Section 6

Communications

6.1 Introduction

For the purpose of this manual, communication is the function of transmitting ideas, orders or sharing information in support of the safe and expeditious transit of ships. In the Panama Canal, communication is an essential and critical component of the transit activity. It is through a good, clear and concise message that the vital cooperation of those participating in this team effort will be obtained. This manual is issued as a reference and guidance for those concerned with the transit of a vessel through the Panama Canal. It regulates the way radios, telephones and other approved means are used within the Panama Canal organization to convey the messages necessary for a safe and successful operation. The Transit Operations Division Executive Manager, or his designee, is delegated the authority to resolve any discrepancy or difference that might surface during daily operations.

Recognizing the human interaction inherent in the communication process, it should be based on trust, mutual respect and professionalism.

6.2 Responsibility

The Transit Operations Division's Maritime Traffic Control Unit Manager is the Executive Vice Presidency for Operations official responsible for oversight and coordination of all electronic communication systems for safe and efficient vessel transit. The Transit Operations Division Executive Manager is responsible for all visual signals necessary for transit operations. The commitment, cooperation and support from all concerned parties are necessary to ensure excellent customer service.

6.3 Maritime Traffic Control Orders

Orders received by way of the arrow signals at the locks, by radio, or any other practicable means used by appropriate Panama Canal Authority officials, shall be obeyed. In those cases where it is considered necessary to deviate from such orders to prevent damage to the vessel or the installations and equipment of the Panama Canal Authority, the pilot shall take such action he deems appropriate, reporting such fact to Maritime Traffic Control Unit (MTC) by radio. It should be noted that an enter arrow is not given at the north end of Gatun Locks due to the fact that the vehicle bridge remains in the closed position until after the vessel has arrived.

6.4 Use of Radios

a. Conduct only essential business over the radio. This is particularly applicable to transit Channels 1 and 7. Radio transmissions should not contain editorial

comment or superfluous information, as this contributes to congestion and frequently interferes with the intended use of the channels.

b. All communications shall be in English.

c. Use alternate means of communication as much as practicable, bearing in mind that information regarding the safety of all nearby vessels should be passed on to all pilots concerned in the appropriate radio channels. Cellular phones are not considered as alternate means of communication. Avoid the use of cellular phones or other non-authorized mobile electronic devices on the navigational bridge while maneuvering a vessel in Canal waters, except in case of an emergency.

d. Keep all questions, answers, and exchanges as brief and concise as possible. Try to frame messages beforehand and eliminate all commentary.

e. Always speak clearly and slowly to reduce the need for repetition.

f. Avoid high noise areas when communicating. If possible, move away from or reduce the noise level rather than trying to shout above it. When aboard a launch, reduce engine speed.

6.5 Radio Channels

The Executive Vice Presidency for Operations transit radio system used for daily operation described below.

a. *Transit Channels:* UHF Channels 1 and 7 (P/A and Transit Central) are reserved for essential transit related business.

b. *Maneuvering Channels:* ZONE 1. UHF Channels 2, 11 and 12 are reserved for pilot/towboat communication in the canal and harbor respectively. ZONE 2 UHF channels 2, 3,4,5,9 10 and 11 are reserved for pilot/towboat communications in the canal and harbor respectively. ZONE 3, UHF channels 2, 10 and 11 are reserved for pilot/towboat communication in the canal and harbor respectively.

c. *Locks Radios:* ZONE 1. (Panamax Locks). UHF Channels 3, 4, 5, 6, 9 (Relay) 10 (Tie-up locomotives P/A) 13, 14, 15 and 16 are reserved for the transit of ships through the locks. Channel assignments shall be in accordance with Table VII, Lockage Radio Channels, on page 18. ZONE 3. (Neopanamax Locks). UHF CHANNELS 3,4,5,6 and 9 (tie up) are reserved for the transit of ships through the Neopanamax locks.

d. *Emergency Channel:* UHF Channel 8 (Emergency) is a clear channel available for use in case of emergency when non-interference is essential. It is not to be used for the routine conduct of business.

e. *Administrative Channels:* ZONE 2. Channel 12 (Harbor Pacific) and channel 13 (Harbor Atlantic) are administrative channels used by boarding, admeasures, towboats, launches, line handlers and others. These channels are heavily used; therefore conversation must be kept short and to the point. Channel 14 is a Dredging Division channel, channels 15 and 16 are used by Fire Department. ZONE 3. Channel 13 is reserved by the Industrial Division and channels 15 and 16 are contingencies channels.

f. *VHF Channels:* The ACP Signal Stations are equipped with VHF Channels 12 and 16. Channel 12 is the designated frequency for communicating with arriving and other non-piloted vessels. Channel 13 is used by transiting vessels to maintain a continuous watch and for bridge-to-bridge navigational communications while under way in Panama Canal waters. Channel 16 may be used for communication with vessels en route to Panama.

Pilot Radios: Are equipped with 47 channels, (16 channels Zone 1 and 16 channels Zone 2 and 15 channels in Zone 3) providing sufficient channels, so that each vessel in the relay process will have a channel available for that vessel's exclusive use. Channel assignments are shown in Table I, on the next page.

	ZONE 1	ZONE 2	ZONE 3
CH	CHANNEL	CHANNEL	CHANNEL
1	Transit P/A	Transit P/A	Transit P/A
2	Tug Maneuver (Zone 1)	Tug Maneuver (Zone 2)	Tug Maneuver (Zone 3)
3	Locks 3	Harbor Maneuver 3	New Locks 3
4	Locks 4	Harbor Maneuver 4	New Locks 4
5	Locks 5	Harbor Maneuver 5	New Locks 5
6	Locks 6	6B Pilot	New Locks 6
7	Transit Central	Transit Central	Transit Central
8	Emergency	Emergency	Emergency
9	1B Relay	Mooring Buoys 9	New Locks Tie-Up
10	2B Tie-Up	Cartagena Tie-Up	Mooring Buoys 2
11	3B Maneuver	Cucaracha Tie-Up	Mooring Buoys 3
12	Harbor Maneuver (4B)	Harbor Pacific	Harbor Maneuver (4B)
13	Tandem PM East	Harbor Atlantic	Industrial (OPM)
14	Tandem PM West	Dredging 5B	*Not programmed*
15	Tandem MF East	Fire Simplex	Contingencies 1
16	Tandem MF West	Fire Repeater	Contingencies 2
16	Tandem MF West	Fire Repeater	Contingencies 2

TABLE I - Pilot Radio Channel Assignments

NOTES:

(1) By using Transit Channel 1, the control pilot, lockmaster, Transit Operations Division Executive Manager and MTC can carry on a four-way conversation.

(2) Tugboats will use the same channel as the tie-up locomotive when assisting vessels approaching the lock wall.

6.6 Pilot/Maritime Traffic Control/Transit Communications

a. Telephones 272-3623 and 272-3624 are set aside for the specific and dedicated purpose of providing pilots with transit schedule information when they arrive at their duty station. This number will be answered on a priority basis. Calls for any other reason will be referred to regular MTC telephone numbers. Pilots calling for initial schedule information on another telephone line will be requested to re-call on 272-3623 and 272-3624.

b. Pilot/MTC Transit Radio Communications are standardized as follows:

(1) *Northbound Transits*

(a) Upon arriving on board ship the pilot calls MTC (Transit) for a radio check on Channel 1. After commenting on the quality of reception, MTC repeats any critical items given previously on the telephone and furnishes additional information on any pertinent items, such as vessel movements, dredging equipment in the area (Pacific Anchorage, Pacific Entrance, Balboa Harbor and Balboa Reach), and areas in which a safe speed has been specially requested; receives scheduled lockage time and lane availability at Miraflores Locks and, if applicable, tugs, relay or tie up information, and responds to pilot requests for any other information relative to the transit. In addition, MTC provides the expected clearing time of the first segment, which is the clearing time of Miraflores Locks.

(b) Prior to getting under way, the pilot calls Flamenco Signal Station on VHF Channel 12 for traffic situation. The pilot reports to Signal Station and MTC (Transit) when underway on VHF Channel 12 and Transit Channel 1.

(c) Pilot reports time entering the channel to MTC (Transit) on Channel 1 and MTC restates harbor and southbound movements, dredging equipment and traffic conditions in the area, and updates the pilot with Miraflores Locks information if there are changes.

(d) Pilot reports time passing Dock 6 to MTC (Transit) on Channel 1 and MTC restates Miraflores Locks situation and tug assignments, if there are changes.

(e) Prior to clearing Miraflores Locks, the pilot calls MTC (Transit) on Channel 1 for confirmation of "proceed" or "tie-up" at Miraflores Moorings, or to receive scheduled lockage time and lane for Pedro Miguel Locks and, if applicable, tugs or tie up information; and the expected clearing time of the second segment, which is the clearing time of the Gaillard Cut.

(f) Prior to clearing Pedro Miguel Locks, the pilot calls MTC (Transit) on Channel 7 for confirmation of "proceed" or "tie-up" at Pedro Miguel or any of the tie-up stations (Cartagena or Cucaracha), southbounds scheduled to meet in the Cut, times southbounds have passed or are scheduled to pass Gamboa, dredging equipment in Gaillard Cut (from Paraiso Reach to Chagres Crossing), and areas in which a safe speed has been specially requested.

(g) Pilot reports passing Gamboa to MTC (Transit) on Channel 7 and receives scheduled lockage time and lane for Gatun Locks and, if applicable, relay/ carrousel information, dredging equipment in Gatun Lake (from Gamboa Reach to Gatun Reach, including Gatun Anchorage), areas in which a safe speed has been specially requested, and the expected clearing time of the third segment, which is the clearing time of Gatun Locks.

(h) Pilot reports passing Buoy 25, Gatun Lake to MTC (Transit) on Channel 7 and receives confirmation of lockage time, lane, and when applicable, tug assignment, and/or clear channel plans.

(i) Prior to clearing Gatun Locks, the pilot calls Cristobal Harbor on Channel 1 for disposition of ship at Cristobal and receives harbor traffic situation and, when applicable, tie-up crew and tug assignment for docking, dredging equipment in the area (Gatun Approach, Atlantic Entrance, Cristobal Harbor and Cristobal Anchorages), and areas in which a safe speed has been specially requested.

(j) Upon clearing Gatun Locks, the pilot calls MTC on Channel 1 to inform and Cristobal Signal Station on VHF Channel 12 for breakwater traffic situation.

(2) Southbound Transits

(a) Upon arriving on board ship the pilot calls MTC (Transit) on Channel 1 for a radio check. After commenting on the quality of reception, MTC repeats any critical items given previously on the telephone and furnishes additional information on other pertinent items, such as vessel movements, dredging equipment in the area (Cristobal Anchorages, Cristobal Harbor, Atlantic Entrance and Gatun Approach), areas in which a safe speed has been specially requested, scheduled lockage time and lane for Gatun Locks and, if applicable, tugs, relay/carousel or tie up information; and responds to pilot requests for any other information relative to the transit. MTC also provides the expected clearing time of the first segment, which is the clearing time of Gatun Locks.

(b) Prior to getting underway, the pilot calls Cristobal Signal Station on VHF Channel 12 for traffic situation. The pilot reports to Signal Station and MTC (Transit) when underway on VHF Channel 12 and Transit Channel 1.

(c) Prior to clearing Gatun Locks, the pilot calls MTC (Transit) on Channel 7 for confirmation of Gamboa passing time, for ready time and lane in Pedro Miguel (tie-up or locomotives); and, when applicable, for tug assignments in Gaillard Cut, the order in which ships are to pass Gamboa, dredging equipment in Gatun Lake (from Gatun Reach to Gamboa Reach, including Gatun Lake Anchorage), and areas in which a safe speed has been specially requested. MTC also provides the expected clearing time of the second segment, which is the passing time by Gamboa.

(d) Pilot reports passing Buoy 62 to MTC (Transit) on Channel 7 and MTC restates Pedro Miguel lockage information, tug assignments when applicable, and confirms scheduled clearing times of northbound ships expected to meet in Gaillard Cut, dredging equipment in Gaillard Cut (from Chagres Crossing to Paraiso Reach), and areas in which a safe speed has been specially requested.

(e) Pilot reports passing Gamboa Signal Station to MTC (Transit) on Channel 7 and MTC updates the pilot with Pedro Miguel lockage information and provides the expected clearing time of the third segment, which is the clearing time of Miraflores Locks.

(f) Prior to clearing Pedro Miguel Locks, the pilot calls MTC (Transit) on Channel 1 for confirmation of "proceed" or "tie-up" at Miraflores Moorings, or to receive scheduled lockage time and lane for Miraflores Locks and, if applicable, tugs, relay or tie up information.

(g) Prior to clearing Miraflores, the pilot calls MTC (Harbor) on Channel 1 and receives disposition of vessels at Balboa harbor, traffic movements, and when applicable, clear channel plans, tug assignments, and/or tie-up crew availability, dredging equipment in the area (Balboa Reach, Balboa Harbor, Pacific Entrance and Pacific Anchorages), and areas in which a safe speed has been specially requested.

(h) Prior to clearing the Pacific Channel, the pilot calls Flamenco Signal Station on VHF Channel 12 to ascertain traffic situation.

(3) The foregoing specified communications do not in any way supersede the requirement of prompt notification of the pilot when a situation changes and early corrective action by the pilot is needed, or prompt notification to MTC by the pilot whenever he is not making the schedule times or whenever the pilot becomes aware of a situation affecting schedules or safety of which MTC might not be aware. Further, these instructions are not intended to restrict the flow of information between pilots and MTC, but rather to standardize and formalize the communications at the times and locations specified. The need for other information and communications is recognized, and includes, but is not limited to:

- Special information required for tows and hand lines.
- Special meeting information, such as the large, over 900 feet (274.3 meters) ships require.
- Docking, undocking and tie-ups for certain areas.
- Tugs and hand lines locking with ship.
- Any other information that the pilot or MTC requires to perform his job in a safe and efficient manner.
- Early reassignment and duty time when applicable.
- Dredging movements (such as barges, scows, cranes, dredges).
- Areas in which a safe speed has been specially requested.

(4) Information summarized in the following Table II will be furnished by MTC to pilots calling on 272-3623 and 272-3624 after reporting to duty station. Additional information will be furnished upon request, if available.

NORTHBOUND AND SOUTHBOUND TRANSIT INFORMATION	NORTHBOUND	SOUTHBOUND
Schedule number, including extenders (tandem, dangerous cargo, etc.)	X	X
Name of ship and location.	X	X
Names of other pilots assigned to vessel and where they will board.	X	X
Locomotives/wires planned (or, if handline, whether center chamber or side wall).	X	X
When applicable, Clear-cut, daylight, high mast lighting, dangerous cargo information and/or clear channel restrictions, or any other pertinent information.	X	X
Time due and lane at Miraflores (when applicable, relay information).	X	
Whether following northbound or entering where southbound clears.	X	
Time due and lane at Gatun (when applicable, relay information).		X
Whether following southbound or entering where northbound clears.		X
When applicable, tug assignment Pacific locks and Cut.	X	X
Tentative Gamboa passing time.		X
Scheduled tie-ups at Cucaracha Tie-up Station, and/or Gatun, Pedro Miguel or Miraflores Locks.	X	X
Lane and availability of Pedro Miguel.	X	
If requested, expected ready time of Gatun.	X	
When applicable, handlines and tugs locking with vessel.	X	X
The names of Official, Courtesy or Guest passengers and where they will board and disembark.	X	X

TABLE II - Information Furnished to Pilots by MTC.

6.7 Pilot/Tug Communications

a. To improve communication, avoid misunderstanding and ensure safe operating procedures, strict radio procedures must be followed when moving vessels with tug assistance. Standard orders and tug acknowledgment and response are necessary to ensure complete coordination between pilots and tug masters. Instructions to the tug on the radio must be precise, avoiding unusual expressions, slang, and homespun terminology.

b. If a tug master is to carry out a ship handler's instructions effectively, he must first receive them clearly. The pilot must give clear and concise orders to assisting tug(s). Several means are available, including radio, ship whistle, mouth whistle, and hand signals. The pilot must be alert to immediately detect any lack of acknowledgement or lack of response by the tug to his order and must take

positive timely action at once to correct the situation. The utilization of ship's officers or, in cases of multiple pilot ships, the assisting pilot to ensure that the control pilot's orders to assisting tug(s) are carried out is considered prudent seamanship.

c. Omni-directional tugs are capable of side thrusting at approximately 70 percent of full bollard pull. The pilot can request "side thrust" when he wants to push without requiring this type of tug to work out to 90^{o}.

d. Tugs on the stern Cut-style will normally stay in line with the keel. This is its "neutral" position and it will return to this position at the conclusion of each maneuver, unless instructed otherwise.

e. The tug will use full power, unless otherwise instructed. The pilot should, at all times, indicate whether he wants the maneuver accomplished with a "pull" or "push".

f. Distractions in the tug's control station must be eliminated to ensure that pilot's instructions are received.

g. Pilots and tug masters shall utilize standard tug orders shown in Table III on the following page, and this communication shall be in English.

h. Pilots and towboat masters should avoid areas where machinery or wind velocity may create interference, either in the transmission or reception of messages. Towboat masters should insure that at the current operating station, the whistle can be used for response to pilot orders or to indicate an emergency condition.

STANDARD ORDERS TO TUG MASTERS	
ORDER	**RESPONSE**
STANDARD ORDERS TO TUG ON BOW OR QUARTER	
"One whistle" (come ahead or push from stop)	Blows one short blast, pushes against ship at full power and works out to 90º.
"Two whistles" (back or pull from stop)	Blows two short blasts, pulls on ship at full power and works out to 90º.
"One whistle" (stop)	Blows one short blast and stops working in any direction.
STANDARD ORDERS TO TUG ON STERN CUT-STYLE	
"One whistle" (push/pull my stern to starboard)	Blows one short blast, push/pull ship's stern to starboard at full power.
"Two whistles" (push/pull my stern to port)	Blows two short blasts, push/pull ship's stern to port full power.
"Three whistles" (back straight)	Blows three short blasts, backs straight in line with keel full power.
"One whistle" (stop)	Blows one short blast and stops working in any direction.
On suitable vessels, when the pilot intends to use the Cut-style tug to push him into or out of the chamber, the order should be as follows:	
"Push straight ahead"	Blows one short blast, pushes in line with the keel at full power.
STANDARD ORDERS TO CAST OFF THE TUG	
"Cast off" or "Let go" (to let go lines)	Blows one prolonged blast followed by two short blasts and orders to release the working lines and take them aboard the tug.
EXAMPLES OF ACCEPTABLE AMPLIFIED ORDERS	
"Two whistles back alongside"	Blows two short blasts, backs full power alongside and not work out to 90º.
"One whistle come ahead slow"	Blows one short blast, pushes at low power at 90º.
"At 45º, push/pull"	Push or pull while at 45º to vessel's keel.
"As you are – push/pull"	Begin to push or pull.
SIGNALS TO CALL TUGS IN THE CANAL	
Call for one tug: Vessel blows one prolonged blast followed by three short and one prolonged blasts (-xxx-)	
Call for two tugs: Vessel blows one prolonged blast followed by three short and one prolonged blasts (-xxx-) followed by two prolonged blasts (- -).	
SPECIAL CIRCUMSTANCES	
For dead tows, barge work and other special cases, it is expected that specific orders will be passed and that the guideline for brevity and clarity of content will be followed.	

TABLE III - Standard Pilot/Tug Orders

NOTES:

All "orders" shall be preceded by the tug's name.

COMMUNICATIONS - STANDARD ORDERS TO TUG MASTERS – NEOPANAMAX LOCKS			
TUGS ID WHILE ASSISTING VESSELS AT NEOPANAMAX LOCKS			
Tug location	**Alternative 1**	**Alternative 2**	**Alternative 3**
"On the Hawser"	Alpha Tug	Tug's name	Hawser Tug
Vessel's Port or Starboard bow	Bravo Tug	Tug's name	Port / Starboard Bow Tug
Vessel's Port or Starboard Quarter	Charlie Tug	Tug's name	Port / Starboard Quarter Tug
Vessel's Stern "Cut-Style" or two lines through the same chock	Delta Tug	Tug's name	Cut Style Tug
Depending on the pilot's need	Echo Tug	Tug's name	According to location requested by the pilot

ORDERS TO TUG ALPHA			
Order	**Directions**	**Alternative directions**	**Forces**
Tow / Pull	9 O´CLOCK	Bow to port	Full / Half / Slow / Stop
	10 O´CLOCK		
	11 O´CLOCK		
	12 O´CLOCK	Straight ahead	Just stay ahead
	1 O´CLOCK	Bow to starboard	Full / Half / Slow / Stop
	2 O´CLOCK		
	3 O´CLOCK		

ORDERS TO TUGS BRAVO & CHARLIE		
Order	**Expanded orders**	**Forces**
Push	One whistle, push	Full / Half / Slow / Stop
Back (at 45° / 90° / Alongside)	Two whistles, back	

ORDERS TO TUG DELTA		
Order	**Expanded orders**	**Forces**
Push Stern to Port / Starboard	Push, two whistles / one whistle	Full / Half / Slow / Stop
Back Stern to Port / Starboard	Back, two whistles / one whistle	
Straight back	Three whistles straight back	
Push straight ahead in line with the keel		

ORDERS TO TUG ECHO	
Order / Directions / Alternative directions / Expanded orders	**Forces**
According to location requested by the pilot	Full / Half / Slow / Stop

TABLE IV - Standard Pilot/Tug Orders at Neopanamax Locks

6.8 Pilot/Locks Communications

The standard communication procedures outlined here are to be followed at all locks.

a. *Separate radio systems:*

Pilots, lockmasters, control house operators, locomotive operators and others can communicate over two separate radio systems. The Lock's frequencies, UHF Channels 3, 4, 5, 6, 9 (Relay) 10 (Tie-up locomotives P/A) 13, 14, 15 and 16 of ZONE 1 are reserved for the transit of ships through the Panamax locks. Channel assignments shall be in accordance with Table VII, Lockage Radio Channels, on page 18. UHF CHANNELS 3,4,5,6 and 9 (tie up) of ZONE 3 are reserved for the transit of ships through the Neopanamax locks. Lockage Radio Channels, provides two-way communications between the lockmaster and pilot and one way communication from the pilot to locomotive operators. At Gatun and Miraflores, it also provides two-way communication between the pilot and lock line-handling boatswain. The lock control house channel enables internal two-way transmissions among lockmasters, locomotive operators, control house operators and line-handling boatswains

b. *Lockage Communications*:

(1) Good communication and close coordination between pilot and lockmaster is essential in order to coordinate the work of the lock's control house operator, locomotive operators and other members of the lockage team. Close communication between the pilot and the lockmaster is necessary when locking large vessels with no bow pilot.

(2) Ship handling information and instructions are transmitted by radio. Standard orders are necessary so that there will be complete understanding between the pilot and each locomotive operator. These orders appear in Table V.

Before a ship arrives at the locks, the pilot will perform a radio check with the lockmaster identifying himself by the transit schedule number and exchanging lockage information.

(3) The lockmaster will then check with all assigned operators by radio to ensure that all operators are informed of the particulars for the lockage.

(4) During the lockage, all instructions from the pilot to the locomotive operators for handling the ship shall normally be given using the standard orders in Table V. Standard orders are necessary so that there will be complete understanding between the pilot and each locomotive operator.

(5) Communication of instructions to locomotive operators must be done in an atmosphere of emotional control. Commands must be given clearly, distinctly and concisely in English, in accordance with accepted standards of communication.

(6) The pilot will normally use the radio to order cables to be cast off from individual locomotives. If relay operations are not in progress, either the radio or one short blast of the ship's whistle may be used to cast off cables from all locomotives. If relays are in progress, the whistle should not be used for this purpose.

STANDARD ORDERS TO LOCOMOTIVE OPERATORS	
PILOT'S ORDER	*Expected Response by Locomotive Operator (Always two distinct taps on the locomotive bell)*
Locomotive Designation: Center wall number; Side wall number; Bow locomotives, Stern locomotives; Center wall locomotives; Side wall locomotives; All locomotives	Designated locomotive operators will expect to receive order.
Speed: Lockage speed one, two, three, four or five miles per hour.	Operate at designated speed if practical or switch to indicate speed while maintaining control and position.
Position: Drop back to braking position; Move ahead to towing position; Move opposite chock	Operator shifts locomotive to designated position.
Towing: Tow Stop Towing	Picks up slack in cable(s) and moves ahead at designated towing speed. If below speed, seeks to accelerate ship to designated towing speed. May coil in to assist getting full tension in cable. Releases tension on towing cables. Retains position.
Coiling: Coil in (or coil out). Stop coiling and hold. Stop coiling and release. Slack the cable. Take up slack (if it is desired that the operator "hold," say so).	Uses windlass to pull cable in. Normally used to move ship laterally. When cable tension approaches 35,000 lbs (16,000 kg) in the slow coil-in setting, the system reduces the tension to 22,000 lbs (10,000 kg). Stops coiling. Does not deliberately put slack in cables. Operator will not resume coiling in or out without further instructions. If tension exceeds 35,000 lbs (16,000 kg), the cable will begin to slip out. Stops coiling and then coils out slightly to give small amount of slack in the cable. Does not allow cable to exert appreciable tension on vessel. Slack the cable, as necessary. Picks up slack in cable.
Braking: Brake. Release (given after braking signal).	Uses brake to slow or stop vessel. Stops braking.
Cast off cables	Slack cable(s) for casting off and gives cast off signal to deckhands.

TABLE V - Standard Orders to Locomotive Operators

NOTES:

- *Once the pilot orders the locomotive to cast off, the order must not be changed in any way that will cause the locomotive to tighten the wires. If wires are tightened, line handlers could easily be injured or lose their fingers.*
- *The order **"hold"** shall follow a preliminary instruction, such as **"stop coiling and hold"** or **"take up slack and hold." "Hold"** should not be used by itself. When an operator is ordered to hold after a specific instruction, he will complete whatever order is given and take no further action until another order is received or until it becomes necessary to act to maintain control over the vessel. For example, if ordered to **"take up slack and hold,"** the operator will take all the slack out of the wire and then stop coiling.*
- *The order to **"Ease up"** should not be used. **"Release"** or **"Slack"** are the proper instructions.*

(7) In case the pilot loses radio communication, the following signals will be given on the ship's whistle:

SHIP WHISTLE SIGNALS USED IN THE LOCKS		
SIGNAL	**PILOT'S ORDER**	**EXPECTED RESPONSE**
One short blast (should not be used during relays)	Cast off all wires or vessel mooring lines.	Locomotive operator rings bell twice and slacks all cables for casting off and gives cast off signal to deck hands. (If used during mooring, the deck-hand bosun instructs his crew to create slack in the lines and then gives the signal to the line handlers.)
Three short blasts	I have lost radio communications (or to attract the operator's attention).	Locomotive operators ring bells twice and look toward pilot, prepared to execute orders given by hand or flashlight signal.
Four long blasts	Cannot comply with tie-up signal.	Continuation of spilling, filling or other operations necessary to prepare the chamber.
Five or more short blasts	Danger or emergency.	Stop or suspend all operations (filling, spilling or gate movements). If signal is given during approach, prepare to receive vessel. If vessel is moving in locks, locomotive operators will take immediate action to stop it; if it is at rest in chamber, it must be held steady.

TABLE VI – Ship Whistle Signals Used in the Locks

NOTES:
The selective cast-off instructions are conveyed from pilot to operator by radio or hand signal (which is given by pointing at the locomotive concerned with one hand and then lifting both hands with the palms facing upward). It is the responsibility of the operator to relay this information to the deck hands on the ship. The hand signal used at this time is to point at the cable to be released followed by a lifting motion of the hand with palm up.

c. *Radio Procedure for Tandem Lockages*

During tandem lockages, each vessel is normally handled separately, the first ship on the standard frequency and the second ship on the tandem channel. Adjustments may be required when tandems are scheduled simultaneously with relay or merry-go-round operations.

(1) The first ship in the east lane at Miraflores uses Channel 5 Zone 1 (Locks 5) and the second, Channel 15 - Zone 1 (Tandem MF East). In the west lane, the first ship uses Channel 6 - Zone 1 (Locks 6), and the second, Channel 16 - Zone 1 (Tandem MF West).

(2) The first ship in the east lane at Pedro Miguel uses Channel 3 (Locks 3) - Zone 1, and the second, Channel 13 - Zone 1 (Tandem PM East). In the west lane, the first ship uses Channel 4 - Zone 1 (Locks 4), and the second, Channel 14 - Zone 1 (Tandem PM West).

(3) For a tandem lockage in the east lane at Gatun Locks, Channel 3 - Zone 1 (Locks 3) is used for the first vessel and Channel 4 - Zone 1 (Locks 4) for the second vessel. In the west lane, Channel 5 - Zone 1 (Locks 5) is used for the first vessel and Channel 6 - Zone 1 (Locks 6) for the second vessel.

d. *Tie-up locomotives*

(1) At Miraflores Locks, all instructions from the pilot to tie-up locomotives will be conveyed using Channel 10 - Zone 1 (Tie-up).

(2) At Gatun Locks, Channel 9 - Zone 1 (Relay) is used in the west lane and Channel 10 - Zone 1 (Tie-up) in the East lane.

(3) At Pedro Miguel Locks, Channel 13 - Zone 1 (Tandem East) and Channel 14 - Zone 1 (Tandem West) are used to tie-up vessels when they are available. The use of these channels needs the approval of the lockmaster attending the lane receiving the vessel and the pilot onboard the vessel to be tied-up.

e. *Relay Locomotives*

(1) Radio communication will be used to provide instruction to relay locomotives.

(2) The locomotives used are divided into two teams: lower level relay team and upper level relay team.

(3) *Miraflores Locks:* The normal radio frequency, Channel 5 - Zone 1 (Locks 5) in the east lane and Channel 6 - Zone 1 (Locks 6) in the west, is regularly used by the vessel up to the point of the locomotive exchange. After the exchange, the vessel uses Channel 9 - Zone 1 (Relay). Adjustments must be made during double relays or when relays and tandem lockages are scheduled at the same time.

(4) *Gatun Locks:* In the East lane, the lower level relay team will use Channel 4 - Zone 1 (Locks 4) and the upper level team Channel 3 - Zone 1 (Locks 3). In the West lane, the lower level relay team will use Channel 6 - Zone 1 (Locks 6) and the upper level Channel 5 - Zone 1 (Locks 5).

f. *Lockage Radio Channels (See Table VII, on p.18)*

(1) Cross bridge radios should be used in the following manner:

(a) Channel 1 for locks frequency Channel 3 (Locks 3).

(b) Channel 2 for locks frequency Channel 4 (Locks 4).

(c) Channel 3 for locks frequency Channel 5 (Locks 5).

(d) Channel 4 for locks frequency Channel 6 (Locks 6).

Cross bridge radios should be used on the channels having the same number as the transit radio channel in use. When relaying at Miraflores, the ship on Channel 6 should avoid using the cross-bridge radios except in case of emergency.

(2) Further information pertaining to communications is found in the Handbook of Lockage Procedures.

g. *Locomotive signals:*

(1) Two distinct rings on the locomotive bell indicate the operator has received, understands and can execute the signal as directed. This signal also indicates to the pilot that the locomotive cable(s) has been secured to the vessel.

(2) Three distinct rings on the bell indicate that the operator does not understand or cannot execute the signal as directed, or wishes to attract the attention of the pilot.

(3) Five rings are used to alert the pilot in the rare cases when locomotive cables cannot be placed aboard the vessel following normal procedures.

(4) Continuous ringing of the bell is the general alarm signal and is used only in an emergency or accident. It is a signal to warn both the pilot and the lock forces of trouble or danger, either present or impending. At times of extreme emergency, or when the bell is not effective in getting the pilot's attention, the flashing amber light and the air horn may also be used to give the alarm.

(5) A continuously blinking red light on top of the cab identifies the No.1 center wall locomotive on all lockages.

(6) The red light on the top of the cab flashes when locomotive operator rings the bell.

(7) The green light indicates the locomotive is being driven the selected speed.

(8) One long blast on the air horn indicates that lockage speed should be changed to two miles per hour, while three blasts is used in emergencies.

(9) The fair lead lights and the amber light on the top of the cab are extinguished when wire is fast aboard vessel, and turned on when wire is cast off and clear of vessel.

h. *Emergency Signals:*

If radio communications fail during a lockage, observe emergency signal procedures below.

RADIO CHANNELS USED DURING LOCKAGES	
GATUN LOCKS, REGULAR LOCKAGE	
EAST SIDE: single ship or first ship of tandem	Channel 3-Zone 1 (Locks 3)
EAST SIDE: second ship of tandem	Channel 4 -Zone 1 (Locks 4)
WEST SIDE: single ship or first ship of tandem	Channel 5-Zone 1 (Locks 5)
WEST SIDE: second ship of tandem	Channel 6-Zone 1 (Locks 6)
GATUN LOCKS, RELAY LOCKAGE	
EAST SIDE	
Upper lock crew	Channel 3 -Zone 1 (Locks 3)
Lower lock crew	Channel 4 -Zone 1 (Locks 4)
WEST SIDE	
Upper lock crew	Channel 5 -Zone 1 (Locks 5)
Lower lock crew	Channel 6 -Zone 1 (Locks 6)
GATUN LOCKS, TIE-UP LOCOMOTIVES	
EAST SIDE	Channel 10-Zone 1 (Tie-up)
WEST SIDE	Channel 9-Zone 1 (1-B)
MIRAFLORES LOCKS, REGULAR LOCKAGE	
EAST SIDE	Channel 5-Zone 1 (Locks 5)
WEST SIDE	Channel 6-Zone 1 (Locks 6)
MIRAFLORES LOCKS, RELAY LOCKAGE	
EAST SIDE	
Upper lock crew	Channel 5 -Zone 1 (Locks 5)
Lower lock crew	Channel 9-Zone 1 (1-B)
WEST SIDE	
Upper lock crew	Channel 6-Zone 1 (Locks 6)
Lower lock crew	Channel 9-Zone 1 (1-B)
MIRAFLORES LOCKS, TIE-UP LOCOMOTIVES	
Tie-up locomotive, either side	Channel 10 -Zone 1 (Tie-up)
PEDRO MIGUEL LOCKS, REGULAR LOCKAGE	
EAST SIDE	Channel 3-Zone 1 (Locks 3)
WEST SIDE	Channel 4-Zone 1 (Locks 4)
RADIO CHANNELS USED DURING LOCKAGES NEO PANAMAX LOCKS	
COCOLÍ LOCKS	Channel 3, channel 4, channel 5, channel 6
AGUA CLARA LOCKS	Channel 3, channel 4, channel 5, channel 6

TABLE VII - Lockage Radio Channels

(1) The pilot's emergency signal is not less than *five short blasts* on the ship's whistle. If the ship is in motion, all locomotive operators will take immediate action to stop the ship as quickly as possible, shifting position as necessary. If the ship is at rest in chamber, all operators should be ready to hold the ship securely against surge or movement. If filling or spilling, all water movement will be stopped by the control house operator.

(2) Continuous ringing of the locomotive bell, flashing amber light and three blasts from the air horn are the locomotive operator's signal of an emergency or accident. These signals will alert the pilot and locks personnel of an accident or danger, either existing or impending. Examples of emergency situations are broken or stranded cables, loss of electrical power, inability to hold the ship during single culvert operation and obstruction of miter gates.

i. *Hand or flashlight signals*

When radio communications from pilot to operators cannot be used, or fails before or during a lockage, hand or flashlight signals could be used. Pilots shall make every effort to give clear and distinct signals at all times to the locomotive operators. Pictures of hand or flashlight signals are shown in Paragraph 6.13 (h) of this section.

j. *Execution of Signals*

(1) During a lockage, all locomotive operators must be alert and respond promptly to all directions and signals. To ensure a correct and almost simultaneous response, it is important that the sender execute prompt, correct and smooth directions and signals for clear understanding by the recipient.

(2) For good and smooth operations, teamwork between operators is mandatory. Operators must execute directions and signals simultaneously and the degree of pulling or braking must produce smooth and firm control of the ship in order to keep it properly positioned.

6.9 Whistle Signals

The whistle signals that appear on Table VI will be used when maneuvering upon the navigable waters of the Panama Canal and shall be applicable to all vessels, seaplanes and Panama Canal floating equipment. The word whistle means any sound signaling appliance capable of producing the prescribed blast. The following key should be applied when reading this table.

X = Short Blast (1 second)

— = Prolonged Blast (4-6 seconds)

***** = Rapid ringing of ship's bell for 5 seconds

+ = Gong for 5 seconds

O = 3 strokes on ship’s bell

6.10 Harbor Communications

It is imperative that harbor pilots establish communication with MTC at the beginning of each harbor watch and maintain contact throughout the watch. Effective communication with towboats, harbor foremen, signal stations, and others may also be necessary during the watch. Accordingly, the procedure below shall be followed:

(1) Pilots assigned harbor duty shall immediately, upon reporting to their duty station (Diablo Pilot Reporting Station or Cristobal Boathouse) contact the harbor controller by telephone to receive work assignments.

COURSE ALTERATIONS OR INTENTIONS	INT. RULES OF THE ROAD	ACP NAV. REG. ARTICLE 108
"I am altering my course to starboard."	X	None
"I am altering my course to port."	X X	None
"I intend to leave you on my port hand," or agreement to port-to-port meeting.	None	X
"I intend to leave you on my starboard hand," or agreement to starboard-to-starboard meeting.	None	X X
"I intend to overtake you on your port side," or agreement to be overtaken on port side.	None	X X
"I intend to overtake you on your starboard side," or agreement to be overtaken on starboard side.	None	X
Danger Signal	At least X X X X X	At least X X X X X
"I am operating astern propulsion."	X X X	X X X
RESTRICTED VISIBILITY		
Power-driven vessel making way.	— Intervals no more than 2 minutes	— Intervals no more than 2 minutes
Power-driven vessel underway, but stopped and making no way.	— — Intervals no more than 2 minutes	— — Intervals no more than 2 minutes
Vessel not under command; vessel restricted in her ability to maneuver; a sailing vessel; and vessel engaged in towing or pushing.	— X X Intervals no more than 2 minutes	— X X Intervals no more than 2 minutes
Last vessel towed, if manned.	— X X X Intervals no more than 2 minutes	— X X X Intervals no more than 2 minutes
Vessel of less than 100 meters or more in length at anchor.	* Intervals no more than 1 minute	* Intervals no more than 1 minute
Vessel of 100 meters or more in length at anchor.	* fore part + after part Intervals no more than 1 minute	* fore part + after part intervals no more than 1 minute
RESTRICTED VISIBILITY		
Every vessel at anchor in fog, mist, etc. may sound to warn approaching vessels.	X — X	X — X
Vessel aground less than 100 meters or more in length.	0 * 0 Intervals no more than 1 minute	0 * 0 Intervals no more than 1 minute
Vessel aground of 100 meters in length.	0 * 0 + Intervals no more than 1 minute	0 * 0 + Intervals no more than 1 minute
Request to open pipeline. Pipeline is open.	None	— X

TABLE VIII - Whistle Signals

(2) Harbor pilots, when not engaged in piloting duties and/or temporarily away from duty station telephones must be available on Transit Channel 1.

(3) Harbor pilots must contact the harbor controller before leaving the dock, getting underway, entering the channel, and upon completing each assigned harbor job.

(4) Before entering or leaving a dock, dry dock, mooring or other docking area, pilots must establish contact with the harbor foreman on Channel 12 on the pilot radio.

(5) Pilots shall establish contact with harbor towboats on Channel 12 – Zone 1 (Maneuvering Channel 4B) when using the services of these tugboats.

6.11 Vessel/Signal Station Communications

a. *Vessels Requirements:* As provided by *ACP Navigation Regulations, Article 29*, all vessels of 300 gross tons or over; of 100 gross tons or over when carrying one or more passengers for hire; and every commercial towing vessel of 26 feet (8 meters) in length or more shall be equipped with a radio-telephone, which can be operated from the navigation bridge and shall maintain a continuous watch on VHF Channel 12 until the ACP pilot assumes control.

b. *Initial Contact:* As provided by *ACP Navigation Regulations, Article 35*, the above vessels must, when arriving and before entering the breakwater, communicate with the signal station on VHF Channel 12. Channel 12 will be used to notify vessels of their transit time and for harbor coordination communication between ships and the ACP signal stations. A vessel that plans to transit or otherwise navigate in Canal waters shall maintain a continuous watch on VHF channels 12 and 16 until boarded by the pilot.

c. *Bridge-to-Bridge Communications:* Once a vessel receives a pilot on board, it shall maintain a continuous watch on VHF Channel 13 when underway in Canal waters for bridge-to-bridge navigational communications only. One-watt maximum power shall be used on that frequency, except that in emergencies or unusual circumstances more power may be used. When such vessels have a Canal pilot aboard, VHF Channel 13 may be used by the pilot or at his direction for navigational communications.

d. *Notification by Port Entry Coordinator or Boarding Officer:* All vessels shall be notified of the requirement stated on item (b.) by the signal station when initial contact is established and by the Authority boarding officer during the boarding process.

6.12 Emergency Radio Communications

When an emergency situation arises involving vessels in Canal operating waters, clear channel communications with the MTC is vital to facilitate coordination of all units concerned with the emergency using transit Channels 1 and 7.

Transmissions must be kept to the minimum. The following procedures will be followed, unless extenuating circumstances at the time make it impossible or impractical:

(1) Pilot to notify MTC of the emergency as soon as practicable on Transit Channel 1 or 7, depending upon his location; give nature of the emergency (steering or engine failure, grounding, collision, fire, etc.) and quickly warn other vessels in the vicinity of the hazard using the Transit Radio or/and Channel 13 VHF.

(2) MTC will immediately broadcast a warning to all traffic, dispatch available tugs to assist, notify the duty Canal port Captain, and implement the ACP Contingency Plan.

(3) Pilot and Canal port captain will mutually agree when to shift to Channel 8 – Zone 1, the emergency radio channel.

(4) Units responding to the emergency will be directed by the Canal port captain on duty to monitor the emergency channel. If the CPC on duty proceeds to the scene, the Canal Operations Captain (in his absence the senior Canal port captain) will coordinate efforts between the CPC proceeding to the scene, MTC and responding units.

(5) In consultation with the Canal Operations Captain, MTC will advise and direct other vessels in the area and realign schedules as necessary to accommodate the disruption created by the emergency.

(6) Unless specifically instructed to monitor the emergency channel, pilots must monitor the appropriate Transit Channel (1 or 7) so that MTC can keep them informed. This does not preclude pilots from keeping abreast of the situation as dictated by good seamanship, provided they can be contacted on the Transit Channel covering their location.

6.13 Visual Signals

a. *Schedule Flag Signals*

(1) For purposes of this section, flags and pendants used in the Panama Canal bear the same alphabetical code and meaning as in the International Code of Signals, with the exception of Flag “A” (ALPHA), Flag “T” (TANGO), Flag “X” (X-ray) and Flag “Z” (ZULU) when these flags are used jointly with Panama Canal transit schedule numbers. In this case, they have the following meanings:

- ALPHA means a previous-day transit vessel.
- TANGO means the vessel is carrying toxic or radioactive cargo.
- X-RAY means tandem vessel.
- ZULU means preference vessel (normally, passenger and military vessels).

(2) All vessels which have Canal Authority imposed restrictions due to cargo shall display a flag. Flag BRAVO (B) indicates flammables or explosives aboard. Flag “T” (TANGO) indicates toxic or radioactive materials.

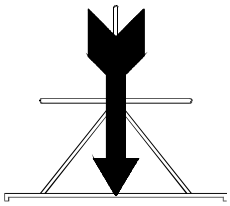
(3) All vessels in Panama Canal waters that have a pilot on board shall indicate it by flying the HOTEL (H) flag.

(4) Odd and even schedule numbers are assigned to northbound and southbound schedules, respectively. Northbound vessels shall fly the HOTEL (H) flag under the numeral pennant corresponding to the schedule assigned, and southbound vessels shall fly the HOTEL (H) flag over the schedule number. All vessels maneuvering and not transiting shall fly the "H" flag when pilot is on board.

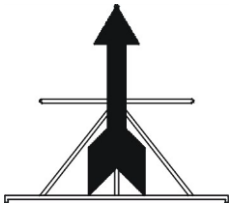
(5) For double repeat digits, the repeater shall be used to repeat the appropriate flag in the hoist (never HOTEL). Hence the first (odd) repeater shall be used for northbound transits when repeated digits are needed. The second repeater shall be used for southbound repeated digit cases.

b. *Arrow Signals*

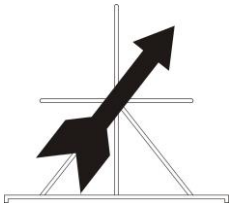
The arrow signals at all locks have the following meanings:



Not ready; lockage cannot take place for some time. This position is also used to signal plans for a change in direction.

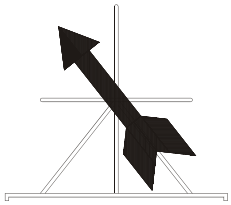


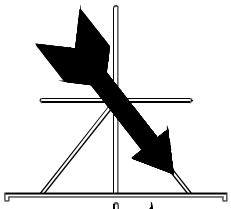
Not ready; stand off well clear of lock, prepared to approach on signal.



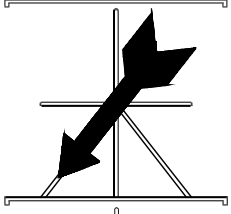
Locks making preparation, probably be ready for lockage in ten minutes or less; you may approach with caution, prepared to tie up or enter on right-hand side on signal.

Locks making preparation, probably be ready for lockage in ten minutes or less; you may approach with caution, prepared to tie up or enter on left-hand side on signal.

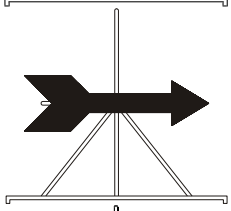




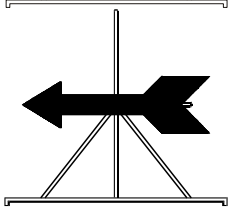
Moor to approach wall near jaws on right-hand side.



Moor to approach wall near jaws on left-hand side.



Enter right-hand side.



Enter left-hand side.

c. *Culvert Signals:* On single culvert up lockages, the amber light on the control house balcony will be lighted on the side next to the chamber in which only single culvert operation is to be used. If change is made from single to double culvert, or from double to single culvert operation after the vessel enters the lower level, the lockmaster will promptly notify the pilot. At Miraflores and Gatun Locks there is no indication for upper level single culvert fill.

d. *Spillway Signals for Gatun Dam:* Whenever one or more spillway gates are open at Gatun Dam, a red indicator light will be displayed at the south end of the Gatun Lock center wall. The lockmaster will advise pilots of transiting ships of the number of spillway gates that are open.

e. *Chamber spill signals:* On the north end of Gatun Locks approach wall and the south end of Miraflores, amber lights are used to indicate when spilling is in progress. Whenever a lower lock chamber is to be spilled from either lane while a vessel is approaching the locks, the amber light corresponding to the side to be spilled is turned on five minutes prior to spilling and kept on until the spilling

operation is over or has stopped. Once spilling has begun, it will not be stopped except for an emergency or unless the pilot sounds the emergency whistle signal or requests that the spill be halted through MTC.

f. *Miraflores Spillway Signal:* Two amber lights, located on top of the superstructure at the west end of Miraflores Spillway Dam, indicate pilots the amount of spill as follows:

(1) One amber light indicates that spilling is under way with a combined opening of not more than 5 gate-feet (1.50 gate-meters).

(2) Two amber lights indicate spilling is under way with a combined opening of more than 5 gate-feet (1.50 gate-meters).

NOTE: *An opening of 5 gate-feet is equal to five gates opened one foot (30 centimeters), one gate opened five feel (1.5 meters) or another equivalent combination.*

g. *Hazardous cargo signals at the locks:* When a vessel is dispatched with restrictions designated as "BRAVO," the locks control house operator will turn on the revolving red light signal on the appropriate side of the control house or, at Gatun Locks, flashing lights on top of lampposts at each level and on the approach walls. He will sound a signal of five or more short intervals over the public address system to alert all personnel of the restrictions for BRAVO lockages.

h. *Hand or flashlight signals:* While pilot radios have proven reliable, the possibility exists that a failure in radio communications would necessitate the use of whistle and hand signals between pilots and locomotive operators. It is mandatory that both transit and locks personnel be familiar with these signals and the action to be taken in response thereto, as follows:

(1) Pilots shall make every effort to give clear and distinct signals at all times to the locomotive operators; however, please take note that these signals should not be done during relay operations.

(2) After dark, signals shall be given by flashlight, one in each hand. These flashlights have a red tube around the lamp and are open at the end so that if the light is pointed directly at the operator, he will see the white light; at any other position of the light it will appear red. Great care must be used in giving signals by flashlight in order that the signal for an operator on one side shall not be executed by the opposite operator. The preparatory signal should be given with both lights burning steadily, pointed directly at the proper locomotive, and the execution signal given by the proper signal with one light while the other is held burning and steady.

(3) To indicate to the locks that a vessel has poor bitts, chocks or bad working angles for locomotive wires, the pilot shall give the following signals:

- In daylight, raise both hands above the head with the palms out.

- At night, with flashlight, give three separate and distinct flashes without oscillating the light.

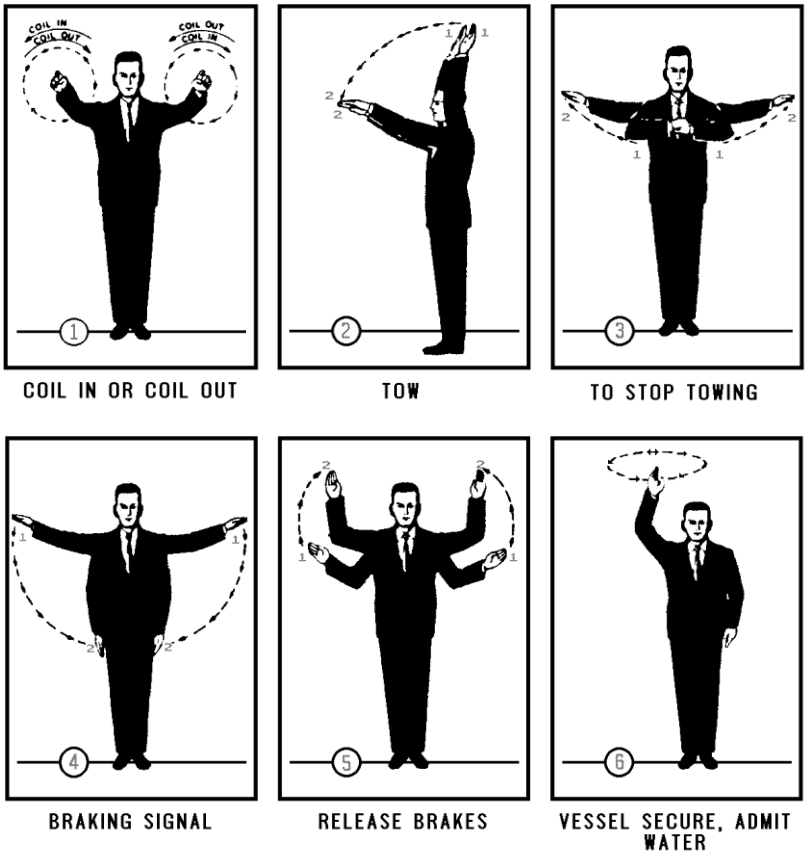
(4) To cast off individual wires during daylight hours: point at the locomotive concerned with one hand and then lift both hands with the palms upward. At night both flashlights are pointed at the locomotive and the same lifting motion is performed.

(5) To cast off all wires, sound one blast of ship's whistle.

(6) To send bow locomotives up the incline on up lockages, or to indicate that stern locomotives will brake on top of incline on down lockages, the pilot will give the following signals:

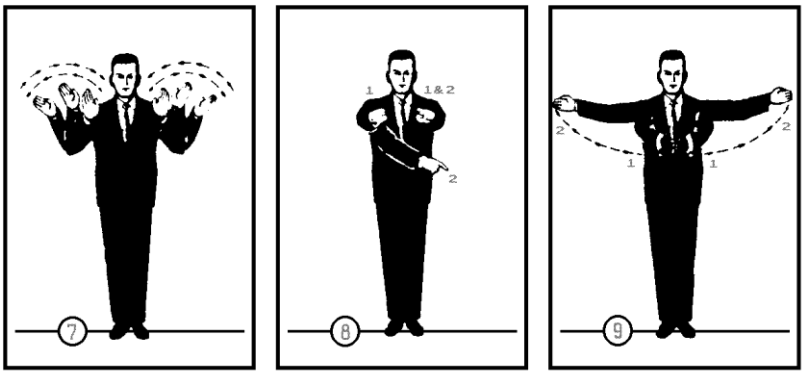
- In Daylight: Facing the locomotive concerned, make a motion to tap the top of the head with the palm of the hand.
- At Night: Direct one flashlight to the top of the head and give several short flashes.

(7) The following pictures indicate the proper position and execution by the pilot of hand and/or flashlight signals to direct locks locomotives:



COIL IN OR COIL OUT | TOW | TO STOP TOWING

BRAKING SIGNAL | RELEASE BRAKES | VESSEL SECURE, ADMIT WATER



THAT IS ENOUGH

CHANGING LOCOMOTIVE POSITION

SIGNAL GIVEN TO OPEN THE LOCK GATES

6.14 Pilot and Scheduling Flag Signals

All transmitting vessels shall display schedule flag signals as follows:

a. When a pilot is assigned to a vessel for transit, he will be given a schedule number and his expected time of arrival at the locks. The vessel shall, throughout the transit, display the flag or flags designating her schedule number. This number will be the vessel's identification while in transit. In addition, "Preference" vessels shall fly the letter "Z"; dangerous cargo vessels shall fly the letter "T" or "B" and display a red light at night.

b. When two vessels are dispatched in tandem on the same schedule, the leading vessel shall fly the assigned schedule number. The second vessel shall fly, in addition to the assigned schedule number, the letter "X" and shall be designated as "Extra."

c. Vessels delayed after having commenced transit, by being tied up at Gamboa moorings or anchored in Gatun Lake until after the next day's traffic has started, will be indicated by flying the letter "A" under the schedule number.

d. Schedule numbers and arrival times are subject to change. When a vessel arrives in sight of the locks the arrow signal takes precedence as the last order received.

e. In addition to the assigned schedule number and special qualification flags in (a), northbound vessels shall fly the "H" flag under the numeral pennant corresponding to the schedule assigned. Southbound vessels shall fly the "H" flag over the schedule number. All vessels maneuvering and not transiting shall fly the "H" flag when pilot is on board.

6.15 Colors (Ensigns) and House Flags

During daylight, vessels in Canal waters, whether they be in the terminal ports or in transit, may keep their colors and house flags flying.

6.16 Recordings

a. To ensure that essential facts related to the operation of the waterway are accurately preserved, i.e., the chronological reconstruction of information relative to accidents/incidents, employee disputes, human or mechanical communication breakdowns, timekeeping questions, and similar events, the below listed radio and telephone lines are routinely recorded:

(1) Transit Channels 1, 2, 7, 8.

(2) Harbor Channels 1B (Pacific) and 2B (Atlantic).

(3) Locks Channels.

(4) VHF Channels 12, 13 and 16.

(5) MTC/Admeasurers/Boarding Channel.

(6) Pilot Rotation & Scheduling Unit, phone numbers 272-4235 through 272-4240.

(7) All radio & telephone traffic in and out of the MTC operations room, pilot assignment area, Canal Port Captain's Office, and Cristobal and Flamenco Signal Stations.

b. The Maritime Traffic Control Unit is the Executive Vice Presidency for Operations unit responsible for processing and controlling telephone and radio recording requests. Official requests can be made by calling the Maritime Traffic and Admeasurement Section (OPTC) Manager or the Maritime Traffic Control Unit (OPTC-T) Manager at 272-4224 during normal duty hours, or the watch supervisor after normal duty hours at 272-4201. Division, section and unit managers, or their designees, may initiate these requests. Other requests must be submitted in writing to the Panama Canal Authority. The request for any recording must include:

(1) Requesting unit

(2) Name, telephone number and/or e-mail address of requestor

(3) Date of request

(4) Date and approximate time frame of requested recording

(5) Radio channel or telephone number

(6) Brief description of the incident

(7) Purpose or use that will be given to the recording

c. The Transit Operations Officer will handle all requests for recordings during normal duty hours. The Transit Operations Officer will process the request, either directly or through the Telecommunications Services Unit, FAIT, using the Nicelog software program. When ready, the Transit Operations Officer will

coordinate the delivery of the recording by electronic mail or notify the requestor for pick up.

d. The Maritime Traffic Control Unit, (OPTC-T), Manager is responsible to ensure that the approved requests are handled in an expeditious and timely manner. The Transit Operations Officers are responsible for maintaining a record of all recordings requested and keeping the OPTC-T Manager informed of all requests.

e. The Maritime Traffic Control Unit (OPTC-T) Manager will provide the Telecommunications Network Unit, IMTN, with the names of the Transit Operations Officers, or their designees, authorized to access the Nicelog software program. The Telecommunications Services Unit, FAIT, in turn, will provide these persons with the passwords to access the mentioned software.

6.17 Replacement of Pilot Radios on Board Vessels

a. The Pilot Section is responsible for ensuring a supply of loan radios at the Diablo Pilot Reporting Station and Cristobal Boathouse.

b. Whenever it is discovered that a pilot on board a vessel needs a replacement radio or battery, it will be promptly reported to MTC, responsible for coordinating the delivery of replacement radios to pilots on board vessels.

c. The traffic controller receiving the request is responsible for ensuring that a replacement radio is dispatched to the pilot by appropriate means.

d. Replacement radios can be furnished by launch from the launch/line handling facilities at the Corozal, Cristobal Boathouse, Paraiso and Gatun Lighthouse landings. Requests for replacement units must be coordinated through MTC.

e. Replacement of radios requiring the use of land transportation (Mine Dock, Corozal, Paraiso, Gamboa, Davis and Cristobal Boathouse landings) will be coordinated through MTC, which is responsible for arranging appropriate land transportation and coordinating water transportation with appropriate Transit Operations Division or Dredging Division units.

f. The radio is delivered to the guard gate at the locks or to a Transit Resources Division supervisor/dispatcher at a launch landing and these units will be responsible for ensuring its delivery on board.