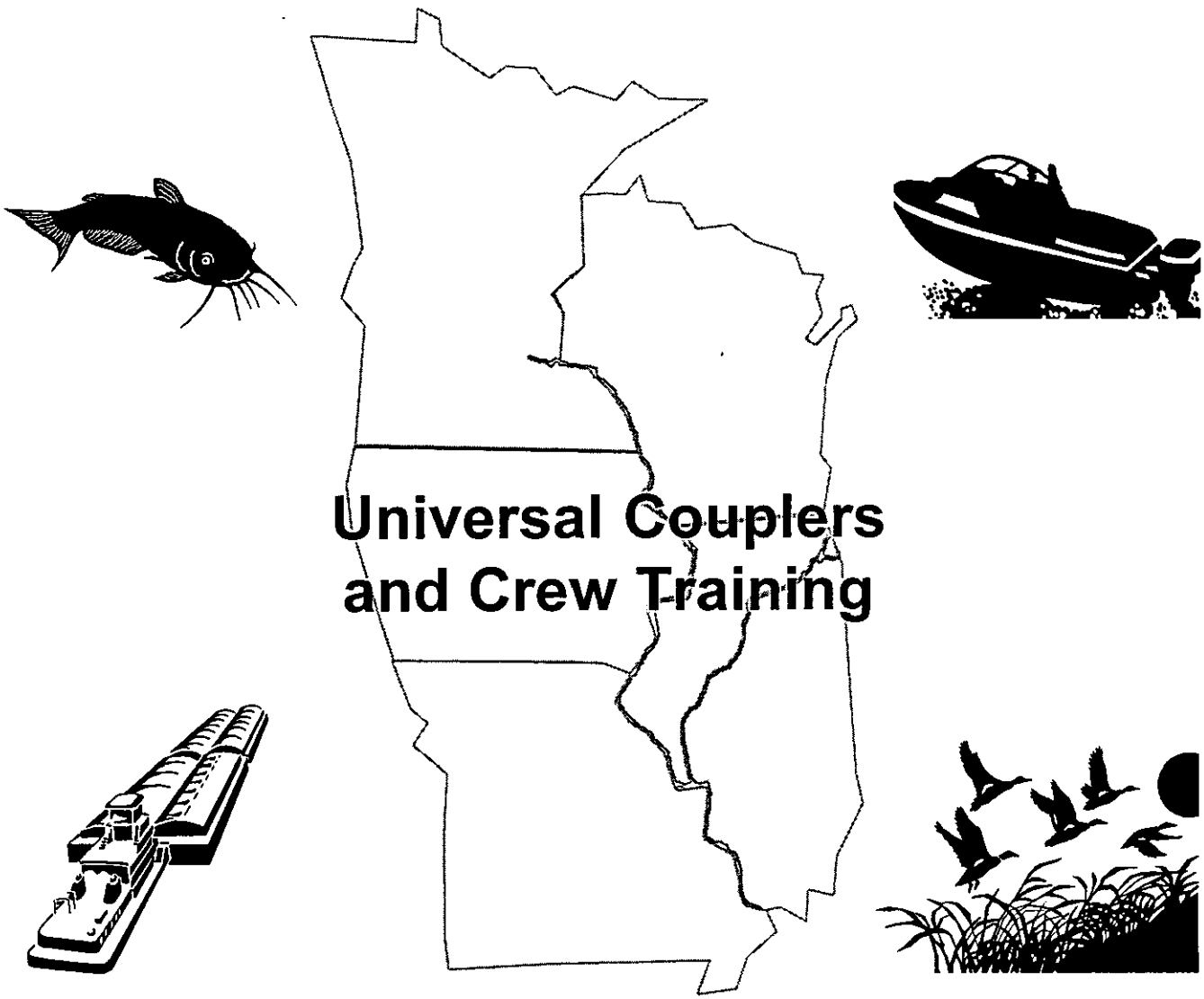
Interim Report For The Upper Mississippi River - Illinois Waterway System Navigation Study



Universal Couplers and Crew Training

September 1995

US Army Corps of Engineers

St. Paul District
Rock Island District
St. Louis District

FOREWORD

This report is submitted in fulfillment of Contract DACW25-93-D-0003 (Delivery Order #6) between Sverdrup Corporation of Maryland Heights, Missouri and the U.S. Army Corps of Engineers, Rock Island District, in cooperation with the U.S. Army Corps of Engineers, St. Louis and St. Paul Districts.

The purpose of this report is to assess the time savings associated with improvements to barge coupling equipment as well as minimum crew training requirements. This study is in support of the Upper Mississippi River - Illinois Waterway System Navigation Study (NAV Study), a system feasibility study of potential navigation improvements for locks during the period 2000-2050.

SUMMARY

This report reviews the current practice regarding hardware, procedures and personnel training related to the secure lashing of barges into a tow configuration as practiced on the Upper Mississippi River and the Illinois Waterway. It assesses the impact that these practices have on the efficiency of moving tows through locks on these two river systems and discusses the opportunities that exist for increasing the efficiency of the lockage process through changes in current practice.

The findings show that crew training is commonly handled as "On-The-Job" training, though formal training programs are provided by some of the larger barge lines. Crew skill is reflected in the time consumed in the lashing process. There was, however, no clear indication that one form of training produced crews with greater skill levels than another form of training. Also the timing data did not indicate that such training consistently reduced the time required to relash the two portions (cuts) of a double lockage.

Investigations into improved hardware and tools show that the industry has a vested interest in improving the lashing process that extends far beyond increasing the efficiency of the lockage process, and study and investigation continues in this area. During the course of investigation of this study, there was no developed piece of hardware or tool found that significantly reduced the time required to relash barges into a full tow configuration utilizing the present lashing system.

Analysis of the steps required to relash the two components of a double lockage indicate that the use of additional deckhands at the locks could cut the time to relash a double lockage tow in half. The impact of additional deckhands at the lock assisting in the coupling/uncoupling barges in double lockages during periods of peak traffic could significantly reduce congestion time.

Based on consideration of the alternatives discussed in this report, it appears that the most effective measure to reduce the time required to recouple the two cuts of a double lockage is

achieved by providing two deckhands at each lock to assist in the recoupling effort during months of traffic congestion. The addition of permanently mounted deck winches on all barges is costly and has a lesser impact on reducing the recoupling time at locks, but imparts benefits at locations other than the locks. This measure may therefore also merit a detailed benefit/cost analysis. These two measures when combined compliment each other in achieving a greater total time savings.

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Section I

SECTION I

INTRODUCTION

The purpose of this study is to assess the technical feasibility of improving the process of breaking and remaking tows involved in double lockages through locks of the Upper Mississippi River and Illinois Waterway. This study is made in support of the Corps of Engineers' 6-year Upper Mississippi River and Illinois Waterway Navigation Study (UMR-IW Nav Study). Sverdrup Civil Inc. has been retained to complete this study by the Rock Island District, with technical coordination and review by the St. Paul and St. Louis Districts.

The basic premise of this study is to determine the impacts to lock transit time with improved barge lashing equipment or processes. Many tows now seen on these waterways require a 1200' chamber to lock through in a single stage. A 600' chamber requires them to lock through in two stages, called a "double lockage."

Double lockages are time consuming and present safety concerns. They require more than twice the time needed for single lockage because of the two stage process that requires the couplings be broken when separating the two segments of the tow, and made-up when joining them back together. Double lockages are difficult because they require more coordination between the towboat's crew and the lock operators.

This study is one of several "Small Scale Improvement" studies by the Corps of Engineers in an effort to identify ways to decrease congestion at the locks in the study area. Small Scale Improvements are those that improve transit time through existing locks, but do not include building new lock facilities (i.e. 600' or 1200' chambers). A separate Corps of Engineers' effort is evaluating the large scale improvements.

This study includes a review of different means of reducing the time required to break and remake tows involved in double lockages. Each method was evaluated for its ability to reduce the total time required to break and remake a tow, the type and quantity of material and equipment required, and any additions or modifications to the lock facility required to support the proposed system.

Section II

SECTION II

EXISTING CONDITIONS

A. HARDWARE USED

The hardware used in coupling barges consists of a combination of the following; wire rope, chain and steamboat ratchets. Winches are occasionally used to tighten couplings, but the majority of couplings are tightened using a steamboat ratchet.

1. Steamboat Ratchets

Couplings are set taut with the use of steamboat ratchet, a type of turnbuckle with a ratchet attached to the barrel. It has a handle that can be extended with a "cheater bar" and pelican hooks on one or both ends. A "toothpick" may also be used to prevent the ratchet from turning as it is tightened. The steamboat ratchets are completely removable, and act as fasteners between chain and/or wire rope. This device has been in use for many years and has become the industry standard in couplings. (See Figure II-1)

2. Wire Rope & Chain

A 35' length of wire with eyes in both ends is used for making couplings between barges. The ratchet is hooked to the small eye and the large eye is placed over a timberhead. Other lengths of wire rope can be used for couplings by adding chain links and shackles to extend them to the ratchet.

3. Sling

A sling, "hula hoop", or strap, is a loop of wire that has been spliced together at its ends. It can be used to attach a chain to a kevel by looping it over the fitting, and securing the chain with a shackle.

B. PROCEDURE

The basic steps to "lay a wire" (attach a coupling) using a ratchet, wire, and sling, are as follows:

1. Run out the ratchet.
2. Place chain sling or strap over kevel.
3. Attach small eye of wire to the ratchet.
4. Lay the wire (run it around the timberheads).
5. "Jerk" the ratchet towards the chain sling to "pop" the wire and remove the slack.
6. Attach the ratchet to the chain sling.
7. Tighten ratchet. (always position it so it tightens inboard)
8. Use the cheater bar and toothpick to tighten the ratchet fully.
9. Remove the cheater bar and toothpick.

The impact of this process on the total lockage time occurs at two points. The lashings in question remain in place until the tow has entered the lock chamber. Once the head of the tow has been secured to the lock wall, the lashings are removed by the deckhands under the supervision of and/or with the assistance of the Mate.

First, the ratchets must be "backed off" relaxing the tension in the wire rope. The eye of the wire rope is then removed from the pelican hook and the wire is unwrapped from its position around the posts and/or kevels of the two barges. After all lashings have been removed, the towboat backs

the remaining barges out of the chamber. Then the gates to the lock chamber are closed and the locking process can continue.

After the first section of the tow has been locked thru, and the first cut pulled out and positioned along the approach wall, the lock chamber can be turned back to receive the remaining barges and the towboat. Once the second cut has been locked thru and the lock gates opened, then the towboat carefully pushes ahead and faces up to the first cut of barges. Once faced up, the deckhands and Mate go to work remaking the lashings. First the wire rope must be threaded back and forth around the fittings of the two adjacent barges. Then the free end is secured to the pelican hook of the ratchet. Finally the ratchet must be properly tightened. Each of these operations is performed manually, and the lashings must be completed before the tow moves off the approach wall of the lock.

The typical deck crew that handles the coupling and uncoupling of barges usually consists of three people; the mate and two deckhands. These three are responsible for remaking the two cuts after a double lockage. This coupling typically consists of 5 wires, each wrapped 3 to 4 times across the gap between barges. The kevel that is normally used for the 6th wire when the vessel is underway is used for the mooring lines when the unpowered cut is on the guidewall after locking through. Therefore, the 6th wire is not placed until after the tow has departed the lock wall. From the time when the cuts bump together, until the tow leaves the wall, the major activity is remaking the 5 wires. Based on timing data collected during the Small Scale Improvements study, this process takes an average of 14 minutes. The elements of this process include 3 minutes to lay the wire and 4 to tighten it. Since each deckhand has to work on two wires, this 7 minutes per wire becomes 14.

Since most of the approach walls on the Upper Mississippi River and the Illinois Waterway are, like their lock chambers, only 600' long, a portion of the tow and the towboat remain in the lock chamber during the remake of a double cut. With the tow in this position the lock gates can not be closed and the chamber cannot be turned back to receive the next tow until the first tow has been

completely made-up and departed. This causes significant delays at many locks in the study area during peak operation times.

C. CONFIGURATIONS

The wire couplings used to attach barges together have special names depending on their use. They include fore & aft wires, backing/towing wires, and scissor/jacking wires. (See Figure II-2) Fore and aft wires in a coupling are used to couple barges end-to-end. They can be either three part wires or four part wires, depending on how many times they traverse the break between barges. (See Figure II-3). Backing and Towing Wires are used to back or tow the "drag string." (See Figure II-4) Scissor or Jacking Wires are used to breast two barges together and provide a towing or backing lead. (see Figure II-5)

D. FACTORS AFFECTING HARDWARE AND CONFIGURATION

The following elements affect the hardware and configurations used for barge couplings; vertical differential, size of barges, the ability to pick up and drop off barges during intermediate stops, the relative expense of the barge, sturdy construction, and the ease of obtaining the required equipment.

E. COAST GUARD LICENSING AND TESTING REQUIREMENTS

Based on a conversation with Ensign Danielle Wiley, the head of the Coast Guard Regional Exam Center in St. Louis, there are no testing or licensing requirements for deckhands on the inland waterways.

F. CORPS OF ENGINEERS REQUIREMENTS FOR LOCKAGE

Navigation Notice 1-1995 (Ohio River Division, North Central Division, and Lower Mississippi River Division) requires a minimum of 3 people to handle lines during a double lockage. The captain/pilot can not act as a deckhand.

The Ratchet

Since every coupling between barges requires at least two ratchets tp pull them tight, you'll be seeing a lot of this river tool. It's built to withstand rough treatment, and it gets it. A ratchet in good working order with cleaned and oiled threads, will pull barges together with much less strain on your part. To avoid running out of thread when you need it, always wind the ratchet out before using.

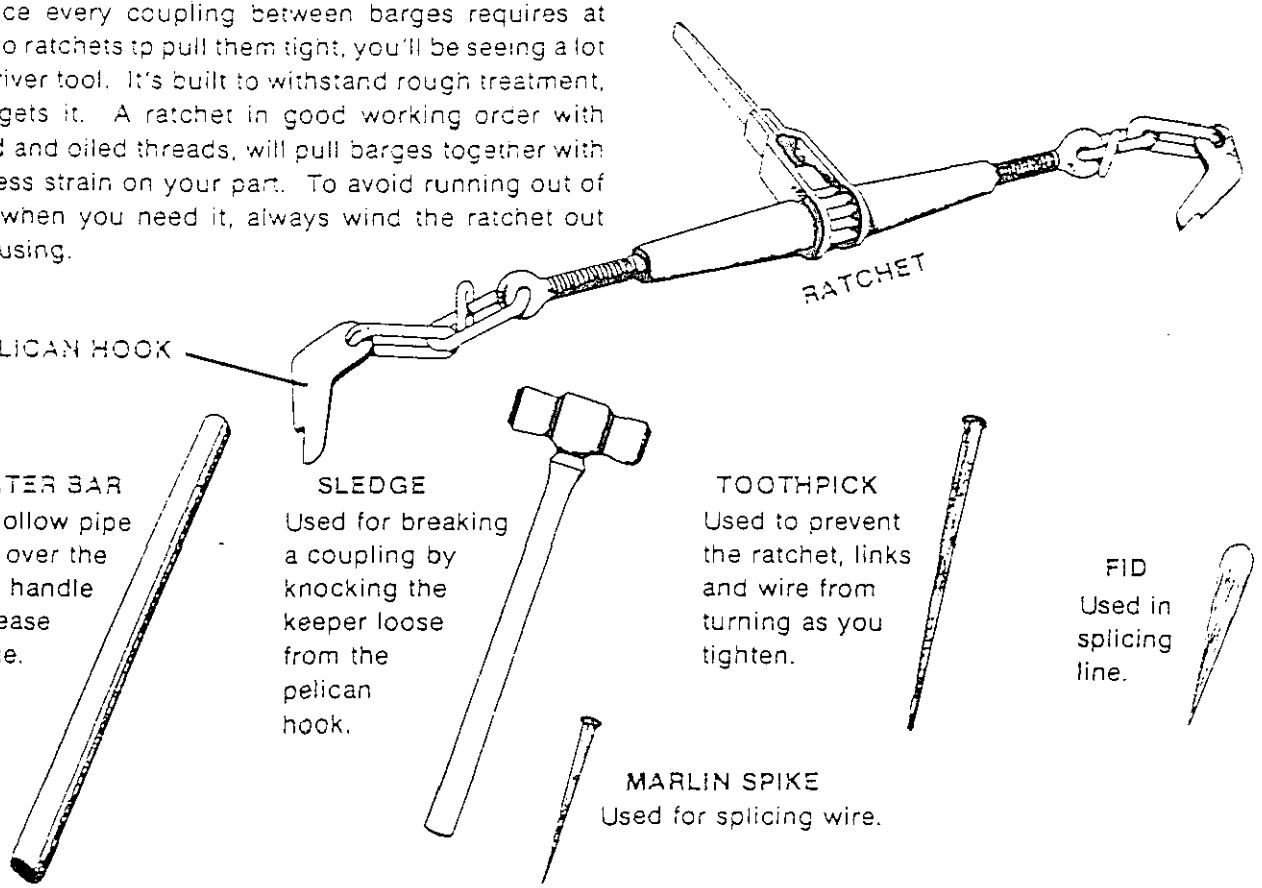

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Figure II-1

Source: The Deckhand's Manual, by Joan Fassler, 1980

WIRES MOST COMMONLY USED AND THEIR DESCRIPTIVE NAMES

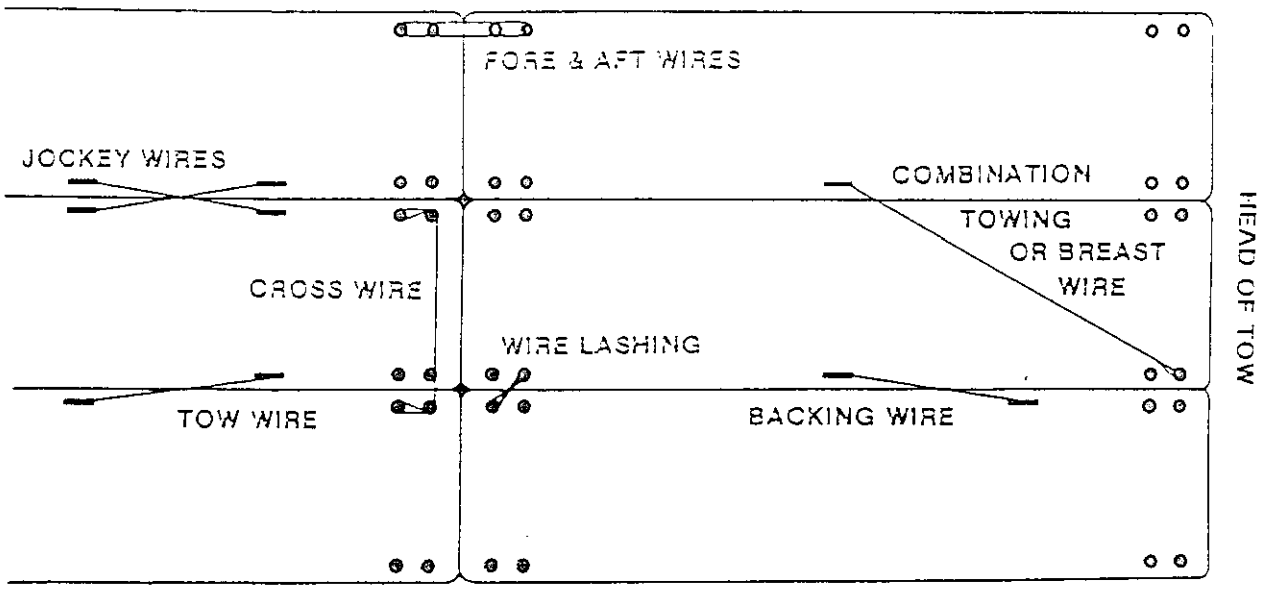

Figure II-2

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Source: The Deckhand's Manual, by Joan Fassler, 1980

BASIC FORE/AFT WIRE

This is the coupling used to couple the barges end to end. It can be either a 3 or 4 part wire.

3 PART WIRE: With 3 parts the eye of the wire is placed over a timberhead on the barge opposite on which the ratchet is placed.

4 PART WIRE: With 4 parts the eye of the wire will be placed over a timberhead on the same barge on which the ratchet is placed.

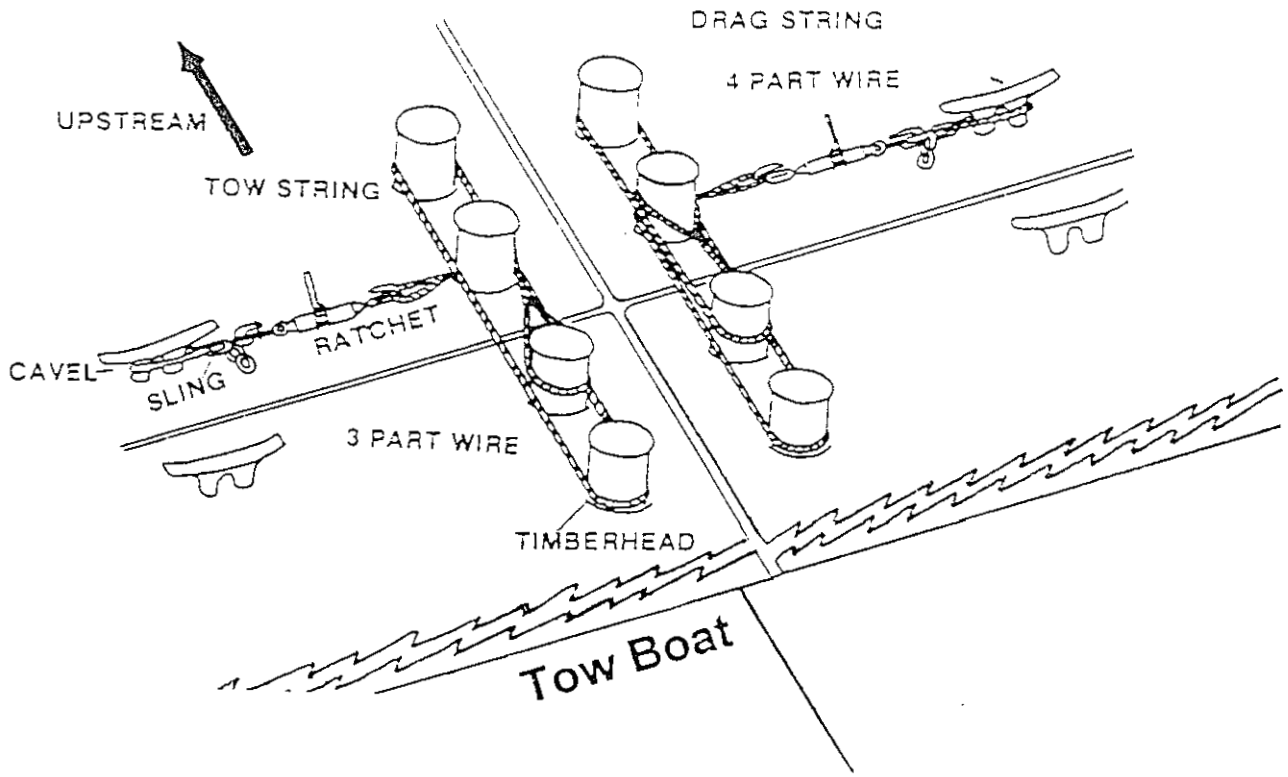


Figure II-3

Source: The Deckhand's Manual, by Joan Fassler, 1980

BACKING & TOWING WIRE

These wires are used to back or tow the "drag string."

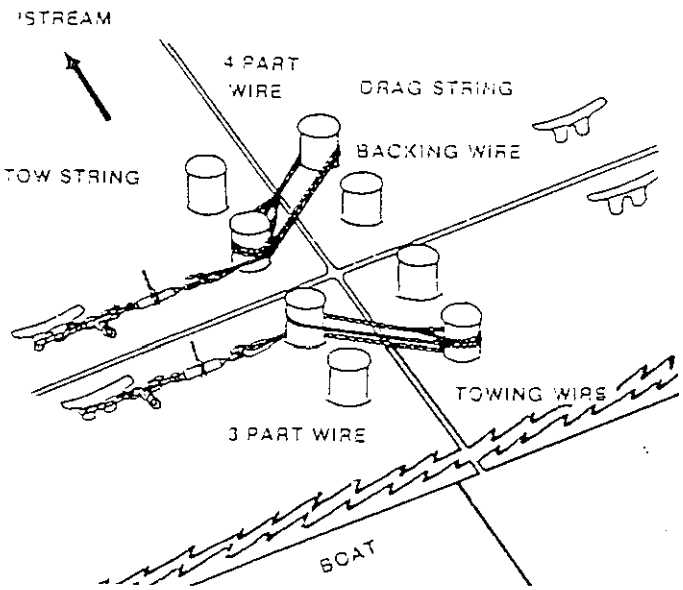


Figure II-4

SCISSORS OR BREAST WIRE

Used to breast two barges together and give towing or backing lead.

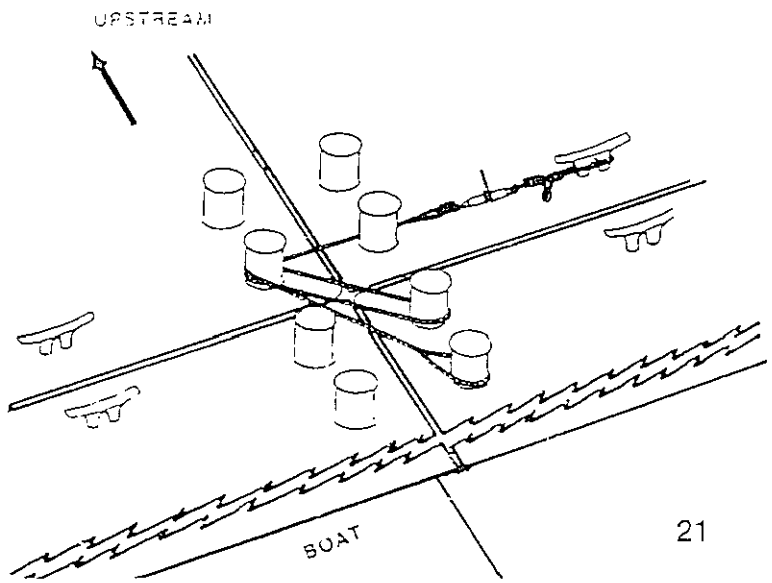


Figure II-5

Source: The Deckhand's Manual, by Joan Fassler, 1980

Section III

SECTION III

MEASURES TO REDUCE REMAKE TIME

A. INDUSTRY VIEW OF COUPLER IMPROVEMENTS

Ingram Barge Company is testing a product from Spectra. This product is a new synthetic line that has the same tensile strength as wire rope (see Appendix I). Ingram is using it in place of cable in the break coupling, fore & aft only. It is much lighter, resists corrosion, has low stretch/snap back, and is more workable. It is also more expensive.

According to Mr. Chris Brinkop of ACBL, they have also studied potential coupling improvements. Their study, which is not available at this time, reportedly will not recommend any changes to existing coupler systems.

B. INDUSTRY VIEW OF COMPANY TRAINING STANDARDS

Mr. Jerry Tinkey, of Ingram Barge Company provided a training agenda for new deckhands (see Appendix II). It includes introduction to and practice with deck equipment, as well as an introduction to locking through. He also provided information on the AWO Responsible Carrier Program (see Appendix III).

Mr. Bill Kasten, of ContiCarriers and Terminals, Inc. provided the following information;

- ContiCarriers does not have a formal training program. All new hires are "trained on the job". This means they are assigned to the 1st Mate for the first week to "learn the ropes" and the particular method of operations of the Captain.

- With his involvement with industry and AWO, he stated that typically only the big towing companies have formal training programs for new hires before they are allowed on a vessel (ACBL, Ingram, and Ohio River Co.).

- Formalized training is only marginally beneficial as each Captain and 1st Mate have "their way" of operating.

C. POWER OPERATED RATCHETS

The steamboat ratchets used for most barge to barge lashings are essentially a tube type turnbuckle with a ratchet driving device located at the mid-length point of the tube. The ratchet mechanism is identical to that found on any ratchet type wrench, but larger. One alternative is to apply a power driven device to the ratchet to achieve a faster tightening of the wire rope lines. Discussions with various industry personnel failed to reveal the existence of any such power driven device, even in a prototype form. However for the sake of discussion and evaluation we have assumed that such a device could be developed.

The initial issue is to evaluate how many such devices (power operated ratchets) would be required and determine what time savings would be generated. The initial assumption is that the device is sufficient in size that a hoist must be provided to move the tool between the guidewalls and the deck of the barge. The locations of the ratchet operators should be located just outside the lock chamber at each end as this is the location where the lashings are made and unmade. Therefore two hoisting systems and two power ratchets should be provided.

It is assumed that the powered ratchet would be sufficiently heavy that two deckhands would be required to move and operate it. Therefore, any thought of providing more than two tools at each location would require additional deckhands. The ratchet would be on a hoist that could be swung out over the barges. This "swinging out" & swinging in" would each take about 2 minutes. See Section IV for a summary of the timing data for this operation.

D. LOAD BINDERS

A load binder is a device that tightens a line by the cam action of the device. The method of operation of the load binder, allows it to be tightened at a faster rate than is currently done by the ratchet. By applying the line tension faster, the total relashing time is reduced. To date, a manually operated load binder of sufficient capacity to replace the steamboat ratchet has not been found.

E. QUICK LINK CONNECTORS

A "Quick Link Connector" is a two piece forging and pin used to join two segments of wire rope or chain. Each of the two forged pieces is "D" or "U" shaped with the wire rope fitted to the rounded portion and the pin connecting the flat or top edge. As applied to the barge lashing issue, the Quick Link Connector would occur at each point where the lashing line crosses the coupling (between the third and forth row of barges).

The operating procedure would require the line to be relaxed by backing off the tensioning device as is done now, then the pin element would be removed to uncouple the link. The segments of wire rope would remain in place at each of the deck fittings. To remake the connection the two segments of the link would need to be remated and the pin reinserted, then the line would be tensioned to secure the lashing.

The evaluation of this alternative suggests several potential problems that impede achieving the desired results. The first issue is one of actual time savings. The current practice is to use a single length of wire rope, and wrap it around the appropriate deck fittings. Use of the "Quick Links" would require three or four pins to be removed and replaced. This is an activity that does not result in a net time savings. (See Section IV of this report.)

The second issue is the pins themselves. When removed in the uncoupling process, the pins could easily be misplaced or dropped overboard. Additional time would be required to get a

replacement pin from a supply/storage area. This would increase the time required to remake the lashings. Also, if the lashing wraps around the same fitting more than once, then the deckhand must exercise care in reconnecting the links in order to assure that the correct mating piece is selected. If an incorrect match is selected then the link must again be separated and correctly made, adding time to the process.

F. PERMANENT DECK WINCHES

Some barge lines, such as Crounse, keep their equipment captive to their own fleets and have chosen to mount deck winches on the forward decks of all their barges. The deck winch is used in lieu of the steamboat ratchet to tighten the primary fore/aft lashings. The winch is permanently welded to the deck of the barge and an ample length of wire rope is spooled on the drum of the winch. The speed of the unlashing, although not a significant element of total lockage time, could be substantially reduced (see Appendix IV). A deckhand must tighten the wheel of the winch slightly to permit the removal of the locking paw, then releasing the wheel. This simple step will "slack" the line sufficiently to permit its removal from all the timberheads and kevels.

Once the tow is again faced up, the line can be remade and the wheel on the winch is cranked to tighten the line. Tightening a single line with a winch will take only a few minutes; the operation is much cleaner as there are no pelican hooks, chains, toothpicks, or cheaterbars to deal with. Secondary benefits will accrue to the towing industry since the simpler, faster operation will occur every time the barge with the winch is lashed into a tow, whether this occurs at a lock or somewhere else in the system.

The question has been raised that if the benefits are so great why haven't all the barges been fitted with the deck winches. The answers from industry are three-fold. First, the deck winches are expensive. Second, the fleet is essentially interchangeable and a barge owned by one company may frequently be found in the tow of another company. Therefore, the assumed benefit would not necessarily be accrued by the company that made the investment. Third, for the system to work, it

would require a costly mandate that all barges (at least those to be used for double lockages) be retrofitted with deck winches.

G. ADDITIONAL PERSONNEL

Since each tow has more wires to make between the first and second cut than there are deck personnel duty, each deckhand is responsible for completing at least two lashings. If additional personnel were available at the lock, each one could be responsible for just one of the lashings.

The process of relashing the two segments of a tow involved in a double lockage is the responsibilty of the deckhands and the Mate. The most common practice is for each of the individuals to take responsibility for one or two of the five fore/aft lashings. There is no particular order in which these lashings must be tightened or loosened, therefore when the crew member completes one of the lashings he moves on to the next one.

This proposed efficiency measure would assign two experienced deckhands to each of the locks in the congestion area. After the unpowered cut of the tow is extracted from the lock and secured on the guidewall, the three extra deckhands would move to the deck of the barges. When the powered cut faces up to the unpowered cut, each person (five total) would take responsibility for remaking one lashing. Since all five lashings are being secured concurrently the total remake process time would be reduced by one-half. When the lashing process is completed, the two additional deckhands would return to the top of the guidewalls and await the next tow.

This approach to reducing lockage time may be the simplest and fastest to implement. It also does not require any capital expenditures. It is anticipated that there is a sufficient pool of

experienced deckhands that would fill these positions during their 30 day rest periods. The issue to be resolved is how are they going to be paid and by whom. Three possible scenarios exist:

1. They could become government employees;
2. They could become employees of a local harbor service or switching company that would be under contract to the government; or
3. They could become employees of a local harbor service or switching company who's services would be billed to the towing industry for each use.

Utilization would be required during periods mandated by the lockmaster (would need to be included in Navigation Notice issued by the Corps of Engineers) in the same way that Helper Boats are required for specific river conditions.

Section IV

SECTION IV

TIMING DATA COMPARISONS

Each of the alternatives listed in the previous section were evaluated for the time savings potential in the lockage process. The following describes the assumptions of each scenario and the estimated time that each operation takes. Since there are five wires and the base case uses only three people, the deck crew (at least two of them) has to perform each operation twice (three people lay a wire & tighten it, then two of those three lay another wire and tighten that one). Some of the proposed measures save time by freeing up this second operation of laying & tightening. Others reduce the laying of the wire only, while others reduce the time to tighten. A summary of the times and time savings (against the baseline times from recorded data in the study area - see Appendix IV) are shown in Part G of this Section.

A. CURRENT OPERATIONS

Assumptions:

3 people on deck (mate and two deckhands)
5 wires to lay & tighten

Time: 12 Minutes (Baseline Estimate)

3 minutes to lay the wire
3 minutes to tighten the wire
2 wires per person

B. POWER OPERATED RATCHETS

Assumptions:

3 people

5 wires to lay & tighten

Time: 15 Minutes (no savings)

2 minutes to swing out with hoist (requires two deckhands to operate)

3 minutes/wire to lay x 2 wires/person = 6 minutes

1 minutes to tighten each wire x 5 wires = 5 minutes

2 minutes to swing in

C. LOAD BINDERS

Assumptions:

Device of sufficient capacity exists

Load binder on each of the 5 wires

3 people

5 wires to lay & tighten

Time: 8 Minutes (4 minute savings)

3 minutes/wire to lay x 2 wires per person = 6 minutes

1 minutes/wire to tighten x 2 wires per person = 2 minutes

D. QUICK LINK CONNECTORS

Assumptions:

3 people

2 people needed on each wire

3 - 4 part wires

pin not misplaced or dropped

steamboat ratchet used to tighten wire after connected

good weather conditions

Time: 16 minutes (No Savings)

2 minutes/wire to pin x 5 wires = 10 minutes

3 minutes/wire to tighten x 2 wires/person = 6 minutes

E. PERMANENT DECK WINCHES

Assumptions:

1 person lays the wire and then operates the winch

wire permanently spooled on winch

All barges at the coupling have/can utilize the winch

Time: 6 Minutes (6 Minute Savings)

2 minutes/wire to lay x 2 wires/person = 4 minutes

1 minute/wire to tighten x 2 wires/person = 2 minutes

F. ADDITIONAL PERSONNEL

Assumptions:

2 additional people for a total of 5 people

each person works a wire

5 wires

Time: 7 minutes (5 minute savings)

3 minutes to lay the wire

4 minutes to tighten the wire

G. SUMMARY OF TIMING DATA COMPARISON

Recoupling Time (minutes)								
	Move	Lay	Tighten	Lay	Tighten	Move	Total	Savings
Current Ops.		3	3	3	3		12	Baseline
Powered Ratchet	2	3		3	5	2	15	-3
Load Binder		3	1	3	1		8	4
Quick Link		5	3	5	3		16	-4
Deck winch		2	1	2	1		6	6
Add'l Personnel		3	4				7	5

Section V

SECTION V

COST COMPARISONS

In order to complete the assessment of each barge coupler alternative, a comparison of order of magnitude costs must be made for implementation. The cost comparison must be made in two components:

1. Initial/Start up cost
    a. capital expenditures
    b. training
2. Annual costs
    - Maintenance/up keep
    - salaries/salary related expenses

The cost estimates do not evaluate the alternatives based on who will bear the expense (industry versus government) of implementations and maintenance, only comparing them on raw cost data. In Section VI, recommendations are made based on time savings, technical feasibility, current technology, and the cost data presented herein.

Five alternatives were previously discussed and evaluated on time savings. The basic premiss of this evaluation was that the alternative must provide a time savings for coupling/uncoupling in the lockage process for double cuts when compared to the baseline (current practices of using a steamboat ratchet). Therefore two alternatives (Power Operated Ratchets and Quick Link Connectors) were eliminated from further evaluation for this reason. The following is a comparison of the costs of the remaining three alternatives:

A. LOAD BINDERS

1. Capital Expenditures

To implement use of the load binders, the concept of the mechanism for this application must be developed, designed, tested, and approved by industry. This effort is difficult to assess, but is estimated to be in the order of $2,000,000.

As previously described, one device is required for each of six wires at the point of break of a double cut tow configuration. In addition, one "spare" should be on hand in case of failure of one in use. This would be required for each tow, estimated at 450 working in this portion of the Inland Waterway System (data from the 1991 Waterborne Report for the Upper Mississippi River and Illinois Waterway). Therefore 3,150 Load Binders would be required. Estimating a cost of $500 each, the capital expenditure would be $1,575,000, and the total capital expenditure would be $3,575,000.

2. Training

Minimal training would be required to use the new device. A brief training session with each deckhand and mate is estimated to cost $50. Estimating 5,400 employees (450 tows x 3 employees x 2 shifts/day x 2 for rest periods) to be trained, the cost would be $270,000.

3. Annual Costs

Annual maintenance and upkeep would be the primary cost consisting of replacement of old equipment. Assuming a constant process of phasing out older equipment at a rate of 10% per year, the annual cost would be $157,500.

B. PERMANENT DECK WINCHES

To implement this measure, it was assumed that each barge in operation would need to be retrofitted with a deck winch. There are a few exceptions to this as certain barge lines keep their fleet captive and some that do not require double lockage. However this is assumed to be a small percentage of the industry fleet. Therefore the basis for this assumption was as follows:

a. Current practice by most companies is to exchange barges on a regular basis for economic reasons

b. To minimize the amount of time that otherwise would be required to reconfigure barge fleet constantly if all the barges would not have deck winches

1. Capital Expenditures

The cost of a single deck winch was estimated to be $1,000 for equipment and installation. Based on an industry fleet of 13,000 barges and 2 winches per barge, the capital cost would be $26,000,000.

2. Training

Training is not considered to be an added requirement for this equipment as winches of this type are widely used in the towing industry.

3. Annual Costs

Annual costs would consist of minor maintenance work consisting of lubrication typically associated with such a device. Other annual costs would consist of replacement of wires that are

worn or broken. Assuming a constant process of phasing out the wires at a rate of 10% per year, the annual cost would be $1,300,000 (wire replacement cost of $500). On an annualized basis over 20 years (and assuming 270 working days per year), the daily cost would be $14,400 (based on a discount rate of 7¾%).

C. ADDITIONAL PERSONNEL

This measure would assign two experienced deckhands to each of the locks in the congestion areas. It is anticipated that there would be a sufficient workforce of deckhands interested in being employed to perform these functions while on their rest periods from the barge industry. It is also assumed the additional personnel would be available on a contract hire basis or as part-time employees of the goverment.

1. Capital Expenditures

There are no capital expenditure to implement this measure.

2. Training

As mentioned earlier, it is assumed that an experienced work force pool would be available on a seasonal basis. Therefore there would be no training costs for this measure.

3. Annual Costs

For this measure, the annual costs would be the cost of the part-time or contract-hire personnel. There would also be a minimal cost of maintaining logs of the availability of this pool

of workers. Assuming that the additional personnel are required to be at the locks in the congested area 24 hours a day during the peak periods, the costs would be as follows:

2 employees X 24 hours/day X $50/hr = $2,400 / day/lock.

If there are 6 locks to be staffed during the peak periods, this cost becomes $14,000/day.

Section VI

SECTION VI

RECOMMENDATIONS

There is clear indication that the industry is continuing to pursue improvements to the barge lashing system. Two main topics are being addressed in this effort. One topic is the ease and speed of making up the lashing. As with any industry, time equals money, therefore any time savings is translated into higher towboat and crew productivity. The second topic is one of worker health and safety. The activities involved in the lashing of barges is the source of numerous back injury claims. New lashing designs are also aimed at being simpler and safer to operate, placing less strain on the operator.

The aim of these efforts is toward a new lashing/coupling mechanism for use at all points in the tow not just the lashing that are worked during a double lockage. By improving the efficiency of the lashing system in general, the time to remake lashings during a double lockage will also be favorably impacted. Since the development of new hardware and lashing procedures will benefit the towing industry as a whole, and these benefits will accrue for all lashing activity, not just relashing at locks, the industry will continue its interest and support of the continued development of such improvements.

A number of other reports were reviewed regarding these issues. The "Inventory of Potential Structural and Non-Structural Alternatives for Increasing Navigation Capacity-Upper Mississippi River System Master Plan" by Louis Berger & Associates, Inc. (herein "The Berger Report") addressed increased lock staffing. However, this report did not address the use of extra personnel for remaking the coupling; it only proposed additional staff to maintain the controls, assist in the mooring along the guidewalls, and help with other lock support services. The Berger Report interpretation of increased staff was eliminated in General Assessment of Small Scale Measures Study.

The Berger Report also addressed the issue of "Universally Acceptable Couplers or Hand Winches for Joining Barges". This report's findings concur with that of the Berger Report on this issue. While an universal coupler could be operated quickly resulting in significant time savings, the lack of existing technology for this application combined with the investment cost to develop such a device caused this alternate to be eliminated.

The Berger Report also includes "Crew Training" as a measure for consideration. This report's findings concur that "the vast majority of the towing companies are responsible and their present manning and equipment standards could satisfy and reasonable regulation", and that "there is no way of estimating the number of (marginal) companies, or the expense required to implement such a program".

Another report, the "Upper Mississippi River Transportation Economics Study" by Leeper, Cambridge, & Campbell, Inc. (herein "The Leeper Report") of April 1989 addressed "Improved Boat and Barge Rigging". This report's findings concur with this report in that (1) the installation cost is high; (2) the maintenance cost is high; (3) contract towers and fleet operators tend to abuse hard rigging; and (4) unless barges are captive to a specific service, the barges with improved rigging may not always be available to the owner/operator who installed them. Further, this report agrees with the Leeper Report findings that additional winches will save approximately half the time involved in recoupling.

To summarize the findings of this report, the following chart shows the advantages and disadvantages of each alternative evaluated:

	Advantages	Disadvantages
Powered Ratchet	Reduces work on deckhand Eliminates steamboat ratchet	No time savings Requires additional approach wall equipment Equipment not yet developed Significant capital expenditure
Load Binder	Saves time	Equipment not yet developed Significant capital expenditure
Quick Link	Eliminates need to lay wire	No time savings Requires many pieces Difficult to use in cold weather
Deck Winch	Saves time Eliminates steamboat ratchet Safer to operate Secondary time/cost benefits	Used by many companies Requires higher maintenance Major capital expenditure Stays with barge, not towboat Operational benefit not always realized by investor
Additional Personnel	Saves time Seasonal flexibility No permanent modifications No capital investment costs Minimal training required	Some non-productive time

In order to select the best solution to the problem of remaking couplings, the following criteria were selected:

a. Time Savings - elimination if there was no savings created

b. Current Technology - negative impact if the development and/or purchase of untried equipment was required for implementation

c. Extent of Capital Investment - negative impact if a large capital equipment outlays or large annual maintenance/upkeep expenditures were required

These criteria were used to screen the potential measures. Measures were eliminated based on the prioritized list of evaluation measures. The following is a summary of this process:

	No Time Savings	Not Yet Developed	Large Capital Investment	Recommended for further consideration
Powered Ratchet	✔			
Load Binder		✔		
Quick Link	✔			
Deck Winch			✔	✔
Additional Personnel				✔

Adding personnel at the lock during peak traffic times appears to be the best solution for improving the speed in recoupling. Having one person on each wire essentially halves the time required to make-up the cuts. Based on the minimal cost to implement the "Additional Personnel" and long term benefit of "Deck Winches", it is recommended that economic analysis be performed for these measures.

The several measures discussed in this report to reduce remake times are not mutually exclusive measures. Almost any of the measures can be combined with the measure of providing additional personnel to gain an additional time saving. This time saving will accrue wherever the process requires a deckhand to complete more than one of the five lashings.

Appendix I

APPENDIX I

SPECTRA Data

INGRAM BARGE COMPANY'S GUIDELINES FOR SPECTRA OPERATION

1. The Spectra wing wire should be inspected regularly to ensure that the sleeves are in good condition.

2. All vessels that are equipped with Spectra should have on board at all times a spare set of sleeves. As soon as you install your spares, reorder additional sleeves.

3. Whenever possible while facing up or unfacing a vessel, try to put the Spectra on the barge first and take it off last. This keeps the Spectra from being dragged on any other face rigging and from possibly being snagged on fish hooks, burrs, etc.

4. Spectra face rigging should be primarily handled by Ingram Barge Company crews to ensure it is handled correctly.

5. If the Spectra is not being used in transit, it should be coiled up by the winch and secured to the vessel.

6. When decrewing a vessel equipped with Spectra, the Spectra should be coiled up back by the winch and secured to the vessel.

7. While splicing or installing eyes in Spectra, follow the instructions and training furnished by Ingram Barge Company. Do not alter methods of splicing in any fashion.

PRICIPAL ADVANTAGES OF SPECTRON 12 vs WIRE ROPE (FACE WIRES) IN RIVER TOWING

- Weight Savings: 180 ft Steel Face Wire = 300 lbs
  180 ft Spectron 12 = 40 lbs
- Handling Ease: 1 Man verses 2 Men or More
- Low Stretch / Snap Back
- No Kinking: Toque Balanced
- No Broken Wires ("Fish Hooks") in Hands
- No Rusting or Corrosion
- Lays Flat on Drum: No "Spring Back" as with Wire
- No Compression Damage or "Bird Caging"
- Spectron 12 FLOATS if Dropped in Water
- Easily Spliced in 10 Minutes
- Avoid Induries (Back, Hernia, Hands, Ankles, etc.)
- Avoid Costly Liability Claims
- Reduced Make Up Time

SPECTRON 12

Product Code #815
Specific Gravity: .98

A unique rope of 100% SPECTRA® fiber with a 12-strand braided Parallay® construction and a proprietary Samthane Urethane coating. This rope yields the highest strength to weight ratio available, fast/easy splicing of a single braid and low elongation with a firm/durable Urethane coating. Available in standard commercial and bulk put-ups in solid colors. Uncoated product available for low snag applications.

RECOMMENDED APPLICATIONS:

Commercial Fishing:

Topping Lifts
Beach Lines
Extentions
Corner Ropes
Running Lines
Set Net, Netlines
Head Ropes
Slings & Chokers
Low Stretch Corklines
Rib Lines
Trawl Ropes

Utility:

Utility Winch Lines
Fiber Optic Pulling
Alternative to Wire
Pilot/Fish Lines
T&D PullingLines
Lifting Slings

Size		Size		Approx Weight		Approx Avg Breaking Strength		ListPrice Samathane Coated	
Dia Inch	Dia MM	Circ Inch	Circ MM	Lbs Per 100 Ft	Kg Per 100 M	Lbs	Kg	100 Ft	100 M
7/64"	2.5	5/16"	7.5	0.33	0.49	1200	544	$13.00	$41.88
1/8"	3	3/8"	9	0.53	0.79	1800	816	20.00	66.32
3/16"	5	9/16"	15	1.04	1.55	3800	1724	39.00	129.14
1/4"	6	3/4"	18	1.60	2.38	6600	2994	59.00	191.96
5/16"	8	1"	24	2.65	3.94	9800	4445	97.00	317.61
3/8"	9	1-1/8"	27	3.71	5.52	14100	6396	136.00	446.74
7/16"	11	1-1/4"	33	4.23	6.30	16500	7484	153.00	502.60
1/2"	12	1-1/2"	36	6.35	9.45	25000	11340	224.00	736.44
9/16"	14	1-3/4"	42	7.90	11.76	30800	13971	280.00	917.93
5/8"	16	2"	48	10.61	15.79	40700	18462	373.00	1225.06
3/4"	18	2-1/4"	54	13.31	19.81	48000	21773	473.00	1553.15
13/16"	20	2-1/2"	60	15.84	23.57	56500	25628	560.00	1835.85
7/8"	22	2-3/4"	66	19.61	29.18	67800	30754	712.00	2334.96
1"	24	3"	72	23.43	34.87	80000	36288	841.00	2760.76
1-1/16"	26	3-1/4"	78	27.53	40.97	90000	40824	960.00	3148.17
1-1/8"	28	3-1/2"	84	31.86	47.41	102000	46267	1115.00	3657.74
1-1/4"	30	3-3/4"	90	36.23	53.92	114000	51710	1301.00	4268.53
1-5/16"	32	4"	96	41.71	62.07	127000	57607	1486.00	4875.83
1-1/2"	36	4-1/2"	108	51.70	76.94	157000	71215	1823.00	5982.22
1-5/8"	40	5"	120	65.72	97.80	186000	84370	2209.00	7245.68
1-3/4"	44	5-1/2"	132	78.35	116.60	220000	99792	2670.00	8760.44
2"	48	6"	144	91.40	136.02	250000	113400	3094.00	10149.54
2-1/8"	52	6-1/2"	156	109.00	162.21	300000	136080	3669.00	12037.74
2-1/4"	56	7"	168	122.00	181.56	353000	160121	4104.00	13465.24
2-1/2"	60	7-1/2"	180	148.00	220.25	400000	181440	4983.00	16348.16
2-5/8"	64	8"	192	167.00	248.53	412000	186883	5623.00	18449.27
2-3/4"	68	8-1/2"	204	187.00	278.29	450000	204120	6297.00	20658.57
3"	72	9"	216	206.00	306.57	500000	226800	6936.00	22756.19

ELASTIC ELONGATION AFTER 50 CYCLES FROM 200D²

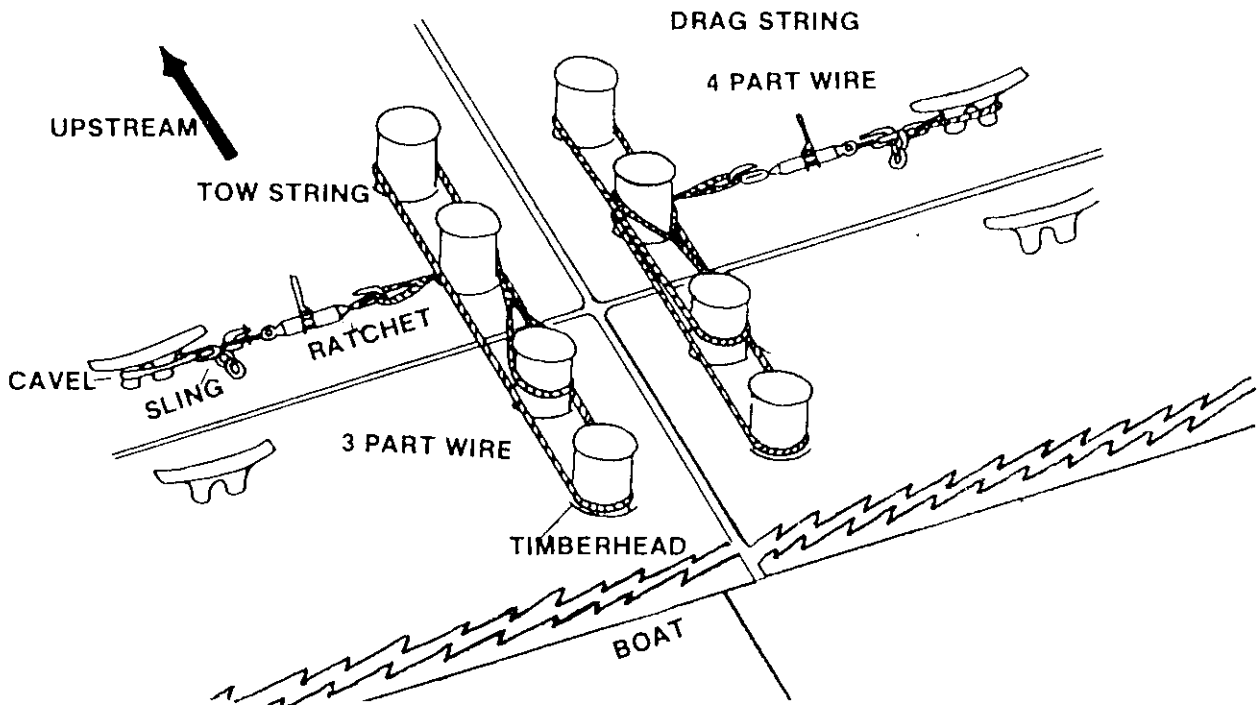
	10%	20%	30%
SPECTRON 12	0.58	0.87	0.96

BASIC FORE/AFT WIRE

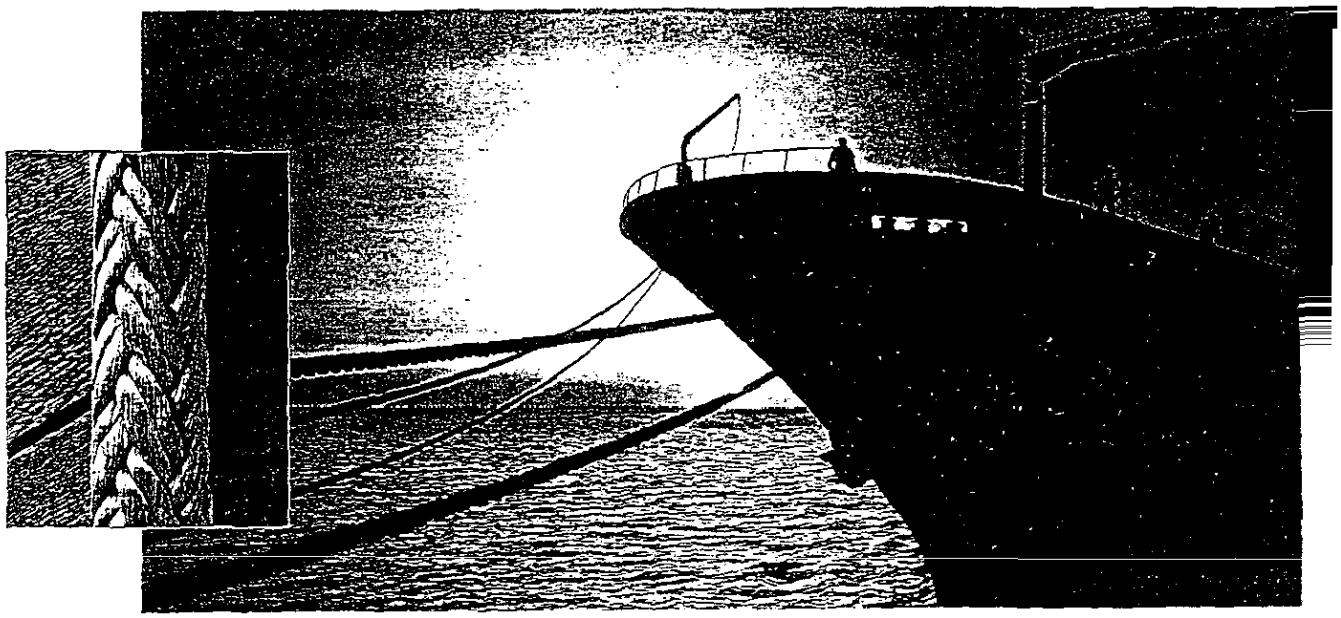
This is the coupling used to couple the barges end to end. It can be either a 3 or 4 part wire.

3 PART WIRE: With 3 parts the eye of the wire is placed over a timberhead on the barge opposite on which the ratchet is placed.

4 PART WIRE: With 4 parts the eye of the wire will be placed over a timberhead on the same barge on which the ratchet is placed.



HIGH PERFORMANCE
HEAVY-DUTY MARINE LINES



Today's Industry

The challenges of today's heavy marine jobs demand the ultimate performance from every piece of equipment used on board. Until recently, the materials used to manufacture lines for heavy marine applications had forced a choice between high-strength, low-stretch steel and lower strength, bulkier synthetics. No rope fiber has ever been able to offer all of the advantages of both—until now.

The Performance Advantage

SPECTRA ultra-high strength fiber offers crews the best of both worlds: the strength and low stretch of steel, with the light weight and handling ease of synthetics.

Unequaled Strength: SPECTRA ropes can replace wire cable at equal diameters with no loss in strength. That means SPECTRA can do the same job at the same diameter with only 1/7 the weight of steel.

Equal strength at drastically reduced weights means easier handling, reduced crew sizes, and quicker deployment and retrieval times.

Durability: Spun from ultra-high molecular weight polyethylene, SPECTRA fiber exhibits outstanding abrasion resistance and has even been shown to outlast steel cable. But unlike wire, SPECTRA fiber rope won't corrode or "fish hook", and requires no lubrication or other time consuming maintenance. These traits assure consistent performance and a long service life.

Compatibility: Since SPECTRA fiber ropes can replace wire lines at equal diameters with equal strength and wire-like stretch, no expensive equipment changes are necessary for full conversion from steel.

Solutions That Make Sense

SPECTRA's unmatched strength and near-zero stretch mean wire-like control and total confidence in the water or at the dock. SPECTRA's strength and ultra-light weight can decrease operating costs and reduce down-time due to injuries from handling steel. And its durability keeps the equipment on line and working longer, which can decrease the amount of time and money lost to replacement and repair.

Ropes made with SPECTRA high performance fiber provide solutions for crews to meet the challenges of today's heavy marine industry.

SPECTRA™
THE PERFORMANCE ADVANTAGE

AI-5

SPECTRA
HIGH PERFORMANCE FIBERS

Specific Properties

SPECTRA® polyethylene fiber is based on a patented gel spinning process by which ultra-high molecular alignment is achieved. This technique, developed by the engineers at Allied-Signal, produces a fiber that's 10 times stronger than steel, and more than three times stronger than polyester on an equal weight basis.

Besides its incredible strength, SPECTRA fiber also possesses incredible abrasion resistance, low elongation to break, low density (so low that it floats), excellent UV and moisture resistance, high energy absorption, and is inherently resistant to many chemicals.

These properties make SPECTRA fiber perfect for the every-day punishment high performance ropes and cordage face.

State-Of-The-Art Applications

Applications for SPECTRA fiber are virtually unlimited. Its light weight and high strength make it the perfect fiber for netting and twine, as well as winch and mooring lines. Its low stretch and low elongation make it the material of choice for sailing enthusiasts in both ropes and sail cloth. And, its low conductivity and wire-like control offer utility personnel a lightweight alternative to steel.

SPECTRA fiber is also being used in high performance kite lines, bow strings, and pack ropes for hiking and climbing enthusiasts.

In its composite form, SPECTRA makes a super tough, lightweight material for sporting equipment, bullet resistant police apparel, military vehicle armorment, and a variety of other applications that require incredible strength with high abrasion resistance and low weight.

SPECTRA high performance fiber; the lightest, strongest fiber ever made.

All statements, information, and data given herein are believed to be accurate and reliable but are presented without guarantee, warranty, or responsibility of any kind, express or implied. Properties presented represent nominal values for the specified fibers unless otherwise indicated. Statements or suggestions concerning possible use of our products are made without representation or warranty that any such use is free of patent infringement, and are not recommendations to infringe any patent. The user should not assume that all safety measures are indicated, or that other measures may not be required.

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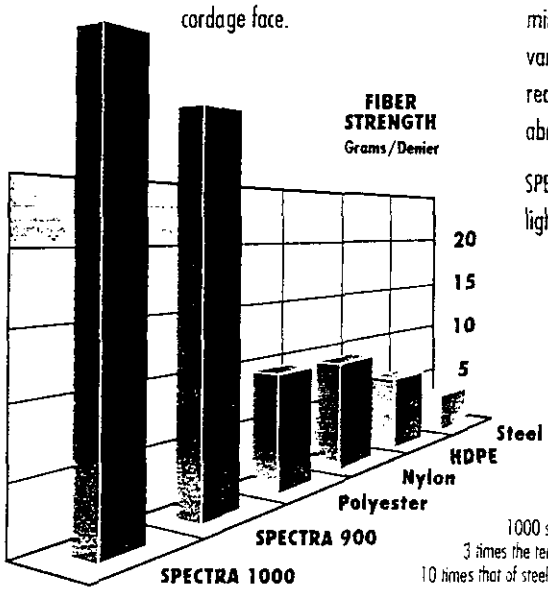

Both SPECTRA 900 and SPECTRA 1000 show unmatched toughness. At over 3 times the tenacity of nylon and polyester, and 10 times that of steel, no other fiber even comes close.

Allied Fibers
P.O. Box 31
Petersburg, VA 23804
Fax: (804) 520-3388
(800) 695-5969

Allied Signal

APPENDIX II

Training Agenda for New Deckhands

Appendix II

DECKHAND SCHOOL

The Deckhand Training Program is designed to focus primarily on the inexperienced new Associate to Ingram Marine Companies. This school is designed to teach safe, basic decking schools, hazard recognition, hazard communication, back care education, hearing conservation, drug and alcohol awareness, and basic fire fighting/prevention skills.

Training Aids:

Videos
Flip Charts
Overheads
Visual Aids
Hands on Training
Observation Practice
Manual

Instructors:

Primary - Terry Pool
Primary - Cindy Bateman

Secondary - Training Mates
Dan Brock

Total Course Time - 42 Hours

DECK SCHOOL AGENDA
- Day One -

0630	Trainees Arrive
0630 - 0645	Outline of Deck School Activities
0645 - 0700	Introduction to Ingram (Ingram Promotional Video)
0700 - 0715	Explanation of the Following: • Chain of Responsibilities • Levels of Authority Trainees will Be Exposed To • Importance of Being Versatile • Family Concept onboard Vessels
0715 - 0830	Alcohol and Controlled Substance Education • Definition (Video, Handouts, Lecture) • Impact (Video, Handouts, Lecture) • Recognition (Video, Handouts, Lecture) • Testing Program (Company Policy, Lecture)
0830 - 1030	Back Care Education • Video • Lecture • Practice • Test
1030 - 1130	Accident Prevention (Slips, Trips, Falls) • Video • Lecture • Discussion
1130 - 1230	Break For Lunch
1230 - 1300	Hearing Conservation • Video and discussion
1300 - 1345	Introduction to Rigging • Video (Rigging Safety) • Equipment Introduction • Use of Tools • Safe Handling
1345 - 1515	Introduction to Basic Rigging Application (Hands On) • Use of Tools (cheater pipe, toothpicks, sledge hammer) • Safe Techniques
1515 - 1600	Break
1515 - 1645	Introduction to Line Handling (Hands on)
1645 - 1700	Review of Days Activities (Question and Answer Period)
1700 - 1830	Housekeeping on Vessel (If available)
1830 - 1930	Break for Supper & Lodging Assignments • Clean Up and Eat • Hotel/Boat Rooms

DECK SCHOOL AGENDA

- Day Two -

0500	Wake Up Call
0530 - 0630	Breakfast/Room Check
0630 - 0700	Working With Rigging (Hands On) • Stretching Exercises • Endurance • Proper Stowage Techniques
0700 - 0830	Basic Rigging Application (Hands On) • Use of Tools • Laying Basic Wires • Safe Jerking Techniques
0830 - 0945	Working With Lines (Hands on)
0945 - 1000	Break (Move to classroom)
1000 - 1045	Fire Prevention and Extinguishing Methods • Video/Lecture/Handouts
1045 - 1130	Use of Portable Fire Extinguishers (Hands on)
1130 - 1245	Break for Lunch
1245 - 1400	Working with Lines (Hands on)
1400 - 1515	Basic Rigging Application • Use of tools • Laying Basic Wires • Safe Jerking Techniques
1515 - 1530	Break (Move to Classroom)
1530 - 1600	Written Test (Prevention is the Key)
1600 - 1645	Locking Procedures • Videos/Discussion
1645 - 1700	Review of Day's Activities (Question and Answer Period)
1700 - 1830	Cleanup Classroom
1830 - 1930	Break for Supper

DECK SCHOOL AGENDA

- Day Three -

0500	Wake Up Call
0530 - 0630	Breakfast/Room Check
0630 - 0730	Proceed Great Rivers Marine Service • Hands on Tow / Fleet Work
0730 - 1130	Hands on Tow / Fleet Work
1130 - 1200	Break for Lunch
1200 - 1600	Hands on Tow / Fleet Work
1600 - 1700	Proceed Back To Ingram Landing • Discuss Day's Activities
1700 - 1830	Break for Supper

DECK SCHOOL AGENDA

- Day Four -

0500	Wake Up Call
0500 - 0530	Strip Beds / Check-out of Hotel
0530 - 0630	Breakfast
0630 - 0700	Working With Lines (Hands on Test)
0700 - 0830	Basic Rigging Application (Hands on Test)
0830 - 0845	Break Move to Classroom
0845 - 0915	Facing Up A Boat • Video/Discussion
0915 - 0945	Written Test (Deckhand School Final Exam)
0945 - 1145	Hazard Communication/Right to Know • Video • Lecture • Written Test
1145 - 1245	Break for Lunch
1245 - 1300	Move to Classroom
1300 - 1330	Sign off on General Work Policies and Safety Guidelines (Mates start working on evaluations)
1330 - 1430	Evaluation of each trainee
1430 - 1630	Personnel Department • Benefits • Enrollment forms • Pictures • Vessel Assignments

APPENDIX III

AWO Responsible Carrier Program

Appendix III

AWO RESPONSIBLE CARRIER PROGRAM

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Disclaimer

The AWO Responsible Carrier Program is intended to improve marine safety and environmental protection in the barge and towing industry. The program aims to accomplish this objective by establishing preferred industry operating principles and practices as voluntary standards of conduct for barge and towing companies. While the standards outlined in the Responsible Carrier Program meet or exceed current governmental standards for the operation of barges and towing vessels, they do not necessarily constitute an exhaustive catalogue of all potential safety practices which any particular company should undertake. Each company must determine for itself its own operational needs and the range of safety measures necessary to protect its employees, the public, and the environment. The program is not intended to supplant any existing safety procedures which a company may have in place in excess of the standards outlined herein. Finally, while the objective of the Responsible Carrier Program is to enhance safety and environmental protection in the barge and towing industry, no program can be considered a panacea which will completely eliminate injuries, accidents, or pollution incidents. The pursuit of better, safer operations must always be the industry's goal.

Introduction

On December 7, 1994, the Board of Directors of the American Waterways Operators (AWO) unanimously approved the establishment of the AWO Responsible Carrier Program as a code of practice for association member companies. The Board's historic vote marked the culmination of an intensive, eight-month effort to develop the outlines of a new, industry-driven safety program for the barge and towing industry. In voting to adopt the Responsible Carrier Program, however, the Board did more than signal its approval of the code of practice and its endorsement of the process which produced it. Perhaps more significantly, the Board directed that a new process begin to help the newly-developed safety program take root in the industry and to ensure that the program's goals of a better, safer, and more responsible barge and towing industry are realized. To that end, the Board set January 1, 1998, as the target date to bring all AWO member companies into compliance with the Responsible Carrier Program.

Background and Purpose

Development of the Responsible Carrier Program began in April 1994, when the Board of Directors authorized the establishment of a specially-selected task force of senior barge and towing industry executives. Comprised of 13 members representing a broad cross-section of AWO's diverse membership -- inland, coastal, and harbor operators; dry and liquid carriers; large and small companies drawn from each of the association's five regions -- the working group was tasked with developing a series of "recommended positions, practices, and standards aimed at enhancing the safety of the barge and towing industry." This work stemmed from the directive of the association's newly-approved strategic plan, *AWO 2000*, that AWO "improve industry safety and environmental protection by establishing preferred industry operating principles and practices," and from the process of industry self-examination which began in the wake of the September 1993 derailment of the Amtrak *Sunset Limited*.

Throughout the spring and summer of 1994, the working group labored to fulfill the Board's mandate and to develop the outlines of a new, industry-specific safety program for the barge and towing industry. By late September, the framework of the program had emerged, and a draft document was shared with all AWO members, including shipyard and affiliate members, for review and comment. Throughout the month of October, regional briefing sessions were held in Greenville, Mississippi; New York, New York; St. Louis, Missouri; and Seattle, Washington, to subject the draft program to the critical review of AWO members in all regions of the country. Armed with this feedback, the working group reconvened in early November to consider the input received from the membership, to revise the document as necessary, and to develop final recommendations for consideration by the AWO Executive Committee and Board of Directors. On November 3, the Responsible Carrier Program was approved by the AWO Executive Committee. The Committee-approved changes to the content of the draft program, as well as its recommendations for implementation and use of the new safety program, were shared with all AWO members in mid-November. On December 7, following a final briefing and discussion session on the content of the program held

December 6, AWO's Board of Directors voted unanimously to adopt the Responsible Carrier Program as a code of practice for AWO member companies.

The Responsible Carrier Program

The program approved by the Board of Directors has three principal parts -- management and administration, equipment and inspection, and human factors -- reflecting the role which each of these components plays in ensuring safe and efficient vessel operations. The program is intended to serve as a template for AWO member companies to use in developing company-specific safety programs which are consistent with applicable law and regulation, which incorporate sound operating principles and practices not currently required by law or regulation, and which are practical and flexible enough to reflect a company's unique operational needs. The three sections of the program are meant to be used in conjunction with one another; the policies and procedures called for in the management and administration section, for example, should reflect the recommended principles and practices outlined in the equipment and inspection and human factors sections, as well as the variables of a company's trade, area of operations, size and organizational structure, and the like.

The Responsible Carrier Program does not attempt to catalogue or to duplicate that which is already required by federal law or regulation. (For clarity, references to applicable law and regulation are included in several areas of the document.) Rather, the program seeks to complement and build upon existing law and regulation and to identify sound operating principles and practices which will enhance the safety of a company's operations, with or without governmental action in these areas. The program is intended to be a practical one. It takes its inspiration not from a government-prescribed standard or from a deep-sea, ship-focused model, but from the experience of the barge and towing industry itself. The practices and principles outlined herein are, in large measure, based on principles of safe and sound operation which many companies in our industry have already voluntarily embraced. This program aims to build upon that foundation by extending those practices and principles throughout the industry as a whole.

It is not the aim of the Responsible Carrier Program to homogenize barge and towing industry operations, however; the industry is far too diverse for such a simplistic approach. Rather, the program aims to combine a set of common principles and practices which can be observed by a company regardless of its trade or its size, with an emphasis on company-specific policies and procedures which may vary significantly both between and among industry sectors. The policies and procedures developed by a small inland grain carrier will inevitably differ from those of a large coastal oil transporter; indeed, the policies developed by one carrier will likely differ even from those of a similarly situated company. The Responsible Carrier Program is rooted in the premise that common principles of safe operation, and industry practices which are recognized as sound standards industry-wide, can and must coexist with the operational diversity that has long been a hallmark of the U.S. barge and towing industry.

Implementation and Use

In approving the establishment of the Responsible Carrier Program, AWO's Board of Directors recognized that developing a comprehensive plan for implementation and use of the new safety program would be critical to achieving the program's objectives. *AWO 2000* directed the association to "improve industry safety and environmental protection by establishing preferred industry operating principles and practices," but the mere development of such a program will not by itself achieve these crucial goals. To make real gains in marine safety and environmental protection, the Board recognized that the next step for the association must be to put the Responsible Carrier Program in place and to help all AWO members integrate the program into their own companies' operations.

The Board set January 1, 1998, as the target date to bring all AWO member companies into compliance with the Responsible Carrier Program. To broaden the program's reach, and to bolster its utility as a safety-enhancing tool, the Board set the same goal to bring the vendors of AWO member companies into compliance with the program as well. The Board recommended that in adopting the Responsible Carrier Program, AWO members encourage their outside towers to comply with the program, and assist them in doing so, with the objective that all AWO member company vendors will be operating in compliance with the program by January 1, 1998.

To assist AWO members in meeting these targets, the Board directed that the development of an implementation and assistance program aimed at giving all AWO members the tools they need to adopt the Responsible Carrier Program commence immediately following Board approval of the program. Development of such a program, which may include the identification or development of sample policies and procedures, identification of industry training resources, and a series of regional implementation seminars, has already begun, and a detailed implementation plan will be presented to the AWO membership and Board of Directors at the association's April 1995 Annual Meeting. Concurrently, the association will work to research, identify, and promote tangible incentives, such as insurance benefits and charterer acceptance of program standards, for member companies adopting the Responsible Carrier Program. A progress report on these initiatives will be presented at the April 1995 Board of Directors meeting.

The Board also recognized the importance of monitoring the implementation process closely to ensure continued progress toward universal member adoption of the program and to identify any difficulties requiring modification, either of the document itself or of the implementation program. To that end, the Board will receive regular reports on the implementation process at each of its meetings between 1995 and 1998. To assist the Board in that process, each member company's chief executive officer or senior marine executive, as appropriate, should notify the AWO president when the company has put the Responsible Carrier Program in place. This self-certification process is not intended to convey a role for AWO in "enforcing" compliance with the program; it is, rather, meant to assist the Board of Directors in monitoring the association's progress toward fulfilling the Board-endorsed objective of universal member compliance by January 1,

1998. (The Board of Directors has not, at this time, recommended that an external audit be performed to verify that a company is operating in compliance with the program. The Board recognizes, however, that in order to secure certain benefits which it hopes will accrue from the Responsible Carrier Program -- for example, charterer acceptance of Responsible Carrier Program standards -- some form of external audit or third-party verification may be necessary. That possibility therefore warrants examination as the implementation process unfolds.)

Finally, the Board of Directors recognized that the process of enhancing marine safety and environmental protection is, and must be, a continuum. The Board vote to establish the Responsible Carrier Program was a milestone, not an end to the process; likewise, universal member adoption of the program will itself be a milestone, not an ending. Approaching the goals of *AWO 2000* seriously means making the Responsible Carrier Program a living document, and a continuing process: incorporating lessons learned and new technological developments into the program; considering, debating, and adopting suggestions to improve, strengthen, and build upon the program; and maintaining a constant fix on the program's underlying objectives: to improve industry safety and environmental protection.

There are many parties with a role to play in building a better, safer barge and towing industry, but the primary responsibility for making industry operations safer unquestionably lies with the industry itself. The AWO Responsible Carrier Program is a tangible manifestation of the association's acceptance of that responsibility, and its deeply felt commitment to carrying it out.

Each towing company should develop and document written policies and procedures covering, at a minimum, those items outlined below. Companies should abide by these policies in conducting their operations and should ensure that their employees are aware of and trained in those policies and procedures which affect their job responsibilities. Companies should develop a mission statement expressing their commitment to abide by their established policies and procedures and to ensure employee awareness and knowledge thereof.

All company policies and procedures should be consistent with applicable law and regulation and with the guidelines provided in the Equipment/Inspection and Human Factors sections of the AWO Responsible Carrier Program. Items marked with an asterisk (*) denote recommended practices only. Parenthetical items preceded by "e.g." or "for example" may not be applicable in all situations and are intended to serve only as examples of the types of items which company policies and procedures may address.

Policies and Procedures

A. Vessel Operating Policies/Procedures

1. Company-specific vessel operating procedures (will depend on trade)
2. Vessel-specific operating procedures (will depend on vessel size, cargo, trade, etc.)
   a. procedures for making horsepower/tow size decisions
3. Procedures to ensure proper and valid documentation carried aboard vessels; list of documentation to be carried
4. Fuel transfer procedures
5. Vessel maintenance procedures, including:
   a. persons responsible for maintenance
   b. maintenance schedules
   c. qualifications and training requirements for persons responsible for maintenance
   d. procedures to correct deficiencies identified during maintenance
   e. maintenance record retention program
6. Vessel inspection procedures, including:
   a. persons responsible for conducting in-house inspections
   b. frequency of inspections
   c. qualifications and training requirements for persons responsible for conducting in-house inspections
   d. procedures to correct deficiencies identified during inspections
   e. inspection record retention program
7. Cargo transfer/cargo handling procedures
   a. benzene policy
   b. vapor control procedures
   c. cargoes requiring special handling (e.g., anhydrous ammonia, hydrogen sulfide, etc.)

8. Lightering procedures (where applicable)
9. Procedures for identifying critical stores and supplies

B. Safety Policy/Procedures

1. Company safety policy
2. Company safety rules (will depend on cargo, trade, etc.)
3. Personal protective equipment policy, including:
   a. use
   b. inspection
   c. maintenance
   d. replacement
4. Safety training/drills/meetings (including station bill)
   a. topics to be covered (e.g., first aid/CPR, firefighting, emergency boat operation, use of life rafts, survival suits, etc.)
   b. frequency
5. Safe use of equipment (e.g., deck machinery, rigging, etc.)
6. Cargo knowledge (may include material safety data sheets)
*7. Hazard communication procedures (right to know)

C. Environmental Policy/Procedures

1. Company environmental policy
2. Garbage disposal requirements/procedures/documentation
3. Handling of waste oil, oily bilge slops, and used filters
4. Hazardous waste disposal/handling
5. Sanitary systems/handling of sewage

D. Incident Reporting Procedures

1. Personal injury
2. Oil or hazardous substance spill
3. Vessel accident
4. Bridge, lock, or dock allision
5. Grounding

E. Emergency Response Procedures

1. Personal injury response
2. Spill response plan/contingency plan
3. Vessel accident response
4. Onboard emergency response training/drill procedures
   a. subject matter
   b. frequency
   c. documentation

F. Internal Audit/Review Procedures

1. Personal injury investigation
2. Spill investigation
3. Vessel accident investigation
4. Communication procedures for disseminating lessons learned
5. Corrective safety measures taken
6. Document control, updating, and distribution
7. Performance measurement procedures

G. Organization/Levels of Authority

1. Explain/depict company organization and authority/responsibilities of individuals at different levels

H. Personnel Policies

1. Hiring policy
2. Physical exams/physical standards policy (ADA compliance)
3. Drug and alcohol policy
4. Proficiency evaluation policy
5. Orientation and training policy, including:
   a. who is trained
   b. subjects in which training is given
   c. frequency of training
6. Personnel development program
   a. deck personnel
   b. tankermen
   c. engineers
   d. wheelhouse personnel
7. Prescription medication notification policy
8. Disciplinary policy

Inland Towing Vessels

Note: Items marked with an asterisk (*) denote recommended items or practices only.

A. Hull

Documentation of each inspection item listed below should be maintained for reporting or examination by appropriate company or third-party personnel. (Note: Annual inspection requirements are not intended to preclude routine walk-through inspections conducted by vessel personnel. Such inspections are an important component of sound vessel maintenance and should be encouraged.)

1. Drydock period (routine hull inspection)

   Recommended as needed; maximum 36 months.

2. Watertight closures (doors, hatches, airports, windows, etc.)

   If vessel has watertight closures, they should be inspected annually, with particular attention to main or freeboard deck closures.

3. Other openings (ventilators, air pipes, tank vents, etc.)

   Inspection annually for water or weather tightness and structural integrity.

4. Rails, ladders, bulwarks, lighting, walking surfaces, chain guards, and handrails

   a. Inspection annually for wastage, weakness, and personnel safety considerations.
   b. Safety chains along outboard sides of main deck.

5. Emergency walkways and hatchways

   Inspection annually.

6. Piping systems and tanks

   a. Piping diagrams should be kept aboard the vessel and piping systems identified by color-coding, numbering, lettering, etc.
   b. Inspection annually.

7. Freeing ports and scuppers (if applicable)

   Survey and inspection annually while underway to note satisfactory drainage of main deck for seaworthiness.

B. Machinery

1. Each company should develop a vessel maintenance program as outlined in the Management/Administration section of the AWO Responsible Carrier Program. At a minimum, this program should cover the following:

   a. Propulsion system (all major propulsion machinery, including engines, reduction gears, clutches, controls, shafting, bearings, and other items prone to wear)
   b. Steering system (all components)
   c. Miscellaneous auxiliary systems
   d. Electrical systems (should be labeled *or documented by schematic diagram)

2. Maintenance records should be kept on all systems identified above. Records should contain sufficient information to develop a program for overhauls, repairs, and preventative maintenance, and indicate part replacement dates and test dates. Logs should be kept indicating any maintenance or inspections performed.

3. Company maintenance procedures should include a lock-out/tag-out policy.

4. Guards should be placed around any exposed moving parts (e.g., shafts, belts, pulleys, etc.).

5. Alarms/Gauges

   a. Alarms

      Vessel should have the following alarms <u>or</u> have individuals assigned responsibility to monitor and document the following in accordance with company policy:

      i. Main engine water temperature
      ii. Main engine lube oil pressure
      iii. Bilge alarm
      *iv. Generator water temperature
      *v. Generator lube oil pressure
      *vi. Hydraulic steering fluid level

      In addition:

      i. Vessel should have general alarm audible in all compartments.
      ii. Alarms should be tested quarterly.
      *iii. For unmanned or periodically manned engine room, alarms should have display board in both engine room and wheelhouse.

b. Gauges

Vessel should have the following gauges or have individuals assigned responsibility to monitor and document the following in accordance with company policy:

i. Main engine water temperature
ii. Main engine lube oil pressure
iii. Generator water temperature
iv. Generator lube oil pressure
v. Main engine tachometer
*vi. Gear oil pressure
*vii. Hydraulic steering fluid level (sight glass)

C. Firefighting/Lifesaving Equipment

A check-off report should be turned in or a log entry made at least quarterly verifying that the following required firefighting and lifesaving equipment is present and in proper working order:

1. Coast Guard-approved life preservers (46 CFR 25.25-5)
2. Coast Guard-approved ring buoy (46 CFR 25.25-5)
3. Coast Guard-approved work vests (46 CFR 26.30-5)
4. Coast Guard-approved hand-portable fire extinguishers and semi-portable fire extinguishing systems (46 CFR 25.30)

Other equipment/items carried (and addressed in check-off report or log entry) should include the following:

1. Fire hydrants with hose and nozzle
2. Flare kits (if applicable)
3. Fire axe
4. First aid kit/trauma kit (properly stocked and maintained)
5. Smoke alarms to protect all accommodation spaces (*and connected to central alarm)
6. Emergency lighting
*7. Heat or flame detector in galley and engine room
*8. Externally activated fire extinguishers in engine room
*9. Remote manual engine shutdown or remote main engine fuel shutoff valve
*10. Remote starter for fire pump
*11. Posted safety notices/placards/warning signs
*12. Placarded storage area appropriate for flammable products

D. Navigation/Communication Equipment

A check-off report should be turned in or a log entry made at least quarterly verifying that all required navigation and communication equipment is present and in proper working order:

1. Copy of Navigation Rules (33 CFR 88.05)
2. Radiotelephone log (where applicable) (47 CFR 60.405, 60.409(e) and (f))
3. VHF radio (33 CFR 26.03)
4. Valid radio station license (47 CFR 80.25) posted near radio
5. Navigation lights (33 USC 2024)
6. Whistle and bell (33 CFR 86.05)
7. Sound signal device (33 USC 2033(b))

Other equipment/items carried (and addressed in check-off report or log entry) should include the following:

1. Additional VHF radio capable of connection to battery backup
2. Swing meter or magnetic compass, depending on area of operations
3. 2 radars (If only one radar is carried, need documented procedures to address radar failure)
4. Navigation charts/maps
5. Tide and Current Tables (where applicable)
6. Coast Pilot (where applicable)
7. Notice to Mariners
8. Search light
9. Defroster/de-icer (where applicable)
10. VTS Manual (where applicable)

*11. Handheld VHF radio
*12. Backup marine radio or telephone communications
*13. Loran or GPS
*14. Public address system/internal communication system
*15. Windshield wiper (when visibility will be improved by its use)

E. Boat and Barge Rigging

Each company operating inland towing vessels should:

1. Establish documented procedures for safe use of wires, ropes, chains, shackles, ratchets, and winches.
2. Identify minimum rigging requirements for each vessel according to service.
3. Formulate an inspection and replacement program for rigging.
4. Establish minimum (original/time of purchase) specifications for each element of rigging.

F. Environmental Controls

The following requirements are prescribed by regulation:

1. Fuel oil and bulk lubricating oil containment (33 CFR 155.320)
2. Bilge slop containment (33 CFR 155.330)
3. Oily water separator equipment (33 CFR 155.380) (where applicable)
4. Placard prohibiting discharge of oil (33 CFR 155.450)
5. MARPOL placard (33 CFR 151.59)
6. Certified marine sanitation device (33 CFR 159.7)
7. Fuel oil transfer procedures (33 CFR 155.720)

In addition, each towing vessel should have the following:

1. Oil spill contingency plan outlining procedures to be followed in the event of a fuel spill from the towing vessel
2. Containment around fueling stations
3. Spill kit

*4. Closable scuppers or other containment method (where applicable)

Coastal/Ocean Towing Vessels

Note: Items marked with an asterisk (*) denote recommended items or practices only.

A. Hull

Documentation of each inspection item listed below should be maintained for reporting or examination by appropriate company or third-party personnel. (Note: Annual inspection requirements are not intended to preclude routine walk-through inspections conducted by vessel personnel. Such inspections are an important component of sound vessel maintenance and should be encouraged.)

1. Drydock period (routine hull inspection)

   Recommended twice every five years; maximum 36 months.

2. Hull gaugings and ballast tank inspections

   Maximum 36 months for ballast tanks and voids. Maximum 5 years for hull gaugings.

3. Watertight closures (doors, hatches, airports, windows, etc.)

   If vessel has watertight closures, they should be inspected annually, with particular attention to main or freeboard deck closures.

4. Other openings (ventilators, air pipes, tank vents, etc.)

   Inspection annually for water or weather tightness and structural integrity.

5. Rails, ladders, bulwarks, lighting, walking surfaces, chain guards, and handrails

   Inspection annually for wastage, weakness, and personnel safety considerations.

6. Emergency walkways and hatchways

   Inspection annually.

7. Freeing ports and scuppers

   Survey and inspection annually while at sea to note satisfactory drainage of main deck for seaworthiness.

8. Piping systems and tanks

   a. Piping diagrams should be kept aboard the vessel and piping systems identified by color-coding, numbering, lettering, etc.
   b. Inspection annually.

B. Machinery

1. Each company should develop a vessel maintenance program as outlined in the Management/Administration section of the AWO Responsible Carrier Program. At a minimum, this program should cover the following:

   a. Propulsion system (all major propulsion machinery, including engines, reduction gears, clutches, controls, shafting, bearings, and other items prone to wear)
   b. Steering system (all components)
   c. Miscellaneous auxiliary systems
   d. Electrical systems (should be labeled *or documented by schematic diagram)

2. Maintenance records should be kept on all systems identified above. Records should contain sufficient information to develop a program for overhauls, repairs, and preventative maintenance, and indicate part replacement dates and test dates. Logs should be kept indicating any maintenance or inspections performed.

3. Company maintenance procedures should include a lock-out/tag-out policy.

4. Guards should be placed around any exposed moving parts (e.g., shafts, belts, pulleys, etc.).

5. Alarms/Gauges

   a. Alarms

      Vessel should have the following alarms <u>or</u> have individuals assigned responsibility to monitor and document the following in accordance with company policy:

      i. Main engine water temperature
      ii. Main engine lube oil pressure
      iii. Bilge alarm
      *iv. Generator water temperature
      *v. Generator lube oil pressure
      *vi. Hydraulic steering fluid level

In addition:

i. Vessel should have general alarm audible in all compartments.
ii. Alarms should be tested quarterly.
*iii. For unmanned or periodically manned engine room, alarms should have display board in both engine room and wheelhouse.

b. Gauges

Vessel should have the following gauges or have individuals assigned responsibility to monitor and document the following in accordance with company policy:

i. Main engine water temperature
ii. Main engine lube oil pressure
iii. Generator water temperature
iv. Generator lube oil pressure
v. Main engine tachometer
*vi. Gear oil pressure
*vii. Hydraulic steering fluid level (sight glass)

C. Firefighting/Lifesaving Equipment

A check-off report should be turned in or a log entry made at least quarterly verifying that the following required firefighting and lifesaving equipment is present and in proper working order:

1. Coast Guard-approved life preservers (46 CFR 25.25-5)
2. Coast Guard-approved ring buoy (46 CFR 25.25-5)
3. Coast Guard-approved work vests (46 CFR 26.30-5)
4. Coast Guard-approved hand-portable fire extinguishers and semi-portable fire extinguishing systems (46 CFR 25.30)

Other equipment/items carried (and addressed in check-off report or log entry) should include the following:

1. Inflatable life raft
2. Fire hydrants with hose and nozzle
3. Flare kits
4. Fire axe
5. First aid kit/trauma kit (properly stocked and maintained)
6. Smoke alarms installed to protect all accommodation spaces (*and connected to central alarm)
7. Emergency lighting
8. Survival suits for each person on board (where applicable)
*9. Heat or flame detector in galley and engine room
*10. Remote manual engine shutdown or remote main engine fuel shutoff valve
*11. Remote starter for fire pump

*12. Posted safety notices/placards/warning signs
*13. Placarded storage area appropriate for flammable products
*14. Externally activated fire extinguishers in engine room

D. Navigation/Communication Equipment

A check-off report should be turned in or a log entry made at least quarterly verifying that all required navigation and communication equipment is present and in proper working order:

1. Copy of Navigation Rules (33 CFR 88.05)
2. Radiotelephone log (47 CFR 80.405, 80.409(e) and (f))
3. VHF radio (33 CFR 26.03)
4. Valid radio station license (47 CFR 80.25) posted near radio
5. Navigation lights (33 USC 2024)
6. Whistle and bell (33 CFR 86.05)
7. Sound signal device (33 USC 2033(b))
8. Emergency position indicating radio beacon (EPIRB) (46 CFR 25.26)

Other equipment/items carried (and addressed in check-off report or log entry) should include the following:

1. Additional VHF radio capable of connection to battery backup
2. Magnetic compass and backup means of determining course and direction (*gyrocompass for oceangoing tugs)
3. 2 radars (If only one radar is carried, need documented procedures to address radar failure)
4. Fathometer
5. Loran or GPS
6. Navigation charts
7. Tide and Current Tables
8. Coast Pilot
9. Light List
10. Notice to Mariners
11. Search light
12. Rudder angle indicator
13. Defroster/de-icer (where applicable)
14. VTS Manual (where applicable)
*15. Autopilot
*16. Handheld VHF radio
*17. Backup marine radio or telephone communications
*18. Public address system/internal communication system
*19. Windshield wiper (when visibility will be improved by its use)

E. Towing Gear

1. Tow wire/towing hawser

a. General guidelines for sizing tow wires/towing hawsers

i. The minimum nominal breaking strength of the tow wire/towing hawser should be 2.5 times the certified or calculated bollard pull of the tug. The static bollard pull of the tug should be determined by a static bollard pull test certified by the American Bureau of Shipping or other competent organization, or calculated using the engine manufacturer's rated brake horsepower (BHP) at the maximum engine rpm times the factor 27.5 lbs. per BHP.

ii. The following minimum size tow wire/towing hawser is recommended for use with tugs of the horsepower indicated. (Note: The horsepower and diameter ranges listed are intended to serve as ranges only. A tug at the low end of a given horsepower range does not necessarily require a towing hawser sized at the low end of the diameter range; nor does a vessel at the high end of a given horsepower range necessarily require a towing hawser sized at the high end of the diameter range.)

aa. < 1000 hp: 1" diameter; breaking strength 35 tons
bb. 1000-1500 hp: 1"-1.125" diameter; breaking strength 46 tons
cc. 1500-2000 hp: 1"-1.25" diameter; breaking strength 68 tons
dd. 2000-2500 hp: 1.25"-1.50" diameter; breaking strength 86 tons
ee. 2500-3000 hp: 1.50"-1.75" diameter; breaking strength 103 tons
ff. 3000-4000 hp: 1.75"-2" diameter; breaking strength 137 tons
gg. 4000-5000 hp: 2"-2.25" diameter; breaking strength 172 tons
hh. 5000-7000 hp: 2.125"-2.50" diameter; breaking strength 245 tons
ii. 7000-10,000 hp: Special consideration (e.g., certified bollard pull/tow wire match or dual tow wire arrangement)

b. Specifications

i. Tow wires should have independent wire rope cores (IWRC).
ii. Tow wires should be of improved plow steel or extra improved plow steel.

iii. Tow wires should be heavy lubricated or galvanized at the time of manufacture.
iv. Tow wires should be 6 x 19 or larger (more flexible).
v. Soft lines used in ocean towing should be rated at 2.5 times the certified or calculated bollard pull of the tug.
vi. The breaking strength of the wire rope or towing hawser should be certified by the manufacturer by pull-testing to destruction a portion of wire from the mill run from which it originated.

c. Terminations

The towing end of the tow wire should terminate in a spelter or thermo-set resin poured socket, or a spliced eye with thimble, and should be sized to exceed the breaking strength of the tow wire.

2. Bridles and surge gear (if used)

a. Bridles for ocean towing

i. Connections to the barge should be by a two-legged bridle.
ii. The breaking strength of each leg should be at least 1.3 times that of the minimum required breaking strength of the main towing hawser.
iii. Bridles should be Grade 2 or higher welded or forged integral stud link chain or IWRC wire rope.

b. Surge gear (if used)

i. Surge chains should be Grade 2 or higher welded or forged integral stud link chain.
ii. Surge chains should be of the same grade and type and at least as large as that in the towing bridle.
iii. Each end of the chain may have an end link or one studless link.
iv. A synthetic shockline may be used as surge gear if rated at 1.3 times the breaking strength specified for the primary tow wire or towing hawser (see item 1.a.i. above).

3. Associated towing gear

All associated towing gear (e.g., shackles, flounder/fish plates, shock hawser, and pennant) should be sufficiently sized for its intended use and should have a breaking strength of not less than 1.3 times the breaking strength specified for the primary tow line (see item 1.a.i. above).

4. Chafing protection

a. Protection from chafing should be provided at points where the wire rope hawser passes over the stern bulrail or around a surface that may

cause wear on the hawser during normal towing operations.

b. Any wear points on the vessel or associated equipment contacted by wire rope as it travels during operation should be kept ground smooth. Sources of sharp bending by deformation of the surface should be eliminated or not introduced.

5. Emergency towing gear

All components of the emergency towing system should be rated with a breaking strength equal to 1.5 times the rated bollard pull of the towing vessel. Each tug or barge should be equipped with an emergency recovery system.

(Note: 33 CFR 155.230 requires that all offshore [i.e., coastal or ocean] oil barges carry an emergency tow wire or tow line, rigged and ready for use. The emergency tow wire or tow line must have the same towing characteristics, but not necessarily the same physical characteristics, as the primary tow wire or tow line. The Coast Guard has advised AWO that tow line features such as size, breaking strength, etc., are considered physical characteristics, not towing characteristics. Hence, according to the Coast Guard, carrying an emergency tow line with a breaking strength equal to 1.5 times the rated bollard pull of the towing vessel, while the breaking strength of the primary tow line is equal to 2.5 times the rated bollard pull, as specified in item 1.a.i. above, is not inconsistent with the requirements of 33 CFR 155.230.)

6. Wire rope records, inspection, and maintenance

Each company should develop a program to address inspection, maintenance, and replacement criteria for wire rope and synthetic hawsers used in the tow line assembly. As a minimum, the wire rope program should be consistent with the recommendations outlined in Coast Guard Navigation and Vessel Inspection Circular (NVIC) 5-92.

F. Environmental Controls

The following requirements are prescribed by regulation:

1. Fuel oil and bulk lubricating oil containment (33 CFR 155.320)
2. Bilge slop containment (33 CFR 155.330)
3. Oily water separator equipment (33 CFR 33 CFR 155.380)
4. Placard prohibiting discharge of oil (33 CFR 155.450)
5. MARPOL placard (33 CFR 151.59)
6. Certified marine sanitation device (33 CFR 159.7)
7. Fuel oil transfer procedures (33 CFR 155.720)

In addition, each towing vessel should have the following:

1. Oil spill contingency plan outlining procedures to be followed in the event of a fuel spill from the towing vessel
2. Containment around fueling stations
3. Spill kit

*4. Closable scuppers or other containment method

A. Manning

1. All towing companies should man their vessels for safe operation, taking into account the following criteria:

   a. applicable law and regulation
   b. number, size, and type of barges to be towed
   c. towing route
   d. safety of personnel, equipment, environment
   e. service in which tow is engaged
   f. functional duties required of crew in addition to standard navigation
   g. configuration of vessel superstructure and deck and engine room
   h. extent of automation
   i. size and power of equipment used
   j. environmental/climatic conditions (e.g., icing)
   k. experience of crew

2. Except in an emergency, at least one qualified wheelhouse person and one additional crewmember should be on duty at all times while the vessel is underway.

B. Watchstanding/Work Hours

(Note: Current law [46 USC 8104(h)] provides that "an individual licensed to operate a towing vessel may not work for more than 12 hours in a consecutive 24-hour period except in an emergency." Therefore, unless and until this statute is amended, towing vessel operators remain subject to a 12-hour work limit.)

All other crewmembers on a towing vessel should be permitted to work no more than 15 hours in any 24-hour period or more than 42 hours in a 72-hour period, except in an emergency or drill.

C. Training

- Towing vessel crewmembers should receive initial training and periodic refresher training in the following subjects. Refresher training should be conducted in accordance with company policy, but no less frequently than once every five years.

- Unless required as a condition of licensure or otherwise prescribed by regulation, training courses need not be Coast Guard-approved.

o The training identified below is intended to apply to any individual serving in the listed capacity aboard a towing vessel, regardless of license held. Training required as a condition of licensure (e.g., firefighting) may be used to satisfy the training specifications listed below.

1. Master (captain), relief captain, mate (pilot)

   a. Radar training
   b. Navigation/boat handling training or proficiency evaluation; Rules of the Road refresher training
   c. Company policy and procedure orientation, including review of federal requirements and company policies
   d. Marine firefighting/fire prevention
   e. Personal safety, including:
      i. first aid and CPR awareness
      ii. confined space hazard awareness
      iii. injury prevention, including back training
   f. For tank barge tows:
      i. first responder/spill mitigation/emergency response orientation (may include HAZWOPER training)
      ii. benzene awareness training
   g. Cargo knowledge/hazard awareness
   h. Responsibility and authority of master; supervisory skills training

2. Engineer

   a. Marine diesel school or in-house training, including equipment and process updates
   b. Company policy and procedure orientation, including review of federal requirements and company policies
   c. Marine firefighting/fire prevention
   d. Personal safety, including:
      i. first aid and CPR awareness
      ii. confined space hazard awareness
      iii. injury prevention, including back training
      iv. lock-out/tag-out procedures
   e. For tank barge tows:
      i. first responder/spill mitigation training

3. Tankerman

   a. Tank barge safety training
      i. loading and discharging operations
      ii. safety practices
      iii. environmental protection and loading procedures
      iv. federal regulation review and training
      v. first responder/spill mitigation/emergency response orientation (may include HAZWOPER training)
      vi. vapor recovery operations

b. Company policy and procedure orientation, including review of federal requirements and company policies
c. Marine firefighting/fire prevention
d. Personal safety, including:
   i. first aid and CPR awareness
   ii. confined space hazard awareness
   iii. injury prevention, including back training
   iv. cargo-specific training
e. Vessel communications system and procedures

5. Deck crew

(Note: Experienced deckhands new to a particular company should receive, or have received, the training identified below.)

a. Deck operations and safety training
b. Company policy and procedure orientation, including review of federal requirements and company policies
c. Vessel firefighting/fire prevention
d. Personal safety, including:
   i. first aid and CPR awareness
   ii. confined space hazard awareness
   iii. injury prevention, including back training
   iv. lock-out/tag-out procedures
e. For tank barge tows:
   i. first responder/spill mitigation training

6. Entry-level personnel

(Note: "Entry-level" refers to individuals new to the barge and towing industry.)

a. Company orientation, including:
   i. drug and alcohol policy
   ii. safety as a condition of employment
   iii. vessel layout/deck operations
   iv. required safety gear
   v. job responsibilities
b. Emergency procedures orientation
   i. fire
   ii. collision/allision
   iii. sinking
   iv. grounding
   v. man overboard
   vi. personal injury
c. Confined space hazard awareness
d. Injury prevention, including back training

Appendix IV

APPENDIX IV

Timing Data

Average Remake Time
(Cuts Bump Together until Tow Starts Exit)

No.	Lock	Time (min)
1	Starved Rock	14:10
2	Starved Rock	14:10
3	Lock 24	09:00
4	Lock 24	11:45
5	Lock 24	13:05
6	Mel Price Lock	17:29
7	Mel Price Lock	07:55
8	Mel Price Lock	15:25
9	Mel Price Lock	08:32
10	Mel Price Lock	07:08
	AVERAGE	**12 Minutes**

Lock: Starved Rock Date: 16 Aug 94

ITEM	DESCRIPTION		Notes:
a.	Observation Number	1	Sebring
b.	Tow Type	Setover	
c.	Number of Barges	2	Fuel Barges
d.	Type of Entry	Fly	
e.	Upbound/Downbound	Upbound	

NO.	EVENT	CLOCK	ELAPSED	COMMENTS
1.	Bow Over Sill	12:13:10		
			00:01:20	
2.	First Cut In	12:14:30		
			00:08:00	tie off barges to wall
3.	Begin Reconfiguration	12:22:30		
			00:02:20	
4.	End Reconfiguration	12:24:50		
			00:00:02	
5.	Start Gate Closure	12:24:52		
			00:01:42	
6.	Gate Closed	12:26:34		
			00:11:41	
7.	End Fill/Empty	12:38:15		
			00:02:03	
8.	Gate Recessed	12:40:18		
			00:00:02	
9.	Begin Reconfiguration	12:40:20		
			00:05:40	reconfig during exit
10.	End Reconfiguration	12:46:00		
			00:02:20	
11.	Tow Stern Over Sill	12:48:20		

Lock: Starved Rock Date: 16 Aug 94

ITEM	DESCRIPTION		Notes:
a.	Observation Number	2	Bob Koch
b.	Tow Type	Double	
c.	Number of Barges	15	+2 Recreational Vessels
d.	Type of Entry	Fly	Exchange Exit
e.	Upbound/Downbound	Upbound	

NO.	EVENT	CLOCK	ELAPSED	COMMENTS
1.	Bow Over Sill	13:30:00		
			00:12:00	
2.	First Cut In	13:42:00		
			00:04:28	
3.	Second Cut Loose	13:46:28		
			00:02:52	
4.	Second Cut Clear of Gate	13:49:20		
			00:00:28	
5.	Start Gate Closure	13:49:48		
			00:01:44	
6.	Gate Closed	13:51:32		
			00:12:28	
7.	End Fill/Empty	14:04:00		
			00:02:20	
8.	Gate Recessed	14:06:20		
			00:01:50	
9.	First Cut Begins Exit	14:08:10		
			00:11:20	used tow haulage unit
10.	First Cut Stern Over Gate	14:19:30		
			00:01:30	moor cut prior to closure
11.	Start Gate Closure	14:21:00		
			00:01:56	
12.	Gate Closed	14:22:56		
			00:16:04	
13.	End Fill/Empty	14:39:00		
			00:02:12	
14.	Gate Recessed	14:41:12		
			00:03:48	
15.	Second Cut Bow Over Gate	14:45:00		
			00:08:00	
16.	Second Cut Clear of Gate	14:53:00		
			00:05:15	
17.	Start Gate Closure	14:58:15		
			00:01:55	
18.	Gate Closed	15:00:10		
			00:12:50	
19.	End Fill/Empty	15:13:00		
			00:03:09	
20.	Gate Recessed	15:16:09		
			00:00:51	
21.	Second Cut Begins Exit	15:17:00		
			00:03:00	
22.	Cuts Bump together	15:20:00		
			00:24:10	includes 10 min delay for exch. vsl
23.	Tow Starts Exit	15:44:10		to moor @ cell in approach
			00:05:20	
24.	Tow Stern Over Sill	15:49:30		

Lock: Starved Rock Date: 16 Aug 94

ITEM	DESCRIPTION		Notes:
a.	Observation Number	3	Vicksburg
b.	Tow Type	Double	
c.	Number of Barges	9	3x3 configuration
d.	Type of Entry	Exchange	Moored at cell in upstream approach
e.	Upbound/Downbound	Dwnbound	

NO.	EVENT	CLOCK	ELAPSED	COMMENTS
1.	Bow Over Sill	16:13:45		
			00:06:15	
2.	First Cut In	16:20:00		
			00:02:00	
3.	Second Cut Loose	16:22:00		
			00:02:14	
4.	Second Cut Clear of Gate	16:24:14		
			00:01:01	
5.	Start Gate Closure	16:25:15		
			00:01:55	
6.	Gate Closed	16:27:10		
			00:10:05	
7.	End Fill/Empty	16:37:15		
			00:02:01	
8.	Gate Recessed	16:39:16		
			00:01:39	
9.	First Cut Begins Exit	16:40:55		
			00:08:50	
10.	First Cut Stern Over Gate	16:49:45		
			00:07:05	wait on rec vsl to enter in exchange
11.	Start Gate Closure	16:56:50		
			00:02:05	
12.	Gate Closed	16:58:55		
			00:11:11	
13.	End Fill/Empty	17:10:06		
			00:01:57	
14.	Gate Recessed	17:12:03		
			00:04:13	
15.	Second Cut Bow Over Gate	17:16:16		
			00:00:27	2nd cut was towboat only
16.	Second Cut Clear of Gate	17:16:43		
			00:00:17	
17.	Start Gate Closure	17:17:00		
			00:01:45	
18.	Gate Closed	17:18:45		
			00:13:15	
19.	End Fill/Empty	17:32:00		
			00:02:08	
20.	Gate Recessed	17:34:08		
			00:00:12	
21.	Second Cut Begins Exit	17:34:20		
			00:01:35	
22.	Cuts Bump together	17:35:55		
			00:03:35	
23.	Tow Starts Exit	17:39:30		
			00:01:00	2nd cut was towboat only
24.	Tow Stern Over Sill	17:40:30		

Lock: Starved Rock Date: 16 Aug 94

ITEM	DESCRIPTION		Notes:
a.	Observation Number	4	Karen Renee
b.	Tow Type	Knockout	
c.	Number of Barges	6	
d.	Type of Entry	Fly	
e.	Upbound/Downbound	Upbound	

NO.	EVENT	CLOCK	ELAPSED	COMMENTS
1.	Bow Over Sill	18:49:00		
			00:12:00	
2.	First Cut In	19:01:00		
			00:01:00	
3.	Begin Reconfiguration	19:02:00		
			00:03:00	
4.	End Reconfiguration	19:05:00		
			00:00:05	
5.	Start Gate Closure	19:05:05		
			00:01:52	
6.	Gate Closed	19:06:57		
			00:12:33	
7.	End Fill/Empty	19:19:30		
			00:02:05	
8.	Gate Recessed	19:21:35		
			00:01:25	
9.	Begin Reconfiguration	19:23:00		
			00:03:00	reconfig during exit
10.	End Reconfiguration	19:26:00		
			00:04:25	
11.	Tow Stern Over Sill	19:30:25		

Lock: Starved Rock Date: 16 Aug 94

ITEM	DESCRIPTION		Notes:
a.	Observation Number	5	Nancy S
b.	Tow Type	Knockout	
c.	Number of Barges	5	
d.	Type of Entry	Fly	
e.	Upbound/Downbound	Dwnbound	

NO.	EVENT	CLOCK	ELAPSED	COMMENTS
1.	Bow Over Sill	19:50:00		
			00:07:58	
2.	First Cut In	19:57:58		
			00:00:20	
3.	Begin Reconfiguration	19:58:18		
			00:01:02	
4.	End Reconfiguration	19:59:20		
			00:00:15	
5.	Start Gate Closure	19:59:35		
			00:01:45	
6.	Gate Closed	20:01:20		
			00:09:38	
7.	End Fill/Empty	20:10:58		
			00:01:53	
8.	Gate Recessed	20:12:51		
			00:04:39	exiting
9.	Begin Reconfiguration	20:17:30		
			00:02:43	reconfig during exit
10.	End Reconfiguration	20:20:13		
			00:04:33	
11.	Tow Stern Over Sill	20:24:46		

Lock: Starved Rock Date: 16 Aug 94

ITEM	DESCRIPTION		Notes:
a.	Observation Number	6	Lois Ann
b.	Tow Type	Double	Inexperienced Deckhands
c.	Number of Barges	10	2x5 configuration
d.	Type of Entry	Exchange	
e.	Upbound/Downbound	Upbound	Night Lockage

NO.	EVENT	CLOCK	ELAPSED	COMMENTS
1.	Bow Over Sill	20:58:30		
			00:11:28	
2.	First Cut In	21:09:58		
			00:09:17	
3.	Second Cut Loose	21:19:15		
			00:01:45	
4.	Second Cut Clear of Gate	21:21:00		
			00:00:18	
5.	Start Gate Closure	21:21:18		
			00:02:05	
6.	Gate Closed	21:23:23		
			00:11:39	
7.	End Fill/Empty	21:35:02		
			00:02:04	
8.	Gate Recessed	21:37:06		
			00:01:54	
9.	First Cut Begins Exit	21:39:00		
			00:09:00	used tow haulage unit
10.	First Cut Stern Over Gate	21:48:00		
			00:02:12	moor cut prior to closure
11.	Start Gate Closure	21:50:12		
			00:02:05	
12.	Gate Closed	21:52:17		
			00:15:34	
13.	End Fill/Empty	22:07:51		
			00:02:19	
14.	Gate Recessed	22:10:10		
			00:02:35	
15.	Second Cut Bow Over Gate	22:12:45		
			00:07:53	
16.	Second Cut Clear of Gate	22:20:38		
			00:04:29	moor cut before closing gates
17.	Start Gate Closure	22:25:07		
			00:01:53	
18.	Gate Closed	22:27:00		
			00:11:45	
19.	End Fill/Empty	22:38:45		
			00:01:59	
20.	Gate Recessed	22:40:44		
			00:00:16	
21.	Second Cut Begins Exit	22:41:00		
			00:07:50	
22.	Cuts Bump together	22:48:50		
			00:14:10	
23.	Tow Starts Exit	23:03:00		
			00:08:00	
24.	Tow Stern Over Sill	23:11:00		

Lock: Starved Rock Date: 17Aug94

ITEM	DESCRIPTION		Notes:
a.	Observation Number	7	Rambler
b.	Tow Type	Double	second cut; tug only
c.	Number of Barges	9	3x3 configuration
d.	Type of Entry	Fly	3 rec vessels during turnback
e.	Upbound/Downbound	Upbound	

NO.	EVENT	CLOCK	ELAPSED	COMMENTS
1.	Bow Over Sill	11:04:47		
			00:13:13	
2.	First Cut In	11:18:00		
			00:00:43	
3.	Second Cut Loose	11:18:43		
			00:00:17	
4.	Second Cut Clear of Gate	11:19:00		
			00:00:15	
5.	Start Gate Closure	11:19:15		
			00:01:52	
6.	Gate Closed	11:21:07		
			00:13:28	
7.	End Fill/Empty	11:34:35		
			00:01:59	
8.	Gate Recessed	11:36:34		
			00:01:11	2 min delay for rec vsls
9.	First Cut Begins Exit	11:37:45		
			00:15:15	used tow haulage unit
10.	First Cut Stern Over Gate	11:53:00		
			00:07:57	5 min delay for rec vsls to enter
11.	Start Gate Closure	12:00:57		
			00:02:09	
12.	Gate Closed	12:03:06		
			00:13:14	
13.	End Fill/Empty	12:16:20		
			00:01:50	
14.	Gate Recessed	12:18:10		
			00:02:40	delay for rec vsls to depart
15.	Second Cut Bow Over Gate	12:20:50		
			00:00:25	tug only
16.	Second Cut Clear of Gate	12:21:15		
			00:00:10	
17.	Start Gate Closure	12:21:25		
			00:01:55	
18.	Gate Closed	12:23:20		
			00:14:36	
19.	End Fill/Empty	12:37:56		
			00:02:02	
20.	Gate Recessed	12:39:58		
			00:00:01	
21.	Second Cut Begins Exit	12:39:59		
			00:02:18	stern over sill prior to cuts together
22.	Cuts Bump together	12:42:17		
			N/A	
23.	Tow Starts Exit	N/A		
			N/A	
24.	Tow Stern Over Sill	N/A		

Lock: 24 Date: 18Aug94

ITEM	DESCRIPTION		Notes:
a.	Observation Number	1	Mary H. Morrison
b.	Tow Type	Double	
c.	Number of Barges	15	3x5 configuration
d.	Type of Entry	Exchange	
e.	Upbound/Downbound	Dwnbound	

NO.	EVENT	CLOCK	ELAPSED	COMMENTS
1.	Bow Over Sill	09:53:56		
			00:08:25	
2.	First Cut In	10:02:21		
			00:01:50	
3.	Second Cut Loose	10:04:11		
			00:02:19	
4.	Second Cut Clear of Gate	10:06:30		
			00:00:30	
5.	Start Gate Closure	10:07:00		
			00:02:10	
6.	Gate Closed	10:09:10		
			00:06:40	
7.	End Fill/Empty	10:15:50		
			00:02:10	
8.	Gate Recessed	10:18:00		
			00:02:16	
9.	First Cut Begins Exit	10:20:16		
			00:16:17	used tow haulage unit
10.	First Cut Stern Over Gate	10:36:33		
			00:00:11	
11.	Start Gate Closure	10:36:44		
			00:01:56	
12.	Gate Closed	10:38:40		
			00:06:05	
13.	End Fill/Empty	10:44:45		
			00:01:55	
14.	Gate Recessed	10:46:40		
			00:00:15	
15.	Second Cut Bow Over Gate	10:46:55		
			00:05:15	
16.	Second Cut Clear of Gate	10:52:10		
			00:00:55	
17.	Start Gate Closure	10:53:05		
			00:02:10	
18.	Gate Closed	10:55:15		
			00:07:25	
19.	End Fill/Empty	11:02:40		
			00:01:50	
20.	Gate Recessed	11:04:30		
			00:02:30	delay for fouled mooring line
21.	Second Cut Begins Exit	11:07:00		
			00:04:00	
22.	Cuts Bump together	11:11:00		
			00:09:00	
23.	Tow Starts Exit	11:20:00		
			00:04:06	
24.	Tow Stern Over Sill	11:24:06		

Lock: 24 Date: 18Aug94

ITEM	DESCRIPTION		Notes:
a.	Observation Number	2	Bill O'Donley
b.	Tow Type	Single	
c.	Number of Barges	2	in line
d.	Type of Entry	Exchange	
e.	Upbound/Downbound	Dwnbound	

NO.	EVENT	CLOCK	ELAPSED	COMMENTS
1.	Bow Over Sill	11:40:30		
			00:01:50	
2.	Entry Complete	11:42:20		
			00:00:20	
3.	Start Gate Closure	11:42:40		
			00:01:50	
4.	Gate Closed	11:44:30		
			00:05:30	
5.	End Fill/Empty	11:50:00		
			00:01:55	
6.	Gate Recessed	11:51:55		
			00:00:05	
7.	Begin Exit	11:52:00		
			00:02:00	
8.	Tow Stern Over Sill	11:54:00		

Lock: 24 Date: 18Aug94

ITEM	DESCRIPTION		Notes:
a.	Observation Number	3	Ardyce Randall
b.	Tow Type	Double	
c.	Number of Barges	15	3x5 configuration
d.	Type of Entry	Exchange	
e.	Upbound/Downbound	Upbound	

NO.	EVENT	CLOCK	ELAPSED	COMMENTS
1.	Bow Over Sill	15:45:25		
			00:08:55	
2.	First Cut In	15:54:20		
			00:01:35	
3.	Second Cut Loose	15:55:55		
			00:01:20	
4.	Second Cut Clear of Gate	15:57:15		
			00:00:10	
5.	Start Gate Closure	15:57:25		
			00:02:01	
6.	Gate Closed	15:59:26		
			00:05:42	
7.	End Fill/Empty	16:05:08		
			00:01:57	
8.	Gate Recessed	16:07:05		
			00:02:15	drag cable for tow haul unit
9.	First Cut Begins Exit	16:09:20		
			00:08:10	used tow haulage unit
10.	First Cut Stern Over Gate	16:17:30		
			00:00:05	
11.	Start Gate Closure	16:17:35		
			00:01:55	
12.	Gate Closed	16:19:30		
			00:10:20	
13.	End Fill/Empty	16:29:50		
			00:02:01	
14.	Gate Recessed	16:31:51		
			00:00:24	
15.	Second Cut Bow Over Gate	16:32:15		
			00:06:11	
16.	Second Cut Clear of Gate	16:38:26		
			00:00:31	
17.	Start Gate Closure	16:38:57		
			00:02:01	
18.	Gate Closed	16:40:58		
			00:06:10	
19.	End Fill/Empty	16:47:08		
			00:01:55	
20.	Gate Recessed	16:49:03		
			00:00:07	
21.	Second Cut Begins Exit	16:49:10		
			00:02:55	
22.	Cuts Bump together	16:52:05		
			00:11:45	
23.	Tow Starts Exit	17:03:50		
			00:03:10	
24.	Tow Stern Over Sill	17:07:00		

Lock: 24 Date: 18Aug94

ITEM	DESCRIPTION		Notes:
a.	Observation Number	4	Sir Robert
b.	Tow Type	Single	
c.	Number of Barges	4	2x2 configuration
d.	Type of Entry	Fly	
e.	Upbound/Downbound	Dwnbound	

NO.	EVENT	CLOCK	ELAPSED	COMMENTS
1.	Bow Over Sill	18:33:20		
			00:04:25	
2.	Entry Complete	18:37:45		
			00:00:55	
3.	Start Gate Closure	18:38:40		
			00:02:00	
4.	Gate Closed	18:40:40		
			00:06:02	
5.	End Fill/Empty	18:46:42		
			00:02:04	
6.	Gate Recessed	18:48:46		
			00:00:29	
7.	Begin Exit	18:49:15		
			00:03:05	
8.	Tow Stern Over Sill	18:52:20		

Lock: 24 Date: 18Aug94

ITEM	DESCRIPTION		Notes:
a.	Observation Number	5	Kay D
b.	Tow Type	Single	
c.	Number of Barges	2	Fuel Barges
d.	Type of Entry	Exchange	
e.	Upbound/Downbound	Upbound	

NO.	EVENT	CLOCK	ELAPSED	COMMENTS
1.	Bow Over Sill	19:05:50		
			00:04:20	
2.	Entry Complete	19:10:10		
			00:00:50	
3.	Start Gate Closure	19:11:00		
			00:02:00	
4.	Gate Closed	19:13:00		
			00:08:28	
5.	End Fill/Empty	19:21:28		
			00:01:59	
6.	Gate Recessed	19:23:27		
			00:00:03	
7.	Begin Exit	19:23:30		
			00:02:50	
8.	Tow Stern Over Sill	19:26:20		

Lock: 24 Date: 18Aug94

ITEM	DESCRIPTION		Notes:
a.	Observation Number	6	American Beauty
b.	Tow Type	Double	
c.	Number of Barges	15	3x5 configuration
d.	Type of Entry	Fly	
e.	Upbound/Downbound	Dwnbound	Night Lockage

NO.	EVENT	CLOCK	ELAPSED	COMMENTS
1.	Bow Over Sill	20:41:00		
			00:10:03	
2.	First Cut In	20:51:03		
			00:03:27	
3.	Second Cut Loose	20:54:30		
			00:01:10	
4.	Second Cut Clear of Gate	20:55:40		
			00:00:15	
5.	Start Gate Closure	20:55:55		
			00:02:25	
6.	Gate Closed	20:58:20		
			00:05:28	
7.	End Fill/Empty	21:03:48		
			00:01:57	
8.	Gate Recessed	21:05:45		
			00:02:15	drag cable for tow haul unit
9.	First Cut Begins Exit	21:08:00		
			00:16:17	used tow haulage unit
10.	First cut Stern Over Gate	21:24:17		
			00:01:08	moor cut before closing gates
11.	Start Gate Closure	21:25:25		
			00:02:02	
12.	Gate Closed	21:27:27		
			00:06:09	
13.	End Fill/Empty	21:33:27		
			00:01:58	
14.	Gate Recessed	21:35:25		
			00:01:25	
15.	Second Cut Bow Over Gate	21:36:50		
			00:03:40	
16.	Second Cut Clear of Gate	21:40:30		
			00:01:20	
17.	Start Gate Closure	21:41:50		
			00:02:00	
18.	Gate Closed	21:43:50		
			00:07:25	
19.	End Fill/Empty	21:51:15		
			00:01:51	
20.	Gate Recessed	21:53:06		
			00:00:01	
21.	Second Cut Begins Exit	21:53:07		
			00:03:53	
22.	Cuts Bump together	21:57:00		
			00:13:05	
23.	Tow Starts Exit	22:10:05		
			00:04:32	
24.	Tow Stern Over Sill	22:14:37		

Lock:	Mel Price (26R)		Date: 02-27-95
ITEM	DESCRIPTION		Notes:
a.	Observation Number	1	Charles W. Clark (Mrs. Rachael)
b.	Tow Type	Single	
c.	Number of Barges	1	
d.	Type of Entry	Fly	
e.	Upbound/Downbound	Upbound	

NO.	EVENT	CLOCK	ELAPSED	COMMENTS
1.	Bow Over Sill	08:09:37		
			00:02:11	
2.	Entry Complete	08:11:48		
			00:00:21	
3.	Start Gate Closure	08:12:09		
			00:02:53	
4.	Gate Closed	08:15:02		
			00:05:13	
5.	End Fill/Empty	08:20:15		
			00:02:03	
6.	Gate Recessed	08:22:18		
			00:00:02	
7.	Begin Exit	08:22:20		
			00:03:08	
8.	Tow Stern Over Sill	08:25:28		

Lock:	Mel Price (26R)		**Date:**	02-27-95
ITEM	DESCRIPTION		Notes:	
a.	Observation Number	2	Robert Love	
b.	Tow Type	Single		
c.	Number of Barges	2	Empty	
d.	Type of Entry	Fly		
e.	Upbound/Downbound	Upbound		
NO.	EVENT	CLOCK	ELAPSED	COMMENTS
1.	Bow Over Sill	09:22:34		
			00:03:00	
2.	Entry Complete	09:25:34		
			00:00:04	
3.	Start Gate Closure	09:25:38		
			00:03:04	
4.	Gate Closed	09:28:42		
			00:05:30	
5.	End Fill/Empty	09:34:12		
			00:01:58	
6.	Gate Recessed	09:36:10		
			00:00:05	
7.	Begin Exit	09:36:15		
			00:04:10	
8.	Tow Stern Over Sill	09:40:25		

Lock:	Mel Price (26R)		**Date:**	02-27-95
ITEM	DESCRIPTION		Notes:	
a.	Observation Number	3		Bob Stith
b.	Tow Type	Double		
c.	Number of Barges	16		3x3, 3x2+1
d.	Type of Entry	Fly		
e.	Upbound/Downbound	Upbound		
NO.	EVENT	CLOCK	ELAPSED	COMMENTS
1.	Bow Over Sill	12:16:12		
			00:06:26	
2.	First Cut In	12:22:38		
			00:03:07	
3.	Second Cut Loose	12:25:45		
			00:01:15	
4.	Second Cut Clear of Gate	12:27:00		
			00:00:08	
5.	Start Gate Closure	12:27:08		
			00:03:14	
6.	Gate Closed	12:30:22		
			00:05:18	
7.	End Fill/Empty	12:35:40		
			00:02:04	
8.	Gate Recessed	12:37:44		
			00:00:18	
9.	First Cut Begins Exit	12:38:02		
			00:06:00	Helper Boat
10.	First cut Stern Over Gate	12:44:02		
			00:00:23	
11.	Start Gate Closure	12:44:25		
			00:02:57	
12.	Gate Closed	12:47:22		
			00:05:40	
13.	End Fill/Empty	12:53:02		
			00:02:00	
14.	Gate Recessed	12:55:02		
			00:01:28	
15.	Second Cut Bow Over Gate	12:56:30		
			00:06:41	
16.	Second Cut Clear of Gate	13:03:11		
			00:00:21	
17.	Start Gate Closure	13:03:32		
			00:02:59	
18.	Gate Closed	13:06:31		
			00:05:14	
19.	End Fill/Empty	13:11:45		
			00:02:13	
20.	Gate Recessed	13:13:58		
			00:00:42	
21.	Second Cut Begins Exit	13:14:40		
			00:03:30	
22.	Cuts Bump together	13:18:10		
			00:17:29	Second cut occupies chamber
23.	Tow Starts Exit	13:35:39		
			00:02:49	
24.	Tow Stern Over Sill	13:38:28		

Lock:	Mel Price (26R)		Date:	02-27-95
ITEM	DESCRIPTION		Notes:	
a.	Observation Number	4	Cooperative Vanguard	
b.	Tow Type	Double		
c.	Number of Barges	15	3x3, 3x2	
d.	Type of Entry	Fly		
e.	Upbound/Downbound	Downbound		

NO.	EVENT	CLOCK	ELAPSED	COMMENTS
1.	Bow Over Sill	14:09:46		
			00:06:53	
2.	First Cut In	14:16:39		
			00:03:02	
3.	Second Cut Loose	14:19:41		
			00:01:26	
4.	Second Cut Clear of Gate	14:21:07		
			00:00:22	
5.	Start Gate Closure	14:21:29		
			00:03:04	
6.	Gate Closed	14:24:33		
			00:05:35	
7.	End Fill/Empty	14:30:08		
			00:02:02	
8.	Gate Recessed	14:32:10		
			00:00:40	
9.	First Cut Begins Exit	14:32:50		
			00:07:04	Helper Boat
10.	First cut Stern Over Gate	14:39:54		
			00:00:02	
11.	Start Gate Closure	14:39:56		
			00:03:02	
12.	Gate Closed	14:42:58		
			00:05:14	
13.	End Fill/Empty	14:48:12		
			00:02:10	
14.	Gate Recessed	14:50:22		
			00:02:08	
15.	Second Cut Bow Over Gate	14:52:30		
			00:04:31	
16.	Second Cut Clear of Gate	14:57:01		
			00:00:07	
17.	Start Gate Closure	14:57:08		
			00:02:47	
18.	Gate Closed	14:59:55		
			00:05:45	
19.	End Fill/Empty	15:05:40		
			00:02:09	
20.	Gate Recessed	15:07:49		
			00:01:06	
21.	Second Cut Begins Exit	15:08:55		
			00:05:37	
22.	Tow Stern Over Sill	15:14:32		
			00:03:38	
23.	Cuts Bump together	15:18:10		

Lock:	Mel Price (26R)		Date: 02-27-95
ITEM	DESCRIPTION		Notes:
a.	Observation Number	5	Coral Dawn
b.	Tow Type	Double	
c.	Number of Barges	15	3x3, 3x2
d.	Type of Entry	Fly	
e.	Upbound/Downbound	Downbound	

NO.	EVENT	CLOCK	ELAPSED	COMMENTS
1.	Bow Over Sill	15:27:19		
			00:07:10	
2.	First Cut In	15:34:29		
			00:01:53	
3.	Second Cut Loose	15:36:22		
			00:01:36	
4.	Second Cut Clear of Gate	15:37:58		
			00:00:13	
5.	Start Gate Closure	15:38:11		
			00:02:50	
6.	Gate Closed	15:41:01		
			00:05:39	
7.	End Fill/Empty	15:46:40		
			00:02:09	
8.	Gate Recessed	15:48:49		
			00:00:43	
9.	First Cut Begins Exit	15:49:32		
			00:07:29	Helper Boat
10.	First cut Stern Over Gate	15:57:01		
			00:00:00	
11.	Start Gate Closure	15:57:01		
			00:03:03	
12.	Gate Closed	16:00:04		
			00:05:05	
13.	End Fill/Empty	16:05:09		
			00:02:16	
14.	Gate Recessed	16:07:25		
			00:01:49	
15.	Second Cut Bow Over Gate	16:09:14		
			00:05:18	
16.	Second Cut Clear of Gate	16:14:32		
			00:00:07	
17.	Start Gate Closure	16:14:39		
			00:02:46	
18.	Gate Closed	16:17:25		
			00:05:46	
19.	End Fill/Empty	16:23:11		
			00:02:08	
20.	Gate Recessed	16:25:19		
			00:00:23	
21.	Second Cut Begins Exit	16:25:42		
			00:04:37	
22.	Cuts Bump together	16:30:19		
			00:07:55	
23.	Tow Starts Exit	16:38:14		
			00:04:30	
24.	Tow Stern Over Sill	16:42:44		

Lock:	Mel Price (26R)		Date: 02-28-95
ITEM	DESCRIPTION		Notes:
a.	Observation Number	1	Cooperative Vanguard
b.	Tow Type	Double	
c.	Number of Barges	16	3x3, 3x2+1 Empty
d.	Type of Entry	Fly	
e.	Upbound/Downbound	Upbound	

NO.	EVENT	CLOCK	ELAPSED	COMMENTS
1.	Bow Over Sill	08:43:56		
			00:08:02	
2.	First Cut In	08:51:58		
			00:02:16	
3.	Second Cut Loose	08:54:14		
			00:02:25	
4.	Second Cut Clear of Gate	08:56:39		
			00:00:08	
5.	Start Gate Closure	08:56:47		
			00:03:03	
6.	Gate Closed	08:59:50		
			00:05:02	
7.	End Fill/Empty	09:04:52		
			00:02:15	
8.	Gate Recessed	09:07:07		
			00:00:02	
9.	First Cut Begins Exit	09:07:09		
			00:03:16	Helper Boat
10.	First cut Stern Over Gate	09:10:25		
			00:00:06	
11.	Start Gate Closure	09:10:31		
			00:02:51	
12.	Gate Closed	09:13:22		
			00:05:44	
13.	End Fill/Empty	09:19:06		
			00:02:08	
14.	Gate Recessed	09:21:14		
			00:01:32	
15.	Second Cut Bow Over Gate	09:22:46		
			00:07:06	
16.	Second Cut Clear of Gate	09:29:52		
			00:00:28	
17.	Start Gate Closure	09:30:20		
			00:03:01	
18.	Gate Closed	09:33:21		
			00:05:03	
19.	End Fill/Empty	09:38:24		
			00:02:14	
20.	Gate Recessed	09:40:38		
			00:00:19	
21.	Second Cut Begins Exit	09:40:57		
			00:06:13	
22.	Tow Stern Over Sill	09:47:10		
			00:01:32	
23.	Cuts Bump together	09:48:42		

Lock:	Mel Price (26R)		Date: 02-28-95
ITEM	DESCRIPTION		Notes:
a.	Observation Number	2	Jack D. Wofford
b.	Tow Type	Double	
c.	Number of Barges	14	2-3-3, 3x2
d.	Type of Entry	Turnback	
e.	Upbound/Downbound	Upbound	

NO.	EVENT	CLOCK	ELAPSED	COMMENTS
1.	Bow Over Sill	10:00:18		
			00:09:48	
2.	First Cut In	10:10:06		
			00:03:39	
3.	Second Cut Loose	10:13:45		
			00:01:55	
4.	Second Cut Clear of Gate	10:15:40		
			00:00:09	
5.	Start Gate Closure	10:15:49		
			00:03:01	
6.	Gate Closed	10:18:50		
			00:05:06	
7.	End Fill/Empty	10:23:56		
			00:02:14	
8.	Gate Recessed	10:26:10		
			00:00:12	
9.	First Cut Begins Exit	10:26:22		
			00:06:55	Helper Boat
10.	First cut Stern Over Gate	10:33:17		
			00:00:13	
11.	Start Gate Closure	10:33:30		
			00:02:56	
12.	Gate Closed	10:36:26		
			00:05:29	
13.	End Fill/Empty	10:41:55		
			00:02:10	
14.	Gate Recessed	10:44:05		
			00:02:03	
15.	Second Cut Bow Over Gate	10:46:08		
			00:04:22	
16.	Second Cut Clear of Gate	10:50:30		
			00:00:11	
17.	Start Gate Closure	10:50:41		
			00:03:00	
18.	Gate Closed	10:53:41		
			00:05:02	
19.	End Fill/Empty	10:58:43		
			00:02:15	
20.	Gate Recessed	11:00:58		
			00:00:40	
21.	Second Cut Begins Exit	11:01:38		
			00:04:40	
22.	Tow Stern Over Sill	11:06:18		
			00:01:20	
23.	Cuts Bump together	11:07:38		

Lock:	Mel Price (26R)		Date:	02-28-95
ITEM	DESCRIPTION		Notes:	
a.	Observation Number	3	Sarah Elizabeth	
b.	Tow Type	Double		
c.	Number of Barges	15	3x3, 2x3	
d.	Type of Entry	Turnback		
e.	Upbound/Downbound	Upbound		

NO.	EVENT	CLOCK	ELAPSED	COMMENTS
1.	Bow Over Sill	11:19:16		
			00:08:58	
2.	First Cut In	11:28:14		
			00:04:41	
3.	Second Cut Loose	11:32:55		
			00:01:53	
4.	Second Cut Clear of Gate	11:34:48		
			00:00:17	
5.	Start Gate Closure	11:35:05		
			00:03:03	
6.	Gate Closed	11:38:08		
			00:05:06	
7.	End Fill/Empty	11:43:14		
			00:02:14	
8.	Gate Recessed	11:45:28		
			00:00:24	
9.	First Cut Begins Exit	11:45:52		
			00:03:21	Helper Boat
10.	First cut Stern Over Gate	11:49:13		
			00:00:10	
11.	Start Gate Closure	11:49:23		
			00:02:58	
12.	Gate Closed	11:52:21		
			00:05:34	
13.	End Fill/Empty	11:57:55		
			00:02:10	
14.	Gate Recessed	12:00:05		
			00:01:33	
15.	Second Cut Bow Over Gate	12:01:38		
			00:04:32	
16.	Second Cut Clear of Gate	12:06:10		
			00:00:07	
17.	Start Gate Closure	12:06:17		
			00:02:57	
18.	Gate Closed	12:09:14		
			00:05:04	
19.	End Fill/Empty	12:14:18		
			00:02:14	
20.	Gate Recessed	12:16:32		
			00:00:09	
21.	Second Cut Begins Exit	12:16:41		
			00:05:09	
22.	Tow Stern Over Sill	12:21:50		
			00:02:25	
23.	Cuts Bump together	12:24:15		

Lock:	Mel Price (26R)		**Date:**	02-28-95
ITEM	DESCRIPTION		Notes:	
a.	Observation Number	4	L.W. Matteson, Inc. (Bull Frog)	
b.	Tow Type	Single		
c.	Number of Barges	8	Work barges, varing sizes (dredge	
d.	Type of Entry	Fly	material) - 2 tugs	
e.	Upbound/Downbound	Downbound		

NO.	EVENT	CLOCK	ELAPSED	COMMENTS
1.	Bow Over Sill	13:54:15		
			00:05:16	
2.	Entry Complete	13:59:31		
			00:00:10	
3.	Start Gate Closure	13:59:41		
			00:02:58	
4.	Gate Closed	14:02:39		
			00:05:31	
5.	End Fill/Empty	14:08:10		
			00:02:10	
6.	Gate Recessed	14:10:20		
			00:00:31	
7.	Begin Exit	14:10:51		
			00:03:12	
8.	Tow Stern Over Sill	14:14:03		

Lock:	Mel Price (26R)		Date: 02-28-95
ITEM	DESCRIPTION		Notes:
a.	Observation Number	5	Alter Barge Line, Inc. (Renee G.)
b.	Tow Type	Double	
c.	Number of Barges	15	3x3, 3x2 (Grain)
d.	Type of Entry	Fly	
e.	Upbound/Downbound	Downbound	

NO.	EVENT	CLOCK	ELAPSED	COMMENTS
1.	Bow Over Sill	14:43:14		
			00:08:31	
2.	First Cut In	14:51:45		
			00:02:34	
3.	Second Cut Loose	14:54:19		
			00:02:03	
4.	Second Cut Clear of Gate	14:56:22		
			00:00:09	
5.	Start Gate Closure	14:56:31		
			00:02:58	
6.	Gate Closed	14:59:29		
			00:05:26	
7.	End Fill/Empty	15:04:55		
			00:02:15	
8.	Gate Recessed	15:07:10		
			00:00:36	
9.	First Cut Begins Exit	15:07:46		
			00:05:37	Helper Boat
10.	First cut Stern Over Gate	15:13:23		
			00:00:15	
11.	Start Gate Closure	15:13:38		
			00:03:00	
12.	Gate Closed	15:16:38		
			00:05:05	
13.	End Fill/Empty	15:21:43		
			00:02:14	
14.	Gate Recessed	15:23:57		
			00:02:22	
15.	Second Cut Bow Over Gate	15:26:19		
			00:05:55	
16.	Second Cut Clear of Gate	15:32:14		
			00:00:55	
17.	Start Gate Closure	15:33:09		
			00:03:03	
18.	Gate Closed	15:36:12		
			00:05:28	
19.	End Fill/Empty	15:41:40		
			00:02:09	
20.	Gate Recessed	15:43:49		
			00:00:35	
21.	Second Cut Begins Exit	15:44:24		
			00:04:27	
22.	Cuts Bump together	15:48:51		
			00:15:25	
23.	Tow Starts Exit	16:04:16		
			00:08:40	
24.	Tow Stern Over Sill	16:12:56		

Lock:	Mel Price (26R)		**Date:**	03-01-95
ITEM	DESCRIPTION		Notes:	
a.	Observation Number	1	Mary D.	
b.	Tow Type	Knockout		
c.	Number of Barges	6	2x3	
d.	Type of Entry	Fly		
e.	Upbound/Downbound	Upbound		
NO.	EVENT	CLOCK	ELAPSED	COMMENTS
1.	Bow Over Sill	08:52:20		
			00:12:55	
2.	Entry Complete	09:05:15		
			00:00:16	
3.	Start Gate Closure	09:05:31		
			00:03:02	
4.	Gate Closed	09:08:33		
			00:05:39	
5.	End Fill/Empty	09:14:12		
			00:02:13	
6.	Gate Recessed	09:16:25		
			00:01:15	
7.	Begin Exit	09:17:40		
			00:05:07	
8.	Tow Stern Over Sill	09:22:47		

Lock:	Mel Price (26R)		Date: 03-01-95
ITEM	DESCRIPTION		Notes:
a.	Observation Number	2	Ron Shankin
b.	Tow Type	Double	
c.	Number of Barges	14	3x3, 3+2
d.	Type of Entry	Turnback	
e.	Upbound/Downbound	Upbound	

NO.	EVENT	CLOCK	ELAPSED	COMMENTS
1.	Bow Over Sill	09:35:28		
			00:06:03	
2.	First Cut In	09:41:31		
			00:09:01	
3.	Second Cut Loose	09:50:32		
			00:01:16	
4.	Second Cut Clear of Gate	09:51:48		
			00:00:09	
5.	Start Gate Closure	09:51:57		
			00:03:02	
6.	Gate Closed	09:54:59		
			00:04:54	
7.	End Fill/Empty	09:59:53		
			00:02:09	
8.	Gate Recessed	10:02:02		
			00:00:15	
9.	First Cut Begins Exit	10:02:17		
			00:03:03	Helper Boat
10.	First cut Stern Over Gate	10:05:20		
			00:00:09	
11.	Start Gate Closure	10:05:29		
			00:03:02	
12.	Gate Closed	10:08:31		
			00:05:25	
13.	End Fill/Empty	10:13:56		
			00:02:11	
14.	Gate Recessed	10:16:07		
			00:01:06	
15.	Second Cut Bow Over Gate	10:17:13		
			00:04:15	
16.	Second Cut Clear of Gate	10:21:28		
			00:00:03	
17.	Start Gate Closure	10:21:31		
			00:02:58	
18.	Gate Closed	10:24:29		
			00:04:47	
19.	End Fill/Empty	10:29:16		
			00:02:13	
20.	Gate Recessed	10:31:29		
			00:00:12	
21.	Second Cut Begins Exit	10:31:41		
			00:03:44	
22.	Tow Stern Over Sill	10:35:25		
			00:01:37	
23.	Cuts Bump together	10:37:02		

Lock:	Mel Price (26R)		Date:	03-01-95
ITEM	DESCRIPTION		Notes:	
a.	Observation Number	3		Cooperative Mariner
b.	Tow Type	Double		
c.	Number of Barges	15		3x3, 3x2
d.	Type of Entry	Turnback		
e.	Upbound/Downbound	Upbound		

NO.	EVENT	CLOCK	ELAPSED	COMMENTS
1.	Bow Over Sill	10:47:48		
			00:06:21	
2.	First Cut In	10:54:09		
			00:02:53	
3.	Second Cut Loose	10:57:02		
			00:01:28	
4.	Second Cut Clear of Gate	10:58:30		
			00:00:12	
5.	Start Gate Closure	10:58:42		
			00:03:00	
6.	Gate Closed	11:01:42		
			00:04:49	
7.	End Fill/Empty	11:06:31		
			00:02:16	
8.	Gate Recessed	11:08:47		
			00:00:05	
9.	First Cut Begins Exit	11:08:52		
			00:03:58	Helper Boat
10.	First cut Stern Over Gate	11:12:50		
			00:00:12	
11.	Start Gate Closure	11:13:02		
			00:02:57	
12.	Gate Closed	11:15:59		
			00:05:23	
13.	End Fill/Empty	11:21:22		
			00:02:10	
14.	Gate Recessed	11:23:32		
			00:01:12	
15.	Second Cut Bow Over Gate	11:24:44		
			00:03:32	
16.	Second Cut Clear of Gate	11:28:16		
			00:00:04	
17.	Start Gate Closure	11:28:20		
			00:02:59	
18.	Gate Closed	11:31:19		
			00:04:46	
19.	End Fill/Empty	11:36:05		
			00:02:15	
20.	Gate Recessed	11:38:20		
			00:00:08	
21.	Second Cut Begins Exit	11:38:28		
			00:03:26	
22.	Cuts Bump together	11:41:54		
			00:08:32	
23.	Tow Starts Exit	11:50:26		
			00:02:37	
24.	Tow Stern Over Sill	11:53:03		

Lock:	Mel Price (26R)		Date: 03-01-95
ITEM	DESCRIPTION		Notes:
a.	Observation Number	4	Hornet
b.	Tow Type	Double	
c.	Number of Barges	15	3x3, 3x2
d.	Type of Entry	Fly	
e.	Upbound/Downbound	Upbound	

NO.	EVENT	CLOCK	ELAPSED	COMMENTS
1.	Bow Over Sill	14:05:25		
			00:05:09	
2.	First Cut In	14:10:34		
			00:03:06	
3.	Second Cut Loose	14:13:40		
			00:01:23	
4.	Second Cut Clear of Gate	14:15:03		
			00:00:11	
5.	Start Gate Closure	14:15:14		
			00:03:01	
6.	Gate Closed	14:18:15		
			00:04:41	
7.	End Fill/Empty	14:22:56		
			00:02:13	
8.	Gate Recessed	14:25:09		
			00:00:07	
9.	First Cut Begins Exit	14:25:16		
			00:03:16	
10.	First cut Stern Over Gate	14:28:32		
			00:00:54	
11.	Start Gate Closure	14:29:26		
			00:02:58	
12.	Gate Closed	14:32:24		
			00:05:27	
13.	End Fill/Empty	14:37:51		
			00:02:10	
14.	Gate Recessed	14:40:01		
			00:01:22	
15.	Second Cut Bow Over Gate	14:41:23		
			00:03:27	
16.	Second Cut Clear of Gate	14:44:50		
			00:00:11	
17.	Start Gate Closure	14:45:01		
			00:03:00	
18.	Gate Closed	14:48:01		
			00:04:50	
19.	End Fill/Empty	14:52:51		
			00:02:08	
20.	Gate Recessed	14:54:59		
			00:00:59	
21.	Second Cut Begins Exit	14:55:58		
			00:02:48	
22.	Cuts Bump together	14:58:46		
			00:07:08	
23.	Tow Starts Exit	15:05:54		
			00:01:56	
24.	Tow Stern Over Sill	15:07:50		

Lock:	Mel Price (26R)		Date: 03-02-95
ITEM	DESCRIPTION		Notes:
a.	Observation Number	1	Melinda Brent
b.	Tow Type	Single	
c.	Number of Barges	1	
d.	Type of Entry	Fly	
e.	Upbound/Downbound	Downbound	

NO.	EVENT	CLOCK	ELAPSED	COMMENTS
1.	Bow Over Sill	06:52:24		
			00:01:11	
2.	Entry Complete	06:53:35		
			00:00:19	
3.	Start Gate Closure	06:53:54		
			00:02:58	
4.	Gate Closed	06:56:52		
			00:05:22	
5.	End Fill/Empty	07:02:14		
			00:02:10	
6.	Gate Recessed	07:04:24		
			00:00:35	
7.	Begin Exit	07:04:59		
			00:01:59	
8.	Tow Stern Over Sill	07:06:58		

Lock:	Mel Price (26R)		Date: 03-02-95
ITEM	DESCRIPTION		Notes:
a.	Observation Number	2	Beverly Ann
b.	Tow Type	Double	
c.	Number of Barges	15	3x3, 3x2
d.	Type of Entry	Fly	
e.	Upbound/Downbound	Downbound	

NO.	EVENT	CLOCK	ELAPSED	COMMENTS
1.	Bow Over Sill	08:46:03		
			00:08:29	
2.	First Cut In	08:54:32		
			00:02:40	
3.	Second Cut Loose	08:57:12		
			00:01:12	
4.	Second Cut Clear of Gate	08:58:24		
			00:00:13	
5.	Start Gate Closure	08:58:37		
			00:02:59	
6.	Gate Closed	09:01:36		
			00:05:24	
7.	End Fill/Empty	09:07:00		
			00:03:10	
8.	Gate Recessed	09:10:10		
			00:00:11	
9.	First Cut Begins Exit	09:10:21		
			00:07:48	Helper Boat
10.	First cut Stern Over Gate	09:18:09		
			00:00:12	
11.	Start Gate Closure	09:18:21		
			00:03:03	
12.	Gate Closed	09:21:24		
			00:04:40	
13.	End Fill/Empty	09:26:04		
			00:02:14	
14.	Gate Recessed	09:28:18		
			00:02:24	
15.	Second Cut Bow Over Gate	09:30:42		
			00:04:14	
16.	Second Cut Clear of Gate	09:34:56		
			00:00:11	
17.	Start Gate Closure	09:35:07		
			00:02:59	
18.	Gate Closed	09:38:06		
			00:05:25	
19.	End Fill/Empty	09:43:31		
			00:02:08	
20.	Gate Recessed	09:45:39		
			00:00:39	
21.	Second Cut Begins Exit	09:46:18		
			00:05:34	
22.	Tow Stern Over Sill	09:51:52		
			00:02:44	
23.	Cuts Bump together	09:54:36		

Lock:	Mel Price (26R)		Date: 03-02-95
ITEM	DESCRIPTION		Notes:
a.	Observation Number	3	Normania
b.	Tow Type	Double	
c.	Number of Barges	12	3x2, 3x2
d.	Type of Entry	Turnback	
e.	Upbound/Downbound	Downbound	

NO.	EVENT	CLOCK	ELAPSED	COMMENTS
1.	Bow Over Sill	10:04:32		
			00:04:52	
2.	First Cut In	10:09:24		
			00:06:52	
3.	Second Cut Loose	10:16:16		
			00:01:55	
4.	Second Cut Clear of Gate	10:18:11		
			00:00:14	
5.	Start Gate Closure	10:18:25		
			00:02:58	
6.	Gate Closed	10:21:23		
			00:05:20	
7.	End Fill/Empty	10:26:43		
			00:02:12	
8.	Gate Recessed	10:28:55		
			00:00:46	
9.	First Cut Begins Exit	10:29:41		
			00:05:42	Helper Boat
10.	First cut Stern Over Gate	10:35:23		
			00:00:07	
11.	Start Gate Closure	10:35:30		
			00:02:59	
12.	Gate Closed	10:38:29		
			00:04:43	
13.	End Fill/Empty	10:43:12		
			00:02:14	
14.	Gate Recessed	10:45:26		
			00:02:19	
15.	Second Cut Bow Over Gate	10:47:45		
			00:02:41	
16.	Second Cut Clear of Gate	10:50:26		
			00:00:17	
17.	Start Gate Closure	10:50:43		
			00:02:59	
18.	Gate Closed	10:53:42		
			00:05:26	
19.	End Fill/Empty	10:59:08		
			00:02:11	
20.	Gate Recessed	11:01:19		
			00:00:37	
21.	Second Cut Begins Exit	11:01:56		
			00:04:35	
22.	Tow Stern Over Sill	11:06:31		
			00:02:40	
23.	Cuts Bump together	11:09:11		

Lock:	Mel Price (26R)		Date:	03-02-95
ITEM	DESCRIPTION		Notes:	
a.	Observation Number	4	Karen Ann	
b.	Tow Type	Single		
c.	Number of Barges	2	Work barge & tug (Angela Kay)	
d.	Type of Entry	Exchange		
e.	Upbound/Downbound	Upbound		

NO.	EVENT	CLOCK	ELAPSED	COMMENTS
1.	Bow Over Sill	11:13:04		
			00:00:28	
2.	Entry Complete	11:13:32		
			00:00:30	
3.	Start Gate Closure	11:14:02		
			00:03:02	
4.	Gate Closed	11:17:04		
			00:04:46	
5.	End Fill/Empty	11:21:50		
			00:02:09	
6.	Gate Recessed	11:23:59		
			00:00:21	
7.	Begin Exit	11:24:20		
			00:01:32	
8.	Tow Stern Over Sill	11:25:52		

Lock:	Mel Price (26R)		Date: 03-02-95
ITEM	DESCRIPTION		Notes:
a.	Observation Number	5	Hugh C. Blaske
b.	Tow Type	Double	
c.	Number of Barges	15	3x3, 3x2
d.	Type of Entry	Fly	
e.	Upbound/Downbound	Downbound	

NO.	EVENT	CLOCK	ELAPSED	COMMENTS
1.	Bow Over Sill	11:49:02		
			00:05:14	
2.	First Cut In	11:54:16		
			00:04:20	
3.	Second Cut Loose	11:58:36		
			00:01:22	
4.	Second Cut Clear of Gate	11:59:58		
			00:00:12	
5.	Start Gate Closure	12:00:10		
			00:02:57	
6.	Gate Closed	12:03:07		
			00:05:25	
7.	End Fill/Empty	12:08:32		
			00:02:29	
8.	Gate Recessed	12:11:01		
			00:00:21	
9.	First Cut Begins Exit	12:11:22		
			00:06:50	Helper Boat
10.	First cut Stern Over Gate	12:18:12		
			00:00:05	
11.	Start Gate Closure	12:18:17		
			00:03:01	
12.	Gate Closed	12:21:18		
			00:04:22	
13.	End Fill/Empty	12:25:40		
			00:02:31	
14.	Gate Recessed	12:28:11		
			00:01:47	
15.	Second Cut Bow Over Gate	12:29:58		
			00:04:19	
16.	Second Cut Clear of Gate	12:34:17		
			00:00:16	
17.	Start Gate Closure	12:34:33		
			00:02:55	
18.	Gate Closed	12:37:28		
			00:05:24	
19.	End Fill/Empty	12:42:52		
			00:02:12	
20.	Gate Recessed	12:45:04		
			00:00:48	
21.	Second Cut Begins Exit	12:45:52		
			00:05:04	
22.	Tow Stern Over Sill	12:50:56		
			00:02:46	
23.	Cuts Bump together	12:53:42		

Lock:	Mel Price (26R)		Date: 03-02-95
ITEM	DESCRIPTION		Notes:
a.	Observation Number	6	DBS Dominque You
b.	Tow Type	Single	
c.	Number of Barges	4	2x2
d.	Type of Entry	Exchange	
e.	Upbound/Downbound	Upbound	

NO.	EVENT	CLOCK	ELAPSED	COMMENTS
1.	Bow Over Sill	13:20:03		
			00:02:03	
2.	Entry Complete	13:22:06		
			00:00:34	
3.	Start Gate Closure	13:22:40		
			00:03:02	
4.	Gate Closed	13:25:42		
			00:07:54	
5.	End Fill/Empty	13:33:36		
			00:02:55	
6.	Gate Recessed	13:36:31		
			00:00:17	
7.	Begin Exit	13:36:48		
			00:01:51	
8.	Tow Stern Over Sill	13:38:39		

Lock:	Mel Price (26R)		Date:	03-02-95
ITEM	DESCRIPTION		Notes:	
a.	Observation Number	7	Evey-T	
b.	Tow Type	Double		
c.	Number of Barges	14	3x3, 3+2	
d.	Type of Entry	Fly		
e.	Upbound/Downbound	Upbound		

NO.	EVENT	CLOCK	ELAPSED	COMMENTS
1.	Bow Over Sill	14:15:37		
			00:04:14	
2.	First Cut In	14:19:51		
			00:03:50	
3.	Second Cut Loose	14:23:41		
			00:01:22	
4.	Second Cut Clear of Gate	14:25:03		
			00:01:27	
5.	Start Gate Closure	14:26:30		
			00:02:56	
6.	Gate Closed	14:29:26		
			00:04:56	
7.	End Fill/Empty	14:34:22		
			00:02:12	
8.	Gate Recessed	14:36:34		
			00:00:30	
9.	First Cut Begins Exit	14:37:04		
			00:03:39	Helper Boat
10.	First cut Stern Over Gate	14:40:43		
			00:01:11	
11.	Start Gate Closure	14:41:54		
			00:02:57	
12.	Gate Closed	14:44:51		
			00:05:22	
13.	End Fill/Empty	14:50:13		
			00:02:11	
14.	Gate Recessed	14:52:24		
			00:01:05	
15.	Second Cut Bow Over Gate	14:53:29		
			00:02:52	
16.	Second Cut Clear of Gate	14:56:21		
			00:00:06	
17.	Start Gate Closure	14:56:27		
			00:02:59	
18.	Gate Closed	14:59:26		
			00:04:48	
19.	End Fill/Empty	15:04:14		
			00:02:12	
20.	Gate Recessed	15:06:26		
			00:00:30	
21.	Second Cut Begins Exit	15:06:56		
			00:03:49	
22.	Tow Stern Over Sill	15:10:45		
			00:01:05	
23.	Cuts Bump together	15:11:50		

Lock:	Mel Price (26R)		Date: 03-02-95
ITEM	DESCRIPTION		Notes:
a.	Observation Number	8	Kevin Flowers
b.	Tow Type	Double	
c.	Number of Barges	15	3x3, 3x2
d.	Type of Entry	Turnback	
e.	Upbound/Downbound	Upbound	

NO.	EVENT	CLOCK	ELAPSED	COMMENTS
1.	Bow Over Sill	15:23:23		
			00:10:01	
2.	First Cut In	15:33:24		
			00:04:22	
3.	Second Cut Loose	15:37:46		
			00:01:38	
4.	Second Cut Clear of Gate	15:39:24		
			00:01:08	
5.	Start Gate Closure	15:40:32		
			00:03:01	
6.	Gate Closed	15:43:33		
			00:04:44	
7.	End Fill/Empty	15:48:17		
			00:02:14	
8.	Gate Recessed	15:50:31		
			00:00:09	
9.	First Cut Begins Exit	15:50:40		
			00:08:09	
10.	First cut Stern Over Gate	15:58:49		
			00:00:15	
11.	Start Gate Closure	15:59:04		
			00:02:57	
12.	Gate Closed	16:02:01		
			00:05:23	
13.	End Fill/Empty	16:07:24		
			00:02:09	
14.	Gate Recessed	16:09:33		
			00:01:40	
15.	Second Cut Bow Over Gate	16:11:13		
			00:06:09	
16.	Second Cut Clear of Gate	16:17:22		
			00:00:14	
17.	Start Gate Closure	16:17:36		
			00:03:01	
18.	Gate Closed	16:20:37		
			00:06:59	
19.	End Fill/Empty	16:25:23		
			00:02:13	
20.	Gate Recessed	16:27:36		
			00:05:50	
21.	Second Cut Begins Exit	16:27:48		
			00:05:38	
22.	Tow Stern Over Sill	16:33:26		
			00:01:41	
23.	Cuts Bump together	16:35:07		

Lock:	Mel Price (26R)		Date: 03-03-95
ITEM	DESCRIPTION		Notes:
a.	Observation Number	1	Charles Lehman
b.	Tow Type	Double	
c.	Number of Barges	16	3x3, 3x2+1
d.	Type of Entry	Turnback	
e.	Upbound/Downbound	Upbound	

NO.	EVENT	CLOCK	ELAPSED	COMMENTS
1.	Bow Over Sill	06:59:53		
			00:08:57	
2.	First Cut In	07:08:50		
			00:02:20	
3.	Second Cut Loose	07:11:10		
			00:02:11	
4.	Second Cut Clear of Gate	07:13:21		
			00:00:11	
5.	Start Gate Closure	07:13:32		
			00:02:54	
6.	Gate Closed	07:16:26		
			00:04:55	
7.	End Fill/Empty	07:21:21		
			00:02:13	
8.	Gate Recessed	07:23:34		
			00:00:15	
9.	First Cut Begins Exit	07:23:49		
			00:07:17	Helper Boat
10.	First cut Stern Over Gate	07:31:06		
			00:00:12	
11.	Start Gate Closure	07:31:18		
			00:02:59	
12.	Gate Closed	07:34:17		
			00:05:21	
13.	End Fill/Empty	07:39:38		
			00:02:09	
14.	Gate Recessed	07:41:47		
			00:02:49	
15.	Second Cut Bow Over Gate	07:44:36		
			00:05:59	
16.	Second Cut Clear of Gate	07:50:35		
			00:01:13	
17.	Start Gate Closure	07:51:48		
			00:02:59	
18.	Gate Closed	07:54:47		
			00:04:48	
19.	End Fill/Empty	07:59:35		
			00:02:16	
20.	Gate Recessed	08:01:51		
			00:00:28	
21.	Second Cut Begins Exit	08:02:19		
			00:05:08	
22.	Tow Stern Over Sill	08:07:27		
			00:00:52	
23.	Cuts Bump together	08:08:19		

Lock:	Mel Price (26R)		**Date:**	03-03-95
ITEM	DESCRIPTION		Notes:	
a.	Observation Number	2	Melinda Brent	
b.	Tow Type	Single		
c.	Number of Barges	4	2x2	
d.	Type of Entry	Turnback		
e.	Upbound/Downbound	Upbound		

NO.	EVENT	CLOCK	ELAPSED	COMMENTS
1.	Bow Over Sill	08:24:32		
			00:08:39	
2.	Entry Complete	08:33:11		
			00:00:15	
3.	Start Gate Closure	08:33:26		
			00:03:04	
4.	Gate Closed	08:36:30		
			00:04:41	
5.	End Fill/Empty	08:41:11		
			00:02:13	
6.	Gate Recessed	08:43:24		
			00:00:20	
7.	Begin Exit	08:43:44		
			00:06:12	
8.	Tow Stern Over Sill	08:49:56		

Lock:	Mel Price (26R)		**Date:**	03-03-95
ITEM	DESCRIPTION		Notes:	
a.	Observation Number	3	Leviticus	
b.	Tow Type	Single		
c.	Number of Barges	6	3x2	
d.	Type of Entry	Turnback		
e.	Upbound/Downbound	Upbound		

NO.	EVENT	CLOCK	ELAPSED	COMMENTS
1.	Bow Over Sill	09:04:04		
			00:04:52	
2.	Entry Complete	09:08:56		
			00:00:15	
3.	Start Gate Closure	09:09:11		
			00:02:57	
4.	Gate Closed	09:12:08		
			00:04:48	
5.	End Fill/Empty	09:16:56		
			00:02:13	
6.	Gate Recessed	09:19:09		
			00:01:33	
7.	Begin Exit	09:20:42		
			00:03:36	
8.	Tow Stern Over Sill	09:24:18		

Lock:	Mel Price (26R)		Date: 03-03-95
ITEM	DESCRIPTION		Notes:
a.	Observation Number	4	C.W. Rushing
b.	Tow Type	Single	
c.	Number of Barges	1	
d.	Type of Entry	Exchange	
e.	Upbound/Downbound	Downbound	

NO.	EVENT	CLOCK	ELAPSED	COMMENTS
1.	Bow Over Sill	09:38:58		
			00:01:31	
2.	Entry Complete	09:40:29		
			00:00:15	
3.	Start Gate Closure	09:40:44		
			00:02:58	
4.	Gate Closed	09:43:42		
			00:05:26	
5.	End Fill/Empty	09:49:08		
			00:02:09	
6.	Gate Recessed	09:51:17		
			00:00:18	
7.	Begin Exit	09:51:35		
			00:02:06	
8.	Tow Stern Over Sill	09:53:41		

Lock:	Mel Price (26R)		Date: 03-03-95
ITEM	DESCRIPTION		Notes:
a.	Observation Number	5	Phyllis
b.	Tow Type	Double	
c.	Number of Barges	15	3x3, 3x2
d.	Type of Entry	Turnback	
e.	Upbound/Downbound	Downbound	

NO.	EVENT	CLOCK	ELAPSED	COMMENTS
1.	Bow Over Sill	10:07:02		
			00:09:04	
2.	First Cut In	10:16:06		
			00:05:56	
3.	Second Cut Loose	10:22:02		
			00:02:00	
4.	Second Cut Clear of Gate	10:24:02		
			00:00:14	
5.	Start Gate Closure	10:24:16		
			00:02:58	
6.	Gate Closed	10:27:14		
			00:05:22	
7.	End Fill/Empty	10:32:36		
			00:02:11	
8.	Gate Recessed	10:34:47		
			00:00:35	
9.	First Cut Begins Exit	10:35:22		
			00:07:12	Helper Boat
10.	First cut Stern Over Gate	10:42:34		
			00:00:09	
11.	Start Gate Closure	10:42:43		
			00:02:55	
12.	Gate Closed	10:45:38		
			00:04:54	
13.	End Fill/Empty	10:50:32		
			00:02:13	
14.	Gate Recessed	10:52:45		
			00:02:11	
15.	Second Cut Bow Over Gate	10:54:56		
			00:04:14	
16.	Second Cut Clear of Gate	10:59:10		
			00:00:29	
17.	Start Gate Closure	10:59:39		
			00:02:58	
18.	Gate Closed	11:02:37		
			00:05:26	
19.	End Fill/Empty	11:08:03		
			00:02:10	
20.	Gate Recessed	11:10:13		
			00:00:23	
21.	Second Cut Begins Exit	11:10:36		
			00:05:08	
22.	Tow Stern Over Sill	11:15:44		
			00:04:11	
23.	Cuts Bump together	11:19:55		

Lock:	Mel Price (26R)		**Date:**	03-03-95
ITEM	DESCRIPTION		Notes:	
a.	Observation Number	6	Ruth Brent	
b.	Tow Type	Knockout		
c.	Number of Barges	2	1+1	
d.	Type of Entry	Exhchange		
e.	Upbound/Downbound	Upbound		

NO.	EVENT	CLOCK	ELAPSED	COMMENTS
1.	Bow Over Sill	12:01:55		
			00:13:38	
2.	Entry Complete	12:15:33		
			00:00:12	
3.	Start Gate Closure	12:15:45		
			00:02:59	
4.	Gate Closed	12:18:44		
			00:05:40	
5.	End Fill/Empty	12:24:24		
			00:02:14	
6.	Gate Recessed	12:26:38		
			00:00:16	
7.	Begin Exit	12:26:54		
			00:09:12	
8.	Tow Stern Over Sill	12:36:06		

Lock:	Mel Price (26R)		Date:	03-03-95
ITEM	DESCRIPTION		Notes:	
a.	Observation Number	7	Decatur Lady	
b.	Tow Type	Double		
c.	Number of Barges	15	3x3, 3x2	
d.	Type of Entry	Exchange		
e.	Upbound/Downbound	Downbound		

NO.	EVENT	CLOCK	ELAPSED	COMMENTS
1.	Bow Over Sill	13:01:18		
			00:07:04	
2.	First Cut In	13:08:22		
			00:03:54	
3.	Second Cut Loose	13:12:16		
			00:01:29	
4.	Second Cut Clear of Gate	13:13:45		
			00:00:23	
5.	Start Gate Closure	13:14:08		
			00:02:58	
6.	Gate Closed	13:17:06		
			00:05:26	
7.	End Fill/Empty	13:22:32		
			00:02:10	
8.	Gate Recessed	13:24:42		
			00:00:26	
9.	First Cut Begins Exit	13:25:08		
			00:07:05	Helper Boat
10.	First cut Stern Over Gate	13:32:13		
			00:00:08	
11.	Start Gate Closure	13:32:21		
			00:03:01	
12.	Gate Closed	13:35:22		
			00:04:48	
13.	End Fill/Empty	13:40:10		
			00:02:15	
14.	Gate Recessed	13:42:25		
			00:02:26	
15.	Second Cut Bow Over Gate	13:44:51		
			00:04:16	
16.	Second Cut Clear of Gate	13:49:07		
			00:00:28	
17.	Start Gate Closure	13:49:35		
			00:02:59	
18.	Gate Closed	13:52:34		
			00:05:21	
19.	End Fill/Empty	13:57:55		
			00:02:12	
20.	Gate Recessed	14:00:07		
			00:00:23	
21.	Second Cut Begins Exit	14:00:30		
			00:06:14	
22.	Tow Stern Over Sill	14:06:44		
			00:03:18	
23.	Cuts Bump together	14:10:02		

Lock:	Mel Price (26R)		Date: 03-03-95
ITEM	DESCRIPTION		Notes:
a.	Observation Number	8	Kevin Michael
b.	Tow Type	Double	
c.	Number of Barges	15	3x3, 3x2
d.	Type of Entry	Turnback	
e.	Upbound/Downbound	Downbound	

NO.	EVENT	CLOCK	ELAPSED	COMMENTS
1.	Bow Over Sill	14:21:03		
			00:06:01	
2.	First Cut In	14:27:04		
			00:02:14	
3.	Second Cut Loose	14:29:18		
			00:01:26	
4.	Second Cut Clear of Gate	14:30:44		
			00:00:31	
5.	Start Gate Closure	14:31:15		
			00:02:59	
6.	Gate Closed	14:34:14		
			00:05:17	
7.	End Fill/Empty	14:39:31		
			00:02:11	
8.	Gate Recessed	14:41:42		
			00:00:41	
9.	First Cut Begins Exit	14:42:23		
			00:08:30	Helper Boat
10.	First cut Stern Over Gate	14:50:53		
			00:00:06	
11.	Start Gate Closure	14:50:59		
			00:02:58	
12.	Gate Closed	14:53:57		
			00:04:43	
13.	End Fill/Empty	14:58:40		
			00:02:13	
14.	Gate Recessed	15:00:53		
			00:03:03	
15.	Second Cut Bow Over Gate	15:03:56		
			00:04:47	
16.	Second Cut Clear of Gate	15:08:43		
			00:00:14	
17.	Start Gate Closure	15:08:57		
			00:02:59	
18.	Gate Closed	15:11:56		
			00:05:28	
19.	End Fill/Empty	15:17:24		
			00:02:12	
20.	Gate Recessed	15:19:36		
			00:00:28	
21.	Second Cut Begins Exit	15:20:04		
			00:04:57	
22.	Tow Stern Over Sill	15:25:01		
			00:02:17	
23.	Cuts Bump together	15:27:18		

Lock:	Mel Price (26R)		**Date:**	03-08-95
ITEM	DESCRIPTION		Notes:	
a.	Observation Number	1	Charles W. Clark	
b.	Tow Type	Single		
c.	Number of Barges	1		
d.	Type of Entry	Exchange		
e.	Upbound/Downbound	Downbound		

NO.	EVENT	CLOCK	ELAPSED	COMMENTS
1.	Bow Over Sill	07:42:01		
			00:02:40	
2.	Entry Complete	07:44:41		
			00:00:01	
3.	Start Gate Closure	07:44:42		
			00:03:02	
4.	Gate Closed	07:47:44		
			00:05:11	
5.	End Fill/Empty	07:52:55		
			00:02:10	
6.	Gate Recessed	07:55:05		
			00:00:37	
7.	Begin Exit	07:55:42		
			00:03:17	
8.	Tow Stern Over Sill	07:58:59		

Lock:	Mel Price (26R)		Date: 03-08-95
ITEM	DESCRIPTION		Notes:
a.	Observation Number	2	Renee G.
b.	Tow Type	Double	
c.	Number of Barges	15	3x3, 3x2
d.	Type of Entry	Turnback	
e.	Upbound/Downbound	Downbound	

NO.	EVENT	CLOCK	ELAPSED	COMMENTS
1.	Bow Over Sill	08:13:46		
			00:07:24	
2.	First Cut In	08:21:10		
			00:03:07	
3.	Second Cut Loose	08:24:17		
			00:01:28	
4.	Second Cut Clear of Gate	08:25:45		
			00:00:09	
5.	Start Gate Closure	08:25:54		
			00:02:59	
6.	Gate Closed	08:28:53		
			00:05:08	
7.	End Fill/Empty	08:34:01		
			00:02:15	
8.	Gate Recessed	08:36:16		
			00:00:58	
9.	First Cut Begins Exit	08:37:14		
			00:07:13	Helper Boat
10.	First cut Stern Over Gate	08:44:27		
			00:00:08	
11.	Start Gate Closure	08:44:35		
			00:03:02	
12.	Gate Closed	08:47:37		
			00:04:42	
13.	End Fill/Empty	08:52:19		
			00:02:13	
14.	Gate Recessed	08:54:32		
			00:02:29	
15.	Second Cut Bow Over Gate	08:57:01		
			00:03:33	
16.	Second Cut Clear of Gate	09:00:34		
			00:00:14	
17.	Start Gate Closure	09:00:48		
			00:02:58	
18.	Gate Closed	09:03:46		
			00:05:12	
19.	End Fill/Empty	09:08:58		
			00:02:12	
20.	Gate Recessed	09:11:10		
			00:00:37	
21.	Second Cut Begins Exit	09:11:47		
			00:04:43	
22.	Tow Stern Over Sill	09:16:30		
			00:03:42	
23.	Cuts Bump together	09:20:12		

Lock:	Mel Price (26R)		Date: 03-08-95
ITEM	DESCRIPTION		Notes:
a.	Observation Number	3	Lydia E. Campbell
b.	Tow Type	Double	
c.	Number of Barges	6	2x2, 2x1
d.	Type of Entry	Turnback	
e.	Upbound/Downbound	Downbound	

NO.	EVENT	CLOCK	ELAPSED	COMMENTS
1.	Bow Over Sill	09:32:58		
			00:06:02	
2.	First Cut In	09:39:00		
			00:06:43	
3.	Second Cut Loose	09:45:43		
			00:02:03	
4.	Second Cut Clear of Gate	09:47:46		
			00:00:01	
5.	Start Gate Closure	09:47:47		
			00:03:00	
6.	Gate Closed	09:50:47		
			00:05:15	
7.	End Fill/Empty	09:56:02		
			00:02:13	
8.	Gate Recessed	09:58:15		
			00:01:09	
9.	First Cut Begins Exit	09:59:24		
			00:06:29	Helper Boat
10.	First cut Stern Over Gate	10:05:53		
			00:00:08	
11.	Start Gate Closure	10:06:01		
			00:03:02	
12.	Gate Closed	10:09:03		
			00:04:41	
13.	End Fill/Empty	10:13:44		
			00:02:13	
14.	Gate Recessed	10:15:57		
			00:02:39	
15.	Second Cut Bow Over Gate	10:18:36		
			00:05:39	
16.	Second Cut Clear of Gate	10:24:15		
			00:00:01	
17.	Start Gate Closure	10:24:16		
			00:02:57	
18.	Gate Closed	10:27:13		
			00:05:09	
19.	End Fill/Empty	10:32:22		
			00:02:12	
20.	Gate Recessed	10:34:34		
			00:00:47	
21.	Second Cut Begins Exit	10:35:21		
			00:05:08	
22.	Tow Stern Over Sill	10:40:29		
			00:03:48	
23.	Cuts Bump together	10:44:17		

Lock:	Mel Price (26R)		Date: 03-08-95
ITEM	DESCRIPTION		Notes:
a.	Observation Number	4	Jack D. Wofford
b.	Tow Type	Double	
c.	Number of Barges	12	3x2, 3x2
d.	Type of Entry	Turnback	
e.	Upbound/Downbound	Downbound	

NO.	EVENT	CLOCK	ELAPSED	COMMENTS
1.	Bow Over Sill	10:54:13		
			00:03:33	
2.	First Cut In	10:57:46		
			00:02:38	
3.	Second Cut Loose	11:00:24		
			00:01:38	
4.	Second Cut Clear of Gate	11:02:02		
			00:00:09	
5.	Start Gate Closure	11:02:11		
			00:02:57	
6.	Gate Closed	11:05:08		
			00:05:16	
7.	End Fill/Empty	11:10:24		
			00:02:12	
8.	Gate Recessed	11:12:36		
			00:00:53	
9.	First Cut Begins Exit	11:13:29		
			00:06:00	Helper Boat
10.	First cut Stern Over Gate	11:19:29		
			00:00:11	
11.	Start Gate Closure	11:19:40		
			00:03:00	
12.	Gate Closed	11:22:40		
			00:04:39	
13.	End Fill/Empty	11:27:19		
			00:02:13	
14.	Gate Recessed	11:29:32		
			00:01:56	
15.	Second Cut Bow Over Gate	11:31:28		
			00:04:17	
16.	Second Cut Clear of Gate	11:35:45		
			00:00:21	
17.	Start Gate Closure	11:36:06		
			00:02:57	
18.	Gate Closed	11:39:03		
			00:05:15	
19.	End Fill/Empty	11:44:18		
			00:02:12	
20.	Gate Recessed	11:46:30		
			00:00:36	
21.	Second Cut Begins Exit	11:47:06		
			00:04:14	
22.	Tow Stern Over Sill	11:51:20		
			00:02:52	
23.	Cuts Bump together	11:54:12		

Lock:	Mel Price (26R)		**Date:**	03-08-95
ITEM	DESCRIPTION		Notes:	
a.	Observation Number	5	Eddie Waxler	
b.	Tow Type	Single		
c.	Number of Barges	4	2x2	
d.	Type of Entry	Turnback		
e.	Upbound/Downbound	Downbound		

NO.	EVENT	CLOCK	ELAPSED	COMMENTS
1.	Bow Over Sill	12:03:34		
			00:02:48	
2.	Entry Complete	12:06:22		
			00:00:22	
3.	Start Gate Closure	12:06:44		
			00:02:58	
4.	Gate Closed	12:09:42		
			00:05:13	
5.	End Fill/Empty	12:14:55		
			00:02:10	
6.	Gate Recessed	12:17:05		
			00:00:29	
7.	Begin Exit	12:17:34		
			00:02:51	
8.	Tow Stern Over Sill	12:20:25		

Lock:	Mel Price (26R)		Date: 03-08-95
ITEM	DESCRIPTION		Notes:
a.	Observation Number	6	Herman Pott
b.	Tow Type	Double	
c.	Number of Barges	15	3x3, 3x2
d.	Type of Entry	Turnback	
e.	Upbound/Downbound	Downbound	

NO.	EVENT	CLOCK	ELAPSED	COMMENTS
1.	Bow Over Sill	12:33:01		
			00:07:13	
2.	First Cut In	12:40:14		
			00:04:56	
3.	Second Cut Loose	12:45:10		
			00:01:06	
4.	Second Cut Clear of Gate	12:46:16		
			00:00:06	
5.	Start Gate Closure	12:46:22		
			00:02:58	
6.	Gate Closed	12:49:20		
			00:05:13	
7.	End Fill/Empty	12:54:33		
			00:02:12	
8.	Gate Recessed	12:56:45		
			00:00:49	
9.	First Cut Begins Exit	12:57:34		
			00:06:36	Helper Boat
10.	First cut Stern Over Gate	13:04:10		
			00:00:11	
11.	Start Gate Closure	13:04:21		
			00:03:01	
12.	Gate Closed	13:07:22		
			00:04:36	
13.	End Fill/Empty	13:11:58		
			00:02:14	
14.	Gate Recessed	13:14:12		
			00:02:13	
15.	Second Cut Bow Over Gate	13:16:25		
			00:03:43	
16.	Second Cut Clear of Gate	13:20:08		
			00:00:37	
17.	Start Gate Closure	13:20:45		
			00:02:58	
18.	Gate Closed	13:23:43		
			00:05:15	
19.	End Fill/Empty	13:28:58		
			00:02:12	
20.	Gate Recessed	13:31:10		
			00:00:33	
21.	Second Cut Begins Exit	13:31:43		
			00:03:52	
22.	Tow Stern Over Sill	13:35:35		
			00:02:46	
23.	Cuts Bump together	13:38:21		

Lock:	Mel Price (26R)		**Date:**	03-08-95
ITEM	DESCRIPTION		Notes:	
a.	Observation Number	7	Clolinger	
b.	Tow Type	Single		
c.	Number of Barges	1		
d.	Type of Entry	Turnback		
e.	Upbound/Downbound	Downbound		

NO.	EVENT	CLOCK	ELAPSED	COMMENTS
1.	Bow Over Sill	13:46:46		
			00:00:48	
2.	Entry Complete	13:47:34		
			23:59:57	
3.	Start Gate Closure	13:47:30		
			00:02:58	
4.	Gate Closed	13:50:28		
			00:05:10	
5.	End Fill/Empty	13:55:38		
			00:02:13	
6.	Gate Recessed	13:57:51		
			00:00:27	
7.	Begin Exit	13:58:18		
			00:01:51	
8.	Tow Stern Over Sill	14:00:09		

Short Form

1.	Approach	Bow Over Sill - Entry Complete
2.	Gate (Close)	Entry Complete - Gate Closed
3.	Empty	Gate Closed - End Fill/Empty
4.	Gate (Open)	End Fill/Empty - Gate Recessed
5.	Exit	Gate Recessed - Tow Stern Over Sill

Long Form

1.	Entry	Bow Over Sill - Second Cut Clear of Gate
2.	Gate (Close)	Second Cut Clear of Gate - Gate Closed
3.	Empty	Gate Closed - End Fill/Empty
4.	Gate (Open)	End Fill/Empty - Gate Recessed
5.	First Cut (Remove)	Gate Recessed - First Cut Stern Over Gate
6.	Gate (Close)	First Cut Stern Over Gate - Gate Closed
7.	Fill	Gate Closed - End Fill/Empty
8.	Gate (Open)	End Fill/Empty - Gate Recessed
9.	Second Cut (Enter)	Gate Recessed - Second Cut Clear of Gate
10.	Gate (Close)	Second Cut Clear of Gate - Gate Closed
11.	Empty	Gate Closed - End Fill/Empty
12.	Gate (Open)	End Fill/Empty - Gate Recessed
13.	Exit	Gate Recessed - Tow Stern Over Sill

			Bow Over Sill		Entry Complete		Total
1	02-27-95	#1	08:09:37		08:11:48		00:02:11
2		#2	09:22:34		09:25:34		00:03:00
3	02-28-95	#4	13:54:15		13:59:31		00:05:16
4	03-01-95	#1	08:52:20		09:05:15		00:12:55
5	03-02-95	#1	06:52:24		06:53:35		00:01:11
6		#4	11:13:04		11:13:32		00:00:28
7		#6	13:20:03		13:22:06		00:02:03
8	03-03-95	#2	08:24:32		08:33:11		00:08:39
9		#3	09:04:04		09:08:56		00:04:52
10		#4	09:38:58		09:40:29		00:01:31
11		#6	12:01:55		12:15:33		00:13:38
12	03-08-95	#1	07:42:01		07:44:41		00:02:40
13		#5	12:03:34		12:06:22		00:02:48
14		#7	13:46:46		13:47:34		00:00:48
15	03-09-95	#3	09:11:27		09:14:25		00:02:58
16		#5	11:32:22		11:34:04		00:01:42
17	03-10-95	#3	09:29:42		09:43:24		00:13:42
18		#6	12:53:07		13:07:35		00:14:28
19		#8	14:46:08		14:54:23		00:08:15
20	03-13-95	#2	07:52:57		07:59:42		00:06:45
21		#6	13:24:12		13:32:10		00:07:58
22	03-14-95	#2	10:13:27		10:20:24		00:06:57
23		#4	12:07:07		12:08:25		00:01:18
24		#5	12:26:40		12:27:23		00:00:43
Totals			18:23:16		20:30:02		02:06:46

Average **00:05:17**

			Entry Complete		Gate Closed		Total
1	02-27-95	#1	08:11:48		08:15:02		00:03:14
2		#2	09:25:34		09:28:42		00:03:08
3	02-28-95	#4	13:59:31		14:02:39		00:03:08
4	03-01-95	#1	09:05:15		09:08:33		00:03:18
5	03-02-95	#1	06:53:35		06:56:52		00:03:17
6		#4	11:13:32		11:17:04		00:03:32
7		#6	13:22:06		13:25:42		00:03:36
8	03-03-95	#2	08:33:11		08:36:30		00:03:19
9		#3	09:08:56		09:12:08		00:03:12
10		#4	09:40:29		09:43:42		00:03:13
11		#6	12:15:33		12:18:44		00:03:11
12	03-08-95	#1	07:44:41		07:47:44		00:03:03
13		#5	12:06:22		12:09:42		00:03:20
14		#7	13:47:34		13:50:28		00:02:54
15	03-09-95	#3	09:14:25		09:17:48		00:03:23
16		#5	11:34:04		11:37:24		00:03:20
17	03-10-95	#3	09:43:24		09:46:29		00:03:05
18		#6	13:07:35		13:10:49		00:03:14
19		#8	14:54:23		14:57:29		00:03:06
20	03-13-95	#2	07:59:42		08:03:04		00:03:22
21		#6	13:32:10		13:35:21		00:03:11
22	03-14-95	#2	10:20:24		10:23:43		00:03:19
23		#4	12:08:25		12:11:52		00:03:27
24		#5	12:27:23		12:30:45		00:03:22
Totals			20:30:02		21:48:16		01:18:14

Average **00:03:16**

			Gate Closed	End Fill/Empty	Total
1	02-27-95	#1	08:15:02	08:20:15	00:05:13
2		#2	09:28:42	09:34:12	00:05:30
3	02-28-95	#4	14:02:39	14:08:10	00:05:31
4	03-01-95	#1	09:08:33	09:14:12	00:05:39
5	03-02-95	#1	06:56:52	07:02:14	00:05:22
6		#4	11:17:04	11:21:50	00:04:46
7		#6	13:25:42	13:33:36	00:07:54
8	03-03-95	#2	08:36:30	08:41:11	00:04:41
9		#3	09:12:08	09:16:56	00:04:48
10		#4	09:43:42	09:49:08	00:05:26
11		#6	12:18:44	12:24:24	00:05:40
12	03-08-95	#1	07:47:44	07:52:55	00:05:11
13		#5	12:09:42	12:14:55	00:05:13
14		#7	13:50:28	13:55:38	00:05:10
15	03-09-95	#3	09:17:48	09:23:01	00:05:13
16		#5	11:37:24	11:42:42	00:05:18
17	03-10-95	#3	09:46:29	09:51:15	00:04:46
18		#6	13:10:49	13:15:28	00:04:39
19		#8	14:57:29	15:02:43	00:05:14
20	03-13-95	#2	08:03:04	08:08:20	00:05:16
21		#6	13:35:21	13:43:22	00:08:01
22	03-14-95	#2	10:23:43	10:28:59	00:05:16
23		#4	12:11:52	12:17:03	00:05:11
24		#5	12:30:45	12:35:44	00:04:59
Totals			21:48:16	23:58:13	02:09:57

Average **00:05:25**

			End Fill/Empty	Gate Recessed	Total
1	02-27-95	#1	08:20:15	08:22:18	00:02:03
2		#2	09:34:12	09:36:10	00:01:58
3	02-28-95	#4	14:08:10	14:10:20	00:02:10
4	03-01-95	#1	09:14:12	09:16:25	00:02:13
5	03-02-95	#1	07:02:14	07:04:24	00:02:10
6		#4	11:21:50	11:23:59	00:02:09
7		#6	13:33:36	13:36:31	00:02:55
8	03-03-95	#2	08:41:11	08:43:24	00:02:13
9		#3	09:16:56	09:19:09	00:02:13
10		#4	09:49:08	09:51:17	00:02:09
11		#6	12:24:24	12:26:38	00:02:14
12	03-08-95	#1	07:52:55	07:55:05	00:02:10
13		#5	12:14:55	12:17:05	00:02:10
14		#7	13:55:38	13:57:51	00:02:13
15	03-09-95	#3	09:23:01	09:25:13	00:02:12
16		#5	11:42:42	11:44:53	00:02:11
17	03-10-95	#3	09:51:15	09:53:28	00:02:13
18		#6	13:15:28	13:17:43	00:02:15
19		#8	15:02:43	15:04:58	00:02:15
20	03-13-95	#2	08:08:20	08:10:34	00:02:14
21		#6	13:43:22	13:45:36	00:02:14
22	03-14-95	#2	10:28:59	10:31:12	00:02:13
23		#4	12:17:03	12:19:16	00:02:13
24		#5	12:35:44	12:37:59	00:02:15
Totals			23:58:13	00:51:28	00:53:15

Average **00:02:13**

			Gate Recessed		Tow Over Sill		Total
1	02-27-95	#1	08:22:18		08:25:28		00:03:10
2		#2	09:36:10		09:40:25		00:04:15
3	02-28-95	#4	14:10:20		14:14:03		00:03:43
4	03-01-95	#1	09:16:25		09:22:47		00:06:22
5	03-02-95	#1	07:04:24		07:06:58		00:02:34
6		#4	11:23:59		11:25:52		00:01:53
7		#6	13:36:31		13:38:39		00:02:08
8	03-03-95	#2	08:43:24		08:49:56		00:06:32
9		#3	09:19:09		09:24:18		00:05:09
10		#4	09:51:17		09:53:41		00:02:24
11		#6	12:26:38		12:36:06		00:09:28
12	03-08-95	#1	07:55:05		07:58:59		00:03:54
13		#5	12:17:05		12:20:25		00:03:20
14		#7	13:57:51		14:00:09		00:02:18
15	03-09-95	#3	09:25:13		09:27:31		00:02:18
16		#5	11:44:53		11:48:33		00:03:40
17	03-10-95	#3	09:53:28		10:00:43		00:07:15
18		#6	13:17:43		13:24:09		00:06:26
19		#8	15:04:58		15:10:42		00:05:44
20	03-13-95	#2	08:10:34		08:15:27		00:04:53
21		#6	13:45:36		13:52:12		00:06:36
22	03-14-95	#2	10:31:12		10:36:02		00:04:50
23		#4	12:19:16		12:24:04		00:04:48
24		#5	12:37:59		12:38:11		00:00:12
Totals			00:51:28		02:35:20		01:43:52

Average **00:04:20**

			Bow Over Sill		2nd Cut Clear Gate		Total
1	02-27-95	#3	12:16:12		12:27:00		00:10:48
2		#4	14:09:46		14:21:07		00:11:21
3		#5	15:27:19		15:37:58		00:10:39
4	02-28-95	#1	08:43:56		08:56:39		00:12:43
5		#2	10:00:18		10:15:40		00:15:22
6		#3	11:19:16		11:34:48		00:15:32
7		#5	14:43:14		14:56:22		00:13:08
8	03-01-95	#2	09:35:28		09:51:48		00:16:20
9		#3	10:47:48		10:58:30		00:10:42
10		#4	14:05:25		14:15:03		00:09:38
11	03-02-95	#2	08:46:03		08:58:24		00:12:21
12		#3	10:05:32		10:18:11		00:12:39
13		#5	11:49:02		11:59:58		00:10:56
14		#7	14:15:37		14:25:03		00:09:26
15		#8	15:23:23		15:39:24		00:16:01
16	03-03-95	#1	06:59:53		07:13:21		00:13:28
17		#5	10:07:02		10:24:02		00:17:00
18		#7	13:01:18		13:13:45		00:12:27
19		#8	14:21:03		14:30:44		00:09:41
20	03-08-95	#2	08:13:46		08:25:45		00:11:59
21		#3	09:32:58		09:47:46		00:14:48
22		#4	10:54:13		11:02:02		00:07:49
23		#6	12:33:01		12:46:16		00:13:15
24		#8	14:11:27		14:22:24		00:10:57
25	03-09-95	#1					00:00:00
26		#2	07:54:42		08:05:45		00:11:03
27		#4	09:59:20		10:14:40		00:15:20
28		#6	15:16:45		15:26:35		00:09:50
29	03-10-95	#1	06:50:22		07:06:14		00:15:52
30		#2	08:10:46		08:26:28		00:15:42
31		#4	10:13:33		10:31:03		00:17:30
32		#5	11:36:20		11:53:01		00:16:41
33		#7	13:36:17		13:48:02		00:11:45
34	03-13-95	#1	06:46:42		06:58:30		00:11:48
35		#3	08:32:03		08:44:25		00:12:22
36		#4	09:53:26		10:10:12		00:16:46
37		#5	12:03:22		12:20:39		00:17:17
38		#7	14:05:29		14:26:56		00:21:27
39	03-14-95	#1	08:54:41		09:06:27		00:11:46
40		#3	10:48:45		10:59:26		00:10:41
41		#6	12:45:09		12:56:08		00:10:59
42		#7	14:02:38		14:13:00		00:10:22
Totals			06:53:20		15:49:31		08:56:11

Average **00:12:46**

			2nd Cut Clear Gate		Gate Closed		Total
1	02-27-95	#3	12:27:00		12:30:22		00:03:22
2		#4	14:21:07		14:24:33		00:03:26
3		#5	15:37:58		15:41:01		00:03:03
4	02-28-95	#1	08:56:39		08:59:50		00:03:11
5		#2	10:15:40		10:18:50		00:03:10
6		#3	11:34:48		11:38:08		00:03:20
7		#5	14:56:22		14:59:29		00:03:07
8	03-01-95	#2	09:51:48		09:54:59		00:03:11
9		#3	10:58:30		11:01:42		00:03:12
10		#4	14:15:03		14:18:15		00:03:12
11	03-02-95	#2	08:58:24		09:01:36		00:03:12
12		#3	10:18:11		10:21:23		00:03:12
13		#5	11:59:58		12:03:07		00:03:09
14		#7	14:25:03		14:29:26		00:04:23
15		#8	15:39:24		15:43:33		00:04:09
16	03-03-95	#1	07:13:21		07:16:26		00:03:05
17		#5	10:24:02		10:27:14		00:03:12
18		#7	13:13:45		13:17:06		00:03:21
19		#8	14:30:44		14:34:14		00:03:30
20	03-08-95	#2	08:25:45		08:28:53		00:03:08
21		#3	09:47:46		09:50:47		00:03:01
22		#4	11:02:02		11:05:08		00:03:06
23		#6	12:46:16		12:49:20		00:03:04
24		#8	14:22:24		14:25:34		00:03:10
25	03-09-95	#1					00:00:00
26		#2	08:05:45		08:08:57		00:03:12
27		#4	10:14:40		10:17:52		00:03:12
28		#6	15:26:35		15:29:43		00:03:08
29	03-10-95	#1	07:06:14		07:09:26		00:03:12
30		#2	08:26:28		08:29:41		00:03:13
31		#4	10:31:03		10:34:15		00:03:12
32		#5	11:53:01		11:56:11		00:03:10
33		#7	13:48:02		13:51:10		00:03:08
34	03-13-95	#1	06:58:30		07:01:31		00:03:01
35		#3	08:44:25		08:47:30		00:03:05
36		#4	10:10:12		10:13:21		00:03:09
37		#5	12:20:39		12:23:42		00:03:03
38		#7	14:26:56		14:30:08		00:03:12
39	03-14-95	#1	09:06:27		09:09:29		00:03:02
40		#3	10:59:26		11:02:30		00:03:04
41		#6	12:56:08		12:59:10		00:03:02
42		#7	14:13:00		14:16:11		00:03:11
Totals			15:49:31		18:01:43		02:12:12

Average **00:03:09**

			Gate Closed		End Fill/Empty		Total
1	02-27-95	#3	12:30:22		12:35:40		00:05:18
2		#4	14:24:33		14:30:08		00:05:35
3		#5	15:41:01		15:46:40		00:05:39
4	02-28-95	#1	08:59:50		09:04:52		00:05:02
5		#2	10:18:50		10:23:56		00:05:06
6		#3	11:38:08		11:43:14		00:05:06
7		#5	14:59:29		15:04:55		00:05:26
8	03-01-95	#2	09:54:59		09:59:53		00:04:54
9		#3	11:01:42		11:06:31		00:04:49
10		#4	14:18:15		14:22:56		00:04:41
11	03-02-95	#2	09:01:36		09:07:00		00:05:24
12		#3	10:21:23		10:26:43		00:05:20
13		#5	12:03:07		12:08:32		00:05:25
14		#7	14:29:26		14:34:22		00:04:56
15		#8	15:43:33		15:48:17		00:04:44
16	03-03-95	#1	07:16:26		07:21:21		00:04:55
17		#5	10:27:14		10:32:36		00:05:22
18		#7	13:17:06		13:22:32		00:05:26
19		#8	14:34:14		14:39:31		00:05:17
20	03-08-95	#2	08:28:53		08:34:01		00:05:08
21		#3	09:50:47		09:56:02		00:05:15
22		#4	11:05:08		11:10:24		00:05:16
23		#6	12:49:20		12:54:33		00:05:13
24		#8	14:25:34		14:30:44		00:05:10
25	03-09-95	#1	06:53:44		06:58:59		00:05:15
26		#2	08:08:57		08:14:11		00:05:14
27		#4	10:17:52		10:22:41		00:04:49
28		#6	15:29:43		15:35:01		00:05:18
29	03-10-95	#1	07:09:26		07:14:14		00:04:48
30		#2	08:29:41		08:34:24		00:04:43
31		#4	10:34:15		10:38:54		00:04:39
32		#5	11:56:11		12:00:54		00:04:43
33		#7	13:51:10		13:55:48		00:04:38
34	03-13-95	#1	07:01:31		07:06:52		00:05:21
35		#3	08:47:30		08:52:53		00:05:23
36		#4	10:13:21		10:18:44		00:05:23
37		#5	12:23:42		12:28:36		00:04:54
38		#7	14:30:08		14:36:51		00:06:43
39	03-14-95	#1	09:09:29		09:14:41		00:05:12
40		#3	11:02:30		11:07:44		00:05:14
41		#6	12:59:10		13:04:26		00:05:16
42		#7	14:16:11		14:23:31		00:07:20
Totals			00:55:27		04:34:47		03:39:20

Average **00:05:13**

			End Fill/Empty	Gate Recessed	Total
1	02-27-95	#3	12:35:40	12:37:44	00:02:04
2		#4	14:30:08	14:32:10	00:02:02
3		#5	15:46:40	15:48:49	00:02:09
4	02-28-95	#1	09:04:52	09:07:07	00:02:15
5		#2	10:23:56	10:26:10	00:02:14
6		#3	11:43:14	11:45:28	00:02:14
7		#5	15:04:55	15:07:10	00:02:15
8	03-01-95	#2	09:59:53	10:02:02	00:02:09
9		#3	11:06:31	11:08:47	00:02:16
10		#4	14:22:56	14:25:09	00:02:13
11	03-02-95	#2	09:07:00	09:10:10	00:03:10
12		#3	10:26:43	10:28:55	00:02:12
13		#5	12:08:32	12:11:01	00:02:29
14		#7	14:34:22	14:36:34	00:02:12
15		#8	15:48:17	15:50:31	00:02:14
16	03-03-95	#1	07:21:21	07:23:34	00:02:13
17		#5	10:32:36	10:34:47	00:02:11
18		#7	13:22:32	13:24:42	00:02:10
19		#8	14:39:31	14:41:42	00:02:11
20	03-08-95	#2	08:34:01	08:36:16	00:02:15
21		#3	09:56:02	09:58:15	00:02:13
22		#4	11:10:24	11:12:36	00:02:12
23		#6	12:54:33	12:56:45	00:02:12
24		#8	14:30:44	14:32:55	00:02:11
25	03-09-95	#1	06:58:59	07:01:04	00:02:05
26		#2	08:14:11	08:16:28	00:02:17
27		#4	10:22:41	10:24:55	00:02:14
28		#6	15:35:01	15:37:12	00:02:11
29	03-10-95	#1	07:14:14	07:16:28	00:02:14
30		#2	08:34:24	08:36:39	00:02:15
31		#4	10:38:54	10:41:08	00:02:14
32		#5	12:00:54	12:03:08	00:02:14
33		#7	13:55:48	13:57:59	00:02:11
34	03-13-95	#1	07:06:52	07:09:04	00:02:12
35		#3	08:52:53	08:55:04	00:02:11
36		#4	10:18:44	10:21:15	00:02:31
37		#5	12:28:36	12:30:51	00:02:15
38		#7	14:36:51	14:39:06	00:02:15
39	03-14-95	#1	09:14:41	09:17:44	00:03:03
40		#3	11:07:44	11:10:21	00:02:37
41		#6	13:04:26	13:06:36	00:02:10
42		#7	14:23:31	14:25:44	00:02:13
Totals			04:34:47	06:10:05	01:35:18

Average **00:02:16**

			Gate Recessed	1st Cut Over Gate	Total
1	02-27-95	#3	12:37:44	12:44:02	00:06:18
2		#4	14:32:10	14:39:54	00:07:44
3		#5	15:48:49	15:57:01	00:08:12
4	02-28-95	#1	09:07:07	09:10:25	00:03:18
5		#2	10:26:10	10:33:17	00:07:07
6		#3	11:45:28	11:49:13	00:03:45
7		#5	15:07:10	15:13:23	00:06:13
8	03-01-95	#2	10:02:02	10:05:20	00:03:18
9		#3	11:08:47	11:12:50	00:04:03
10		#4	14:25:09	14:28:32	00:03:23
11	03-02-95	#2	09:10:10	09:18:09	00:07:59
12		#3	10:28:55	10:35:23	00:06:28
13		#5	12:11:01	12:18:12	00:07:11
14		#7	14:36:34	14:40:43	00:04:09
15		#8	15:50:31	15:58:49	00:08:18
16	03-03-95	#1	07:23:34	07:31:06	00:07:32
17		#5	10:34:47	10:42:34	00:07:47
18		#7	13:24:42	13:32:13	00:07:31
19		#8	14:41:42	14:50:53	00:09:11
20	03-08-95	#2	08:36:16	08:44:27	00:08:11
21		#3	09:58:15	10:05:53	00:07:38
22		#4	11:12:36	11:19:29	00:06:53
23		#6	12:56:45	13:04:10	00:07:25
24		#8	14:32:55	14:38:52	00:05:57
25	03-09-95	#1	07:01:04	07:09:20	00:08:16
26		#2	08:16:28	08:23:15	00:06:47
27		#4	10:24:55	10:29:51	00:04:56
28		#6	15:37:12	15:45:36	00:08:24
29	03-10-95	#1	07:16:28	07:23:36	00:07:08
30		#2	08:36:39	08:42:55	00:06:16
31		#4	10:41:08	10:48:44	00:07:36
32		#5	12:03:08	12:10:12	00:07:04
33		#7	13:57:59	14:02:20	00:04:21
34	03-13-95	#1	07:09:04	07:17:10	00:08:06
35		#3	08:55:04	09:02:11	00:07:07
36		#4	10:21:15	10:29:35	00:08:20
37		#5	12:30:51	12:34:36	00:03:45
38		#7	14:39:06	14:45:51	00:06:45
39	03-14-95	#1	09:17:44	09:25:22	00:07:38
40		#3	11:10:21	11:18:10	00:07:49
41		#6	13:06:36	13:14:37	00:08:01
42		#7	14:25:44	14:33:22	00:07:38
Totals			06:10:05	10:51:33	04:41:28

Average **00:06:42**

			1st Cut Over Gate		Gate Closed		Total
1	02-27-95	#3	12:44:02		12:47:22		00:03:20
2		#4	14:39:54		14:42:58		00:03:04
3		#5	15:57:01		16:00:04		00:03:03
4	02-28-95	#1	09:10:25		09:13:22		00:02:57
5		#2	10:33:17		10:36:26		00:03:09
6		#3	11:49:13		11:52:21		00:03:08
7		#5	15:13:23		15:16:38		00:03:15
8	03-01-95	#2	10:05:20		10:08:31		00:03:11
9		#3	11:12:50		11:15:59		00:03:09
10		#4	14:28:32		14:32:24		00:03:52
11	03-02-95	#2	09:18:09		09:21:24		00:03:15
12		#3	10:35:23		10:38:29		00:03:06
13		#5	12:18:12		12:21:18		00:03:06
14		#7	14:40:43		14:44:51		00:04:08
15		#8	15:58:49		16:02:01		00:03:12
16	03-03-95	#1	07:31:06		07:34:17		00:03:11
17		#5	10:42:34		10:45:38		00:03:04
18		#7	13:32:13		13:35:22		00:03:09
19		#8	14:50:53		14:53:57		00:03:04
20	03-08-95	#2	08:44:27		08:47:37		00:03:10
21		#3	10:05:53		10:09:03		00:03:10
22		#4	11:19:29		11:22:40		00:03:11
23		#6	13:04:10		13:07:22		00:03:12
24		#8	14:38:52		14:42:02		00:03:10
25	03-09-95	#1	07:09:20		07:12:24		00:03:04
26		#2	08:23:15		08:26:18		00:03:03
27		#4	10:29:51		10:33:00		00:03:09
28		#6	15:45:36		15:48:56		00:03:20
29	03-10-95	#1	07:23:36		07:26:54		00:03:18
30		#2	08:42:55		08:46:19		00:03:24
31		#4	10:48:44		10:51:59		00:03:15
32		#5	12:10:12		12:13:25		00:03:13
33		#7	14:02:20		14:05:30		00:03:10
34	03-13-95	#1	07:17:10		07:20:12		00:03:02
35		#3	09:02:11		09:05:08		00:02:57
36		#4	10:29:35		10:32:36		00:03:01
37		#5	12:34:36		12:37:42		00:03:06
38		#7	14:45:51		14:49:03		00:03:12
39	03-14-95	#1	09:25:22		09:28:32		00:03:10
40		#3	11:18:10		11:21:11		00:03:01
41		#6	13:14:37		13:17:36		00:02:59
42		#7	14:33:22		14:36:29		00:03:07
Totals			10:51:33		13:05:20		02:13:47

Average **00:03:11**

			Gate Closed	End Fill/Empty	Total
1	02-27-95	#3	12:47:22	12:53:02	00:05:40
2		#4	14:42:58	14:48:12	00:05:14
3		#5	16:00:04	16:05:09	00:05:05
4	02-28-95	#1	09:13:22	09:19:06	00:05:44
5		#2	10:36:26	10:41:55	00:05:29
6		#3	11:52:21	11:57:55	00:05:34
7		#5	15:16:38	15:21:43	00:05:05
8	03-01-95	#2	10:08:31	10:13:56	00:05:25
9		#3	11:15:59	11:21:22	00:05:23
10		#4	14:32:24	14:37:51	00:05:27
11	03-02-95	#2	09:21:24	09:26:04	00:04:40
12		#3	10:38:29	10:43:12	00:04:43
13		#5	12:21:18	12:25:40	00:04:22
14		#7	14:44:51	14:50:13	00:05:22
15		#8	16:02:01	16:07:24	00:05:23
16	03-03-95	#1	07:34:17	07:39:38	00:05:21
17		#5	10:45:38	10:50:32	00:04:54
18		#7	13:35:22	13:40:10	00:04:48
19		#8	14:53:57	14:58:40	00:04:43
20	03-08-95	#2	08:47:37	08:52:01	00:04:24
21		#3	10:09:03	10:13:44	00:04:41
22		#4	11:22:40	11:27:19	00:04:39
23		#6	13:07:22	13:11:58	00:04:36
24		#8	14:42:02	14:46:38	00:04:36
25	03-09-95	#1	07:12:24	07:17:13	00:04:49
26		#2	08:26:18	08:31:09	00:04:51
27		#4	10:33:00	10:38:16	00:05:16
28		#6	15:48:56	15:53:41	00:04:45
29	03-10-95	#1	07:26:54	07:32:09	00:05:15
30		#2	08:46:19	08:51:34	00:05:15
31		#4	10:51:59	10:57:09	00:05:10
32		#5	12:13:25	12:18:40	00:05:15
33		#7	14:05:30	14:10:46	00:05:16
34	03-13-95	#1	07:20:12	07:25:13	00:05:01
35		#3	09:05:08	09:10:12	00:05:04
36		#4	10:32:36	10:37:37	00:05:01
37		#5	12:37:42	12:43:01	00:05:19
38		#7	14:49:03	14:54:24	00:05:21
39	03-14-95	#1	09:28:32	09:33:31	00:04:59
40		#3	11:21:11	11:26:10	00:04:59
41		#6	13:17:36	13:22:29	00:04:53
42		#7	14:36:29	14:43:22	00:06:53
Totals			13:05:20	16:40:00	03:34:40

Average **00:05:07**

			End Fill/Empty		Gate Recessed		Total
1	02-27-95	#3	12:53:02		12:55:02		00:02:00
2		#4	14:48:12		14:50:22		00:02:10
3		#5	16:05:09		16:07:25		00:02:16
4	02-28-95	#1	09:19:06		09:21:14		00:02:08
5		#2	10:41:55		10:44:05		00:02:10
6		#3	11:57:55		12:00:05		00:02:10
7		#5	15:21:43		15:23:57		00:02:14
8	03-01-95	#2	10:13:56		10:16:07		00:02:11
9		#3	11:21:22		11:23:32		00:02:10
10		#4	14:37:51		14:40:01		00:02:10
11	03-02-95	#2	09:26:04		09:28:18		00:02:14
12		#3	10:43:12		10:45:26		00:02:14
13		#5	12:25:40		12:28:11		00:02:31
14		#7	14:50:13		14:52:24		00:02:11
15		#8	16:07:24		16:09:33		00:02:09
16	03-03-95	#1	07:39:38		07:41:47		00:02:09
17		#5	10:50:32		10:52:45		00:02:13
18		#7	13:40:10		13:42:25		00:02:15
19		#8	14:58:40		15:00:53		00:02:13
20	03-08-95	#2	08:52:01		08:54:32		00:02:31
21		#3	10:13:44		10:15:57		00:02:13
22		#4	11:27:19		11:29:32		00:02:13
23		#6	13:11:58		13:14:12		00:02:14
24		#8	14:46:38		14:48:52		00:02:14
25	03-09-95	#1	07:17:13		07:19:25		00:02:12
26		#2	08:31:09		08:33:22		00:02:13
27		#4	10:38:16		10:40:27		00:02:11
28		#6	15:53:41		15:55:55		00:02:14
29	03-10-95	#1	07:32:09		07:34:21		00:02:12
30		#2	08:51:34		08:53:45		00:02:11
31		#4	10:57:09		10:59:20		00:02:11
32		#5	12:18:40		12:20:50		00:02:10
33		#7	14:10:46		14:12:55		00:02:09
34	03-13-95	#1	07:25:13		07:27:27		00:02:14
35		#3	09:10:12		09:12:27		00:02:15
36		#4	10:37:37		10:39:51		00:02:14
37		#5	12:43:01		12:45:14		00:02:13
38		#7	14:54:24		14:56:34		00:02:10
39	03-14-95	#1	09:33:31		09:35:46		00:02:15
40		#3	11:26:10		11:28:25		00:02:15
41		#6	13:22:29		13:24:44		00:02:15
42		#7	14:43:22		14:45:36		00:02:14
Totals			16:40:00		18:13:01		01:33:01

Average **00:02:13**

			Gate Recessed		2nd Cut Clear		Total
1	02-27-95	#3	12:55:02		13:03:11		00:08:09
2		#4	14:50:22		14:57:01		00:06:39
3		#5	16:07:25		16:14:32		00:07:07
4	02-28-95	#1	09:21:14		09:29:52		00:08:38
5		#2	10:44:05		10:50:30		00:06:25
6		#3	12:00:05		12:06:10		00:06:05
7		#5	15:23:57		15:32:14		00:08:17
8	03-01-95	#2	10:16:07		10:21:28		00:05:21
9		#3	11:23:32		11:28:16		00:04:44
10		#4	14:40:01		14:44:50		00:04:49
11	03-02-95	#2	09:28:18		09:34:56		00:06:38
12		#3	10:45:26		10:50:26		00:05:00
13		#5	12:28:11		12:34:17		00:06:06
14		#7	14:52:24		14:56:21		00:03:57
15		#8	16:09:33		16:17:22		00:07:49
16	03-03-95	#1	07:41:47		07:50:35		00:08:48
17		#5	10:52:45		10:59:10		00:06:25
18		#7	13:42:25		13:49:07		00:06:42
19		#8	15:00:53		15:08:43		00:07:50
20	03-08-95	#2	08:54:32		09:00:34		00:06:02
21		#3	10:15:57		10:24:15		00:08:18
22		#4	11:29:32		11:35:45		00:06:13
23		#6	13:14:12		13:20:08		00:05:56
24		#8	14:48:52		14:54:22		00:05:30
25	03-09-95	#1	07:19:25		07:25:28		00:06:03
26		#2	08:33:22		08:40:21		00:06:59
27		#4	10:40:27		10:48:16		00:07:49
28		#6	15:55:55		16:03:25		00:07:30
29	03-10-95	#1	07:34:21		07:40:38		00:06:17
30		#2	08:53:45		09:01:49		00:08:04
31		#4	10:59:20		11:05:56		00:06:36
32		#5	12:20:50		12:26:38		00:05:48
33		#7	14:12:55		14:19:05		00:06:10
34	03-13-95	#1	07:27:27		07:27:54		00:00:27
35		#3	09:12:27		09:20:48		00:08:21
36		#4	10:39:51		10:49:35		00:09:44
37		#5	12:45:14		12:53:06		00:07:52
38		#7	14:56:34		15:05:19		00:08:45
39	03-14-95	#1	09:35:46		09:42:07		00:06:21
40		#3	11:28:25		11:33:46		00:05:21
41		#6	13:24:44		13:32:44		00:08:00
42		#7	14:45:36		14:52:05		00:06:29
Totals			18:13:01		22:53:05		04:40:04

Average **00:06:40**

			2nd Cut Clear		Gate Closed		Total
1	02-27-95	#3	13:03:11		13:06:31		00:03:20
2		#4	14:57:01		14:59:55		00:02:54
3		#5	16:14:32		16:17:25		00:02:53
4	02-28-95	#1	09:29:52		09:33:21		00:03:29
5		#2	10:50:30		10:53:41		00:03:11
6		#3	12:06:10		12:09:14		00:03:04
7		#5	15:32:14		15:36:12		00:03:58
8	03-01-95	#2	10:21:28		10:24:29		00:03:01
9		#3	11:28:16		11:31:19		00:03:03
10		#4	14:44:50		14:48:01		00:03:11
11	03-02-95	#2	09:34:56		09:38:06		00:03:10
12		#3	10:50:26		10:53:42		00:03:16
13		#5	12:34:17		12:37:28		00:03:11
14		#7	14:56:21		14:59:26		00:03:05
15		#8	16:17:22		16:20:37		00:03:15
16	03-03-95	#1	07:50:35		07:54:47		00:04:12
17		#5	10:59:10		11:02:37		00:03:27
18		#7	13:49:07		13:52:34		00:03:27
19		#8	15:08:43		15:11:56		00:03:13
20	03-08-95	#2	09:00:34		09:03:46		00:03:12
21		#3	10:24:15		10:27:13		00:02:58
22		#4	11:35:45		11:39:03		00:03:18
23		#6	13:20:08		13:23:43		00:03:35
24		#8	14:54:22		14:57:28		00:03:06
25	03-09-95	#1	07:25:28		07:29:02		00:03:34
26		#2	08:40:21		08:43:30		00:03:09
27		#4	10:48:16		10:51:23		00:03:07
28		#6	16:03:25		16:06:47		00:03:22
29	03-10-95	#1	07:40:38		07:43:54		00:03:16
30		#2	09:01:49		09:04:57		00:03:08
31		#4	11:05:56		11:10:24		00:04:28
32		#5	12:26:38		12:29:37		00:02:59
33		#7	14:19:05		14:22:32		00:03:27
34	03-13-95	#1	07:27:54		07:31:10		00:03:16
35		#3	09:20:48		09:24:12		00:03:24
36		#4	10:49:35		10:52:58		00:03:23
37		#5	12:53:06		12:56:49		00:03:43
38		#7	15:05:19		15:08:54		00:03:35
39	03-14-95	#1	09:42:07		09:45:24		00:03:17
40		#3	11:33:46		11:36:48		00:03:02
41		#6	13:32:44		13:35:54		00:03:10
42		#7	14:52:05		14:55:40		00:03:35
Totals			22:53:05		01:12:29		02:19:24

Average **00:03:19**

			Gate Closed		End Fill/Empty		Total
1	02-27-95	#3	13:06:31		13:11:45		00:05:14
2		#4	14:59:55		15:05:40		00:05:45
3		#5	16:17:25		16:23:11		00:05:46
4	02-28-95	#1	09:33:21		09:38:24		00:05:03
5		#2	10:53:41		10:58:43		00:05:02
6		#3	12:09:14		12:14:18		00:05:04
7		#5	15:36:12		15:41:40		00:05:28
8	03-01-95	#2	10:24:29		10:29:16		00:04:47
9		#3	11:31:19		11:36:05		00:04:46
10		#4	14:48:01		14:52:51		00:04:50
11	03-02-95	#2	09:38:06		09:43:31		00:05:25
12		#3	10:53:42		10:59:08		00:05:26
13		#5	12:37:28		12:42:52		00:05:24
14		#7	14:59:26		15:04:14		00:04:48
15		#8	16:20:37		16:25:23		00:04:46
16	03-03-95	#1	07:54:47		07:59:35		00:04:48
17		#5	11:02:37		11:08:03		00:05:26
18		#7	13:52:34		13:57:55		00:05:21
19		#8	15:11:56		15:17:24		00:05:28
20	03-08-95	#2	09:03:46		09:08:58		00:05:12
21		#3	10:27:13		10:32:22		00:05:09
22		#4	11:39:03		11:44:18		00:05:15
23		#6	13:23:43		13:28:58		00:05:15
24		#8	14:57:28		15:02:38		00:05:10
25	03-09-95	#1	07:29:02		07:34:16		00:05:14
26		#2	08:43:30		08:48:45		00:05:15
27		#4	10:51:23		10:56:12		00:04:49
28		#6	16:06:47		16:12:00		00:05:13
29	03-10-95	#1	07:43:54		07:48:38		00:04:44
30		#2	09:04:57		09:09:41		00:04:44
31		#4	11:10:24		11:15:04		00:04:40
32		#5	12:29:37		12:34:18		00:04:41
33		#7	14:22:32		14:27:15		00:04:43
34	03-13-95	#1	07:31:10		07:36:28		00:05:18
35		#3	09:24:12		09:29:32		00:05:20
36		#4	10:52:58		10:58:16		00:05:18
37		#5	12:56:49		13:01:46		00:04:57
38		#7	15:08:54		15:14:56		00:06:02
39	03-14-95	#1	09:45:24		09:50:34		00:05:10
40		#3	11:36:48		11:42:04		00:05:16
41		#6	13:35:54		13:41:03		00:05:09
42		#7	14:55:40		15:00:54		00:05:14
Totals			01:12:29		04:48:54		03:36:25

Average **00:05:09**

			End Fill/Empty	Gate Recessed	Total
1	02-27-95	#3	13:11:45	13:13:58	00:02:13
2		#4	15:05:40	15:07:49	00:02:09
3		#5	16:23:11	16:25:19	00:02:08
4	02-28-95	#1	09:38:24	09:40:38	00:02:14
5		#2	10:58:43	11:00:58	00:02:15
6		#3	12:14:18	12:16:32	00:02:14
7		#5	15:41:40	15:43:49	00:02:09
8	03-01-95	#2	10:29:16	10:31:29	00:02:13
9		#3	11:36:05	11:38:20	00:02:15
10		#4	14:52:51	14:54:59	00:02:08
11	03-02-95	#2	09:43:31	09:45:39	00:02:08
12		#3	10:59:08	11:01:19	00:02:11
13		#5	12:42:52	12:45:04	00:02:12
14		#7	15:04:14	15:06:26	00:02:12
15		#8	16:25:23	16:27:36	00:02:13
16	03-03-95	#1	07:59:35	08:01:51	00:02:16
17		#5	11:08:03	11:10:13	00:02:10
18		#7	13:57:55	14:00:07	00:02:12
19		#8	15:17:24	15:19:36	00:02:12
20	03-08-95	#2	09:08:58	09:11:10	00:02:12
21		#3	10:32:22	10:34:34	00:02:12
22		#4	11:44:18	11:46:30	00:02:12
23		#6	13:28:58	13:31:10	00:02:12
24		#8	15:02:38	15:04:51	00:02:13
25	03-09-95	#1	07:34:16	07:36:27	00:02:11
26		#2	08:48:45	08:50:57	00:02:12
27		#4	10:56:12	10:58:25	00:02:13
28		#6	16:12:00	16:14:12	00:02:12
29	03-10-95	#1	07:48:38	07:50:53	00:02:15
30		#2	09:09:41	09:11:54	00:02:13
31		#4	11:15:04	11:17:18	00:02:14
32		#5	12:34:18	12:36:33	00:02:15
33		#7	14:27:15	14:29:29	00:02:14
34	03-13-95	#1	07:36:28	07:38:42	00:02:14
35		#3	09:29:32	09:31:44	00:02:12
36		#4	10:58:16	11:00:30	00:02:14
37		#5	13:01:46	13:03:59	00:02:13
38		#7	15:14:56	15:17:10	00:02:14
39	03-14-95	#1	09:50:34	09:52:46	00:02:12
40		#3	11:42:04	11:44:16	00:02:12
41		#6	13:41:03	13:43:16	00:02:13
42		#7	15:00:54	15:03:08	00:02:14
Totals			04:48:54	06:21:36	01:32:42

Average **00:02:12**

			Gate Recessed	Tow Over Sill	Total
1	02-27-95	#3	13:13:58	13:38:28	00:24:30
2		#4	15:07:49	15:18:10	00:10:21
3		#5	16:25:19	16:42:44	00:17:25
4	02-28-95	#1	09:40:38	09:48:42	00:08:04
5		#2	11:00:58	11:07:38	00:06:40
6		#3	12:16:32	12:24:15	00:07:43
7		#5	15:43:49	16:12:56	00:29:07
8	03-01-95	#2	10:31:29	10:37:02	00:05:33
9		#3	11:38:20	11:53:03	00:14:43
10		#4	14:54:59	15:07:50	00:12:51
11	03-02-95	#2	09:45:39	09:54:36	00:08:57
12		#3	11:01:19	11:09:11	00:07:52
13		#5	12:45:04	12:53:42	00:08:38
14		#7	15:06:26	15:11:50	00:05:24
15		#8	16:27:36	16:35:07	00:07:31
16	03-03-95	#1	08:01:51	08:08:19	00:06:28
17		#5	11:10:13	11:19:55	00:09:42
18		#7	14:00:07	14:10:02	00:09:55
19		#8	15:19:36	15:27:18	00:07:42
20	03-08-95	#2	09:11:10	09:20:12	00:09:02
21		#3	10:34:34	10:44:17	00:09:43
22		#4	11:46:30	11:54:12	00:07:42
23		#6	13:31:10	13:38:21	00:07:11
24		#8	15:04:51	15:13:33	00:08:42
25	03-09-95	#1	07:36:27	07:45:22	00:08:55
26		#2	08:50:57	09:02:25	00:11:28
27		#4	10:58:25	11:17:36	00:19:11
28		#6	16:14:12	16:38:34	00:24:22
29	03-10-95	#1	07:50:53	08:01:31	00:10:38
30		#2	09:11:54	09:22:25	00:10:31
31		#4	11:17:18	11:24:19	00:07:01
32		#5	12:36:33	12:43:33	00:07:00
33		#7	14:29:29	14:36:06	00:06:37
34	03-13-95	#1	07:38:42	07:40:09	00:01:27
35		#3	09:31:44	09:42:32	00:10:48
36		#4	11:00:30	11:23:29	00:22:59
37		#5	13:03:59	13:12:39	00:08:40
38		#7	15:17:10	15:25:18	00:08:08
39	03-14-95	#1	09:52:46	10:04:34	00:11:48
40		#3	11:44:16	11:51:39	00:07:23
41		#6	13:43:16	13:52:33	00:09:17
42		#7	15:03:08	15:13:12	00:10:04
Totals			06:21:36	13:49:19	07:27:43

Average **00:10:40**

	Mel Price LocK Average
Entry	00:12:46
Gate (Close)	00:03:09
Empty	00:05:13
Gate (Open)	00:02:16
First Cut (Remove)	00:06:42
Gate (Close)	00:03:11
Fill	00:05:07
Gate (Open)	00:02:13
Second Cut (Enter)	00:06:40
Gate (Close)	00:03:19
Empty	00:05:09
Gate (Open)	00:02:12
Exit	00:10:40
TOTAL	01:08:37

	Mel Price LocK Average
Approach	00:05:17
Gate (Close)	00:03:16
Empty	00:05:25
Gate (Open)	00:02:13
Exit	00:04:20
TOTAL	00:20:30