

# **AFTER ACTION REPORT**

## **Hurricane Mitch Relief**

### **JOINT TASK FORCE EAGLE**

The purpose of this document is to give the reader the opportunity to review the Detachment's mission in El Salvador. This will also give the reader a clear understanding of the need to continue follow up preventive medicine (PM) operations in El Salvador and the Central America region. Due to time constraints the detachment was unable to initiate a training plan with the Ministry of Health that would address and assist in reducing the long-term Medical Threat. As a result of Hurricane Mitch this country and much of the region will suffer due to the lack of the country's ability to recover from the growing long-term health effects that have been created by the floodwater. The government has not been able to quantify or qualify the exact environmental effects of the storm due to the damage caused by flooding to horizontal (roads) and vertical (homes) structures. Due to the design of their homes and roads many areas have not been assessed for anything other than the damage caused to roads, homes, and commercial property. These types of structures (horizontal and vertical) take the concentration of the country and with good reason. Trading, local vendors, and homes are the primary means of survival for much of the population. The problem with that focus is the medical threat continues to go unchecked. Water, food, and shelter are the primary means/routes by which insects, disease, and rodents are spread or increased within a given population. This problem is magnified when inadequate treatment, concentration, and training are not directed to the control to these threats.

This paper will cover the need for PM detachments becoming a part of the NEW HORIZONS missions to assist in an ongoing effort to reduce the medical threat. The Detachments must become a team with the local Ministry of Health, the National Ministry of Health, and other Non-Governmental agencies in the area if this effort is to be successful. I have had the particular pleasure of working with the Pan American Health Organization which had it's headquarters in San Salvador. It must be noted that reduction of the medical threat not only provides a healthy environment for the people of El Salvador but it also reduces the threat to our soldiers operating in this area. One additional area of concern revolves around the unit's need. Based on experience of two major deployments each detachment should be authorized a linguist that speaks the language of their largest support area. For example detachments with the primary contingency mission of support to forces operating in Central America should be provided a 91S linguist that is always assigned to each detachment. This individual should not have to be authorized by MTO& E. However, the FORSCOM Preventive Medicine Officer should be given the authority to contact PERSCOM and make appropriate request for such personnel. This will allow central management of the need and ensure the need has been identified and verified for the specific requirements.

The Host Nation invested considerable time, personnel, and resources to learn our skills and assist as part of their long-term recovery operation. The National Ministry in San Salvador had laid on facilities and gathered its experts from all over El Salvador for a two

week seminar on control of medically important arthropods and rodents. We had done an excellent job gaining the respect, trust, and confidence of the National Ministry only to lose it because of time constraints.

This project should continue along side the New Horizons projects. First it would provide PM support to Reserve and Guard forces operating in this area. Second, it would enable the PM elements to secure equipment space on airplanes already dedicated to the mission (New Horizons). Horizontal and vertical structures are much needed in this region. However, contaminated drinking water, unhygienic housing, poor sanitation, disease vectors, and communicable diseases significantly contribute to the death rate in this region. Only through an intense reduction, training, and education program can these conditions be improved over the next ten years. Our unit did not scratch the surface in terms of reduction of the medical threat (control of disease vectors, rodents or improving sanitation practices) for the people of El Salvador. El Salvador is now in the process of rebuilding their neighborhoods and setting up sewer systems (above ground design). This is an excellent time to work along side the local Ministries and assist in building proper sewer systems that will aide in the proper removal of urine and feces to down stream locations. Things that appear to be common sense to us at a glance requires training and a change in mentality for the people of El Salvador. They have been taught and trained to do things that in the 20<sup>th</sup> Century are no longer practiced or considered an unapproved practice.

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MEMORANDUM FOR SEE DISTRIBUTION

SUBJECT: Hurricane Relief Efforts after Action Review

1. The 61st Medical Detachment (LX) participated in Hurricane Mitch Relief efforts. On 24 November 1998 the unit was notified by the FORSCOM Preventive Medicine Officer (LTC Kraft) and the 44<sup>th</sup> Medical Brigade's Preventive Medicine Officer (MAJ Swalko).
2. MISSION: USCINCSO EMPLOYS MULTIPLE JTFS TO CONDUCT DISASTER RELIEF (DR) OPERATIONS; IN SUPPORT OF UNITED STATES RELIEF EFFORTS IN THE CENTAM REGION IN ORDER TO MITIGATE NEAR-TERM HUMAN SUFFERING AND ACCELERATE LONG-TERM RECOVERY.
3. The 61<sup>st</sup> Medical Detachment was given a two-part mission based on US SOUTHERN COMMAND's mission statement.
  - a. Provide Preventive Medicine support to US forces operating in Comolapa and Joint Task Force-Aquila El Salvador area of operations.
  - b. Provide HOST Nation support to El Salvador in the areas of Preventive Medicine to restore El Salvador to pre-Mitch conditions and assist with long-term recovery.
4. 03 DEC 1998, 0205hrs the unit departed Ft. Campbell enroute to El Salvador. After a layover at Pope and Charleston Air Force Base the unit arrived in El Salvador at 2230 hours 3 DEC 98. The units priority of work was set up tents, rest 8-10 hours, initiate forced fluid intake and chemoprophylaxis consumption, initiate personnel acclimatization, and establish the basecamp chain of command.
5. The unit's first priority was to comply with 3(a) above before conducting any operations outside of the Comolapa Air Base. The unit began base camp assessments and set up the water quality analysis set and initiated epidemiological & entomological surveys, and food service & entomological inspections. After 72 hours of surveys and inspections the findings revealed foodborne illness outbreaks, poor camp sanitation, and fecal contamination in the water distribution system.

6. Upon completion of all initial surveys the unit took corrective actions within the compound before conducting missions within El Salvador. This after action report will cover two basic areas. Lesson learned from the mission and support provided to the Host Nation. Finally we will review the need for follow up assessments and work in the areas of preventive medicine for long-term recovery.

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## LESSON LEARNED (Base Camp Assessment)

**DISCUSSION:** To be effective in the prevention of disease and non-battle injury (DNBI) Preventive Medicine must be incorporated into military planning at the concept of the operation. Preventive Medicine Detachments need to be moved up as a priority unit on the TPFDD.

**LESSON LEARNED:** As the units arrived in country we were faced with numerous Preventive Medicine issues that could have been reduced if the preventive medicine detachment had been deployed with the advance party. Key leaders must invest in developing viable unit level Field Sanitation Teams. If units had deployed with viable teams the Preventive Medicine Detachment would not have had to concentrate on basic sanitation issues within the encampment area. Leaders began to rely on the detachment to conduct basic sanitary surveillance of the encampment area. This is inherently the disadvantage of deploying without a trained and equipped FST.

**RECOMMENDATION:** Include Preventive Medicine in pre-planning, design, and layout of the area of operations. Move Preventive Medicine assets to the front on the TPFDD order of deployment to ensure they are a part of advance parties and initial assessments. Include a Preventive Medicine Field survey of the area, which should include food procurement, water quality, and other environmental factors that may impact on the mission. Ensure the waste disposal contractor understands basic requirements such as the amount of trash to be picked up and method of disposal. Ensure waste is disposed of properly to prevent future legal ramifications of improper disposal by Host Nation. Ensure only Environmental Protection Agency (EPA) approved pesticides are used in areas of U.S. troop concentrations. Adhere to the requirements set in Army Regulation 40-5 which requires company size units and larger to have trained field sanitation teams. Ensure when units deploy that the field sanitation team and their equipment are also included.

**Contracting:** Food service, waste disposal and medical waste contracts were established without specific guidelines to address the medical problems associated with these procedures. For example the food vendor was selected without the aid of Preventive Medicine. Although the vendor was listed on the approved food sources list contractors must remember an inspection must still be required before the vendor is given the all clear to serve. In this instance the vendor was capable of serving food to US personnel within the confinements of their immediate dining facility. Therefore, Contracting Officers must take under consideration that this approval is based on being able to serve food within the immediate dining facility area not under field conditions. Preventive Medicine Personnel are trained to recognize critical control points and time and temperature problems in the food service process. Contract vendors did not place emphasis on the importance of maintaining hot foods hot and cold foods cold through out the serving period to prevent the growth of potentially hazardous microorganism.

**Urine and Feces Disposal Contracts-**Long term requirements associated with generation and proper disposal of these by-products generated by U.S. personnel in accordance with Host Nation requirements. The detachment trailed the disposal team from the porta-potty (Comolapa Air Base) to the disposal area. The waste was collected twice a day in 250-gallon containers on the back of a truck. Then the waste was taken to **128 La Calla Poniente, San Miguelito**, which turned out to be the home of the contractor. The contractor had the employees put the waste into the local sewer system. After further determination there was no local waste treatment plant in the area. The underground sewers flowed to a local stream. The unit recorded the information and made it a part of our historical records.

**Ice-** During the initial approval inspection of the contractor by the vets it was noted that there was a water disinfecting system, however the vets could not analyze the system for potability. Later the ice was found to contain fecal coliform but US Service Members discovered this only after consumption. The ice was found to be the primary cause of gastrointestinal infections among U. S. personnel.

**Entomology-** Initially advance party personnel requested the local pest contractor to conduct pesticide operations in the area where US personnel were authorized to occupy. One of the primary problems with this type of operation was local pest control operators do not record pesticides used in the compound. Assessment of the health hazards associated with these pesticides cannot be determined. Further, none of these pesticides were applied with a target pest in mind. There was a blanket application used to eliminate pest simply because US personnel were occupying the area. It must be noted that this application did not make the environment pest free. As US personnel arrived in the area more garbage was introduced into the area. There was an increase in the number of flies, mosquitoes, rodents, and skunks. The detachment also noted that with the production of potable water the mosquito population also increased significantly.

**Showers-** Showers were opened and approved for use without proper bacteriological analysis before use by service members. Water sampling revealed fecal coliforms in the shower water. Proper analysis would have identified this health threat and procedures could have been initiated to ensure service members were educated on this risk and how to avoid exposure. It was determined that the showers contributed to a small percentage of the DNBI cases. Epidemiological investigations showed the majority of cases were attributed to the ice, various medications, foods consumed and finally improperly sanitized water in the order of severity.

**Sanitation-** within the camp area: Sanitation must be a priority in order to prevent the spread of disease and harborage of disease vectors within the camp area. Important issues were hand washing stations, soakage pits, harborage areas for insects, rodents and adequate latrine facilities. Personal hygiene stands along with eating and designated smoking areas must be established outside the immediate (living quarters) tent area. Many of the units failed to deploy with field sanitation team supplies. Required items like mosquito netting, insect repellent, 2-gallon sprayers, and water cans were in short

supply. Many of these supplies were crossed leveled between units. Even with cross-leveling, 2-gallon sprayers and 5-gallon water cans were in short supply.

**Encampment arrangement:** Understanding the issue of limited space for troops to occupy. The encampment area must be arranged or organized to prevent the spread of upper respiratory infections and other health issues associated with field conditions. Within certain units like the 593<sup>rd</sup>, 801<sup>st</sup> and 93<sup>rd</sup> upper respiratory infections were quite common. They were among the first units on the ground and all other units built their quarters around these units. There were approximately 2 to 3 feet between tents and approximately 30 or more troops per tent. However, no consideration was made for reducing the spread of disease and harborage areas for insect and rodents as it relates to camp arrangement. Commanders weren't amenable to changing their set up once established. Furthermore, changes could not be made without tearing down the entire encampment area (so changes weren't feasible).

### HOST NATION SUPPORT

Initially it was impossible to determine what type of support should be provided to El Salvador especially since we were not provided any preliminary information on the extent of damage to the local population (only the country as a whole). In the absence of written reports to establish some type of initial assessment the unit advertised its capabilities to the host nation in order to get the Salvadoran to tell us what they needed. During the first advertisement through Civil Affairs (MAJ Rodriguez) we received request for assistance from the Ministry of Health in La Paz. We were informed that La Paz was also one of the hardest hit areas. It was also noted that most of the damage to El Salvador was caused by the floodwater. The request were for well cleaning, water distribution system disinfection, mosquito and rodent control. The unit wasn't sure of how to proceed with the request but it was a start. The key we found to the process was in asking the Salvadoran their priorities of work for recovery. We in turn sent a request for a meeting between the local ministry of health and the detachment with Civil Affairs serving as the liaison between us. It was important to have the Civil Affairs personnel serving as the primary liaison to ensure we only committed to the intent of the USOUTHCOM mission. During the meeting we requested information on diseases endemic to the local area and an assessment of the increase in medically important arthropods and rodents since hurricane Mitch. Based on the meeting to establish their priorities the mission (location) was broken down into three stages: Assessment, vector & rodent control and potable water distribution system disinfection and training.

Although the detachment surveyed and worked in areas as far east as Santa Maria Coquama, as far north as San Salvador, and as far west as La Paz. The assessment process revealed the same basic problems throughout the region. Therefore, we will not go into in-depth discussions about each area.

**Assessment-**During our assessment we found communicable diseases and malnutrition represent the core health problems for much of the residents in El Salvador. Contaminated drinking water, unhygienic housing, and poor sanitation have magnified these problems. Many of these problems have been the direct result of hurricane Mitch.

Many people were driven from their homes due to the floodwaters. Residents were forced to seek shelter in other abandoned homes within the immediate area due to the lack of local public shelters for displaced people. Many of these uninhabited shelters were full of bed bugs. The people living there served as a source of food for this pest.

**Vector & Rodent Control**-The area was so large and congested it was virtually impossible to conduct outdoor pest control operations. We had to consider that some of the pesticides we had in our inventory might cause a problem to live stocks and tropical pets if incorrectly applied. Therefore we broke the operation down into two parts (indoor pest control and outdoor pest control). Prior to starting we discussed our issues with the La Herradura Ministry of Health to get them to clear the way for our operations. We then set up a treatment zone that encompassed all homes along the riverbank, which also had the greatest complaints concerning insects and rodents. We also knew that we could not treat the entire township because there were other locations that had requested our services. Our primary purpose was to train the Salvadorans how to maintain an insecticide residual in homes. What some people had for homes were bamboo poles tied together or the leaves from bamboo poles piled together in the form of a mound. These types of structures provided plenty of shelter and harborage for pest. Another unique challenge the unit found was that many of the places where mosquitoes were found were man made containers used to water pets or livestock. We even found mosquito larva growing in an abandoned section of Rosales Hospital. The area was approximately 25 meters from the patient care ward. It was also noted upon further survey that the mosquito (*Aedes*) was capable of transmitting dengue fever.

**Water Distribution System**-Unless you live within the immediate city limits (where potable water distribution systems exist) your water system was either well water supplemented by an indoors submersible system or a drilled well. The system the Salvadorans wanted us to look at were the submersible systems and disinfection of wells. Since the Marines were already assigned the task of cleaning wells we worked with the Marines to establish a well cleaning protocol and the detachment would analyze the samples once the cleaning project was complete. The process to properly disinfect the wells would take approximately 48-72 hours to complete. We lacked the manpower to cover the number of well per/day to complete the more than 200 well projects in the La Paz area within a 60-90 day period. However, the goal was to teach the Salvadorans how to do this task for themselves. As the time to redeploy neared even the Marines were unable to complete the number of wells they initially stated. But the rush caused the units to take short cuts in the disinfecting process and many of the last few projects were no more than cosmetic cleanings. But cosmetic cleaning was better than not getting the trash, muck, debris, and other heavy contaminants out of the water.

**Training**-Finally the unit was using a combination of taking digital images and having local experts accompany us on the various missions as part of the hands on training. Having someone accompany us would aid the individual in the process of serving as the training translator when the training program began. The plan was to conduct training to the local population (specifically youth ranging in ages of 14-18), Military Health Bn,

local health experts, and the National Ministry of Health personnel. Our plans were changed when the Task Force was ordered to Redeploy to home station.

#### LESSON LEARNED (Host Nation)

**DISCUSSION:** The Host Nation invested considerable time, personnel, and resources to learn our skills and assist us in the operation. The National Ministry in San Salvador has laid on facilities and gathered its experts from all over El Salvador for a two week seminar on control of medically important arthropods and rodents. We had done an excellent job gaining the respect trust and confidence of the National Ministry only to loose it because of time constraints.

**LESSON LEARNED:** Initially going into an operation seek the assistance of all non-governmental organizations located in the area. If we had done this first we would have had a better assessment of where to place our resources. We could have also split the unit into more effective teams. For example we could have worked simultaneously in San Salvador and La Paz and accomplished more by running reverse operations (ento in one location and rodent control in the other).

**RECOMMENDATION:** This project should continue along with the New Horizons projects. Before committing to any task of Host Nation support ensure you have an optimal guess of the length of time available to conduct your mission prior to establishing a plan of action. Our unit would have spent more time developing training notes and treatment plans if we had known the time line.

**ADDITIONAL INSIGHT FOR DETACHMENT COMMANDERS:** You must gain the credibility and respect of the people prior to going into the area. The best way to accomplish this is to have the ministry of health and the local representative(s) of the area serve as your village guides. They must also provide community pre-briefs so the community is aware of what you are doing. Remember the longer you work in a particular area the more familiar you will become with the occupants. As people become familiar with you and the operation they will become more open and inviting. They will also pin point problems for you the local representative may not be aware of in the area. During several instances people approached us to ask for assistance because they had seen or heard what good the services we were providing had done for other neighbors. Using the word of mouth technique we were able to target more infestations and in some cases people just wanted us to do for them what had been done at the neighbors house down the river. The in house service also made Salvadorans more receptive to our corrective training. On numerous occasions we found people raising mosquitoes in their front or back yard. Each time we ran into situations such as this we initiated on the spot training on the importance of denying mosquitoes harborage areas. Rodents on the other hand were another problem all together. However, this seemed to be an area of expertise for the First Sergeant. Upon preliminary investigation he found that denying access inside homes was impractical simply because of the various structures. Further he determined the roof rat was the target pest in the area. He set up protocols using rodenticide briquettes tied to ceiling beams. Prior to placing the

briquettes in homes each homeowner or school manager was informed of its use and given the opportunity to deny the use of the product in their homes or school due to small children being present. Since we were unable to go back into the area prior to redeployment it was impossible to assess how effective the protocol was at killing rodents. We remained in touch with the National Ministry of Health and the La Herradura Ministry of Health. Both of which stated the rodenticide was very effective in killing rodents. However, in La Herradura some homeowners reported the rodents would not go near the rodenticide. The First Sergeant assumed that maybe there were other food sources available in the homes that were more accessible. That was definitely a possibility due to the lack of storage areas for food especially in kitchen facilities. Another area of major concern was disinfecting the potable water distribution system. Their systems were no more than multistage submersible pumps. Water is admitted into the suction pipe or pump casing and is rotated in the pump by an impeller inside the pump casing. The energy is converted from velocity head primarily into pressure head. In the submersible pump, the pump and electric motor are suspended in the well attached to the discharge pipe. This pump has no valves or pistons; there is no internal lubrication; it takes up less room and is relatively quiet. When the motor is turned on the pump creates a vacuum and pressure is created in the oxygen tanks. The pressure in the tanks is what causes the water to move down the discharge pipeline into homes. Since the system operates as a closed system it was impossible to superchlorinate the system. The First Sergeant found a flaw in the design that turned out to be our way to chlorinate the system. The flaw was created when the electric motor is turned off. Backflow was created in the system between the static water level and the suction lift inside the well. This meant when the hydrant was turned on the system had suction (backflow) at the well head. We were able to inject chlorine into the system by turning the faucet nearest the well to the on position and allowing the solution to be suctioned into the well. We turned the system back on and ran the faucet in the immediate area for a few minutes. After we received a chlorine residual at the source we started down the system to the first home on the line. We waited approximately 1 hour to give the system contact time. We also had water faucets turned on along the route to assist the water in moving down stream. During the cleaning and testing of the system in some locations approximately 5 miles away we found free available chlorine readings as high as 7 parts per million (ppm). This meant success for the mission and it provided us a wealth of credibility with the community and the local Ministry of Health. The unit took special precautions with any residents that complained that they would not drink from this location because of the chlorine taste. It turned out to be a matter of educating all residents on what to do to reduce the amount of chlorine in the system.

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