



NAVAL POSTGRADUATE SCHOOL

MONTEREY, CALIFORNIA

THESIS

**SELF-PROPELLED SEMI-SUBMERSIBLES: THE NEXT
GREAT THREAT TO REGIONAL SECURITY AND
STABILITY**

by

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June 2011

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**SELF-PROPELLED SEMI-SUBMERSIBLES: THE NEXT GREAT THREAT
TO REGIONAL SECURITY AND STABILITY**

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ABSTRACT

The most effective and fastest-evolving delivery system for cocaine to move from its place of production in Colombia to the United States market has undoubtedly become the Self-Propelled Semi-Submersible (SPSS). Often called “drug subs” or “narco submarines,” SPSSs are used to transport cocaine from Colombia’s Pacific coast into Central America and Mexico, then overland to the United States. This thesis begins with an examination of the evolution of the illegal narcotics trade in Colombia since the 1990s. It examines the actions of United States government (USG) and Government of Colombia (GOC) to counter the production and transportation of illegal drugs through fumigation, manual eradication, air-bridge denial and maritime interdiction strategies. The success of these strategies has caused Drug Trafficking Organizations (DTOs) to develop and launch SPSSs, and now self-propelled fully submersibles (SPFSs). The increasing sophistication and range of the SPSS/SPFS have given rise to at least two fears: first, that cocaine may be transported straight onto U.S. shores by boats that are practically impossible to detect. Second, that a terrorist group will use SPSS/SPFS to transport Weapons of Mass Destruction (WMDs) into the United States and other nations.

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LIST OF ACRONYMS AND ABBREVIATIONS

ABD	Air Bridge Denial
BACRIM	Bandas Criminales Emergents
CBP	Customs and Border Protection
DEA	Drug Enforcement Agency
DHS	Department of Homeland Security
DTO	Drug Trafficking Organization
FARC	Revolutionary Armed Forces of Colombia (Spanish)
FLIR	Forward Looking Infrared Radar
GOC	Government of Colombia
HITRON	Helicopter Interdiction Tactical Squadron
IAG	Illegal Armed Group
LEDET	Law Enforcement Detachment
SPFS	Self-Propelled Fully-Submersible
SPSS	Self-Propelled Semi-Submersible
UNODC	U.N. Office on Drugs and Crime
USG	United States Government
WMD	Weapons of Mass Destruction

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I. INTRODUCTION: THE STEALTH SMUGGLER

A. EVOLUTION OF DRUG TRADE FROM PERU TO COLOMBIA

For decades, Drug Trafficking Organizations (DTOs) have posed a threat to the governments of Colombia and the United States, as well as the general region of Latin America. Proceeds from drug trafficking continue to finance insurgent groups and criminal cartels, whose violence and corruption undermine government legitimacy and threaten social stability. Counterstrategies attack the DTOs directly through law enforcement and military operations that seek to dismantle criminal structures, kill, incarcerate or demobilize their membership, dry up their finances, eradicate coca production and processing, and sever the supply routes. This thesis focuses on the final dimension—in particular on the use since the 1990s—of Self-Propelled Semi-Submersibles (SPSSs) to transport cocaine from Colombia north toward the lucrative U.S. market.

As a technological concept, SPSSs date at least from the sixteenth century when English mathematician William Bourne patented his concept of a submersible as “a rowboat that would consist of a wooden skeleton covered by an oiled leather skin.” While the Dutchman Cornelis Drebbel is considered the builder of the first “submersible craft” in 1620, it was the American David Bushnell who produced a one-man submersible in 1775. Bushnell’s *Turtle* could “propel itself on the surface of the water. It could sink at will, operate and flourish underwater, and return to the surface when the operator wishes.”¹ Bushnell’s invention inspired Robert Fulton, better known as the inventor of the steamboat, to design the *Nautilus*, a *submarine* that could “ballast with underwater hand cranks.”² All of these early crafts were fundamentally surface vessels with limited submerged operational capability, but which were necessary first steps to the evolution of today’s submarines and SPSSs.

¹ Thomas Parrish, “The Submarine: A History” (New York, NY: Penguin Books, 2004), 11.

² Ibid., 9–13.

While their early inventors conceived of the SPSSs as a military craft, in the twenty-first century, they have been employed in a non-military, but none-the-less lethal, task. Better known by its more popular name of “narco-sub,” or “drug smuggling submarine,” the SPSS has become a challenge to law enforcement and military officials tasked with interdicting drug shipments out of Colombia. Since the 1990s, DTOs have diversified from the traditional “go-fasts,” cargo ships, planes and fishing vessels, to include the utilization of SPSSs, which today have the capability of carrying up to 10–12 tons of cocaine on a successful commute from Colombia to the shores of Mexico and Central America.

In recent years, Colombia has been the center of cocaine production. However, during the 1980s, Peru’s Upper Huallaga Valley was home to “indisputably Latin America’s strongest narco-terrorist alliance,” that united coca growers, drug cartels and terrorist groups. The insurgent group Sendero Luminoso “had penetrated the Upper Huallaga region of Peru, forging a monopoly of alliances with cocoa growers, cocaine-paste manufacturing centers,” wrote investigator Gabriela Tarazona-Sevillano in 1990. “More cocoa is grown in the Upper Huallaga region than anywhere else in the world. The two groups working together—Sendero Luminoso and the cocaine syndicate—have given rise to a powerful new phenomenon in Peru: narco-terrorism.” The Sendero had developed an effective relationship with drug traffickers, “working in collusion with Colombian cocaine mafias,”³ which in turn fed the expansion of the Medellin cartel which began to process coca grown in Bolivia and Peru in the 1970s and 1980s into cocaine.

³ Gabriela Tarazona-Sevillano, *The Washington Papers: Sendero Luminoso and the Threat of Narcoterrorism*. (Washington, DC: Praeger Publishers, 1990), 122.

Colombian drug lords begin with poor Andean farmers to cultivate cocoa, which is then redefined and purified in jungle laboratories.⁴ At one time, “Peru was home to over 120,000 hectares (300, 000 acres) of coca, producing 100,000-120,000 tons of leaf. However, in the late 1990s, according to DEA estimates, coca cultivation in Peru dropped from 214,800 hectares (530,000 acres) in 1995 to just 37,700 (93,000 acres) in 1999. The decline in Peru’s production sparked a rise in Colombia’s coca cultivation to an estimated 122,500 hectares of coca, which resulted in an output of 520 tons of cocaine.” Over the years cocaine production in Colombia increased substantially, because supply had to connect with demand and the drug cartels had to develop logistics and transit operations for cocaine leaving Colombia for the U.S. market via Mexico and the Caribbean.

Having drug vessels and planes that can move cocaine undetected is the ultimate goal for Colombian DTOs. Drug cartels have resorted to extreme measures, such as working with the Russians to build SPSSs. For example, in September 2000, the Colombian National Police (CNP) found a partially built SPSS in a warehouse in Facatativa, just outside of Bogotá.

CNP showed up, took a look, did a double-take, and then pronounced that this big metal ‘thing’ was in fact a submarine. Not only was this a submarine but the plans were in Russian, a concrete indication of collaboration between Colombian DTOs and Russian mafias. But also, it offered an indication of the increasing reach and capacity of the Colombian cartels.⁵

The DEA concluded: All available information suggests the submarine—if completed—could have been used to transport up to 10 metric tons of illicit drugs from Colombia to remote off-load sites in Latin America and the Caribbean.⁶

4 Grace Livingstone, *Inside Colombia: Drugs, Democracy and War*; Foreword by Jenny Pearce, Rutgers University Press, New Brunswick: NJ, 2003, 104.

5 Dominic Streatfield, *Cocaine: An unauthorized biography* (New York, NY: Thomas Dunne Books, St.Martin’s Press) 2001, 415,419, 461, 473.

6 DEA Intelligence Division, “The Drug Trade in Colombia: A Threat Assessment South America/Caribbean” Strategic Intelligence Unit (NIBC) of the Office of International Intelligence (2002), 1.

This shows that Colombian DTOs are currently dominating the production and distribution of cocaine and taking advantage of new technologies to strengthen and adapt their delivery systems.

SPSSs are stealthy and able to carry drug shipments unnoticed throughout the region. According to U.S. Southern Commander General Douglas Fraser:

Just how stealthy they are was demonstrated when the U.S. military towed a captured semi-submersible behind a ship to test whether it could be seen during an exercise that depicted a fictional threat to the Panama Canal. And we had a pinpoint position of where it was, had a helicopter who knew exactly where it was, fly over the top of it and they couldn't see it.⁷

Additionally the DEA concludes that,

This incident again demonstrates traffickers' resources and ingenuity. Colombian cocaine trafficking groups generate billions of dollars in revenues each year, resources that increasingly have been used to purchase the best talent and technology available on the world market.⁸

Colombian drug cartel operations for transiting cocaine are similar to military tactics, conducting covert strategies and actions to complete the mission. It demonstrates the perseverance and commitment of DTOs to invest millions of dollars of engineering, construction and planning into an SPSS. But even if one fails, other SPSSs are in line to try. Furthermore, the SPSS is simply one of several distribution and transportation systems available to the DTOs, some of which are quite ingenious. For example, drug smugglers have used "thinly sliced sheets of cocaine made to look just like Pringles potato chips."⁹ But none are more original or innovative than cocaine being delivered by a vessel that floats just below the surface of the water.

⁷ Inside Defense, "Canal Zone", August 18, 2010, <http://insidedefense.com.libproxy.nps.edu/201008182049001/Inside-Defense-Blog/Defense-Next/canal-zone/menu-id-73.html>, August 18, 2010 (accessed October 5, 2010), 1.

⁸ Ibid.

⁹ Jeni Mitchell, "Cocaine Submarines: The Next "Miracle on the Hudson?" June 11, 2009, <http://crimeconflict nexus.wordpress.com/2009/06/11/cocaine-submarines> (accessed October 5, 2009), 1.

“U.S. officials estimate that more than a third of the cocaine smuggled into the United States from Colombia travels in semi-submersibles.”¹⁰ It is becoming more difficult to identify and track these SPSSs because of technological advances and DTOs determination to get through. Recently, DTOs have developed remote-controlled model semi-submersibles: “That means no crew. That means just cocaine, or whatever, inside the boat, said Michael Braun, a former chief of operations at the U.S. Drug Enforcement Administration.”¹¹

During my tour at Joint Interagency Task Force South as Tactical Action Officer (TAO) in Key West, FL, the process of detection and monitoring SPSSs was assisted by other federal agencies in the apprehension and capturing process as well. Former director of JIATF South U.S. Coast Guard Rear Adm. Joseph Nimmich stood on a dock at the task force’s headquarters in Key West, Fla., beside a vessel dubbed Big Foot II and said:

These vessels are intelligently designed. They are not very comfortable, but they are now very seaworthy. They are capable of carrying multi-ton cargos. They can travel thousands of miles without refuel or resupply. And they are very hard to detect. Captured last year 350 miles off the Guatemalan-Mexican coast, the sub had a four-man Colombian crew and 6.4 tons of cocaine aboard, worth more than \$100 million.¹²

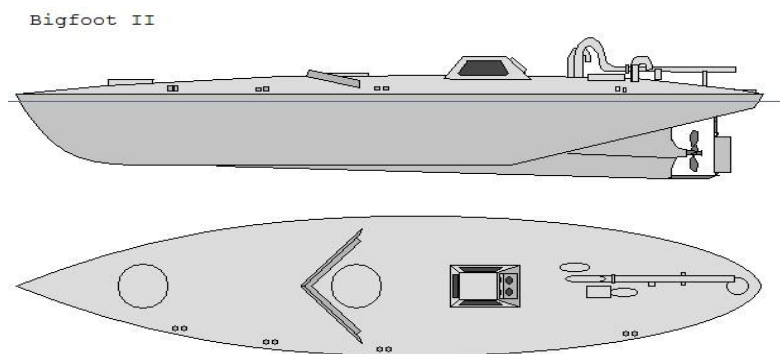


Figure 1. SPSS diagram “Bigfoot” II (Image available from Covert Shores Naval Warfare Blog: Open Source Intelligence)

¹⁰ Mitchell, “Cocaine Submarines,” 1.

¹¹Jeni Mitchell, “Cocaine Submarines: The Next “Miracle on the Hudson?” June 11, 2009, 1.

¹² Ibid.

The worst-case scenario U.S. officials' fear is terrorists using these vessels to conduct an attack in U.S. territorial waters. The U.S. Coast Guard has contributed a great deal to the interdiction and suppression of SPSSs transiting through the Pacific Ocean and the Caribbean. The Coast Guard is the lead federal agency for maritime drug interdiction in the transit zone, responsible for the apprehension of cocaine transporting vessels and smugglers in the transit area—while still maintaining law enforcement detection and monitoring functions as well.¹³

The U.S. Coast Guard continues to provide legal and logistical assets for reducing the threat of SPSSs shipping cocaine. It allows U.S. Coast Guards members to board U.S. Naval vessels and act as legal liaisons known as “law enforcement detaching teams (LEDETS) onboard U.S. and allied naval ships acting as a force multiplier in the transit zone.”¹⁴ The U.S. Coast Guard is able to operate and carry out duties and procedures as law enforcement officers to intercept SPSSs. In addition, the U.S. Coast Guard conducts searches on board fishing vessels as well as looking for contraband and evidence of SPSS association. It is routine for fishing vessels to operate in vicinity of SPSSs, acting as a replenishment station for fuel and supplies. In the past, the main targets for shipping cocaine were go-fasts boats and airplanes, which were being interdicted and suppress at a steady rate that forced DTOs to develop a more effective mode of transport.

This thesis will offer an account of the evolution of the SPSS as a means to transport cargos of cocaine from Colombia to, Central America, Mexico and the United States, the efforts of the Colombia and U.S. governments and the international community to interdict them, as well as future challenges posed by new SPSS technologies.

13 Department Homeland Security, “Testimony of Rear Admiral Vincent Atkins, U.S. Coast Guard, before the House Subcommittee on Homeland Security, on Department of Homeland Security Air and Marine Operations and Investments.” April 19, 2010, Washington, D.C.
http://www.dhs.gov/ynews/testimony/testimony_1271690315007.shtm (accessed March 21, 2010).

14 Ibid.

B. THE DEVELOPMENT OF DRUG CARTELS

In the late 1970s, Colombian drug cartels operated in small groups controlling the production and distribution of cocaine. Soon these groups formalized and became known by the late 1970s as the Medellin cartel headed by Pablo Escobar and the Cali cartel led by the Ochoa brothers.¹⁵ The Medellin cartel developed the cocaine market in the United States and Colombia in the 1980s. Escobar's December 1993 death left the Cali cartel, which had cooperated with authorities to eliminate their Medellin rival, in control of Colombia's lucrative cocaine market. Organized according to U.S. researchers Decker and Chapman as "a loose association of five major drug syndicates, each representing aspects of the business," the Cali cartel's demise came in the summer of 1995 when six of its bosses were arrested, two of whom were extradited to Miami and convicted, which caused the cartel to split into smaller entities.¹⁶ The Norte del Valle cartel is a splinter group of the Cali cartel. It rose to prominence by seizing the routes and networks following the arrest of Cali drug cartel leaders Miguel and Gilberto Rodriguez Orejuela in 1995."¹⁷ By taking trafficking practices from the Cali cartel "playbook," the Norte del Valle shortly became one of the biggest trafficking cartels in the region,

responsible for between 30 to 60 percent of the cocaine that enters the United States. Since 1998, the Norte Valle cartel has smuggled in excess of 500,000 kilograms of cocaine into the United States, with a wholesale value exceeding \$5–10 billion.¹⁸

However, these system of divided cartels remained, and these groups maintained a high concentration of drug trafficking, which allowed the North Coast cartel to emerge

¹⁵ Scott H. Decker and Margaret Townsend Chapman, "Drug Smugglers on Drug Smuggling: Lesson from the Inside (Philadelphia: PA Temple University Press, 2008), 34.

¹⁶ Ibid., 34–35.

¹⁷ Office of Foreign Assets Control US Dept of Treasury, "Impact Report: Economic Sanctions against Colombian Drug Cartels, Department of Treasury March 1, 2007, 12, www.treasury.gov/resource.../sanctions/.../narco_impact_report_05042007.pdf (accessed January 12, 2010).

¹⁸ Lauren A. Dellinger, "From dollars to pesos: A comparison of the US and Colombian Anti-Monet Laundering Initiatives from an International Perspective," May 21, 2008, 419, <http://www.cwsl.edu/content/journals/Dellinger.pdf> (accessed January 12, 2010).

on the scene. Operating along the Northern border of Colombia the North Coast cartel controlled the maritime shipping routes of former Medellin and Cali cartels.¹⁹

The North Coast cartels organized the maritime routes as exclusive transit zones for cocaine, allowing no one to penetrate and enter their territory without paying a fee.

Although smaller and more de-centralized than both the Cali and North del Valle drug cartels, the North Coast cartel have more autonomous networks of independent maritime drug traffickers, such as Julio Cesar Nasser David, which are both highly profitable and powerful.²⁰



Figure 2. DTO Colombian construction sites for SPSSs (Images available from Joint Interagency Task Force South, *Self Propelled Semi-Submersible: SPSS fact sheet*)

19 Office of Foreign Assets Control US Dept of Treasury, "Impact Report: Economic Sanctions against Colombian Drug Cartels," Department of Treasury, March 1, 2007, 95.

20 Office of Foreign Assets Control US Dept of Treasury, "Impact Report: Economic Sanctions against Colombian Drug Cartels," Department of Treasury, March 1, 2007, 95.

DTOs occupy remote areas, mainly on Colombia's remote Pacific coast, to manufacture SPSSs. With some construction yards located in the Buenaventura jungles of Colombia, which have high-tech logistics to move equipments and materials from other cities via river boats. An SPSS usually requires between 30–45 days of frame construction. These sites must constantly change to avoid detection and “some larger yards are capable of constructing up to three to four simultaneously,”²¹ which allows Colombian DTOs to place 65 SPSSs at sea every year.²²

C. THE DECISION OF FARC TO JOIN THE DRUG TRADE

The FARC began to profit from the trade in illegal drugs in the 1980s, which allowed them to grow their organization from a few thousand to an estimated 18-20,000 fighter by 1998 and buy more sophisticated arms.

They did so mainly by taxing peasant growers in their zones of influence and by contracting out their services to the trafficker organizations to protect crops, processing laboratories and landing strips.²³

The tradeoff for the FARC of becoming drug traffickers was that they sacrificed their ideological cohesion. Initially, they taxed the peasant producers in areas that they controlled, and left the processing of coca into cocaine and transport to the cartels. Now however, according to Evan Covington, an author and member of the Harvard Model Congress Europe, the FARC is known to be involved with all areas of the drug trade including cultivation, production, and distribution.²⁴

Despite the fact FARC has substantially declined to about 9000 fighters, with at least some of its key leadership killed or captured, the guerrilla movement remains active,

21 Strategy Page, “Colombia: Blood and Gold,” February 20, 2011, <http://www.strategypage.com/qnd/colombi/articles/20110220.aspx> (accessed February 24, 2011).

22 Marc Van Riper, “Background on narco subs.” October 5, 2008, <http://narcosphere.narconews.com/notebook/marc-van-riper/2008/10/background-narco-subs> (accessed September 14, 2010).

23 Bruce Michael Bagley, Drug Trafficking Political Violence and US Policy in Colombia in the 1990s. School of International Studies University of Miami, 2001, 10.

24 Evan Covington, “Group of Fifteen: Drug Trade and Use in the Developing World.” Harvard Model Congress Europe 2010, 5. http://www.hmceurope.org/2010/docs/updates/G15_drugs_update.pdf (accessed December 12, 2010)

both as an insurgency and as a drug syndicate.²⁵ For example, in 2007, the U.S. Navy said that two SPSSs found in a clandestine shipyard in the swamps around Colombia's largest port Buenaventura were connected to the FARC.²⁶ Since the FARC had control of the land, it allowed DTOs to do what they wanted and provided resources to coordinate the development and production of SPSSs.

According to the DEA director, Jay Bergman, FARC has already begun using Al-Qaeda members in West Africa in order to deliver drugs to Europe. Three members of Al-Qaeda have been arrested in West Africa and were extradited to the U.S. in December.²⁷ The FARC is also coordinating with Chinese gangs in the tri-border area of Argentina, Paraguay and Brazil.²⁸ These gangs could potentially provide services for Colombian DTOs as well. These facts not only show that the FARC are involved with DTOs in transporting cocaine with SPSSs, but also that they have established relationships with terrorists organizations across the Atlantic Ocean.

D. THE EMERGENCE OF PARAMILITARIES

Paramilitary groups that emerged in the early 1990s financed themselves through illegal drugs. Although officially dissolved between 2003 and 2006, many simply reformed into what are called *Bandas Criminales Emergentes* (BACRIMs).²⁹ Others, however, are still active and using the same terror tactics by taxing the drug trade in the areas they control. These paramilitary groups have a role in the development and protection of SPSSs, including monitoring and detecting law enforcement, which – it is widely assumed – is bought off to look the other way.

25 Vanda Felbab-Brown “Coca and Insecurity in Nariño, Colombia,” *Colombia, Crime, Latin America*. Fellow, Foreign Policy, 21st Century Defense Initiative. The Brookings Institution).

26 Associated Press. “Colombia detains two homemade submarines ready to ship drugs,” October 31, 2007, http://english.pravda.ru/news/world/31-10-2007/99954-submarines_drugs-0 (accessed February 20, 2010).

27 Adrian Al Sema, “FARC and Al Qaeda in “unholy” drug alliance,” January 4, 2010, <http://colombiareports.com/colombia-news/news/7529-farc-and-al-qaeda-in-unholy-drug-alliance.html> (accessed December 14, 2010).

28 Ryan Mauro, “FARC Cashes in on Mexican Drug War,” June 8, 2010, <http://frontpagemag.com/2010/06/08/farc-cashes-in-on-mexican-drug-war/> (accessed December 14, 2010).

29 Dilshika Jayamaha, Scott Brady, Ben Fitzgerald and Jason Fritz, “Lesson Learned from US Government Law Enforcement in International Operations.”, PKSOI Paper, December 1, 2010, 46, <http://www.StrategicStudiesInstitute.army.mil> (accessed January 12, 2011).

The demobilization of paramilitary groups between 2003 and 2006 meant that the FARC and paramilitaries stopped fighting and began to cooperate. The BACRIM is the new organized threat in Colombia made up of diffuse networks of “well-armed gangs (that) have experience and links with drug cartels and the Revolutionary Armed Forces of Colombia (FARC).”³⁰ The BACRIM in reality represents a new phase in the evolution of para-militarism in Colombia—just as the Bloque Metropolitano of the Águilas Negras in Bogotá expressed in flyers circulated in May 2010: “We are not emerging bands. We are the Black Eagles and we are present as an army for the restoration of society.”³¹

The BACRIM continue to create a demand for light armaments, at the same time utilizing the AUC’s old weapons collection to fund their criminal organization.³² These cartels and organized criminals are part of the problem that drives the drug smuggling world of SPSSs, whether it is internal or external, mobilized or demobilized.

E. THESIS ORGANIZATION

SPSSs are a security threat to Colombia and the region. This thesis explains how SPSSs have plagued the United States with the drug trade from Colombia, and illustrates how the use of SPSSs has grown over time, introducing historical data that explains the origin, mission and sustainability of SPSSs. Chapter II demonstrates the effects of the U.S.–Colombia reaction to fight the war on drugs with Plan Colombia and through fumigation, the Air Bridge Denial Program, and efforts to track and apprehend so called “go-fasts”—drug carrying speed boats. The success of these programs sparked the evolution of SPSSs. Chapter III examines the maritime interdiction countermeasures to suppress SPSSs. Chapter IV discusses the future developments of SPSSs into fully submersibles (SPFS) and the development of remote-controlled narco torpedo shells.

30 Dilshika Jayamaha, Scott Brady, Ben Fitzgerald and Jason Fritz, “Lesson Learned from US Government Law Enforcement in International Operations, 47.

31 Jasmin Hristov, *Legalizing the Illegal: “Paramilitarism in Colombia’s ‘Post-Paramilitary’ Era.”* NACLA Report on the Americas 2009, 19.

32 Nicolas Urrutia, Miguel Ortega, Gustavo Andrade and Ann Vranckx. “Perspectives on Control, Traffic and the use of Illegal Weapons in Colombia,” *Fundacion Ideas Para La Paz*, Bogotá:Colombia, November 2009, 5.

Finally, the thesis concludes with the argument that WMDs are the cargo of the future for SPSSs and SPFSs establishing a serious threat to national security.

II. COLOMBIA–U.S. REACTION TO DRUG TRADE

A. FUMIGATION AND CUTTING LOGISTICS

The GOC and USG continue to fight the war on drugs through fumigation. Eradicating, or at least significantly diminishing coca production in South America was the U.S. State Department’s primary objective.

However, from mid-FY1996 through sometime in FY1997, the United States cut off certain categories of assistance, including foreign military financing, which had been a large part of U.S. assistance to Colombia. The cutoff was mandated by President Clinton’s decision to “decertify” Colombian March 1996 and March 1997, in the annual evaluation as to whether drug-producing and transit countries are fully cooperating with the United States on counternarcotics efforts.³³

The USG implemented and provided services and programs that were instituted to eradicate the “illicit crops called “Plan Colombia,” an intervention system used inside the boundaries of the two major global wars of our time: the war on drugs and the war on terror.”³⁴

The GOC organized eradicators to eliminate the coca cultivation,

deciding on a program of forced manual eradication. They formed various groups of uniformed eradicators who came with the army and police force to destroy the coca.³⁵

With the assistance of the Colombian government, coca production was halted in the valleys of Colombia’s major coca-growing regions. Colombian troops began to fumigate illicit narcotics crops in the region of Putumayo.³⁶

33 Nina M. Serafino, Colombia: Summary and Tables on U.S. Assistance, FY1989-FY2003, CRS Report for Congress, May 3, 2002, <http://www.policyarchive.org/handle/10207/bitstreams/3603.pdf> (accessed December 12, 2010), 2.

34 Margarita Rosa Serje De Le Ossa, Ashley Caja, Rebecca Natolini, Laura Moll Rexach, “Iron Maiden Landscapes: The Geopolitics of Colombia’s Territorial Conquest.” The Johns Hopkins University Press, Project Muse, South Central Review 24 (2007), 42.

35 Ibid.

36 Garry M. Leech, Death Falls from the Sky, April 23, 2001. <http://www.colombiareport.org/colombia60htm>. April 23, 2001 (accessed June 23, 2010).

In November 2005, fumigation efforts ceased for fifteen days, until the Government of Colombia, merely decided to use aerial fumigation.³⁷ This decision was not intended as an attack on tenant farmers,³⁸ “but rather in response to the death of six eradicators due to a landmine that had been placed underneath a coca plant by guerrillas.”³⁹ The decision to pursue fumigation sought to diminish coca production by fifty percent over a six year period.⁴⁰

The GOC understood the impact it could face if counternarcotics expectations were not met in a timely fashion.

Between 2000 and 2005, Washington paid out nearly \$4 billion to Colombia, with approximately 75 percent of the total going to the military and the police, and increased its presence in the country with 800 soldiers and 600 security contractors. Indeed, Colombia is now the fifth largest recipient of U.S. military aid.⁴¹

The GOC had no other choice but to cooperate with the USG in the eradication and fumigation efforts. If not, funding and other state and local programs may have been in jeopardy.

Nearly half of the Colombia funding was dedicated to the “Push into Southern Colombia” program to set up and train two new Colombian Army Counternarcotics Battalions (CACBs).⁴²

Billions were spent to eradicate coca cultivation in Colombia and reduce the threat of terrorism. “Plan Colombia” eventually improved stability in the region and produce positive results.

37 Margarita Rosa Serje De Le Ossa, Ashley Caja, Rebecca Natolini, Laura Moll Rexach, “Iron Maiden Landscapes: The Geopolitics of Colombia’s Territorial Conquest”, 42.

38 Ibid., 42.

39 Ibid.

40 Ibid.

41 Ibid., 43.

42 Nina M. Serafino, Colombia: Summary and Tables on U.S. Assistance, FY1989-FY2003, CRS Report for Congress, 2.

B. COLOMBIAN AIR BRIDGE DENIAL PROGRAM



Figure 3. Air Bridge Denial image: Suspicious tracks detected over Colombia became concentrated along its borders (From: United States Government Accountability Office [GAO])

The drug war for the USG and GOC does not take a break—not even on Christmas day—specifically for JIATF South personnel who maintain a 24-7, 365-day operation, fighting drug traffickers with intelligence flow, communications, logistics and the Air Bridge Denial Program (ABD program), along with Air Bridge Denial Officers (ABDOs) from the U.S. and Colombian military.

The ABD program's stated goal is to assist Colombia in suppressing the air traffic of illegal drugs—primarily cocaine—in its airspace by forcing

suspicious aircraft to land safely, so that law enforcement authorities can take control of the aircraft, arrest suspects, and seize drugs.⁴³

The ABD program has proven its effectiveness against drug traffickers who seek to transport illegal drugs via air routes in Colombia. This program allows ABDOs to monitor thousands of flights to determine whether they are illicit or legitimate. In addition,

the program was expanded in 2007 to include surveillance of Colombia's coastal waters to strengthen the Colombian government's capacity to address the emerging threat posed by semi-submersible vessels.⁴⁴

Providing the Colombian military information regarding suspected air tracks allows other Colombian assets to search the same area, from a surface standpoint. In the same year,

the ABD program was expanded to include a maritime patrol mission. While conducting a maritime patrol, ABD aircraft assisted in the sinking of two self-propelled semi-submersibles, which resulted in the arrest of seven individuals and the seizure or destruction of approximately 11 metric tons of cocaine.⁴⁵

Any aircraft not identified with a legitimate flight plan is labeled an air track of interest, "Aircrafts suspected of involvement in drug trafficking are usually first identified by re-locatable over-the-horizon radar."⁴⁶ If aircraft are deviating from their original flight plan they are monitored and targeted as a suspect track.

Ultimately, flights that continue to transit illegally will be shot down and destroyed, which serves as a warning for others to avoid entering the Colombian

43 United States Government Accountability Office (GAO), Drug Control: "Air Bridge Denial Program in Colombia has implemented new safeguards, but its effect on drug trafficking is not clear." September 2005: 1, <http://www.gao.gov/new.items/d05970.pdf> (accessed February 8, 2010)

44 United States Government Accountability Office (GAO), Drug Reduction Goals Were Not Fully Met, but Security Has Improved; U.S. Agencies Need More Highlights of GAO-09-71, a report to the Detailed Plans for Reducing Assistance, October 2008: 36, <http://www.gao.gov/new.items/d0971.pdf> (accessed February 8, 2010).

45 Ibid., 37.

46 United States Government Accountability Office (GAO), Drug Control: "Air Bridge Denial Program in Colombia has implemented new safeguards, but its effect on drug trafficking is not clear." September 2005, 2.

airspace.⁴⁷ This is why drug traffickers think twice even before going into the airspace of Colombia. The likelihood of losing your life and not making good on your drug shipment is not the best scenario.

In Figure 3, the Air Bridge Denial program air picture depicts the air traffic that is sorted hourly to ensure proper transition of all flights originating and departing in Colombian Airspace. The program also confronted a number of DTO initiatives to protect illegal operations. These issues include:

- Many of the drug carrying aircraft had falsified registration/tail numbers that could be changed in minutes.
- DTO aircraft carried extra fuel containers and improvised in-flight refueling systems including pumps that increased the aircrafts' range.
- DTOs took action to ensure they were informed when ABD program aircraft took off. It was not unusual to see illegal aircraft change course shortly after takeoff of an ABD tracker aircraft. Operations security became a key aspect of daily operations.
- During night operations from illegal runways, DTO personnel would sometimes light large bonfires in a vain attempt to degrade night vision device effectiveness.⁴⁸

It is important that all data and intelligence is closely monitored and sorted, in order to identify a suspect track or air track of interest. Effectively monitoring and detecting these illicit air tracks places the USG/GOC in a strong position to capture an SPSS. When these air tracks are targeted, they may be associated with cocaine-carrying fishing vessels, go-fasts boats or SPSSs in the area. According to U.S. and Colombian

47 United States Government Accountability Office (GAO), Step 14 on the ABD checklist gives permission to fire and destroy suspect aircraft when not responding.

48 Ezequiel Parrilla, Air Bridge Denial: An International and Interagency Success Story. www.airpower.au.af.mil/apjinternational/.../2010_03_07_parrilla_eng.pdf, 4 (accessed July 16, 2010).

officials on average, since the implementation and development of the ABD Program, reduction in suspicious air tracks indicates that Colombia is deterring traffickers and regaining control of its airspace.⁴⁹

C. TACTICS TO COUNTER GO-FAST BOATS

Before SPSSs, the primary vessels for trafficking cocaine were the dependable and speedy go-fast boats that dominated the waters of the Caribbean and Eastern Pacific Ocean. DTOs launching go-fast boats were the norm; even transiting to the Bahamas and Miami were routine trips for Colombian drug traffickers. While living in Puerto Rico and stationed at the Tactical Support Center (TSC), I had firsthand experience and knowledge of counter-drug operations and tactics. TSC structured their goals and mission on detection and monitoring, gathering intelligence, which provided U.S. Navy and Coast Guard assets to interdict go-fast boats, airplanes and other vessels transiting drugs and weapons. At the time,

the flow of narcotics was accomplished through collaborative efforts between the squadrons, the Joint Interagency Task Force East (JIATF East) and the Tactical Support Center (TSC) located within the Atlantic Fleet Weapons Training Facility (AFWTF).⁵⁰

Chasing go-fast boats was the main objective of law enforcement officers and the U.S. military before DTOs developed and improved their technology and converted to SPSSs. A go-fast boat operates at high speed—typically between 40–60kts—and has three or four outboard engines with enough fuel to traffic drugs from South America to Mexico and the Caribbean. “Onboard these crafts are two or three drug smugglers, illegal drugs worth millions of dollars and gasoline”⁵¹ Go-fast boats began to dominate the scene in the 1980s, continuing strong up until the late 1990s,⁵² “Transporting drugs from

⁴⁹ United States Government Accountability Office (GAO), Drug Control: “Air Bridge Denial Program in Colombia,” September 2005, 4.

⁵⁰ Global Security Org. Tactical Support Center, Roosevelt Roads.
<http://www.globalsecurity.org/military/agency/navy/tsc-rr.htm>, 1, (accessed 12 June 2010).

⁵¹ Kit and Carolyn Bonner, “Always ready: Today’s US Coast Guard.” (St. Paul, MN: MBI Publishing Co.), 2004, 109-110.

⁵² Scott H. Decker and Margaret Townsend Chapman, “Drug Smugglers on Drug Smuggling: Lesson from the Inside (Philadelphia: PA Temple University Press, 2008), 69.

the Bahamas or Cuba in high powered go-fast boats—usually modified cigarette boats with two or three engines that held approximately four hundred kilos.”⁵³ These Colombian go-fast boats began to flourish as well, transiting cocaine to Puerto Rico and Florida:

When traveling by speedboats, the loads were brought in at night to the Florida Keys or to a house in South Florida. The night drop was better because law enforcement was suspicious of speedboats, and there was less intense law enforcement on the water at night. One smuggler used three boats to bring in the load: one with the load, one to provide support if the loaded boat broke down, and a third with no drugs on board that acted as a decoy.⁵⁴

Law enforcement and the U.S. military became concerned over the emerging threat of go-fast boats transiting drugs, subsequently having to increase U.S. Coast Guard assets and Navy airplanes in the vicinity of those historical go-fast areas and routes. In 1997,

according to Joint Interagency Task Force East, the most maritime drug-smuggling modes of transportation involved go-fast boats and fishing vessels in the Caribbean and Eastern Pacific.⁵⁵

At the time, USG and GOC efforts in the Eastern Pacific and Caribbean were only foiling a small portion of go-fast missions. According to the DEA, the most popular routes originated in Colombia and Venezuela, which eventually transferred to the Eastern Caribbean throughout Central America, with direct shipments to the U.S. or Puerto Rico.⁵⁶ The Caribbean experienced the most heavy go-fast traffic, because of the short time and distant it took to reach Haiti, Dominican Republic and Puerto Rico. In addition,

⁵³ Scott H. Decker and Margaret Townsend Chapman, “Drug Smugglers on Drug Smuggling: Lesson from the Inside, 69.

⁵⁴ Ibid., 70-71.

⁵⁵ GAO, Drug Control: Update on US interdiction efforts in the Caribbean and Eastern Pacific. United States General Accounting Office, Washington D.C., October, 1997, 8, <http://www.gao.gov/archive/1998/ns98030.pdf> (accessed March 14, 2010).

⁵⁶ GAO, Drug Control: Update on US interdiction efforts in the Caribbean and Eastern Pacific. United States General Accounting Office, Washington D.C., October, 1997, 6.

smaller loads made it feasible for smugglers to distribute a shipment once it hit shore, while the “larger quantities of cocaine pass through Mexico via the Eastern Pacific and Western Caribbean corridors.”⁵⁷

In 1998, less than 10 percent of go-fast boats were being interdicted and captured. This led Admiral James Loy, Former Commandant, to develop a plan to counter the go-fast threat. However, in 1999, the U.S. Coast Guard developed more problems with highly complex DPBs (high speed RIBs) that had substandard performance with interdiction and apprehension efforts of go-fast boats shipping cocaine.⁵⁸



Figure 4. Go-fast boat transiting cocaine; subsequently boarded by U.S. Coast Guard and CBP (Image available from Smuggler and Pirate Go-fast Boat, <http://www.london-research-and-development.com/GOFAST.pdf>)

The Helicopter Interdiction Tactical Squadron (HITRON) eventually initiated and led a crusade of operating tactics and strategies, and implemented the Commandant’s

⁵⁷ GAO, Drug Control: Update on US interdiction efforts in the Caribbean and Eastern Pacific. United States General Accounting Office, 6.

⁵⁸ Gary Russell, “Is It Time to Designate Coast Guard Special Operations Forces?” U.S. Army Command and General Staff College, Fort Leavenworth, Kansas, 2005, 12, <http://www.dtic.mil/cgi-bin/GetTRDoc?Location=U2&doc=GetTRDoc.pdf&AD=ADA443195> (accessed March 14, 2010).

decision to stop the drug-laden go-fasts.⁵⁹ The U.S. military and law enforcement began working constantly with partnering nations, developing staging areas for military and law assets to counter the threat of go-fast boats. The USG and GOC utilized more aircrafts, specifically the P-3 Orion, which carried the necessary radar and equipment to track go-fast boats on the water. With the increase of U.S. Coast Guard and Navy surface units to counter cocaine shipments of go-fast boats from the Eastern Pacific and Caribbean, the most successful implementation of HITRON was the authorization to employ Airborne Use of Force or (AUF).

These aircraft employ the latest radar and Forward Looking Infrared Radar (FLIR) sensors as well as state of the art Night Vision Goggles (NVGs) to pierce the night. HITRON arms these helicopters with M-16 5.56mm rifles and M240 7.62mm machine guns for warning shots and self-protection, and the RC50 laser-sighted .50 caliber precision rifle to disable the engines of non-compliant suspect vessels.⁶⁰

While the go-fast boat is disabled, surface units operating in the same area of responsibility (AOR), are vectored in to apprehend drug smugglers.

⁵⁹ Craig Neubecker, Coast Guard Helicopter Interdiction Tactical Squadron., U.S. Coast Guard Aviation History (HITRON-Jacksonville) February 23, 2010, http://www.uscg.mil/history/webaircraft/AC_HITRON_History.asp (accessed 23 July 2010).

⁶⁰ Neubecker, Coast Guard Helicopter Interdiction Tactical Squadron, February 23, 2010, 1.



Figure 5. Go-fast boat with U.S. Coast Guard HITRON in pursuit (Image available from Smuggler and Pirate Go-fast Boat, <http://www.london-research-and-development.com/gofast.pdf>)

HITRON was a success in countering daily operations of go-fast boats transiting the Caribbean and Eastern Pacific. The U.S. military increase its productivity of Maritime Patrol Aircraft's (MPA) and U.S. Navy surface ships, along with partnering nations, contributed greatly in reducing the threat of go-fast boats.

HITRON will take up a firing position alongside the go-fast and fire warning shots across their bow to further compel them to stop. If the warning shots do not convince the suspects to stop, the helicopter crew prepares to disable the vessel by shooting out the go-fast's engines. Using precision, laser-sighted .50 caliber rifles, the helicopter crew positions themselves alongside the fleeing go-fast for disabling shots. Once stopped, the vessel will be boarded by the Coast Guard pursuit boat crew and the smugglers taken into custody.⁶¹

61 Neubecker, Coast Guard Helicopter Interdiction Tactical Squadron, February 23, 2010, 1.

These actions eventually compel DTOs to reinforce their shipments of cocaine with submerged covertness. Because,

Up until recent times the preferred mode of transport was go fast boats capable of carrying up to two tons of cocaine and making speed in excess of fifty knots. These vessels would run from Colombia to Honduras, Guatemala, Belize or Mexico where the drugs would be handed off to continue on its way by land or air into the U.S.⁶²

DTOs developing the SPSS seem to be the only option that could overcome the GOC and U.S. Military strategy of interdiction and disruption in transiting cocaine. More production of SPSSs prove to be effective an well-organized for DTOs, only a few SPSSs have been caught in the departing harbors, because according to Air Force General Douglas Fraser “In the mangrove swamps in Western Colombia you can be ten feet away from where somebody’s building a semi-submersible and never see it.”⁶³

D. INSPECTION OF SHIPS: PORT AND HARBORS

The U.S. Coast Guard has the resources and manpower to ensure the threat of SPSSs can be deterred and eliminated from U.S. ports and Colombia. The U.S. Coast Guard has the technology and capabilities to operate around the world and provide training and assistance. The U.S. Coast Guard has established strict procedures and inspections of ships in harbors and ports that can reduce the threat of SPSSs obtaining position and launching.

Having a high velocity of harbor traffic in Colombia does not make it easy, because:

About 20 national and international shipping lines operate in the Caribbean harbors (Barranquilla, Cartagena, Santa Marta, Turbo, Puerto

⁶² John Borland, “The Implications of Globalization on Maritime Security in the Wider Caribbean and Central America.” SIRC-Nippon Fellows Maritime Conference at the Seafarers International Research Center, Cardiff University, November 2008, 4.

⁶³ Defense Tech, SOUTHCOM Battles Drug Cartel Submarine Armada. April 28, 2010.

Bolívar) and the Pacific harbors (Buenaventura, Tumaco). The harbors dispose of many piers and extensive storing capacity.⁶⁴

It is hundred of ships entering and departing these locations everyday, which makes it difficult to detect SPSSs. Since goods are shipped from as far as Europe and Miami, with Barranquilla being the most important harbor, DTOs have the opportunity to outfit not only container ships and fishing vessels with contraband, but load large amounts of cocaine bales into SPSSs and launch them straight into the Pacific and Caribbean oceans unnoticed.⁶⁵

These cocaine shipments, hidden in ships and bound for Mexico, Central America and U.S., are interdicted by Colombian and U.S. Coast Guardsmen who actively coordinate with law enforcement organizations. These organizations are the difference makers in making sure cocaine laden SPSS vessels are not leaving the port and harbor areas of Colombia. For example, according to the U.S. Embassy Bogotá, Colombia, in 2007, the efforts of interagency allowed the Coast Guard to make its largest maritime cocaine seizure in history. The Coast Guard intercepted the Panamanian flagged motor vessel Gatun just outside the coastal waterways of Panama and Colombia, carrying more than 33,500 pounds of cocaine—or approximately 20 tons.⁶⁶ The Colombian military works diligently with the U.S. Coast Guard inspecting ships and cargo, strengthening their partnership and countering drug smugglers in ports.

The tactical combined efforts of international maritime have included:

1. Conducted over 1,500 security boarding's on high interest vessels bound for the United States.
2. Interdicted nearly 5,000 undocumented migrants attempting to illegally enter the U.S.
3. Conducted over 70,000 commercial inspections of U.S flagged vessels.

⁶⁴ Pymes, Exportadoras De Colombia, Transport, 1, <http://www.usergioarboleda.edu.co/PyMES/english/transport.htm> Universidad Sergio Arboleda, 2003 (accessed June 23, 2010).

⁶⁵ Ibid.

⁶⁶ Colombia Press Release, "Successful Interagency Maritime Interdiction Forces Smugglers to Extreme Tactics." http://bogota.usembassy.gov/pr_63_17122007.html (accessed August 20, 2010).

4. Conducted over 12,000 Port State Control safety and environmental examinations on foreign vessels entering U.S. ports.⁶⁷

The Coast Guard's "ability to conduct distinct but interrelated maritime functions—law enforcement, national defense, environmental protection, transportation, safety, and humanitarian response—defines its unique multi-mission character and value."⁶⁸ Having a positive international relationship brings cohesiveness and productivity with partnering nations. This relationship with other nations has expanded and became a major deterrent for cocaine trafficking, which impacts DTOs investment and launching of go-fasts boats and SPSSs. Today, the same agenda has evolved in relation to drug interdiction, international and national port authorities that have coordinated guidelines and procedures between each other to prevent DTOs from smuggling and launching SPSSs. For example,

The U.S. Coast Guard has been a key participant and the primary U.S. representative to the International Maritime Organization (IMO) for all policy developments since the IMO Convention entered into force 50 years ago.⁶⁹

Directly overseeing operations in overseas ports and maintains harbor security and stability in foreign countries. International port authorities and the U.S. Coast Guard are involved in joint efforts that continue to contribute to thorough inspections and drug seizures of motor and fishing vessels as well as go-fast boats and SPSSs.

⁶⁷ Dept. Homeland Security, "Budget-in-Brief." www.dhs.gov (accessed February 18, 2011).

⁶⁸ USCG, US Coast Guard Fiscal Year 2009 Performance Report.
http://www.uscg.mil/history/allen/docs/USCG_FY09_Performance_Report.pdf (accessed December 12, 2010).

⁶⁹ U.S. Coast Guard Headquarters, USCG IMO. <http://www.uscg.mil/imo/> (accessed May 4, 2010).

E. DTOS TURN TO SPSS EVOLUTION IN 1990

1. Proliferation of Mission

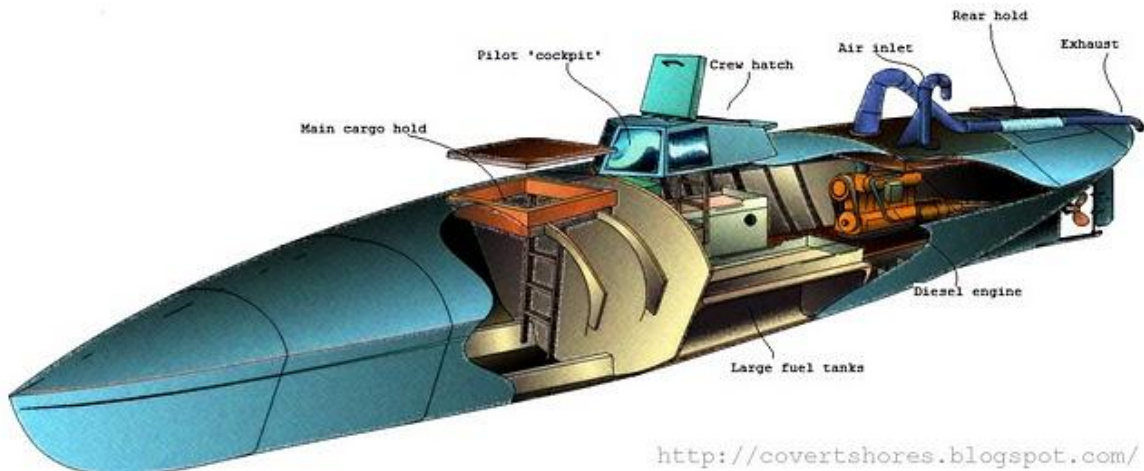


Figure 6. SPSS diagram of its internal structure and instruments (Image available from Covert Shores Naval Warfare Blog: Open Source Intelligence)

Some of the characteristics of SPSSs are as follows:

- SPSS: a surface vessel of 40 to 80 feet in length with very low freeboard (exposed height above water line) of typically 18 inches. Presently used for drug smuggling.
- Material: made out of Fiberglass/wood making it difficult to be detected at sea visually due to very low freeboard and also by Radar.
- Propulsion: self-propelled by single or twin diesel engines with fuel storing capacity of not less than 1500 gallons.
- Control and Communication: Manual or Remote controlled uses Global Positioning System (GPS), compact and powerful communication equipment.
- Capacity: can accommodate up to four persons and can carry cargo (cocaine) of 4 to 12 metric tons depending on the size.

- Future developments: as SPSS has proved to be very reliable for smuggling since 1990s, now steel is also used for construction of SPSS to make it more stronger to improve seaworthiness and bigger to increase cargo carrying capacity.⁷⁰

The task of deterring a terrorist attack via SPSSs echoes what the former Deputy Assistant Secretary of Defense under the Bush Administration, Richard Douglas called a “three zones” strategy to disrupt the cocaine trade to the United States and Europe:

first, the source zone where the narcotics are produced; second, the transit zones the areas of the world where these things transit on their way from the source to, third, the arrival zone.⁷¹

According to Captain Robert Watts, a United States Coast Guard officer who has tracked maritime drug smuggling trends, SPSSs are a fairly recent technology dating from 1989:

The Colombian drug trade has evolved into one of the most brutal and lucrative businesses in the world. Many countries are suffering the consequences of cocaine SPSSs which are clearly proliferating and are on the path to become a major conveyance for maritime drug traffickers in Colombia.⁷²

Early vessels were primitive, unstable boats with diminutive ranges, rather like David Bushnell’s 1775 *Turtle*. Longer range boats have not become practical until global position system (GPS) technology was made available for civilian use by President William Clinton in 1996, and after U.S. and Colombian authorities began to experience success in intercepting go-fast speedboats typically used by the smugglers.⁷³

In the 1990s, airplanes and go-fasts were used to transit cocaine from Colombia to Mexico, the Caribbean islands and Central America.

70 Marine Tech. “Torpedo Shells to Replace Self Propelled Semi Submersibles for Cocaine Smuggling,” May 14, 2009.

71 Inside Defense, Deputy Assistant Secretary Douglas. “DoD Official Briefing on Counternarcotics,” 2 April 2007.

72 United States Coast Guard, US Dept of Homeland Security, “Dangerous Self-Propelled Semi-Submersibles (SPSS) Proliferating Rapidly,” September 17, 2008.

73 Jane's Information Group. “Insurgent submersibles,” June 16, 2008.

The use of these drug submarines started being explored by some of Colombia's top drug runners in the mid-1990s, according to the Christian Science Monitor. The so-called go-fast boats that tried to outrun U.S. Coast Guard patrols were being caught. The go-fasts had replaced cocaine laden planes when they became too easy to detect.⁷⁴

However, as shipments of cocaine were repeatedly seized by law enforcement, Colombian DTOs began to invest in the technology of SPSSs, which opened new smuggling avenues.

Because of concentrated SPSS searches from the CNP in the late 1990s, drug cartels were compelled to change their methods and construction sites.⁷⁵ The growing threat of SPSSs not only impacts the poor and disadvantaged, but affects the working class and elites as well, because “drug cartels have many military and law enforcement entities from Mexico, Central, and South America on the payroll.”⁷⁶ To remain successful in SPSS operations, DTOs receive information from law enforcement, government and foreign officials that have faced threats of violence and intimidation, “This makes joint cooperation to catch submarine threats a difficult task due to lack of trust among U.S. and foreign entities.”⁷⁷

For example, DTOs and foreigners are engaged in international cocaine operations that have ignited and pose a serious threat to national security. Evidence of this behavior was demonstrated when an incomplete semi-submersible was found in Colombia in 2000, it showed DTOs are using Russian plans to engineer an SPSS. For example,

Stalishnar A. Osipov, an intelligence officer at the Russian Embassy in Bogotá said the submarine could not have been built without Russian

⁷⁴ Christian Science Monitor, “Crack Down on Colombia's Narco Subs,” June 24, 2009, http://agonist.org/nat_wilson_turner/20090624/crack_down_on_colombias_narco_subs (accessed June 23, 2010).

⁷⁵ Marine Tech. “Torpedo Shells to Replace Self Propelled Semi Submersibles for Cocaine Smuggling, May 14, 2009,” <http://www.marinebuzz.com/2009/05/14/torpedo-shells-to-replace-self-propelled-semi-submersibles-for-cocaine-smuggling/> (accessed March 27, 2010)

⁷⁶ U.S. Army Training and Doctrine Command, TRADOC G2 TRISA-Threats, “Submarines Emerging Threat in the War on Drugs”, 2009, 9, www.patriotfreedom.org/files/file_49d54f809ebc2544401.pdf (accessed December 12, 2010).

⁷⁷ Ibid.

technology. This Russian connection speaks volumes about the likelihood that Russian criminal organizations were somehow involved.⁷⁸

These SPSSs were certainly engineered and designed by well-educated and knowledgeable people. However, there is only one known contributor that has assisted with the craftsmanship of these SPSSs, the ingenious Enrique Portocarrero,

Law officers here have dubbed him “Captain Nemo,” after the dark genius of 20,000 Leagues Under the Sea, the 45-year-old has designed and built as many as 20 fiberglass submarines, strange vessels with the look of sea creatures, for drug traffickers to haul cocaine from this area of Southern Colombia to Central America and Mexico.⁷⁹

According to Colombian Navy Captain Luis German Borrero, Portocarrero introduced innovations such as a bow that produced very little wake, a conning tower that rises only a foot above the water and a valve system that enables the crew to scuttle the sub (intentionally sink) in 10 minutes.⁸⁰

Nevertheless, having political and criminal international ties give DTOs an advantage over local law enforcement and the military. The partial SPSS found in Colombia had North Korean characteristics resembling the Sang-O class submarines. Sparking debate as to whether the North Koreans could possibly be involved. However, according to Dr. Spalding, “the North Koreans can’t take the credit for the design of their SPSS. They borrowed it from the Russians who had been using them for years.”⁸¹

⁷⁸ Tyler K. Moore, *The Submarine in the Andes: Rise of a Non-State Navy?* Center for the study of terrorism and irregular warfare. United States Naval Postgraduate School, Monterey, CA, 2001, 5-6, www.nps.edu/Academics/Centers/IOCenter/docs/NPS-SO-01-01.pdf (accessed October 21, 2010).

⁷⁹ Chris Kraul, “Captain Nemo’ is grounded; Captured in Colombia, a shrimp fisherman is accused of creating ingenious submarines for cocaine traffickers.” December 14, 2008, 1-2, Los Angeles Times, <http://articles.latimes.com/2008/dec/14/world/fg-captainnemo14> (September 16, 2010).

⁸⁰ Ibid.

⁸¹ Robert Spalding, *Drug Subs: The Worldwide Invasion by the Narco-Submarine Fleet*. Signal Mountain, Tennessee: Spalding Publishing, 2009, 61.

More recently, others have issued allegations and assumption regarding North Korea's connection with SPSSs, including South Korea's Foreign Minister Yu Myung-hwan, who believes North Korea, was involved in the sinking of their naval ship in 2010.⁸² According to the Dong-a Ilbo newspaper,

an 85-ton North Korean submersible is believed to have torpedoed the vessel. Citing an unidentified government official, the report said the conclusion was based on intelligence on the movement of North Korean submersibles and analyses of intercepted North Korean military communication.⁸³

Given its international attention and association with Russian and Korean militaries, Colombia and the United States should acknowledge that the threat of SPSSs is a national security concern. It is just a matter of time before the technology of these semi-submersibles will become advanced enough to penetrate the Gulf of Mexico or California coasts and enter U.S. shores, causing damage to the infrastructure or perhaps physically harming citizens.

Colombian naval officials must develop a pre-planned response to not only deal with this threat, but to implement programs to track DTO affiliations outside of Colombia. This would provide the military and law enforcement the necessary tools to suppress DTOs. It is vital for the security and stability of not only Colombia, but the Western Hemisphere as a whole.

In addition, the capabilities of these semi-submersibles are advancing at an alarming rate, considering the SPSS that was found in Colombia in 2000 had a dive depth of 325ft (99m) and capable of carrying 10–15 tons of cocaine.⁸⁴ The GOC should assume that the limitations and capabilities of these semi-submersibles have dramatically grown over time. These SPSSs are now outfitted with GPS and infrared digital camera equipment providing drug traffickers extended mobility and allowing “SPSS vessels to

⁸² Associated Press, S. Korea: “Obvious” North Torpedoed Our Ship, 1.
<http://www.cbsnews.com/stories/2010/05/19/world/main6498333.shtml> (accessed November 12, 2010).

⁸³ Ibid.

⁸⁴ Tyler Moore, “The Submarine in the Andes: Rise of a Non-State Navy?” 7.

navigate independently without need for external communication.”⁸⁵ In order to maintain a stealthy travel the SPSS “fuel tanks are filled with seawater as they empty; they maintain a steady, ultra-low profile that makes them nearly impossible to spot by eye at any distance over one nautical mile.”⁸⁶

2. SPSS Transport Routes



Figure 7. SPSS transit routes of the Eastern Pacific Ocean and Western Caribbean
(Image available from Spiegel Online International,
<http://www.spiegel.de/international/world/bild-732292-157394.html>)

SPSSs have a high success rate of trafficking cocaine in the Pacific and Caribbean areas, known as primary transit zones, because of the improved technology and upgrading. The engineering modifications allowed SPSSs to become more efficient and

⁸⁵ Wade F. Wilkenson, “A New Underwater Threat,” October 14, 2008, 1,
<http://www.military.com/forums/0,15240,177265,00.html> (accessed February 20, 2010).

⁸⁶ Wade F. Wilkenson, “A New Underwater Threat,” October 14, 2008, 1.

full proof over the water. SPSSs transit cocaine undetected and covertly supply's cocaine to other drug cartels in the region. These SPSSs have shown to be extremely difficult to track, identify and detect, because:

The structure of an SPSS is purposely shaped to minimize the vessel's wake, while exhaust pipes are designed to minimize its thermal signature.⁸⁷

The upgrades conducted on SPSSs are just a small part of the overall enhancement process for cocaine operations. DTOs have developed SPSS launch sites into covert units. For example, SPSS locations and departures are undisclosed and considered high value targets areas; neither U.S. military or Colombian naval officials know the whereabouts of these clandestine construction sites.

The tactical logistics of SPSSs depend on secrecy, "In fact, drug-trafficking organizations practice exceptional control of information regarding SPSS launch date, cargo, route, and destination."⁸⁸ Transiting at high tempo in the littoral routes of the Pacific, where tons of cocaine could be vulnerable to law enforcement interdiction.

SPSSs are considered "invisible cargo" until intelligence has been received on their underway launch times and dates. The apprehension process of semi-submersibles must continue to integrate law enforcement methods that can prevent these vessels from leaving the Colombian coast. DEA intelligence gatherers also must be able to "position themselves into jungle hideouts where semi-submersibles are built, because once underway, there is a lot of ocean to scour."⁸⁹

DEA agents usually experience the "catch 22," because law enforcement efforts are made to crack down on cocaine distribution in México, which in turn, forces Colombian DTOs to use Central America as a major transshipment point for cocaine

⁸⁷ Douglas A. Kash and Eli White, A New Law Counters the Semisubmersible Smuggling Threat. Legal Digest, http://www.fbi.gov/publications/leb/2010/march2010/smuggling_feature.htm (accessed March 9, 2010).

⁸⁸ Ibid.

⁸⁹ Defense Tech, Drugs and Thugs: US SOUTHCOM Battles Drug Cartel Submarine Armada. Obtained from <http://defensetech.org/category/drugs-and-thugs> (accessed June 14, 2010).

bound for the United States.⁹⁰ DTOs will switch cocaine shipments, because it has realized that other avenues of cocaine distribution can be easily targeted when law enforcement increase containment tactics. The Mexican drug cartels and Central American gang's networks of violence expand when semi-submersibles are successful in delivery operations, because these drug cartels and gangs generate most of the logistics for cocaine entering Mexico and the Southern Border of the United States.

The "SPSS balloon effect" has impacted Mexican and Colombian societies, because some fishermen have been threatened into this enterprise of drug trafficking, while others have been convinced that this is the only way to make a reasonable living. These so-called "drug trafficker fishers" are risking their lives in transporting cocaine in SPSSs, which has risen to new levels because of the economic incentive it pays. There are no gray areas; drug trafficking organizations maximize all options to traffic drugs. At the same time, transiting drugs across the Pacific and Caribbean using an SPSS provides a larger storage capacity of cocaine, which will increase their productivity and distribution level. DTOs are pleased with the development and method of SPSSs, compared to the traditional over-the-water logistics of go-fasts boats, which had a considerable amount of losses over the years.

⁹⁰ Wade F. Wilkenson, "A New Underwater Threat," 1.

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III. U.S. TACTICS TO COUNTER SPSS

A. SPSS LEGISLATION

Despite the success of SPSS cocaine trafficking, undercover DEA agents have managed to penetrate their operations posing as crew. Once an SPSS has been detected and engaged by law enforcement, drug smugglers usually scuttle to obliterate evidence and thus be rescued as shipwrecked sailors by,⁹¹ law enforcement and the military with man-overboard and rescue-at-sea operations.

It is obvious that DTOs incur a huge loss from scuttling SPSSs; however,

with the drugs disposed of, law enforcement personnel lacked evidence of criminal wrongdoing under the Maritime Drug Law Enforcement Act (MDLEA). The U.S. military and Law enforcement are forced to treat the situation as a mere castaway rescue mission, picking up the occupants from the ocean and returning them to their home country.⁹²

Drug traffickers began to catch on to these methods of scuttling an SPSS without suffering any legal action from law enforcement. The Coast Guard became aware of the problem and introduced a bill—the Drug Trafficking Vessel Interdiction Act of 2008 (DTVIA)—in Congress to allow prosecutors to bring criminal charges even when the cargo is not recovered taken by drug traffickers.

The DTVIA is definitely a big step forward for the DEA and CBP, specifically allowing law enforcement to take legal action against anyone operating an SPSS. “If that happens, the crews will be prosecuted and encouraged to disclose information about how SPSSs are trying to penetrate U.S. maritime surveillance.”⁹³

Though, according to P. Federico Bower, the attorney for Carlos Andres Mina Meneses, one of the Colombians indicted in the September 2008 SPSS case, no evidence

⁹¹ Kash and White, A New Law Counters the Semisubmersible Smuggling Threat, 1.

⁹² Ibid.

⁹³ David Hughes, “Sighted Self-Propelled Semi-Submersible: Drug Runner Captured Same,” Aviation Week, September 18, 2008, 1.

should mean no conviction: “the law is based on assumptions and the government is assuming it is a drug vessel. All we know is my clients was on a vessel that sank. No drugs found.”⁹⁴

Despite the new law, some drug-smuggling crews still take the chance to transit cocaine across the region. It happens more now, because

Some SPSSs have the fuel capacity and supplies to travel 3,000 miles without replenishing, that's the distance from Los Angeles to New York. That's a huge area to cover with limited resources.⁹⁵

However, having an inadequate number of resources to detect and monitor SPSSs puts law enforcement and the U.S. military at a disadvantage to accomplish the mission of interdiction and apprehension effectively. Law enforcements efforts are built on intelligence, surveillance and reconnaissance missions to track, identify, and interdict these SPSSs. If resources are lacking, then a course of action must be taken to resolve the problem.⁹⁶

B. MARITIME INTERDICTION PROGRAMS

While go-fast boats have reduced the activity of cocaine shipments in the transit zone, they are still considered a primary vessel in drug trafficking, only second to the SPSS in transporting cocaine. However, the SPSS continues to maintain this mysterious profile, because no one witnesses these semi-submersibles being developed and integrated into drug operations in their early stages. When an SPSS is launched and traveling in the transit zone, it may be vulnerable. Yet, “by using cocaine as ballast, these craft can literally sneak under the radar to their destinations, where they are then unloaded and abandoned.”⁹⁷

94 Blog Wired, Feds Harpoon Alleged “Narco Submarines” Crew. January 22, 2009. http://hightimes.com/news/ht_admin/4993 (accessed August 18, 2010).

95 San Diego News, Drug Subs Used To Smuggle Narcotics into US. Obtained from <http://www.10news.com/news/23653029/detail.html> (accessed June 25, 2010).

96 Scott M. Bolen, DHS Science & Technology Directorate Project NEMO: The hunt for Self-Propelled Semi-Submersible (SPSS) boats & other small vessel, Department of Homeland Security, 29 June 2009.

97John Gresham, “Narcoterrorism.” www.defensestandard.com/DS%20Edit%20V5/narcoterrorism.pdf, 3, (accessed October 5, 2010).

The GOC and USG must implement policies and procedures that deter and suppress SPSSs, such as installing state-of-the-art equipment on all aircraft and surface ships. SPSSs have made exceptional advances in their physical structure making it difficult for them to be detected. SPSSs have now reduced their transit time on station and continue to have anonymous coordination with other vessels to evade law enforcement and the U.S. military. In other words, policies are needed to:

counter these new methods, enhanced capabilities are required for wide-area surveillance to support the detection, identification, tracking, and interdiction of target vessels beyond 12 nautical miles from the U.S. coastline.⁹⁸

First and foremost, to reduce the threat in such a huge area, Colombia and the U.S. military must have more and more assets. In order to make SPSSs incapable of completing their missions, a strong presence is needed in the transit zone, with intense surveillance in key departing locations, such as Buenaventura and Tumaco. The strategy in countering SPSSs begins with intense asset integration and developing a wide surveillance structure to target SPSS vessels. SPSSs are extremely difficult to locate during the day, because they are covered with a blue tarp totally hidden from maritime patrol aircraft and surface vessels. Sometimes only traveling at night, the SPSS produce very little wake in the ocean and are assisted by decoy fishing vessels during its transit. Since this is the case, U.S. tactics must start from the ground level, in which DHS describes how countering SPSSs can stop an emerging threat:

- The DHS counternarcotics community must engage in cooperative efforts specifically designed to disrupt and dismantle Drug Trafficking Organizations (DTOs).
- The DHS counternarcotics community will address drug trafficking at the state, local, and tribal levels, as well as at the national and international levels. We must understand the significant challenges and critical interests of our partners and build on strengths while minimizing weaknesses.

98 National Southwest Border Counternarcotics Strategy: Office of National Drug Control Policy, 2009, 40.

- Our counternarcotics efforts must be directed at identifying, tracking, and targeting relationships that exist between drug trafficking and terrorism.⁹⁹

SPSS countermeasures must focus on the historical and geographical routes of drug trafficking, analyzing all data and sources of cocaine organizations. The mission must branch over to other venues—not just the maritime domain and transit zones of the Eastern Pacific and Caribbean, but viable land base targets and penetrating DTO networks from the inside.¹⁰⁰ Programs such as “Plan Colombia” and the “Drug Flow Attack Strategy” are effective and making progress as well. CBP developed and implemented an initiative focusing on joint U.S.–Colombia narcotics interdiction efforts.

As part of U.S. support to Plan Colombia, CBP provided Colombia with training and assistance on personnel management systems to assure coordinated operations on border interdiction and industry partnership programs.¹⁰¹

The USG and GOC are conducting day-to-day operations, 24–7 detecting, monitoring and interdicting SPSSs from DTOs. These programs of interdiction have improved, which has frustrated DTOs. In order to stay one step ahead of law enforcement, DTOs are forced to change and develop new tactics daily. But once those tactics are known, changes are quickly integrated into the USG/GOC countermeasure transit routes. DTOs have gone as far as implementing new crew changes for SPSS transits, just to foil law enforcement interrogation tactics. By changing out the crew members, provides a disconnect with any tracking efforts that are associated with future cocaine operations.

The Drug Flow Attack Strategy focuses on departure areas that make it difficult for DTOs to launch SPSSs; however, since some DTOs have the protection and coordination of some corrupt law enforcement officials, it is easier for them to assemble and depart undetected. The primary objective of the Drug Flow Attack Strategy is to

⁹⁹ Department of Homeland Security, Counternarcotics Doctrine. <http://www.dhs.gov/xlibrary/assets/dhs-counternarcotics-doctrine-2010-06-15.pdf>, 3, (accessed January 16, 2011).

¹⁰⁰ Department of Homeland Security, Counternarcotics Doctrine, 4.

¹⁰¹ Department of State, “Bureau of International Narcotics and Law Enforcement Affairs”:2009 International Narcotics Control Strategy Report (accessed February 20, 2010), 18.

cause major disruption to the flow of drugs and money, between the source zones and the United States. By establishing an effective and efficient interagency process, it deters the threat in transit zones, making DTOs less likely to launch on specific dates. SPSSs and cocaine interdiction threat assessment determines the most efficient use of interagency resources that can possibly disrupt SPSSs operating in source and transit zones.¹⁰²

The USG and GOC have implemented counterdrug programs to eliminate the flow of drugs throughout Colombia.

They combined forces and put into practice host programs and expanded its joint intelligence gathering efforts with Colombian agencies since 2008. The objectives of these intelligence gathering programs include information related to new groups emerging from the demobilization process of paramilitary organizations, intelligence on methamphetamine production and transportation in Colombia, information related to Colombia/Venezuela cross-border drug trafficking activity, and a final intelligence program which targeted the Colombian ports and the transportation organizations using the ports.¹⁰³

Moreover, the USG and GOC tactics and programs to counter SPSSs and suppress drug trafficking in geographic locations and departure zones include:

- The Enlace Program established in the Southern Cone countries of South America more than five years ago to exchange law enforcement officers with the South American countries. The program has supported investigations and initiatives which have benefited both the DEA mission and missions of the host nations.¹⁰⁴
- Operation Panama Express, a joint operation designed to disrupt and dismantle major maritime drug smuggling organizations operating from the Pacific and Caribbean coasts of Colombia. The operation is conducted by DEA and several other federal, state, and local law enforcement authorities, including the Joint Inter-Agency Task Force.¹⁰⁵

102 Department of State, "Bureau of International Narcotics and Law Enforcement Affairs":2009 International Narcotics Control Strategy Report (accessed February 20, 2010), 18.

103 Ibid., 18.

104 Ibid., 20.

105 Department of State, "Bureau of International Narcotics and Law Enforcement Affairs," 22.

These programs are a success, specifically Operation Panama Express, especially when it demonstrated its effectiveness by assisting in the seizure of 20 tons of cocaine from the vessel Gatun. According to Former commandant of the Coast Guard Adm. Thad Allen,

This record-breaking seizure was the result of good actionable intelligence and the closest collaboration amongst our interagency partners through Operation Panama Express.¹⁰⁶

These programs produce the best results for military and civilians conducting counter narco-trafficking operations, at the same time, continue to provide difficulty for DTOs to develop and launch an SPSS in designated departures zones.

The DEA and CBP offer both in-country and regional training programs conducted by mobile training teams as well. In-country programs are seminars conducted in a host country and include participants from that country only. For example,

the Port of Entry Interdiction Training (PEIT), this general description encompasses four specific training courses concerning border security issues found at the various types of international border environments, i.e., land (IBIT), seaport (ISIT), rail (IRIT) and airport (IACIT).¹⁰⁷

The U.S. Coast Guard is the maritime security leader in law enforcement and continues to provide the best tactics for drug interdiction, developing a “five year counter drug strategy called “Steel Web.” This strategy is a comprehensive approach to counter maritime cocaine activity in the transit and arrival zones of SPSSs. The cornerstones of this plan are as follows:

- Maintain a strong interdiction presence to deny smugglers access to maritime routes and deter trafficking activity.
- Strengthen ties with sources and transit zone nations to increase their willingness and ability to reduce the production and trafficking of illicit drugs within their sovereign boundaries, including territorial seas.

¹⁰⁵ Garrison Courtney, “DEA, Coast Guard Make Record Maritime Cocaine Seizure,” March 21, 2007, <http://www.justice.gov/dea/pubs/states/newsrel/wdo032107.html> (accessed June 23, 2010).

¹⁰⁷ Ibid.

- Support interagency and international efforts to combat drug smuggling through increased cooperation and coordination.¹⁰⁸

C. NEW COUNTERMEASURE DEVELOPMENTS

The threat of SPSSs has sparked counter tactics from the Naval Postgraduate School faculty-student Operational Research team, which developed a mathematical model that determines the best combination and deployment of search platforms to detect and classify self-propelled semi-submersible (SPSSs). Commander, Daniel “Barney” Pfeiff and Distinguished Professor Gerald Brown provides a detail analysis on how to tackle the problem of interdicting SPSSs. According to Gerald Brown, “Running scenarios for the Eastern Pacific and the Caribbean using five types of search platforms where the attacker has to choose a transit path and the defender has to determine the best use of search platforms to detect and classify SPSSs, we come up with a consistent optimal plan for defenders: use a mixed [probabilistic] strategy to shape the attackers’ routes by positioning search assets to force the vessels into chokepoints where they are more easily spotted, identified and interdicted.”¹⁰⁹ These countermeasures are informative and credible, which can be used in the present as well as future operations in detecting, tracking and identifying SPSSs. Moreover, efforts to counter SPSSs are reaching out in the international community, the HMCS Montreal, recently “became the first Canadian warship to conduct acoustic sensor trials with SPSS vessels.”¹¹⁰ Having multinational units involved in stopping SPSSs, demonstrates the importance to prevent these vessel from threatening the region.

If foreign military forces are honing in on these countermeasures, it only reveals the seriousness and complexity of this SPSS problem. The U.S. tactics in countering SPSSs has evolved and aligned with another possible international force—Israel. SPSSs can transit for days without fuel, draining the on-station time of military and civilian aircrafts fuel and manpower.

108 DHS, National Drug Control Strategy: FY2010 Budget Summary, 2010, 83.

109 Barbara Honegger, “NPS OR Team Optimizes Defense against Narco Semi-Subs.” January 15, 2010. <http://www.nps.edu/About/News/NPS-OR-Team-Optimizes-Defense-Against-Narco-Semi-Subs-.html> (accessed March 23, 2010).

110 Justin Simmons and Crystal Chenell, HMCS Montréal conducts sensor trials with SPSS vessels. www.navy.forces.gc.ca. Spring 2009, 1, (accessed June 17, 2010).

However, Israel is proposing to use “Narco-Drones” to disrupt cocaine shipments of SPSSs. The Narco-Drone will stay in the air longer than any other Maritime Patrol Aircraft assets. The Narco-Drone “Heron” is Israeli-made, though an expanded fleet would be tested and built in the U.S., subject to congressional approval.¹¹¹ Drones could be the U.S. and GOC stealth hunters, tracking and detecting stealth smugglers from high above the ocean. In addition, these drones could be used as surveillance tactics in DTO operations to ensure the safety of undercover DEA agents. Nevertheless,

U.S. Southern Command would use the Heron for surveillance only against the drug subs—which are extremely difficult to detect and interdict—seems like a no-brainer. It would employ some of the same advantages that the subs have for traffickers such as endurance and stealth.¹¹²

Finally, the U.S. may have the opportunity to implement the new technology of underwater surveillance in the Gulf of Mexico and the Eastern Pacific Ocean to intercept and capture SPSSs that are departing and entering coastal waterways. For example,

a group of researchers is working on developing a network of solar-powered autonomous underwater vehicles (SAUVs) that will communicate with each other to detect threats and hazardous substances in coastal and harbor waters. According to Arthur Sanderson, the SAUVs could be used to detect potential threats by detecting and tracking objects or vehicles in coastal waters.¹¹³

111 Jeni Mitchell, *Narco-Drones: A Good Idea?* July 13, 2009, 1.
<http://crimeconflict nexus.wordpress.com/2009/07/13/narco-drones-a-good-idea> (accessed August 26, 2010).

112 Ibid.

113 Homeland Security News, Insight and Analysis, “New depths on the high seas, Underwater robots could soon revolutionize coastal surveillance,”
[http://hstoday.gcnpublishing.com/index.php?id=483&cHash=081010&tx_ttnews\[tt_news\]=1213](http://hstoday.gcnpublishing.com/index.php?id=483&cHash=081010&tx_ttnews[tt_news]=1213).

IV. CONCLUSION: FUTURE TRENDS

A. SPSS TRANSITIONAL TECHNOLOGY

'Narco Torpedo' smuggling system

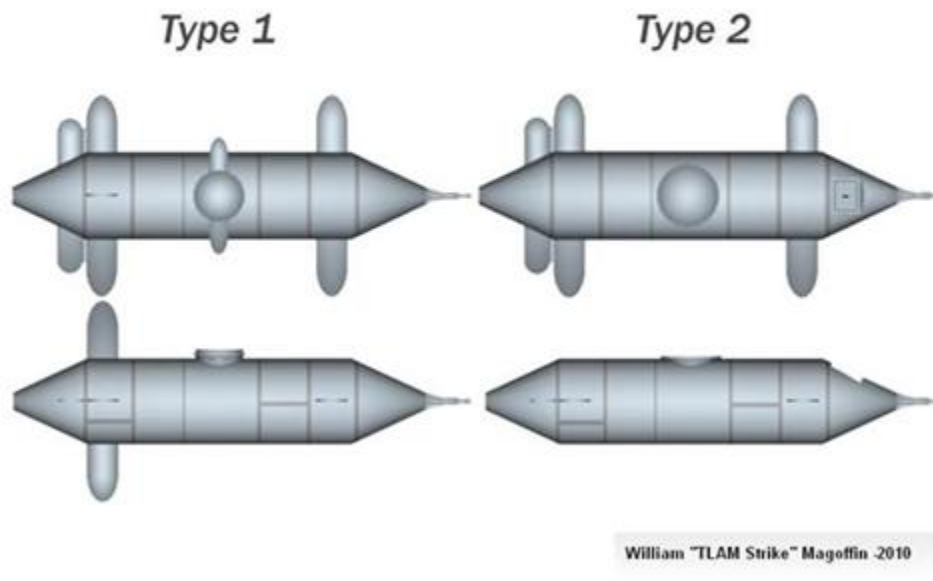


Figure 8. Narco-Torpedo shell used to transit cocaine into Mexico and Central America (Image available from Covert Shores Naval Warfare Blog: Open Source Intelligence)

The sophistication of these semi- submersibles are growing at an alarming rate, along with other developments, such as narco torpedo shells that are used as towing mechanisms filled with cocaine. These torpedo shells can tow between 500kg and 5000kg of cocaine.¹¹⁴ According to Dr. Miguel Angel Montoya,

¹¹⁴ Santiago Stelley, "Drug Smuggling With Submarines," July 14, 2009, <http://www.motherboard.tv/2009/7/14/drug-smuggling-with-submarines> (accessed August 18, 2010), 1.

transportation methods for torpedoes are sometimes used in conjunction with semi-submersibles. The torpedo shells towed are not physically joined with SPSSs, but are attached to fishing vessels with a steel cable as long as 1,000 feet.¹¹⁵

The logistics, however, seems more complicated than the SPSS, which require and has a technique of three boats working simultaneously to complete the smuggling operation. The whole process of using torpedo shells to traffic cocaine involves:

One to tow the device, one to go ahead to warn of marine patrols or the U.S. Coast Guard, and one for backup protection—a lookout that travels 24 hours behind the towboat. It was practically a relay, and the chance of success was about 90 percent.¹¹⁶

According to Dr. Montoya, the comparisons between semi-submersibles and torpedo shells is that SPSSs have a “mold made of fiberglass, and carry a large diesel engine,”¹¹⁷ while torpedo shells are able to stay beneath the water, and use a radio buoy that is able to float to the surface of the water camouflaged as a log.¹¹⁸

¹¹⁵Santiago Stelley, “Drug Smuggling With Submarines,” July 14, 2009, 2.

¹¹⁶ Ibid., 1.

¹¹⁷ Ibid.

¹¹⁸ Ibid.



Figure 9. Narco-Torpedo shell captured by Colombian authorities in Buenaventura (Image available from Covert Shores Naval Warfare Blog: Open Source Intelligence)

The narco torpedo shell is totally hidden from law enforcement surveillance, as escorts and decoy towing vessels pretend to be occupied in fishing operations.¹¹⁹ The only way to interdict or capture the torpedo shell is to engage the towing vessels and prevent them from relaying or detaching the steel cable for other vessels to retrieve the hand-off. The interdiction role would force vessels to slow down and cause the camouflaged radio-buoy to be exposed and immediately surface to the water. Although the DTO success rate was highly effective, it consumed a great deal of manpower to carry out the evolution, because of the mission and the distance to travel and the whole process involving three vessels. Initially, these torpedo shells devices were

¹¹⁹ Santiago Stelley, "Drug Smuggling With Submarines." July 14, 2009, <http://www.motherboard.tv/2009/7/14/drug-smuggling-with-submarines> (accessed August 18, 2010), 2.

made to travel to Mexico, but the final objective of the development of this technology was to transport the product from the ports of Colombia and the Caribbean, all the way to the coast of Spain.¹²⁰

This shows the determination of DTOs wanting to ensure the shipment of cocaine, will be able to meet the demand market by any means necessary. DTOs eventually want to make these torpedo shells “completely automatic and operated by remote control—they could be navigating it from their offices using satellites.”¹²¹ However, compared to semi-submersible vessels involved in transiting cocaine are fewer, which allow a less congested relay and simplistic hand-off operation. Although, SPSSs does have a slow speed of six to eight knots but,

if you’re looking at the horizon, semi-submersibles are impossible to see—that is one of vessel’s advantages. A disadvantage is that, in the day time from above, they are very easy to spot, because of their wake in the water, no matter how much they are camouflaged.¹²²

DTOs create an environment of unyielding opportunity, using money and assets at all costs to transit cocaine across the ocean into Mexico and Central America. If DTOs are forced to use this much technology and innovation to escalate cocaine products and dissuade law enforcement, it is just a matter time before SPSSs and torpedo shells reach the United States territorial waters.

In order to be effective and track these torpedo shell vessels and SPSSs, the GOC and the U.S. military must have a number of sufficient assets and resources on the water and in the air. Otherwise, it is difficult to locate these vessels, because SPSSs have

small visual infra-red and radar signatures making them difficult to detect by non-acoustic sensors. Additionally, SPSS designers and DTOs have taken particular care to reduce infra-red signatures through the use of exhaust cooling systems.¹²³

120 Santiago Stelley, “Drug Smuggling With Submarines.” July 14, 2009, 1.

121 Ibid.

122 Ibid.

123 Daniel M. Pfeiff, *Optimizing Employment of Search Platforms to Counter Self Propelled Semi-Submersibles*. Master's Thesis, Monterey, CA: Naval Postgraduate School, June 2009. 2.

B. DEVELOPMENT OF FULLY SUBMERSIBLES (SPFS)

The first ever fully operational Self-Propelled Fully-Submersible (SPFS) recently discovered in Ecuador demonstrates the ingenuity and extreme measures these DTOs are willing to take to get their cocaine product across the ocean. The SPFS has the capability to go underwater to 50 feet; diving any deeper will risk the possibility of hull crush depth. According to Jay Bergman, DEA Andean Director,

This is a game changer for us and will prompt an array of countermeasures....This has the national security community concerned as much as the drug interdiction community.¹²⁴

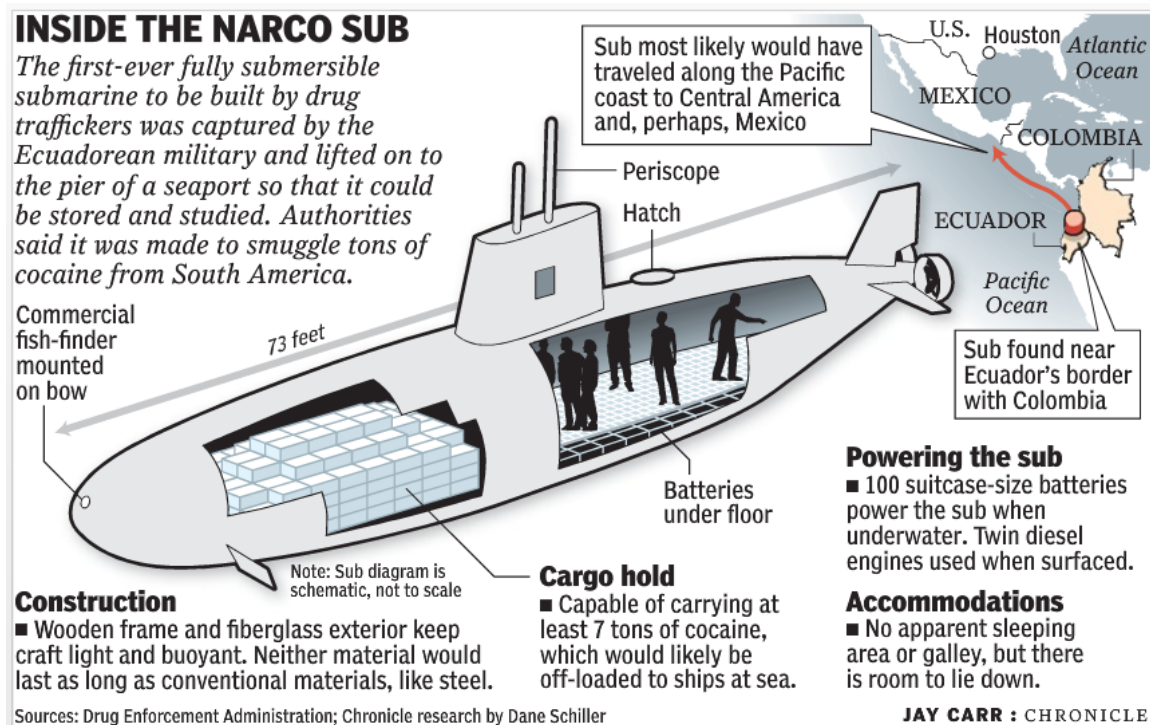


Figure 10. SPFS diagram that depicts the internal structure and instruments (Image available from Covert Shores Naval Warfare Blog: Open Source Intelligence)

¹²⁴ Chris Kraul, "Sophisticated narco-sub seized; A U.S. official calls the discovery in Ecuador a national security concern." July 6, 2010, <http://articles.latimes.com/2010/jul/06/world/la-fg-ecuador-narco-sub-20100706> Los Angeles Times (accessed October 5, 2010).

This innovation of DTOs creating the perfect SPSS has risen to a new level, which has evolved and appears to be developing in a manner that is faster than expected. It is intimidating watching these DTOs grow into such supreme traffickers of cocaine. Recently, the

police in Ecuador, acting on intelligence gathered by the United States Drug Enforcement Administration, raided a secret jungle shipyard near the country's border with Colombia and discovered what American officials called "a fully operational submarine built for the primary purpose of transporting multi-ton quantities of cocaine."¹²⁵

DTOs has also realized that detection and monitoring of these vessels are not going to stop, and law enforcement assets are going to continue scouring the oceans every day searching for SPSSs.

Therefore, DTOs were forced to take the next step in evolution of SPSSs, because law enforcement continues to deliver the pressure of interdiction daily. According to Rear Admiral Nimmich, "It's in fact a logical progression; as we get better at interdiction, they move to try to counteract our success."¹²⁶ The development of SPFSs is evidence that DTOs are planning to completely escape law enforcement detection and surveillance. The USG and GOC may have to shift focus and find new ways to prevent and eliminate these vessels from even getting a chance to enter the water. DTOs feared the pressure of law enforcement being able to infiltrate construction platforms locations that could put a dent in their future cocaine operations. The SPFS has a periscope and the capacity for a crew of five or six, rather than three or four on an SPSS, and the ability to fully submerge. We can only imagine that, in time, these fully submersibles will continue to improve with technology and provide greater cause for concern.

DTOs seek opportunity and innovation, and connecting with terrorists may be the next step after the newly developed SPFS. It is evident that DTOs are evolving into another cycle of submersibles, because

¹²⁵ Robert Mackey Advances in "Narco-Submarine" Technology. July 6, 2010. <http://thelede.blogs.nytimes.com/2010/07/06/advances-in-narco-submarine-technology/> (accessed December 7, 2010).

¹²⁶ Miami AFP, Narco subs pose new challenge for US coast guards. May 9, 2008. <http://afp.google.com/article/ALeqM5iSuHZQFZonc7WY3SToohrX7Z0JnA> (accessed December 12, 2010).

Authorities are in no doubt that the smugglers will soon invent a new way to traffic cocaine. But they may already have come up with the next step—a remote-controlled, fully operational submarine that can dive below the waves.¹²⁷

It has become apparent that DTOs are maximizing their efforts of efficiency by developing more complex and sophisticated submersibles. These fully submersibles are completely hidden beneath the ocean and can carry anything unnoticed into the region, including WMDs.



Figure 11. SPFS seized from drug traffickers in Timbiqui, southwestern Colombia
(Image available from *Times Tribune*, http://thetimes-tribune/polopoly_fs/1.1105229!/image/1486298576jp)

In the past, chasing down high-speed go-fast boats was challenging, but not as scary as having to fathom WMDs could be on one of these SPFS vessels heading straight to the U.S. The new generation of narco subs developers has scored a “big one,” developing the capability to penetrate the region totally undetected. The technology of SPSSs has taken a leap forward for DTOs, and it is just a matter time before they use the same innovative tactics to create indefinable tunnels that reach into the U.S. In addition,

¹²⁷ Jeremy McDermott, Colombia out to sink cocaine barons by banning “drug subs.” June 20, 2009. <http://thescotsman.scotsman.com/world/Colombia-out-to-sink-cocaine.5385360.jp> (accessed March 13, 2010).

the increasingly successful use of submarine-like small vessels by drug smuggling organizations should raise the nation's anxiety concerning the possibility of a successful small boat attack in U.S. waters.¹²⁸

C. SPSS–SPFS CARRYING WMD?

The primary function of Self-Propelled Semi-Submersibles (SPSSs) is to transit cocaine from Colombia to Mexico and Central America. While this is bad enough, the real fear of U.S. officials is that future SPSSs may become the delivery vehicle for weapons of mass destruction (WMDs), either biological or nuclear, in the event that DTOs collaborate with terrorists to carry out an attack in the Western Hemisphere, or that terrorists simply acquire SPSS technology on their own. SPSSs may deliver the next Armageddon, because,

any viable method to covertly transport large quantities of illicit drugs over long distances such as these [vessels] could conceivably be employed to transport other prohibited materials.¹²⁹

The Gulf of Mexico, the Atlantic coast and the Pacific coast offer a range of vulnerable targets for terrorist attacks. SPSSs also have the capability to smuggle human cargo, perhaps Al Qaeda or Taliban agents. As SPSSs become more sophisticated, the potential to reach U.S. territorial waters grows. Therefore, deterrence and detection will become a layered, multi-agency challenge, involving distant interdiction by Colombia, intermediate interception by U.S. and international navies, and potentially U.S. law enforcement agencies like the Department of Homeland Security and even local and state police.

The potential for a terrorist attack using SPSSs will require the development of new intelligence sources. Because Colombian DTOs have extensive foreign networks and contacts, the possibility that they will be contacted by terrorists interested in SPSS technology is not improbable.

¹²⁸ Brian Patrick Hill, "Maritime Terrorism and the Small Boat Threat to the United States: A proposed Response," Naval Postgraduate School, 2009, 109.

¹²⁹ Chris Kraul, "Colombian drug cartels take underwater route: Submersibles are used to ferry narcotics. Some in U.S. fear the tactic may inspire terrorists," <http://articles.latimes.com/2007/nov/06/world/fg-narcosub6> (accessed January 20, 2011).

It would be naive to assume that what is good for international commerce and international communication is not also good for international terrorists, who are increasingly becoming opportunistic entrepreneurs whose “product” (often quite consciously “sold”) is violence against innocent targets for a political end. —Professor of Strategy, U.S. National War College Senior Associate Audrey Kurth Cronin.¹³⁰

The counter-argument is that DTOs and terrorists will never join forces because their objectives are entirely different—DTOs seek to make money in the United States, not blow it up. On the other hand, DTOs may cooperate unwittingly with terrorists, who may in any case acquire the SPSS technology on their own. In December 2008, Admiral James Stavridis, USN, former commander of U.S. Southern Command (SOUTHCOM), stated that the threat of WMD delivery via an SPSS “is clearly the next big thing.” Stavridis’s special fear is that SPSSs are evolving into fully submersible boats that will pose an even greater threat because they will be impossible to detect.¹³¹ Were this to happen, the U.S. maritime domain may witness the next 9/11, with terrorists being able to utilize transit routes that were developed primarily for shipping cocaine via SPSSs.

DTOs are counteracting law enforcement tactics by developing innovative techniques and looking for constructive ways to transfer cocaine and other contraband to markets around the world.¹³²

WMDs are the most extreme violence that could be generated from SPSSs transiting through the Western Hemisphere. However, the insensate and barbarous acts of SPSSs are now being used on innocent women and children who are confined and forced into these vessels for human trafficking networks. Hundreds of thousands are moved through the Latin American region every year, and are forced into prostitution. Unfortunately, many leaders both in the United States and in Colombia have failed to recognize human trafficking as part of a larger, more complex security threat.

¹³⁰ Audrey Kurth Cronin, “Behind the Curve: Globalization and International Terrorism.” *International Security* 27 (2002): 30–58.

¹³¹ Marilyn Stern, “From the TBA to the USA: Barbarians at the Gate.” *Small Wars Journal*. Small Wars Foundation, 2010.

¹³² United States Government Accountability Office, “Plan Colombia: Drug Reduction Goals Were Not Fully Met, but Security Has Improved; U.S. Agencies Need More Detailed Plans for Reducing Assistance.” GAO-09-71 *Counternarcotics Aid to Colombia*, October 2008:1-115.

These women and children are traveling through the Eastern Pacific Ocean destined for prostitution. From a reality perspective, that human cargo could just as easily be narcotics, nuclear weapons, or Al-Qaeda and Taliban members.¹³³ In other words, the same chances are regarded and considered for human trafficking when DTOs use SPSSs to transit cocaine. DTOs are thinking it does not matter what goes into an SPSS as long as they benefit from a high-percentage profit. This potentially opens the door for other options, such as WMDs.

The possibility of this happening worries the GOC and U.S. military, because tactics of this nature could be integrated into an SPSS and sent straight into the U.S. and Mexico. What is the possibility of terrorists obtaining any chemical agent to destroy and kill hundreds of thousands of people in the Latin America region using an SPSS? This could be a major problem down the road for GOC, because they have no control over DTOs.

DTOs will seek to gain financial security from terrorists, producing SPSSs for monetary value. Nevertheless, the possibility remains and the opportunity still exists for the terrorist to execute the perfect plan if they are able to transfer the technology to another venue, or simply have a SPSS built for them in a Colombian jungle shipyard. Former Secretary of State Condoleezza Rice states that, “nations incapable of exercising responsible sovereignty have a spillover effect in the form of terrorism, weapons proliferation, and other dangers.”¹³⁴

The SPSS threat may be influencing terrorists to become part of the Colombian cocaine network of organized crime. DTOs association with any terrorist groups will eventually spark a problem that can cripple the Latin American region as well as the United States. According to Rear Adm. Joseph Castillo, the Coast Guard’s director of response policy, “This is a serious threat which is growing, both in volume of cocaine

¹³³Thomas M. Sanderson, “Transnational Terror and Organized Crime: Blurring the Lines” SAIS Review 24 (2004): 49-61.

¹³⁴Patrick, Stewart. “Weak States and Global Threats: Fact or Fiction”? The Washington Quarterly 29 (2006): 27-53.

shipped, and in sophistication of the craft.”¹³⁵ The opportunity for DTOs to co-exist with other terrorists such as Al-Qaeda may be easier than expected. Since Afghanistan terrorists are the drug traffickers of opium, it could be an attractive market for Colombian DTOs. If these groups were to come together, it would give the GOC and USG a serious problem, because “Colombia remains the world’s largest supplier of cocaine, while Afghanistan is the top global opium producer.”¹³⁶ The cooperation between the groups lures the possibility of an SPSS maritime enterprise. Al-Qaeda operatives planning to use these semi-submersibles can launch an attack straight into U.S. ports and harbors. For example, the Port of Long Beach, on the West Coast of the U.S., has the

most important source for crude oil shipments, having received more than 30 million metric tons of petroleum products in 2005, is an attractive target for would-be terrorists.¹³⁷

The maritime domain and port security are key concerns for law enforcement and the U.S. military. Terrorists would be able to take WMDs into one of the world’s busiest ports, destroy the infrastructure, and cause an economic downfall throughout the region. The possibility of this happening is daunting and will change cruise liners and oil tankers usual way of doing business. These “SPSSs tactics and payloads could one day represent a great threat to the United States and our partners.”¹³⁸ The duty of the GOC and U.S. military is to recognize that an SPSS threat is evolving and take the necessary precautions to prevent an attack. In addition, the GOC and the USG must have a vigilant approach to suppress and deter SPSSs. If not, the productivity of SPSS cocaine shipments may cause a regional balloon effect and rise throughout the region, triggering an increase in violence and instability.

¹³⁵ Rebekah Gordon, Navy, Coast Guard Partner to Nab Drug-Ferrying Submersibles. http://www.insidedefense.com.libproxy.nps.edu/secure/display.asp?docnum=NAVY-21-38-16&f=defense_2002.ask (accessed March 27, 2010).

¹³⁶ Inside Defense, Afghans Lean on Colombian Police to Build Drug Interdiction Skills. http://www.insidedefense.com.libproxy.nps.edu/secure/display.asp?docnum=NAVY-21-38-16&f=defense_2002.ask (accessed March 27, 2010).

¹³⁷ Stephen Flynn, *Edge of Disaster: Rebuilding a Resilient Nation*. Random House Publishing Group, New York: NY, 2007.

¹³⁸ House and Senate Armed Services Committees, *The Posture Statement of Admiral James G. Stavridis, United States Navy Commander United States Southern Command*, 2009.

The GOC and USG law enforcement and military resources are continuing to prevent SPSSs from reaching Mexico and Central American coastlines. However, their valiant work could force DTOs to choose new routes of trans-Atlantic shipments. For example, West Africa and Europe cocaine shipments are among the countries, Colombia has delivered using airplanes and container ships. In the future, the new primary arrival location for SPSSs may be Europe and West Africa port waterways and coastal areas.

Drug Traffickers are always developing ways to prevent interference of their illegal activities. As the U.S. modifies tactics to adjust to DTO efforts, drug producers and traffickers find innovative ways to maintain their cocaine operations as well as develop alternative trafficking routes to transport it.¹³⁹ If DTOs perceive their shipments are no longer profitable, other cocaine shipment routes and locations will be considered in order to sustain the maximum outcome. Without the cooperation and teamwork of both USG and GOC detection and monitoring teams, the interdiction and apprehension phase would not be possible. This is especially important, because right now these criminal organizations are using SPSSs as a primary cocaine vessel, but this could soon change and into weapons of mass destruction.

SPSSs cause instability and insecurity in the region, which in turn, allows Colombian DTOs to take advantage of weak states. DTOs have the capability to unite with terrorists and sell SPSS technology, which could eventually be used to ship WMDs. If so, that is something that not only the U.S. wants to address, but other world leaders need to address as well. Colombian DTOs have already developed a sophisticated, hard to detect SPSS, which are good indications that, association with terrorists and WMDs are not too far from the list. These technological progressions could potentially attract terrorists' organizations that are interested in conducting attacks against other countries as well. It may seem less likely for DTOs to get involved with terrorists, because that could potentially limit their demand market; however, DTOs are already decreasing the demand by destroying people lives with cocaine. Having the definitive edge of making people give into drugs is what DTOs want in order to generate more cocaine sales.

139 Keynote Address, Western Hemisphere Security Colloquium "The Power of Partnership" May 25, 2010.

SPSSs are transcending their technology across the globe into Africa and the United Kingdom. It is already difficult for the GOC and USG to track and detect these submersibles in the Caribbean and Eastern Pacific, but now “traffickers are increasingly transporting drugs from the Caribbean to West Africa by sea and then on into the UK.”¹⁴⁰

The Colombian cocaine market to Mexico and Central America is the highest in transport activity of cocaine, but the overseas demand market across the Atlantic is becoming easier to transit and profit from as well. In other words, there should not be a central focus for transiting cocaine, because it motivates DTOs to make advancements in technology and develop overseas routes, not yet known. The GOC and USG should cover all methods and routes used to traffic cocaine. Having law enforcement resources focusing on a certain area or region could also force DTOs to collaborate with terrorists. Europe and Africa are just as important as Mexico and Central America and needs the same attention, because “The Navy says 20 to 30 tons of cocaine is shipped across the Atlantic Ocean each day.”¹⁴¹

Cocaine trafficking for Colombian DTOs now stretches across the Atlantic and into the Mediterranean Sea, allowing them to strengthen their foundation and association with known terrorists. According to the Michele Leonhart,

We see traffickers’ adaptability with their continued exploitation of African routes, using countries there as a key command and control platform to move cocaine to Europe.¹⁴²

This demonstrates that DTOs are advancing in overseas trafficking, setting up labs with possible construction of SPSSs; WMDs will soon follow.

¹⁴⁰ Duncan Larcombe, Subs ‘bringing cocaine to UK’ May 29, 2010, 1. <http://www.thesun.co.uk/sol/homepage/news/2992128/Drug-subs-bringing-cocaine-to-Britain.html?OTC-RSS&ATTR=News> (accessed May 31, 2010).

¹⁴¹ Ibid., 1.

¹⁴² Statements by U.S. Officials, “Michele Leonhart’s Speech at International Drug Enforcement Conference.” July 8, 2008. http://istanbul.usconsulate.gov/leonhart_speech_070808.html (accessed June 29, 2010).

It is also common knowledge that once a relatively wealthy country such as South Africa becomes a major transit route, it is not long before it becomes a major drug consuming country”¹⁴³

An opportunity will always remain for DTOs to conspire with terrorists and use SPSSs for WMDs. It can be chemical or nuclear in nature, causing an international disaster in the Western Hemisphere. The USG and GOC have to take into account the worst-case scenario when dealing with such innovative technology of DTOs. For example, President Barrack Obama believes

The greatest threat to U.S. and global security is no longer a nuclear exchange between nations, but nuclear terrorism by violent extremists and nuclear proliferation to an increasing number of states.¹⁴⁴

This same idea applies to DTOs that may be coercing with terrorists, planning a WMD destruction attack using nuclear or biological weapons via SPSS. According to James Carafano of the Heritage Foundation,

The threat is pretty much global, Sri Lanka saw a lot of this and we have seen some from Hamas as well, so we know groups are borrowing tactics from one another.¹⁴⁵

It is not a far-fetched situation. DTOs are motivated by profits, and if these extremists were to offer a huge amount of money for the technology and development of SPSSs, a coastal or harbor attack can easily be carried out within a few years in the U.S. The creativity and expansion of these vessels will ignite drug cartels to improve the technology of another transiting tool for cocaine—underground tunnels. In 2007, congress passed legislation providing a 20-year maximum sentence for the developing or financing of subterranean passages between the U.S. and another country.¹⁴⁶ The threat

143 Simon Baynham, “Narco-Trafficking in Africa: Security, Social and Economic Implications.” African Security Review. <http://www.iss.co.za/pubs/asr/4No6/Editorial.html> (accessed July 18, 2010).

144 Robert Burns and Anne Flaherty, Obama Calls Nuke Terrorism the Top Threat to US. April 6, 2010. <http://abcnews.go.com/Politics/wireStory?id=10295550> (accessed April 30, 2010).

145 Christopher J. Castelli, Navy Advisers Mull Small Vessel Threats After Classified Data Delay. June 28, 2010. <http://insidedefense.com.libproxy.nps.edu/Inside-the-Navy/Inside-the-Navy-06/28/2010/navy-advisers-mull-small-vessel-threats-after-classified-data-delay/menu-id-150.html> (accessed October 5, 2010).

146 Donna Elm, “Re: Submersible Vessels: Before the United States Sentencing Commission Public Hearing on Proposed Amendments for, March 17–18, 2009.

of tunnels being used to transports human cargo and drugs concerned congress, because “these passages were directly on U.S. soil and could be used by terrorists’ organizations to smuggle in dangerous weapons.”¹⁴⁷ The proceeding in passing laws against SPSSs, were based on the same philosophy and guidelines. Drug smugglers operating and transiting SPSSs would be given a “maximum 15-20 years sentence, since, theoretically, it can carry more dangerous cargo and present a threat to the security of the United States.”¹⁴⁸

D. CONCLUSION

When a second SPFS was discovered in Colombia, a Colombian Admiral Hernando Wills was not surprised:

We actually have been forecasting for awhile that we'd find more of these. First came the semi-submersible, now the fully-submersibles...and next will be remote-controlled subs.¹⁴⁹

It would be naive to imagine that these are among the first of many SPFSs which are no doubt transiting the Pacific Ocean at this very hour, evading authorities and planning their next mission.

These drug trafficking organizations are going to continue to “raise the bar” in technology, as Admiral James Stavridis recognizes:

We need to be able to rapidly detect and interdict this new type of threat, both for its current effects via the drug trade and more troublingly for its potential as a weapon in the hands of terrorists.¹⁵⁰

Having the combination of real time intelligence and multiple assets reduces SPSS-SPFS mobility and suppresses their coordination to engage in illicit activity with other surface vessels.

¹⁴⁷ Elm, “Re: Submersible Vessels,” 2009.

¹⁴⁸ Ibid.

¹⁴⁹ Dan Molinski, “Colombia Finds 32 meter Submarine Made for Hauling Drugs.” February 14, 2011, <http://www.nasdaq.com/aspx/stock-market-news> (accessed February 27, 2011).

¹⁵⁰ Admiral James Stavridis, USN, Semi-submersibles: An Emerging Threat in the Americas. Air & Space Power Journal, <http://www.airpower.maxwell.af.mil/apjinternational/apj-s/2008/2tri08/stavridiseng.htm> (accessed June 17, 2010).

The U.S. military and law enforcement must continue to apply pressure on DTOs, which forces them continually to alter their delivery systems. More might be at stake if one imagines, as does Commander Pat Paterson a U.S. Navy Foreign Area Officer who has worked in Latin America since 1997 said that:

In a time of proliferating weapons of mass destruction, the idea of 80 to 100 enemy vessels steaming undetected toward the California or Florida coastline represents a major national security threat.¹⁵¹

The SPSS and SPFS will continue to be a major threat affecting the internal and external boundaries of Colombia. In order to effectively counter this activity, international cooperation must start at the local and state level, branching out to establish U.S. and foreign assistance. The USG and GOC must continue to exchange information with other partnering nations to reduce the chance of SPSS technology falling into the hands of terrorists. According to Rear Admiral Nimmich,

The concern that most of us have is the relationship of illicit trafficking with any illegal activity or any potential terrorist wanting to take advantage of it.¹⁵²

This is going to take a global effort, not just from the U.S. military and GOC. However, in order to combat and stop DTOs from launching SPSSs and SPFSs in the Western Hemisphere, it must be a unified objective. The Colombian

cocaine that is inbound to Mexico and Central America pass through a six-million square mile transit zone, an area about twice the size of the continental United States, which includes the Eastern Pacific Ocean, Gulf of Mexico, and Caribbean Sea.¹⁵³

151, Pat Paterson, "Our Waning Influence to the South," May 2009, http://www.navalbooks.com/magazines/proceedings/archive/story.asp?STORY_ID=1857 (accessed 21 February 2010), 12.

152 Darlene Blakeley, CF Works with US Task Force in War on Drugs. The Maple Leaf, 25 February 2009 (accessed February 21, 2010).

153 Wade F. Wilkenson, "A New Underwater Threat," October 14, 2008. <http://www.military.com/forums/0,15240,177265,00.html> (accessed May 24, 2010).

The U.S. military and law enforcement have the responsibility to monitor and suppress illicit traffic operating in the transit zone area calling for a combined effort with Colombia and other partnering nations.

Navy warships, flyover planes and military helicopters equipped with radar, video cameras, day-time and night-time surveillance equipment and both large and small military weapons are used in the detection and apprehension of Colombian fishing vessels, go-fast boats and submersible vessels.¹⁵⁴

All forces are operating in a joint environment with partnering nations, reducing the threat of drug trafficking violence in Colombia and, at the same time, countering the SPSS and SPFS threat. It will continue to take international cooperation and advanced equipment to counter these submersibles. The technology innovation achieved by DTOs has created a surreptitious vessel that has sparked major concerns for the USG and the GOC, considering it will cause a national security risk, and eventually be used to carry anything from terrorists to WMDs.

¹⁵⁴ Donna Elm, "Submersible Vessels." Federal Public Defender for the Middle District of Florida. Before the United States Sentencing Commission Public Hearing on Proposed Amendments for, 2009: 1-20.

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LIST OF REFERENCES

- America/Caribbean” *Strategic Intelligence Unit (NIBC) of the Office of International Intelligence*, 2002.
- Associated Press (South Korea). “Obvious” North Torpedoed Our Ship.”
<http://www.cbsnews.com/stories/2010/05/19/world/main6498333.shtml> (accessed November 12, 2010).
- Associated Press. “Colombia detains two homemade submarines ready to ship drugs,” October 31, 2007. http://english.pravda.ru/news/world/31-10-2007/99954-submarines_drugs-0 (accessed February 20, 2010).
- Bagley, Bruce Michael. “Drug Trafficking Political Violence and US Policy in Colombia in the 1990s.” *School of International Studies University of Miami*, 2009.
- Baynham, Simon. “Narco-Trafficking in Africa: Security, Social and Economic Implications.” *African Security Review*
<http://www.iss.co.za/pubs/asr/4No6/Editorial.html> (accessed July 18, 2010).
- Blakeley, Darlene. “CF Works with US Task Force in War on Drugs.” *The Maple Leaf*, February 25, 2009 (accessed February 21, 2010).
- Blog Wired, Feds Harpoon Alleged “Narco Submarines” Crew. January 22, 2009.
http://hightimes.com/news/ht_admin/4993 (accessed August 18, 2010).
- Bolen, Scott M. *DHS Science & Technology Directorate Project NEMO: The hunt for Self-Propelled Semi-Submersible (SPSS) boats & other small vessel*, Department of Homeland Security, June 29, 2009.
- Bonner, Kit and Carolyn. “*Always ready: Today’s US Coast Guard*.” (St. Paul, MN: MBI Publishing Co.), 2004.
- Borland, John “*The Implications of Globalization on Maritime Security in the Wider Caribbean and Central America*.” SIRC-Nippon Fellows Maritime Conference at the Seafarers International Research Center, Cardiff University, 2008.
- Burns, Robert and Flaherty, Anne. Obama Calls Nuke Terrorism the Top Threat to US. April 6, 2010. <http://abcnews.go.com/Politics/wireStory?id=10295550> (accessed April 30, 2010).
- Castelli, Christopher J. Navy Advisers Mull Small Vessel Threats After Classified Data Delay. June 28, 2010. <http://insidedefense.com.libproxy.nps.edu/Inside-the-Navy/Inside-the-Navy-06/28/2010/navy-advisers-mull-small-vessel-threats-after-classified-data-delay/menu-id-150.html> (accessed October 5, 2010).

- Christian Science Monitor. "Crack Down on Colombia's Narco Subs."
http://agonist.org/nat_wilson_turner/20090624/crack_down_on_colombias_narco_subs (accessed June 23, 2010).
- Colombia Press Release. Successful Interagency Maritime Interdiction Forces Smugglers to Extreme Tactics. http://bogota.usembassy.gov/pr_63_17122007.html (accessed August 20, 2010).
- Courtney, Garrison. "DEA, Coast Guard Make Record Maritime Cocaine Seizure," March 21, 2007, <http://www.justice.gov/dea/pubs/states/newsrel/wdo032107.html> (accessed June 23, 2010)
- Covington, Evan, "Group of Fifteen: Drug Trade and Use in the Developing World." *Harvard Model Congress Europe 2010*.
- Cronin, Audrey Kurth. "Behind the Curve: Globalization and International Terrorism." *International Security* 27 (2002): 30–58.
- DEA Intelligence Division. "The Drug Trade in Colombia: A Threat Assessment South
- Decker, Scott H. and Townsend Chapman, Margaret. *"Drug Smugglers on Drug Smuggling: Lessons from the Inside"*, Philadelphia: PA Temple University Press, 2008.
- Defense Tech. "Drugs and Thugs: US SOUTHCOM Battles Drug Cartel Submarine Armada." <http://defensetech.org/category/drugs-and-thugs> (accessed June 14, 2010).
- Dellinger. US Southern Command Battles Drug Cartel Submarine Armada." April 28, 2010. <http://defensetech.org/2010/04/28/southcom-battles-drug-cartel-submarine-armada/> (accessed July 12, 2010).
- . "Budget-in-Brief." www.dhs.gov (accessed February 18, 2011). Department of State, "Bureau of International Narcotics and Law Enforcement Affairs": 2009 International Narcotics Control Strategy Report (accessed February 20, 2010), 18.
- . "From dollars to pesos: A comparison of the US and Colombian Anti-Money Laundering Initiatives from an International Perspective, May 21, 2008, <http://www.cwsl.edu/content/journals/Dellinger.pdf> (accessed February 20, 2010), 419. Department of Homeland Security. "Counternarcotics Doctrine." http://www.dhs.gov/xabout/structure/gc_1244492953182.shtm (accessed January 16, 2010).
- . "National Drug Control Strategy: FY2010 Budget Summary, 2010. Homeland Security News, Insight and Analysis, "New Depths on the High seas, Underwater Robots could soon revolutionize Coastal Surveillance. http://hstoday.gcnpublishing.com/index.php?id=483&cHash=081010&tx_ttnews

- . “Testimony of Rear Admiral Vincent Atkins, U.S. Coast Guard, before the House Subcommittee on Homeland Security, on Department of Homeland Security Air and Marine Operations and Investments,” http://www.dhs.gov/ynews/testimony/testimony_1271690315007.shtm (accessed March 21, 2010).
- Elm, Donna. “Submersible Vessels.” *Federal Public Defender for the Middle District of Florida* before the United States Sentencing Commission Public Hearing on Proposed Amendments for, 2009: 1–20.
- . “Re: Submersible Vessels: Before the United States Sentencing Commission. *Public Hearing on Proposed Amendments* for March 17–18, 2009 (accessed June 12, 2010).
- Felbab-Brown, Vanda. “Coca and Insecurity in Nariño, Colombia.” *Colombia, Crime, Latin America*. Foreign Policy, 21st Century Defense Initiative. The Brookings Institution http://www.brookings.edu/opinions/2011/0222_colombia_guerrilla_felbabbrown.asp (accessed February 11, 2010).
- Flynn, Stephen. *The Edge of Disaster: Rebuilding a Resilient Nation*. Random House Publishing Group, New York: NY, 2007.
- Global Security Org. “Tactical Support Center, Roosevelt Roads.” <http://www.globalsecurity.org/military/agency/navy/tsc-rr.htm> (Accessed 12 June 2010).
- Gordon, Rebekah. “Navy, Coastguard Partner to Nab Drug-Ferrying Submersibles.” www.insidedefense.com.libproxy.nps.edu (accessed February 23, 2010).
- Gresham, John. “Narcoterrorism.” www.defensestandard.com/DS%20Edit%20V5/narcoterrorism.pdf (accessed October 5, 2010).
- Henrique Cardoso, Fernando, Gaviria Cesar and Zedillo Ernesto. “The War on Drugs is a Failure,” *Wall Street Journal*, February 23, 2009.
- Hill, Brian Patrick. “*Maritime Terrorism and the Small Boat Threat to the United States: A proposed Response*.” Naval Postgraduate School, 2009.
- Homeland Security News, Insight and Analysis, “New depths on the high seas, Underwater robots could soon revolutionize coastal surveillance,” [http://hstoday.gcnpublishing.com/index.php?id=483&cHash=081010&tx_ttnews\[tt_news\]=1213](http://hstoday.gcnpublishing.com/index.php?id=483&cHash=081010&tx_ttnews[tt_news]=1213).

- Honegger, Barbara. "NPS OR Team Optimizes Defense against Narco Semi-Subs." January 15, 2010. <http://www.nps.edu/About/News/NPS-OR-Team-Optimizes-Defense-Against-Narco-Semi-Subs-.html> (accessed March 23, 2010).
- House and Senate Armed Services Committees. The Posture Statement of Admiral James G. Stavridis, United States Navy Commander United States Southern Command, 2009.
- Hughes, David. "Sighted Self-Propelled Semi-Submersible: Drug Runner Captured Same." September 18, 2008. <http://www.aviationweek.com/aw/blogs/defense/index.jsp?plckController=Blog&plckScript=blogscript&plckElementId=blogDest&plckBlogPage=BlogViewPost&plckPostId=Blog%3A27ec4a53-dcc8-42d0-bd3a-01329aef79a7Post%3Aabc8e37a0-55ce-4815-8977-ce698258efb5> (accessed March 17, 2010).
- Inside Defense "Afghans Lean on Colombian Police to Build Drug Interdiction Skills": http://www.insidedefense.com.libproxy.nps.edu/secure/display.asp?docnum=NAVY-21-38-16&f=defense_2002.ask (accessed March 27, 2010).
- Inside Defense. "Canal Zone" <http://insidedefense.com.libproxy.nps.edu/201008182049001/Inside-Defense-Blog/Defense-Next/canal-zone/menu-id-73.html>, August 18, 2010 (accessed October 5, 2010).
- Inside Defense. "DoD Official Briefing on Counternarcotics, Deputy Assistant Secretary of Defense Douglas," April 2, 2007.
- Jaén, Sebastián and Dyner, Isaac, "Criminal Cycles in the Illegal Drug Industry: A System Dynamics Approach Applied to Colombia." School for Systems, Centre For Complexity Ceiba Universidad Nacional de Colombia Medellín, Colombia 2008.
- Jane's Information Group. "Insurgent submersibles," June 16, 2008, http://www.janes.com/news/security/terrorism/jtsm/jtsm080616_1_n.shtml (accessed July 20, 2010).
- Jayamaha, Dilshika, Brady, Scott, Fitzgerald, Ben and Fritz, Jason. "Lesson Learned from US Government Law Enforcement in International Operations." PKSOI Paper.
- Kash, Douglas A., and Eli White. "A New Law Counters the Semisubmersible Smuggling Threat." *Legal Digest*, <http://www.highbeam.com/doc/1G1-221649843.html> (accessed March 28, 2011), 2.
- Keynote Address. Western Hemisphere Security Colloquium, "The Power of Partnership," May 25, 2010

- Kiley, Brendan. "The Mystery of the Tainted Cocaine."
<http://www.bluelight.ru/vb/showthread.php?t=521106> (accessed February 21, 2010).
- Kraul, Chris. "Captain Nemo' is grounded; Captured in Colombia, a shrimp fisherman is accused of creating ingenious submarines for cocaine traffickers." December 14, 2008. *Los Angeles Times*.
- . "Colombian drug cartels take underwater route: Submersibles are used to ferry narcotics. Some in U.S. fear the tactic may inspire terrorists."
<http://articles.latimes.com/2007/nov/06/world/fg-narcosub6> (accessed January 20, 2011).
- . "Sophisticated *narco-sub* seized; A U.S. official calls the discovery in Ecuador a national security concern." July 6, 2010. *Los Angeles Times*.
- Larcombe, Duncan. Subs 'bringing cocaine to UK' May 29, 2010.
<http://www.thesun.co.uk/sol/homepage/news/2992128/Drug-subs-bringing-cocaine-to-Britain.html?OTC-RSS&ATTR=News> (accessed May 31, 2010).
- Leech, Garry M. "Death Falls from the Sky." <http://www.colombiareport.org/colombia60htm>. April 23, 2001 (accessed June 23, 2010).
- Mackey, Robert. Advances in "Narco-Submarine" Technology. July 6, 2010.
<http://thelede.blogs.nytimes.com/2010/07/06/advances-in-narco-submarine-technology/> (accessed December 7, 2010).
- Marine Tech. "Torpedo Shells to Replace Self Propelled Semi Submersibles for Cocaine Smuggling," May 14, 2009, <http://www.marinebuzz.com/2008/09/15/self-propelled-semi-submersible-spss-increasing-threat-from-sea> (accessed February 20, 2010).
- Mc Parry. "Six Colombian police killed in guerrilla attack." World Military Forum—Latest Military News, 2010.
- McDermott, Jeremy. "Colombia out to sink cocaine barons by banning "drug subs." June 20, 2009. <http://thescotsman.scotsman.com/world/Colombia-out-to-sink-cocaine.5385360.jp> (accessed March 13, 2010)
- Miami AFP. "Narco subs pose new challenge for US coast guards."
<http://afp.google.com/article/ALeqM5iSuHZQFZonc7WY3SToohrX7Z0JnA> (accessed December 12, 2010).
- Mitchell, Jeni. "Cocaine Submarines: The Next "Miracle on the Hudson?" June 11, 2009, <http://crimeconflict nexus.wordpress.com/2009/06/11/cocaine-submarines> (accessed October 5, 2009), 1.

- . “Narco-Drones: A Good Idea? July 13, 2009.
<http://crimeconflict nexus.wordpress.com/2009/07/13/narco-drones-a-good-idea>
(accessed August 26, 2010).
- Molinski, Dan. “Colombia Finds 32 meter Submarine Made for Hauling Drugs.”
February 14, 2011, <http://www.nasdaq.com/aspx/stock-market-news> (accessed
February 27, 2011).
- Moore, Tyler K. “The Submarine in the Andes: Rise of a Non-State Navy?” *Center for the study of terrorism and irregular warfare*. United States Naval Postgraduate School, Monterey, CA, 2001.
- National Southwest Border Counternarcotics Strategy: Office of National Drug Control Policy, 2009, 40. Department of Homeland Security, Counternarcotics Doctrine.
http://www.dhs.gov/xabout/structure/gc_1244492953182.shtm (accessed January 16, 2011).
- Neubecker, Craig. Coast Guard Helicopter Interdiction Tactical Squadron., U.S. Coast Guard Aviation History (HITRON-Jacksonville)
http://www.uscg.mil/history/webaircraft/AC_HITRON_History.asp (accessed July 23, 2010).
- Office of Foreign Assets Control US Dept of Treasury, “Impact Report: Economic Sanctions against Colombian Drug Cartels, *Department of Treasury* 2007,
www.treasury.gov/resource.../sanctions/.../narco_impact_report_05042007.pdf
- Parrilla, Ezequiel. Air Bridge Denial: “An International and Interagency Success Story.”
www.airpower.au.af.mil/apjinternational/.../2010_03_07_parrilla_eng.pdf, 4
(accessed July 16, 2010).
- Parrish, Thomas. *The Submarine: A History*. New York, NY: Penguin Books, 2004.
- Paterson, Pat. “Our Waning Influence to the South,” May 1, 2009,
<http://www.navalbooks.com/magazines/proceedings/archive/story.asp> (accessed February 21, 2010).
- PBS. The Colombian Cartels. January 18, 2011,
<http://www.pbs.org/wgbh/pages/frontline/shows/drugs/business/inside/colombian.htm> (accessed February 23, 2011).
- Pfieff, Daniel M. *Optimizing Employment of Search Platforms to Counter Self Propelled Semi-Submersibles*. Master's Thesis, Monterey, CA: Naval Postgraduate School, June 2009.
- PYMES. “Exportadoras De Colombia Transport.”
<http://www.usergioarboleda.edu.co/PyMES/english/transport.htm> Universidad Sergio Arboleda, 2003 (accessed June 23, 2010).

- Rebekah Gordon. Navy, Coast Guard Partner to Nab Drug-Ferrying Submersibles.
http://www.insidedefense.com.libproxy.nps.edu/secure/display.asp?docnum=NAVY-21-38-16&f=defense_2002.ask (accessed March 27, 2010).
- Russell, Gary. "Is It Time to Designate Coast Guard Special Operations Forces?" U.S. Army Command and General Staff College, Fort Leavenworth, Kansas, 2005.
- San Diego News*. "Drug Subs Used To Smuggle Narcotics into US."
<http://www.10news.com/news/23653029/detail.html> (accessed June 25, 2010).
- Sanderson. Thomas M. "Transnational Terror and Organized Crime: Blurring the Lines," *SAIS Review* 24 (2004): 49–61.
- Serafino, Nina M. Colombia: Summary and Tables on U.S. Assistance, FY1989–FY2003, CRS Report for Congress.
- Serje, Margarita. Translated by Ashley Caja, Rebecca Natolini, *Universidad de los Andes, Colombia* Laura Rexach, and C. Britt Arredondo), "Iron Maiden Landscapes: The Geopolitics of Colombia's Territorial Conquest." *Universidad de los Andes, Colombia*, 2006.
- Simmons, Justin and Chenell, Crystal. "HMCS Montréal conducts sensor trials with SPSS vessels." www.navy.forces.gc.ga. Spring 2009 (accessed June 17, 2010).
- Spalding, Robert. *Drug Subs: The Worldwide Invasion by the Narco-Submarine Fleet*. Signal Mountain, Tennessee: Spalding Publishing, 2009.
- Statements by U.S. Officials. "Michele Leonhart's Speech at International Drug Enforcement Conference." July 8, 2008.
http://istanbul.usconsulate.gov/leonhart_speech_070808.html (accessed June 29, 2010).
- Stavridis, James. "Semi-submersibles: An Emerging Threat in the Americas. *Air & Space Power Journal*, <http://www.airpower.maxwell.af.mil/apjinternational/apjs/2008/2tri08/stavridiseng.htm> (accessed June 17, 2010).
- Stelley, Santiago. "Drug Smuggling with Submarines." July 14, 2009,
<http://www.motherboard.tv/2009/7/14/drug-smuggling-with-submarines> (accessed August 18, 2010).
- Stern, Marilyn. "From the TBA to the USA: Barbarians at the Gate." *Small Wars Journal*. Small Wars Foundation, 2010.
- Strategy Page. "Colombia: Blood and Gold."
<http://www.strategypage.com/qnd/colombi/articles/20110220.aspx> (accessed February 24, 2011).

- Streatfield, Dominic. *Cocaine: An unauthorized biography* (New York, NY: Thomas Dunne Books, St. Martin's Press, 2001).
- Tarazona-Sevillano, Gabriela. *The Washington Papers: Sendero Luminoso and the Threat of Narcoterrorism*. Washington, DC: Praeger Book Publishers, 1990.
- U.S. Army Training and Doctrine Command (G2 TRISAN). "Threats, Submarines Emerging Threat in the War on drugs," 2009.
www.patriotfreedom.org/files/file_49d54f809ebc2544401.pdf (accessed December 12, 2010).
- United States Coast Guard. "USCG IMO." <http://www.uscg.mil/imo/> (accessed May 4, 2010).
- . "Dangerous Self-Propelled Semi-Submersibles (SPSS) Proliferating Rapidly US Dept of Homeland Security." September 17, 2008.
- . "US Coast Guard Fiscal Year 2009 Performance Report."
http://www.uscg.mil/history/allen/docs/USCG_FY09_Performance_Report.pdf
 (accessed December 12, 2010).
- United States Government Accountability Office (GAO). "Drug Control: Update on US Interdiction efforts in the Caribbean and Eastern Pacific." United States General Accounting Office, Washington D.C., 1997.
- . "Drug Reduction Goals Were Not Fully Met, but Security Has Improved; U.S. agencies Need More Highlights of GAO-09-71." A report to the Detailed Plans for reducing Assistance <http://www.gao.gov/new.items/d05970.pdf> (accessed February 8, 2010), 38.
- . "Drug Control: "Air Bridge Denial Program in Colombia has implemented new safeguards, but its effect on drug trafficking is not clear."
<http://www.gao.gov/new.items/d05970.pdf> (Accessed February 20, 2010).
- Urrutia, Nicolas Ortega, Miguel, Andrade, Gustavo and Vranckx, An. Perspectives on Control, Traffic and the use of Illegal Weapons in Colombia, *Fundacion Ideas Para La Paz*, Bogotá: Colombia, November 2009.
- Wilkenson, Wade F. "A New Underwater Threat," October 14, 2008,
<http://www.military.com/forums/0,15240,177265,00.html> (accessed February 20, 2010).
- Word Press. "Cocaine Submarines: The Next 'Miracle on the Hudson?'" June 11, 2009,
<http://crimeconflict nexus.wordpress.com/2009/06/11/cocaine-submarines>
 (accessed March 12, 2010).

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