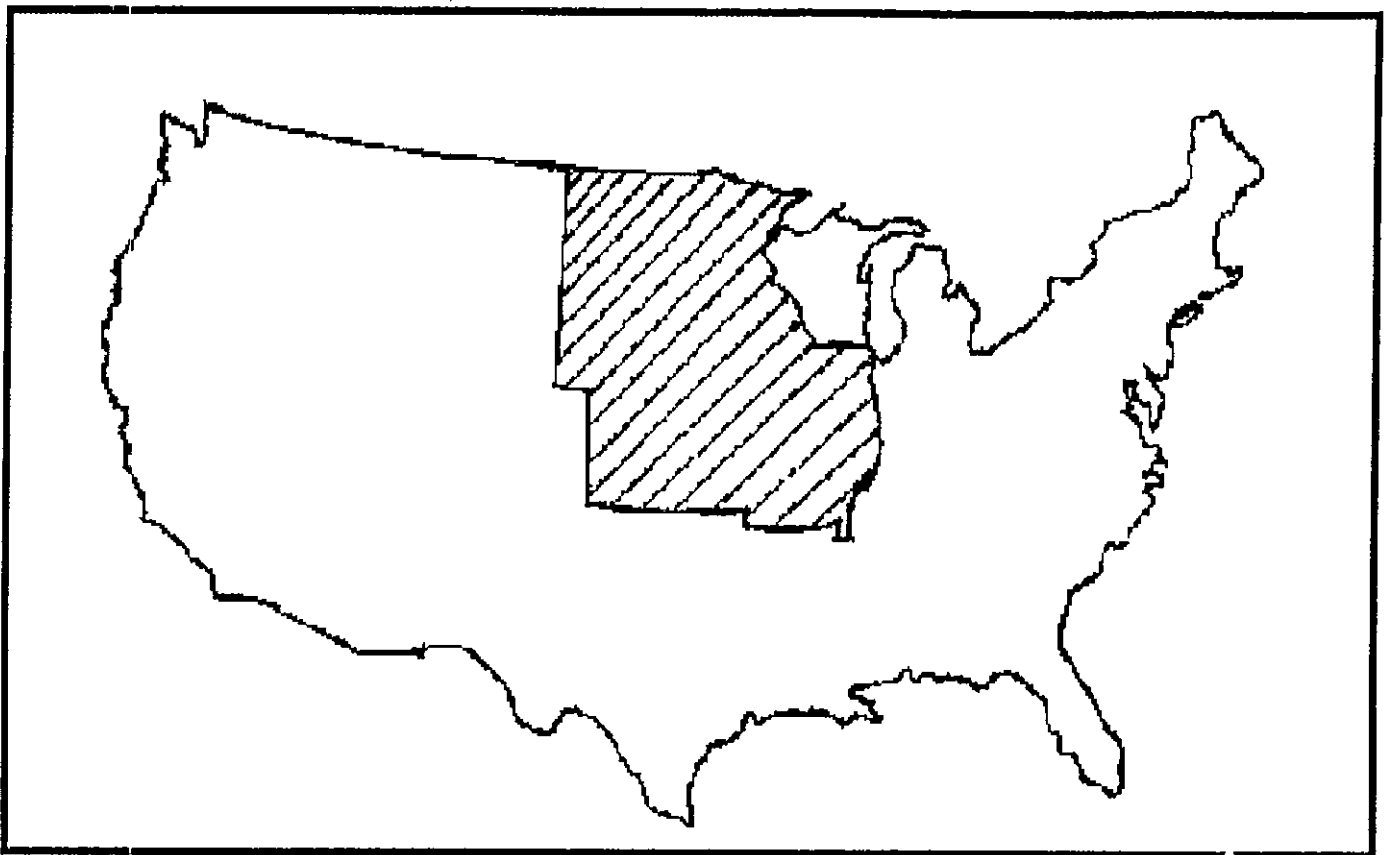




LESSONS LEARNED REPORT

OCTOBER 1994

1993 Midwest Flood Disaster Assistance Operation



CENTER FOR ARMY LESSONS LEARNED (CALL)
U. S. ARMY TRAINING AND DOCTRINE COMMAND (TRADOC)
FORT LEAVENWORTH, KANSAS 66027-7000

PREFACE

A flood has been described as a "disaster in slow-motion". This was certainly the case in the midwestern United States starting in February 1993. Campaigns were fought over 2000 miles of rivers in Kansas, Nebraska, South Dakota, North Dakota, Iowa, Missouri, Minnesota, and Illinois. Series of battles were fought along individual stretches of the Platte, Missouri, James Meramec, Mississippi, Little Sioux, Red Des Moines, Racoon, Illinois, River Des Peres, and in numerous other rivers and streams. Lakes such as Spirit Lake in Iowa were also battlegrounds.

Unlike a hurricane, earthquake, tornado or a blizzard, the flood damage was not localized or quickly assessed and then executed by a rapid reaction of state and federal agencies. Military response was gradually built starting at the local level, state level (including National Guard) through the federal level (including active duty and reserve forces and the U.S. Army Corps of Engineers) as capabilities to fight and recover from the flood were exhausted.

Joint operations were also conducted between Air and Army National Guard forces as well as with the Coast Guard. As the flood waters have receded, military response agencies have disengaged most of their forces as state and local agencies were able to take over the flood recovery effort. Military response agencies continue to remain proactive in anticipation of further response of flooding over the winter and into the spring of 1994.

Current doctrine found in FM 100-19, *Domestic Support Operations*, appears to be sound in guiding flood military disaster assistance response. Copies of FM 100-19 were not readily available in the USACE offices visited. The following were identified as key observations made from 20-27 October concerning the on-going flood response effort.

Acknowledgement:

Special thanks is given to Mr. Vern Lowery and the U.S. Army Engineer School, Fort Leonard Wood, MO, in their support for this lessons learned effort. In addition, CALL appreciates the efforts and time devoted by the many commands and agencies who provided information for this lessons learned report.

TABLE OF CONTENTS
LESSONS LEARNED REPORT
1993 MIDWEST FLOOD DISASTER
ASSISTANCE OPERATION

Military Command Estimate/Decision-making Process	1
Disaster Assistance Planning	2
Disaster Assistance Training	3
Interagency Support/Liaison Personnel	4
Use of Active Army and Army Reserve Forces	6
Rules of Engagement	7
Military Aviation Support	8
Disengagement of National Guard Forces	10
Call-up of National Guard Forces	11
Communications Support	13
Map Support	14
Bottled Water Containers	15
National Guard Logistics Support	16
Safety	17

MILITARY COMMAND ESTIMATE/DECISION-MAKING PROCESS

ISSUE: Military response agencies used the framework of the military command estimate and deliberate decision-making processes to anticipate and plan for flood relief efforts.

DISCUSSION:

The framework of the military command estimate process was used by all National Guard and USACE headquarters. Intelligence information was continually gathered concerning the terrain, levees, flood levels, and weather. Current information concerning employment of local, state, and federal resources was also gathered. Based on this information, military agency staffs and commanders would develop courses of action for future flood fighting and flood-recovery operations. Decisions were reached and implemented as required. Most local and state response officials were unfamiliar with these military processes, causing some hesitancy to share information in a timely manner with military response agencies. As operations continued, information sharing improved through the use of liaison personnel and face-to-face contacts with local and state agencies.

A premium is placed on a proactive approach to this type of disaster. The command estimate/military decision-making process provides the framework for effective flood relief assessment. Essential information needed for this assessment is provided by on-the-ground observers (civilian and military, state response plans, continuous coordination with state and local authorities. The planning process can be hindered if state and local authorities are reluctant to share details on the crisis, due to the feeling that they could handle the crisis without federal intrusion or that the federal government is perceived as questioning their capability. Effective liaison is essential to make the process work in a timely manner.

RECOMMENDATIONS:

- a. Continue to use the military command estimate/decision-making process during disaster-relief training and operations.
- b. Educate local and state agencies on the process during training exercises prior to disaster operations.
- c. Continue to provide effective liaison between military response agencies and local and state agencies.

PROPOSER: CALL recommends this issue be elevated to DA via ARAP.

DISASTER ASSISTANCE PLANNING

ISSUE: Disaster response plans were present with each military response agency and all plans were used to guide the flood response efforts.

DISCUSSION:

USACE district and division offices maintain disaster response plans that support Federal Response Plans (FRP) with the Federal Emergency Management Agency (FEMA). National Guard State Area Commands (STARCS) maintain disaster response plans that support state emergency plans. Some plans were recently updated, others had not been reviewed for some time. Kansas National Guard units operated off of a draft plan. These general guidelines effectively steered the flood response efforts. All plans identified coordination and liaison requirements. Procedures for requesting military aviation support and on the use of cellular telephones were not normally included with plans. Some local agency plans duplicated those of the military because of unfamiliarity with military response plans. Some local authorities needed to be brought up-to-speed on military capabilities.

Up-to-date military disaster response plans are needed to effectively guide the relief efforts. Plans must be continually updated to include new capabilities. Local authorities need to be made aware of military disaster response planning so they can incorporate their plans with the military.

RECOMMENDATION:

- a. All military response agencies should continue to fine-tune their current disaster response plans based on the lessons of the flood relief operations.
- b. Ensure that affected local agencies and authorities are made aware of the military plans, for mutual support.

PROPOSER: CALL recommends this issue be elevated to DA via ARAP with FORSCOM in support.

DISASTER ASSISTANCE TRAINING

ISSUE: Previous flood relief operations and disaster relief training exercises between military and civilian response agencies greatly assisted the flood response effort, but resources to participate in these types of training exercises was difficult to obtain, especially for active duty Defense Coordinating Officers (DCO).

DISCUSSION:

Flood relief operations earlier in 1993 in Nebraska, Kansas City, and St. Charles, Missouri provided valuable insights and helped foster coordination for follow-on flooding later in the summer. Omaha District and the Nebraska National Guard personnel were involved in flood relief operations in February due to ice-dams on the Platte River, causing levee damage and flooding of low-lying areas. Kansas National Guard personnel were involved with flash-flooding in Kansas City in early July. Missouri National Guard personnel were involved with high water in the St. Charles area in May. Iowa National guardsmen assisted with flooding in the Waterloo area in April. All operations helped establish and improve liaison with local authorities, prior to the major flooding events in July and August 1993. National Guard and USACE personnel also participated in previous disaster relief exercises with FEMA and local authorities using various scenarios including earthquake, nuclear power plant evacuation, and civil disturbance responses. Each spring the St. Louis District conducts levee inspections which helps coordinate flood control activities with local agencies. These types of exercises worked well to establish lines of coordination between military response forces and civilian agencies. DCOs were able to participate in these types of exercises only with in-house resources taken from other programs. Joint operations between the Air National Guard and Army National Guard occurred for the first time in years in several of the states.

RECOMMENDATIONS:

- a. Previous disaster relief operations and ongoing training exercises act as rehearsals and enhance coordination and cooperation for future responses.
- b. Joint National Guard and USACE personnel should continue to participate in these types of exercises as resources and time allow. CONUSAs should provide needed resources for DCOs to participate as well.

PROPONENT: CALL recommends this issue be elevated to DA via ARAP with FORSCOM in support.

INTERAGENCY SUPPORT AND LIAISON PERSONNEL

ISSUE: Liaison teams and communication assets were required to provide effective coordination between agency response cells.

DISCUSSION:

All agencies involved in the midwest flood response effort were unanimous in the need to have effective liaison personnel at emergency operations centers (EOC) from the local/county/city levels to the Federal Emergency Management Agency level. Kansas National Guard personnel established five-person liaison teams at the local/county/city response centers. Two persons each were on 12 hour shifts with one person being overall in charge of the Guard liaison effort. Kansas City District liaison personnel were present at the Kansas and Missouri state EOCs, proving especially critical during the overflow operations at Milford and Tuttle Creek reservoirs in Kansas. Missouri River Division liaison personnel were located at FEMA Disaster Field Offices (DFO).

Omaha District provided liaison support to the Spirit Lake field location. Iowa National Guard maintained liaison with the state EOCs at Davenport and Des Moines, along with needed support with local emergency response centers. National Guard liaison personnel positioned at Spirit Lake, Iowa became the final authority for military response efforts and priorities between local authorities and USACE.

Illinois National Guard provided liaison with the state EOC and at the forward DFO office in Moline. Missouri National Guard liaison personnel were located at the Earth City DFO. Rock Island District maintained liaison with Illinois and Iowa DFOs along with the state EOCs. St. Louis District liaison was maintained with both Illinois and Missouri DFOs along with the state EOCs.

Liaison personnel were often called upon to make immediate on-the-spot decisions concerning military capabilities. These were usually handled within the intent of the military support plan. Liaison personnel were often turned to as subject matter experts (SME).

RECOMMENDATIONS:

a. During disaster assistance training exercises and operations, participating military response agencies should provide adequately trained, competent liaison personnel, with communication equipment for coordination and representation of interests, at the local through federal levels.

b. Allow liaison personnel to make on-the-spot decisions based on the military support plan and commander's guidance.

PROPONENT: CALL recommends this issue be elevated to DA via ARAP.

USE OF ACTIVE ARMY AND ARMY RESERVE FORCES

ISSUE: While providing limited support of water supply, water transport and aviation support, active and reserve Army forces relied on the National Guard for logistic support; National Guard forces wanted to maintain the control and staff supervision of active Army and Army Reserve forces operating in the state.

DISCUSSION:

Limited numbers of active Army and Army Reserve forces supporting flood relief efforts were employed during the flood relief operations primarily in the areas of water supply and transport, aviation support, and float bridging. All units were placed under the Operational Control (OPCON) of the Defense Coordinating Officer (DCO) in each state by the CONUSA commander. Active Army and Army Reserve forces were used to augment local and state capabilities. These units were company-sized or smaller, with limited in-house logistics capability. This command and control arrangement caused all taskings and requests for support from these units to flow from the local authorities, through the State Emergency Management Agency (SEMA) to the DFO, to the DCO, to the Active Army or Army Reserve unit, creating delays.

Information on the status of missions and logistics capabilities was not normally known by the Adjutant General (TAG). Logistic support for these units normally was provided on a "good-neighbor" basis by local National Guard support units. The authority for the National Guard to directly task Active Army and Army Reserve forces operating in the state is not currently stated in doctrine found in FM 100-19.

RECOMMENDATION: Active Army and Army Reserve military response forces operating in a state area should continue to be placed OPCON to the DCO from the CONUSA, and further placed in direct support of the state authorities (National Guard), until the size of these federal forces exceeds the capability of the TAG to manage them.

PROPONENT: CALL recommends this issue be elevated to DA via ARAP.

RULES OF ENGAGEMENT (ROE)

ISSUE: Army National Guard units employed various ROE during flood relief operations, when required, and some states did not issue weapons and ammunition to forces, while others did.

DISCUSSION:

ROE followed standard procedures identified for civil disturbance operations, including use of deadly force. All Kansas National Guard personnel drew weapons without ammunition for local security operations. When ammunition was required to assist local law enforcement authorities, three rounds were drawn and placed in magazines, but not loaded, unless the soldier's life was threatened. All personnel were thoroughly briefed on the ROE and carried ROE cards.

The presence of National Guard forces normally provided a sense of secure calm to the local population, negating the need to demonstrate a show of force with weapons. Iowa, Illinois, and Missouri National Guard personnel were not issued weapons or ammunition based on this premise. Missouri did authorize the issue of weapons for security missions when requested by local authorities to augment local police capability in South St. Louis and at the Chesterfield area jail, which was flooded. Missouri issued a printed sheet defining ROE and thoroughly briefed personnel involved.

RECOMMENDATIONS:

- a. Standard ROE developed for civil disturbance operations are appropriate for this type of operation.
- b. Army National Guard should continually assess the need for weapons and ammunition during these types of disaster assistance operations.
- c. When required for security operations, use proven ROE, including use of deadly force and brief all personnel on the ROE.
- d. Ensure the ROE and any changes to it, is in writing and disseminated to all personnel as soon as changes are made.

PROPOSER: CALL recommends this issue be elevated to DA via ARAP with the National Guard Bureau in support.

MILITARY AVIATION SUPPORT

ISSUE: Army aviation provided timely reconnaissance and logistics support to flood fighting and recovery operations. Air National Guard aircraft were used to transport large numbers of soldiers and supplies.

DISCUSSION:

Various Army aviation assets were employed in support of flood response efforts. Active Army helicopter support from Fort Leonard Wood was used to transport Defense Control Officer (DCO) personnel and FEMA personnel to needed locations in a timely manner. Kansas National Guard aviation assets were used to conduct reconnaissance and haul supplies. Active Army helicopters from Fort Riley were used to haul immediate sandbag supplies. Army Reserve CH-47 helicopters sling-loaded large chunks of rock to slow down levee blowout erosion near Glasgow, Missouri.

Iowa National Guard received support from CH-47s from Fort Hood to sling-load sandbags, pumps, and other equipment. The Chinooks also were used to quickly pull pumps out of the city of Des Moines water plant. OH-58 and UH-1 helicopters were extensively used for flood reconnaissance, damage assessment and transport of personnel.

Illinois used aviation assets (CH-47 and UH-1) to transport soldiers and supplies, conduct rescue operations on levees that were breaking apart, and sling-load sandbags into inaccessible areas. Missouri centrally controlled its aviation (UH-1 and OH-58) to support various missions including reconnaissance and transport of key personnel. ALL USACE Districts received aviation support through the DFO/DCO channels to provide observation and to move sandbags and pumps into positions. Air National Guard support included use of C-130 and KC-135 aircraft to move large numbers of soldiers and supplies in several of the states.

RECOMMENDATIONS:

- a. Anticipate Army aviation requirements for future disaster assistance operations. Ensure that aviation support will be available on short notice.
- b. Use all available assets, regardless of component.
- c. Ensure that sling-load training and expertise is available.
- d. Stockpile additional cargo nets and slings.

e. Centrally control aviation support under the TAG if required and use Air National Guard aircraft to move large numbers of personnel, supplies and equipment.

PROPOSER: CALL recommends this issue be elevated to DA via ARAP with FORSCOM, the National Guard Bureau, TRADOC and the U.S.A. Aviation School in support.

DISENGAGEMENT OF NATIONAL GUARD FORCES

ISSUE: Disengagement (End State) of National Guard forces at flood-fighting locations was conducted after consensus-building with local authorities.

DISCUSSION:

National Guard forces were called in initially to assist with immediate efforts to prevent loss of life, including evacuation and providing security to evacuated areas. The goal was to only have the National Guard stay in-place until local authorities could take over the flood recovery efforts. This allowed the Guard to be deactivated or moved to other needed locations. Determination of when local authorities could take over from the National Guard forces was done by mutual agreement (consensus) between local officials and National Guard commanders on the ground.

A common technique was to tie the disengagement to a measurable event such as a river depth, opening of a road or bridge, etc. Sometimes, it was difficult to get local authorities to realize that they had the capability to continue the flood recovery efforts. Local people wanted the National Guard to continue to patrol evacuated areas, because they perceived that it would be "less safe" if the National Guard left the area. Disengagement actions were not fully announced in some cases, causing frustration on the part of local authorities and USACE personnel to quickly cover the lost capability.

RECOMMENDATIONS:

- a. Coordinate the disengagement of military forces as soon as possible with local authorities and tie to measurable events.
- b. Ensure continuous communication with local authorities concerning disengagement of forces.

PROPONENT: CALL recommends this issue be elevated to DA via ARAP.

CALL-UP OF NATIONAL GUARD FORCES

ISSUE: Each state handled the call-up of their National Guard forces for State Emergency Duty (SED) differently.

DISCUSSION:

Kansas and Iowa normally called up units, including staff, while Illinois and Missouri normally called up individuals but did call up some entire units as necessary. Both call-up methods proved effective in meeting the mission with each having benefits and detractors. Volunteers were extensively used, but had some special considerations. Rotation policies of 10-14 days were established to provide fresh troops to the flood operations and release soldiers back to employers or schooling.

Unit versus individual call-up for SED is normally determined by the anticipated length of stay and availability of fiscal resources. Kansas and Iowa called up entire units based on the premise of providing adequate staffing early on in the response process, and tailoring the force as time went on. This allowed the states to set up a multiple task force organization structure on an area basis for ease of command and control. Unneeded Guard personnel were deactivated quickly.

Missouri and Illinois received political guidance early on to call-up "minimum essential manning" primarily due to fiscal constraints. Call-up requests from local authorities were based on increments of 50 to 100 personnel being needed. Command and control of these units was handled by the TAG's EOC. Volunteers were the main suppliers of personnel early in the operation. Missouri initially called up forces in company-sized units. Eventually, the continuing flooding required the call-up of other individuals and unit staffs to handle the increasing personnel loads. Missouri eventually set up three area task forces. "Fluid" task forces were developed in Illinois to control changing requirements along the Mississippi and Illinois rivers. As the flooding continued, Guard soldiers began to feel the wear and tear of extended flood-fighting. Rotation policies were established to change soldiers/units at 10 to 14 day increments. This aided in the return of soldiers to civilian employment or to school. Most volunteers were college students or unemployed. Job protection requirements for SED were not established in all states, causing concern of soldiers.

RECOMMENDATIONS:

- a. State emergency planners should review plans for the call-up of units versus individuals.
- b. Establish task force headquarters by unit.

c. Develop personnel rotation policies for long duration operations. Ensure that personal needs of volunteers do not hinder mission accomplishment.

PROPONENT: CALL recommends the National Guard Bureau.

COMMUNICATIONS SUPPORT

ISSUE: Various types of communications equipment were required during the flood relief operations.

DISCUSSION:

Cellular phones were used extensively by USACE and national Guard personnel throughout the flood relief effort. Back-up communication was provided through FM and HF radios. Various types of phones were procured or donated. The phones with higher wattage capability seemed to perform the best, covering larger areas. Personnel required training on the use of the phones, including how to recharge periodically, or how to replace batteries. Spot shortages of batteries occurred. Areas not covered by cellular telephone towers were primarily in the Dakotas. Telephone frequencies were controlled through the military response agency.

Facsimiles (FAX) were provided at the task force level. They were effective in providing up-to-date logistics and personnel status information. Also facsimiles were used extensively to transmit activation and deactivation orders.

Missouri National Guard also established E-MAIL capability with each task force. Radio coverage was provided by HF single-sideband type of equipment. Local FM radio coverage was provided primarily by AN/PRC-127 and AN/VRC-12 equipment.

RECOMMENDATIONS:

- a. Military response planners should assess coverage of cellular telephone capability. Assess the impact of damage to existing towers. Procure or plan to procure cellular telephones with batteries for needed contingencies, including coverage and power requirements.
- b. As a minimum, provide each liaison officer with a cellular phone. Provide the necessary training.
- c. Coordinate frequency requirements with local agencies.
- d. Provide facsimiles and E-MAIL capability at the task force level. Continue to use FM and HF radios for back-up communications.

PROPONENT: CALL recommends this issue be elevated to DA via ARAP.

MAP SUPPORT

ISSUE: Map coverage appeared adequate to support military response efforts in flooded areas.

DISCUSSION:

The USGS map scales used were primarily 1:100,000 and 1:24,000. Locally produced maps included city street maps, and county and state highway maps of varying scales. USACE Flood Plain maps were used primarily along the Mississippi River basin. Some local maps were outdated and did not show recent streets or roads. No difficulties in interpreting the maps were noted. The large-area maps were used primarily in Emergency Operations Centers (EOC), while the small-area maps were used by units and personnel on the ground.

RECOMMENDATION: Continually assess, acquire copies of, and train with updated map products for potential disaster assistance operation areas.

PROPOSER: CALL recommends this issue be elevated to DA via ARAP.

BOTTLED WATER CONTAINERS

ISSUE: The military water supply units and USACE had difficulty in obtaining needed water containers to support the local populations throughout the flood stricken area.

DISCUSSION:

The military water supply system is based on purification, transport, and distribution of bulk water. This serves the military well as each soldier carries his or her own container (canteens, 5 gallon water cans, etc.). During this disaster assistance operation, military bulk water supply in St. Joseph and Des Moines only worked for large requirements such as laundry and bath points, hospitals, or engine/plant cooling operations. National Guard soldiers were able to fill up canteens and water cans, but the local populace could not without bringing their own container support. USACE procured some containers in Des Moines, but not enough to satisfy requirements. The ones that were procured were not normally returned by the local civilians. St. Joseph authorities also had difficulty in obtaining containers. Donations of bottled water for the local populace by numerous agencies including the Red Cross and Anheuser-Busch throughout the flood area were greatly appreciated and became expected.

RECOMMENDATIONS:

- a. Military disaster assistance planners should assess the need for bottled water containers and supplies to support local civilian requirements.
- b. Establish contracts to provide the needed containers and supplies as appropriate.

PROPONENT: CALL recommends this issue be elevated to DA via ARAP.

NATIONAL GUARD LOGISTICS SUPPORT

ISSUE: National Guard units that deployed with all organic equipment, supplies, and repair parts were immediately capable of extended operations during the flood-fighting effort.

DISCUSSION:

National Guard logistics support varied by state. Some units deployed with all organic equipment and supplies, while others did not. Logistics support was hindered when other units deployed without their equipment. This caused deployed units to rely on local sources for needed supplies and transportation to move around, and not fully capable to fight the floods.

In states where individuals, instead of units were called up, logistics support problems were compounded even further. States which provided forward DS maintenance contact teams from Organizational Maintenance Support (OMS) shops were able to repair most equipment on-site, with minimal down-time. States that retained DS capability at OMS shops had delays in providing timely repair. Because vehicles were continually driving in and around water, preventative maintenance (PM) was heightened, especially in the areas of keeping fluids and seals from being contaminated. Some units delayed PM due to flood-fighting operations, but conducted maintenance operations as soon as possible to alleviate future damage.

Portable latrines were required in many areas for field sanitation purposes. Refrigerated vans were needed to store produce and other rations. Individual supplies that proved critical included sunscreen, bug repellent, flashlights, and flashlight batteries.

RECOMMENDATIONS:

- a. Deploy units with all organic equipment, supplies, and repair parts.
- b. Provide forward DS maintenance capability. Schedule preventative maintenance operations throughout the disaster assistance operation.
- c. Provide portable latrines and refrigeration capability.

PROPONENT: CALL recommends this issue be elevated to DA via ARAP.

SAFETY

ISSUE: To keep personnel safe, commanders used the risk assessment process throughout the flood relief effort.

DISCUSSION: Safety concerns centered around prevention of heat injuries, night operations, use of life jackets, and protection against tetanus and insect bites. All personnel received training on how to spot and treat heat-related injuries. Although temperatures reached 100 degrees Fahrenheit in some areas with high humidities over 80 percent, very few heat-related injuries were reported. Personnel were continually hydrated with water, used sun screens, and used the buddy system to watch each other.

Military personnel and equipment needed to be easily visible in the dark because operations continued around the clock. Floodlights provided by USACE and the Air National Guard were used extensively in flood-fighting areas. Several traffic accidents occurred when military vehicles with camouflage paint were not visible at night. This military equipment required additional reflective devices such as highway warning lights to prevent cars from driving into them. Personnel working at night were required to wear reflective clothing and use flashlights and the buddy system.

Agencies required that all personnel operating on levees and in and around water wear life jackets. The life jackets provided by USACE to the National Guard and other agencies saved several persons who were swept away when levees broke.

Additionally, all military personnel received inoculations against tetanus because of the unsanitary water. Adequate stocks of insect repellent were available to ward off mosquitos and flies around flooded areas.

RECOMMENDATION: Continually stress safety during disaster assistance operations, including operating at night. Use the risk assessment process. Plan for specific safety requirements such as the need for life jackets and highway warning equipment.

PROPOSER: CALL recommends the U.S. Army safety Center at Fort Rucker, Alabama.