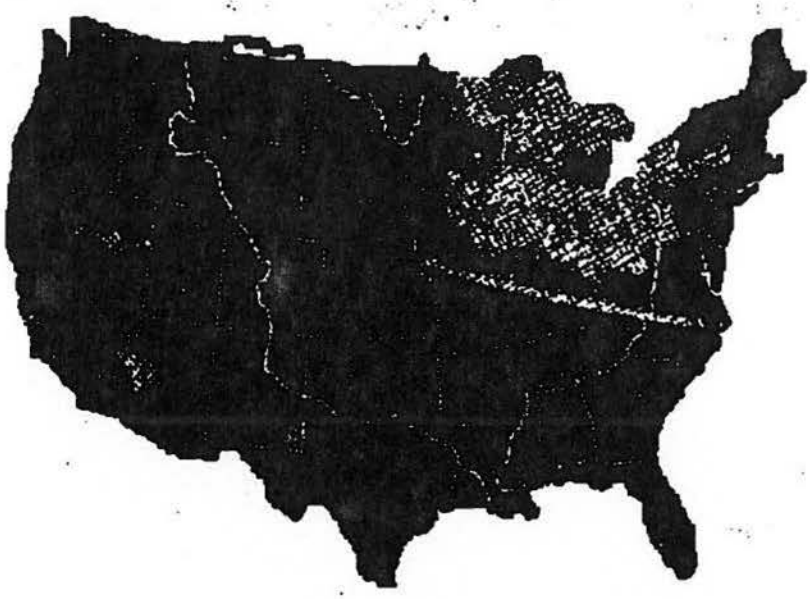
In 2007 the Waterways Action Plan was published combining the 1997 Mississippi River Crisis Action Plan with the Ohio River Valley Waterways Management Plan. The 2007 plan is much shorter and is supplemented with regional annexes.

Search for "anchor", "allision", and "high water".

MISSISSIPPI RIVER CRISIS ACTION PLAN

A Joint Project of the Marine Industry, the U.S. Coast Guard, and the U. S. Army Corps of Engineers



Revised December 1, 1997

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EXECUTIVE SUMMARY

The Mississippi River Crisis Action Plan provides the marine industry, U.S. Coast Guard (USCG), U.S. Army Corps of Engineers (ACOE), states and local governments with a plan for pro-actively facilitating the safe and orderly movement of traffic during low and high water navigation crises on the Mississippi River.

The River Industry Executive Task Force (RIETF) in conjunction with the ACOE and the USCG, chartered the River Crisis Response Working Group in September 1995. The group's goal was to draft a standard CAP for dealing with impeding navigation crises on the Mississippi River System. Subsequently, floods in the Ohio Valley in the Spring of 1997 resulted in high water and excessive river flows in the lower Mississippi River from Vicksburg, Mississippi to the mouth of the river. The Eighth Coast Guard District Commander then directed the COTP New Orleans to convene a working group of stakeholders operating between Baton Rouge and Southwest Pass to modify the plan to include the entire Lower Mississippi River. These stakeholders included ACOE, the four Pilot Associations, the Steamship Association of Louisiana, the AWO, GNOBFA, and MNSA. In place of a formal WMC for the Baton Rouge to Southwest Pass portion of the Mississippi River, these and other stakeholders will be consulted during high and/or low water situations.

To ensure an effective response, a standing organization of senior USCG, ACOE and industry personnel has been established. This Waterway Management Committee (WMC) is a **Unified Command** (UC), which adheres to the nationally accepted Incident Command System (ICS) model. The UC promotes synergetic activity among all river stakeholders and ensures **joint** evaluations and decisions are made that take all perspectives into account.

Chapters 1–5 of the plan detail the essential issues, authorities and traffic management tools designed to enable government and industry to pro-actively manage a river crisis. Particularly critical is the guidance for executing waterway management intervention actions. Responses are broken down into 4 phases: the **Watch Phase, Implementation Phase, Emergency Phase** and **Recovery Phase**. Appendixes I–IV break down these response actions by geographic segments of the Mississippi River (Lower, Middle, and Upper) and apply trigger points and recommended actions for each phase of response. Specifically, pro-active actions are triggered when river gage levels are attained, and safety measures put in place to avert casualties, rather than respond after an incident has occurred. The plan initiates Traffic Information Centers (TIC) to disseminate safety information and Traffic Control Centers (TCC) to temporarily perform active vessel traffic management. Appendix V includes case histories, which provide details of past river crises and solutions developed to manage these incidents.

This CAP is an example of the positive results attainable through joint partnerships between the marine industry, ACOE, USCG, state and local governments. The plan will facilitate coordinated responses and minimize disruptions during the inevitable navigation crises that will occur.

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Introduction

Mississippi River Crisis Action Plan, (CAP)

This plan provides guidance on the activities needed to respond to a marine transportation emergency on the Mississippi River. River emergencies significantly disrupt navigation and may be caused by a natural or man-made disaster, or a combination of both. The goal of the plan is to serve as a guide for officials of the U.S. Coast Guard (USCG), the Army Corps of Engineers (ACOE) and the marine industry to facilitate the safe and orderly movement of traffic during a navigational crisis.

This CAP is the result of the efforts of the River Crisis Response Working Group chartered in the fall of 1995 by the River Industry Executive Task Force (RIETF), the Commander of the Second Coast Guard District, and the U.S. Army Corps of Engineers, Lower Mississippi Valley Division. The Eighth Coast Guard District Commander chartered a second follow on Working Group in the summer of 1997. Based on an analysis of these events, it was concluded that the CAP needed to define communication responsibilities, provide information on the effects of hydrology and meteorology on the river system, and outline how federal, state, and local government agencies and the various industry river groups should interact during a crisis. Team members were government managers and industry representatives who play key roles in waterways management.

The information in the CAP is not intended to provide a "cookbook" solution to the complex waterways management problems that arise. It does, however, contain examples of proven techniques and processes used with success in past crises. Also included is historical data and commentary on response actions during the "The Midwest Drought of 1988-1989", "The Great Flood of 1993", "The Flood of 1995" and "The Baton Rouge Extreme High Water of 1997."

CAP users must realize that each crisis has its own unique set of issues, factors and controlling elements that require constant evaluation and adjustment. No plan can replace a clear, logical and analytical approach to problem solving. Critical to this effort is early and open communication with all parties to assure that response actions reflect fair and equal consideration of the interests of all parties, including the public at risk.

To ensure coordination of future crisis responses, the CAP establishes the Waterways Management Committee (WMC). The WMC is a standing committee

of government and industry personnel responsible for assessing the hydrological and meteorological factors that affect river transportation, and conducting long term planning and preparation for future events. Its members include: the Chairmen of RIETF, RIAC, LOMRC, IRC, the presidents of industry groups and associations operating below Baton Rouge; representatives from the Corps of Engineers Lower Mississippi Valley Division and North Central Division, the Coast Guard Captain of the Port for New Orleans, and the Chief of the Marine Safety Division for the Eighth Coast Guard District (CCGD8(m)).

During a crisis the CAP calls for the WMC to appoint a staff from government and industry personnel to deal with the crisis. The WMC staff is a Unified Command that adheres to the Incident Command System (ICS) model. Like the ICS, staff size will vary based on the nature, location and scope of the crisis. The WMC staff organization is designed to consist of four sections: Logistics, Operations, Planning and Public Information. The Logistics Section provides support resources to respond to the crisis. The Operations Section manages the day to day activities associated with the response to the crisis. This includes the establishment of a Traffic Information Center operating in conjunction with established Coast Guard MSO Crisis Action Centers or ACOE Emergency Operations Centers and when conditions dictate, the establishment of Traffic Control Centers and/or a Traffic Assist Vessel (TAV) in the immediate vicinity. The Planning Section collects, evaluates and disseminates information on the crisis, and will provide recommendations on redirection of resources and reassessment of priorities. The Public Information Section provides information to the media, the general public and other organizations.

The need for effective communications was highlighted by the working group as being of paramount importance. During past events no one person was responsible for communications. This led to inconsistent and sometimes untimely communication to river users and the public regarding response efforts. To address this problem, the Working Group created the Information Management Supervisor (IMS) position. The IMS will be part of the Planning Staff and will collect and evaluate information to be disseminated to the staff. The IMS will work closely with the Public Information Section to ensure that staff is provided with the information necessary to develop releases to the public.

The Working Group also identified the lack of use of modern information technology as a shortfall during past events. During previous responses the telephone was used as the primary means of communicating with every interested party. As a result countless staff hours were spent answering routine calls. While public inquires are important, the time needed to answer the questions took valuable talent away from crisis response duties. To minimize the

use of the telephone for communications, the CAP sets up procedures for the use of communication methods such as fax on demand, the Internet and auto-attendant phone systems. These systems are easy to use, accessible to anyone and require a minimal amount of staff time to operate. The procedures still and require a minimal amount of staff time to operate. The procedures still provide the option to speak to an individual; however, the goal is that anyone can easily obtain information on the crisis through a number of other electronic means.

Synopsis of past response actions during the Flood of 1995, the Flood of 1993, the Drought of 1988 and Baton Rouge Extreme High Water Response in 1997 have been included in **Appendix V**.

Personnel involved in waterways management activities on the inland river system are encouraged to read this CAP. The principles discussed can be used in any waterway management activity and will assist any industry, ACOE, or USCG manager in fulfilling their role in waterway management activities.

This plan does not eliminate the the traditional direct communication between the USCG/ACOE and marine industry. However, it is anticipated that use of the networks created by the WMC, and other stakeholder organizations will transmit vital information to the affected parties more rapidly than direct communication by the USCG/ACOE to individual parties. When this plan is activated, information will be provided automatically to the interested parties by the communication networks of the USCG, ACOE, WMC, and other stakeholders.

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Glossary

ATON	Aids To Navigation
ACOE	U.S. Army Corps of Engineers
AWO	American Waterways Operators
BNM	Broadcast Notice to Mariners
CAC	Crisis Action Center
CAP	Crisis Action Plan
CEO	Corporate Executive Officer
CFR	Code of Federal Regulations
cfs	cubic feet per second
COTP	Captain of the Port
GNOBFA	Greater New Orleans Barge Fleeting Association
ICS	Incident Command System
ILWW	Illinois Waterway
IMS	Information Management Supervisor
JIC	Joint Information Center
IRC	Illinois River Carriers Association
ITCS	Inland Traffic Communications System
LMR	Lower Mississippi River
LMRWSAC	Lower Mississippi River Waterway Safety Advisory Committee
LOMRC	Lower Mississippi River Committee
MMR	Middle Mississippi River
MOR	Missouri River
NOAA	National Oceanic and Atmospheric Association
NOBRA	New Orleans-Baton Rouge Steamship Pilots Association
NWS	National Weather Service
OPCEN	Operations Center
Op Order	Incident Operations Order
PAO	Public Affairs Officer
RIAC	River Industry Action Committee
RIETF	River Industry Executive Task Force
SEMA	State Emergency Management Agency
SITREP	Situation Report
TAV	Traffic Assist Vessel
TIC	Traffic Information Center
TCC	Traffic Control Center
UMR	Upper Mississippi River
USCG	U.S. Coast Guard
USGS	U.S. Geological Survey
WMC	Waterways Management Committee

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Chapter 1: Hydrology, Meteorology, and Waterways Management

The purpose of this chapter is to provide the waterway manager with basic information on the hydrological and meteorological factors that affect the Mississippi River system and to identify how these factors affect river levels and navigation safety. This chapter outlines the general philosophy for dealing with navigation safety issues and discusses the tools available to conduct waterway management activities

Hydrological and Meteorological Factors Affecting Waterways Management

The Mississippi River and its tributaries form a complex waterway system spread out over millions of square miles. In order to predict changes in conditions in this system, waterway managers must constantly monitor a number of hydrological and meteorological factors. These include water flow, soil moisture, snow cover, precipitation, temperature, weather patterns and most importantly, geography. Effective waterway managers must constantly monitor these factors and forecast river conditions in order to ensure they are adequately prepared to deal with a regional transportation emergency.

The area most significantly affected by the factors mentioned above is the Upper Mississippi River (UMR). This portion of the river, from the confluence of the Ohio River, northward, consists principally of pooled waters created by a series of locks and dams operated by the ACOE. The purpose of these structures is to maintain water levels to provide the minimum channel depth of nine feet required by law for commercial navigation. Major tributaries to the UMR, including the Missouri River (MOR), Illinois Waterway (ILWW), Iowa River, Des Moines River and the Ohio River, have impoundment's that create reservoirs. Flows from these reservoirs impact the water levels of the UMR.

Numerous variables affect how much water is in the system at any given time. Listed below are some of the key variables waterway managers must consider:

1. Base flow: The amount of water flow (measured in cubic feet per second (cfs) along a section of river (usually measured at a dam). The ACOE has established an average flow rate for each section of a river. Average rates are based on flows consistent with normal weather patterns. A comparison of the actual flow against the base flow is an indicator of increased or decreased water levels. The flow rate does not provide an indication of the duration of the increased/decreased flows. Base flow and flow rate information is available from the ACOE.

2. Soil moisture: The amount of moisture concentrated in the soil. High soil moisture content means a large percentage of new precipitation will

not be absorbed into the soil. This will result in increased runoff and a corresponding increase in water levels. Soil moisture averages and current levels are available from the U.S. Geological Survey (USGS) and State water/soil conservation agencies.

3. Precipitation: The amount of rain/sleet, etc. This becomes runoff and impacts water levels in the river systems. The amount and duration of precipitation are equally important factors. Precipitation averages and totals can be obtained from the USGS, the National Oceanic and Atmospheric Association (NOAA), the National Weather Service (NWS) and State agencies.

4. Snow cover: Snow cover is the buildup of snow that will melt and enter the water table and/or turn into runoff. Increase in snow cover will result in a corresponding increase in runoff and spring water levels. Information on snow cover can be obtained via NOAA, NWS, and State weather services.

5. Temperature: Average fall and winter temperatures determine the depth of frost, the amount of water entering the soil, and the amount and duration of river ice. Below normal temperatures in the fall and winter increase the depth of frost, allowing less water to enter the soil during periods of precipitation, increasing the amount of runoff. This situation may also cause an increase in ice and subsequent problems due to ice dams or gorges, and difficulties with the lock and dam system. Above normal temperatures in the spring increases the amount of runoff from snowmelt. Temperature information is available from USGS, NOAA, NWS, and State agencies.

6. Geography/Terrain: The physical characteristics of the river bend and shoreline. These characteristics impact river currents and the rate of change in water levels. Steep banks, levees, revetments, narrow channels, rock bottoms, adjacent flood plains and wetlands are just a few of the factors that determine how the river will rise or fall. In addition, geography has an effect on ice build up, the effect of flooding, the time and complexity of maintenance and dredging and the effectiveness of traffic control measures.

7. River slope: Rivers slope downstream toward their mouths. Slope is the change in elevation of the river, expressed in a ratio between the change in elevation and the number of miles between reference points. A working knowledge of slope is one of the best tools to quickly determine river conditions and the duration of low/high water events. As flow rates from the upper dams increase, the slope will increase as the upper end of the river in the vicinity of the upper dam increases in depth. If the increased flow rates remain constant, water levels

downstream will rise and be sustained. As upper river water flows decrease, the river slope will decrease and water levels will crest sequentially down the river. The term for this decrease in flow and subsequent decrease in slope is called "leveling". Once the crest has passed through the system, and flow rates become more consistent, water levels and slope will return to normal.

"Leveling" also occurs when low water conditions prevail in the system. As the dams reduce flow in order to maintain their pools, less water becomes available downstream. As each successive dam reduces flow to maintain the nine-foot channel, short-term low water is caused in the next pool downstream until that dam holds enough water to maintain its required level. When dams are only able to maintain minimum pool or unable to maintain a minimum channel depth, traffic management may have to be initiated.

Changes in weather patterns impact the river system by themselves and in conjunction with the factors listed above. One of the best known examples of this is the abnormal pattern that contributed significantly to the Great Flood of 1993. In this case, a wet-weather pattern persisted over the upper Midwest for over six months. This was caused by weather front convergence zone, which generated frequent and prolonged thunderstorms. In addition to the excessive rain, the area experienced an early snowmelt, increasing spring runoff.

Each of the factors mentioned must be constantly evaluated by waterway managers to prepare for long term traffic control activities. It is particularly important that waterway managers and users at all levels meet regularly to review anticipated problems. At minimum, the Waterway Management Committee should conduct semi-annual meetings to discuss waterway management issues and ensure information contained in this plan is updated. The value of a proactive approach to waterway management can not be overemphasized. This ensures the safest, most efficient and most economical course of action, with the least impact on the river user.

Waterway Management Activities

The goal of any waterway management activity is to facilitate safe navigation during a period of less than optimum conditions. Timely, well designed interventions by waterway managers will bring order to the chaos surrounding a flood, drought or other marine incident and will limit economic impact on local and regional economies. The management of marine traffic during emergencies requires a clear set of goals and a focused plan of action to address associated complex issues.

River users are experts on river operations and must be involved in the decision making process. To ensure issues are addressed in the most efficient manner,

working relationships between federal, state and local waterway managers and industry user groups such as RIAC, LOMRC and others, should be continuously cultivated and all parties given ownership in the decision making process.

Waterway managers must continually monitor hydrological and meteorological reports and the frequency of vessel casualties as indices of navigating conditions. By analyzing developing trends, they can decide when system controls must be implemented to maintain an acceptable level of safety. **Chapter 1, Tab A** discusses impacts to navigation that waterway managers can expect to occur during high water.

System Management and Control

Waterway management intervention actions must be taken when a compelling need exists to preserve the safety of navigation and the environment. Careful analysis of the risks must be conducted in each case, and controls should be exercised only to the extent necessary to mitigate these risks. In all cases, the controls imposed should be the least restrictive necessary. The degree of control can always be escalated as conditions worsen. Control actions range from passive enforcement actions such as advisories, to active enforcement actions such as the prohibition of all navigation on a river system. These activities should be approached systematically. When an intervention must be conducted on one part of the Mississippi River, other areas of the river must be considered. For example the actions in St. Louis Harbor by the COTP St. Louis or in New Orleans or Baton Rouge by the COTP New Orleans will have an impact on transiting traffic. Care must be taken to recognize any restriction put in place to address local safety issues may place undue hardship on vessels on other parts of the river system.

The simplest form of intervention is a navigational safety advisory. It relies on the voluntary compliance of industry to limit risk and prevent vessel casualties. Advisories are usually issued only after consultation with the appropriate river user group and the ACOE. They can be originated by the USCG or self imposed by industry, and disseminated over the industry facsimile system, the ACOE bulletin board, as a Broadcast Notice to Mariners (BNM), or any combination of these methods. The purpose is to advise the marine industry of the existence of hazardous conditions and provide recommendations for navigating safely. Advisories can also be used to notify the marine industry of the COTP's intention to take action in respect to developing navigation conditions. Advisories are an important tool that provides marine interests time to adjust their operations to avoid future problems.

The most frequently used intervention activity is the establishment of a COTP safety zone that imposes vessel-operating restrictions. Consultation and deliberation with the ACOE and industry user groups usually precede implementation of safety zones. Depending on the situation, the nature of the

hazardous conditions and the dynamics of the river, a safety zone can rapidly develop into a complex management effort involving the control of traffic through the establishment of a Traffic Control Center (TCC). A safety zone entails the control of a harbor, a river, or portion of a river. This enables the USCG to control access and/or prescribe operating restrictions on vessels seeking to navigate in the area. This approach can be applied to limited or large geographical areas and may involve simple or complex restrictions including:

- Minimum horsepower requirements
- Maximum draft limits
- Maximum tow size
- Specific tow configurations
- Length and breadth limits
- Safe speed zones, no passing zones or no meeting zones
- Helper or bow boat requirements
- Separation schemes
- Reporting requirements
- Tank barge prohibitions or the exclusion of all vessels from the safety zone.

The establishment of a safety zone may include active control of vessel traffic through an area or it may be conducted passively, relying on voluntarily compliance to limit risk. Safety zones using passive control have been imposed during periods of high or abnormally low water and when local construction or pollution response cleanup operations are impacted by passing traffic. Safety zones using active control have been imposed in conjunction with activities such as ACOE dredging and during major responses to vessel casualties. When dredging takes place, the COTP may limit access to the section of river that includes the work site. The COTP may designate the dredge master, or an onboard USCG representative, to serve as coordinator for passing traffic. Vessels may be required to "double trip" through the site or limit the times of passage depending on the conditions identified by the traffic coordinator.

During the most serious maritime incidents, safety zones are often used in conjunction with the establishment of a TCC or temporary vessel traffic control system. These organizations are joint government/ industry organizations established on a temporary basis to actively facilitate the safe movement of traffic. They can be used to provide either advisory or mandatory control of traffic and have been used successfully in numerous maritime incidents. These TCC's are manned by a combination of government and industry personnel under the control of the COTP or Coast Guard District Commander depending on the scope, nature and duration of the incident.

The Traffic Information Center (TIC) is a specialized Joint Information Center (JIC) manned by industry in the early stages of high water and is tasked with information gathering and delivery. The TIC issues daily bulletins to ensure all parties are provided with up to date information on the river crisis. The COTP or

industry should request the WMC and other major waterway users assist in establishing a TIC or TCC if one or more of the following conditions exist:

- There is a prolonged period of navigation stoppage and conditions are expected to worsen.
- River conditions are changing and operating restrictions are being amended frequently.
- There are numerous safety zones in effect, with a variety of operating conditions.
- The industry is experiencing difficulty in gaining timely information on river conditions.
- Severe congestion of harbors, terminals and locks.
- The restart of traffic will require control of vessels under complex operating restrictions.

Waterways Management Planning

The response to a transportation emergency can be broken down in to four distinct phases: the **Watch Phase, Implementation Phase, Emergency Phase,** and **Recovery Phase.** Key events are associated with each phase and specific actions must executed to ensure that safe and efficient responses are conducted. Each phase is defined as follows:

Watch Phase

Situation: The Watch Phase is the start of waterway management activity. It exists when navigation conditions have markedly deteriorated and hydrological projections and weather forecasts signal abnormal river stages and continued deterioration of navigating conditions. The COTP, local ACOE personnel and the local river user groups will be the first to become aware of difficulties being experienced by the commercial navigation interests. This group must confer and decide if the developing scenario has the potential of evolving into a large-scale transportation emergency. If the situation has the potential of escalating to this level, local representatives from the USCG, ACOE and industry should request a meeting to brief the WMC of the situation and recommend actions to be taken.

Implementation Phase

Situation: The Implementation Phase is the "ACTION" phase, when active traffic control and extraordinary information coordination become necessary. Vessels are navigating with difficulty and local navigation advisories and safety

zones are in effect to address hazardous areas. The casualty rate continues to increase and weather forecasts and hydrological projections indicate conditions will continue to worsen. The Coast Guard Aids to Navigation (ATON) system is deteriorating and USCG river tenders can not meet the demands for marking the river.

Emergency Phase

Situation: The Emergency Phase starts when areas must be closed to traffic or active vessel control is essential to avert casualties. During the Emergency Phase, river conditions and ATON reliability are significantly deteriorated, causing the cessation of navigation. Weather reports and hydrographic data indicate conditions will be abnormal for a protracted period. Casualties continue to occur despite the imposition of operating restrictions.

Recovery Phase

Situation: The Recovery Phase starts once limited navigation can be resumed on the affected river system. It is characterized by improving navigation and weather conditions, rivers returning to normal stages and re-establishment of the ATON system. In the early part of the Recovery Phase, traffic may move at reduced capacity under active control of the USCG. As conditions improve, operating restrictions are gradually removed and navigation is conducted without active direction. This phase ends when active management is no longer required and navigational advisories are used in lieu of operating restrictions. The WMC will announce the end of the Regional Traffic Emergency and the WMC Staff will complete documentation of the event.

Chapter 1, Tab B provides additional information on the actions to be taken during each response phase.

Operations Orders (Op Order)

When a transportation emergency develops, it becomes increasingly important to develop an Op Order (an Incident Action Plan or IAP in ICS terminology) to ensure appropriate coordination of actions taken. The document should indicate the goals of the waterway management action and explain the precedence in which operating restrictions will be implemented. **Chapter 3, Tab H** provides elements for inclusion and a sample Op Order.

Emergency Waterway Management

The complexity of the river system and the number of factors involved in its management make it essential that a pro-active approach be taken concerning waterway management activities. To ensure prevention and response activities are conducted most efficiently, it is essential that river users and managers

participate in decisions. The WMC should meet regularly to review existing conditions, assess the possibility of future emergencies, and review contingency planning. Critical to success is the implementation of a Unified Command, which promotes synergetic activity among all river stakeholders and ensures joint evaluations and decisions are made that take all perspectives into account.

Tab 1-A: Waterway Management Issues Associated with High Water

The purpose of this Tab is to list the impacts waterway managers can expect during a high water event. High-water or flood conditions will be marked by deterioration of navigating conditions due to swift currents, heavy debris flow, and the degradation of the ATON system. These conditions often result in an increase in vessel casualties, pollution incidents and barge breakaways. Additional impacts of a high water event are listed below:

Impacts on Navigating Tows

- Vessels navigating against the current face the potential for stall outs and loss of control.
- Vessels have difficulty making meeting and passing agreements due to effects of the current.
- Heavy debris flow causes damage to rudders and propellers, as well as side shell damage to barges.
- Vessels have difficulty identifying dikes and channel boundaries.
- Landings and passages through bridges become more difficult due to abnormal out drafts and currents, increasing allision incidents to bridge fendering systems.
- Close quarter maneuvers and tow building are more difficult.
- Safe tie off locations are limited and vessels are not able to find safe refuge.
- Downbound vessels have difficulty controlling their speed, complicating close aboard maneuvering during passing situations.
- Lock approaches by downbound tows are influenced by abnormal out drafts that lead to an increase in allisions with lock structures and gates.
- High currents and subsequent full power maneuvers overstress tow rigging, increasing tow breakups.
- ACOE spillway management can improve river currents below open spillways.

Impacts on Moored, Fleeted Vessels and Facilities

- Fleet anchors and dead men are strained by high flow and current, increasing the potential for breakaways.
- Tow building and midstream operations become difficult. Fleeting operations require skillful mariners to prevent breakaways.
- Large passenger vessels experience difficulty in maneuvering.
- Harbor activity decreases and a lesser number of vessels are available to respond to harbor emergencies.
- Facilities, particularly power plants, run short of coal and feed stocks, leading to later requests for passage of critical cargoes.

Impacts on Levees

- Prolonged exposure to high water will cause levees to become saturated and lose strength. Face vegetation dies off and erosion occurs.
- Vessels tied off to areas close to levees accelerate erosion with prop wash.
- Wake impact from passing tows, light boats and recreational vessels damage levees.
- Airborne infrared teams provide early detection of changing levee conditions.

Impacts When Navigation is Halted

- Vessels trapped in the closure require replenishment of fuel, potable water and groceries.
- Local law enforcement and relief agencies request small boat transportation to deliver aid.
- Recreational boaters and marinas operate despite river closure.
- Fleets require line boats to assist in maintaining security.
- Landowners and residents of unprotected communities engage in conflict with tied off tows and passing vessels.
- Isolated communities attempt to set up ferry operations using local pleasure craft.

Tab 1-B: Marine Transportation Emergency Response Cycle

The purpose of this Tab is to provide guidance for planning and executing waterways management intervention actions during a marine transportation emergency. Although the guidelines focus on response to a large-scale event involving a number of ACOE and COTP jurisdictions, they can be used for the management of local transportation emergencies as well. When used for local emergencies, the participation of regional managers may not be necessary and management representatives can be drawn from local river user groups, ACOE, and USCG personnel.

The response to a transportation emergency can be broken down in to four distinct phases: the **Watch Phase, Implementation Phase, Emergency Phase,** and **Recovery Phase.** Key events are associated with each phase and specific actions must executed to ensure that safe and efficient responses are conducted.

Watch Phase

If the WMC determines that a large-scale transportation emergency has occurred they should:

1. Assign senior representatives and staff members.
2. Develop an Op Order, providing operational guidelines.
3. Identify internal and external communication networks.
4. Determine resource and logistic needs.
5. Examine personnel needs to support extended activities.
6. Establish a schedule for information releases.
7. Establish a briefing schedule.
8. Prepare a press release indicating that a transportation emergency has developed and that operating restrictions may be imposed.
9. Determine if a public meeting should be held to brief stakeholders on the crisis.

Implementation Phase

The "ACTION" phase, when the WMC and its staff may:

1. Meet to examine the crisis and update the information from the Watch Phase meeting.
2. Update the Op Order to reflect the situation and anticipated actions.
3. Conduct a meeting to brief stakeholders.
4. Draft a news release and navigational advisory to announce the stage at which navigation will cease.
5. Announce the standup of the TIC and solicit watchstanders from industry.
6. Establish an information system for gathering pilot input on navigating conditions via industry.
7. Increase surveillance to capture real time pictures of river conditions.
8. Release a press bulletin outlining the crisis' situation, the establishment of the TIC and planned intervention activities .
9. Initiate development of policies for vessel queuing, test tow procedures, special movements, vessel replenishment and reduced crewing.
10. Establish a safety zone in preparation for the cessation of navigation within the affected area.
11. Issue regular press releases, navigation advisories and briefings to ensure a continuous flow of information to all interested parties.

Emergency Phase

During this phase, the WMC and its staff should:

1. Meet to examine the crisis and update information from the Implementation Phase meeting.
2. Place a prohibition of navigation into effect.
3. Establish the TCC to coordinate traffic management activities.
4. Discuss imminent operations and revise the Op Order as necessary.
5. Issue a press release explaining the situation and the actions taken.
6. Initiate traffic management in preparation for the restart of operations.
7. Issue waivers to vessels needed to maintain safe harbor operations.
8. Make preparations for initiating test tows and queuing systems.
9. Hold a meeting of stakeholders to brief them on the situation and the proposed traffic start-up plan.
10. Continue information gathering from overflights and surface patrols
11. Prepare a briefing for the WMC on river conditions necessary to resume navigation and the restrictions that are anticipated once traffic resumes.
12. Obtain concurrence between federal, state and local government to restart navigation.
13. Ensure sufficient aids to navigation are in place.
14. Establish "trigger" river stages for the start of a "test tow" program and the eventual resumption of limited traffic.
15. Test each river system for navigability using a test tow. If the test tow proves successful, traffic resumption efforts should move forward.
16. Use the data and experience gained in the test tow program to establish tow size and limits for the eventual restart of traffic.
17. Limit gaming vessel activities and fleet management.

Recovery Phase

During this phase the WMC and its staff should:

1. Meet to examine the crisis and update information in the Emergency Phase meeting.
2. Hold a meeting of stakeholders to brief them on the situation.
3. Evaluate operating restrictions on a recurring basis.
4. Continue to impose operating restrictions and issue navigational advisories as necessary.
5. Announce the end of the Regional Traffic Emergency through press releases, Broadcast Notice to Mariners (BNM's) and all means possible.
6. Conduct a debrief of the operation with the WMC to capture lessons learned.
7. Draft an after action report and incident history to be used in refining the CAP.
8. Collect and archive pertinent records of the response.
9. Stand down the WMC staff.

Chapter 2: Authorities and Responsibilities

The successful management of any traffic crisis is dependent on the cooperation of the waterway system participants. This includes agencies of the federal, state and local governments, industry groups and the general public. This chapter identifies the key organizations in these areas, outlines their authority and responsibilities and explains their involvement with traffic management during a river crisis.

Federal Agencies

The United States Code (USC), provides regulatory authority for establishing and maintaining navigation throughout U.S. territorial waters. Included as part of a national waterway system are numerous rivers, lakes and streams that comprise the inland waterway system. Navigation on these "navigable waters of the United States" are regulated primarily by the USCG. The ACOE provides technical advice to the USCG to enable them to properly evaluate and make decisions on navigation safety matters. ACOE is also responsible for authorizing waterway projects, evaluating and maintaining navigable channels and directing emergency flood control operations.

United States Coast Guard: Title 14, USC, defines USCG roles and responsibilities in establishing and maintaining the safety of ports and waterways. 33 CFR Part 165.20 gives COTP's and USCG District Commanders the authority to impose safety zones, security zones and other restrictions to ensure the safe flow of navigation. There are four COTP zones on the Mississippi River. Activities of the COTP New Orleans, LA, COTP Memphis, TN, COTP Paducah, KY and COTP St. Louis, MO are overseen by the Commander, Eighth Coast Guard District, in New Orleans, LA (CCGD8).

The New Orleans, LA COTP zone extends from mile 506.0 of the LMR to its entry into the Gulf of Mexico. The Memphis, TN COTP zone is on the LMR from mile 506.0 to mile 828.0. The Paducah, KY COTP zone begins at mile 828.0 on the LMR and ends at mile 55.3 on the UMR and COTP St. Louis, MO zone encompasses the UMR from mile 55.3 to its origin in Minnesota. This relationship is outlined in **Chapter 2, Tab A**.

United States Army Corps of Engineers: Title 33, U.S. Code defines ACOE roles and responsibilities regarding development of or changes to waterfront facilities, weirs, dams or dikes. Specifically, the ACOE is authorized to review and approve all changes to hydrodynamic structures for the purposes of maintaining a navigable channel. In addition, the ACOE is charged with conducting waterworks operations to maintain the physical nature of a navigable channel on particular waterways. The ACOE is also responsible for directing emergency flood control operations, and collecting information on flood states and damage.

ACOE jurisdiction on the Mississippi River is divided among 6 districts, each overseen by a Division Office. The Mississippi Valley Division Office in Vicksburg, TN coordinates activities of the St. Paul, MN District (UMR mile 868.0 to 614.0), and the Rock Island, IL District (UMR mile 614.0 to 300.0), the St. Louis, MO District Office (UMR mile 300.00 to 0.0), the Memphis, TN District office (UMR mile 0.0 to LMR mile 600.0), the Vicksburg, MS District Office (LMR mile 600.0 to 320.7), and the New Orleans, LA District Office (LMR mile 320.7 to 0.0). This relationship is outlined in **Chapter 2, Tab B.**

State and Local Governments

State, County and Parish Emergency Management personnel, Levee District managers, County Commissioners, City Mayors and local public safety personnel represent local interests and can significantly impact traffic management decisions. Though it is not always practical to involve local interests in traffic management decisions, particularly when they involve federal statutory requirements, State Emergency Management Agencies (SEMA) should be consulted and informed of decisions that may have an effect on local levees, waterways and overall public safety. If necessary for successful problem resolution, the WMC may consider extending an invitation to a state or local agency to participate in a particular emergency traffic event.

Industry Groups

As the principal river users and experts, industry groups should be called upon to provide assistance during waterway management activities. There are several organizations available to provide these services. These include; RIETF, RIAC, LOMRC, and IRC. Each of these organizations falls under the umbrella of RIETF, which acts as the point of contact for the WMC. Additional groups that can provide invaluable information/assistance, especially for situations below Baton Rouge, are the LMRWSAC, the Pilot Associations, GNOBFA, the Louisiana Steamship Association, and AWO. The AWO acts in an advisory capacity to the RIETF, RIAC, LOMRC, LMRWSAC, and IRC representing the interests of the "canal" sector of towing industry on the Gulf Intercoastal Waterway. **Chapter 2, Tab C** depicts the organizational relationship of these groups.

River Industry Executive Task Force: The RIETF, established in 1988 as an advisory group to address existing low water conditions, is an industry body representing the towing industry, facilities and other maritime interests. Members are solicited from industry senior executive echelons. RIETF serves as the primary, industry representative and traffic management counsel to CCGD8 and the ACOE on the western rivers waterways system. RIETF is senior to RIAC , LOMRC and IRC. RIETF serves as a permanent standing member of the

WMC. They may elect to delegate authority for implementation of an Emergency Traffic Management Plan to RIAC, LOMRC or IRC as necessary.

River Industry Action Committee: RIAC, which covers the UMR, is a sister organization to LOMRC and IRC. Its responsibilities are derived from its charter and periodic executive committee officer elections. RIAC collects river condition data including depth soundings, channel widths and obstruction locations through deployment of available vessels of opportunity. RIAC's Inland Traffic Communications System (ITCS) network is used in conjunction with the USCG BNTM communications system to ensure timely dissemination of information critical to waterway safety.

Lower Mississippi River Committee: LOMRC covers the length of the LMR, is a sister organization to RIAC and IRC. Periodic elections in addition to a charter define LOMRC responsibilities. LOMRC is composed primarily of towing companies that transport commodities between Cairo, IL and New Orleans, LA. Like RIAC, LOMRC accesses the ITCS and can supplement USCG BNM's.

Lower Mississippi River Waterway Safety Advisory Committee: LMRWSAC covers the length of the LMR, is a federally chartered safety advisory committee. LMRWSAC is composed of representatives of all users of the lower Mississippi River system including the public.

Illinois River Carriers: IRC is a sister organization to both RIAC and LOMRC. Periodic elections in addition to a charter define IRC responsibilities. IRC is composed primarily of companies that transport commodities on the ILWW. Like RIAC, IRC accesses the ITCS and can supplement USCG BNM's.

American Waterways Operators: AWO is an association of commercial vessel owners and operators throughout the country. Their primary constituent is the commercial vessel towing industry, which is the principal industry group represented on the Western Rivers. The AWO provides advice and assistance to RIETF in fulfilling its responsibilities and works with the USCG and ACOE on numerous initiatives. Most recently, the AWO signed a partnership agreement with the USCG to identify ways to work together more efficiently towards the common goal of commercial vessel safety.

Greater New Orleans Barge Fleeting Association: GNOBFA represents a broad cross section of barge fleeting, line haul, towboat, and other navigation safety professionals in a dynamic and involved public organization. GNOBFA sponsors both regular member meetings and an annual International Barge Fleeting conference. A GNOBFA Quality Action Team (QAT) partnership with MSO New Orleans produced the "Barge Fleeting Safety Guide" and regulatory job aid that is used as an important training and compliance guide for fleeting activities inside the Mississippi River Regulated Navigation Area. Below Baton Rouge.

Steamship Association of Louisiana: The Steamship Association of Louisiana coordinates and facilitates maritime navigation and industry throughout the Gulf Region. The Steamship Association is a key link in providing operationally important information to broad segments of the maritime community, both regionally and internationally.

Pilot Groups

New Orleans-Baton Rouge Steamship Pilots Association: NOBRA is responsible for the safe pilotage of vessels between New Orleans and Baton Rouge on the Mississippi River. NOBRA pilots play a critical role in navigation safety on the Mississippi River system, due to the high density of vessel traffic and marine facilities between New Orleans and Baton Rouge.

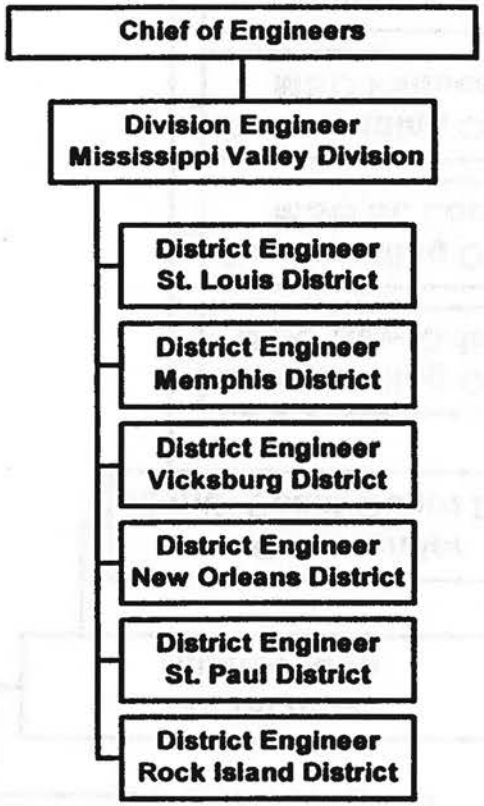
Associated Branch Pilots Association: The Bar Pilots safely navigate vessels across the bar at the mouth of the Mississippi River. Low water conditions are a critical concern to these pilots.

Crescent River Port Pilot Association: The Crescent Pilots safely navigate vessels from Pilottown to New Orleans.

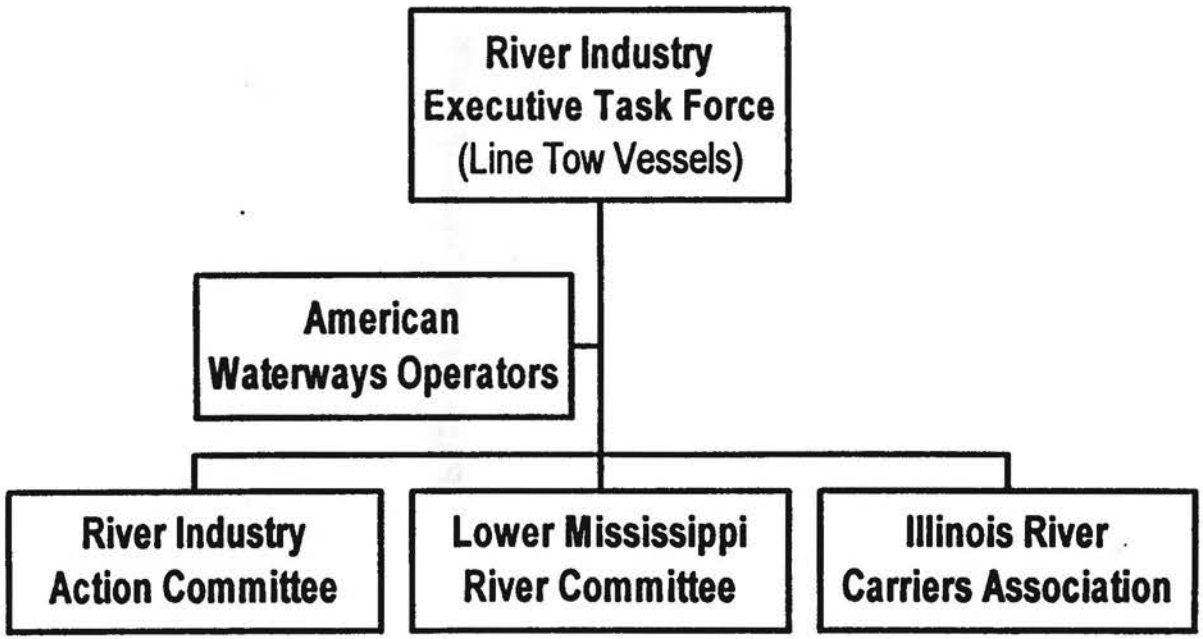
Associated Federal Pilots and Docking Masters of Louisiana: The Federal Pilots assist US-flag vessels safely navigate the Mississippi River from the mouth to Baton Rouge.

Tab 2-A: U. S. Coast Guard Organization

Tab 2-B: U. S. Army Corp of Engineers Organization



Tab 2-C: River Line Tow Industry Group Organization



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Chapter 3: Marine Transportation Emergency Response Organization

The goal of an emergency traffic management organization is to facilitate the safe movement of traffic during a marine transportation emergency. The success of the organization is largely dependent on the participation of federal and industry representatives. The federal role in this process is to coordinate the orderly and safe flow of river transportation and the industry role is to provide expertise and input. To ensure adequate planning is completed and an effective response can be conducted, a standing organization of senior USCG, ACOE and industry personnel has been established. This Waterways Management Committee (WMC) is responsible for continuously assessing the hydrological and meteorological factors that affect river transportation and conducting long term planning and preparation in the event an emergency should arise.

The Waterway Management Committee

The waterway management organization includes a standing committee made up of representatives from the USCG, ACOE and industry. These individuals meet either telephonically or in person to discuss long term planning issues, to assess the sufficiency of the CAP and to determine if waterway managers are properly prepared for an emergency. Meetings of the WMC should be conducted a minimum of semi-annually, with other meetings conducted at the request of the committee members. The schedule and host for each meeting is identified in **Chapter 3, Tab A.**

- The chairman designates a WMC coordinator. The coordinator is responsible for administrative and organizational tasks such as arranging meetings, developing agendas and keeping records. The coordinator may be a representative from the USCG, ACOE, or the industry, and will serve in this capacity for a period designated by the WMC.

The members of the WMC* are:

1. The Chairmen of RIETF, RIAC, LOMRC and the IRC.

2. The ACOE District Engineers from the appropriate district.

3. The Chief, Marine Safety Division, Eighth Coast Guard District and the COTP New Orleans.

Prior to each meeting an agenda will be set by the WMC Coordinator. The agenda should include short briefings from each of the organizations on current operations and a discussion of potential problems, taking into consideration the factors outlined in the meteorology and hydrology section of the waterway management chapter of this plan. For ad hoc meetings which are generated by response to a specific incident, affected local industry reps, e.g. harbor associations, should be invited to participate.

*For incidents impacting the area below Baton Rouge, the AWO, Louisiana Steamship Association, the pilots associations, and GNOBFA, will be included in the committee

Waterway Management Staff

Unlike the WMC and the committee coordinator, the WMC staff is not permanent and will be made up of USCG, ACOE and industry personnel to suit the nature, size and location of an emergency. The senior USCG representative will identify staff members after discussion with the other members of the WMC. This staff can be appointed from local USCG, ACOE and industry personnel if the emergency is local, or it can include members from CCGD8 and regional level ACOE and industry groups if the emergency impacts multiple USCG, ACOE and industry areas.

The recommended WMC organizational staff is designed to ensure that an effective emergency response can be conducted. It is based on the nationally accepted Incident Command System (ICS) model, modified slightly to deal with the unique problems identified in previous emergencies on the inland river system. The WMC is a Unified Command comprised of marine industry representatives and government agencies that have waterways management jurisdiction. It is task based and as such, does not prescribe the specific number of personnel required. The structure is designed to allow the staff to grow or shrink as the crisis escalates or subsides. **Chapter 3, Tab B** provides an outline of the recommended staff structure.

This system of establishing a standing committee from senior management personnel and selecting incident specific staff members depending on the size of the emergency has numerous benefits. It encourages emergency planning at upper management levels and waterway management at the lowest levels. It provides flexibility in the selection of personnel and ensures that the most qualified individuals are used for each emergency. An example of a problem handled in this manner is traffic management operations during localized ice conditions. As an emergency develops, traffic management may be necessary and the WMC may stand up a staff made up of local USCG, ACOE and industry personnel. If conditions continue to worsen and a full-scale traffic coordination effort becomes necessary, the WMC may want to set up a TIC or TCC. This will necessitate an increase in the size of the staff and the inclusion of regional USCG, ACOE, and industry personnel.

The following additional tabs are included in Chapter 3:

- Tab 3-C - Traffic Information Center Organization
- Tab 3-D - Traffic Information Center Logistic requirements
- Tab 3-E - Traffic Control Center Organization
- Tab 3-F - Traffic Control Center Logistic Requirements
- Tab 3-G – Waterways Management Committee Logistics
- Tab 3-H –Operations Order Elements and Sample

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Tab 3-A: Waterways Management Committee Schedule and Agenda

The purpose of this Tab is to outline the meeting schedule for the WMC and provide a suggested agenda. The goals of these meetings are to discuss current navigation conditions and to review the potential for issues that could arise in the future. The intent of this process is to establish communication well before a crisis develops.

Scheduling: The meetings can be conference calls or held in person. The WMC should call "ad hoc" meetings if emergent situations occur. The WMC should meet physically at least once a year, preferably at one of two scheduled meetings and should take advantage of scheduled regional industry meetings (.i.e., ACOE/CG industry day, RIETF annual meeting).

Content: the senior USCG member, assisted by the committee coordinator will chair the meeting. Short briefings will be provided by each member, taking into consideration the hydrological and meteorological factors discussed earlier in the plan. The factors include: base flow, soil moisture, precipitation, snow cover (if applicable), temperature, geography, river slope and weather patterns.

Winter/Spring Meeting: Normally held during the second week of November to discuss the impact of the closure of MOR and pending closure of the UMR. Discuss cargo volumes needed to be exported from the UMR System. Review the potential for winter low water in UMR, ILWW, MMR and LMR and the potential for ice problems.

Summer/Fall Meeting: Normally held during the first week of June to discuss the potential for summer low water conditions and reservoir management plans if low water occurs. Discuss the plans for scheduled lock maintenance.

Meeting Tasking: Two weeks prior to the meeting, the committee coordinator shall solicit agenda items and read ahead materials from the members. The host will publish an agenda, distribute read ahead items and make arrangements for teleconferencing services. Within 2 days after the meeting, the host agency shall produce the meeting notes for distribution to the WMC. The minutes are released after review by all committee members.

Sample Waterways Management Committee Agenda

1) Roll Call and opening remarks: (2 minutes.)

2) Committee Coordinators report: (7 minutes.)
   - Administrative matters

3) USCG Brief: (5 minutes.):
   - Current ATON situation
   - Casualty trends and navigation "hot spots"
   - Organizational issues that may impact USCG waterways management services

4) RIETF REPORT: (8 minutes.):
   - Current view of business
   - Specific problems that have arisen since last the meeting
   - Long range concerns on ATON, dredging and scheduled lock outages

5) LOMRC Report: (5 minutes.)
   - Current navigation conditions
   - Long range concerns
   - Dredging and ATON issues

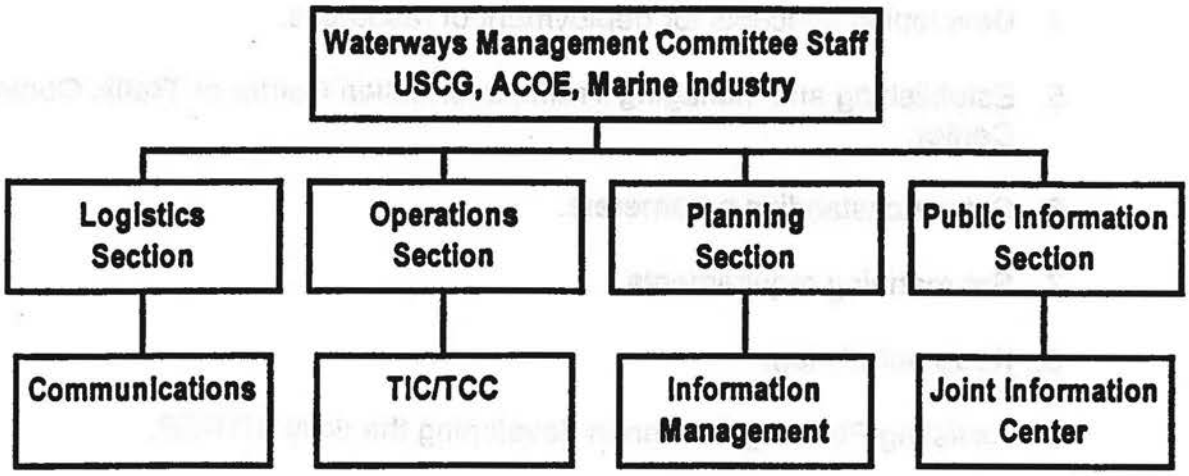
6) RIAC Report: (5 minutes.)
   - Current navigation conditions
   - Long range concerns
   - Dredging and ATON issues

7) ACOE Report: (8 minutes.)
   - Current hydrological projections and long range view
   - Current and long range weather outlook
   - Update on dredging, scheduled repairs and waterways maintenance projects

8) Open discussion (20 minutes.)

9) Close meeting and agree on next meeting date, solicit suggestions for improvement.

Tab 3-B: Waterways Management Committee Staff Organization



Staff Organization and Assignments

The chapter includes the recommended WMC Staff organizational structure to be used when a crisis requires a staff be activated. However, each WMC staff should determine its own organization requirements based on local needs.

The staff organization employs the National Interagency Incident Management System (NIIMS) Incident Command System (ICS). During any type of waterway management intervention, a number of functions must be fulfilled. In order to do this most efficiently, the committee staff has been divided into four sections, each with specific responsibilities and tasking. The sections are logistics, operations, planning, and public information. When a regional transportation emergency occurs, a number of individuals may be assigned to each section, particularly when a TIC or TCC is established. Staff members will be assigned to sections and will report to the section chief, with the section chief reporting to the WMC. The sections and their responsibilities are described below.

Operations Section: This section is responsible for oversight and management of the day to day activities during the emergency. The Operations Section supervises all operational actions related to traffic control and management. This includes the directing of operational resources and oversight of the TIC or TCC. The Operations Section Chief is the direct representative of the WMC staff for the accomplishment of the operational objectives outlined in the Op Order. Included as part of these duties are:

1. Assisting in development of the Op Order (Incident Action Plan).

2. Participating in planning meetings.

3. Briefing operations personnel.

4. Developing concepts for deployment of resources.

5. Establishing and managing Traffic Information Center or Traffic Control Center.

6. Set watchstanding parameters.

7. Set manning requirements.

8. Keep activity log.

9. Assisting Planning Section in developing the daily SITREP.

10. Drafting navigation advisories and safety zones.

11. Coordinating air asset requests.

12. Establishing procedures for vessel queuing, testing tow operations, special movements, vessel replenishments and reduced crewing.

13. Issuing vessel operational waivers.

14. Guidance on staffing and logistic requirements for a TIC are included in **Chapter 3, Tabs C and D.**

15. Guidance on staffing and logistic requirements for a TCC are included in **Chapter 3, Tabs E and F.**

Logistics Section: This section is responsible for the acquisition and maintenance of resources. The Logistics Section is responsible for providing facilities, services, and material support. It identifies sources of supplies and equipment and ensures maintenance and repair is conducted. It is responsible for recording purchases and accounting for property. The Logistics Section Chief is the direct representative of the WMC staff for the accomplishment of the logistical objectives outlined in the Op Order. Included as part of these duties are:

1. Assisting in development of Op Order.

2. Identifying and obtaining appropriate facilities.

3. Determining logistics needs.

4. Examining logistical implications of an extended waterways management activity.

5. Implementing the Communications Plan.

6. Obtaining communications gear.

7. Procuring and installing TIC/TCC equipment.

8. Providing cost documentation for aircraft over flights and surface patrols.

The logistics requirements of the WMC are identified in **Chapter 3, Tab G.**

Planning Section : This section is responsible for the collection, evaluation, dissemination of information and providing recommendations regarding resource allocation and use. The Planning Section Chief shall provide information that is needed to understand the current situation, predict the probable course of incident events and prepare alternative strategies. The Planning Section shall have the greatest stake in establishing and updating the direction of the organization and developing priorities. The Planning Section Chief is the direct representative of the WMC staff for the accomplishment of the planning objectives outlined in the Op Order. Included as part of these duties are:

1. Developing and updating the Op Order.

2. Examining resource and logistics needs.

3. Determining need for specialized resources.

4. Establishing briefing schedules.

5. Briefing personnel.

6. Supervising the Information Management Section (described below)

7. Providing periodic predictions regarding incident potential.

8. Providing status reports.

9. Advising staff of significant changes.

10. Developing decision protocols.

11. Providing event duration forecasts.

12. Identifying conditions where traffic advisories and restrictions must be imposed.

13. Drafting the After Action Report

Information Management Staff: This staff is responsible for the collection, evaluation and dissemination of information. The Information Management staff is subordinate to the Planning Section and as such the Information Management Unit Leader is supervised by the Planning Section Chief. The Information Management Unit is responsible for:

1. Determining information requiring collection.
2. Determining means and methods of collection.
3. Collecting information from internal and external and sources.
4. Organizing and evaluating information.
5. Identifying internal recipients.
6. Determining methods and schedules for internal dissemination.
7. Disseminating information to the staff.
8. Providing data to the public information officer for briefs and news releases.
9. Providing information to the planning officer for staff briefs.
10. Establishing and updating status boards.
11. Compiling statistics.
12. Archiving information and maintaining records.

The Information Management Unit is the focal point for WMC information gathering. This section is responsible for the collection of information from the public, industry and WMC staff. The processing of all information also falls under the cognizance of this section. The information management staff must work closely with all staff components, in particular the Public Information Officer, the Operations Section Chief and the TIC/TCC Supervisor.

Public Information Section : This section is responsible for developing and releasing information about the incident to the news media, the general public and other agencies and organizations. The Public Information Section shall establish an outreach program and manage the Joint Information Center (JIC). The Public Information Section Chief is the direct representative of the WMC staff for the accomplishment of the public affairs and outreach objectives outlined in the Op Order. Included as part of these duties are:

1. Establishing JIC (discussed in more detail in Chapter 5)
2. Preparing news summaries and press releases.
3. Establishing schedule for press releases.
4. Arranging meetings between media and WMC staff.
5. Providing escort service to VIP's.
6. Scheduling and arranging public meetings.
7. Obtaining and maintaining media information that may be useful to the WMC.
8. Coordinating media requests.
9. Identifying key contact points.
10. Establish liaison/outreach programs with the following:

    - SEMA, transportation and natural resource agencies.
    - Local police and fire departments, mayors and city managers
    - Newspapers, radio and television stations.
    - Levee district managers.

Summary

For waterway management activities to be conducted effectively, an efficient and proactive organization must be established. This organization must have clearly defined goals and responsibilities, and must emphasize the need for long term planning and preparation. The organization outlined in this chapter is designed to ensure that the WMC meets regularly to conduct this planning and analysis. The organization also provides a means to communicate this information to the waterway users and managers, and sets up a system where these entities can collectively deal with waterway management issues

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Tab 3-C: Traffic Information Center (TIC) Organization

A TIC is activated after the COTP determines that high water conditions require that a dedicated team provide waterway safety information to the marine industry. The decision to activate a TIC would follow consultation with WMC members. A TIC is essentially a specialized Joint Information Center (JIC) which keeps the maritime industry and public updated on river conditions. The TIC staff has the following responsibilities:

1. Answer questions and disseminate river conditions, RNA controls and/or COTP Safety Zone information to the public and maritime industry.

2. Provide technical advice to the COTP concerning waiver requests from RNA or Safety Zone regulations.

3. Provide the COTP with industry's perspective/interpretation of the success of high water operations and/or need for modifying safety measures.

A TIC is staffed by 1 to 4 industry representatives depending on the complexity and intensity of the activity. For example, daytime operations may require 3 watchstanders, while 1 watchstander may be sufficient during the evening hours. The number of watchstanders may be reduced or increased based on the judgment of the Watch Supervisor. The TIC should normally be manned 24 hours a day once activated. Staff positions include a Watch Supervisor, a Senior Industry Watchstander and Industry Watchstanders. The duties are as follows:

a) Title: TIC Watch Supervisor

Qualifications: Marine Industry executive with extensive waterways management and vessel operating experience.

Responsibilities:

- In charge of the TIC
- Develops watch schedules
- Serve as the Public Information Officer (PIO) for the TIC.
- Point of contact for TIC personnel and equipment needs.
- Trains watchstanders
- Conducts daily watchstander briefings
- Promulgates watchstanding orders and guidance

b) Title: Senior Industry Watchstander

Qualifications: Marine industry executive with vessel operating experience.

Responsibilities:

- Assists Watch Supervisor in soliciting, selecting and assigning industry watchstanders.
- Provides advice to the Watch Supervisor on matters of local knowledge and marine practice
- Assists in the preparation of the daily bulletin
- Assists the Watch Supervisor in drafting necessary policy and watchstander guidance

c) Title: Marine Industry Watchstander

Qualifications: Port Captain or Marine Dispatcher with waterway knowledge and excellent communications skills. Should serve a minimum of 2 days to minimize the training burden.

Responsibilities:

- Responds to telephone and fax machine calls.
- Monitors conditions that impact the river crisis.
- Assists in the preparation of the daily bulletin.

d) Title: Administrative Assistant

Qualifications: Excellent interpersonal, computer and communications skills.

Responsibilities:

- Provides computer and administrative support as needed.

Tab 3-D: TIC Logistic Requirements

The following logistic requirements are generic in nature, each incidents logistical needs must be evaluated carefully.

TIC Location: The TIC will normally be located at an MSO or ACOE Office, however, other locations may be used if close proximity to the affected waterway is required.

Physical Requirements: The staff will need a space with limited access, adjoining space for training and a meeting room seating 10 people. The area must have ample wall space for posting status sheets and information bulletins and sufficient workspace for each staff member.

Communications Equipment:

5 phone lines with hold, transfer and multiple line features
1 dedicated fax line
2 dedicated computer phone lines

Support Equipment:

1 laser printer
1 plain paper copier
2 "Windows" based computer workstations
2 large magnetic white boards

Reference Material:

Telephone directories
Inland River Guides
USCG Light Lists
ACOE charts for the waterway involved
USGS charts for the waterway involved
Media contact list

Miscellaneous Equipment:

Kitchen Facilities with refrigerator, microwave and coffee mess
Waste bins and simple housekeeping supplies
Bathroom
General office equipment including staplers, pens, pencils, post-it-notes, paper clips, paper and file folders

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Tab 3-E: Traffic Control Center (TCC) Organization

The TCC is activated by the WMC when continuously rising river levels require that active traffic management be provided along with dissemination of information by the TIC. The TCC performs many of the same functions as a Vessel Traffic Service (VTS). The TCC staff has the following responsibilities:

1. Facilitate the safe and efficient transit of vessels, promote commerce, and assist in the prevention of collisions, allisions or groundings.

2. Ensure vessels transiting the safety zone are in compliance with the restrictions in place.

3. Manage, control and direct all waterway traffic in an area where dangerous high water river currents exist.

4. Use charts and vessel data cards to monitor the location and destination of all traffic.

5. Answer questions and disseminate information on specific waterway under control, RNA regulations and/or COTP Safety Zones to the public and maritime industry.

6. Keep the COTP updated on traffic control operations and anticipated problems.

A TCC may employ a Traffic Assist Vessel (TAV) if deemed necessary. A TAV provides vessel traffic maneuvering assistance, on-scene traffic control and/or emergency assistance when needed.

A TAV can also be utilized without activation of a TCC. A Coast Guard and industry member should be stationed on a TAV when it provides traffic control.

The TCC requires a full industry/government partnership to ensure its success. The TCC should consist of 3 to 8 people depending on activity complexity and intensity. At a minimum, the TCC Watch Supervisor, Senior Industry Watchstander and either Marine Industry Watchstander or USCG Watchstander positions should be filled. The number of watchstanders may be reduced or increased based on the judgment of the Watch Supervisor. The TCC should be

manned 24 hours a day once activated. The duties are as follows:

a) Title: TCC Watch Supervisor

Qualifications: USCG Officer with VTS or waterways management experience.

Responsibilities:

- In charge of the TCC
- Develops watch schedules
- Serve as the Public Information Officer (PIO) for the TCC.
- Point of contact for TCC personnel and equipment needs.
- Trains watchstanders
- Conducts daily watchstander briefings
- Promulgates watch standing orders and guidance

b) Title: Senior Industry Watchstander

Qualifications: Marine industry executive with vessel operating experience.

Responsibilities:

- Assists Watch Supervisor in soliciting, selecting and assigning industry watchstanders
- Provides advice to the Watch Supervisor on matters of local knowledge and marine practice
- Assists in the preparation of the daily bulletin
- Assists the Watch Supervisor in drafting necessary policy and watchstander guidance

c) Title: ACOE Watchstander

Qualifications: A senior representative from the ACOE who has an understanding of river hydrology, dredging and construction operations.

Responsibilities:

- Serve as the primary point of contact with the ACOE staff and Lock Masters.
- Responsible for coordinating daily ACOE river projections and lock status reports
- Primary individual for tasking ACOE resources.

d) Title: USCG Watchstander

Qualifications: Conversant with inland marine operations. Mature with excellent interpersonal and communications skills is recommended. Reserve or Active Duty personnel can be used.

Responsibilities:

- Responds to telephone and fax machine calls.
- Monitor conditions that impact the river crisis.
- Plots and monitors vessels.
- Assists in the preparation of the Daily Bulletin.

e) Title: Marine Industry Watchstander

Qualifications: Port Captain or Marine Dispatcher with waterway knowledge and excellent communications skills. Should serve a minimum of 2 days to minimize the training burden.

Responsibilities:

- Responds to telephone and fax machine calls.
- Monitors conditions that impact the river crisis.
- Plots and monitors vessels.
- Assists in the preparation of the daily bulletin.

f) Title: Administrative Assistant

Qualifications: Excellent interpersonal, computer and communications skills. A yeoman or quartermaster is recommended.

Responsibilities:

- Provides computer and administrative support as needed

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Tab 3-F: TCC Logistic Requirements

The following logistic requirements are generic in nature, each incidents logistical needs must be evaluated carefully.

TCC Location: If possible, the TCC should be located at a facility in close proximity to the waterway under control. Ideally, the TCC should allow the staff to visually observe the waterway.

Physical Requirements: The staff will need a space with limited access, adjoining space for training and a meeting room seating 10 people. The area must have ample wall space for posting status sheets and information bulletins and sufficient workspace for each staff member.

Communications Equipment:

7 phone lines with hold, transfer and multiple line features
1 dedicated fax line
2 dedicated computer phone lines
4 VHF base stations

Support Equipment:

1 laser printer
1 plain paper copier
2 "Windows" based computer workstations
1 fax machine
2 large magnetic white boards
1 video camera
1 35mm camera
1 overhead projector

Reference Material:

Telephone directories, white and yellow pages
Inland River Guides
USCG Light Lists
ACOE charts for the waterway involved
USGS charts for the waterway involved
Media contact list
Government Telephone Book

Miscellaneous Equipment:

Kitchen Facilities with refrigerator, microwave and coffee mess

Waste bins and simple housekeeping supplies
Bathroom
General office equipment including staplers, pens, pencils, post-it-notes, paper clips, paper and file folders

Tab 3-G: Waterways Management Committee Staff Logistics

Logistics Needs of the WMC: The ideal location for a WMC staff is in the office of the involved COTP. This is not always feasible. If the waterway management activity is far removed from the COTP's location, then the staff should be located as close as possible to the activity.

Physical Requirements: The staff will need an area with limited access and an adjoining room capable of seating twelve people comfortably to accommodate teleconferencing as well as planning, logistics, public affairs and training. The area must have ample wall space for posting status sheets and information bulletins and sufficient workspace for each staff member. Listed below are the telephone and electrical equipment requirements for a large-scale transportation emergency.

Communications Equipment:

- An auto attendant telephone system with a minimum of 7 lines, broken down as follows:
  - 3 lines, with roll over feature, for general operations,
  - 1 line (published), for the public affairs section,
  - 1 line for logistics section,
  - 1 line for the planning section and
  - 1 line (unpublished), as a "Hotline" for incoming high priority calls.

- 2 dedicated fax lines
  - 1 general fax for WMC staff usage, and
  - 1 fax for fax trees only.

- 3 dedicated lines for hookup to computers
  - 1 with fax on demand capabilities, and
  - 2 for Internet use.

- Each telephone instrument should have multiple line capability with hold and transfer features.

- At least 1 phone instrument in each section should be equipped with hands free capability.

Support Equipment:

- 1 cable televisions and 1 videocassette recorders for the Joint Information Center (JIC) 1
- 1 USCG standard workstation.
- 1 video camera.
- 1 35mm Camera.
- 1 Plain Paper Copier (with enlargement and reducing capability).
- 2 printers, 1 of which is a high output laser.
- 2"Windows" based computer workstations, as follows:
  1 in the Planning Section, and
  1 in the JIC.
- 1 programmable 20-channel scanner with marine band capability.
- Work tables, comfortable chairs, and portable file boxes
- 2 large magnetic white boards,
- 1 overhead projector.
- Desk size calendars.

- **Reference material:**
  Telephone directories, white and yellow pages
  Inland River Record
  Inland River Guides
  Telephone directories for USCG and ACOE Offices
  USCG Light Lists
  ACOE Charts for the river involved
  USGS Charts for the river system involved
  Relevant USCG and ACOE Response Plans
  Media Contact List
  Congressional Directory
  Government Telephone Books

- **General office equipment:**
- including file folders, staplers, pens, pencils, felt markers, Post-It notes, paper clips, spring clips, paper and loose leaf binders and large meeting pads of butcher paper

- **Miscellaneous equipment:**

  A First Aid kit
  Kitchen facilities with a refrigerator, microwave and coffee mess
  Cots, pillows and blankets
  A changing room with shower
  Waste bins and simple house keeping supplies

TAB 3-H: Operations Order (Op Order) Elements and Sample

The importance of developing an incident specific Op Order (or an Incident Action Plan in ICS terminology) cannot be over emphasized. The development of the Op Order must involve input from all stakeholders and must allow for adjustments as conditions change. An Op Order should:

- State the goal of the response.
- Identify key participants and their responsibilities.
- Establish operational parameters including:

  Actions to be initiated
  Sequence of response

- Identify notification mechanisms for government, public, and marine interests.
- Outline public affairs procedures including:

  Contact points.
  Release schedules.
  Access methods.

Sample Op Order

This OPORDER was developed for a small-scale waterway management incident that occurred on the lower portion of the Upper Mississippi River during the spring of 1996. Full-scale traffic management did not become necessary during this incident.

High Water Operations Spring 1996

Discussion:

The snow melt and rains this spring have created high water levels on the Upper Mississippi, Missouri, and Illinois rivers throughout Marine Safety Office St. Louis's area of responsibility. The swiftly moving current created by these elevated water levels, combined with the dangers of saturated and weakened levees, has the potential of causing system-wide problems. The Waterways Management Committee (WMC) has been notified and is aware of this. Traffic management activities (advisories, local safety zones, and operating restrictions) are currently in place. Stand up of a formal TIC/TCC is not anticipated at this time.

Goals:

- To actively manage river traffic to protect both the mariner and the environment
- To keep the river open to commerce as long as is safely possible
- To protect the public and private levees along flooded areas
- To assist other federal, state and local agencies in flood relief and with river management support when requested.

Responsibilities:

Authorities and responsibilities of members of the WMC are outlined in Chapter 3 of the River Crisis Action Plan.

Action:

The response to high water issues will be addressed in stages as the river continues to rise. Some actions are governed by specific river stages on the St. Louis gage, however, most will be used as the need arises. The specific gage-driven actions include:

1. At 25ft on the St Louis gage, the Captain of the Port will place a Safety Zone on the St Louis Harbor, mile 179 - 184 UMR. This Safety Zone will restrict downbound tows greater than 600 ft to daylight hours only, and will also require tows to have at least 250 of horsepower for each 1500 tons of cargo. At this time the Captain of the Port will advise tows operating south of the Melvin Price L&D to employ operators experienced with high water conditions, and will strongly discourage the practice of downstreaming.

2. At 30ft on the St Louis gage, the Coast Guard will initiate the "Uncertainty Phase", which closely correlates with the "Watch Phase" outlined in the River Crisis Action Plan. This is a preparatory phase that indicates a heightened state of preparedness for extended, debilitating high water conditions. Disaster Response teams are placed on a 6 hour standby, daily Sitreps are prepared, and contact is made with surrounding local, state, and federal emergency agencies.

3. At 38ft on the gage, all locks and dams will be closed and the river will be closed to all commercial and recreational traffic.

Many other actions, which are not gage-driven, will occur as the need arises. These issues will be discussed by the WMC and will be placed into effect as deemed necessary by the WMC. Examples of such actions include but are not limited to:

1. No-wake advisories as requested by other agencies to protect low-lying areas and saturated levees. These advisories can be upgraded to Safety Zones if the situation deteriorates further.

2. Additional tow size and horsepower restrictions in other areas of the river.

3. Response to other emergency agency requests for Disaster Response teams or regulatory assistance.

4. Other industry or Coast Guard initiated advisories to protect life and property.

5. Establishment of a TCC may be necessary if the river is closed for an extended period and an orderly resumption of traffic is necessary.

Notifications:

Notifications of impending or completed actions will be made to RIAC members and other interested parties by telephone, with a follow-up fax transmitted via the ITCS system. Notification of the Corps of Engineers, state, and local authorities by phone or fax message will be conducted in accordance with a list developed by the WMC staff.

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Chapter 4: Communications

This chapter provides guidance on the methods of communicating and receiving information. Poor communications can cause significant problems during a navigation crisis. Tow boat operators may make dangerous operating decisions, recreational boaters may operate in perilous waters and businesses could make costly decisions if they are not armed with timely and accurate information. Effective communications must be a key focus of any crisis management plan.

Communications has 3 distinct phases: collection, processing and dissemination. The Information Management Staff Supervisor (IMS) is responsible for this process. The IMS is assigned to the Planning Section of the WMC staff. The IMS has the overall responsibility for ensuring that communications requirements are being met. He or she must work closely with the Logistic Section Chief when installing and setting up communications equipment. The IMS must also rely on the Operations and Public Information Staff to collect and disseminate information. The IMS should be in frequent contact with all of the staff elements of the WMC, to exchange information and to discuss any issues or concerns regarding communications. **Chapter 4, Tab A** outlines the information flow into, within and out of the WMC. **Chapter 4, Tab B** is a list of sources that should be contacted for information during a navigation crisis.

Communication Methods

When the Mississippi River is in a flood or drought condition and navigation is affected, a myriad of groups become interested. Since the degree of interest in the river varies, it is important that communications are tailored to the target audience. For example, a high degree of detail is not as important to the recreational boater as it is to commercial barge companies. Additionally, communication of information during a crisis must minimize reliance on voice to voice contact. Voice to voice communication, although the most personable, is time consuming, inefficient, and subject to misunderstanding, and misinterpretation. **Chapter 4, Tab C** is a list of user groups that may desire information on river conditions during a navigational crisis.

The very best method of communicating information in a standard and effective manner is by using technology such as fax on demand, auto attendant phone systems and the Internet. There are a number of Internet sites available from the ACOE, NWS, the USCG and other organizations, which provide a wealth of information. The number and content of these sites is growing rapidly. They are not only an excellent means to retrieve information but an efficient and inexpensive means to disseminate it. A list of these sites should be developed by the IMS and information should be posted on these sites daily. **Chapter 4, Tab D** provides a sample list of sites that can be contacted.

Fax on demand is perhaps the easiest way to release information. By calling a fax on demand number, its menu driven system allows the caller to retrieve as much or as little information as desired. Fax trees also offer a simple, yet effective approach to the delivery and receipt of information. Fax trees are nothing more that a list of individuals with their fax numbers, that require similar information. Once the fax machine is programmed with the receivers' fax numbers, information can be rapidly sent to multiple sites at the push of a button. Fax trees are best suited for relatively small audiences, such as industry groups, that require daily updates on specific issues.

The Internet offers a convenient approach for delivering and receiving general information, such as weather conditions and river stage forecasts. Additionally, the USCG maintains a "Web Site" on the Internet for communicating a variety of information such as Notices to Mariners, pending marine regulations and advisories. The Internet is a cost effective and an extremely accessible approach to delivering information to a very large audience during a crisis.

An auto attendant, menu driven phone system can also be used to deliver timely information on specific topics, such as conditions on the rivers, lock status or weather forecasts. An example greeting and menu for an auto attendant phone system can be found in **Chapter 4, Tab E.** An auto attendant phone system offers ease in updating information and provides answers to frequently asked questions without using valuable staff time.

Meetings with key groups may sometimes be necessary and could be fruitful during critical stages of a navigation crisis. Meetings should have a set time limit, an agenda and someone recording the minutes. After the meeting all parties should be provided with minutes within 24 hours. Meetings need not take place with all parties in one location; teleconferences and video conferences offer an inexpensive and efficient approach without the cost and time associated with traveling to a meeting site. Efforts should be made to minimize reliance on meetings.

There is a time when person to person contact is the very best way to communicate during a crisis. Personal attention to the concerns of key customers during a river crisis, such as levee boards or local politicians, can eliminate feelings of mistrust, or apprehension. Clearly the use of person to person contact takes more time than other communication approaches, and therefore should be used judiciously. However, it is a means of communication that must be used when other approaches fail to convey the empathy and understanding necessary to assuage customers concerns.

While the goal of this plan is minimize reliance on telephone voice to voice contact, that option will continue to exist. On the auto attendant phone system and the fax on demand system, information will be available on how to contact members on the WMC staff. By using the technology discussed herein, and by

ensuring information is properly detailed and frequently updated, the number of phone conversations can be minimized.

The Information Management Section Supervisor (IMS)

The IMS has the overall responsibility for ensuring all information-gathering needs are being met. The IMS will rely principally on 2 individuals to assist in the WMC communication efforts: the PIO for communication with the public and the TIC and TCC Supervisor for communication with the commercial river users. The IMS's primary contact groups include: the ACOE, USCG MSO's, Groups, Disaster Response Units and District staffs; Levee Boards and Commissions; politicians and their staffs; state and local emergency response agencies; the NWS and other Federal agencies. The IMS should always be the first person to contact if in doubt about where information should come from or go to within the WMC. Chapter 4 describes the responsibilities of the IMS. The following are duties of the IMS:

1. Ensure all communication equipment necessary for accessing and delivering information is available. A list of equipment needed by the WMC during a navigation crisis is can be found in **Chapter 3, Tab G.**

2. Compile a list of organizations, agencies and individuals that provide information to the WMC during the navigation crisis and identify the key person or persons of those organizations and groups. As early in the crisis as possible, contact the key persons of the groups identified and define:

    - The exact information that will be needed.
    - The format the information will be needed in.
    - The preferred and alternate methods of receiving the information.
    - The times the information will be required.

3. Ensure the contact person is provided with the phone numbers of the key personnel in the WMC; also provide all fax numbers, phone numbers and the Internet address to each contact person.

4. Determine the type of information that will be released, how and when it will be communicated and to whom it will go, both internally and externally. Ensure that all possible types of information are identified. This information can be found in **Chapter 4, Tab C.**

5. Meet with the TIC and TCC Supervisor to develop an "Initial Information Release" for review by the Planning Officer and PIO. Ensure that the

appropriate people know what telephone and fax numbers to call for information. An example of this release can be found in **Chapter 4, Tab F.**

6. Prepare the Daily Bulletin with input from the TIC and TCC Supervisor. **Chapter 4, Tab G** provides an example format of the Daily Bulletin.

7. Provide the PIO with information on operational, hydrological, and political issues for the daily press release.

8. In conjunction with the TIC and TCC Supervisor, prepare daily briefing for internal audiences.

9. As information changes, update all fax on demand, auto attendant phone messages and Internet postings.

10. Provide information to the PIO for briefings of internal and external customers.

11. Monitor performance of the communications systems. If problems occur, contact the Logistics Section of the WMC immediately for assistance.

12. Constantly evaluate the communications plan. If something is not working, seek an immediate alternative. Be flexible with the communications plan and look for ways to improve it.

The Public Information Officer (PIO)

The PIO is critical part of the communications effort during a crisis. The PIO is the linkage between the WMC and the public. The PIO must stay informed on the WMC's crisis response actions by working closely with the IMS and the TIC and TCC Supervisor. The PIO must be able to articulate the public's concerns to the IMS as well as recommend outreach efforts to market the WMC's response plan. The PIO's primary contact groups include: the media, marinas, civic organizations, recreational river users, trade and commerce groups, and USCG Public Affairs. The following are <u>communications</u> duties of the PIO:

1. Develop a list of media organizations, community interest groups, local and state politicians, trade groups, commerce boards, marinas, boating organizations, etc. interested in information on the navigation crisis. Identify the key persons in organization and group. Inform them that a daily press release will be sent out via fax on demand each day. Provide the contact person with phone number of the Public Information Section.

2. Screen news media for information on the crisis. Make videotapes of any television news on the crisis and provide it to the IMS. Provide copies of newspaper articles on the navigation crisis to the IMS.

3. Coordinate all media requests to visit the WMC staffs.

4. Ensure the WMC Staff is briefed on all public meetings about the navigation crisis.

5. Develop a public outreach program as outlined in Chapter 5.

6. If media requests for interviews are constant and daily, conduct a press conference each day. If requests for interview are infrequent, conduct interviews as requested.

7. Evaluate the daily press release. Contact media people that will provide candid feedback. Revise the press release as necessary.

The Traffic Information Center (TIC) Supervisor and Traffic Control Center (TCC) Supervisor

The TIC Supervisor is responsible for information dissemination and answering inquiries from the marine industry. The TCC Supervisor is the WMC's operational interface with commercial river users. The TCC Supervisor shall provide the IMS with operational information on traffic management issues as well as recommendations for communications improvements. The TCC Supervisor's primary contact groups include: fleeters, waterfront facilities, barge lines, Lock Masters, Dredge Masters, Coast Guard Groups and WLR's , and commercial river user groups. The TCC Supervisor's concerns are river conditions and traffic management. All members of the WMC must ensure that the TIC and TCC Supervisor's are not unduly tasked with inquires which should be addressed by either the IMS or the PIO. The following are the communications duties of the TIC and TCC Supervisor's:

TIC Supervisor

1. Answer questions and pro-actively disseminate information concerning river hazards and regulations to the public and maritime industry.
2. Contact the following each day:

   - The MSO's to discuss any pending or unusual traffic or river problems not already outlined in the Broadcast Notice to Mariners.

   - USCG Groups on the condition of ATON in the affected rivers.

- Lock Masters for lock status and any safety requirements they may have in effect for vessels that desire to use their locks. Lock Masters are also contacted to assist in gathering information on queues.

3. Assist the WMC Operations Section Chief in the development of the daily SITREP.

4. Each morning, speak with the IMS to exchange information and to assist in the preparation of the Daily Bulletin and the internal brief.

5. Be available, when a "specialist" is required for interviews with the media. If operations deem this impossible, the interview shall be conducted with the next senior available watchstander.

TCC Supervisor

1. Post messages frequently, pull all Broadcast Notice to Mariners and other information that relates to the operational aspects of the crisis.

2. Contact the following each day:

   - The MSO's to discuss any pending or unusual traffic or river problems not already outlined in the Broadcast Notice to Mariners.
   - USCG Groups on the condition of ATON in the affected rivers.
   - Specific fleeters for queue information. [NOTE: the fleeter company contacted will depend on the location of the queues.]
   - Lock Masters for lock status and any safety requirements they may have in effect for vessels that desire to use their locks. Lock Masters are also contacted to assist in gathering information on queues.
   - Dredge Masters (in droughts) would be contacted to assess progress of channel deepening as well as any information they may have on vessel queues

3. Assist the WMC Operations Section Chief in the development of the daily SITREP

4. Each morning, speak with the IMS to exchange information and to assist in the preparation of the Daily Bulletin and the internal brief.

5. Be available, when a "specialist" is required for interviews with the media. If operations deem this impossible, the interview shall be conducted with the next senior available watchstander.

Summary

Effective communication is paramount during a crisis, and the IMS is the key to the WMC's communication success. In past river crises, many people executed portions of communications duties, often in a duplicative or inconsistent manner. In future crises the IMS will be solely responsible for all communications during a crisis. By using the IMS to focus exclusively on communications for the WMC, other staff components are free to concentrate on the crisis response efforts. With a proactive IMS and strong cooperation between the PIO and the TIC and TCC Supervisor's, the WMC communication requirements will be executed efficiently and effectively.

An equally important aspect of communications during a crisis is to ensure the widest availability of information. The WMC must ensure that communications are accurate and readily available. Every effort should be made prior to a crisis to develop a list of organizations that the WMC may need information from. In addition, a detailed list of public organizations, media groups and commercial and recreational river users should be developed prior to a crisis so that they receive the "Initial Information Release" at the outset of a crisis. The work done before a crisis to construct lists of groups with an interest in the river will pay dividends during the crisis, by decreasing the number of telephone calls the staff of the WMC will receive. It is imperative that this chapter be reviewed frequently, for faster, more effective ways of communication.

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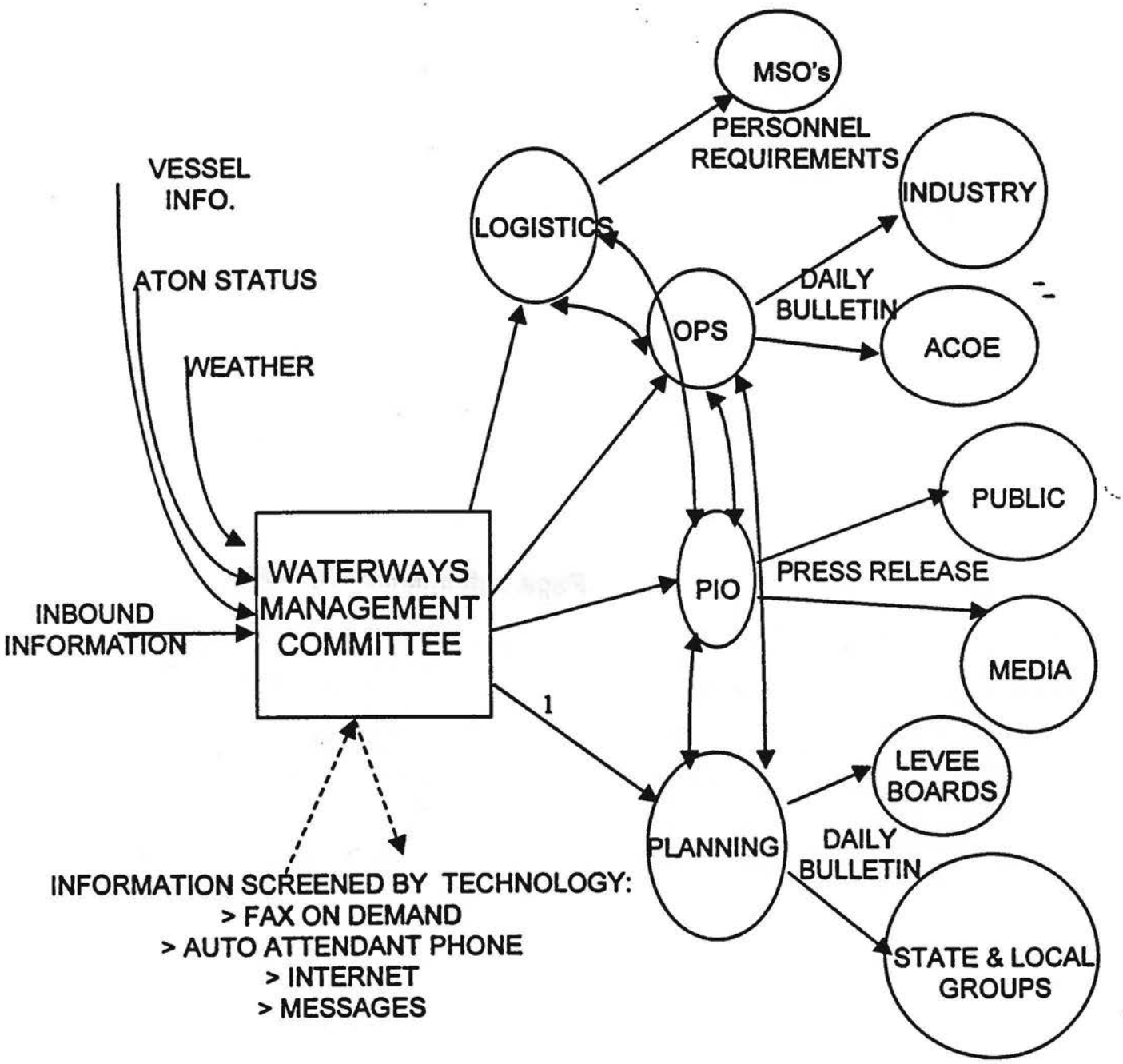
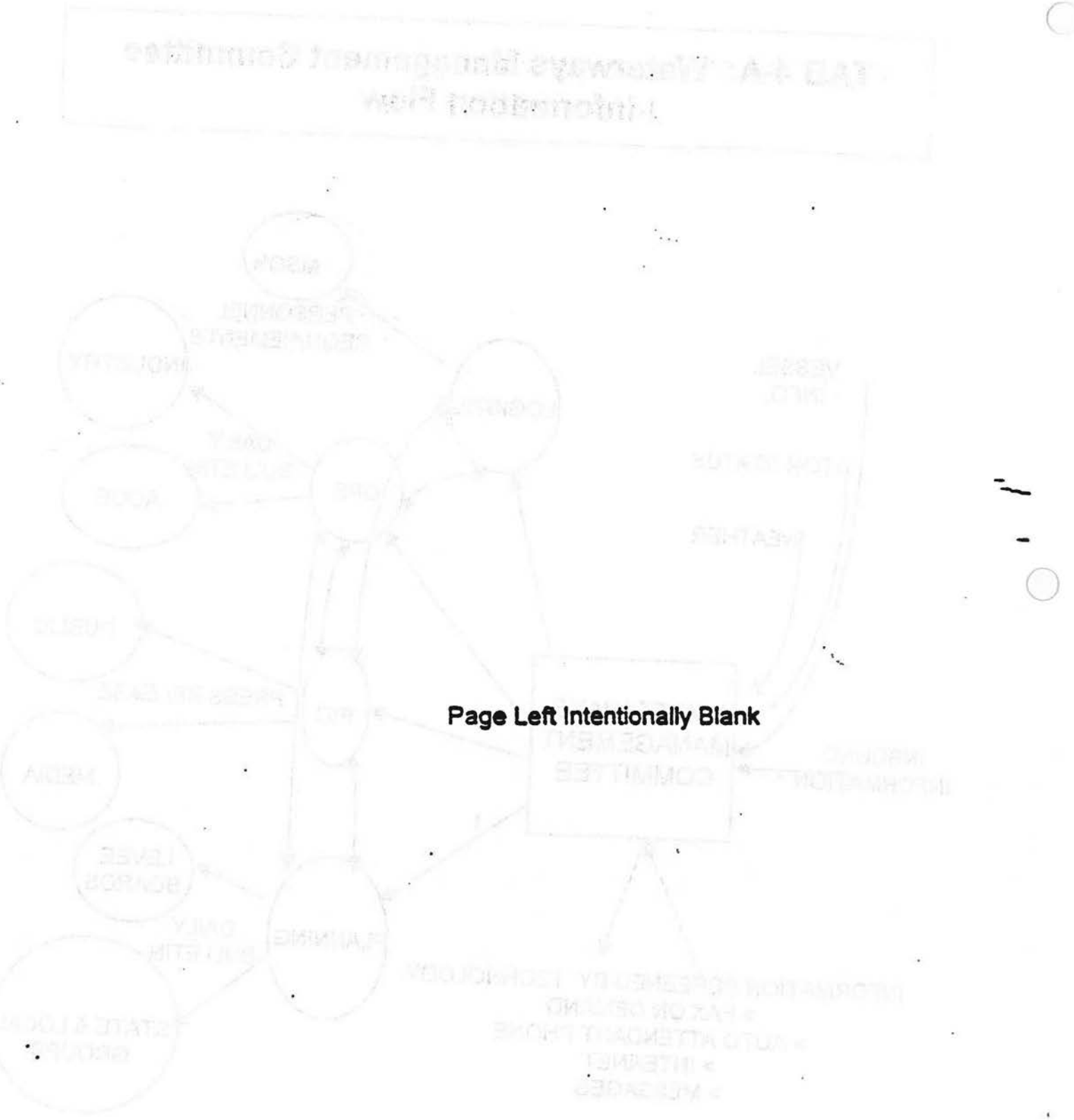
TAB 4-A: Waterways Management Committee Information Flow





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Tab 4-B: Waterways Management Committee Information Sources

The following is a general list of sources of information that need to be retrieved on a daily basis during a navigation crisis on the Mississippi River System.

Type of Information	Source	Who Retrieves	Retrieval Method (primary and secondary)
Weather	National Weather Service	Information Management Staff Supervisor	Primary: Message, TV or Internet. Secondary: Fax or Phone
River Conditions: stages, flows	National Weather Service ACOE	Information Management Staff Supervisor	Primary: Message, TV or Internet. Secondary: Fax or Phone
ATON status, channel problems, etc.	Coast Guard MSO's and Groups	TIC/TCC Supervisor	Primary: Message or Phone. Secondary: FAX
Vessel Traffic Survey: volume, location, cargo, priority and queuing issues.	Fleeter Companies ACOE Lock Masters Possibly Dredge Masters if during a drought	TIC/TCC Supervisor	Primary: FAX. Secondary: Phone
Vessel Traffic Regulations: COTP Orders, Advisories, Safety zones, and lock outages or lock safety requirements	USCG ACOE	TIC/TCC Supervisor	Primary: Message and FAX Secondary: Phone
Levee Conditions (pertains to flood conditions only)	Levee Boards and Levee Commissions, local response agencies, ACOE	Information Management Staff Supervisor	Primary: Phone Secondary: FAX
Media information	Review of news media for info. on the crisis.	Public Information Officer	Primary: Television, newspapers, and radio stations. Secondary: Internet and FAX

Response Efforts: (pertains to flood conditions only) Rescues completed, towns affected, personnel deployed, support needs, overall assessment of flood conditions	US Coast Guard, state and local response groups, other federal agencies involved in flood response efforts as necessary	Information Management Staff Supervisor	Primary: Message and FAX Secondary: Phone

Tab 4-C: Waterways Management Committee Information Delivery

Daily Conference Call: Daily communications between industry and government regulators is critical to successfully implement this plan. In order to achieve this goal, a formalized and scheduled telephone conference call should take place on a daily basis. Participants normally should include the pertinent Marine Safety Office, LOMRC, ACOE, commercial operators and other river stakeholders (AWO, Steamship Association, Pilot Associations, GNOBFA) as needed. The conference call should include succinct updates on the "types" of information noted below.

Additionally, the following information needs to be communicated on a daily basis to the recipient groups during a river crisis. Target recipients are the intended receivers of the information, however, anyone should have access.

Type of Information	How Delivered	Recipient Groups	Methods of Delivery
River stages and flows, channel problems, weather information, ATON problems, and weather and river stage forecasts	All of this information is put in the Daily Bulletin	Coast Guard MSO's, Groups, DRU's and WLR's. Other USCG units as needed. ACOE MARAD Commercial Operators Levee Boards State & local politicians	Daily Bulletin is available via FAX Tree, FAX on Demand or FAX River stages, weather and weather forecasts are also available on the auto attendant phone system Phone contact may be necessary with Levee Boards, and local politicians
River traffic information: volume of traffic in the queues, location of traffic, cargo, and priorities.	All of this information is put in the Daily Bulletin	Coast Guard MSO's, Groups and WLR's ACOE Commercial Vessel Operators Levee Boards and Levee Commissions. State and local politicians	Daily Bulletin is available via FAX Tree, FAX on Demand or FAX Queue volume and protocols also available on the Internet and via FAX on Demand Phone contact may be necessary with Levee Boards, and local politicians

Vessel Traffic Regulations: COTP Orders, Advisories, Safety zones, and lock outages	All of this information is put in the Daily Bulletin	Coast Guard MSO's, Groups and WLR's Commercial Vessel Operators ACOE Levee Boards and Levee Commissions.. State and local politicians	Daily Bulletin is available via FAX Tree, FAX on Demand or FAX Safety zones, Advisories and lock status are also available as a stand-alone document on the Internet or via FAX on Demand. Phone contact may be necessary with Levee Boards, & local politicians
General information on the river's condition.	A Press Release detailing river closures, Safety zones & reopening dates.	Marina's Press State & Local governments General public	FAX Tree and FAX on Demand are the primary methods of delivery. Also available via the Internet.
General queries.	Auto attendant phone system	Anyone	Auto attendant phone system primarily or phone

In addition to the above, a daily brief for internal audiences shall be developed by the Information Management Staff Supervisor and the PIO with input from the TIC/TCC Supervisor.

The IMS and the PIO should develop FAX Trees with input from WMC members.

Tab 4-D : Internet and Electronic Mail Sites

The advent of the Internet has made a wide range of useful information immediately available to waterway managers. It should be noted that this means of communication is no a one way tool. Each organization listed has e-mail capability to enhance communication among waterway managers. Each staff component of the WMC should compile a list of Internet and electronic mail addresses that are regularly viewed. Suggested addresses are listed below:

Weather Information

All Internet addresses listed below provide real-time weather information or specific surface or upper air analysis or prognostic forecasts. Some products require familiarity with weather symbols and/or terminology (particularly using upper air or horizontal weather charts).

National Weather Flood Forecast	http://hsp.nws.noaa.gov
University of Colorado (Boulder) All Weather Info.	gopher.colorado.edu (Colorado Weather Underground)
WeatherNet	http://cirrus.sprl.umich.edu.wxnet/
WeatherWeb	http://wxweb.msu.edu/weather/
Purdue WX Board	http://thunder.atms.purdue.edu/
University of Illinois	http://www.atmos.uiuc.edu/weather/weather.html

Precipitation Accumulations (covers latest 24 hour period)

St Louis	http://www.intellicast.com/weather/stl/precip.gif

St Paul http://www.intellicast.com/weather/ict/precip.gif

Pittsburgh	http://www.intellicast.com/weather/pit/precip.gif
Nashville	http://www.intellicast.com/weather/bna/precip.gif

U.S. Army Corps of Engineers: The ACOE maintains several databases.including navigation information, ice reports and general ACOE information.

ACOE Home Page	http://www.ncr.usace.army.mil

Navigation Information Connection (Outstanding River Management Info)	http://www.ncr.usace.army.mil/navdata/nic.htm
Ice Reports	http://www.ncr.usace.army.mil/navdata/icerpt.htm

U.S. Coast Guard: The Office of Marine Safety, Security and Environmental Protection at Coast Guard Headquarters publishes numerous documents on regulatory projects, changes in regulations and general maritime information via the National Maritime Center Home Page. In addition, the Coast Guard's primary home page offers a variety of information from the various Coast Guard District's and individual units.

U.S. Coast Guard Homepage	http://www.dot.gov/dotinfo/uscg/
National Maritime Center (NMC)	http://www.starsoftware.com/uscgnmc/nmc/
Navigation Center	http://www.navcen.uscg.mil/navcen.htm
National Pollution Funds Center	http://www.dot.gov/dotinfo/uscg/hg/npfc/npfc.htm
Eighth Coast Guard District	http://www.dot.gov/dotinfo/uscg/d8/uscgd8.html

State Transportation Department Sites: The State Internet addresses listed below provide a wealth of information on transportation related activities in the state (roads, river transportation, etc.) The user needs to browse these areas to determine useful products.

Illinois	http://www.state.il.us/
Kansas	http://protol.dot.state.ks.us/
Minnesota	http://www.dot.state.mn.us/
Oklahoma	http://www.okladot.state.ok.us/
South Dakota	http://www.state.sd.us/state/executive/dot/dot.html
Wisconsin	http://www.dot.state.wi.us/
Wyoming	http://www.state.wy.us.80/state/government/state

Media Sites: The media addresses listed below provide up-to-date information on current affairs or on-line access to the news. Each network has its on unique information products.

CNN	http://www.cnn.com
ABC News	http://www.abc.com
CBS News	http://cbs.com
NBC News	http://www.nbc.com/

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Tab 4 - E: Auto Attendant Phone System Greeting and Menu

The USCG St. Louis office currently has the ability for an extended auto attendant phone system. This system can manage a large volume of incoming calls, 24 hours a day. By using this system the need for staff members to answer phone calls will be greatly reduced. Additionally, the auto attendant system is easy to update and it provides the caller with accurate and timely information on specific topics of interest to them for incidents impacting the Upper Mississippi River. The Information Management Staff Supervisor and the PIO should update this system as new information comes in.

Sample Message:

"Hello, you have reached the Waterways Management Committee, jointly staffed by the U.S. Coast Guard the Army Corps of Engineers and members of the marine industry. To best use our staff members and to better serve your needs during this emergency, this system will provide you with information on a variety of topics about the navigation stoppage on the Upper Mississippi River System.

If you would like to learn how to obtain information on this crisis through the Internet or our FAX on demand system, please press 1 now.

If you would like the weather and river stage forecasts for the next 3 days, please press 2 now.

If you wish to hear a list of current Broadcast Notice to Mariners in effect for the Upper Mississippi River, please press 3 now.

If you wish to hear a list of current Broadcast Notice to Mariners in effect for the Illinois River, please press 4 now.

If you wish to hear a list of lock outages for the Upper Mississippi River, please press 5 now.

If you wish to hear information on how to assist communities affected by this crisis, please press 6 now.

If you wish to hear information on the volume of tows below _____ and above _____, please press 7 now.

If you wish to hear today's abbreviated press release, please press 8 now.

If you have any other questions, please press 9 now to speak to a staff member of the Waterways Management Committee."

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Tab 4-F : Sample Initial Information Release

At the outset of a crisis it will be necessary to inform the public, the press , the marine industry and any other interested party **how** communications will be executed by the WMC during the navigational crisis. At a minimum, this release should inform the public, the marine industry and the press **what** types of information will be available, **when** it will be available and **how** it will be transmitted. The following sample release should be distributed widely. The PIO and the Information Management Staff Supervisor shall ensure that the initial release reaches as many organizations that may have an interest in the river crisis as possible. The following is a basic model that can be added to or modified as necessary:

DATE: 22 May 19xx:

"The United States Coast Guard, the Army Corps of Engineers and members of the marine industry are currently working together as part of the WMC to respond to the flooding (or drought) conditions currently taking place on the (fill in the rivers). To best assist the public, the media and the users of the river, a multi faceted communication system will be used during this crisis to provide accurate and timely information to anyone with questions about this crisis. Each day the WMC will deliver a press release by 1:00 o'clock PM. To access the Press Release, call our FAX on Demand number at xxx-xxx-xxxx, or access our Web Page on the Internet at http://WMC.com. Additionally, an abbreviated version of this release can be heard by calling our auto-attendant phone number at xxx-xxx-xxxx, then pressing the number 8 on your touch-tone phone.

The Coast Guard will also release a Daily Bulletin with detailed information on the crisis by 1:00 o'clock PM. This Bulletin will contain river conditions and weather forecasts, a list of Broadcast Notice to Mariners, a Situation Report, lock status reports, traffic movement protocols and the count of vessels currently awaiting transit through the closed portions of the river. The Daily Bulletin can also be accessed by calling our FAX on Demand number of xxx-xxx-xxxx. Information on specific topics such as lock outages, river closures and weather and river stage forecasts can be accessed by calling our auto attendant phone number of xxx-xxx-xxxx. Additionally our Internet Web Page, at http://WMC.com will contain a variety of information on the river crisis and the Coast Guard's and the Army Corps response efforts. If you have any specific questions on how communications will be executed during this crisis, please contact LT SMITH at xxx-xxx-xxxx. Questions from the media should be directed to LT SMITH at xxx-xxx-xxxx

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Tab 4-G : Daily Bulletin Format

The Daily Bulletin is the primary means of communicating operational information on a navigational crisis from the WMC. The Daily Bulletin will be distributed via fax tree and fax on demand and should be updated as frequently as needed, but at least once a day by 1200 hours. The following is a recommended format for the Daily Bulletin:

Title: The Waterways Management Committee's Daily Bulletin
Date: 24 May 19xx
Date and Time of Last Revision: 24 May 19xx @ 0930
Contact Phone Numbers: (xxx) xxx-xxxx Auto Attendant Phone System
(xxx) xxx-xxxx Fax on Demand Access to the Daily Bulletin
(xxx) xxx-xxxx Fax to the TIC/TCC
(xxx) xxx-xxxx Fax to the Public Information Center

Internet Address: (appropriate address)

I. **List of Active Broadcast Notice to Mariners (BNM)**
All of the BNMs in the area(s) affected by the crisis.

II. **Situation Report**
A plain English synopsis of the present situation.

III. **River Conditions**
The river conditions and status's of the Locks in the affected area(s).

IV. **Traffic Movement Protocols**
Describe the criteria for the movement of vessel traffic once the decision to resume navigation has been made.

V. **Weather and Selected River Stages**
Provide the 3-day weather forecast and a list of the river stages in the affected area(s).

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Chapter 5: Public Information

The general public has a major stake in the timely restoration of marine commerce following a river crisis. Extended river closures have a tremendous impact on local and regional economies. The flow of basic, everyday essentials such as gasoline, building materials, coal, and farm products is either stopped or diverted to a more expensive mode when a natural disaster such as a drought or flood impedes river traffic.

Although consumers typically bear the burden, river communities have opposed and delayed the restoration of river traffic for fear that vessel movements might advance the damage already sustained. In many cases this fear is due to a failure of government and industry to effectively communicate the actions they have taken to ensure that traffic can flow safely during periods of restricted navigation.

Timely traffic restoration requires the understanding, support and cooperation of both the general public and the impacted river communities. The purpose of this chapter is to provide guidance to the Public Information staff on establishing and operating a Joint Information Center (JIC). This JIC is designed to assist the WMC in it's efforts to ensure that successful outreach is conducted, the general public is aware of the actions taken, and cooperation is enhanced. The JIC is an essential element in these efforts.

Joint Information Center

Information sharing is a key element in fostering public support and cooperation. Just as a TCC is recommended to manage and control the flow of traffic, a JIC can greatly assist in managing the flow of information. During the initial event planning stage, JIC activation should be given the same consideration as that given to the activation of a TIC or TCC. The WMC should determine the need for, the size and the scope of the JIC based on the event at hand. Once activated the basic mission of the JIC should remain relatively unchanged from one event to another. The mission of the JIC is as follows:

- Provide timely and accurate information for media consumption.
- Establish an "affected community" information network.
- Promote a positive government-industry partnership image.

The basic activities performed by the JIC may vary from event to event. The Public Information Section Chief should ensure that the Op Order includes guidance on the public information program and goals.

Public Information Guidance

Guidance should be provided to the JIC that outlines the actions it should take in meeting the WMC's information sharing responsibilities. During a Regional Transportation Emergency the Public Information Section Chief should develop these guidelines. The following public information activities should be included:

- Daily or periodic media releases: Describe the coordination and scheduling of information releases. Schedules should target local news programs and printed publications.
- Recorded messages and fax on demand services: These services typically utilize an 800 number and offer either a recorded message or caller initiated fax transmission. Describe the method to make information available via a well-publicized "call for information" service
- Fax on Demand: The use of fax on demand systems or other network distributions to provide for maximum, immediate disbursement of time sensitive information should be outlined.
- Media briefings and news conferences: Media briefings and conferences should be outlined. Development of materials for individual and pooled sessions should be described.
- Affected community direct line: The means and level of access to affected community groups, responsibility for promoting cooperation and acceptance should be described.
- Coordinated site visits: The use of site visits should be described. These events bring public officials, media, and WMC personnel together to foster assurances and show efforts.

Physical Requirements and Manning of the JIC

JIC manning will vary with the size and expected duration of the crisis. The JIC is intended to be the information arm of the WMC. As such, JIC personnel must be able to speak for the combined ACOE, USCG and industry efforts. Equipment for the JIC is outlined in **Chapter 3, Tab G.**

Public Information Releases

Under ideal circumstances the JIC is the sole provider of crisis information to the public. Unfortunately, misinformation, speculation and rumors surface, often raising the level of anxiety and frustration beyond that aroused by the crisis itself. To minimize this problem, the following actions should be taken:

1. Proactive distribution: The JIC should create an information distribution chain applicable to the crisis at hand. Identifiable, impacted should be regularly updated. Each impacted party should be considered a potential avenue to the general public. They should be provided the same safety, economic and operational information that the JIC provides the press or other media sources.

2. Timeliness of communications: The JIC must not only establish itself as the official information source, it must establish itself as the most current source of information. This will discourage the media and other interested individuals from seeking alternative sources. Timeliness is often the key. The JIC must establish itself as the provider of the most current and most accurate information. This may require daily or twice daily information releases.

3. Common message: The JIC should work with the agencies, the industry and other affected parties to orchestrate a common message. Recipients of network distributions should continuously be prompted with key messages -- safety, security, and environmental protection -- that capture the essence of the crisis restoration efforts. Distribution recipients should be encouraged to refer media calls to the JIC for handling rather than speculating on crisis management efforts and successes. Industry representatives who typically receive media calls should be encouraged to confine their comments to the specific impact the crisis is having on their business and refer crisis restoration questions to the JIC.

4. Media Contacts: JIC personnel and other WMC staff should be prepared at all times. The USCG and ACOE public affairs offices can provide guidelines and assistance.

Event Closure

Closure is critical to any crisis management process. The public needs to know when the crisis is resolved. The JIC can play a key role in how that message is received. The inland rivers typically receive very little attention or notoriety. A river crisis is one of the few times the public actually hears about the waterways, and that generally comes with the negative overtone of flood, drought or catastrophe. The conclusion of a crisis should be viewed as an opportunity to highlight successes, lend praise to those involved, and reinforce already

stimulated public awareness of the economic and environmental advantages of river transportation.

The draw down of traffic management efforts and the safe, successful restoration of river operations are newsworthy items. Likewise, the inter-agency cooperative efforts and the value of a restored river make excellent feature stories. The JIC staff should find ways to publicize and celebrate the closure. The following might be applicable:

- Symbolic river opening: The JIC could draw together industry and political leaders to participate in a reopening ceremony. CEO's and Congressional leaders would meet to celebrate the commencement of river transportation.

- Award ceremonies: The JIC could arrange for localized award ceremonies recognizing the efforts of community members as well as industry and agency personnel.

- Media vessel rides: JIC staff members could invite media staff to participate in a reopening river ride to better understand the impact of the closure, safety considerations and levee concerns previously communicated during the crisis.

The public relations chapter is intended to be a guide for the future. It is to be hoped that it will never be needed. If a major crisis does occur, it is the purpose of this chapter to assist in the crisis restoration effort by stimulating public awareness and support, alleviating confusion and ensuring that information is available to all interested parties.

Appendix I: Upper Mississippi River Trigger Points/Recommended Actions - Pooled Portion

Appendix I - TAB A: High Water Target Gages

Under flood conditions, controlling factors are gage readings on locks, levees and other structures. These are generally elevations at which Locks and Dams can no longer operate, or at which lock machinery, lock gates, and control stations are inundated. Prior to the arrival of high water, the ACOE response and operating plans require that lock protection measures be taken. These actions include the cessation of lock operations, removal of lock machinery and the setting of dam gates for the unrestricted passage of water

Navigation must stop or start as the river approaches the tailwater gages listed. The WMC staff should establish key readings (-2 Ft for stoppage and +2 Ft for restart of navigation, for example) where action should be taken. The readings should be based on an analysis of data, river trends, weather history, and experience. At the target gage an advisory should be issued alerting interests to the pending stoppage or restart of navigation and the establishment of restrictions.

Navigation Structure	Tailwater Gage Reading	Gage at Zero Elevation	River Mile
St. Anthony Upper	@ 40KCFS	796.5	853.7 L Minneapolis MN
St. Anthony Lower	@40KCFS	749.5	853.4 R Minneapolis MN
Lock 1	730.0	722.8	847.6 R Minneapolis MN.
Lock 2	691.6 * fast rise	686.5	815.2 R Hastings MN
Lock 3	682.6*	674.0	796.0 R Welch MN
Lock 4	671.5	666.5	752.8 L Alma Is
Lock 5	664.5	659.5	738.1 R Minnesota city Is
Lock 5A	659.6 *	650.0	728.5 L Fountain City, Wis.
Lock 6	651.1 *	644.5	714.3 L Trempeleu Wis.
Lock 7	648.0	638.5	702.5 R LaCrescent MN.
Lock 8	633.56**	630.0	679.2 L Genoa Wis.
Lock 9	628.52 **	619.0	647.9 L Eastman Wis.
Lock 10	618.56*	610.0	615.1 R Guttenberg IA

Lock 11	19.5	588.20	583.0 R Dubuque IA
Lock 12	17.2	580.20	566.7 R Bellvue IA
Lock 13	17.8	568.70	522.5 L Fulton IL
Lock 14	14.0	557.08	493.3 R Pleasant Valley IA
Lock 15	20.0	542.50	482.9 L Rock Island IL.
Lock 16	17.0	533.60	457.2 L E. Muscatine IL
Lock 17	18.2	526.70	437.1 L New Boston IL.
Lock 18	15.6	518.52	410.5 L Gladstone IL.
Lock 19	21.2	477.83	364.3 R Keokuk IA.
Lock 20	18.0	468.50	343.2 R Canton Mo.
Lock 21	21.9	457.80	324.9 L Quincy IL.
Lock 22	21.4	446.10	301.2 R New London Mo.
Lock 24	31.5	421.81	273.4 R Clarksville Mo.
Lock 25	32.75	407.00	241.4 R Winfield Mo.
Lock 26 Melvin Price Lock	36.52	395.48	200.8 L Alton IL.
Locks 27	38.0 St. Louis Gage	***	185.5 L Granite City IL.

* The elevation for closure during a fast rising trend is 0.4 feet lower than for slow rising river.

** The elevation for closure during a fast rising trend is 0.5 feet lower than for slow rising river.

Appendix I - Tab B: Target Stages for Resumption of Traffic

The following St. Louis Gage readings are identified as "trigger" stages. These stages were used in preparation for the restart of vessel traffic on the UMR, MMR, MOR, and ILWW during the flood of 1993. These points are generic and care must be taken not to rely on them as trigger points in all cases.

Gage Readings and Preparations for Re-institution of Traffic

At 46.3 Ft. on the St. Louis Gage: A Traffic Information Center/ Traffic Control Center (TIC/TCC) should be stood up.

At 43.0 Ft. and falling on the St. Louis Gage: Start an intensified program of aerial and surface patrols to document river and levee conditions. This assessment takes approximately ten days.

At 41.5 Ft. on the St. Louis Gage: Undertake an "Outreach Program" to contact Levee Boards and Levee Commissions to invite them to comment on the plans to conduct test tows.

At 40.0 Ft. on the St. Louis Gage: Undertake a levee assessment program to physically walk all levees in their districts and contact local officials to ascertain if levee stability is sufficient to allow for the passage of "no wake" traffic. (**Note:** This was a critical portion of the outreach program during the "Great Flood of 1993" since it gave the public an opportunity to interact with the ACOE and register their concerns.)

At 39.0 Ft. on the St. Louis Gage: Make preparations to execute the test tow program on the Middle and Upper Mississippi Rivers. Traffic should not proceed on the Middle Mississippi if conditions at Thebes Bridge are unfavorable. Passage from St. Louis to Cairo should proceed only if the gages at St. Louis and Cairo indicate a slope of less than 8.0 Ft., and the gages at St. Louis and Cape Girardeau indicate a slope of less than 5.0 Ft. Greater slopes indicate that current and flows are too severe. The TCC should actively control harbor activities to reduce fleet populations to handle the influx of barges when traffic resumes.

At 38.0 Ft. on the St. Louis Gage: Initiate test tows on the MMR, UMR, ILWW and MOR. Traffic through and into St. Louis Harbor should not resume until the gage falls below 38.0 Ft.

The following is the sequence of events used to re-institute traffic on the MMR and UMR systems, this approach would also allow for the eventual resumption of vessel traffic into the ILWW and MOR.

Gage Readings and Actions Required when Traffic is Re-instituted

Between 38.0 Ft. and 30.0 Ft. on the St. Louis Gage with a Falling River If test tow programs prove successful and river conditions permit, limited traffic should commence on the MMR and UMR systems. Tow size, speed limits, and horsepower restrictions should be imposed. The following additional actions should be taken by the TIC/TCC:

North and southbound traffic in the MMR should be actively controlled.

Southbound departures from St. Louis Harbor should be controlled to assure that "no wake" daylight transits are made through Grays Point and Thebes Bridge.

Northbound departures should coordinated with the Louisiana Dock Company Dispatchers.

The TIC/TCC shall monitor and record all position reports to assure that speed and separation restrictions are followed. They should stage tows in St. Louis Harbor in preparation for transit into the UMR, and ILWW and coordinate these transits with the Lock Masters of L&D 27 & 26. The TIC/TCC should also monitor voyages from St. Louis Harbor in and out of the MOR.

At 30.0 Ft. on the St. Louis Gage: Re-established traffic on all river systems. De-activate the TIC/TCC and return traffic coordination activities to the COTP's in St. Louis and Paducah.

Appendx II: Upper Mississippi River Low Water Trigger Points/Target Gages - Recommended Actions - Open Portion

The purpose of this appendix is to document the target stages and flows to be considered in the management of the Middle Mississippi River from St. Louis to Cairo, IL." When selecting target stages, neighboring gages must be considered. Example: When predicting the navigability of channels South of St. Louis, the height of the Cape Girardeau gage must be factored. The slope that is generated by the elevation or depression of the neighboring gage will give an indication of the potential flows and currents encountered. This is critical in high-water and ice conditions.

Waterway Managers are CAUTIONED that the following is generic and the target stages are suggested. Since response actions will vary from event to event, the cited target stages must be modified to reflect the current events and conditions.

St. Louis Gage	Flow in K CFS	Operating Restrictions Waterway management response actions
Above 5.0 Ft with predicted falling trend	Above 90	None, time to convene first Joint Mtg. start the planning for response. Set the **watch phase.**
Above 3.5 Ft. with predicted falling trend	Above 90	Issue advisory on nav conditions and anticipated intervention plans. Set PR Program in place
3.5 to 2.0 Ft with predicted trend	Above 90	Start Intensified Survey activities Issue advisory for max tow size of 25 barges north and southbound
1.0 Ft with falling trend	74 to 90	Issue Nav Adv. announcing intent to establish Safety zone Set the **Assessment Phase**
0.0 to -2.0 Ft with falling trend as predicted, no significant inflow expected to occur in near future.	74-55	Hold public meeting for nav interests Start Planning committee activities Institute Safety zone with 20-barge max tow restriction. Industry should prepare for draft restriction of 8.5 Ft.
-2.5 to -3.5 Ft continued fall is predicted	55 to 48.5	Limit Tow size to 16 barges. Refine Action plan Stand up TIC Issue Nav Adv. that Draft limits are anticipated to be placed in effect in near future. Intensify survey activities start overflights
-3.5 to -4.0 Ft.	48.5 to 46	Invoke 8.5' draft restriction. Advise industry of next draft restriction target

		gage , hold public meeting.
-4.0 to -4.5 Ft. Falling trend continues as predicted.	44 to 46	Invoke 8.0' draft restriction. Declare **Emergency Phase** Set up TCC Refine Action plan WMC holds meeting to discuss future action
-4.5 Ft And falling	Below 44	**Nav Halts** Execute Action plan for the restart of traffic. Increase survey activity with surface and air patrols Hold public meeting to market Action plan for restoration of traffic.
-4.0 Ft.		Declare **recovery phase** and start to run test tows and limited traffic in accordance with Action Plan

Appendix III: Lower Mississippi River Low Water Trigger Points/Target Gages/Recommended Actions - Upper Portion

The purpose: of this Appendix is to document the target stages and flows to be considered in the management of the Lower Mississippi River from Cairo, IL to Baton Rouge, LA. They are provided to assist waterway managers in the design of action plans for low water events. When selecting target stages, the neighboring gages must be considered. For example: When assessing the navigability of channels South of Cairo, the height of the New Madrid gage must be factored in. The slope that is generated by the elevation or depression of the neighboring gage will give an indication of the potential flows and currents that will be encountered. This is especially critical in high-water and ice conditions

Waterway Managers are CAUTIONED that the following plan is generic in nature and the target stages are suggested. Since low water event response actions will vary from event to event, the cited target stages must be modified to reflect the current events and conditions.

Cairo Gage	Flow in K CFS	Operating Restrictions and Waterway management response actions
Above 11.8 Ft.	Above 189	None
11.8 to 7.5 Ft. with a falling river predicted , Ohio River discharges are projected to be reduced	189 -120	None , time to convene first joint Mtg. start planning for the response. Set the **watch phase.** Issue Nav Advisory
7.5 to 6.0 Ft. with continued fall stage predicted	120 -111	Issue advisory for anticipated Max. tow size of barges north and south bound, start monitoring casualty rate and identify critical crossings. Start monitoring down river gages and trends. Establish Safety zone in prep of Tow size restrictions
6.0 Ft. with continued falling river predicted	111 and below	Limit Tow size ,and barges and advise of Draft restrictions of 8.5 Ft if fall goes below 6.0 Ft.
5.0 to 4.5 Ft. Predictions for a continued fall in stage. Casualty rate rising.	Below 95	Issue Nav. Advisory. Watch Memphis to Greenville section for deteriorating conditions Start intensified survey activities and over flights.

4.5 to 3.5 Ft. Falling trend continues with no predicted rise in near future	below 95 to 80.5	Declare **Emergency Phase** Institute 8.0 Max. Draft with 16 or 12 Barge Maximum Standup TCC Issue Nav.. Advisory recommending halt of Navigation at 3.5 Ft and below. Focus planning activities to include Memphis to Greenville section
Below 3.5 Ft.	Below 80.5	Navigation prohibited. Discuss options for restart of traffic. Develop test tow program (Cairo to Memphis & Memphis to Greenville.)
4.0 Ft. with rising river predicted		Set Recovery Phase and start test tow programs and limited traffic

Appendix IV: Lower Mississippi River Trigger Points/Recommended Actions - Lower Portion

This appendix was developed by a working group convened by Rear Admiral Josiah, the Commander, Eighth Coast Guard District. Captain Marsh, the New Orleans Captain of the Port (COTP) headed the group to document the lessons learned during the extreme high water on the Lower Mississippi River between Baton Rouge and New Orleans in the spring of 1997. The working group met monthly from July until November. Subgroups of the various stakeholders were formed to address problems unique to each subgroup. The subgroups were headed by an industry representative and were facilitated by a Coast Guard member from MSO New Orleans or MSD Baton Rouge.

Waterway Managers are CAUTIONED that the following listed response actions are generic and the target stages are suggested. Since response actions will vary from event to event, the cited target stages may be modified to reflect the current events and conditions.

Steps and actions that should be considered by waterway managers during extreme high water conditions are listed in the following Tabs to this Appendix:

- Tab A: Line Tow Operations
- Tab B: Canal Towing Operations
- Tab C: Barge Fleeting Operations
- Tab D: Facility and Midstream Operations
- Tab E: Deep Draft Vessel Operations
- Tab F: Levee Protection and Considerations

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Appendix IV - Tab A: Line Tow Operations

Discussion:

High water levels and/or current speeds greatly reduce maneuverability of tugs and tows. Relative speed through the water can approach zero when southbound, making normal control of a vessel impossible. To continue to operate in high currents, the flanking maneuver was developed to use, rather than fight, the current to navigate around the many points on the river systems. Additionally, normal Aids to Navigation (ATON) are often destroyed or no longer mark the preferred channels, or are in the way of required flanking maneuvers.

Regulated Navigation Area High Water Requirements:

33 CFR 165.810 designates the Mississippi River below Baton Rouge as a Regulated Navigation Area at all times. At specific conditions listed below, additional requirements regulating vessel traffic go into effect.

Carrollton Gage	Vessels regulated	Restrictions
8 Ft and rising	Tugs with tows and All ships	Algiers Point light controls vessels passing Algiers Point.
12 Feet or higher	Under-powered or poorly handling vessel	Use assist tug passing Algiers Point
12 Feet or higher	Towing on Hawser	Towing downstream between Julia and Desire St. is prohibited.

Additional Crisis Action Plan Trigger Points/Recommended actions: The following safety measures should be enacted for the LMR when the Baton Rouge Gage reaches the level indicated.

Phase 1: WATCH PHASE - Baton Rouge Gage 28' and rising.

Representatives of the COTP, ACOE, and marine industry, shall communicate to determine if the river will continue to rise or sustain a level of 28' or more. If so likely responses include:

- An advisory should be issued to all line tow operators and towing companies recommending a ratio of 250 horsepower per barge for southbound transit of this area, with a maximum tow size of 35 barges.

- Towing companies will be advised to staff their vessels with their most experienced crews.

- Points or bends and bridge approaches that have a history of problems such as Wilkinson Point will be assessed to see if problems are developing.

- Buoys that will prevent tows from taking a proper line around points and bends and hinder flanking operations, such as those at Wilkinson Point, should be removed to allow southbound vessels to flank close around the point.

- Owner/Operators will ensure towing vessel inspections are completed before entering the RNA as per 33 CFR 164.

Phase 2: IMPLEMENTATION PHASE - Baton Rouge Gage 35' and rising.

Representatives of the COTP, ACOE, and marine industry shall communicate as the river stage approaches 35' on the Baton Rouge gage to determine:

- If the river will continue to rise and sustain level of 35' or more.

- If the 250 horsepower per barge advisory is adequate for safe navigation.

- Note: If a "Safety Zone" is established, the horsepower ratio should increase to 280 horsepower per barge, for southbound transit through the safety zone with a maximum tow size of 30 barges.

When conditions dictate, the COTP New Orleans will establish a Safety Zone to:

- Require "daylight transit only" for southbound tows transiting Baton Rouge Harbor when river levels dictate the need for a TAV at Wilkinson point.

- Establish a "no meeting or passing zone" from mile 232 AHOP to mile 237 AHOP when river levels dictate the need for a TAV at Wilkinson Point.

- Northbound vessels unable to make at least 3 mph through the safety zone must use an assist tug to help them through the upper Baton Rouge Bridge and around Wilkinson Point.

When a Traffic Assist Vessel (TAV) is stationed at Wilkinson Point to assist vessels transiting the Highway 190 bridge, an industry self-help plan should be implemented to fund and schedule this vessel. This vessel should be equipped

with telephone and fax capability to communicate with the Traffic Information Center and /or Traffic Control Center.

In addition to the vessel crew, industry stakeholder representatives and USCG representatives should be onboard the TAV any time it is functioning as a Traffic Control Center. The TAV should also assist the COTP office in handling requests for exemptions to any established requirements in the Safety Zone.

The TAV will coordinate line boat traffic only through the safety zone.

The TAV will have a minimum of 5600 hp.

Phase 3: EMERGENCY PHASE - Baton Rouge Gage 39' and rising.

If a COTP Safety Zone has not already been established at Wilkinson Point, one should be put in place. Horsepower ratios should be increased to 300 horsepower per barge for southbound transit and maximum tow size should be reduced to 25 barges. All other restrictions should remain as established in the IMPLEMENTATION PHASE.

Mixed Tows:

- Vessels transiting the safety zone that have mixed loaded/empty tows and do not meet the horsepower per barge requirement must contact the Traffic Control Center to obtain permission to transit the safety zone.

- Example: A 6000 horsepower boat with 15 loads and 10 empties would not meet the horsepower requirement at 35' on the Baton Rouge gage, but should be given permission to transit because this tow and HP configuration is sufficiently powered to meet the intent of the Safety Zone requirements.

- Vessels transiting the safety zone with mixed tows of dry cargo and loaded chemical barges shall make every effort to place the loaded chemical barges in a safe position within the tow, preferably surrounded by the dry cargo barges.

Phase 4: RECOVERY PHASE - Baton Rouge Gage 38 feet and falling with projections to fall below flood stage.

Call meeting of impacted parties, to include marine industry (AWO, GNOBFA, Pilots, Steamship Association, etc), ACOE, COTP, MSD, and Governor's Representative to:

- Review river gauges and velocities.

Efforts to phase back into normal operations should begin as soon as the river begins to crest after any high water period. The dynamics of the river system decrease rapidly as it reaches crest and begins a gradual fall. In order to determine actual river conditions, "Test Tows" should be used to sample the lessening effect of the river on operating conditions. This testing will provide the feedback needed to determine when and how to gradually return to normal operating procedures.

Discuss phase down of restrictions that should include adjustments as follows:

- Tow size, horsepower/tonnage ratios.
- Safety zone restrictions.
- Control vessels.
- Removing TIC and TCC controls.
- Ship anchorages.
- Issue Notice to Mariners based on phase down recommendations.
- Issue Navigation Advisories to industry through High Water Action Group.
- Review and critique data and events. COTP will retain historical data.

Appendix IV - Tab B: Canal Towing Operations

Discussion:

Canal towing vessels face all the same problems as Line Tow vessels. Additionally, they face the hazards of maneuvering into and out of locks at high current flows, the difficulty in turning upstream coming out of a lock, and being trapped when a lock is out of commission due to high water or allision damage.

Regulated Navigation Area High Water Requirements:

CFR 165.810 designates the Mississippi River below Baton Rouge as a Regulated Navigation Area at all times. At specific conditions listed below, additional requirements regulating vessel traffic go into effect.

Carrollton Gage	Vessels regulated	Restrictions
8 Ft and rising	Tugs with tows and All ships	Algiers Point light controls vessels passing Algiers Point.
12 Feet or higher	Under-powered or poorly handling vessel	Use assist tug passing Algiers Point
12 Feet or higher	Towing on Hawser	Towing downstream between Julia St. and Desire St. is prohibited.

Additional Crisis Action Plan Trigger Points/Recommended actions: The following safety measures should be enacted for the LMR when the Baton Rouge Gage reaches the level indicated.

Phase 1: WATCH PHASE - Baton Rouge Gage 28 feet and rising:

Captain of the Port New Orleans should host a meeting with the Canal Towboat Operators Action Team, the Supervisor MSD Baton Rouge, and state government representatives to:

- Evaluate the need for lock TAV for tows entering and exiting locks.
- Consider a COTP Safety Zone at all/some river/Canal Lock forebays.

- Evaluate need for all North bound tows departing Port Allen Locks and entering the Mississippi River to proceed South Bound and then top North below Mile 226.

COTP New Orleans will issue Notice to Mariners on all recommended actions. The towing industry should issue recommended actions through the High Water Action Team.

The US Army Corps of Engineers will be requested to distribute recommended actions at their locks.

When Baton Rouge Gage reaches 30 feet and rising:

- Hold meeting of Canal High Water Action Team.
- Review stage forecast and current velocities.
- Review previous recommendations on new stage predictions.
- Evaluate need for mandatory TAV at Port Allen Locks for multiple barge tows entering and exiting locks when river state reaches **33 feet** on the Baton Rouge Gage.
- COTP to reissue marine information broadcast. (as needed)
- Issue industry notices through High Water Action Team.

Phase 2: IMPLEMENTATION PHASE - Baton Rouge Gage 33 feet and rising with projections to exceed flood stage:

- Hold meeting of Canal High Water Action Team, now to include representative of US Army Corp of Engineers
- Review river gages and current velocities.
- Review and evaluate recommendations in Assessment Phase.
- Implement mandatory TAV at Port Allen Locks. COTP to assign representative on TAV or at Locks.
- Implement vessel H.P. and tonnage restrictions (5 ton per 1 H.P.).
- Review Lock forebay safety zone and make recommendations for change to COTP.

- Review ship anchorages below Port Allen Lock forebay and make recommendations to COTP.
- Discuss the need for implementation of TCC or TIC and make recommendation to COTP.
- Review log of marine incidents during high water period.
- COTP issue Notice to Mariners on current recommendations.
- Issue industry notices through High Water Action Team:
- Company Management to review pilothouse high water experience.
- Company Management to review maintenance standards with vessel personnel prior to entering Locks.
- Company Management to review tow configuration and rigging prior to entering Locks.
- Towing companies will be advised to staff their vessels with their most experienced crews.

Phase 3: EMERGENCY PHASE - Baton Rouge Gage 38 feet and rising:

Hold meeting of High Water Action Team to include Canal Action Team, COTP, MSD Commander, Local Office of Emergency Preparedness, Representative of Governor's Office and US Army Corp of Engineers and all other Action Teams to:

- Review river gauges, velocities and forecast.
- Review restrictions mandated during Implementation Phase.
- Review and recommend tow length restrictions to COTP.
- Discuss the need for implementation of TCC and TIC and make recommendation to COTP.
- Evaluate and recommend need for a TAV at Port Allen Locks.
- Review Safety Zone Mile 223.0 to 238.0 AHP and make recommendation to COTP.

- When exiting the Port Allen Lock into the Mississippi River, recommend that northbound tows initially go south below Mile 226, then turn around and go north.

- Establish scheduled meetings to interface with other groups of the High Water Action Team from a logistics and communications standpoint. Make recommendations to COTP of any changes needed.

Phase 4: RECOVERY PHASE - Baton Rouge Gage 38 feet and falling with projections to fall below flood stage.

Call meeting of High Water Action Team, to include all groups of team, ACOE, COTP, MSD, and Governor's Representative to:

- Review river gauges and velocities.

Efforts to phase back into normal operations should begin as soon as the river begins to crest after any high water period. The dynamics of the river system decrease rapidly as it reaches crest and begins a gradual fall.

Discuss phase down of restrictions that should include adjustments as follows:

- Tow size, horsepower/tonnage ratios.
- Safety zone restrictions.
- Control vessels.
- Removing TIC and TCC controls.
- Ship anchorages.
- Issue Notice to Mariners based on phase down recommendations.
- Issue Navigation Advisories to industry through High Water Action Group.
- Review and critique data and events. COTP will retain historical data.

Appendix IV - Tab C: Barge Fleeting Operations

Discussion:

High water brings stronger currents that strain mooring appliances and make "downstreaming" and routine fleeting operations more hazardous to fleet employees and downstream facilities and vessels if a breakaway occurs. The Greater New Orleans Barge Fleeting Association (GNOBFA) in partnership with MSO New Orleans has developed "The Standards of Care & Streamlined Inspection Program Guide Book" or commonly, the GNOBFA guide. Due to the design and configuration of barge fleets in the New Orleans area, most preventive maintenance measures must be accomplished during low water conditions. Preventive and high water preparatory recommendations that should be accomplished before high water conditions arise are included in the Guide and are not repeated here.

Regulated Navigation Area High Water Requirements:

33 CFR 165.803 describes barge mooring rules for the Lower Mississippi River between miles 88 and 240 (Above Head of Passes) to minimize fleeting hazards. Subsection (m) has additional rules for High Water periods.

Carrollton Gage	Required Actions
12 Ft or more **or**, 10 Ft and rising when designated by the District Commander	Fleet PIC must: • Attend fleet with tug(s) • Do radar surveillance of fleet in low visibility • Not assemble or disassemble tows during low visibility • Ensure fleets w/8 or more barges are equipped w/1 radar equipped towboat for each 100 barges or less • Ensure 2 or more towboats are in attendance when barges are withdrawn, moved or added & 8 or more barges in fleet

This Tab assumes the Bonnet Carre spillway will be opened by the ACOE when the Mississippi River approaches 17-18 Ft on the Carrolton Gage. If not, then additional procedures may be required

Recommended High Water Actions:

Phase 1: WATCH PHASE - Carrollton Gage 10 feet and rising:

- The COTP New Orleans or the President of GNOBFA should call a meeting with the GNOBFA Emergency Action Team and USCG Facilities personnel from the MSO/MSD to discuss the upcoming high water.
- Hold a general GNOBFA membership meeting, invite Marine Safety Office representative to review the "Standards of Care & Streamlined Inspection Program Guide Book" (GNOBFA guide) and related regulations with all management/vessel personnel. The president of GNOBFA should remind all operators that their fleets must be managed in accordance with the requirements in 33 CFR 165.803. Preventive measures in the GNOBFA guide should be addressed.
- Ensure High Water Recommendations in the GNOBFA Guide and the Awareness Phase have been addressed.
- Review the Streamline Inspection Manual and related regulations with all management/vessel personnel.
- Prepare and review additional vessel/horsepower requirements for fleet towboats and line operations.
- Review the Breakaway Response Plan with all management/vessel personnel.

Phase 2: IMPLEMENTATION PHASE - Carrollton Gage 12 feet and rising:

The President of GNOBFA will coordinate GNOBFA member participation in a TIC if it is stood up as outlined in **Chapter 3,Tab D.**

Recommendations for all Fleets:

- All management/vessel personnel should review the GNOBFA Streamlined Inspection Guide and related Coast Guard regulations.
- Phase 1 recommendations should be completed and reviewed with all management/vessel personnel.
- Breakaway Response Plans should be reviewed and where possible tested during evening or off-peak operating hours.

- Fleet Operators should inform the President of GNOBFA of unique conditions and fleet management problems as they develop so that this information gets passed to other GNOBFA members and MSO personnel.

Phase 3: EMERGENCY PHASE - 17, or above on the Carrollton Gage, or 35' or greater on the Baton Rouge Gage with the Bonnet Carre Spillway Open:

- Recommendations for Phase 1 and 2 should have been completed.
- The GNOBFA Emergency Action Team and COTP personnel will review high water conditions and unique problems individual fleets are experiencing daily and determine additional safety measures that may be required.

If river conditions and casualties require the establishment of Traffic Control Centers, affected fleets should be prepared to work closely with the COTP to minimize traffic disruptions and insure river safety.

Each fleet operator should:

- Minimize the potential of breakaway tank barge incidents by arranging fleets to provide maximum protection and security for tank barges carrying oil and hazardous chemicals.

- Monitor river forces on mooring and anchor equipment. Reduce fleet widths and sizes based on location and river conditions.

The President of GNOBFA will continue to coordinate GNOBFA member participation in a TIC. The TIC will coordinate closely with the ACOE and CG Crisis Action Centers to insure information on changing river conditions, casualties and other incidents is rapidly passed to all fleets.

Phase 4: RECOVERY PHASE - Baton Rouge Gage 38 feet and falling with projections to fall below flood stage.

Evaluate the need for a meeting with government and industry stakeholders.

- Review river gages and velocities.

Efforts to phase back into normal operations should begin as soon as the river begins to crest after any high water period. The dynamics of the river system decrease rapidly as it reaches crest and begins a gradual fall. GNOBFA leadership should look at fleets significantly impacted by high water and identify schedules to begin building back to normal capacity.

Consider phase down of restrictions that should include adjustments as follows:

- Safety zone restrictions.
- Removing TIC and TCC controls.
- Make recommendations to COTP for phase down and recovery. Issue Notice to Mariners based on phase down recommendations.
- Issue Navigation Advisories to industry through High Water Action Group.
- Review and critique data and events. COTP will retain historical data.

Appendix IV- Tab D: Facility and Midstream Operations

Discussion:

High water levels increase river currents making berthing vessels more difficult as well as increasing the danger of wharf ramming and moored vessels parting their lines. Facility personnel face much more serious consequences if they fall overboard into the river.

Flood Stage Issues:

Each facility or berth within a facility often has a specific operations plan or operating pattern that takes operational safety and operational design limits into consideration. This Crisis Action Plan is not designed to be used in lieu of or to cover those specifics, but to strengthen our commitment to safety and provide some guidance for future operators while looking at issues that may not have already been considered.

River Stage High Water Trigger Points:

River Stage Trigger Points will vary with such factors as the rate of rise or fall of the river as well as the current river stage and flow rate. Each reach of the river has its own difficulties as will each facility depending on the location in relationship to eddies, bends, river width, etc. With few exceptions, the area between mile 106 AHP and the Gulf of Mexico historically does not experience significant difficulties during high water. All Points listed here are used as general guidelines only and are not intended to be absolute.

Gauges	Mile	High Water Alert	Flood Stage Alert	(*)Corps of Engineers' Project Flood Flow Line
Baton Rouge	228.4	30' & rising	35'	46.1'
Donaldsonville	175.5	25' & rising	27'	34.4'
Reserve	**138.8**	**19' & rising**	**22'**	**26.0'**
New Orleans	102.8	08' & rising	17'	19.8'

(*) The river elevations to which the levees are engineered to handle. Levees are generally a few feet higher than the Project Flood Flow line.

Recommended High Water Actions:

Phase 1-2:WATCH PHASE/IMPLEMENTATION PHASE - Carrollton Gage 8'and rising, or equivalent levels in above table.

Implement high-water Alert checks:

- Review facility high water safety practices for equipment and personnel.
- Give special attention to newer employees with least river experience.
- Begin monitoring river stages, flow rates, and velocity more carefully and frequently:
- Check (where appropriate depending on type of facility and location) mooring buoys for dock moorings, mooring lines on floating equipment such as barges and loading/discharge cranes.
- Take corrective steps.

Phase 3: EMERGENCY PHASE - Carrollton Gage 15'and rising:

- Increase exchange of information by most effective way including meeting, if necessary with Coast Guard, Pilots, Line handlers, and Industry Organizations (Maritime Navigation Safety Association, Port Safety Council, Greater New Orleans Barge Fleeting Association, American Waterways Operators, and Steamship Association of Louisiana/New Orleans Steamship Association).
- Heighten awareness of safety practices.
- Increase safety inspections.
- Monitor vessels in berth for any potential problems or concerns.

Consider if warranted, added precautions based on vessel size, ect. as follows:

- Restricting docking windows;
- Additional docking tugs;
- Holding tugs;
- Additional lines.

Depending on type of facility consider:

- Placement and number of cranes and/or barges in cargo operations.

- Issue advisory to vessels and agents of expected requirements with regard to lines, anchors, etc.

Phase 4: RECOVERY PHASE - Carrollton Gage 17'and falling.

Efforts to phase back into normal operations should begin as soon as the river begins to crest after any high water period. The dynamics of the river system decrease rapidly as it reaches crest and begins a gradual fall.

Discuss phase down of restrictions that should include adjustments as follows:

- Safety zone restrictions.
- Removing TIC and TCC controls.
- Make recommendations to COTP for phase down and recovery. Issue Notice to Mariners based on phase down recommendations.
- Issue Navigation Advisories to industry through High Water Action Group.
- Review and critique data and events. COTP will retain historical data.

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Appendix IV - Tab E: Deep Draft Vessel Operations

Discussion:

Upbound- Ships progress much slower, the longer voyage increases fatigue of crew. Vessels moored along river more susceptible to wake damage or having lines parted due to use of maximum power to make headway. Current strength can cause radical swings, especially in river bends if not carefully piloted

Downbound- Speed over ground increases, while speed through water decreases creating added potential for full/partial loss of control. Large increase in time/distance required to slow or stop vessel making way. Current strength can cause radical swings, especially in river bends if not carefully piloted. Difficulty of transit adds stress to crew.

Regulated Navigation Area High Water Requirements:

CFR 165.810 designates the Mississippi River below Baton Rouge as a Regulated Navigation Area at all times. At specific conditions listed below, additional requirements regulating vessel traffic go into effect.

Carrollton Gage	Vessels regulated	Restrictions
8 Ft and rising	Tugs with tows and All ships	Algiers Point light controls vessels passing Algiers Point.
12 Feet or higher	Under-powered or poorly handling vessel	Use TAV passing Algiers Point
12 Feet or higher	Towing on Hawser	Towing downstream between Julia and Desire St. is prohibited.

Flood Stage Issues:

The New Orleans-Baton Rouge Steamship Pilots Association (NOBRA) represents Louisiana State Commissioned Pilots who are self-employed, and operate over their area of state jurisdiction on the Mississippi River from New Orleans to latitude 35 North Louisiana/Mississippi line. Each individual pilot has the authority to issue safety recommendations to the ship and the marine industry in his area of jurisdiction, as deemed necessary. The Association's role is to facilitate communications between the pilot members and the Maritime Industry.

The Association gathers information from the pilot members during all stages of the river as they discuss situations among themselves and they ask the association to relay and review these issues with the marine community.

[redacted] developed over many years of experience concerning problems or issues that appear during a rising river, and at, or above flood stages of the river. Some of these problems increase as the river rises and current increases, alternately, these problems may decrease at higher river stages. Pilots must re-evaluate all of these situations on a daily basis to maintain safe operations.

Recommended High Water Actions:

Phase 1: WATCH PHASE - Carrollton Gage 8'and rising:

- All pilots begin to watch and evaluate how vessels are handling the increased current, both up and downbound.
- All pilots watch for air draft pertaining to bridge clearance, as calculated by a vessel's bridge team.
- All pilots pass on information concerning disabled aids to navigation among themselves, to the association, and to the U.S. Coast Guard.
- All pilots evaluate docks, anchorages, and midstream facilities as to current movement, eddies, etc., and these forces adverse reaction on the ship.
- All pilots evaluate large and small towing operations pertaining to the size of tow as it relates to the horsepower of the towing vessel, flanking maneuvers as opposed to steering maneuvers, etc.

Phase 2: IMPLEMENTATION PHASE - Carrollton Gage 12-15'and rising.

All pilots should continue to monitor and report those situations listed under the Watch Phase. In addition, pilots may begin to experience an increase in:

- Ships dragging anchor in anchorages and midstream facilities.
- Ships parting mooring lines at dockside and midstream facilities.
- Additional destruction of aids to navigation due to erosion of the bank, or base of the aid due to higher currents.
- Ships having more difficulty making points upbound and navigation bends down bound.

Phase 3 EMERGENCY PHASE - Carrollton Gage 17' or more:

- Poor handling ships may be recommended for daylight navigation only. In extreme cases, when it will be effective, tug escorts are required.
- In anchorages, more scope is put out on each anchor. Ships are re-anchored when they drag out of position. Ships not holding are placed in other anchorages, taken below New Orleans to anchor, or berthed at a dock.
- Some anchorages are limited as to number of ships, draft and size of ship, or in extreme cases the entire anchorage is taken out of service.
- At shoreside facilities, additional mooring lines may be recommended to the master, or the facility may require additional lines. Hold in tugs may be required by the facility, or recommended by the pilot on a case by case basis. Additional assist tugs may be required by the facility, or recommended by the pilot, during the mooring and unmooring process.

The same actions may be necessary for the midstream facilities, as discussed above for both anchorages and shore side facilities. Additionally, problems with midstream buoys being properly lighted, insufficient number of buoys at the facility, and being out of position are likely. The decision to utilize the midstream facility, at night versus day, or at all, is made by the pilot/master.

NOBRA recommends that all deep draft vessels transiting the Mississippi River have a manned engine room and be capable of operating propulsion in a manual mode and answering all ahead, stop and astern engine orders. Those vessels incapable of performing as above will be evaluated on a case by case basis by the pilot, who will recommend actions necessary for the safety of the vessel, marine traffic, and facilities in NOBRA's area of jurisdiction.

Phase 4: RECOVERY PHASE - Carrollton Gage 17' and falling

Call meeting of High Water Action Team, to include all groups of team, ACOE, COTP, MSD, and Governor's Representative to:

- Review river gages and velocities.
- Review Safety zone restrictions.
- Consider removing TIC and TCC controls.
- Make recommendations to COTP for phase down and recovery. Issue Notice to Mariners based on phase down recommendations.
- Issue Navigation Advisories to industry through High Water Action Group.
- Review and critique data and events. COTP will retain historical data.

Efforts to phase back into normal operations should begin as soon as the river begins to crest after any high water period. This is because dynamics of the river system decrease rapidly as it reaches crest and begins a gradual fall. However, as river levels decrease, silt will rapidly settle to the river bottom and form mud lumps. Great diligence must be used as river levels decline to avoid "hard" groundings in areas prone to forming mud lumps as well as throughout the LMR. River pilots should work closely with the ACOE and USCG to monitor and document river conditions.

Appendix IV - Tab F: Levee Protection and Considerations

Discussion:

The operational needs of divergent management organizations may make coordination of information and action even more important during emergencies

Operational decisions to manage flow rates may improve navigation, particularly if flow rates and gage stages return to normal high water conditions. The preventive value to navigation safety of managing flow rates may be significant. The opening of the Bonnet Carre Spill Way in March 1997 reduced flow rates by as much as 0.5 mcf/s and was an important contributing factor to improving the safety of navigation over a major portion of the Mississippi River.

Operational management of river systems includes active response to changing river conditions. Prevention, early detection of changing levee conditions through the use of IR, other remote sensing and active response to developing situations may require close cooperation of divergent groups of waterway managers.

"Worst Case" scenarios evaluated during the 1997 high water event included the potential destruction of a key portion of a levee by a vessel. Analysis of force calculations indicated that a partially loaded downbound tanker could generate a maximum force to penetrate levee systems. A vessel did destroy a much less substantial levee during the 1927 flood. A calculation of impact forces follows:

1. Scenarios: Three scenarios were considered with respect to potential damage and breaching of the levees between Baton Rouge and New Orleans. A fully loaded deep draft ship could suffer a steering casualty and impact the levee); a lightly loaded ship could suffer a steering casualty; and a tow boat pushing numerous barges could suffer a loss of control and impact the levee.

2. Assumed Deep Draft Ship: For the purposes of this analysis, the ship was assumed to be 800' x 133' x 45', displacing 109,500 ling tons (LT) travelling downbound at 16 knots (27 ft/sec). In the lightly loaded condition, the draft was reduced to 30', changing the displacement to 73,000 LT.

3. River/Shore Geometry: The levees are assumed to have a 10' crown and a slope of 1.5' over 1'. At the toe of the levee, the batture extends out in some places 100' or less (**Figure 1**) and in other places over 1000'. **Table 1** shows the areas (by LMR mile marker) where the batture is less than 100'. There are several critical areas: Left Descending Bank (LDB)

MM162.9 -144.3, RDB MM 138.4 - 134.8, LDB 129.4 - 125.5, LDB/RDB 120.5 - 118.6, RDB 107 - 34.9, and LDB 92.6 - 44.2. The latter two include the greater New Orleans area. In some places, principally near New Orleans, floodwalls are used either in conjunction with a levee or in place of a levee (Table 2). These, though, are well protected by wharfs. Between the 190 HWY Bridge in Baton Rouge and to just below Belle Chase (MM 70), roughly 30% of the levees have less than 100' of batture. The vast majority of this figure is due to the RDB at MM 107 and the LDB at MM 92.6 having less than 100' batture. Up river of MM 107, 13% of the levees do not have at least 100' of batture.

4. Impact Analysis

A. Tow Barge (Figure 2): This is considered the most likely scenario when the direction of travel is downbound. Barges on tow typically are 195' long and have a draft of 9'-12'. Towboats have been experiencing a loss of control due to the swift currents and the transient boils or vortices that develop. Each barge is secured to another barge or tow by wire rope. This effectively provides a hinge point. The combination of an articulated string of barges, high speed over the ground, and relatively shallow draft, could allow the barge to ride up on the batture and impact on the levee itself. It is unlikely though that the momentum would allow it to over-top the levee. Minimal to no damage is expected to the levee; however, possible structural failure of the lead barge (S) could result in a spill or release from the barge (S).

B. Deep Draft, Fully Loaded (Figure 3): Due to the typically deep draft of a loaded ship (on order of 45'), it is unlikely that the energy available (kinetic) is sufficient to drive the ship through the batture and impact the flood side of the levee. Numerous steering casualties near the mouth of the Mississippi River clearly indicate that the ship grounds out rapidly. While the focus is on the levees, a re-occurrence of the M/V Bright Field would result in significant damage to the wharfs in New Orleans; however, it is unlikely that the levee would be at risk.

C. Deep Draft, Lightly Loaded (Figure 4): Due to the decrease in draft, this scenario is more likely to result in damage to the levee than the fully loaded case. However, the probability is considered minimal. Using the assumed ship characteristics, there is insufficient energy to allow the ship to damage the upper portion of the levee. Possible damage to the toe of the levee could occur if the vessel was transiting downbound and made a sudden and sharp turn into one of the levees noted above.

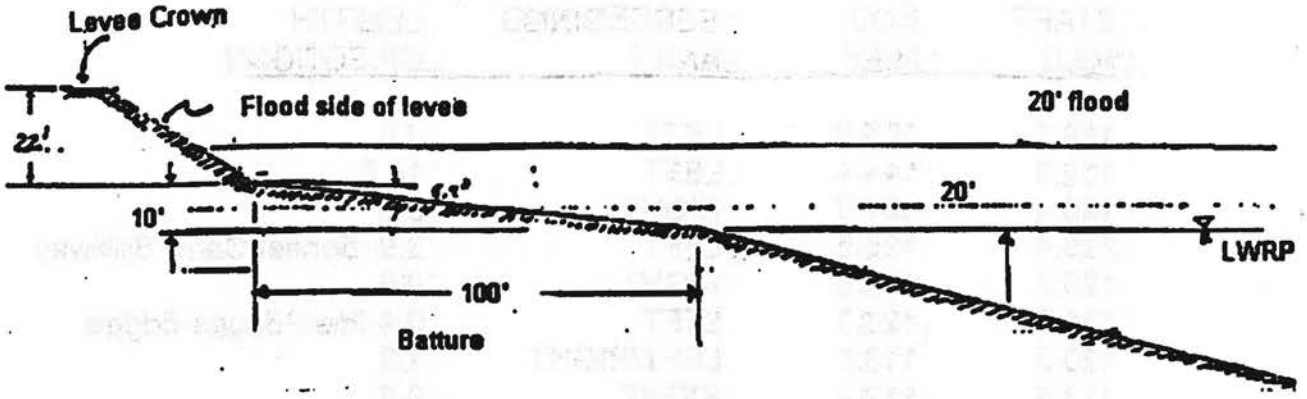
Table 1. Mississippi River levees with less than 100' batture.

START MILE	END MILE	DESCENDING BANK	LENGTH OF SECTION	
169.7	168.9	LEFT	0.8	
162.9	144.4	LEFT	18.6	
138.4	134.8	RIGHT	3.6	
129.4	125.5	LEFT	3.9	Bonnet Carre Spillway
126.2	125.6	RIGHT	0.6	
121.7	121.3	LEFT	0.4	Hale Boggs Bridge
120.5	118.6	LEFT/RIGHT	1.9	
113.6	112.8	RIGHT	0.8	
109.0	108.4	RIGHT	0.6	
108.0	107.9	RIGHT	0.1	
107.0	34.9	RIGHT	72.1	
103.0	100.4	LEFT	2.6	
92.6	44.2	LEFT	48.4	

Table 2. Mississippi River flood walls.

START MILE	END MILE	DESCENDING BANK	LENGTH OF SECTION
100.6	92.8	LEFT	7.8

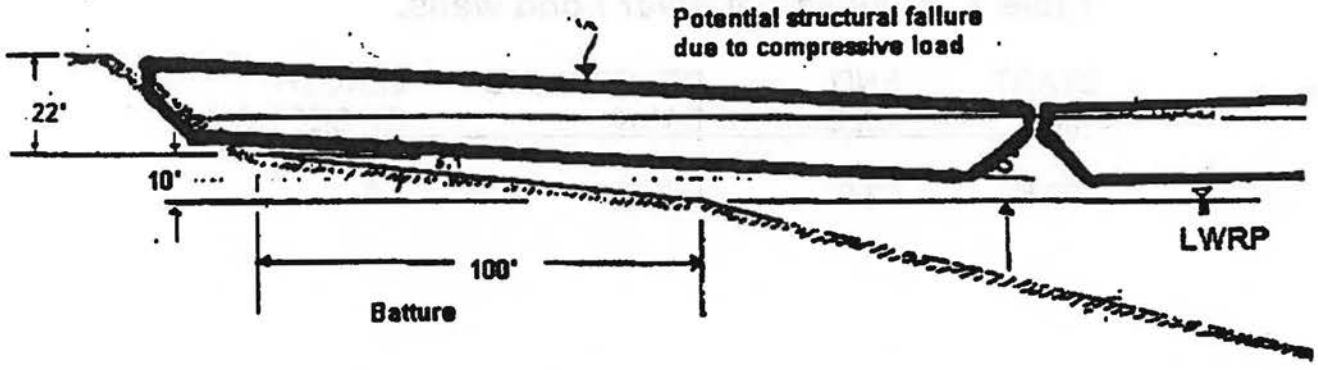
Figure 1 - Levee Profile



Assumed 100' batture with only 10' ROE

LWRP - Low Water Reference Plane

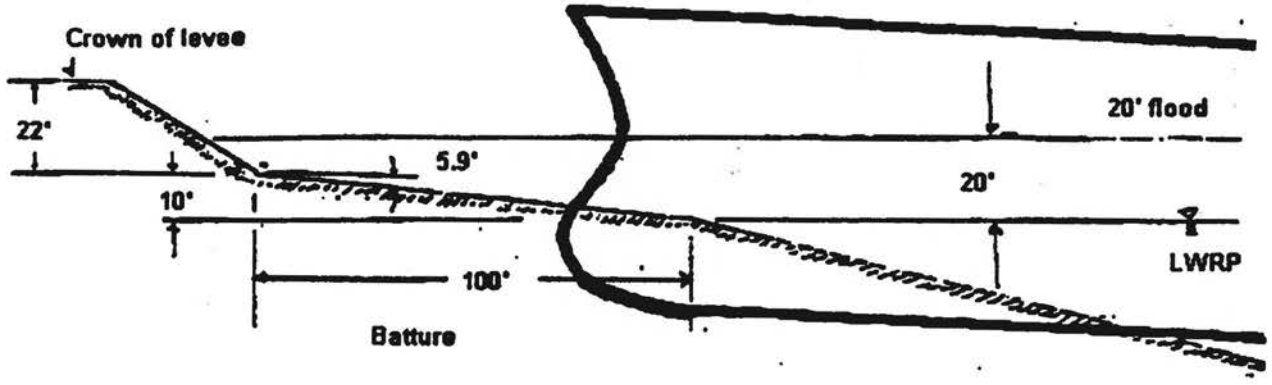
Figure 2 - Tow-Barge Impact



Damage Estimate - Minimal

Pollution Risk - High

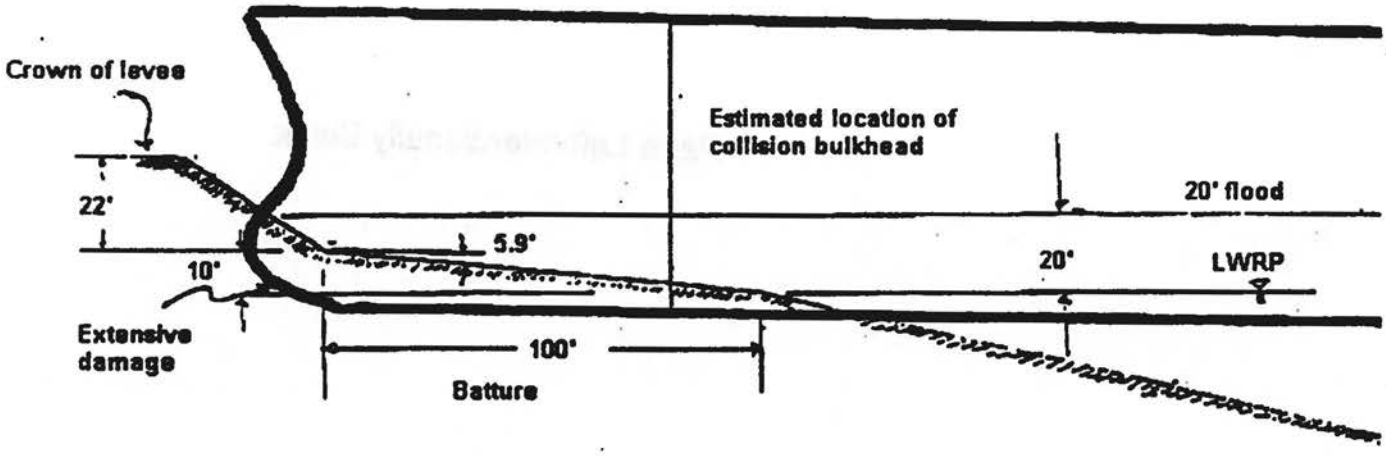
Figure 3 - Deep-Draft Fully Loaded Impact



Levee damage estimate - Very low

Pollution risk - Low

Figure 4 - Deep-Draft Lightly Loaded Impact



Levee damage estimate - Medium potential

Pollution risk - Low

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Appendix V: Waterway Management Case Histories

NOTE: The term Middle Mississippi River (MMR) is used throughout this appendix. It refers to the open portion of the UMR extending from Cairo, IL (00.0 UMR) to just above St. Louis Harbor (190.5 UMR). This term is used to differentiate between the open and pooled sections of the UMR.

This appendix contains a synopsis of 4 recent Mississippi River transportation crises and provides an overview of the waterways management techniques used in each case:

- Tab A: The Drought of 1988
- Tab B: The Great Flood of 1993
- Tab C: The Flood of 1995
- Tab D: The Baton Rouge Extreme High Water of 1997

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Appendix V - Tab A: The Drought of 1988

The prolonged drought and the resultant low water of 1988 affected river stages in the Mississippi River Valley. The following areas will be examined herein:

- The lower open section, unpooled, of the Ohio River from Mound City, IL (L&D 53) to the confluence of the Mississippi River at Cairo, IL.
- The Lower Mississippi River from Cairo, IL to Natchez, MS.
- The Middle Mississippi River from Cairo, IL to St. Louis, MO.

The drought and subsequent disruption to navigation in the UMR, MMR and MOR systems lasted long after navigation was re-established on the LMR and OHIO RIVER. The effect on the inland towing industry had a prolonged national impact.

The Lower Ohio River Drought Response at Mound City L&D 53 to Cairo

In May 1988, the lower open section of the Ohio River was the first location to experience navigational disruption due to the drought. The abnormally low flow in the MMR caused the Ohio River to bottom out. The 18-mile open river between L&D 53 and the confluence of the LMR began to shoal in late May and 26 groundings occurred in the area by early June. The COTP Paducah, in coordination with the Louisville ACOE, established a safety zone, imposing tow size and horsepower limitations and restricting traffic to one way passage to prevent future groundings.

The COTP Paducah initiated a consultation process with the marine industry through the Ohio River Ice Committee. Vessel groundings, and subsequent recovery efforts during early June caused the channel to silt in, resulting in an uneven channel bottom. By 14 June, conditions worsened and the river was closed to all navigation while awaiting the arrival of a dredge to re-establish the channel. After a limited period of emergency dredging, a pilot channel was established. Traffic resumed on 18 June with restrictions on tow size and horsepower, with passage through the work site coordinated by the Dredge Master. Dredging operations took most of the summer and traffic control was used effectively to permit around the clock dredging.

The COTP Paducah, in concert with the Ohio River Ice Committee, established a traffic management scheme to allow for the passage of traffic during the dredging operations. The river was open to limited one way traffic under restrictions on tow size and minimum horsepower requirements. Within days, tows began to collect upstream and downstream of the safety zone causing congestion in Cairo harbor and at the lower approaches of L&D 53. On 21 June a mobile TCC was established at Mound City, IL. This TCC was staffed around

the clock by USCG watchstanders and augmented with ACOE and industry representatives during periods of peak activity. This center managed the queues of vessels in Cairo and at the lower approaches of L&D 53.

The controlling factors were the LMR stages at the Cairo, IL gage. When the Cairo gage fell and flow from the mainstream of the Ohio Valley was insufficient to maintain a passable channel, traffic halted indefinitely. The gage at Cairo was at 7.1 feet on 21 June and fell to 5.3 feet on 7 July. The stage hovered between 5.0 and 6.0 feet until 20 July. On 23 July, the gage reached 13.5 feet after rain fell in the UMR Valley. On 31 July, the gage again stabilized between 5.0 and 6.0 feet. These transient gage events complicated traffic management activities, but did not hamper dredging operations.

The TCC actively controlled traffic through the "choke points" and remained in place until 21 August, when dredging activities were completed. The river was opened to traffic with limited restrictions on tow size and horsepower on 22 August, with all restrictions removed shortly thereafter. This eight week emergency operation was a success due to the early integration of USCG, ACOE and marine industry stakeholders. Throughout the "Drought of 1988", most of the publics' attention was focused on the problems in the LMR Valley, while the crisis at the mouth of the Ohio River Valley went virtually unnoticed, even though it had the potential for causing significant economic loss to the region.

The Drought on the Lower Mississippi River (506.0 LMR to 882.7 LMR)

During the spring of 1988, the LMR experienced abnormally low flows and river stages. Channels and crossings began to narrow and silt in, causing sandbars and sand waves to develop. Record low stages occurred at gage stations between Cairo, IL and Arkansas City, AR. The decline in river stages continued throughout the summer, when the Memphis gage hit a record low of -10.7 feet on 11 July. There were periods during the summer when flow for the mainstream of the river was 20% of the normal seasonal flow. Drought conditions gripped the MMR Valley for more than a year and a half and subjected the area to periods of navigational disruptions requiring restrictions on tow sizes and drafts, and minimum horsepower requirements.

On 1 June 1988, the Memphis gage read 0.0 feet, with forecasts for a continued steady decline. The COTP Memphis initiated contact with the ACOE and the marine industry representatives concerning river conditions. At this time, there was no unified marine industry user group established in the LMR Valley to represent marine interests or assist the USCG and the ACOE in coordinating industry response to navigation problems.

Various areas of shoaling were beginning to develop throughout the LMR Valley. Channel surveys indicated that 22 crossings in the area registered less than 11.0

feet in depth. On 15 June, the river at Greenville, MS became impassable with no identifiable channel available. A safety zone was established at Greenville and the river was closed to navigation with 71 tows awaiting passage. The Greenville Reach was reopened to vessel traffic on 18 June after four days of emergency dredging operations.

On 20 June 1988, the Memphis gage had fallen to -8.7 feet and the channel upstream from Memphis at mile 743 LMR became impassable. The COTP Memphis contacted marine industry representatives and scheduled a planning meeting to discuss the need for tow size and draft restrictions. A safety zone was established and the river was closed for emergency dredging. On 21 June, the marine industry formed and chartered an advisory group to assist in the response to the navigation problems in the LMR. The group was called The Lower Mississippi River Committee (LOMRC). This committee's membership consisted of representatives from major towing companies and the ACOE.

A USCG Command Center was established in Memphis to coordinate traffic management activities. The command center maintained an around the clock watch to monitor river conditions and disseminate information to interested parties. USCG, ACOE and marine industry personnel staffed the center. The entire LMR was designated a safety zone and drafts of barges operating in the zone were restricted to 8.5 feet. The safety zone contained a "grandfather clause" to accommodate barges trapped in the affected area by the emergency restrictions.

On 24 June 1988, the Memphis gage was at -8.8 feet. The emergency dredging operations at mile 743 LMR were completed and the river was re-opened to vessel traffic. Seventy-three tows were delayed for 5 days during the closure and after re-establishment of navigation, groundings continued to occur unabated. By 27 June, 11 dredges were operating on the LMR and approximately 110 tows were delayed at various dredge sites.

The marine industry grew concerned as barges with drafts over 8.5 feet queued above Cairo and below Greenville due to the restrictions of the Memphis safety zone. In response to the traffic back-up, the COTP Memphis and LOMRC representatives designed a convoy protocol to allow tows with drafts of 8.5 feet or greater to navigate through the Memphis safety zone. The convoy concept was designed to allow deep draft tows to navigate as a group using the lead tow to reconnoiter the passage. When groundings occurred, the accompanying vessels assisted in the refloating efforts. The goals were to prevent repeated groundings and to preserve the channels during refloating activities. Fifty-seven tows, with over 600 barges, used the convoy protocol to transit the safety zone between 4 and 24 July.

On 3 July, the Memphis gage was at -10.0 feet and the river at Greenville was again severely shoaled and impassable. A safety zone was established and the

river was closed to navigation to allow emergency dredging. The closure lasted 5 days and delayed 101 tows. On 6 July, the American Waterways Operators (AWO) hosted a meeting in St. Louis for the senior management of the major barge lines. The purpose of the meeting was to discuss the crisis on the LMR. The industry felt the government could have responded more effectively if it had the assistance of a senior level industry group during the planning of waterway management activities. As a result, the group chartered the River Industry Executive Task Force (RIETF). RIETF's membership included senior representatives from the major barge lines, senior ACOE personnel and the Commander, Second Coast Guard District. RIETF immediately became involved in the waterway management activities on the Mississippi River.

On 11 July, the Memphis gage registered -10.7 feet and traffic continued to move under safety zone restrictions. The river began a slow rise as a result of upstream rain. By 14 July, the Memphis gage registered -9.3 feet, the grounding rate was reduced to one fifth of that experienced in the previous week and channel conditions stabilized. On 1 September, the COTP Memphis rescinded the safety zone. Navigation continued under an advisory that recommended tows have a maximum draft of 8.5 feet and a maximum tow size of 20 barges northbound, with no more than 12 loads in the tow, and a maximum of 20 barges southbound. This advisory remained in effect until river stages increased later in the year.

In reviewing the chronology of events and the data available at the time preceding the institution of the safety zone and navigation restrictions, it is apparent that the USCG, ACOE and the marine industry were caught off guard by the severity of the drought. Some felt that the COTP in Memphis did the very best that he could, given the lack of an organized industry group that represented the LMR. Others felt COTP Memphis' initial actions were too little, too late. Regardless of how one views the response to the "Drought of 1988", it is clear that once industry formed the RIETF, waterways management and communication among all parties improved.

The operation was a success despite the problems that arose during the early stages of the crisis. Dredging activities, continuous remarking and surveying of channels, the convoy program and industry compliance with navigation restrictions greatly improved the navigability of the LMR. Operators quickly adjusted to the challenges of low water navigation and groundings and channel blockages became less frequent. One of the greatest benefits resulting from this event was the establishment of the LOMRC and RIETF organizations. These organizations were extremely helpful during the "Drought of 1988" and have since been an invaluable resource in managing transportation emergencies.

Drought Impact in St. Louis Harbor and on the Middle Mississippi River

The water that flows past St. Louis harbor is the sum of the inflows of the MOR, ILWW and the UMR systems. The MOR system contributes an average of 45% of the normal flow, while the UMR and ILWW systems contribute the remaining 55% of the flow. When meteorological events or conservation interventions occur that cause significant variations of inflow, the navigation conditions in St. Louis harbor and the MMR change.

While the LMR Valley and the Lower Ohio River were suffering the severe impact of the drought during the summer of 1988, the MMR was experiencing both reduced flows and depressed river stages. Channels narrowed and shoaling was present, but conditions on the MMR were not severe enough to require a safety zone or operating restrictions.

The St. Louis Gage has historically been relied upon to serve as an indicator of navigability for St. Louis harbor and the MMR South to Cape Girardeau. The Cape Girardeau gage is the indicator of navigability for the river downstream to Cairo Harbor. The St. Louis gage hovered at 0.0 feet with slight variations until the end of September 1988. From September to December, the river continued to fluctuate. It then fell to a record low of -3.2 feet in early December. This depressed stage condition persisted through calendar year 1989.

Due to the reduced inflows from the MOR and UMR systems, there was not sufficient water to maintain channel depths in the vicinity of Grand Tower, IL (mile 78.8 to mile 79.5), and several other locations between Grays Point and Commerce, MO (mile 46.0 to mile 38.4). Rock formations in these channels reduced the depth to well below the 9.0 foot required depth. The ACOE recommended that an extensive emergency rock removal program be initiated to accommodate traffic during the extreme low stages that were predicted for the coming winter months. Work was scheduled to start on 2 November with all dredging completed at Grand Tower, IL by mid November.

COTP St. Louis, in coordination with the ACOE, RIAC, and the dredging contractor, designed a plan to establish a safety zone and tow restrictions to permit passage of traffic during the rock removal. The plan called for a USCG command post to be established at Grand Tower to monitor and direct traffic through the work site. The plan identified target stages, based on the gage at St. Louis, at which restrictions for the safety zone would change. This approach provided the opportunity to advise the marine industry well in advance of the requirements and allowed them to prepare for this critical period of navigation. As the St. Louis gage fell, additional restrictions were imposed.

While dredging operations continued at Grand Tower, the St. Louis Gage started to fall and reached a record low of -3.2 feet. Three areas of channel blockage developed between mile 125 and mile 182, causing a traffic jam in St. Louis

Harbor. This complex traffic problem complicated the difficult transit through the MMR. A total of 56 tows and 1049 barges were awaiting passage through the harbor

A safety zone was implemented and 2 TCC's were established to control traffic through the harbor: one at mile 159 and another at mile 171. Emergency dredging operations were conducted at both locations. Coordinating with the lock masters at L&D 26 & 27, southbound traffic was first staged through the harbor and past the dredge sites to clear harbor congestion. Northbound traffic was then moved into the harbor. COTP Paducah used the same approach as COTP St. Louis for the work conducted in the Paducah zone (below mile 55.3). The work continued well into the early summer of 1989.

The "Drought of 1988" is an excellent example of the varied scenarios waterways managers must face. Analysis of the ACOE and the USCG response to this complex series of events demonstrates the importance of timely and proactive planning that involves stake holders in the decision making processes. The luxury of being ahead of the problem can not be over emphasized. Although somewhat caught off guard during the early stages of this crisis, ultimately the USCG, ACOE and the marine industry handled this prolonged, intense period of emergency operations adroitly. Clear and articulate goal setting, coupled with open communications among all stakeholders was critical to the maintenance of safe navigation.

Many factors contributed to the overall success in keeping the river system viable during the drought: the timely implementation of water conservation and flow management programs; the coordinated responsive dredging activities; and the cooperation of the marine industry. All of these actions assisted in resolving the various waterways management issues during the drought. The USCG's ability to use a wide variety of waterways management tools in a way that optimized safety yet ensured continued navigation demonstrated the value of innovative thinking and risk taking to achieve a defined goal. Most importantly, this crisis response would have not succeeded without the involvement and contributions of RIAC, LOMRC, RIETF and the ACOE.

Appendix V - Tab B: The Great Flood of 1993

The "Great Flood of 1993" occurred on the UMR and its major tributaries from mid Spring to early Fall. It was one of the most disastrous natural events to affect the Midwest in history, leaving more then fifty dead and causing damage to homes, farmlands and crops that totaled approximately $14 billion. Preliminary estimates put marine industry losses in excess of $200 million.

The "Great Flood of 1993" began as a spring high water period that was wetter and longer than normal, causing the UMR and its tributaries to remain at elevated stages through the month of April. This prolonged period of high water caused inordinate stress on the levee systems in the region. Levees designed for exposure to high water for weeks at a time were submerged for months and the face vegetation, the natural protective armor of earthen levees, was destroyed by the prolonged exposure to water. The extended spring high water period set the stage for the coming crisis.

Just as the spring high water started to recede, a weather pattern settled over the Midwest that was dubbed by the media as the "Rain Machine". This highly unusual weather pattern remained stationary over the Midwest, dropping 36 inches of rain on many parts of the UMR Basin between April and August. The abnormally high soil moisture conditions from the wet spring did little to reduce or slow the rain run off, and rivers quickly swelled causing levee failures, massive widespread regional flooding and interruptions of river, road and rail transportation.

On 1 August, the UMR crested in St. Louis at 49.6 feet, 19.6 feet above flood stage and a scant five inches below the elevation of the main floodwall that protects the city. The flood crest continued south and on 7 August crested in Cairo, IL, at 45.8 feet, 5.8 feet above flood stage. As the flood crest continued southward and combined with the flow of the OHR, the LMR rose dramatically but remained within its banks. The UMR crested in New Madrid, MO, at 34.6 feet on 8 August, only 6 feet over flood stage. The extraordinary flows experienced in the UMR Basin did not cause massive flooding in the LMR Valley because the channels are wider and deeper than those of the UMR.

The crests during the "Flood of 1993" would have been significantly higher if the upstream MOR and UMR reservoirs had not captured and controlled much of the continuing run-off. Additionally, upstream levee failures and flooding diverted and held significant flow from entering the main stem of the UMR. These levee failures acted as safety valves by lessening the height of the developing flood crest. However, the failed levees also protracted the eventual recession of floodwaters.

Throughout the Flood of 1993, there was public and political concern that once vessel traffic began to move on the Mississippi River and its tributaries, already

weakened levees would fail from the stress caused by vessel wakes, causing additional flooding. To address these concerns an "outreach program" was developed by the marine industry and federal government so that both the public and local political sectors were involved in the processes of restarting marine traffic.

Beginning in May, senior managers of the USCG, ACOE and the RIETF were in communication concerning the navigation conditions in the UMR Basin. It was agreed that a coordinated industry and government effort for the eventual resumption of vessel traffic was necessary. In early July, RIETF, USCG and ACOE met to discuss the river conditions needed before commercial vessel traffic could begin. The group's position was that the resumption of traffic would only be attempted when conditions were such that it would not threaten the stressed levee systems. The group also concurred that the public and local political groups needed to be involved in the decision making process.

The waterways management activities undertaken in the aftermath of the "Great Flood of 1993" were an unparalleled success. It is an outstanding example of the beneficial value a dynamic government and industry partnership provides during a regional transportation emergency. The close cooperation, the candid and open communication and the high degree of customer involvement throughout the "Flood of 1993" produced a synergy seldom experienced.

This prolonged response activity required the full spectrum of waterway management techniques and tools available to resolve the complex issues involved. The team used both active and passive vessel control systems coupled with a unique mix of well-defined and articulated temporary operating restrictions to test the waterway and restart traffic. The flexible management approach and the ability to rapidly adjust to the changing flood scenario contributed greatly to keeping marine commerce moving during this extraordinary event.

Appendix V - Tab C: The Flood of 1995

The Flood of 1995 occurred on the UMR, LMR, Lower OHR and the ILWW from mid-May to late June 1995. On the UMR, St. Louis recorded its third highest stage, while Cape Girardeau, MO hit its second highest level. The ILWW at Meredosia, IL, reached the second highest level on record matching the mark set in 1993. At the height of the flooding, all commercial and recreational traffic was stopped on the MOR and large sections of the Mississippi, Illinois, Ohio, Kaskaskia and Arkansas waterways.

During April through early June 1995, many areas of the central United States received more than twice their normal precipitation. May 1995 was the wettest May on record at Kansas City, MO and at St. Louis, MO. Abnormally wet soil conditions across the Midwest greatly diminished the water holding capacity of soils in the affected areas. Unusually strong and persistent southwesterly flow of air at the jet stream level over the central U.S. pushed a series of major storm systems across the country, resulting in repeated episodes of heavy rain. This weather pattern was centered farther southward and eastward than in 1993 when similar storm systems formed from Iowa northward. Another factor that made 1995 different from 1993 was the substantial flooding along the lower section of the OHR, creating a "plugged drain" effect on the Mississippi River. The UMR rose above flood stage at Hannibal, MO in early-May and crested in St. Louis on May 22 at 41.8 feet, 11.8 feet above flood stage. The flood crest continued southward and crested in Cape Girardeau, MO on May 24 at 46.7 feet, 14.7 feet above flood stage. The OHR crested at Cairo, IL on 28 May at 55.7 feet, 15.7 feet above flood stage and 10 feet higher than during the 1993 flood. This high water on the OHR significantly increased its flow into the Mississippi River, backing up the water on the UMR from Cairo northward to Cape Girardeau, slowing the rate of fall on the UMR. This phenomenon lengthened the duration of flooding for communities between Cairo and Cape Girardeau and increased the threat of levee breaches due to saturation.

The ILWW was at all time high levels in late May due to abnormally high rainfall and the high UMR levels that created a plugging effect on the ILWW similar to the one farther south. The ILWW at Beardstown, IL crested at 29.3 feet on June 1, 15.3 feet above flood stage, tying an all time record.

Capitalizing on lessons learned in 1993, senior managers of the USCG, ACOE and RIETF conducted conference calls to map out plans for the orderly resumption of vessel traffic. Concern for public safety required that traffic not be restarted if weakened levee systems were threatened. A TIC was established to collect data on tow and barge locations, river and levee conditions and weather forecasts. This TIC transitioned into a TCC to restart vessel traffic on closed sections of the MMR and ILWW as waters receded.

The TCC coordinated inputs from various interests concerning vessel movements, kept the marine industry and boating public informed of river conditions and established protocols to ensure the safe movement of traffic into and out of the MMR region. More tows and barges were moved at higher flood stages during the 1995 restart of traffic
than were moved following the 1993 flood. Restarting river traffic in 1995 was very different from 1993. Three major rivers (the UMR, the Lower OHR, and the ILWW) approached crest at generally the same time. Additionally, St. Louis fleets were filled to capacity, in some cases over capacity, when traffic was halted due to high water. As floodwaters began receding, the first task faced by the TCC was to thin out fleets in St. Louis Harbor. Soft levees south of St. Louis and on the ILWW prevented movement on these sections of river. The UMR north of St. Louis was left as the relief valve.

The TCC prepared queue lists for those vessels approved to lock through L/D 26 and 27. The TCC designated test tows were dispatched northward on June 5 with horsepower and barge configuration restrictions. Light boats from the north were allowed into the harbor to pick up northbound barges. As St. Louis fleets thinned out, preparations were made to commence southbound tows. Mutually agreed upon river target stages were selected as "trigger points" at which time test tows would commence.

On 9 June, test tows were released northbound and southbound on the ILWW. The following day, southbound test tows were allowed to depart from St. Louis at no wake speeds. By 12 June, northbound and southbound tows were allowed to transit the UMR and ILWW with horsepower and tow size restrictions. Each tow was assigned a queue number and departure time by the TCC's to control the number and spacing of tows on the rivers. Vessel reporting checkpoints were established to monitor the progress and spacing of traffic. Departure times for southbound traffic were calculated to allow daylight transit of the Thebes Bridge (UMR, Mile 45). No passing zones were established at Commerce, MO, the Thebes Bridge and between UMR miles 35-39.

A backup of northbound traffic developed at Thebes Bridge due to vessels not having sufficient time to clear the area without meeting a southbound vessel. To correct this problem, southbound tows were released at 2-hour intervals from St. Louis instead of 1-hour intervals. On 14 June, the TCC began releasing vessels southbound from St. Louis around the clock to clear the vessels in the queue at a faster rate. Horsepower, speed and tow size restrictions were still in effect. By 17 June, traffic was proceeding in an orderly fashion on all rivers, the queue list was disestablished and the TCC stood down.

The efforts during the 1995 flood once again proved the value of government and industry cooperation. As a result of these efforts, rivers were allowed to close later and open sooner than under similar conditions in the 1993 flood, while maintaining an equivalent level of safety. The concept of using a TIC/TCC

to ensure the safe movement of traffic once again proved its effectiveness, and public affairs and information collection efforts were vastly improved over those in 1993. The waterway management efforts during the 1995 flood solidified the working relationship between the government and the river users, and set the stage for success during future events.

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Appendix V: Tab D: The Baton Rouge Extreme High Water of 1997

Wide spread flooding of the Ohio Valley occurred during the month of March of 1997 as18 inches of rain fell over the area in a period of 15 days. Floodwaters impacted four states including portions of 132 counties. As these flood waters receded and moved into the lower Mississippi River, a period of extreme high water and high river currents resulted. This high water episode severely impacted waterborne river traffic on the Lower Mississippi river; resulting in a high number of vessel casualties and a deleterious impact on commerce and the public at large. Vessel casualties occurred throughout the lower Mississippi River system, but the area between Baton Rouge and New Orleans, Mile 235 to mile 80, was especially adversely impacted.

1997 started as a routine high water season in the Baton Rouge area as river levels hovered between 20 to 31 feet on the Baton Rouge gage. This trend lasted throughout the months of January and February. By March 1, the bulk of the upriver floodwaters reached the Lower Mississippi River and caused a rapid rise in river levels. From March 1 through March 5, the river rose over 2 feet, to 31.64 feet. From March 5 through March 10 the river rose another 4 feet to 35.55 feet, exceeding the 35-foot flood stage. The river was now rising on a pace that would see an average of 6 inches of rise per day for the next 16 days. The peak was reached on March 26, 1997 at 43.64 feet. After the crest, the river stayed above flood stage in Baton Rouge until April 23, completing a 45-day period above flood stage.

As river levels increased, the COTP New Orleans initiated the standard responses to high water on the Lower Mississippi River. These included the following actions:

- Establishment of a Safety Zone at the Bonnet Carre Spillway
- Mandatory control of vessels at Algiers Point
- Additional requirements at barge fleet areas
- Downstream towing restrictions in the Port of New Orleans
- Requirements for ocean going ships to maintain emergency anchoring capability
- Requirements for passenger vessels to maintain a manned bridge watch

These restrictions proved to be an adequate first step for normal high water levels. However, the river quickly exceeded flood stage and it was apparent that

additional safety measures were needed. On March 15, the first extra notice to mariners was broadcast urging mariners to take extra precautions in response to the unusual high currents. Mariners were advised to ensure towing vessels had adequate horsepower for the anticipated current and that downbound tugs consider using a Traffic Assist Vessel (TAV) or small towing configurations prior to navigating river mile 234 and under the Highway 190 bridge. These additional precautions proved to be inadequate.

The river's rapid rise and resulting high currents still caught much of the inland marine industry unprepared. Many inland-towing vessels had begun both northbound and southbound voyages anticipating lower river levels and current conditions. For the next 30 days, a succession of vessel and facility casualties occurred on the Lower Mississippi River. Casualties included:

- 475 breakaway barges from fleeting areas on 31 different occasions
- 5 vessels sunk
- 16 vessels grounded
- 21 allisions and 11 collisions
- 23 vessel anchoring problems
- 1 vessel fire
- 135 pollution incidents
- 2 major hazardous materials incidents
- 2 underwater pipeline ruptures

An evaluation of these incidents by industry and government representatives served as the basis for the plans set forth in this document. Therefore, discussion of these incidents is warranted, particularly a review of the IB-960, M/V DANNI SUE and the CGB Barge Fleet Breakaway.

IB-960: On March 17, 1997 the 7200-bhp tow M/V F. R. BIGELOW hit the LA 190 highway bridge (LMR mile 233) while flanking Wilkinson Point heading down river, breaking up the tow of 25 barges. Three open hopper barges carrying stone sank and the tank barge IB-960 overturned. The IB-960 was loaded with 9528 bbls of pyrolysis gasoline; a cargo containing approximately 41% benzene. The response to this incident lasted 11 days. For the first two days, the Mississippi River was closed. During the remaining 9 days of lightering and salvage operations, a series of operational restrictions were placed on all vessels transiting the Port of Baton Rouge. Vessel traffic was restricted to one way only from above Wilkinson Point to below the Highway 190 bridge (mile 233 to 236). Towing vessels were limited to a maximum number of barges based on the actual horsepower of that vessel. A significant action was the placing of a Traffic Assist Vessel (TAV) at the Wilkinson Point area. The TAV acted as an onscene Traffic Control Center (TCC) and also physically assisted many towing vessels that had trouble flanking the point and transiting under the Highway 190 bridge.

M/V DANNI SUE: Another incident occurring within the Port of Baton Rouge was the allision of the M/V DANNI SUE with a tier of fleeted barges at LMR mile 228. On April 3, the M/V DANNI SUE and her tow of five barges exited the Port Allen Lock forebay and proceeded into the Mississippi River. The DANNI SUE encountered vessel traffic mid-river as she was still maneuvering to head down river. She chose to push her tow into a barge fleeting area on the east bank of the river to avoid a possible collision with another vessel. The resulting barge fleet allision severely damaged two of the fleeted hopper barges and punctured one of the DANNI SUE's tank barges, the DC-346. The DC-346 subsequently spilled an estimated 5040 gallons of styrene. The tank barge DXE 2804 carrying over 900,000 gallons of pyrolysis gasoline was also slightly damaged. Response to the incident lasted only two days, but the potential for another large incident was clearly evident. Operational controls on vessels entering and exiting the lock forebays were developed through Coast Guard & industry discussions, including stationing a second TAV at the Port Allen Lock (LMR mile 228.5). With the addition of a second set of operational controls within the Port of Baton Rouge, and two mandatory TAV's operating in the port, Traffic Control Center (TCC) Baton Rouge was established and vessels from mile 223 to 242 were under mandatory control. Both industry and Coast Guard personnel staffed TCC Baton Rouge. TCC Baton Rouge assisted 1680 vessels and 10,749 barges that transited within its 18 days of operation. TCC Baton Rouge was disestablished on April 24, the day the river went below its 35-ft flood stage. In-depth discussion of TCC Baton Rouge is included in **Annex 4.**

CGB Barge Fleet: On the night of March 19, a 42 barge breakaway from the CGB Barge Fleet at mile 132 started a chain reaction breakaway involving a total of 132 barges from other down river fleets. These barges allided with the water intakes at the Waterford Nuclear power plant and caused major damage to the Oxychem, Koch Nitrogen, and Union Carbide facilities. An ammonia line was severed at Oxychem causing an ammonia release, necessitating an evacuation of local residents. Before the barges were brought under control, 14 miles of river had been impacted including the closure of the Hale Boggs Bridge at mile 121. Subsequent inspection of the CGB Facility found that the barge fleet was not being maintained with the high water requirements specified in the regulations. A COTP Order was issued to attain compliance with the regulations or face a 50% reduction in fleet carrying capacity. The Coast Guard's inspection the following day showed the fleet to be substantially out of compliance and the fleet was ordered to reduce the number of barges moored by 50%.

While no extraordinary casualty involving an ocean going vessel occurred during the period, the COTP was keenly aware of the potential for catastrophic results from such a casualty. The lessons learned from the M/V BRIGHTFIELD allision in downtown New Orleans were in the final implementation stages. These lessons learned, combined with reasonable precautions that should be taken in the high current of the period, were the foundation on which to build proactive measures to lessen the possibility of an oceangoing vessel casualty. Therefore,

COTP New Orleans and the Commander, Eighth Coast Guard District established operational and management controls for vessels 1600 G.T. and over. These restrictions included:

- Requirements for the vessel's propulsion and steering systems to be operated in a manual mode
- Certification of operational tests to be passed from the ship's master to the ship's agent
- Manning of the engine room
- Limitation on the movement of chemical laden ships to daylight transit only

As the total number and variety of incidents indicate, this was an extraordinary period of activity on the Lower Mississippi River. The COTP and District Commander implemented unique precautionary actions in order to prevent additional casualties. Although the incidents listed occurred, it is easily postulated that without the safety controls placed on vessels and facilities, more and greater problems would have occurred. In all, a total of 25 different controls were put in place. Copies of each Regulated Navigation Area, Captain of the Port Safety Zone, or Broadcast Notice to Mariners are available at MSO New Orleans. A synopsis of the RNA's, COTP Orders and COTP Bulletins/Notice to Mariners are included in **Annex's 1–3.**

Appendix V – Tab D – Annex 1: Regulated Navigation Areas

RNA
CCGD08-97-001
RIN 2115-AE-84
Signed: CAPT Prokop, March 18, 1997
Effective 8:30 PM, March 18, 1997 terminates 12 PM, April 5, 1997.

From I-20 Bridge at Vicksburg MS, to Algiers Cutoff canal, Lower Mississippi River miles 437 to 88:

- Downbound tows on the Lower Mississippi River are restricted:
- Tows with 7400 bhp and above are limited to 25 barge tows.
- Tows with 6000 bhp to less than 7400 bhp are limited to 20 barge tows.

For all other towing vessels:

- Loaded std dry cargo tows must have 300 bhp per barge.
- Other loaded dry and all liquid tows must have 1 bhp per 5 deadweight tons of cargo.
- Empty dry cargo barges transiting around Algiers Pt. must have 200 bhp per barge.
- Mixed empty and loads tows must have 300 bhp per barge.
- 20 barge tows or larger transiting under the Hwy 190 bridge are restricted to daylight only.

RNA
CCGD08-97-008
RIN 2115-AE-84
Signed: RADM Josiah, March 21, 1997
Effective 10 AM, March 21, 1997 terminates 12 PM, April 5, 1997.

Downbound tows on the Lower Mississippi River are restricted (extended RNA to AHOP, otherwise unchanged)

New Requirements for self-propelled vessels to which 33 CFR 164 applies. For Ships 1600 GT and greater:

- Masters shall review 33 CFR 164.25- Tests required before getting U/WA.
- Engine Room shall be manned at all times while U/W.
- Prior to getting U/W in RNA, master shall report to agent that 164.25 has been reviewed, understood, and vessel is in compliance.

Chief Engineer shall certify in master's report:

- Ship, if automated, is operating in manual mode and prepared to answer maneuvering commands immediately.
- Vessel shall immediately provide maximum ahead or astern power when so ordered by the bridge.
- Main propulsion, air start, fuel system, lube oil system, cooling systems, and automation systems shall be ready for operations while in RNA.
- Master shall certify that gyro compass is properly operating and calibrated.

RNA
CCGD08-97-008
RIN 2115-AE-84
Signed: RADM Josiah, March 28, 1997
Effective 12 AM, March 29, 1997 terminates 12 PM, April 10, 1997.

Downbound tows on the Lower Mississippi River are restricted.
(unchanged)

For Ships 1600 GT and greater.
(unchanged)

For chemical barges, chemical ships, and gas ships:

- Chemical barges maintained in a fleeting area shall be placed in a protected position within the fleet.
- Whenever, possible, shifting of chemical barges within a fleeting area shall be limited to daylight hours.
- Upbound and downbound tows containing chemical barges shall be placed in the most protected position within the tow configuration.
- Downbound chemical or gas ships operating on the LMR from mile 437 at Vicksburg, MS to mile 78 AHOP shall only transit during daylight hours.
- The COTP will notify the public of changes in the status of this zone by Marine Safety Radio Broadcast on VHF Marine Band Radio, Channel 22 (157.1 MHz).

RNA
CCGD08-97-008
RIN 2115-AE-84
Signed: RADM Josiah, April 4, 1997
Effective 11 AM, April 4, 1997 terminates 12 PM, April 20, 1997.

Downbound tows on the Lower Mississippi River are restricted.
(unchanged)

Ships 1600 GT and greater.
(unchanged)

Chemical barges, chemical ships, and gas ships.
(unchanged)

BHP per towboat not with assist tow and locks into the LMR:

- When calculating BHP requirements within the RNA, assist tug BHP shall not be included to meet the minimum requirements.
- The length of tows entering or exiting lock forebays shall not exceed 600 ft excluding the towboat.

RNA
CCGD08-97-008
RIN 2115-AE-84
Signed: RADM Josiah, April 15, 1997
Effective 11 AM, April 15, 1997 terminates 12 PM, April 20, 1997.

Ships 1600 GT and greater.
(unchanged)

Chemical barges, chemical ships, and gas ships.
(unchanged)

BHP per towboat not with TAV and locks into the LMR.
(unchanged)

Downbound tows on the Lower Mississippi River are restricted:

- Tows with 9000 bhp and above are limited to 30 barge tows.
- Tows with 7400 bhp to less than 9000 bhp are limited to 25 barge tows.

RNA
CCGD08-97-008
RIN 2115-AE-84
Signed: RADM Josiah, April 19, 1997
Effective 12 PM April 20, 1997 terminates 12 PM July 1, 1997.

Downbound tows on the Lower Mississippi River are restricted.
(unchanged, - will expire on April 20, 1997)

Ships 1600 GT and greater.
(unchanged - stays effective until July 1, 1997)

Chemical barges, chemical ships, and gas ships.
(unchanged, will expire on April 20, 1997)

BHP per towboat not with TAV and locks into the LMR.
(unchanged - will expire on April 20, 1997)

COTP NOLA Safety Zone for LMR mile 225 - 238 remains unchanged.

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Appendix V – Tab D – Annex 2: Captain of the Port Orders

March 14, 1997

1. BONNET CARRE SPILLWAY

   - A Safety Zone requiring vessels to remain along the right descending bank (west bank side) of the Mississippi River between River Miles 127 to 129. This is to avoid the high currents expected near the open Bonnet Carre Spillway.

2. MANDATORY ALGEIRS POINT VESSEL TRAFFIC LIGHT CONTROL.

   - All vessels must check in and receive clearance .
   - Underpowered or poor handling shall not navigate around Algiers Point .810(c)(6)

3. TOWING VESSEL RESTRICTIONS

   - No downstream towing between Julia & Desire St. 810 (c)(5)
   - Towing with insufficient power is prohibited .810(b)(3)

4. VESSEL ANCHORING 33 CFR 164.11(o)

   - Ensure anchors are ready to let go.
   - Man foredeck.
   - Maintain communications between foredeck & bridge.
   - Maintain anchors, tackle, gear, and capstain.
   - Walk out anchor, if necessary, to let go.

5. PASSENGER VESSEL MANNED BRIDGE

   - Maintain a continuously manned bridge.
   - Bridge shall monitor radio & be alert to conditions.
   - Bridge watch capable of initiating emergency procedures.

March 18, 1997
COTP Safety Zone

- Negotiated telephonically between MSO NOLA, MSD BR, LOMARC Reps.
- Written Evidence in the form of ITCS Memo #905 from Larry Strain to LOMARC members.

- "Due to the high level of water on the Lower Mississippi River, the Captain of the Port New Orleans has initiated the following southbound restrictions from Upper Baton Rouge Bridge or mile 236 down:
- Daylight transit only.
- Vessels under 6000 horse power are limited to 15-barge tow.
- 6,000 to 7,400 horse power boats should have no more than twenty (20) barges. (5 long x 4 wide)
- 7,400 and up horse power boats should have no more than twenty-five (25) barges. (5 long x 5 wide)
- Mariners are to be advised that there is a strong outdraft at the Bonnet Carre spillway. Mariners are advised to transit area with extreme caution."
- 180020Z MAR 97- Safety Zone closed LMR between mile 231 & 235.
- 180705Z MAR 97- Safety Zone closed LMR between mile 233 & 235.5.

April 7, 1997

COTP New Orleans Regulation 97-008
RIN 2115-AA97
Signed: CAPT Marsh, April 7, 1997
Effective 11:30 PM April 20, 1997 terminates 11 AM April 30, 1997

- Amended the Safety Zone from mile 225 to 238 LMR, Red eye crossing to above Wilkinson Pt. to extend the.termination date.

April 7, 1997

COTP New Orleans Regulation 97-008
RIN 2115-AA97
Signed: CAPT Marsh, April 7, 1997
Effective 11 am April 7, 1997 terminates April 14, 1997

Amended the Safety Zone from mile 225 to 238 LMR, Red Eye crossing to above Wilkinson Pt:

- Entry into the safety zone is prohibited unless vessels meet the requirements.
- Mariners must contact the COTP representative onboard assist tugs at both ends of the safety zone, or in a command post. Vessels must specify horsepower-to-tow size, tow length, and configuration requirements.
- COTP rep will allow only one-way traffic.
- Mariners must maintain 2,000 feet from other traffic.

- Mariners shall not meet pass or overtake other vessels.
- Southbound traffic is restricted to daylight-only transits and required to both meet the requirements and use an assist tug when flanking around Wilkinson pt.
- Mariners are reminded of the requirements of the RNA.

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Appendix V – Tab D – Annex 3: COTP Bulletins/Notice to Mariners

MSO NOLA request for BNTM
162000Z MAR 97

"The river currents on the Lower Mississippi River are approaching an all time high. Mariners are advised to ensure tows transiting the lower Mississippi River have adequate horsepower for anticipated current. Facilities and wharves with vessels alongside must be given wide berth. Downbound vessels should consider Traffic Assist Vessels or reducing the size of tows at mile 234 prior to navigating through the highway 190 bridge, Lower Mississippi River, above head of passes. Signed U.S. Coast Guard COTP NOLA."

COTP NOLA Bulletin
March 16, 1997

High water conditions and near record currents call for extra diligence when transferring cargo. Facility operators and fleet managers are reminded that 33 CFR 162.80(b) requires that vessels' moorings are to be adequate for all anticipated water conditions. Transfer of liquid cargo to or from a vessel without adequate moorings must not be done. Facility operators and fleet managers are encouraged to make extra rounds to ensure all vessel lashings are secure.

COTP NOLA BMTM
March 16, 1997

The Carrolton Gauge indicates a river stage of 15 feet on the rise. The following regulations are effective:

- Cancel 041830Z MAR 97.
- 33CFR165.810 (D) No vessel shall enter South Pass from the Gulf if it has a speed of less than 10 MPH.
- 33CFR165.803(M) Requires stricter barge fleeting standards.
- 33CFR165.810(C)(5) Any vessel that is under-powered or handling poorly to navigate around Algiers Point only with tug assistance.
- 33CFR165.810(C)(6) prohibits downstream towing on a hawser between Julian and Desire Streets unless specifically permitted by the COTP.
- Check in with the Algiers Point tower traffic lights and compliance with their instructions is mandatory.

COTP NOLA MIB
March, 20, 1997

COTP New Orleans has established a safety zone from I-10 Bridge to one mile above Wilkinson Point mile 229 to 236.

Northbound tow traffic will be allowed to transit the area provided:

- Contact the F.R. BIGELOW CH-67 for instructions.
- Maintain 2000 ft separation, no passing, meeting, overtaking & proceed at the slowest safe speed.
- Favor the LDB when passing damaged chemical barge, maintain no-wake.
- When southbound traffic allowed, will meet similar requirements and use the industry provided assist tug.

Notes-

- Upbound tows shall have sufficient horsepower to make good a minimum of 3 mph over the ground.
- T/B shall be put in protected interior locations of the tow, if possible.

COTP NOLA MIB
March 22, 1997

Opening of Bonnet Carre Spillway LMR mile 127 to 129,

- Mariners are prohibited from going within 600 ft
- Disestablished low water buoys in vicinity of LMR 234, Wilkinson Pt.

COTP NOLA MIB
March 23, 1997

Modification of Bonnet Carre Spillway:

- Mariners are prohibited from going within 600 ft
- All vessels; particularly heavy loaded tows are directed to navigate sufficiently towards the opposite or RDB to avoid possible crosscurrents.
- Bonnet Carre Anchorage is closed.
- M/V KENT will be stationed north of spillway to monitor traffic on VHF CH 13 & 16.
- Should any incident involving adrift vessels above the spillway occur, notify the M/V KENT.

- Vessels operating in Lake Pontchatrain should lookout for floating logs & give area wide berth.

GP LM BMTN
WESTERN RIVERS BNTM 0172-97 LM
March 24, 1997

COTP NOLA has established a Safety Zone between I-10 and 1 mile north of Wilkinson Pt. 229- 236. Northbound and southbound traffic will be allowed to transit if:

- Contact the CHARLES E. PETERS CH-6 for instructions.
- Maintain 2000 ft separation from other northbound and proceed at slowest safe speed.
- No-wake & slowest safe speed when passing chemical barge.
- When downbound around Wilkinson Pt. 25 barge tows must have 8400 BHP.
- When downbound around Wilkinson Pt. 20 barge tows must have 6500 BHP.
- Downbound tows are restricted to daylight transit
- Downbound tows are required to use an industry provided assist tug when flanking W. PT.

COTP NOLA
Request for MIB
April 4, 1997

COTP NOLA has established safety zones at all lock forebays above head of passes to mile 437 on the LMR: No tow longer than 600 ft shall exit and lock forebay into the Miss River. This restriction includes all barges of any length, configuration or product. The 600 ft maximum length does not include the length of the tow vessel. This restriction shall remain in effect 24 hours a day.

COTP NOLA
Request for MIB
April 4, 1997

COTP NOLA is establishing a safety zone in Baton Rouge from Exxon Baton Rouge to one mile above Wilkinson Point, mile 229 to 236. Northbound and southbound tows will be allowed to transit the zone if:

- Contact the C.E. PETERS on CH-6 for instructions.
- Maintain 200 ft separation, no passing, overtaking, must proceed at the slowest safe speed.

- Downbound Tows with 25 barges must have a brake horsepower of 8000.
- Downbound Tows with 20 barges must have a brake horsepower of 6200.
- Downbound tows around Wilkinson Pt are restricted to daylight only.
- Downbound tows around Wilkinson Pt are required to use an industry provided assist tug when flanking the pt.

COTP NOLA
Request for MIB
051844 Z APR 97

Restated general RNA requirements for LMR mile 437 to the approaches of southwest pass but added a Paragraph 2:

- In determining the maximum number of barges that may be included in the tow, only the horsepower of the tow boats made up to and pushing the tow may be considered. Assist tugs not made up and pushing cannot be considered.

COTP NOLA
Request for MIB
April 5, 1997

The following restrictions have been placed on chemical barges on the lower Mississippi River from mile 437 to the approaches of southwest pass at the territorial sea:

- In fleeting areas, chemical barges shall be placed in a protected area within the fleet.
- Whenever possible, shifting chemical barges within a fleeting area shall be limited to daylight hours.
- Upbound and downbound tows containing chemical barges shall place them in the most protected position within the tow configuration.

COPT NOLA
Request for MIB
April 7, 1997

Cancel 040228Z APR 97

The COTP NOLA has established safety zones at all lock forebays above head of passes to mile 437 on the lower Miss River:

- No tow longer than 600 ft shall exit or enter the Miss River at any lock forebay. This restriction includes all barges of any length, configuration or product. The 600 foot maximum length does not

include the length of the tow vessel. This restriction shall remain in effect 24 hours a day.

COTP NOLA
Request for MIB
April 15, 1997

COTP NOLA is establishing a safety zone from mile 225 to 238 on the LMR. All vessels must contact vessel control Baton Rouge on VHF-FM Channel 11 prior to entering the safety zone. All southbound traffic must make contact prior to mile 242.2, Devils swamp light. All northbound traffic must make contact prior to mile 23, Red Eye crossing. All vessels must meet the following requirements:

- Maintain 200 ft from other vessels and may not overtake, unless authorized by vessel traffic control.
- While transiting downbound around Wilkinson point, tow boats with a brake horsepower of 9,000 and greater shall be limited to a 30 barge tow.
- While transiting downbound around Wilkinson point, tow boats with a brake horsepower of 7,400 and greater shall be limited to a 25 barge tow.
- While transiting downbound around Wilkinson point, tow boats with a brake horsepower of 6,000 and greater shall be limited to a 20 barge tow.
- Downbound tows around Wilkinson Pt are restricted to daylight only.
- Downbound tows around Wilkinson Pt are required to use an industry provided assist tug when flanking the pt.
- Tows entering and exiting the Port Allen lock are limited to a tow length of 600 ft and will be required to use the industry provided assist tug.
- All vessels are navigating on the Miss River are reminded of the RNA between mile 437 and the approaches to the southwest pass.

COTP NOLA
Request for MIB
242200Z APR 97

Vessel Traffic Control Baton Rouge has been suspended and industry provided assist tugs are no longer available at Wilkinson Point and the Port Allen Locks. The following recommendations remain in effect for vessels transiting the Baton Rouge Area:

- Mariners must not pass or meet at Wilkinson Point.
- Tow configuration downbound shall not exceed 35 barges.
- While transiting downbound around Wilkinson point, tow boats with 35 barges must have at least 9,000 brake horsepower.

- While transiting downbound around Wilkinson point, tow boats with 30 barges must have at least 7,200 brake horsepower.
- While transiting downbound around Wilkinson point, tow boats with 25 barges must have at least 5,600 brake horsepower
- Tows entering and departing the Port Allen Locks shall evaluate the need to use an assist vessel.
- Tows entering the Miss River from the Port Allen Lock shall exercise extreme caution and shall complete their maneuver without embarrassing any other vessel.
- Tows are prohibited from waiting for a turn into the Port Allen Lock in the area between the CCI fleet office and the Cargil Grain terminal.
- Northbound tows in excess of 800 ft long or four barges entering the river shall turn south and proceed to a safe location below CCI fleet before rounding up.

Mississippi River: The Commander, Eighth Coast Guard District has established a Regulated Navigation Area (RNA) on the Mississippi River and the Territorial Sea at the approaches to Southwest Pass:

- All self-propelled vessels over 1,600 gross tons must meet the following requirements:
- Masters shall review the requirements of Chapter 33, part 164, subpart 25, pertaining to "tests before entering or getting underway."
- Prior to entering the RNA or getting underway within the RNA, the master of each vessel shall report to the ship's agent that these regulations have been reviewed, are understood and are being followed.
- As part of this report, the master shall certify that the gyrocompass is properly operating and calibrated.
- The engine room shall be manned at all times while the vessel is underway.

As a part of the master's report, the Chief Engineer shall certify that the following operational requirements are satisfied:

- If the vessel has an automated main propulsion plant, it will be operated in the manual mode and will be prepared to answer maneuvering commands immediately.
- The vessel shall immediately provide maximum ahead or astern power when so ordered by the bridge.
- The main propulsion plant shall, in all respects, be ready for operations while in the RNA.

Appendix V – Tab D – Annex 4: Traffic Control Center Baton Rouge

On Friday, April 4, 1997 the decision to open and operate a Traffic Control Center (TCC) for the Port of Baton Rouge was made. Word was passed to MSO New Orleans and MSD Baton Rouge to delineate the geographic boundaries and to develop the operational controls that were to be put in place. MSO New Orleans took the lead on developing the geographical area and MSD Baton Rouge began devising the plan and making the contacts to build and staff a TCC.

MSO New Orleans reviewed the Regulated Navigation Area requirements in place from the District Commander and their own operational controls that had been in effect to lessen the impact of an extended period of high water on the Lower Mississippi River. Within a 5-hour period, a Safety Zone was developed that was among the most rigorous ever put into place by the Coast Guard. Details of the Safety Zone were as follows:

- A vessel control safety zone was established from mile 225 to mile 238 on the Lower Mississippi River. All vessels are required to contact TCC Baton Rouge on VHF-FM channel 11 prior to entering the safety zone. All southbound traffic must make contact prior to mile 242.2, Devils Swamp light. All northbound traffic must make contact prior to mile 223, Red Eye crossing.

- Mariners must maintain 2,000 feet from other vessels and may not overtake other vessels, unless authorized by TCC Baton Rouge.

- Tow configurations downbound shall not exceed 25 barges.

- While transiting downbound around Wilkinson Point, towboats with 25 barges must have at least 8,000 break horsepower.

- While transiting downbound around Wilkinson Point, towboats with 20 barges must have at least 6,200 break horsepower.

- Downbound tows around Wilkinson point will be allowed during daylight only and are required to use an industry provided Traffic Assist Vessel (TAV) when flanking around Wilkinson Point.

- Tows entering and exiting the Port Allen locks are limited to a maximum tow length of 600 feet and are required to use the industry provided TAV.

- All vessels navigating on the Mississippi River are reminded of the regulated navigation area between mile 437 and the approaches to southwest pass.

MSD Baton Rouge began developing plans to deploy a transportable communications trailer owned by the Gulf Strike Team. Two locations to stage the communications trailer were identified in less than two hours. Contacts were made at these locations, at the Port of Greater Baton Rouge property in Port Allen, and the Army Corps of Engineers Port Allen Lock property. Understanding the significance of this communications trailer's deployment, and the positive impact the traffic service would have on vessel safety during the period of high water, permission was easily obtained from each agency.

Simultaneous to identifying and surveying locations to deploy the Gulf Strike Team's communications trailer, an effort was made to identify a more permanent location with communications equipment to set up the TCC. Kirby Corporation, from the inland marine industry, nominated an office location on the Mississippi River in downtown Baton Rouge. One of the Old Man River offices was proposed and visited by MSD Baton Rouge personnel. This office was almost exactly in the center of the area to be controlled, and offered a view of about 1/3 of the area from an outside vantage point. The space was ideal in size and location, but did not have enough VHF-FM communications equipment to operate the TCC. However, representatives were certain that adequate communications equipment could be installed and tested prior to the arrival of personnel to operate the TCC.

All decisions require some trade-off. Using the communications trailer would give the TCC pre-installed high power communications equipment. But the operation would be conducted out of a cramped trailer, using a diesel generator and cellular telephones until utilities could be run. Using the office would provide a good location, more room, and the personal comforts provided by an in place office environment, but adequate VHF-FM communications would have to be installed. With industries can do attitude, and discussions on how to outfit the office with VHF radios, the decision was made to use the office, and keep the communications trailer on hand as a backup was made.

In less than 12 hours, industry had outfitted the office space. The TCC had five individual telephone numbers hooked-up to a multi-line telephone system, four VHF-FM marine band radios operating on individual antennas, one fax, one copier, and a coffee pot. On Saturday, April 05, 1997, all was tested and ready for the watchstanders to arrive, get "In Briefed", and flip the on switch. All personnel were in-place by 0600 on Monday morning April 7, 1997 and the TCC was put in full operation.

The cooperation between the Coast Guard and Maritime Industry was evident in the way the TCC was physically setup and was carried over into the way the TCC was staffed and operated. The TCC was designed to be staffed by a Coast Guard representative familiar with Vessel Traffic System operations, a maritime industry person experienced with operating towing vessels on the Lower

Mississippi River and a working knowledge of the names and locations of places in the TCC area, and a LOMRC (Lower Mississippi River Committee) representative to answer business operation and corporate level inquiries. The TCC did not have any installed radar's or television cameras to aide in confirming the locations of transiting vessels, but had to rely on the mariner to accurately pass his position and the TAV's assigned at two critical transit areas.

TCC Baton Rouge was designed to monitor and track movements in the Port of Baton Rouge, from Mississippi River mile 229 to 236. The mission was to facilitate the safe and efficient transit of vessels, promote commerce, and to assist in the prevention of collisions, allisions, or groundings that could cost lives, property damage, or subject the area and waters to environmental harm. The TCC recorded river traffic information and provided the latest interpretive answers to mariner's questions regarding the Regulated Navigation Area (RNA) and Safety Zone.

The TCC was manned 24 hours by one (1) Coast Guard person and one (1) person provided by the maritime towing industry. The rotation was for 12-hour watches with a six-hour overlap between industry and Coast Guard shift changes. During normal working hours there was also a second towing industry representative from LOMARC available to answer questions from the marine industries corporate offices. Four (4) VHF-FM radios were continuously monitored; the TCC operated on channel 11, the Wilkinson Point TAV on channel 6, the Port Allen locks TAV on channel 83, and normal river hailing and passing channel 67.

All vessels transiting the Baton Rouge area were required to check in with the TCC on VHF-FM channel 11. The TCC then monitored that vessel's movement through the safety zone and provided advisories (gives the names of the other vessels he will meet and what their intentions are) throughout the transit. It is up to the individual vessels to make a safe meeting or passing arrangement. Around Wilkinson Point and the Highway 190 bridge, one way traffic necessitated directing vessels to stop below the bridge and wait for southbound traffic to clear the point. Because the TCC did not have a radar or visual picture, the TAV at Wilkinson point coordinated the vessel traffic around the point and the 190 bridge. The second TAV stationed at Port Allen locks coordinated vessel traffic in/out of the locks. The TAV's were the remote "eyes" and "ears" of the TCC, and were critical parts of the TCC team's effort to manage vessel traffic.

The mechanics of the operation included:

- The vessel checks in with the TCC, the watch stander queries the vessel operator to his location, destination in or through the safety zone, vessel horsepower, the number of barges, type of barges, and whether loaded or empty.

- Vessel information is recorded on a Vessel Data Card (VDC) along with the time that the vessel checked in. Vessel movements were tracked through the safety zone by inserting the VDC in a binder and placing it on a chart of the area. The VDC's represented the vessels and their locations by moving them on the chart as they called in with their position reports. TCC Baton Rouge tracked between 15 to 30 vessel movements at a time. If a vessel was a light tow boat, i.e. not pushing any barges, a VDC would not normally be completed. A light boat is highly maneuverable and was not normally required to participate in the TCC.

- The TCC then provided an advisory to the vessel calling, if necessary, and instructions on where to call in and report his next position. If this was the vessel operator's first time in the safety zone, the TCC usually answered some basic questions for him about the safety zone. This call-in and advisory routine was followed throughout the safety zone until the vessel checked out.

- The 'standard' call in points were: Devils Swamp light - mile 242, Highway 190 bridge - mile 234, Interstate Highway I-10 bridge - mile 229, Red Eye crossing - mile 224, and when entering or leaving the Port Allen locks.

Each vessel transit was recorded on a VDC. Local shifts and supply/fueling barges were not considered transits. The VDC information was entered into a computer spread sheet and printed at midnight. The TAV's provided the number of vessels and barges that passed them at Wilkinson point and Port Allen locks and the number of vessels they assisted. The data was compiled into a daily report and faxed to MSD Baton Rouge and MSO New Orleans. The report included:

- Total number of vessels and barges transiting in the Baton Rouge safety zone.

- The number of vessels and barges transiting north or south around Wilkinson Point including the name, bhp, and number of barges requiring TAV assistance.

- The number of vessels and barges entering or departing Port Allen locks and the name, bhp, length and number of barges requiring TAV assistance.

This information was reviewed in a risk-based decision making process to determine the need for additional safety measures as well as standing down the TCC.

The TCC personnel were armed with proactive information including current river stage, projections at the Port Allen locks and the current update to the RNA and latest Marine Information Bulletins (MIB). They were the Mariner's point of

contact in an emergency and were available to notify the proper response centers in emergency situations such as, allisions, collisions, barge break away, bridge strikes, spills etc.

The TCC was in operation for 18 days, from April 7th through 24th 1997. During that time, the TCC recorded a total of 1,680 vessel transits and 10,749 barge movements through the safety zone, a daily average of 93 vessels and 597 barges.

Passing Wilkinson point were 717 tugs pushing 8,099 barges. While the TCC was operating, 11 southbound tows were assisted by the TAV stationed there.

Transiting through Port Allen locks were 463 tugs and 1,172 barges, 123 tugs required some type of assistance by the TAV stationed there.