generator board, synchronization panel, feeder panel, discharger/charger board for rechargeable battery
Charger for rechargeable battery	1	
Distribution box	1	Dead front type
Shorepower connection box	1	AC440V
Switchboard of wheelhouse	1	Installed to navigation console
Navigation light control panel	1	
Searchlight	1	2 kW xenon, near-infrared radiation unit and high-sensitivity CCD camera mounted on 3-axis stabilized platform
Projector	6	250W halogen projector
Portable working light	3	Incandescent lump, DC24V, waterproof x 2, general type x1
Switch and receptacle	1unit	
Indoor lighting	1 unit	
Outdoor lighting	1 unit	
Communication/signal equipment		
Common telephone	1unit	Wheelhouse, engine room, steering gear room, lounge, mess room, master's quarter
Vessel monitoring TV	1unit	Camera: in engine room x 4, at board side & stern x 4, Monitor and control panel: for engine room x 1, for board side & stern x1
Intercom	1unit	Intercom, main phone + 3 set of mobile phones
Electric horn	1	Horn, type 3
PA system	1 unit	Main unit: output 60 W

4) Electric part (2/2)

Item	Q'ty	Specification
Navigation Instruments		
Rudder indicator	1	Transmitter, Indicator, 1 each
Electric rev counter	1	DC generator, transmitter, 1 each, 2 each for receiver
Seawater thermometer	1	Digital
Thermometer	1	
Liquid level gauge	2	Fuel tank, fresh water tank
Alarm		
Emergency alarm	1unit	
Alarm, wheelhouse	1unit	
Fire alarm	1unit	Manual fire alarm, automatic fire alarm
Immersion alarm	6	
Liquid level gauge alarm of fuel tank	1	
Navigation equipment		
GPS compass	1	
Magnetic compass	1	
Radar	1	X-band, ARPA integrated
AIS receiver	1	
Navigation system		
GPS navigation system	1	
ECDIS (Electric Chart Display Information System)	1	
Wind speed / wind direction meter	1	Electric, vane type
Wiper	5	Electric driven, arm type, front windows of the wheelhouse
Echo sounder	1	
Radio equipment		
International VHF	2	
Two-way VHF radio	2	
NAVTEX	1	
EPIRB	1	
Radar transponder	1	
HF/MF radio	2	
Wide band receiver	1	

2-2-3 Outline Design Drawings

General Arrangement

Length overall 35.8 m
Width Molded 6.9 m
Depth Molded 3.2 m

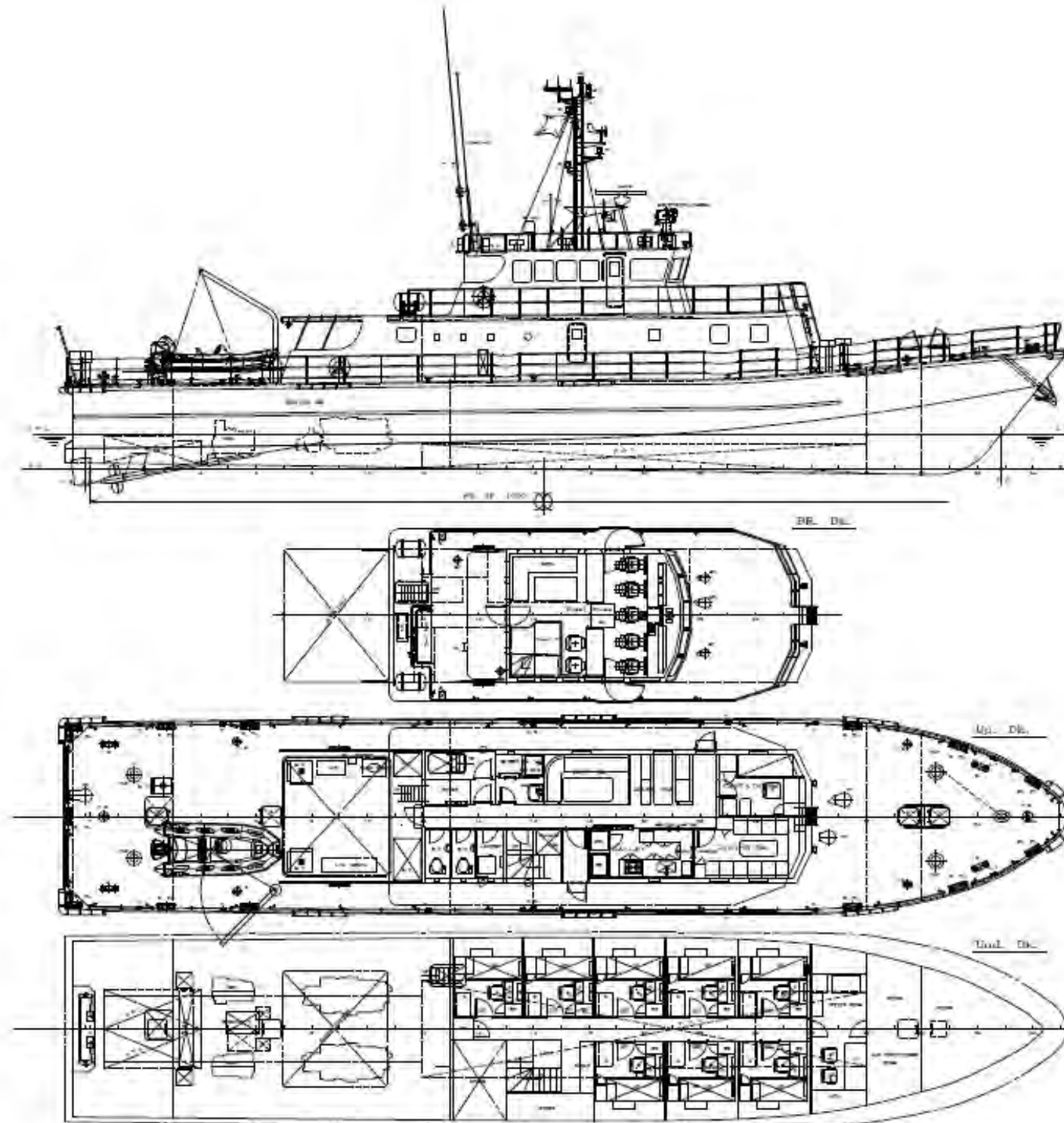


Figure 2- 5 General Arrangement Plan of the patrol Vessel

2-2-4 Implementation Plan

2-2-4-1 Implementation Policy

(1) Basic policy for shipbuilding and procurement

The project shall be implemented in accordance with the Grant Aid scheme of Japan, by conclusion of the Exchange of Notes (E/N: purpose of the project, period of E/N, conditions of implementation, and confirmation of limit of amount to be provided) between the Government of Japan and Yemen, followed by the conclusion of the Grant Agreement (G/A: items of the project, period of G/A, conditions of implementation, and confirmation of limit of amount to be provided) between JICA and implementing organization of the Government of Yemen.

The vessel to be built in the Project has many differences in its equipment and structure from those of regular vessels because it is a light alloy structure and is supposed to pursue special duties. Thus, the shipbuilder responsible for the construction of the vessel needs to be equipped with sufficient techniques and experiences in building the type of vessel.

In addition, because the vessel is required to complete within the designated period in accordance with the scheme of the Grant Aid projects of Japan, the builder shall also have sufficient production capacity and excellent schedule management and procurement supervision skills.

Therefore, bidding is carried out in such a manner to choose a contractor that is a shipbuilding company (or its joint venture) based in Japan with substantial experiences in building patrol vessels in the similar scale or work vessels for the same purpose as well as the existing production system and fulltime engineers with capacity or experiences sufficient enough to build the vessel in the Project.

(2) Procedures of selection of shipbuilder

The construction plan that ranges from the implementation design, selection of the shipbuilder and construction to the delivery on site is described below.

1) Implementation design

The selected consulting firm(s) shall have in-depth discussions with the Yemen Coast Guard that is the implementing organization of the Yemen side, formulate an implementation design in accordance with the design policy, and conduct the final checking with the technical specifications and design documents that include the general arrangement plan. It shall also obtain approval on the bidding documents that contains the document for screening of bidding qualifications, technical specifications and building agreement from the Yemen Coast

Guard upon discussions. The procedures of the Banking Arrangement and the Authorization to Pay shall be also confirmed with the Ministry of Finance of Yemen.

2) Selection of shipbuilder

The consulting firm(s) shall screen the bidding qualifications of builders in accordance with the method of screening of bidding qualifications approved by the implementing organization of Yemen and report the result to the Government of Yemen and obtain its approval in order to decide the qualified bidders.

The consulting firm(s) shall carry out a competitive bidding participated in by the shipbuilders that have passed the screening of bidding qualifications with the attendance of representatives of the implementing organization of Yemen. It shall organize the bidding result, recommend the successful bidder that has the contract negotiation right to the Government of Yemen, and assist the negotiation between the implementing organization and the shipbuilder.

3) Shipbuilding

The planned vessel shall be inspected by inspectors of the Government of Japan in accordance with the Ship Safety Act and the relevant regulations to be applied, and the consulting firm shall carry out the services to inspect and supervise design, materials, processing and performance tests on behalf of the implementing organization, and report the progress monthly to the implementing organization of the Yemen side during the construction period of the vessel.

The consulting firm(s) shall check design documents and obtain approval from the executing agency of Yemen as for major documents.

4) Transportation

The vessel is planned to be transported by a large heavy cargo ship to the Gulf of Aden on the responsibility of the shipbuilder. The consulting firm(s) shall be present at the inspection before the transportation and unloading to confirm that there is no defect. Yemen shall be responsible for all procedures related to import of the patrol vessel.

5) Delivery

The consulting firm and engineers dispatched from the shipbuilder shall perform the recovery work and on-site test operation prior to the official delivery of the patrol vessel to the Yemen Coast Guard in the Gulf of Aden. When a defect is discovered in the test operation, the shipbuilder shall make an arrangement promptly to take measures to solve the problem. The shipbuilder shall shoulder the fuel cost for the test operation.

(3) Basic policy on technical assistance

The technical explanation and operational instructions shall be provided by the shipbuilder or major equipment makers such as a main engine manufacturer to maximum five crew members such as the captain, chief engineer, and electric engineers and communication operators who are designated to serve on the vessel for one and a half months at a proper time during the construction of the vessel.

2-2-4-2 Implementation Conditions

The issues described below require attention with regard to the construction of the planned vessel.

(1) Local characteristics of Yemen

The planned vessel shall be designed to allow desired performance of its equipment at an ambient temperature of 45°C and at sea temperature of 32°C considering using in Yemen. Because Yemen does not have its own ship regulations, Japan's regulations for ships shall be applied to build the hull and equipment. In addition, because the ship repair facility in the Gulf of Aden has limited capacity, preventive quality control measures shall be taken. Application of quality control and inspection standards of the shipbuilder shall be carefully observed in relation to painting and corrosion protection, in particular. Material and hull inspections shall be strictly conducted in order to maintain high quality and reduce the maintenance work to be performed by the Yemen side after delivery as much as possible.

(2) Construction management

The planned vessel is a high-speed vessel and thus weight increase of the hull heavily affects the speed performance and stability. Thus, structural details should be decided rationally in the production design, lightest models of fittings or equipment that meet the performance requirements should be selected, and careful attention should be paid in every stage from design to construction in order to make the vessel as light as possible.

Take preventive quality control measures. It needs to be made sure that quality control and inspection standards of the shipbuilder is fully applied and materials and hull inspections are performed strictly in order to maintain high quality and reduce maintenance work of the Yemen side after delivery.

(3) Delivery date management

Sure procurement management of such major equipments as major hull materials, main engine, power generators and nautical instruments is needed for managing the delivery date of the planned vessel.

In particular, because the time when the main engine is loaded on the vessel is the starting of the outfitting of the engine room, it is the critical path in the construction process and requires special attention. The shipbuilder needs to confirm the details of the procurement plan including the main engine for the construction schedule management of the hull.

(4) Securing means of transportation

The vessel is planned to be built in Japan and shipped to Yemen by sea after its completion. Although a semi-submersible heavy cargo ship can be an alternative means of ocean transportation of heavy load, a heavy cargo ship equipped with a heavy derrick shall be used for its cost advantages.

Because the operation schedule of a heavy cargo ship equipped with a heavy derrick may be usually determined depending on the cargoes to be loaded and unloaded since the load is expected to be full, the shipbuilder shall start negotiations with the carrier in the early stages so that the transportation will be arranged timely to met delivery schedule in time in Yemen.

2-2-4-3 Scope of Works

When the Project is implemented as a Japan's Grant Aid project, shipbuilding and procurement of all equipments shall be conducted by Japan, as well as the transportation to Yemen.

There is no work to be implemented by Yemen concerning shipbuilding and procurement of equipments.

2-2-4-4 Quality Control Plan

Measures listed below are taken for quality control of the construction of the planned vessel.

(1) Qualifications of builder

Because the construction material of hull is light alloy, engineers who perform the welding work of the hull need to have passed welding skills test of Japan Light Metal Welding & Construction Association, Japan Welding Engineering Society (JWES), or Nippon Kaiji Kyokai (Class NK) as a minimum requirement.

(2) Structural materials

Material tests of plates and extrusions to be used as structural members shall be performed by the manufacturers.

(3) Inspection based on the Ship Safety Act

Although the nationality of the planned vessel is not Japan, the hull structure, mooring equipment, steering gear, firefighting equipment and machinery and electric installations shall be built in accordance with the ship Safety Act to ensure safety of the planned vessel, and they shall be inspected in accordance with the Act.

2-2-4-5 Procurement Plan

Selection of such heavy equipment as the main engine and power generator is very important for a high-speed vessel since these may affect the vessel's performance. Lightest and high-power engine should be selected if there is no special reason not to do so. German or U.S. make engines have by far the better performance for engines of the same class used in the vessel, keeping majority of the global market share. They shall be chosen once it is confirmed that their agents are located in Yemen, or they are capable of supplying consumables and repair parts or dispatching engineers for necessary after-the-sale service.

2-2-4-6 Operational Guidance Plan

Two engineers (one deck engineer and one machinery engineer) of the shipbuilder shall be dispatched to Yemen for a week after the completion of restoration work and trial operation of the planned vessel delivered on site to provide operational guidance and technical instructions on maintenance.

2-2-4-7 Implementation Schedule

Figure 2-6 shows the implementation schedule. The schedule for the implementation design with the consultant, construction of one planned vessel, adjustment and trial, transportation, trial operation at site, and delivery is shown in the schedule

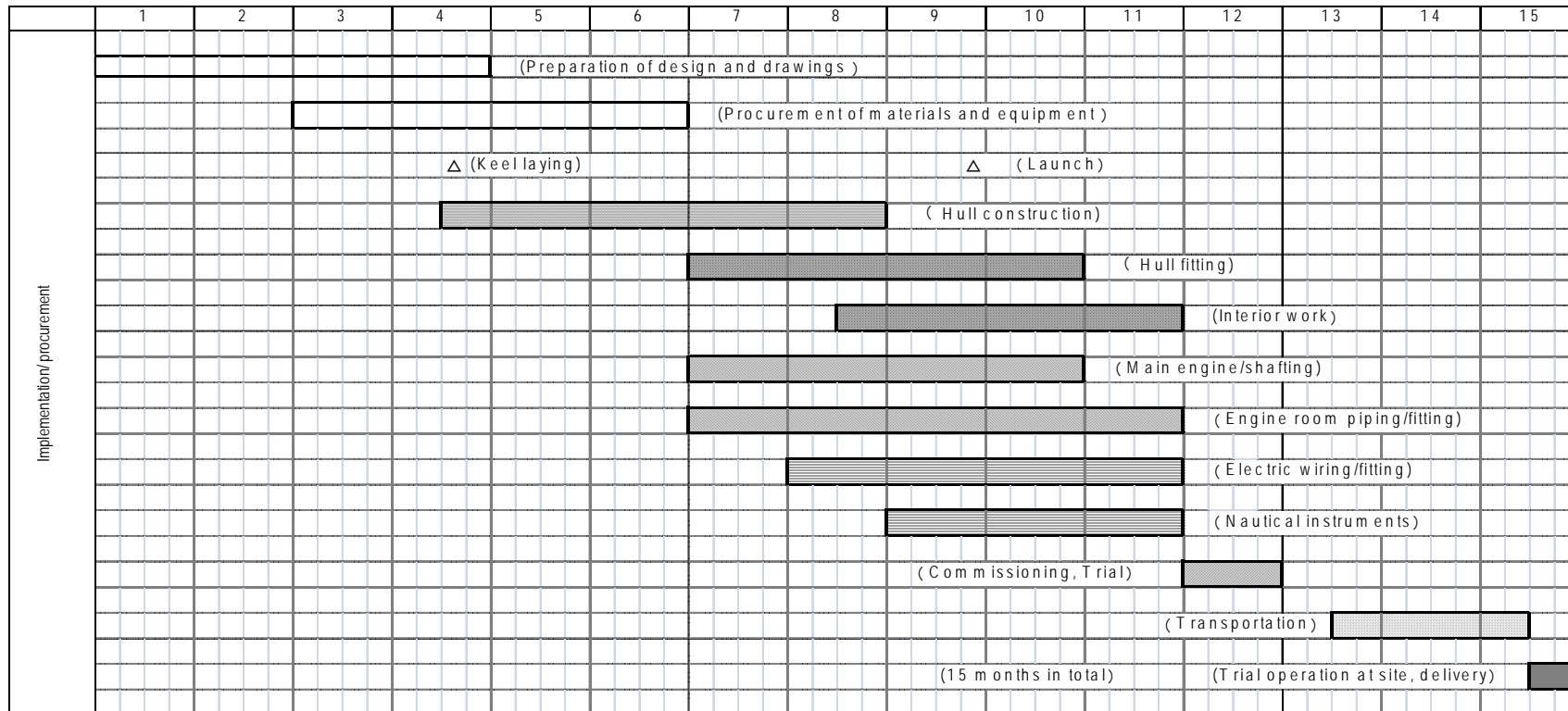
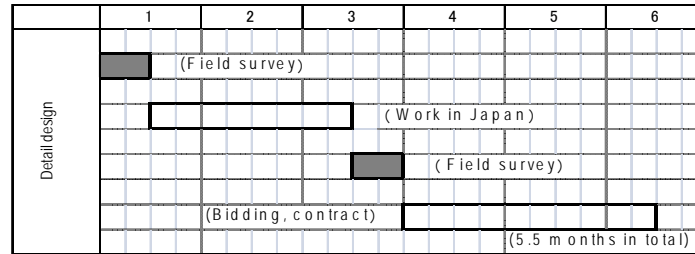


Figure 2- 6 Implementation schedule (schedule per vessel)

2- 3 Obligations of Recipient Country

Construction of the planned vessel and procurement of materials and equipment are carried out all in Japan.

Yemen is responsible for the duties listed below during the Project implementation and after the arrival of the planned vessel.

- Acquisition of document necessary for transportation to Yemen
- Banking Arrangement (B/A) with a Japanese bank, issuance of Authorization to Pay (A/P) and payment of handling fees for the procedures with regard to the contract concerning the Project
- Exemption of tariff and other taxes and charges in Yemen for the planned vessel and onboard equipment as well as smooth customs clearance
- Delivery of the vessel at the Port of Aden, and transportation from unloading place to base berth
- Securing crew members and providing training for the operation of the planned vessel
- Securing the necessary budget including that for fuel cost, maintenance cost, cost for spare parts, etc. for operation of the planned vessel

Yemen is responsible for the following after the Project implementation:

- Assure to bear the cost and handling of budget required for operation and maintenance of the planned vessel
- Other matters necessary for the implementation of the Project but not included in responsibilities of Japan side

2- 4 Project Operation Plan

2-4-1 Project Operation Plan

The planned vessel is allocated in the Aden base of the Gulf of Aden District and it conducts maritime patrol. Although patrol vessels are operated by the headquarters of each district, patrol is conducted based on orders by YCG headquarter. The operations bureau of the YCG headquarters controls the overall patrol activities.

The planned vessel and two patrol vessels to be provided by the U.S. have different responsibilities; one mainly patrols the surrounding ocean area and the other patrols coastal waters. However, they shall be operated to strengthen the maritime security capacity in the Gulf of Aden region by complementing each other as one group.

The planned vessel is a large vessel which YCG has never experienced; therefore necessary regulations must be established regarding the skills and experiences of the crew members in charge of operation and machinery. The crews shall have sufficient experiences in the biggest or similar vessels operated by YCG.

2-4-2 Maintenance

A variety of small vessels including a 22 m length offshore patrol vessel (Malaysian vessel) and 12 m offshore patrol vessel (jet boat) provided by the U.S. are deployed in the navy base of Aden. The workshop in the base is responsible for maintenance. Technical instructions on the machinery are provided by the UK as a program to assist YCG and workshop workers have acquired basic maintenance skills. Crews and workshop workers shall conduct routine and basic regular maintenance of the planned vessel.

The dock at the Aden base of Gulf of Aden District is insufficient to use as a repairing dock for the planned vessel, therefore the repair shipyard operated by the Aden Port Corporation shall be used.

YCG's current maintenance policy is the breakdown maintenance method—performs repair work after breakdown. This is likely to require a large amount of cost temporary cost for repairing a large vessel and the vessel may not be operated for a long period of time. Preventive maintenance is performed for such main equipment such as the main engine by conducting an open maintenance and replacing parts regularly in order to level the repair cost.

2-5 Project Cost Estimation

2-5-1 Initial Cost Estimation

(1) Cost borne by the Government of Yemen

None

(2) Parameters of Cost Estimation

Time of cost estimate: May 2010

Exchange rate: 91.73 JPY/USD

Construction period:

Others: This plan will be put into execution in accordance with the Grant Aid scheme of the Government of Japan

2-5-2 Operation and Maintenance Cost

The operation and maintenance of the planned vessel will require the cost listed below.

(1) Annual fuel cost

Annual fuel cost is estimated based on the operation pattern of the planned vessel described below.

The basic operation pattern of patrol vessels in Yemen is as follows: Three to four vessels form a group to perform their duties by week by rotation. Each vessel performs the patrol duties for one week every three to four weeks. Other weeks they are not in duty are schedules by week as the maintenance period of the hull, engine and other parts of the vessel and rest period, training period or standby period of the crews. Yemen expressed its intention, in the discussions, to operate the vessel for a mid-distance patrol every three weeks and a long-distance patrol once a month.

1) Mid-distance patrol

Patrol area: 60 nautical miles from the navy base of Aden to the approximate midpoint to the entrance to the Red Sea, the Bab-el-Mandeb Strait. It shall patrol the zone between the west of the Gulf of Aden and around the Bab-el-Mandeb Strait.

Operation hours: Successive 50 hours in the patrol area

Operation speed: Travel between the navy base of Aden and the patrol area at a cruising speed. During patrol, the vessel is operated at a low-speed and the engine is stopped alternatively at the ratio of 1 to 1.

Operation	Travel to and from patrol area	Patrol duty
Cruising range	60 nm each	(250 nm)
Speed	20 knots	10 knots
Engine power output	75%	35%
Operation hours of main engine	3 hrs. x 2	25 hrs.
Required fuel	3.72 kL	7.25 kL
	11.0 kL	

2) Long-distance patrol

Patrol area: Waters between Al Mukalla and near the border between Oman or the Socotra Island to the east. It is about 300 nautical miles from Aden to Al Mukalla and about 250 nautical miles from Al Mukalla to the border between Oman and also to the Socotra Island. The beginning and ending point of the patrol is 200 nautical miles from Al Mukalla.

Operation hours: successive 6 hours after entering the patrol area

Operation speed: travel at a cruising speed from the Aden base to the patrol area and successive patrol at a low speed during patrol

Operation	Travel to and from patrol area	Patrol duty
Cruising range	500 nm each	(60 nm)
Speed	20 knots	10 knots
Engine power output	75%	35%
Operation hours of main engine	25 hrs. x 2	6 hrs.
Required fuel	31.00 kL	1.74 kL
	32.7 kL	

3) Annual fuel cost, etc.

Annual fuel cost of the planned vessel is estimated to be approximately 366,000 US\$.

Type	Mid-distance patrol	Long-distance patrol
Operation hours of main engine per patrol activity	31 hrs.	56 hrs.
Required fuel per patrol activity	11.0 kL	32.7 kL
Number of patrol activities per year	17	12
Operation hours of main engine per year	1,199 hours	
Annual fuel consumption	579 kL (approx. 480 tons)	
Annual fuel cost	480 x 740 US\$/MT = 355,200 US\$	
Lubricant oil cost	Fuel cost x 3% = 10,656 US\$	
Total	366,000 US\$	

(Unit price for fuel is based on the field survey)

(2) Maintenance cost

The estimation cost for maintenance including docking and repair is as follows.

Item	Occurrence period of cost	Estimated cost	
		Ratio to ship building cost	Rough estimate
Docking cost	Yearly	Approx. 0.3%	22,000,000YER
Repair cost (excluding main engine overhaul cost)	Yearly	Approx. 0.5%	
Main engine overhaul cost	Every 5 years	Approx. 3%	81,000,000YER

Average annual maintenance cost of approximately 22 million YER, as well as another approximately 81 million YER every five years for the main engine overhaul is estimated.

With respect to the maintenance cost to be necessary when the patrol vessels are deployed, it was reported that the Ministry of Finance of Yemen pledged allocation of budget for them to YCG in writing.

(3) Labor cost

Five officers and twelve crews shall board the planned vessel. An average of 7 million YER is required for the annual manpower cost, given the estimation that average of 45,000 YER is necessary for the officers' salary on a monthly basis and 30,000 YER for the crews.

Chapter 3 Evaluation of the Project

Chapter 3 Evaluation of the Project

3-1 Preconditions of the Project

3-1-1 Preconditions for Implementing the Project

The objectives of the Project is to improve the capacity of maritime safety and security in Yemen, providing patrol vessel(s) to YCG which is requisite in activities for maritime safety and security. Japan's Official Development Assistance Charter (August 29, 2003) cites the principle that is "Any use of ODA for military purposes or aggravation of international conflicts should be avoided" in "II Principle of ODA Implementation", as one of the points when ODA will be provided. In order to implement this Project observing this principle, it is necessary to confirm again that the patrol vessel(s) and its equipments will be never used for military purposes by both parties.

3-1-2 Preconditions and External Conditions to Be Achieved for the Overall Project Plan

In order to realize and maintain the effects of the Project, YCG must steadily carry out the following items after the implementation of the assistance Project.

- i. The patrol vessel(s) to be provided by the Project is the largest scale within the YCG, thus the cost for maintenance and operation shall also be a considerable amount. YCG must collaborate with the concerned government agencies and secure the budget necessary for maintenance and operation of the vessel(s).
- ii. In addition, crew members who has appropriate skills which match the scale of the patrol vessel(s) must be secured continuously. It is necessary to develop a framework of training in order to ensure patrol vessel crews in quantity, enhancing the current training system which provides mainly orientation training and general training and establishing a new regular training program for further improving the capacity of crews who have experience to a certain level.

This Project must be taken as a part of international cooperation and contribution, while the international community such as U.K., U.S.A., and France, etc. has established the framework to support the Yemeni Coast Guard in collaboration with each other and undertake the physical and technical assistances.

3-2 Evaluation of the Project

3-2-1 Relevance

The waters of off Yemen, the Gulf of Aden and the Red Sea which leads to the Suez Canal, is a very important corridor for the international marine transport, where approximately 18,000 vessels including approximately 2,000 vessels operated or owned by Japanese firms in total across in a year, carrying cargo of equivalent to around 12% of the worlds sea freight volume. However, more than 200 piracies occurred in these waters in 2009, which is a threat to the international marine transport, additionally, smuggling of arms and banned drugs from Somalia on the opposite shore of the Gulf of Aden to Yemen is infested, which is said to be a breeding ground for terrorists in Yemen. Therefore, maintaining of security in the Gulf of Aden is an urgent issue.

In 2003, the Government of Yemen established the Yemeni Coast Guard in order to handle these issues, however, but force in terms of patrol vessels and equipment has developed only slightly due to the limited financial capacity of Yemen. Thus the current YCG's forces are still not sufficient to conduct patrols effectively beyond the territorial waters where piracies occur frequently.

Although the 35 m class patrol vessel has the specification to comply with the patrol activities not only within the territorial waters of Yemen but also at the high seas, provision of patrol vessels of this class is planned only by Japan. The provision of large-scale patrol vessel(s) for additional security capacity in the international waters can be a large contribution to the stabilization of Yemen. Additionally, the safety of international navigation can be improved; leading to protection of the lives and properties of Japan, therefore the relevance of the assistance is extremely high.

Moreover, this Project highly evaluated as a part of international cooperation and contribution, while the international community such as UK, USA, and France, etc. are undergoing the assistance for building the framework of the Yemeni Coast Guard from hardware and software perspective, therefore from such point of view, the relevance is high.

3-2-2 Effectiveness

Below effects can be expected by implementing the Project.

(1) Quantitative effect

Index of achievement	Current value (2010)	Planned value (2013)
Operational range of patrol vessel (when at 20 knots, back and forth the base)	600 nautical miles (Including open sea*)	800 nautical miles (Including open sea**)
Improvement in sea-keeping capacity	Patrol range is within 12 nautical miles from the shore	Expand patrol range to more than 12 nautical miles from the shore
Hours of patrol duty	Average 6 hours*	18 hours/day** (Stage 1) 24 hours/day*** (Stage 2)

* Calculated from the actual operation in 2009

** More than 12 nautical miles from the shore

*** Including patrol vessels planned for provision from USA (around April 2011)

(2) Qualitative effect

- i. The Project shall contribute for mitigation of suffering from piracy in the waters of Yemeni Coast Guard and deterrence against illegal traffic
- ii. The Project shall ensure safe and smooth international sea freight the Red Sea, the Arabian Sea, and the Gulf of Aden

Appendices

APPENDICES

- Appendix-1 Member of the Survey Team
- Appendix-2 Survey Schedule
- Appendix-3 List of Parties Concerned
- Appendix-4 Minutes of Discussions (M/D)

Appendix- 1 Member of the Survey Team

(1) Site Survey (April 11 – May 17, 2010)

#	Name	Job Title	Occupation
1	Mr. KOIZUMI, Yukihiro	Team Leader	Director Transportation and ICT Division 1 Transportation and ICT Group Economic Infrastructure Department, JICA
2	Mr. KOREZUMI, Tomoaki	Advisor (Cooperation Policy)	Country Officer Third Country Assistance Planning Division International Cooperation Bureau Ministry of Foreign Affairs
3	Mr. KANOSUE, Hiroaki	Technical Advisor (Operations of Coast Guard)	Deputy Director International Affairs and Crisis Management Division, Administration Department Japan Coast Guard
4	Mr. KOJO, Kei	Project Coordinator	Transportation and ICT Division 1 Transportation and ICT Group Economic Infrastructure Department, JICA
5	Mr. INOUE, Kazuma	Chief Consultant/ Building and O&M Planner	Japan Marine Science Inc.
6	Mr. YOSHIDA, Tatsuya	Operation Planner/Machinery Engineer	Japan Marine Science Inc.
7	Mr. MARUYAMA, Akio	Hull Engineer	Japan Marine Science Inc.
8	Mr. YOSHIDA, Naomi	Equipment Engineer	Japan Marine Science Inc.
9	Mr. NAKAJO, Yasuo	Procurement & Cost Engineer	Japan Marine Science Inc.
10	Mr. Nassim JEBARI	Interpreter	Translation Center Pioneer

(2) Explanation of Draft Report (October 29 - November 8)

#	Name	Job Title	Occupation
1	Mr. KOIZUMI, Yukihiro *	Team Leader	Director Transportation and ICT Division 1 Transportation and ICT Group Economic Infrastructure Department, JICA
2	Mr. SAKABE, Hidetaka	Deputy Leader/ Project Coordinator	Deputy Director Urban and Regional Development Division 1 Urban and Regional Development Group Economic Infrastructure Department JICA
3	Mr. INOUE, Kazuma	Chief Consultant/ Building and O&M Planner	Japan Marine Science Inc.
4	Mr. MARUYAMA, Akio	Hull Engineer	Japan Marine Science Inc.
5	Mr. Nassim JEBARI	Interpreter	Translation Center Pioneer

(*No stay in Yemen)

Appendix-2 Survey Schedule

(1) Site Survey (April 11- May17, 2010)

Day	Day of the week	Leader	Advisor	Chief Consultant	Cost Engineer	Hull Engineer
		Mr. KOIZUMI	Mr. KOREZUMI	Mr. INOUE	Mr. NAKAJO	Mr. MARUYAMA
		Project Coordinator	Technical Advisor	Operation Planner		Equipment Engineer
		Mr. KOJO	Mr. KANOSUE	Mr. T. YOSHIDA		Mr. N. YOSHIDA
1	11Apr	Su				
2	12Apr	Mo				
3	13Apr	Tu				
4	14Apr	We				
5	15Apr	Th				
6	16Apr	Fr	Lv. Tokyo			
7	17Apr	Sa	Traveling	Lv. Tokyo		
8	18Apr	Su	Arr. Sana'a, Courtesy Visit to Ministry of Interior and YCG, Attend at YCG Supporting Countries Meeting, Internal Meeting at EOJ			
9	19Apr	Mo	Travel (Sana'a → Aden), Site survey (Training Institute)			
10	20Apr	Tu	Site Survey (YCG Gulf of Aden District HQ and Base, Boarding on Malaysian Boat, Shipyard)			
11	21Apr	We	Travel (Aden → Sana'a), Discussion of Minutes			
12	22Apr	Th	Internal Meeting (Minutes)			
13	23Apr	Fr	Internal Meeting (Minutes)			
14	24Apr	Sa	Discussion of Minutes, Presentation by USCG and Discussion USCG team			
15	25Apr	Su	Courtesy visit to Deputy Prime Minister Al-Alemi, Signing at Prime Minister's Office, Courtesy Visit to Vice Minister of MOPIC			
16	26Apr	Mo	Supplemental Survey	Lv. Sana'a	Discussion at YCG (Operations)	
17	27Apr	Tu	Lv. Sana'a	Arr. Tokyo	Ditto (Planning)	
18	28Apr	We	Arr. Tokyo		Ditto (Public Relations)	
19	29Apr	Th			Documentation	
20	30Apr	Fr			Documentation	
21	01May	Sa			Documentation	Lv. Tokyo
22	02May	Su			Discussion at YCG (Chairman), Collection of Info	Arr. Sana'a Courtesy visit to YCG
23	03May	Mo			Discussion at YCG (Liaison Officers of France and Italy)	
24	04May	Tu			Discussion at YCG (Liaison Officers of UK and USA)	
25	05May	We			Discussion at YCG, Information	
26	06May	Th			Documentation	Lv. Tokyo
27	07May	Fr			Documentation	Arr. Sana'a
28	08May	Sa			Discussion at YCG (Preliminary design), Reporting to EOJ	
29	09May	Su			Travel (Sana'a → Aden), Field Survey (YCG GOA HQ, Work shop)	
30	10May	Mo			Field Survey (Repair shipyard, Local agent of Maine engine), Discussion with UK supporting team	
31	11May	Tu			Field Survey (TI, GOA Port, Shipping agents), Travel (Aden → Sana'a)	
32	12May	We			Discussion of Tech Minutes	
33	13May	Th			Documentation	
34	14May	Fr			Documentation	
35	15May	Sa			Signing of Tech Minutes, Supplement Survey	
36	16May	Su			Lv. Sana'a	
37	17May	Mo			Arr. Tokyo	

(2) Explanation of Draft Final Report (October 28 - November 9, 2010)

Day		Day of the week	Deputy Leader/Project Coordinator	Chief Consultant/Building & O&M planner	Hull Engineer
			Mr. SAKABE, Hidetaka	Mr. INOUE, Kazuma	Mr. MARUYAMA, Akio
1	28 Oct	Th		Lv. Tokyo	
2	29 Oct	Fr	Lv. Tokyo	Arr. Sana'a	
3	30 Oct	Sa	Arr. Sana'a	Meeting w/YCG(Technical meeting), Meeting w/JICA and EOJ	
4	31 Oct	Su	Meeting w/YCG Meeting w/MOPIC		
5	01 Nov	Mo	Courtesy meeting w/YCG Chairman, Meeting w/YCG		
6	02 Nov	Tu	Meeting w/YCG on M/D		
7	03 Nov	We	Signing of M/D		
8	04 Nov	Th	Lv. Sana'a	Document Arrangement	
9	05 Nov	Fr	Traveling	Document Arrangement	
10	06 Nov	Sa	Arr. Tokyo	Additional Meeting w/YCG	
11	07 Nov	Su		Additional Meeting w/YCG	
12	08 Nov	Mo		Lv. Sana'a	
13	09 Nov	Tu		Arr. Tokyo	

Appendix 3 List of Parties Concerned in the Recipient Country

Ministry of Planning and International Cooperation

Mr. Hisham Sharaf Abdullah Deputy Minister for International Cooperation

Ministry of Interior

Major General Mutahar Rashad Al-Masri Minister of Interior

Yemen Coast Guard

(Headquarter)

Brigadier General Ali Ahmed Rassa	Chairman
Brig. Fouad Saleh Basuleiman	Deputy Chairman
CDR. Shugaa A. Almahdi	General Director of Operations
Lt. Col. Amen Al-Ansei	General Director of Public Relation
Mr. Mohammed Al-Sobhi	General Director of Communications
Col. Mohammed Sharaf	General Director of Technical Affairs
Eng. Mohammed Nasser Al-Hali	Deputy Director of Technical Affairs
Mr. Majed Saleh Mastoor	Executive Officer
Commander David McKenzie	Liaison officer, UK
Commander Pat O'Byrne	Liaison officer, UK
Lieutenant Richard Fletcher	Liaison officer, UK
Lieutenant Mark Wilson	Liaison officer, UK
Mr. Jean Baniske de Cacquerary	Liaison officer, France
Capt. Vincenzo Salvatore Vitale	Liaison officer, Italy
CDR Mike Merren	Liaison officer, USA
Major Timothy Stewart	Liaison officer, USA
(Gulf of Aden District Headquarter)	
Lotf A.H. Al-Baraty	General Director of Gulf of Aden District
Mr. Mohammed Taresh	General Manager of Maritime Security, GOA
Mr. Mohammed Al-Fashih	Deputy Head of Operation Room
(Training Institute)	
Mr. Faisal Daaif Allah AL Haaj	General Director of Coast Guard Institute

Member of YCG Supporting Countries Meeting

LTC Dirk Kuke	Advisory Group Leader, Germany
Mr. Jan Giermann	Police Liaison Officer, Germany
Mr. Johan C.B.Dirx	First secretary, Netherlands
Ms. Silke Nikolay	Program Manager Instrument Stability, EU

Maritime Affairs Authority Aden

Capt. Shakeeb M. A. Wahed

Harbor Master

Yemen Gulf of Aden Ports Corp.

Mr. M Abudullah A. Salam Sabra

Deputy Board Chairman

Capt. Roy Alan Facey

Port Development Advisor

USCG Patrol Boat Project Team

Lieutenant Colonel Kaz Kotlow

Defense and Army Attaché

Commander Retired Allen K. Harker

Contracting Officer

CDR Michael T. Rorstad

Commanding Officer

Embassy of Japan in Yemen

Mr. Mitsunori Namba

Ambassador

Mr. Matahiro Yamaguchi

Counselor

Mr. Katsumi Moriyasu

Counselor

Mr. Kohei Akiyama

First Secretary

Mr. Hiroki Haruta

Second Secretary

JICA Yemen Office

Mr. Takeshi Komori

Resident Representative

Mr. Taro Azuma

Deputy Resident Representative

Ms. Yoshie Hama

Project Formulation Advisor

Mr. Abdullah Al-Wa'ara

National Staff

**Minutes of Discussions
on the Preparatory Survey
on the Project for Capacity Building of the Yemen Coast Guard
for Combating Piracy and Terrorism
in the Republic of Yemen**

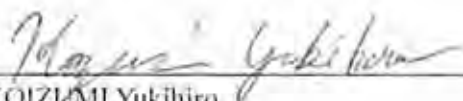
Based on a request from the Government of the Republic of Yemen (hereinafter referred to as "GOY"), the Government of Japan conferred with Japan International Cooperation Agency (hereinafter referred to as "JICA") about a Preparatory Survey on the Project for Capacity Building of the Yemen Coast Guard for Combating Piracy and Terrorism (hereinafter referred to as "the Project") and JICA decided to conduct the survey on the Project.

JICA sent to Yemen the Preparatory Survey Team (hereinafter referred to as "the Team"), which is managed by Mr. KOIZUMI Yukihiro, Director of Transportation and ICT Division 1, Economic Infrastructure Department, JICA, and is scheduled to stay in the country from April 12, 2010 to May 16, 2010 .


The Team held discussions with the officials concerned of GOY and conducted a field survey at the study area.

In the course of discussions and field survey, both parties confirmed the main items described on the attached sheets. The Team will proceed to further works and prepare a Draft Report of the Preparatory Survey.


Sana'a, April 25, 2010



KOIZUMI Yukihiro
Leader
Preparatory Survey Team
Japan International Cooperation Agency



Ali Ahmed RASAA
Chairman
The Yemen Coast Guard
The Republic of Yemen



Hisham Sharaf ABDULLAH
Vice Minister
Ministry of Planning and International
Cooperation
The Republic of Yemen

ATTACHMENT

1. Purposes of the Survey

The purposes of the Team are;

- 1-1. To reconfirm the contents of the requested Project,
- 1-2. To make the site survey and collect the necessary data and information to know details of the situation of marine safety sector in Yemen in order to confirm the validity of the Project, and
- 1-3. To confirm the design principal of patrol vessel(s)

2. Objective of the Project

Both sides confirmed that the objective of the Project is to improve the capabilities to conduct operational patrols along the coast of Yemen to contribute to the international efforts in combating piracy and terrorism and the security of the international shipping lanes.

3. Responsible and Implementing Agency

- 3-1. The responsible ministry for the Project is "Ministry of Interior".
- 3-2. The implementing agency for the Project is "the Yemen Coast Guard (hereinafter referred to as "the YCG")", and its organization chart is shown in Annex-1.

4. Items requested by GOY

Both sides reconfirmed that the items described as follow were requested by the Yemeni side.

- 4-1. To provide several 35m length patrol vessels,
(To be deployed in the YCG Aden District)
- 4-2. To conduct technical cooperation of capacity development of the YCG, including in dispatch of liaison person to the YCG.

JICA will assess the appropriateness of the request and will recommend to the Government of Japan for approval.

5. Japan's Grant Aid Scheme

5-1. The Yemeni side understands the Japan's Grant Aid scheme written in page2-6 on the Inception Report explained by the Team.

5-2. The Yemeni side will take the necessary measures in Annex-2, for smooth implementation of the Project, as a condition for the Japanese Grant Aid to be implemented.

5-3. The Yemeni side confirmed that the following undertakings should be taken by the Yemeni side at the Yemeni expenses under the Project.

- (1) To secure the site for berthing and mooring
- (2) To secure the crews who have experience of a 22m length or equivalent patrol vessel at least
- (3) To secure the operational and maintenance cost

y.k.

6. The site for new patrol vessel(s)

Both sides confirmed that the new patrol vessel(s) work most effectively in Waters of the YCG Aden District from a comprehensive viewpoint of the survey results (Annex-3).

7. Specification of new patrol vessel(s)

Both sides confirmed that main specification of new patrol vessel(s) is as follows.

- 7-1. The vessel's principal dimension is approximately length 35 meter x breadth 6.5 meter x draft 1.5 meter, considering the seaworthiness to sail in the high seas beyond the territorial waters of Yemen.
- 7-2. The range of the vessel shall be approximately eight hundred (800) nautical miles and endurance of the vessel shall be three (3) days.

8. Number of new patrol vessels

- 8-1. The YCG has strongly requested to the Team to provide more than one vessel taking into consideration of 24/7 service in patrolling to waters of the YCG Aden District.
- 8-2. Supporting nations (composed of the UK, the US, and etc.) recognize the necessity of several 35m length patrol vessels based on the strategic paper of the YCG.
- 8-3. The Team suggested, bearing provision of subsequent vessel(s) in mind, provision of one vessel be appropriate as the first step. The Team explained next step would be considered based on the result of further monitoring and evaluation for operating and maintenance of vessels provided by the US.

9. Technical Assistance

Based on the strong request for capacity development of the YCG with the set of provision of new vessel(s), the Team explained to consider below cooperation plan.

- 9-1. Training program will be held in 2010. (Confirmed)
 - 3 trainees of one-month training course and 3 trainees of one-week training course in maritime law enforcement field
 - 1 trainee of two and half months training course in Search And Rescue (SAR) and disaster prevention field
- 9-2. Dispatch of Japanese liaison person to the YCG. (Under consideration)
- 9-3. Human Resource Development Project for three (3) years, consists of training in Japan, dispatch of experts to the YCG, etc. (Under consideration)

yk



10. Schedule of the Study

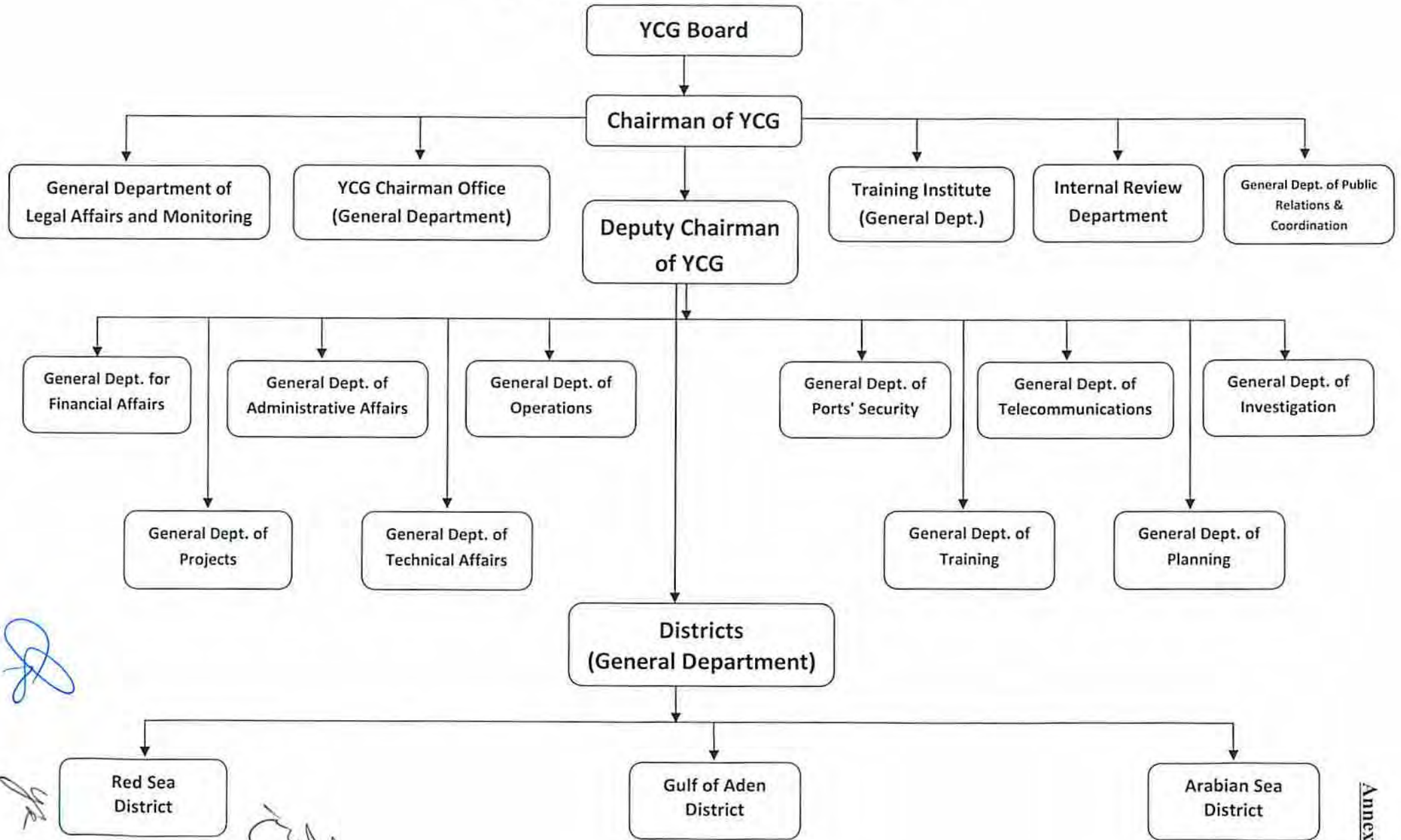
- 10-1. JICA will prepare a draft report in Arabic and English, and dispatch a mission in order to explain its contents by the end of October 2010.
- 10-2. JICA will prepare and submit a final report in English, which contains a summary in Arabic, to GOY around January 2011.

11. Other relevant issues

- 11-1. The Team explained contents of the 'Japan's ODA Charter' and 'Japan's policy on the control of arms exports'. The Yemeni side responded that the vessel(s) and equipment to be provided on the Project would never be utilized for military purpose under any circumstances.
- 11-2. The Team explained needs for further discussions to clarify some answers to Questionnaires during the mission's staying in Yemen. *yk*



The Organizational Chart of YCG



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Major Undertaking to be taken by Each Government

NO	Items	To be covered by Grant Aid	To be covered by Recipient side
1	Design and Construction of vessel(s)	●	
2	Allocate the appropriate budget and conduct the undertakings in a timely manner necessary for proper operation and maintenance of the vessel(s) to be provided (procurement of fuel and spare parts, and overhaul of main engine)		●
3	To bear the following commissions to a bank in Japan for the banking services based upon the B/A		
	1) Advising Commission of A/P		●
	2) Payment commission		●
4	To ensure prompt unloading and customs clearance at the port of disembarkation in Yemen		
	1) Marine and land transportation of the products from Japan to Yemen	●	
	2) Tax exemption and customs clearance of the products at the port of disembarkation, including the project registration to the Ministry of Finance, and budget allocation for tax refund according to the implementation schedule of the Project		●
5	To accord Japanese nationals, whose services may be required in connection with the supply of the products and the services under the verified contract, such facilities as may be necessary for their entry into Yemen and stay therein for the performance of their work		●
6	To exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which may be imposed in Yemen with respect to the supply of the products and services under the verified contract		●
7	To maintain and use properly and effectively the facilities constructed and equipment provided under the Grant Aid		●
8	To bear all the expense, other than those to be borne by the Grant Aid, necessary for the Transportation and installation of the products		●

(B/A: Banking Arrangement, A/P: Authorization to pay)

yk



WATERS OF YCG ADEN DISTRICT

yk
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**Minutes of Discussions
on the Preparatory Survey
on the Project for Capacity Building of the Yemen Coast Guard
for Combating Piracy and Terrorism
(Building of Vessels/Explanation of Draft Report)**

In April 2010, the Japan International Cooperation Agency (hereinafter referred to as "JICA") dispatched the Preparatory Survey Team on The Project for Capacity Building of the Yemeni Coast Guard for Combating Piracy and Terrorism (hereinafter referred to as "the Project") to the Republic of Yemen (hereinafter referred to as "Yemen"), and through discussions, field survey and technical examination of the results in Japan, JICA prepared a draft report of the survey.

In order to explain and to consult with the concerned officials of the Government of Yemen on the contents of the draft report, JICA sent to Yemen the Outline Design Explanation Team (hereinafter referred to as "the Team"), which is managed by Mr. Yukihiro KOIZUMI, Director, Transportation and ICT Division 1, Transportation and ICT Group, Economic Infrastructure Department, JICA, and headed by Mr. Hidetaka SAKABE, Deputy Director, Urban and Regional Development Div. 1, Urban and Regional Development Group, Economic Infrastructure Department, JICA, from October 29 to November 8, 2010.

As a result of discussions, both sides confirmed the main items described in the attached sheets.


Sana'a, November 3, 2010



Hidetaka SAKABE
Deputy Leader
Outline Design Explanation Team
Japan International Cooperation Agency



Ali Ahmed RASA
Chairman
The Yemen Coast Guard
The Republic of Yemen



Hisham Sharaf ABDULLAH
Vice Minister
Ministry of Planning and International Cooperation
The Republic of Yemen

ATTACHMENT

1. Components of the Draft Report

The Yemeni side agreed and accepted in principle the contents of the draft report explained by the Team.

2. Cost Estimation

Both sides agreed that the Project Cost Estimation as attached in Annex-I should never be duplicated or released to any third parties until the signing of all the Contract(s) for the Project.

3. Japan's Grant Aid Scheme

The Yemeni side reconfirmed the Japan's Grant Aid scheme and the necessary measures to be taken by the Yemeni side as explained by the Team.

4. Schedule of the Study

JICA will complete the Final Report in accordance with the confirmed items and send it to the Yemeni side by the end of January 2011.

5. Other Relevant Issues

5-1. Both sides reconfirmed that the vessels and equipment to be provided under the Project would never be utilized for military purpose under any circumstances.

5-2. The Team explained to the Yemeni side that the building of the 2nd vessel should be examined based on not only budgetary conditions of the Government of Japan, but also operational result of the vessels to be procured by the U.S. assistance, and requested the Yemeni side to provide data relating to operations of the vessels, such as monthly operation and maintenance report.

5-3. When the alteration is added to the vessels after the handing over the vessels, the Yemeni side shall inform the Japanese side of the plans in advance.

5-4. The Yemeni side explained to the Team that the permanent base of the vessels would be the port of Aden. And both sides confirmed that when the permanent port of the vessels would be changed, the Yemeni side shall inform the Japanese side of the plan in advance

5-5. The Yemeni side shall secure the personnel and allocate the necessary budget in a timely manner for executing the patrol activities based on the new patrol plan by the patrol vessels (including the vessels procured under the Project).

5-6. The Yemeni side confirmed that the following undertakings should be taken by the Yemeni side at the Yemeni expenses.

- (1) To prepare and execute all the necessary procedures for quick acceptance of the patrol vessels into the Port in Aden, custom clearance of the vessels and their equipment, and registration of the vessels, when the vessels arrive at the port in Aden from Japan,
- (2) To secure the buoys for safe mooring of the patrol vessels,
- (3) To dispatch experienced crew for training in Japan.
- (4) To provide trainings for the technical transfer in terms of necessary operation and maintenance skills among YCG.



5-7. The Yemeni side emphasized to make the most use of the vessels to be built by the Project, and requested for the Japanese side to consider further technical assistance to enhance the maintenance capability of YCG. The Team would convey its request to JICA HDQs, and would continue to examine its possibilities not only under this Project.

HS.

HS

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Annex-1



Memorandum of Technical Discussions
on the Preparatory Survey on the Project for Capacity Building
of the Yemen Coast Guard for Combating Piracy and Terrorism
in the Republic of Yemen

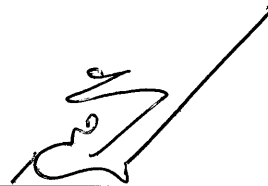
Subsequently to the signing of the Minutes of Meeting of dated April 25, 2010 regarding the captioned Project, the Preparatory Survey Team (hereinafter referred to as “the Team”) held technical discussions with the officials of the Yemen Coast Guard (“the YCG”) at Sana’a and the Aden District Headquarter at Aden until May 12, 2010.

As a result of the discussions and the field surveys, the Team and the YCG confirmed the items described in the Attachment and the Annexes.

Sana’a, 15 May, 2010



INOUE Kazuma
Chief Consultant, JICA Survey Team
Japan Marine Science Inc.



Brig. Gen. Ali Ahmed RASAA
Chairman, Yemen Coast Guard
Ministry of Interior
Republic of Yemen

ATTACHMENT

1. Outline Specifications of the Patrol Vessel

1.1 Fundamental technical requirements

Both parties confirmed that the fundamental technical requirements for the Patrol Vessel were as follows:

- 1) Range – approximately 800 nautical miles
- 2) Maximum speed – approximately 25 knots +
- 3) Ship length – approximately 35 m
- 4) Complement – 17 persons
(1-Commanding officer, 1-Executive officer, 1-Engineer, 1-Communication,
1-Electrician, 2-Coxswains, 10-Seamanship)

1.2 Justifications of the technical requirements

Following justifications of the technical requirements were presented by the YCG and confirmed by both parties.

- 1) Range – The Patrol Vessel shall carry out by ordinary patrols in the waters of Gulf of Aden District (GOAD) and occasionally carry out long-range patrols beyond the GOAD, for instance, to the proximity of the border with Oman or Socotra Islands via Al Mukalla from Aden.
- 2) Maximum speed – A rubber inflatable boat (RIB) which is loaded onboard the Patrol Vessel and runs faster than the Patrol Vessel will be launched in order to quest a suspicious ship. The maximum speed of the Patrol Vessel is enough to be equivalent to those of the commercial ships.
- 3) Ship length – Length of the Patrol Vessel shall be determined to have appropriate seaworthiness in the high seas beyond the territory waters of the Yemen.
- 4) Complement – The complement is decided considering the danger and the specific necessity when they carry out boarding and survey against a suspicious ship.

1.3 Principal particulars and preliminary general arrangement plan

The Team presented the principal particulars of the Patrol Vessel and the preliminary arrangement plan as shown in Annex-1 and Annex-2 after reviewing the fundamental technical requirements and both parties confirmed that further design should be developed based on these plans in the Analysis in Japan.

1.4 Main machinery and equipment

Both parties confirmed that;

- 1) The main engine should be determined considering the commonality in type and make with the YCG's vessels, i.e. the Malaysian boat, as far as possible to ease the demands

for spare parts logistics and maintenance work capability building.

- 2) Regarding major navigation and communication equipment, (1) X-band RADAR, (1) AIS, (1) ECDIS, (1) Echo Sounder, (1) GPS, (1) magnetic compass (1) GPS compass and (1) HF/VHF radio communication equipment shall be fitted, but no gyro compass is provided. The navigation equipment shall be arranged in the manner which has commonality as far as possible to the other patrol boats.
- 3) Desalination or distilling plant shall be equipped to make a fresh water tank rather small and in preparation for longer operations than three days.
- 4) Japan side will decide the provision of a surveillance camera system and a binocular type night-vision in the Analysis in Japan, taking note of the request by the YCG.

1.5 Rules and regulations

YCG explained that there were no specific technical regulations or technical standards of the YCG to be applied to the construction and equipment of the Patrol Vessel other than the relevant international regulations.

2. Operations of the Patrol Vessel

Both parties confirmed that the Patrol Vessel, in principle, will carry out;

- 1) One by ordinal patrol (medium-range patrol) in three weeks, which includes a fifty-hours continuous operational patrol in lowest transition speed in the mission area and fast transitions from/to Aden,
- 2) One long-range operational patrol in a month, which includes a six-hours patrol in different speed and fast transitions to the operation area from/to Aden

3. Project Performance Index

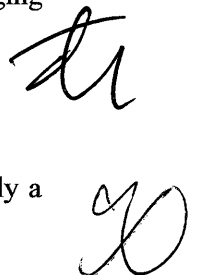
Both parties confirmed that the operating hours of the Patrol Vessel to be estimated by the preceding paragraph should be set as the project performance index, which shall be regularly monitored by both parties.

4. Mooring Point

Both parties confirmed that the Patrol Vessel would be moored to the buoys which are to be placed off the Aden Base of the YCG Aden District Headquarter (Annex-3) for the time being. The buoys will be placed at the distance of 90 m each other to allow swinging in the exclusion area of the YCG.

5. Others

- 1) YCG explained that the shipyard belonging to the Aden Port Corp. is substantially a

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sole repairing shipyard available at Aden and the Patrol Vessel will be refitted in this yard for the time being. Further, YCG explained that YCG will build a workshop in Al-Hodaida in the Red Sea District.

- 2) YCG requested that training in Japan while constructing the Patrol Vessel should accommodate at least three persons – (1) navigation equipment/communication, (1) machinery and (1) electrician, and much more if available.

Annexes:

Annex-1 Principal Particulars of the Patrol Vessel

Annex-2 Preliminary General Arrangement

Annex-3 Locations of Mooring Buoys for the Patrol Vessel




Principal Particulars of the Patrol Vessel

Principal Particulars of New Patrol Vessel

	JAPAN PATROL BOAT*	U.S. NEW BOAT – ADEN & SANA'A	YCG LARGEST BOAT - MALYASIAN
Length	35.80 m	26.50 m	22.50 m
Beam	6.70 m	5.92 m	6.30 m
Draft	1.25 m	1.74 m	1.50 m
Max Speed	25 kt	25 kt	31 kt
Main Engine	MTU16V2000 M92 1630 kW x 2	MTU8V396TE93 1100 kW x 2	MTU12V2000 M90 (994 kW x 2)
Range	800 nm @ 20 kt	1600 nm @ 10 kt	600 nm @ 25 kt
Complement	17 p	10 p	8 p

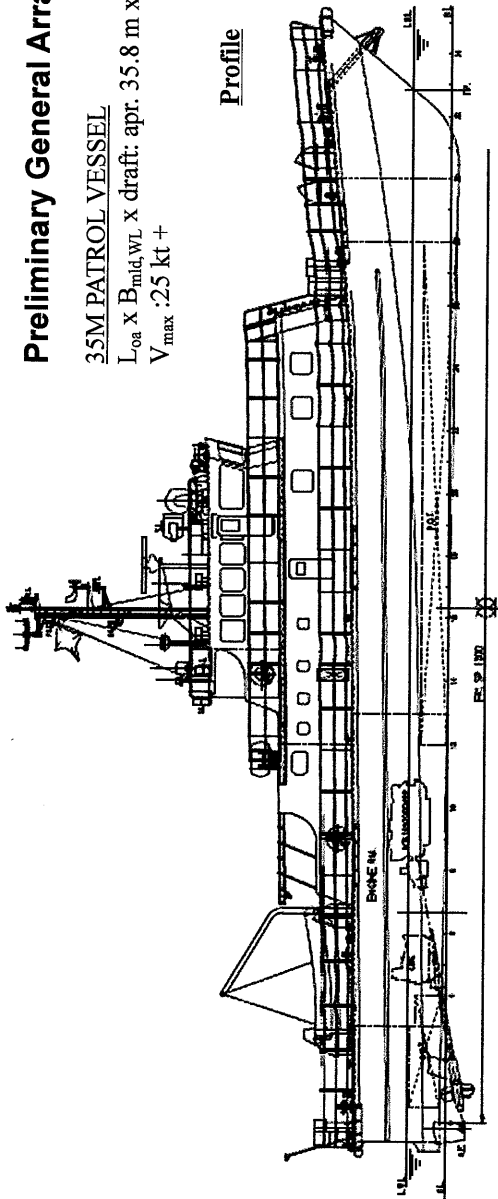
**) Subject to change in the course of further design*

Preliminary General Arrangement Plan

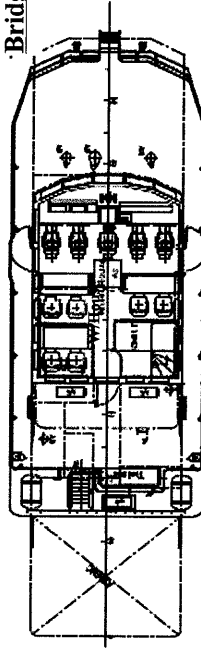
35M PATROL VESSEL

$L_{oa} \times B_{mid,VL} \times \text{draft}$: apr. 35.8 m x 6.7 m x 1.25 m

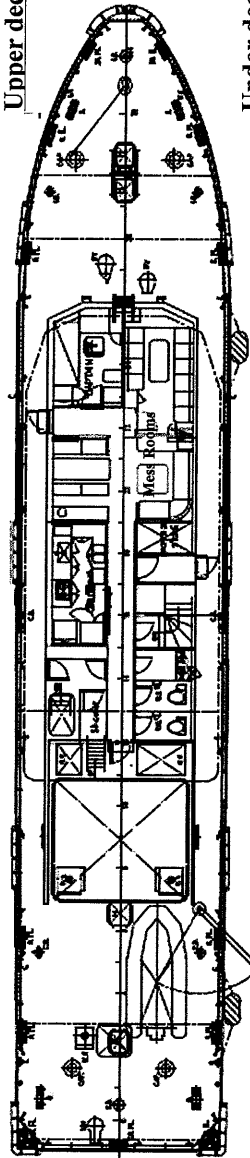
V_{max} : 25 kt +



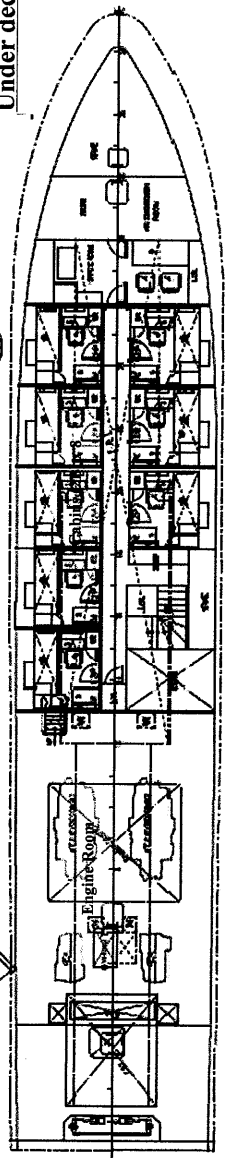
Bridge deck plan



Upper deck plan



Under deck plan



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Minutes of Technical Discussion
on The Preparatory Survey
on the Project for Capacity Building of the Yemen Coast Guard
for Combating Piracy and Terrorism
in the Republic of Yemen
(Building of Vessels/Explanation of Draft Report)

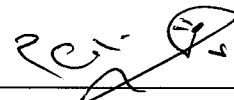
Regarding the Project for Capacity Building of the Yemen Coast Guard for Combating Piracy and Terrorism (herein after referred to as “the Project”), the JICA Preparatory Survey Team (herein after referred to as “the Team”) and the officials of the Yemen Coast Guard (Referred to as “YCG”) held technical discussions on the draft outline design report of the Project from October 30, 2010 to November 7, 2010 at Sana’a, the Headquarter of the Yemen Coast Guard.

As a result of the discussions, the Team and the YCG confirmed the items as described in the Attachment and the Annexes.

Sana’a, November 7, 2010



Kazuma IMOUÉ
Chief Consultant
JICA Survey Team
Japan Marine Science Inc.



Col. Mohammed Sharaf Al-Qadasi
G. M. of Technical Affairs
The Yemen Coast Guard



Bg. Fouad S. Basuleiman
Deputy Chairman of YCG
The Yemen Coast Guard

ATTACHMENT

1. General Arrangement Plan of the Vessel

The Team explained the general arrangement plan including the items beneath and the YCG agreed to and accepted the general arrangement plan as appears in the report. (Annex-1)

(1) Cabin and public room arrangement

Upper deck: One commander's cabin (single berth cabin), officer's mess, crew's mess and waiting room

Under deck: Eight (8) double berth cabins (with one two-tier locker) and an office

(2) Galley, sanitary space and others arrangement

Upper deck: A galley, a laundry, two water closets (with a western style lavatory), and a shower room

Under deck: An air conditioning machine room, stores (bow, fore, aft and under stairway)

(3) Fittings and equipment arrangement

Upper deck: An engine room hatch (approximately 3,800 x 4,200 mm) for main engine taking out and access hatches (Bow store, fore store, engine room, steering gear room)

Capstans and mooring fittings (bollards, cross bits, fairleads)

RIB and davit

Bridge deck: Two Life rafts

Others: Rigid fenders on the hull

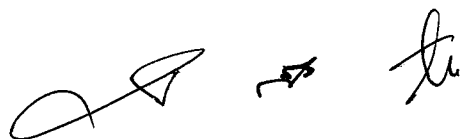
(4) Tank arrangement (hull tank)

One fuel oil tank under the cabins

One fresh water tank and one potable water tank at stern

(5) Bullet-proof

Bullet-proofing for the wheel house side wall only



2. Specifications of the Patrol Vessel

(1) General

Both parties confirmed the principal particulars and the specifications of the vessel as appears in the report (Annex-2) and the notes below, and the Team explained that request for further changes of the specifications, which will have impact on the Project cost, would not be accepted.

(2) Mooring system

The Team explained that the provision of mooring system is based on the Japanese regulations and the YCG accepted it. The YCG requested to use an electro-hydraulic type capstan; the Team explained that the capacity of the capstan is rather small that the electric type is more efficient and suitable for this vessel, the YCG accepted.

(3) Water closet

The Team explained that the type of water closet is a western style and the YCG agreed.

(4) RIB

The YCG requested provision of a jockey type seat on RIB, Yamaha make outboard engine, spare fuel tanks and navigation light. The Team confirmed them except the engine manufacture. Both confirmed that no navigation equipment except a portable GPS will be provided.

(5) Air conditioning

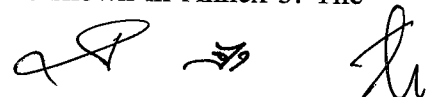
The Team explained the design condition of the air conditioning unit and the YCG confirmed it.

(6) Generator - Power supply frequency

The Team explained that the proposed design of power supply system 60 Hz is advantageous from the viewpoint of light weight and small-footprint in this type of vessel; the YCG strongly requested to consider the availability of replacement of components or parts as a matter of the first and make it 50 Hz as general shore equipment in Yemen. The Team agreed to study changing of power supply frequency into 50 Hz and both confirmed that specifications of generator would be changed accordingly after further study in Japan.

(7) Shore power connection

The YCG explained that though there is 220 VAC shore power supply in the Aden base for lighting and general use but requested to change it into 440 VAC considering the shore power supply in Yemen is in general 380-440 VAC as shown in Annex-3. The



Team agreed to change the voltage of shore connection from 220 VAC to 380-440 VAC, 50 Hz.

(8) Reinforcement for gun mounting

Both side confirmed that any reinforcement for gun mounting is not provided.

(9) Ring plates

The YCG requested to provide approximately six (6) ring plates in the vicinity of the bench at aft deck under the awning and the Team confirmed it.

(10) GMDSS equipment

The YCG confirmed that it is not necessary for the provision of GMDSS equipment to meet fully to the Japan's relevant regulations even though the vessel is in general designed according to the Japanese regulations. (Annex-4)

(11) Sill and coaming height

The YCG requested lower sill height of the entrance doors on the upper deck and coaming height of access hatches than those required by the Japanese relevant regulations considering the special activities of the vessel. The Team responded to convey the request to the authorities concerned while design development and construction. (Annex-5)

(12) Fireman's outfit and diving suit

The Team explained that any fireman's suit and diving suit is not provided and the YCG agreed.

(13) Damage control equipment

The YCG requested to provide some damage control equipment. The Team responded that some wooden plugs will be included in the accessory and the YCG agreed.

(14) Propeller puller

The YCG requested to provide propeller removal tool and the Team agreed.

(15) Documentation

The YCG requested to provide three sets of final documents (to be delivered to HQ, GoAD HQ, and Onboard) and the Team confirmed it.



3. Others

(1) Operating and maintenance cost

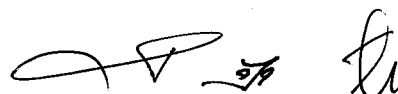
The Team explained the estimation of the operating cost and maintenance cost, and the YCG confirmed it.

(2) Spare parts

The Team explained that spare parts would be provided only for one year operation as per manufactures' standards and the requirements of the regulations to be applied and the YCG accepted it.

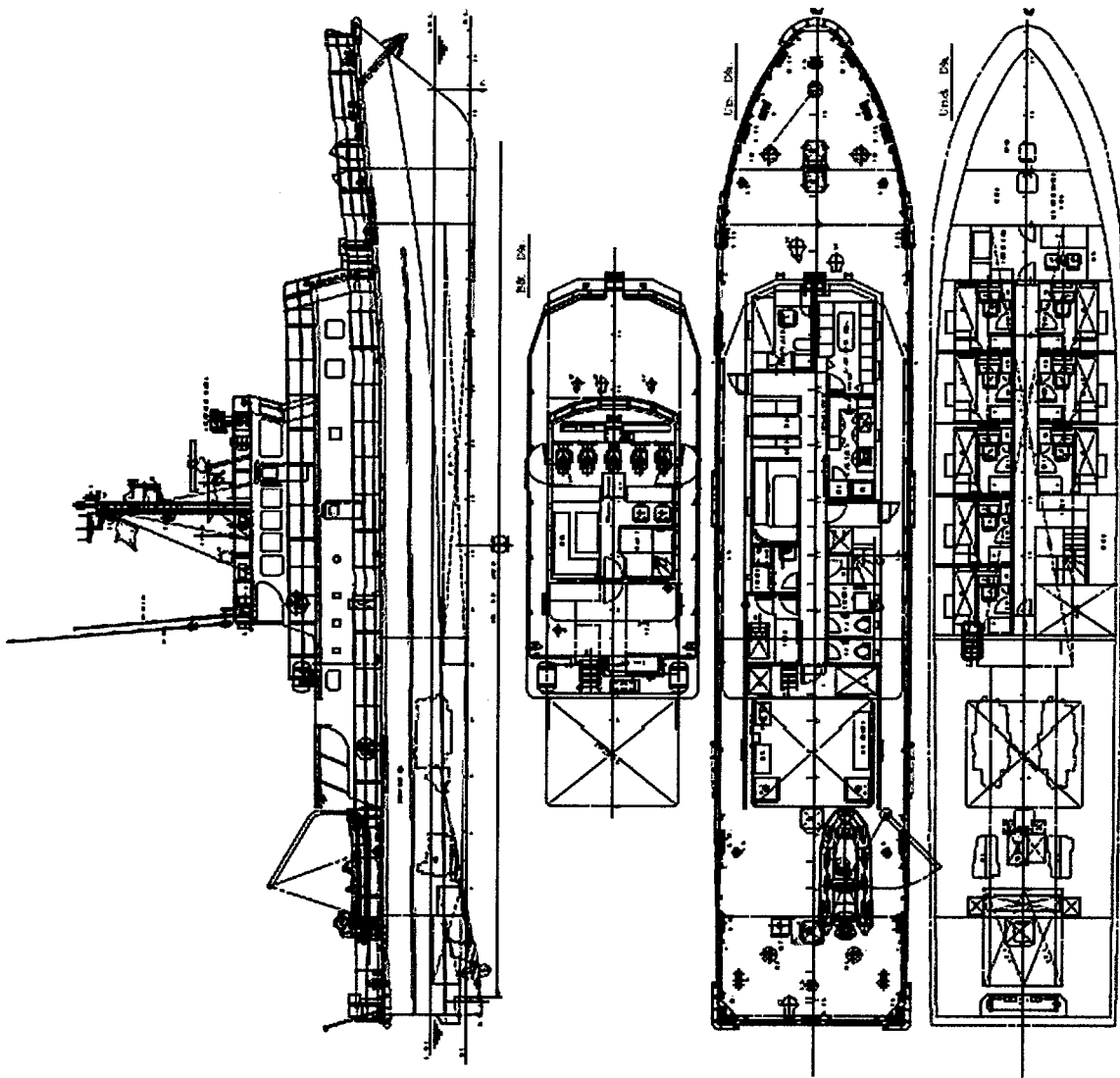
(3) Mooring buoys

The YCG explained that the installation of the mooring buoys had been completed and confirmed to inform the detail of installation as soon as possible.

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Annex-1

General Arrangement Plan of the Vessel



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Annex-2**Specifications of the Vessel**

Item	Q'ty	Specifications
1. Principal Particulars		
Nationality		Republic of Yemen
Navigation area		Gulf of Aden (Major coast of JG)
Principal dimensions		
Length overall		35.80 m
Length of registry		35.20 m
Molded breadth		6.90 m
Molded depth amidship		3.20 m
Design molded draft		Approx. 1.25 m
International gross tonnage		Approx. 208T
Volume		
Fuel tank		Approx. 30 m ³
Potable water tank		Approx. 4 m ³
Fresh water tank		Approx. 4 m ³
Main engine		
Type		High-speed marine diesel engine
Maximum output		1,630 kW
Number of engines		2 sets
Generator		
Auxiliary engine		High-speed marine diesel engine
Output, revolution		51.5 kW x 1500 rpm (* To be decided)
Generator		Brushless type AC generator, 2 sets
Speed		
Maximum speed		25 knots (at 2/3 load, maximum rated output)
Cruising speed		20 knots (at 2/3 load, 75% of maximum rated output)
Cruising range		800 nautical miles (at cruising speed)
Endurance		3 days
Complement		17 persons
Hull material		Light alloy
2. Hull		
Mooring system		
Capstan (bow)	2	14.7kN x 13m/min, electric
Capstan (stern)	2	14.7kNx13m/min, electric



Anchor	2	260kg, Danforth
Anchor rode	2	φ32mm x length 135m, nylon 8-strand
Anchor chain	1	φ19mm x length 30m, stainless wire rope
Tow line	1	φ30mm x length 135m, nylon 8-strand
Mooring rope	1	φ20mm x length 165m, nylon 8-strand
Mooring rope	1	φ32mm x length 50m, nylon 8-strand
Mooring rope	1	φ20mm x length 50m, nylon 8-strand
Steering gear		
Rudder	2	Hanging rudder, single stainless plate
Steering gear	1	Electric-hydraulic, approx. 19.6 kN-m
Life saving equipment		
Life raft	2	15 persons
Life jacket	30	Adult size
Hand flare	4	
Self-activating smoke signal	2	
Self-igniting light	2	
Rocket parachute signal	8	
Firefighting equipment		
Portable fire extinguisher	9	Chemical, 50% spare extinguishant
Automatic dispersion type liquid fire extinguisher	4	Fire extinguisher for engine room
Accommodation		
Interior work of cabin area	1 set	
Galley equipment		
Microwave	1	IH heater type, approx. 2kW
Microwave oven	1	Approx. 1kW
Electric water heater	1	Approx. 18kW
Refrigerator	1	400L
Freezer	1	200L
Others	1 set	Sink, cooking table, cupboard, etc.
RIB and davit		
RIB	1 set	Approx. 4.5m inflatable boat (FRP & rubber) Max. 6 persons, 30 knots or higher speed
RIB davit	1 set	Light alloy made, 500kg load, electric winch
Air conditioning		
System 1	1 set	Under deck and deckhouse area, water cooled package type, 37°C/80%RH – 25°C/50% RH
System 2	1 set	Wheelhouse, water cooled separate type

3. Machinery		
Main engine	2	Single acting 4 stroke high-speed diesel engine 1,630kW x 2,450rpm, 16-cylinder, with starter motor
Reduction gear	2	Reduction and reverse gear, gear ratio 2.41
Propeller shaft	2	Stainless steel
Propeller	2	Fixed pitch 5-blade, approx. $\phi 1200\text{mm}$, w/spare propeller, (1 each of right and left revolution)
Stern tube shaft seal	2	Mechanical seal
Stern tube bearing	2	Seawater-lubricant rubber bearing
Shaft bracket	2	Seawater-lubricant rubber bearing
Intermediate shaft bearing	2	Seawater-lubricant rubber bearing
Pumps		
General service / bilge pump	1	Self priming centrifugal pump $10\text{m}^3/\text{h} \times 20\text{mAq}$
Bilge pump	1	Self priming centrifugal pump $10\text{m}^3/\text{h} \times 20\text{mAq}$
Fresh water pump	2	Home pump $3.6\text{m}^3/\text{h} \times 15\text{mAq}$
Sanitary pump	1	Centrifugal type $5\text{m}^3/\text{h} \times 7\text{mAq}$
Waste oil pump	1	Gear type $1\text{m}^3/\text{h} \times 0.1\text{MPa}$
Lubricator pump	1	Gear type $1\text{m}^3/\text{h} \times 0.1\text{MPa}$
Wing pump	1	Manual
Oil separator	1	Automatic discharging oil separator, $0.15\text{m}^3/\text{h}$ treatment capacity
Water generator	1	Reverse osmosis membrane water generator, 3t/day
4. Electrical systems		
Generator	2	64kVA, 440V, 3-phase, 50Hz, brushless, H-type (* To be decided)
Battery	4	24V x 200AH, Starter of main engine and starter of generator, emergency light, alarm and radio
Main Switch Board (MSB)	1	Self-standing or wall mounted, aluminum, generator board, synchronization panel, feeder panel, discharger/charger board for battery
Battery charger	1	(Built in MSB)
Distribution box	1 set	Dead front
Shore connection box	1	AC 380-440 V, 3-phase, 50 Hz
Switchboard of wheelhouse	1	Installed to navigation console
Navigation light control panel	1	
Searchlight	1	2kW Xenon, near-infrared filter and high-sensitivity CCD camera mounted on 3-axis stabilizer
Projector	6	250W halogen projector
Portable working light	3	Waterproof type x 2, general type x 1

Switch and receptacle	1 set	
Indoor lighting	1 set	
Outdoor lighting	1 set	
Communication/signal equipment		
Common telephone	1 set	Wheelhouse, engine room, steering gear room, officer mess, crew mess, commander's quarter
Vessel monitoring TV	1 set	Camera: in engine room x4, at boardside / stern x4, Monitor and control panel: 2 sets (Wheelhouse)
Intercom	1 set	Intercom, main phone + 3 set of mobile phones
Electric horn	1 set	Horn, type 3
PA system	1 set	Output of main unit: 60W
Instruments		
Rudder indicator	1	Transmitter, Indicator, 1 each
Electric rev counter	1	DC generator, transmitter, 1 each, 2 each for receiver
Seawater thermometer	1	Digital
Thermometer	1	
Tank level gauge	3	Fuel tank, fresh water tank and potable water tank
Alarm		
General alarm	1 set	
Fire alarm	1 set	Manual fire alarm, automatic fire alarm
Immersion alarm	6	
High level alarm of fuel tank	1	
Navigation instruments		
GPS compass	1	
Magnetic compass	1	
RADAR	1	X-band, ARPA integrated
AIS receiver	1	
Navigation system		
GPS navigation system	1	
Electric chart display information system (ECDIS)	1	
Wind speed / wind direction meter	1	Electric, vane type
Wiper	5	Arm type, wheelhouse front
Echo sounder	1	
Radio Equipment		
International VHF	2	w/DSC
Two-way VHF radio	2	

NAVTEX	1	
EPIRB	1	
RADAR transponder	1	
HF/MF radio	2	w/DSC
Wide band receiver	1	

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Annex-3

REPUBLIC OF YEMEN
MINISTRY OF INTERIOR
YEMEN COAST GUARD (Y.C.G)



الجمهورية اليمنية
وزارة الداخلية
مصلحة خفر السواحل

المرفقات : التاريخ ٢٠١٠ / ١١ / ٧ م الرقم: ٢٠٢٥
Date: 7/11/2010

To: JICA study team

Dear Sirs.

First of all we would like to express our highest gratitude and thankfulness to you.

We would like to inform you that the electricity standards in Yemeni ports as follow:

Location	Power supply	
Aden port	3 phases 380/440V 50Hz	1ph 220-250V 50Hz.
Al-Hodeida	3 phases 380/440V 50Hz	1ph 220-250V 50Hz.
Al-Mukalla port	3 phases 380/440V 50Hz	1ph 220-250V 50Hz.
Al-Mokha port	3 phases 380/440V 50Hz	1ph 220-250V 50Hz.

Thank you again and we really appreciate your efforts.

Sincerely.

Col.

Muhamad Sharaf Al-Qadasi

GM. Technical Afair

B.G.

Fuad Saleh Basulaiman

Deputy Chairman of Y.C.G



Annex-4

REPUBLIC OF YEMEN
MINISTRY OF INTERIOR
YEMEN COAST GUARD (Y.C.G)



الجمهورية اليمنية
وزارة الداخلية
مصلحة خفر السواحل

المرفقات: _____ التاريخ: ٢٠١٠ / ١١ / ٧ م الرقم: ٢٧٧
Date: 9/11/2010

To: JICA Preparatory Survey Team and Whom concerned

Sub: The project for Capacity Building of the Yemen Coast Guard for
Combating Piracy and Terrorism in the Republic of Yemen

Re: GMDSS equipment of the patrol vessel

The Yemeni Coast Guard confirmed that 2 units of HF, VHF and DSC shall be provided but it is not necessary to equip GMDSS equipment of the vessel fully as required by the relevant Japanese regulations even though the vessel will be designed after the Japanese regulations considering the specialty of the vessel.

Col. 

Muhamad Sharaf Al-Qadasi

GM. Technical Afair

B.G. 

Fuad Saleh Basulaiman

Deputy Chairman of Y.C.G. 



REPUBLIC OF YEMEN
MINISTRY OF INTERIOR
YEMEN COAST GUARD (Y.C.G)



الجمهورية اليمنية
وزارة الداخلية
مصلحة خفر السواحل

المرقعات : التاريخ / ١١ / ٢٠١٠ م الرقم : ٢٠٧
Date: 9/11/2010

To: JICA Preparatory Survey Team and Whom concerned

Sub: The project for Capacity Building of the Yemen Coast Guard for
Combating Piracy and Terrorism, the Republic of Yemen

Re: Sill Height and Coaming Height

The Yemeni Coast Guard request strongly reduce sill height and
coamings height of the vessel than those required by the relevant
Japanese regulations though the vessel will be designed after the
Japanese regulations considering the special activities of the vessel.

Col

Muhamad Sharaf Al-Qadasi

GM. Technical Afair

B.G.

Fuad Saleh Basulaiman

Deputy Chairman of Y.C.G.



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