The People's Republic of China Straight Baseline Claim

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Introduction

The People's Republic of China (PRC) claimed to use straight baselines in its 1958 *Declaration on China's Territorial Sea*, but did not delimit them at that time. This general claim was reiterated in the PRC's 1992 *Law on the Territorial Sea and the Contiguous Zone*. On 15 May 1996 the PRC gave partial effect to these earlier claims in a *Declaration on the Baselines of the Territorial Sea*, which delimited much of its baseline, from the tip of the Shandong peninsula along the mainland coast to the western cape of Hainan island (Figures 1-3).

The 15 May Declaration also delimits baselines around the Paracel Islands (Figure 3). Subsequent statements by the PRC Foreign Ministry promise delimitation of the remaining baselines, including those around Taiwan and islands associated with it (presumably the Pescadores). There is no doubt that the PRC is justified in delimiting a straight baseline along much of its mainland coast, where it is deeply indented or fringed by islands or there are river deltas, but do the particular baselines defined in the 15 May Declaration comport with the international law of the sea?

The 1958 Declaration on China's Territorial Sea

On 4 September 1958, the PRC issued a Declaration on China's Territorial Sea that established a 12-nautical mile (nm) width for its territorial sea. The declaration stated that: *"China's territorial sea along the mainland and its coastal islands takes as its baseline the line composed of the straight lines connecting basepoints on the mainland coast and on the outermost of the coastal islands."*[1] The declaration also identified the Po Hai (bay) and Chiungchow (Qiongzhou) strait, between Hainan Island and the mainland, as internal waters, and listed nearshore and distant islands that the PRC claimed.[2]

The 1992 Law on the Territorial Sea

On 25 February 1992 the Standing Committee of the National People's Congress adopted the Law of the People's Republic of China on the Territorial Sea and the Contiguous Zone, which stated that: *"The method of straight baselines composed of all the straight lines joining the adjacent base points shall be employed in drawing the baselines of the territorial sea of the People's Republic of China."* In Article 2, the law reiterated the 1958 declaration by listing the offshore islands, but added the Diaoyutai [Senkaku] Islands, which are disputed with Japan. Unlike the 1958 Declaration, the coastal islands were not catalogued in the 1992 Law.[3] Article 15 stated that the baselines would be promulgated by the PRC government.
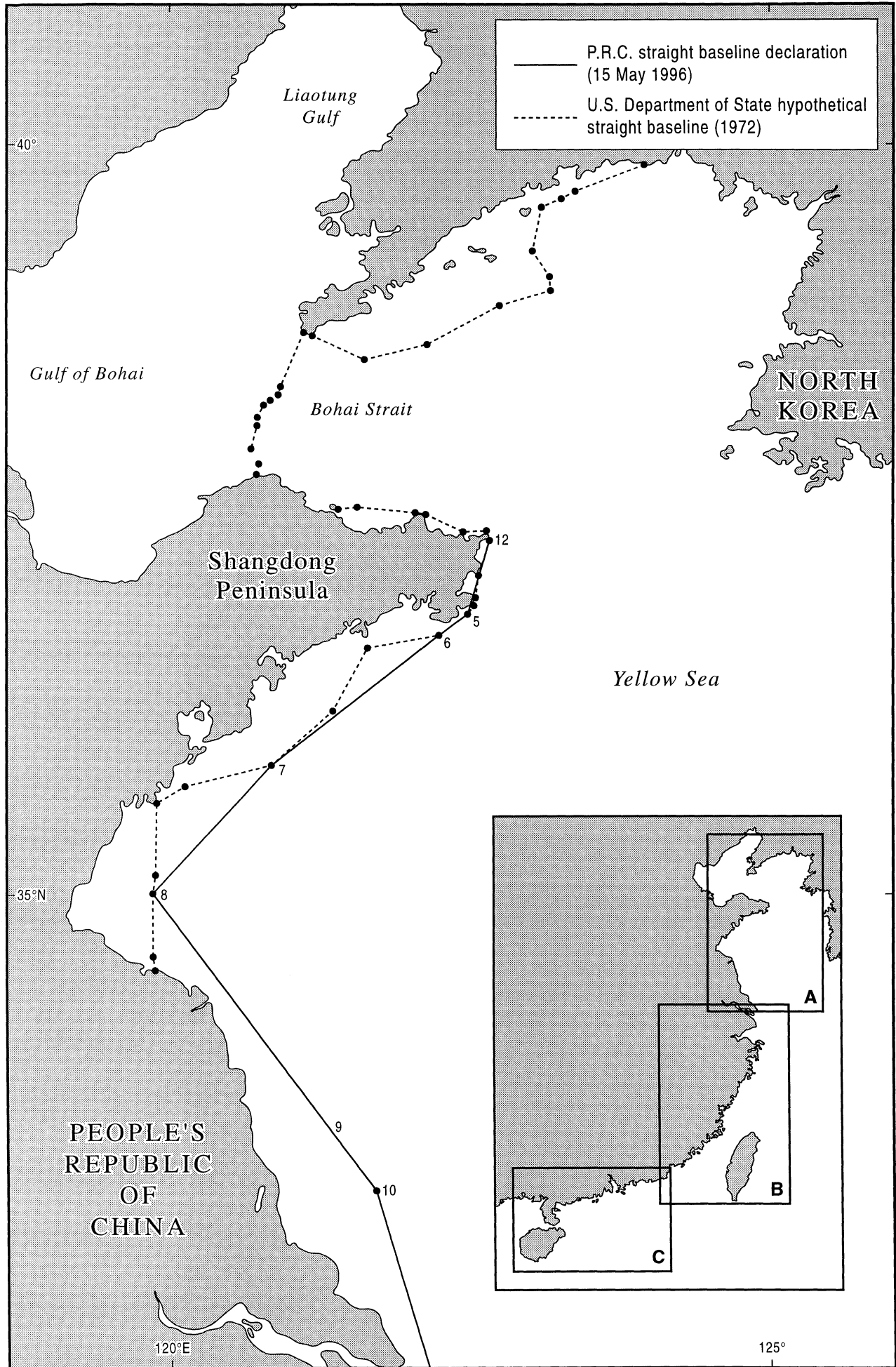
The 1996 Declaration on the Baseline of the Territorial Sea
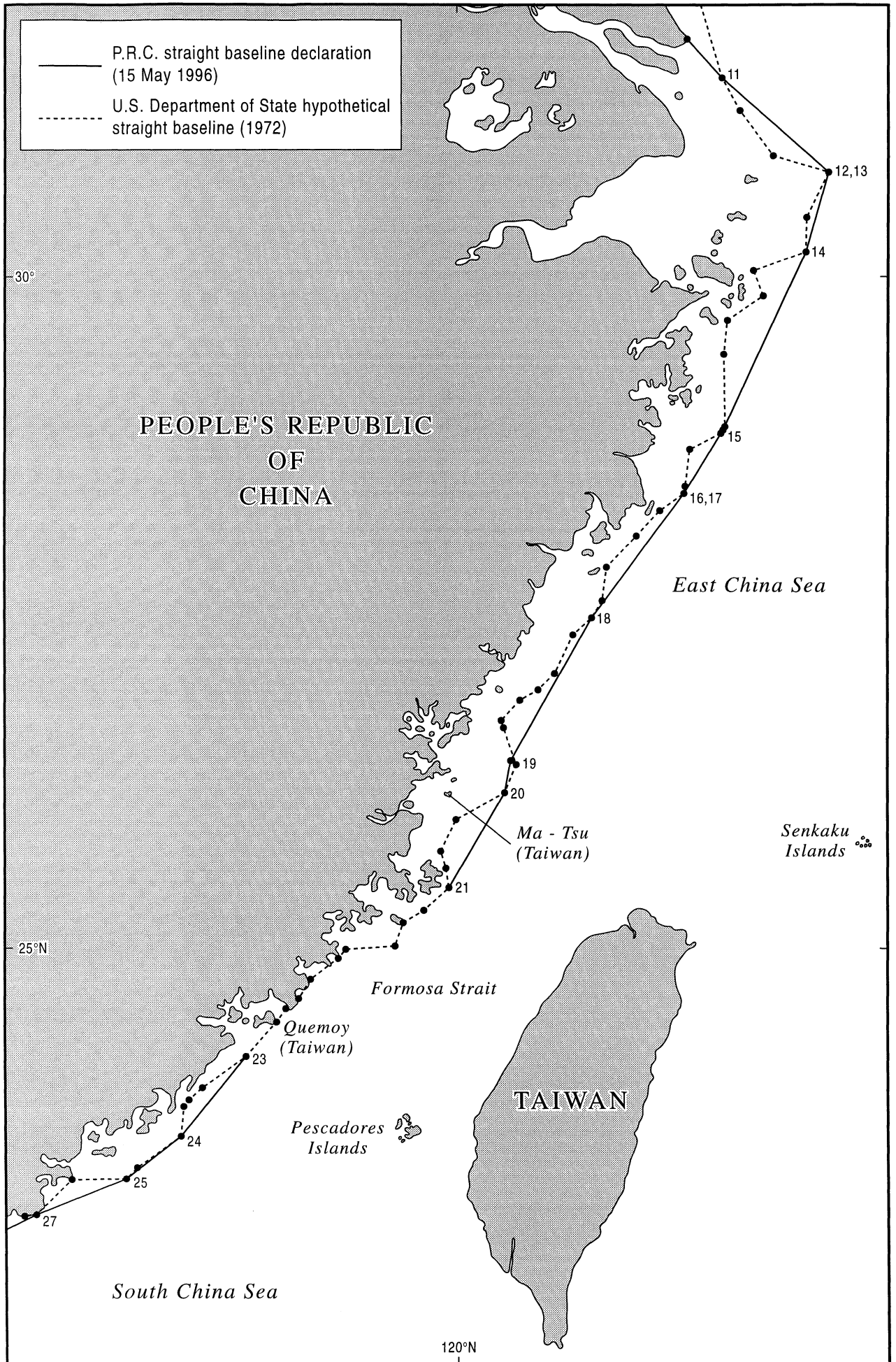
The coordinates for the 15 May 1996 Declaration are given in Table 1. The text of the Declaration states that:

"In accordance with the Law of the People's Republic of China on the Territorial Sea and the Contiguous Zone adopted and promulgated on 25 February 1992, the Government of the People's Republic of China hereby announces the baselines of part of its territorial sea adjacent to the mainland and those of the territorial sea adjacent to its Xisha [Paracel] Islands as follows:

1. The baselines of part of the territorial sea adjacent to the mainland are composed of all the straight lines joining the adjacent base points listed below: ...

2. The baselines of the territorial sea adjacent to the Xisha Islands of the People's Republic of China are composed of all the straight lines joining the adjacent base points listed below: ...

The Government of the People's Republic of China will announce the remaining baselines of the

P.R.C. straight baseline declaration
(15 May 1996)
U.S. Department of State hypothetical
straight baseline (1972)

Liaotung
Gulf

40°

Gulf of Bohai

Bohai Strait

NORTH
KOREA

Shangdong
Peninsula

12

5

6

Yellow Sea

7

35°N

8

A

9

B

PEOPLE'S
REPUBLIC
OF
CHINA

10

C

120°E

125°

Legend:

——— P.R.C. straight baseline declaration (15 May 1996)

------ U.S. Department of State hypothetical straight baseline (1972)

PEOPLE'S REPUBLIC OF CHINA

30°

11

12,13

14

15

16,17

East China Sea

18

19

20

Ma - Tsu (Taiwan)

Senkaku Islands

21

25°N

Formosa Strait

Quemoy (Taiwan)

23

TAIWAN

Pescadores Islands

24

25

27

South China Sea

120°N

territorial sea of the People's Republic of China at another time."[4]

The PRC 1996 Declaration did not define what kind of line is used to link the points (i.e. loxodrome, orthodrome, or arc of a great circle). Nor did it give the geodetic system for the coordinates. Due to these omissions, it is not possible to determine the location of the turning points or line segments with high precision. Under the terms of the 1982 United Nations Convention on the Law of the Sea (hereafter 1982 UN Convention), the PRC is bound to publish, *"charts of a scale or scales adequate for ascertaining [the baseline's] position,"* or specifying the geodetic datum and depositing the charts or information with the UN Secretary-General.[5] The Director the PRC State Oceanography Bureau has acknowledged this obligation, so the information should be forthcoming.[6]

On the same day that it delimited most of its straight baseline, the PRC ratified the 1982 UN Convention and claimed an exclusive economic zone (EEZ).[7] The instrument of ratification was deposited with the UN Secretary-General on 7 June, accompanied by the following statement:

"1. In accordance with the provisions of the United Nations Convention on the Law of the Sea, the People's Republic of China shall enjoy sovereign rights and jurisdiction over an exclusive economic zone of 200 nautical miles and the continental shelf.

2. The People's Republic of China will effect, through consultations, the delimitation of boundary [sic] of the maritime jurisdiction with the states with coasts opposite or adjacent to China respectively on the basis of international law and in accordance with the equitable principle.

3. The People's Republic of China reaffirms its sovereignty over all its archipelagoes and islands as listed in Article 2 of the Law of the People's Republic of China on the Territorial Sea and the Contiguous Zone which was promulgated on 25 February 1992.

4. The People's Republic of China reaffirms that the provisions of the United Nations Convention on the Law of the Sea concerning innocent passage through the territorial sea shall not prejudice the right of a coastal state to request, in accordance with its laws and regulations, a foreign state to obtain advance approval from or give prior

notification to the coastal state for the passage of its warships through the territorial sea of the coastal state."[8]

It is unusual for a country to include a new jurisdictional claim with an instrument of ratification. The director of the State Oceanography Bureau has indicated that the PRC will promulgate specific legislation to implement this EEZ claim.[9] The ratification statement reiterates the PRC's island claim and makes a confusing reference to innocent passage. It appears to compound *"advance approval"* with *"prior notification"* for warships, although the former is more restrictive than the latter. Many countries view either requirement as contrary to the 1982 UN Convention.[10]
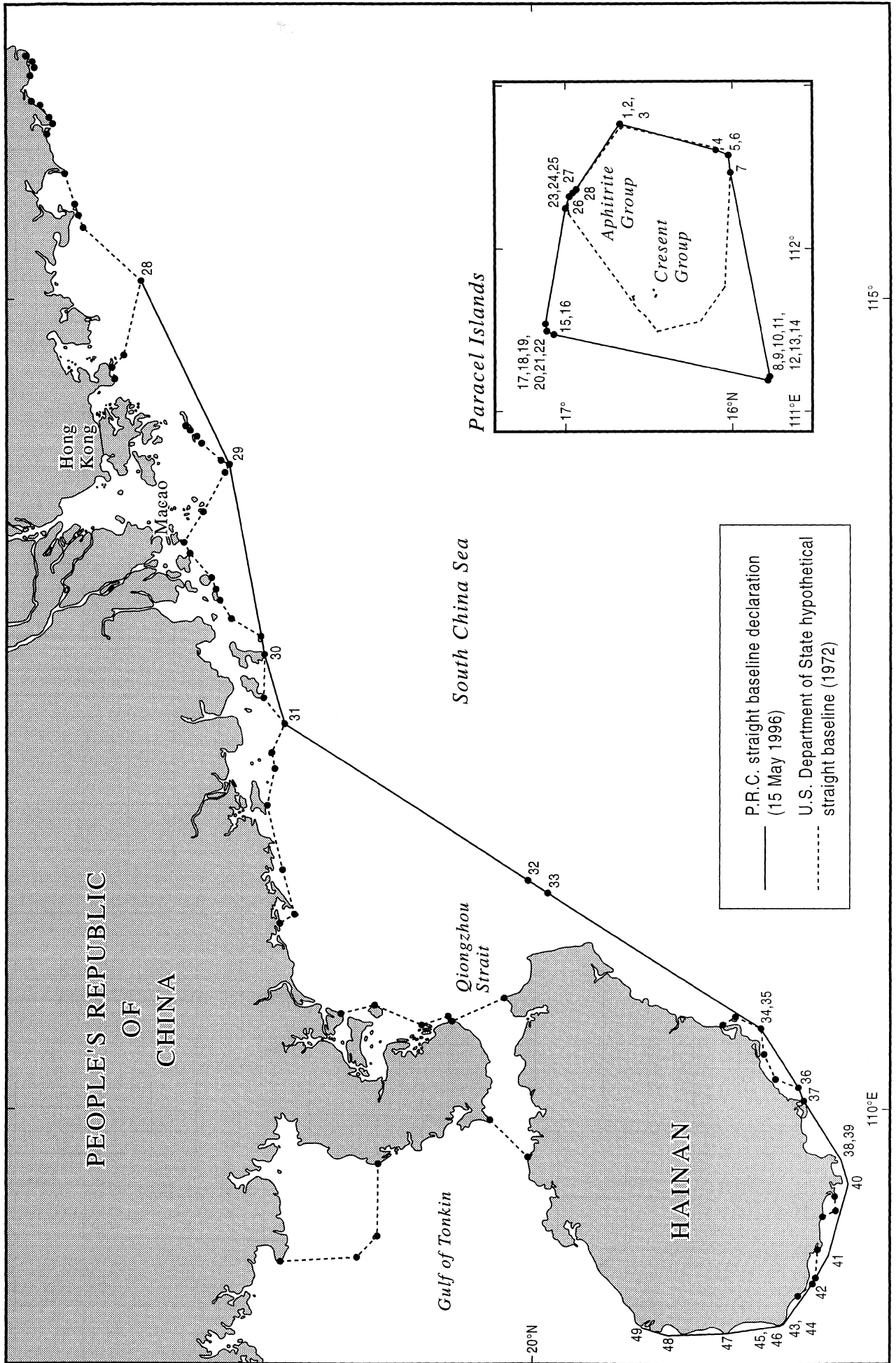
Responses

Concurrent with the baseline and EEZ claims, PRC authorities apparently suggested that their actions had added 2.5 million km^2 of jurisdictional area.[11] A PRC Foreign Ministry spokesman elaborated on the baseline declaration by observing that *"The Chinese Government will successively determine and announce other parts of the baseline of the territorial seas, including the baseline of the PRC territorial seas around Taiwan and other outlying islands."[12]* The Philippines, Taiwan, and Vietnam swiftly objected. However, Japan responded that ratification of the 1982 UN Convention would facilitate negotiations over its EEZ frontier with the PRC.[13]

In point of fact, the PRC did not define the outermost limit of its EEZ, so there is no way to determine how much area it claims. Because marginal seas surround the PRC, there are very few areas where it could claim a full 200-nm EEZ without overlapping neighbours. It's ratification statement promises negotiated boundaries with opposite and adjacent states, so its EEZ area is unsettled. The new PRC straight baseline encloses significant areas as internal waters, but the total would fall far short of 2.5 million km^2.

Straight Baselines in International Law

> *The 1982 UN Convention, which the PRC ratified on the same day that it promulgated its baseline declaration, specifies that:*

PEOPLE'S REPUBLIC OF CHINA

Hong Kong

Macao

South China Sea

Qiongzhou Strait

Gulf of Tonkin

HAINAN

Paracel Islands

1,2, 3

4
5,6
7

Aphitrite Group

Cresent Group

23,24,25
27
26
28

15,16

17,18,19,
20,21,22

8,9,10,11,
12,13,14

17°

16°N

111°E

112°

115°

P.R.C. straight baseline declaration
(15 May 1996)

U.S. Department of State hypothetical
straight baseline (1972)

28

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34,35

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38,39

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45,
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47

48

49

20°N

110°E

"Except where otherwise provided in this Convention, the normal baseline for measuring the breadth of the territorial sea is the low-water line along the coast as marked on large-scale charts officially recognized by the coastal State."[14]

The territorial sea, contiguous zone, continental shelf, and exclusive economic zone (EEZ) are measured seaward from the baseline. The 1982 UN Convention permits a coastal state to delimit straight baselines only under special circumstances:

"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," or, *"where because of the presence of a delta and other natural conditions the coastline is highly unstable."*

Article 7 also prescribes that:

"The drawing of straight baselines must not depart to any appreciable extent from the general direction of the coast, and the sea areas lying within the lines must be sufficiently closely linked to the land domain to be subject to the régime of internal waters. ... Straight baselines shall not be drawn to and from low-tide elevations, unless lighthouses or similar installations which are permanently above sea level have been built on them or except in instances where the drawing of baselines to and from such elevations has received general international recognition."
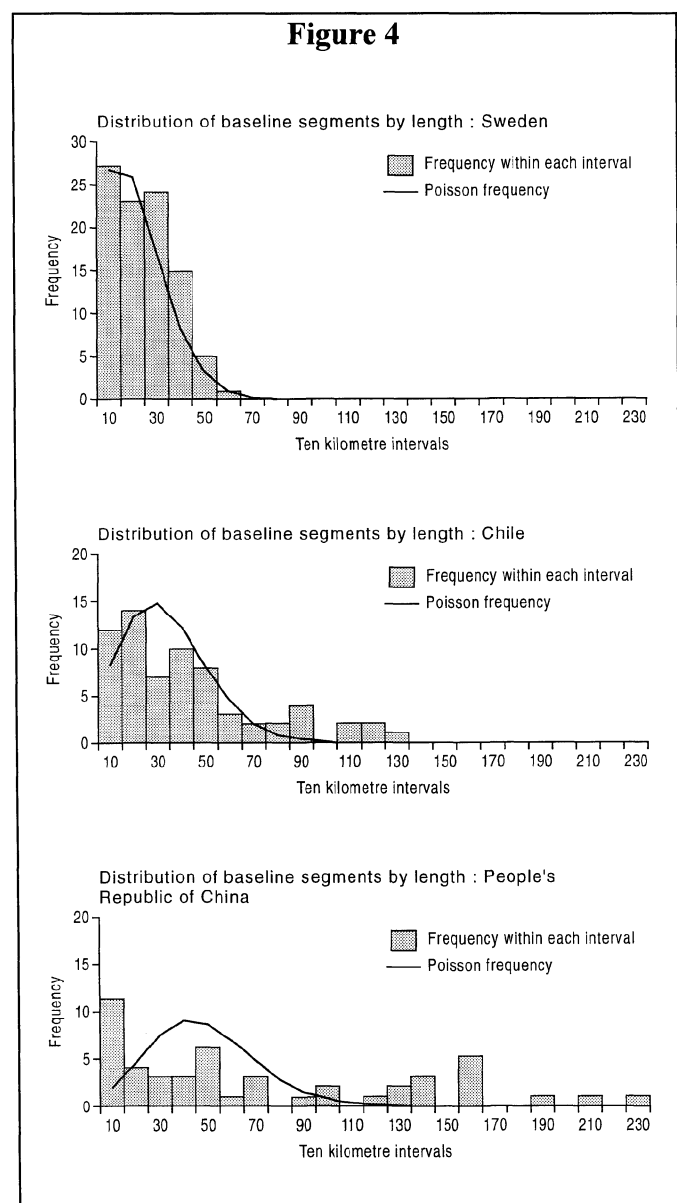
In general, the waters on the landward side of straight baselines forms part of the internal waters of the coastal state.[15] There, a country exercises absolute sovereignty, such as that it has over its landmass.

Macro Analysis of the Mainland Segments

Many critiques of straight baseline systems focus on individual components, discussing whether particular segments digress from the general direction of the coast or enclose excessive areas of former high seas. Before reviewing individual elements of the PRC baseline, an overview of the entire baseline system along the mainland may be informative.[16]

A non-legal way of looking at a proposed straight baseline system is as a mathematical (geometric) model of a natural phenomenon, a country's coastline.[17] A straight baseline generalises and simplifies a complex natural system in order to facilitate human activity – in this case maritime jurisdiction. Like any abstraction from the natural order, the model should preserve important aspects of the phenomenon. The baseline segments should mimic the gross structure of the coastline, suggesting its lengths and directions. Consequently, two simple models have been applied to the PRC straight baseline system.

If an extensive straight baseline system were drawn along a deeply indented coast or one fringed by islands, it would be expected to have many small and medium length segments and few long components. This kind of natural variation often is modelled by a Poisson statistical distribution, which

Figure 4

Distribution of baseline segments by length : Sweden

Distribution of baseline segments by length : Chile

Distribution of baseline segments by length : People's Republic of China

assumes relatively rare, random phenomenon independent of location.[18] Figure 4 illustrates the application of this distribution to three straight baseline systems of comparable length and complexity, those of Sweden, Chile, and the PRC.

The Swedish system, excluding the baselines around offshore Gotland, includes 95 segments extending for 1,844km.[19] Chile's system includes 67 legs, totalling 2,478km.[20] The portion of the PRC's system on the mainland, excluding that about the Paracel Islands, accounts for 48 segments extending 3,230km. For each system, the individual segments were sorted by length and grouped in ten-kilometre-interval classes. The number in each class is depicted in a histogram, with a superimposed Poisson distribution.[21]

The straight baseline systems of Chile and Sweden show a relatively good match to the theoretical distribution. However, that of the PRC diverges from the theoretical curve. There appear to be too few segments – a mere 48 to span over 3,000km. The mean length (67.3km) is much larger than the median length (47.4km), which suggests a very skewed or bimodal distribution. The standard deviation, a measure of the variation in the lengths, is quite high (63.9km).[22] Eleven segments, a fifth of the total, are more than one standard deviation from the mean (longer than 131.2km). Four segments are over 150km (81nm) long, and three much longer: 197km, 201km, and 227km. These outliers suggest that the PRC system of straight baselines are not well constructed and does not represent the natural phenomenon, the coastline, on which it is based.

The PRC histogram also shows an unusually large proportion of very small segments. 23% are less than 6.0km long. One would not expect a distribution where the shortest class had the highest frequency. In the PRC case, this appears due to relying solely on straight baseline segments to round capes and islands. Had the PRC used the low-water line along some portions of its coast, the number of very small segments would have been diminished.

A second aspect of the coastline that should be evident in a straight baseline system is its principal directions. Figure 5 shows the general direction of the PRC baseline segments along the mainland coast from Shandong to and around Hainan Island. The diagram is based on a 'wind rose' that is used in meteorology to depict prevailing winds. An

Figure 5

General direction of PRC baseline segments
(aggregate length in km)
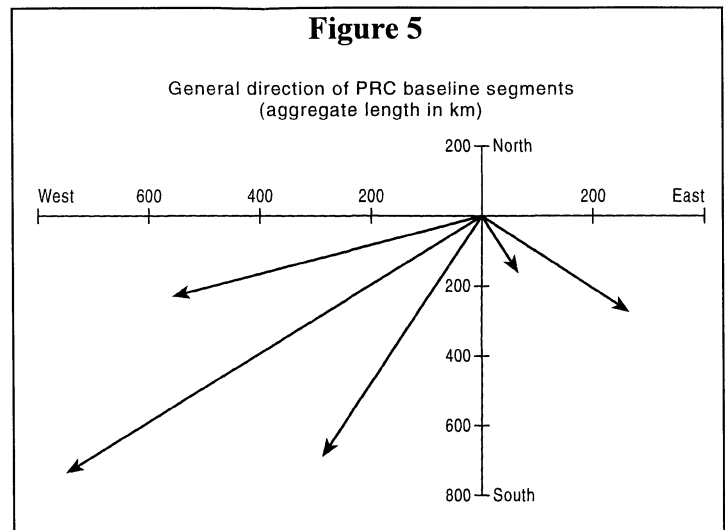
initial azimuth was calculated for each of the 48 PRC segments. The data were sorted and clustered into 16 classes, those nearest major compass bearings (N, NNE, NE, etc.). The length of each radial line, or vector, is proportional to the sum of the lengths of all the segments in that cluster. It is as if one gathered all the baseline segments to one point and put the ones nearest to each principal direction end-to-end. The initial point used to calculate the direction for each segment followed the PRC list, north to south, so most of the vectors have a southern trend.[23]

Does the PRC straight baseline system preserve the general direction of the coast? For a long linear coastline, one can hypothesise long straight baseline segments with little change in direction. However, the general configuration of the PRC coast south of Shandong Peninsula is not linear; it follows the arc of a huge circle with a radius of 1,100km centred at 31°N, 110°E. Because this part of China's coast curves from the northeast to the southwest, the dominant direction of the PRC baseline segments should be southwestward. Since the coastline is roughly circular, one would expect the directional distribution to be gradual and roughly symmetric about the dominant direction. This is not the case. There is an aberrant southeast vector that is larger than expected, and the vector in the dominant direction (southwest) is much too prominent – 40% longer than the next largest vector. The southeast vector is created by only two segments, both north of the Yangtze Delta where the coast is neither deeply indented nor fringed with islands. These legs are 116km and 227km long; the latter is the longest segment in the PRC system. The dominant southwest vector is longer than expected, because it includes the second longest segment plus four large legs, each over 100km. The graph of the general direction of its segments suggests that the

PRC baseline system poorly represents the general direction of its coast. This is probably due to excessive lengths of some legs that do not follow the shoreline or island fringe.

Micro Analysis of the Mainland Segments

In response to the 1958 Declaration, the Office of the Geographer in the US Department of State developed hypothetical baselines for the PRC, which were published in 1972.[24] A comparison of the 1996 PRC baseline with the hypothetical baseline is informative. Along the coast covered by the 1996 Declaration, the PRC delimited 49 turning points where the Office of the Geographer had estimated 121 points. The PRC system is continuous straight segments and uses no low-water lines; the Geographer hypothesised eleven distinct subsets of straight legs separated by normal low-water line sections.

In terms of particular PRC straight baseline segments, there are two regions where the segments are especially problematic. The PRC has delimited sections north of the Yangtze Delta (linking points 8-11) where the coast is not deeply indented and there is no fringe of islands. According to available PRC and US charts, points 9 and 10 appear to be tidal flats or sandbars without lighthouses or other permanent structures.[25] These charts identify the points as Puzi Sha and Jinjia Sha, respectively. (Sha is Chinese for sandbank.) These three legs span 461km and bend well out to sea, but the coast is slightly concave. Point 10 is 69.1km (37.3nm) from the nearest mainland point.

This area of the coast is not a delta, but there are extensive tidal flats. Perhaps the PRC predicates its use of straight baselines here on a claim of a highly unstable coast. However, points 9 and 10 could not be used under this hypothesis, because they are separated from the mainland coast at low tide. Basepoints along unstable coasts are to *"be selected along the furthest seaward extend to the low-water line,"* not on offshore low-tide elevations.[26]

The second troublesome section of the PRC baseline is that linking Hainan Island to the mainland (points 31-34). The three legs span 369km and digress from the general direction of the coast, which is deeply concave. These segments enclose 23,300km² (an area larger than Wales or Belize), which could not be considered closely linked to the land domain and subject to an internal

waters regime. Portions of the longest leg (points 31-32) are 100km (54nm) from the nearest point on the coastline. Points 32 and 33 are mere rocks off the Hainan coast.

The PRC straight baseline may be unique in its enclosure of territories not currently under effective PRC control: Hong Kong, Macao, Jinmen (Kinmen, Quemoy), Mazu (Matsu), and Wuqiu (Wuchiu). The last three are outposts of Nationalist forces from Taiwan. The lines enclosing Hong Kong and Macao would be appropriate in 1997 and 1999, respectively, after these territories revert to PRC control. Prescott has observed that *"presumably no harm will be done if China...does not use the baselines to interrupt air and sea traffic to these territories."*[27] Enclosure of Taiwan's islands may be less benign, given recent tensions in the Formosa Strait. Taipei has taken exception to the incorporation, which appears to violate a *modus vivendi* previously in force around Jinmen and the other islands.[28]

The PRC straight baseline system penetrates well into the Gulf of Tonkin (points 43-49). China's delimitation of straight baselines *within* the Gulf of Tonkin is inconsistent with Vietnam's claim that the gulf is joint historic waters. If it were, the PRC would have stopped at the entrance to the gulf or claimed part of a joint bay-closing line across its mouth.

Paracel Islands Straight Baseline

The PRC has delimited archipelagic baselines around the Paracels, but it is not entitled to such baselines under the 1982 UN Convention, for two reasons. First, according to Article 46, only an archipelagic state (constituted wholly by one or more archipelagos) may draw archipelagic baselines around its island groups. Neither China nor Vietnam, which also claim the Paracel Islands, is an archipelagic state. Second, the ratio of the water to land area in an archipelago must be between 1:1 and 9:1.[29]

The area enclosed by the PRC straight baselines is 17,400km². The land area of the Paracels is not well defined, but the total, including that enclosed by reefs, is probably a few hundred km². That is far less than the minimum 1,933km² required for an acceptable water-to-land ratio.

That said, several continental countries have drawn questionable straight baselines around offshore island groups: Denmark (Faroe Islands), Ecuador (Galapagos Islands), Portugal (Azores), and Spain (Balearic Islands), among others.[30] Although offshore islands may not qualify as archipelagos that does not mean a sovereign could not draw straight baselines around them under provisions of Article 7. This is distinct from *archipelagic* baselines. Some subgroups in the Paracels, parts of the Crescent Group and the northern portion of the Amphitrite Group, might qualify for straight baselines under Article 7, if smaller islets mask a nearby larger island or islands were deeply indented. However, any such straight baselines would affect a very small area and utilise legs only a few kilometres long. The baselines that the PRC drew around the Paracels contravene the 1982 UN Convention.

One implication of the Paracel baselines is interesting. The delimitation of straight baselines around the Paracel Islands is logically inconsistent with any purported claim to historic waters within the irregular, tongue-shaped line found on Chinese maps. Some commentators maintain that this line is a historic waters claim, but historic waters have the status of either internal waters or territorial sea.[31] A straight baseline divides internal waters from territorial sea. Moreover, the 1992 PRC Law on the Territorial Sea specifies that China's territorial sea extends 12nm (22.2km) from its baseline. Therefore, the new PRC baseline delimits its claim to internal waters within the Paracel baseline and territorial sea up to 12nm from that baseline. The PRC must view the remaining area in the northern South China Sea as EEZ or continental shelf.

Conclusion

The 1982 UN Convention failed to place quantitative limits on the maximum length of straight baseline segments, the amount of area that they could incorporate as internal waters, the proportion of coastline that must be screened by islands, or the maximum distance islands may be from the coast in order to be considered in its immediate vicinity. However, numerical limits are not totally absent from the Convention. The maximum length for a bay closing line is 24nm (44.4km). 97% of an archipelago's baseline legs may not exceed 100nm (185.2km), and only three percent are permitted to be up to 125nm (231.5km) in length. The fact that the currently codified law of

the sea does not set maximum limits on straight baselines does not preclude such considerations in critiques. It should be remembered that the 1958 Geneva Convention on the Territorial Sea failed to limit the maximum extent of the territorial sea. Some countries subsequently claimed territorial sea jurisdiction to 200nm from shore, but the world community adopted a 12nm limit in the 1982 UN Convention. Perhaps, the next convention on the law of the sea may restrict straight baselines.

Various authorities have advocated a maximum allowable length for straight baseline legs ranging from 15nm to 48nm (27.8-88.9km) and other numerical guidelines.[32] Both by these standards and from an analysis of the intrinsic features of its straight baseline system, the PRC claim seems excessive in some areas. Prescott could have described the PRC claim, when he wrote:

> *"[I]mproper straight baselines generally have few segments composed of a few legs, and are rarely interspersed with sections of low-water mark. Individual legs may be very long, and the centres of such long legs might be distant from the exposed coast. Such baselines often enclose a high ratio of water to land, and cause the conversion of large areas of contiguous zones or exclusive economic zones into territorial waters."[33]*

The PRC is hardly alone in violating the spirit, if not the letter, of the 1982 UN Convention. Excessive baseline claims are all too common in Asia, and elsewhere. Those of Burma, Cambodia, Malaysia, North Korea, Russia, Thailand, and Vietnam are as extreme as that of the PRC.

The PRC 1996 Declaration will, no doubt, trigger a flurry of diplomatic protests from the major maritime powers. What effect such diplomatic objections have is a matter of conjecture. Prescott maintains, *"that the international political community, apart perhaps from the United States of America, is prepared to tolerate blatant infringements of the rules providing the offending state does not try to use the baselines in negotiating international limits with neighbours. This seems to be demonstrated by the fact that countries are allowed to ratify the Convention even when their baselines obviously infringe the rules contained in the Convention."[34]* Following a diplomatic protest to a claimant state, in which the US government raises objections and reserves its rights under international law, American military vessels and

aircraft frequently exercise navigation or overflight in the area under the US Freedom of Navigation Program.[35] It will be interesting to see how the international community responds to the new PRC declaration, and how China chooses to enforce its internal waters.

Further delimitation of the PRC straight baseline may be more worrisome. Beijing deferred extending its baseline to the termini of its land boundaries with North Korea and Vietnam. Perhaps the PRC feared aggravating already tense bilateral relations or complicating negotiations. It has no agreed maritime boundaries with either neighbour. Nor did the PRC delimit straight baselines about contentious offshore islands: Pratas (occupied by Taiwan), the Spratly Islands (claimed by five other governments), or the Diaoyutai/Senkaku Islands (occupied by Japan). We must now wait for the proverbial other shoe to drop.

Notes

[1] Declaration on China's Territorial Sea, reprinted in Office of the Geographer (1972) *Straight Baselines: People's Republic of China* (hereafter *Straight Baselines: PRC*), Limits in the Seas, No. 43 Washington, DC: US Department of State: 1.

[2] Article 2 listed the coastal islands: Tungyin Island, Kaoteng Island, Matsu [Mazu] Islands, Paichuan Islands, Wuchiu Island, the Greater and Lesser Quemoy [Jinmen] Islands, Tatan Island, Erhtan Island, and Tungting Island. Article 4 listed: *"Taiwan and its surrounding islands, the Penghu [Pescadores] Islands, Tungsha [Pratas] Islands, Hsisha [Paracel] Islands, Chungsha [Macclesfield Bank] Islands, Nansha [Spratly] Islands, and all other islands belonging to China."* Translations above used the Wade-Giles romanisation system for the Chinese; modern usage favors the Pinyin system.

[3] Legislative Affairs Commission (n.d.) (trans) *Law of the People's Republic of China on the Territorial Sea and the Contiguous Zone,* Beijing: Standing Committee of the National People's Congress, Legislative Affairs Commission; the Chinese text is also found in PRC (1992) *Gazette of the State Council,* issue no. 3, serial no. 688: 69-71.

[4] 'Declaration on the Baselines of the Territorial Sea', *Xinhua* (Beijing) broadcast in English, 15 May 1996, transcribed in US Foreign Broadcast Information Service, *Daily Report: China* (hereafter, FBIS, *China),* 16 May 1996: 35-36. Also transcribed in BBC, *Summary of World Broadcasts,* 16 May 1996.

[5] 1982 UN Convention, Article 16.

[6] 'Perfect Maritime Legal System, Update Maritime Concepts,' *Renmin Ribao,* Beijing, 18 May 1996: 3, translated in FBIS, *China,* 6 June 1996.

[7] 'China Says UN Sea Convention Boosts Territory,' *Reuter,* Beijing, 15 May 1996.

[8] E-mail message of Mori Hayashi, Director, Division of Ocean Affairs and the Law of the Sea, UN Office of Legal Affairs, to int-boundaries@mailbase.ac.uk, 7 June 1996, archived at web site http://www.mailbase.ac.uk/lists-f-j/int-boundaries/.

[9] 'Perfect Maritime Legal System,' 18 May 1996.

[10] Roach, J. A. and Smith, R. W. (1994) *Excessive Maritime Claims,* International Law Studies, Newport, RI: US Naval War College, 66: 16, 143-60.

[11] 'China Says,' 15 May 1996.

[12] 'Spokesman on 'Peaceful' Nuclear Tests, Law of Seas,' *Zhongguo Xinwen She,* Beijing, 15 May 1996, translated in FBIS, *China,* 15 May 1996.

[13] 'Vietnam Sounds Off over Chinese Territorial Claim,' *Reuter,* Hanoi, 17 May 1996; 'Philippines Slams China's Sea Declaration' and 'Asian Reaction Swift to China's Maritime Expansion,' *Reuter,* Manila, 17 May 1996; 'Tokyo to Talk with PRC over 200-mile Economic Zone,' *Kyodo,* Tokyo, broadcast in English, 16 May 1996, transcribed in FBIS, *Daily Report: East Asia,* 16 May 1996.

[14] 1982 UN Convention, Article 5.

[15] 1982 UN Convention, Article 8.

[16] Straight baseline systems about island groups are idiosyncratic and have too few segments to permit meaningful statistical analysis.

[17] It should also be acknowledged that the term 'straight' baseline is inaccurate. The 'straight' baselines used in the law of the sea vary in shape and lie on the curved surface of the earth. For purposes of this study, the straight baseline segments are taken to be arcs of a great circle, which are the shortest distance between points on a sphere. In the broadest sense, we know from the General Theory of Relativity that space-time is curved, so no truly straight line exists in the physical universe.

[18] See, for example, King, L. J. (1969) *Statistical Analysis in Geography,* Englewood Cliffs, NJ: Prentice-Hall: 40-45.

[19] Office of the Geographer, (1972) *Straight Baselines: Sweden,* Limits in the Seas, No. 47, Washington, DC: US Department of State.

[20] Office of the Geographer (1978) *Straight Baselines: Chile,* Limits in the Seas, No. 80, Washington, DC: US Department of State.

[21] The Poisson frequencies were calculated from the median values for each set of straight baselines. This provides a better fit than the mean of each set.

[22] For comparison, the mean, median, and standard deviation for Sweden's baseline segments were 19.4km, 19.2km, and 12.7km. Those for Chile were 37.0km, 32.9km, and 30.5km, respectively. A more appropriate measure of variation would be the

deviation about the median, but this is less commonly used.

23 If the second endpoint in each segment had been used to calculate the initial azimuth, the dispersion would be reflected about the origin (i.e. most radial lines would point north). However, this would not affect the analysis.

24 *Straight Baselines: PRC.*

25 PRC, China Navigation Press [Zhongguo Hanghai Tushuchubanshe], 'Bo Hai, Huang Hai, and Dong Hai,' chart 9201, 1:2,000,000, August 1976; US Defense Mapping Agency, 'Linhuai to Juegang,' chart 94260, 1:300,000, 5th ed., 26 August 1995.

26 1982 UN Convention, Article 7, para. 2.

27 E-mail message of Victor Prescott to int-boundaries@mailbase.ac.uk, 5 June 1996, archived at web site http://www.mailbase.ac.uk/lists-f-j/int-boundaries/.

28 'Lien Chan Criticizes PRC Claims to Offshore Islands,' *Tzu-li Wan-pao,* Taipei, 17 May 1996: 1, translated in FBIS, *China,* 30 May 1996; 'Lawmakers Inspect Kinmen Waters, Call for Increased Patrols,' Voice of Free China, Taipei, broadcast in English, 4 June 1996, transcribed in FBIS, *China,* 6 June 1996.

29 1982 UN Convention, Article 47, para. 1.

30 Roach and Smith, 1994: 63-67.

31 Dzurek, D. J. (forthcoming) 'The Spratly Islands Dispute: Who's On First?' *Maritime Briefing,* Durham: IBRU.

32 Office of Ocean Law and Policy (1987) 'Developing Standard Guidelines for Evaluating Straight Baselines', *Limits in the Seas,* Washington, DC: US Department of State, Bureau of Oceans and International Environmental and Scientific Affairs, 106.

33 Prescott, J. R. V. (1985) *The Maritime Political Boundaries of the World,* London: Methuen: 69.

34 Prescott, 5 June 1996, see note 27.

35 Roach and Smith, 1994: 3-6.

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The 4th International Conference of the International Boundaries Research Unit (IBRU)
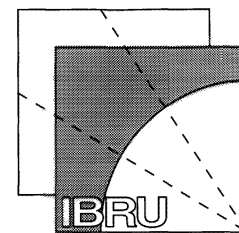
BOUNDARIES AND ENERGY: PROBLEMS AND PROSPECTS

Thursday 18th – Friday 19th July 1996
University of Durham

Competition for energy resources lies at the heart of many international boundary and territorial disputes. As the global demand for energy continues to increase at a dramatic rate, the need for creative solutions to the problem of energy resources in disputed territory has never been greater.

This timely conference will bring together senior policy-makers, international lawyers, technical experts and scholars from around the world to exchange information and ideas in an informal setting in the beautiful cathedral city of Durham.

Day One will examine the opportunities and challenges presented by energy resources spanning international boundaries, together with an in-depth look at emerging energy-producing regions such as the Caspian Sea, the Falklands and the South China Sea.

Day Two will focus on dispute resolution, critically reviewing existing mechanisms and proposing creative tools for future dispute resolution. This will be done both by drawing on existing case studies and suggesting creative solutions to outstanding disputes. Problems arising from transboundary energy flows, particularly pipelines, will also be highlighted, as will environmental concerns linked to cross-boundary energy issues.

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Table 1 – PRC Straight Baseline Claim

Point no.	Name[a]	Latitude (North)		Longitude (East)		Distance[b] nm	km
	Mainland Points						
1	Shandong gaojiao, 1	37°	24.0'	122°	42.3'		
2	Shandong gaojiao, 2	37	23.7	122	42.3	0.3	0.6
3	Moye dao, 1	36	57.8	122	34.2	26.7	49.7
4	Moye dao, 2	36	55.1	122	32.7	3.0	5.5
5	Moye dao, 3	36	53.7	122	31.1	1.9	3.5
6	Sushan dao	36	44.8	122	15.8	15.1	28.2
7	Chaolian dao	35	53.6	120	53.1	84.0	156.5
8	Dashan dao	35	0.2	119	54.2	71.8	133.7
9	Macaiheng	33	21.8	121	20.8	121.7	226.6
10	Waike jiao	33	0.9	121	38.4	25.0	47.6
11	Sheshan dao	31	25.3	122	14.6	100.4	186.9
12	Hai jiao	30	44.1	123	9.4	62.5	116.3
13	Dongnan jiao	30	43.5	123	9.7	0.6	1.2
14	Liangxiong diyu	30	10.1	122	56.7	35.2	65.6
15	Yushan liedao	28	53.3	122	16.5	84.4	157.1
16	Taizhou liedao, 1	28	23.9	121	55.0	34.9	65.0
17	Taizhou liedao, 2	28	23.5	121	54.7	0.5	0.9
18	Dao Tiaoshan	27	27.9	121	7.8	69.3	129.1
19	Dongyin dao	26	22.6	120	30.4	73.3	136.5
20	Dongsha dao	26	9.4	120	24.3	14.3	26.6
21	Niushan dao	25	25.8	119	56.3	50.4	93.8
22	Wuqiu yu	24	58.6	119	28.7	36.9	68.8
23	Dongding dao	24	9.7	118	14.2	83.6	155.6
24	Daganshan	23	31.9	117	41.3	48.3	90.0
25	Nanpeng liedao, 1	23	12.9	117	14.9	30.8	57.3
26	Nanpeng liedao, 2	23	12.3	117	13.9	1.1	2.0
27	Shibeishan jiao	22	56.1	116	29.7	43.8	81.5
28	Zhentouyan	22	18.9	115	7.5	84.5	157.3
29	Jiapeng liedao	21	48.5	113	58.0	71.2	132.6
30	Weijia dao	21	34.1	112	47.9	66.7	124.2
31	Dafan shi	21	27.7	112	21.5	25.4	47.3
32	Qizhou liedao	19	58.5	111	16.4	108.0	201.1
33	Shuangfan	19	53.0	111	12.8	6.5	12.0
34	Dazhou dao, 1	18	39.7	110	29.6	83.9	156.2
35	Dazhou dao, 2	18	39.4	110	29.1	0.6	1.0
36	Shuangfan shi	18	26.1	110	8.4	23.7	44.1
37	Lingshui jiao	18	23.0	110	3.0	6.0	11.2
38	Dongzhou, 1	18	11.0	109	42.1	23.2	43.2
39	Dongzhou, 2	18	11.0	109	41.8	0.3	0.5
40	Jinmu jiao	18	9.5	109	34.4	7.2	13.4
41	Shenshi jiao	18	14.6	109	7.6	26.0	48.3
42	Xigu dao	18	19.3	108	57.1	11.0	20.5
43	Yingge zui, 1	18	30.2	108	41.3	18.5	34.5
44	Yingge zui, 2	18	30.4	108	41.1	0.3	0.5

45	Yingge zui, 3	18	31.0	108	40.6	0.8	1.4
46	Yingge zui, 4	18	31.1	108	40.5	0.2	0.3
47	Gan'en jiao	18	50.5	108	37.3	19.6	36.6
48	Sigengsha jiao	19	11.6	108	36.0	21.1	39.4
49	Junbi jiao	19°	21.1'	108°	38.6'	9.8	18.3
			Total:			1,734.7	3,230.1
			Mean:			36.1	67.3
		Standard Deviation:				34.3	63.9
			Maximum:			121.7	226.6
			Minimum:			0.1	0.3
	Paracel Islands Points						
1	Dong dao [Lincoln Is], 1	16°	40.5'	112°	44.2'		
2	Dong dao, 2	16	40.1	112	44.5	0.5	0.9
3	Dong dao, 3	16	39.8	112	44.7	0.4	0.7
4	Langhua jiao [Bombay Rf], 1	16	4.4	112	35.8	36.4	67.8
5	Langhua jiao, 2	16	1.9	112	32.7	3.9	7.2
6	Langhua jiao, 3	16	1.5	112	31.8	1.0	1.8
7	Langhua jiao, 4	16	1.0	112	29.8	2.0	3.7
8	Zhongjian dao [Triton Is], 1	15	46.5	111	12.6	75.7	140.9
9	Zhongjian dao, 2	15	46.4	111	12.1	0.5	0.9
10	Zhongjian dao, 3	15	46.4	111	11.8	0.3	0.5
11	Zhongjian dao, 4	15	46.5	111	11.6	0.2	0.4
12	Zhongjian dao, 5	15	46.7	111	11.4	0.3	0.5
13	Zhongjian dao, 6	15	46.9	111	11.3	0.2	0.4
14	Zhongjian dao, 7	15	47.2	111	11.4	0.3	0.6
15	Bei jiao [North Rf], 1	17	4.9	111	26.9	79.1	147.3
16	Bei jiao, 2	17	5.4	111	26.9	0.5	0.9
17	Bei jiao, 3	17	5.7	111	27.2	0.4	0.8
18	Bei jiao, 4	17	6.0	111	27.8	0.6	1.2
19	Bei jiao, 5	17	6.5	111	29.2	1.4	2.7
20	Bei jiao, 6	17	7.0	111	31.0	1.8	3.3
21	Bei jiao, 7	17	7.1	111	31.6	0.6	1.1
22	Bei jiao, 8	17	6.9	111	32.0	0.4	0.8
23	Zhaoshu dao [Tree Is], 1	16	59.9	112	14.7	41.4	77.1
24	Zhaoshu dao, 2	16	59.7	112	15.6	0.9	1.6
25	Zhaoshu dao, 3	16	59.4	112	16.6	1.0	1.9
26	Bei dao [North Is]	16	58.4	112	18.3	1.9	3.6
27	Zhong dao [Middle Is]	16	57.6	112	19.6	1.5	2.8
28	Nan dao [South Is]	16	56.9	112	20.5	1.1	2.1
1	Dong dao, 1	16	40.5	112	44.2	28.0	52.1
			Total:			282.3	525.6
			Mean:			10.1	18.8
		Standard Deviation:				21.9	40.9
			Maximum:			79.1	147.3
			Minimum:			0.2	0.4

Notes: The broadcast did not provide the geodetic system or datum for the coordinates.

[a]Chinese generics: dao – island; jiao – reef, shoal; liedao – island group; shi – rock; yu – islet; zui – point

[b]Distances measured along arcs of a great circle (shortest distance on a sphere).

Source: Xinhua Broadcast, 1102 GMT, 15 May 1996, transcribed in BBC SWB, 16 May 96. Also transcribed in FBIS, Daily Report: China, 16 May 1996: 35-36.