ARBITRATION UNDER ANNEX VII OF THE UNITED NATIONS CONVENTION ON THE LAW OF THE SEA

REPUBLIC OF THE PHILIPPINES

v.

PEOPLE'S REPUBLIC OF CHINA

WRITTEN RESPONSES OF THE PHILIPPINES TO THE TRIBUNAL'S 13 JULY 2015 QUESTIONS

VOLUME II
ANNEXES

23 JULY 2015

VOLUME II

EXHIBITS

CHINESE GOVERNMENT DOCUMENTS

DIPLOMATIC EXCHANGES

GEOGRAPHICAL MATERIALS

Annex 593 U.S. National Imagery and Mapping Agency, *Pub No. 9: The American Practical Navigator: An Epitome of Navigation* (2002 ed.)

Annex 594 International Hydrographic Organization, *A Manual on Technical Aspects of the United Nations Convention on the Law of the Sea – 1982*, Special Publication No. 51 (4th ed., Mar. 2006)

Annex 595 Republic of the Philippines, National Mapping and Resource Information Authority, *Tide & Current Tables: Philippines 2014* (2013)

Annex 596 Japan Coast Guard, *Document No. 6011: Chart Symbols and Abbreviations* (Feb. 2013)

Annex 597 Center for Strategic & International Studies, Asia Maritime Transparency Initiative, "Island Tracker", *available at* http://amti.csis.org/island-tracker/ (last accessed 21 July 2015)

Annex 598 EOMAP, "Satellite Derived Bathymetry", *available at* http://www.eomap.com/services/bathymetry/ (accessed 21 July 2015)

NEWSPAPER REPORTS

Annex 599 "Philippines Claim that Huangyan Dao and Second Thomas Shoal Have Been 'Occupied': Wang Yi Espouses a Firm Position", *China.com* (2 July 2013)

Annex 600 Alexis Romero, "Gov't to spend P480M to upgrade Navy, Air Force facilities in Spratlys", *The Philippine Star* (4 Dec. 2013)

Annex 601 Jim Gomez, "Old US ship home to Filipinos in China standoff", *Associated Press* (31 Mar. 2014)

Annex 602 Carmela Fonbuena, "PH puts on hold repair of airstrip in West PH Sea", *Rappler* (4 Oct. 2014)

Annex 603 Manuel Mogato, "Exclusive: Philippines reinforcing rusting ship on Spratly reef outpost - sources", *Reuters* (13 July 2015)

ACADEMIC ARTICLES, BOOK EXCERPTS AND REPORTS

Annex 604 Peter B. Beazley, "Technical Aspects of Maritime Boundary Delimitation", *IBRU Maritime Briefing*, Vol. 1, No. 2 (1994)

Annex 605 P. Armstrong & V. Forbes, "The Falkland Islands and Their Adjacent Maritime Area", *IBRU Maritime Briefing* Vol. 2, No. 3 (1997)

Annex 606 C. Schofield & C. Carleton, "Developments in the Technical Determination of Maritime Space: Charts, Datums, Baselines, Maritime Zones and Limits", *IBRU Maritime Briefing*, Vol. 3, No. 3 (2001)

LEGAL AUTHORITIES

ICJ CASES

Annex LA-229 *Asylum (Colombia/Peru)*, Judgment, I.C.J. Reports 1950

OTHER INTERNATIONAL CASE LAW

Annex LA-230 *Dispute between Argentina and Chile concerning the Beagle Channel*, Award (18 Feb. 1977), XXI R.I.A.A. 53

Annex LA-231 *Dubai/Sharjah Border Arbitration*, Award (19 Oct. 1981), 91 I.L.R. 543 (1981)

PARTIES' PLEADINGS

Annex LA-232 *The MOX Plant Case (Ireland v. United Kingdom), Request for Provisional Measures, ITLOS*, Written Response of the United Kingdom (15 Nov. 2001)

Annex LA-233 *The MOX Plant Case (Ireland v. United Kingdom), Request for Provisional Measures*, Verbatim Record, ITLOS/PV/01/08 (20 Nov. 2001), p. 26 (Mr Plender)

Annex LA-234 *Case concerning Land Reclamation by Singapore in and around the Straits of Johor (Malaysia v. Singapore), Request for Provisional Measures*, Verbatim Record, ITLOS/PV.03/01 (25 Sept. 2003), p. 13 (Mr Patail)

Annex LA-235 *Territorial and Maritime Dispute (Nicaragua v. Colombia)*, CR 2012/9 (24 Apr. 2012), p. 37 (Prof. Oude Elferink)

Annex LA-236 *Territorial and Maritime Dispute (Nicaragua v. Colombia)*, CR 2012/12 (27 Apr. 2012), p. 35 (Prof. Crawford)

TREATISES AND ARTICLES

Annex LA-237 Hans-Dietrich Treviranus, "Preamble," *Encyclopedia of Public International Law*, Vol. 7 (R. Bernhardt ed., 1984)

Annex LA-238 *United Nations Convention on the Law of the Sea 1982: A Commentary*, Vol. I (M. Nordquist, ed., 1985)

Annex LA-239 Holger P. Hestermeyer, "Access to Medication as a Human Right", in *Max Planck Yearbook of International Law*, Vol. 8 (A. von Bogdandy & R. Wolfrum eds., 2004)

Annex 584

Ministry of Foreign Affairs of the People's Republic of China, *Foreign Ministry Spokesperson Hong Lei's Regular Press Conference on May 22, 2013* (22 May 2013)

Foreign Ministry Spokesperson Hong Lei's Regular Press Conference on May 22, 2013

05/22/2013

Foreign Ministry Spokesperson Hong Lei's Regular Press Conference on May 22, 2013.

[...]

Question: On the 21st, the Philippine Foreign Minister claimed that recently, the Philippines have lodged a protest in response to Chinese naval ships and marine surveillance ships have navigated into waters in the vicinity of Second Thomas Shoal. The Philippines claim that China has violated Philippine sovereignty and is also in violation of international law. What is China's position on this matter?

Response: Second Thomas Shoal is part of the Nansha Islands. China's possession of the islands and the surrounding waters is indisputable. Official Chinese vessels have conducted normal patrols in these waters, this cannot be questioned. China urges the countries involved to thoroughly implement the *Declaration of Conduct of Parties in the South China Sea,* and admonishes these countries not to take actions which would exacerbate or complicate the dispute or to take any actions which would affect the peace and stability of the South China Sea.

[...]

http://www.fmprc.gov.cn/mfa_chn/wjdt_611265/fyrbt_611275/t1042669.shtml

2013年5月22日外交部发言人洪磊主持例行记者会

2013/05/22

2013年5月22日，外交部发言人洪磊主持例行记者会。

问：据报道，朝鲜最高领导人金正恩特使、朝人民军总政治局长崔龙海正在访华，请介绍具体情况。

答:朝鲜劳动党第一书记金正恩的特使、朝鲜劳动党中央政治局常委崔龙海于今天开始访华。全国政协副主席、中共中央对外联络部部长王家瑞22日在北京会见了崔龙海。访问期间，中朝双方将就朝鲜半岛局势及共同关心的问题交换意见。

我想指出，中方始终致力于实现朝鲜半岛的无核化，致力于维护朝鲜半岛的和平稳定，致力于通过对话协商解决有关问题。中方将始终不渝地推进六方会谈，推动朝鲜半岛的和平稳定，实现东北亚的长治久安。

问：21日，菲律宾外交部发言人称，菲方近日就中国军舰和海监船驶入仁爱礁附近海域向中方提出抗议。菲方称中方行为侵犯菲主权，违反国际法。中方对此有何评论？

答：仁爱礁是南沙群岛的一部分。中国对南沙群岛及其附近海域拥有无可争辩的主权。中国公务船在有关海域进行正常巡航，无可非议。中方敦促有关国家全面认真落实《南海各方行为宣言》，不采取使争议扩大化、复杂化和影响南海和平稳定的行动。

问：近日，候任巴基斯坦新总理谢里夫表达了改善印巴关系的意愿，中方对此有何评论？

答：我们注意到印巴关系近期出现改善的积极势头以及两国领导人关于改善双边关系的表态。印度和巴基斯坦都是南亚的重要国家，两国关系事关南亚地区的和平稳定与发展。作为印度和巴基斯坦的友好邻邦，中方衷心希望印巴关系改善，以促进地区的和平、稳定和发展。

Annex 585

Ministry of Foreign Affairs of the People's Republic of China, *Foreign Ministry Spokesperson Hua Chunying's Regular Press Conference on June 16, 2014* (16 June 2014)

Foreign Ministry Spokesperson Hua Chunying's Regular Press Conference on June 16, 2014

2014/06/16

Q: On June 14, Afghanistan held the second round of presidential voting. What is China's comment?

A: It is good to see that the second round of presidential voting in Afghanistan run to a smooth ending. We welcome and congratulate Afghanistan on that. As a friendly neighbor, China respects the choice made by the Afghan people and wishes to see an amicable Afghanistan that enjoys unity, stability and development. China will remain committed to deepening the strategic and cooperative partnership between the two sides and stands ready to work with the international community to help Afghanistan achieve enduring peace, stability and prosperity at an early date.

Q: Indian Prime Minister Narendra Modi is visiting Bhutan. Some said that his visit is aimed at tightening India's hold over its neighboring region and is also a way to contain China. What is China's comment to that? Besides, in an interview with the Hindu, the Bhutanese Prime Minister said China is yet to open its embassy in Bhutan. What is China's response to that?

A: We welcome the development of friendly, cooperative and mutually beneficial relations between our neighbors and their neighboring countries. China attaches great importance to developing relations with India. With concerted efforts, the strategic cooperative partnership between China and India for peace and prosperity has witnessed sound and stable development over recent years. After the swearing-in of India's new government, Premier Li Keqiang had a phone call with Prime Minister Modi. Foreign Minister Wang Yi has just concluded a successful visit to India as President Xi Jinping's Special Envoy. Both sides agreed to maintain the momentum of high-level exchanges and further promote the China-India strategic cooperative partnership. We have great expectations for and confidence in the future of China-India relationship.

As for China's relationship with Bhutan, despite the fact that China has yet to establish diplomatic ties with Bhutan, the two countries have maintained friendly exchanges. China respects Bhutan's independence, sovereignty and territorial integrity and is willing to move forward its good-neighborliness and friendship with Bhutan on the basis of the Five Principles of Peaceful Co-existence.

Q: From June 16 to 20, a new round of talks will begin between the P5+1 and Iran. Who is representing China at this round of talks and what are China's expectations for the talks?

A: The 5th round of talks between the P5+1 and Iran, which will be held from June 16 to 20 in Vienna, will continue to focus on reaching a comprehensive deal in resolving the Iranian nuclear issue. Wang Qun, the Director General of the Department of Arms Control of China's Foreign Ministry will lead a delegation to the meeting.

Since entering this year, the P5+1 and Iran have held four rounds of talks on a comprehensive deal. Now, the talks have come to a crucial stage of negotiating the text of the deal. As the negotiations reach the "deep-water zone", the issues to be discussed are increasingly complex and sensitive. The target time for the P5+1 and Iran to reach a comprehensive deal is July 20.

In China, we have a saying that the last part of an endeavor is the hardest to finish. China hopes that all parties can keep going with a flexible and constructive attitude, work towards the same goal based on what has been achieved, accommodate each other's concerns and push for real progress with

concrete actions at this round of talks.

China will continue to play a constructive role in the negotiations, work together with other parties to surmount difficulties and remove obstacles, and push for an early realization of a comprehensive deal that is just, balanced and mutually beneficial.

Q: There are reports that Japan's Ground Self-Defence Force recently deployed surface-to-ship missiles (SSM) in Okinawa's Miyako Island, and plans to deploy SSMs in Kumamoto Prefecture in 2016. Some media reports believe that these moves are meant to deal with China's possible attack against Japan's southwest outlying islands. What is China's response to that?

A: Japan's moves in the military and security fields will have complex impacts on the regional security environment. Therefore, Japan should give responsible statements as to its true intentions behind these moves. China adheres to the diplomatic principle of good-neighborliness and friendliness and the national defense policy that is defensive in nature. In the meantime, we will take firm and effective actions to respond to changes in the security landscape and safeguard our national territorial sovereignty.

Q: What kinds of achievements are expected to emerge from Premier Li Keqiang's visit to the UK?

A: Today, Premier Li Keqiang left for the UK for the annual meeting with the British Prime Minister and an official visit. Both sides attach great importance to Premier Li's visit and have prepared a very tight schedule. We are at the final stage of comparing notes about our expectations for the meeting. We hope that through this visit, both sides can further consolidate mutual trust, deepen and expand practical cooperation in various areas, and elevate China-UK relationship to a new height. As to the details of the achievements that this visit may produce, relevant information will be released in due course.

Q: The Philippines' Foreign Secretary said that he will call for a moratorium on all land formation activities in the South China Sea through ASEAN while ASEAN is negotiating a code of conduct in the South China Sea with China. Will China abide by such a moratorium?

A: China has indisputable sovereignty over the Nansha Islands and their adjacent waters. Activities by China on relevant islands or reefs of the Nansha Islands fall completely within China's sovereignty. Since the 1970s, the Philippines has illegally and forcefully occupied parts of China's Nansha Islands including the Zhongye Island, in violation of the UN Charter and principles of international law. We demand the Philippines to withdraw all its facilities and personnel on islands illegally seized from China.

Last December, the Philippines' Defence Ministry announced that they would invest large sums of money to upgrade the airstrips and naval facilities on the Zhongye Island. In January this year, the Philippines' military officials again announced their plans to build a world-class airport on the so-called Kalayyan Island. The Philippine side, on the one hand, intentionally takes provocative actions while on the other hand makes irresponsible remarks on China's legitimate actions which are within China's sovereignty. That is unjustifiable. We call on the Philippine side to correct its erroneous actions, strictly follow the Declaration on the Conduct of Parties in the South China Sea (DOC), and stop provocations that would further aggravate and complicate the situation.

Issues on the sovereignty over islands and reefs of the Nansha Islands are not the ones between China and ASEAN. There is consensus between China and ASEAN on fully and effectively implementing the DOC and negotiating a code of conduct in the South China Sea under that framework. We stand ready to work with relevant countries, strictly follow the DOC and jointly safeguard peace and stability of the South China Sea.

Q: On June 14, a Ukrainian transport plane was shot down by pro-Russian militants in Luhansk, killing 49 Ukrainian soldiers on board. On the same day, nearly 300 Ukrainian protesters attacked the Russian Embassy in Ukraine. What is China's comment on that?

A: We have noted that after assuming office, President Poroshenko came up with a peace plan aimed at stabilizing the east, and all parties are engaged in intensive contacts on the political settlement of the Ukrainian crisis. The situation in Ukraine has come to a crucial stage. We hope that all sides can keep calm, exercise restraint, realize a ceasefire in conflict areas, avoid more casualties and create enabling conditions for the political settlement of the Ukrainian issue.

China condemns the action of besieging embassies and consulates. According to the Vienna Convention on Diplomatic Relations and other related international laws, the safety of diplomatic missions and personnel should be earnestly guaranteed.

Q: The Kyodo News Agency reported that Japanese Prime Minister Shinzo Abe plans to step up the revision of constitution. What is China's comment to that?

A: Owing to historical factors, the direction that Japan chooses for its development has been closely followed by its Asian neighbors and the international community. Recently, Japan has been stirring things up, ratcheting up tensions and rivalry, all for the purpose of laying the groundwork and making up excuses for constitutional revision and military buildup.

We have noted the debate concerning collective self defense rights inside Japan. In the final analysis, the direction of Japan's development needs to be decided by the Japanese people. It is worth pointing out that any adjustment in Japan's military and security policies should in no way undermine China's sovereignty and security interests.

I would like to share a Chinese fable. It is about suspecting one's neighbor of stealing an axe. A person lost his axe, and he suspected his neighbor as the thief. The more he observed his neighbor, the more convinced he became that it was his neighbor who did it. However, one day, his axe showed up. After that, he could not find any slice of suspicion in his neighbor's behavior any more. Japan, in a way, also lost something, namely the correct sense of history, the right understanding of its neighbors' development and the proper grasp of the trend of the times. We hope that Japan can retrieve these important things as soon as possible, and treat and develop its relationship with its neighbors with a sound and correct attitude.

Related News:

- Foreign Ministry Spokesperson Hua Chunying's Regular Press Conference on June 17, 2014
- Foreign Ministry Spokesperson Hua Chunying's Regular Press Conference on June 13, 2014
- Foreign Ministry Spokesperson Hua Chunying's Regular Press Conference on June 12, 2014
- Foreign Ministry Spokesperson Hua Chunying's Regular Press Conference on June 11, 2014
- Foreign Ministry Spokesperson Hua Chunying's Regular Press Conference on June 10, 2014
- Foreign Ministry Spokesperson Hua Chunying's Regular Press Conference on June 9, 2014
- Foreign Ministry Spokesperson Hong Lei's Remarks on the Military and Security Developments Involving the People's Republic of China for 2014 Released by the US Defense Department
- Foreign Ministry Spokesperson Hong Lei's Regular Press Conference on June 6, 2014

Annex 586

Ministry of Foreign Affairs of the People's Republic of China, *Foreign Ministry Spokesperson Hong Lei's Regular Press Conference on February 27, 2015* (27 Feb. 2015)

Foreign Ministry Spokesperson Hong Lei's Regular Press Conference on February 27, 2015

2015/02/27

Q: Director of the US National Intelligence James Clapper said at a Senate Armed Services Committee hearing that China is stationing ships and conducting land reclamation activities in the South China Sea, and the US is concerned with relevant activities. What is China' response to that?

A: China's position on the South China Sea issue is clear and consistent, and we have been acting in a restrained and responsible way. What China has been doing on its own islands and reefs and in its own waters is lawful, justifiable and reasonable, and other countries have no right to make unfounded accusations. We hope the US side can honor its commitments, mind what it says and does, and act in a way that is conducive to the development of China-US relations and regional peace and stability.

Q: A delegation of Organization of Islamic Cooperation (OIC) ministerial contact group on Palestine and Jerusalem is in China for a visit from February 27 and 28. Who are the delegation members? What is their itinerary? What is China's expectation for this visit?

A: A delegation of Organization of Islamic Cooperation ministerial contact group on Palestine and Jerusalem led by Egyptian Foreign Minister Sameh Shoukry is in China for a visit from February 27 to 28. The members include OIC Secretary General Iyad Ameen Madani, Palestinian Foreign Minister Riyad Al-Malki, Foreign Minister of Guinea Lounceny Fall and representative of Foreign Minister Elmar Mammadyarov of Azerbaijan. Vice President Li Yuanchao will meet the delegation on February 28. Foreign Minister Wang Yi will hold talks with them today.

China attaches great importance to the Palestinian issue, stands firmly with the Palestinian people in their just cause, and supports Palestine in integrating further into the international community as a state. During the visit, both sides will have an in-depth exchange of views on seeking a comprehensive and just solution to the Palestinian issue at an early date.

Q: The British Foreign and Commonwealth Office issued the 36th Six-Monthly Report on Hong Kong on February 26. What is China's comment?

A: Since the return of Hong Kong, "one country, two systems" has been proved to be a great success, and is recognized by the world. The Central Government of China will continue to implement the "one country, two systems" policy and the Basic Law, resolutely support Hong Kong's democratic development in accordance with the law, and safeguard Hong Kong's long-term prosperity and stability.

I would like to stress again that the Central Government of China resumed its sovereignty over Hong Kong on July 1, 1997. Since then, Hong Kong has been a special administrative region of China. The so-called "responsibility" that the British side claimed to have over Hong Kong simply does not exist. Hong Kong affairs are completely China's domestic affairs. No foreign country has any right to interfere.

Q: As an important part of the "Belt and Road" initiative, China will sign some cooperation agreements with Kazakhstan, Pakistan and others next month. Can you confirm that?

A: China is discussing with relevant neighbors on moving forward project cooperation under the Silk Road Economic Belt and Maritime Silk Road of the 21 Century. China's initiative has been well received by many countries. Neighboring countries are playing an active part in it. The "Belt and Road" initiative has marked some positive progress. We hope that on the basis of consultation, joint undertaking and sharing, the cooperation we have with our neighboring countries can deepen our mutually beneficial relations and lead us to common development.

Q: Turkey is pressing ahead with talks with U.S. and European firms over the purchase of their missile defense system. Officials from Turkey's defense ministry said that Turkey is now reviewing the possibility of buying China's missile defense system. What is China's response?

A: The discussions and negotiations between China and Turkey are normal business exchanges. We believe the Turkish side will make decisions to suit their best interests.

Q: Reports say that Taiwan has heightened its security alert due to the security threat suspectedly released by the Islamic State on the internet. What is your comment on that?

A: The threat to world peace and security posed by international terrorism is spreading lately. China firmly opposes all forms of terrorism and is willing to cooperate with the international community on counter-terrorism.

Q: According to its annual worldwide threats assessment released by the Office of the Director of the US National Intelligence, cyber threats to US national and economic security are increasing. Russia, China, Iran and the DPRK are the top nation states launching cyber attacks. What is China's response to that?

A: Recent years have seen the disclosure of large-scale cyber surveillance the US launched on other countries. As to where the cyber space threats are emanating from, the international community can reach a fair decision.

China's position on opposing hacking attack and other cyber threats is consistent, clear and serious. Hacking is a global issue that needs to be tackled jointly by the international community. Peace, security, openness and cooperation of the cyber space needs to be maintained with collective efforts.

China is a staunch guardian of cyber space peace and stability, as well as an advocate for formulating order and rules in cyber space. This January, China and other members of the Shanghai Cooperation Organization submitted a draft of International Code of Conduct for Information Security to the United Nations, offering opinions on preserving cyber space security. If some country really cares about cyber security, it should contribute constructively to the discussion on international rules and seek common security of the international community.

Q: Prince William will arrive in China next week. Can you give us more details?

A: China welcomes Duke of Cambridge Prince William's visit to China. We hope that through the Duke of Cambridge's visit, the royal family and other sectors in Britain can know China better, the friendship between the two peoples can be deepened, and bilateral relations between China and the UK can be elevated. More details will be released in due course.

Related News:

- Foreign Ministry Spokesperson Hong Lei's Regular Press Conference on February 26, 2015
- Foreign Ministry Spokesperson Hong Lei's Regular Press Conference on February 25, 2015
- Foreign Ministry Spokesperson Hua Chunying's Remarks on Indian Prime Minister Modi Attending Activities in Disputed Area of Eastern Part of China-India Boundary
- Foreign Ministry Spokesperson Hua Chunying's Regular Press Conference on February 17, 2015
- Foreign Ministry Spokesperson Hua Chunying's Regular Press Conference on February 16, 2015
- Foreign Ministry Spokesperson Hua Chunying's Regular Press Conference on February 13, 2015
- Foreign Ministry Spokesperson Hua Chunying's Remarks on Leaders of Russia, Germany, France and Ukraine Reaching Consensus in Minsk Talks
- Foreign Ministry Spokesperson Hua Chunying's Regular Press Conference on February 12, 2015

Annex 587

Ministry of Foreign Affairs of the People's Republic of China, *Foreign Ministry Spokesperson Hong Lei's Regular Press Conference on April 15, 2015* (15 Apr. 2015)

Foreign Ministry Spokesperson Hong Lei's Regular Press Conference on April 15, 2015

2015/04/15

Q: The White House announced on April 14 that President Obama submitted a report to Congress indicating his intent to remove Cuba from the State Sponsors of Terrorism List. What is China's comment on this?

A: We have noted the relevant report. Recent days have witnessed active interactions and the progress of normalization of bilateral relations between the US and Cuba. We welcome and support this. China maintains that the US side should remove all sanctions on and blockade policies towards Cuba at an early date, advance the normalization of bilateral relations and open up a new chapter of bilateral relations. This is in the common interests of the two countries and two peoples, and conducive to regional peace, stability and development.

Q: The 2015 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons will kick off on April 27 in New York. What stance will China hold as a possessor of nuclear weapons in this conference?

A: China holds a consistent and clear stance on the issue of nuclear non-proliferation. The Chinese side attaches great importance to this review conference, and will discuss with all parties on issues of common interest.

Q: First, can you elaborate on President Xi Jinping's upcoming visit to Pakistan? Second, how does the China-Pakistan Economic Corridor contribute to China's "Belt and Road" initiative?

A: On your first question, I have no information to offer at this moment.

On your second question, the China-Pakistan Economic Corridor is an important part of the current economic cooperation between China and Pakistan, and also showcases how China's "Belt and Road" initiative connects with Pakistan's strategy of boosting its economic development. Being a flagship project of the "Belt and Road" initiative, the China-Pakistan Economic Corridor sets up the strategic framework for bilateral pragmatic cooperation. We hope that the building of the China-Pakistan Economic Corridor would further strengthen pragmatic cooperation in various fields, deepen the integration of interests of the two countries and propel common development.

Q: On April 14, Philippine President Benigno Aquino said that China's efforts to stake its claim to the South China Sea sparked fear of all countries, and that China's reclamation activities threatened the access to international shipping lanes and fishing grounds there. While he did not believe that China intended to engage in military conflicts over the territorial disputes with the Philippines and other Asian nations, that remained a possibility. How does China comment on this?

A: The accusation made by the Philippine side is unfounded. China holds a consistent and clear position on the South China Sea issue. The Chinese side maintains that the relevant disputes should be settled through negotiation and consultation by countries directly concerned on the basis of respecting the historical facts and the international law. China will stay committed to jointly safeguarding peace and stability of the South China Sea along with ASEAN countries. China's construction on islands and reefs of the Nansha Islands falls entirely within China's sovereignty. It does not affect or target any country, and is even less likely to threaten the access to international shipping lanes and fishing grounds.

As a matter of fact, the international treaties that lay down the limits of the Philippines' national territory have never included China's Nansha Islands into its territory. Nevertheless, the Philippines has occupied some islands and reefs of China's Nansha Islands by force since the 1970s, which remains the crux and root of the South China Sea disputes between China and the Philippines. The Chinese side urges the Philippine side to respect China's territorial sovereignty, honor its commitment made in bilateral political documents and the Declaration on the Conduct of Parties in the South China Sea, return to the right track of resolving the disputes through direct negotiation and do more things that contribute to China-Philippines relations and regional peace and stability.

Related News:

- Foreign Ministry Spokesperson Hong Lei's Regular Press Conference on April 14, 2015
- Foreign Ministry Spokesperson Hong Lei's Regular Press Conference on April 13, 2015
- Foreign Ministry Spokesperson Hua Chunying's Regular Press Conference on April 10, 2015
- Foreign Ministry Spokesperson Hua Chunying's Regular Press Conference on April 9, 2015
- Foreign Ministry Spokesperson Hua Chunying's Regular Press Conference on April 8, 2015
- Foreign Ministry Spokesperson Hua Chunying's Regular Press Conference on April 7, 2015
- Foreign Ministry Spokesperson Hua Chunying's Announcement of the Temporary Closure of the Chinese Diplomatic and Consular Missions in Yemen
- Foreign Ministry Spokesperson Hua Chunying's Regular Press Conference on April 3, 2015

Annex 588

Ministry of Foreign Affairs of the People's Republic of China, *Foreign Ministry Spokesperson Hong Lei's Regular Press Conference on April 17, 2015* (17 Apr. 2015)

Foreign Ministry Spokesperson Hong Lei's Regular Press Conference on April 17, 2015

2015/04/17

Q: According to media reports, the new round of negotiation on the Iranian nuclear issue will be held in Vienna on April 22. What is China's position on moving forward the Iranian nuclear talks? What does China expect from this round of negotiation?

A: In the Foreign Ministers' meeting recently held in Lausanne, Switzerland, the "core elements" of the comprehensive agreement on the Iranian nuclear issue were clarified by the P5+1 and Iran. This marks a major breakthrough in the Iranian nuclear talks and lays a solid foundation for reaching the comprehensive agreement in the next stage.

From now on to the end of June, more complicated negotiations will be required to conclude the comprehensive agreement. The Chinese side hopes that all parties would set store by what have been achieved so far, accumulate more favorable conditions, get rid of all distractions, make a political judgment promptly and strive to seal the comprehensive agreement as scheduled. It is hoped that all parties can move this round of negotiation forward for constant outcomes, and we are willing to work in tandem with all parties to this end.

Q: First, did China invite the DPRK Supreme Leader Kim Jong-un and the ROK President Park Geun-hye to the commemorations marking the 70th anniversary of the victory of the Chinese People's War of Resistance Against Japanese Aggression? If so, have they accepted the invitation? Second, yesterday the US Congress reached a deal that would pave the way for the Trans-Pacific Partnership (TPP) agreement. Some people say that the TPP agreement will strengthen the influence of the US and Japan in the Asia-Pacific at a time when a free trade agreement in the Asia-Pacific is still at a planning stage. What is China's comment on this?

A: On your first question, we have said on multiple occasions that the Chinese side has invited leaders of all relevant countries to attend the commemorations marking the 70th anniversary of the victory of the Chinese People's War of Resistance Against Japanese Aggression and the World Anti-Fascist War in September. We are still in communication with all parties on the invitation.

On your second question, we are committed to open regionalism. The APEC Economic Leaders' Meeting held in China last year initiated the process of building the Free Trade Area of the Asia-Pacific (FTAAP). It will generate far more economic gains than all existing regional free trade arrangements once it is completed. With regard to the Regional Comprehensive Economic Partnership (RCEP) and the TPP, we believe they can work in parallel as two main routes leading to the building of the FTAAP.

Q: Recent satellite images show that China is accelerating its construction of airstrips in the South China Sea, and neighboring countries are concerned about this. What is your comment?

A: The Chinese side has made a systematic explanation on the construction work on some islands and reefs in the South China Sea last week. I'd like to reiterate that China's construction and maintenance on some garrisoned islands and reefs in the Nansha Islands is to optimize their functions, improve the living and working conditions of personnel stationed there and what's more, to perform China's international responsibility and obligation in maritime search and rescue, disaster prevention and mitigation, marine science and research, meteorological observation, environmental protection, navigation safety, fishery production service and other areas. Relevant construction, which is sensible, justifiable and lawful, falls entirely within China's sovereignty and does not affect or target any other country. What China has done is beyond any reproach, and we hope that relevant parties can take a proper look at this.

After the press conference, the following question was raised: **the G7 Foreign Ministers' Meeting released a declaration on April 15, expressing concerns over unilateral actions which change the status quo and increase tensions in the East and South China Sea. It also expresses support for the establishment of functioning regional mechanisms of cooperation on enhanced maritime security, underscoring the positive role played by the ASEAN-China talks on a Code of Conduct in the South China Sea in adopting confidence-building measures. Does China have any comment on this?**

Spokesperson Hong Lei said that China holds a consistent and clear position on maritime issues in the neighborhood. We maintain that the relevant disputes should be resolved through negotiation and consultation by countries directly concerned, and stay committed to safeguarding regional peace and stability and pushing for mutually beneficial and win-win cooperation along with countries concerned. The situation of this region is generally stable, and relevant cooperation has been moved forward with positive results. It is hoped that relevant countries would fully respect the efforts by regional countries to safeguard regional peace and stability, and do more things that contribute to regional peace and stability.

Related News:

- Foreign Ministry Spokesperson Hong Lei's Regular Press Conference on April 16, 2015
- Foreign Ministry Spokesperson Hong Lei's Regular Press Conference on April 15, 2015
- Foreign Ministry Spokesperson Hong Lei's Regular Press Conference on April 14, 2015
- Foreign Ministry Spokesperson Hong Lei's Regular Press Conference on April 13, 2015
- Foreign Ministry Spokesperson Hua Chunying's Regular Press Conference on April 10, 2015
- Foreign Ministry Spokesperson Hua Chunying's Regular Press Conference on April 9, 2015
- Foreign Ministry Spokesperson Hua Chunying's Regular Press Conference on April 8, 2015
- Foreign Ministry Spokesperson Hua Chunying's Regular Press Conference on April 7, 2015

Contact us Address: No. 2, Chaoyangmen Nandajie, Chaoyang District, Beijing, 100701 Tel: 86-10-65961114

Annex 589

Ministry of Foreign Affairs of the People's Republic of China, *Foreign Ministry Spokesperson Hong Lei's Regular Press Conference on April 27, 2015* (27 Apr. 2015)

Foreign Ministry Spokesperson Hong Lei's Regular Press Conference on April 27, 2015

Nepal was struck by an 8.1 magnitude earthquake on April 25 and suffered from heavy casualties and property damages. Nepal is a friendly neighbor of China, and the Chinese government and people express sympathies to the Nepali government and people for their ordeals. President Xi Jinping, Premier Li Keqiang and Foreign Minister Wang Yi immediately sent messages of condolences to their Nepali counterparts separately, saying that the Chinese government and people would always stand by the Nepali government and people at this trying time, and that the Chinese side is willing to provide all kinds of disaster relief assistance to Nepal to the best of its capacity. The Foreign Ministry took the lead to establish an emergency response mechanism, and Foreign Minister Wang Yi convened an inter-ministerial emergency coordination meeting. Departments concerned took instant actions to organize disaster relief staff and supplies, make the good use of the "golden 72 hours" and offer emergency disaster relief support to Nepal.

China's International Rescue Team consisting of 62 people arrived in Kathmandu on the morning of April 26 local time. Rescue work was carried out upon their arrival, and one person was successfully rescued in the afternoon the same day. The 58-people medical team sent by the Chinese government arrived in Nepal on the morning of April 27 for treatment and rescue. The Chinese medical team assisting Nepal which contains 17 people also threw themselves into the local rescue work. The rescue team and medical team sent by the Chinese military with a total number of 170 people will set off for Kathmandu today in different batches. The first 186 tons of emergency supplies from the Chinese government, which contain tents, blankets and etc., will be delivered to Nepal on four different flights today and tomorrow. Some provinces, districts, cities, civil groups and individuals from China also reached out to Nepal, with some sending rescue personnel and some donating money and goods.

The Chinese side will try its best to provide Nepal with various kinds of assistance in light of the situation in the earthquake-hit areas and the actual needs of the Nepali side. We believe that under the leadership of the Nepali government and with the tremendous help of the international community, the Nepali government and people will definitely tide over the difficulties and survive the disaster.

The CPC Central Committee and the State Council attach great importance to the security of Chinese citizens in Nepal, and has made instructions to verify the casualties of Chinese citizens and damages suffered by Chinese institutions in Nepal. With the coordination of the Foreign Ministry and the Civil Aviation Administration of China, domestic airlines such as Air China, China Eastern Airlines, China Southern Airlines and Sichuan Airlines dispatched extra flights to pick up Chinese citizens stranded at Kathmandu airport in addition to the 7 Nepal-bound flights every day. The Chinese Embassy in Nepal also sent staff to the airport, coordinating flights and helping passengers board the plane. Up to 8 a.m. today, over a thousand stranded passengers have returned to China on 7 civil flights. Another 8 flights are expected to pick up Chinese citizens in Nepal today.

The earthquake triggered an avalanche in Mount Qomolangma, causing 1 missing, 1 death and 8 injuries to a Chinese mountaineering team on the southern route of the mountain. Thanks to the joint efforts of all parties, all the injured and some of the climbers have been transferred to a safe area and properly settled there, while others are still on their way of evacuation.

The earthquake also left 2 dead and 10 injured in a Chinese company undertaking projects in Nepal. The Foreign Ministry is going all out to coordinate helicopters from the military for the rescue work.

The Center for Consular Assistance and Protection of the Chinese Foreign Ministry has issued a safety warning, advising Chinese citizens not to visit Nepal for the time being. The Foreign Ministry and the Chinese Embassy in Nepal will further check on how Chinese citizens in Nepal are affected and offer all

necessary assistance.

Q: How many Chinese citizens are killed by the Nepali earthquake? According to Xinhua's report, the death toll is 4. Has it changed now? There is also media report saying that around 2,000 to 3,000 Chinese citizens are still in Nepal. Can you give us the specific number?

A: The earthquake caused the death of 4 Chinese citizens in Nepal, including 1 tourist, 1 mountaineer on the southern route of Mount Qomolangma and 2 employees of a Chinese company undertaking projects in Nepal. It is known that before the earthquake, there were around 4,000 Chinese tourists in Nepal, including about 1,000 traveling in groups and about 3,000 traveling on their own. We are sending extra flights to Nepal, trying to take back Chinese citizens there as soon as possible. 1,000-odd tourists have now returned to China, and more efforts will be made and resources be mobilized as long as there is a need in this regard.

Meanwhile, the Chinese Embassy in Nepal and the "12308" consular protection hotline of the Foreign Ministry have been answering phone calls from Chinese citizens in Nepal, learning about their situation, clarifying their location, offering assistance and organizing them to return to China at their will.

Q: According to medial report, the presidential election in Kazakhstan was held smoothly, and incumbent President Nazarbayev was re-elected. What is China's comment on this?

A: The presidential election of Kazakhstan was concluded successfully with sitting President Nursultan Nazarbayev being re-elected. President Xi Jinping has sent a message of congratulations to Mr. Nazarbayev.

The Chinese side respects the choice made by the Kazakh people, and supports Kazakhstan in pursuing a development path that suits its national conditions. It is believed that Kazakhstan will maintain political stability and economic development, and play a bigger role in international affairs.

As comprehensive strategic partners, China and Kazakhstan always enjoy a good momentum driving the sound and rapid development of bilateral relations. China stands ready to work with the Kazakh side to implement the various consensus reached by the leadership of the two countries and bring Sino-Kazakh relations to a new level.

Q: The statement to be released by the ASEAN Summit today will voice concerns about China's reclamation in the South China Sea, saying that relevant activities may undermine peace, security and stability in the region. What is China's comment on that?

A: The Chinese side has a clear and long-standing stance on the issue of the South China Sea. We have gone into details on the purposes and functions of the construction work on the islands and reefs of Nansha. What must be stressed is that relevant construction which is reasonable, justified and lawful, is well within China's sovereignty. It does not impact or target any country, and is thus beyond reproach. It is unjustifiable for a few countries to hype up this issue on relevant ASEAN conference. The Chinese side is firmly opposed to a few countries' oblique charges against China as well as the pursuit of their private ends at the expense of the overall China-ASEAN relations.

China is a staunch force upholding regional peace and stability. We will continue to support and advocate that the South China Sea issue be addressed with the "dual-track" approach. It is hoped that relevant countries will meet China halfway to jointly safeguard regional peace and stability as well as the overall interests of China-ASEAN relations.

Q: Some people say that the Chinese government deliberately puts off the formulation of a Code of Conduct (COC) in the South China Sea, hoping to gain a firm foothold in the South China Sea before making any further plan. What is your response?

A: I have elaborated on China's position concerning the relevant issue. I'd like to underscore that China's construction on islands and reefs of Nansha is mainly for civilian purposes, which will be conducive to safeguarding the safety of navigation, protecting the ecological environment and ensuring the safety of fishing activities in the South China Sea. Regional countries will benefit from these functions once the construction work is done. All parties concerned have held productive negotiations and gained positive outcomes on the formulation of the COC under the framework of implementing the Declaration on the Conduct of Parties in the South China Sea (DOC). The Chinese side will make positive efforts to implement the DOC together with ASEAN countries, step up negotiations on the COC, deepen and expand pragmatic cooperation and strive to reach the COC based on consent at an early date. As I just pointed out, the Chinese side is willing to work in tandem with countries concerned to maintain the overall interests of China-ASEAN relations and jointly safeguard peace and stability of the South China Sea.

Related News:

- Foreign Ministry Spokesperson Hong Lei's Regular Press Conference on April 24, 2015
- Foreign Ministry Spokesperson Hong Lei's Regular Press Conference on April 23, 2015
- Foreign Ministry Spokesperson Hong Lei's Regular Press Conference on April 22, 2015
- Foreign Ministry Spokesperson Hong Lei's Regular Press Conference on April 21, 2015
- Foreign Ministry Spokesperson Hong Lei's Regular Press Conference on April 20, 2015
- Foreign Ministry Spokesperson Hong Lei's Regular Press Conference on April 17, 2015
- Foreign Ministry Spokesperson Hong Lei's Regular Press Conference on April 16, 2015
- Foreign Ministry Spokesperson Hong Lei's Regular Press Conference on April 15, 2015

Annex 590

Ministry of Foreign Affairs of the People's Republic of China, *Foreign Ministry Spokesperson Hua Chunying's Regular Press Conference on May 27, 2015* (27 May 2015)

Foreign Ministry Spokesperson Hua Chunying's Regular Press Conference on May 27, 2015

Q: China has clearly taken a more muscular military stance this week. What is China trying to say to the world? How do you think the world should read into this?

A: I suppose you are referring to the white paper on China's military strategy published by the Chinese government yesterday. The Defense Ministry Spokesperson went into details about the background, content and China's considerations concerning the white paper yesterday at a press conference held by the Information Office of the State Council. The white paper presents a systemic analysis of China's external environment, which still poses diverse and complex security threats to China despite being generally favorable. The Chinese armed forces must undertake due strategic tasks and adopt the strategic guideline of active defense. When to publish the white paper is decided by its writing and formulating process. It has nothing to do with the current international and regional security landscape and China's relations with other countries.

Q: Joshua Wong, the convenor of the Hong Kong student activist group "Scholarism" was denied entry into Malaysia. A Malaysian official said yesterday that the order of rejection was issued because Wong's speech might hurt Malaysia's ties with China. What is China's comment on that?

A: I have seen the report, but I am not aware of the specifics. We respect Malaysia's exercise of entry and exit administration in accordance with the law.

Q: Some countries view China's construction work in the South China Sea as redefining the borders. Does China attempt to reinforce the redefined borders through growing naval power and reclamation efforts?

A: I notice similar remarks by the US State Department Spokesperson yesterday. It seems to me that relevant remarks stealthily replaced the legal concept to mislead the public. China has indisputable sovereignty over the Nansha Islands and the adjacent waters. We have put it many times that China's sovereignty and relevant claims of rights in the South China Sea have been formed in the long course of history and upheld by successive Chinese governments. This position has adequate historical and legal basis. There is no need to assert or reinforce China's territorial sovereignty through construction activities on relevant islands and reefs.

China carries out lawful, justified and reasonable construction activities within its own sovereignty. Even some senior officials from the US said in public that China's construction on relevant islands and reefs did not violate the international law. So why is there still tension in the area? Everyone is fully aware of the reason, which is that some countries keep playing up tensions and tarnishing the image of China for self-serving interests. It is hoped that all parties concerned would develop a responsible, comprehensive and unbiased view of the current situation, deal with relevant issues rationally and calmly, and make genuine and constructive efforts to maintain peace and stability of the South China Sea instead of stirring up troubles.

Q: Today Vietnamese and Philippine troops played soccer and volleyball on an island in the South China Sea. Are you concerned that the growing security cooperation between the two countries would obstruct China's claims in the South China Sea?

A: I did not see the report you mentioned. China's longstanding position is that we will not provoke others, but we are determined and capable of safeguarding national sovereignty and territorial integrity.

Q: The US Defense Ministry Spokesperson expressed welcome to China's white paper on military strategy, but reiterated that the US will continue to carry out reconnaissance activities near the Nansha islands and reefs so as to uphold the freedom of over-flight and navigation in relevant areas. How does China respond?

A: Some people from the US have talked quite a lot about the freedom of navigation recently. If you take a close look at relevant international law, the United Nations Convention on the Law of the Sea (UNCLOS) for instance, you will find out that the freedom of over-flight and navigation in no way means that foreign military vessels and planes can defy or even impair other country's sovereignty, lawful rights and safety of over-flight and navigation without restrictions. The UNCLOS specifies that the peace, good order or security of coastal countries shall not be undermined. The UNCLOS does not entitle military vessels and planes of any country to go against the international law, willfully infringe upon other country's sovereignty, lawful rights and navigation and over-flight safety. We are against a few countries' moves to defy or even impair other country's sovereignty, lawful rights and safety of over-flight and navigation by using navigation freedom as an excuse.

With regard to activities by US vessels and aircraft in the South China Sea, China has stated on multiple occasions that the close reconnaissance of Chinese maritime features by US vessels and planes is very likely to cause miscalculation and untoward incidents in the waters and airspace. It is utterly dangerous and irresponsible. We hope that the US can take a responsible attitude, follow the spirit of safeguarding peace and stability of the South China Sea, view the relevant issue in a rational and unbiased manner and cease all irresponsible provocations in words and deeds.

Q: In response to "highlighting maritime military struggle and maritime preparation for military struggle (PMS)" as was written in China's white paper on military strategy, Japanese Chief Cabinet Secretary Yoshihide Suga said that the use of force should be avoided under all circumstances. He also said that Japan has earned high praise from the world as a peaceful country for the last seven decades since the end of the Second World War. What is China's comment?

A: The Chinese nation has struggled under the invasion and bullying of foreign powers for a long period of time since modern times. The Chinese people's memory of that painful experience cannot be erased. No one cherishes peace more than we do. We treasure peace and oppose wars, follow a path of peaceful development and uphold a national defense policy that is defensive in nature. History tells us that it is necessary to build a national defense force commensurate with the demand of national security and the level of economic development. No country is allowed to infringe upon China's sovereignty and territorial integrity.

Q: The Foreign Correspondents' Club Of China issued a report the other day, saying that the working conditions for foreign journalists in China are getting worse. Does the Foreign Ministry have any response to that?

A: I did not see the report you mentioned. As you are all living and working in China, you must have seen the endeavor of the Chinese government, the Information Department of the Foreign Ministry included, to facilitate, support and assist with your interviews and other work in China. China is a rich mine of news, where there are a lot of things worth reporting. We will do our best to provide convenience and services to your interviews. No matter which country you are in, while enjoying the convenience and services for doing interviews provided by the government of the receiving country, you should abide by local laws and regulations. Feel free to contact us, if you encounter any problems or difficulties during your work in China. We are ready to do all that we can to help.

Related News:

- Foreign Ministry Spokesperson Hua Chunying's Regular Press Conference on May 26, 2015
- Foreign Ministry Spokesperson Hua Chunying's Regular Press Conference on May 25, 2015
- Foreign Ministry Spokesperson Hong Lei's Regular Press Conference on May 22, 2015
- Foreign Ministry Spokesperson Hong Lei's Regular Press Conference on May 21, 2015
- Foreign Ministry Spokesperson Hong Lei's Regular Press Conference on May 20, 2015
- Foreign Ministry Spokesperson Hong Lei's Regular Press Conference on May 19, 2015
- Foreign Ministry Spokesperson Hong Lei's Regular Press Conference on May 18, 2015
- Foreign Ministry Spokesperson Hua Chunying's Regular Press Conference on May 15, 2015

Annex 591

Note Verbale from the Permanent Mission of the Republic of Korea to the United Nations to the Secretary-General of the United Nations, No. MUN/046/09 (27 Feb. 2009)

REPUBLIC OF KOREA

PERMANENT MISSION TO THE UNITED NATIONS

27 February 2009

MUN/046/09

The Permanent Mission of the Republic of Korea to the United Nations presents its compliments to the Secretary-General of the United Nations and has the honour to refer to the submission made by Japan to the Commission on the Limits of the Continental Shelf (hereinafter referred to as "the Commission") on November 12, 2008.

The Permanent Mission of the Republic of Korea has further the honour to make a comment regarding the data in the executive summary provided by Japan, in accordance with Annex III, section II.2 (a) (v) of the Rules of Procedure of the Commission, which permits the State Parties to the United Nations Convention on the Law of the Sea (hereinafter referred to as "the Convention") and the Member States of the United Nations to make comments on the submission by a coastal state.

Article 121, paragraph 3 of the Convention clearly states that "rocks which cannot sustain human habitation or economic life of their own shall have no exclusive economic zone or continental shelf."

In this regard, the Republic of Korea has consistently held the view that Oki-no-Tori Shima, considered as a rock under Article 121, paragraph 3 of the Convention, is not entitled to any continental shelf extending to or beyond 200 nautical miles from the baselines from which the breadth of the territorial sea is measured, as defined in Article 76 of the Convention.

The Republic of Korea, furthermore, believes that the legal status of Oki-no-Tori Shima is not a scientific or technical matter involving the establishment of the outer limits of the continental shelf, but rather a matter concerning the interpretation and application of Article 121 of the Convention, which is beyond the purview of the Commission.

Consequently, the Republic of Korea respectfully requests that the Commission set aside the portions relating to Oki-no-Tori Shima from its action on the submission made by Japan.

The Permanent Mission of the Republic of Korea to the United Nations avails itself of this opportunity to renew to the Secretary-General of the United Nations the assurances of its highest consideration.

Secretary-General
The United Nations
New York

MISSION OF THE REPUBLIC OF KOREA
UNITED NATIONS (2)
대한민국대표부

Annex 592

Note Verbale from the Permanent Mission of the Republic of Korea to the United Nations to the Secretary-General of the United Nations, No. MUN/230/11 (11 Aug. 2011)

REPUBLIC OF KOREA

PERMANENT MISSION TO THE UNITED NATIONS

MUN/230 /11 11 August 2011

The Permanent Mission of the Republic of Korea to the United Nations presents its compliments to the Secretary-General of the United Nations and has the honour to refer to the submission made by Japan to the Commission on the Limits of the Continental Shelf (hereinafter referred to as "the Commission") on 12 November 2008, and to the Note Verbale MUN/046/09 from the Permanent Mission of the Republic of Korea to the Secretary-General of the United Nations dated 27 February 2009.

The Permanent Mission of the Republic of Korea has further the honour to remind the Commission of Korea's comments made in the above-mentioned Note Verbale. The Republic of Korea reiterates that Oki-no-Tori Shima is clearly a rock under Article 121, paragraph 3 of the United Nations Convention on the Law of the Sea (hereinafter referred to as "the Convention"), and thus it is not entitled to any continental shelf extending to or beyond 200 nautical miles from the baselines from which the breadth of the territorial sea is measured. Therefore, the legal status of Oki-no-Tori Shima is not a scientific or technical matter involving the establishment of the outer limits of the continental shelf, but rather a matter concerning the interpretation and application of Article 121 of the Convention, which is beyond the purview of the Commission.

In this regard, the Republic of Korea has the honour to draw attention to the Chairman's statement at the 23rd session of the Commission, which acknowledged that the Commission has no role on matters relating to the legal interpretation of Article 121 of the Convention and to the Commission's decision at its 24th session, which ruled that the Commission shall not take action on the part of the recommendations prepared by the Subcommission in relation to Oki-no-Tori Shima.

The Republic of Korea respectfully requests that the Commission take no action on the part of recommendations prepared by the Subcommission in relation to Oki-no-Tori Shima in accordance with its decision made at the 24th session.

The Permanent Mission of the Republic of Korea to the United Nations avails itself of this opportunity to renew to the Secretary-General of the United Nations the assurances of its highest consideration.

Secretary-General
The United Nations
New York

MISSION OF THE REPUBLIC OF KOREA
UNITED NATIONS (2)
대한민국대표부

Annex 593

U.S. National Imagery and Mapping Agency, *Pub No. 9: The American Practical Navigator: An Epitome of Navigation* (2002 ed.)

Pub. No. 9

THE AMERICAN PRACTICAL NAVIGATOR

AN EPITOME OF NAVIGATION

ORIGINALLY BY

NATHANIEL BOWDITCH, LL.D.

2002 BICENTENNIAL EDITION

Prepared and published by the
NATIONAL IMAGERY AND MAPPING AGENCY
Bethesda, Maryland

NSN 7642014014652
NIMA REF. NO. NVPUB9V1

For sale by the Superintendant of Documents, U.S. Government Printing Office
Internet: bookstore.gpo.gov Phone: toll free (866) 512-1800; DC area (202) 512-1800
Fax: (202) 512-2250 Mail Stop: SSOP, Washington, DC 20402-0001

CHAPTER 3

NAUTICAL CHARTS

CHART FUNDAMENTALS

300. Definitions

A **nautical chart** represents part of the spherical earth on a plane surface. It shows water depth, the shoreline of adjacent land, prominent topographic features, aids to navigation, and other navigational information. It is a work area on which the navigator plots courses, ascertains positions, and views the relationship of the ship to the surrounding area. It assists the navigator in avoiding dangers and arriving safely at his destination.

Originally hand-drawn on sheepskin, traditional nautical charts have for generations been printed on paper. **Electronic charts** consisting of a digital data base and a display system are in use and are replacing paper charts aboard many vessels. An electronic chart is not simply a digital version of a paper chart; it introduces a new navigation methodology with capabilities and limitations very different from paper charts. The electronic chart is the legal equivalent of the paper chart if it meets certain International Maritime Organization specifications. See Chapter 14 for a complete discussion of electronic charts.

Should a marine accident occur, the nautical chart in use at the time takes on legal significance. In cases of grounding, collision, and other accidents, charts become critical records for reconstructing the event and assigning liability. Charts used in reconstructing the incident can also have tremendous training value.

301. Projections

Because a cartographer cannot transfer a sphere to a flat surface without distortion, he must project the surface of a sphere onto a **developable surface**. A developable surface is one that can be flattened to form a plane. This process is known as **chart projection**. If points on the surface of the sphere are projected from a single point, the projection is said to be **perspective** or **geometric**.

As the use of electronic charts becomes increasingly widespread, it is important to remember that the same cartographic principles that apply to paper charts apply to their depiction on video screens.

302. Selecting a Projection

Each projection has certain preferable features. However, as the area covered by the chart becomes smaller, the differences between various projections become less noticeable. On the largest scale chart, such as of a harbor, all projections are practically identical. Some desirable properties of a projection are:

1. True shape of physical features
2. Correct angular relationships
3. Equal area (Represents areas in proper proportions)
4. Constant scale values
5. Great circles represented as straight lines
6. Rhumb lines represented as straight lines

Some of these properties are mutually exclusive. For example, a single projection cannot be both conformal and equal area. Similarly, both great circles and rhumb lines cannot be represented on a single projection as straight lines.

303. Types of Projections

The type of developable surface to which the spherical surface is transferred determines the projection's classification. Further classification depends on whether the projection is centered on the equator (equatorial), a pole (polar), or some point or line between (oblique). The name of a projection indicates its type and its principal features.

Mariners most frequently use a **Mercator projection**, classified as a **cylindrical projection** upon a plane, the cylinder tangent along the equator. Similarly, a projection based upon a cylinder tangent along a meridian is called **transverse** (or inverse) **Mercator** or **transverse** (or inverse) **orthomorphic**. The Mercator is the most common projection used in maritime navigation, primarily because rhumb lines plot as straight lines.

In a **simple conic projection**, points on the surface of the earth are transferred to a tangent cone. In the **Lambert conformal projection**, the cone intersects the earth (a secant cone) at two small circles. In a **polyconic projection**, a series of tangent cones is used.

In an **azimuthal** or **zenithal projection**, points on the earth are transferred directly to a plane. If the origin of the

point. A single subdivided line or bar for use over an entire chart is shown only when the chart is of such scale and projection that the scale varies a negligible amount over the chart, usually one of about 1:75,000 or larger. Since 1 minute of latitude is very nearly equal to 1 nautical mile, the latitude scale serves as an approximate graphic scale. On most nautical charts the east and west borders are subdivided to facilitate distance measurements.

On a Mercator chart the scale varies with the latitude. This is noticeable on a chart covering a relatively large distance in a north-south direction. On such a chart the border scale near the latitude in question should be used for measuring distances.

Of the various methods of indicating scale, the graphical method is normally available in some form on the chart. In addition, the scale is customarily stated on charts on which the scale does not change appreciably over the chart.

The ways of expressing the scale of a chart are readily interchangeable. For instance, in a nautical mile there are about 72,913.39 inches. If the natural scale of a chart is 1:80,000, one inch of the chart represents 80,000 inches of the earth, or a little more than a mile. To find the exact amount, divide the scale by the number of inches in a mile, or 80,000/72,913.39 = 1.097. Thus, a scale of 1:80,000 is the same as a scale of 1.097 (or approximately 1.1) miles to an inch. Stated another way, there are: 72,913.39/80,000 = 0.911 (approximately 0.9) inch to a mile. Similarly, if the scale is 60 nautical miles to an inch, the representative fraction is 1:(60 x 72,913.39) = 1:4,374,803.

A chart covering a relatively large area is called a **small-scale chart** and one covering a relatively small area is called a **large-scale chart**. Since the terms are relative, there is no sharp division between the two. Thus, a chart of scale 1:100,000 is large scale when compared with a chart of 1:1,000,000 but small scale when compared with one of 1:25,000.

As scale decreases, the amount of detail which can be shown decreases also. Cartographers selectively decrease the detail in a process called **generalization** when producing small scale charts using large scale charts as sources. The amount of detail shown depends on several factors, among them the coverage of the area at larger scales and the intended use of the chart.

325. Chart Classification by Scale

Charts are constructed on many different scales, ranging from about 1:2,500 to 1:14,000,000. Small-scale charts covering large areas are used for route planning and for offshore navigation. Charts of larger scale, covering smaller areas, are used as the vessel approaches land. Several methods of classifying charts according to scale are used in various nations. The following classifications of nautical charts are used by the National Ocean Service.

Sailing charts are the smallest scale charts used for planning, fixing position at sea, and for plotting the dead reckoning while proceeding on a long voyage. The scale is generally smaller than 1:600,000. The shoreline and topography are generalized and only offshore soundings, the principal navigational lights, outer buoys, and landmarks visible at considerable distances are shown.

General charts are intended for coastwise navigation outside of outlying reefs and shoals. The scales range from about 1:150,000 to 1:600,000.

Coastal charts are intended for inshore coastwise navigation, for entering or leaving bays and harbors of considerable width, and for navigating large inland waterways. The scales range from about 1:50,000 to 1:150,000.

Harbor charts are intended for navigation and anchorage in harbors and small waterways. The scale is generally larger than 1:50,000.

In the classification system used by NIMA, the sailing charts are incorporated in the general charts classification (smaller than about 1:150,000); those coast charts especially useful for approaching more confined waters (bays, harbors) are classified as approach charts. There is considerable overlap in these designations, and the classification of a chart is best determined by its use and by its relationship to other charts of the area. The use of insets complicates the placement of charts into rigid classifications.

CHART ACCURACY

326. Factors Relating to Accuracy

The accuracy of a chart depends upon the accuracy of the hydrographic surveys and other data sources used to compile it and the suitability of its scale for its intended use.

One can sometimes estimate the accuracy of a chart's surveys from the source notes given in the title of the chart. If the chart is based upon very old surveys, use it with caution. Many early surveys were inaccurate because of the technological limitations of the surveyor.

The number of soundings and their spacing indicates the completeness of the survey. Only a small fraction of the soundings taken in a thorough survey are shown on the chart, but sparse or unevenly distributed soundings indicate that the survey was probably not made in detail. See Figure 326a and Figure 326b. Large blank areas or absence of depth contours generally indicate lack of soundings in the area. Operate in an area with sparse sounding data only if required and then only with extreme caution. Run the echo sounder continuously and operate at a reduced speed.

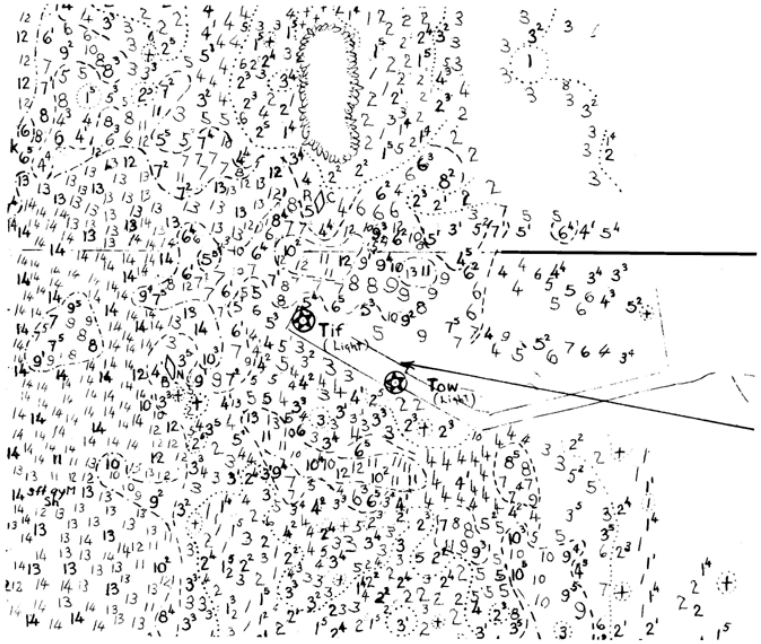


Figure 326a. Part of a "boat sheet," showing the soundings obtained in a survey.

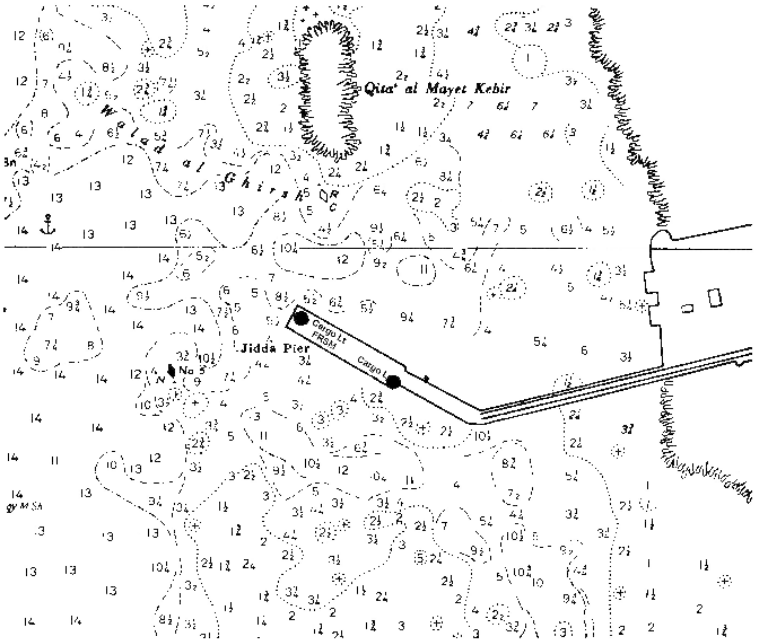


Figure 326b. Part of a nautical chart made from the boat sheet of Figure 326a. *Compare the number of soundings in the two figures.*

Sparse sounding information does not necessarily indicate an incomplete survey. Relatively few soundings are shown when there is a large number of depth contours, or where the bottom is flat, or gently and evenly sloping. Additional soundings are shown when they are helpful in indicating the uneven character of a rough bottom.

Even a detailed survey may fail to locate every rock or pinnacle. In waters where they might be located, the best method for finding them is a wire drag survey. Areas that have been dragged may be indicated on the chart by limiting lines and green or purple tint and a note added to show the effective depth at which the drag was operated.

Changes in bottom contours are relatively rapid in areas such as entrances to harbors where there are strong currents or heavy surf. Similarly, there is sometimes a tendency for dredged channels to shoal, especially if they are surrounded by sand or mud, and cross currents exist. Charts often contain notes indicating the bottom contours are known to change rapidly.

The same detail cannot be shown on a small-scale chart as on a large scale chart. On small-scale charts, detailed information is omitted or "generalized" in the areas covered by larger scale charts. The navigator should use the largest scale chart available for the area in which he is operating, especially when operating in the vicinity of hazards.

Charting agencies continually evaluate both the detail and the presentation of data appearing on a chart. Development of a new navigational aid may render previous charts inadequate. The development of radar, for example, required upgrading charts which lacked the detail required for reliable identification of radar targets.

After receiving a chart, the user is responsible for keeping it updated. Mariner's reports of errors, changes, and suggestions are useful to charting agencies. Even with modern automated data collection techniques, there is no substitute for on-sight observation of hydrographic conditions by experienced mariners. This holds true especially in less frequently traveled areas of the world.

CHART READING

327. Chart Dates

NOS charts have two dates. At the top center of the chart is the date of the first edition of the chart. In the lower left corner of the chart is the current edition number and date. This date shows the latest date through which *Notice to Mariners* were applied to the chart. Any subsequent change will be printed in the *Notice to Mariners*. Any notices which accumulate between the chart date and the announcement date in the *Notice to Mariners* will be given with the announcement. Comparing the dates of the first and current editions gives an indication of how often the chart is updated. Charts of busy areas are updated more frequently than those of less traveled areas. This interval may vary from 6 months to more than ten years for NOS charts. This update interval may be much longer for certain NIMA charts in remote areas.

New editions of charts are both demand and source driven. Receiving significant new information may or may not initiate a new edition of a chart, depending on the demand for that chart. If it is in a sparsely-traveled area, other priorities may delay a new edition for several years. Conversely, a new edition may be printed without the receipt of significant new data if demand for the chart is high and stock levels are low. *Notice to Mariners* corrections are always included on new editions.

NIMA charts have the same two dates as the NOS charts; the current chart edition number and date is given in the lower left corner. Certain NIMA charts are reproductions of foreign charts produced under joint agreements with a number of other countries. These charts, even though of recent date, may be based on foreign charts of considerably earlier date. Further, new editions of the foreign chart will not necessarily result in a new edition of the NIMA reproduction. In these cases, the foreign chart is the better chart to use.

328. Title Block

The chart title block should be the first thing a navigator looks at when receiving a new edition chart. Refer to Figure 328. The title itself tells what area the chart covers. The chart's scale and projection appear below the title. The chart will give both vertical and horizontal datums and, if necessary, a datum conversion note. Source notes or diagrams will list the date of surveys and other charts used in compilation.

329. Shoreline

The shoreline shown on nautical charts represents the line of contact between the land and water at a selected vertical datum. In areas affected by tidal fluctuations, this is usually the mean high-water line. In confined coastal waters of diminished tidal influence, a mean water level line may be used. The shoreline of interior waters (rivers, lakes) is usually a line representing a specified elevation above a

BALTIC SEA

GERMANY—NORTH COAST

DAHMESHÖVED TO WISMAR

From German Surveys

SOUNDINGS IN METERS

reduced to the approximate level of Mean Sea Level

HEIGHTS IN METERS ABOVE MEAN SEA LEVEL

MERCATOR PROJECTION

EUROPEAN DATUM

SCALE 1:50,000

Figure 328. A chart title block.

selected datum. A shoreline is symbolized by a heavy line. A broken line indicates that the charted position is approximate only. The nature of the shore may be indicated.

If the low water line differs considerably from the high water line, then a dotted line represents the low water line. If the bottom in this area is composed of mud, sand, gravel or stones, the type of material will be indicated. If the bottom is composed of coral or rock, then the appropriate symbol will be used. The area alternately covered and uncovered may be shown by a tint which is usually a combination of the land and water tint.

The apparent shoreline shows the outer edge of marine vegetation where that limit would appear as shoreline to the mariner. It is also used to indicate where marine vegetation prevents the mariner from defining the shoreline. A light line symbolizes this shoreline. A broken line marks the inner edge when no other symbol (such as a cliff or levee) furnishes such a limit. The combined land-water tint or the land tint marks the area between inner and outer limits.

330. Chart Symbols

Much of the information contained on charts is shown by symbols. These symbols are not shown to scale, but they indicate the correct position of the feature to which they refer. The standard symbols and abbreviations used on charts published by the United States of America are shown in ***Chart No. 1, Nautical Chart Symbols and Abbreviations***. See Figure 330.

Electronic chart symbols are, within programming and display limits, much the same as printed ones. The less expensive electronic charts have less extensive symbol libraries, and the screen's resolution may affect the presentation detail.

Most of the symbols and abbreviations shown in U.S. *Chart No. 1* agree with recommendations of the International Hydrographic Organization (IHO). The layout is explained in the general remarks section of *Chart No. 1*.

The symbols and abbreviations on any given chart may differ somewhat from those shown in *Chart No. 1*. In addition, foreign charts may use different symbology. When using a foreign chart, the navigator should have available the *Chart No. 1* from the country which produced the chart.

Chart No. 1 is organized according to subject matter, with each specific subject given a letter designator. The general subject areas are General, Topography, Hydrography, Aids and Services, and Indexes. Under each heading, letter designators further define subject areas, and individual numbers refer to specific symbols.

Information in *Chart No. 1* is arranged in columns. The first column contains the IHO number code for the symbol in question. The next two columns show the symbol itself, in NOS and NIMA formats. If the formats are the same, the two columns are combined into one. The next column is a text description of the symbol, term, or abbreviation. The next column contains the IHO standard symbol. The last column shows certain symbols used on foreign reproduction charts produced by NIMA.

331. Lettering

Except on some modified reproductions of foreign charts, cartographers have adopted certain lettering stan-

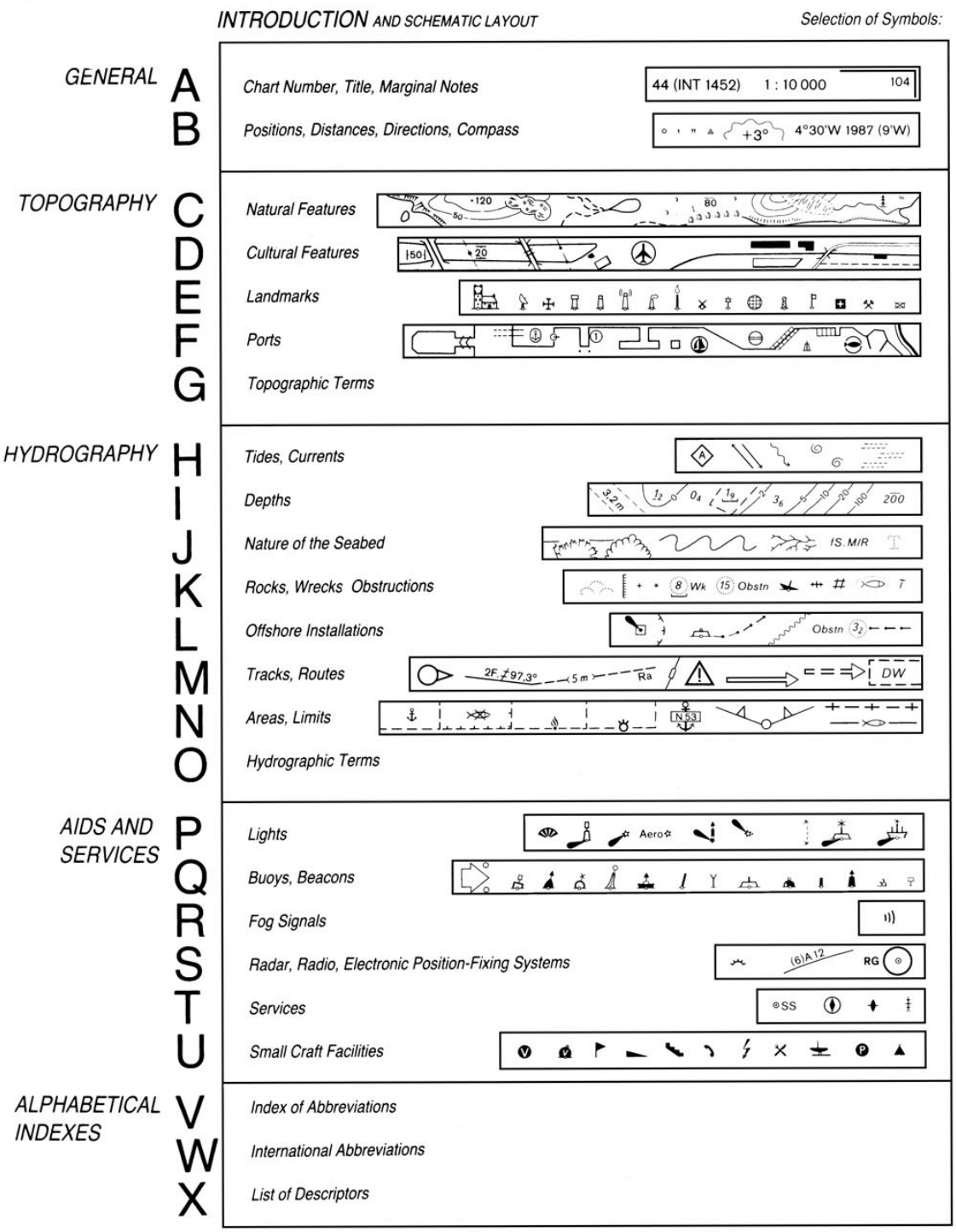


Figure 330. Contents of U.S. Chart No. 1.

dards. Vertical type is used for features which are dry at high water and not affected by movement of the water; slanting type is used for underwater and floating features.

There are two important exceptions to the two general rules listed above. Vertical type is not used to represent heights above the waterline, and slanting type is not used to indicate soundings, except on metric charts. Section 332 below discusses the conventions for indicating soundings.

Evaluating the type of lettering used to denote a feature, one can determine whether a feature is visible at high tide. For instance, a rock might bear the title "Rock" whether or not it extends above the surface. If the name is given in vertical letters, the rock constitutes a small islet; if in slanting type, the rock constitutes a reef, covered at high water.

332. Soundings

Charts show soundings in several ways. Numbers denote individual soundings. These numbers may be either vertical or slanting; both may be used on the same chart, distinguishing between data based upon different U.S. and foreign surveys, different datums, or smaller scale charts.

Large block letters at the top and bottom of the chart indicate the unit of measurement used for soundings. SOUNDINGS IN FATHOMS indicates soundings are in fathoms or fathoms and fractions. SOUNDINGS IN FATHOMS AND FEET indicates the soundings are in fathoms and feet. A similar convention is followed when the soundings are in meters or meters and tenths.

A **depth conversion scale** is placed outside the neatline on the chart for use in converting charted depths to feet, meters, or fathoms. "No bottom" soundings are indicated by a number with a line over the top and a dot over the line. This indicates that the spot was sounded to the depth indicated without reaching the bottom. Areas which have been wire dragged are shown by a broken limiting line, and the clear effective depth is indicated, with a characteristic symbol under the numbers. On NIMA charts a purple or green tint is shown within the swept area.

Soundings are supplemented by **depth contours**, lines connecting points of equal depth. These lines present a picture of the bottom. The types of lines used for various depths are shown in Section I of Chart No. 1. On some charts depth contours are shown in solid lines; the depth represented by each line is shown by numbers placed in breaks in the lines, as with land contours. Solid line depth contours are derived from intensively developed hydrographic surveys. A broken or indefinite contour is substituted for a solid depth contour whenever the reliability of the contour is questionable.

Depth contours are labeled with numerals in the unit of measurement of the soundings. A chart presenting a more detailed indication of the bottom configuration with fewer numerical soundings is useful when bottom contour navigating. Such a chart can be made only for areas which have undergone a detailed survey

Shoal areas often are given a blue tint. Charts designed to give maximum emphasis to the configuration of the bottom show depths beyond the 100-fathom curve over the entire chart by depth contours similar to the contours shown on land areas to indicate graduations in height. These are called **bottom contour** or **bathymetric charts**.

On electronic charts, a variety of other color schemes may be used, according to the manufacturer of the system. Color perception studies are being used to determine the best presentation.

The side limits of dredged channels are indicated by broken lines. The project depth and the date of dredging, if known, are shown by a statement in or along the channel. The possibility of silting is always present. Local authorities should be consulted for the controlling depth. NOS Charts frequently show controlling depths in a table, which is kept current by the *Notice to Mariners*.

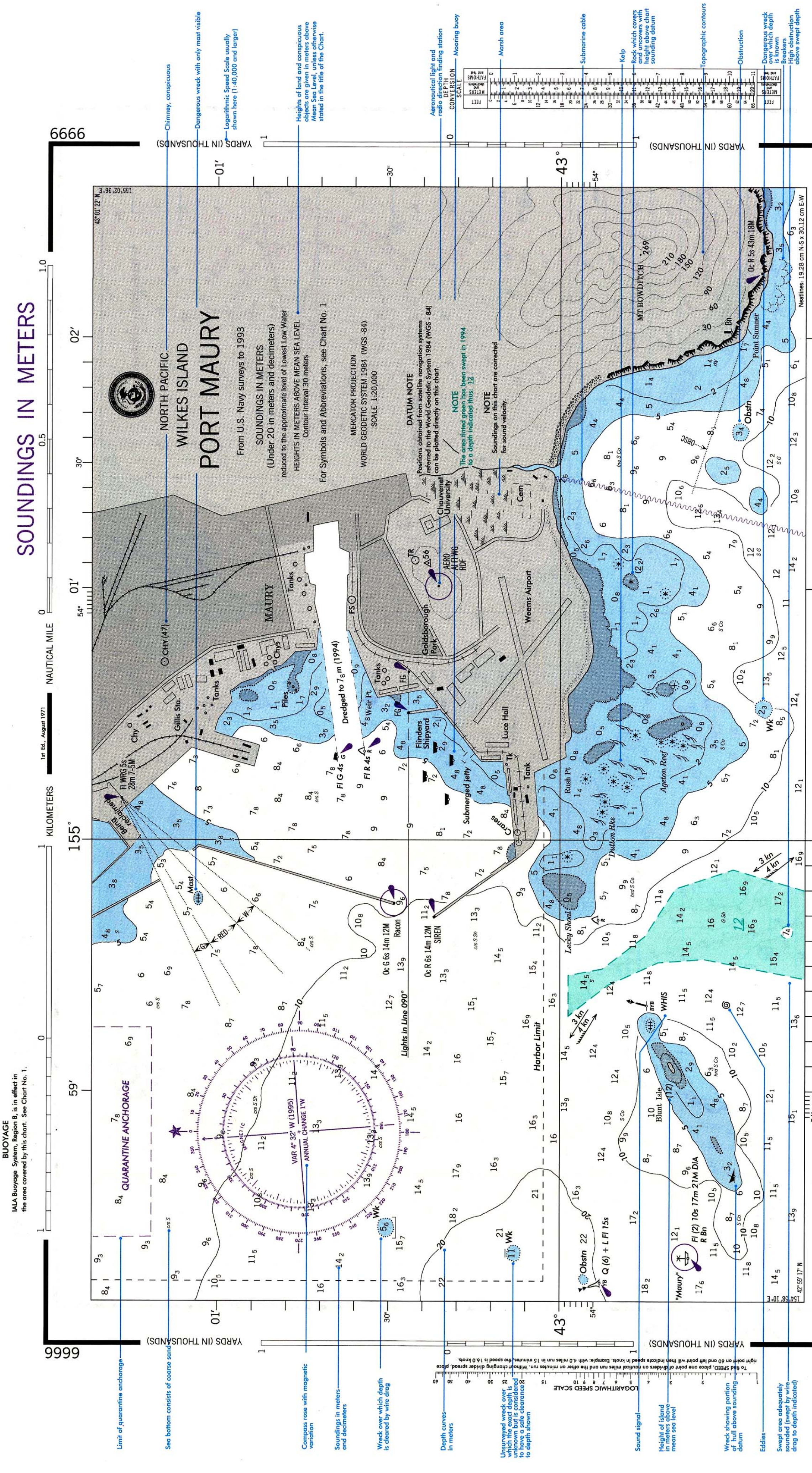
The chart scale is generally too small to permit all soundings to be shown. In the selection of soundings, least depths are shown first. This conservative sounding pattern provides safety and ensures an uncluttered chart appearance. Steep changes in depth may be indicated by more dense soundings in the area. The limits of shoal water indicated on the chart may be in error, and nearby areas of undetected shallow water may not be included on the chart. Given this possibility, areas where shoal water is known to exist should be avoided. If the navigator must enter an area containing shoals, he must exercise extreme caution in avoiding shallow areas which may have escaped detection. By constructing a "safety range" around known shoals and ensuring his vessel does not approach the shoal any closer than the safety range, the navigator can increase his chances of successfully navigating through shoal water. Constant use of the echo sounder is also important.

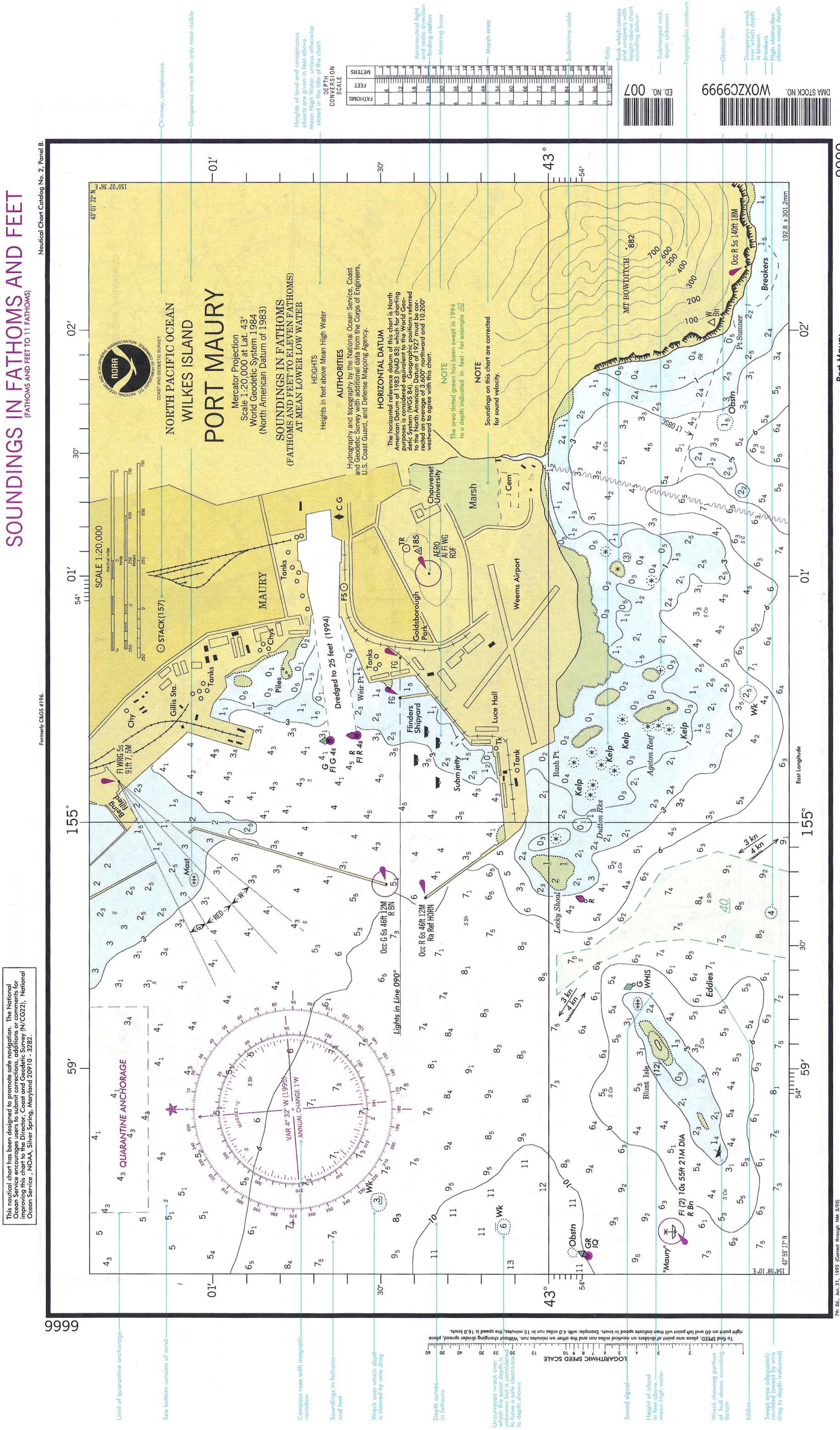
Abbreviations listed in Section J of Chart No. 1 are used to indicate what substance forms the bottom. The meaning of these terms can be found in the Glossary of this volume. While in ages past navigators might actually navigate by knowing the bottom characteristics of certain local areas, today knowing the characteristic of the bottom is most important when anchoring.

333. Depths and Datums

Depths are indicated by soundings or explanatory notes. Only a small percentage of the soundings obtained in a hydrographic survey can be shown on a nautical chart. The least depths are generally selected first, and a pattern built around them to provide a representative indication of bottom relief. In shallow water, soundings may be spaced 0.2 to 0.4 inch apart. The spacing is gradually increased as water deepens, until a spacing of 0.8 to 1.0 inch is reached in deeper waters offshore. Where a sufficient number of soundings are available to permit adequate interpretation, depth curves are drawn in at selected intervals.

All depths indicated on charts are reckoned from a selected level of the water, called the **sounding datum**, (sometimes referred to as the **reference plane** to distinguish this term from the geodetic datum). The various


SOUNDINGS IN METERS
NORTH PACIFIC
WILKES ISLAND
PORT MAURY
From U.S. Navy surveys to 1993
SOUNDINGS IN METERS
(Under 20 in meters and decimeters)
reduced to the approximate level of Lowest Low Water
HEIGHTS IN METERS ABOVE MEAN SEA LEVEL
Contour interval 30 meters
For Symbols and Abbreviations, see Chart No. 1
MERCATOR PROJECTION
WORLD GEODETIC SYSTEM 1984 (WGS-84)
SCALE 1:20,000
DATUM NOTE
Positions obtained from satellite navigation systems referred to the World Geodetic System 1984 (WGS - 84) can be plotted directly on this chart.
NOTE
The area tinted green has been swept in 1994 to a depth indicated thus: 12
NOTE
Soundings on this chart are corrected for sound velocity.
QUARANTINE ANCHORAGE
BUOYAGE
IALA Buoyage System, Region B, is in effect in the area covered by this chart. See Chart No. 1.
Port Maury
SOUNDINGS IN METERS - SCALE 1:20,000
WARNING
The prudent mariner will not rely solely on any single aid to navigation, particularly on floating aids. See paragraph No. 1 of Notice to Mariners No. 1 or Sailing Directions Planning Guides for information relative to DMAHTC Charts.
Users should refer corrections, additions, and comments for improving this product to: DIRECTOR, DEFENSE MAPPING AGENCY, ATTN: PR, 8613 LEE HIGHWAY, FAIRFAX, VA 22031-2137.
Prepared and published by the DEFENSE MAPPING AGENCY HYDROGRAPHIC/TOPOGRAPHIC CENTER Bethesda, Maryland
Neatlines: 19.28 cm N-S x 30.12 cm E-W
DMA STOCK NO. WOXZC9999
ED. NO. 007
9999
LOGARITHMIC SPEED SCALE
DEPTH CONVERSION SCALE
KILOMETERS
NAUTICAL MILE
YARDS (IN THOUSANDS)
Chimney, conspicuous
Dangerous wreck with only mast visible
Logarithmic Speed Scale usually shown here (1:40,000 and larger)
Heights of land and conspicuous objects are given in meters above Mean Sea Level, unless otherwise stated in the title of the Chart.
Aeronautical light and radio direction finding station
Mooring buoy
Marsh area
Submarine cable
Kelp
Rock which covers and uncovers with height above chart sounding datum
Topographic contours
Obstruction
Dangerous wreck over which depth is known
Breakers
High obstruction above swept depth
Limit of quarantine anchorage
Sea bottom consists of coarse sand
Compass rose with magnetic variation
Soundings in meters and decimeters
Wreck over which depth is cleared by wire drag
Depth curves in meters
Unsurveyed wreck over which the exact depth is unknown but is considered to have a safe clearance to depth shown
Sound signal
Height of island in meters above mean sea level
Wreck showing portion of hull above sounding datum
Eddies
Swept area adequately sounded (swept by wire drag to depth indicated)
MAURY
Gillis Sta.
Dredged to 7.8 m (1994)
Flinders Shipyard
Goldsborough Park
Chauvenet University
Weems Airport
Luce Hall
Submerged Jetty
Harbor Limit
Lights in Line 090°
MT BOWDITCH
Point Sumner
Rush Pt
Dutton Rks
Ageton Reef
Lecky Shoal
Blunt Isle
VAR 4° 32' W (1995) ANNUAL CHANGE 1' W


SOUNDINGS IN FATHOMS AND FEET
(FATHOMS AND FEET TO 11 FATHOMS)
NORTH PACIFIC OCEAN
WILKES ISLAND
PORT MAURY
Mercator Projection
Scale 1:20,000 at Lat. 43°
World Geodetic System 1984
(North American Datum of 1983)
SOUNDINGS IN FATHOMS
(FATHOMS AND FEET TO ELEVEN FATHOMS)
AT MEAN LOWER LOW WATER
HEIGHTS
Heights in feet above Mean High Water
AUTHORITIES
Hydrography and topography by the National Ocean Service, Coast and Geodetic Survey with additional data from the Corps of Engineers, U.S. Coast Guard, and Defense Mapping Agency.
HORIZONTAL DATUM
NOTE
The area tinted green has been swept in 1994 to a depth indicated in feet - for example 40
NOTE
Soundings on this chart are corrected for sound velocity.
SCALE 1:20,000
QUARANTINE ANCHORAGE
MAURY
Gillis Sta.
Tanks
Chauvenet University
Marsh
Goldsborough Park
Weems Airport
Flinders Shipyard
Luce Hall
Rush Pt
Dutton Rks
Leeky Shoal
Agdom Reef
Kelp
Blunt Isle
Eddies
MT BOWDITCH
Pt. Sumner
Breakers
Dredged to 25 feet (1994)
Lights in Line 090°
VAR 4° 32' W (1995)
ANNUAL CHANGE 1'W
WARNING
The prudent mariner will not rely solely on any single aid to navigation, particularly on floating aids. See U.S. Coast Guard Light List and U.S. Coast Pilot for details.
CAUTION
This chart has been corrected from Notice to Mariners published weekly by the Defense Mapping Agency Hydrographic/Topographic Center and the Local Notices to Mariners issued periodically by each U.S. Coast Guard district to the date shown in the lower left hand corner.
Published at Washington, D.C.
U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SERVICE
COAST AND GEODETIC SURVEY
This nautical chart has been designed to promote safe navigation. The National Ocean Service encourages users to submit corrections, additions or comments for improving this chart to the Director, Coast and Geodetic Survey (N/CG22), National Ocean Service, NOAA, Silver Spring, Maryland 20910 - 3282.
Port Maury
SOUNDINGS IN FATHOMS - SCALE 1:20,000
Nautical Chart Catalog No. 2, Panel B.
DEPTH CONVERSION SCALE
LOGARITHMIC SPEED SCALE
ED. NO. 007
DMA STOCK NO. WOXZC9999
9999

sounding datums are explained in Chapter 9, Tides and Tidal Currents. On charts produced from U.S. surveys, the sounding datum is selected with regard to the tides of the region. Depths shown are the least depths to be expected under average conditions. On charts compiled from foreign charts and surveys the sounding datum is that of the original authority. When it is known, the sounding datum used is stated on the chart. In some cases where the chart is based upon old surveys, particularly in areas where the range of tide is not great, the sounding datum may not be known.

For most National Ocean Service charts of the United States and Puerto Rico, the sounding datum is mean lower low water. Most NIMA charts are based upon mean low water, mean lower low water, or mean low water springs. The sounding datum for charts published by other countries varies greatly, but is usually lower than mean low water. On charts of the Baltic Sea, Black Sea, the Great Lakes, and other areas where tidal effects are small or without significance, the sounding datum adopted is an arbitrary height approximating the mean water level.

The sounding datum of the largest scale chart of an area is generally the same as the reference level from which height of tide is tabulated in the tide tables.

The chart datum is usually only an approximation of the actual mean value, because determination of the actual mean height usually requires a longer series of tidal observations than is usually available to the cartographer. In addition, the heights of the tide vary over time.

Since the chart datum is generally a computed mean or average height at some state of the tide, the depth of water at any particular moment may be less than shown on the chart. For example, if the chart datum is mean lower low water, the depth of water at lower low water will be less than the charted depth about as often as it is greater. A lower depth is indicated in the tide tables by a minus sign (–).

334. Heights

The shoreline shown on charts is generally mean high water. A light's height is usually reckoned from mean sea level. The heights of overhanging obstructions (bridges, power cables, etc.) are usually reckoned from mean high water. A high water reference gives the mariner the minimum clearance expected.

Since heights are usually reckoned from high water and depths from some form of low water, the reference levels are seldom the same. Except where the range of tide is very large, this is of little practical significance.

335. Dangers

Dangers are shown by appropriate symbols, as indicated in Section K of *Chart No. 1*.

A rock uncovered at mean high water may be shown as an islet. If an isolated, offlying rock is known to uncover at the sounding datum but to be covered at high water, the chart shows the appropriate symbol for a rock and gives the height above the sounding datum. The chart can give this height one of two ways. It can use a statement such as "Uncov 2 ft.," or it can indicate the number of feet the rock protrudes above the sounding datum, underline this value, and enclose it in parentheses (i.e. (2)). A rock which does not uncover is shown by an enclosed figure approximating its dimensions and filled with land tint. It may be enclosed by a dotted depth curve for emphasis.

A tinted, irregular-line figure of approximately true dimensions is used to show a detached coral reef which uncovers at the chart datum. For a coral or rocky reef which is submerged at chart datum, the sunken rock symbol or an appropriate statement is used, enclosed by a dotted or broken line if the limits have been determined.

Several different symbols mark wrecks. The nature of the wreck or scale of the chart determines the correct symbol. A sunken wreck with less than 11 fathoms of water over it is considered dangerous and its symbol is surrounded by a dotted curve. The curve is omitted if the wreck is deeper than 11 fathoms. The safe clearance over a wreck, if known, is indicated by a standard sounding number placed at the wreck. If this depth was determined by a wire drag, the sounding is underscored by the wire drag symbol. An unsurveyed wreck over which the exact depth is unknown but a safe clearance depth is known is depicted with a solid line above the symbol.

Tide rips, eddies, and kelp are shown by symbol or legend. Piles, dolphins (clusters of piles), snags, and stumps are shown by small circles and a label identifying the type of obstruction. If such dangers are submerged, the letters "Subm" precede the label. Fish stakes and traps are shown when known to be permanent or hazardous to navigation.

336. Aids to Navigation

Aids to navigation are shown by symbols listed in Sections P through S of Chart No. 1. Abbreviations and additional descriptive text supplement these symbols. In order to make the symbols conspicuous, the chart shows them in size greatly exaggerated relative to the scale of the chart. "Position approximate" circles are used on floating aids to indicate that they have no exact position because they move around their moorings. For most floating aids, the position circle in the symbol marks the approximate location of the anchor or sinker. The actual aid may be displaced from this location by the scope of its mooring.

The type and number of aids to navigation shown on a chart and the amount of information given in their legends varies with the scale of the chart. Smaller scale charts may have fewer aids indicated and less information than larger scale charts of the same area.

Lighthouses and other navigation lights are shown as black dots with purple disks or as black dots with purple flare symbols. The center of the dot is the position of the light. Some modified facsimile foreign charts use a small

Annex 594

International Hydrographic Organization, *A Manual on Technical Aspects of the United Nations Convention on the Law of the Sea – 1982*, Special Publication No. 51 (4th ed., Mar. 2006)

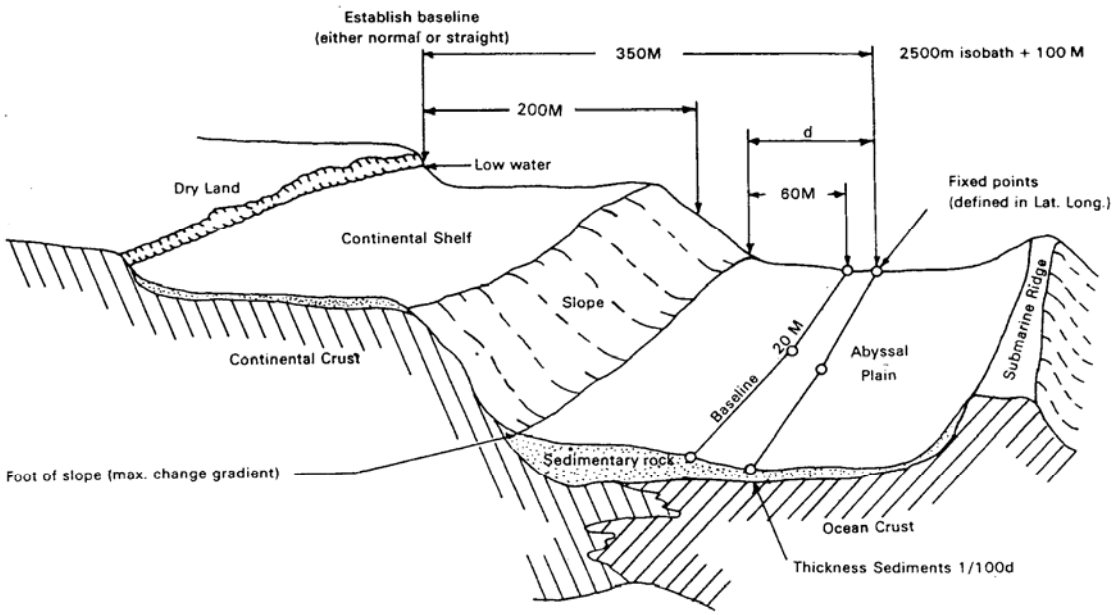
INTERNATIONAL OCEANOGRAPHIC COMMISSION

INTERNATIONAL HYDROGRAPHIC ORGANIZATION

INTERNATIONAL ASSOCIATION OF GEODESY

A MANUAL ON TECHNICAL ASPECTS OF THE UNITED NATIONS CONVENTION ON THE LAW OF THE SEA - 1982

[Prepared by the IHO, IAG, IOC Advisory Board on Law of the Sea (ABLOS)]



Special Publication No. 51
4th Edition - March 2006
Published by the
International Hydrographic Bureau
MONACO

CHAPTER 2 - GEODESY

TABLE OF CONTENTS

Tables

another region is most significantly affected by the changing declination of the moon. The sun has similar but lesser effects on the tidal characteristics, while other astronomical bodies have even smaller effects.

Tidal ranges can also vary within relatively short distances along a coastline and this is due largely to coastal configuration. Theoretical lunar tides are modified by coastal physiography, sometimes dramatically. It is the interaction of the tidal wave with the shoreline and shallow near shore water, the river estuaries and the bays, that produces tidal features as we know them. Due to this coastal influence, it is often the case that different types of tides are found in close proximity to each other along a coastline.

Owing to the many varied tidal characteristics existing throughout the world, a precise, scientific definition for chart datum, which could be used universally, has not been agreed upon. (Over the past 200 years, different countries have adopted different methods for computing chart datum, depending usually on the type of prevailing tide). As yet, only basic guidelines exist. In accordance with an International Hydrographic Organization Resolution of 1926, chart datum should:

(i) be so low that the water will but seldom fall below it;

(ii) not be so low as to cause the charted depths to be unrealistically deep; and

(iii) vary only gradually from area to area and from chart to adjoining chart, to avoid significant discontinuities.

In very basic terms, a chart datum can be defined as the mean of specific low waters over an extended period of time. The time period should ideally be 19 years or more, in order to include all the significant astronomical variations. Opinions vary, however, in terms of which low waters should be used to arrive at this mean value, and as a result, many different precise definitions are currently in use. For example, some countries define chart datum as the mean of all the lower low waters (MLLW) over a specified 19 years period. Others use a chart datum called lower low water large tides (LLWLT), which is defined as the average of the lowest low waters, one from each of 19 years of prediction. Yet others use the lowest low water spring tide (LLWST), which is the average of the lowest low water observations of spring tides, over a specified period. The most conservative use the lowest astronomical tide (LAT), which is the lowest level that can be predicted to occur under average meteorological conditions and under a combination of astronomical conditions.

The differences between the various chart datums and mean sea levels that have been established throughout the world have significant implications in terms of boundary delimitation. The contour of zero depth on the chart corresponds to the level of chart datum. It is considered as the charted low water line, and is the line from which maritime boundaries and limits of jurisdictional zones are measured.

The fact that there are different levels of Chart Datum means that adjacent or opposite States may use different levels at which to establish their baselines. Consequently, differences in the development of equidistance lines can result. It is necessary to take into account the possibility of different datums existing between opposite or adjacent States, such as the case when one State

may utilize Mean Low Water Springs (MLWS) as the datum, while another State may utilize Lower Low Water Large Tides (LLWLT). In that situation, a low tide elevation is recognized on the chart of one, but not on the other.

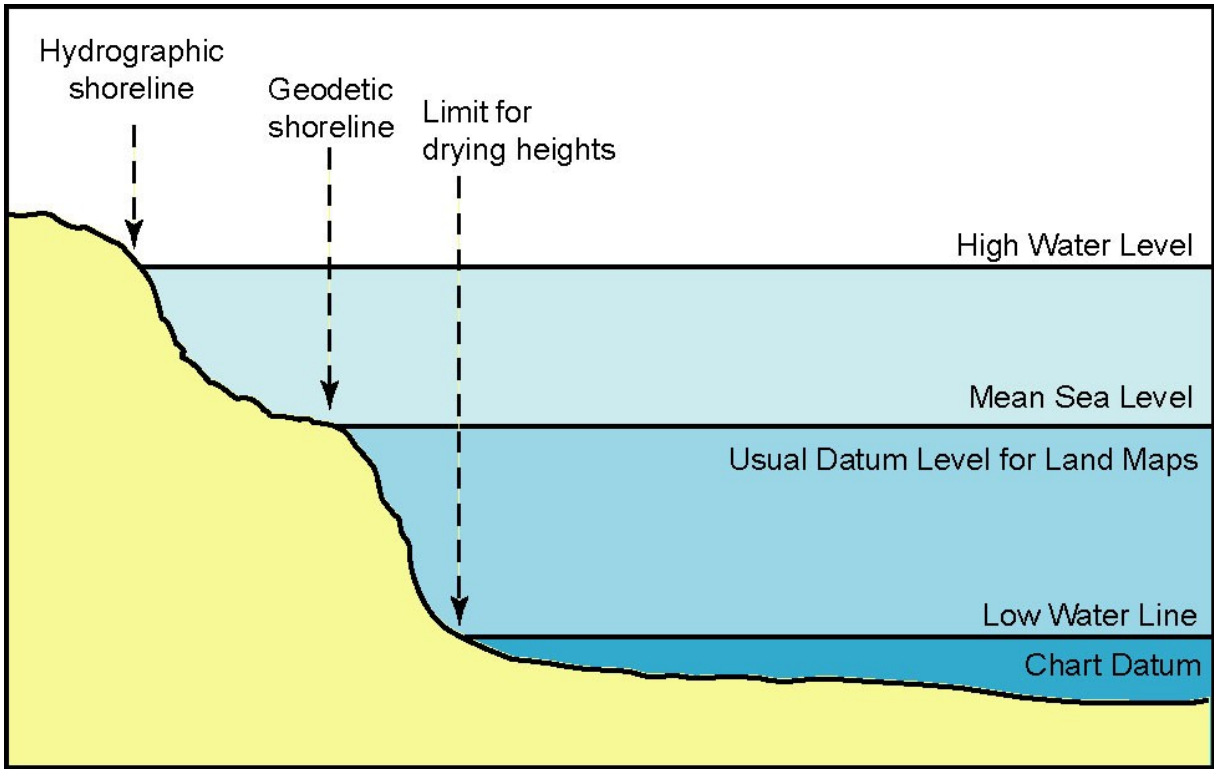


Figure 2.9 - Vertical Datums

Considerable differences may also occur in areas where rocks, islands or reefs, exposed at low tide, are used as baseline points. The choice of the level of chart datum may decide whether they are charted as features permanently below water and thereby eliminated from boundary delimitation calculations, or whether they are charted as low-tide elevations for possible inclusion in such calculations.

Just as the precise definition of chart datum is crucial in boundary delimitation, so too is the accuracy of the data used in the actual calculations. The accuracy of the vertical datum depends on: the length of the tidal records; the remoteness of the area to be delimited from the secondary station, i.e., the closest place where the tide has actually been observed; and the remoteness of that secondary station from the primary station.

In arriving at a reliable, accurate chart datum it is essential to have a good knowledge of the nature of the water level fluctuations for that area. This knowledge is obtained through water level observations of at least one year, but ideally much longer.

At many coastal sites, such as major ports, tide gauges are operated continuously. These sites, which are variously called Primary Control Tide Gauge Stations or Reference Ports, etc. have been in operation around the world. The extensive data that have been gathered at these sites provide a sound basis upon which to establish an accurate chart datum elevation. However, it

Annex 595

Republic of the Philippines, National Mapping and Resource Information Authority, *Tide & Current Tables: Philippines 2014* (2013)

TIDE CURRENT TABLES

PHILIPPINES 2014

ISSN-0115-2580
CGS No. 5

Republic of the Philippines
Department of Environment and Natural Resources
NATIONAL MAPPING AND RESOURCE INFORMATION AUTHORITY

www.namria.gov.ph

PREFACE

This publication contains the predictions of tides and currents in the Philippines. The first part, "Tide Predictions", gives the hourly heights of water at the primary tide stations, times and heights of the daily high and low waters at the primary and secondary stations, and tidal differences and constants at the subordinate points. The second part, "Current Predictions", gives the times, velocities and direction of maximum flood and ebb and times of slack at six principal stations and subordinate points.

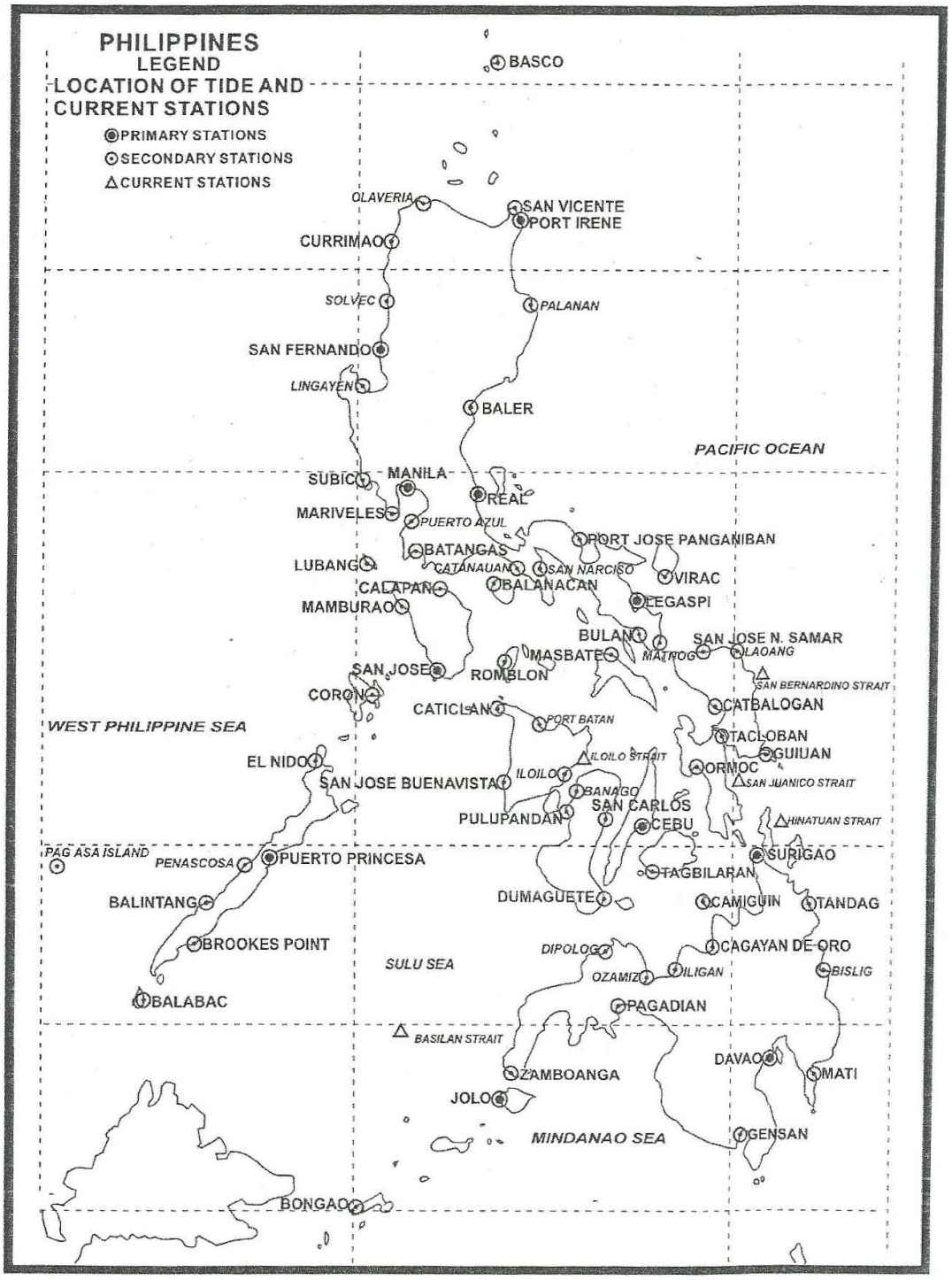
The Tide and Current Tables is an annual publication which was started by the former Bureau of Coast and Geodetic Survey in 1952. Tide predictions at nineteen primary stations are based from 60 harmonic constants derived from mathematical analysis of a year's measurement data. Predictions at secondary stations are based from 36 harmonic constants derived from shorter period measurements. Tidal differences and constants at the subordinate points were computed and appended to the Tables to give this publication a wider coverage.

Current predictions at six major straits are based from an average of 25 harmonic constants derived from at least 15 days of measurement data. Current differences and constants at the subordinate points were likewise computed and appended to the tables. Relevant information such as sunrise, sunset, moonrise, moonset and other astronomical data are presented in the latter portion of the Tables.

This publication has a wide range of technical, scientific and practical applications. Port authorities, navigators, engineers, scientists, and other users are requested to write to the Administrator of the National Mapping and Resource Information Authority if they have any correction, comment or suggestion to increase the utility of these tables.

Dr. PETER N. TIANGCO, CESO I
Administrator

National Mapping and Resource Information Authority
Fort Bonifacio, Taguig City
October 2013


PHILIPPINES
LEGEND
LOCATION OF TIDE AND CURRENT STATIONS
PRIMARY STATIONS
SECONDARY STATIONS
CURRENT STATIONS
BASCO
OLAVERIA
SAN VICENTE
PORT IRENE
CURRIMAO
SOLVEC
PALANAN
SAN FERNANDO
LINGAYEN
BALER
PACIFIC OCEAN
SUBIC
MANILA
REAL
MARIVELES
PUERTO AZUL
PORT JOSE PANGANIBAN
BATANGAS
LUBANG
CATANAUAN
SAN NARCISO
VIRAC
CALAPAN
BALANACAN
LEGASPI
MAMBURAO
BULAN
SAN JOSE N. SAMAR
MASBATE
MATNOG
LAOANG
SAN JOSE
ROMBLON
SAN BERNARDINO STRAIT
CORON
CATBALOGAN
CATICLAN
PORT BATAN
WEST PHILIPPINE SEA
TACLOBAN
GUIUAN
EL NIDO
ILOILO STRAIT
ORMOC
SAN JUANICO STRAIT
SAN JOSE BUENAVISTA
ILOILO
BANAGO
SAN CARLOS
PULUPANDAN
CEBU
HINATUAN STRAIT
PAG ASA ISLAND
PENASCOSA
PUERTO PRINCESA
SURIGAO
TAGBILARAN
BALINTANG
DUMAGUETE
CAMIGUIN
TANDAG
BROOKES POINT
DIPOLOG
CAGAYAN DE ORO
SULU SEA
OZAMIZ
ILIGAN
BISLIG
BALABAC
PAGADIAN
BASILAN STRAIT
DAVAO
ZAMBOANGA
MATI
JOLO
MINDANAO SEA
GENSAN
BONGAO

EXPLANATION OF TIDE PREDICTION

The tide prediction tables contain the predicted hourly heights of water for primary tide stations and times and heights of daily high and low waters for primary and secondary tide stations. The time meridian used is 120 degrees East.

High water is the maximum height reached by each rising tide, and low water is the minimum height reached by each falling tide. High and low waters can be selected from predictions by the comparison of consecutive heights.

The time used for the prediction at each reference station is indicated by the meridian at the bottom of each page. Heights are in meters and reckoned from the datum of soundings on charts of the locality which is mean lower low water (MLLW).

The principal variations in the tide of these nineteen primary stations are shown by typical curves on pages 4 - 10. In Davao Port, Legaspi, Port Irene, Real Port, General Santos City, Guiuan and Tandag the tide is of the semi-diurnal type. There are some inequalities but the principal variations follow the moon's changing phases. The tide at the other stations has considerable inequality. In Manila, Cebu, Surigao, San Jose, Puerto Princesa, Zamboanga, Batangas, Cagayan de Oro, Subic, Balanacan and Caticlan the inequality is both in high and low waters. The tide in these areas become diurnal around the times of the moon's maximum declination. In San Fernando Harbor, the tide is diurnal most of the time.

Predictions of tides at subordinate points throughout the Philippines can be obtained by referring to the table of tidal differences and constants.

The tide prediction tables gives the times of high and low water and not the slack water or the time of turning of the current. In narrow channels, land locked harbors, or in tidal river the time of slack water may differ by several hours from time of high or low water.

DETERMINING THE HEIGHT OF TIDE AT ANY TIME

The Table on Page 13 furnishes a method for obtaining the height of tide at times between high and low water. It gives the correction to be applied to the nearest high and low water. The directions for its use are found at the bottom of the Table, and the following examples will illustrate its use.

Example 1. Required: The height of tide at 2:30 P.M. in Cebu, on a day when the predicted tides are as follows:

HIGH		LOW	
Time	Height	Time	Height
h m	m	h m	m
00 44	1.22	06 13	0.30
12 28	1.65	19 03	0.03

An inspection of the above times of tide shows that the given time, 2:30 P.M. or 14^h30^m, is between the two afternoon tides, and it is nearer the high water at 12^h28^m.

The duration of fall is $19^h03^m - 12^h28^m = 06^h35^m$

The time from the nearest high or low water (in this case, high water) is $14^h30^m - 12^h28^m = 02^h02^m$.

The range of tide is 1.65 - 0.03 = 1.62 meters

The duration of rise or fall is given in the Table for every 20 minutes from 02^h00^m to 10^h40^m. The nearest tabular value to 06^h35^m (the above duration or fall) is 06^h40^m; and on the horizontal line of 06^h40^m, we find 02^h00^m as the nearest tabular time to 02^h02^m (the time from the nearest with the high water). Following down the vertical column is found to intersect with the line of range 1.60 meters, the correction is found to be 0.33 meter. Since the tide used is a high water, the correction is subtracted. Thus the required height of the tide is 1.65 – 0.33 = 1.32 meter.

If the duration of rise or fall is greater than 10^h40^m, use one-half the given duration and one-half the time from the nearest high or low water in obtaining the tabular value, as shown in the succeeding example.

Example 2. Required: The height of tide at 11:00 A.M. in Manila on a day when the nearest predicted tides are as follows:

HIGH		LOW	
Time	Height	Time	Height
h m	m	h m	m
20 56	1.16	04 48	-0.34

Here the duration of rise is $20^h56^m – 04^h48^m = 16^h08^m$

The time range from the nearest tide is $11^h00^m – 04^h48^m = 06^h12^m$

The range of tide is 1.16 – (-0.34) = 1.50 meter

Since the duration of rise exceeds 10^h40^m, use one-half its actual value, i.e 08^h04^m, and one-half of the time from the nearest tide, i.e. 03^h06^m, in the height correction from the table.

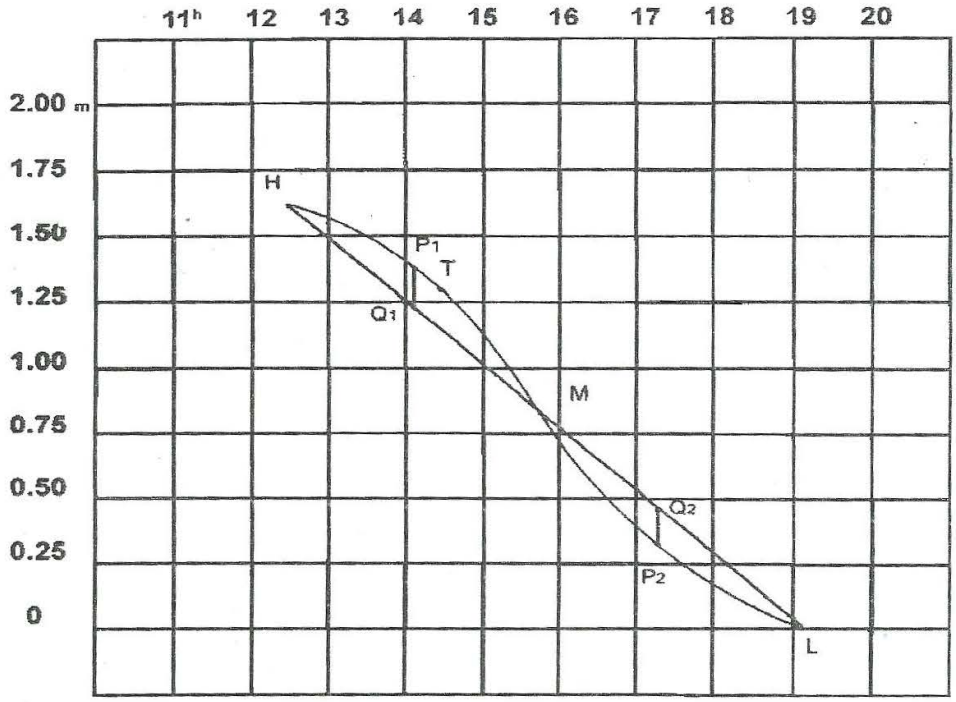
In the line for 08^h00^m, the nearest duration to 08^h04^m, find 03^h12^m the time difference nearest 03^h06^m. Following down the vertical column of 03^h12^m to its intersection with the line of range 1.50 m. the correction 0.52 m is found. The nearest tide being a low water, this correction is added, and the required height of the tide is –0.34 + 0.52 = 0.18 m.

GRAPHICAL METHOD OF DETERMINING THE HEIGHT OF TIDE AT ANY TIME

The height of the tide at any time may also be determined graphically by reproducing the tide curve. This method is suitable if the height of the tide is required several times. The procedure is as follows;

On a cross-section paper, as illustrated in the diagram below, plot the high and low water points, H and L, between which the given time lies. Join H and L by a straight line and divide it into four equal parts at points Q_1, M and Q_2. Locate point P_1 vertically above Q_1 and P_2 vertically below Q_2 at a distance equal to one-tenth of the range of the tide. Draw an approximate sine curve through points H P_1, M P_2 and L. This curve closely approximates the actual tide curve, and heights for any time may be readily scaled from it.

The following diagram shows the curve for Example 1. H is 1.65 m. at 12^h28^m and L is 0.03 m. at 19^h03^m. Since the range is 1.62m. P_1 is located 0.162 units above Q_1 and P_2 is located 0.162 units below Q_2. The height of the tide at 14^h30^m is given by point T to be 1.32 m.



PAGASA ISLAND, KALAYAAN ISLAND GROUP

LAT 11° 02'N LONG 114° 17'E

TIMES AND HEIGHTS OF HIGH AND LOW WATERS

JANUARY

DAY	TIME	HT.	DAY	TIME	HT.
1 WE	0630	-0.21	16 TH	0641	-0.14
	2132	1.20		2157	1.04
2 TH	0703	-0.25	17 FR	0703	-0.12
	2215	1.23		2229	1.03
3 FR	0735	-0.23	18 SA	0722	-0.07
	2255	1.20		2259	0.99
4 SA	0806	-0.16	19 SU	0742	-0.02
	2331	1.13		2328	0.94
5 SU	0835	-0.08	20 MO	0759	0.03
				2358	0.87
6 MO	0005	1.02	21 TU	0814	0.08
	0901	0.02		1707	0.54
				1905	0.53
7 TU	0034	0.87	22 WE	0030	0.77
	0918	0.10		0828	0.12
	1759	0.64		1642	0.58
	2047	0.60		2035	0.50
8 WE	0053	0.71	23 TH	0105	0.66
	0927	0.17		0840	0.17
	1742	0.71		1632	0.65
	2257	0.55		2208	0.45
9 TH	0026	0.56	24 FR	0143	0.53
	0923	0.22		0842	0.21
	1749	0.80		1642	0.74
10 FR	0834	0.24	25 SA	0827	0.24
	1811	0.88		1704	0.84
11 SA	0634	0.19	26 SU	0641	0.22
	1837	0.95		1738	0.94
12 SU	0517	0.08	27 MO	0417	0.07
	1912	0.99		1822	1.01
13 MO	0534	-0.02	28 TU	0455	-0.06
	1953	1.02		1917	1.07
14 TU	0556	-0.10	29 WE	0531	-0.15
	2037	1.04		2020	1.11
15 WE	0619	-0.14	30 TH	0606	-0.19
	2119	1.05		2122	1.13
			31 FR	0637	-0.17
				2214	1.12

FEBRUARY

DAY	TIME	HT.	DAY	TIME	HT.
1 SA	0705	-0.11	16 SU	0639	0.05
	2259	1.07		1421	0.51
				1710	0.49
				2302	0.86
2 SU	0726	-0.02	17 MO	0651	0.10
	2338	0.98		1312	0.53
				1804	0.43
				2337	0.81
3 MO	0745	0.08	18 TU	0703	0.15
	1441	0.54		1303	0.57
	1837	0.48		1853	0.38
4 TU	0016	0.85	19 WE	0013	0.74
	0757	0.16		0717	0.20
	1437	0.61		1318	0.63
	1950	0.45		1946	0.34
5 WE	0051	0.70	20 TH	0056	0.65
	0807	0.22		0732	0.25
	1508	0.69		1349	0.69
	2105	0.42		2049	0.29
6 TH	0126	0.55	21 FR	0146	0.54
	0813	0.26		0745	0.29
	1546	0.78		1427	0.76
	2238	0.37		2205	0.24
7 FR	0159	0.41	22 SA	0258	0.42
	0759	0.27		0746	0.32
	1622	0.85		1512	0.84
				2337	0.18
8 SA	0258	0.28	23 SU	1558	0.92
	0403	0.28			
	0711	0.26			
	1659	0.90			
9 SU	0326	0.17	24 MO	0115	0.10
	1735	0.94		1646	0.98
10 MO	0404	0.07	25 TU	0247	0.02
	1815	0.95		1741	1.01
11 TU	0442	0.00	26 WE	0356	-0.04
	1901	0.95		1850	1.02
12 WE	0516	-0.05	27 TH	0448	-0.06
	1959	0.93		2013	1.00
13 TH	0545	-0.06	28 FR	0528	-0.05
	2058	0.92		2129	0.99
14 FR	0608	-0.05			
	2147	0.91			
15 SA	0625	-0.01			
	2226	0.89			

MARCH

DAY	TIME	HT.	DAY	TIME	HT.
1 SA	0558	0.01	16 SU	0531	0.18
	1431	0.52		1158	0.56
	1532	0.52		1709	0.42
	2226	0.96		2239	0.75
2 SU	0620	0.09	17 MO	0541	0.23
	1225	0.55		1134	0.61
	1714	0.43		1744	0.33
	2314	0.90		2319	0.73
3 MO	0634	0.18	18 TU	0551	0.28
	1222	0.63		1135	0.68
	1811	0.35		1819	0.24
	2356	0.81		2358	0.70
4 TU	0646	0.26	19 WE	0605	0.33
	1236	0.70		1149	0.75
	1901	0.29		1858	0.17
5 WE	0037	0.70	20 TH	0040	0.64
	0657	0.31		0620	0.38
	1301	0.77		1215	0.81
	1953	0.25		1946	0.13
6 TH	0121	0.59	21 FR	0132	0.57
	0705	0.35		0636	0.42
	1334	0.82		1247	0.86
	2052	0.23		2044	0.10
7 FR	0217	0.48	22 SA	0258	0.49
	0710	0.36		0640	0.45
	1413	0.85		1325	0.90
	2200	0.21		2156	0.08
8 SA	0350	0.40	23 SU	1410	0.93
	0656	0.37		2314	0.05
	1458	0.87			
	2320	0.18			
9 SU	1544	0.88	24 MO	1502	0.96
10 MO	0051	0.15	25 TU	0032	0.04
	1628	0.88		1600	0.96
11 TU	0223	0.11	26 WE	0146	0.04
	1713	0.86		1706	0.93
12 WE	0330	0.08	27 TH	0255	0.06
	1806	0.82		1836	0.87
13 TH	0418	0.07	28 FR	0351	0.10
	1926	0.78		2030	0.83
14 FR	0453	0.09	29 SA	0435	0.17
	2054	0.76		1114	0.57
				1544	0.49
				2153	0.80
15 SA	0517	0.13	30 SU	0503	0.25
	1308	0.56		1056	0.64
	1625	0.52		1655	0.36
	2156	0.75		2252	0.78
			31 MO	0523	0.33
				1103	0.73
				1742	0.24
				2338	0.73

APRIL

DAY	TIME	HT.	DAY	TIME	HT.
1 TU	0535	0.40	16 WE	0436	0.48
	1119	0.81		1036	0.86
	1822	0.15		1819	0.06
2 WE	0020	0.68	17 TH	0033	0.61
	0545	0.44		0450	0.52
	1140	0.88		1100	0.93
	1901	0.10		1857	0.00
3 TH	0103	0.61	18 FR	0132	0.57
	0555	0.46		0456	0.55
	1204	0.92		1130	0.98
	1943	0.09		1943	-0.03
4 FR	0153	0.55	19 SA	1202	1.01
	0604	0.47		2040	-0.03
	1232	0.93			
	2030	0.09			
5 SA	1303	0.92	20 SU	1240	1.01
	2126	0.10		2146	-0.02
6 SU	1338	0.89	21 MO	1322	1.00
	2231	0.12		2253	0.01
7 MO	1414	0.85	22 TU	1411	0.95
	2338	0.13		2356	0.05
8 TU	1448	0.81	23 WE	1508	0.88
9 WE	0046	0.14	24 TH	0056	0.11
	1519	0.76		1624	0.79
10 TH	0152	0.17	25 FR	0149	0.19
	1540	0.69		1001	0.61
				1236	0.59
				1846	0.68
11 FR	0249	0.21	26 SA	0238	0.29
	1304	0.61		0932	0.65
	1639	0.61		1537	0.47
	1849	0.61		2111	0.64
12 SA	0330	0.27	27 SU	0316	0.39
	1114	0.60		0933	0.72
	1636	0.51		1641	0.32
	2112	0.59		2236	0.63
13 SU	0354	0.33	28 MO	0343	0.47
	1029	0.62		0947	0.61
	1656	0.39		1721	0.18
	2218	0.60		2338	0.62
14 MO	0410	0.39	29 TU	0401	0.53
	1014	0.69		1007	0.90
	1720	0.26		1755	0.06
	2306	0.61			
15 TU	0422	0.44	30 WE	0029	0.61
	1019	0.77		0412	0.56
	1747	0.15		1029	0.97
	2348	0.62		1826	0.01

TIME MERIDIAN 120 DEG EAST. 0000 IS MIDNIGHT. 1200 IS NOON
HEIGHTS ARE IN METERS AND RECKONED FROM THE DATUM OF SOUNDINGS ON CHARTS OF THE LOCALITY WHICH IS MEAN LOWER LOW WATER

PAGASA ISLAND, KALAYAAN ISLAND GROUP

LAT 11° 02'N LONG 114° 17'E

TIMES AND HEIGHTS OF HIGH AND LOW WATERS

MAY

DAY	TIME	HT.	DAY	TIME	HT.
1 TH	0112	0.59	16 FR	1024	1.08
	0419	0.56		1901	-0.11
	1055	1.01			
	1857	-0.01			
2 FR	0204	0.56	17 SA	1056	1.12
	0414	0.56		1946	-0.11
	1120	1.03			
	1931	-0.01			
3 SA	1147	1.01	18 SU	1131	1.12
	2011	0.02		2038	-0.08
4 SU	1213	0.97	19 MO	1209	1.09
	2101	0.06		2136	-0.03
5 MO	1240	0.91	20 TU	1249	1.02
	2156	0.10		2231	0.04
6 TU	1305	0.85	21 WE	1329	0.92
	2250	0.14		2320	0.11
7 WE	1328	0.79	22 TH	1409	0.79
	2340	0.18			
8 TH	1341	0.72	23 FR	0001	0.21
				0820	0.67
				1154	0.63
				1424	0.64
9 FR	0018	0.24	24 SA	0029	0.31
	1042	0.65		0803	0.72
				1612	0.48
				1935	0.50
10 SA	0044	0.31	25 SU	0044	0.41
	0934	0.64		0809	0.79
				1636	0.32
				2250	0.49
11 SU	0057	0.38	26 MO	0033	0.49
	0856	0.67		0827	0.87
	1723	0.38		1709	0.17
	2204	0.46			
12 MO	0054	0.44	27 TU	0854	0.96
	0848	0.74		1737	0.06
	1711	0.26			
13 TU	0859	0.83	28 WE	0923	1.02
	1726	0.13		1804	-0.01
14 WE	0922	0.93	29 TH	0954	1.07
	1751	0.01		1829	-0.05
15 TH	0951	1.01	30 FR	1022	1.09
	1823	-0.07		1856	-0.06
			31 SA	1050	1.09
				1926	-0.03

JUNE

DAY	TIME	HT.	DAY	TIME	HT.
1 SU	1117	1.05	16 MO	1119	1.18
	2003	0.01		2034	-0.06
2 MO	1142	1.00	17 TU	1156	1.11
	2044	0.06		2119	0.02
3 TU	1206	0.94	18 WE	1232	1.00
	2127	0.11		2201	0.11
4 WE	1229	0.86	19 TH	1304	0.85
	2208	0.16		2232	0.20
5 TH	1249	0.78	20 FR	0719	0.66
	2239	0.21		0947	0.65
				1321	0.69
				2250	0.29
6 FR	1301	0.70	21 SA	0653	0.72
	2252	0.27		2249	0.36
7 SA	0810	0.65	22 SU	0654	0.81
	2235	0.32		1632	0.35
8 SU	0732	0.69	23 MO	0712	0.89
	2130	0.35		1645	0.21
9 MO	0725	0.76	24 TU	0741	0.97
	1728	0.29		1711	0.10
10 TU	0738	0.85	25 WE	0816	1.03
	1714	0.17		1738	0.01
11 WE	0807	0.94	26 TH	0854	1.08
	1730	0.04		1805	-0.04
12 TH	0844	1.04	27 FR	0932	1.10
	1758	-0.06		1829	-0.06
13 FR	0923	1.13	28 SA	1005	1.11
	1832	-0.13		1856	-0.05
14 SA	1003	1.18	29 SU	1036	1.10
	1910	-0.15		1922	-0.02
15 SU	1042	1.21	30 MO	1104	1.06
	1950	-0.12		1953	0.03

JULY

DAY	TIME	HT.	DAY	TIME	HT.
1 TU	1130	1.01	16 WE	1158	1.06
	2024	0.09		2047	0.12
2 WE	1154	0.94	17 TH	1234	0.91
	2055	0.14		2111	0.22
3 TH	1218	0.86	18 FR	0548	0.58
	2120	0.19		0752	0.56
				1305	0.75
				2126	0.29
4 FR	1243	0.77	19 SA	0523	0.66
	2134	0.23		0957	0.54
				1322	0.59
				2129	0.34
5 SA	0656	0.61	20 SU	0530	0.75
	0904	0.60		2054	0.36
	1305	0.66			
	2134	0.27			
6 SU	0620	0.65	21 MO	0554	0.85
	1148	0.54		1556	0.29
	1307	0.55			
	2119	0.30			
7 MO	0613	0.73	22 TU	0625	0.93
	2038	0.31		1619	0.17
8 TU	0625	0.82	23 WE	0701	0.98
	1659	0.24		1652	0.08
9 WE	0653	0.92	24 TH	0746	1.02
	1659	0.11		1723	0.02
10 TH	0735	1.02	25 FR	0833	1.05
	1724	-0.01		1751	-0.02
11 FR	0823	1.10	26 SA	0919	1.07
	1758	-0.09		1818	-0.03
12 SA	0912	1.18	27 SU	0958	1.07
	1832	-0.13		1841	0.00
13 SU	0958	1.22	28 MO	1032	1.05
	1907	-0.12		1905	0.04
14 MO	1041	1.21	29 TU	1102	1.02
	1942	-0.06		1926	0.10
15 TU	1121	1.16	30 WE	1128	0.96
	2016	0.03		1946	0.15
			31 TH	1155	0.89
				2004	0.20

AUGUST

DAY	TIME	HT.	DAY	TIME	HT.
1 FR	1225	0.81	16 SA	0203	0.64
	2020	0.24		0817	0.41
				1332	0.63
				2009	0.37
2 SA	0415	0.52	17 SU	0258	0.72
	0739	0.48		0946	0.39
	1258	0.70		1428	0.49
	2033	0.28		2004	0.38
3 SU	0408	0.59	18 MO	0356	0.79
	0913	0.47		1159	0.34
	1336	0.59		1641	0.38
	2040	0.30		1912	0.37
4 MO	0425	0.67	19 TU	0446	0.86
	1107	0.42		1420	0.25
	1421	0.46			
	2034	0.32			
5 TU	0453	0.77	20 WE	0531	0.91
	1342	0.32		1516	0.16
	1709	0.33			
	1943	0.32			
6 WE	0530	0.87	21 TH	0619	0.94
	1526	0.19		1603	0.10
7 TH	0615	0.96	22 FR	0711	0.95
	1615	0.07		1643	0.06
8 FR	0710	1.04	23 SA	0811	0.95
	1659	-0.02		1717	0.04
9 SA	0811	1.10	24 SU	0908	0.95
	1738	-0.06		1745	0.06
10 SU	0911	1.14	25 MO	0954	0.94
	1813	-0.06		1806	0.10
11 MO	1003	1.16	26 TU	0108	0.48
	1844	-0.01		0340	0.47
				1032	0.93
				1823	0.15
12 TU	1049	1.13	27 WE	0025	0.49
	1911	0.07		0448	0.42
				1104	0.89
				1836	0.20
13 WE	1131	1.05	28 TH	0011	0.53
	1932	0.17		0534	0.38
				1134	0.85
				1849	0.25
14 TH	0100	0.50	29 FR	0012	0.57
	0547	0.42		0618	0.34
	1211	0.93		1206	0.78
	1949	0.26		1900	0.30
15 FR	0124	0.57	30 SA	0030	0.62
	0701	0.41		0705	0.32
	1250	0.78		1243	0.70
	2000	0.33		1914	0.33
			31 SU	0100	0.67
				0804	0.31
				1328	0.60
				1929	0.37

TIME MERIDIAN 120 DEG EAST. 0000 IS MIDNIGHT. 1200 IS NOON
HEIGHTS ARE IN METERS AND RECKONED FROM THE DATUM OF SOUNDINGS ON CHARTS OF THE LOCALITY WHICH IS MEAN LOWER LOW WATER

EXPLANATION OF TABLES
FOR TIDAL DIFFERENCES AND CONSTANTS

Full prediction of daily tides are generally derived from stations with continuous observation of tidal measurement over long periods of time. Predictions of tides for short period observation at subordinate points throughout the Philippines can be obtained by referring to the table of tidal differences and constants. These time and height differences and constants should be applied to the daily predictions for the reference station under which the particular subordinate point is listed. The first column under ranges gives the mean range, which is the difference in height between mean high and mean low water. The next column gives the diurnal range, which is the difference in height between mean higher high water and mean lower low water, and the last column gives the mean tide level.

Note. - The time and height differences are average differences derived from the comparisons of simultaneous tidal observation of the selected subordinate station and its corresponding reference station. Since the values are constant, it may not always provide daily variations of the actual tide, most especially when the subordinate station is far away from the reference station. The method of applying these constants will generally provide reasonable approximations but cannot provide prediction results as accurate as those of the reference stations.

To determine the time of high and low water at any subordinate station listed on the table, the hours and minutes on the corresponding column under the heading "tidal differences, time" are to be added or subtracted from the time of high and low water of the reference station used. A positive (+) sign indicates a later tide at the subordinate station than the reference station and the difference should be added and a negative (-) sign indicates an early tide for the subordinate station than the reference station and should be subtracted.

Similarly, the height of tide at the subordinate station is determined by applying the height differences or ratios under the corresponding column with heading "tidal differences, height". A positive (+) sign indicates that the value should be added to the height of the reference station while a negative (-) sign indicates that the value should be subtracted from the height of the reference station.

LIST OF SECONDARY TIDE STATIONS DATUM PLANES

NAME	GEOGRAPHIC POSITION DEG.	MIN.	LOCALITY	PRIMARY TIDAL BENCH MARK	ELEVATIONS IN METERS ABOVE MEAN LOWER LOW WATER (MLLW)				
					Bench Mark	Mean Tide Level (MTL)	Mean High Water (MHW)	Mean Low Water (MLW)	Mean Higher High Water (MHHW)
JOLO PORT	06 121	04 N 00 E	Jolo, Sulu	BM 1	2.615	0.34	0.67	0.03	0.88
TACLOBAN PORT	11 125	15 N 00 E	Tacloban City, Leyte	BM 4	1.720	0.29	0.51	0.04	0.69
SAN VICENTE PORT	18 122	31 N 09 E	San Vicente, Cagayan	BM 4	3.420	0.55	1.00	0.08	1.08
DUMAGUETE PORT	09 123	18 N 19 E	Dumaguete City, Negros Oriental	TBM 2	2.542	0.63	1.13	0.13	1.39
ILIGAN BAY	08 124	13 N 13 E	Iligan City, Lanao del Norte	BM 4	5.028	0.56	0.98	0.15	1.25
PORT BATAN	11 122	35 N 30 E	Batan, Aklan	BM AK 12	3.745	0.81	1.41	0.21	1.69
BISLIG BAY	08 126	12 N 22 E	Bislig, Surigao del Sur	BM 1	5.136	0.83	1.46	0.20	1.56
VIRAC PORT	13 124	35 N 14 E	Virac, Catanduanes	BM 2	4.757	0.71	1.29	0.14	1.37
CURRIMAO PORT	17 120	59 N 29 E	Currimao, Ilocos Norte	BM 4-A	7.604	0.29	0.56	0.02	0.59
PEÑASCOSA PORT	09 118	46 N 31 E	Penascosa Pier, Palawan	BM 2	2.144	0.52	0.93	0.12	1.08
LAOANG	12 125	35 N 00 E	Laoang, Samar	BM 1	1.790	0.81	1.42	0.19	1.47
ILOILO HARBOR	10 122	2 N 35 E	Iloilo City, Iloilo	BM 3	4.074	0.78	1.30	0.25	1.59
ORMOC PORT	11 124	00 N 06 E	Ormoc City, Leyte	BM OC 3	29.440	0.80	1.39	0.20	1.66
BALABAC PORT	08 117	00 N 04 E	Balabac, Palawan	BM 3	4.597	0.63	1.15	0.10	1.31
OZAMIZ PORT	08 123	08 N 51 E	Ozamiz City, Misamis Occidental	BM 3A	2.585	0.58	1.01	0.15	1.28

LIST OF SECONDARY TIDE STATIONS DATUM PLANES

NAME	GEOGRAPHIC POSITION DEG.	MIN.	LOCALITY	PRIMARY TIDAL BENCH MARK	ELEVATIONS IN METERS ABOVE MEAN LOWER LOW WATER (MLLW)				
					Bench Mark	Mean Tide Level (MTL)	Mean High Water (MHW)	Mean Low Water (MLW)	Mean Higher High Water (MHHW)
TAGBILARAN PORT	09	39 N	Tagbilaran City, Bohol	BM 506 D	7.420	0.63	1.07	0.18	1.34
	123	51 E							
SOLVEC	17	27 N	Narvacan, Ilocos Sur	Bm 2	3.340	0.35	-	-	0.69
	120	27 E							
MANILA NORTH HARBOR	14	36 N	North Harbor, Metro Manila	BM GM 4BA	2.935	0.52	0.95	0.10	1.09
	120	57 E							
SAN NARCISO	13	35 N	San Narciso, Quezon	BM BP 50	22.815	0.83	1.43	0.22	1.70
	122	34 E							
CATANAUAN	13	34 N	Catanauan, Quezon	BM BP 11	27.213	0.77	1.35	0.20	1.57
	122	19 E							
NAVOTAS PORT	14	41 N	Navotas Port, Metro Manila	BM JL 6	1.205	0.47	0.85	0.09	1.00
	120	56 E							
BALER	15	46 N	Baler, Aurora	TGBM 2	6.123	0.70	1.36	0.16	1.45
	121	36 E							
BASCO PORT	20	27 N	Basco, Batanes	BM BAS3	6.567	0.36	0.66	0.07	0.74
	121	58 E							
CLAVERIA	18	36 N	Claveria, Cagayan	CLAV BM1	4.900	0.33	0.60	0.05	0.78
	121	04 E							
PALANAN	17	07 N	Palanan, Isabela	BM PAL1	2.752	0.76	1.38	0.21	1.44
	122	28 E							
PAGASA ISLAND	11	02 N	Pagasa Island, Kalayaan Island Group	BM 1	2.540	0.50	0.94	0.07	1.00
	114	17 E							
LIMAY	14	30 N	Limay, Bataan	BM 3A	7.028	0.63	1.10	0.17	1.25
	120	36 E							
MATNOG PORT	12	35 N	Matnog, Sorsogon	TBM 1	3.557	0.23	0.38	0.08	0.63
	124	05 E							
PUERTO AZUL	14	47 N	Ternate, Cavite	BM 2A	3.876	0.49	0.91	0.07	1.00
	120	41 E							

LIST OF SECONDARY TIDE STATIONS DATUM PLANES

NAME	GEOGRAPHIC POSITION DEG.	MIN.	LOCALITY	PRIMARY TIDAL BENCH MARK	ELEVATIONS IN METERS ABOVE MEAN LOWER LOW WATER (MLLW)				
					Bench Mark	Mean Tide Level (MTL)	Mean High Water (MHW)	Mean Low Water (MLW)	Mean Higher High Water (MHHW)
MARIVELES HARBOR	14	26 N	Mariveles, Bataan	BM 1	3.176	0.48	0.90	0.07	0.98
	120	30 E							
CORON PORT	12	00 N	Coron, Palawan	BM 4	7.705	0.59	1.09	0.09	1.25
	120	12 E							
BULAN PORT	12	40 N	Bulan, Sorsogon	BM4	5.300	0.61	1.06	0.15	1.26
	123	52 E							
PAGADIAN PORT	07	49 N	Pagadian Port	BM1	2.802	0.76	1.46	0.07	1.61
	123	26 E	Zamboanga del Sur						
MATI PORT	06	57 N	Mati, Davao Oriental	BM3	9.652	0.78	1.37	0.18	1.45
	128	13 E							
PULUPANDAN PORT	10	31 N	Pulupandan	BM PU3	3.457	0.79	1.39	0.22	1.68
	122	48 E	Negros Occidental						
BALINTANG PORT	09	21 N	Balintang, Quezon	BM3	7.290	0.56	1.05	0.08	1.12
	118	08 E	Palawan						
CALAPAN PORT	13	26 N	Calapan, Oriental	BM1	3.332	0.64	1.15	0.13	1.33
	121	12 E	Mindoro						
MAMBURAO PORT	13	14 N	Mamburao	BM5	3.273	0.47	0.87	0.07	0.94
	120	34 E	Occidental Mindoro						
BALBAGON PORT	09	15 N	Mambajao, Camiguin	BM2	11.199	0.58	1.04	0.12	1.22
	124	43 E	Misamis Oriental						
MASBATE PORT	12	22 N	Masbate, Masbate	BM 2	2.578	0.71	1.24	0.19	1.53
	123	37 E							
EL NIDO PORT	11	11 N	El Nido, Palawan	BM 5	2.840	0.538	0.99	0.09	1.08
	119	23 E							
JOSE PANGANIBAN	14	19 N	Jose Panganiban	BM 5	12.813	0.78	1.42	0.15	1.49
	122	40 E	Camarines Sur						
SAN JOSE PORT	12	32 N	San Jose	TGBM 1	3.140	0.58	1.06	0.09	1.11
	124	29 E	Northern Samar						
SAN JOSE DE BUENAVISTA PORT	10	44 N	Sa Jose de Buenavista	TGBM 3	12.991	0.6	1.05	0.14	1.31
	121	56 E	Antique						

EXPLANATION OF CURRENT PREDICTIONS

Pages 326 to 349 contain the predicted times of slack water and the predicted times and velocities of maximum flood and ebb for each day for the six (6) reference stations. The time meridian used is 120 degrees East.

The principal variations in the tidal current at each station are shown by the typical curves on page 324. Flood current is represented by the curve above the zero velocity (slack water line) and the ebb current by the curve below the slack water line.

The velocity of current at anytime can be approximated by following the instructions given on page 325.

On page 356 is given the differences and constants which together with the reference stations enable one to make predictions for a number of points. The differences are applicable to all phases of the current, i.e., slack waters and strengths of flood and ebb. The time of a particular phase of the current at a station is obtained by applying the difference to the corresponding phase at the reference station under which the particular station is listed. The approximate maximum velocity of the current may be obtained by multiplying the predicted velocity for the corresponding reference station by the velocity ratio. The direction of the flood current is given as N (north), NW (northwest), etc.

In using these tables it must be borne in mind that although the predictions represent the principal horizontal motion of the water, significant deviations may be caused by winds.

The currents in San Bernardino Strait are dominated primarily by the declination of the moon. When the moon is near the Equator there are two flood and two ebb currents each day, but as the moon's declination increases it gives rise to a diminishing velocity in one ebb and an increasing velocity in the other. As the moon approaches its extreme declination, north or south of the Equator, the diurnal inequality in the ebb current is so pronounced that one ebb entirely disappears and instead of two floods and two ebbs, there are but one flood and one ebb in a day.

The current on days when there is but one flood and one ebb is represented by the

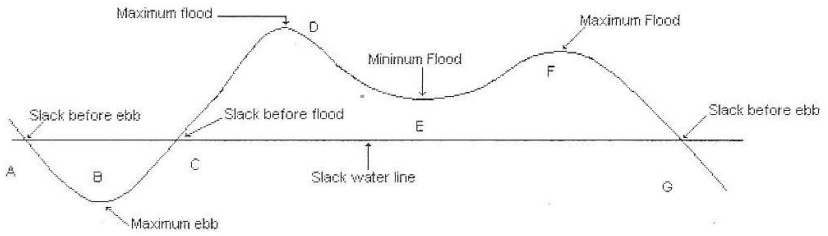


Figure above, which is characteristic of the current on a day when the moon is near its maximum declination. It will be noted that when there are but one ebb and one flood in a day the flood lasts for the greater part of the day and is of varying strength. Starting with the slack before ebb, A, the figure shows that the current gradually increases to a maximum ebb at B, after which it begins to increase to a slack before flood at C. From this slack, the current gradually increases to a maximum flood at D and then begins to decrease gradually to a smaller velocity at E, called the minimum flood. From this point the current again increases to of second maximum flood, F, after which it gradually decreases to a slack before ebb at G.

PHASES OF THE MOON, 2014

Standard time (120° E) of the moon's phases, apogee, perigee, greatest north and south declination, moon on the equator, and the solar equinoxes and solstices.

JANUARY			
	D	H	M
●	01	19	14
P	02	04	01
(	08	11	39
A	16	09	54
☺	16	12	52
)	24	13	20
P	30	17	59
●	31	05	38

FEBRUARY			
	D	H	M
(	07	03	22
A	12	13	11
☺	15	07	53
)	23	01	15
P	28	03	53

MARCH			
	D	H	M
●	01	16	00
(	08	21	27
A	12	03	47
☺	17	01	08
O_1	20	16	57
)	24	09	46
P	28	02	31
●	31	02	45

APRIL			
	D	H	M
(	07	16	31
A	08	22	53
☺	15	15	42
)	22	15	52
P	23	08	28
●	29	14	14

MAY			
	D	H	M
(	07	11	15
A	06	18	23
☺	15	03	16
)	21	20	59
P	18	19	59
●	29	02	40

JUNE			
	D	H	M
A	03	12	26
(	06	04	39
☺	13	12	11
)	20	02	39
P	15	11	35
O_2	21	10	51
●	27	16	08

JULY			
	D	H	M
A	01	03	11
(	05	19	59
☺	12	19	25
P	13	16	28
)	19	10	08
●	27	06	42
A	28	11	28

AUGUST			
	D	H	M
(	04	08	50
☺	11	02	09
P	11	01	44
)	17	20	26
A	24	14	10
●	25	22	13

SEPTEMBER			
	D	H	M
(	02	19	11
P	08	11	30
☺	9	09	38
)	16	10	05
A	20	22	23
O_3	23	02	29
●	24	14	14

OCTOBER			
	D	H	M
(	02	03	32
P	06	17	42
☺	08	18	51
)	16	03	12
A	18	14	06
●	24	04	57
(	31	10	48

NOVEMBER			
	D	H	M
P	03	08	22
☺	07	06	23
)	14	23	15
A	15	09	57
●	22	20	32
P	28	07	12
(	29	18	06

DECEMBER			
	D	H	M
☺	06	20	27
A	13	07	04
)	14	20	57
O_4	21	23	03
●	22	09	36
P	25	00	44
(	29	04	31

Legend

- ● New Moon
- (First Quarter
- ☺ Full Moon
-) Last Quarter
- A Moon at Apogee
- P Moon at Perigee
- O_1 Sun at Vernal Equinox
- O_2 Sun at Summer Solstice
- O_3 Sun at Autumnal Equinox
- O_4 Sun at Winter Solstice

Annex 596

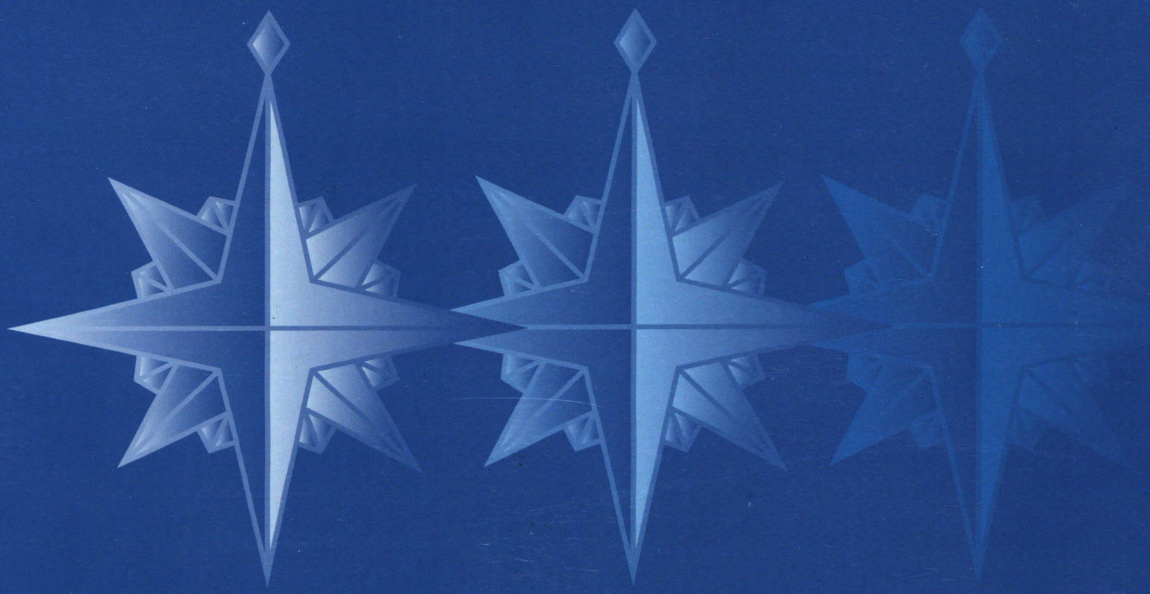
Japan Coast Guard, *Document No. 6011: Chart Symbols and Abbreviations* (Feb. 2013)

第６０１１号

海 図 図 式

平成 25年 2 月　刊行

海　上　保　安　庁



No 6011

CHART SYMBOLS AND ABBREVIATIONS

JAPAN COAST GUARD

FEBRUARY 2013

Introduction

Chart 6011 contains the symbols and abbreviations used on nautical charts published by the Hydrographic and Oceanographic Department, Japan Coast Guard. Chart 6011 is based on the "Chart Specifications of the IHO" which came into force at the XIIth International Hydrographic Conference 1982 in Monaco, with later additions and corrections.

1 Chart Projection

Nautical charts compiled by Japan Coast Guard are mainly constructed on Mercator projection.

2 Scales basement

Charts with scales of smaller than 1:100,000 for the area of Nippon and its adjacent seas are mainly based on the scale length of the longitude at the 35°, and those of larger than 1:100,000 are based on the middle latitude of the chart.

3 Latitude and Longitude

Latitude and longitude are based on WGS 84.

4 Datum level for soundings

Soundings on nautical chart are referred to the level of $Hm+Hs+H'+Ho$ below the Mean Sea Level. This is to the Level of Nearly Lowest Low Water. (Hm,Hs,H',Ho, lag of the tide, M_2,S_2,K_1,O_1, major four tidal components)
(see Pub. 781 "Tide Table" Vol.I)

- M_2 : Principal lunar semi-diurnal tide
- S_2 : Principal solar diurnal tide
- K_1 : Lumi-solar diurnal tide
- O_1 : Principal lunar diurnal tide

5 Soundings (including Swept Depths)

Soundings are shown in metres with the first decimal place except .0 up to the depth of 20.9 metres. All fractions are rounded off sounding from 21 less than 31 metres are shown with 0.5 meter.

6 Drying heights

Drying heights, the portion between the Level of Nearly Lowest Low Water and the Level of Nearly Highest High Water, are referred to the Level of Nearly Lowest Low Water and shown in underlined metres with the first decimal place except .0 up to 10 metres.

7 Heights

Heights are refered to the Mean Sea Level and shown in metres with the first decimal place except .0 up to 5 metres.
Vertical bridge clearances are refered to Nearly Hightest High Water.

8 Coastlines (including river shoreline and lake shoreline)

Coastlines are determined by the line of intersection of the land and the Level of Nearly Highest High Water.

9 Low water line

Low Water Line are determined by the line of intersection of the land the level of Nearly Lowest Low Water.

10 Bearings

Bearings refer to the true compass in degrees, or in degree and minutes.

11 Nautical miles

A Nautical Mile is the length of one minute of latitude at the place.
An International Nautical Mile is 1,852 metres.

12 Catalogue of Nautical charts and publications

All nautical charts and published by Japan Coast Guard are listed in Pub. No 901 "Catalogue of Nautical Charts and Publications".

13 Continuous corrections

Japan Coast Guard promulagates weekly the "Notices to Mariners" to update nautical charts.
Year, date and paragraph numbers of Notices to Mariners which updates a chart are shown at the bottom left-hand margin of the chart.

14 Chart reference

When larger scale charts exist, they should always be used, as they contain further essential navigational information.

15 INT Charts

International chart number are shown in magenta with the prefix "INT". (e.g. INT 510)

16 IALA Maritime Buoyage System

IALA Buoyage System has Buoyage Regions A and B. Japan adopts the Region B.

17 Dimensions of plate

The dimensions of the neat line of each chart are shown in millimetres at the bottom right-hand corner margin of a chart.

Annex 597

Center for Strategic & International Studies, Asia Maritime Transparency Initiative, "Island Tracker", *available at* http://amti.csis.org/island-tracker/ (last accessed 21 July 2015)

ASIA MARITIME TRANSPARENCY INITIATIVE

Follow the latest developments on island reclamation activities in maritime Asia. Exclusive new satellite imagery is added on a regular basis.

Island Building

Cuarteron Reef

U.S. Board of Geographic Names: Cuarteron Reef

Chinese: Huayang Jiao (阳礁)

Philippine: Calderon Reef

Vietnamese: Bãi Châu Viên

The artificial island at Cuarteron Reef saw most of its construction and dredging during the summer of 2014. Construction of buildings and facilities continues today.

Click here to explore.

Fiery Cross Reef

U.S. Board of Geographic Names: Fiery Cross Reef

Chinese: Yongshu Reef (暑礁)

Philippine: Kagitingan Reef

Vietnamese: Đá Chữ Thập

Reclamation on Fiery Cross Reef began in August of 2014. Principal landmass construction was finished by November. Since January of 2015, construction has begun on an airstrip estimated at 3,110 meters in length. Work has also proceeded on a port facility.

Click here to explore.

Gaven Reef

U.S. Board of Geographic Names: Gaven Reefs

Chinese: Nanxun Jiao (　　礁)

Philippine: Burgos Reefs

Vietnamese: Đá Ga Ven

Construction at Gaven Reef began sometime after March 30, 2014. The island that has been reclaimed since then measures approximately 300 by 250 meters with causeways extending from a central island.

Click here to explore.

Hughes Reef

U.S. Board of Geographic Names: Hughes Reef

Chinese: Dongmen (　　礁)

Philippine: Đá Tư Nghĩa

Construction on Hughes Reef began in summer 2014. What was once a 380 square meter concrete platform on stilts has been expanded to a 75,000 square meter island through dredging and reclamation activity.

Click here to explore.

Johnson Reef

U.S. Board of Geographic Names: Johnson Reef

Chinese: Chigua Jiao (赤　礁)

Philippine: Mabini Reef

Vietnamese: Đá Gạc Ma

Though reclamation began far earlier, significant progress on building construction was made at Johnson South Reef in late 2014.

Click here to explore.

Mischief Reef

U.S. Board of Geographic Names: Mischief Reef

Chinese: Meiji Jiao (美　礁)

Tagalog: Panganiban reef

Vietnamese: Đá Vành Khăn

Beginning in early 2015, Mischief Reef has undergone extensive reclamation activity along the western rim of the reef. Recent widening of the southern entrance to the reef, coupled with sightings of PLAN naval vessels around the reef, may suggest a future role for the reclaimed reef as a naval base.

Click here to explore.

Subi Reef

U.S. Board of Geographic Names: Subi Reef

Chinese: Zhubi Dao (渚　礁)

Philippine: Zamora

Vietnamese: Đá Xu Bi

Subi Reef is the most recent feature to undergo significant reclamation efforts by China. Originally occupied in 1988, since July of 2014 it has seen significant expansion of the landmass with some analysis suggesting it might have the footprint to support a second airstrip, much like Fiery Cross Reef.

Click here to explore.

Sand Cay

U.S. Board of Geographic Names: Sand Cay
Chinese: Dungian Shazhou (敦　沙洲), Beixiao Dao (北小　)
Philippine: Bailan Island
Vietnamese: Đảo Sơn Ca

Sand Cay was occupied by Vietnam in 1975 and has undergone sporadic occupation and development ever since. Between 2011 and 2015, Vietnam has expanded the island at Sand Cay by more than 50%, adding extensive defensive structures and facilities and improving existing western facilities.

Click here to explore.

West Reef

U.S. Board of Geographic Names: West Reef

Chinese: Xi Jiao (西礁)

Philippine: Kanlurang Quezon

Vietnamese: Đá Tây

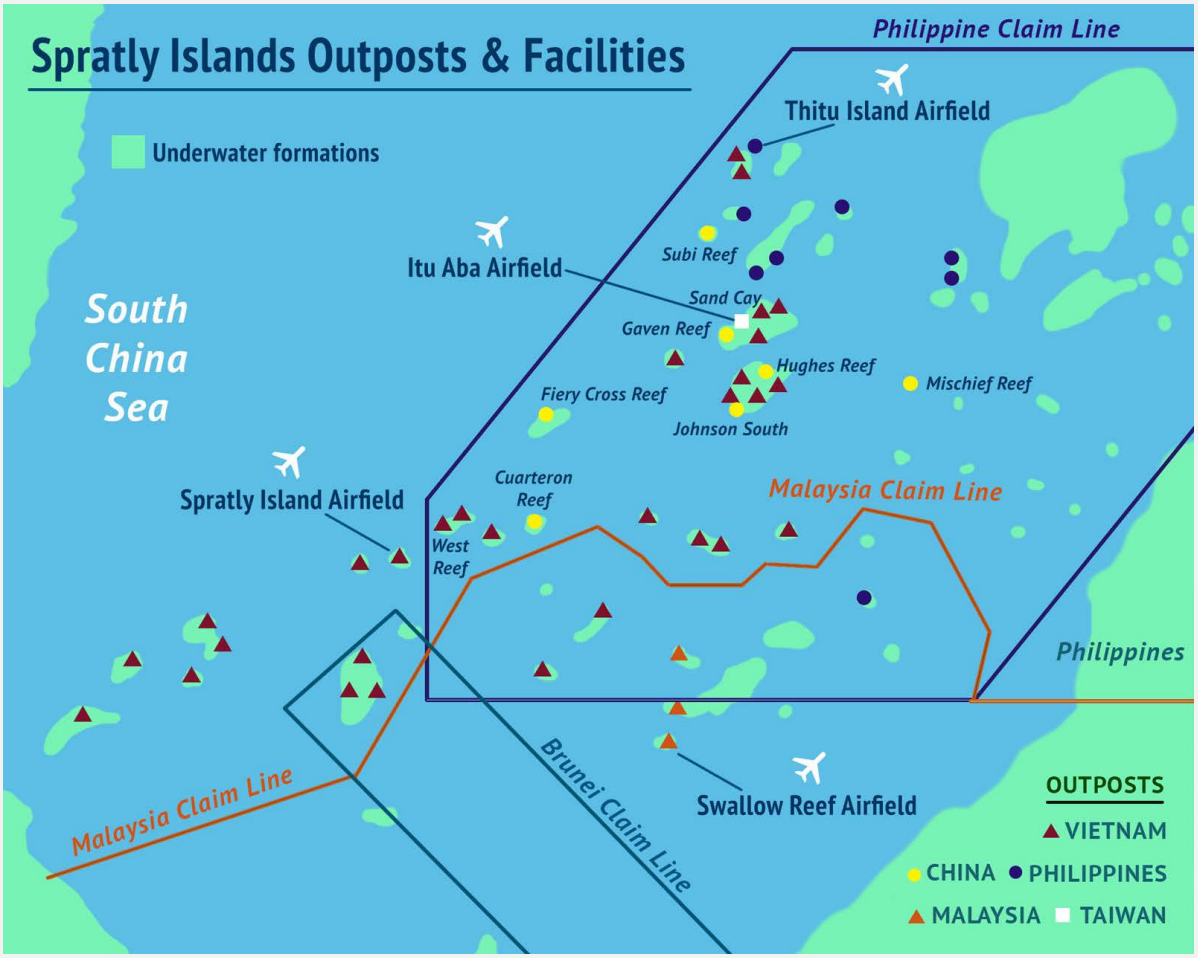
Vietnam is believed to have controlled West Reef without interruption since 1975. Vietnam built a lighthouse on the reef in May or June of 1994 and built various military structures throughout the feature in the years that followed. Beginning in August 2012, the reef has been the site of extensive land reclamation and construction with additional facilities and a harbor being built.

Click here to explore.

ASIA MARITIME TRANSPARENCY INITIATIVE

related inquiries please contact the Asia Maritime Transparency Initiative.

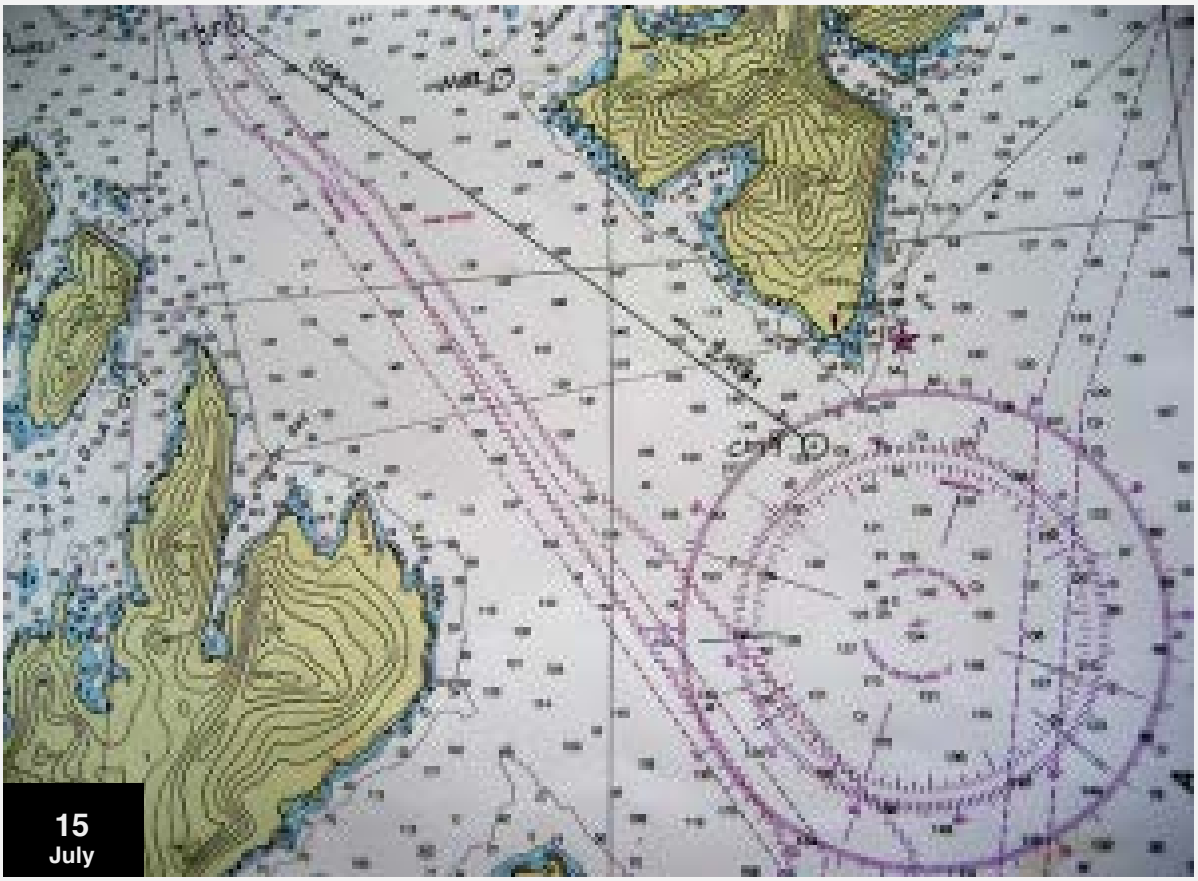
Outposts & Claims



This map shows the major outposts and facilities in the Spratly islands. These islands are known in Chinese as the Nansha Islands, in Malay as the Kepulauan Spratly and in Vietnamese as the Quần đảo Trường Sa. The four operational airfields at Swallow Reef (Malaysia), Itu Aba (Taiwan), Thitu Island (Philippines) and Spratly Island (Vietnam) are

indicated. China is in the process of constructing a fifth airstrip on the reclaimed land atop Fiery Cross reef. The yellow dots indicate reefs that China has reclaimed or begun to reclaim: Fiery Cross, Cuarteron, Hughes, Johnson South, Mischief, Gaven and Subi. It is notable that all seven of these reclaimed reefs fall within the claims of the Philippines, with Mischief Reef falling within the Philippines' Exclusive Economic Zone.

Island Reclamation Analysis



15
July

What Makes an Island? Land Reclamation and the South China Sea Arbitration

By Christopher Mirasola

We have all heard about land reclamation by the People's Republic of China (PRC) in the South China Sea, particularly the southeastern region known as the Spratly Group. But much

less is being said about what the Permanent Court of Arbitration just finished considering for the past week: are ...

Diplomacy Changes, Construction Continues: New Images of Mischief and Subi Reefs

By AMTI Leadership

On June 16, 2015, China's Foreign Ministry spokesman Lu Kang announced that "as planned, the land reclamation project of China's construction on some stationed islands and reefs of the Nansha (Spratly) Islands will be completed in the upcoming days." He went on to note that after ...

VIEW POST

China's Land Reclamation Announcement: A Change in Message, Not in Policy

By Michael Green, Ernest Bower, Mira Rapp-Hooper, Chris Johnson and Bonnie Glaser

Q1: What has China announced about its land reclamation activities in the Spratly Islands? A1: On June 16, China's Foreign Ministry spokesperson Lu Kang announced that "as planned, the land reclamation project of China's construction on some stationed islands and reefs of the Nansha (Spratly) ...

VIEW POST

16
June

China's Claims are Unambiguously Ambiguous

By Peter Dutton

In the first paragraph of his recent AMTI article, Zheng Zhihua essentially conflates two issues–questions of sovereignty over islands and questions of jurisdiction over resources and the boundaries delimiting them–when he says: A few international observers also accuse China of ...

VIEW POST

VIEW ALL LAND RECLAMATION ANALYSIS

Subscribe to the AMTI Brief

Navigation

Island Tracker
Analysis
Timeline
Documents Library
Atlas
About

Search

Promoting openness and exchange in maritime Asia.

CSIS | CENTER FOR STRATEGIC & INTERNATIONAL STUDIES

Annex 598

EOMAP, "Satellite Derived Bathymetry", *available at* http://www.eomap.com/services/bathymetry/ (accessed 21 July 2015)

Satellite Derived Bathymetry (SDB)

Satellite Derived Bathymetry – Introduction

Our Satellite-Derived bathymetry (SDB) services have been **deployed and validated world-wide over the last 15 years**, and provide contiguous, 3-D water depth information for optically shallow areas.

Bathymetric data in shallow waters are critical to **marine engineering, environmental management and hydrographic applications**, amongst others. **Key benefits** of our **state-of-the-art SDB services** include:

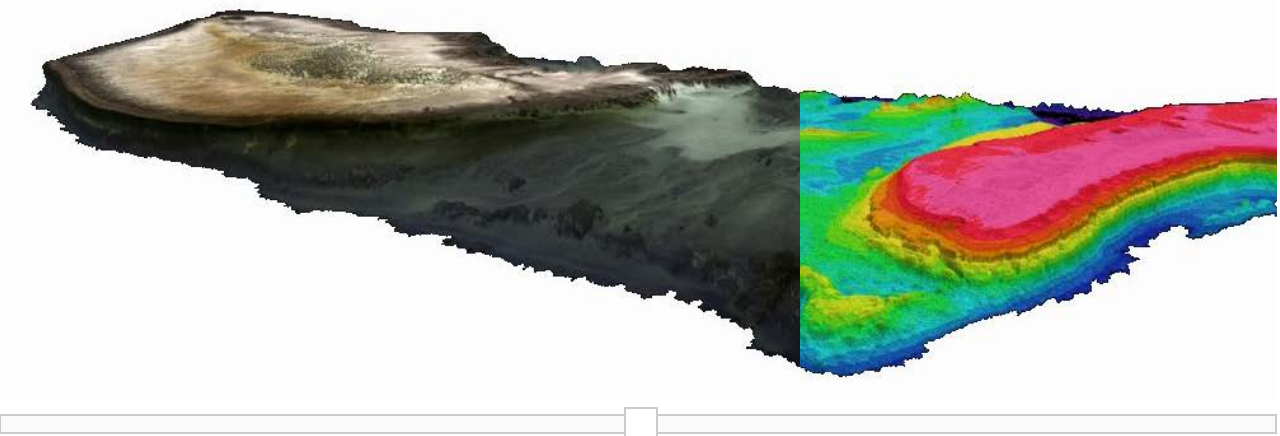
- remote/denied area access
- rapid delivery, no mobilization or permits required
- very cost effective
- non-intrusive
- no health-and-safety-risks
- validated world-wide
- applicable from small scale (25 km²) up to big (>10,000 km²) scale

The Great Barrier Reef Bathymetry

Get an impression of the world's largest high resolution bathymetry survey!

South China Sea Bathymetry

The most up-to-date and detailed bathymetry data set for the islands in South China Sea.



Background

We are the **largest commercial producer of satellite derived shallow water depth data globally**. The **proprietary processing and production workflows** are based on more than 15 years of research and development at EOMAP and the German Aerospace Center (DLR).

Product specification

The bathymetry products are available at a **range of spatial resolutions** (grid spacing) from 0.3 m to 30 m – for all optical shallow waters down to a **maximum depth of 35 m**. The aggregated results of our worldwide validation exercises, using accoustic and LiDAR comparisons, demonstrate **typical accuracies of within 10% of actual depth +/- 0.5 m**, for optical clear water conditions. Our SDB products are provided with uncertainty measures.

Documents for further reading

- EOMAP Bathymetry whitepaper
- Siermann, J., Harvey, C., Morgan, G., & Heege, T. (2014, January 19). Satellite derived Bathymetry and Digital Elevation Models (DEM). International Petroleum Technology Conference. doi:10.2523/17346-MS
- Rob Beaman, James Cook University. 2015. 3D Satellite Mapping of Coral Sea Reef
- Coral Sea Bathymetry mapping published (press release)
- EOMAP, 2013. Mapping the world's largest coral reef
- Launch of the Great Barrier Reef Bathymetry (press release)

Sample Data

A full sample dataset for our 2m high-resolution and 15m medium resolution bathymetry products can be accessed using the download form below. Please fill in your name and e-mail address and submit your request! Your download will be available immediately, just click on the link that will appear.
Please use our contact form to enquire further information about our products.

Annex 599

"Philippines Claim that Huangyan Dao and Second Thomas Shoal Have Been 'Occupied': Wang Yi Espouses a Firm Position", *China.com* (2 July 2013)

Philippines Claim that Huangyan Dao and Second Thomas Shoal Have Been "Occupied" Wang Yi Espouses a Firm Position

News Center-China.com.cn news.china.com.cn Date: 07-02-2013 Leave a Comment>>

China.com.cn reported on July 2, according to information posted at the Ministry of Foreign Affairs website on July 2, 2013, that the Minister of Foreign Affairs, Wang Yi was in Seri Begawan attending the ASEAN Region Forum (ARF) meeting of foreign ministers, when he directly addressed the statements made at the conference by the Philippines saying that Huangyan Dao and the Second Thomas Shoal had been occupied, espousing the Chinese Government's firm position.

Wang Yi said, this conference was not originally meant to be used as a venue to discuss specifics of the South China Sea cases, but if the Philippines brings it up, then we must discuss the facts clearly.

Wang Yi introduced the factual aspects of the South China Sea question, and emphasized there are an abundance of historical and legal reasons that support China's position, and, as the previous Chinese Government had maintained, this position has enjoyed broad support from the Chinese People. We steadfastly maintain our national sovereignty and maritime rights. Additionally, we are committed to working with the countries involved to resolve this dispute through negotiations. This is stipulated in the *Declaration of Conduct of Parties in the South China Sea*, and is a mutual promise made between China and ASEAN.

Wang Yi stated that the overall situation in the South China Sea was stable, and there were no problems stemming from interference with freedom of navigation. During this meeting of the foreign ministers, my ASEAN colleagues and I have participated in deep exchanges of ideas on the South China Sea question, and have built confidence between each other. We are all in agreement that the relationship between China and ASEAN is comprehensive and should not be defined by any one issue, and we cannot allow any one issue to affect the larger framework of amicable cooperation. The South China Sea question is not a problem between China and ASEAN, it is only an issue between China and a small number of Southeast Asian nations. China and the ASEAN nations are comprehensively and effectively implementing the *Declaration of Conduct of Parties in the South China Sea*, and we have the full ability to maintain peace and stability in the South China Sea. We have already agreed that this September, the high level meetings and joint working group meetings in the next round of implementation of the *Declaration* will take place in China to promote the comprehensive, effective implementation of the *Declaration*. These meetings will also promote negotiations on how best to promote "Standards of Conduct in the South China Sea" under the framework of the implemented *Declaration*, and on a foundation built on agreement to orderly and gradually advance the progress of the "Standards."

Wang Yi quoted a multitude of facts as a basis to prove that China has indisputable sovereignty over Huangyan Dao and Second Thomas Shoal, and emphasized that China has made necessary responses to provocative behavior, which were all legitimate.

Wang Yi emphasized that the bilateral dispute should be resolved through bilateral negotiations. If you only want to escalate the situation at an occasion with many parties present, and do not help solve the problem, you will only damage the relationship between the two countries, and these actions do not benefit the nation or its people.

The foreign ministers from many nations have issued statements recognizing the new developments made in achieving stability in the South China Sea by China and ASEAN, and

have stated that the disputes in the South China Sea should be resolved through negotiations by the countries involved. Each party should, under the comprehensive and effective implementation of the "Standards" framework, advance the progress of the formulation of the "Standards." There are several nations who take the position that outside forces or countries outside the region should not insert themselves into the disputes in the South China Sea. The South China Sea question should not be expanded internationally otherwise it will not be helpful to the resolution of the problem. ASEAN nations are enthusiastically expressing their willingness to come together with China to maintain regional peace and stability.

Text Source: china.com.cn Editor in Charge: Zhu Zi

http://news.china.com.cn/txt/2013-07/02/content_29299621.htm

菲声称黄岩岛和仁爱礁被"侵占" 王毅阐述严正立场

新闻中心-中国网 news.china.com.cn 时间： 2013-07-02 发表评论>>

中国网7月2日讯 据外交部网站消息，2013年7月2日，外交部长王毅在文莱斯里巴加湾出席东盟地区论坛（ARF）外长会时，针对菲律宾在会上声称黄岩岛和仁爱礁被“侵占”事，阐述了中国政府的严正立场。

王毅说，这个会议本来不是讨论南海具体案件的场所，但既然菲律宾提出来了，我们就有必要把事实讲清楚。

王毅介绍了南海问题的事实经纬，强调中方在南海问题上的立场有着充分历史和法理依据，为历届中国政府所坚持，得到中国人民广泛支持。我们维护国家主权和海洋权益的决心坚定不移。同时，我们致力于同当事国通过协商谈判解决争议。这是《南海各方行为宣言》作出的规定，也是中国-东盟共同作出的承诺。

王毅指出，南海形势总体稳定，航行自由也没有任何问题。此次外长会期间，我与东盟同事们就南海问题深入交换意见，增进了互信。我们一致认为，中国与东盟关系是全方位的，不能被个别问题所定义，不能让个别问题影响双方友好合作大局。南海问题不是中国与东盟之间的问题，而仅是中国同少数东南亚国家的问题。中国与东盟国家正在全面有效落实《南海各方行为宣言》，我们完全有能力维护好南海和平稳定。我们已经同意今年9月在中国举行下一轮落实《宣言》高官会和联合工作组会议，推动全面有效落实《宣言》，并在落实《宣言》框架下就如何推进“南海行为准则”举行磋商，在协商一致基础上循序渐进推动“准则”进程。

王毅引用大量事实和依据，证明中国对黄岩岛和仁爱礁拥有无可争辩的主权，强调中方对挑衅行为作出必要反应，是完全正当的。

王毅强调，双边争议本应通过双边协商予以解决。如只想拿到多边场合炒作，无助于问题的解决，只能损害两国关系，也不符合这个国家和人民的利益。

许多国家外长在发言中充分肯定中国与东盟就维护南海稳定取得的新进展，指出南海争议应由直接当事国通过协商谈判解决。各方应在全面有效落实《宣言》框架下，推进制订“准则”进程。有些国家认为，外部势力和域外国家不应介入南海争议，南海问题不应国际化，否则不利于问题的解决。东盟国家纷纷表示愿同中方共同维护地区和平与稳定。

文章来源：中国网 责任编辑：苧梓

Annex 600

Alexis Romero, "Gov't to spend P480M to upgrade Navy, Air Force facilities in Spratlys", *The Philippine Star* (4 Dec. 2013)

Gov't to spend P480M to upgrade Navy, Air Force facilities in Spratlys

By Alexis Romero (philstar.com) | Updated December 4, 2013 - 5:57pm

MANILA, Philippines - The government is planning to spend almost P480 million to upgrade the Air Force and Navy facilities in Pag-Asa Island, one of the areas occupied by the Philippines in the disputed Spratlys region.

Defense department data showed that the project costs P479.75 million and would be undertaken through public bidding.

The project will be bankrolled by the Armed Forces Modernization Law of 1995 and is now being studied by security officials.

Details of the project were not immediately available.

Sources, however, said the multi-million project would cover the upgrade of naval facilities and the repair of the eroding airstrip.

The project is expected to improve the military's monitoring capabilities in the West Philippine Sea (South China Sea), the subject of a territorial row in the region.

Pag-Asa Island is part of Kalayaan Island, a fifth class municipality in Palawan.

The Philippines has constructed a town hall, a 1.3-kilometer airstrip, a naval station, a health center and a kindergarten school at Pag-asa Island.

The Defense department earlier bared plans to spend P313-million to construct vital facilities at a naval detachment in Oyster Bay facing the West Philippine Sea.

The project would involve the building of pier, harbor and support facilities at the Palawan-based detachment.

The construction of the pier and harbor costs P237.12 million while the building of support facilities will require P76.49 million.

Oyster Bay is located about 160 kilometers from the Spratly Islands, the subject of a territorial dispute between the Philippines and China.

The Philippines, China, Brunei, Malaysia, Vietnam and Taiwan claim either part or the entire Spratly Islands, which is said to be rich in oil.

China has been building structures in disputed areas to assert its territorial claims, raising concerns among other claimants.

It has built a military garrison in the Mischief Reef or Panganiban Reef, one of the areas being claimed by the Philippines. Mischief Reef is located about 130 nautical miles off Palawan and has been occupied by China since 1995.

China initially built structures on stilts at the reef, supposedly to provide shelter for fishermen but these were later on converted into a military garrison with powerful radars.

China has also installed a powerful radar station in Subi Reef near Pag-asa Island.

Annex 601

Jim Gomez, "Old US ship home to Filipinos in China standoff", *Associated Press* (31 Mar. 2014)

Old US ship home to Filipinos in China standoff

BY **JIM GOMEZ**

MAR. 31, 2014 10:05 AM EDT

ABOARD BRP SIERRA MADRE, Spratly Islands (AP) — On board the crumbling carcass of this World War II-era warship, Filipino marine 1st Lt. Mike Pelotera and his eight men make their way to a mid-level deck to raise the Philippine flag up a leaning pole and then salute it. Across the calm, turquoise waters, two Chinese coast guard ships lurk, looking on.

Its hull riddled with holes and rust, the BRP Sierra Madre has become a fragile symbol of the Philippines' claim to Second Thomas Shoal, an eight-kilometer (five-mile) -long submerged coral outcrop that has been disputed by China and the Philippines for years.

It's a lonely ship, where Pelotera and his team wage a daily battle against isolation.

"There's a point where you tend to feel low," Pelotera said of the challenges of his team's four-month deployment at the reef, where there is no land to stand on and nothing to stare at all day but sea. "But we have to kill the boredom because there is an important mission to fulfill."

The Philippine navy inherited the former U.S. tank-landing ship USS Harnett County in 1976, and ran it deliberately aground at Second Thomas Shoal in 1999.

A Chinese frigate and maritime surveillance ships arrived last year to press China's claim to the shoal, which is believed to be sitting atop undersea oil and gas reserves. The move was an example of China's increasing assertiveness in the South China Sea, something that is alarming the United States,

Manila's longtime ally.

Analysts say China's strategy is to slowly take possession of islands and outcrops in the South China Sea, using intimidation where necessary but avoiding any major confrontation. Its military might and economic dominance in the region mean it can push its weight around with little fear.

Second Thomas Shoal and the nearby Spratly Islands lie about 120 miles (190 kilometers) from the western Philippine province of Palawan, and about 700 miles (more than 1,000 kilometers) from southern China. China's foreign ministry says Beijing has "indisputable sovereignty" over the shoal.

The Sierra Madre is now effectively a shipwreck, but the Philippine military has not decommissioned it. This makes the ship an extension of the government and means any attack on the ship is tantamount to an assault against the Philippines. The Chinese ships are around 5 miles (8 kilometers) from the

Annex 602

Carmela Fonbuena, "PH puts on hold repair of airstrip in West PH Sea", *Rappler* (4 Oct. 2014)

PHILIPPINES

PH puts on hold repair of airstrip in West PH Sea

Defense Secretary Voltaire Gazmin says the President had ordered them 'not to disturb the status quo' to allow the Philippines to keep its 'moral high ground' while the case is pending in the arbitral tribunal

Rappler.com

Published 9:53 AM, October 04, 2014
Updated 9:54 AM, Oct 04, 2014

FREEZE: The Philippines halts plans to repair the damaged Rancudo Air Field on Pag-asa Island in the Spratlys

MANILA, Philippines – Philippine President Benigno Aquino III stopped plans to repair the Rancudo Airstip in Pag-asa Island in the West Philippine Sea, Defense Secretary Voltaire Gazmin told senators on Friday, October 3.

“We do have funds for the improvement of, for example, the Pag-asa airport, but this is being held in abeyance because of the case that we have filed. It might affect the case that we have filed [with the arbitral tribunal],” Gazmin said during the committee on appropriations hearing on the budget of the defense department.

Gazmin said the President ordered the department to "not disturb the status quo" while the case is pending to allow the country to keep its "moral high ground" on the matter. The Philippines continues to protest China's reclamation and construction activities in disputed maritime territories for what appears to be a military base in the Mabini Reef and lighthouses in other areas.

The defense department earlier allocated P480 million to upgrade facilities of the Philippine Navy and the Philippine Air Force there.

The country lodged an international arbitration case against China over its claims in the West Philippine Sea (South China Sea). These include maritime territories within the country's 200 nautical mile exclusive economic zone under the United Nations Convention on the Laws of the Sea. (READ: Aquino: This battle is not just about China)

Pag-asa, or Tithu, is the biggest island that the country occupies in the West Philippine Sea. It is also the Philippines' seat of power in the area. The island that is populated by several hundred Filipinos also has a town hall, a military post, a health center, and a school. The island is also being claimed by China, Taiwan, and Vietnam.

The Philippine Air Force had been looking forward to getting the airstrip repaired to allow safer landing for its C130 cargo plane. Portions of the 1.3-kilometer runway are eroded. Aircrafts can land but repairs are needed for security purposes. (READ: Hitches in repair of PH air field in Spratlys) **– Carmela Fonbuena/Rappler.com**

Annex 603

Manuel Mogato, "Exclusive: Philippines reinforcing rusting ship on Spratly reef outpost - sources", *Reuters* (13 July 2015)

World | Mon Jul 13, 2015 9:26pm EDT

Related: WORLD, CHINA, SOUTH CHINA SEA

Exclusive: Philippines reinforcing rusting ship on Spratly reef outpost - sources

MANILA | BY MANUEL MOGATO

Filipino soldiers wave from the dilapidated Sierra Madre ship of the Philippine Navy as it is anchored near Ayungin shoal (Second Thomas Shoal) in the Spratly group of islands in the South China Sea, west of Palawan, Philippines, May 11, 2015.
REUTERS/RITCHIE A. TONGO/POOL

The Philippine navy is quietly reinforcing the hull and deck of a rusting ship it ran aground on a disputed South China Sea reef in 1999 to stop it breaking apart, determined to hold the shoal as Beijing creates a string of man-made islands nearby.

Using wooden fishing boats and other small craft, the navy has run the gauntlet of the Chinese coastguard to move cement, steel, cabling and welding equipment to the BRP Sierra Madre since late last year, two navy officers who have been inside the vessel told Reuters in recent interviews.

The 100 meter-long (330-foot) tank landing ship was built for the U.S. Navy during World War Two. It was eventually transferred to the Philippine navy, which deliberately grounded it on Second Thomas Shoal to mark Manila's claim to the reef in the Spratly archipelago of the South China Sea. A small contingent of Philippine soldiers are stationed onboard.

Manila regards Second Thomas Shoal, which lies 105 nautical miles (195 km) southwest of the Philippine region of Palawan, as being within its 200-nautical mile exclusive economic zone. China, which claims virtually all the South China Sea, says the reef is part of its territory.

"We know China has been waiting for the ship to disintegrate but we are doing everything to hold it together," said one of the officers, adding that while the work was progressing slowly, it should be finished by the year-end.

The other naval officer said welding was being done at night because of the heat.

Concrete foundations were being laid inside the ship's hull to try to stabilize it, he added.

Without giving exact dates, both sources said they witnessed the repairs taking place earlier this year. They declined to be identified because they were not authorized to speak to the media.

The soldiers currently stationed on the ship, who are demolition experts, were doing the work, said the second source.

Just to the west of Second Thomas Shoal is Mischief Reef, one of seven coral formations in the Spratlys that China is rapidly turning into islands that Beijing says will have undefined military purposes.

Vietnam, Malaysia, Taiwan and Brunei also have overlapping claims to the Spratly waterway, which is some 1,100 km (680 miles) from the Chinese mainland.

RUSTING OUTPOST

Asked about the repairs, Philippine Foreign Ministry spokesman Charles Jose declined to comment. But such work would not violate an informal code of conduct signed in 2002 by China and Southeast Asian states that prohibited any change to the status quo in disputed areas, he said.

"In our view, repairs and maintenance of existing facilities are allowed ... especially if such repairs and maintenance work are for the safety of our personnel and safety of navigation," Jose added.

The Philippine Defense Ministry declined to comment.

China's Defense and Foreign Ministries did not respond to a request for comment.

A Philippine general familiar with the repairs told Reuters the ship's hull and deck were being strengthened, and air-conditioning units added.

"We are improving the living quarters inside, to make life for our soldiers more comfortable," he said, declining to give further details about the repairs or be identified.

Pictures taken by a Reuters photographer who sailed to the BRP Sierra Madre with other media in March last year show a pockmarked vessel covered in rust, sitting on the permanently submerged reef but listing slightly to one side. Much of the boat's hull is visible.

BUT STILL ON ACTIVE DUTY

Besides being a military outpost, the BRP Sierra Madre is also a commissioned Philippine navy ship.

That means Manila could request U.S. military assistance under a decades-old security treaty with Washington if the ship was attacked, said senior Philippine military officials.

"Even if it's covered with rust, it will remain an active duty commissioned navy ship. It's a symbol of our sovereignty," said the Philippine general.

Second Thomas Shoal illustrates the mismatch in power between the Philippines and China.

Since the start of 2014, the Philippine navy's regular attempts to re-supply soldiers on the

BRP Sierra Madre with food and water have become a cat-and-mouse routine, with large Chinese coastguard vessels on patrol in the area trying to block the path of the smaller Philippine boats, naval officials said.

The Philippine vessels have always gotten through by making a run for the shoal's shallow waters, which aren't deep enough for the Chinese coastguard, naval officials said. The tear-shaped shoal itself is large, some 10-11 nautical miles from top to bottom.

Zhang Baohui, a mainland security expert at Hong Kong's Lingnan University, said Beijing would be angry about the repairs, adding that Chinese ships would probably continue their "menacing" tactics. But they would not do anything that could be considered an act of war, Zhang said.

"The larger geo-strategic context is more important than Second Thomas Shoal," he said.

(Additional reporting by Greg Torode in HONG KONG and Ben Blanchard in BEIJING; Editing by Dean Yates)

Annex 604

Peter B. Beazley, "Technical Aspects of Maritime Boundary Delimitation", *IBRU Maritime Briefing*, Vol. 1, No. 2 (1994)

Maritime Briefing

Volume 1 Number 2
ISBN 1 897643 08 X
1994

Technical Aspects of Maritime Boundary Delimitation

by

P.B. Beazley

Edited by

William Hildesley

International Boundaries Research Unit
Mountjoy Research Centre, Suite 3P
University of Durham
Durham DH1 3UR
UK

Tel: + 44 (0) 191 374 7701
Fax: + 44 (0) 191 374 7702
e-mail: ibru@durham.ac.uk
web-site: www-ibru.dur.ac.uk

Contents

With the advent of global systems it is not a particularly lengthy or difficult task to have the necessary global positioning system observations made that will relate the national datums to an appropriate global reference system within acceptable limits of accuracy.

6. Vertical (Tidal) Datums

The depth measurements shown on a nautical chart are reduced to a common horizontal height known as Chart Datum which is generally a level at or near to the level of the lowest tides. There is, however, no agreed tidal level to which all chart datums conform, although by international agreement the datum should be *"at a plane so low that the tide will not frequently fall below it"*[12]. States wishing to negotiate a maritime boundary may, therefore, have different levels of chart datum.

In theory such differences could produce difficulties in negotiation. For instance a state with a gently shelving shoreline and a low level for chart datum might claim a low-water line significantly further seaward than if it used a higher level. Greater difficulties might arise if one datum resulted in more areas of low-tide elevation being shown that did another. In practice, however, the differences are almost always too small to cause concern. The only instance of the matter being crucial concerned France and Belgium. Here the existence of a low-time elevation about 2½ miles off the French coast was disputed. Agreement was reached to give it half-effect in the construction of the territorial sea boundary.[13]

7. Methods of Boundary Determination

There is in theory no limit to the methods that may be employed to determine a maritime boundary providing only that either the parties agree to it or it is deemed by a Court or Tribunal to be equitable. In the case of the EEZ and Continental Shelf states are required to negotiate on the basis of international law in order to achieve an equitable solution[14]. In the case of the territorial sea, however, failing agreement between them neither party may extend beyond the equidistant line unless it is necessary by reason of historic title or other special circumstances to delimit differently.

The difference in the emphasis between the rules governing the territorial sea boundary and those governing the other two reflects the greater sensitivity of the territorial sea boundary by reason of its proximity to the coast. Where both interested states claim an EEZ the boundary dividing it will also divide the continental shelf out to the outer limit of the EEZ. Even where one or both states claims something other than an EEZ (e.g. fishery jurisdiction only) it is now usual to agree to a single maritime boundary through the zones, including the territorial sea if a territorial sea boundary is not in place.

12 *Repertory of Technical Resolutions* (International Hydrographic organization) Res. A 2.5

13 *IMB* p. 1894

14 1982 Convention Article 15

Annex 605

P. Armstrong & V. Forbes, "The Falkland Islands and Their Adjacent Maritime Area", *IBRU Maritime Briefing* Vol. 2, No. 3 (1997)

International Boundaries Research Unit

MARITIME BRIEFING

Volume 2 Number 3

The Falkland Islands and their Adjacent Maritime Area

Patrick Armstrong and Vivian Forbes

Maritime Briefing

Volume 2 Number 3
ISBN 1-897643-26-8
1997

The Falkland Islands and their Adjacent Maritime Area

by

Patrick Armstrong and Vivian Forbes

Edited by

Clive Schofield

International Boundaries Research Unit
Department of Geography
University of Durham
South Road
Durham DH1 3LE
UK

Tel: UK + 44 (0) 191 334 1961 Fax: UK +44 (0) 191 334 1962
E-mail: ibru@durham.ac.uk
www: http://www-ibru.dur.ac.uk

The Authors

Patrick Armstrong teaches biogeography and environmental management in the Geography Department of the University of Western Australia. He also cooperates with a colleague from that University's Law School in the teaching of a course in environmental law. He has had a long interest in remote islands, and has written extensively on this subject, and on the life and work of the nineteenth century naturalist Charles Darwin, another devotee of islands.

Viv Forbes is a cartographer, map curator and marine geographer based at the University of Western Australia. His initial career was with the Merchant Navy, and it was with them that he spent many years sailing the waters around Australia, East and Southeast Asia. He is the author of a number of publications on maritime boundaries, particularly those of the Indian Ocean region.

Acknowledgements

Travel to the Falkland Islands for the first author was supported by a grant from the National Geographic Society Committee for Research and Exploration. Part of the material in this *Briefing* was presented as a paper at the 4th International Boundaries Conference, IBRU, Durham, July 1996; travel by PHA to this conference was supported by the Faculty of Science of the University of Western Australia. Other parts have been modified from material that was published in IBRU's *Boundary and Security Bulletin* (1993-94) and acknowledgement is due to the editors. Thanks also to Ken Back and Jim McAdam, whose knowledge of the Falklands environment is superlative. We also appreciate the guidance of Lt Commander C. Carleton (UK Territorial Waters Officer) and of Bruce Blanche (of Blanche International, Geological Consultants) on certain points. Guy Foster drew the map for Figure 1.

Both authors much appreciate the encouragement of John Dodson, Head of the Department of Geography at the University of Western Australia.

Contents

Figures

The Falkland Islands and their Adjacent Maritime Area

Patrick Armstrong and Vivian Forbes

1. Introduction

This *Briefing* documents the origins of the dispute relating to sovereignty over a group of remote islands in the South Atlantic, tracing its development over two centuries. The varying ways in which the islands were viewed, both by Britain and by Argentina, over this long period are considered, but the 1982 conflict is not discussed in detail. Efforts by the British administration to encourage economic development in the years following 1982, by providing an effective legal regime, first for offshore fisheries, and later for exploration for hydrocarbons in the Falkland Islands continental shelf are described, and the recent moves towards a cooperative approach to the development of the offshore maritime resources of the region are emphasised.

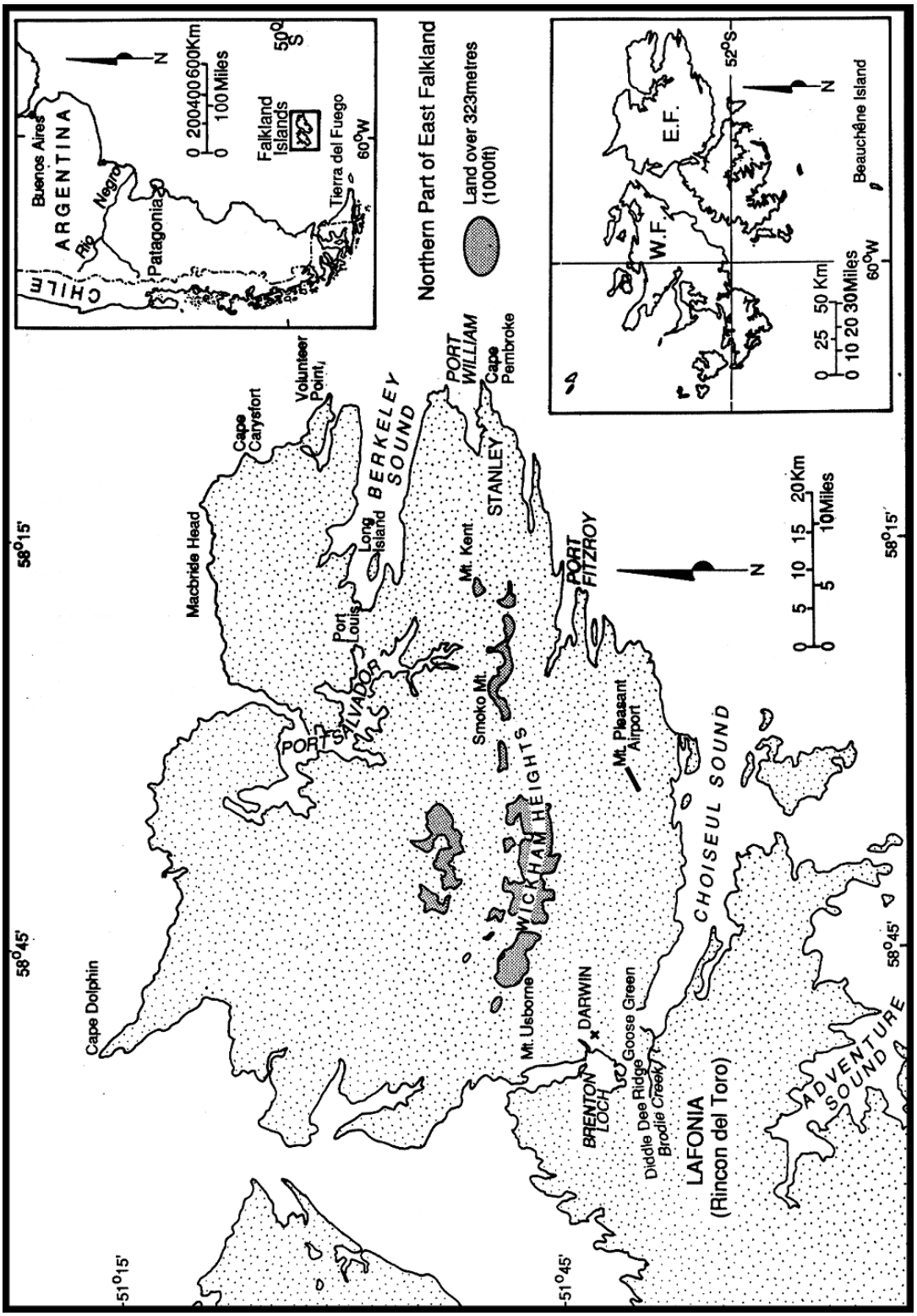
2. The Falkland Islands

The Falkland Islands archipelago comprises two large islands, East and West Falkland, and several hundred smaller islets in the South Atlantic (51°-52°30'S; 57°45'-61°30'W); the total area is about 13,000km^2, and the islands are about 480km from the mainland of South America. Geologically the Falklands have affinities with Africa; the Falkland Islands or Lafonia microplate lay originally to the south and east of southern Africa, having rotated through about 100° before the opening of the South Atlantic.[1] The Falklands consist largely of Palaeozoic sedimentary material; particularly conspicuous is quartzite, in places nearly vertically inclined, and which forms a marked east-west ridge which is especially prominent on East Falkland (see Figure 1).

The highest mountain is Mt. Usborne (approximately 705m). Much of the terrain is covered by thin layers of peat, with a low vegetation of grass and shrub heath. Trees are absent except where they have been planted close to some of the settlements. Stone runs form a conspicuous element in the landscape; these are linear arrangements, probably formed by periglacial activity, of irregularly shaped boulders. The individual boulders vary in size from 10cm to 20m across. The bleak environment is largely controlled by the climate: temperatures average 9°C in the summer months (January, February) and 7°C in the winter. Snow can occur in any month, but seldom lies long; ground frost can also occur at any time of the year, but there are no glaciers or permanent snow beds. Very high winds are also a characteristic – the annual mean is over 30km per hour. There is a permanent population, mainly of English and Scots stock of rather over 2,000, and since the 1982 conflict, a garrison (with associated personnel) of around the

[1] The first suggestion that the Falklands might constitute a rotated fragment of the Africa plate seems to be Aidie, 1952. For more recent discussion see Mitchell, *et al.*, 1986, and Ben-Avraham, *et al.*, 1993. The last of these makes interesting comparisons between structures revealed by recently released geophysical data from off South Africa with data from the continental shelf near the Falklands.

Figure 1: The Falkland Islands



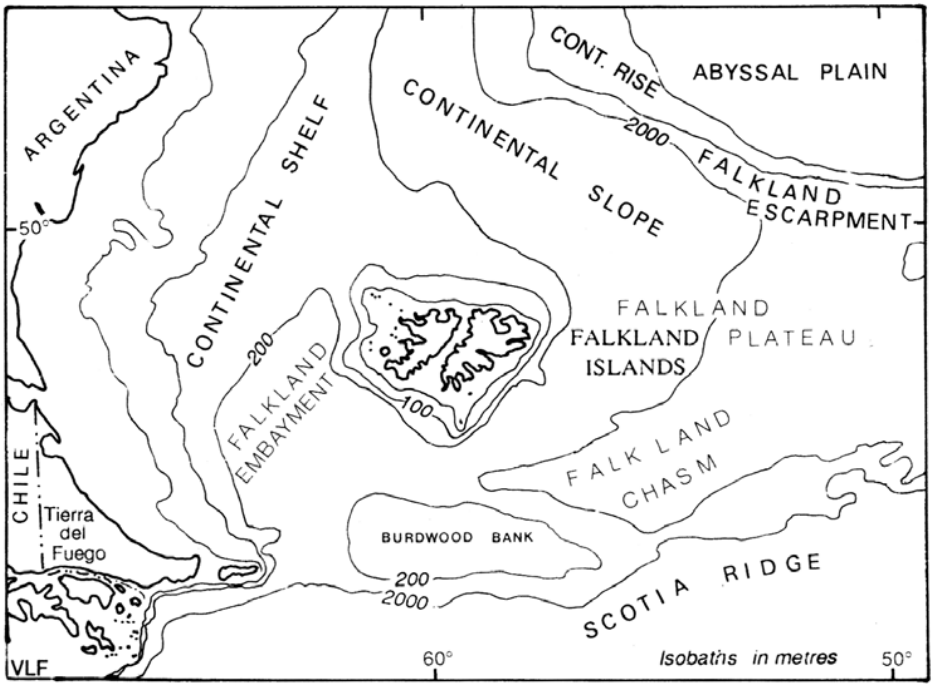
same number. The economy is closely dependent upon wool, but the licence fees from offshore squid fishing are also important. There is a small tourist industry, catering for an elite type of visitor attracted to the extremely beautiful, wild, unpolluted Falklands environment and who comes for the trout fishing or birdwatching.

The location of the islands just to the north of the Antarctic Convergence means that the cool, turbulent oceanic waters around the archipelago are biologically productive. The nearby southern ocean supports large numbers of whales, dolphins, seals and sea birds, feeding upon krill, fish and squid (*Illex* and *Loligo*). The seals and sea birds (penguins, prions, albatrosses) constitute important ecological links between the islands and the surrounding southern ocean ecosystem, as they breed on the islands, where their guano enriches the otherwise rather infertile soil, but venture far afield for food.

An important component of the Falkland Islands environment is provided by very extensive kelp beds in some of the long, narrow inlets and in the shallow waters offshore. Three main species occur (*Durvillea antarctica*, *Macrocystis pyrifera*, *Lessonia antarctica*), each occupying a subtly different ecological niche. Many invertebrates depend on the kelp habitat, and these in their turn provide food for many fish and several bird species; amongst the latter is the Falklands steamer duck (*Tachyeres brachydactyla*), an endemic, flightless species.[2]

The archipelago is surrounded by a quite extensive area of continental shelf (see Figure 2) which may contain sedimentary rocks of much younger age than those exposed on the islands themselves (see Section 4.3). The sea is relatively shallow to the north and west, and around the Burdwood Bank some 150km to the south, but deepens gradually towards the eastern part of the Falkland Plateau area.

Figure 2: Bathymetry of the Continental Shelf Adjacent to the Falkland Islands



[2] Strange, 1987, gives a general view of the natural history of the islands. One of the present authors provides a brief summary on the Falklands environment in Armstrong, 1994.

3. The Issue of Sovereignty

3.1 Early History

It is not the major function of this *Briefing* to provide a detailed commentary on the complex history of settlement and naval and military presence in the Falkland Islands, nor of the manner in which some of the manoeuvres and incidents of history have been used to justify each part of the palimpsest of claim and counterclaim to which this archipelago has been subjected. A summary, however, may be useful to bring matters into focus.

A number of sightings of the Falkland Islands were made by British, French and Dutch seamen in the early sixteenth century, but were not followed up. The first undisputed landing is that of John Strong, captain of the *Welfare*, bound from Plymouth to the South Seas, in January 1690. Captain Strong sailed between the two main islands, naming it Falkland Sound – the first use of the name in connection with the islands. Over the next few decades there were several British and French landings on the islands, the French being in the forefront of exploration: they referred to the islands as the Isles Malouines, after the port (St. Malo) whence many of the French expeditions set forth; this is the origin of the name Islas Malvinas used by South Americans for the islands. Sometimes both British and French ships were exploring around the islands at the same time, unknown to each other.

As early as 1740 pleas were being made to the British Admiralty to claim the Falklands, on the grounds of their potential importance on a sea route – nothing was done however.[3]

In 1763 the French lost their colonies in North America to Britain, and in the same year a young French aristocrat, Antoine de Bougainville (1729-1811), sought to establish another colony, at the opposite end of the American land mass to Quebec, as a recompense. A number of embittered former colonists from Arcadia, the French colony in Nova Scotia, were part of his group. After loading up large numbers of livestock in Montevideo in January 1764, the two vessels comprising the expedition arrived at what they named Baie Saint Louis (Berkeley Sound, East Falkland) on 17 February. A fort of turf and stone was constructed which still stands as a flower-covered series of mounds close to the present Port Louis settlement.

Bougainville seems to have had a restless disposition, for three days after the ceremony of possession on 5 April 1764 he returned to France, leaving 28 settlers. He was back in the islands just under a year later, however, bringing the total number of settlers to 80, but again his visit was a short one, for he left for France once more in April 1766. Meanwhile the Spanish authorities had got to hear of Bougainville's venture, and protested with vigour. Bougainville agreed to transfer his colony to Spain, for a very substantial sum. On his last voyage to the islands in late 1766, he called in at Rio de la Plata to be joined by a Spanish party, and on 1 April 1767 the colony was formally handed over to Spain.[4]

Meanwhile, in complete ignorance of the French activities, His Majesty's Ships *Tamar* and *Dolphin* sailed from England in June 1764 under the command of Captain John Byron. He reached the Falklands in January 1765, naming Port Egmont on Saunders Island, West

3 Strange, 1983: 48.
4 *Ibid.*: 51-52.

Falkland in honour of the First Lord of the Admiralty. He claimed this island, and those adjacent, for George III, not knowing of the French claim, on East Falkland, of a few months earlier; he had, indeed, sailed very close to the French settlement, across the mouth of Berkeley Sound.

Despite the secretive nature of the French venture, by 1765 rumours of the French settlement's existence were circulating in England, and in September of that year a flotilla of three vessels set sail under Captain John McBride. Amongst his instructions was the directive to inform any lawless person living on the islands that they were inhabiting land belonging to Britain. Those not wishing to take an oath of allegiance were to be given six months to get out!

From 8 January 1766 onwards he consolidated the Port Egmont settlement, erecting a blockhouse and other buildings. On an exploration cruise in December 1766 the French settlement was sighted, and McBride made contact with the French Governor, M. de Neville, delivering him a note informing him of Britain's claim. Although the meeting was most friendly, even cordial, the claim was rejected, neither party knowing of Bougainville's decision to hand over the settlement to Spain.[5]

However, when the Spanish Governor, Felipe Ruiz Puente took over from de Neville, the tension seems to have risen. McBride having returned to England to report on developments, Captain Hunt, then in command, in September 1769, presented the captain of a Spanish schooner with a warning to leave. A few days later the situation was reversed, and Hunt was issued with a note ordering him to depart. This went on for some time.

In June 1770 the Spanish authorities dispatched a force of five frigates, with a massed force of 1,600 men to Port Egmont, far outnumbering the small British detachment. Each of the two commanders ordered the other to leave, and after something of a stand-off the Spanish landed: shots were fired, but the British soon surrendered and departed. Britain and Spain were on the brink of war, but in the subsequent negotiations a deal was patched up, the settlement was returned to Britain a few months later, and for the next two and a half years Britain's Port Egmont settlement was unchallenged.

But, perhaps unwisely, as part of *"an economical Naval regulation"* the settlement was abandoned. Then, as before and since in British defence circles, issues of cost took priority. The block-house had a notice affixed to it proclaiming it, the islands and all *"wharves and harbours, bays and creeks thereunto"* to be *"the sole right and property of His Most Sacred Majesty, George the Third"*, but when the Spaniards from Puerto de la Soledad, as Port Louis was by then called, inspected the site a year or so later it had gone to ruin.

The Puerto de la Soledad settlement was maintained by the Spaniards, however, for the next thirty years. Governors – good, bad and indifferent – came and went, the settlement, seldom with more than a hundred souls, survived, but did not prosper, and there were occasional murmurs that it should be abandoned. Abandoned it was, in 1806, as South America moved towards revolution. The United Provinces emerged in 1816, claiming to succeed Spain in all

[5] *Ibid*.: 53. The incident is reminiscent of occasions in the 1950s when the commanders of British and Argentinian bases in Antarctica delivered notes of protest to each other, and then proceeded to attempt to drink each other under the table!

her territories in South America, but it was not until November 1820 that efforts were made to establish the new, independent government's authority on the Islas Malvinas.[6]

During the interregnum, and indeed for some years after, the islands were used as bases for whaling and sealing by sailors from many nations, and a fairly brutish life seems to have been lived amongst the remnants of the settlements by a motley crew of thugs, outlaws and pirates. No lawful authority was exercised.

The 6 November 1820 saw formal rights of possession declared in the name of the United Provinces, by one Colonel Soledad Jewitt. In due course Argentina emerged from several decades of disturbed and tyrannical rule, but hold on the Falklands (or Malvinas) remained tenuous. Attempts to foster colonisation were not very successful, and a succession of brief governorships followed. One of the holders of the position Governor of the Malvinas, Louis Vervet, was not only a substantial landholder in the islands, but also Governor of Tierra del Fuego! He attempted to exercise his authority by excluding whalers and sealers (many of them American) from the islands, and in 1831 he seized three US sealing schooners, claiming that they had no lawful authority to use the Falklands.

At least one section of American opinion disagreed with this particular interpretation of the sovereignty issue, and a Captain Duncan, commander of the USS *Lexington*, exacted reprisal, sacking Port Soledad on 28 December 1831. The little settlement was *"ruined"*, Captain Duncan allowed his crew to do *"great harm to the houses and gardens"*, and Vervet's agent was *"treated more like a wild beast than a human being."* For years afterwards some of the few settlers that remained fled to the country whenever a ship of war appeared. Anarchy remained the principle form of government. A temporary Governor was appointed by Buenos Aires, Major Juan Esteban Mestivier in late 1832: he did not survive long – being murdered by a gang of thugs.[7]

But throughout much of this period of disquiet, the British were quietly seeking to regain sovereignty to the islands through diplomatic channels. The British Ambassador, Woodbine Parish, forwarded a letter asserting the British claim to the Ministry of Foreign Affairs in Buenos Aires in November 1829. The matter dragged on, however, without resolution, and in 1832, HMS *Clio* (under Captain J.J.Onslow) and HMS *Tyne* (Captain C.Hope) were despatched to take possession, calling first at the remains of the old British Settlement of Port Egmont, arriving at Port Soledad on 2 January 1833. The British flag was hoisted and saluted, and the relatively junior Argentinian officer remaining after Mestivier's murder, Jose Maria Pinedo, was issued with a letter telling of the intention of the British party to *"exercise the right of sovereignty over these islands."* He departed, a day or two later, apparently without sorrow or regret.

Surprisingly, the British did not press home their claim to sovereignty by remaining in the islands, or by establishing even a minimal garrison. After saluting the flag they soon left, and less than two months later, on 1 March, when HMS *Beagle* sailed into Berkeley Sound (with naturalist Charles Darwin aboard) the situation was as chaotic as ever. The *Beagle's* commander, Captain Robert FitzRoy recorded laconically:

6 *Ibid.*: 54. A good summary of these events is also provided in: Philpott, 1992.

7 Strange, 1983: 54-56.

> *...there was no constituted authority whatever resident on the islands, but that the British flag had been left by Captain Onslow in charge of an Irishman.*[8]

The flag-guardian, one William Dickson by name, described by FitzRoy as *"loquacious"* and formerly employed as a storekeeper, had been given firm instructions to hoist it every Sunday, and whenever a vessel came into port!

FitzRoy and the crew of the *Beagle* had other matters to attend to, and left in early April, *"with a heavy heart and gloomy forebodings."* FitzRoy wrote at length in his account of the gauchos who, *"gamble and fight with long knives giving each other severe wounds"*, and of the sealers with their rifles and clubs, stating: *"there was no lack of the elements of discord."* His premonitions were well founded and in August a further series of murders took place, including flag-holder Dickson, the capitaz of the gauchos (a Frenchman, Jean Simon) and several other settlers.

When HMS *Challenger*, then in Rio de Janeiro, heard of the matter, she set off, arriving in Port Louis early in January 1834. A Lt.Smith was left as acting Governor, with a squad of marines. He immediately set about attempting to round up the desperadoes, who had escaped to open country. He was successful in capturing several of them, and indeed the log of HMS *Beagle*, on the ship's second visit to the Falklands in March 1834 records: "*Tuesday 18 March – Received on board Antonis Rivers, prisoner."*[9]

The *Beagle* was the first British ship of war to visit the islands after the arrest, and Captain Fitzroy was duty bound to accept several of the prisoners who were held in irons. Naturalist Charles Darwin described the incident in some detail. The captives were taken to South America, and eventually to England for trial. But under what law were they to be tried? The murders had allegedly taken place on land claimed by Britain, but before lawful government had been established. To send them to Buenos Aires for trial would be to acknowledge Argentina's sovereignty. They languished in Newgate prison for a while, but were never brought to trial; after a period of wrangling they were returned to South America as free men. Darwin was remarkably perceptive and prescient when he noted that the Falklands were, *"a bone of contention between nations"*, and in a letter to his sister at the time of his first visit to the Falklands, noted:

> *We arrived here in the Falkland Islands in the beginning of this month...We found to our great surprise the English flag hoisted – I suppose the occupation of this place, has only just been noticed in the English papers; but we hear all the southern part of America is in ferment about [it]. By the awful language of Buenos Ayres one would suppose this great republic meant to declare War against England!*[10]

Two points emerge from the study of the bickerings over sovereignty during the first seventy years following the first settlement of the Falkland Islands.

---

8 FitzRoy, 1839: 270.

9 The log of HMS *Beagle* is held in the Public Record Office, Kew, at ADM 51/3054. See also Boumphrey, 1961.

10 Charles Darwin to Caroline Darwin, 30 March 1833. Original held in Darwin Archives at Cambridge University Library at DAR 223. Published in Burkhardt, *et al.*, 1985: 304.

First, the disputation between France and Spain, between France and Britain, later between Britain and Spain, and later still between Britain and the young Argentina arose because of neglect and indecision. Britain abandoned her establishment at Port Egmont for reasons of economy, and even when she regained authority in the islands, no proper administration was established for some time. So too, for long periods, the Spanish, and later Argentinian administration was half-hearted. It is no wonder that anarchy ruled, with, as Darwin put it, *"complicated scenes of cold-blooded murder, robbery, plunder, suffering...[and] infamous conduct."*[11] British administrations of the late twentieth century were no more decisive and clear in their thinking than those of over a century earlier.

Second, although it is seldom explicitly referred to in the documents, time and again there are hints that marine resources were considered as important as those of the islands themselves, and issues of marine power and sovereignty were also thought significant. Captain Duncan *"ruined"* the settlement of Port Soledad in 1831, furious that, as Americans, they were being excluded from the sealing and whaling resources of the waters around the islands. Captain FitzRoy was concerned in 1833 about the risks of serious conflict between whalers and sealers. He wrote of:

> *...the crews of some thirty whale-ships, hovering about...the islands; the men of American vessels, all armed with rifles; the English sealers with their clubs...the several French whalers who could not or would not see why they had not as good a right to the islands as Englishmen...without the presence of a man-of-war, or the semblance of any regular authority.*[12]

Indeed, one of the purposes of the *Beagle's* visit to the archipelago was strategic – it was to construct hydrographic charts of an island group considered important as a replenishment base on the Cape Horn run. Darwin, no doubt after discussing the matter with FitzRoy and the other officers, wrote to his sisters:

> *The islands...from their local situation will be of great importance to shipping; from this cause the Captain intends making an accurate survey.*[13]

And later:

> *This island must some day become a very important halting place in the most turbulent sea in the world. – it is midway between Australia & South Sea to England. Between Chili Peru &c & the R. Plata & R. de Janeiro. - There are fine harbors, plenty of fresh water & good beef.*[14]

Thereafter Britain's hold on the islands was consolidated. Richard Moody was appointed Governor in 1840, and colonisation actively encouraged. Britain was careful not to recognise earlier land grants, for that would imply recognition of the authority under which they were issued.

---

11 Charles Darwin's Diary entry for 10 March 1834. Barlow, 1933: 216. For an account of Darwin's work in and impressions of the Falklands, see Armstrong, (1992).

12 FitzRoy, 1839: 278-279.

13 Charles Darwin to Caroline Darwin, 30 March 1833, *op cit*..

14 Charles Darwin to Caroline Darwin, 6 April 1834.

3.2 The Crystallisation of the Sovereignty Dispute

As the Falkland Islands remained continuously under British administration for nearly a century and a half, there is no need here to document in detail the later settlement and maritime history. Suffice it to say that population slowly increased, a successful wool industry was established, and whaling and sealing remained important until well into the present century.

Periods of appreciation of the strategic importance of the Falklands alternated with phases of benign neglect. Argentina retained her claim to the islands, although there were periods during which it was proclaimed more stridently than others. British Foreign Office and Colonial Office files in the Public Record Office abound with reference to friction with Argentina over Falkland Island matters. There is evidence in the files that sometimes there was tension between the two departments: the Foreign Office seeking to maintain good relations with Argentina (and other South American countries) and the Colonial Office attempting to protect the interests of the Islanders.

Details of a single aspect will serve as an example. There were long-time difficulties over the insistence that Falkland Islanders had Argentinian papers when they visited Argentina. The problem can be traced back to the very early decades of the twentieth century, and there were difficulties of this sort over passports in 1922, 1933, 1934, 1936 and 1937, 1948 and in the 1950s. As Sir David Kelly wrote in a 1934 memorandum:

> *...our policy in regard to the Falklands must be to maintain our rights while avoiding all incidents calculated to fan the always smouldering embers of Argentine resentment. There is absolutely no hope of our reaching any agreement on the question of principle involved, and our guiding principle must be to avoid dragging this century old controversy into the limelight...*[15]

When the Colonial Office in 1950 requested the Foreign Office to take up the matter with Buenos Aires, the reply was that it *"would be quite useless and even harmful."* At one stage the Governor of the Falklands was issued a block of London passports for Islanders who wished to travel to Argentina. A letter from Chancery, British Embassy Santiago, dated 31 December 1952, enclosed a letter (17 December 1952) from the British Consul in Punta Arenas in southern Chile, referring to the day-to-day problems experienced. There was an appreciable Falkland Islander community in the Punta Arenas area, and *"for some time"* those wishing to go to Argentina had been required to hold Argentinian passports and documents:

> *Generally speaking this is taken in good part, causing amusement more than anything else. There are no more patriotic people in the British Empire than the Falkland Island people.*

There was a feeling that Argentinian pressure had recently been tightening. A 1952 Foreign Office Minute summarised the situation:

> *Since the war we have become more and more dependent on Argentina as a source of meat and the growth of nationalism all over the world and anti-colonial*

[15] Public Record Office, Kew: A6065/1118/2. See also below.

> *feeling has made it more desirable than ever that we should refrain from bringing disputes over colonial territories to a head with the likely consequence of suffering some setback or rebuff at the UN. There are therefore stronger reasons than ever for refusing to make an issue of the dispute.*

A minute to Anthony Nutting, Parliamentary Under-secretary at the Foreign Office dated 14 March 1953 reads:

> *Regretfully HM Government have no weapon ready to their hand with which they might enforce better treatment of the Falkland Islanders within Argentinian jurisdiction. Protests alone will do nothing. We shall merely elicit the flat assertion that the Falkland Islands are manifestly Argentinian territory, albeit under foreign occupation and that the inhabitants are Argentinian citizens. Retaliation offers no prospect of advantage.*

There is much more in the files of the same nature, indeed, some of it even stronger in tone. The extreme delicacy of the matter can be judged from the fact that some papers from files on this matter (for example A 1523/4 are closed until the year 2004 – 50 years after the events to which they relate).

Meanwhile tension was building elsewhere in the South Atlantic. In January 1953 an Argentinian party built a base adjoining the British base on Deception Island in the Antarctic. The Colonial Office was extremely concerned, and in a Top Secret telegram to the Falkland Islands administration, on 30 January 1953, commences as follows:

> *Latest Argentinian and Chilean landings in Deception Island appear to be deliberately provocative, and ones we should not tolerate.*

The Secretary of State went on to say that under section 3 of the *Aliens Ordinance* there was authority to order detention and deportation of any alien, if it were *"deemed to be in the public good."* To ensure surprise and reduce the risk of bloodshed, there was to be no warning of the Argentinian and Chilean governments. On 15 February it was reported:

> *Two Falkland Island Policemen supported by one Lieutenant RN, one Major, RM and thirty-five Royal Marines were landed with Sten guns, rifles, bayonets and tear gas at 2.51pm, local time, in arresting two inhabitants of Argentine hut, who did not resist.*

Personal congratulations were sent to those involved in the arrest by Sir Anthony Eden, then the British Prime Minister. An attempt was made to hush the whole event up (with the connivance of the Argentinians and Chileans), but the matter leaked out. There was a very real fear at the time that there might be reprisals against other British bases in Antarctica or the Falkland Islands themselves. In April, May and June the Governor of the Falklands expressed, in ciphered telegrams to the Colonial Office, some concern about reports of unidentified aircraft in several parts of the islands, and at one stage the cooperation of diplomatic missions in South America was sought to see if any light could be thrown on the

matter. It was eventually decided that most of the intruders were aircraft that had veered off-course, or on navigation training exercises, and of little immediate concern.[16]

The Deception Island Incident soon faded from the headlines with some segments of the British press regarding the affair as a joke, comparing it with a scene from a Gilbertian opera, but it is not without comparisons with the events of 1982. It both cases there seems to have been something of a test of British resolve involving the presence of *agents provocateurs* on remote islands within the Falklands area. In 1953 it was at Deception Island; in March 1982 it was on South Georgia. Although following the Deception Island incident tension in the Falkland Islands remained quite high for a while, the real danger to the main islands was probably slight. In 1982 Argentine activity on South Georgia in middle and late March 1982 was followed by an Argentine invasion of East Falkland on 1-2 April.

The story of the brief Argentine occupation of the Falkland Islands, the mounting of the British Task Force of 28,000 men and over 100 ships to retake the islands, and the eventual Argentine surrender on 14 June 1982 is too recent and too well documented elsewhere to need description here.[17]

3.3 The Argentinian Situation

Although the Argentine claim to the islands persisted, the enthusiasm with which the Buenos Aires government pursued it fluctuated. And just as different strands of opinion existed within the British camp, so too did internal tensions, in some ways comparable, exist in the Argentinian establishment. Again a single brief example must suffice as illustration.

In 1969 a decision had been made to issue a licence to the Shell subsidiary Shell Capsa (Compania Argentina de Petroleo SA) to explore for oil in the continental shelf, off southern Argentina, in accordance with the provisions of Argentina's *Law of Hydrocarbons* 17.319, clause 14 of which stated that any company could be authorised to search for oil in Argentina or Argentine waters. The more extreme nationalists opposed this grant to a foreign company, saying that the matter should be held over until the Argentine state-owned oil and gas companies had the technology to be able to do the exploration. Nevertheless, the survey went ahead at the cost of US$1.5 million over the southern hemisphere summer of 1969-1970.[18]

The bickering within the Argentine governing junta continued. On 17 June 1970 a formal statement on oil policy was issued, which reserved for the state companies a leading role in the exploitation of oil and gas, but the more liberal side came into the ascendancy, and in January 1971 the military government decrees (numbers 22 and 59) were signed authorising the granting of blocks of up to 97,000km^2 to oil companies. Shell argued, in their representations, perhaps naively in view of their large British shareholding, that the grant of

---

16 These annotations are based on Foreign Office Papers, PRO, Kew, especially the following: FO371/103143-103174. Foreign Office Original Correspondence, Political, 1953; Chilean and Argentinian Naval Intrusions in Antarctica (103144). Problems confronting British Residents in the area of Punta Arenas who were born in the Falkland Islands and wish to visit Argentina.

17 Gustafsen, 1988; Hanrahan and Fox, 1982; song, 1988; Strange, 1983; Way, 1983; provide a sample of the English language literature dealing with the 1982 Conflict – of varying types and from a range of points of view. No doubt there is a comparable range of materials in Spanish from Argentina.

18 The data collected were assessed by a US company, Geocom Inc, who advertised its findings in the June 1971 issue of *World Oil*.

exploration rights by Argentina to a private company would tend to consolidate their sovereignty over the continental shelf. Nevertheless the protagonists of the state concerns kept up their pressure, tending to be identified with the hardliners who opposed the friendly policy towards Britain, and favoured a more vigorous policy aimed at recovering the Malvinas, and by April 1975 the Argentine representative at the UN told the General Assembly that Britain, who by then had got a sniff of oil near the Falklands, had no right to explore for oil in the South Atlantic – and so it went on.[19]

In fact, a number of wells were drilled in the adjacent Argentinian part of the Malvinas basin. Several are said to have had appreciable hydrocarbon shows. *Ciclon-1*, drilled by YPF (Yacimentos Petroliferos Fiscales, the Argentinian National Oil Company) in the South Malvinas basin in 1979/80 is particularly mentioned.

A report compiled by Lord Shakleton (son of Sir Ernest Shackleton, the Antarctic explorer) as the result of a 1976 survey – *Economic Survey of the Falkland Islands* – commented on some aspects of these developments, urging *"greater political and economic cooperation"* with Argentina. Besides emphasising the fisheries resources, it referred to the possibility of hydrocarbons in offshore waters, although it was not over-optimistic. Nevertheless, the 1977/78 seismic survey followed. Whether these activities influenced thinking in Argentina prior to 1982 can only be the subject of speculation.

4. 1982 and After: The Need for Economic Development

Although the existence of different views within each of the two government establishments may have acted to restrain those of more extreme views, the conflict when it came, seen through the sweep of 150 years of history – having been foreseen by Charles Darwin in the 1830s – had a certain inevitability about it.

The other way of looking at the situation from the British point of view is to argue that all the signals were there that the Argentinians intended, in the early 1980s to take some action. The long history of the dispute and the existence of a less-than-popular military government in Argentina that badly needed to take some action to generate public support can be viewed in this light. Some actions by the Argentinian side can be seen retrospectively to be even more pointed.

A few months before the invasion a large Argentinian aircraft landed at the Stanley airfield bearing a prefabricated building, which was then erected for the use of certain Argentine officials then resident on the islands. It is asserted by Islanders that this was to test the bearing capacity of the runway! Despite this, and diplomatic messages from missions in South America, the benign neglect of the Islands by the British government persisted through the early months of 1982. There are those who argue that the dispatch of even a modest force of aircraft and troops by the UK government, then led by Mrs Margaret Thatcher, to strengthen the tiny Royal Marine detachment stationed in the Falklands would have been sufficient to discourage the Argentinian adventure.
After the 1982 conflict, everything changed. The period of political and economic neglect of the islands was, at least for the time being, over, and there began a period of almost feverish

[19] Gustafsen, 1988: 84-86.

activity. The British Government commissioned Lord Shackleton to undertake another survey, published with the title *The Falkland Islands Economic Study*, a thorough evaluation of the Islands' resources. A number of possibilities for economic development were identified, amongst the most important of which were, once again, fisheries. In view of the substantial overfishing that had previously occurred in waters adjacent to the Falkland Islands, by vessels from a number of countries, the report urged:

> *...that in order to secure the future economic benefits from the offshore fisheries of the Falklands, the United Kingdom should adopt for the Falklands the regime now accepted as normal world-wide, namely a fisheries limit of 200 miles. This would incidentally remove the anomaly that Argentina already claims control over waters extending 200 miles from the Falklands, but Britain does not: it would also remove one deterrent to economic development.*

4.1 The Management of Fisheries

A number of important legislative developments then followed. After lengthy discussion of this matter, in the UK Parliament and elsewhere, on 29 October 1986, the Governor of the Falkland Islands issued a *Proclamation* (No.4 of 1986) which may usefully be quoted at some length:

> *Whereas the Falkland Islands are entitled under international law to a fishery limit of 200 nautical miles from the baselines from which the breadth of territorial seas is measured subject to the boundary with a neighbouring state prescribed by the rules of international law concerning the delimitation of maritime jurisdiction,*
>
> *And Whereas there is a need to conserve the living resources and to regulate on an interim basis, fishing in the seas around the Falkland Islands,*
>
> *Now therefore I, Gordon Wesley Jewkes, acting in pursuance of instructions given by Her Majesty through a Secretary of State, do hereby proclaim as follows:*
>
> *1. There is established for the Falkland Islands an interim fishery conservation and management zone, hereinafter referred to as "the zone".*
> *2. The zone has an inner boundary the outer limits of the territorial sea of the Falkland Islands and has its seaward boundary the line formed by the circumference of a circle which has a radius of 150 nautical miles and its centre at Latitude 51°40'S, Longitude 59°30'W, except that between those points on the circumference situated at 52°30'S, Longitude 63°19.25'W and 54°08.68'S, Longitude 60°00'W the seaward boundary shall be a rhumb line.*

The United Kingdom Government thus affirmed the right to assume a fishing zone of 200 nautical miles (nm), in keeping with evolving international law, particularly with Part V, especially Article 57, of the United Nations Convention on the Law of the Sea (UNCLOS). It may be noted in passing, however, that UNCLOS did not enter into force until 16 November 1995, and the United Kingdom has not yet signed the Convention. However, for some years

the UK has in general conducted itself in broad conformity with its provisions. For its part, Argentina ratified the Convention on 1 December 1994, having signed it on 5 October 1984.[20]

However, despite the affirmation of the right for a 200 mile fishery zone, the 1986 Proclamation, as an interim measure, only extended the fishery conservation and management zone to 150 miles from the centre of the circle, in places less than 100 miles from the islands themselves. This may perhaps be partly because the immediate predecessor of the fishery zone was a naval protection zone, aimed at excluding Argentine ships and aircraft from the Falklands region during and following the 1982 conflict. The slice out of the zone towards the south-west is presumably an acknowledgement of Argentine rights to an exclusive economic zone: the rhumb line defined in the Proclamation is very approximately equidistant between West Falkland and the south-eastern corner of Tierra del Fuego. Subsequent sections of the Proclamation reserved the right to extend the outer margin of the zone (section 3) and to manage and conserve the living resources of the zone in the same manner as in the territorial waters of the islands (section 4).

In the same year, the *Falkland Islands Fisheries (Conservation and Management) Ordinance*, 1986 was passed, establishing procedures for the calculation of tonnages of various species to be taken, and for application for licences. In the years that followed, fishing vessels from several nations (Japan, Poland and South Korea among them) were licensed to fish in the zone, particularly for squid, and factory ships became a familiar sight offshore of Berkeley Sound, East Falkland. Licence fees subsequently brought in several million pounds per annum. In 1992 licences for the harvesting of squid yielded £20.6 million per year, out of a Falkland Government revenue total of £44 million. There has been some subsequent decline.

On 28 November 1990, following a series of meetings between British and Argentine officials, a *Joint Statement on the Conservation of Fisheries* was issued. In this document, it was agreed that the two governments would cooperate over the conservation of fish stocks in the South Atlantic Ocean between 45°S and 60°S. In a *Proclamation* (No.2 of 1990), dated 20 December 1990 the Governor of the Islands gave partial legal effect to that agreement in Falklands waters. An *"outer fishery conservation zone"* or *"outer zone"* was proclaimed (section 1) and provision was made for varying the limits of the zone (section 3). In a schedule to the proclamation, the outer zone is defined by a quite complex set of coordinates. The line uniting points 8 and 9 of this (56°14'S, 58°31'W and 47°42'S, 60°41W) is defined as:

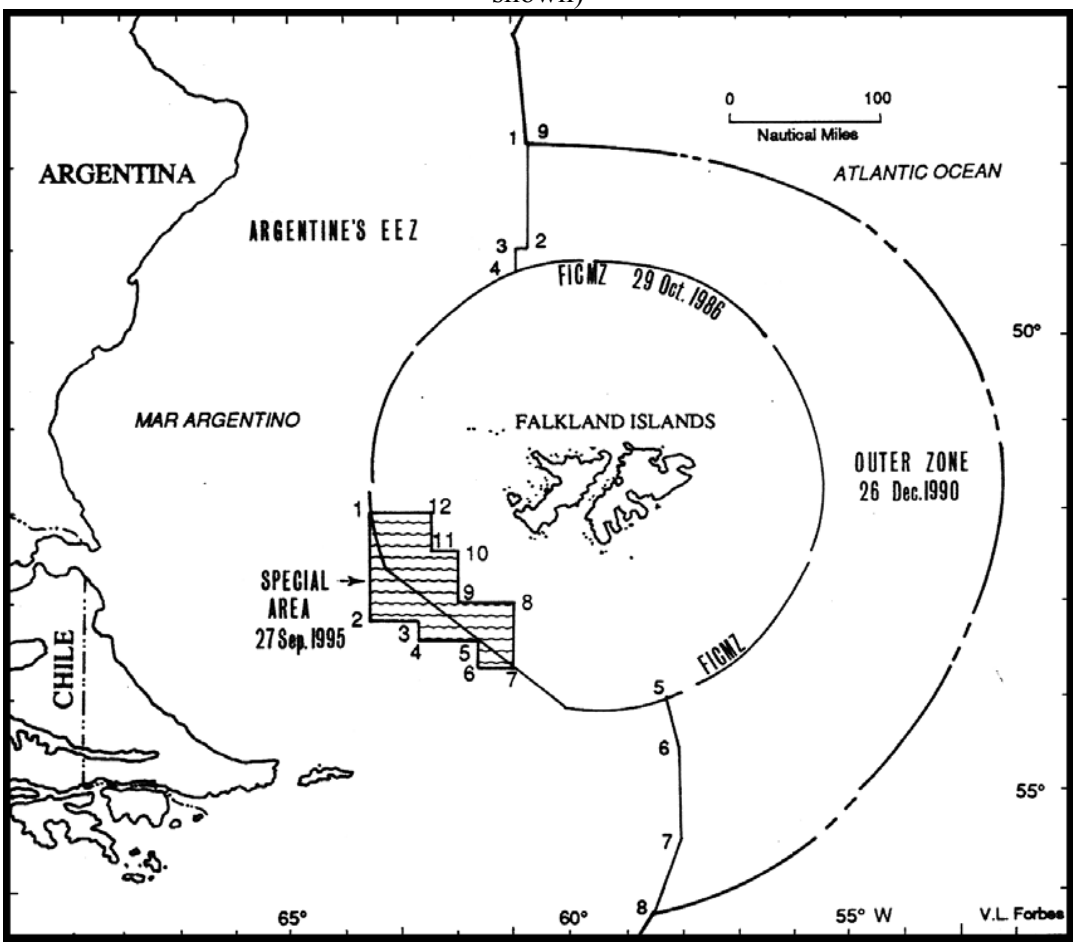
> *...a line drawn anti-clockwise 200 nautical miles from the nearest points on the baseline of the territorial sea of the Falkland Islands.*

The effect of delimiting the outer zone in this way was to designate a crescent-shaped area enclosing the inner zone on its western side. Further coordinates delimit the precise boundaries of the outer zone to the west, where the 'horns' of the outer zone face onto what the British view accepts as an Argentine exclusive economic zone. Figure 3 shows the arrangement of the two zones.

---

[20] Argentina did, however, accompany its ratification of the UN Convention on the Law of the Sea with a declaration which, among other things, reaffirmed its *"legitimate and inalienable sovereignty over the Malvinas and the South Georgia and South Sandwich Islands and their respective maritime and island zones"* (see Appendix I).

Figure 3: The Falkland Islands Fishery Conservation Zones
(The "Special Area" mentioned in the UK-Argentine Joint Declaration of 1995 is also shown)



4.2 The Delimitation of Baselines: A Comparison of the British and Argentine Approaches

Meanwhile, in conformity with the general spirit of international law (as perceived by the UK Government), and in pursuance of the *Colonial Boundaries Act*, 1895, the British Parliament enacted the *Falkland Islands (Territorial Sea) Order*, 1989. This entered into force on 1 January 1990. Section 3.1 of this instrument (Order No.1993 of 1989) provides that:

> *...the baseline from which the territorial sea adjacent to the Falkland Islands is measured shall be the low-water line along the coast of all the islands...*

However, section 3.3 notes that the baseline system comprises a series of loxodromes (straight lines between two points on a constant azimuth), constructed so as to join a number of turning-points, the coordinates of which are set out in a schedule. The values of the coordinates are based on the Falklands Island datum (1943). The 22 turning-points are located on the low-water line on or adjacent to significant geographical features.

Figure 4: The Falkland Islands Baselines – UK Version

(Showing the approximate extent of the 12 nautical territorial sea)

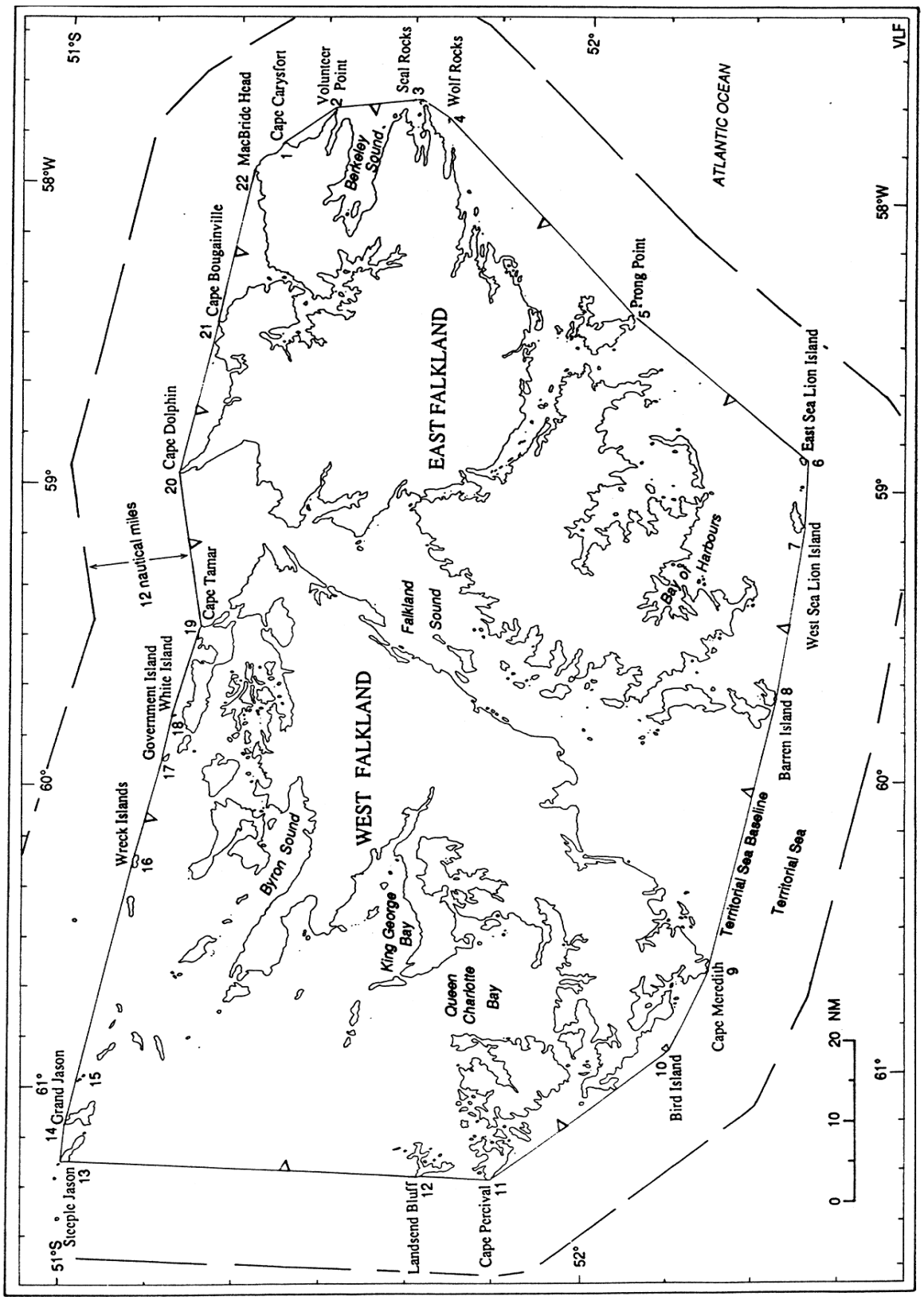
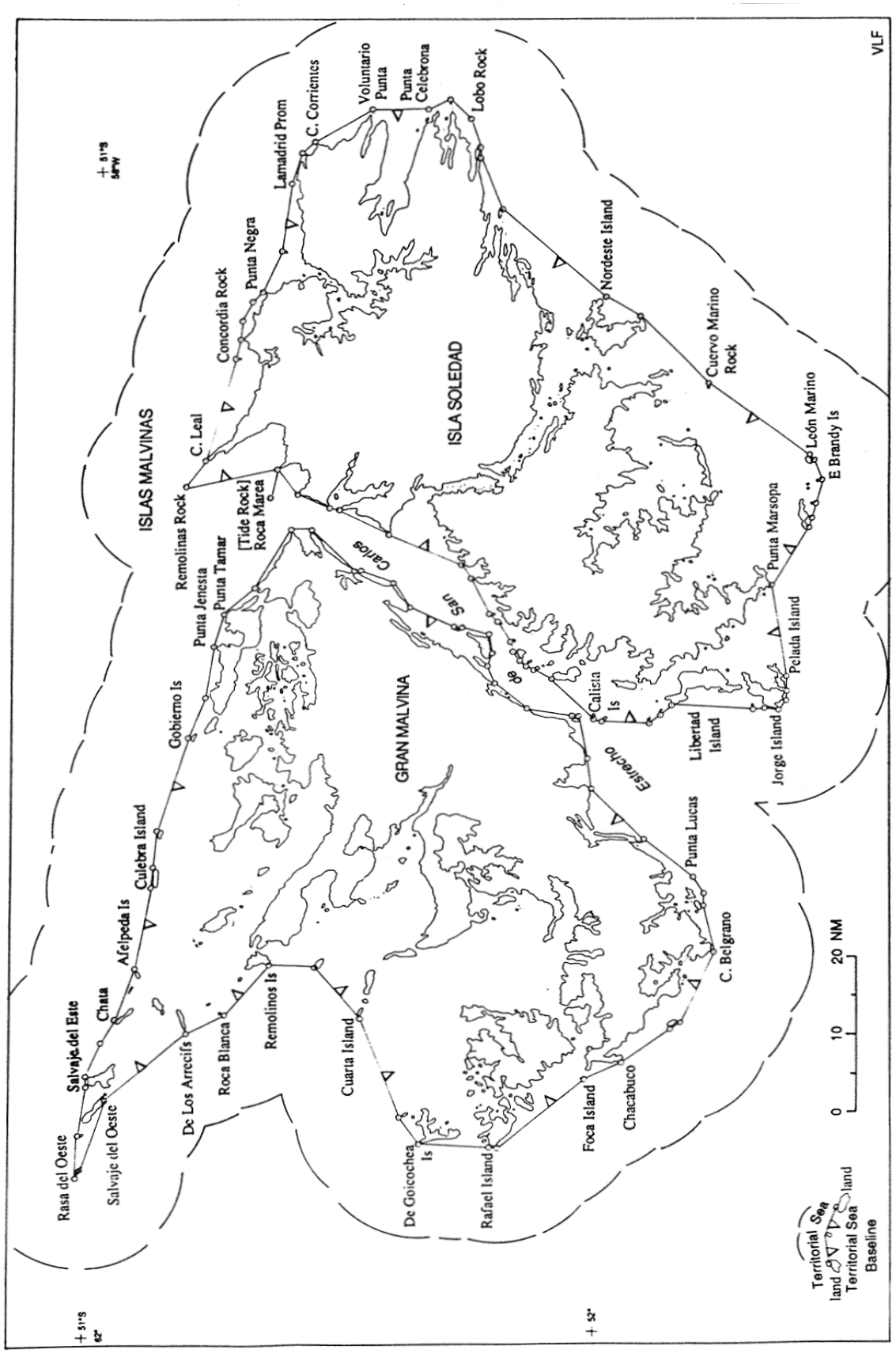


Figure 5: The Falkland Islands (Islas Malvinas) Baselines-Argentine version



The greatest length of any segment (between points 12 and 13) is 41.7nm, the shortest segment is 5.4nm (between points 3 and 4). The system commences at Cape Carysfort (point 1) on East Falkland, proceeding clockwise connecting Cape Meredith (point 9) on West Falkland, New Island (points 12), Steeple Jason and Cape Bougainville (points 21) on East Falkland. Seal Rocks, Lively Island, Sea Lion Islands and most of the Jason Islands are included. Falkland Sound becomes internal waters by virtue of the lines connecting points 8 and 9, and 19 and 20. The total length of the 22 segments is about 360.84nm, with an average segment length of 16.4nm (see Figure 4). The baseline system is constructed in a manner somewhat analogous to an archipelagic baseline system (as provided for in Article 47 of UNCLOS), although as a colonial territory the Falklands do not constitute an archipelagic state. Such baselines are those:

> *...joining the outermost points of the outermost islands and drying reefs of the archipelago, provided that within such baselines are included the main islands and an area in which the ratio of the area of water to the area of land is between 1 to 1 and 1 to 9.*

There are further provisions preventing the lines being longer than 100nm, except in very restricted circumstances.

It is interesting to compare the UK-legislated baselines with those brought in by Argentine procedures about two years later. On 14 August 1991 Argentina enacted Law 23.968.[21] The Act defined the territorial sea baselines and establishes marine-area boundary lines for the Republic of Argentina. Anexo 1 [Annex 1] of the Act lists the coordinates and respective geographical features of the turning points that comprise the baseline system for the 'Islas Malvinas'. The Argentine system nominates 108 points located on the low-water mark on the coast of the islands. The points are numbered from 207 to 315: Gran Malvina (West Falkland) is encompassed by a series of loxodromes joining points 207 (Jason West Cay) to 258. Soledad (East Falkland) is encircled by lines linking 259 (Eddystone Rock) to 315 inclusive. The total length for the Argentinian system is 546nm (286.39nm for Gran Malvina and 259.72nm for Isla Soledad), the segments varying from 0.3 to 17.55nm, with a mean of marginally over 5nm. The Argentine baseline system is shown in Figure 5, while Figure 6 provides a general picture of the maritime jurisdictions in the area from the Argentine viewpoint.

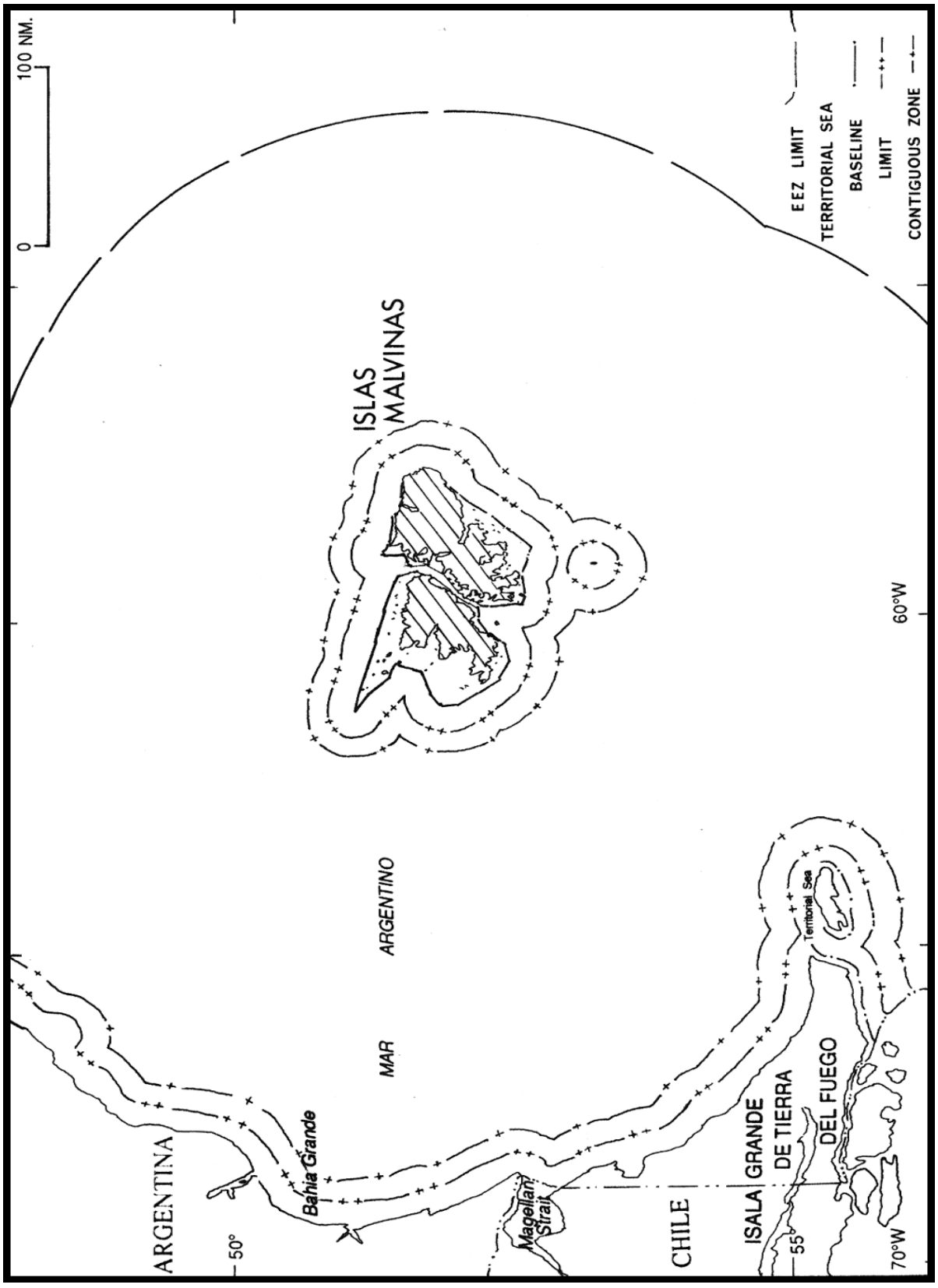
Both systems appear to follow the procedures indicated in UNCLOS, especially Articles 5-16 of Section 2, Part I,[22] for the designation of baselines, but that of Argentina could be described as the more meticulous and conservative, the segments between turning points being much shorter. One of the consequences of the difference between the two systems are the inclusion of Falkland Sound within internal waters in the UK delimitation, although not in that of Argentina.

---

21 See *Boletin Oficial de la Republica Argentina*, No 23.278, 5 December 1991.

22 For example, UNCLOS Article 7.1 provides: *"In localities where the coastline is deeply indented and cut into, or if there is a fringe of islands along the coast in its immediate vicinity, the method of straight baselines joining appropriate points may be employed in drawing the baseline from which the breadth of the territorial sea is measured."*

Figure 6: Maritime Jurisdiction around the Falkland Islands (Islas Malvinas) – Argentine Version



On the other hand the British system does not make use of Jason West, Jason East Cays and Eddystone Rock as turning points, as might be considered an entitlement, as these islets are within 12nm;[23] doing so would slightly increase the area of claimed internal waters.

4.3 The Continental Shelf: 1991-1994

An important use of baselines is in the delimitation of claims to the continental shelf, wherein important resources may be found, and a proclamation by the Governor of the Islands, dated 22 November 1991, and effective forthwith noted that:

> *for the purposes of international law the continental shelf around the Falkland Islands extends...to a distance of 200 nautical miles from the baselines from which the breadth of the territorial sea is measured or to such other limit as prescribed by the rules of international law, including rules for the delimitation of maritime jurisdiction between neighbours.* (Proclamation No.1 of 1991, *Falkland Islands Gazette*, xcx: 23).

More generally, the Governor in that instrument proclaimed:

> *1. Any rights exercisable over the seabed and subsoil of the continental shelf, including the natural resources thereof, beyond and adjacent to the territorial sea around the Falkland Islands are hereby vested in Her Majesty.*

In section 2 of the Proclamation the area within the which the rights mentioned in section 1 are exercisable are defined as comprising:

> *(a) the area defined in section 2 of Proclamation No.4 of 1986*
> *(b) the area defined in section 2 and the schedule to Proclamation No.2 of 1990; and,*
> *(c) any such area designated by a further Proclamation as an area within which any such rights are exercisable.*
> *All such areas are hereafter referred to as designated areas.*

In other words, for the time-being at least, the limits of the continental shelf claimed coincide exactly with the total area over which fisheries jurisdiction is asserted. On this basis the *Falkland Islands Designated Area* covers about 400,000km^2 (see Figure 3).

This proclamation coincided with the passing by the Legislative Council of the Colony of the Falkland Islands (Legco) of the *Continental Shelf Ordinance*, 1991. This provided an interim framework for the preliminary (i.e. primarily non-intrusive) exploration of the continental shelf within the designated area. For example section 3 of this ordinance prohibits any person or body corporate from exploring for any mineral in the designated area, or removing any mineral from the area, except as provided by the ordinance. The term *"explore"* is carefully defined to include all forms of geological and geophysical prospecting, and the removal of any sample. Heavy penalties were prescribed for any infringements. Section 4 set out conditions for the granting of licences.

[23] One territorial sea's width – both the United Kingdom and Argentina now claim the 12nm territorial limits.

By this stage the pace of developments was beginning to accelerate. The Falkland Islands Government (FIG) had appointed the British Geological Survey (with its extensive experience of the North Sea and adjacent areas) as consultants – Falklands matters were dealt with through an office in Edinburgh – and in the first part of 1992 invited bids from companies known to be interested in offshore geophysical survey. Presumably the number and character of the bids in some way fell short of what was hoped for, as on 22 September 1992 a public invitation was issued seeking applications for licences. A special issue of the *Falkland Islands Gazette* (Vol.CI, No.17) gave in full the *Notice* (No.4) inviting *"fresh applications from persons wishing to conduct speculative seismic and gravity-magnetic surveys in the Falkland Islands Designated Area."* Companies that had expressed interest earlier in the year were, *"in no way disqualified"* from applying pursuant to the public invitation. Interested companies were invited to submit applications, accompanied by a fee of £1,000 by 16 October 1992 (i.e. only 24 days after the announcement that applications were sought). Successful companies were to be notified by the end of November 1992, with a view to the geophysical survey work being carried out during the southern hemisphere summer of 1992-93. Such was the pace at which events were proceeding, that the terms of the licences, contained in the *Continental Shelf Petroleum Survey Licences (Model Clauses) Regulations*, 1992, did not appear until 27 October 1992!

Survey licences were in due course allocated to two companies, Spectrum Energy and Information Technology and Geco-Prakla, although there is some suggestion that some major companies shied away from the work through fear that it might cause difficulties with operations in Argentina. Offshore work continued through much of 1993, and eventually a combined total of 15,558km of surveys was completed. Spectrum later completed an infill survey, increasing the density of their lines in part of their area to the north of the islands: this survey provided a further 3,650km of data.[24]

It is inappropriate to include a detailed description of Falklands offshore geology here, as much of what has been written is speculative, based as it is on the recent Geco-Prakla and Spectrum Energy geophysical surveys, and the very limited number of earlier surveys (mostly from the 1970s), three boreholes drilled in 1974 by the Deep Sea Drilling Programme into the Maurice Ewing bank, some hundreds of kilometres east of the Islands, together with 17 holes drilled in the Argentine offshore area, to the west of the Falklands Designated Area. At the time of writing (late 1996) there had been no drilling in the Area itself.

It seems, however, that the Islands, at the western end of the submarine Falklands Plateau, are surrounded by four major sedimentary basins: the Falklands Plateau Basin, the South Falklands Basin, the Malvinas Basin and the North Falklands Basin. They lie beneath 200-2,500m of water, and contain sedimentary sequences of Devono-Carboniferous to Tertiary age (see Figure 2). The Lower Cretaceous Springhill Formation has been identified in some places as a possible reservoir, but others exist that may be suitable. The existence of wedge-shaped structures in possible reservoir rocks, together with faulting and other disturbances have been demonstrated by the surveys, and these seem to imply favourable environments for hydrocarbon accumulation. Some of the boreholes in the Argentine sector of the Malvinas Basin have yielded shows of hydrocarbons. The Hidra oilfield, southeast of the Magellan Straits, has been proved to have over 44 million barrels of recoverable reserves. It has to be emphasised in the strongest terms that until further survey work, and a substantial drilling

[24] Richards, 1995.

programme has been undertaken no definite assertion can be made, but many petroleum geologists are reasonably hopeful of prospects in the Falkland Islands Designated Area.[25]

5. Preparations for Offshore Hydrocarbon Development

Meanwhile, with the assistance of economists at Aberdeen University, a draft plan for the taxation of the possible oil revenues was drawn up and advice sought on social and ecological impacts. It was widely appreciated that development of oil and gas resources (if they existed) in the continental shelf around the Falkland Islands would have profound effects on the small but closely-knit Falkland Islands community and the relatively undisturbed Falklands environment with its abundance of wildlife, and efforts were made to involve the Falkland Islanders in the decision-making. Thus, in November 1993, a pamphlet *The Falkland Islands and Oil* was widely distributed in the islands in an attempt to explain some of the issues – legal, economic and political.

In June 1994 a report entitled *Oil Development Strategies for the Falkland Islands* was produced for the Falkland Islands Government by Environmental Resources Management (ERM) and was circulated to the Islands' community. In October 1994, on the eve of a major debate on the subject in the Legislative Council (Legco), a 'distillation' of the ERM report, and of a 'commentary' on the report prepared from reactions to it from various government departments and commercial advisers was widely distributed as an *Information Paper* by the Falkland Islands Development Corporation (FIDC). An 'information offensive' then took place to involve the population in discussion of the options facing the islands. Publicity was given to the various documents, and to Legco's deliberations in the local press (the *Penguin News* and the *Teaberry Express*) and on the local broadcasting service. Comment was actively sought.[26]

At the same time an approximate programme was drawn up by FIDC as follows:

- **Pre-licensing planning**, during which the strategy for development was to be determined and an assessment made of social and environmental changes anticipated and a legislative framework for licensing, taxation and environmental protection and management put in place. This was proceeding apace in late 1994 continuing in 1995 and thereafter.

- **Licensing**. The first licensing round commenced in October 1995 and closed in July 1996. The production licences offered comprised four stages, with the requirement that some acreage be relinquished at the end of each phase. The first three exploration phases are to be of five, seven and ten years respectively. Initially there is no requirement for drilling (although it is encouraged), but the drilling requirement increases in the later phases. The final exploitation phase would last 35 years, but might be extended.

25 Richards, *et al.*, 1996: 161-182.

26 The succeeding paragraphs are based on the Falklands Oil pamphlet, Richards, 1995, and the 1994 Government Information Paper.

- **Seismic survey** would continue some eight or nine months of the year during the first five years.

- **Exploratory drilling** would not be expected during the first four years, but, as it was compulsory in the second and third phases, would be expected to build up between years six and twelve, and might continue thereafter.

- **Construction phase**. Assuming worthwhile reserves of oil or gas were found, some two or three years of construction would be required before production commenced.

- **Production**. No attempt has been made to accurately forecast the time-frame for this phase as so much would depend on when (and if) a discovery were made, and the technical difficulty of its development, along with market conditions at the time, among other factors. It was noted that the average time from licence to discovery in the North Sea was 7.5 years, and from licence to production 17.2 years. Production might extend for up to 30 years – hence the long exploitation phase built into the licences. A production licence can be maintained for a total period of up to 57 years.

It should be stressed that the above schedule was drawn up in 1994 using comparisons with the North Sea. However, there is a strong body of opinion that some of these estimates are far too pessimistic. The Falkland Island continental shelf is in many respects analogous to the basins west of the Shetland Islands, where innovative technology, including the use of floating production systems have allowed production to be brought on at a much faster rate than during the earlier North Sea development. Oil companies have already run economic models for the Falklands using West of Shetland analogues.

It was appreciated that the production phase might never eventuate, and that for the next ten years or so the islands should plan for a relative modest *exploration* industry, and with this in view the Chamber of Commerce and Falklands Islands Government have dispatched delegations to Aberdeen and Newfoundland to help the Islands' business community and administrators consider what might be needed. The Governor, David Tatham, also visited the Shetlands in July 1994. Their conclusion, and that of the Information Paper, was that, with a few exceptions, almost everything necessary for the seismic exploration stage, and even the preliminary drilling stages, already existed on the Islands. The exceptions were:

- some minor upgrading of the Mount Pleasant Airport (the main military and civilian airport built after the 1982 conflict);
- the sealing of the road from this airport to Stanley;
- relatively minor additions to Stanley Harbour, to make it suitable for supply operations for an offshore industry;
- minimal alterations to Stanley Airport to render it suitable for use as a helicopter base (it was used as such by the forces from 1982-86, until the Mount Pleasant facility was complete);
- the construction of a transit camp for 150-200 workers.

The situation was summarised as follows:

> *In summary there is little to suggest that the Falkland Islands could not adequately cope for several years exploration through judicious improvements to existing facilities.*

Some of these suggestions are already being put into effect.

The consultants and the authors of the Information Paper detail closely what economic, social and environmental impacts could be expected at the various stages of exploration and production. For example, during the stage of intensive seismic survey of the offshore continental shelf, economic impacts are seen in terms of the *"generation of limited business opportunities for local companies and revenue up to £600,000 per annum."* There might be some spin-off for the local tourist industry if regular air services were established to the South American mainland instead of the use of occasional charters. Negligible social disruption was foreseen, and environmental impacts were summarised as follows:

> *There is potential for conflict between seismic vessels and fishing vessels, and for disturbance to squid stocks. Seismic work in sensitive areas will need to be regulated to avoid key fishing times.*

In the exploratory drilling stage appreciably more economic social and economic impacts are foreseen, and the following possible environmental disturbances are envisaged:

- Disturbance of the sea-bed, described as being *"absolutely minimal compared to trawling."*
- Disturbance of adjacent fisheries, localised and limited in comparison to seismic exploration.
- Operational discharges, capable of being controlled by regulation.
- Potential diesel or chemical spill risk, or drill-hole blow-out. Pollution risks to be controlled by regulation and emergency response facilities.

The impacts mount as the production stage approaches, and the Information Paper carefully spells out what these might be under various scenarios. For example, it is estimated that income to the Government might total £30 million per annum from a single small oilfield, to several hundred million pounds in the case of a real bonanza. The social effects of an influx of workers, and immigration and voting-right aspects are considered. Environmental impacts at this stage are seen in terms of the disruption of the islands *"peace and tranquillity"*, the land and buildings required for a deep-water harbour, the increased danger of blow-outs and tanker spills, disturbance of wildlife and marine areas, and noise from aircraft and helicopter movements.

At this stage the ERM report recommended:

> *[There must be] heavy emphasis on sharing facilities between oil companies and strong control over the scale and siting of developments...[with] a slow build-up of onshore activity in a controlled fashion with close cooperation between FIG and the oil companies, and between the oil companies themselves.*

Elsewhere the ERM report stresses the need for:

> *Making sure that best practice environmental protection and pollution control is in place [and] providing some form of protection for environmentally sensitive areas.*

It is clear that at least the intention at present is that there will be most careful planning, and the development of appropriate emergency response facilities and procedures at each stage.

It is important that a good knowledge exists of the present Falklands environment, and particularly the islands' ecology, and a programme of baseline studies is in progress, so that the effects of subsequent events can be monitored. The penguin and seal colonies, the offshore kelp fields, together with the windswept but awe-inspiring 'camp' – the areas outside Stanley – are aspects of the environment that the islanders wish to protect.

5.1 The Current Legal Framework for Hydrocarbon Development

The 1991 *Continental Shelf Ordinance*, described above, which provided the framework for the initial geophysical survey, has now been repealed, and replaced by the much more complex *Offshore Minerals Ordinance*, 1994, that was passed by Legco late in October of that year. It should be noted that this statute is quite separate from the UK legislation, but there are a number of similarities with the legal regime governing the UK sector of the North Sea (however the Designated Area is about one-and-a-half times the area of the UK North Sea). Thus the Area is subdivided into *quadrants*, one degree of latitude by one degree of longitude; their actual area in km^2 therefore gets smaller as one moves polewards. Figure 7 shows that there are 92 quadrants in the Area, those towards the margin being truncated, some highly so. Each quadrant is divided into thirty *blocks* – five east-west, by six north-south. Numbering of the blocks in each quadrant, 1-30, proceeds from west to east, commencing in the northwest corner of each quadrant. Block 65/1 thus indicates the block in the northwest corner of quadrant 65.

The 1994 Ordinance has some 81 sections (grouped into six parts), and has four schedules.

- **Part 1** is introductory; section 2, for example, is a *"dictionary section"*, providing precise definitions of many of the terms used in the Ordinance.

- **Part 2** provides for the exploration for, and exploitation of offshore minerals under licence, sections 5-13 setting out procedures for the grant of licences, and related matters. Sections 14-16 deal with environmental damage. Section 14(1), and Schedule 1 of the Ordinance incorporate provisions similar to those of the *Antarctic Minerals Act*, 1989, the UK Act passed to implement the requirements of the *Convention on the Regulation of Antarctic Mineral Resource Activities*, 1988. Section 16 deals with offshore oil pollution.

- **Part 3** provides for Health and Safety at Work in the offshore industry. Many provisions are based on UK legislation, some parts of which were brought in during 1992, following the Piper Alpha catastrophe.

- **Part 4** deals with submarine pipelines that become necessary to gather oil and gas from offshore and carry it to offshore or shore-based terminals for processing and onshipping, and its sections are again based on analogous UK legislation – in this case the *Petroleum and Submarine Pipelines Act*, 1975. Sections 40-42 provide power for the Government in insist that companies share pipelines, or to design pipeline systems with the capacity for future developments to avoid the construction of a multiplicity of lines on the ocean floor.

- **Part 5** provides for the decommissioning or abandonment of facilities when surplus to requirements.

- **Part 6** deals with a number of other environmental matters. Section 61, for example provides for the liquefaction of natural gas (this is based on equivalent provisions in the UK *Energy Act* 1976), section 62 for flaring of gas. Section 63 deals with planning considerations, and 64 and 65 with requirements for environmental impact assessments.

There is a good deal of other environmental legislation that applies, in whole or in part, to the offshore area of the Falklands; these include the provisions of the *Marine Environment (Offshore Protection) Ordinance*, 1995. All marine mammals are protected under the *Marine Mammals Protection Ordinance*, 1992. Other enactments are in prospect.

The *Offshore Minerals Ordinance*, 1994 has to be considered with the appropriate subsidiary legislation. The *Petroleum Survey Licences (Model Clauses) Regulations*, 1992, which were made under the former *Continental Shelf Ordinance*, 1992 have been continued in force by the 1994 Ordinance; these have been supplemented by the *Offshore Petroleum (Licensing) Regulations*, 1995, which themselves have a number of schedules, giving for example, the precise form for an application for a licence, and clauses to be incorporated in a licence.

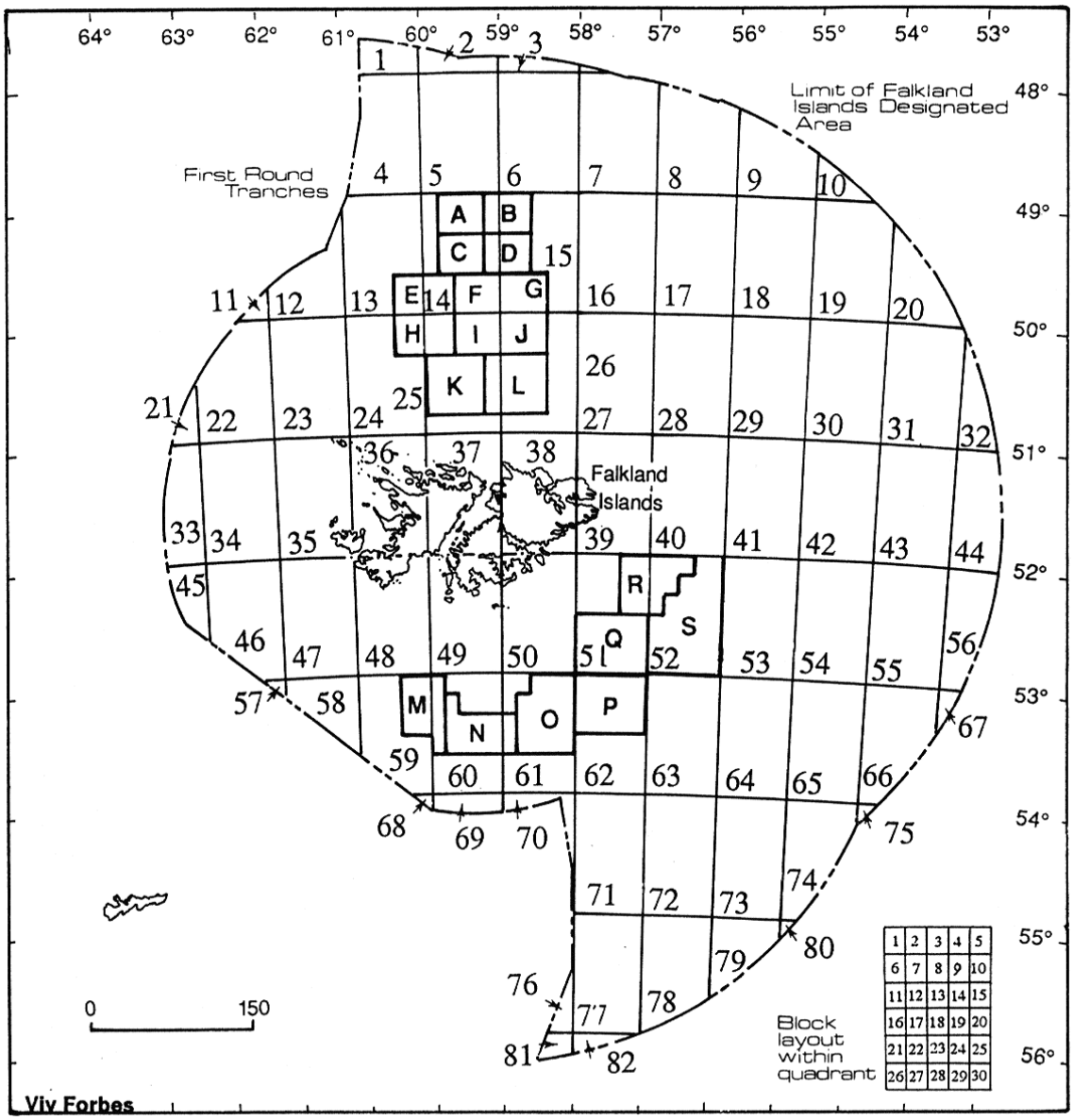
5.2 The Licensing Round of October 1995

The first round of oil licensing in the Falkland Islands opened on 11 October 1995, closing on 2 July 1996. Nineteen tranches were offered, twelve in the vicinity of the North Falklands Basin (A to L), in quadrants 13, 14, 15, 24, 25 and 26, and a further seven (M to S) in the South Falklands Basin, in quadrants 51, 52, 59, 60, 61 and 62 with a combined total area of 44,000km^2. Most of the tranches consisted of from six to twelve blocks, although in the South Falklands area there were a few of 15 blocks (O, P, Q), and one of 24 (S, most of quadrant 52) (see Figure 7). The aim has been to offer a spread in terms of acreage, water depth and type of geology. The licensing round was run as a competition based on planned work programmes, and the experience of the company or group.

The award of the licences was announced in Stanley and in London on 28 October 1996. Thirteen companies, associated into five operating groups, were successful:

Figure 7: The Falkland Islands "Designated Area"

(Showing the division into quadrants and blocks; the distribution of the tranches in the October 1995 licensing round is also shown)



- **Tranche A** Amerada Hess Falklands Ltd (as Operator) with Fina Exploration Atlantic BV, Murphy South Atlantic Oil Company, Teikoku Oil Co Ltd, Argos Evergreen Ltd.

- **Tranche B** Shell Exploration BV (as Operator) with Agip Exploration BV.

- **Tranches C & D** LASMO International Ltd (as Operator) with Clyde Expro plc and Desire Petroleum Ltd.

- **Tranche F** International Petroleum Corporation (as Operator) with Sands Petroleum AB.

Interestingly, none of the tranches to the south of the Islands was taken up, companies presumably feeling that the water was too deep, the geological information too poor and the risks too high at this stage.

Although an alliance between British Gas plc and YPF submitted a bid, it was not successful.

5.3 Financial Arrangements

There is a £5,000 fee payable for each production licence applied for. In addition acreage rentals are payable for each km^2 during the exploration phases, at the rate of US$30 per km^2 for the first five years; thereafter rentals increase appreciably, but there are substantial discounts allowed in relation to the number of wells drilled. Once a field has been proved, and permission been received for its development, the exploration acreage rental for that portion of a licence area is replaced by a fixed rental of US$350,000 per annum, paid until the first royalties are paid from production.

These production royalties are to be paid at the rate of nine percent of the market value of petroleum won. In addition corporation tax will be levied at the current rate (at present 32.5%); this will be payable by both oil companies and contractor companies providing services in the islands. However substantial allowances for the costs of drilling and similar expenses are to be given. Tax returns may be prepared either in sterling or US dollars.

The Falkland Islands Government and their advisors regard this as a reasonably 'company friendly' taxation regime, which will encourage oil firms to make a substantial commitment to the Islands' development. It is expected that the total Government take (in royalties, fees and taxes) will be 40-50%, and it is felt that this compares favourably with rates in other jurisdictions.[27]

5.4 The Argentine Position

What UK and FIG official papers seldom emphasise is that investment in the Falklands involves a certain measure of political risk. Despite the considerable improvement in relations since the 1982 conflict, and despite the fact that the complex legal framework has been developed with little reference to the South American mainland neighbour, Argentina still claims the islands, as she has done for well over a century. This claim naturally includes the territorial waters, exclusive economic zone and offshore continental shelf of what Argentine publications continue to call the Islas Malvinas (Figure 6).

Indeed from time to time the claim is strenuously asserted by Argentinian politicians. Possibly such remarks, including the oft-voiced aspiration that the Malvinas will be back under the Argentinian flag by the year 2000, are to be seen part of the local (i.e. Argentinian) political process. But in view of the fact that Argentina continues to pass legislation pertaining to the islands, and in 1995 certain sources implied that Argentina might attempt to devise taxes on companies benefiting from any future Falklands oil bonanza, companies with substantial investments in Argentina will be cautious.

27 *Ibid*.

It may also be noted that persons travelling on Argentinian passports are still not allowed onto the islands, and an applicant group with more than 49% Argentinian interests will not be granted licences.

6. Moving Towards Cooperation

In the years immediately following 1982, diplomatic relations between Britain and Argentina were exceedingly cool, but by 1990 had warmed appreciably. Following a meeting of British and Argentinian delegations in Madrid on 14 and 15 February, 1990, the delegates issued a *Joint Statement* which provided for *"an interim reciprocal and consultation system"* on the movement of armed forces, the establishment of a communications link between the Islands and the mainland, cooperation over air-sea rescue and in the field of maritime navigation.

Then on 28 November 1990, following a further series of meetings, the *Joint Statement on the Conservation of Fisheries* was issued. In this it was agreed that the two governments would cooperate over the conservation of fish stocks in the South Atlantic Ocean between 45°S and 60°S. Fishing was to be controlled in certain waters around the Falkland Islands and by Proclamation (No.2 of 1990), dated 20 December 1990 the Governor of the Islands was partially to give legal effect to that agreement in the Falklands (see Section 4.1). In the schedule to the proclamation the *"outer zone"* was on its eastern side; the line uniting points 8 and 9 or this (56°14'S, 58°31'W and 47°42'S, 60°41'W) is defined as:

> *...a line drawn anti-clockwise 200 nautical miles from the nearest points on the baseline of the territorial sea of the Falkland Islands.*

This instrument thus contains one of the first references to the newly defined baselines mentioned above (Section 4.2).

Interestingly the *Joint Statement* on which it is based, in the same context refers to:

> *...a line drawn anti-clockwise along the maximum limit of jurisdiction over fisheries in accordance with international law.*

It should be noted in passing that, initially at least, this fisheries agreement was not very successful, and only following pressure from the UK Foreign Secretary's visit to Argentina in January 1993 were any steps taken towards the long-term management of the squid fishery, and the reduction of poaching in Argentine waters. A briefing issued in Stanley in January 1993 referred to, *"the low place conservation holds in Argentine planning"*, *"signs of a 'hidden agenda' in Argentine fishing policy"* and *"the ineffectiveness of Argentine fishery protection."* The spirit of rapprochement clearly takes some time to penetrate.

All these negotiations were conducted *"without prejudice"* in relation to sovereignty, over either the islands themselves, or the surrounding maritime area. Thus the *Joint Statement on the Conservation of Fisheries*, 1990, Article 1(1) reads:

> *Nothing in the conduct or content of the present meeting or of any subsequent meetings shall be interpreted as:*

(a) A change in the position of the United Kingdom with regard to the sovereignty or territorial or maritime jurisdiction over the Falkland Islands, South Georgia, the South Sandwich Islands and the surrounding maritime areas.

(b) A change in the position of the Argentine Republic with regard to the sovereignty or territorial or maritime jurisdiction over the Falkland Islands, South Georgia, the South Sandwich Islands and the surrounding maritime areas.

(c) Recognition or support for the position of the United Kingdom or the Argentine Republic with regard to the sovereignty or territorial or maritime jurisdiction over the Falkland Islands, South Georgia, the South Sandwich Islands and the surrounding maritime areas.

There is a strong analogy with the wording of Article 4 of the *Antarctic Treaty*, 1959, in which the contracting parties agree that nothing in the Treaty, or any acts done during the period it remains in force shall be the basis of a claim, shall amount to the renunciation of a claim, or the recognition of a claim in Antarctica.

Meetings between the UK and Argentine governments continued, and on 27 September 1995 a *Joint Declaration on Cooperation over Offshore Activities in the South West Atlantic* was issued (Appendix II). This contains a *"without prejudice"* Article similar to those of earlier dates (Article 1), and in (Article 2) an agreement *"to co-operate in order to encourage offshore activities in the South West Atlantic."* In particular *"a Joint Commission, composed of delegations from the two sides"* will coordinate activities. Particularly close cooperation is planned for: *"in up to 6 tranches, each of about 3,500 square kilometres, the first ones to be situated within the sedimentary structure as identified in the Annex"* (Article 2b).

The Special Area, as designated by the complex set of coordinates given in the Annex to the Declaration, is shown in Figure 3. The coordination of activities within this Area is to be overseen by *"a sub-committee,...subordinate to the Commission"* (Article 4b).

Other concerns of the Joint Commission and the sub-committee, will include: the submission of recommendations to both Governments for standards for the protection of the marine environment (Article 4a); the encouragement of commercial activities by means of joint ventures and consortia from the two sides (Article 4b(i)); the seeking of cooperation in the matter of fees, royalties, charges and taxes, and *"the harmonisation of timing, commercial terms and conditions"* (Article 4b(iv)), and to generally encourage the search for hydrocarbons in the South West Atlantic. The parties agree to *"communicate to each other relevant information relating to the conduct of exploration"*, and to *"abstain from taking action or imposing conditions tending to inhibit or frustrate the possibility of carrying out hydrocarbons development"* in the region (Article 6).

7. Concluding Comments

Taking a long view, in the face of rivalry extending over two centuries, it has been argued that the conflict of 1982 was inevitable: it has already been remarked that it was foreseen, even if somewhat jokingly, by Charles Darwin in the 1830s. It is, perhaps, the improvement in relations between Argentina and the UK since 1982 that is as surprising as it is encouraging. The rapprochement since 1990 is particularly heartening.

Of special note, amongst the general provisions for cooperation and harmonisation in the search for offshore hydrocarbons in the South Atlantic is the appearance in the Joint Declaration, in the *"Special Area"* designated in Article 2(b) and in the Annex of the agreement, of the concept of the *Zone of Cooperation* or *Joint Development Zone*.

This tool for dispute resolution has been enthusiastically adopted as a mechanism for development of resources, particularly but not exclusively mineral resources, in East and Southeast Asia. This region of the world provides several instances of where exploration for resources close to or astride a disputed boundary has been able to continue despite the absence of a final agreement on the location of the boundary.

Examples of this type of agreement exist between Japan and South Korea, and between Malaysia and Thailand. Perhaps the most striking, and the most detailed, is the *Timor Gap Agreement* between Australia and Indonesia, so called as for many years the offshore boundary between the two countries was undetermined in the region of the former Portuguese colony of East Timor.[28] This entered into force on 11 February 1991. It established a Zone of Cooperation (ZOC) in the Timor Sea, and created a two-level administrative arrangement composed of a Ministerial Council and a Joint Development Authority (Articles 5-10), the latter having responsibility for the day-to-day administration of Area A, the actual Area of Joint Control and Development (AJCD).

The benefits from any development in Area A are to be shared equally between Australia and Indonesia, thus companies operating in the area will be required to submit returns to both revenue authorities, each allowing a fifty percent rebate. In Area B Australian Law applies, subject to sharing with Indonesia ten percent of Australia's Resource Rent Tax. In Area C Indonesian law applies, subject to sharing with Australia ten percent of Indonesia's Contractors' Income Tax (Articles 2, 29). The treaty is a detailed one, and the functions, composition and administrative structures of the Council and the JDA are spelled out in some detail. The distinctive feature could be said to be the creation of a sovereignty neutral regime for Area A. The other Asian instances differ in degree from the Timor Gap Treaty.

One is immediately tempted to make comparisons between, for example, the Indonesia-Australia agreement and the UK-Argentine Joint Declaration. Both emphasise cooperation, both express concern for environmental issues at least in principle, both make provision for taxation matters and both purport to establish a two-level administrative structure. The Zone of Cooperation in the Australia-Indonesia treaty has its analogue in the Special Area proposed in the Anglo-Argentine Joint Declaration.

[28] The full title is: *Treaty between Australia and the Republic of Indonesia on the Zone of Cooperation in the area of the Indonesian Province of East Timor and Northern Australia*, 11 December 1989. See also: Auburn, *et al.*, 1994, together with Forbes and Auburn, 1991.

But there are significant differences – exploration in the Falkland Islands Designated Area is at a much earlier stage than in the Arafura Sea, and the Declaration is a much less detailed document. There is no dispute over the sovereignty of adjacent land masses between Australia and Indonesia, so no 'without prejudice' provisions are necessary. Nor is there any mention of criminal jurisdiction in the Special Area; elaborate provisions are made for this in the agreement between Indonesia and Australia (as it is in other comparable agreements): perhaps going back to the Port Louis murders of the 1830s, the matter is too much of a sore point between Britain and Argentina! Of course if development in the South Atlantic proceeds successfully more complex arrangements will develop.

The point is often made that finance from outside sources for massively expensive projects will only be forthcoming if it is believed that they are legally secure. It is perhaps of note that a British Government Declaration (see Appendix III), with regard to the Joint Declaration, dated 27 September 1995, besides affirming the British position in relation to the Falklands, has as its penultimate sentence:

> *We welcome the understanding as a beneficial factor which will reassure the oil industry and improve the climate for exploration for hydrocarbons in a frontier area.*

Appendix I:
Argentina: Declaration Made Upon Ratification of the United Nations Convention on the Law of the Sea

[Original: Spanish]
Carlos Saúl Menem
President of the Argentine Nation

Whereas:

By Act No. 24.543, the United Nations Convention on the Law of the Sea, adopted in New York, United States of America, on 30 April 1982, and the Agreement concerning the Application of Part XI of the United Nations Convention on the Law of the Sea, adopted in New York, United States of America, on 28 July 1994, have been approved,

Therefore:

I hereby ratify, on behalf of and as the representative of the Argentine Government, the aforementioned Convention and Agreement, and make the following declarations:

(a) "With regard to those provisions of the Convention which deal with innocent passage through the territorial sea, it is the intention of the Government of the Argentine Republic to continue to apply the regime currently in force to the passage of foreign warships through the Argentine territorial sea, since that regime is totally compatible with the provisions of the Convention."

(b) "With regard to Part III of the Convention, the Argentine Government declares that in the Treaty of Peace and Friendship signed with the Republic of Chile on 29 November 1984, which entered into force on 2 May 1985 and was registered with the United Nations Secretariat in accordance with Article 102 of the Charter of the United Nations,[29] both States reaffirmed the validity of article V of the Boundary Treaty of 1881 whereby the Strait of Magellan (Estrecho de Magallanes) is neutralised forever with free navigation assured for the flags of all nations. The aforementioned Treaty of Peace and Friendship also contains specific provisions and a special annex on navigation which includes regulations for vessels flying the flags of third countries in the Beagle Channel and other straits and channels of the Tierra del Fuego archipelago."

(c) "The Argentine Republic accepts the provisions on the conservation and management of the living resources of the high seas, but considers that they are insufficient, particularly the provisions relating to straddling fish stocks or highly migratory fish stocks, and that they should be supplemented by an effective and binding multilateral regime which, *inter alia*, would facilitate cooperation to prevent and avoid overfishing, and would permit the monitoring of the activities of fishing vessels on the high seas and of the use of fishing methods and gear."

[29] United Nations, *Treaty Series*, Vol.1399, No.1-23392.

"The Argentine Government, bearing in mind its priority interest in conserving the resources of its exclusive economic zone and the area of the high seas adjacent thereto, considers that, in accordance with the provisions of the Convention, where the same stock or stocks of associated species occur both within the exclusive economic zone and in the area of the high seas adjacent thereto, the Argentine Republic, as the coastal State, and other States fishing for such stocks in the area adjacent to its exclusive economic zone should agree upon the measures necessary for the conservation of those stocks or stocks of associated species in the high seas."

"Independently of this, it is the understanding of the Argentine Government that, in order to comply with the obligation laid down in the Convention concerning the conservation of the living resources in its exclusive economic zone and the area adjacent thereto, it is authorised to adopt, in accordance with international law, all the measures it may deem necessary for the purpose."

(d) "The ratification of the Convention by the Argentine Government does not imply acceptance of the Final Act of the Third United Nations Conference on the Law of the Sea. In that regard, the Argentine Republic, as in its written statement of 8 December 1982 (A/CONF.62/WS/35), places on record its reservation to the effect that resolution III, in annex I to the Final Act, in no way affects the 'Question of the Falkland Islands (Malvinas)', which is governed by the following specific resolutions of the General Assembly: 2065 (XX), 3160 (XXVIII), 31/49, 37/9, 38/12, 39/6, 40/21, 41/40, 42/19, 43/25, [and decisions] 44/406, 45/424, 46/406, 47/408 and 48/408, adopted within the framework of the decolonisation process.

"In this connection, and bearing in mind that the Malvinas and the South Sandwich and South Georgia Islands form an integral part of Argentine territory, the Argentine Government declares that it neither recognises nor will recognise the title of any other State, community or entity or the exercise by it of any right of maritime jurisdiction which is claimed to be protected under any interpretation of resolution III that violates the rights of Argentina over the Malvinas and the South Sandwich and South Georgia Islands and their respective maritime zones. Consequently, it likewise neither recognises nor will recognise and will consider null and void any activity or measure that may be carried out or adopted without its consent with regard to this question, which the Argentine Government considers to be of major importance."

"The Argentine Government will accordingly interpret the occurrence of acts of the kind referred to above as contrary to the aforementioned resolutions adopted by the United Nations, the objective of which is the peaceful settlement of the sovereignty dispute concerning the islands by means of bilateral negotiations and through the good offices of the Secretary-General of the United Nations.

The Argentine Republic reaffirms its legitimate and inalienable sovereignty over the Malvinas and the South Georgia and South Sandwich Islands and their respective maritime and island zones, which form an integral part of its national territory. The recovery of those territories and the full exercise of sovereignty, respecting the way of life of the inhabitants of the territories and in accordance with the principles of international law, constitute a permanent objective of the Argentine people that cannot be renounced.

"Furthermore, it is the understanding of the Argentine Republic that the Final Act, in referring in paragraph 42 to the Convention together with resolutions I to IV as forming an integral whole, is merely describing the procedure that was followed at the Conference to avoid a series of separate votes on the Convention and the resolutions. The Convention itself clearly establishes in article 318 that only the Annexes form an integral part of the Convention; thus, any other instrument or document, even one adopted by the Conference, does not form an integral part of the United Nations Convention on the Law of the Sea."

(e) "The Argentine Republic fully respects the right of free navigation as embodied in the Convention; however, it considers that the transit by sea of vessels carrying highly radioactive substances must be duly regulated."

"The Argentine Government accepts the provisions on prevention of pollution of the marine environment contained in Part XII of the Convention, but considers that, in the light of events subsequent to the adoption of that international instrument, the measures to prevent, control and minimise the effects of the pollution of the sea by noxious and potentially dangerous substances and highly active radioactive substances must be supplemented and reinforced."

(f) "In accordance with the provisions of article 287, the Argentine Government declares that it accepts, in order of preference, the following means for the settlement of disputes concerning the interpretation or application of the Convention: (a) the International Tribunal for the Law of the Sea; (b) an arbitral tribunal constituted in accordance with Annex VIII for questions relating to fisheries, protection and preservation of the marine environment, marine scientific research, and navigation, in accordance with Annex VIII, article 1. The Argentine Government also declares that it does not accept the procedures provided for in Part XV, section 2, with respect to the disputes specified in article 298, paragraph 1 (a), (b) and (c)."

IN WITNESS WHEREOF, I have signed the present Instrument of Ratification authorised with the seal of the Republic and countersigned by the Minister for Foreign Affairs, International Trade and Worship, Mr. Guido José Mario DI TELLA.

DONE in Buenos Aires, Capital of the Argentine Republic, on 18 October 1995.

(Signed) MENEM.

Appendix II:
UK-Argentine Joint Declaration

Cooperation over Offshore Activities in the South West Atlantic

1. The Government of the United Kingdom of Great Britain and Northern Ireland and the Government of the Argentine Republic agreed that the following formula on sovereignty, based on that contained in the Joint Statement issued at Madrid on 19 October 1989, applies to this Joint Declaration and its results:

(1) Nothing in the content of the present Joint Declaration or of any similar subsequent joint statements and meetings shall be interpreted as:

a) a change in the position of the United Kingdom with regard to sovereignty or territorial and maritime jurisdiction over the Falkland Islands, South Georgia and the South Sandwich Islands and the surrounding maritime areas;

b) a change in the position of the Argentine Republic with regard to sovereignty or territorial and maritime jurisdiction over the Falkland Islands, South Georgia and the South Sandwich Islands and the surrounding maritime areas;

c) recognition of or support for the position of the United Kingdom or the Argentine Republic with regard to sovereignty or territorial and maritime jurisdiction over the Falkland Islands, South Georgia and the South Sandwich Islands and the surrounding maritime areas.

(2) No act or activity carried out by the United Kingdom, the Argentine Republic or third parties as a consequence and in implementation of anything agreed to in the present Joint Declaration or in any similar subsequent Joint Statements and meetings shall constitute a basis for affirming, supporting, or denying the position of the United Kingdom or the Argentine Republic regarding the sovereignty or territorial and maritime jurisdiction over the Falkland Islands, South Georgia and the South Sandwich Islands and the surrounding maritime areas. The areas subject to the controversy on sovereignty and jurisdiction will not be extended in any way as a consequence of this Joint Declaration or its implementation.

This Joint Declaration does not apply to the maritime areas surrounding South Georgia and the South Sandwich Islands.

2. The two Governments agreed to cooperate in order to encourage offshore activities in the South West Atlantic in accordance with the provisions contained herein. Exploration for and exploitation of hydrocarbons by the offshore oil and gas industry will be carried out in accordance with sound commercial principles and good oil field practice, drawing upon the Governments' experience both in the South West Atlantic and in the North Sea. Cooperation will be furthered:

(a) by means of the establishment of a Joint Commission, composed of delegations from both sides;

(b) by means of coordinated activities in up to 6 tranches, each of about 3,500km², the first ones to be situated within the sedimentary structure as identified in the Annex.

3. The Commission will be composed of a delegation from each of the two states, and will meet at least twice a year. Recommendations shall be reached by mutual agreement.

4. The Commission will have the following functions:

(a) to submit to both Governments recommendations and proposed standards for the protection of the marine environment of the South West Atlantic, taking into account relevant international conventions and recommendations of competent international organisations;

(b) to coordinate activities in the tranches referred to in paragraph 2 (b) above, as areas for special cooperation. This will be done by the establishment of a sub-committee which shall meet regularly, subordinate to the commission, charged with:

(i) encouraging commercial activities in each tranche by means such as joint ventures and consortia from the two sides;

(ii) seeking nominations from companies for each tranche, to be offered upon terms appropriate for a challenging environment;

(iii) making recommendations on proposals made to the two Governments by companies for development projects in each tranche, including the limits of the tranches.

(iv) seeking close coordination in regard to all aspects of future operations, including the overall level of fees, royalties, charges and taxes, the harmonisation of timing, commercial terms and conditions, and compliance with recommended standards;

(v) recommending on the basis of geological data known to both sides, additional tranches either within the sedimentary structure referred to in the Annex or in a further area to be agreed by the Governments on the recommendation of the Commission;

(c) to promote the exploration for and exploitation of hydrocarbons in maritime areas of the South West Atlantic subject to a controversy on sovereignty and jurisdiction, and to this end:

(i) to promote cooperation between industry on both sides, including the formation of joint ventures and the elaboration of joint projects for exploration, production and use of infrastructure;

(ii) to receive from both sides and from operating companies the available information on scientific research, development of activities and commercial operations relating to the seabed, whilst respecting commercial confidentiality;

(iii) to propose to both Governments coordinated research work by commercial undertakings;

(iv) to submit to both Governments recommendations for standards for offshore activities in safety, health and monitoring;

Both governments will take the appropriate measures in order to ensure that the companies will keep the Commission informed on the development of their activities;

(d) on the basis of geological data known to both sides, to propose to the two Governments at the appropriate time further areas of special cooperation, on terms similar to those contained in paragraph 4 (b) above;

(e) to consider and submit recommendations to the two Governments on any related matter which may arise in the future, including the possible need to agree on the unitisation of any discoveries in accordance with good oil field practice, on pipeline operations and on the efficient use of infrastructure.

5. The arrangements regarding search and rescue set out in the Joint Statements of 25 September 1991 and 12 July 1993 or any future arrangements between the Parties on the same subject will apply to offshore activities. Civilian helicopter traffic will be the subject of future discussion.

6. Each Government will take the appropriately related administrative measures in accordance with this Joint Declaration for the exploration for an exploitation of hydrocarbons in the areas referred to in paragraph 4 above. They agreed that such measures regulating the activities of companies would be subject to the formula on sovereignty in paragraph 1 above. The Parties will create the conditions for substantial participation in the activities by companies from the two sides. The Parties will communicate to each other relevant information relating tot the conduct of exploration and exploitation activities in the areas. Both Parties agreed to abstain from taking action or imposing conditions designed or tending to inhibit or frustrate the possibility of carrying out the hydrocarbons development in the areas.

7. In order to implement the different arrangements in this Joint Declaration, which form an interdependent whole, the two Governments agreed to cooperate throughout the different stages of offshore activities undertaken by commercial operators, including the regime for the eventual abandonment of installations.

Annex to Joint Declaration Dated 27 September 1995

Special Area

The area is bounded by lines of the type described in Column 2 joining the points defined to the nearest minute of arc by co-ordinates of latitude and longitude on WGS 72 Datum specified in Column 1.

Column 1 Co-ordinates of Latitude and Longitude		Column 2 Line Type
1.	52°00'S, 63°36'W	1-2 meridian
2.	53°10'S, 63°36'W	2-3 parallel of latitude
3.	53°10'S, 62°48'W	3-4 meridian
4.	53°25'S, 62°48'W	4-5 parallel of latitude
5.	53°25'S, 61°48'W	5-6 meridian
6.	53°40'S, 61°48'W	6-7 parallel of latitude
7.	53°40'S, 61°00'W	7-8 meridian
8.	53°00'S, 61°00'|W	8-9 parallel of latitude
9.	53°00'S, 62°00'W	9-10 meridian
10.	52°30'S, 62°00'W	10-11 parallel of latitude
11.	52°30'S, 62°36'W	11-12 meridian
12.	52°00'S, 62°36'W	12-13 parallel of latitude
13.	52°00'S, 63°36'W	

Appendix III

Declaration of the British Government with regard to the Joint Declaration Signed by the British and Argentine Foreign Ministers On Cooperation Over Offshore Activities in the South West Atlantic

The British Government welcomes the understanding reached with Argentina on cooperation over offshore activities in the South West Atlantic.

The understanding will facilitate mutually beneficial cooperation, promoting the development of hydrocarbons. It will further improve relations with Argentina since the Madrid Joint Statement of February 1990. At the same time, it will offer commercial opportunities to British companies, as well as to the Falkland Islands which will launch a licensing round in October.

The Joint Declaration safeguards British sovereignty and jurisdiction over the Falkland Islands and the surrounding maritime areas. HMG have no doubts about the sovereignty and jurisdiction of the UK.

HMG are aware that Argentina proposes to enact legislation purporting to impose charges on companies working in maritime areas surrounding the Falkland Islands. HMG do not accept any Argentine claim to impose such charges on companies by reason only of their activities on the continental shelf around the Falkland Islands under Falklands licence. HMG will be working with the Falkland Islands Government in the development of the forthcoming Licensing Round. We welcome the understanding as a beneficial factor which will reassure the oil industry and improve the climate for exploration for and exploitation of hydrocarbons in a frontier area.

Appropriate legislation will be introduced in order to take account of the Joint Declaration, including a new Ordinance in the Falkland Islands.

References

Aidie, R.J. (1952) 'The position of the Falkland Islands in the reconstruction of Gondwanaland', *Geological Magazine*, 89, 6: 401-410.

Armstrong, P.H. (1992) *Darwin's Desolate Islands: a Naturalist in the Falklands, 1833 and 1834*, Chippenham: Pictons.

Armstrong, P.H. (1994) 'Human impact on the Falkland Islands environment', *Environmentalist*, 14: 215-231.

Auburn, F.M., Ong, D. and Forbes, V.L. (1994) 'Dispute resolution and the Timor Gap Treaty', *Occasional Paper*, No.35, Perth: Indian Ocean Centre for Peace Studies.

Barlow, N. (1933) (ed.) *Charles Darwin's Diary of the voyage of HMS Beagle*, Cambridge: Cambridge University Press.

Ben-Avraham, Z., Hartnady, C.J.H. and Malan, J.A. (1993) 'Early tectonic extension between the Aghulas Bank and the Falkland Plateau due to the rotation of the Lafonia microplate', *Earth and Planetary Science Letters*, 117: 43-58.

Boumphrey, R.S. (1961) 'The murders at Port Louis, 1833', in Benedikz, B.S. (ed.) *Studia Centenalia in Honorem Memoriae Benedikt S Thorarinsson, 1861-1961*, Reykjavik: Isafoldarprentsmidja.

Burkhardt, F. and Smith, S. (1985) (eds) *The Correspondence of Charles Darwin, Volume 1: 1821-1836*, Cambridge: Cambridge University Press.

FitzRoy, R. (1839) *Narrative of the surveying voyages of His Majesty's Ships Adventure and Beagle, 1826-1836*, Liverpool: Henry Colburn.

Forbes, V.L., and Auburn, F.M. (1991) 'The Timor Gap Zone of Cooperation', *Boundary Briefing*, No.9, Durham: International Boundaries Research Unit.

Gustafsen, L.S. (1988) *The Sovereignty Dispute over the Falklands (Malvinas) Islands*, New York: Oxford University Press.

Hanrahan, B. and Fox, R. (1982) *I counted them all out and I counted them all back*, London: BBC.

Mitchell, C., Taylor, G.K. and Cox, K.G. (1986) 'Are the Falkland Islands a rotated microplate?' *Nature*, 319: 100-101.

Philpott, R. A. (1992) *An archaeological survey of Port Egmont, Falkland Islands*, Liverpool: National Museums and Galleries on Merseyside.

Richards, P.C. (1995) *Oil and the Falkland Islands: an Introduction to the October 1995 Offshore Licensing Round*, Keyworth: British Geological Survey, for Falkland Islands Government.

Richards, P.C., Gatliff, R.W., Quinn, M.F., and Fannin, N.G.T. (1996) 'Petroleum potential of the Falkland Islands offshore area', *Journal of Petroleum Geology*, 19, 2: 161-182.

Song, Y-H. (1988) 'The British 150-mile fishery conservation and management zone around the Falkland (Malvinas) Islands', *Political Geography Quarterly*, 7, 2: 183-196.

Strange, I.J. (1987) *The Falkland Islands and their natural history*, Newton Abbot: David and Charles.

Strange, I.J. (1983), *The Falkland Islands*, 3rd edition, Newton Abbot: David and Charles.

Wag, P. (1983) *The Falklands War*, London: Marshall Cavendish.

Summary list of the main statutory and similar materials referred to in the text:

UK Acts of Parliament:

Antarctic Minerals Act, 1989
Colonial Boundaries Act, 1895
Energy Act, 1975
Petroleum and Submarine Pipelines Act, 1975

UK Order:

Falkland Islands (Territorial Sea) Order, 1989

Falkland Island Ordinances:

Continental Shelf Ordinance, 1991
Fisheries (Conservation and Management) Ordinance, 1986
Marine Environment (Offshore Protection) Ordinance, 1995
Marine Mammals Protection Ordinance, 1992
Offshore Minerals Ordinance, 1994

Falkland Island Regulations:

Continental Shelf Petroleum Survey Licences (Model Clauses) Regulations, 1992
Offshore Petroleum (Licensing) Regulations, 1995

Falkland Islands Proclamations:

No 4 of 1986 (Fisheries Conservation and Management)
No 2 of 1990 (Outer Fisheries Zone)
No 1 of 1991 (Continental Shelf)

International Agreements:

Antarctic Treaty, 1959
Convention on the Regulation of Antarctic Mineral Resource Activities, 1988
Treaty between Australia and the Republic of Indonesia on the Zone of Cooperation in the area of the Indonesia Province of East Timor and Northern Australia, 1989
United Nations Convention of the Law of the Sea, 1982

Agreements of the UK and Argentine Governments:

Joint Statement of British and Argentine Governments (Marine matters), 1990
Joint Statement on the Conservation of Fisheries, 1990
Joint Declaration (Cooperation over Offshore Activities in the South West Atlantic), 1995

Argentine Legal Materials:

Law of Hydrocarbons, 17.319
Law of Baselines, 23.968

Other Sources:

In addition to the sources, published and unpublished, listed in the Notes, the authors made use of a variety of newspapers and magazines (British, Australian and Falkland Islands) including: *Daily Telegraph*, *Weekly Telegraph*, *Financial Times*, *The Bulletin*, *Penguin News*, *Teaberry Express*, *Falkland Islands Newsletter*, as well as a number of Falklands Islands Government official and semi-official publications and circulars.

Annex 606

C. Schofield & C. Carleton, "Developments in the Technical Determination of Maritime Space: Charts, Datums, Baselines, Maritime Zones and Limits", *IBRU Maritime Briefing*, Vol. 3, No. 3 (2001)

Maritime Briefing

Volume 3 Number 3
ISBN 1-897643-45-4
2001

Developments in the Technical Determination of Maritime Space:
Charts, Datums, Baselines and Maritime Zones

by

Chris Carleton and Clive Schofield

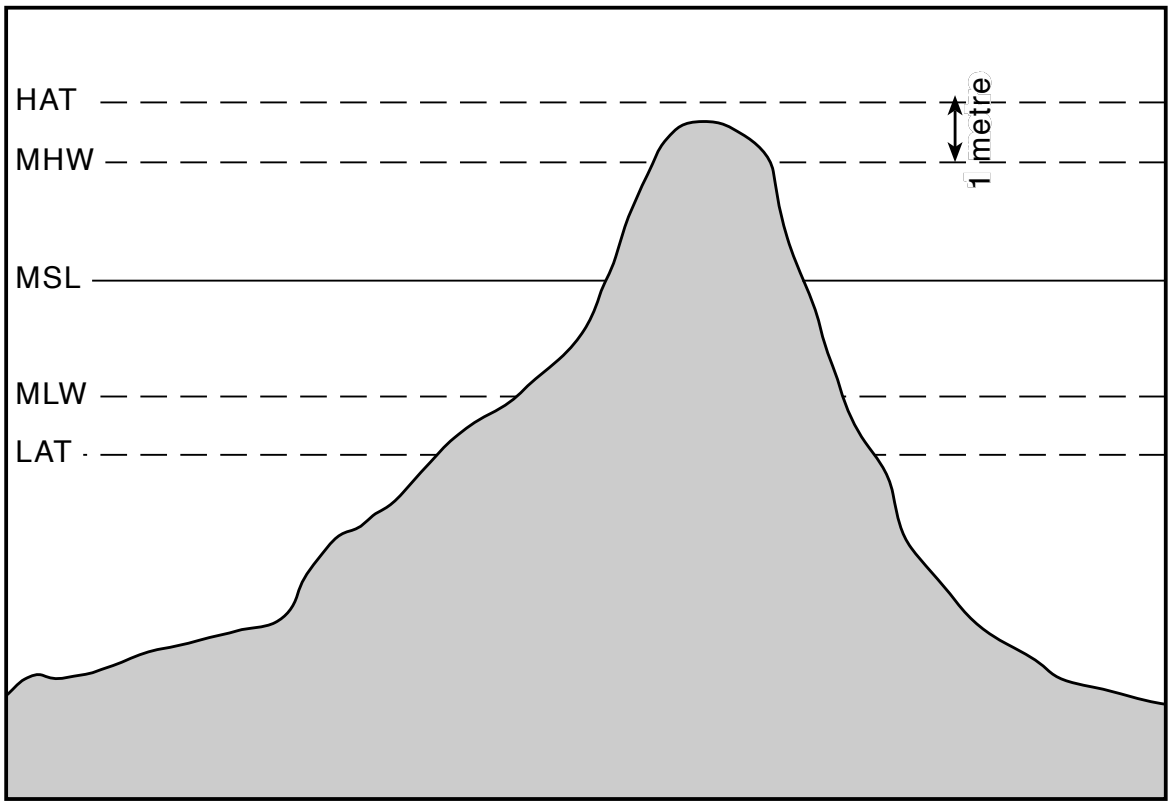
Edited by

Shelagh Furness

International Boundaries Research Unit
Department of Geography
University of Durham
South Road
Durham DH1 3LE
UK
Tel: UK + 44 (0) 191 334 1961 Fax: UK +44 (0) 191 334 1962
E-mail: ibru@durham.ac.uk
www: http://www-ibru.dur.ac.uk

Contents

Figure 10: Insular Features and the Vertical Datum



baseline. As a result, a variety of datums have been used by states, providing a range of low-water lines and thus scope for dispute.

The potential for dispute related to choice of vertical datum is to some extent minimised by the fact that charts are primarily designed to aid the navigator and for safety reasons the vertical datum used for the depiction of underwater features, including the 'zero' line tends to err on the side of caution. Modern charts therefore frequently take the Lowest Astronomical Tide (LAT), as the low-water datum and this has been accepted as the preferred datum for navigational charts by the International Hydrographic Organization (IHO).[16] The definition of LAT is:

> *The lowest tide level which can be predicted to occur under average meteorological conditions and under any combination of astronomical conditions.*

However, numerous alternative datums exist including:

> **Mean Lower Low Water** (MLLW) defined as:
> The average height of the lower low waters at a place over a 19 year period.
>
> **Lower Low Water Large Tides** (LLWLT) defined as:
> The average of the lowest low waters, one from each of 19 years of prediction.

[16] Carleton, 1997.