

113TH CONGRESS
1ST SESSION

H. R. 543

To amend title 38, United States Code, to clarify presumptions relating to the exposure of certain veterans who served in the vicinity of the Republic of Vietnam, and for other purposes.

IN THE HOUSE OF REPRESENTATIVES

FEBRUARY 6, 2013

Mr. GIBSON (for himself, Mr. WALZ, Mr. MASSIE, Mr. HOLT, Ms. PINGREE of Maine, Mr. TIERNEY, Mr. GRIJALVA, Ms. EDWARDS, Mr. CICILLINE, Mr. RAHALL, Ms. CLARKE, Mr. CONYERS, Ms. SCHWARTZ, Mr. YOUNG of Florida, Mr. HANNA, Mr. TONKO, Mr. LEWIS, Mr. COURTNEY, Ms. NORTON, Mr. SCOTT of Virginia, Mr. MCGOVERN, Mr. THORNBERRY, Mr. BRIDENSTINE, Mr. BARLETTA, Mr. GRIFFIN of Arkansas, Mr. RUSH, Mr. BRALEY of Iowa, Mr. POE of Texas, Mr. HIMES, Mr. MEEKS, Mr. GRIMM, Mr. RANGEL, Mr. YOUNG of Alaska, Mr. MICHAUD, Mr. MCINTYRE, Mr. POLIS, Mr. FITZPATRICK, Mr. KING of New York, Ms. ROSLEHTINEN, Mr. STIVERS, Mr. WELCH, Mr. ISRAEL, and Mr. LARSON of Connecticut) introduced the following bill; which was referred to the Committee on Veterans' Affairs

A BILL

To amend title 38, United States Code, to clarify presumptions relating to the exposure of certain veterans who served in the vicinity of the Republic of Vietnam, and for other purposes.

1 *Be it enacted by the Senate and House of Representa-*
2 *tives of the United States of America in Congress assembled,*



1 **SECTION 1. SHORT TITLE.**

2 This Act may be cited as the “Blue Water Navy Viet-
3 nam Veterans Act of 2013”.

4 **SEC. 2. CLARIFICATION OF PRESUMPTIONS OF EXPOSURE**
5 **FOR VETERANS WHO SERVED IN VICINITY OF**
6 **REPUBLIC OF VIETNAM.**

7 (a) **COMPENSATION.**—Subsections (a)(1) and (f) of
8 section 1116 of title 38, United States Code, are amended
9 by inserting “(including the territorial seas of such Repub-
10 lic)” after “served in the Republic of Vietnam” each place
11 it appears.

12 (b) **HEALTH CARE.**—Section 1710(e)(4) of such title
13 is amended by inserting “(including the territorial seas of
14 such Republic)” after “served on active duty in the Repub-
15 lic of Vietnam”.

16 (c) **EFFECTIVE DATE.**—The amendments made by
17 subsections (a) and (b) shall take effect as of September
18 25, 1985.

○

150°15'

111

STRAIGHT BASELINES

VIETNAM

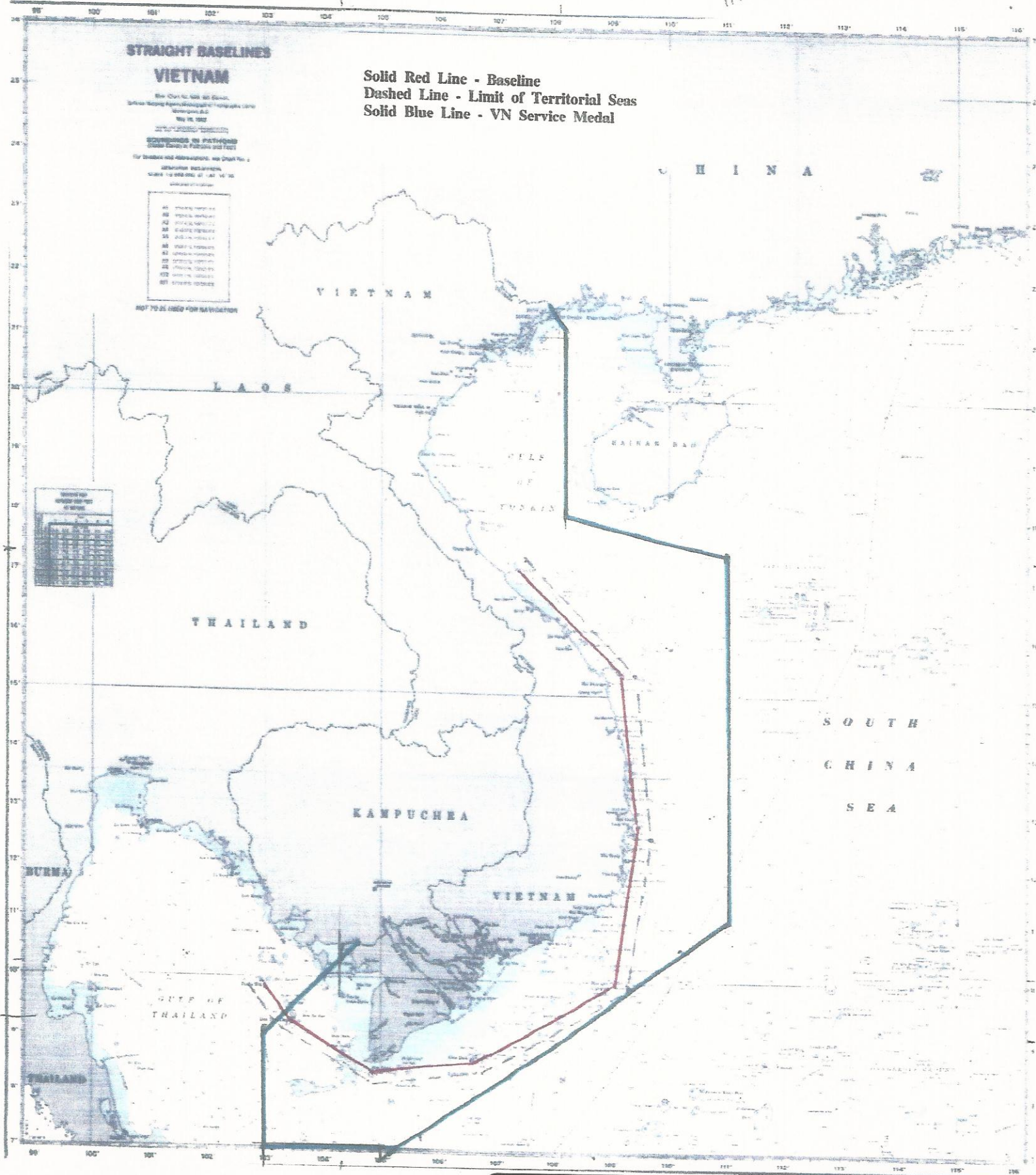
By Order of the Government of Vietnam
Signed: Ho Chi Minh
1958

For further information, see Chart No. 1
Scale 1:500,000 at Lat. 16° N

- 01 STRAIGHT BASELINE
- 02 TERRITORIAL SEA
- 03 ECONOMIC ZONE
- 04 CONTINENTAL SHELF
- 05 AIR SPACE
- 06 AIR SPACE
- 07 AIR SPACE
- 08 AIR SPACE
- 09 AIR SPACE
- 10 AIR SPACE
- 11 AIR SPACE
- 12 AIR SPACE
- 13 AIR SPACE

NOT TO BE USED FOR NAVIGATION

Solid Red Line - Baseline
Dashed Line - Limit of Territorial Seas
Solid Blue Line - VN Service Medal

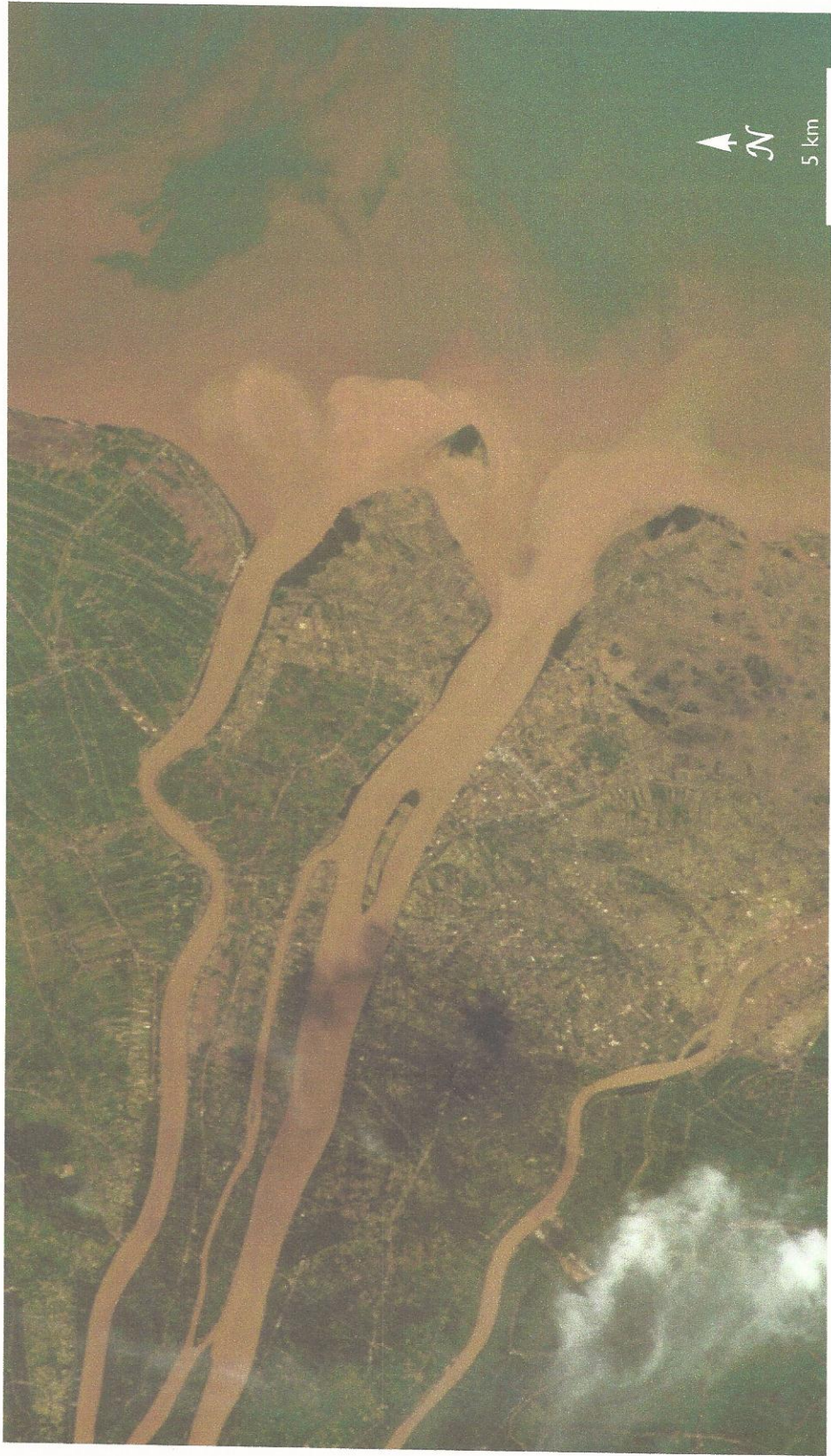


Symbol	Description
01	STRAIGHT BASELINE
02	TERRITORIAL SEA
03	ECONOMIC ZONE
04	CONTINENTAL SHELF
05	AIR SPACE
06	AIR SPACE
07	AIR SPACE
08	AIR SPACE
09	AIR SPACE
10	AIR SPACE
11	AIR SPACE
12	AIR SPACE
13	AIR SPACE

EXHIBIT

B

tabbles



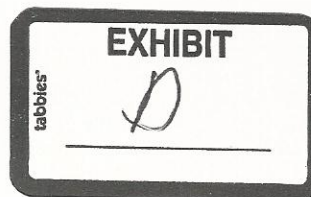
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EXHIBIT
C

DECLARATION OF ROBINSON HORDOIR, Ph.D.

I, Robinson Hordoir, Ph.D., state and declare as follows:

1. I am 36 years old and a resident of Norrköping, Sweden. I was contacted by Terrence J. O'Toole, the attorney for Claimant Marvin K. Davis. Mr. O'Toole advised me that Mr. Davis was making a claim for veterans benefits based on Mr. Davis' actual or presumed exposure to Agent Orange while serving aboard a United States Navy destroyer, USS Newman K. Perry, while cruising the coastal water of South Vietnam. Mr. O'Toole provided me with Deck Logs for the Newman K. Perry dated 21 Nov. 1966 to 30 Nov. 1966. I am not being compensated for my services in rendering the opinions expressed in this Declaration.

2. I am employed as a researcher by the Swedish Meteorological and Hydrological Institute ("SMHI"). SMHI is an agency of the Swedish government. Information about SMHI can be found at <http://www.smhi.se/en/about-smhi>. I am a French national and I am fluent in English, among other languages.



3. I received by doctorate degree from the University of Caen which is located in Caen, Normandy, France. I received my Ph.D. in 2007 in Physical Oceanography. My curriculum vitae is attached to this Declaration. A significant research topic that I undertook in earning my Ph.D. degree was an investigation into the extent to which freshwater discharged from the Mekong River influences ocean water in the coastal area adjacent to the Mekong Delta. The results of this study were published in *Journal of Geophysical Research*, a peer-reviewed journal of the American Geophysical Union (AGU). The article is referenced as: Hordoir, R., K. D. Nguyen, and J. Polcher (2006), *Simulating Tropical River Plumes, A Set Of Parametrizations Based On Macroscale Data: A Test Case In The Mekong Delta Region*, *J. Geophys. Res.*, 111, C09036, doi:10.1029/2005JC003392 (hereafter referred to as the "Mekong Delta Plume Study")

4. The object of the Mekong Delta Plume Study was to model the Mekong River plume and its impact the coastal waters of southern Vietnam. Most rivers create plumes. A plume is formed when the outflow of fresh water from a river system empties into a larger body of water. The plume, generally

speaking, is the area of the larger body that is influenced by the fresh water discharge. The existence of the plume is mostly related to the salinity difference between river water (i.e. : freshwater) and that of the larger body that is the sea in most cases. Because of their density difference, river water and sea water do not mix immediately but create a density front. The presence of the front usually creates a coastal current that is influence by the Earth rotation (also known as the "Coriolis Force"). This phenomenon is extremely close, from a physical point of view, to that of "Thermal Wind" that most people also refer to as "Sea Breeze".

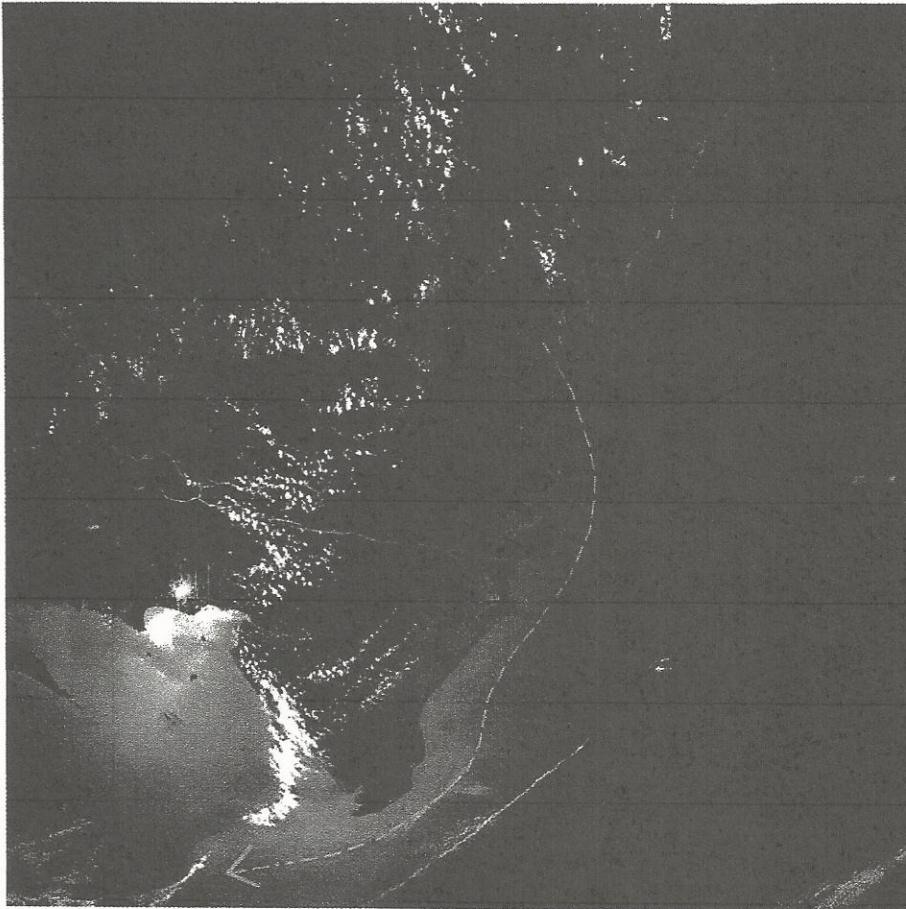
The input of freshwater creates what is called a "baroclinic" current in the coastal area. "Baroclinic" is a term that is used both in Ocean and Atmospheric dynamics, and that refers to this density difference. This baroclinic current is made of two layers, the upper layer that is a mix of freshwater and sea water, and the lower layer that is mostly sea water. This dual system can be described as a "coastal overturning" : the input of freshwater attracts sea water below the river plume and that sea water eventually becomes mixed with freshwater when it

reaches the vicinity of the river mouth. This mix of freshwater and sea water is the main body of the upper part of the plume. If wind blows in the same direction as the coastal current, or if wind can be neglected, this coastal current becomes "coastally trapped". This means it flows with the coast on its right (in the Northern Hemisphere), and flows parallel to the coast. For major river systems, like the Mekong River, or the Amazon or Mississippi, the river's plume can be considerable. Depending on latitude, on meteorological, oceanographic and other conditions, a river's plume may extend hundreds of kilometers from the river's delta area. Some coastal currents like the Norwegian Coastal Current that flows all along the Norwegian coast, extend from the South of Norway up to the Arctic Ocean. In the case of the Norwegian Coastal Current, it is mostly explained by the freshwater outflow from the Baltic Sea. Because of their nature, the width of these currents are highly influenced by latitude. In tropical regions, such currents have a higher width because of the lower Coriolis force, whereas this width is smaller closer to the poles. Obviously, the closer the plume to the

mouth of the river, the higher the percentage of river water that is mixed in the water of the receiving body. These dynamics are now quite well understood to Physical Oceanographers around the world thanks to measurements and numerical models.

5. The Mekong River is one of the world's major rivers. It is the world's 12th-longest river and the 7th-longest in Asia. Its estimated length is 4,350 km (2,703 mi), and it drains an area of 795,000 km² (307,000 sq mi), discharging 475 cu. km. (114 cu mi) of water annually. The Mekong flowing southwesterly through Vietnam and empties into the South China Sea through several channels that form the very extensive Mekong Delta. The following image is a satellite

photo of the Mekong and its delta:



6. Based on my review of the *Perry* deck logs, it appears that The *Perry* was anchored in various positions off the coast of the Mekong delta area between November 24th and November 30, 1966. Taking into account recorded longitude/latitude coordinates, water depth and on the narrative description of the *Perry's* location, the *Perry* sailed closed to the southernmost channels through

the Mekong delta which named "Tranh De" and "Din An". The black circle on the photo shows the approximate location of the *Perry* during this time.

7. Using this data, it is clear that the *Perry* never sailed or was never anchored less than 15 nautical miles off the coast of the Mekong delta, and that the *Perry* always sailed and was always anchored close to the southernmost tip of the Mekong delta. In fact, it is clear that, on some of these days, the *Perry* maneuvered very close to the coastline of Vietnam. For example, on 24 November 1966, the Deck Log reflects that the *Perry* anchored at the mouth of the Mekong River, 3 miles from the beach.

8. In southeast Asia and, specifically in the Mekong River basin, the month of November can be considered as the end of the wet season from a climatological point of view. During that period, I calculate the total freshwater discharge of the Mekong delta at 10,000 - 15,000 cubic meter per second (approximately 353,000 – 529,000 cu. ft per second). At that time of the years, the prevailing wind in the area of the Mekong Delta would be out of the Northeast

blowing Southwest.

9. Based on these meteorological and hydrological elements, in November 1966, a coastally trapped baroclinic circulation of Mekong River water would be headed in a southwesterly direction. Baroclinic flow would cause Mekong River water to be transported into the area where the *USS Newman K Perry* sailed or was anchored. Prevailing winds from the northeast contribute to the trapping of the freshwater close to the coast. This baroclinic current reaches its highest width off the southern-most point of the Mekong delta where all the freshwater from all the mouths of the delta meet to form a surface current flowing parallel to the coast. I would estimate the width of this current to be in a range from 20 nautical miles to 50 nautical miles. The dashed yellow arrow on the photo in ¶ 5, above, illustrates the baroclinic flow of Mekong River water and its direction.

10. Based on the kind of computer modeling used in the Mekong River Plume Study and using the specific data relevant to the *Perry's* position between

24 November and 30 November, 1966, one can say that the surface salinity where the *Perry* sailed or was anchored between November 24th and November 30th 1966 ranged between 10 grams per liter and 24 grams per liter. These salinity values should be contrasted to the average salinity of that same region of 36 grams per liter. This means that the *Perry* sailed or was anchored between November 24th and November 30th 1966 in an area in which the surface water is heavily influenced by the freshwater outflow from the Mekong river.

11. Based on these salinity data, one can estimate that the percentage of Mekong river water at the sea surface of the area where the *Perry* sailed or was anchored between 24th and November 30th 1966, at between 51% and 72%. To put it more simply, using our modeling techniques, the about half to three quarters of the water surrounding the *Perry* would have been water from the Mekong River.

12. I am able to make a rough guess that the baroclinic current of circulating Mekong River water would have had a depth of anywhere from 5 to 10

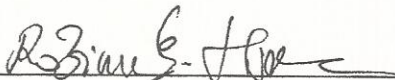
meters.

13. It should be noted that during the monsoon season, the prevailing winds in the Mekong Delta are out of the southwest blowing to the northeast. This change in wind direction results in Mekong River water being driven away from the coast. A boat sailing miles away from the Mekong Delta coast, would therefore sail in an area which surface water is heavily influenced by the Mekong River. On the contrary, during that precise season, a boat anchored close to the Vietnamese coast but a few miles south west of the southernmost delta branch, would notice the presence of only a small percentage of Mekong river water at the surface of the sea. I say this to make the point that it is unscientific to believe that there is a precise boundary between river water (brown water) and ocean water (blue water) within what is referred as the "Region of Freshwater Influence" of the Mekong river. In a system like the Mekong Delta, the flow of river water and its mixture with sea water is complex and subject to a number of variable. I also wish to add that in the case of the Perry, the extreme proximity of the

Mekong river branches makes it very unlikely that the percentage of Mekong river water could have been less than 20% at the sea surface, and this regardless of the season. However, the end of the wet season (from October to December) coincides with the highest probability of having a high percentage of Mekong river water close to the coast, as the end of the wet season is this only time of the year that makes it possible to have both a high river discharge and wind blowing from the North East which ensure freshwater is trapped close to the Mekong delta coast and flows towards the South West.

Pursuant to 28 U.S.C. § 1748, I declare under penalty of perjury under the laws of the United States of America, that the foregoing is true and correct.

Executed this 28th day of May, 2010



Robinson Hordoir, Ph.D.

Oceanography of the Mekong River Estuary

Eric Wolanski¹ and Nguyen Huu Nhan²

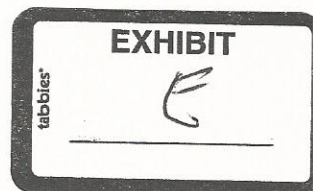
¹ Australian Institute of Marine Science, PMB No. 3, Townsville MC, Queensland 4810, Australia. E-mail: e.wolanski@aims.gov.au

² Southern Center for Hydro-Meteorological Service, 8 Mac Dinh Chi Street, Dist 1, Ho Chi Minh City, Vietnam. E-mail: huu-nhan@hcm.vnn.vn

The 4,800 km long Mekong River drains an area of $0.795 \cdot 10^6 \text{ km}^2$. The river forms a delta downstream of Kompong Cham, Cambodia, where the river discharge varies seasonally between typically $2,100 \text{ m}^3 \text{ s}^{-1}$ in April (the low-flow season) and $40,000 \text{ m}^3 \text{ s}^{-1}$ in September (the high-flow season). The delta is drained by main channels that have a thalweg about 10m deep in the freshwater region located 30 km upstream from the mouth. Closer to the mouth, saline oceanic water intrude in the low-flow season, and the depth decreases to typically 5 m in the thalweg, with extensive shoals on either side. Even shallower waters are found in coastal waters near the mouth.

The sediment discharge is about $160 \cdot 10^6 \text{ tonnes year}^{-1}$. To place the Mekong in perspective with other major rivers, the Mekong River has a smaller drainage area than the Yangtze (41%), the Amazon (12%), the Mississippi (24%) and the Ganges-Brahmaputra (53%) rivers. However the Mekong River sediment load is about the same as that of the Mississippi, it is 85% that of the Yangtze River and it is 12% larger than that of the Amazon.

Mixed, mesotidal tides prevail with a strong diurnal inequality. At the mouth the mean maximum and average tidal ranges are respectively about 3.2 m and 2.2 m. The average tide range decreases with distance upstream. At Can Tho (123 km from the mouth) it is



only 1.9 m in the low-flow season and 0.7 m in the high-flow season. At Cau Doc (228 km from the mouth) it is 0.49 m in the low-flow season and 0 m in the high-flow season.

About 8 million Cambodians, 4 million Laotians, 25 million Vietnamese and several million Chinese live in the Mekong basin, most of them depending on the Mekong for the livelihood. The desire for hydropower led China to construct the Manwan hydroelectric dam on the main river in 1994 and Thailand to build the Pak Mun on the Mun River, a tributary of the Mekong. China is presently building a cascade of eight dams on the main river. There have been no published studies that we could find of the resulting environmental and socio-economic impact in the Mekong Estuary and its delta. Such studies are urgently needed and should be integrated within the studies of estuarine processes occurring naturally. This potential problem is further aggravated by plans for constructing 100 hydroelectric dams and water diversion schemes upstream on the Mekong River, principally in China, Thailand, Cambodia and Laos, these plans appear not to include the environmental and socio-economic impact in Vietnam in their cost-benefit analysis evaluation.

These studies of natural processes in the estuary have been carried out through field studies and numerical modelling by Vietnam's Southern Center for Hydro-Meteorological Service. These studies have focused on the immediate, urgent, socio-economic problems generated by salinity intrusion in the low-flow season, and flooding by storm surges and by river floods. For instance, the tidal dynamics can be modelled successfully as a friction-damped, progressive wave in branched, one-dimensional channels, with the tidal amplitude decreasing and the time lag increasing with distance from the river mouth. River floods were also be modelled successfully using 2-D models

in branched estuaries and coastal waters. These models are used predictively and have great, beneficial socio-economic relevance including saving human lives.

In view of the likely, longer-term environmental impacts from the construction of dams on the Mekong and the flow regulation that results, preliminary, field studies of fine-sediment transport were also carried out in the Mekong Estuary in both the high-and low-flow seasons.

In the freshwater region, erosion and deposition of suspended sediment occur at tidal frequency. The mean suspended-solid concentration is typically about 250-500 mg l⁻¹. The suspended sediment is mostly fine silt, and the clay fraction accounted for only 15%. The suspended sediment is transported either as individual particles or agglomerated with organic detritus.

In the wet season, there is a strong down-river transport at a mean velocity of 1 m s⁻¹. A salt wedge is present near the mouth and is flushed out of the estuary at low tide. Flow reversal occurs across the pycnocline. A turbidity maximum zone is present at the toe of the salt wedge at flood tide. Most of the suspended sediment is coagulated with little organic matter. The bulk of the suspended sediment is exported to coastal waters, but some sediment returns to the estuary in the salt wedge. At such times, the Mekong River plume has been tracked all the way into the middle region of the Gulf of Thailand.

By contrast in the dry season, the semidiurnal, macro-tides and shallow water effects result in a tidal asymmetry with peak flood tidal currents 10% stronger than peak ebb tidal currents. The salinity intrusion extends 50 km up-river with vertical stratification in salinity occurring around slack tidal currents. The suspended sediment is still mainly fine silt and flocculation occurs in the saline region. The asymmetry of tidal currents, along

with the baroclinic circulation, pump sediment upstream. It is advected from the South China Sea where it may have been deposited at the previous wet season. This sediment is sequestered in the estuary. The saline region of the estuary is more turbid than the freshwater region and the location of the turbidity maximum varies spatially with the tides.

Modelling predicts that, as a result of these schemes, the Mekong Estuary will suffer major siltation, possibly in as little as 30 years. These changes, together with changes in salinity and their impact on farming, may cause significant, negative, socio-economic problems.

The problems of managing water resources, controlling floods and salinity intrusion in the Mekong are not just for the future, there are already severe. Additional present problems deal with new complicated hydrodynamics features introduced by engineering developments in the delta (dykes, channels, sluices, roads and other infrastructures). This requires the development of a methodology, database and integrated tools for management and prediction of water resources, water quality, floods, and salinity intrusion. This is carried out by an integrated model "HydroGis". It was applied successfully in a number of applications of flooding, storm surges, and salinity intrusion in the period 2000-2004.

Detailed scientific studies of the Mekong Estuary are warranted to integrate land and water management at the entire river catchment, including the river and the estuary, as one ecosystem; this solution goes against present political and administrative practices. The successful management of the Mekong Estuary and its delta requires an ecohydrology-based, basin-wide approach. This necessitates changing present practices

by official institutions based on countries as an administrative unit, or the narrowly-focused approaches of managers of specific activities (e.g. farming and fisheries, water resources, hydroelectricity, and nature conservancy). Without this change in thinking and management concept, the Mekong delta may degrade, with huge environmental and socio-economic implications, whatever integrated coastal management plans are implemented.