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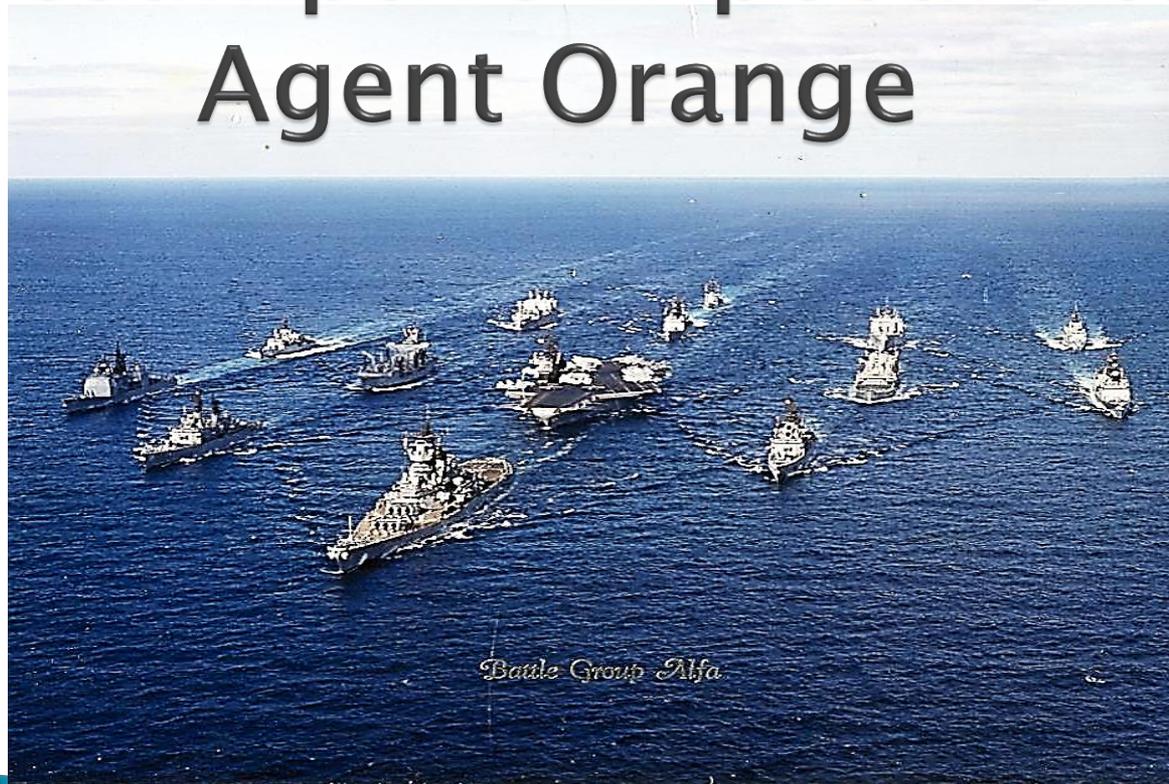
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Blue Water Navy and Presumptive Exposure to Agent Orange



VVA 2016 State Conference, Carlisle Inn,
Sugarcreek, Ohio

By Ed Ball, Shelby Co., CVSO

OSACVSO BWN Presumptive
6/10/2016 Exposure to AO

Blue Water Veterans and Agent Orange Exposure 38 U.S.C. § 1116

- ▶ Veterans who served on open sea ships off the shore of Vietnam during the Vietnam War are sometimes called "Blue Water Veterans."
- ▶ Blue Water Veterans must have actually stepped foot on the land of Vietnam or served on its inland waterways anytime between January 9, 1962 and May 7, 1975 to be presumed to have been exposed to herbicides when claiming service-connection for diseases related to Agent Orange exposure.
- ▶ Blue Water Veterans who did not set foot in Vietnam or serve aboard ships that operated on the inland waterways of Vietnam anytime between January 9, 1962 and May 7, 1975 must show on a factual basis that they were exposed to herbicides during military service in order to receive disability compensation for diseases related to Agent Orange exposure. These claims are decided on a case-by-case basis.

Legislation Pending in Congress

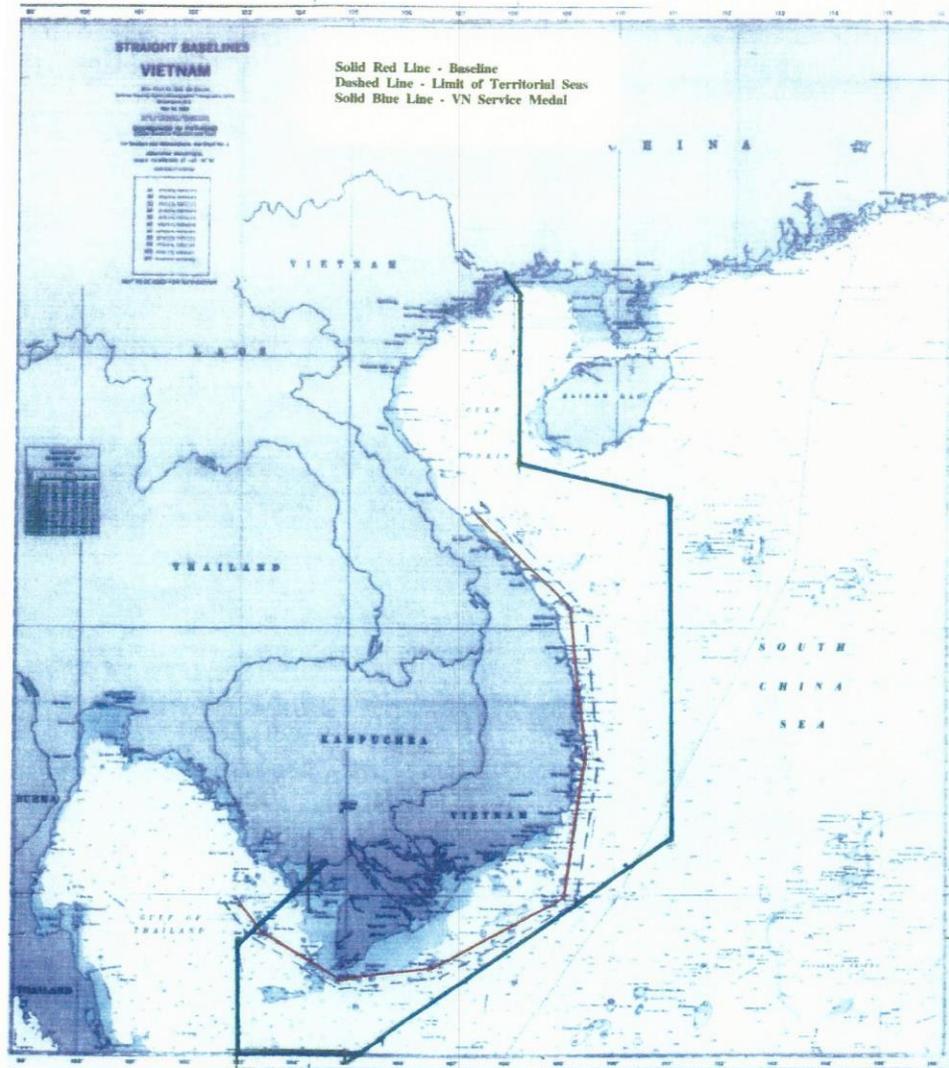
- ▶ [Senate Bill S. 681](#) – Blue Water Navy Vietnam Veterans Act of 2015
 - Cosponsors – 39

- ▶ [House Bill H.R. 969](#) – Blue Water Navy Vietnam Veterans Act of 2015
 - Cosponsors – 309

Territorial Waters of Vietnam War

- ▶ President Johnson signed [Executive Order 11216](#) providing the designation of Vietnam and waters adjacent thereto as a combat zone for the purposes of section 112 of the Internal Revenue Code.
- ▶ EO 11216 not to be confused with the Baseline territorial Waters of Vietnam.
- ▶ The [Socialist Republic of Vietnam and the Law of the Sea](#): An Analysis of Vietnamese Behavior within the Emerging International Oceans Regime (Publications on Ocean Development, V. 32)

Territorial Waters of Vietnam War – left solid line along the coast is Baseline – Dashed line is Limit of Territorial Seas



Blue Water Navy Vietnam Veterans and Agent Orange Exposure.

- ▶ The growing concern of Blue Water Navy veterans that they were exposed to Agent Orange and TCDD during their service during the Vietnam War, possibly as a result of drinking contaminated water, prompted the VA to task the IOM with establishing a committee to conduct a study and prepare a report on whether the Vietnam veterans in the Blue Water Navy experienced a comparable range of exposures to herbicides and their contaminants (focus on dioxin) as the Brown Water Navy Vietnam veterans and those on the ground in Vietnam (i.e., specifically with regard to Agent Orange exposure).

Institute of Medicine says:

- ▶ Blue Water Navy Veterans – Ingestion
- ▶ "Blue Water Navy ships generated their own potable water from marine water (discussed later) and therefore are not expected to have had the opportunity for exposure to potable water from Vietnamese freshwater sources. If a ship docked and took on potable water from Vietnam, crewmembers would have been eligible for a presumption of herbicide exposure only for the time the ship was docked (VA, 2008). Thus, exposure of this population to Agent Orange-associated TCDD via ingestion of freshwater was not considered to be plausible."
- ▶ IOM left out the ability for ship to ship replenishment of fresh water, to include water barges (YW) inport.

Potable Water Sources for Naval Ships:

- ▶ (1) Distillation, RO, or other NAVSEA approved water production technology.
- ▶ (2) Shore-to-ship delivery from an approved source.
- ▶ (3) Shore-to-ship delivery from an unapproved source (when approved source does not exist), refer to Article 6-7.
- ▶ (4) Ship-to-ship.

Institute of Medicine Says:

- ▶ Dermal – Blue Water Navy
 - Blue Water Navy personnel are not expected to have had the opportunity for dermal contact with fresh surface waters unless their ship docked in Vietnam and took on freshwater. *In that situation, crewmembers would be eligible for a presumption of herbicide exposure for the duration of the ship's docking.*
- **Note:** Potable water is used aboard ship for drinking, cooking, laundry, medical, personal hygiene, and other purposes. [NAVMED P-5010-6 – July 2005](#)

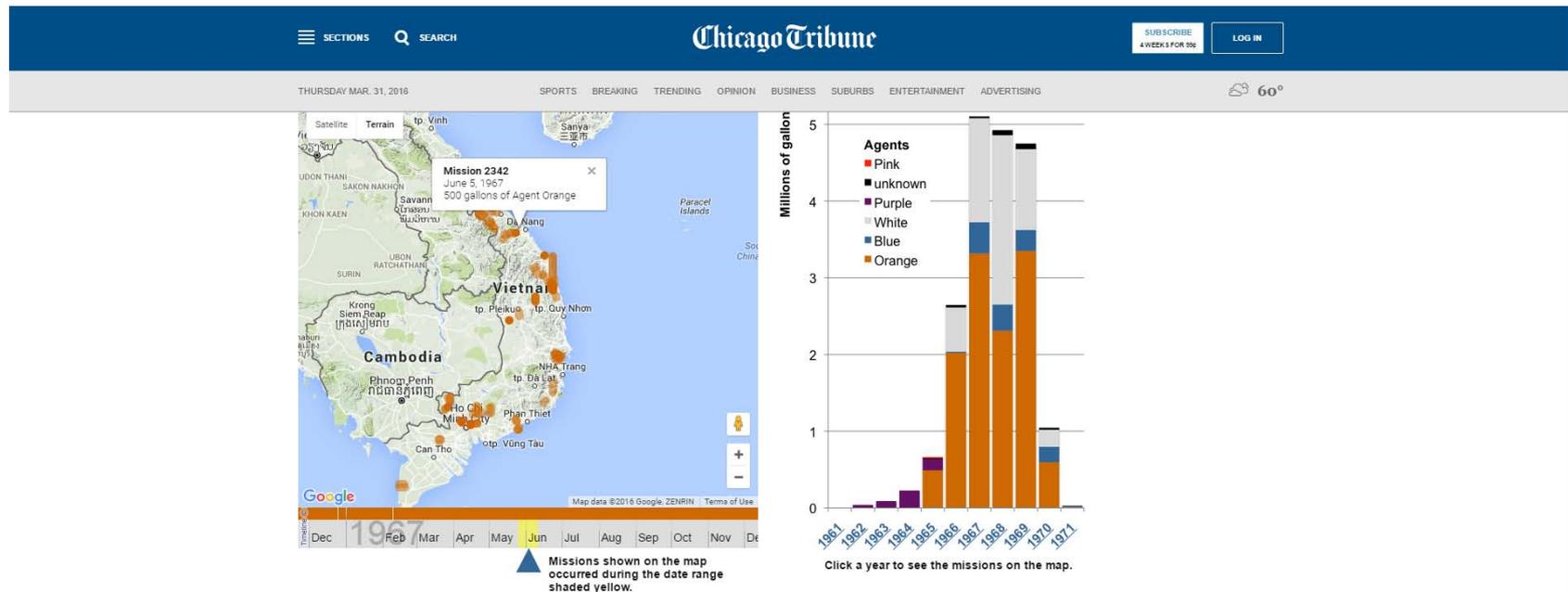
Commander US Naval Forces Vietnam says:

- ▶ Feb 1967 – 61 port visits, ships provided 491,580 gal diesel; 791,749 gal water
- ▶ Mar 1967 – 85 port visits, ships provided 566,460 gal diesel; 1,063,478 gal water
- ▶ Apr 1967 – 100 port visits, ships provided 438,690 gal diesel; 962,131 gal water
- ▶ May 1967 – 122 port visits, ships provided 545,340 gal diesel; 1,000,000 gal water
- ▶ July 1967 – 134 visits, almost 1.5M diesel, and 3,000,000 gals potable water.
- ▶ Etc.. Etc.. Etc...

How Many Navy Ships Supported the Vietnam War?

- ▶ On June 17, 2010 the Secretary of the Navy, Ray Mabus promulgated a [letter](#) to the Chairman of the Committee on Veterans Affairs for the Senate which prepared a list of 713 ships that served off the coast of Vietnam from 1962 - 1975.
- ▶ Agent Orange: [Alphabetized Ships List](#)
 - 344 ships on the list - current list is under review.

Operation Ranch Hand Spray Missions



Please note: Lines rendered on the map represent spraying runs, many of which are part of multi-run spraying missions. The quantity of herbicide listed in the map descriptions are per mission. Line width on the map is not an indicator of spray distribution. Herbicide quantity is not available for some missions.

This interactive map is based on the Herbicide Exposure Assessment-Vietnam database developed by Jeanne Stellman, professor emeritus at Columbia University's school of public health, and Columbia epidemiology professor Steven Stellman. They cleaned data from a 1974 National Academy of Sciences database and supplemented the records with documents from the National Archives. The database is considered the most comprehensive available on spraying missions. The effort was funded by a contract from the National Academy of Sciences to build an exposure model that could be used to assess the defoliants' health impact on U.S. veterans who served in Vietnam. The model has been evaluated twice by the Institute of Medicine, which recommended that the U.S. Department of Veterans Affairs use it to evaluate the chemicals' health impact. The VA has been testing the exposure model since 2003.

Gray vs McDonald

- ▶ U.S. Court of Appeals for Veterans Claims – mandated the VA redefine “inner – Waterways”.
- ▶ Mr. Thomas Murphy, VBA Director email reply:
 - As a result of the Court of Appeals for Veterans Claims’ remand in *Gray v. McDonald*, VA has re-evaluated and clarified its policy concerning inland waterways where we will presume exposure to herbicides. That policy is as follows: Inland waterways are fresh water rivers, streams, canals, and similar waterways. Explicitly included by policy are the heavily vegetated Mekong River Delta and Rung Sat Special Zone. Specifically excluded are all other coastal water features, particularly bays and harbors, including Da Nang Harbor. As we have long done, VA will continue to extend a presumption of exposure to Agent Orange to any Veteran who went ashore.

Key issues supporting BWN presumptive exposure to AO:

- ▶ The Third Australian Vietnam Veterans Mortality Study 2005
 - National Research Centre for Environmental Toxicology (NRCET) and the Queensland Health Scientific Services in Australia and Department of Veterans Affairs “the report concluded that in the process of evaporative distillation of potable water, organochlorine pesticides and *dioxins, if present in sea and estuarine water, would have co-distilled and been concentrated.* This study demonstrated that ingestion and personal use of the potable water could have led to exposure to these chemicals for Navy members.”

Key issues supporting BWN presumptive exposure to AO:

- ▶ Blue Water Navy Vietnam Veterans and Agent Orange Exposure ([2011](#)) – presented by IOM
- ▶ “Equations 1–10 were solved using physical properties of TCDD in order to determine the percent of total TCDD in the feed water subject to codistillation. Thus, in the batch distillation process used in the NRCET study (Muller, 2002), a concentration of 40 ng TCDD/L in 1 L feed water would result in all 40 ng TCDD being distilled into the 0.1 L of product water, assuming 10% of the feed water is distilled. This demonstrates [an enrichment of TCDD](#) from the feed water into the product water with a product water concentration of 40 ng/0.1 L or 400 ng/L.”

Key issues supporting BWN presumptive exposure to AO:

- ▶ NAVMED [P-5010-6](#) (Rev. 7-2005) para 6-3
 - Shipboard Potable Water
 - b. Avoid making water while operating in harbors or from polluted seawater. Seawater shall be assumed polluted when ships are operated in close formation. While making potable water, care must be taken not to strip fuel waste tanks or empty bilges forward of the saltwater intakes. Source water in harbors or ship navigation lanes is likely to be contaminated by fuel/oil slicks or other pollutant sources.

Key issues supporting BWN presumptive exposure to AO:

- ▶ The National Archives maintain [CONGA](#) naval gunfire support database indicating gunships that provided support along the coast from I Corps to IV Corps regions.

View Record	MISSION FIRING DATE	UIC OF FIRING SHIP	NAME OF FIRING SHIP	HULL TYPE OF FIRING SHIP	HULL NUMBER OF FIRING SHIP	CTZ TO WHICH FIRING WAS DIRECTED	NICKNAME OF OPERATION SUPPORTED	TARGET TYPE CODE	PROVINCE CODE
	08/20/1966	N03888	HOLLISTER	Destroyer	788	Corps Area 2		STRUCT/BUILDING	
	08/20/1966	N03888	HOLLISTER	Destroyer	788	Corps Area 2		TROOP CONC	
	08/20/1966	N03888	HOLLISTER	Destroyer	788	Corps Area 2		ASSEMBLY AREA	
	08/20/1966	N03888	HOLLISTER	Destroyer	788	Corps Area 2		TROOP CONC	
	08/20/1966	N03888	HOLLISTER	Destroyer	788	Corps Area 2		TROOP CONC	

Key issues supporting BWN presumptive exposure to AO:

5"/38 gunmounts on destroyers

- ▶ Range with 55.18 lbs. (25.03 kg) AAC Mark 49 (792 mps)
- ▶ 10° 9,506 yards (8,692 m) or 5.4 miles
- ▶ 15° 11,663 yards (10,665 m) or 6.6 mi
- ▶ 20° 13,395 yards (12,248 m) or 7.6 mi
- ▶ 25° 14,804 yards (13,537 m) or 8.4 mi
- ▶ 30° 15,919 yards (14,556 m) or 9.04 mi
- ▶ 35° 16,739 yards (15,298 m) or 9.5 mi
- ▶ 40° 17,240 yards (15,764 m) or 9.79 mi
- ▶ 45° 17,392 yards (15,903 m) or 9.88 mi
- ▶ AA Ceiling 37,200 feet (11,887 m) or 21.136 mi (Anti Aircraft=AA)

Key issues supporting BWN presumptive exposure to AO:

- ▶ A History of Naval Support Activity/Facility DaNang, 1970
 - By the end of 1969, the Public Works Department had reached its peak and had become the largest Public Works operation in the world. At its peak the Public Works Department: was composed of more than 7,000 military, U.S. Civilians, Vietnamese and third country nationals, operated and maintained 986 generators producing more than 122 megawatts of power; operated and maintained 30 water treatment facilities, producing 7,000,000 gallons of water per day;

Key issues supporting BWN presumptive exposure to AO:

- ▶ MACV Monthly Summary for February 1967 Mobile Construction Battalion 133 begin construction on Camp Tien Sha Water Treatment Plant.
- ▶ Seabees built a lagoon with a dam and 8 inch water pipeline capable of handling 1,900,000 gals of water on Monkey Mountain, for further treatment at the Water Treatment Plant at Camp Tien Sha on Marble Mountain.

Key issues supporting BWN presumptive exposure to AO:

- ▶ YW-101 and YW-128 water barges each capable of 200,000 gallons of potable water were permanently assigned to Naval Supply Activity Da Nang, both were involved in Vietnam War Campaigns 1967–1972. They were responsible for ships at anchorage. (Exposed to Spray Mist – Risers, hoses/hull/and connectors presumed contaminated with dioxin.)
- ▶ YW-118 and YW-126 also service naval vessels in RVN.
- ▶ MACV Monthly Summary for July 1967 indicates Da Nang was visited 85 times by Seventh Fleet ships, and provided over three million gallons of potable water.

This is KEY to BWN presumptive exposure to Agent Orange!

- ▶ In NSA DaNang harbor from Dec 1966 to August 1967 there were 917 ships that visited and approximately 12,430,049 gals of fresh water from Monkey Mountain, via water barges, provided to the visiting ships.
- ▶ There are only 344 ships on the VA presumptive exposure to Agent Orange ship list.

Key issues supporting BWN presumptive exposure to AO:

- ▶ All Hands magazine July 1967 shows USS Sacramento (AOE-1) delivering thousands of gallons of potable water to ships out at sea. Where'd the water come from?



Key issues supporting BWN presumptive exposure to AO:

- ▶ [Replenishment at Sea](#) – 1965 CONREP US Navy 21690 Navy video
 - Produced by the U.S. Navy in 1965, this film shows the basic elements of re-supply of ships at sea during deployment, including ship formations and replenishment type. Replenishment at sea is a method of transferring fuel, munitions, and stores from one ship to another while under way. The alongside connected replenishment (CONREP) is a standard method of transferring liquids such as fuel and fresh water, along with ammunition and break bulk goods.

Key issues supporting BWN presumptive exposure to AO:

- ▶ VRC-30 SQUADRON HISTORY: In 1969, squadron C-1A's and crews operated from Danang, Republic of Vietnam in support of CTF-77.
- ▶ TACTICAL COMMAND AND CONTROL OF CARRIER OPERATIONS: Task Force 77, the Carrier Striking Force, included all of the carriers and major combatants assigned to the carriers in a support role. Although the major surface combatants -- cruisers, destroyers and frigates -- were deployed from their administrative commands in the Continental United States (Cruiser Force, Atlantic Fleet or Pacific Fleet) to Task Force 75, the Surface Warfare Force of the SEVENTH Fleet, these units were transferred to Task Force 77 in order to form up the carrier task groups which were the basic tactical entities for carrier strike operations. A typical carrier task group would consist of one carrier, several destroyers, and three or four frigates. Occasionally a cruiser would be assigned to a carrier task group when it was not committed to gunfire support or other independent operations.

Key issues supporting BWN presumptive exposure to AO:

- ▶ Against the backdrop of these contingency operations, at 0844 on 12 December 1971, a COD flight, Grumman C-2A Greyhound (BuNo 152793), Lieutenant Vetal C. LaMountain, Jr., pilot, and Lieutenant (jg) Gale V. Woolsey, Jr., co-pilot, VRC-50 Det Cubi Point, took off from Cubi Point, bound for Enterprise, routed via Tan Son Nhut, for a “logistic support mission.”

Key issues supporting BWN presumptive exposure to AO:

- ▶ While C-1A COD support from Da Nang proved reliable, a ship the size of Enterprise required three to four daily trips. In addition, 300,000 lb of mail was carried by HC-1 Det 4 during this WestPac, requiring 920 transfers, as well as 3,210 passengers.
- ▶ (A WestPac is one deployment – as personnel PCS aboard ships, or replacement personnel arrive, many are flown onboard or ashore from out to sea. Many of these passengers awaited helos ft to ship assigned with the Carrier Battle Group.)

Key issues supporting BWN presumptive exposure to AO:

- ▶ VRC-30 Command History:

October 11 to December 24, 1969, C-1A aircraft and pilots were sent to Danang, Republic of Viet Nam, to supplement the "COD" aircraft shortage due to the grounding of the C-2A aircraft.

Key issues supporting BWN presumptive exposure to AO:

- ▶ Armed Forces Courier Service (ARFCOS)
- ▶ Courier of Authentication Codes and other COMSEC materials from NSA to end users.
- ▶ Cam Ranh Bay CR Republic of Vietnam Estab 1 Dec 67; disestab FY 72
- ▶ Danang DG Danang, Republic of Estab as sub-station to Saigon 5 Sep 66; Vietnam disestab FY 73
- ▶ Saigon SG Saigon, Republic of Estab 30 Oct 62; disestab 23 Mar 73; Vietnam mission to Clark
- ▶ This facilitated both use of carrieronboard-delivery (COD) flights to service ships at sea and designation of a COD's pilot or co-pilot as the mission courier.

Key issues supporting BWN presumptive exposure to AO:

- ▶ (7) A program was initiated whereby four times weekly fresh produce (tomatoes, green onions, peppers and cucumbers) is flown from Taiwan to Da Nang. These items are supplied to Class I Supply Points on a "Rush Package" basis and are distributed to supporting units in proportion to their strength. (Water is classified Class I)
- ▶ Fresh produced offload from aircraft (risk of exposure to spray mist) on tarmac, loaded onto flatbeds for warehouse.

What Else Do Service Officers Know?

- ▶ [2,3,7,8 Tetrachlorodibenzo-p-dioxin](#) (TCDD, “dioxin”) It is sparingly soluble in most organic solvents and essentially insoluble in water. ([Hatfield Group](#) water samples prove the same in DaNang lakes off airstrip)
- ▶ TCDD would enter the coastal marine water from river discharge and spray drift.
- ▶ Plausible pathways and routes of exposure of Blue Water Navy personnel to Agent Orange-associated TCDD include inhalation and dermal contact with aerosols from spraying operations that occurred at or near the coast when Blue Water Navy ships were nearby, contact with marine water, and uses of potable water prepared from distilled marine water.
- ▶ The last official spray run by the US Air Force took place on January 7, 1971

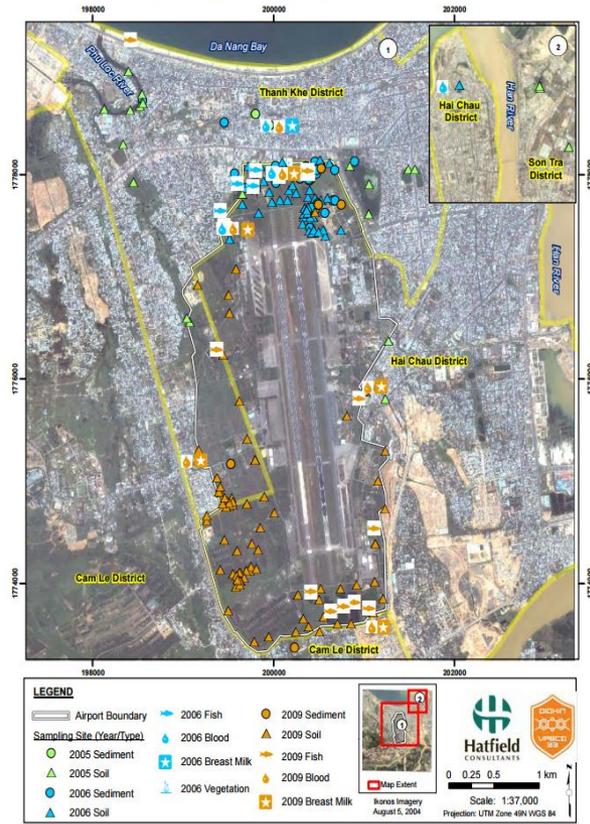
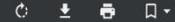
RUSSIAN JOURNAL OF MARINE BIOLOGY Vol. 30 No. 1 2004

- ▶ Present–Day State of [Coral Reefs of Nha Trang Bay \(Southern Vietnam\)](#) and Possible Reasons for the Disturbance of Habitats of Scleractinian Corals
- ▶ The results of our investigations suggest that the presence of residues of dioxin–containing ecotoxics in the marine bottom sediments is evidently the major stress factor (along with significant anthropogenic pressure) for the modern near–shore communities of Southern Vietnam. The adverse effect of dioxin–containing ecotoxics is aggravated by the periodic stirring–up of silts during the storms and generally increased turbidity of the water as the results of the reduced coverage by live corals, which are the natural biological filters in the near–shore tropical ecosystems.

Da Nang Air Field, Sampling areas

Da Nang 2009 Report.pdf

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What Else Do Service Officers Know?

- ▶ USNS Geiger T-AP-197 with 1,700 ROK Troops aboard ran hard aground in 13 feet of water in DaNang Harbor on 4 October 1967
- ▶ 5 June (1970), an ammunition ship, the SS AMERICAN HAWK, went aground in Danang Harbor 500 yards from the Harbor Entrance Control Post (HECP)

What Else Do Service Officers Know?

- ▶ November 1966 Chaplain Garrett declared in DaNang: “Deep water stopped two miles out from the coastline. Cargo ships were forced to remain at anchor and unload their cargoes onto lighters which in turn moved the cargo ashore.
- ▶ De Long Floating Pier operations in Vietnam turned shallow water ports into deep water piers.

What Else Do Service Officers Know?

- ▶ ..deposits of silt constantly change the depth of the rivers and make navigation hazardous. As constant dredging was necessary to keep traffic moving and to keep open the ports and bases supplied by river, dredges were operated in Vietnam by the United States and many other nations.
- ▶ Naval vessels were used to transport chemicals that make Agent Orange from Naval Magazine Subic Bay to Vietnam (USS White Plains)

What Else Do Service Officers Know?

- ▶ [Army FMF 3-3](#) requires a 500-meter radius when spraying herbicide
- ▶ Navy aircraft frequently landed in Vietnam air fields and returned to carriers, helicopters would have returned presumptively contaminated to various ships and or smaller lamps capable vessels.
- ▶ Navy Squadrons at sea frequently swapped aircraft with USMC Squadrons ashore.

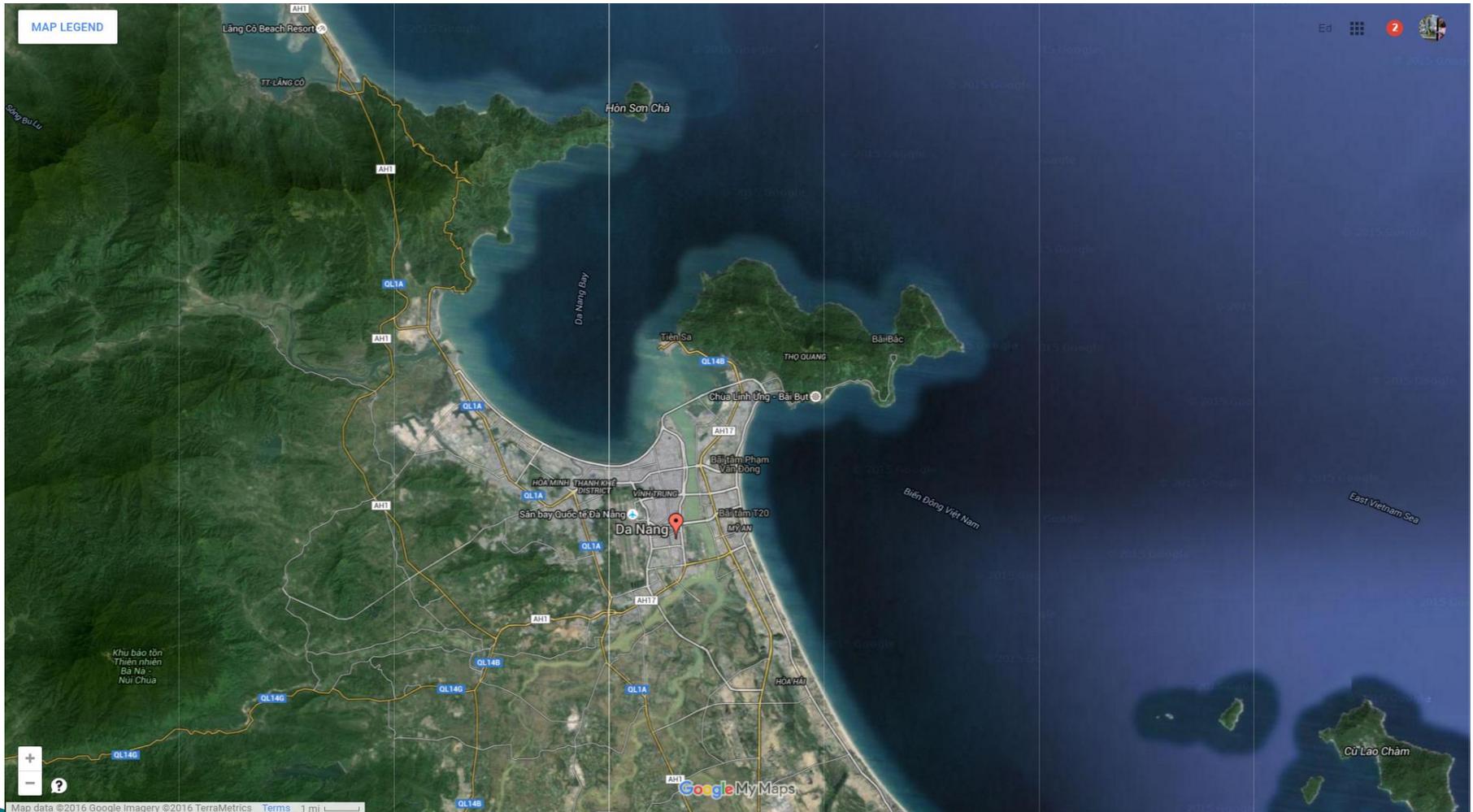
What Else Do Service Officers Know?

- ▶ Ocean current/tide patterns from streams and harbor areas in and surrounding South Vietnam not to mention flooding & contamination caused by tropical monsoons with runoff
- ▶ Petroleum products used to mix chemicals to create herbicide is lighter than water and floats on the ocean surface as carried by the currents/tides.

View of Mekong Delta from International Space Station 10/24/2006

- ▶ A large muddy plume of sediment flows from the Mekong River Delta – courtesy NASA.

Da Nang Harbor



What Else Do Service Officers Know?

- ▶ Aware of [Hatfield Group](#) report to show AO soil, water, and aquatic vegetation levels in 2005/6 showed dioxin levels 365 times the acceptable global standards, and that USAID is in country Vietnam cleaning up our mess today.
- ▶ November 13, 2015, the Congressional Research Service released their findings entitled: [U.S. Agent Orange/Dioxin Assistance to Vietnam](#), as a CRS Report prepared for Members and Committees of Congress
- ▶ [C-123s](#) were contaminated and posed a threat to all that served post-Vietnam era.

What Else Do Service Officers Know?

- ▶ Ships assigned to Naval Gunfire Support roles along the coast of Vietnam did in fact run their evaporators for their Water Distillation plants per crewmember of USS Lowe DER-325. ([IOM states](#), much like Australia, “this demonstrates an enrichment of TCDD from the feed water into the product water with a product water concentration of 40 ng/0.1 L or 400 ng/L.)”

What Else Do Service Officers Know?

- ▶ Advocates estimate as many as 90,000 potentially exposed Blue Water veterans were cut off from compensation as a result of the 2002 policy change. Any veterans who had received benefits before were supposed to be grandfathered in, but at least one Blue Water veteran reported losing compensation that had been given to him prior to the change.
- ▶ Veterans argue the rules are “arbitrary and capricious.” A clear error of judgment; an action not based upon consideration of relevant factors

What Else Do Service Officers Know?

- ▶ [Jan 12, 2016](#) – U.S. Senators from Armed Forces Committee sent VA Secretary Bob McDonald letter requesting he use his authority and reinstate Blue Water Navy veterans presumptive exposure while serving in Vietnam Territorial Waters.

Army Harbors – Inland Water Terminals – (Army FM 55-1)

- ▶ 4-3. The two broad categories of terminals are water and inland terminals. Water terminals are established at ports, beach sites, or degraded/unimproved facilities. Inland terminals include facilities such as air terminals, truck terminals, TTPs, rail yards, and inland water terminals. Commanders establish inland terminals at points along air, rail, rivers and canals, pipelines, and motor transport LOC to provide for the transshipment of cargo and personnel carried by these modes.
- ▶ 4-20. The Army establishes inland water terminals along waterways. These terminals serve a dual purpose. They receive, load, and unload cargo destined to locations accessible to and from the water terminal. They also provide for the maintenance of the watercraft and rest for the crew.

USAID Remediation Efforts to Clean UP Dioxin in Vietnam Today!

- ▶ [Timeline](#) for Phase I and Phase 2 (Da Nang is in Phase 2)
- ▶ [Da Nang](#) Air Terminal clean-up areas.
- ▶ In May 2015, successful treatment of approximately 45,000 cubic meters of dioxin-contaminated material was confirmed – the first of two phases of treatment. Another approximately 45,000 cubic meters of contaminated material will be treated in 2016-2017.
- ▶ [Hatfield Agent Orange Reports](#) and Presentations

USAID Remediation Efforts to Clean UP Dioxin in Vietnam Today!

- ▶ HOW HEALTH AND SAFETY CONCERNS HAVE BEEN ADDRESSED:
 - Unexploded Ordinance (UXO)
 - Site Access
 - Contaminated Soil and Sediment
 - Contaminated Dust
 - Contaminated Wastewater
 - Rainy Season
 - Site Workers
- ▶ Da Nang \$88M by 2017 & Bien Hoa airport up to \$250M

In Conclusion

- ▶ Admiral Zumwalt once said: "Knowing what I now know, I still would have ordered the defoliation to achieve the objectives it did, of reducing casualties. But that does not ease the sorrow I feel for Elmo, or the anguish his illness, and Russell's disability, give me."
- ▶ Elmo was the Admiral's son he died Aug 14, 1988, Russell his grandson suffers from a congenital dysfunction that confuses his physical senses..

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- ▶ [KIA/MIA NSF Da Nang 1964-1973](#)
- ▶ [The Air Force and Herbicides in Southeast Asia 1961-1971](#) – Operation Ranch Hand book
- ▶ [THE MILITARY USE OF HERBICIDES IN VIETNAM](#) – Alvin Young; types herbicide/qty used/dates
- ▶ [The extent and patterns of usage of Agent Orange and other herbicides in Vietnam](#)
- ▶ [Report of Investigation into Possible Herbicide Damage at Vietnamese Naval Compound at Da Nang – Danger of AO Drums/Barrels](#)
- ▶ [Annual Typhoon Report 1967](#)
- ▶ [Minesweepers in Vietnam](#)
- ▶ [News article NSF Da Nang](#)
- ▶ [News article Public Works Da Nang](#)
- ▶ [Map of Da Nang Harbor and city](#)
- ▶ [Map of Da Nang Harbor anchorage and river flow into harbor](#)

Congressional Research Services

- ▶ [Veterans Exposed to Agent Orange: Legislative History, Litigation, and Current Issues](#)
– adverse effects

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- ▶ [BLUE WATER NAVY VIETNAM VETERANS AND AGENT ORANGE EXPOSURE](#) (2011)
- ▶ [Veterans and Agent Orange Update](#) (2014)
- ▶ [CHEMICALS USED ABOARD US NAVY SHIPS](#)
- ▶ [An Analytical Method for Detecting TCDD \(Dioxin\): Levels of TCDD in Samples from Vietnam](#)

Navy Inst's., Ship Awards, History, and capabilities

- ▶ [Command History](#)
- ▶ [Navy Fact Files](#) – Aircraft, Missiles, Radars, Ships, Submarines, Weapons, etc..
- ▶ [Navy Ships](#)
- ▶ [Ship History](#)
- ▶ [Navy Ports in Vietnam](#)
- ▶ [U.S. Navy Active Ship Force Levels, 1965–1971](#)
- ▶ [Port Operations](#) – types of services rendered by Public Works Centers in the Navy
- ▶ [Manual of Naval Preventive Medicine Chapter 6 WATER SUPPLY AFLOAT](#)
- ▶ [Standards for Potable Water BUMED 6240.3B 30 Sep 1963](#)
- ▶ [Standards for Potable Water BUMEDINST 6240.3C 25 August 1972](#)
- ▶ [NAVFACENGCOM GPWS for Water Plants and Systems Operation and Maintenance Feb 1987](#)
- ▶ [All Hands Navy Magazines](#) – Archives

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State Department

- ▶ [All herbicide procured commercially](#)
- ▶ [US Policy on Chemical and Biological Warfare and Agents](#)
- ▶ [Congress appropriations for USAID Remediation efforts in Vietnam](#)

Veterans Affairs

- ▶ [U.S. Wars](#)
- ▶ [Service Connection for Disabilities Resulting from Exposure to Environmental Hazards or Service in the Republic of Vietnam \(RVN\) – Updated 2/5/16 \(Word .doc\)](#)

USAID

- ▶ [Agent Orange Remediation Efforts](#)
- ▶ [Socialist Republic of Vietnam News article USAID remediation efforts](#)
- ▶ [ENVIRONMENTAL REMEDIATION AT DA NANG AIRPORT June 2010](#)

Vietnam Rainfall/Currents

- ▶ [Climatology Currents](#) off the coast of Vietnam (animated .gif)
- ▶ [Definition of Currents](#)
- ▶ [Vietnam Temps and Average Rainfall](#)
- ▶ [Interdecadal Variability of the Eastward Current in the South China Sea Associated with the Summer Asian Monsoon](#)

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Veteran Affairs Resources

- [Admiral Zumwalt's Classified Agent Orange Report](#)
- [Agent Orange: Alphabetized Ships List](#)
- [Agent Orange and Survivors' Benefits](#)
- [Diseases Associated with Agent Orange](#)

Press Releases:

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Q&A “Our research will continue”

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- ▶ Cc: Senate/House Veteran Affairs Committees,
OSACVSO, NACVSO, Blue Water Navy Association,
and various NSO's.