

AU/ACSC/2017

AIR COMMAND AND STAFF COLLEGE

AIR UNIVERSITY

CENTRAL AMERICAN TACTICAL AIRLIFT WING

by

Lt Col Guillermo Gonzales, Peruvian Air Force
Maj Jacob Delapasse, USAF
Maj Brenton Gaylord, USAF
Maj Christopher Hakola, USMC

A Research Report Submitted to the Faculty

In Partial Fulfillment of the Graduation Requirements

Advisor: Lt Col Scott Cook

Maxwell Air Force Base, Alabama

17 March 2017



Disclaimer

The views expressed in this academic research paper are those of the authors and do not reflect the official policy or position of the United States government or the Department of Defense. In accordance with Air Force Instruction 51-303, it is not copyrighted, but is the property of the United States government.

Thesis

Central America is a region with unique security requirements. Asymmetric threats posed by organized crime, drug trafficking, and humanitarian disasters require flexibility in force and aide movement. Currently, the countries in the region are unable fiscally to maintain their own airlift capability to meet requirements. The Heavy Airlift Wing (HAW) in Papa, Hungary provides a successful model for a collaboration of countries maintaining an airlift wing to meet their airlift needs while lowering the cost per country to an affordable level. A C-130 Tactical Airlift Wing (TAW) in Central America, funded and operated by Central American countries and the US, is a fiscally and operationally feasible solution for meeting airlift requirements.

This paper will examine the airlift demands for Central America. Then it will examine the success of the HAW in Europe. Next, cost analysis will illustrate the feasibility of a collaborative airlift wing in Central America. Finally, we will offer a proposal for the construct of the Tactical Airlift Wing.

Airlift Demands

Central America is a region where security threats are related to domestic issues rather than to state actors. Its condition as a bridge between the United States and the rest of Latin America makes it particularly exposed to trafficking networks of drugs, weapons and human beings. In the last century, a violent period of instability emerged due to the repression of communist insurgencies and social unrest by military regimes associated with economic elites. After the end of this period, the influence of the Armed Forces in the political life declined and the defense budgets were reduced, under the perception that conventional wars were an unlikely scenario. Additionally, Costa Rica and Panama had their military banned by law, to focus its

resources in development and social needs. However, the lack of conventional wars does not mean that the region is peaceful.

According to a 2016 press release, Central America is the world's most deadly region outside a war zone. The so-called Northern Triangle (Guatemala, El Salvador and Honduras) recorded 17,422 murders in 2015, driven in most of the cases by the war among gangs.¹ The social inequity, poor governance and high corruption makes the young population in the region prone to collaborate with gangs. On June 2016, U.S. Southern Command commander Navy Adm. Kurt Tidd said the biggest security challenge for Latin America and the Caribbean is the illicit networks that criminals and terrorists can use.² Consequently, homeland security is one of the top security priorities of military forces. Nevertheless, the roles of the Armed Forces according to the law in each country covers a wide spectrum.

According to the law in each country, the other common priority is disaster relief (see Figure A). National development, peacekeeping operations and counter narcotics are considered in most of the Constitutions, but do not generate the same regional consensus. Peacekeeping is a recent area of interest and is expected to grow in the near future. In 2016, Guatemala participated in 7 peacekeeping operations with 218 troops, Honduras participated in 2 with 59 troops, and El Salvador in 7 with 198 troops.³

The limitations to confront natural disasters and humanitarian crises resulted in a successful joint effort by these countries. The Conference of Central American Armed Forces (CFAC) established the creation of Humanitarian and Rescue Units (UHR) in all its members. Since 2000, these units have been employed to relief in natural disasters and epidemics in the region.⁴ The advantage of geographical proximity, cultural similarity, and pre-arranged agreements for entering in affected territories makes them convenient. Furthermore, according to

recommendations of the Stockholm International Peace Research Institute (SIPRI), regional capacities to respond to disasters should be developed and relevant institutional relationships strengthened, particularly between existing regional organizations and the United Nations regional offices. This would improve the effectiveness of foreign military assets in disaster relief, not least coordination with other actors.⁵

MISSION COUNTRY	NATIONAL DEFENSE	HOMELAND SECURITY	NATIONAL DEVELOPMENT	DISASTER RELIEF	PEACEKEEPING OPERATIONS	COUNTER DRUG SUPPORT
BELIZE	X	X		X		
GUATEMALA	X	X		X		
HONDURAS	X	X	X	X	X	X
EL SALVADOR	X	X	X	X		
NICARAGUA	X	X	X	X	X	
COSTA RICA	ARMY BANNED BY CONSTITUTION					
PANAMA	ARMY BANNED BY CONSTITUTION					

Figure A: Missions of the Military by Law in Central America. Elaborated with information of Comparative Atlas of Defense in Latin America and the Caribbean-2016.

The same study considered air transport as the main immediate asset deployed after a disaster, particularly during the initial phase of the response, when the need is most urgent and in places where access to the affected area is limited. Timely arrival of rescue teams and medical supplies can affect significantly the casualties. Moving relief goods and personnel between countries or within a country is the least politically sensitive and controversial use of military assets, including aircraft.⁶ In the case of Central America, because of the limited funding provided to the military, current airlift capability is composed in most of the cases by scarce and limited platforms. The best aircraft is the C-130 of the Honduran Air Force, and bigger aircraft are limited, additionally to their cost, by the capability of the airfields. A capability congressional report evidenced the limitations in infrastructure to operate strategic airlift platforms C-5 and C-

17 in the region. Only Guatemala, Honduras, El Salvador and Panama each one with had five or less airfields available.⁷ Besides, the main security priority will also need airlift as part of its response.

As part of their security strategy, Central American countries are deploying elite teams from their Armed Forces to confront organized crime groups and disrupt illegal enterprises such as drug trafficking, along their shared borders.⁸ This area covers 600 km (375 miles) among Guatemala, Honduras and El Salvador. Recently efforts like the joint security force, launched by the presidents of these three countries on November 2016, are ambitious and includes the participation of police, military, intelligence and border forces.⁹ The intention of curbing the involvement of gangs with narco-trafficking and territorial disputes for the distribution of cocaine is not new. It has been part of the efforts by different previous efforts, like the Central America Regional Security Initiative, but the violence is still increasing and the illegal networks are expanding. The success in the use of military force for homeland security, and airlift capabilities in particular, will depend on the proper and ingenious provision of needed resources.

Central America needs organic airlift capability to combat the asymmetric threats and mitigate humanitarian disasters. The individual countries in Central America cannot afford their own airlift fleets. A collaborative airlift wing would lower the cost for Central American countries while providing airlift capabilities. An example of a collaborative airlift wing working successfully exists in the Heavy Airlift Wing (HAW) in Papa, Hungary.

Collaborative Airlift Wing Success

The HAW is the operational arm of a multinational initiative providing participating nations assured access to military airlift capability addressing the growing need for strategic and tactical airlift.¹⁰ The HAW consists of 12 contributing nations: The United States, Sweden,

Hungary, Finland, Lithuania, Estonia, Norway, Slovenia, Romania, Bulgaria, Poland, and The Netherlands. Of the 12 member nations, only the US possesses its own heavy airlift capability outside of the HAW.¹¹ The other 11 nations have not had enough demand for heavy airlift to justify the cost of maintaining their own fleet. Instead, they have relied on heavy airlift from partners (NATO, EU, Partnership for Peace, etc...) or contracted it out to civilian carriers or other nations with the capability, namely Russia. With the HAW, these 11 nations have unilateral control over a portion of the wing's annual flight hours to meet their airlift demands.

The HAW currently operates three C-17A aircraft with an annual flying hour program of 3,100 hours. Each year, the flying hours are divided up amongst the consortium countries to execute missions based on national needs.¹² Flying hours are allocated based on fiscal contributions from each country. The US, for example, contributes 32% of the annual budget for the HAW so they control 32% of the flying hours.¹³ The annual budget for the HAW is \$147 Million USD. The 12 member nations have agreed to fund the HAW at this level for a minimum of 30 years from its inception in 2009.¹⁴ The US, Sweden, The Netherlands, and Norway are the largest contributors at 32%, 17%, 16%, and 13% respectively. Conversely, Slovenia, Estonia, Finland, Hungary, and Lithuania all contribute less than 2% of the budget and thus control less than 2% of the annual flying hours.¹⁵ With each country contributing to the HAW based on their needs and abilities, the HAW has successfully met the heavy airlift requirements of its member nations since 2009.

Since 2009, the HAW has flown over 20,000 hours to meet the airlift needs of its member nations while contributing to regional and international security missions. The HAW has successfully completed combat missions in Afghanistan, Iraq, and Kosovo; humanitarian relief missions in Haiti and Mali; and missions supporting the Malaysian Airlines crash investigation

in Ukraine in 2014.¹⁶ The HAW has demonstrated the capability to execute the full range of C-17 missions to include equipment airdrop, personnel airdrop, and operations on short and non-paved runways. All of these are capabilities and missions that the member nations (except the US) would have been unable to perform outside of the HAW construct.

In the same way that the HAW provides heavy airlift to partner nations that would otherwise be unable to afford the capability, the Tactical Airlift Wing (TAW) in Central America would provide a needed capability in a cost effective manner. In a Central American tactical airlift wing, the member nations would include Panama, Costa Rica, Nicaragua, Guatemala, Honduras, El Salvador, and Belize. Because these countries collectively are still unlikely to be able to fiscally support an airlift wing, the US and at least one other higher GDP country from the Americas should participate in the wing. Mexico is a logical partner for the TAW due to its geographic position and shared asymmetric threats with the rest of Central America.

Cost Analysis

The feasibility of a tactical airlift capability in Central America relies heavily on the Central American countries' ability to afford the acquisition and operational cost to run an airlift wing. Unfortunately, most of the Central American countries have low GDPs and in return low defense budgets especially compared to the countries that support the HAW in Papa, Hungary. To capture the affordability of the multinational Tactical Airlift Wing (TAW) in Central America, our team completed a cost analysis for supporting three C-130Js or three C-130Ts. First, we looked directly at the cost it would take to run TAW. Much of this cost analysis relied heavily on the HAW budget sheets. Aircraft maintenance and fuel rates were adjusted for the C-130J/Ts. Second, our team analyzed the Central American governments' current military spending and suggested the ratio of cost per country to fund TAW. Third, we calculated the

percentage increase in defense spending for each country in order to meet the funding requirements for acquisition cost and operational cost. Then the team compared the Central American countries' percentage of increase in the defense budget with the countries within HAW's percentage of defense budget increase for a feasibility check. Before getting started, it must be understood that these three analyses are an initial look at cost for developing the wing and should require more scrutiny if the plan materializes.

The cost to run an airlift wing is not cheap. Many variables must be considered to run an effective airlift wing. The cost needs to support all units within the wing such as the command staff, the airlift squadron, command and control, and logistical support squadron. The initial cost analysis considered everything from procurement of aircraft to pencils for support personnel. The analysis was broken into two main sections: acquisition cost and operational cost. Acquisition cost considered aircraft procurement, support equipment procurement, airbase bed down cost, and procurement cost for aircraft modifications. Operational cost considered mostly everything else to include maintenance, support, fuel, and other fixed cost. The basis of this analysis relied heavily on the current cost to support the HAW in Europe. To start the analysis our team first looked at acquisitions cost.

Acquisitions cost will be heavily weighted towards the beginning of the program. The initial cost for aircraft and support equipment will be significant, but the acquisition cost will decrease as the program matures. However, after initial acquisition, increased acquisition cost may occur with any significant aircraft modifications that are required for increased capability or FAA regulations. For example, the HAW at Papa, Hungary is currently funding one significant modification that drives up mid-program acquisition cost. The HAW is procuring Large Aircraft Infrared Countermeasures (LAIRCM) system on all three C-17s.¹⁷ LAIRCM a technology that

increases the survivability of the C-17 by protecting it from missile attacks. The HAW has procured three systems for \$51.8M.¹⁸ Furthermore, increase in procurement cost after initial purchase may come from infrastructure requirements. For example, the HAW in Papa, Hungary is currently building a new hangar in order to do home station checks indoors and out of the weather elements. The procurement cost for this hangar is approximately \$44M.¹⁹ These costs include the construction of the hangar, hiring of construction managers, hiring of project managers, and furniture and effects for occupation of the hangar.²⁰ Furthermore, increased acquisitions cost may occur with expensive procurement of spare parts. For example, the HAW is currently purchasing a spare engine, which cost \$13.4M.²¹ In its 10th year of operation, the HAW has a \$108M acquisitions cost for the next three years compared to the initial acquisitions cost of close to \$1B. With that being said, the acquisition cost after the initial procurement will be very difficult to project for the Central American TAW. Therefore, these costs will not be put into this initial assessment. This cost must be considered if this plan materializes. Now let us look at the upfront acquisition cost for the TAW.

The initial acquisition cost for the airlift wing includes the purchase of aircraft, infrastructure, and support equipment. According to the C-130J program office, the procurement cost for a single C-130J is \$66M.²² Therefore, the cost for two and three C-130Js is \$132M and \$198M, respectfully. The team chose to start the analysis with C-130J aircraft for three reasons. First, C-130J aircraft can meet the mission requirements in Central America. The smaller geographic coverage required in Central America does not necessitate a wing capable of heavy or strategic airlift provided by C-17s. Second, the cost of the C-130J from a procurement and operational perspective is much cheaper than the C-17 (~\$256M per aircraft). Because the Central American budgets are much smaller than the Eastern European countries participating in

HAW in Papa, Hungary, the C-130 was a better option. Finally, the C-17 is no longer in production. Boeing stopped producing the C-17 so it is no longer available for purchase. The other current option was the Airbus A400M. This aircraft is in production; however, the U.S. does not operate this aircraft. This means the U.S. will not be in a leadership role because it does not have trained pilots or crew. In addition, the price of the A400M would be too costly for the Central American countries. The team recommends that the United States contribute at least one C-130 at \$66M while the Central American countries pay for the other two C-130Js at \$132M. This is a very similar modal used in the HAW for the initial purchase of the C-17s. The analysis later in this chapter will show that the United States will need to alleviate some of the upfront acquisitions cost by paying for more than a single aircraft.

Next, the TAW will need to procure equipment to support C-130J operations. This support equipment will include spare engines, night vision devices, ground handling equipment, spares, alternate mission equipment, support equipment, and contractor logistics support. The initial procurement cost for the support equipment will be significant at the beginning of the program, but should decrease rapidly after the initial purchase. The HAW initially budgeted \$340M dollars for six years for initial support cost to support C-17. While a majority of this cost was for Boeing contracted maintenance, this cost also covered a majority of the support equipment to include spare engines.²³ Therefore, the initial procurement for support equipment will be purchased through the maintenance support contract. Our team recommends using this model. More of this cost will be discussed in the operational cost section.

The cost to bed down the TAW will be highly dependent on the airfield chosen as the main operating location. This cost relies heavily on the existing infrastructure of the air base. If the existing infrastructure is lacking hangar space and office space, this could drive the cost up.

This paragraph will attempt to provide a reasonable estimate on the bed down cost; however, further investigation of the operating location will be required once the location is selected. The initial bed down cost includes construction and renovation of hangars, office space, and support buildings. It also includes utility infrastructure such as roads, parking areas, drainage, electricity, gas, internet, or whatever systems are needed. The initial bed down for the HAW was approximately \$7M a year for the first three years.²⁴ The HAW budgeted \$37M for bed down cost. This estimate would increase significantly if the location chosen had poor infrastructure. When considering the location of the base, the team picking the location should highly consider the existing infrastructure. In addition, much of the bed down support and cost for HAW is being provided by Hungary. Hungary provides about \$1.6M a year in infrastructure support. The bed down cost has many variables and should be investigated more when the location is chosen.

Operational cost should remain steady throughout the lifetime of the program as long as the amount of flying hours and total number of aircraft in the unit remain constant year to year. Operational cost includes maintenance, personnel, training, fuel, vehicle support, travel, tools, consumables and much more. This estimate will use the HAW expenditures to provide a cost estimate for operations. Maintenance for the C-17 in the HAW is contracted out to Boeing. The multinational partnership has a 4-year ~\$50M/year contract with Boeing to fully support the C-17s at Papa.²⁵ The decision for the HAW to go with contractor support was easy because the United States Air Force has contracted its C-17 maintenance to Boeing. The structure was already in place for the HAW to do the same. The C-130J maintenance, however, is a little different. Lockheed-Martin only does contractor maintenance for parts that are C-130J unique. All other legacy parts on the C-130 are maintained by the Air Force. For example, if a part

breaks on the C-130 and a legacy C-130E/H part that carried over to the C-130J, United States Air Force (blue suitors) will fix the part. If the part broken is C-130J unique, such as the composite control surfaces, the part will be fixed by Lockheed-Martin.²⁶ While blue suitors maintain a majority of the C-130Js, our group recommends providing full contractor support for the aircraft in the Central America TAW. Maintenance support through the government personnel participating in TAW would require extra training because the majority of the countries in this multinational program do not have C-130Js in their respective air force's inventory. Without C-130Js, these countries do not have the training or expertise to maintain the C-130. Contracting the maintenance will allow for continuity within the maintenance unit. While the current HAW averaged \$50M a year to maintain the C-17, the C-130J should be lower due to its size and legacy parts. The current cost for per flight hour for a C-17 is \$23,811.²⁷ Taking the current ratio of cost for fuel to cost for maintenance on the C-17 and using the cost per flight hour of \$14,015 for the C-130, a predicted cost for a maintenance contract should be around \$32M.²⁸

Furthermore, the Central American Airlift Wing will have to pay for the personnel. The HAW has 146 total personnel in which 55 are officers and 91 are enlisted.²⁹ The Central American TAW will most likely have very similar mission support manning. The total cost for all personnel is approximately \$18.7M.³⁰ This cost is most likely a high estimate because the number of personnel to support C-130J because it is smaller and less complex than the C-17. Pilots and loadmasters from the United States Air Force will come to the Central American Airlift wing already trained. However, all other countries in this multinational organization do not own the C-130 and will require their loadmasters and pilots to be trained. This foreign

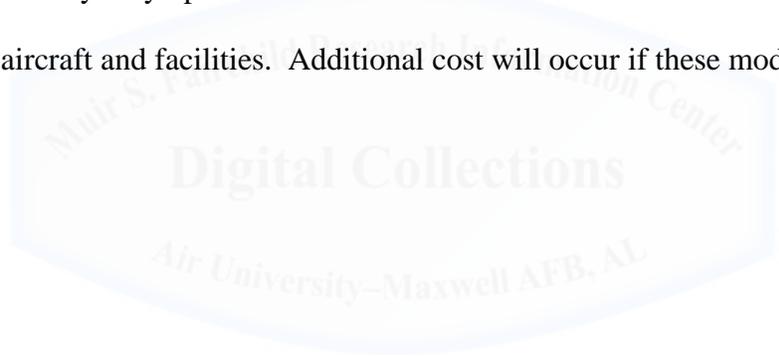
military training will cost approximately \$4.7M a year. This cost will adjust depending on the current personnel.

In addition, fuel cost for the C-130J will be a significant part of the budget. In 2015, the HAW spent \$17.9M on fuel for 2818 flight hours. Initially, the cost for gas will be low due to low flight hours, but as the program ramps up this cost will increase then level off. The annual flight hour allotment for the HAW is 3165 hours. The team based the estimate fuel cost off the same number of flight hours as the HAW for accuracy. The fuel cost for the C-130J will be significantly cheaper for 3165 hours because the C-130J is more efficient than the C-17. The cost for fuel for 3165 flight hours on the C-130J is \$9.811M. This was calculated using the current cost for fuel at \$4.17 per gallon and the C-130J burn rate of 5000lbs/hr.³¹ Fuel cost can change dramatically due to fuel prices. The HAW sets aside an extra \$15M in case prices rise. Our group recommends setting aside \$7M for fuel price increases.

Airport services provides cost associated with ground handling, crew transportation, and lavatory services. The estimate for airport services is \$1.8M.³² This cost should not vary unless there is an increase or decrease in number of aircraft. Also, crew lodging is estimated to be \$325K.³³ This covers accommodation charges with associated missions.

Other fixed operational cost include facilities recurring cost. This includes base support services such as utilities, janitorial services, heating, lighting, security, and repairs. This cost should be around \$175K a year and will fluctuate depending on cost of repairs.³⁴ Certification and registration, and airworthiness of the aircraft should cost around 50K a year and this cost should be stable.³⁵ Travel requirements for Central Airlift personnel should cost 600,000.³⁶ This travel is mainly for training. IT support for base computers cost 470K.³⁷ This covers phone, iPads, printer, and network services. This cost should be fairly stable unless there is an upgrade

in the system. Freight transportation cost estimate is \$111K a year.³⁸ This cost includes shipment of items from vendors and shipping to repair locations. Other fixed cost such as vehicle support, non-aircraft refueling operations, administration, hospitality, public affairs, uniforms, spares and consumables for non-aircraft items, and all other support items cost approximately \$600K.³⁹ This completes the cost analysis for the Central America Airlift Wing. Figure B summarizes all cost. The initial estimation for acquisition cost is \$317M. This includes aircraft and facilities procurement. Once the airlift wing has completed its one time procurement purchases the steady state cost per year will be approximately \$82M a year. When you consider higher C-17 fuel cost and maintenance cost, the TAW operational cost estimate compares nicely to the yearly operations cost for the HAW at \$105M. This excludes any modifications to aircraft and facilities. Additional cost will occur if these modifications or additions occur.



Title	Cost (K)	Notes
Procurement Cost		
Aircraft Procurement	198,000	3-year money
Beddown Cost	37,000	cost will be dependant on infrastructure of mainbase
Operational Cost		
Maintenance/Support	32,000	Yearly cost/includes support equipment cost
Facility Cost	7,000	Yearly cost/ Rental and renovation cost
Mission Personnel	18,700	Yearly cost
Training	4,700	Yearly cost
Fuel Cost	9,800	Yearly cost
Fuel Cost reserve	7,000	Yearly cost
Air Refueling	170	Yearly cost
Airport Services	1,800	Yearly cost
Crew Lodging	325	Yearly cost
Facility services	175	Yearly cost
Aircraft registration	50	Yearly cost
IT	470	Yearly cost
Freight Transportation	111	Yearly cost
other fixed cost	600	Yearly cost
Total first year	317,901	
Steady State	82,901	Does not include aircraft and bed down

Figure B: Summary of cost for the Central American Airlift Wing

Next, the team did an analysis of possible countries willing to participate in the Central American Airlift Wing. First, the team looked at the feasibility of only the Central American counties (Belize, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, and Panama) plus the United States' ability to fund the airlift wing. The HAW splits acquisition and operational cost by the amount of flight hours each country will fly.⁴⁰ For example, Sweden declared 550 flight hours of the total 3165 flight hours that the HAW will fly for a given year. Therefore, the Sweden pays 16.9% (550/3165) of the acquisition cost. Since this is only a feasibility study, the total flight hours demanded from each country is unknown until negotiations for forming the wing start. Therefore, our team has used a normalized method to compare the HAW to the new airlift wing in Central America. To do this, the team added the defense budget of each Central

American country, which totaled to \$1.6B. The acquisition and operation cost required from each country were calculated by taking the percentage of each country's defense budget divided by the total defense budget of all Central American countries. By doing this, wealthier countries will pay for more of the cost. For example, Panama has a \$747M defense budget requiring it to pay for 45.5% ($\$747\text{M}/\1.6B) of the acquisition cost. The team also varied the percentage of United States' distribution to the Central America Airlift Wing. For example, the team varied the percentage from 33% - 60% to see which cost is feasible for the Central American countries. If the US paid for 50% of the acquisition cost, Panama would pay for 45.5% of the 50% that the Central American countries will cover. An example of the analysis can be seen in Figure C below.⁴¹ In this example, the United States is paying for 50% as seen at the bottom column (f). Column (h) shows the percentage of increase in defense spending required to meet the acquisition cost. In this scenario, all Central American countries would be required to raise their defense budgets 7.19% to meet the initial acquisition cost. Column (i) shows the

Central American countries with U.S. funding 50% of procurement and aquisition cost										
Central American Country	Type (a)	2014 (b)	2015 (c)	2016 (d)	2017 (e)	(f) % of Defense Budget	(g) Cost for initial procurement (\$M)	(h) % increase in defense spending due to initial procurement cost	(i) Cost for steady state operations (\$M)	(j) % increase in defense spending due to steady state operations
Belize	Defense Budet (\$M)	52	58	65	75	0.046	5.37	7.185	1.89	2.527
	Percent GDP	3	4	3	4					
	GDP (\$M)	1,582	1,597	1,903	1,787					
Costa Rico	Defense Budet (\$M)					0.000	0.00	0.000	0.00	0.000
	Percent GDP									
	GDP									
El Salvador	Defense Budet (\$M)	151	154	159	154	0.094	11.09	7.185	3.90	2.527
	Percent GDP	1	1	1	1					
	GDP (\$M)	25,100	25,717	26,550	25,717					
Guatemala	Defense Budet (\$M)	259	266	275	282	0.172	20.23	7.185	7.12	2.527
	Percent GDP	0.480	0.480	0.480	0.480					
	GDP	53,958	55,417	57,375	58,667					
Honduras	Defense Budet (\$M)				310	0.189	22.27	7.185	7.83	2.527
	Percent GDP				2					
	GDP (\$M)				20,667					
Nicaugra	Defense Budet (\$M)	83	75	73	N/A	0.044	5.22	7.185	1.83	2.527
	Percent GDP	0.900	0.610	0.590	N/A					
	GDP (\$M)	9,211	12,295	12,305						
Panama	Defense Budet (\$M)	716	685	751	747	0.455	53.67	7.185	18.88	2.527
	Percent GDP	1.550	1.480	1.400	1.600					
	GDP (\$M)	46,219	46,277	53,629	46,688					
United States	Defense Budet (\$M)	653,212	627,882	636,678	635,049	0.5	117.85	0.019	41.4505	0.007
	Percent GDP	3.577	3.356	3.351	3.268					
	GDP (\$M)	18,261,448	18,709,237	18,999,642	19,432,344					

Figure C: Example of cost analysis with U.S. supplying 50% of the funding

operational cost required from each country. Column (j) shows the percentage increase in defense budget in order to meet the yearly operational cost. Central American countries would have to raise their defense budget 2.53% to meet the operational cost requirements. Next, the team increased the U.S. cost from 33% to 60% to see the effect it would have the Central American countries increase in defense spending. The calculations for this can be seen in Figure D. The percentage increase in defense spending for the Central American countries seemed high. To validate this assumption, the team calculated the percentage increase for the countries participating in the HAW in Papa, Hungary. The exact same analysis was completed for the HAW and the results can be seen in Figure E.

Change in Central American defense spending with increased U.S. Cost (Central American countries only)		
U.S. % Cost	(h) % increase in defense spending due to initial procurement cost	(j) % increase in defense spending due to steady state operations
33%	9.63%	3.39%
40%	8.62%	3.03%
50%	7.19%	2.53%
60%	5.75%	2.02%
70%	4.31%	1.52%

Figure D: % of Central American increase due to procurement and operational cost

The percentage increase in defense spending for the countries participating in HAW due to the acquisition cost (Column (h)) and the operation cost (column (j)) in Figure E is 1.413% and .184%, respectfully. This indicates that the feasibility for the Central American countries to

HAW cost analysis (Procurement cost = \$805M, Yearly Operational Cost \$105M)										
Central American Country	Type (a)	2014 (b)	2015 (c)	2016 (d)	2017 (e)	(f) % of Defense Budget	(g) Cost for initial procurement (\$M)	(h) % increase in defense spending due to initial procurement cost	(i) Cost for steady state Operations (\$M)	(j) % increase in defense spending due to steady state operations
Bulgaria	Defense Budet (\$M)	559	523	622	772					
	Percent GDP	1.23	1.11	1.27	1.54	0.020	10.91	1.413	1.42	0.184
	GDP (\$M)	45,633	47,245	48,823	50,293					
Estonia	Defense Budet (\$M)	401	427	462	488					
	Percent GDP	1.94	2.03	2.17	2.23	0.013	6.90	1.413	0.90	0.184
	GDP (\$M)	20,670	21,034	21,290	21,883					
Finland	Defense Budet (\$M)	2,856	2,716	2,921	2,864					
	Percent GDP	1.34	1.27	1.36	1.31	0.075	40.47	1.413	5.28	0.184
	GDP (\$M)	213,134	213,690	215,413	218,459					
Hungary	Defense Budet (\$M)	961	898	1,061	1,214					
	Percent GDP	0.812	0.737	0.853	0.953	0.032	17.16	1.413	2.24	0.184
	GDP (\$M)	118,350	121,845	124,385	127,387					
Lithuania	Defense Budet (\$M)	338	444	599	735					
	Percent GDP	0.880	1.140	1.500	1.800	0.019	10.39	1.413	1.35	0.184
	GDP (\$M)	38,409	38,947	39,933	40,833					
Netherlands	Defense Budet (\$M)	8,289	8,288	8,473	8,724					
	Percent GDP	1.175	1,178,000	1,200	1,193	0.229	123.29	1.413	16.08	0.184
	GDP (\$M)	705,447	704	706,083	731,266					
Norway	Defense Budet (\$M)	4,666	4,898	5,563	5,672					
	Percent GDP	1.360	1.405	1.585	1.605	0.149	80.16	1.413	10.46	0.184
	GDP (\$M)	343,088	348,612	350,978	353,396					
Poland	Defense Budet (\$M)	7,779	9,243	8,600	8,778					
	Percent GDP	1.873	2.148	1.945	1.925	0.230	124.05	1.413	16.18	0.184
	GDP (\$M)	415,323	430,307	442,159	456,000					
Romania	Defense Budet (\$M)	2,486	2,473	2,852	3,217					
	Percent GDP	1.565	1.500	1.653	1.804	0.084	45.46	1.413	5.93	0.184
	GDP (\$M)	158,850	164,867	172,535	178,326					
Slovenia	Defense Budet (\$M)	396	376	380	384					
	Percent GDP	1.060	0.980	0.970	0.980	0.010	5.43	1.413	0.71	0.184
	GDP (\$M)	37,358	38,367	39,175	39,184					
Sweden	Defense Budet (\$M)	5,321	5,238	5,234	5,317					
	Percent GDP	1.217	1.155	1.119	1.115	0.139	75.14	1.413	9.80	0.184
	GDP (\$M)	437,223	453,506	467,739	476,861					
United States	Defense Budet (\$M)	653,212	627,882	636,678	635,049					
	Percent GDP	3.577	3.356	3.351	3.268	0.330	265.65	0.042	34.65	0.005
	GDP (\$M)	18,261,448	18,709,237	18,999,642	19,432,344					

Figure E: Cost analysis of the HAW with U.S. supplying 33% of the funding

operate and maintain three C-130J is not feasible because their defense budget increase is six orders of magnitude higher than that of the HAW.

Next, the team did the same analysis but added Mexico to the list of countries. Mexico was chosen because it provides a large defense budget at \$6.1B, it is geographically logical, and it is combatting the same asymmetric threats affecting Central America. Figure E shows the

Cost Analysis with Central American Countries with Mexico added (U.S. funding 50% of procurement and acquisition cost)										
Central American Country	Type (a)	2014 (b)	2015 (c)	2016 (d)	2017 (e)	(f) % of Defense Budget	(g) Cost for initial procurement (\$M)	(h) % increase in defense spending due to initial procurement cost	(i) Cost for steady state operations (\$M)	(j) % increase in defense spending due to steady state operations
Belize	Defense Budget (\$M)	52	58	65	75	0.010	1.13	1.517	0.40	0.535
	Percent GDP	3	4	3	4					
	GDP (\$M)	1,582	1,597	1,903	1,787					
Costa Rico	Defense Budget (\$M)					0.000	0.00	0.000	0.00	0.000
	Percent GDP									
	GDP (\$M)									
El Salvador	Defense Budget (\$M)	151	154	159	154	0.020	2.34	1.517	0.83	0.535
	Percent GDP	1	1	1	1					
	GDP (\$M)	25,100	25,717	26,550	25,717					
Guatemala	Defense Budget (\$M)	259	266	275	282	0.036	4.27	1.517	1.51	0.535
	Percent GDP	0.480	0.480	0.480	0.480					
	GDP (\$M)	53,958	55,417	57,375	58,667					
Honduras	Defense Budget (\$M)				310	0.040	4.70	1.517	1.66	0.535
	Percent GDP				1					
	GDP (\$M)				28,182					
Mexico	Defense Budget (\$M)	6,084	6,027	6,062	6,104	0.788	92.61	1.517	32.67	0.535
	Percent GDP	0.593	0.555	0.536	0.527					
	GDP (\$M)	1,025,970	1,085,946	1,130,970	1,158,254					
Nicaugra	Defense Budget (\$M)	83	75	73	N/A	0.009	1.10	1.517	0.39	0.535
	Percent GDP	0.900	0.610	0.590	N/A					
	GDP (\$M)	9,211	12,295	12,305						
Panama	Defense Budget (\$M)	716	685	751	747	0.096	11.33	1.517	4.00	0.535
	Percent GDP	1.550	1.480	1.400	1.600					
	GDP (\$M)	46,219	46,277	53,629	46,688					
United States	Defense Budget (\$M)	653,212	627,882	636,678	635,049	0.5	117.50	0.019	41.4505	0.007
	Percent GDP	3.577	3.356	3.351	3.268					
	GDP (\$M)	18,261,448	18,709,237	18,999,642	19,432,344					

results of the analysis. The specific analysis was done with the U.S. providing 50% of the

Figure F: Example of cost analysis with Mexico with U.S. supplying 50% of the funding acquisition cost and operational cost. The team also changed the funding provided by the U.S. from 33% to 60% to see the change in percentage of defense budget for the Central America countries and Mexico. These results can be seen in Figure G. When the U.S. supports 40% of the overall cost, the increase in defense budget for Mexico and the Central American countries

Change in Central American defense spending with increased U.S. Cost (Central American countries and Mexico, C-130J)		
U.S. % Cost	(h) % increase in defense spending due to initial procurement cost	(j) % increase in defense spending due to steady state operations
33%	2.03%	0.72%
40%	1.82%	0.64%
50%	1.52%	0.54%
60%	1.21%	0.43%

Figure G: % of Central American increase due to procurement and operational cost

compares very nicely to the HAW increase in percentage of defense spending. The issue with U.S. providing 40% of the cost is that Mexico would have to pay more out of pocket than the U.S. With U.S. paying 40% of the cost, Mexico would pay \$111M for acquisition cost while the U.S. paid \$94M. Therefore, our team recommends that the U.S. pay 50% of the acquisition cost and operational cost to ensure they are funding a majority of the project. With the U.S. paying 50% of overall cost, the rest of the TAW countries will be required to increase their defense budgets by 1.52% for acquisition cost and .54% for yearly operational cost in order to meet the funding requirements. This compares very nicely with the HAW. The percentage of U.S. payment to acquisition cost and operational cost does not have to be the same and can be adjusted to meet the needs of the program. For example the U.S. can pay 50% in acquisition cost and 55% percent in operational cost to meet the needs of the Central American countries.

The same analysis was accomplished with the purchase of C-130Ts, which are an older model of C-130. These models cost approximately \$30M per aircraft. To purchase three aircraft at \$90M, the TAW would still require significant funding from the U.S. if only Central American

countries were involved. The percentage of defense increase for this scenario is captured in Figure H. Because of the high increase, the team added Mexico to the model. This addition is captured in Figure I. By adding Mexico, the Central American payments are much more

Change in Central American defense spending with increased U.S. Cost (Central American countries only - C-130Ts)		
U.S. % Cost	(h) % increase in defense spending due to initial procurement cost	(j) % increase in defense spending due to steady state operations
33%	5.22%	3.30%
40%	4.67%	3.03%
50%	3.89%	2.53%
60%	3.11%	2.02%
70%	2.34%	1.52%

feasible. It also lowered the cost needed from the U.S. for the TAW when compared to the C-130J case.

Figure H: % of Central American increase with C-130T procurement

Figure I: % of Central American and Mexico increase with C-130T procurement

Through this analysis, our team suggests that the ability to fund a Central American Airlift Wing with three C-130Js or C-130Ts is feasible. The analysis showed that just using the Central American countries would be too much of a burden on the Central American defense budgets. The airlift wing must use Mexico as a partner to make the funding feasible. Also, the U.S. must pay for 50% of the cost to purchase the C-130J, which is higher percentage than is

Change in Central American defense spending with increased U.S. Cost (Central American countries and Mexico, C-130T)		
U.S. % Cost	(h) % increase in defense spending due to initial procurement cost	(j) % increase in defense spending due to steady state operations
33%	2.11%	0.72%
40%	0.98%	0.64%
50%	0.82%	0.54%
60%	0.66%	0.43%

pays with the current HAW in Papa, Hungary. The U.S. must pay for 33% of the cost to purchase the C-130T.

Proposal

The concept for a Central American Tactical Airlift Wing (TAW) is a scaled down version of the successful model seen in Europe. While the European model is based around the C-17, the Central American version would be best served with C-130s for a variety of reasons. First, the limited resources of the contributing nations compared to those in Europe. Second, the austere conditions seen throughout Central America are much more suitable to the C-130, including short, unimproved runways in mountainous regions. Finally, C-130s are the largest airlift asset in the region that still provide the required mission flexibility, and the Honduran Air Force operates, maintains and conducts training within a self-sustained C-130 program.⁴² This proposal will expand upon current regional capabilities, infuse US funding into a combined Foreign Military Sales (FMS) case and provide expertise and leadership to establish the program. The following sections will describe the best suitable bed-down location, recommended contributions by country, FMS case overview, and benefits to the entire region.

Basing: Soto Cano Air Base, Honduras

In the search for a bed-down location, we analyzed three critical factors: 1) Suitable runway length and width, and taxiways that can handle C-5 aircraft. The reason for this is the requirement to bring in massive quantities of supplies from the US in the case of a largescale Humanitarian Assistance / Disaster Relief (HA/DR) scenario. The base would become a hub, from which C-130s would distribute aid to anywhere within Central America or the Caribbean. 2) Current capabilities in operations, maintenance and training for C-130 aircraft. 3) Enduring US presence and established military-to-military relationships with the host nation.

Honduras is the only country that meets all three conditions; therefore, the search was narrowed within these borders. There are three airfields in Honduras capable of handling both C-5 and C-130 aircraft, and one additional field that is not C-5 capable, but currently serves as their air transport operations center (ATOC). Of the three airfields that could handle C-5s, two of them are civil-military joint use facilities, Armando Escalon Espinal Air Base at San Pedro Sula and Hector Caraccioli Moncada Air Base at La Ceiba.⁴³ Both of these airports lack the cargo handling equipment required to service large transport aircraft and do not have an enduring US presence. The remaining airfield, Soto Cano Air Base at Comayagua, is home to Joint Task Force Bravo (JTF-Bravo), a task force administered by US Southern Command that operates an all-weather, day/night C-5 capable air base.⁴⁴ JTF-Bravo, in cooperation with partner nations, supports counter transnational organized crime, HA/DR and building partner capacities, to promote security in Central America, South America and the Caribbean.⁴⁵

The runway at Soto Cano is 8008 feet long by 148 feet wide, sits at a comfortable elevation of 2,000 feet above mean sea level (MSL), and has a competent air traffic control (ATC) element.⁴⁶ Additionally, the Air Base is equipped with Ground Controlled Approach (GCA) Radar that facilitates all-weather approaches to the field, and has an assault strip on-site to aid in training for missions to austere airfields in the region.⁴⁷

Enduring US operations at Soto Cano Air Base include a weekly C-5 flight from the US, in conjunction with regional C-130 sorties to distribute cargo as required. The TAW could easily piggyback on this weekly round trip for supplies and equipment, in addition to utilizing the cargo handling equipment for ongoing operations. Permanent bed down for three C-130s at this location would not put a significant strain on current operations, and pooling resources among Central American countries with US assistance would defray the initial infrastructure costs. In

the event of a large-scale operation, transient US Air Force C-130s operating under Southern Command could be tasked as the supporting element for the established TAW.

Cost Sharing and FMS Discussion

Of course, nothing happens in the world without money, and in Central America that quickly becomes an issue when discussing military spending. The combined GDP of all Central American countries is just over \$230 Billion USD, with total military spending just over \$1 Billion USD, or 0.5% of combined 2015 GDP.⁴⁸ Figure J ranks each country in order of total military spending, with Costa Rica and Panama the two countries without a standing military force. The spending listed for Panama is limited to the Panamanian Public Forces, which is strictly a paramilitary self-defense force.⁴⁹

Country	GDP in Billion USD	Mil Spending	
		% of GDP	Billion USD
Honduras	20.4	1.50%	0.31
Guatemala	63.8	0.40%	0.26
El Salvador	25.85	0.90%	0.23
Panama	52.1	0.30%	0.16
Nicaragua	12.7	0.60%	0.08
Belize	1.75	1.10%	0.02
Costa Rica	54.1	0.00%	0.00
Totals	230.7	0.5%	1.05

Figure J: Rank of Central American countries based on military spending

Based on this data, the countries of Honduras, Guatemala and El Salvador would provide the bulk of the non-US funding for the FMS case, and hold leadership positions within the TAW. This would fit with the current construct administered by the Heavy Airlift Wing (HAW) in Europe, in which three of the eleven participating countries contribute nearly 75 percent of the money and flight hours, and hold nearly all non-US leadership positions in the command.⁵⁰

The FMS case could also be structured similarly to the HAW, where the US provides nearly one-third of the funding for both operations and acquisitions and the other countries split the difference based on GDP and current military spending. Using data from an existing FMS case proposal that involves C-130T aircraft sales to the Philippines, the TAW case would run upwards of \$120 million USD. The major elements of the sales would include four C-130T (or C-130H, which is comparable to the C-130T) aircraft with four spare T56-16 engines.⁵¹ This aircraft model is currently being phased out of the US inventory as the C-130J is phased in across the services, thereby reducing costs to the TAW and benefiting all parties. The case would include logistical sustainment for three years, modification equipment and labor costs, spare and repair parts, support equipment, publications and technical documentation, aircraft ferry support, personnel training and required training equipment, and US Government and contractor logistics and technical support services. While \$120 million seems like a huge cost for these countries even with US assistance, there is precedence for largescale military spending in the region. For example, Honduras recently allocated over \$200 million USD to refurbish their fixed-wing aircraft and helicopter fleets in cooperation with Israel.⁵²

To procure the C-130J, the most advanced C-130 model, the procurement costs would rise significantly. Feasibility for this option would have to include Mexico as a major regional funding partner. According to GDP and military spending analysis, Mexico's share of the non-US costs would be upwards of 80 percent. While this percentage can be modified, it demonstrates the tremendous monetary advantage to be gained by including Mexico in the arrangement. Comparing the Philippines FMS case with one involving Mexico demonstrates the cost difference between C130J and C130T acquisition and logistical support. The Mexico case proposal to purchase two C130J aircraft with a similar support package would cost well over

\$400 million USD, nearly 700 percent more than the C130T. While there are benefits to including a country that can afford to procure and operate C130J aircraft, the issues with this inclusion are significant. First, Mexico is part of US Northern Command's AOR, requiring additional command relationships and coordination with Southern Command. Second, the Central American countries involved in the TAW could feel marginalized by Mexico's significant role in the project.

Regional Impact

The establishment of a TAW at Soto Cano Air Base, Honduras would further the interests of US Southern Command in the region, provide additional organic airlift capacity, and give Central American countries ownership pride in operations throughout the region. There is a history of operations between Central America and the Caribbean, and the TAW concept would work to further the spirit of cooperation and add significant regional capabilities to perform the missions. An example is the Honduran government supporting Nicaragua following the aftermath of Hurricane Felix. During this operation hundreds of flights operated out of air bases in Honduras, to include Honduran C-130s transporting humanitarian aid supplies from Tegucigalpa to Puerto Cabezas.⁵³ With a TAW centrally located in Honduras the response time for any HA/DR scenario would significantly decrease, with immediate support flown to the hardest hit areas while partner nations outside the region mobilize their support packages.

Recommendation

There is no denying the need for airlift capabilities in Central America. There is also no denying the success of the HAW as a model for collaborative airlift capability. The question is the feasibility of such a wing in Central America given financial constraints. Standing up a C-130J unit in Central America would be considerably cheaper than the C-17 HAW. Additionally,

the C-130J would meet the mission requirements of the TAW in Central America. The legacy versions of the C-130 could be procured at a far cheaper price, but the operational costs and manning requirements are higher than that of the C-130J. Additionally, the US is divesting itself of legacy C-130s. All US active duty C-130 units have converted, or are in the process of converting, to the C-130J. The lack of long-term US support for legacy C-130 models and the higher operating costs offset the benefits of the lower procurement costs. The recommendation of this study is to pursue an additional partner to join the Central American countries and the US to form the Tactical Airlift Wing. Mexico is the logical choice for geographic reasons as well as their shared asymmetric threats with Central America. A Tactical Airlift Wing based in Honduras comprised of the eight Central American countries as well as the US and Mexico would meet the airlift demands of the region, increase Central American security, and strengthen partnerships between the involved nations.

¹ 2016. "El Salvador becomes world's most deadly country outside a war zone." *The Telegraph*. January 5. Accessed February 25, 2017. <http://www.telegraph.co.uk/news/worldnews/centralamericaandthecaribbean/elsalvador/12083903/El-Salvador-becomes-worlds-most-deadly-country-outside-a-war-zone.html>.

² Pellerin, Cheryl. 2016. "Southcom Commander: Illicit Networks are Region's Greatest Security Challenge." *U.S. Department of Defense*. June 2. Accessed February 25, 2017. <https://www.defense.gov/News/Article/Article/789126/southcom-commander-illicit-networks-are-regions-greatest-security-challenge>.

³ Security and Defense Network of Latin America. 2016. *Comparative Defense Atlas in Latin America and Caribbean - 2016*. Buenos Aires: RESDAL, 64

⁴ Nicaraguan Army. 2010. *Conferencia de las Fuerzas Armadas de Centroamerica (CFAC)*. Accessed February 25, 2017. <http://www.ejercito.mil.ni/contenido/relaciones-publicas/rmi/rmi-cfac.html>.

⁵ Sharon Wiharta, Hassan Ahmad, Jean-Yves Haine, Josefina Löfgren, Tim Randall. 2008. *The Effectiveness of Foreign Military Assets in Natural Disaster Response*. Stockholm: Stockholm International Peace Research Institute, xiv

⁶ *Ibid*, 15-16

⁷ United States General Accountability Office. 1994. *Military Airlift: Comparison of C-5 and C-17 Airfield Availability*. Report to Congressional Committees, Washington D.C.: GAO, 8

⁸ Carcamo, Lorena. 2015. "Dialogo Digital Military Magazine." *Central American Armed Forces Strengthen Joint Patrols to Fight Organized Crimes*. August 6. Accessed February 20, 2017. <https://dialogo-americas.com/en/articles/central-american-armed-forces-strengthen-joint-patrols-fight-organized-crime>.

⁹ BBC News. 2016. *Central America tackles gangs with joint border force*. November 16. Accessed February 20, 2017. <http://www.bbc.com/news/world-latin-america-37995720> (BBC News 2016)

-
- ¹⁰ The Strategic Airlift Capability. Retrieved 11 March 2017 from <https://www.sacprogram.org/en/Pages/The%20Strategic%20Airlift%20Capability.aspx>
- ¹¹ *Ibid*
- ¹² *Ibid*
- ¹³ *Ibid*
- ¹⁴ Memorandum of Understanding Concerning Strategic Airlift Capabilities (2009). NATO Airlift Management Organization document# 09-51.
- ¹⁵ The Strategic Airlift Capability. Retrieved 11 March 2017 from <https://www.sacprogram.org/en/Pages/The%20Strategic%20Airlift%20Capability.aspx>
- ¹⁶ *Ibid*
- ¹⁷ 2017 SAC Budget and 2018-2022 Medium Term Financial Plan, 1-2.
- ¹⁸ *Ibid*, 1-4.
- ¹⁹ *Ibid*, 1-4.
- ²⁰ *Ibid*, 1-3.
- ²¹ *Ibid*, 1-4.
- ²² EMAIL from C-130J Program office
- ²³ NATO Airlift Management Agency: SAC Program Annual Financial Overview, 11.
- ²⁴ *Ibid*, 11.
- ²⁵ NATO Airlift Management Program: Foreign Military Sales Business Joint Report, 50.
- ²⁶ Conversation with C-130 program office
- ²⁷ <http://nation.time.com/2013/04/02/costly-flight-hours/>
- ²⁸ <http://nation.time.com/2013/04/02/costly-flight-hours/>
- ²⁹ 2017 SAC Budget and 2018-2022 Medium Term Financial Plan, 1-23.
- ³⁰ *Ibid*, 1-23.
- ³¹ AirNav.com, C-130J TCTO fuel consumption rate
- ³² 2017 SAC Budget and 2018-2022 Medium Term Financial Plan, 1-38.
- ³³ *Ibid*, 1-39.
- ³⁴ *Ibid*, 1-23.
- ³⁵ *Ibid*, 1-24.
- ³⁶ *Ibid*, 1-25.
- ³⁷ *Ibid*, 1-26.
- ³⁸ *Ibid*, 1-24.
- ³⁹ *Ibid*, 1-25.
- ⁴⁰ SAC cost share worksheet: Worksheet sent through email by Lt Col Sanders.
- ⁴¹ Defence Budget Overview, Jane's Sentinel Security Assessment, <http://janes.ihs.com.au/fric.idm.oclc.org/Janes/Display/>.
- ⁴² Lockheed Martin. "C130 Worldwide Fleet Support" <http://lockheedmartin.com/us/products/c130/worldwidefleetsupport.html> (accessed 12 March 2017)
- ⁴³ Red Honduras. "Base Areas" <https://www.redhonduras.com/base-aerea> (translated from Spanish to English) (accessed 13 March 2017)
- ⁴⁴ US Southern Command. "Soto Cano Personnel Become Crew Chiefs for a Day" <http://www.jtfb.southcom.mil/News/Article-Display/Article/1102427/soto-cano-personnel-become-crew-chiefs-for-a-day/> (accessed 12 March 2017)
- ⁴⁵ US Southern Command. "JTF-Bravo" <http://www.jtfb.southcom.mil/> (accessed 13 March 2017)
- ⁴⁶ World Aero Data: "MHSC" <http://worldaerodata.com/wad.cgi?id=HO29721&sch=MHSC> (accessed 14 March 2017)
- ⁴⁷ World Aero Data: "MHSC" <http://worldaerodata.com/wad.cgi?id=HO29721&sch=MHSC> (accessed 14 March 2017)
- ⁴⁸ World Bank. "GDP Ranking Table" <http://data.worldbank.org/data-catalog/GDP-ranking-table> (accessed 15 March 2017)

⁴⁹ National Public Radio. "Having An Army Might Be Practical, But It's Not Obligatory" <http://www.npr.org/2014/06/21/324057374/having-an-army-might-be-practical-but-its-not-obligatory> (accessed 13 March 2017)

⁵⁰ Strategic Airlift Capability. "Strategic Airlift Capability Personnel Conference Heavy Airlift Wing Manning Document" (12 August 2016) p. 1-1, 2-1

⁵¹ Defense Security Cooperation Agency. "DSCA News Release: Government of the Philippines – C-130T Aircraft" <http://www.dsca.mil/major-arms-sales/government-philippines-c-130t-aircraft> (accessed 14 March 2017)

⁵² The Jerusalem Post. "Israel to Modernize Honduran Fighter Jets and Helicopters" <http://www.jpost.com/Israel-News/Politics-And-Diplomacy/Israel-to-modernize-Honduran-fighter-jets-and-helicopters-475042> (accessed 14 March 2017)

⁵³ Red Honduras. "Coronel Hernan Acosta Mejia Air Base" <https://www.redhonduras.com/base-aerea-coronel-hernan-acosta-mejia-ham/> (translated from Spanish to English) (accessed 14 March 2017)

