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The International Conference of Military Engineers and the Environment

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INTRODUCTION

Building trust and cooperation between the military and civilian sectors in the nations of South America is an essential step in their continuing evaluation as democracies. To that end, the United States Army Southern Command Engineers and the Chilean Army Engineers co-sponsored an event entitled "The International Conference of Military Engineers and the Environment," 3-7 August 2009, in Santiago, Chile. The conference was opened by General Oscar Izurieta Ferrer, Commander in Chief of the Army, Chile, and Mr. Thomas Schoenbeck, Director, Enterprise Support, United States Army Southern Command (USSOUTHCOM). It was hosted by Brigadier General Sergio Varela Solar, Commander of Army Engineers, Chile, and Colonel Norberto Cintron, Command Engineer, USSOUTHCOM.

The event was the USSOUTHCOM Command Engineer's annual engineering and environment conference within the USSOUTHCOM Area of Influence. It follows last year's conference held in San Juan, Puerto Rico. It was also the third in a series of USSOUTHCOM Engineer and Environment conferences in South America, with pervious conferences having been held in Asunción, Paraguay, and Montevideo, Uruguay. The principle topics of the 2009 conference were: military engineer involvement in national infrastructure development, environmental security considerations for military engineers, water quality, role of military engineers in natural disaster response and recovery, humanitarian demining, and engineer unit participation in peacekeeping operations.

ENVIRONMENT AND SECURITY IN SOUTH AMERICA

In South America, during most of the 20th century tension existed between the military and civilian sectors chiefly because the military was either the primary enforcement instrument of the ruling oligarchy, or the actual government in being. To set the conditions for continued growth and stability, these two sectors must cooperate both nationally and multilaterally in order to build confidence in the government and to promote regional stability. The first region wide USSOUTHCOM Engineer and Environment conference in Paraguay chose to encourage dialogue through the use of environmental security and its element of disaster response planning.[1]

The second conference in Uruguay recognized that habitat cannot be managed by the Ministry of the Environment alone. It needs to be a community effort and to engage all elements of national power. This conference was sponsored by both military and civilian organizations and reinforced the links between the military and civil society. It focused on the idea that the civilian environmental authorities can make use of the training, professionalism, and capabilities of their defense forces to overcome some of the challenges of environmental protection. The military can also use these missions to conduct training in logistics, command and control and in many cases, technical capabilities. Conference attendees recognized that under today's conditions, with natural resources under threat, and factoring in the ability of governments to cope, creativity must be used to apply whatever resources society has at its disposal to protect the environment for future generations. The military, as a member and defender of civil society should (and does) have a natural role in this.[2]

These first two conferences provided excellent examples that proved that cooperation has not only taken place but has also been well articulated for the benefit of the community. Working forward from these successes, this year's conference in Santiago worked hard to strengthen those points and to identify common issues, to share knowledge and, more importantly, to develop strategies for strengthening their military-civilian cooperation against all environmental threats.

1. CSL Conference Report: *Strengthening the Bonds of Environmental Cooperation Between Security Forces in the Southern Cone of the Americas.*
2. *Exploring Opportunities For Civil-Military Cooperation to Protect the Environment in South America.*

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The cooperative defense against environmental threats is not a contradictory mission for civilian governments and their militaries. Militaries should not consider such a role as competition with their traditional missions of national defense; they are mutually supporting missions. Efforts and resources devoted to accomplish one indeed go further to accomplish the other. However, the strategic shifts in institutional roles and missions are not easy. Tough practices, scarce resources, conflicting priorities, inadequate or an absence of coordination between governmental agencies or nations represent real obstacles.

PANEL SUMMARY

In South America, it is evident the environment is growing in importance at the country and regional level. Leading up to the Chilean conference, previous speakers addressed diverse topics such as the efforts to mitigate the effects of an off-shore oil spill, reforestation projects in the Andes, successful procedures for fighting forest fires, the use of water treatment units that provide potable water in remote areas, and the use of satellite imagery tools to predict the paths of mudslides and lava flows. Additionally past conferences have repeatedly emphasized the assets the military offers to help government's deal with environmental issues such as communications, transport, command and control capabilities, and the manpower. Essentially, regional militaries can easily play a pivotal role supporting other governmental organizations in protecting and fostering the environment as a nation's broadest natural resource and build governmental legitimacy in the process.

These conferences represent the first steps toward using the combined knowledge and experience of the attendees to formulate plans to face the challenges of water pollution, soil erosion, natural disasters, deforestation, endangered and invasive species, and criminal incursions related to these issues. They provide opportunities to share contacts, tools, and best practices to improve efforts to protect each nation's legacy. They also provide good examples of how to lawfully integrate the military, into missions like surveillance, logistics, and horizontal construction to make a difference in an integrated, well-managed effort to pressure the resource base.

The 2008 Engineering and Environment conference in San Juan, Puerto Rico, stressed multilateral cooperation and specifically sought to: share engineering and environmental ideas, knowledge, and experiences; discuss how to improve the collaborative relationship among stakeholders within the country and among the region; identify barriers or obstacles to moving forward, and; identify needs and topics for future training.

The issues and challenges of the Chilean conference are summarized as follows:

- There is considerable knowledge on how decisions are made but very little on the tools available to assist in the decision-making process;
- Preparation and obtaining good data are keys to good planning;
- A chain of command and the identification of national and local leaders must be completed prior to an emergency;
- Environmental issues are vital areas that must be included in the policy-making process;
- All organizations need to reflect on how to better manage environmental threats;
- There must be greater focus on disaster risk prevention vis-à-vis disaster management; it is the key to being pro-active instead of reactive, as today's problems are tomorrow's crises;
- Collaborative efforts in environmental engineering and disaster management should be a primary consideration for every nation; engineering activities must go beyond "constructing something";
- It is imperative to have trained engineers to inspect and classify structural damage after disasters hit
- Building multilateral partnerships is tantamount to resolving regional issues
- Lines of communication between commands must be clear during emergencies
- The Caribbean region needs to pay attention to other natural disasters beyond hurricanes, such as earthquakes, pandemics, volcanic events and the effects of climate change

CURRENT HOT ENVIRONMENTAL ISSUES

Growing Environmental Security Issues

- Resource conflict: Water resources, fisheries, energy, arable land
- Natural disasters: Seismic, droughts, floods, hurricanes
- Adapting to Global Climate Change
- Public health/pollution problems: Air, water, pandemics

Regional Climate Change Effects

Adaptation to climate change is a powerful environmental security issue as it threatens the basic elements of life for South America. The region's security is already threatened by melting glaciers, rising oceanic temperature and sea levels, water scarcity, and food in-security. These challenges however, also provide an opportunity for multi-lateral cooperation within each state and the region and host nation military support to limited lead civilian agencies.

ISSUES AT THE 2009 CONFERENCE

There were a variety of topics discussed at the Santiago conference. The event provided a venue for collaboration and cooperation among the engineer departments of all South American nations. Chief among the topics was natural disasters, which are a common denominator throughout the region, representing a wide range of types and varying in intensity. For example, throughout South America floods, wild fires, and droughts are commonplace. Case studies of recent disasters in Guyana and Peru were presented to the audience by first responders, which led to discussions of methods of cooperation, such as sharing disaster response standing operating procedures.

Chile, the conference host nation, provided a current synopsis of environmental security in the region along with its associated engineering challenges and opportunities. The issues ranged from environmental clean-up projects to the "greening" of the military. They also discussed the important contributions of the Army Engineer Corps to Chile's National Infrastructure Development. The works performed by the Army, through the Military Works Corps (CMT), were and are principally concentrated in sectors of the national territory that are geographically isolated or have high development costs or where there are difficult conditions and a lack of interest from the private sector. In these sectors the role of national development fell to Army Engineers.

Brazil provided a presentation regarding environmental protection activities in which Army engineers participate. In addition, military engineers conducted extensive work on experimental roads using Chemically Bound Sand (arena de machería, or ADF) in asphalt composites and determined that they resulted in similar mechanical behaviour to the ones found in national literature about hot composites using common sand. This is a great option in areas where normal construction materials are not available.

Guyana discussed the critical role that their military engineer's played in national disaster response and recovery operations. They concluded that the effects of climate change make it more important to be better prepared for disasters. Therefore, intensive military efforts to prepare for and reduce the impact caused by disasters remains a priority.

Peru similarly provided a discussion of their military engineer participation in disaster response and recovery operations. They had numerous lessons that included: the media is of extreme importance for coordination within the regional civil defense system to which the armed forces provide support; the general population must be organized and prepared for disasters through continuous state efforts in order to minimize adverse consequences; early planning should be conducted and acknowledged by everyone, including the general population, so as to avoid the duplication of efforts that are detrimental to overall requirements; command and control of the civil defense is limited, minimizing its effectiveness; natural disasters and crisis situations demand coordination between the armed forces and the civil defense system; regularly conducted drills must be given priority so as to develop a consciousness and a capacity to react to situations that quickly overwhelms assets, such as occurred in the earthquake of 2007, and; the responsibilities of each element of government must be well defined and understood so that there are no shortcomings or misunderstandings during the execution of support to natural disasters.

Uruguay shared their vast knowledge of engineer participation in peacekeeping operations that has been gained by many years of experience as one of the world's most prolific participants in United Nations operations. Their lessons learned include: cooperate to achieve a solution to the problem; support multilateralism in order to project an international image and a positive perception of the country; respond to international responsibility; improve tactical operational capacity; maintain and sustain local nationals trained in polyvalent competences; increase the equipment renewal cycle; generate and maintain an exceptionally high level of motivation for personnel, and; incorporate knowledge about other situations and professional procedures gained through the interaction with other forces and international agencies.

Argentina provided their insights as one of the world leaders of water quality and security, an issue that is quickly gaining world attention. Their lessons learned were to: provide assistance to communities during catastrophic situations by supplying, storing and distributing potable water; provide civil protection; ensure the quality and security of water; establish procedures for purifying water; provide water purification and packing models of the Argentinean Army, and; provide other assistance to the community when needed.

Ecuador shared their extensive knowledge of ongoing trends and technological advances in humanitarian de-mining. The Ecuadorian military made clear the geography of the region played a deterministic role in the importance of technology. In particular, because of the mountainous terrain, they found that air detection assets were necessary to identify likely minefields. Conditions in coastal areas are generally favorable for mine detection, the soil is sandy, the climate is stable, and there is easy access for vehicles; however, in the western region the land is forested with large trees, making mine detection using only ground assets difficult. Weather across varying altitudes also proves to be a challenge, as conditions can change at a moment's notice.

The Organization of American States (OAS) also discussed their considerable Demining Assistance Program. Their results were that the completion of the National Demining Plan in Nicaragua in 2009 is one of the most significant achievements of the international effort against anti-personnel mines. The challenges that Colombia faces have required an innovative response that the Comprehensive Action against Anti-personnel Mines (AICMA) Program continues to fine-tune. Bilateral cooperation is the key to progress in the border between Ecuador and Peru. To continue the success of the demining program, both donor and beneficiary countries must strengthen the commitments they have assumed.

SUMMARY/CONCLUSION

Military Engineer units are a valuable resource capable of addressing the broad spectrum of security challenges facing a nation state. Population growth is increasing the demand for resources that governments are struggling to provide. From fisheries to safe drinking water countries are faced with growing resource demand and an over exploited resource base. Essentially, environmental issues are closely linked to eroding natural resources and threaten the human security of the region. For example, major storms destroy crops and infrastructure, pandemic diseases and zoonotic diseases weakens public health and the workforce, chronic drought threatens food security and the economies of rural areas, the improper handling of toxic and hazardous waste pollutes the air, soil and water assets and weakens the country's economy and health; these are difficult challenges that often exceed the capacities of governmental agencies. Using the military element of power, may make the difference between successfully managing resource challenges, and the loss of governmental legitimacy.

The military has the ability to operate effectively in geographically isolated areas, and endure severe climatic conditions or limited infrastructure where the private sector cannot. Additionally, military units have an established command structure, reliable transportation assets and a guaranteed access to adequate fuel sources, as well as a presence in rural or under-governed areas which is difficult for other governmental organizations to monitor. The military technical assets (Engineer units), can build and maintain roads and other critical infrastructure, as well as conduct host nation training, education and health capacity that could be invaluable to those seeking to create resilience to environmental change in the population. The military should be seen as a force multiplier to civilian agencies that enhances their capacities and the potential of a whole of government approach to security challenges. The International Conference of Military Engineers and the Environment, held in Santiago, Chile, brought together experienced and knowledgeable Engineer leaders to share their best practices in addressing environmental challenges and supporting civil authority in their resolution. The conference demonstrated the leadership of the Chilean Army and its Army Engineers and promoted important avenues of multilateral cooperation and communication.

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