



Prepared for:

Autoridad del Canal de Panamá

Salt Water Intrusion Analysis Panama Canal Locks

Existing situation

Report A: field data collection, development and validation of
simulation model, analysis of salt water intrusion

Annex A: Salinity measurements wet season

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ANNEX A

SALINITY MEASUREMENTS WET SEASON (Nov. – Dec. 2001)

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SALINITY MEASUREMENTS WET SEASON (Nov. – Dec. 2001)

**Outline
of
salinity measurements
wet season (Nov. – Dec. 2001)**

Outline of salinity measurements in wet season (Nov – Dec 2001)

Measurement of vertical salinity profiles in Miraflores Locks. No shipping.

Uunlockage					
lock	phase 1	phase 2	phase 3	phase 4	phase 5
	low water level lock open long sections	low water level measurements near upstream gates	high water level measurements near downstreams gates	high water level lock closed long sections	low water level lock closed long sections
lock A	28 Nov A-east	-	-	28 Nov A-east	-
lock B	28 Nov B-east	-	-	-	-

Downlockage					
lock	phase 1	phase 2	phase 3	phase 4	phase 5
	high water level lock open long sections	high water level measurements near downstream gates	low water level measurements near upstream gates	low water level lock closed long sections	high water level lock closed long sections
lock A	28 Nov A-east	28 Nov A-east	-	28 Nov A-east	-
lock B	28 Nov B-east	28 Nov B-east	-	28 Nov B-east	-

Measurement of vertical salinity profiles in Miraflores Locks and Pedro Miguel Locks.

Uplockage					
lock	phase 1	phase 2	phase 3	phase 4	phase 5
	low water level lock open long sections	low water level vessel enters lock measurements near upstream gates	high water level vessel leaves lock measurements near downstreams gates	high water level lock closed and empty long sections	low water level lock closed and empty long sections
lock A / low tide	29 Nov A-west, 1.5 h before low tide 29 Nov A-west, about low tide, also meas. near d/s gates	-	29 Nov A-west	29 Nov A-west	29 Nov A-west
lock A / high tide	5 Dec A-east, 1.5 h after high tide	-	5 Dec A-east, 2.5 h after high tide	5 Dec A-east, 3 h after high tide	-
lock B	-	3 Dec B-west	-	3 Dec B-west 3 Dec B-west	3 Dec B-west, during profiling d/s gates are opened 3 Dec B-west, pushtows and barges in the lock
lock C	2 Dec C-east, during 1 st profiling d/s gates are closed, during 2 nd profiling d/s gates are opened	-	2 Dec C-east	2 Dec C-east	2 Dec C-east, during profiling d/s gates are opened

Downlockage					
lock	phase 1	phase 2	phase 3	phase 4	phase 5
	high water level lock open long sections	high water level vessel enters lock measurements near downstream gates	low water level vessel leaves lock measurements near upstream gates	low water level lock closed and empty long sections	high water level lock closed and empty long sections
lock A / low tide	-	-	-	-	-
lock A / high tide	29 Nov A-west, 1 h before high tide 3 Dec A-east, 1.5 h before high tide	29 Nov A-west, 0.8 h before high tide 3 Dec A-east 1.2 h before high tide	-	3 Dec A-east, 0.8 h before high tide	-
lock B	29 Nov B-west, vessel enters imme- diately after launches 3 Dec B-east	3 Dec B-east	3 Dec B-west	3 Dec B-west	3 Dec B-west
lock C	2 Dec C-east	2 Dec C-west	-	2 Dec C-west	2 Dec C-west

Measurement of vertical salinity profiles in Gatun Locks.

Uplockage					
lock	phase 1	phase 2	phase 3	phase 4	phase 5
	low water level lock open long sections	low water level vessel enters lock measurements near upstream gates	high water level vessel leaves lock measurements near downstreams gates	high water level lock closed and empty long sections	low water level lock closed and empty long sections
lock D	8 Dec D-east	8 Dec D-east	9 Dec D-west	9 Dec D-west	9 Dec D-west
lock E	8 Dec E-east	8 Dec E-east	10 Dec E-east	10 Dec E-east	10 Dec E-east
lock F	8 Dec F-east	8 Dec F-east	11 Dec F-east	11 Dec F-east	11 Dec F-east

Downlockage					
lock	phase 1	phase 2	phase 3	phase 4	phase 5
	high water level lock open long sections	high water level vessel enters lock measurements near downstream gates	low water level vessel leaves lock measurements near upstream gates	low water level lock closed and empty long sections	high water level lock closed and empty long sections
lock D	8 dec D-east	8 dec D-east		11 dec D-east also measurements at fixed position near d/s side of lock	11 dec D-east
lock E	8 dec E-east	8 dec E-east	10 dec E-east	10 dec E-east also measurements at fixed position near d/s side of lock	10 dec E-east u/s gates are opened and closed again prior to measurements
lock F	8 dec F-east	8 dec F-east	9 dec F-west	9 dec F-west	9 dec F-west

Measurements in Pacific Entrance.

description	Pacific Entrance
Two parallel long sections from Miraflores Locks to Bridge of the Americas	30 Nov
Continuous profiling at position 100 m south of Miraflores Locks, first green buoy, west side of shipping lane	5 Dec /14 Dec

Measurements near Miraflores Locks.

lock	outlet	intake	centre wall south near bed	centre wall south near water surface	centre wall north near bed	centre wall north near water surface
lock A	5 Dec A-west	not applicable	30 Nov – 2 Dec	2 Dec – 4 Dec	not applicable	not applicable
lock B	not applicable	5 Dec B-west	not applicable	not applicable	4 Dec – 5 Dec	5 Dec – 6 Dec

description	centre wall and wing walls south
Two long sections along centre wall, west wing wall and east wing wall of Miraflores Locks, south side	4 Dec
Long section along centre wall, west wing wall and east wing wall of Miraflores Locks, south side	14 Dec

Profiling in Miraflores Lake.

description	Miraflores lake
Two long sections parallel and perpendicular to Miraflores spillway	28 Nov
Two parallel long sections in shipping lane from Miraflores Locks to Pedro Miguel Locks	29 Nov
Long section along west and east bank of Miraflores Lake	3 Dec

Measurements near Pedro Miguel Locks.

description	centre wall and wing walls north
Long section along centre wall, west wing wall and east wing wall of Pedro Miguel Locks, north side	14 dec

Profiling in Gaillard Cut.

description	Gaillard Cut
Long section in shipping lane from Gamboa halfway up to Pedro Miguel Locks	1 Dec
Long section in shipping lane from halfway Gamboa and Pedro Miguel Locks to position north of Pedro Miguel Locks	2 Dec
Long section in shipping lane from Gatun Lake to Gamboa	13 Dec
Long section in shipping lane from Pedro Miguel Locks to position north of Pedro Miguel Locks	14 Dec

Profiling in Gatun Lake.

description	Gatun Lake
Long section at west side of Gatun Locks, from Gatun Locks to Gatun spillway	11 Dec
Long section from Gatun Locks along north-east bank of Gatun Lake	12 Dec
Three long sections at east side of Gatun Locks, perpendicular to north-east bank of Gatun Lake	13 Dec
Long section in shipping lane from Gatun Locks to Gaillard Cut	12 Dec

Measurements near Gatun Locks.

lock	filling jet	centre wall north near bed	centre wall north near water surface	centre wall south near bed	centre wall south near water surface
lock D	10 Dec / 11 Dec	6 Dec – 8 Dec	8 Dec – 10 Dec	not applicable	not applicable
lock E	10 Dec / 11 Dec	not applicable	not applicable	not applicable	not applicable
lock F	10 Dec / 11 Dec	not applicable	not applicable	10 Dec – 11 Dec	11 Dec – 12 Dec

description	centre wall south
Profiling along centre wall Gatun Locks, southside	13 Dec

Measurements in Atlantic Entrance.

description	Atlantic Entrance
Two long sections from Gatun Locks to breakwaters	7 Dec
Continuous profiling at position 300 m north of Gatun Locks, first green buoy, east side of shipping lane	7 Dec / 10 Dec

Measurements

Lock A

Lock A		uplockage	no vessels
Phase 1:		Low water level in lock chamber (levelled down to level in Pacific entrance) Lock chamber open and empty Measurement of vertical salinity profiles in long sections	
Date / time:		28 November 2001, 12:15 h – 12:35 h	
Conditions:		Lane:	A-east
Level Miraflores Lake (ft to PLD):		+54.7	
Level Pacific Ocean (ft to PLD):		+3.5	
Level in lock chamber (ft to PLD):		+3.5	
Vessel dimensions in ft (l, w, d):		--	
Files			
Identification	location in lock chamber	remarks	
011128lo-1216	0.3 width, 1000 ft from u/s gates		
011128lo-1220	0.3 width, 800 ft from u/s gates		
011128lo-1223	0.3 width, 600 ft from u/s gates		
011128lo-1225	0.3 width, 400 ft from u/s gates		
011128lo-1228	0.3 width, 200 ft from u/s gates		
011128lo-1231	0.3 width, near u/s gates		
011128ju-1217	0.7 width, 1000 ft from u/s gates		
011128ju-1220	0.7 width, 800 ft from u/s gates		
011128ju-1223	0.7 width, 600 ft from u/s gates		
011128ju-1225	0.7 width, 400 ft from u/s gates		
011128ju-1228	0.7 width, 200 ft from u/s gates		
011128ju-1230	0.7 width, near u/s gates		

Lock A	uplockage	no vessels
Phase 4:	High water level in lock chamber Lock chamber closed and empty Measurement of vertical salinity profiles in long sections	
Date / time:	28 November 2001, 12:50 h – 13:10 h	
Conditions:	Lane: Level Miraflores Lake (ft to PLD): Level Pacific Ocean (ft to PLD): Level in lock chamber (ft to PLD): Vessel dimensions in ft (l, w, d):	A-east +54.7 +5.2 +26.8 --
Files		
Identification	location in lock chamber	remarks
011128lo-1251	0.3 width, near u/s gates	
011128lo-1254	0.3 width, 200 ft from u/s gates	
011128lo-1257	0.3 width, 400 ft from u/s gates	
011128lo-1300	0.3 width, 600 ft from u/s gates	
011128lo-1303	0.3 width, 800 ft from u/s gates	
011128lo-1306	0.3 width, 1000 ft from u/s gates	
011128ju-1252	0.7 width, near u/s gates	
011128ju-1255	0.7 width, 200 ft from u/s gates	
		other measurements at 0.7 lock width failed

Lock A		downlockage	no vessels
Phase 1:		High water level in lock chamber (levelled up; equalized with level in lock B) Lock chamber open and empty Measurement of vertical salinity profiles in long sections	
Date / time:		28 November 2001, 10:50 h - 11:05 h	
Conditions:		Lane:	A-east
Level Pacific Ocean (ft to PLD):		-0.4	
Level Miraflores Lake (ft to PLD):		+54.7	
Level in lock chamber (ft to PLD):		+26.8	
Vessel dimensions in ft (l, w, d):		--	
Files			
Identification	location in lock chamber	remarks	
011128lo-1051	0.3 width, near u/s gates		
011128lo-1055	0.3 width, 200 ft from u/s gates		
011128lo-1057	0.3 width, 400 ft from u/s gates		
011128lo-1101	0.3 width, 600 ft from u/s gates		
011128lo-1103	0.3 width, 800 ft from u/s gates		
011128ju-1052	0.7 width, near u/s gates		
011128ju-1054	0.7 width, 200 ft from u/s gates		
011128ju-1057	0.7 width, 400 ft from u/s gates		
011128ju-1100	0.7 width, 600 ft from u/s gates		
011128ju-1103	0.7 width, 800 ft from u/s gates		

Lock A	downlockage	no vessels
Phase 2:	High water level in lock chamber Lock chamber open Measurement of vertical salinity profiles at position near downstream gates	
Date / time:	28 November 2001, 11:05 h - 11:15 h	
Conditions:	Lane: Level Pacific Ocean (ft to PLD): Level Miraflores Lake (ft to PLD): Level in lock chamber (ft to PLD): Vessel dimensions in ft (l, w, d):	A-east +0.6 +54.7 +26.8 --
Files		
Identification	location in lock chamber	remarks
011128lo-1107	side wall, 950 ft from u/s gates	
011128lo-1110	side wall, 950 ft from u/s gates	
011128lo-1113	side wall, 950 ft from u/s gates	
011128ju-1106	centre wall, 950 ft from u/s gates	profile not to full depth
011128ju-1108	centre wall, 950 ft from u/s gates	
011128ju-1111	centre wall, 950 ft from u/s gates	
011128ju-1113	centre wall, 950 ft from u/s gates	

Lock A	downlockage	no vessels
Phase 4:	Low water level in lock chamber Lock chamber closed and empty Measurement of vertical salinity profiles in long sections	
Date / time:	28 November 2001, 11:20 h - 11:40 h	
Conditions:	Lane: Level Pacific Ocean (ft to PLD): Level Miraflores Lake (ft to PLD): Level in lock chamber (ft to PLD): Vessel dimensions in ft (l, w, d):	A-east +1.6 +54.7 +1.6 --
Files		
Identification	location in lock chamber	remarks
011128lo-1123	0.3 width, 950 ft from u/s gates	
011128lo-1126	0.3 width, 800 ft from u/s gates	
011128lo-1129	0.3 width, 600 ft from u/s gates	
011128lo-1132	0.3 width, 400 ft from u/s gates	
011128lo-1134	0.3 width, 200 ft from u/s gates	
011128lo-1137	0.3 width, near u/s gates	
011128ju-1125	0.7 width, 950 ft from u/s gates	
011128ju-1127	0.7 width, 800 ft from u/s gates	
011128ju-1129	0.7 width, 600 ft from u/s gates	
011128ju-1132	0.7 width, 400 ft from u/s gates	
011128ju-1135	0.7 width, 200 ft from u/s gates	
011128ju-1137	0.7 width, near u/s gates	

Lock A - low tide	uplockage	northbound vessels
Phase 1 (1):	Ahead of vessel (vessel waits outside, in Pacific entrance) Low water level in lock chamber (levelled down to level in Pacific entrance) Lock chamber open and empty Measurement of vertical salinity profiles in long sections	
Date / time:	29 November 2001, 7:10 h - 7:20 h	
Conditions:	Lane: Level Miraflores Lake (ft to PLD): Level Pacific Ocean (ft to PLD): Level in lock chamber (ft to PLD): Vessel dimensions in ft (l, w, d):	A-west +54.7 -3.7 -3.7 Hyundai 604 x 100 x 28/6 (N15)
Files		
identification	location in lock chamber	remarks
011129lo-0711	0.3 width, 1000 ft from u/s gates	
011129lo-0713	0.3 width, 800 ft from u/s gates	
011129lo-0714	0.3 width, 600 ft from u/s gates	
011129lo-0716	0.3 width, 400 ft from u/s gates	measurements stopped, ship enters
011129ju-0711	0.7 width, 1000 ft from u/s gates	
011129ju-0713	0.7 width, 800 ft from u/s gates	
011129ju-0715	0.7 width, 600 ft from u/s gates	
011129ju-0716	0.7 width, 400 ft from u/s gates	measurements stopped, ship enters

Lock A – low tide	uplockage	northbound vessels
Phase 1 (2):	No next vessel (turn around) Low water level in lock chamber (levelled down to level in Pacific entrance) Lock chamber open and empty Measurement of vertical salinity profiles at positions near d/s gates and in long sections	
Date / time:	29 November 2001, 9:05 h - 9:40 h	
Conditions:	Lane: Level Miraflores Lake (ft to PLD): Level Pacific Ocean (ft to PLD): Level in lock chamber (ft to PLD): Vessel dimensions in ft (l, w, d):	A-west +54.7 -5.6 -5.6
Files		
Identification	location in lock chamber	remarks
011129lo-0907	centre wall, near d/s gates	fixed position
011129lo-0911	centre wall, near d/s gates	
011129lo-0916	centre wall, near d/s gates	
011129lo-0921	centre wall, near d/s gates	
011129lo-0926	centre wall, near d/s gates	
011129ju-0908	side wall, near d/s gates	fixed position
011129ju-0911	side wall, near d/s gates	
011129ju-0915	side wall, near d/s gates	
011129ju-0920	side wall, near d/s gates	
011129ju-0926	side wall, near d/s gates	
011129lo-0929	0.3 width, 1000 ft from u/s gates	long section
011129lo-0930	0.3 width, 800 ft from u/s gates	
011129lo-0932	0.3 width, 600 ft from u/s gates	
011129lo-0934	0.3 width, 400 ft from u/s gates	
011129lo-0936	0.3 width, 200 ft from u/s gates	
011129lo-0938	0.3 width, near u/s gates	
011129ju-0929	0.7 width, 1000 ft from u/s gates	long section
011129ju-0931	0.7 width, 800 ft from u/s gates	
011129ju-0933	0.7 width, 600 ft from u/s gates	
011129ju-0935	0.7 width, 400 ft from u/s gates	
011129ju-0937	0.7 width, 200 ft from u/s gates	
011129ju-0939	0.7 width, near u/s gates	

Lock A – low tide	uplockage	northbound vessels
Phase 3:	Astern of vessel, near downstream gates High water level in lock chamber (levelled up; equalized with level in lock B) Lock chamber open, vessel leaves and enters Lock B Measurement of vertical salinity profiles at position near downstream gates	
Date / time:	29 November 2001, 7:55 h - 8:10 h	
Conditions:	Lane: Level Miraflores Lake (ft to PLD): Level Pacific Ocean (ft to PLD): Level in lock chamber (ft to PLD): Vessel dimensions in ft (l, w, d):	A-west +54.7 -5.0 +25.5 Hyundai 604 x 100 x 28/6 (N15)
Files		
Identification	location in lock chamber	remarks
011129lo-0756	centre wall, near d/s gates	
011129lo-0758	centre wall, near d/s gates	
011129lo-0800	centre wall, near d/s gates	
011129lo-0804	centre wall, near d/s gates	
011129lo-0807	centre wall, near d/s gates	
011129ju-0756	side wall, near d/s gates	
011129ju-0758	side wall, near d/s gates	
011129ju-0801	side wall, near d/s gates	
011129ju-0803	side wall, near d/s gates	
011129ju-0805	side wall, near d/s gates	
011129ju-0808	side wall, near d/s gates	

Lock A – low tide	uplockage	northbound vessels
Phase 4:	Vessel has left for lock B High water level in lock chamber Lock chamber closed and empty Measurement of vertical salinity profiles in long sections	
Date / time:	29 November 2001, 8:10 h - 8:30 h	
Conditions:	Lane: Level Miraflores Lake (ft to PLD): Level Pacific Ocean (ft to PLD): Level in lock chamber (ft to PLD): Vessel dimensions in ft (l, w, d):	A-west +54.7 -5.3 +25.5 Hyundai 604 x 100 x 28/6 (N15)
Files		
Identification	location in lock chamber	remarks
011129lo-0812	0.3 width, 1000 ft from u/s gates	
011129lo-0815	0.3 width, 800 ft from u/s gates	
011129lo-0817	0.3 width, 600 ft from u/s gates	
011129lo-0820	0.3 width, 400 ft from u/s gates	
011129lo-0823	0.3 width, 200 ft from u/s gates	
011129lo-0826	0.3 width, near u/s gates	
011129ju-0812	0.7 width, 1000 ft from u/s gates	
011129ju-0815	0.7 width, 800 ft from u/s gates	
011129ju-0817	0.7 width, 600 ft from u/s gates	
011129ju-0820	0.7 width, 400 ft from u/s gates	
011129ju-0823	0.7 width, 200 ft from u/s gates	
011129ju-0826	0.7 width, near u/s gates	

Lock A – low tide	uplockage	northbound vessels
Phase 5:	No next vessel (turn around) Low water level in lock chamber (levelled down to level in Pacific entrance) Lock chamber closed and empty Measurement of vertical salinity profiles in long sections	
Date / time:	29 November 2001, 8:40 h - 8:55 h	
Conditions:	Lane: Level Miraflores Lake (ft to PLD): Level Pacific Ocean (ft to PLD): Level in lock chamber (ft to PLD): Vessel dimensions in ft (l, w, d):	A-west +54.7 -5.7 -5.7 -
Files		
Identification	location in lock chamber	remarks
011129lo-0844	0.3 width, 1000 ft from u/s gates	
011129lo-0846	0.3 width, 800 ft from u/s gates	
011129lo-0848	0.3 width, 600 ft from u/s gates	
011129lo-0850	0.3 width, 400 ft from u/s gates	
011129lo-0852	0.3 width, 200 ft from u/s gates	
011129lo-0854	0.3 width, near u/s gates	
011129ju-0844	0.7 width, 1000 ft from u/s gates	
011129ju-0846	0.7 width, 800 ft from u/s gates	
011129ju-0847	0.7 width, 600 ft from u/s gates	
011129ju-0849	0.7 width, 400 ft from u/s gates	
011129ju-0852	0.7 width, 200 ft from u/s gates	
011129ju-0854	0.7 width, near u/s gates	

Lock A - low tide

downlockage

southbound vessels

No measurements

Lock A - high tide	uplockage	northbound vessels
Phase 1:	Ahead of vessel (vessel waits outside, in Pacific entrance) Low water level in lock chamber (levelled down to level in Pacific entrance) Lock chamber open and empty Measurement of vertical salinity profiles in long sections	
Date / time:	5 December 2001, 8:00 h - 8:25 h	
Conditions:	Lane: Level Miraflores Lake (ft to PLD): Level Pacific Ocean (ft to PLD): Level in lock chamber (ft to PLD): Vessel dimensions in ft (l, w, d):	A-east +54.7 +6.2 +6.2 Toba 750 x 106 x 35/9 (N17T) + tugboat
Files		
identification	location in lock chamber	remarks
011205ju-0801	centre, 1000 ft from u/s gates	
011205ju-0804	centre, 800 ft from u/s gates	
011205ju-0806	centre, 600 ft from u/s gates	
011205ju-0808	centre, 400 ft from u/s gates	
011205ju-0810	centre, 200 ft from u/s gates	
011205ju-0812	centre, near u/s gates	
011205ju-0814	centre, near u/s gates	
011205ju-0815	centre, 200 ft from u/s gates	
011205ju-0817	centre, 400 ft from u/s gates	
011205ju-0819	centre, 600 ft from u/s gates	
011205ju-0821	centre, 800 ft from u/s gates	
011205ju-0822	centre, 1000ft from u/s gates	

Lock A - high tide	uplockage	northbound vessels
Phase 3:	A stern of vessel, near downstream gates High water level in lock chamber (levelled up; equalized with level in lock B) Lock chamber open, vessel leaves and enters lock B Measurement of vertical salinity profiles at position near downstream gates	
Date / time:	5 December 2001, 9:05 h – 9:30 h	
Conditions:	Lane: Level Miraflores Lake (ft to PLD): Level Pacific Ocean (ft to PLD): Level in lock chamber (ft to PLD): Vessel dimensions in ft (l, w, d):	A-east +54.7 +3.6 +26.5 Toba 750 x 106 x 35/9 (N17T) + tugboat
Files		
identification	location in lock chamber	remarks
011205ju-0908	side wall, near d/s gates	
011205ju-0910	side wall, near d/s gates	
011205ju-0911	side wall, near d/s gates	
011205ju-0913	side wall, near d/s gates	
011205ju-0914	side wall, near d/s gates	
011205ju-0916	side wall, near d/s gates	
011205ju-0918	side wall, near d/s gates	
011205ju-0919	side wall, near d/s gates	
011205ju-0921	side wall, near d/s gates	
011205ju-0922	side wall, near d/s gates	
011205ju-0923	side wall, near d/s gates	
011205ju-0925	side wall, near d/s gates	

Lock A - high tide	uplockage	northbound vessels
Phase 4:	Vessel has left for lock B High water level in lock chamber Lock chamber closed and empty Measurement of vertical salinity profiles in long sections	
Date / time:	5 December 2001, 9:25 h - 9:40 h	
Conditions:	Lane: Level Miraflores Lake (ft to PLD): Level Pacific Ocean (ft to PLD): Level in lock chamber (ft to PLD): Vessel dimensions in ft (l, w, d):	A-east +54.7 +2.9 +26.5 Toba 750 x 106 x 35/9 (N17T) + tugboat
Files		
identification	location in lock chamber	remarks
011205ju-0927	centre, 1000 ft from u/s gates	
011205ju-0930	centre, 800 ft from u/s gates	
011205ju-0932	centre, 600 ft from u/s gates	
011205ju-0934	centre, 400 ft from u/s gates	
011205ju-0936	centre, 200 ft from u/s gates	
011205ju-0938	centre, near u/s gates	

Lock A - high tide	downlockage	southbound vessels
Phase 1 (1):	Ahead of vessel (vessel waits in lock B) High water level in lock chamber (levelled up; equalized with level in lock B) Lock chamber open and empty Measurement of vertical salinity profiles in long sections	
Date / time:	29 November 2001, 13:50 h - 14:00 h	
Conditions:	Lane: Level Pacific Ocean (ft to PLD): Level Miraflores Lake (ft to PLD): Level in lock chamber (ft to PLD): Vessel dimensions in ft (l, w, d):	A-west +6.2 +54.7 +27.4 Csav Callao 683 x 98 x 31/6 (S08T)
Files		
Identification	location in lock chamber	remarks
011129lo-1349	0.3 width, near u/s gates	
011129lo-1352	0.3 width, 500 ft from u/s gates	
011129lo-1354	0.3 width, 1000 ft from u/s gates	
011129ju-1350	0.7 width, near u/s gates	
011129ju-1352	0.7 width, 500 ft from u/s gates	
011129ju-1355	0.7 width, 1000 ft from u/s gates	

Lock A – high tide	downlockage	southbound vessels
Phase 1 (2):	Ahead of vessel (vessel waits in lock B) High water level in lock chamber (levelled up; equalized with level in lock B) Lock chamber open and empty Measurement of vertical salinity profiles in long sections	
Date / time:	3 December 2001, 16:10 h - 16:20 h	
Conditions:	Lane: Level Pacific Ocean (ft to PLD): Level Miraflores Lake (ft to PLD): Level in lock chamber (ft to PLD): Vessel dimensions in ft (l, w, d):	A-east +4.9 +54.3 +27.5 Cypress Pass 603 x 100 x 24/7 (S16) + tugboat
Files		
Identification	location in lock chamber	remarks
011203ju-1612	centre, near u/s gates	
011203ju-1615	centre, 500 ft from u/s gates	
011203ju-1618	centre, 1000 ft from u/s gates	

Lock A – high tide	downlockage	southbound vessels
Phase 2 (1):	Ahead of vessel, near downstream gates High water level in lock chamber Lock chamber open, vessel enters from lock B Measurement of vertical salinity profiles at position near downstream gates	
Date / time:	29 November 2001, 13:55h - 14:10 h	
Conditions:	Lane: Level Pacific Ocean (ft to PLD): Level Miraflores Lake (ft to PLD): Level in lock chamber (ft to PLD): Vessel dimensions in ft (l, w, d):	A-west +6.3 +54.7 +27.4 Csav Callao 683 x 98 x 31/6 (S08T)
Files		
Identification	location in lock chamber	remarks
011129lo-1359	side wall, near d/s gates	bow of Csav Callao enters lock A-west
011129lo-1403	side wall, near d/s gates	
011129ju-1400	centre wall, near d/s gates	bow of Csav Callao enters lock A-west
011129ju-1402	centre wall, near d/s gates	
011129ju-1404	centre wall, near d/s gates	
011129ju-1407	centre wall, near d/s gates	

Lock A – high tide	downlockage	southbound vessels
Phase 2 (2):	Ahead of vessel, near downstream gates High water level in lock chamber Lock chamber open, vessel enters from lock B Measurement of vertical salinity profiles at position near downstream gates	
Date / time:	3 December 2001, 16:20 h - 16:30 h	
Conditions:	Lane: Level Pacific Ocean (ft to PLD): Level Miraflores Lake (ft to PLD): Level in lock chamber (ft to PLD): Vessel dimensions in ft (l, w, d):	A-east +5.2 +54.3 +27.5 Cypress Pass 603 x 100 x 24/7 (S16) + tugboat
Files		
Identification	location in lock chamber	remarks
011203ju-1622	centre wall, near d/s gates	Cypress Pass enters lock A
011203ju-1624	centre wall, near d/s gates	
011203ju-1625	centre wall, near d/s gates	
011203ju-1626	centre wall, near d/s gates	

Lock A – high tide	downlockage	southbound vessels
Phase 4:	Vessel has left for Pacific entrance Low water level in lock chamber Lock chamber closed and empty Measurement of vertical salinity profiles in long sections	
Date / time:	3 December 2001, 16:50 h - 17:00 h	
Conditions:	Lane: Level Pacific Ocean (ft to PLD): Level Miraflores Lake (ft to PLD): Level in lock chamber (ft to PLD): Vessel dimensions in ft (l, w, d):	A-east +7.5 +54.3 +7.5 Cypress Pass 603 x 100 x 24/7 (S16) + tugboat
Files		
Identification	location in lock chamber	remarks
011203ju-1650	centre, near u/s gates	
011203ju-1651	centre, 200 ft from u/s gates	
011203ju-1653	centre, 400 ft from u/s gates	
011203ju-1655	centre, 600 ft from u/s gates	
011203ju-1657	centre, 800 ft from u/s gates	
011203ju-1659	centre, 1000 ft from u/s gates	

Measurements

Lock B

Lock B		uplockage	no vessels
Phase 1:		Low water level in lock chamber (levelled down; equalized with level in lock A) Lock chamber open and empty Measurement of vertical salinity profiles in long sections	
Date / time:		28 November 2001, 13:10 h – 13:25 h	
Conditions:		Lane:	B-east
		Level Miraflores Lake (ft to PLD):	
		Level Pacific Ocean (ft to PLD):	
		Level in lock chamber (ft to PLD):	
		Vessel dimensions in ft (l, w, d):	--
Files			
Identification	location in lock chamber	remarks	
011128lo-1312	centre line, 900 ft from u/s gates		
011128lo-1314	centre line, 800 ft from u/s gates		
011128lo-1316	centre line, 600 ft from u/s gates		
011128lo-1318	centre line, 400 ft from u/s gates		
011128lo-1320	centre line, 200 ft from u/s gates		
011128lo-1322	centre line, near u/s gates		

Lock B	downlockage	no vessels
Phase 1:	High water level in lock chamber (levelled up to level in Miraflores Lake) Lock chamber open and empty Measurement of vertical salinity profiles in long sections	
Date / time:	28 November 2001, 9:55 h – 10:05 h	
Conditions:	Lane: Level Pacific Ocean (ft to PLD): Level Miraflores Lake (ft to PLD): Level in lock chamber (ft to PLD): Vessel dimensions in ft (l, w, d):	B-east -3.6 +54.7 +54.7 --
Files (.csv and .xls)		
Identification	location in lock chamber	remarks
011128lo-0955	0.3 width, near u/s gates	
011128lo-0958	0.3 width, 200 ft from u/s gates	
011128lo-1000	0.3 width, 400 ft from u/s gates	
011128lo-1003	0.3 width, 600 ft from u/s gates	
011128lo-1005	0.3 width, 800 ft from u/s gates	
011128ju-0955	0.7 width, near u/s gates	
011128ju-0958	0.7 width, 200 ft from u/s gates	
011128ju-1000	0.7 width, 400 ft from u/s gates	
011128ju-1003	0.7 width, 600 ft from u/s gates	
011128ju-1005	0.7 width, 800 ft from u/s gates	

Lock B	downlockage	no vessels
Phase 2:	High water level in lock chamber (levelled up to level in Miraflores Lake) Lock chamber open Measurement of vertical salinity profiles at position near downstream gates	
Date / time:	28 November 2001, 10:05 h – 10:15 h	
Conditions:	Lane: Level Pacific Ocean (ft to PLD): Level Miraflores Lake (ft to PLD): Level in lock chamber (ft to PLD): Vessel dimensions in ft (l, w, d):	B-east -3.2 +54.7 +54.7 --
Files		
Identification	location in lock chamber	remarks
011128lo-1007	side wall, 950 ft from u/s gates	
011128lo-1012	side wall, 950 ft from u/s gates	
011128ju-1008	centre wall, 950 ft from u/s gates	
011128ju-1012	centre wall, 950 ft from u/s gates	

Lock B	downlockage	no vessels
Phase 4:	Low water level in lock chamber Lock chamber closed and empty Measurement of vertical salinity profiles in long sections	
Date / time:	28 November 2001, 10:35 h – 10:50 h	
Conditions:	Lane: Level Pacific Ocean (ft to PLD): Level Miraflores Lake (ft to PLD): Level in lock chamber (ft to PLD): Vessel dimensions in ft (l, w, d):	B-east -2.7 +54.7 +26.8 --
Files		
Identification	location in lock chamber	remarks
011128lo-1036	0.3 width, 800 ft from u/s gates	
011128lo-1039	0.3 width, 600 ft from u/s gates	
011128lo-1042	0.3 width, 400 ft from u/s gates	
011128lo-1044	0.3 width, 200 ft from u/s gates	
011128lo-1046	0.3 width, near u/s gates	
011128ju-1037	0.7 width, 800 ft from u/s gates	
011128ju-1039	0.7 width, 600 ft from u/s gates	
011128ju-1041	0.7 width, 400 ft from u/s gates	
011128ju-1044	0.7 width, 200 ft from u/s gates	
011128ju-1046	0.7 width, near u/s gates	

Lock B	uplockage	northbound vessels
Phase 2:	Ahead of vessel, near upstream gates Low water level in lock chamber Lock chamber open, vessel enters from lock A Measurement of vertical salinity profiles at position near upstream gates	
Date / time:	3 December 2001, 7:05 h - 7:20 h	
Conditions:	Lane: Level Miraflores Lake (ft to PLD): Level Pacific Ocean (ft to PLD): Level in lock chamber (ft to PLD): Vessel dimensions in ft (l, w, d):	B-west +54.7 +5.9 +26.7 Star Dieppe 600 x 102 x 3 1/2 (N07)
Files		
Identification	location in lock chamber	remarks
011203ju-0707	side wall, near u/s gates	
011203ju-0708	side wall, near u/s gates	
011203ju-0709	side wall, near u/s gates	
011203ju-0710	side wall, near u/s gates	
011203ju-0711	side wall, near u/s gates	
011203ju-0712	side wall, near u/s gates	
011203ju-0713	side wall, near u/s gates	
011203ju-0715	side wall, near u/s gates	
011203ju-0716	side wall, near u/s gates	
011203ju-0717	side wall, near u/s gates	
011203ju-0718	side wall, near u/s gates	

Lock B	uplockage	northbound vessels
Phase 4 (1):	Vessel has left for Miraflores Lake High water level in lock chamber Lock chamber closed and empty Measurement of vertical salinity profiles in long sections	
Date / time:	3 December 2001, 6:15 h - 6:50 h	
Conditions:	Lane: Level Miraflores Lake (ft to PLD): Level Pacific Ocean (ft to PLD): Level in lock chamber (ft to PLD): Vessel dimensions in ft (l, w, d):	B-west +54.7 +7.2 +54.7 Stolt Creativity 589 x 102 x 39/4 (N03)
Files		
Identification	location in lock chamber	remarks
011203ju-0616	centre, 1000 ft from u/s gates	
011203ju-0620	centre, 800 ft from u/s gates	
011203ju-0624	centre, 600 ft from u/s gates	
011203ju-0627	centre, 400 ft from u/s gates	
011203ju-0630	centre, 200 ft from u/s gates	
011203ju-0632	centre, near u/s gates	
011203ju-0635	centre wall, near u/s gates	
011203ju-0638	centre wall, 200 ft from u/s gates	
011203ju-0641	centre wall, 400 ft from u/s gates	
011203ju-0644	centre wall, 600 ft from u/s gates	
011203ju-0646	centre wall, 800 ft from u/s gates	
011203ju-0648	centre wall, 1000 ft from u/s gates	

Lock B	uplockage	northbound vessels
Phase 4 (2):	Vessel has left for Miraflores Lake High water level in lock chamber Lock chamber closed and empty Measurement of vertical salinity profiles in long sections	
Date / time:	3 December 2001, 7:40 h - 8:00 h	
Conditions:	Lane: Level Miraflores Lake (ft to PLD): Level Pacific Ocean (ft to PLD): Level in lock chamber (ft to PLD): Vessel dimensions in ft (l, w, d):	B-west +54.7 +3.6 +54.7 Star Dieppe 600 x 102 x 31/2 (N07)
Files		
Identification	location in lock chamber	remarks
011203ju-0743	centre, near u/s gates	
011203ju-0747	centre, 200 ft from u/s gates	
011203ju-0750	centre, 400 ft from u/s gates	
011203ju-0752	centre, 600 ft from u/s gates	
011203ju-0754	centre, 800 ft from u/s gates	
011203ju-0756	centre, 1000 ft from u/s gates	

Lock B	uplockage	northbound vessels
Phase 5 (1):	Next vessel waits in lock A Low water level in lock chamber (levelled down; equalized with level in lock A) Lock chamber closed and empty Measurement of vertical salinity profiles in long sections	
Date / time:	3 December 2001, 6:55 h - 7:05 h	
Conditions:	Lane: Level Miraflores Lake (ft to PLD): Level Pacific Ocean (ft to PLD): Level in lock chamber (ft to PLD): Vessel dimensions in ft (l, w, d):	B-west +54.7 +7.0 +26.7 Star Dieppe 600 x 102 x 31/2 (N07)
Files		
Identification	location in lock chamber	remarks
011203ju-0658	centre, near u/s gates	d/s gates are opened
011203ju-0700	centre, 200 ft from u/s gates	d/s gates are open
011203ju-0701	centre, 400 ft from u/s gates	d/s gates are open
011203ju-0704	centre, 900 ft from u/s gates	d/s gates are open

Lock B	uplockage	northbound vessels
Phase 5 (2):	Astern of vessel Low water level in lock chamber (levelled down; equalized with level in lock A) Lock chamber closed and empty Measurement of vertical salinity profiles in long sections	
Date / time:	3 December 2001, 8:25 h - 8:40 h	
Conditions:	Lane: Level Miraflores Lake (ft to PLD): Level Pacific Ocean (ft to PLD): Level in lock chamber (ft to PLD): Vessel dimensions in ft (l, w, d):	B-west +54.7 +26.7
Files		
Identification	location in lock chamber	remarks
011203ju-0828	centre, 1000 ft from u/s gates	
011203ju-0830	centre, 800 ft from u/s gates	
011203ju-0832	centre, 600 ft from u/s gates	
011203ju-0834	centre, 400 ft from u/s gates	
011203ju-0836	centre, 200 ft from u/s gates	
011203ju-0838	centre, near u/s gates	

Lock B	downlockage	southbound vessels
Phase 1 (1):	Ahead of vessel (vessel waits in Miraflores lake) High water level in lock chamber (levelled up to level in Miraflores Lake) Lock chamber open and empty Measurement of vertical salinity profiles in long sections	
Date / time:	29 November 2001, 13:25 h - 13:35 h	
Conditions:	Lane: Level Pacific Ocean (ft to PLD): Level Miraflores Lake (ft to PLD): Level in lock chamber (ft to PLD): Vessel dimensions in ft (l, w, d):	B-west +4.9 +54.7 +54.7 Csav Callao 683 x 98 x 31/6 (S10B)
Files		
identification	location in lock chamber	remarks
011129lo-1328	0.3 width, near u/s gates	
011129lo-1331	0.3 width, 500 ft from u/s gates	Csav Callao starts moving
011129lo-1334	0.3 width, 1000 ft from u/s gates	Csav Callao in lock B-west
011129ju-1328	0.7 width, near u/s gates	
011129ju-1331	0.7 width, 500 ft from u/s gates	Csav Callao starts moving
011129ju-1334	0.7 width, 1000 ft from u/s gates	Csav Callao in lock B-west

Lock B	downlockage	southbound vessels
Phase 1 (2):	Ahead of vessel (vessel waits in Miraflores lake) High water level in lock chamber (levelled up to level in Miraflores Lake) Lock chamber open and empty Measurement of vertical salinity profiles in long sections	
Date / time:	3 December 2001, 15:35 h - 15:50 h	
Conditions:	Lane: Level Pacific Ocean (ft to PLD): Level Miraflores Lake (ft to PLD): Level in lock chamber (ft to PLD): Vessel dimensions in ft (l, w, d):	B-east +3.9 +54.3 +54.3 Cypress Pass 603 x 100 x 24/7 (S16) + tugboat
Files		
Identification	location in lock chamber	remarks
011203ju-1535	centre, near u/s gates	
011203ju-1537	centre, 200 ft from u/s gates	
011203ju-1539	centre, 400 ft from u/s gates	
011203ju-1542	centre, 600 ft from u/s gates	
011203ju-1544	centre, 800 ft from u/s gates	
011203ju-1546	centre, 1000 ft from u/s gates	

Lock B	downlockage	southbound vessels
Phase 2:	Ahead of vessel, near downstream gates High water level in lock chamber Lock chamber open, vessel enters from Miraflores Lake Measurement of vertical salinity profiles at position near downstream gates	
Date / time:	3 December 2001, 15:55 h - 16:05 h	
Conditions:	Lane: Level Pacific Ocean (ft to PLD): Level Miraflores Lake (ft to PLD): Level in lock chamber (ft to PLD): Vessel dimensions in ft (l, w, d):	B-east +4.8 +54.3 +54.3 Cypress Pass 603 x 100 x 24/7 (S16) + tugboat
Files		
Identification	location in lock chamber	remarks
011203ju-1557	beside tugboat, near d/s gates	
011203ju-1559	beside tugboat, near d/s gates	
011203ju-1601	beside tugboat, near d/s gates	

Lock B	downlockage	southbound vessels
Phase 3:	Astern of vessel, near upstream gates Low water level in lock chamber (levelled down; equalized with level in lock A) Lock chamber open, vessel leaves and enters lock A Measurement of vertical salinity profiles at position near upstream gates	
Date / time:	3 December 2001, 13:25 h - 13:40 h	
Conditions:	Lane: Level Pacific Ocean (ft to PLD): Level Miraflores Lake (ft to PLD): Level in lock chamber (ft to PLD): Vessel dimensions in ft (l, w, d):	B-west -3.5 +54.3 +27.5 Hume Highway 656 x 106 x 26/3 (S04)
Files		
Identification	location in lock chamber	remarks
011203ju-1328	side wall, near u/s gates	
011203ju-1330	side wall, near u/s gates	
011203ju-1332	side wall, near u/s gates	
011203ju-1334	side wall, near u/s gates	
011203ju-1335	side wall, near u/s gates	
011203ju-1337	side wall, near u/s gates	
011203ju-1338	side wall, near u/s gates	

Lock B	downlockage	southbound vessels
Phase 4:	Vessel has left for lock A Low water level in lock chamber Lock chamber closed and empty Measurement of vertical salinity profiles in long sections	
Date / time:	3 December 2001, 13:40 h - 13:50 h	
Conditions:	Lane: Level Pacific Ocean (ft to PLD): Level Miraflores Lake (ft to PLD): Level in lock chamber (ft to PLD): Vessel dimensions in ft (l, w, d):	B-west -3.8 +54.3 +27.5 Hume Highway 656 x 106 x 26/3 (S04)
Files		
Identification	location in lock chamber	remarks
011203ju-1341	centre, near u/s gates	
011203ju-1343	centre, 450 ft from u/s gates	
011203ju-1346	centre, 900 ft from u/s gates	

Lock B	downlockage	southbound vessels
Phase 5:	Next vessel waits in Miraflores Lake High water level in lock chamber (levelled up to level in Miraflores lake) Lock chamber closed and empty Measurement of vertical salinity profiles in long sections	
Date / time:	3 December 2001, 14:00 h - 14:10 h	
Conditions:	Lane: Level Pacific Ocean (ft to PLD): Level Miraflores Lake (ft to PLD): Level in lock chamber (ft to PLD): Vessel dimensions in ft (l, w, d):	B-west -3.5 +54.3 +54.3 Hanjin Vancouver 792 x 106 x 26/3 (S10T)
Files		
Identification	location in lock chamber	remarks
011203ju-1403	centre, 900 ft from u/s gates	
011203ju-1405	centre, 450 ft from u/s gates	
011203ju-1407	centre, near u/s gates	u/s gates are opened

Measurements

Lock C

Lock C	uplockage	northbound vessels
Phase 1:	Ahead of vessel (vessel waits in Miraflores Lake) Low water level in lock chamber (levelled down to level in Miraflores Lake) Lock chamber open and empty Measurement of vertical salinity profiles in long sections	
Date / time:	2 December 2001, 6:50 h - 7:15 h	
Conditions:	Lane: Level Gaillard Cut (ft to PLD): Level Miraflores Lake (ft to PLD): Level in lock chamber (ft to PLD): Vessel dimensions in ft (l, w, d):	C-east +87.9 +54.3 +54.3 Latona 738 x 106 x 39/5 (N09)
Files		
identification	location in lock chamber	remarks
011202lo-0654	centre, 1000 ft from u/s gates	
011202lo-0656	centre, 800 ft from u/s gates	d/s gates are closed
011202lo-0657	centre, 600 ft from u/s gates	d/s gates closed
011202lo-0659	centre, 400 ft from u/s gates	
011202lo-0701	centre, 200 ft from u/s gates	
011202lo-0703	centre, near u/s gates	
011202lo-0707	centre, 1000 ft from u/s gates	d/s gates closed
011202lo-0709	centre, 800 ft from u/s gates	
011202lo-0711	centre, 600 ft from u/s gates	
011202lo-0712	centre, 400 ft from u/s gates	d/s gates are opened
011202lo-0714	centre, 200 ft from u/s gates	d/s gates are open

Lock C	uplockage	northbound vessels
Phase 3:	Astern of vessel, near downstream gates High water level in lock chamber (levelled up to level in Gaillard Cut) Lock chamber open, vessel leaves and enters Gaillard Cut Measurement of vertical salinity profiles at position near downstream gates	
Date / time:	2 December 2001, 8:00 h - 8:28 h	
Conditions:	Lane: Level Gaillard Cut (ft to PLD): Level Miraflores Lake (ft to PLD): Level in lock chamber (ft to PLD): Vessel dimensions in ft (l, w, d):	C-east +87.9 +54.3 +87.9 Latona 738 x 106 x 39/5 (N09)
Files		
Identification	location in lock chamber	remarks
011202lo-0802	side wall, near d/s gates	
011202lo-0805	side wall, near d/s gates	
011202lo-0807	side wall, near d/s gates	
011202lo-0809	side wall, near d/s gates	
011202lo-0812	side wall, near d/s gates	
011202lo-0815	side wall, near d/s gates	
011202lo-0820	side wall, near d/s gates	
011202lo-0822	side wall, near d/s gates	
011202lo-0825	side wall, near d/s gates	

Lock C	uplockage	northbound vessels
Phase 4:	Vessel has left for Gaillard Cut High water level in lock chamber Lock chamber closed and empty Measurement of vertical salinity profiles in long sections	
Date / time:	2 December 2001, 8:28 h -8:40 h	
Conditions:	Lane: Level Gaillard Cut (ft to PLD): Level Miraflores Lake (ft to PLD): Level in lock chamber (ft to PLD): Vessel dimensions in ft (l, w, d):	C-east +87.9 +54.3 +87.9 Latona 738 x 106 x 39/5 (N09)
Files		
Identification	location in lock chamber	remarks
011202lo-0829	centre, 1000 ft from u/s gates	
011202lo-0833	centre, 500 ft from u/s gates	
011202lo-0835	centre, near u/s gates	

Lock C	uplockage	northbound vessels
Phase 5:	Next vessel waits in Miraflores Lake Low water level in lock chamber (levelled down to level in Miraflores Lake) Lock chamber closed and empty Measurement of vertical salinity profiles in long sections	
Date / time:	2 December 2001, 8:50 h - 9:00 h	
Conditions:	Lane: Level Gaillard Cut (ft to PLD): Level Miraflores Lake (ft to PLD): Level in lock chamber (ft to PLD): Vessel dimensions in ft (l, w, d):	C-east +87.9 +54.3 +54.3 Marishiten 94 x 21 x 10/0 (N15C)
Files		
Identification	location in lock chamber	remarks
011202lo-0852	centre, 1000 ft from u/s gates	
011202lo-0853	centre, 500 ft from u/s gates	d/s gates are opened
011202lo-0855	centre, near u/s gates	d/s gates are open

Lock C	downlockage	southbound vessels
Phase 1:	Ahead of vessel (vessel waits in Gaillard Cut) High water level in lock chamber (levelled up to level in Gaillard Cut) Lock chamber open and empty Measurement of vertical salinity profiles in long sections	
Date / time:	2 December 2001, 12:20 h - 12:40 h	
Conditions:	Lane: C-east Level Miraflores Lake (ft to PLD): +54.6 Level Gaillard Cut (ft to PLD): +87.9 Level in lock chamber (ft to PLD): +87.9 Vessel dimensions in ft (l, w, d): Tokyo Highway 591 x 106 x 25/11 (S10)	
Files		
Identification	location in lock chamber	remarks
011202lo-1221	centre, near u/s gates	
011202lo-1224	centre, 200 ft from u/s gates	Tokyo Highway starts moving
011202lo-1227	centre, 400 ft from u/s gates	
011202lo-1230	centre, 600 ft from u/s gates	
011202lo-1232	centre, 800 ft from u/s gates	
011202lo-1235	centre, 1000 ft from u/s gates	bow of Tokyo highway halfway C-east

Lock C	downlockage	southbound vessels
Phase 2:	Ahead of vessel, near downstream gates High water level in lock chamber Lock chamber open, vessel enters from Gaillard Cut Measurement of vertical salinity profiles at position near downstream gates	
Date / time:	2 December 2001, 15:05 h - 15:25 h	
Conditions:	Lane: Level Miraflores Lake (ft to PLD): Level Gaillard Cut (ft to PLD): Level in lock chamber (ft to PLD): Vessel dimensions in ft (l, w, d):	C-west +54.6 +87.9 +87.9 Sea Epoch 738 x 106 x 39/4 (S16))
Files		
Identification	location in lock chamber	remarks
011202lo-1508	side wall, near d/s gates	
011202lo-1513	side wall, near d/s gates	
011202lo-1515	side wall, near d/s gates	
011202lo-1518	side wall, near d/s gates	
011202lo-1521	side wall, near d/s gates	
011202lo-1523	side wall, near d/s gates	

Lock C	downlockage	southbound vessels
Phase 4:	Vessel has left for Miraflores Lake Low water level in lock chamber Lock chamber closed and empty Measurement of vertical salinity profiles in long sections	
Date / time:	2 December 2001, 13:55 h - 14:05 h	
Conditions:	Lane: Level Miraflores Lake (ft to PLD): Level Gaillard Cut (ft to PLD): Level in lock chamber (ft to PLD): Vessel dimensions in ft (l, w, d):	C-west +54.6 +87.9 +54.6 Hanjin Nagoya 950 x 106 x 37/5 (S12T)
Files		
Identification	location in lock chamber	remarks
011202lo-1356	centre, near u/s gates	
011202lo-1357	centre, 200 ft from u/s gates	
011202lo-1359	centre, 400 ft from u/s gates	
011202lo-1400	centre, 600 ft from u/s gates	
011202lo-1402	centre, 800 ft from u/s gates	
011202lo-1403	centre, 1000 ft from u/s gates	

Lock C	downlockage	southbound vessels
Phase 5:	Next vessel is approaching in Gaillard Cut High water level in lock chamber (levelled up to level in Gaillard Cut) Lock chamber closed and empty Measurement of vertical salinity profiles in long sections	
Date / time:	02 December 2001, 14:20 h - 14:40 h	
Conditions:	Lane: Level Miraflores Lake (ft to PLD): Level Gaillard Cut (ft to PLD): Level in lock chamber (ft to PLD): Vessel dimensions in ft (l, w, d):	C-west +54.6 +87.9 +87.9 Sea Epoch 738 x 106 x 39/4 (S16)
Files		
Identification	location in lock chamber	remarks
011202lo-1424	centre, near u/s gates	
011202lo-1427	centre, 200 ft from u/s gates	
011202lo-1429	centre, 400 ft from u/s gates	
011202lo-1431	centre, 600 ft from u/s gates	
011202lo-1433	centre, 800 ft from u/s gates	
011202lo-1436	centre, 1000 ft from u/s gates	

Measurements

Lock D

Lock D	uplockage	southbound vessels
Phase 1:	Ahead of vessel (vessel waits outside, in Atlantic entrance) Low water level in lock chamber (levelled down to level in Atlantic entrance) Lock chamber open and empty Measurement of vertical salinity profiles in long sections	
Date / time:	8 December 2001, 11:10 h – 11:25 h	
Conditions:	Lane: Level Gatun Lake (ft to PLD): Level Atlantic Ocean (ft to PLD): Level in lock chamber (ft to PLD): Vessel dimensions in ft (l, w, d):	D-east +87.5 +0.2 +0.2 Mass Success 738 x 106 x 39/6 (S18)
Files		
Identification	location in lock chamber	remarks
011208ju-1112	centre, 1000 ft from u/s gates	
011208ju-1116	centre, 800 ft from u/s gates	
011208ju-1118	centre, 600 ft from u/s gates	
011208ju-1120	centre, 400 ft from u/s gates	
011208ju-1122	centre, 200 ft from u/s gates	
011208ju-1124	centre, near u/s gates	

Lock D	uplockage	southbound vessels
Phase 2:	Ahead of vessel, near upstream gates Low water level in lock chamber Lock chamber open, vessel enters from Atlantic Ocean Measurement of vertical salinity profiles at position near upstream gates	
Date / time:	8 December 2001, 11:25 h – 11:50 h	
Conditions:	Lane: Level Gatun Lake (ft to PLD): Level Atlantic Ocean (ft to PLD): Level in lock chamber (ft to PLD): Vessel dimensions in ft (l, w, d):	D-east +87.5 +0.2 +0.2 Mass Success 738 x 106 x 39/6 (S18)
Files		
Identification	location in lock chamber	remarks
011208ju-1128	side wall, near u/s gates	vessel starts moving
011208ju-1130	side wall, near u/s gates	bow of vessel enters lock D-east
011208ju-1131	side wall, near u/s gates	
011208ju-1133	side wall, near u/s gates	
011208ju-1135	side wall, near u/s gates	
011208ju-1137	side wall, near u/s gates	
011208ju-1138	side wall, near u/s gates	
011208ju-1140	side wall, near u/s gates	
011208ju-1141	side wall, near u/s gates	
011208ju-1142	side wall, near u/s gates	
011208ju-1143	side wall, near u/s gates	
011208ju-1145	side wall, near u/s gates	

Lock D	uplockage	southbound vessels
Phase 3:	Astern of vessel, near downstream gates High water level in lock chamber (levelled up; equalized with level in lock E) Lock chamber open, vessel leaves and enters lock E Measurement of vertical salinity profiles at position near downstream gates	
Date / time:	9 December 2001, 9:30 h – 9:45 h	
Conditions:	Lane: Level Gatun Lake (ft to PLD): Level Atlantic Ocean (ft to PLD): Level in lock chamber (ft to PLD): Vessel dimensions in ft (l, w, d):	D-west +87.4 +0.5 +29.2 Mare Thracium 642 x 106 x 36/1 (S16T) + tugboat
Files		
Identification	location in lock chamber	remarks
011209lo-0934	centre, beside tugboat, near d/s gates	
011209lo-0936	centre, beside tugboat, near d/s gates	
011209lo-0939	centre, beside tugboat, near d/s gates	
011209lo-0941	centre, beside tugboat, near d/s gates	
011209lo-0943	centre, beside tugboat, near d/s gates	
011209lo-0945	centre, beside tugboat, near d/s gates	

Lock D	uplockage	southbound vessels
Phase 4:	Vessel has left for lock E High water level in lock chamber Lock chamber closed and empty Measurement of vertical salinity profiles in long sections	
Date / time:	9 December 2001, 9:45 h – 10:00 h	
Conditions:	Lane: Level Gatun Lake (ft to PLD): Level Atlantic Ocean (ft to PLD): Level in lock chamber (ft to PLD): Vessel dimensions in ft (l, w, d):	D-west +87.4 +1.8 +29.2 Mare Thracium 642 x 106 x 36/1 (S16T) + tugboat
Files		
Identification	location in lock chamber	remarks
011209lo-0949	centre, 1000 ft from u/s gates	
011209lo-0951	centre, 850 ft from u/s gates	
011209lo-0953	centre, 600 ft from u/s gates	
011209lo-0955	centre, 400 ft from u/s gates	
011209lo-0957	centre, 200 ft from u/s gates	
011209lo-1000	centre, near u/s gates	

Lock D	uplockage	southbound vessels
Phase 5:	Next vessel waits in Atlantic entrance Low water level in lock chamber (levelled down to level in Atlantic entrance) Lock chamber closed and empty Measurement of vertical salinity profiles in long sections	
Date / time:	9 December 2001, 10:15 h – 10:25 h	
Conditions:	Lane: Level Gatun Lake (ft to PLD): Level Atlantic Ocean (ft to PLD): Level in lock chamber (ft to PLD): Vessel dimensions in ft (l, w, d):	D-west +87.4 +1.8 +1.8 Humboldt Express 676 x 106 x 34/11 (S18T)
Files		
Identification	location in lock chamber	remarks
011209lo-1015	centre, near u/s gates	
011209lo-1017	centre, 200 ft from u/s gates	
011209lo-1018	centre, 400 ft from u/s gates	
011209lo-1020	centre, 600 ft from u/s gates	
011209lo-1022	centre, 800 ft from u/s gates	
011209lo-1023	centre, 1000 ft from u/s gates	

Lock D	downlockage	northbound vessels
Phase 1:	Ahead of vessel (vessel waits in lock E) High water level in lock chamber (levelled up; equalized with level in lock E) Lock chamber open and empty Measurement of vertical salinity profiles in long sections	
Date / time:	8 December 2001, 16:40 h – 16:55 h	
Conditions:	Lane: Level Atlantic Ocean (ft to PLD): Level Gatun Lake (ft to PLD): Level in lock chamber (ft to PLD): Vessel dimensions in ft (l, w, d):	D-east +0.4 +87.5 +29.2 Nedlloyd Falcon 661 x 94 x 29/9 (N15) + 2 small barges
Files		
Identification	location in lock chamber	remarks
011208ju-1643	centre, near u/s gates	
011208ju-1646	centre, 200 ft from u/s gates	
011208ju-1649	centre, 400 ft from u/s gates	
011208ju-1650	centre, 600 ft from u/s gates	
011208ju-1652	centre, 800 ft from u/s gates	
011208ju-1654	centre, 1000 ft from u/s gates	

Lock D	downlockage	northbound vessels
Phase 2:	Ahead of vessel, near downstream gates High water level in lock chamber Lock chamber open, vessel enters from lock E Measurement of vertical salinity profiles at position near downstream gates	
Date / time:	8 December 2001, 17:00 h – 17:10 h	
Conditions:	Lane: Level Atlantic Ocean (ft to PLD): Level Gatun Lake (ft to PLD): Level in lock chamber (ft to PLD): Vessel dimensions in ft (l, w, d):	D-east +0.4 +87.5 +29.2 Nedlloyd Falcon 661 x 94 x 29/9 (N15) + 2 small barges
Files		
Identification	location in lock chamber	remarks
011208ju-1701	centre, beside barges, near d/s gates	bow of vessel enters D-east
011208ju-1703	centre, beside barges, near d/s gates	
011208ju-1704	centre, beside barges, near d/s gates	
011208ju-1705	centre, beside barges, near d/s gates	
011208ju-1706	centre, beside barges, near d/s gates	
011208ju-1708	centre, beside barges, near d/s gates	

Lock D	downlockage	northbound vessels
Phase 3:	Astern of vessel, near upstream gates Low water level in lock chamber (levelled down to level in Atlantic Entrance) Lock chamber open, vessel leaves and enters Atlantic Entrance Measurement of vertical salinity profiles at position near upstream gates	
Date / time:	11 December 2001, 21:00 h – 21:06 h	
Conditions:	Lane: Level Atlantic Ocean (ft to PLD): Level Gatun Lake (ft to PLD): Level in lock chamber (ft to PLD): Vessel dimensions in ft (l, w, d):	D-east +0.9 +87.3 +0.9 Nedlloyd Clement 689 x 106 x 32/6 (N05T) + tugboat
Files		
Identification	location in lock chamber	remarks
011211lo-2100	side wall, near u/s gates	stern of vessel 300 ft from u/s gates
011211lo-2102	side wall, near u/s gates	
011211lo-2104	side wall, near u/s gates	stern of vessel passes d/s gates

Lock D	downlockage	northbound vessels
Phase 4:	Vessel has left for Atlantic Ocean Low water level in lock chamber Lock chamber closed and empty Measurement of vertical salinity profiles in long sections	
Date / time:	11 December 2001, 21:10 h – 22:30 h	
Conditions:	Lane: Level Atlantic Ocean (ft to PLD): Level Gatun Lake (ft to PLD): Level in lock chamber (ft to PLD): Vessel dimensions in ft (l, w, d):	D-east +0.5 +87.3 +0.9 Nedlloyd Clement 689 x 106 x 32/6 (N05T) + tugboat
Files		
Identification	location in lock chamber	remarks
011211lo-2111	centre, near u/s gates	long section
011211lo-2113	centre, 200 ft from u/s gates	
011211lo-2115	centre, 400 ft from u/s gates	
011211lo-2116	centre, 600 ft from u/s gates	
011211lo-2118	centre, 800 ft from u/s gates	
011211lo-2120	centre, 1000 ft from u/s gates	
011211lo-2125	side wall, near d/s gates	fixed position
011211lo-2130	side wall, near d/s gates	
011211lo-2135	side wall, near d/s gates	
011211lo-2140	side wall, near d/s gates	
011211lo-2145	side wall, near d/s gates	
011211lo-2150	side wall, near d/s gates	
011211lo-2155	side wall, near d/s gates	
011211lo-2200	side wall, near d/s gates	
011211lo-2205	side wall, near d/s gates	
011211lo-2210	side wall, near d/s gates	
011211lo-2215	side wall, near d/s gates	
011211lo-2220	side wall, near d/s gates	
011211lo-2225	side wall, near d/s gates	

Lock D	downlockage	northbound vessels
Phase 5:	Next vessel waits in lock E High water level in lock chamber (levelled up; equalized with level in lock E) Lock chamber closed and empty Measurement of vertical salinity profiles in long sections	
Date / time:	11 December 2001, 22:40 h – 22:55 h	
Conditions:	Lane: Level Atlantic Ocean (ft to PLD): Level Gatun Lake (ft to PLD): Level in lock chamber (ft to PLD): Vessel dimensions in ft (l, w, d):	D-east +0.5 +87.3 +28.4 Primavera 528 x 78 x 29/8 (N17)
Files		
Identification	location in lock chamber	remarks
011211lo-2241	centre, 1000 ft from u/s gates	long section
011211lo-2243	centre, 800 ft from u/s gates	
011211lo-2245	centre, 600 ft from u/s gates	
011211lo-2248	centre, 400 ft from u/s gates	
011211lo-2250	centre, 200 ft from u/s gates	
011211lo-2252	centre, near u/s gates	

Measurements

Lock E

Lock E	uplockage	southbound vessels
Phase 1:	Ahead of vessel (vessel waits in lock D) Low water level in lock chamber (levelled down to level in lock D) Lock chamber open and empty Measurement of vertical salinity profiles in long sections	
Date / time:	8 December 2001, 11:55 h – 12:08 h	
Conditions:	Lane: Level Gatun Lake (ft to PLD): Level Atlantic Ocean (ft to PLD): Level in lock chamber (ft to PLD): Vessel dimensions in ft (l, w, d):	E-east +87.5 +0.1 +28.0 Mass Success 738 x 106 x 39/6 (S18)
Files		
identification	location in lock chamber	remarks
011208ju-1158	centre, 1000 ft from u/s gates	
011208ju-1200	centre, 800 ft from u/s gates	
011208ju-1201	centre, 600 ft from u/s gates	
011208ju-1203	centre, 400 ft from u/s gates	
011208ju-1205	centre, 200 ft from u/s gates	
011208ju-1206	centre, near u/s gates	

Lock E	uplockage	southbound vessels
Phase 2:	Ahead of vessel, near upstream gates Low water level in lock chamber Lock chamber open, vessel enters from lock D Measurement of vertical salinity profiles at position near upstream gates	
Date / time:	8 December 2001, 12:08 h – 12:32 h	
Conditions:	Lane: Level Gatun Lake (ft to PLD): Level Atlantic Ocean (ft to PLD): Level in lock chamber (ft to PLD): Vessel dimensions in ft (l, w, d):	E-east +87.5 +0.1 +28.0 Mass Success 738 x 106 x 39/6 (S18)
Files		
Identification	location in lock chamber	remarks
011208ju-1209	side wall, near u/s gates	vessel starts moving
011208ju-1210	side wall, near u/s gates	bow of vessel enters lock E-east
011208ju-1211	side wall, near u/s gates	
011208ju-1212	side wall, near u/s gates	
011208ju-1213	side wall, near u/s gates	
011208ju-1214	side wall, near u/s gates	
011208ju-1216	side wall, near u/s gates	
011208ju-1222	side wall, near u/s gates	
011208ju-1224	side wall, near u/s gates	
011208ju-1225	side wall, near u/s gates	
011208ju-1227	side wall, near u/s gates	
011208ju-1228	side wall, near u/s gates	
011208ju-1229	side wall, near u/s gates	
011208ju-1230	side wall, near u/s gates	

Lock E	uplockage	southbound vessels
Phase 3:	Astern of vessel, near downstream gates High water level in lock chamber (levelled up; equalized with level in lock F) Lock chamber open, vessel leaves and enters lock F Measurement of vertical salinity profiles at position near downstream gates	
Date / time:	10 December 2001, 10:13 h – 10:25 h	
Conditions:	Lane: Level Gatun Lake (ft to PLD): Level Atlantic Ocean (ft to PLD): Level in lock chamber (ft to PLD): Vessel dimensions in ft (l, w, d):	E-east +87.5 +0.5 +58.5 Star Michalis 607 x 93 x 38/0 (S14) + tugboat
Files		
Identification	location in lock chamber	remarks
011210ju-1014	centre, beside tugboat, near d/s gates	
011210ju-1016	centre, beside tugboat, near d/s gates	vessel starts moving
011210ju-1018	centre, beside tugboat, near d/s gates	
011210ju-1020	centre, beside tugboat, near d/s gates	
011210ju-1021	centre, beside tugboat, near d/s gates	
011210ju-1023	centre, beside tugboat, near d/s gates	stern of vessel passes u/s gates

Lock E	uplockage	southbound vessels
Phase 4:	Vessel has left for lock F High water level in lock chamber Lock chamber closed and empty Measurement of vertical salinity profiles in long sections	
Date / time:	10 December 2001, 10:30 h – 10:45 h	
Conditions:	Lane: Level Gatun Lake (ft to PLD): Level Atlantic Ocean (ft to PLD): Level in lock chamber (ft to PLD): Vessel dimensions in ft (l, w, d):	E-east +87.5 +0.5 +58.5 Star Michalis 607 x 93 x 38/0 (S14) + tugboat
Files		
Identification	location in lock chamber	remarks
011210ju-1030	centre, 1000 ft from u/s gates	
011210ju-1033	centre, 800 ft from u/s gates	
011210ju-1035	centre, 600 ft from u/s gates	
011210ju-1037	centre, 400 ft from u/s gates	
011210ju-1039	centre, 200 ft from u/s gates	
011210ju-1042	centre, near u/s gates	

Lock E	uplockage	southbound vessels
Phase 5:	No next vessel in lock D (turn around) Low water level in lock chamber (levelled down to level in lock D) Lock chamber closed and empty Measurement of vertical salinity profiles in long sections	
Date / time:	10 December 2001, 11:00 h – 11:15 h	
Conditions:	Lane: Level Gatun Lake (ft to PLD): Level Atlantic Ocean (ft to PLD): Level in lock chamber (ft to PLD): Vessel dimensions in ft (l, w, d):	E-east +87.5 +0.4 +28.9 -
Files		
Identification	location in lock chamber	remarks
011210ju-1102	centre, near u/s gates	
011210ju-1104	centre, 200 ft from u/s gates	
011210ju-1106	centre, 400 ft from u/s gates	
011210ju-1108	centre, 600 ft from u/s gates	
011210ju-1110	centre, 800 ft from u/s gates	
011210ju-1113	centre, 1000 ft from u/s gates	

Lock E	downlockage	northbound vessels
Phase 1:	Ahead of vessel (vessel waits in lock F) High water level in lock chamber (levelled up; equalized with level in lock F) Lock chamber open and empty Measurement of vertical salinity profiles in long sections	
Date / time:	8 December 2001, 16:05 h – 16:20 h	
Conditions:	Lane: Level Atlantic Ocean (ft to PLD): Level Gatun Lake (ft to PLD): Level in lock chamber (ft to PLD): Vessel dimensions in ft (l, w, d):	E-east +0.4 +87.5 +59.0 Nedlloyd Falcon 661 x 94 x 29/9 (N15) + 2 barges
Files		
identification	location in lock chamber	remarks
011208ju-1607	centre, near u/s gates	
011208ju-1609	centre, 200 ft from u/s gates	
011208ju-1611	centre, 400 ft from u/s gates	
011208ju-1613	centre, 600 ft from u/s gates	
011208ju-1615	centre, 800 ft from u/s gates	
011208ju-1617	centre, 1000 ft from u/s gates	

Lock E	downlockage	northbound vessels
Phase 2:	Ahead of vessel, near downstream gates High water level in lock chamber Lock chamber open, vessel enters from lock F Measurement of vertical salinity profiles at position near downstream gates	
Date / time:	8 December 2001, 16:20 h – 16:30 h	
Conditions:	Lane: Level Atlantic Ocean (ft to PLD): Level Gatun Lake (ft to PLD): Level in lock chamber (ft to PLD): Vessel dimensions in ft (l, w, d):	E-east +0.4 +87.5 +59.0 Nedlloyd Falcon 661 x 94 x 29/9 (N15) + 2 barges
Files		
Identification	location in lock chamber	remarks
011208ju-1622	centre, beside barges, near d/s gates	bow of vessel enters E-east
011208ju-1623	centre, beside barges, near d/s gates	
011208ju-1624	centre, beside barges, near d/s gates	
011208ju-1626	centre, beside barges, near d/s gates	
011208ju-1627	centre, beside barges, near d/s gates	

Lock E	downlockage	northbound vessels
Phase 3:	Astern of vessel, near upstream gates Low water level in lock chamber (levelled down to level in lock D) Lock chamber open, vessel leaves and enters lock D Measurement of vertical salinity profiles at position near upstream gates	
Date / time:	10 December 2001, 12:45 h – 12:50 h	
Conditions:	Lane: Level Atlantic Ocean (ft to PLD): Level Gatun Lake (ft to PLD): Level in lock chamber (ft to PLD): Vessel dimensions in ft (l, w, d):	E-east +0.3 +87.5 +27.5 Chong Ming 554 x 90 x 24/1 (N07)
Files		
Identification	location in lock chamber	remarks
011210ju-1245	side wall, near u/s gates	stern of vessel halfway chamber E
011210ju-1247	side wall, near u/s gates	
011210ju-1248	side wall, near u/s gates	stern of vessel passes d/s gates

Lock E	downlockage	northbound vessels
Phase 4:	Vessel has left for lock D Low water level in lock chamber Lock chamber closed and empty Measurement of vertical salinity profiles in long sections	
Date / time:	10 December 2001, 12:50 h – 13:40 h	
Conditions:	Lane: Level Atlantic Ocean (ft to PLD): Level Gatun Lake (ft to PLD): Level in lock chamber (ft to PLD): Vessel dimensions in ft (l, w, d):	E-east +0.2 +87.5 +27.5 Chong Ming 554 x 90 x 24/1 (N07)
Files		
Identification	location in lock chamber	remarks
011210ju-1251	0,33 width, near u/s gates	long section
011210ju-1253	0,33 width, 200 ft from u/s gates	
011210ju-1255	0,33 width, 400 ft from u/s gates	
011210ju-1258	0,33 width, 600 ft from u/s gates	
011210ju-1300	0,33 width, 800 ft from u/s gates	
011210ju-1302	0,33 width, 1000 ft from u/s gates	
011210ju-1305	0,67 width, 1000 ft from u/s gates	long section
011210ju-1307	0,67 width, 800 ft from u/s gates	
011210ju-1308	0,67 width, 600 ft from u/s gates	
011210ju-1310	0,67 width, 400 ft from u/s gates	
011210ju-1312	0,67 width, 200 ft from u/s gates	
011210ju-1314	0,67 width, near u/s gates	
011210ju-1321	side wall, near d/s gates	fixed position
011210ju-1325	side wall, near d/s gates	
011210ju-1328	side wall, near d/s gates	
011210ju-1330	side wall, near d/s gates	
011210ju-1333	side wall, near d/s gates	
011210ju-1339	side wall, near d/s gates	

Lock E	downlockage	northbound vessels
Phase 5:	Next vessel waits in lock F High water level in lock chamber (levelled up; equalized with level in lock F) Lock chamber closed and empty Measurement of vertical salinity profiles in long sections	
Date / time:	10 December 2001, 13:55 h – 14:15 h	
Conditions:	Lane: Level Atlantic Ocean (ft to PLD): Level Gatun Lake (ft to PLD): Level in lock chamber (ft to PLD): Vessel dimensions in ft (l, w, d):	E-east +0.2 +87.5 +59.7 Hanjin Hamburg 797 x 106 x 31/1 (N11T)
Files		
Identification	location in lock chamber	remarks
		Gates between E and F are opened and closed again prior to measurements
011210ju-1359	centre, 1000 ft from u/s gates	
011210ju-1402	centre, 800 ft from u/s gates	
011210ju-1405	centre, 600 ft from u/s gates	
011210ju-1408	centre, 400 ft from u/s gates	
011210ju-1411	centre, 200 ft from u/s gates	
011210ju-1414	centre, near u/s gates	

Measurements

Lock F

Lock F	uplockage	southbound vessels
Phase 1:	Ahead of vessel (vessel waits in lock E) Low water level in lock chamber (levelled down to level in lock E) Lock chamber open and empty Measurement of vertical salinity profiles in long sections	
Date / time:	8 December 2001, 12:45 h – 12:55 h	
Conditions:	Lane: Level Gatun Lake (ft to PLD): Level Atlantic Ocean (ft to PLD): Level in lock chamber (ft to PLD): Vessel dimensions in ft (l, w, d):	F-east +87.5 +0.1 +58.8 Mass Success 738 x 106 x 39/6 (S18)
Files		
Identification	location in lock chamber	remarks
011208ju-1245	centre, 1000 ft from u/s gates	
011208ju-1247	centre, 800 ft from u/s gates	
011208ju-1248	centre, 600 ft from u/s gates	
011208ju-1250	centre, 400 ft from u/s gates	
011208ju-1252	centre, 200 ft from u/s gates	
011208ju-1253	centre, near u/s gates	

Lock F	uplockage	southbound vessels
Phase 2:	Ahead of vessel, near upstream gates Low water level in lock chamber Lock chamber open, vessel enters from lock E Measurement of vertical salinity profiles at position near upstream gates	
Date / time:	8 December 2001, 12:55 h – 13:15 h	
Conditions:	Lane: Level Gatun Lake (ft to PLD): Level Atlantic Ocean (ft to PLD): Level in lock chamber (ft to PLD): Vessel dimensions in ft (l, w, d):	F-east +87.5 +0.1 +58.8 Mass Success 738 x 106 x 39/6 (S18)
Files		
Identification	location in lock chamber	remarks
011208ju-1257	side wall, near u/s gates	vessel starts moving
011208ju-1258	side wall, near u/s gates	bow of vessel enters lock F-east
011208ju-1259	side wall, near u/s gates	
011208ju-1300	side wall, near u/s gates	
011208ju-1301	side wall, near u/s gates	
011208ju-1302	side wall, near u/s gates	
011208ju-1303	side wall, near u/s gates	
011208ju-1304	side wall, near u/s gates	
011208ju-1305	side wall, near u/s gates	
011208ju-1306	side wall, near u/s gates	
011208ju-1307	side wall, near u/s gates	
011208ju-1308	side wall, near u/s gates	
011208ju-1309	side wall, near u/s gates	
011208ju-1311	side wall, near u/s gates	
011208ju-1312	side wall, near u/s gates	
011208ju-1313	side wall, near u/s gates	

Lock F	uplockage	southbound vessels
Phase 3:	Astern of vessel, near downstream gates High water level in lock chamber (levelled up; equalized with Gatun Lake level) Lock chamber open, vessel leaves and enters lock Gatun lake Measurement of vertical salinity profiles at position near downstream gates	
Date / time:	11 December, 12:10 h - 12:30 h	
Conditions:	Lane: Level Gatun Lake (ft to PLD): Level Atlantic Ocean (ft to PLD): Level in lock chamber (ft to PLD): Vessel dimensions in ft (l, w, d):	F-east +87.3 +0.4 +87.3 Pacmonarch 738 x 106 x 39/6 (S16) + 2 tugboats
Files		
Identification	location in lock chamber	remarks
011211lo-1213	centre, beside tugboats, near d/s gates	
011211lo-1217	centre, beside tugboats, near d/s gates	vessel starts moving
011211lo-1220	centre, beside tugboats, near d/s gates	
011211lo-1222	centre, beside tugboats, near d/s gates	
011211lo-1225	centre, beside tugboats, near d/s gates	stern of vessel passes u/s gates

Lock F	uplockage	southbound vessels
Phase 4:	Vessel has left for Gatun lake High water level in lock chamber Lock chamber closed and empty Measurement of vertical salinity profiles in long sections	
Date / time:	11 December 2001, 12:30 h - 12:50 h	
Conditions:	Lane: Level Gatun Lake (ft to PLD): Level Atlantic Ocean (ft to PLD): Level in lock chamber (ft to PLD): Vessel dimensions in ft (l, w, d):	F-east +87.3 +0.4 +87.3 Pacmonarch 738 x 106 x 39/6 (S16) + 2 tugboats
Files		
Identification	location in lock chamber	remarks
011211lo-1233	centre, 1000 ft from u/s gates	
011211lo-1236	centre, 800 ft from u/s gates	
011211lo-1239	centre, 600 ft from u/s gates	
011211lo-1241	centre, 400 ft from u/s gates	
011211lo-1244	centre, 200 ft from u/s gates	
011211lo-1248	centre, near u/s gates	

Lock F	uplockage	southbound vessels
Phase 5:	No next vessel in lock E (turn around) Low water level in lock chamber (levelled down to level in lock E) Lock chamber closed and empty Measurement of vertical salinity profiles in long sections	
Date / time:	11 December 2001, 13:00 h - 13:15 h	
Conditions:	Lane:	F-east
	Level Gatun Lake (ft to PLD):	+87.3
	Level Atlantic Ocean (ft to PLD):	+0.3
	Level in lock chamber (ft to PLD):	+58.5
	Vessel dimensions in ft (l, w, d):	-
Files		
Identification	location in lock chamber	remarks
011211lo-1303	centre, near u/s gates	
011211lo-1305	centre, 200 ft from u/s gates	
011211lo-1307	centre, 400 ft from u/s gates	
011211lo-1308	centre, 600 ft from u/s gates	
011211lo-1310	centre, 800 ft from u/s gates	
011211lo-1312	centre, 1000 ft from u/s gates	

Lock F	downlockage	northbound vessels
Phase 1:	Ahead of vessel (vessel waits in Gatun Lake) High water level in lock chamber (levelled up; equalized with Gatun Lake level) Lock chamber open and empty Measurement of vertical salinity profiles in long sections	
Date / time:	8 December 2001, 15:23 h – 15:38 h	
Conditions:	Lane: Level Atlantic Ocean (ft to PLD): Level Gatun Lake (ft to PLD): Level in lock chamber (ft to PLD): Vessel dimensions in ft (l, w, d):	F-east +0.3 +87.5 +87.5 Nedlloyd Falcon 661 x 94 x 29/9 (N15) + 2 barges
Files		
identification	location in lock chamber	remarks
011208ju-1524	centre, near u/s gates	
011208ju-1527	centre, 200 ft from u/s gates	
011208ju-1528	centre, 400 ft from u/s gates	
011208ju-1531	centre, 600 ft from u/s gates	
011208ju-1533	centre, 800 ft from u/s gates	
011208ju-1535	centre, 1000 ft from u/s gates	

Lock F	downlockage	northbound vessels
Phase 2:	Ahead of vessel, near downstream gates High water level in lock chamber Lock chamber open, vessel enters from Gatun Lake Measurement of vertical salinity profiles at position near downstream gates	
Date / time:	8 December 2001, 15:38 h – 16:00 h	
Conditions:	Lane: Level Atlantic Ocean (ft to PLD): Level Gatun Lake (ft to PLD): Level in lock chamber (ft to PLD): Vessel dimensions in ft (l, w, d):	F-east +0.3 +87.5 +87.5 Nedlloyd Falcon 661 x 94 x 29/9 (N15) + 2 barges
Files		
Identification	location in lock chamber	remarks
011208ju-1539	side wall, near d/s gates	vessel still outside
011208ju-1550	side wall, near d/s gates	bow of vessel enters F-east
011208ju-1551	side wall, near d/s gates	
011208ju-1553	side wall, near d/s gates	
011208ju-1554	side wall, near d/s gates	
011208ju-1556	side wall, near d/s gates	
011208ju-1557	side wall, near d/s gates	

Lock F	downlockage	northbound vessels
Phase 3:	Astern of vessel, near upstream gates Low water level in lock chamber (levelled down to level in lock E) Lock chamber open, vessel leaves and enters lock E Measurement of vertical salinity profiles at position near upstream gates	
Date / time:	9 December 2001, 16:40 h - 16:52 h	
Conditions:	Lane: F-west Level Atlantic Ocean (ft to PLD): +0.2 Level Gatun Lake (ft to PLD): +87.4 Level in lock chamber (ft to PLD): +57.4 Vessel dimensions in ft (l, w, d): Akili 623 x 106 x 31/7 (N17)	
Files		
Identification	location in lock chamber	remarks
011209lo-1640	side wall, near u/s gates	
011209lo-1643	side wall, near u/s gates	
011209lo-1644	side wall, near u/s gates	
011209lo-1646	side wall, near u/s gates	
011209lo-1647	side wall, near u/s gates	
011209lo-1649	side wall, near u/s gates	
011209lo-1650	side wall, near u/s gates	

Lock F	downlockage	northbound vessels
Phase 4:	Vessel has left for lock E Low water level in lock chamber Lock chamber closed and empty Measurement of vertical salinity profiles in long sections	
Date / time:	9 December 2001, 16:52 h - 17:05 h	
Conditions:	Lane: Level Atlantic Ocean (ft to PLD): Level Gatun Lake (ft to PLD): Level in lock chamber (ft to PLD): Vessel dimensions in ft (l, w, d):	F-west +0.2 +87.4 +57.4 Akili 623 x 106 x 31/7 (N17)
Files		
Identification	location in lock chamber	remarks
011209lo-1653	centre, near u/s gates	
011209lo-1655	centre, 200 ft from u/s gates	
011209lo-1657	centre, 400 ft from u/s gates	
011209lo-1658	centre, 600 ft from u/s gates	
011209lo-1700	centre, 800 ft from u/s gates	
011209lo-1702	centre, 950 ft from u/s gates	

Lock F	downlockage	northbound vessels
Phase 5:	Next vessel waits in Gatun lake High water level in lock chamber (levelled up; equalized with Gatun Lake level) Lock chamber closed and empty Measurement of vertical salinity profiles in long sections	
Date / time:	9 December 2001, 17:10 h - 17:25 h	
Conditions:	Lane: Level Atlantic Ocean (ft to PLD): Level Gatun Lake (ft to PLD): Level in lock chamber (ft to PLD): Vessel dimensions in ft (l, w, d):	F-west +0.3 +87.4 +87.4 Bright State 453 x 72 x 21/4 (N01) + tugboat
Files		
Identification	location in lock chamber	remarks
011209lo-1714	centre, 950 ft from u/s gates	
011209lo-1716	centre, 800 ft from u/s gates	
011209lo-1718	centre, 600 ft from u/s gates	
011209lo-1720	centre, 400 ft from u/s gates	
011209lo-1722	centre, 200 ft from u/s gates	
011209lo-1724	centre, near u/s gates	

Measurements

Pacific Entrance

Profiling in Pacific Entrance

Date / time:	30 November 2001, 13:35 h – 17:10 h		
Conditions:	Level Pacific Entrance (ft to PLD):		variable, between +1.6 ft and +7.6 ft, incoming tide, and +7.6 ft and +5.9 ft, falling tide; high tide at 15:31 h (+7.6 ft PLD)
Files			
identification	location (GPS, UTM 17)		remarks
	East (m)	North (m)	
011130lo-1335	start near d/s gates A-west, Miraflores Locks		1 st long section in shipping lane, west side, up to Bridge of the America's
011130lo-1337	300 ft from gates A-west		
011130lo-1340	600 ft from gates A-west		
011130lo-1342	1000 ft from gates A-west		
011130lo-1345	1300 ft from gates A-west		near nose of centre wall
011130lo-1349	655454	0994050	
011130lo-1351	655523	0993971	
011130lo-1354	655587	0993880	
011130lo-1357	655661	0993801	
011130lo-1359	655713	0993706	
011130lo-1402	655761	0993609	
011130lo-1404	655801	0993515	
011130lo-1407	655855	0993435	
011130lo-1410	655885	0993339	
011130lo-1412	655925	0993251	
011130lo-1415	655965	0993156	
011130lo-1417	655980	0993063	
011130lo-1420	655997	0992946	
011130lo-1422	656028	0992833	
011130lo-1425	656063	0992728	
011130lo-1427	656104	0992625	
011130lo-1430	656151	0992510	
011130lo-1433	656219	0992406	
011130lo-1435	656265	0992301	
011130lo-1438	656305	0992201	
011130lo-1441	656341	0992093	
011130lo-1443	656366	0991976	
011130lo-1446	656394	0991859	
011130lo-1449	656422	0991762	
011130lo-1452	656446	0991652	
011130lo-1455	656485	0991542	
011130lo-1457	656517	0991426	
011130lo-1548	656677	0991019	continuation
011130lo-1550	656717	0990907	
011130lo-1553	656773	0990809	
011130lo-1555	656810	0990706	
011130lo-1557	656855	0990589	
011130lo-1559	656895	0990489	

Profiling in Pacific Entrance

Date / time:	30 November 2001, 13:35 h – 17:10 h	
Conditions:	Level Pacific Entrance (ft to PLD):	variable, between +1.6 ft and +7.6 ft, incoming tide, and +7.6 ft and +5.9 ft, falling tide; high tide at 15:31 h (+7.6 ft PLD)
Files		
identification	location (GPS, UTM 17)	remarks
	East (m)	North (m)
011130lo-1602	656928	0990372
011130lo-1604	656958	0990266
011130lo-1607	656984	0990157
011130lo-1612	656995	0990047
011130lo-1615	657023	0989945
011130lo-1617	657039	0989857
011130lo-1620	657079	0989775
011130lo-1625	657124	0989680
011130lo-1627	657143	0989570
011130lo-1630	657202	0989476
011130lo-1632	657280	0989384
011130lo-1635	657339	0989266
011130lo-1637	657435	0989174
011130lo-1640	657519	0989099
011130lo-1642	657607	0988984
011130lo-1644	657693	0988884
011130lo-1649	657787	0988809
011130lo-1652	657877	0988696
011130lo-1654	657946	0988587
011130lo-1656	658015	0988456
011130lo-1658	658081	0988352
011130lo-1700	658168	0988256
011130lo-1702	658253	0988156
011130lo-1704	658318	0988059
011130lo-1706	658385	0987977
011130ju-1335	start near d/s gates A-west, Miraflores Locks	2 nd long section in shipping lane, east side, up to Bridge of the America's
011130ju-1338	655091	994549
011130ju-1548	656830	991057
011130ju-1552	656870	990946
011130ju-1554	656907	990860
011130ju-1557	656962	990735
011130ju-1559	656996	990639
011130ju-1601	657040	990520
011130ju-1604	657061	990406
011130ju-1607	657080	990311
011130ju-1609	657099	990219
011130ju-1612	657130	990118

Profiling in Pacific Entrance

Date / time:	30 November 2001, 13:35 h – 17:10 h		
Conditions:	Level Pacific Entrance (ft to PLD):		variable, between +1.6 ft and +7.6 ft, incoming tide, and +7.6 ft and +5.9 ft, falling tide; high tide at 15:31 h (+7.6 ft PLD)
Files			
identification		location (GPS, UTM 17)	
		East (m)	North (m)
011130ju-1615		657158	990035
011130ju-1617		657192	989924
011130ju-1620		657210	989842
011130ju-1622		657253	989740
011130ju-1625		657284	989645
011130ju-1628		657337	989529
011130ju-1632		657462	989462
011130ju-1635		657515	989367
011130ju-1638		657588	989275
011130ju-1640		657640	989207
011130ju-1643		657711	989115
011130ju-1645		657778	989042
011130ju-1647		657852	988956
011130ju-1649		657920	988886
011130ju-1652		658012	988779
011130ju-1654		658101	988687
011130ju-1657		658202	988552
011130ju-1659		658291	988439
011130ju-1701		658368	988328
011130ju-1704		658435	988234
011130ju-1706		658540	988090

Pacific Entrance – measurements at first green buoy		
Date / time:	5 December 2001, 10:50 h – 16:15 h	
Conditions:	Level Pacific Entrance (ft to PLD):	variable, between -0.4 ft and -7.0 ft, falling tide, and -7.0 ft and +0.6 ft, incoming tide; low tide at 12:56 h (-7.0 ft PLD)
Files		
Identification	location	remarks
011205ju-1050	fixed position of launch at first green buoy, shipping lane, west side, south of Miraflores Locks	first profile at 10:50 h
011205ju-1059		
011205ju-1109		
011205ju-1119		
011205ju-1129		
011205ju-1139		
011205ju-1149		
011205ju-1150		
011205ju-1209		
011205ju-1218		
011205ju-1229		
011205ju-1239		
011205ju-1250		
011205ju-1251		
011205ju-1309		
011205ju-1320		
011205ju-1329		
011205ju-1339		
011205ju-1349		
011205ju-1359		
011205ju-1409		
011205ju-1419		
011205ju-1432		
011205ju-1441		
011205ju-1450		
011205ju-1500		
011205ju-1509		
011205ju-1519		
011205ju-1533		
011205ju-1539		
011205ju-1549		
011205ju-1559		
011205ju-1609		last profile at 16:09

Pacific Entrance – measurements at first green buoy		
Date / time:	14 December 2001, 9:30 h – 12:00 h	
Conditions:	Level Pacific Entrance (ft to PLD):	variable, between -7.6 ft and -0.5 ft, incoming tide; low tide at 9:24 h (- 7.7 ft PLD)
Files		
Identification	location	remarks
011214lo-0930	fixed position of launch at first green buoy, shipping lane, west side, south of Miraflores Locks	first profile at 9:30 h
011214lo-0941		
011214lo-0950		
011214lo-1000		
011214lo-1010		
011214lo-1020		
011214lo-1030		
011214lo-1040		
011214lo-1050		
011214lo-1100		strong leakage (?) flow from outlet west
011214lo-1110		
011214lo-1120		
011214lo-1130		
011214lo-1140		
011214lo-1150		last profile at 11:50 h

**Measurements
near
Miraflores Locks**

Measurements near Miraflores Locks

Date / time:	4 December 2001, 9:50 h – 11:50 h		
Conditions:	Level Pacific Entrance (ft to PLD):		variable, between +4.5 ft and –6.8 ft, falling tide; low tide at 12:10 h (-7.6 ft PLD)
Files			
Identification	location (GPS, UTM 17)		remarks
	East (m)	North (m)	
011204lo-0954	start near d/s gates A-east, Miraflores Locks		long section along east side of centre wall Miraflores Locks, south side
011204lo-0957	200 ft from d/s gates A-east		
011204lo-0959	340 ft from d/s gates A-east		
011204lo-1001	600 ft from d/s gates A-east		
011204lo-1003	820 ft from d/s gates A-east		
011204lo-1005	1000 ft from d/s gates A-east		
011204lo-1007	655410	0994222	near nose of centre wall
011204lo-1011	655470	0994174	in shipping lane
011204lo-1013	655533	0994135	
011204lo-1015	655595	0994074	discharge from outlet A-east
011204lo-1017	655657	0994013	
011204lo-1019	655713	0993965	Pacific Aries passes in west lane
011204lo-1021	655768	0993910	
011204lo-1028	start near d/s gates A-east, Miraflores Locks		long section along east wing wall Miraflores Locks, south side; discharge from outlet A-east
011204lo-1031	655128	0994498	north edge of east wing wall
011204lo-1033	655208	0994480	south edge of east wing wall
011204lo-1035	655303	0994452	along east bank
011204lo-1037	655368	0994413	
011204lo-1039	655427	0994352	
011204lo-1040	655486	0994290	
011204lo-1042	655535	0994229	
011204lo-1044	655580	0994164	
011204lo-1045	655635	0994095	
011204lo-1047	655688	0994051	
011204lo-1050	655749	0994008	
011204lo-1052	655808	0993965	
011204lo-1056	start near d/s gates A-west, Miraflores Locks		long section along west side of centre wall Miraflores Locks, south side
011204lo-1058	655070	0994452	200 ft from d/s gates A-west
011204lo-1100	655125	0994408	400 ft from d/s gates A-west; discharge from outlet A-west
011204lo-1102	655185	0994373	600 ft from d/s gates A-west
011204lo-1106	655242	0994327	800 ft from d/s gates A-west
011204lo-1109	655296	0994274	1000 ft from d/s gates A-west
011204lo-1112	655367	0994202	near nose of centre wall
011204lo-1114	655417	0994124	in shipping lane

Measurements near Miraflores Locks			
Date / time:	4 December 2001, 9:50 h – 11:50 h		
Conditions:	Level Pacific Entrance (ft to PLD):		variable, between +4.5 ft and -6.8 ft, falling tide; low tide at 12:10 h (-7.6 ft PLD)
Files			
Identification	location (GPS, UTM 17)		remarks
	East (m)	North (m)	
011204lo-1117	655505	0994082	
011204lo-1119	655581	0994018	
011204lo-1121	655647	0993944	
011204lo-1126	655041	0994504	long section along west wing wall Miraflores Locks, south side; start near d/s gates A-west
011204lo-1128	655092	0994449	north edge of west wing wall
011204lo-1130	655104	0994384	south edge of west wing wall
011204lo-1132	655146	0994328	along west bank
011204lo-1133	655191	0994277	
011204lo-1134	655252	0994227	
011204lo-1137	655304	0994177	
011204lo-1138	655355	0994124	
011204lo-1141	655417	0994052	
011204lo-1143	655475	0994007	

Measurements near Miraflores Locks

Date / time:	4 December 2001, 14:45 h – 17:05 h		
Conditions:	Level Pacific Entrance (ft to PLD):		variable, between –1.0 ft and +5.5 ft, incoming tide; high tide at 18:24 h (+8.3 ft PLD)
Files			
Identification	location (GPS, UTM 17)		remarks
	East (m)	North (m)	
011204lo-1544	start near d/s gates A-east, Miraflores Locks		long section along east side of centre wall Miraflores Locks, south side; shot of water from outlet A-east
011204lo-1547	200 ft from d/s gates A-east		again shot of water from outlet A-east
011204lo-1549	655156	0994451	300 ft from d/s gates A-east
011204lo-1554	655186	0994423	440 ft from d/s gates A-east
011204lo-1557	655261	0994347	800 ft from d/s gates A-east
011204lo-1559	655319	0994292	1040 ft from d/s gates A-east
011204lo-1602	655380	0994225	near nose of centre wall; discharge from outlet A-east
011204lo-1604	655463	0994137	in shipping lane
011204lo-1606	655547	0994044	
011204lo-1608	655636	0993960	
011204lo-1610	655719	0993865	
011204lo-1612	655809	0993774	
011204lo-1614	655888	0993681	
011204lo-1619	655942	0993621	
011204lo-1646	655206	0994491	long section along east wing wall Miraflores Locks, south side
011204lo-1648	655295	0994464	along east bank; discharge from lock A- east
011204lo-1650	655371	0994408	
011204lo-1652	655443	0994326	
011204lo-1654	655512	0994258	
011204lo-1656	655587	0994185	
011204lo-1657	655656	0994105	
011204lo-1659	655755	0993995	
011204lo-1701	655828	0993909	
011204lo-1703	655897	0993805	
011204lo-1446	655016	0994486	long section along west side of centre wall Miraflores Locks, south side; start near d/s gates A-west
011204lo-1448	655067	0994464	200 ft from d/s gates A-west
011204lo-1451	655131	0994429	300 ft from d/s gates A-west
011204lo-1453	655183	0994383	600 ft from d/s gates A-west
011204lo-1455	655238	0994328	800 ft from d/s gates A-west
011204lo-1457	655273	0994286	980 ft from d/s gates A-west
011204lo-1500	655352	0994210	near nose of centre wall
011204lo-1502	655457	0994171	in shipping lane

Measurements near Miraflores Locks

Date / time:	4 December 2001, 14:45 h – 17:05 h		
Conditions:	Level Pacific Entrance (ft to PLD): variable, between -1.0 ft and +5.5 ft, incoming tide; high tide at 18:24 h (+8.3 ft PLD)		
Files			
Identification	location (GPS, UTM 17)		remarks
	East (m)	North (m)	
011204lo-1504	655562	0994131	
011204lo-1507	655605	0994018	
011204lo-1509	655683	0993925	
011204lo-1511	655769	0993839	
011204lo-1517	start near d/s gates A-west, Miraflores Locks		long section along west wing wall Miraflores Locks, south side; leakage flow from outlet A-west
011204lo-1519	655084	0994453	north edge of west wing wall
011204lo-1522	655100	0994376	south edge of west wing wall
011204lo-1524	655168	0994299	along west bank
011204lo-1526	655235	0994224	
011204lo-1528	655316	0994149	
011204lo-1530	655384	0994061	
011204lo-1532	655450	0993968	
011204lo-1535	655503	0993871	
011204lo-1536	655566	0993787	
011204lo-1539	655617	0993688	

Measurements near Miraflores Locks

Date / time:	14 December 2001, 8:30 h – 12:40 h	
Conditions:	Level Pacific Entrance (ft to PLD):	variable, between -5.1 ft and -7.7 ft, falling tide, and between -7.7 ft and +2.3 ft, incoming tide; low tide at 9:24 h (-7.7 ft PLD)
Files		
Identification		Remarks
	location (see Figure A112 / A113)	
011214lo-0832	position 1	1 st long section along east wing wall, centre wall and west wing wall, Miraflores Locks, south side
011214lo-0834	position 2	
011214lo-0837	position 3	leakage flow from outlet east
011214lo-0841	position 4	normal gates of A-east are closed
011214lo-0843	position 5	
011214lo-0846	position 6	
011214lo-0849	position 7	
011214lo-0854	position 8	
011214lo-0858	position 9	
011214lo-0902	position 10	
011214lo-0906	position 11	normal gates of A-west are closed;
011214lo-0909	position 12	leakage flow from gates A-west
011214lo-0911	position 13	
011214lo-0915	position 14	
011214lo-0918	position 15	
	location (see Figure A114 / A115)	
011214lo-1156	position 1	2 nd long section along east wing wall, centre wall and west wing wall, Miraflores Locks, south side
011214lo-1157	position 2	
011214lo-1200	position 3	
011214lo-1203	position 4a	sea gates of A-east are closed
011214lo-1205	position 5a	
011214lo-1208	position 6a	
011214lo-1211	position 7	
011214lo-1214	position 8	
011214lo-1218	position 9	
011214lo-1222	position 10	
011214lo-1226	position 11	gates of lock A-west are open
011214lo-1228	position 12	
011214lo-1231	position 13	
011214lo-1234	position 14	strong leakage flow from outlet west
011214lo-1237	position 15	

Measurements near Miraflores Locks – outlet A-west

Date / time:	5 December 2001, 16:25 h – 16:35 h	
Conditions:	Level Pacific Entrance (ft to PLD):	about +1.6 ft, incoming tide; high tide at 19:13 h (+8.1 ft PLD)
Files		
Identification	location	Remarks
011205ju-1625	fixed position of launch against west side wall, beside outflow section, A-west, Miraflores Locks	Measurements in outflow of outlet A-west
011205ju-1628		
011205ju-1629		
011205ju-1630		

Measurements near Miraflores Locks – intake B-west

Date / time:	5 December 2001, 7:55 h – 8:15 h	
Conditions:	Level Miraflores Lake (ft to PLD):	+54.4
Files		
Identification	location	Remarks
011205lo-0758	fixed position of launch against centre wall, beside inflow section, B-west, Miraflores Locks	Measurements in inflow of intake A-west

Measurements near Miraflores Locks – centre wall south		
Date / time:	30 November 2001, 12:00 h – 4 December 2001, 12:00 h	
Conditions:	Level Pacific Entrance (ft to PLD):	Tidal movement during 4 days; highest level +8.9, lowest level -7.8
Files		
Identification	location	Remarks
CtloggerML-south	fixed position of CT logger at head of centre wall, south side of Miraflores Locks	first position near local bed, second position near water surface

Measurements near Miraflores Locks – centre wall north		
Date / time:	4 December 2001, 12:00 h – 6 December 2001, 12:00 h	
Conditions:	Level Miraflores Lake (ft to PLD):	Slightly varying about +54.5
Files		
identification	location	Remarks
CtloggerML-north	fixed position of CT logger at head of centre wall, north side of Miraflores Locks	first position near local bed, second position near water surface

Measurements

Miraflores Lake

Profiling in Miraflores Lake

Date / time:	28 November 2001, 14:25 h – 14:45 h	
Conditions:	Level Miraflores Lake (ft to PLD):	+54.7
Files		
identification	location	remarks
011128lo-1429	in centre line of gate no 1 from west, 30 m away from spillway	1 st long section parallel to Miraflores spillway
011128lo-1432	in centre line of gate no 2 from west, 30 m away from spillway	
011128lo-1433	in centre line of gate no 3 from west, 30 m away from spillway	
011128lo-1435	in centre line of gate no 4 from west, 30 m away from spillway	
011128lo-1436	in centre line of gate no 5 from west, 30 m away from spillway	
011128lo-1438	in centre line of gate no 6 from west, 30 m away from spillway	
011128lo-1439	in centre line of gate no 7 from west, 30 m away from spillway	
011128lo-1441	in centre line of gate no 8 from west, 30 m away from spillway	
011128ju-1429	in centre line of gate no 1 from west, 10 m away from spillway	2 nd long section parallel to Miraflores spillway
011128ju-1431	in centre line of gate no 2 from west, 10 m away from spillway	
011128ju-1433	in centre line of gate no 3 from west, 10 m away from spillway	
011128ju-1434	in centre line of gate no 4 from west, 10 m away from spillway	
011128ju-1436	in centre line of gate no 5 from west, 10 m away from spillway	
011128ju-1437	in centre line of gate no 6 from west, 10 m away from spillway	
011128ju-1439	in centre line of gate no 7 from west, 10 m away from spillway	
011128ju-1441	in centre line of gate no 8 from west 10 m away from spillway	

Profiling in Miraflores Lake

Date / time:	28 November 2001, 14:45 h – 15:00 h	
Conditions:	Level Miraflores Lake (ft to PLD): +54.7	
Files		
Identification	location (GPS, UTM 17)	remarks
	East (m)	North (m)
011128lo-1445	10 m away from spillway	1 st long section perpendicular to Miraflores spillway in centre line of gate no 3 from west
011128lo-1448	654535	0995210
011128lo-1450	654382	0995363
011128lo-1453	654321	0995424
011128lo-1455	654260	0995455
011128ju-1447	10 m away from spillway	2 nd long section perpendicular to Miraflores spillway in centre line of gate no 7 from west
011128ju-1449	654486	995321
011128ju-1450	654440	995348
011128ju-1452	654400	995394
011128ju-1454	654376	995440
011128ju-1456	654323	995510

Profiling in Miraflores Lake

Date / time:	29 November 2001, 10:40 h – 11:35 h	
Conditions:	Level Miraflores Lake (ft to PLD): +54.7	
Files		
Identification	location (GPS, UTM 17)	remarks
	East (m)	North (m)
011129lo-1041	near gates lock B-east	long section in shipping lane, east side, from Miraflores Locks to Pedro Miguel Locks
011129lo-1043	654473	0995120
011129lo-1045	654417	0995165
011129lo-1048	654340	0995236
011129lo-1051	654289	0995286
011129lo-1054	654203	0995370
011129lo-1056	654130	0995444
011129lo-1059	654073	0995522
011129lo-1101	653979	0995628
011129lo-1104	653899	0995710
011129lo-1106	653832	0995781
011129lo-1108	653755	0995858
011129lo-1110	653685	0995935
011129lo-1113	653580	0996038
011129lo-1115	653502	0996111
011129lo-1118	653433	0996186
011129lo-1120	653359	0996252
011129lo-1123	653281	0996321
011129lo-1125	653199	0996379
011129lo-1128	653120	0996445
011129lo-1130	653043	0996511
011129lo-1133	652986	0996555
	near gates lock B-west	long section in shipping lane, west side, from Miraflores Locks to Pedro Miguel Locks
011129ju-1041	654521	995035
011129ju-1043	654466	995093
011129ju-1046	654410	995148
011129ju-1049	654328	995222
011129ju-1051	654282	995261
011129ju-1055	654174	995353
011129ju-1057	654107	995421
011129ju-1059	654052	995485
011129ju-1101	653954	995586
011129ju-1104	653874	995659
011129ju-1106	653800	995736
011129ju-1108	653727	995815
011129ju-1111	653650	995889
011129ju-1113	653546	995999
011129ju-1115	653475	996076
011129ju-1118	653408	996149

Profiling in Miraflores Lake

Date / time:	29 November 2001, 10:40 h – 11:35 h	
Conditions:	Level Miraflores Lake (ft to PLD):	+54.7
Files		
Identification	location (GPS, UTM 17)	remarks
	East (m)	North (m)
011129ju-1120	653340	996222
011129ju-1123	653264	996293
011129ju-1125	653187	996360
011129ju-1128	653104	996434
011129ju-1131	653034	996486
011129ju-1133	652970	996537

Profiling in Miraflores Lake

Date / time:	3 December 2001, 9:40 h - 11:30 h		
Conditions:	Level Miraflores Lake (ft to PLD): +54.3		
Files			
Identification	location (GPS)		remarks
	East (m)	North (m)	
011203ju-0940	654463	995090	long section along west bank of Miraflores Lake from Miraflores Locks to Pedro Miguel Locks
011203ju-0943	654368	995133	
011203ju-0945	654246	995111	
011203ju-0947	654133	995113	
011203ju-0950	654026	995138	
011203ju-0952	653986	995217	
011203ju-0954	653982	995316	
011203ju-0957	653912	995358	
011203ju-0959	653826	995407	
011203ju-1000	653749	995481	
011203ju-1003	653694	995560	
011203ju-1004	653627	995625	
011203ju-1006	653562	995710	
011203ju-1008	653501	995802	
011203ju-1009	653397	995863	
011203ju-1011	653314	995894	
011203ju-1028	653238	995930	
011203ju-1029	653140	995982	
011203ju-1031	653032	996095	
011203ju-1035	653023	996178	
011203ju-1036	653035	996237	
011203ju-1037	653001	996319	
011203ju-1039	652946	996405	
011203ju-1041	652900	996482	
011203ju-1042	652844	996571	
011203ju-1043	652786	996647	
011203ju-1046	652725	996733	
011203ju-1048	652633	996850	
011203ju-1051	652684	996890	long section along east bank of Miraflores Lake from Pedro Miguel Locks to Miraflores Locks
011203ju-1056	652764	996844	
011203ju-1059	652886	996838	
011203ju-1102	653002	996829	
011203ju-1103	653121	996796	
011203ju-1105	653192	996769	
011203ju-1107	653241	996701	
011203ju-1108	653305	996625	
011203ju-1109	653385	996545	
011203ju-1110	653452	996472	
011203ju-1112	653541	996429	

Profiling in Miraflores Lake

Date / time:	3 December 2001, 9:40 h - 11:30 h	
Conditions:	Level Miraflores Lake (ft to PLD):	+54.3
Files		
Identification	location (GPS)	remarks
	East (m)	North (m)
011203ju-1113	653642	996374
011203ju-1114	653725	996331
011203ju-1115	653820	996289
011203ju-1117	653915	996231
011203ju-1118	653982	996179
011203ju-1119	654062	996093
011203ju-1121	654129	995977
011203ju-1123	654175	995906
011203ju-1126	654209	995814
011203ju-1127	654237	995713
011203ju-1157	654178	995332
011203ju-1159	654308	995498
011203ju-1201	654364	995409
011203ju-1203	654410	995302
011203ju-1205	654468	995219
011203ju-1208	654508	995136
011203ju-1210	654573	995078

Measurements
near
Pedro Miguel Locks

Measurements near Pedro Miguel Locks

Date / time:	14 December 2001, 11:15 h – 11:35 h	
Conditions:	Level Gaillard Cut (ft to PLD):	+87.9
Files		
Identification		remarks
	location (see Figure A92)	
011214ju-1115	position 1	long section along east wing wall, centre wall and west wing wall, Pedro Miguel Locks, north side
011214ju-1117	position 2	
011214ju-1118	position 3	
011214ju-1120	position 4	
	location (see Figure A93)	
011214ju-1125	position 1	
011214ju-1126	position 2	
011214ju-1128	position 3	
011214ju-1129	position 4	
011214ju-1131	position 5	
011214ju-1133	position 6	

Measurements

Gaillard Cut

Profiling in Gaillard Cut

Date / time:	1 December 2001, 11:00 - 14:00 h	
Conditions:	Level Gaillard Cut (ft to PLD):	+87.8
Files		
Identification	location (GPS, UTM 17)	remarks
	East (m)	North (m)
011201lo-1058	641883	1007783
011201lo-1103	641992	1007783
011201lo-1105	642098	1007766
011201lo-1107	642214	1007749
011201lo-1110	642320	1007717
011201lo-1112	642421	1007677
011201lo-1114	642524	1007647
011201lo-1116	642621	1007607
011201lo-1118	642707	1007593
011201lo-1120	642795	1007541
011201lo-1122	642894	1007484
011201lo-1124	642983	1007437
011201lo-1126	643069	1007388
011201lo-1129	643155	1007336
011201lo-1131	643237	1007273
011201lo-1133	643305	1007259
011201lo-1135	643370	1007222
011201lo-1137	643440	1007178
011201lo-1139	643509	1007131
011201lo-1331	643581	1007071
011201lo-1142	643653	1007011
011201lo-1144	643721	1006958
011201lo-1147	643781	1006901
011201lo-1149	643838	1006837
011201lo-1151	643887	1006768
011201lo-1154	643949	1006676
011201lo-1156	644010	1006593
011201lo-1159	644063	1006500
011201lo-1201	644110	1006400
011201lo-1204	644166	1006302
011201lo-1206	644225	1006203
011201lo-1250	644291	1006040
011201lo-1254	644354	1005946
011201lo-1256	644414	1005852
011201lo-1258	644472	1005757
011201lo-1259	644527	1005660
011201lo-1301	644592	1005571
011201lo-1303	644647	1005477
011201lo-1305	644700	1005380
011201lo-1307	644748	1005289

Profiling in Gaillard Cut

Date / time:	1 December 2001, 11:00 - 14:00 h	
Conditions:	Level Gaillard Cut (ft to PLD):	+87.8
Files		
Identification	location (GPS, UTM 17)	remarks
	East (m)	North (m)
011201lo-1309	644803	1005194
011201lo-1311	644856	1005102
011201lo-1313	644909	1005011
011201lo-1315	644958	1004916
011201lo-1317	645003	1004821
011201lo-1320	645060	1004727
011201lo-1321	645109	1004636
011201lo-1323	645157	1004537
011201lo-1325	645199	1004444
011201lo-1327	645242	1004344
011201lo-1329	645276	1004241
011201lo-1331	645316	1004145
011201lo-1333	645359	1004043
011201lo-1335	645405	1003939
011201lo-1337	645443	1003838
011201lo-1339	645474	1003735
011201lo-1341	645521	1003621
011201lo-1343	645561	1003519
011201lo-1344	645598	1003417
011201lo-1347	645640	1003321
011201lo-1349	645676	1003222
011201lo-1351	645714	1003119
011201lo-1353	645765	1003024
011201lo-1355	645790	1002934
011201lo-1357	645841	1002843

Profiling in Gaillard Cut

Date / time:	2 December 2001, 10:25 – 11:45 h		
Conditions:	Level Gaillard Cut (ft to PLD):		+87.9
Files			
Identification	location (GPS, UTM 17)		remarks
	East (m)	Norrrth (m)	
011202lo-1025	645826	1003188	Long section in shipping lane, west side, from halfway Gamboa and Pedro Miguel Locks to some kilometers north of Pedro Miguel Locks
011202lo-1028	645964	1002956	
011202lo-1031	646085	1002773	
011202lo-1033	646218	1002604	
011202lo-1036	646364	1002450	
011202lo-1038	646522	1002301	
011202lo-1041	646697	1002167	
011202lo-1043	646865	1002042	
011202lo-1045	647050	1001924	
011202lo-1048	647233	1001792	
011202lo-1050	647410	1001671	
011202lo-1053	647564	1001520	
011202lo-1055	647709	1001354	
011202lo-1058	647840	1001188	
011202lo-1100	647980	1001014	
011202lo-1103	648105	1000830	
011202lo-1105	648225	1000649	
011202lo-1108	648348	1000471	
011202lo-1110	648476	1000299	
011202lo-1113	648598	1000126	
011202lo-1115	648722	0999948	
011202lo-1117	648855	0999774	
011202lo-1120	648997	0999612	
011202lo-1122	649146	0999457	
011202lo-1125	649297	0999301	
011202lo-1127	649470	0999170	
011202lo-1129	649643	0999029	
011202lo-1132	649816	0998891	
011202lo-1135	649991	0998750	
011202lo-1138	650156	0998608	
011202lo-1141	650340	0998482	

Profiling in Gaillard Cut

Date / time:	13 December 2001, 14:35 h – 16:45 h		
Conditions:	Level Gaillard Cut (ft to PLD):		+87.9
Files			
Identification	location (GPS, UTM 17)		remarks
	East (m)	North (m)	
011213ju-1439	628602	1014010	Long section in shipping lane Gaillard Cut from Gatun Lake to Gamboa
011213ju-1447	629663	1013387	
011213ju-1454	630083	1012752	
011213ju-1500	630434	1011826	
011213ju-1506	630615	1010850	
011213ju-1513	630819	1009873	
011213ju-1530	631841	1008163	
011213ju-1536	632807	1007945	
011213ju-1543	633791	1007727	
011213ju-1549	634765	1007528	
011213ju-1556	635751	1007681	
011213ju-1604	636579	1008234	
011213ju-1610	637552	1008449	
011213ju-1617	638539	1008333	
011213ju-1623	639504	1008250	
011213ju-1630	640488	1008045	
011213ju-1637	641471	1007892	
011213ju-1641	641920	1007801	

Profiling in Gaillard Cut

Date / time:	14 December 2001, 9:25 h – 10:25 h	
Conditions:	Level Gaillard Cut (ft to PLD):	+87.9
Files		
Identification	location (GPS, UTM 17)	remarks
	East (m)	North (m)
011214ju-0926	650385	998485 Long section in shipping lane Gaillard Cut, north of Pedro Miguel Locks
011214ju-0929	650465	998417
011214ju-0931	650553	998362
011214ju-0933	650636	998307
011214ju-0935	650728	998255
011214ju-0937	650817	998200
011214ju-0939	650908	998158
011214ju-0942	651006	998115
011214ju-0944	651092	998066
011214ju-0946	651181	998014
011214ju-0948	651282	997975
011214ju-0950	651373	997926
011214ju-0952	651462	997880
011214ju-0954	651560	997841
011214ju-0956	651630	997770
011214ju-0958	651695	997694
011214ju-1000	651768	997608
011214ju-1002	651830	997525
011214ju-1005	651900	997455
011214ju-1007	651986	997400
011214ju-1009	652072	997342
011214ju-1011	652151	997278
011214ju-1013	652191	997244
011214ju-1015	652228	997214
011214ju-1017	652268	997183
011214ju-1019	652308	997152
011214ju-1021	652341	997119

Measurements

Gatun Lake

Profiling in Gatun Lake

Date / time:	11 December 2001, 15:00 h – 16:30 h	
Conditions:	Level Gatun Lake (ft to PLD):	+87.3
Files		
identification	location (GPS, UTM 17)	remarks
	East (m)	North (m)
011211lo-1503	618143	1024615
011211lo-1506	618105	1024559
011211lo-1508	618079	1024492
011211lo-1511	618035	1024446
011211lo-1513	617977	1024396
011211lo-1515	617945	1024333
011211lo-1517	617893	1024284
011211lo-1518	617845	1024227
011211lo-1520	617810	1024169
011211lo-1522	617767	1024101
011211lo-1524	617730	1024047
011211lo-1526	617693	1023989
011211lo-1528	617662	1023916
011211lo-1531	617629	1023861
011211lo-1533	617603	1023794
011211lo-1535	617558	1023727
011211lo-1538	617527	1023661
011211lo-1539	617486	1023594
011211lo-1542	617441	1023527
011211lo-1544	617425	1023452
011211lo-1546	617380	1023392
011211lo-1549	617320	1023343
011211lo-1552	617262	1023284
011211lo-1554	617219	1023225
011211lo-1557	617195	1023157
011211lo-1600	617160	1023060
011211lo-1603	617139	1022965
011211lo-1607	617111	1022880
011211lo-1611	617077	1022791
011211lo-1614	617025	1022694
011211lo-1617	616976	1022610
011211lo-1621	616921	1022510
011211lo-1623	616869	1022425
011211lo-1626	616817	1022331
011211lo-1628	616771	1022233

Profiling in Gatun Lake

Date / time:	12 December 2001, 12:40 h – 14:25 h		
Conditions:	Level Gatun Lake (ft to PLD):		+87.3
Files			
identification	location (GPS, UTM 17)		remarks
	East (m)	North (m)	
011212ju-1243	618792.5	1023827	start at edge centre wall, south side of Gatun Locks long section from Gatun Locks along north-east bank of Gatun Lake
011212ju-1249	619547	1023645	
011212ju-1253	619554	1023378	
011212ju-1257	619551	1023141	
011212ju-1301	619604	1022868	
011212ju-1315	619514	1022530	
011212ju-1320	619536	1022299	
011212ju-1325	619533	1022063	
011212ju-1342	620068	1021960	
011212ju-1352	620707	1022315	
011212ju-1402	620725	1022641	
011212ju-1417	620696	1022982	
011212ju-1419	620723	1023197	

Profiling in Gatun Lake

Date / time:	13 December 2001, 9:10 h – 11:45 h		
Conditions:	Level Gatun Lake (ft to PLD):		+87.3
Files			
identification	location (GPS)		remarks
	East (m)	North (m)	
011213ju-0914	619339	1023850	1 st long section perpendicular to north-east bank of Gatun Lake
011213ju-0917	619327	1023678	
011213ju-0921	619361	1023485	
011213ju-0924	619401	1023264	
011213ju-0928	619454	1023030	
011213ju-0933	619534	1022659	
011213ju-0936	619563	1022438	
011213ju-0939	619606	1022207	
011213ju-0942	619622	1022005	
011213ju-0945	619638	1021793	
011213ju-1004	620736	1024039	2 nd long section perpendicular to north-east bank of Gatun Lake
011213ju-1007	620755	1023830	
011213ju-1014	620743	1023652	
011213ju-1018	620771	1023415	
011213ju-1023	620742	1023111	
011213ju-1026	620712	1022887	
011213ju-1028	620736	1022767	
011213ju-1036	620743	1022669	
011213ju-1039	620753	1022466	
011213ju-1102	620766	1022186	3 rd long section perpendicular to north-east bank of Gatun Lake
011213ju-1106	622341	1025023	
011213ju-1109	622170	1024857	
011213ju-1112	622275	1024710	
	622257	1024572	
011213ju-1118	622654	1024515	
011213ju-1121	622471	1024351	
011213ju-1124	622420	1024194	
011213ju-1128	622441	1024047	
011213ju-1132	622417	1024013	
011213ju-1135	622486	1023565	
011213ju-1138	622572	1023292	
011213ju-1140	622615	1023135	

Profiling in Gatun Lake

Date / time:	12 December 2001, 12:55 h – 17:00 h	
Conditions:	Level Gatun Lake (ft to PLD): +87.3	
Files		
identification	location (GPS)	remarks
	East (m)	North (m)
011212lo-1255	start at edge centre wall, south side of Gatun Locks	long section in shipping lane from Gatun Locks to Gaillard Cut
011212lo-1258	618190	1024246
011212lo-1301	618183	1024162
011212lo-1303	618184	1024078
011212lo-1306	618249	1024019
011212lo-1309	618222	1023955
011212lo-1312	618101	1023756
011212lo-1316	618078	1023651
011212lo-1318	618072	1023576
011212lo-1321	618084	1023465
011212lo-1323	618078	1023364
011212lo-1326	618076	1023266
011212lo-1329	618082	1023165
011212lo-1332	618094	1023060
011212lo-1335	618094	1022957
011212lo-1338	618090	1022851
011212lo-1340	618097	1022747
011212lo-1343	618107	1022644
011212lo-1345	618124	1022532
011212lo-1347	618134	1022428
011212lo-1350	618124	1022197
011212lo-1353	618095	1021989
011212lo-1357	618089	1021773
011212lo-1359	618091	1021560
011212lo-1436	618086	1021337
011212lo-1439	618125	1021098
011212lo-1444	618124	1020889
011212lo-1447	618139	1020672
011212lo-1452	618156	1020168
011212lo-1457	618157	1019683
011212lo-1502	618163	1019184
011212lo-1506	618148	1018669
011212lo-1510	618411	1018233
011212lo-1514	618801	1017916
011212lo-1518	619237	1017654
011212lo-1523	619681	1017407
011212lo-1527	620117	1017143
011212lo-1532	620573	1016919
011212lo-1537	621001	1016658
011212lo-1544	621970	1016176
011212lo-1549	622863	1015686

Profiling in Gatun Lake

Date / time:	12 December 2001, 12:55 h – 17:00 h		
Conditions:	Level Gatun Lake (ft to PLD):		+87.3
Files			
identification		location (GPS)	
		East (m)	North (m)
011212lo-1554		623825	1015224
011212lo-1601		624864	1015263
011212lo-1644		625903	1015302
011212lo-1648		626953	1015443
011212lo-1652		627778	1014874
011212lo-1656		628558	1014199

**Measurements
near
Gatun Locks**

Measurements near Gatun Locks

Date / time:	13 December 2001, 12:45 h – 14:05 h	
Conditions:	Level Gatun Lake (ft to PLD):	+87.3
Files		
Identification	location	remarks
011213ju-1248	240 ft from gates lock F-east	long section along east side of centre wall of Gatun Locks, south side
011213ju-1255	380 ft from gates	
011213ju-1257	500 ft from gates	
011213ju-1259	620 ft from gates	
011213ju-1301	740 ft from gates	
011213ju-1302	860 ft from gates	
011213ju-1305	980 ft from gates	
011213ju-1307	1100 ft from gates	
011213ju-1309	1220 ft from gates	
011213ju-1311	1340 ft from gates	
011213ju-1313	1460 ft from gates	
011213ju-1335	1460 ft from gates lock F-west	long section along west side of centre wall of Gatun Locks, south side
011213ju-1337	1340 ft from gates	
011213ju-1340	1220 ft from gates	
011213ju-1342	1100 ft from gates	
011213ju-1345	980 ft from gates	
011213ju-1347	860 ft from gates	
011213ju-1350	740 ft from gates	
011213ju-1352	620 ft from gates	
011213ju-1354	500 ft from gates	
011213ju-1356	380 ft from gates	
011213ju-1359	240 ft from gates	
011213ju-1402	near gates	

Measurements in Gatun Locks, filling jet		
Date / time:	10 December 2001, 9:35 h – 13:45 h	
Conditions:	Lane:	East
	Level Gatun Lake (ft to PLD):	+87.5
	Level Atlantic Ocean (ft to PLD):	variable, about +0.2
Files		
Identification	location	remarks
011210ju-0935D	lock D-east, near d/s gates	filling jet
011210ju-1002E	lock E-east, near d/s gates	filling jet
011210ju-1008E	lock E-east, near d/s gates	filling jet
011210ju-1009E	lock E-east, near d/s gates	filling jet
011210ju-1120E	lock E-east, near u/s gates	filling jet
011210ju-1123E	lock E-east, near u/s gates	filling jet
011210ju-1136F	lock F-east, near u/s gates	filling jet
011210ju-1138F	lock F-east, near u/s gates	filling jet
011210ju-1341E	lock E-east, near u/s gates	filling jet
011210ju-1344E	lock E-east, near u/s gates	filling jet

Measurements in Gatun Locks, filling jet		
Date / time:	11 December 2001, 10:45 h – 12:05 h	
Conditions:	Lane:	East
	Level Gatun Lake (ft to PLD):	+87.5
	Level Atlantic Ocean (ft to PLD):	variable, about +0.2
Files		
Identification	location	remarks
011211lo-1047D	lock D-east, near d/s gates	filling jet
011211lo-1125E	lock E-east, near d/s gates	filling jet
011211lo-1201F	lock E-east, near d/s gates	filling jet

Measurements near Gatun Locks – centre wall north		
Date / time:	6 December 2001, 12:00 h – 10 December 2001, 12:00 h	
Conditions:	Level Atlantic Entrance (ft to PLD):	Tidal movement during 4 days; highest level +0.7, lowest level -0.3
Files		
Identification	location	remarks
CtloggerGL-north	fixed position of CT logger at head of centre wall, north side of Gatun Locks	first position near local bed, second position near water surface

Measurements near Gatun Locks – centre wall south		
Date / time:	10 December 2001, 12:00 h – 12 December 2001, 12:00 h	
Conditions:	Level Gatun Lake (ft to PLD):	Slightly varying about +87.5
Files		
Identification	location	remarks
CtloggerGL-south	fixed position of CT logger at head of centre wall, south side of Gatun Locks	first position near local bed, second position near water surface

Measurements

Atlantic Entrance

Profiling in Atlantic Entrance

Date / time:	7 December 2001, 8:00 h – 12:00 h		
Conditions:	Level Atlantic Entrance (ft to PLD):		variable, between +0.26 ft and +0.07 ft, falling tide
Files			
identification	location (GPS, UTM 17)		remarks
	East (m)	North (m)	
011207lo-0757	618406	1025850	long section in shipping lane, east side, from bridge north of Gatun Locks, near lock D-east, to breakwaters
011207lo-0800	618414	1025929	300 ft from gates D-east; surface flow from north
011207lo-0801	618430	1026005	700 ft from gates D-east
011207lo-0804	618427	1026072	900 ft from gates D-east
011207lo-0806	618431	1026135	1100 ft from gates D-east
011207lo-0808	618439	1026199	1300 ft from gates D-east, near nose of centre wall
011207lo-0809	618434	1026270	
011207lo-0811	618416	1026335	
011207lo-0813	618397	1026409	
011207lo-0815	618409	1026495	surface flow from south
011207lo-0817	618429	1026576	
011207lo-0819	618435	1026647	
011207lo-0820	618440	1026723	
011207lo-0823	618457	1026792	
011207lo-0826	618478	1026866	
011207lo-0828	618487	1026929	
011207lo-0830	618495	1027011	
011207lo-0832	618502	1027075	
011207lo-0834	618526	1027143	in screw race of Seal and Eagle
011207lo-0836	618547	1027219	
011207lo-0838	618570	1027276	
011207lo-0841	618595	1027349	
011207lo-0843	618617	1027411	
011207lo-0846	618644	1027477	
011207lo-0849	618665	1027536	
011207lo-0942	618664	1027556	
011207lo-0943	618676	1027659	
011207lo-0945	618689	1027751	
011207lo-0946	618701	1027835	
011207lo-0948	618708	1027916	
011207lo-0950	618708	1028004	
011207lo-0951	618711	1028100	
011207lo-0953	618713	1028192	
011207lo-0954	618721	1028282	
011207lo-0956	618724	1028372	
011207lo-0958	618742	1028459	
011207lo-1000	618734	1028551	
011207lo-1003	618737	1028641	
011207lo-1005	618749	1028731	

Profiling in Atlantic Entrance

Date / time:	7 December 2001, 8:00 h – 12:00 h		
Conditions:	Level Atlantic Entrance (ft to PLD):		variable, between +0.26 ft and +0.07 ft, falling tide
Files			
identification	location (GPS, UTM 17)		remarks
	East (m)	North (m)	
011207lo-1008	618765	1028819	
011207lo-1010	618734	1028905	
011207lo-1012	618727	1028996	
011207lo-1015	618741	1029080	
011207lo-1018	618745	1029170	
011207lo-1021	618752	1029261	
011207lo-1022	618733	1029353	
011207lo-1025	618705	1029436	
011207lo-1028	618704	1029521	
011207lo-1030	618699	1029611	
011207lo-1033	618707	1029698	
011207lo-1035	618680	1029798	
011207lo-1056	618683	1029889	
011207lo-1059	618710	1029986	
011207lo-1101	618721	1030090	
011207lo-1104	618729	1030187	
011207lo-1107	618729	1030290	
011207lo-1110	618710	1030391	
011207lo-1113	618709	1030494	
011207lo-1116	618688	1030601	
011207lo-1118	618689	1030704	
011207lo-1120	618708	1030808	
011207lo-1123	618692	1030919	
011207lo-1125	618691	1031025	
011207lo-1128	618696	1031128	
011207lo-1130	618711	1031223	
011207lo-1132	618691	1031335	
011207lo-1135	618700	1031438	
011207lo-1137	618708	1031542	
011207lo-1139	618705	1031650	
011207lo-1142	618702	1031762	
011207lo-1145	618701	1031882	wind waves and swell < 0.3 m
011207lo-1148	618689	1032012	
011207lo-1151	618692	1032126	
011207lo-1154	618711	1032246	
011207lo-1157	618736	1032362	
011207lo-1200	618730	1032492	
011207lo-1202	618728	1032621	

Profiling in Atlantic Entrance

Date / time:	7 December 2001, 12:50 h – 16:00 h		
Conditions:	Level Atlantic Entrance (ft to PLD):		variable, between +0.07 ft and +0.26 ft, incoming tide
Files			
Identification	location (GPS, UTM 17)		remarks
	East (m)	North (m)	
011207ju-1252			long section in shipping lane, west side, from bridge north of Gatun Locks, near lock D-west, to breakwaters
011207ju-1255	618371	1025945	
011207ju-1257	618383	1026028	
011207ju-1300	618398	1026129	
011207ju-1303	618419	1026255	
011207ju-1305	618452	1026369	
011207ju-1307	618461	1026461	
011207ju-1310	618455	1026566	
011207ju-1312	618457	1026664	
011207ju-1315	618488	1026762	
011207ju-1317	618515	1026861	
011207ju-1319	618527	1026953	
011207ju-1321	618548	1027079	
011207ju-1323	618578	1027180	
011207ju-1325	618590	1027276	
011207ju-1328	618608	1027411	
011207ju-1330	618620	1027515	
011207ju-1332	618638	1027623	
011207ju-1335	618643	1027706	
011207ju-1337	618655	1027813	
011207ju-1340	618673	1027930	
011207ju-1342	618682	1028059	
011207ju-1345	618700	1028185	
011207ju-1348	618718	1028323	
011207ju-1349	618705	1028416	
011207ju-1351	618711	1028499	
011207ju-1353	618729	1028603	
011207ju-1356	618735	1028711	
011207ju-1358	618738	1028812	
011207ju-1400	618737	1028910	
011207ju-1402	618725	1029015	
011207ju-1405	618724	1029137	
011207ju-1442	618721	1029340	
011207ju-1443	618714	1029405	
011207ju-1446	618705	1029497	
011207ju-1448	618717	1029626	
011207ju-1450	618713	1029764	
011207ju-1500	618649	1029874	
011207ju-1503	618673	1029964	

Profiling in Atlantic Entrance

Date / time:	7 December 2001, 12:50 h – 16:00 h	
Conditions:	Level Atlantic Entrance (ft to PLD):	variable, between +0.07 ft and +0.26 ft, incoming tide
Files		
Identification	location (GPS, UTM 17)	remarks
	East (m)	North (m)
011207ju-1505	618740	1030059
011207ju-1508	618755	1030148
011207ju-1511	618755	1030231
011207ju-1527	618705	1030391
011207ju-1530	618723	1030492
011207ju-1532	618735	1030606
011207ju-1534	618732	1030701
011207ju-1536	618741	1030802
011207ju-1538	618746	1030913
011207ju-1540	618731	1031039
011207ju-1542	618731	1031143
011207ju-1545	618721	1031272
011207ju-1547	618727	1031386
011207ju-1550	618732	1031487
011207ju-1552	618726	1031616
011207ju-1554	618726	1031705
011207ju-1556	618786	1031798
011207ju-1558	618811	1031911
011207ju-1601	618804	1032099

Atlantic Entrance – measurements at first green buoy

Date / time:	7 December 2001, 8:00 h – 12:30 h	
Conditions:	Level Atlantic Entrance (ft to PLD):	variable, between +0.26 ft and +0.07 ft, falling tide
Files		
Identification	location	remarks
011207ju-0800	fixed position at first green buoy (no 21) north of Gatun Locks, east side of shipping lane	first profile at 8:00 h
011207ju-0810		
011207ju-0820		
011207ju-0830		
011207ju-0840		in screw race Maersk Sealand
011207ju-0849		
011207ju-0859		
011207ju-0910		
011207ju-0920		
011207ju-0930		
011207ju-0940		
011207ju-0951		
011207ju-1000		
011207ju-1011		
011207ju-1021		
011207ju-1030		
011207ju-1040		
011207ju-1050		
011207ju-1100		
011207ju-1110		
011207ju-1122		
011207ju-1131		
011207ju-1140		
011207ju-1150		
011207ju-1201		
011207ju-1211		
011207ju-1222		last profile at 12:22 h

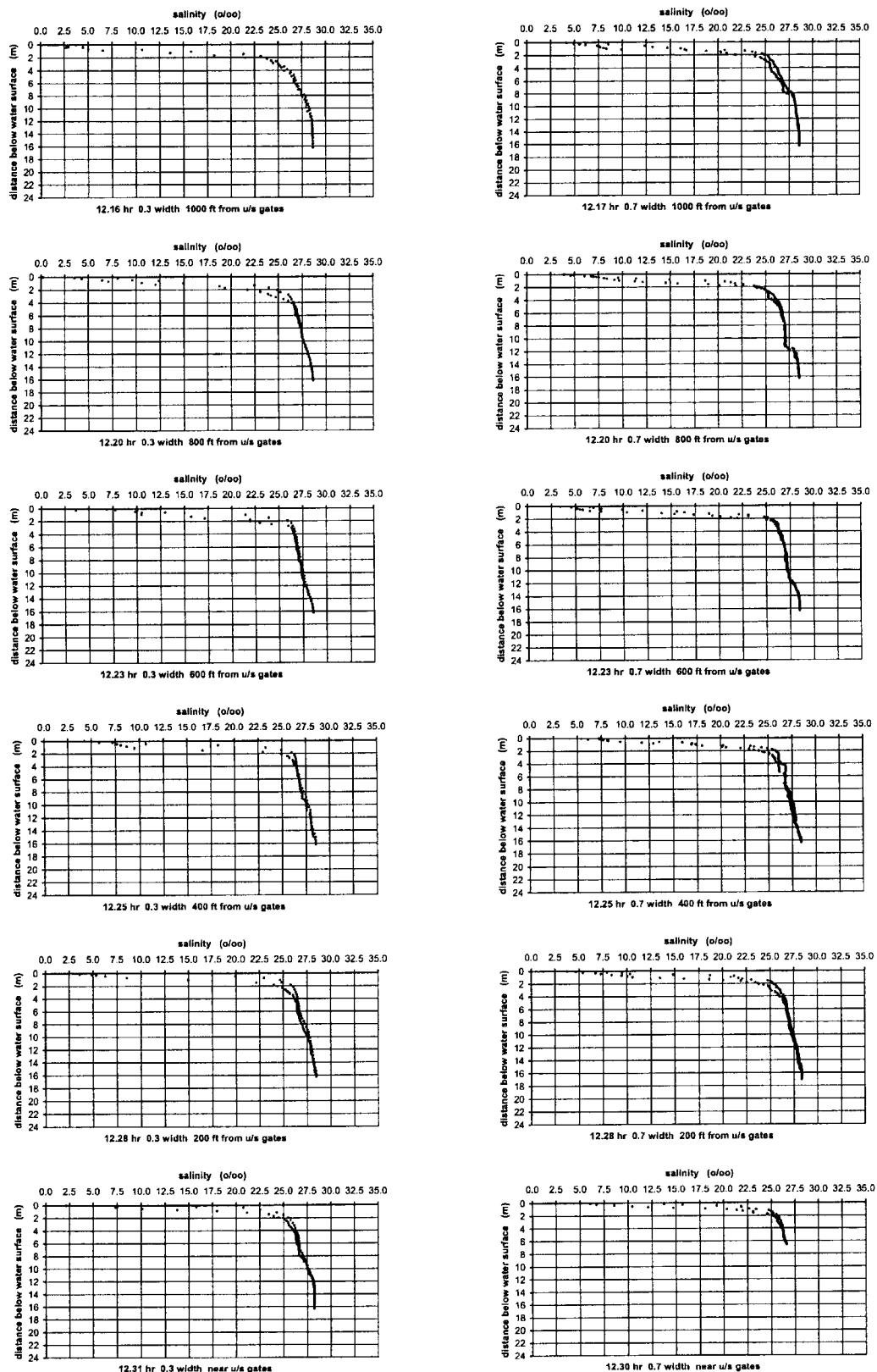
Atlantic Entrance – measurements at first green buoy		
Date / time:	10 December 2001, 15:30 h - 16:30 h	
Conditions:	Level Atlantic Entrance (ft to PLD):	variable, about -0.1 ft
Files		
Identification	location	remarks
011210ju-1530	fixed position at first green buoy (no 21), shipping lane, east side, north of Gatun Locks	first profile at 15:30 h
011210ju-1539		
011210ju-1551		
011210ju-1600		
011210ju-1610		
011210ju-1621		
011210ju-1630		last profile at 16:30 h

FIGURES

**SALINITY MEASUREMENTS
WET SEASON
(Nov. – Dec. 2001)**

LOCK A

UPLOCKAGE



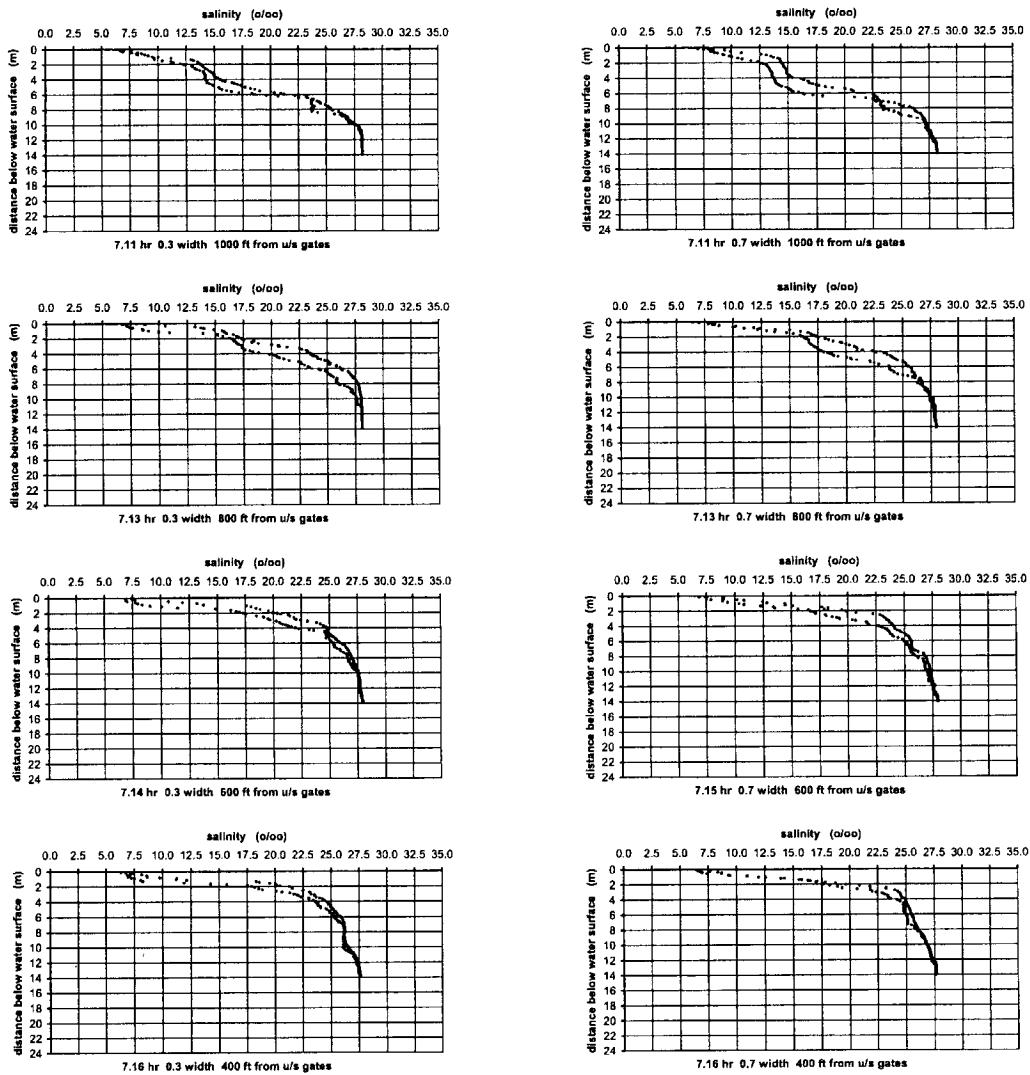
LOCK A
UPLOCKAGE, NO VESSEL

WL | DELFT HYDRAULICS

PHASE 1

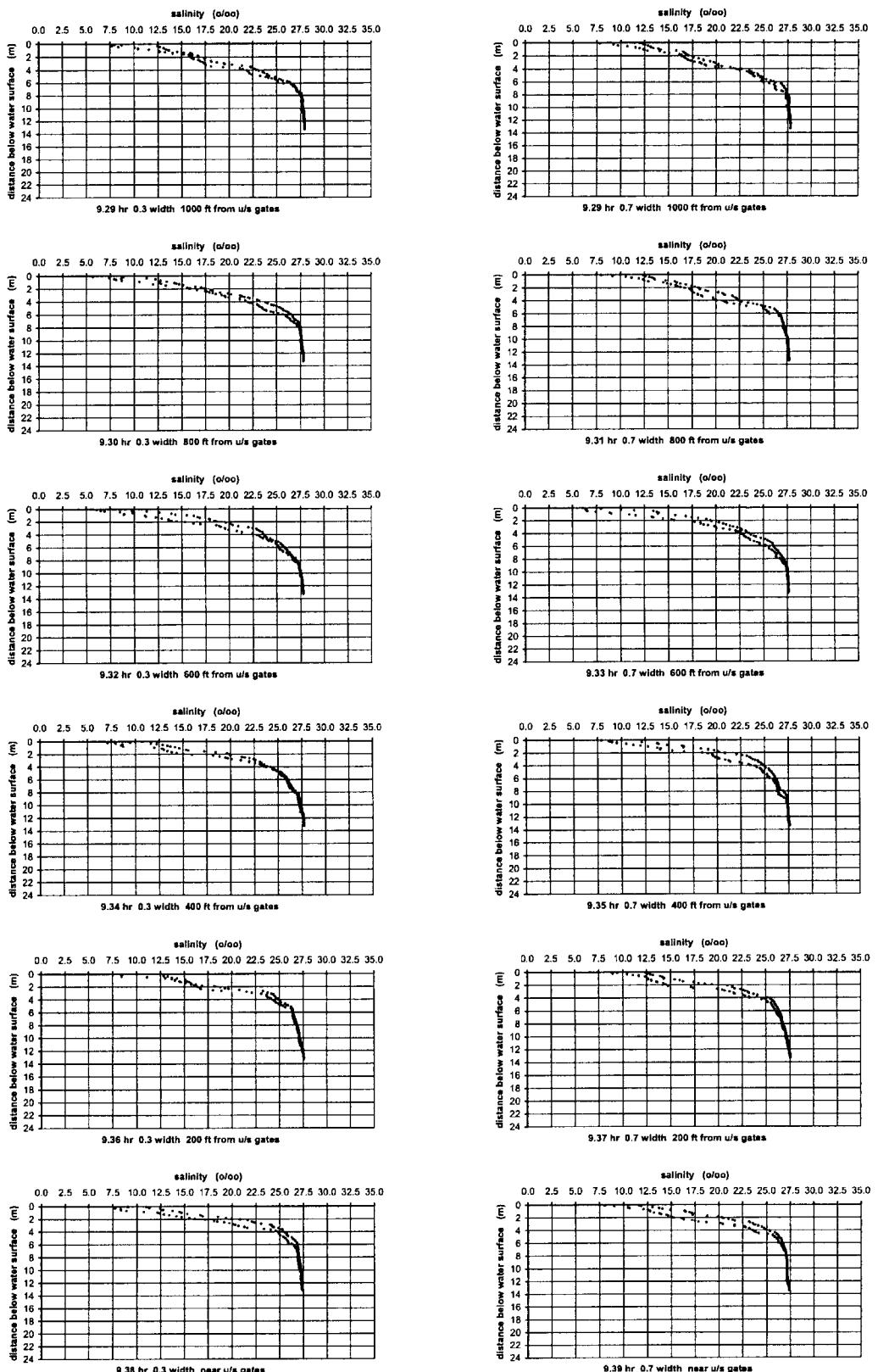
Q 3039

Fig. A.1



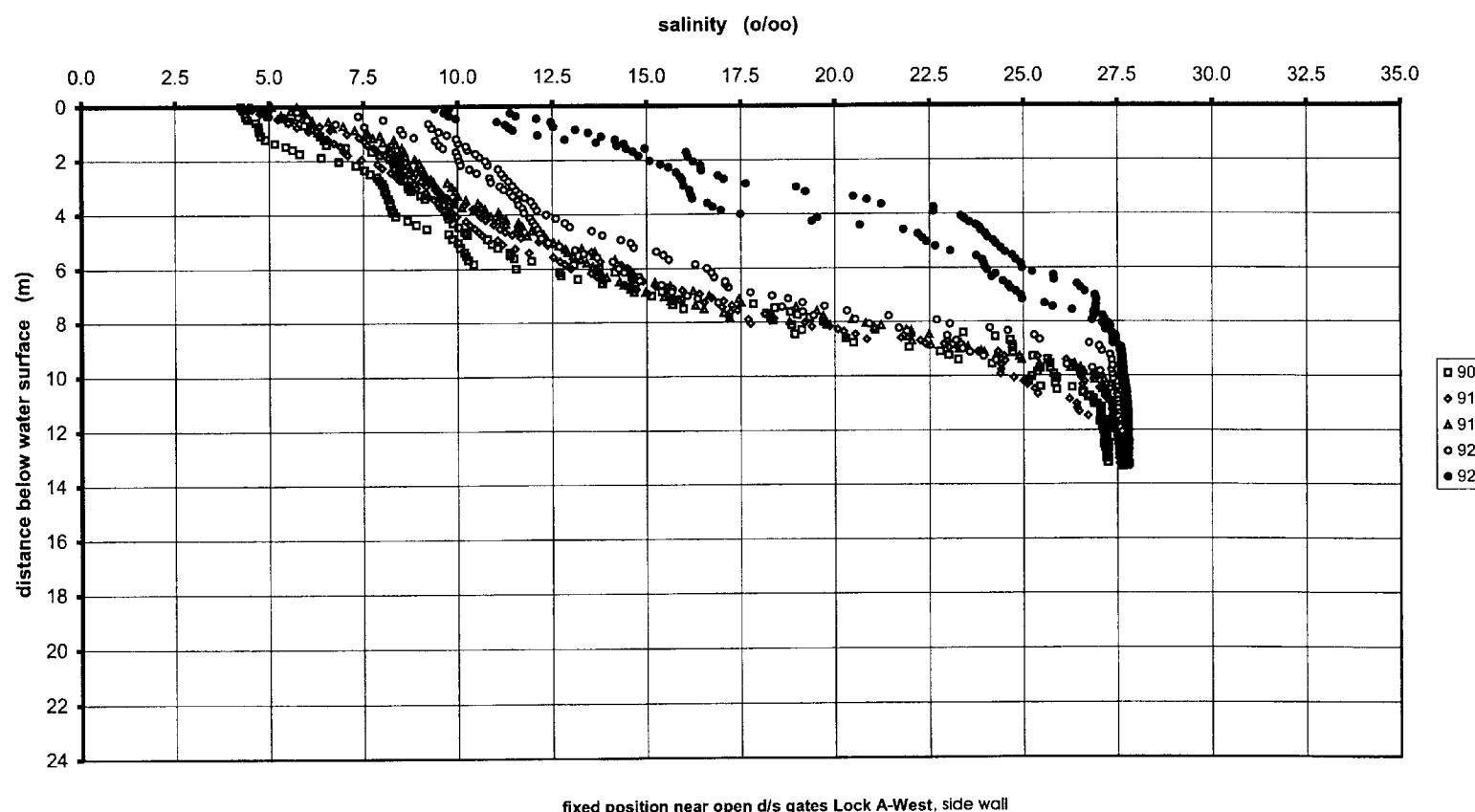
LOCK A - LOW TIDE
UPLOCKAGE, NORTHBOUND VESSEL

PHASE 1(1)



LOCK A - LOW TIDE
UPLOCKAGE, NORTHBOUND VESSEL

PHASE 1(2)

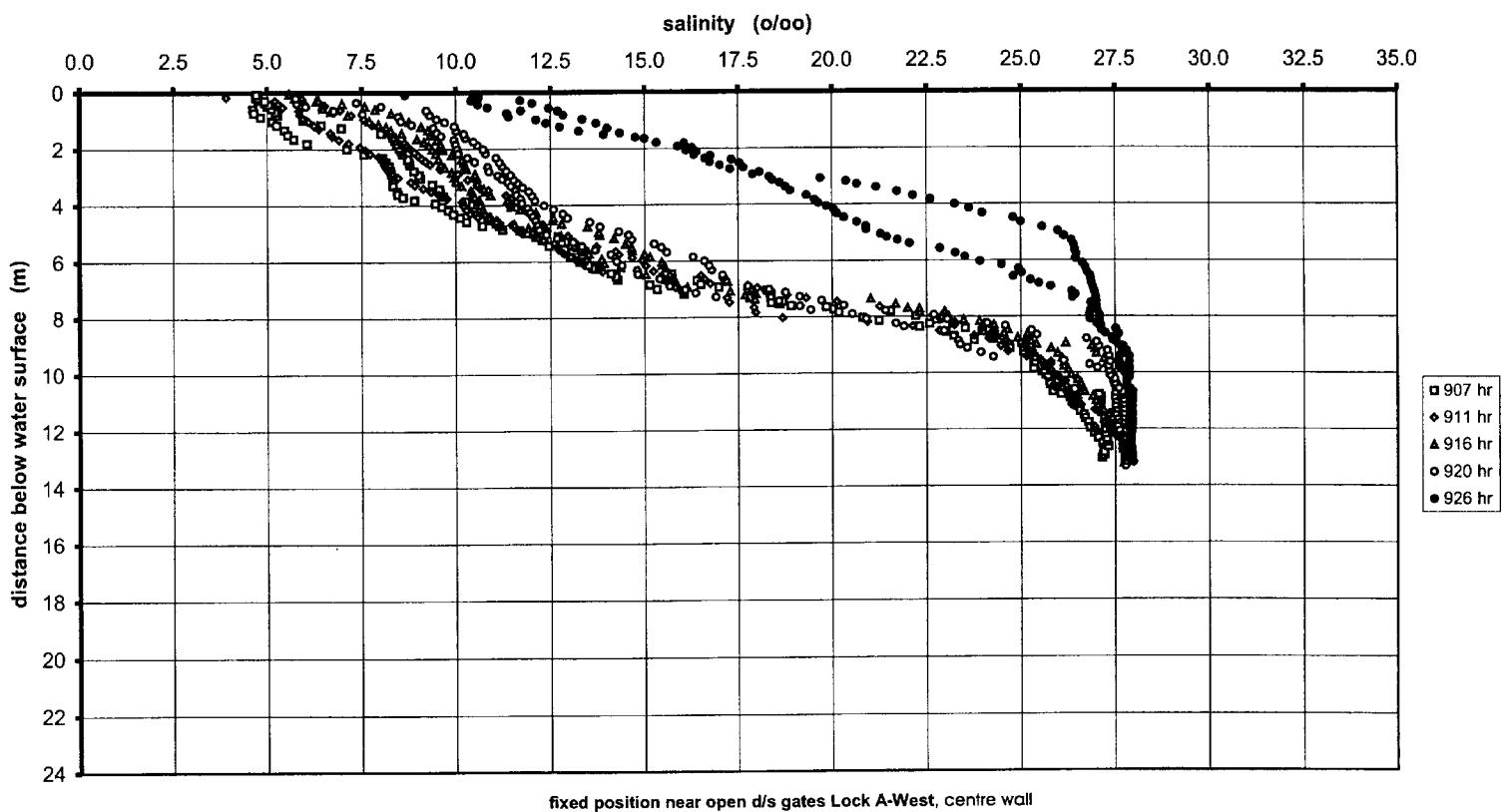


LOCK A - LOW TIDE
UPLOCKAGE, NORTHBOUND VESSEL

PHASE 1(2)

Q 3039

Fig. A.4

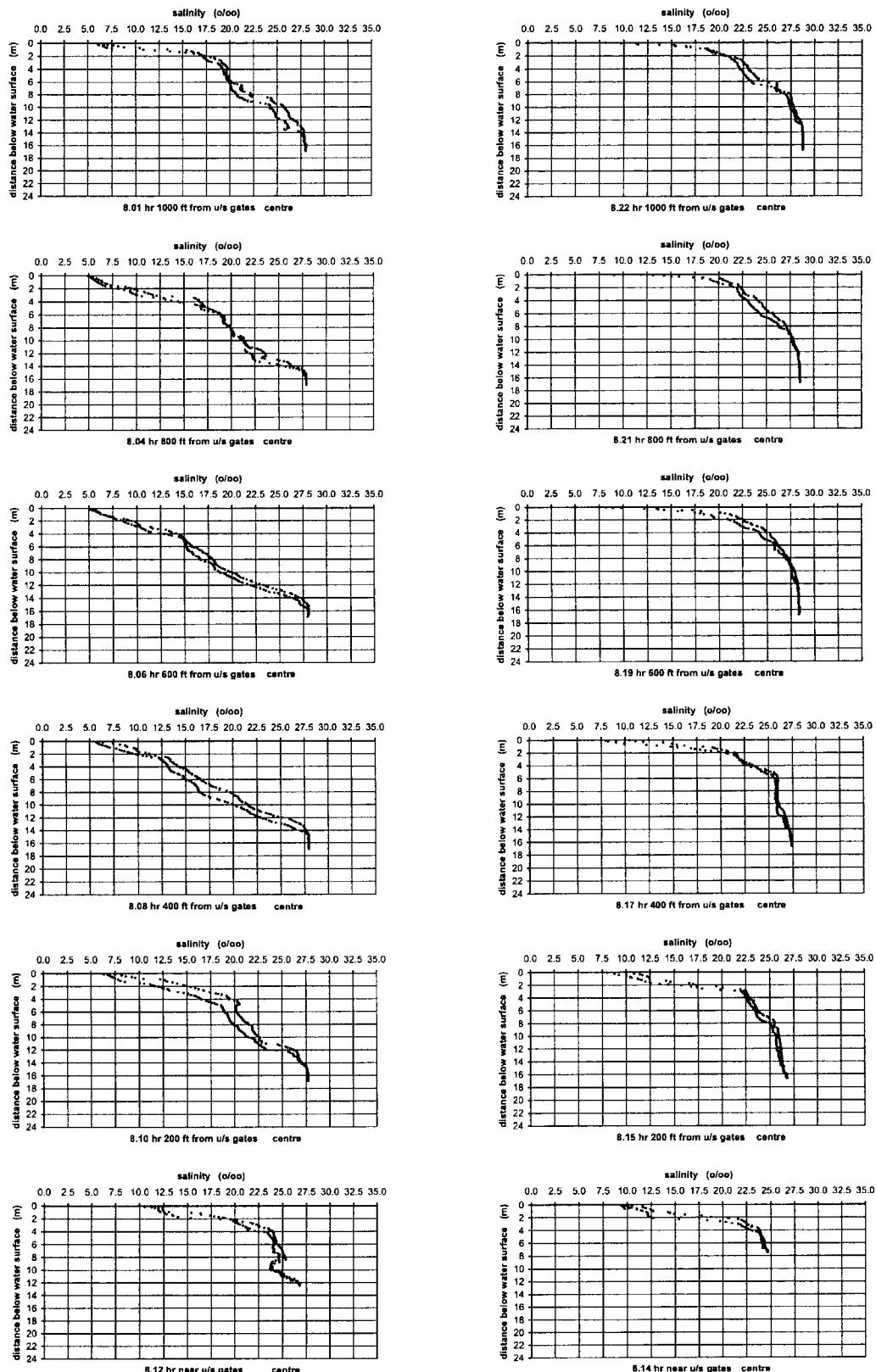


LOCK A - LOW TIDE
UPLOCKAGE, NORTHBOUND VESSEL

PHASE 1(2)

Q 3039

Fig. A.5



LOCK A - HIGH TIDE
UPLOCKAGE, NORTHBOUND VESSEL

PHASE 1

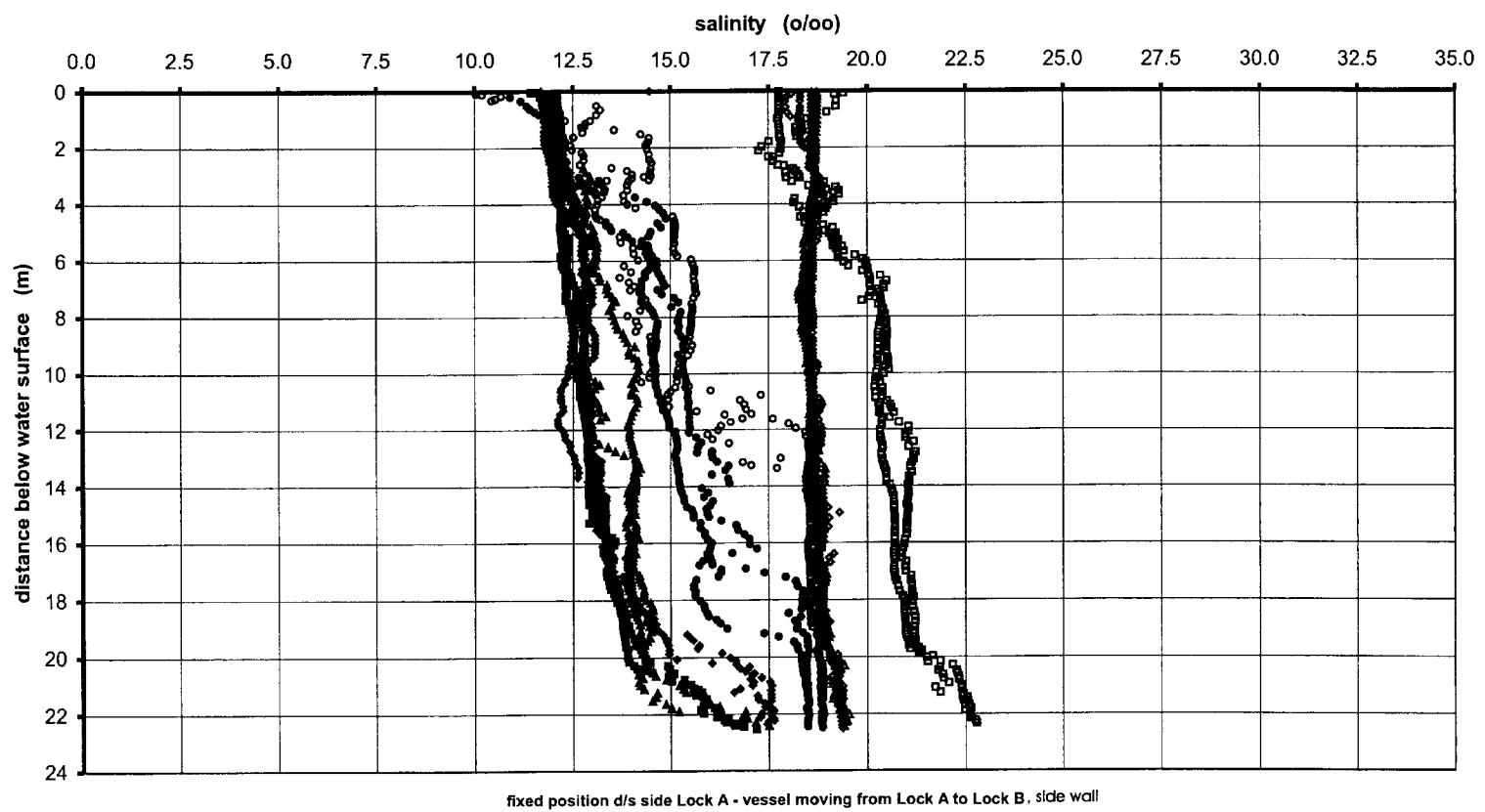
LOCK A - HIGH TIDE
UPLOCKAGE, NORTHBOUND VESSEL

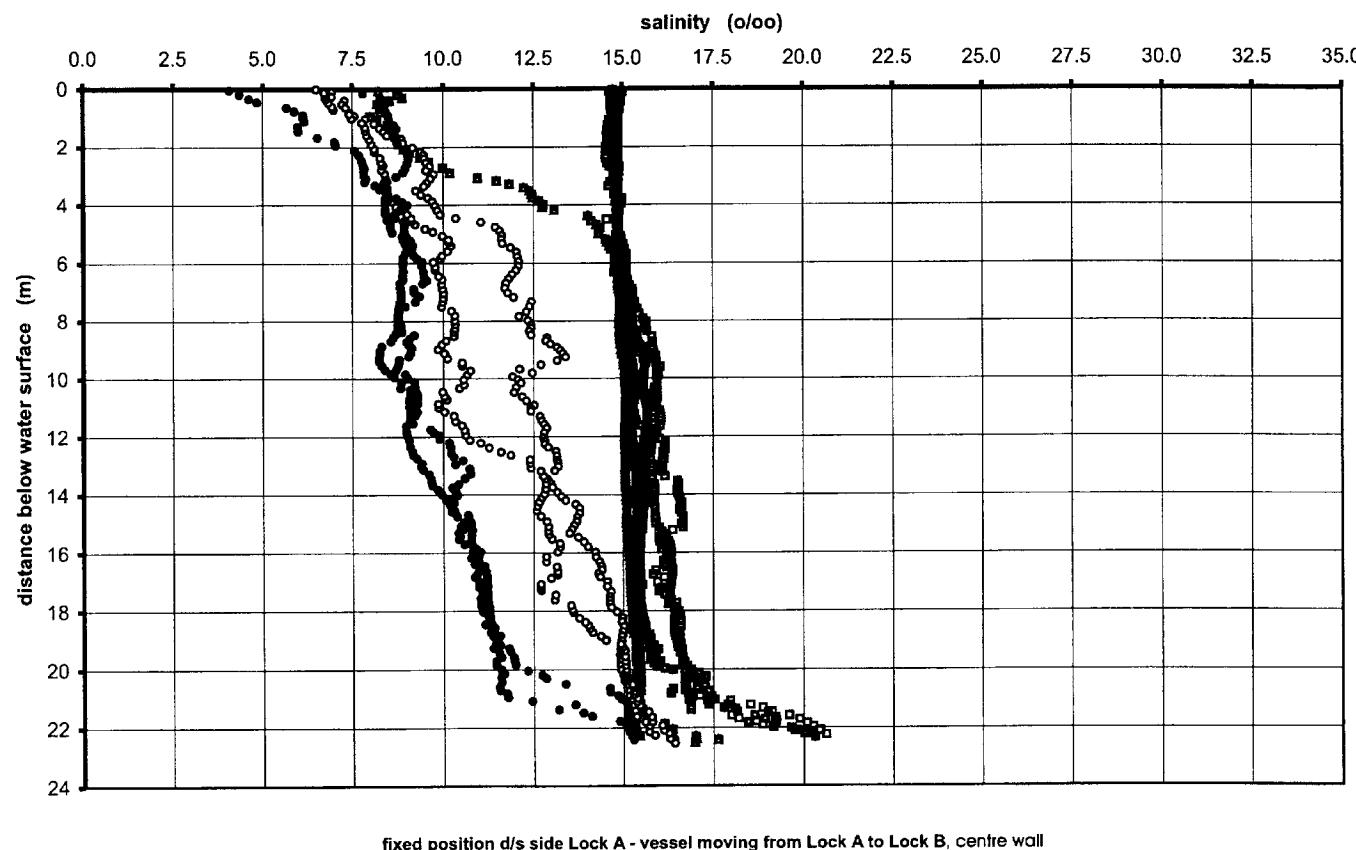
WL | DELFT HYDRAULICS

PHASE 3

Q 3039

Fig. A.7





LOCK A, LOW TIDE
UPLOCKAGE, NORTHBOUND VESSEL

PHASE 3

WL I DELFT HYDRAULICS	Q 3039	Fig. A.8
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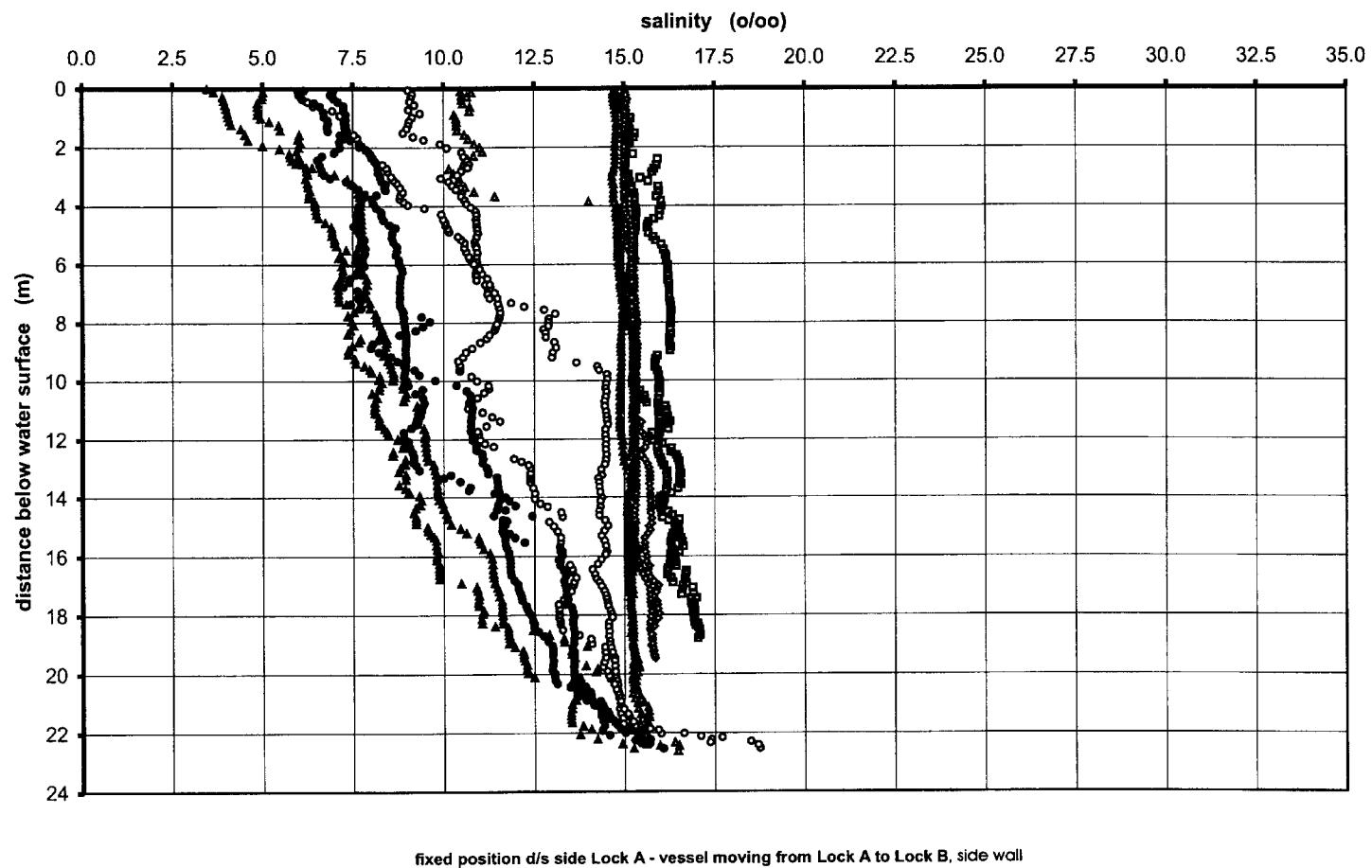
LOCK A, LOW TIDE
UPLOCKAGE, NORTHBOUND VESSEL

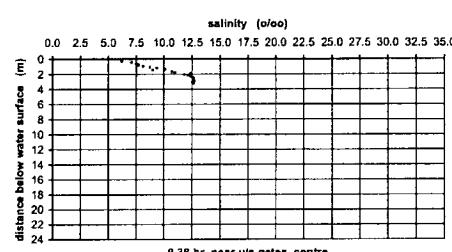
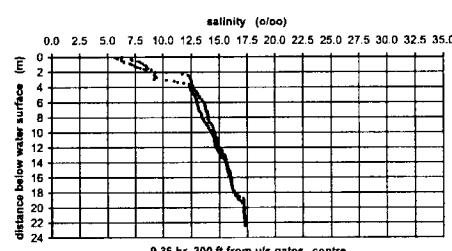
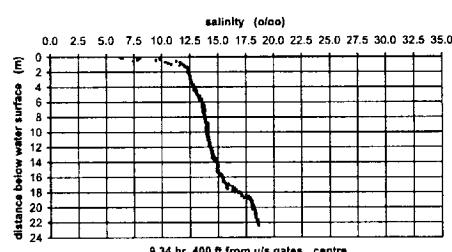
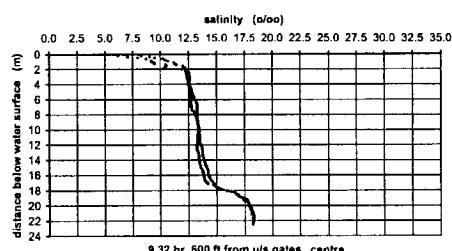
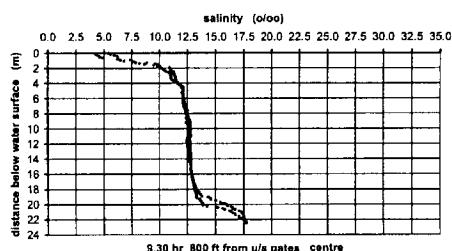
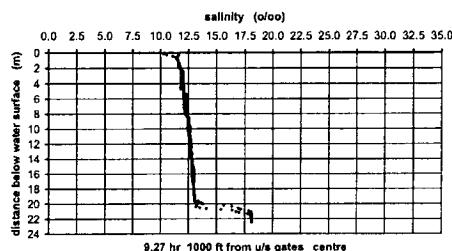
WL | DELFT HYDRAULICS

PHASE 3

Q 3039

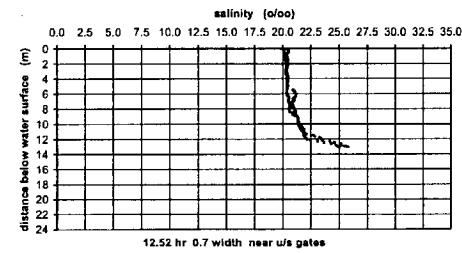
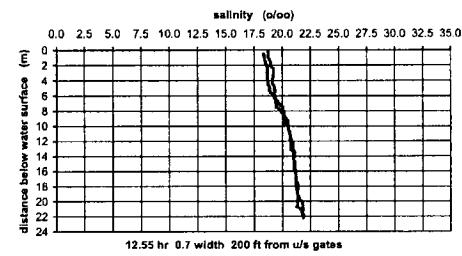
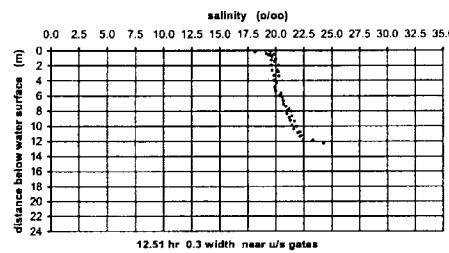
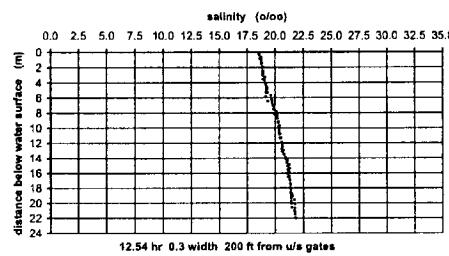
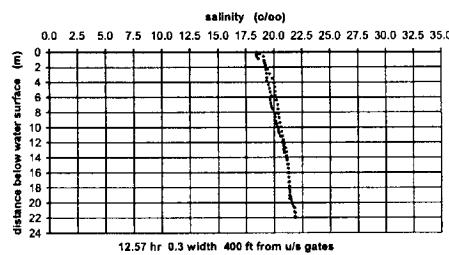
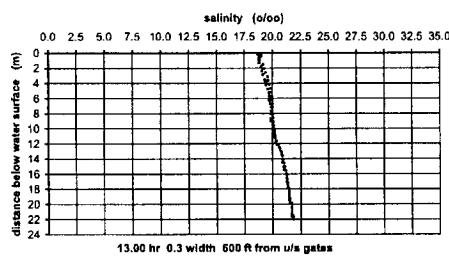
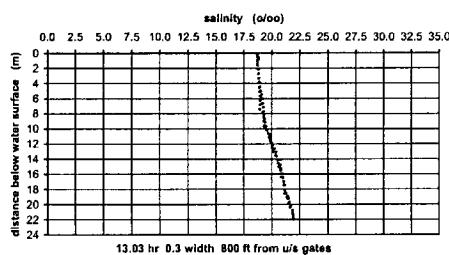
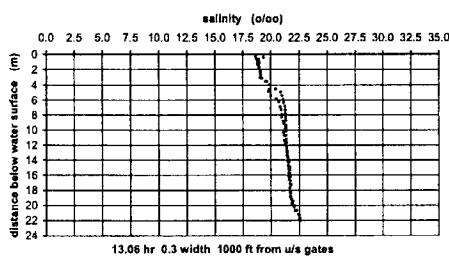
FIG. A.9





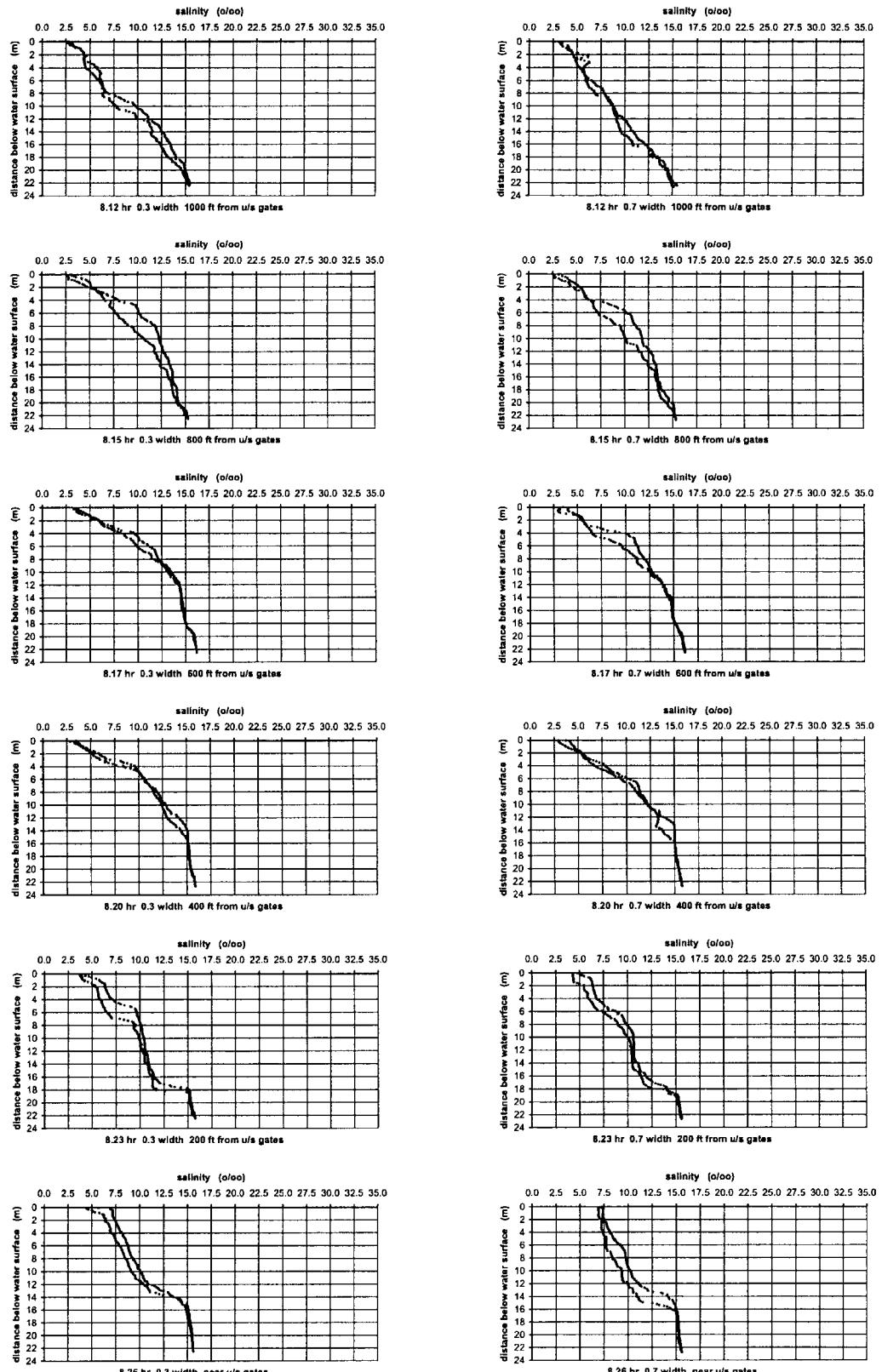
LOCK A - HIGH TIDE
UPLOCKAGE, NORTHBOUND VESSEL

PHASE 4



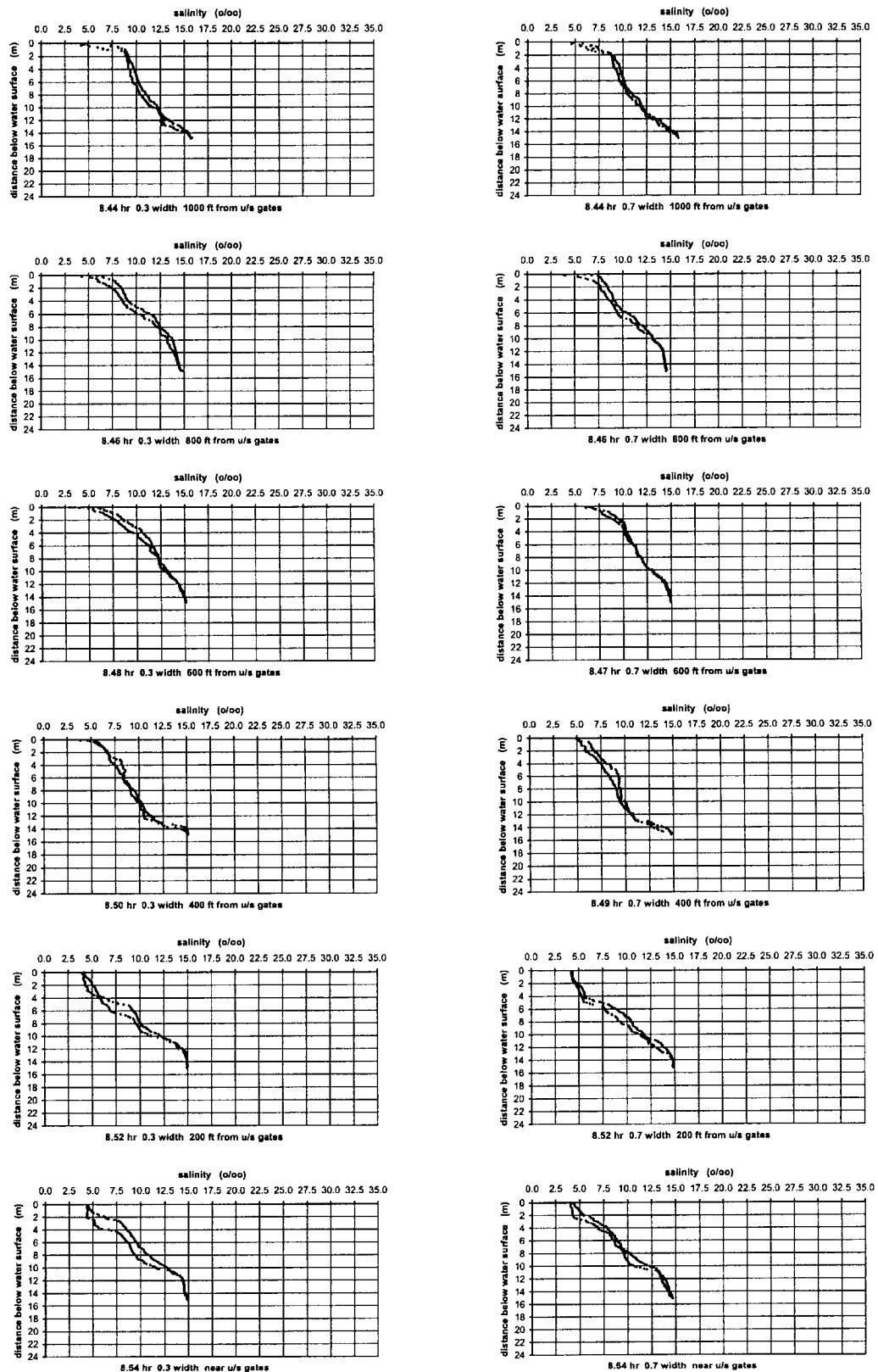
LOCK A
UPLOCKAGE, NO VESSEL

PHASE 4



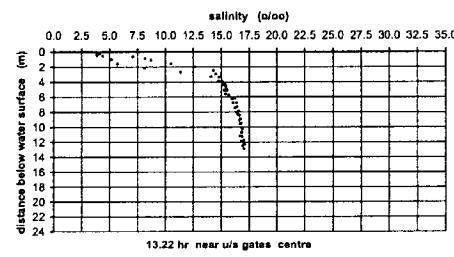
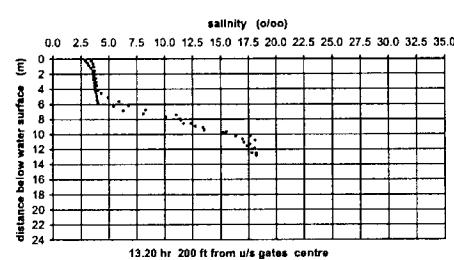
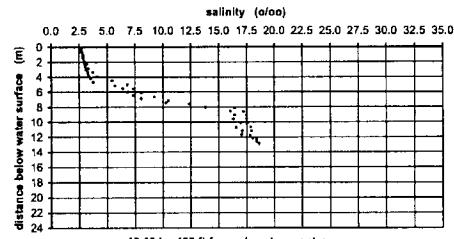
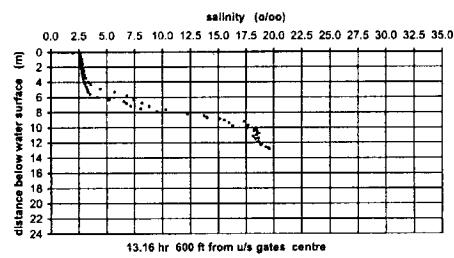
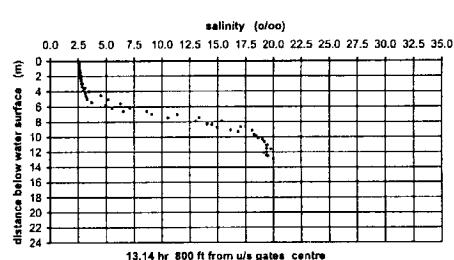
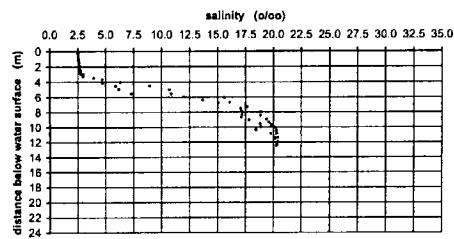
LOCK A - LOW TIDE
UPLOCKAGE, NORTHBOUND VESSEL

PHASE 4



LOCK B

UPLOCKAGE



LOCK B
UPLOCKAGE, NO VESSEL

PHASE 1

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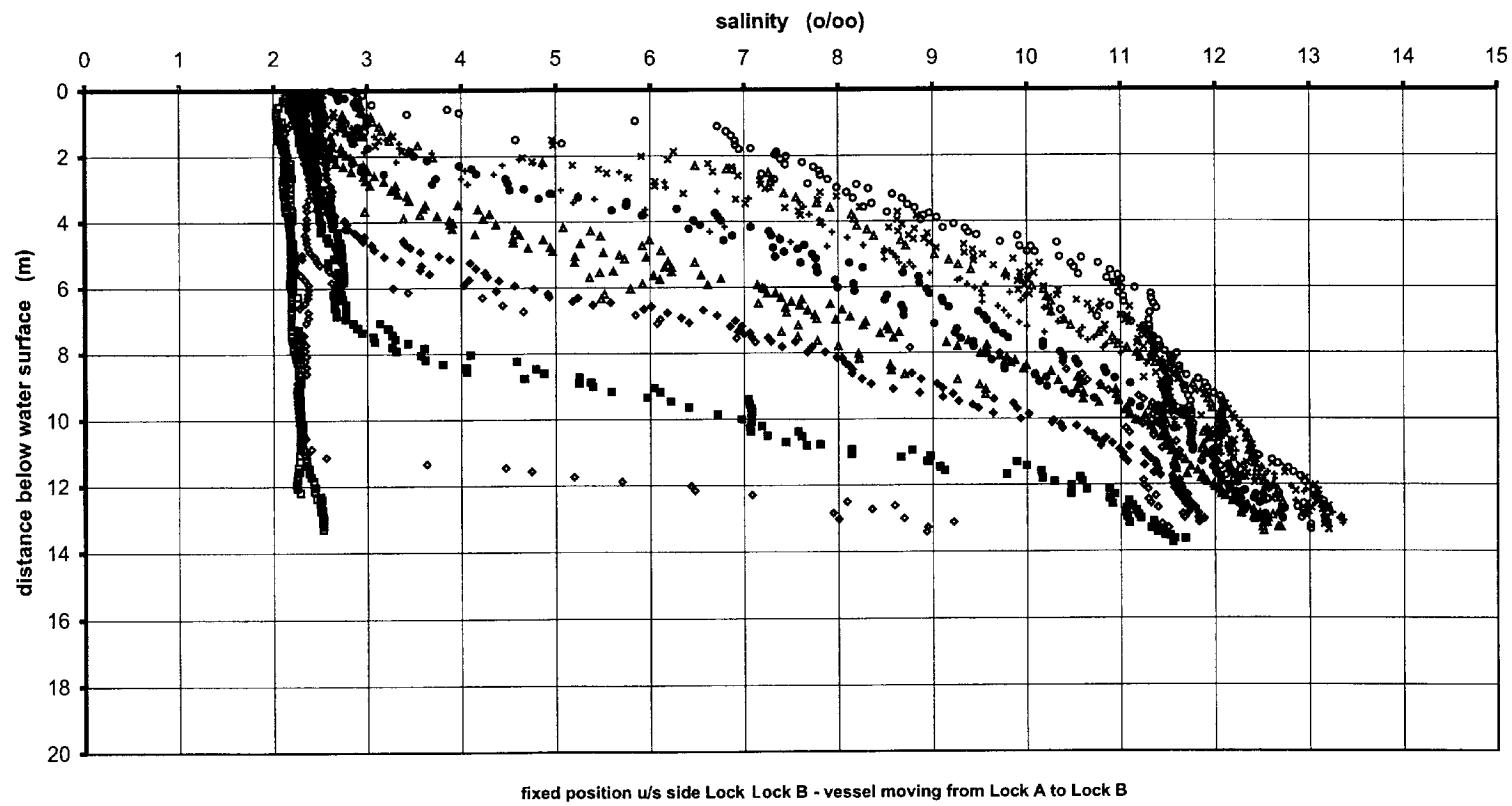
Fig. A.14

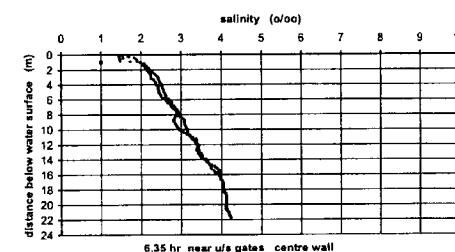
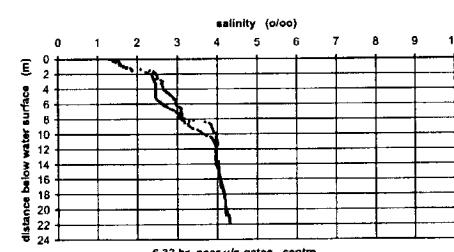
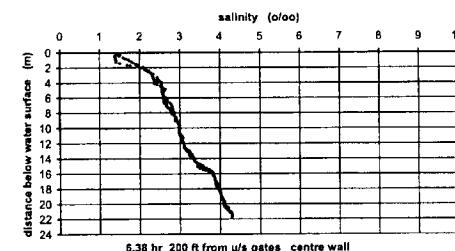
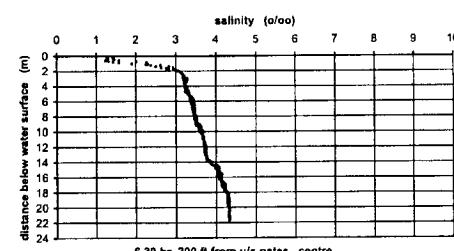
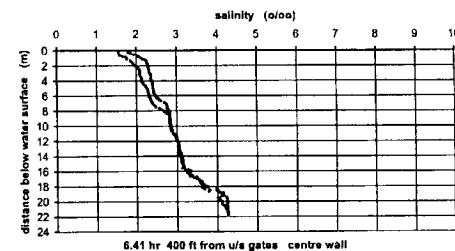
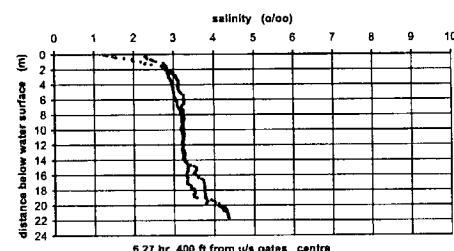
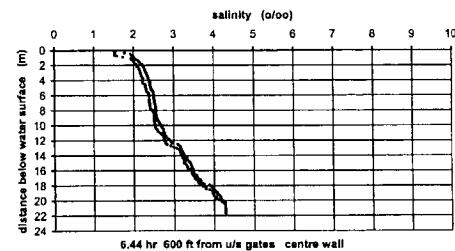
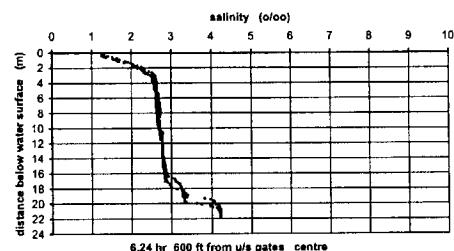
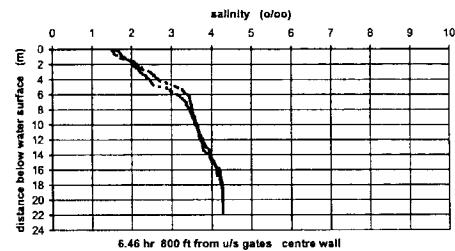
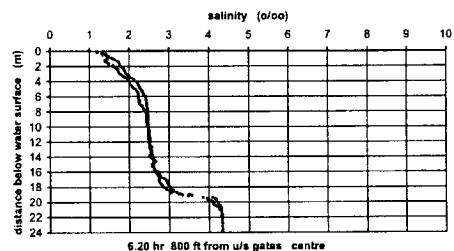
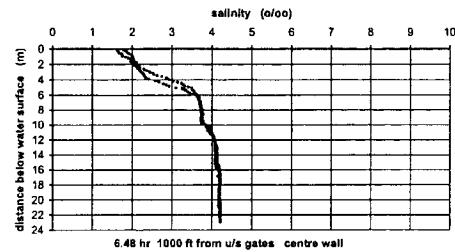
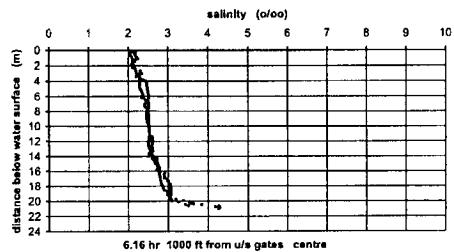
LOCK B
UPLOCKAGE, NORTHBOUND VESSEL

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PHASE 2

Q 3039 FIG. A.15





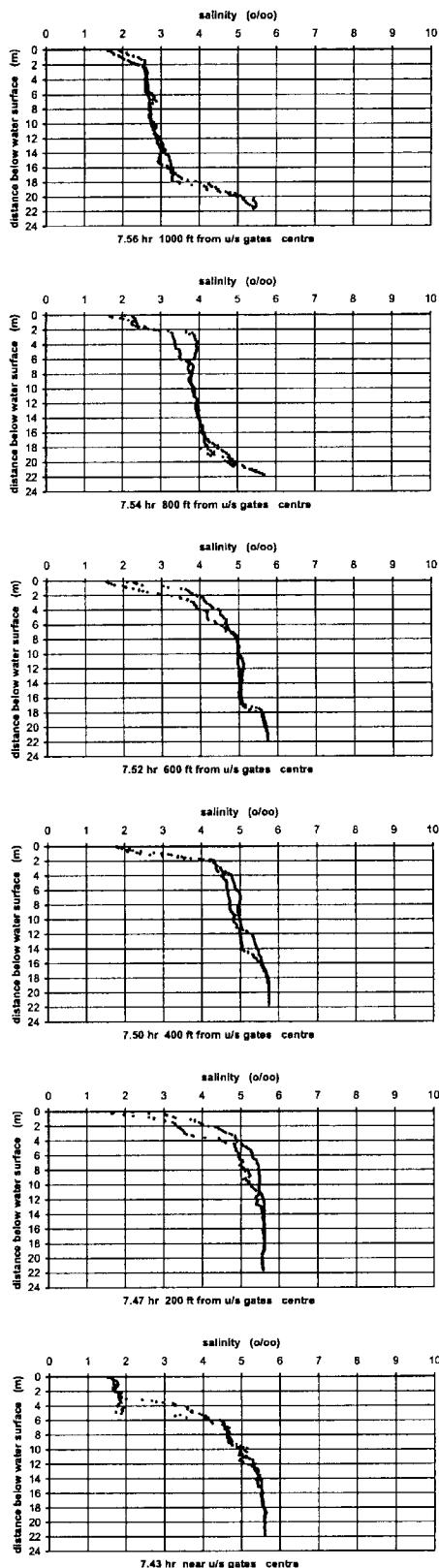
LOCK B
UPLOCKAGE, NORTHBOUND VESSEL

PHASE 4(1)

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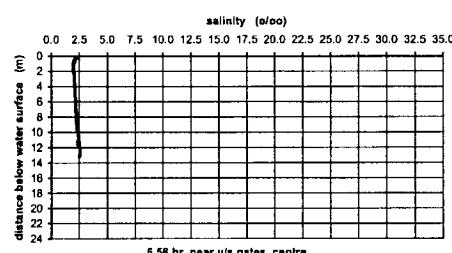
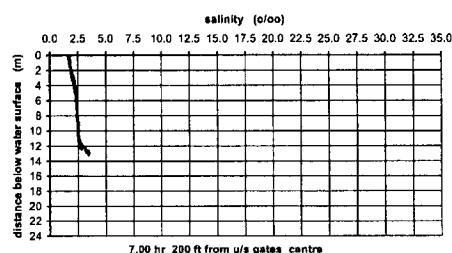
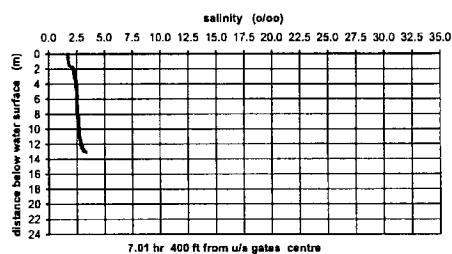
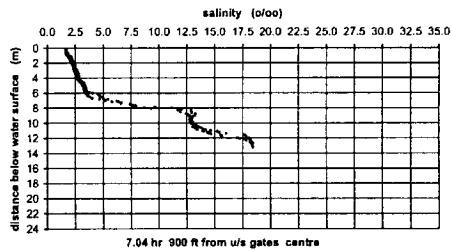
Q 3039

Fig. A.16



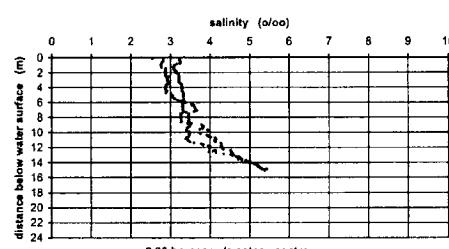
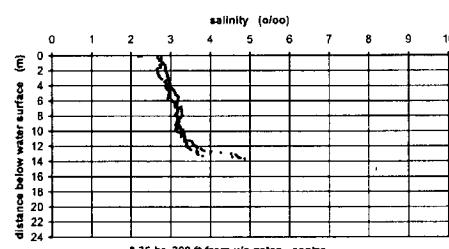
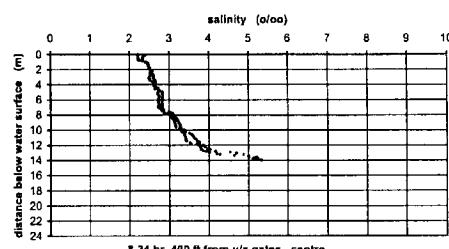
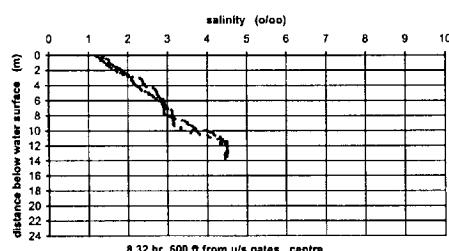
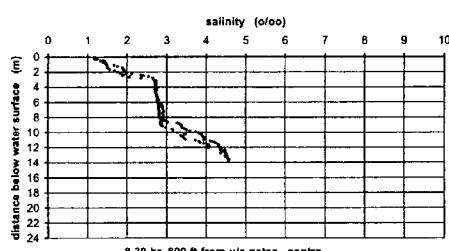
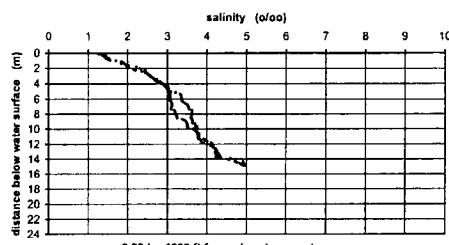
LOCK B
UPLOCKAGE, NORTHBOUND VESSEL

PHASE 4(2)



LOCK B
UPLOCKAGE, NORTHBOUND VESSEL

PHASE 5(1)

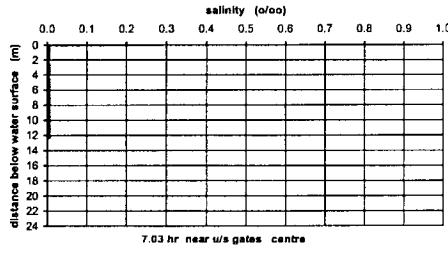
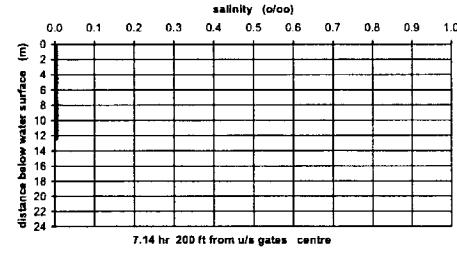
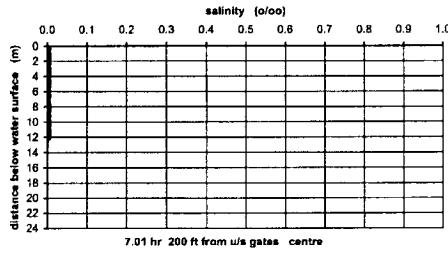
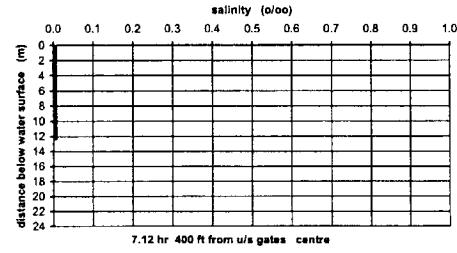
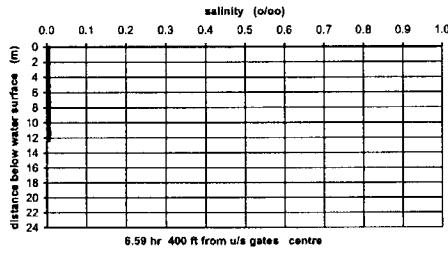
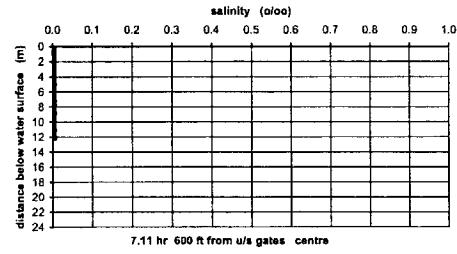
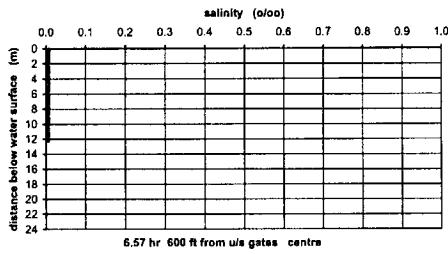
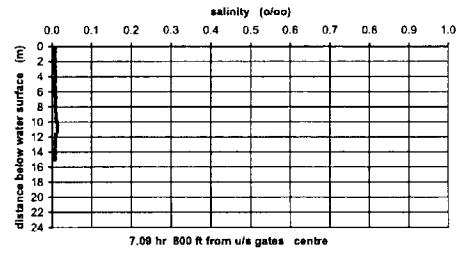
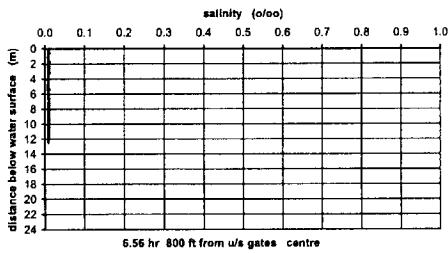
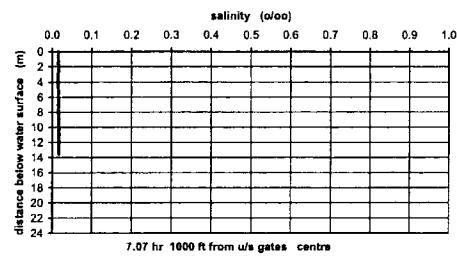
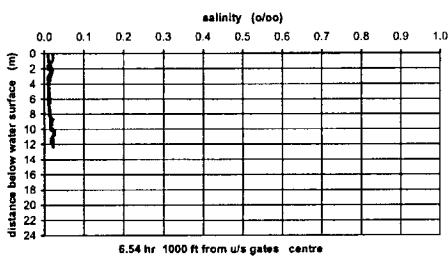


LOCK B
UPLOCKAGE, NORTHBOUND VESSEL

PHASE 5(2)

LOCK C

UPLOCKAGE



LOCK C
UPLOCKAGE, NORTHBOUND VESSEL

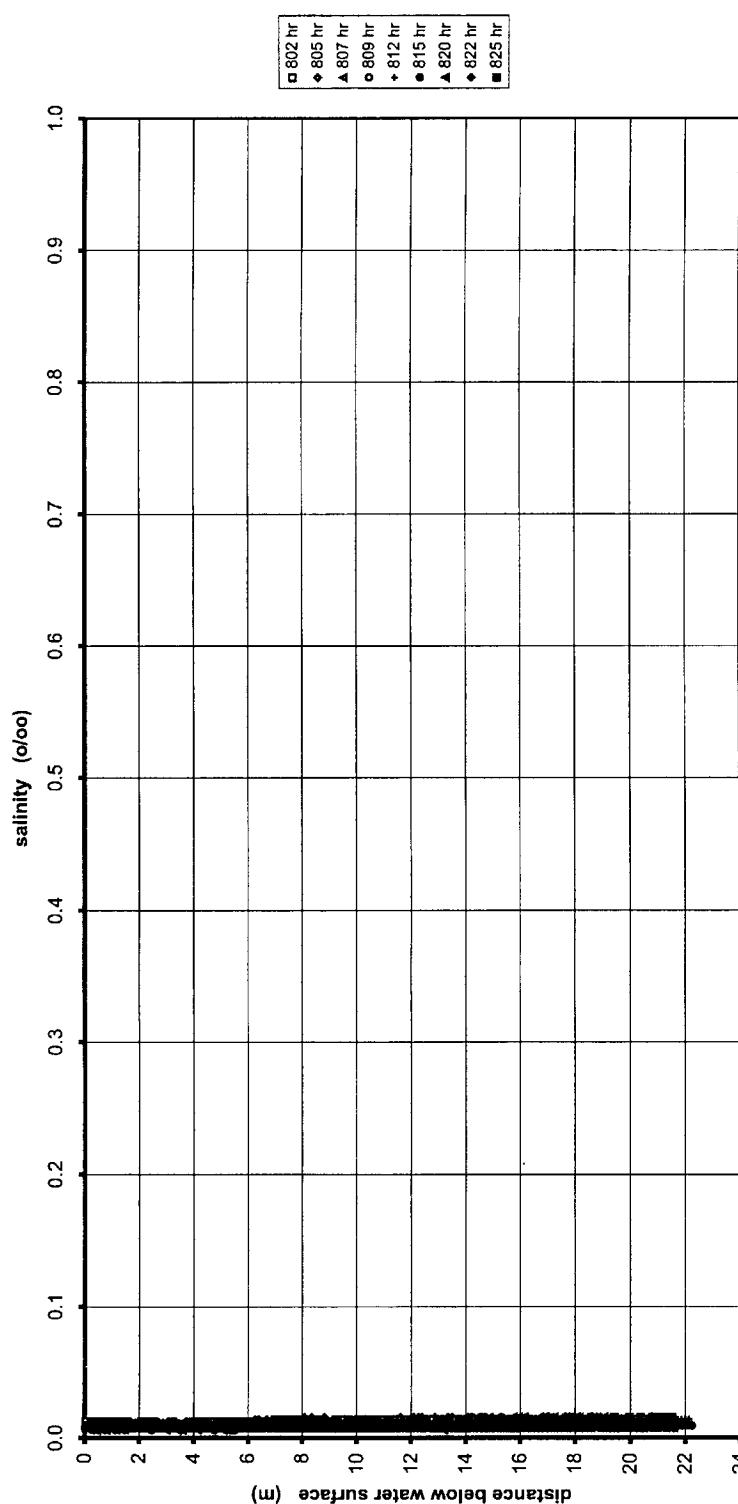
PHASE 1

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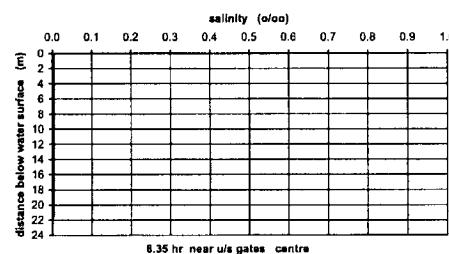
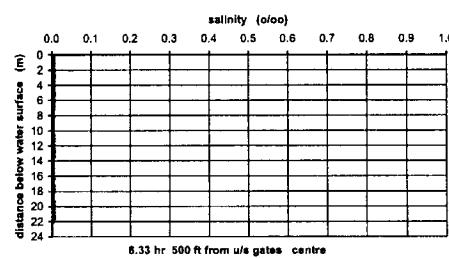
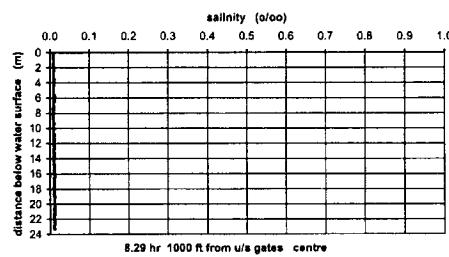
Fig. A.20

fixed position dis side Lock C - vessel moving from Lock C to Gaillard Cut



LOCK C
UPLOCKAGE, NORTHBOUND VESSEL

PHASE 3



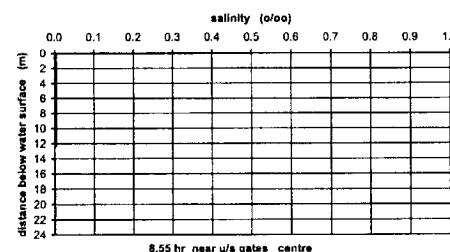
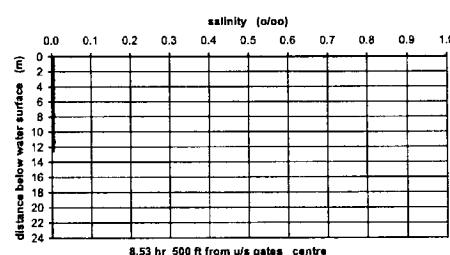
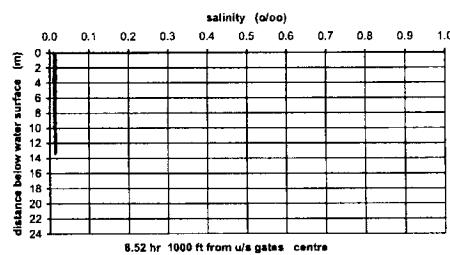
LOCK C
UPLOCKAGE, NORTHBOUND VESSEL

PHASE 4

WL | DELFT HYDRAULICS

Q 3039

Fig. A.22



LOCK C
UPLOCKAGE, NORTHBOUND VESSEL

PHASE 5

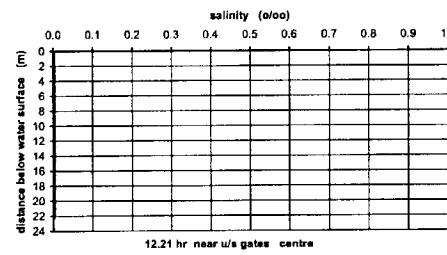
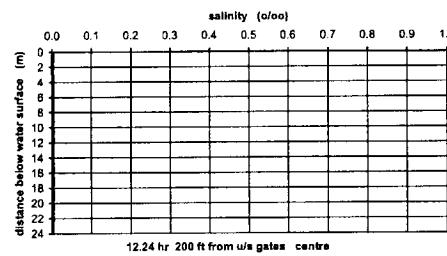
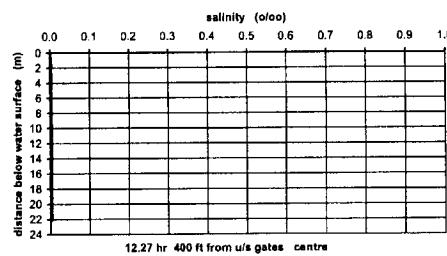
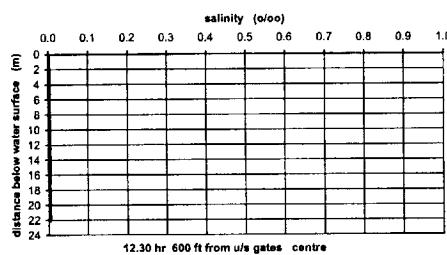
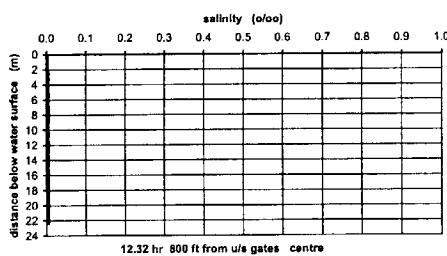
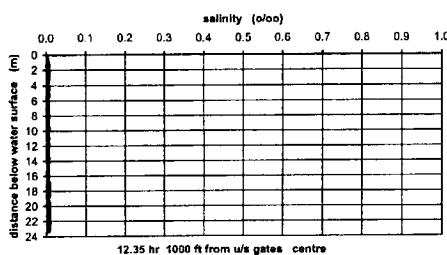
WL | DELFT HYDRAULICS

Q 3039

Fig. A.23

LOCK C

DOWNLOCKAGE



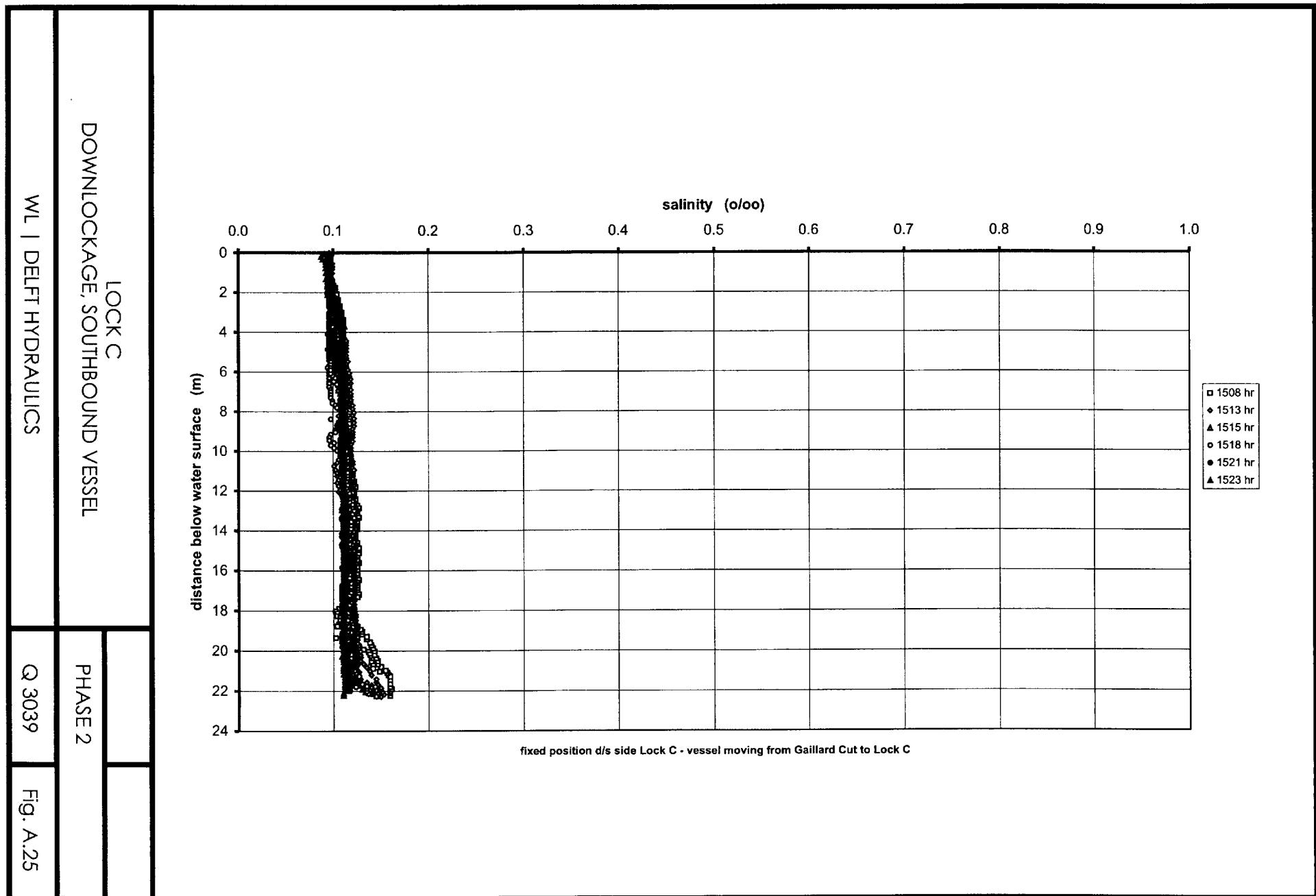
LOCK C
DOWNLOCKAGE, SOUTHBOUND VESSEL

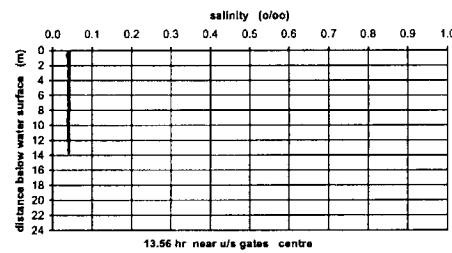
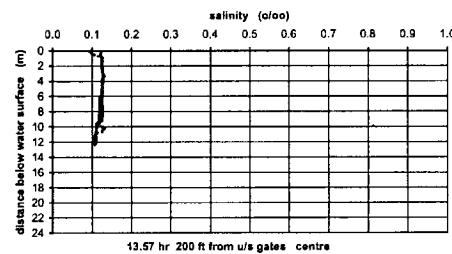
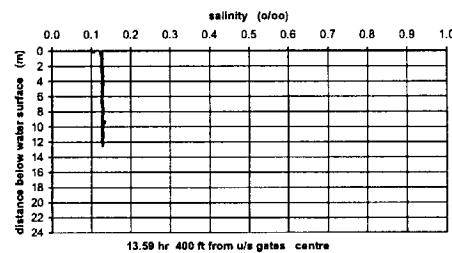
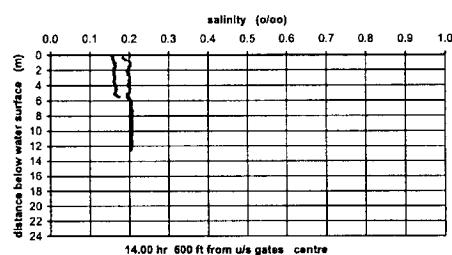
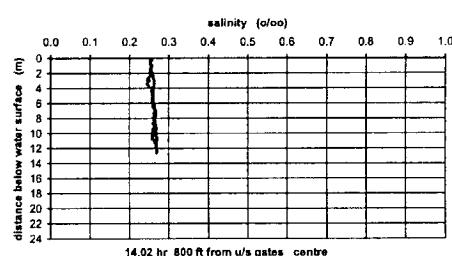
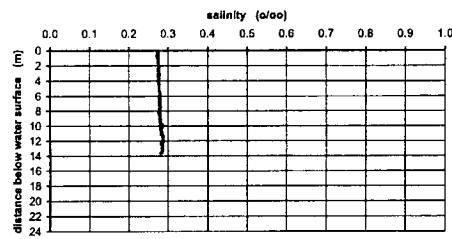
PHASE 1

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Q 3039

Fig. A.24





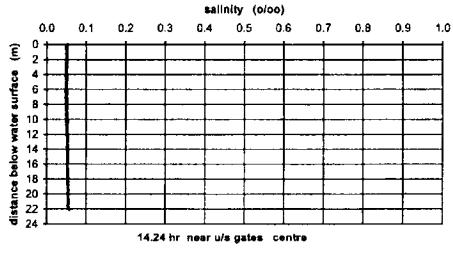
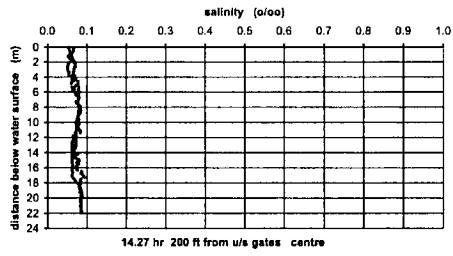
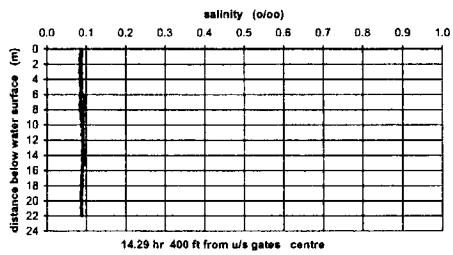
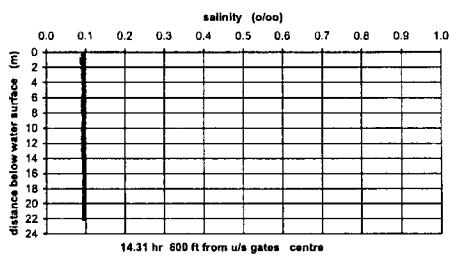
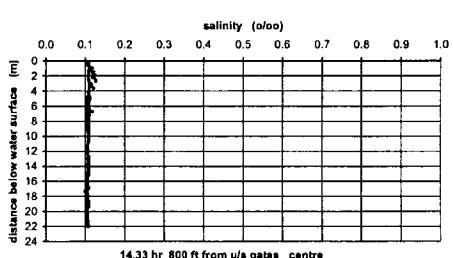
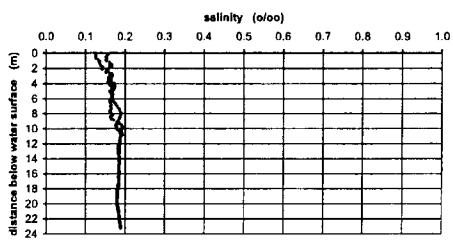
LOCK C
DOWNLOCKAGE, SOUTHBOUND VESSEL

PHASE 4

WL | DELFT HYDRAULICS

Q 3039

Fig. A.26



LOCK C
DOWNLOCKAGE, SOUTHBOUND VESSEL

PHASE 5

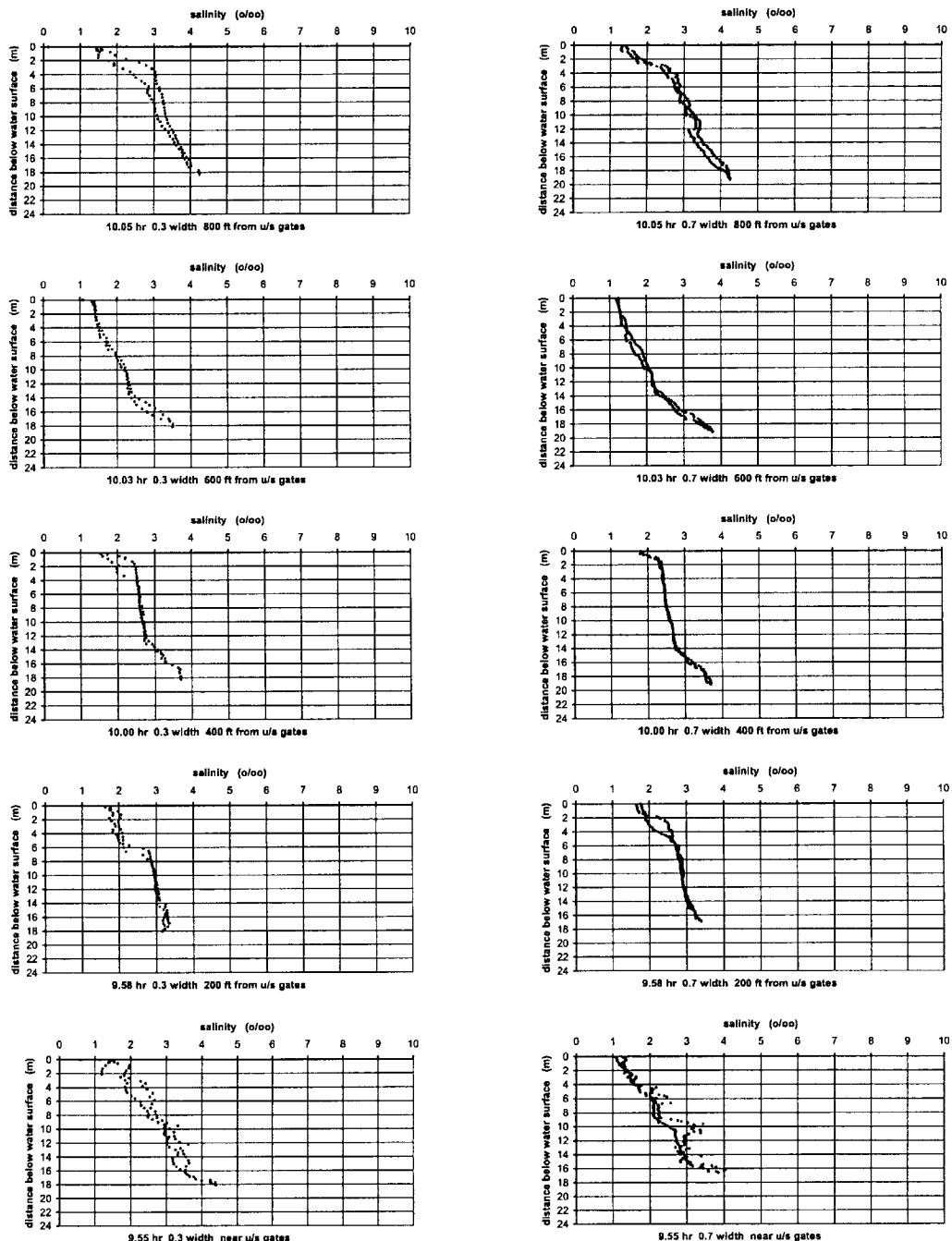
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Q 3039

Fig. A.27

LOCK B

DOWNLOCKAGE



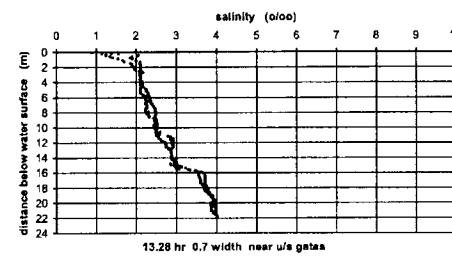
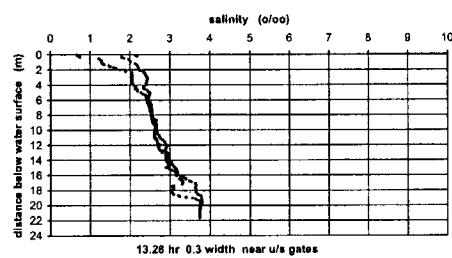
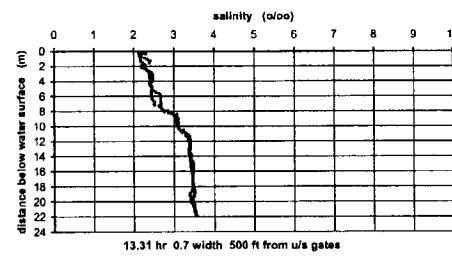
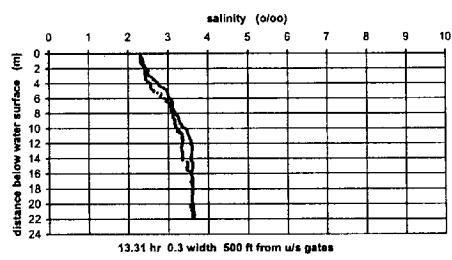
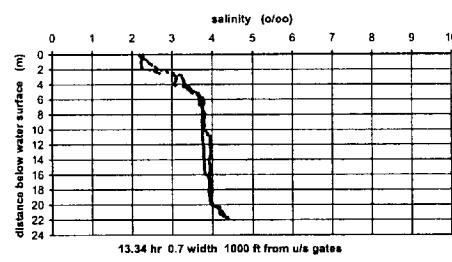
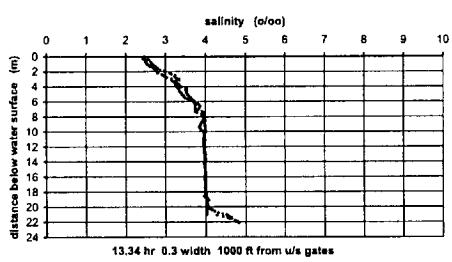
LOCK B
DOWNLOCKAGE, NO VESSEL

PHASE 1

WL | DELFT HYDRAULICS

Q 3039

Fig. A.28



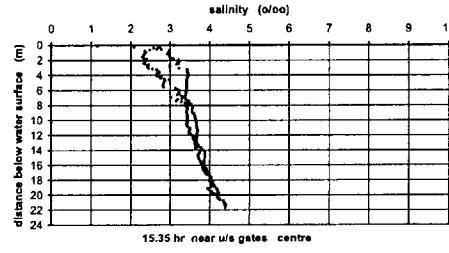
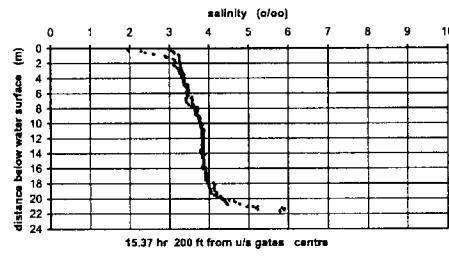
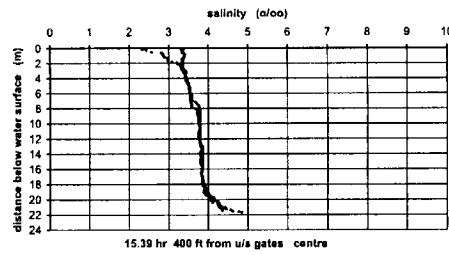
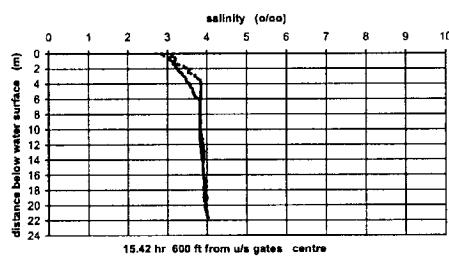
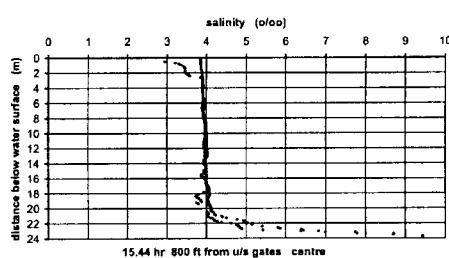
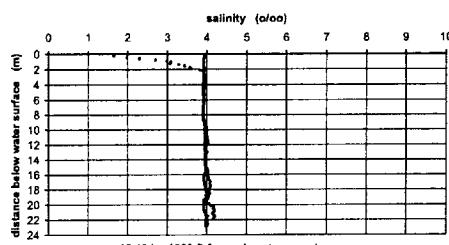
LOCK B
DOWNLOCKAGE, SOUTHBOUND VESSEL

PHASE 1(1)

WL | DELFT HYDRAULICS

Q 3039

Fig. A.29



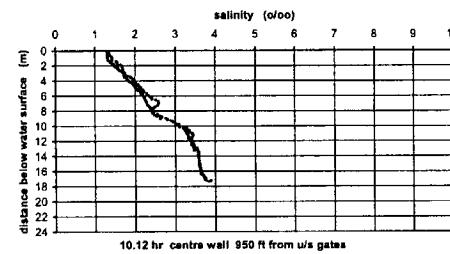
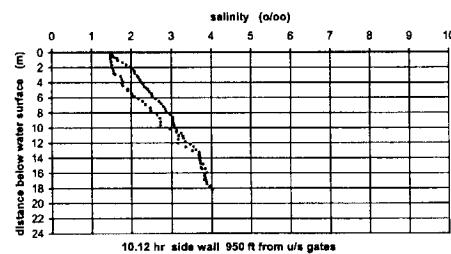
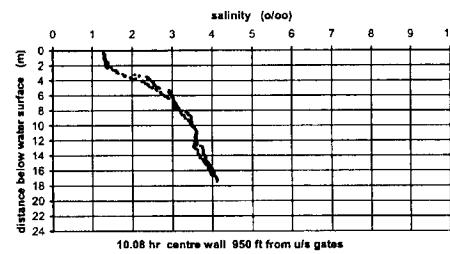
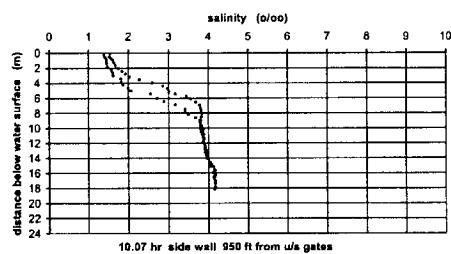
LOCK B
DOWNLOCKAGE, SOUTHBOUND VESSEL

PHASE 1(2)

WL | DELFT HYDRAULICS

Q 3039

Fig. A.30



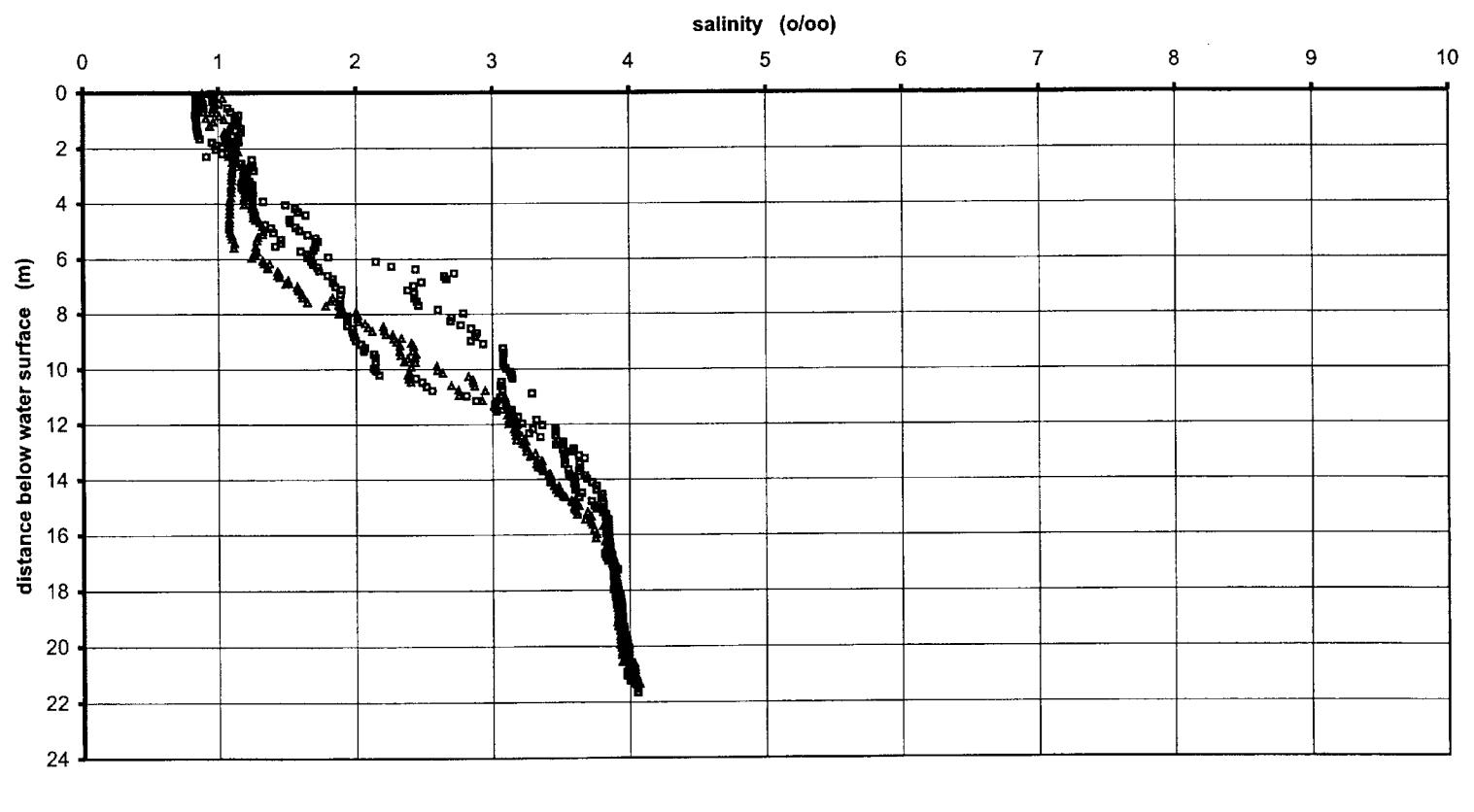
LOCK B
DOWNLOCKAGE, NO VESSEL

PHASE 2

WL | DELFT HYDRAULICS

Q 3039

Fig. A.31



LOCK B
DOWNLOCKAGE, SOUTHBOUND VESSEL

PHASE 2

Q 3039

Fig. A.32

WL | DELFT HYDRAULICS

**LOCK B
DOWNLOCKAGE, SOUTHBOUND VESSEL**

PHASE 3

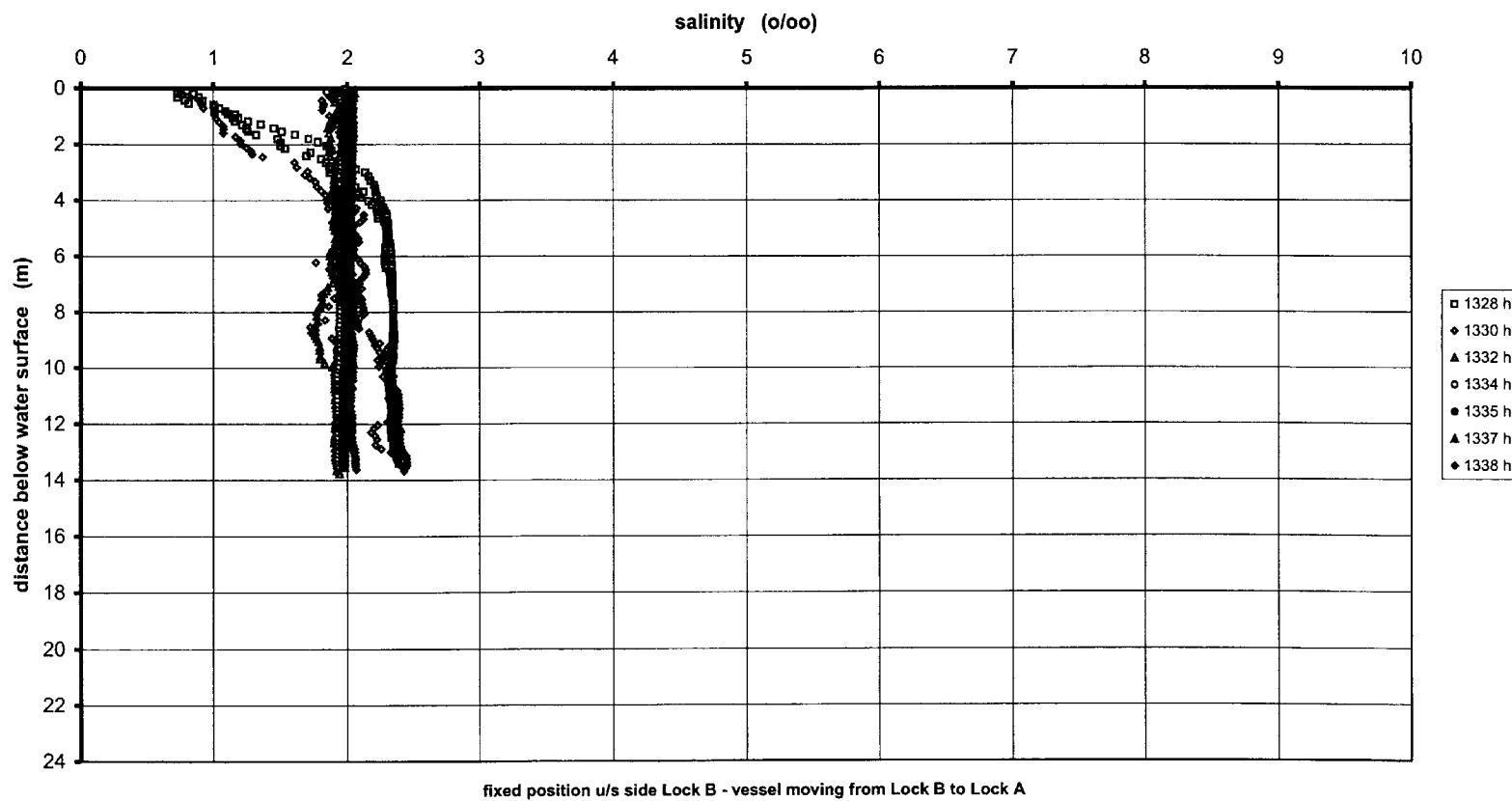
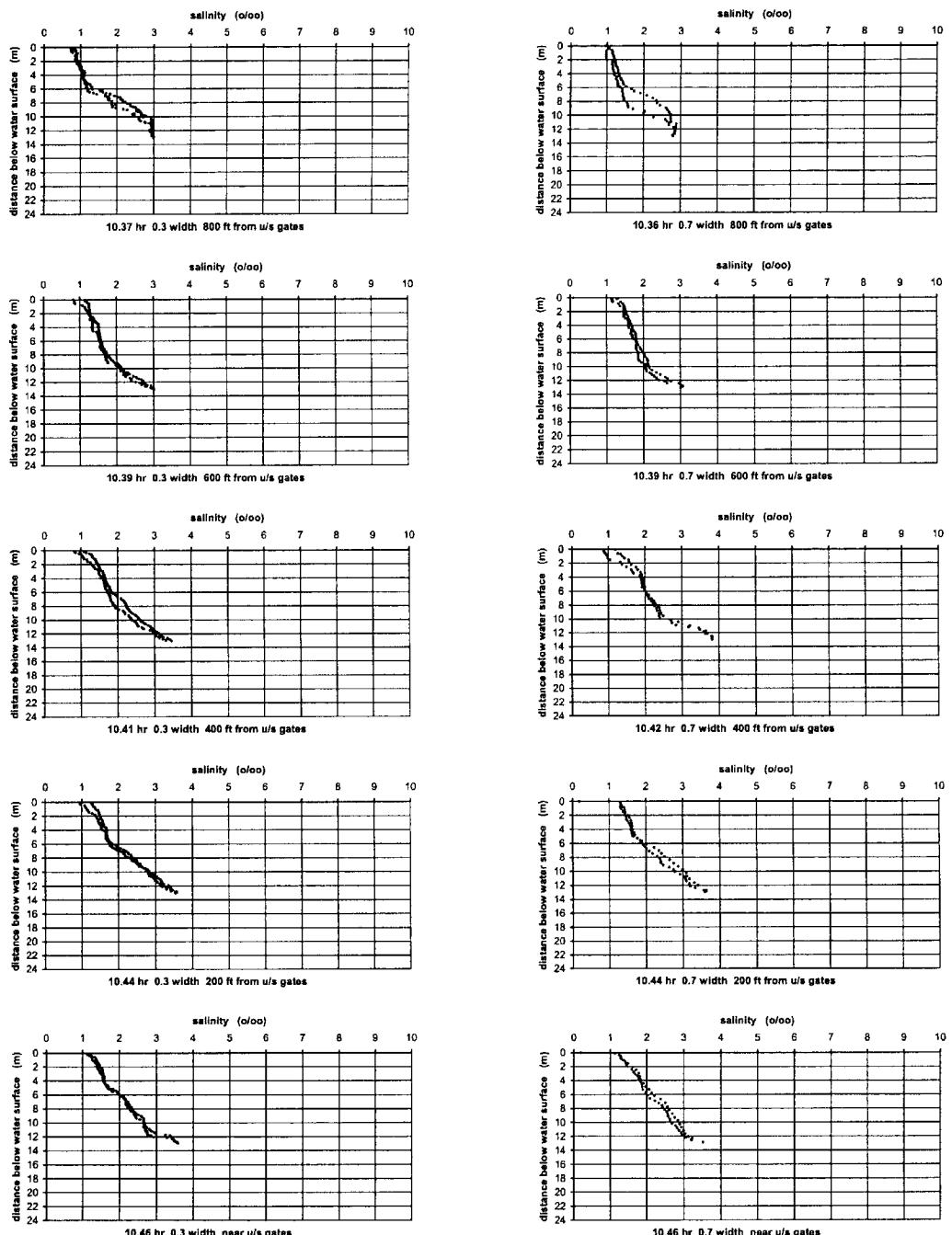


Fig. A.33



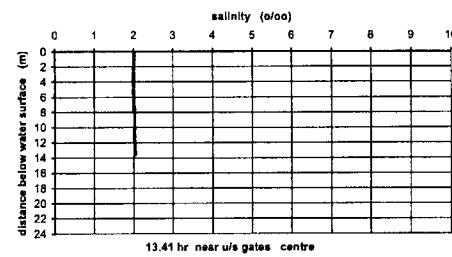
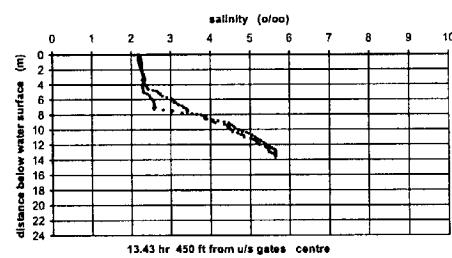
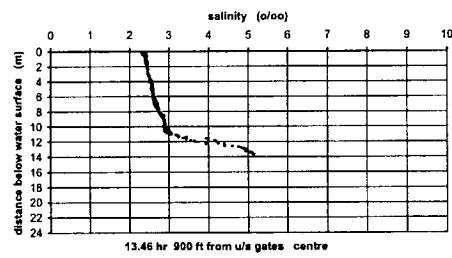
LOCK B
DOWNLOCKAGE, NO VESSEL

PHASE 4

WL | DELFT HYDRAULICS

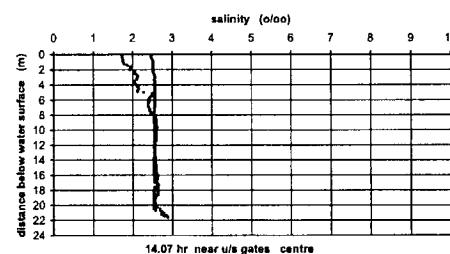
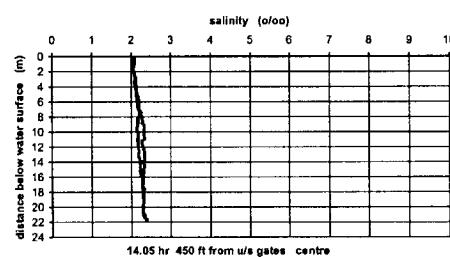
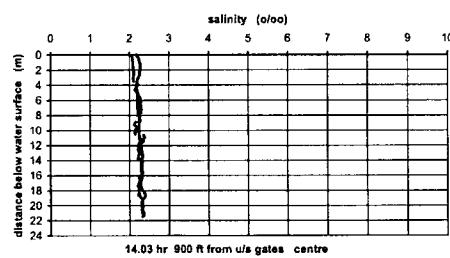
Q 3039

Fig. A.34



LOCK B
DOWNLOCKAGE, SOUTHBOUND VESSEL

PHASE 4



LOCK B
DOWNLOCKAGE, SOUTHBOUND VESSEL

PHASE 5

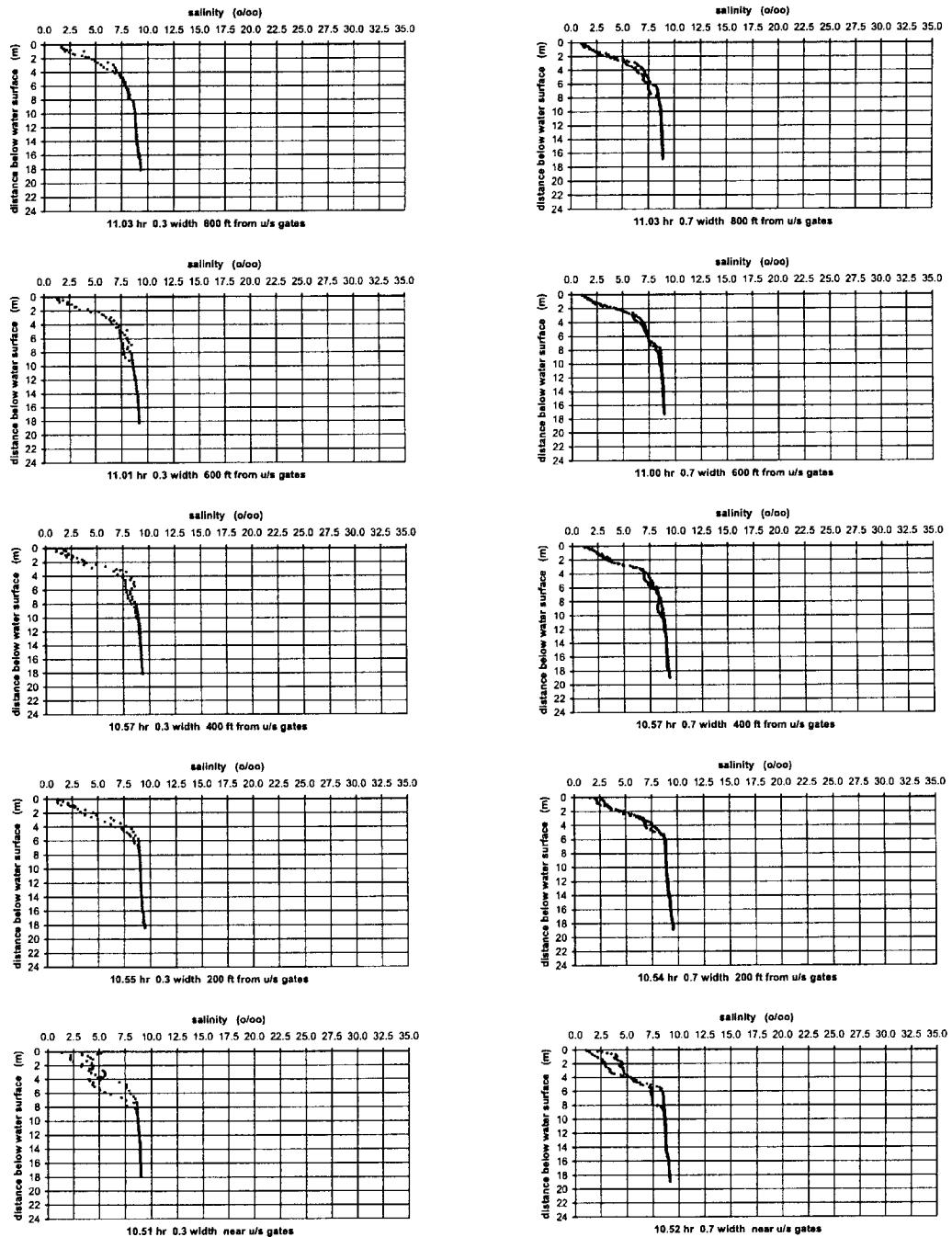
WL | DELFT HYDRAULICS

Q 3039

Fig. A.36

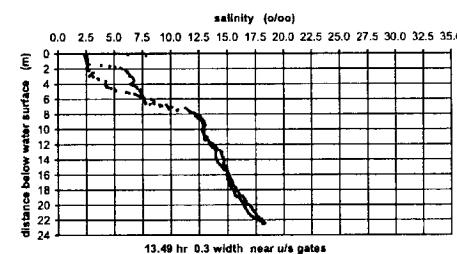
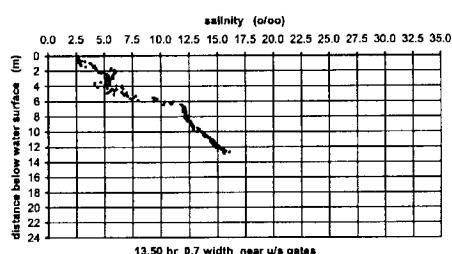
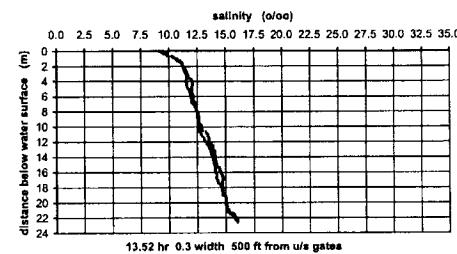
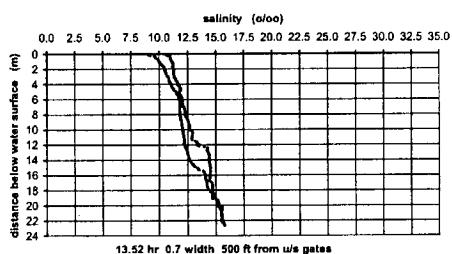
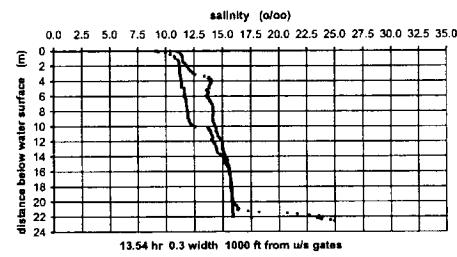
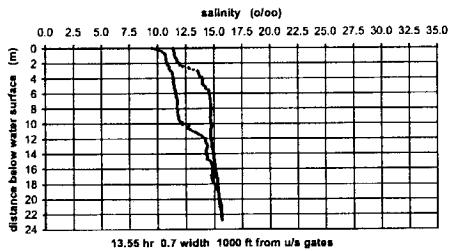
LOCK A

DOWNLOCKAGE



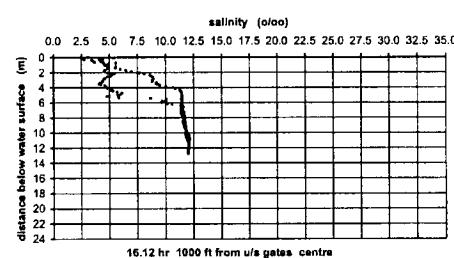
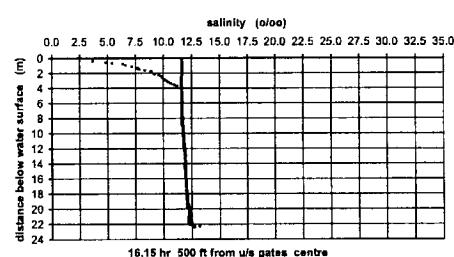
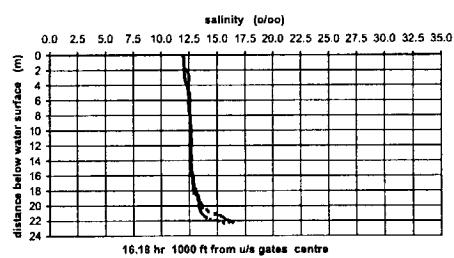
LOCK A
DOWNLOCKAGE, NO VESSEL

PHASE 1



LOCK A - HIGH TIDE
DOWNLOCKAGE, SOUTHBOUND VESSEL

PHASE 1(1)



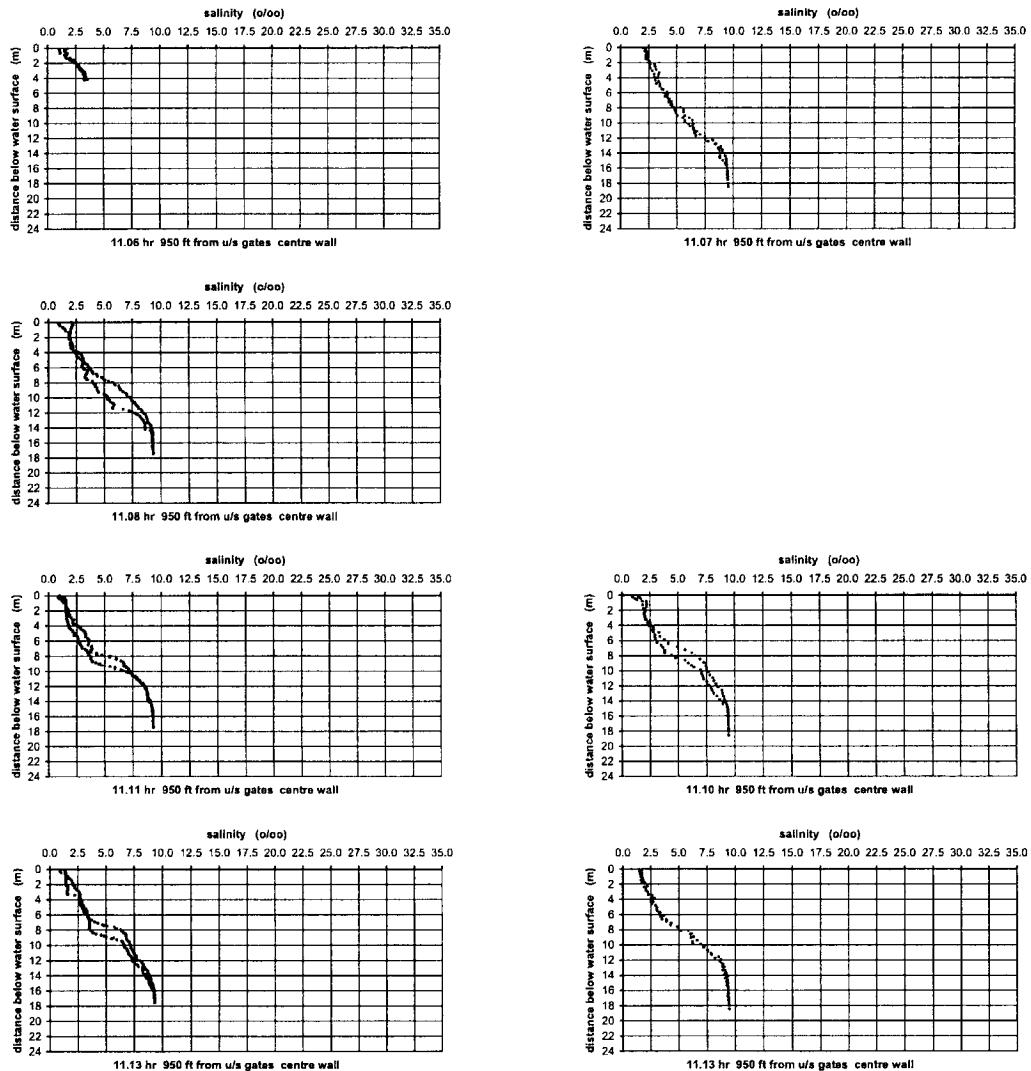
LOCK A - HIGH TIDE
DOWNLOCKAGE, SOUTHBOUND VESSEL

PHASE 1(2)

WL | DELFT HYDRAULICS

Q 3039

Fig. A.39



LOCK A
DOWNLOCKAGE, NO VESSEL

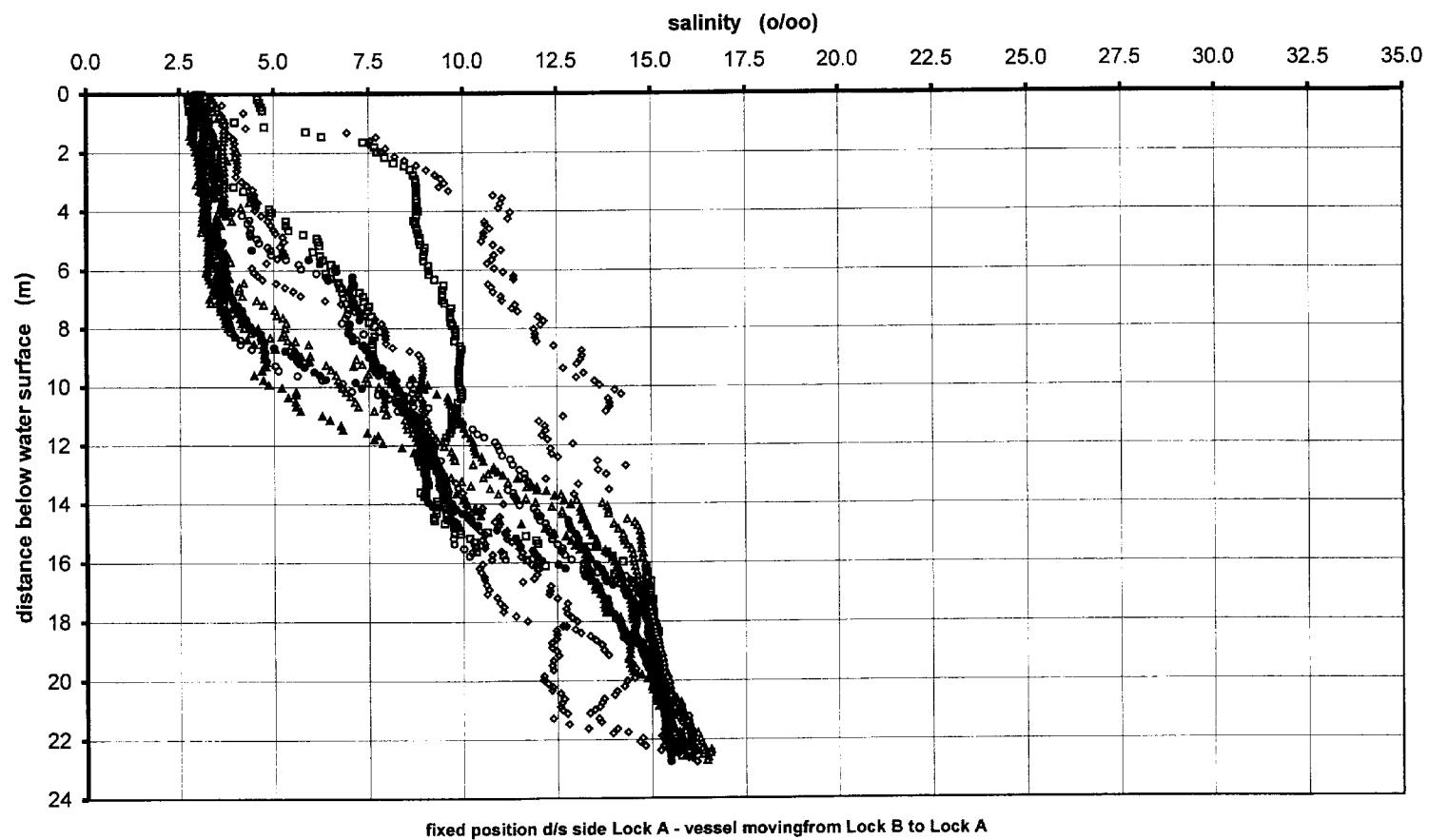
PHASE 2

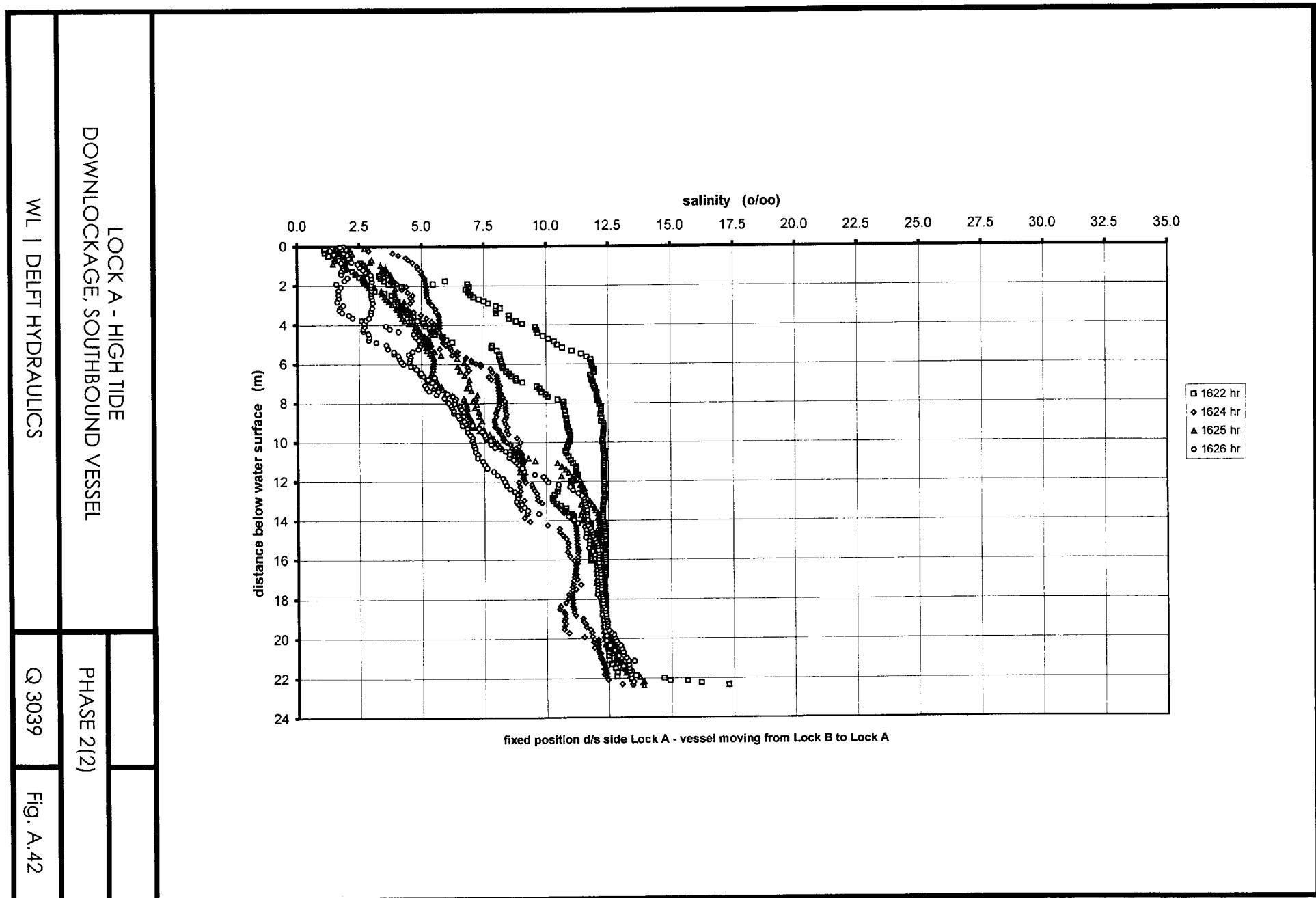
WL | DELFT HYDRAULICS

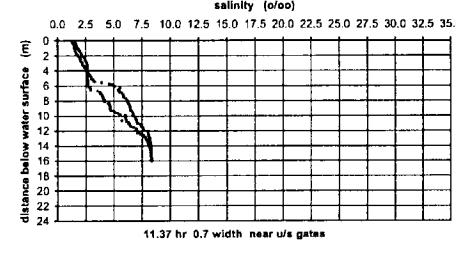
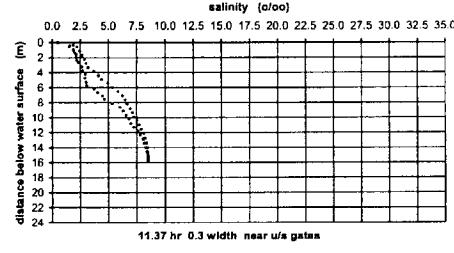
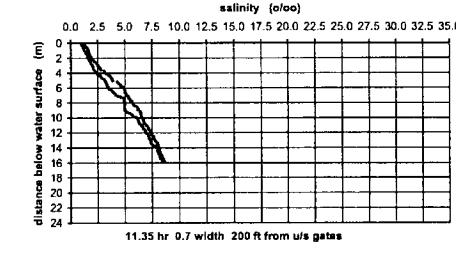
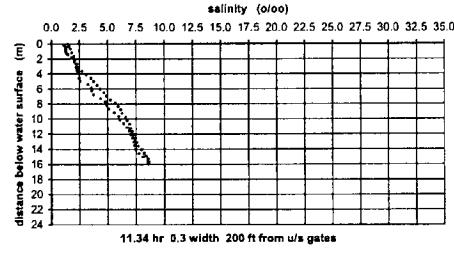
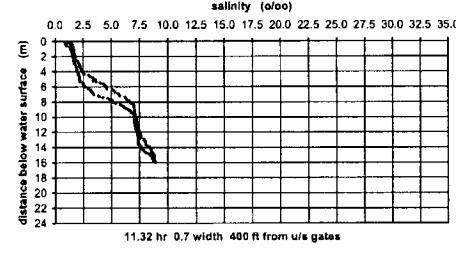
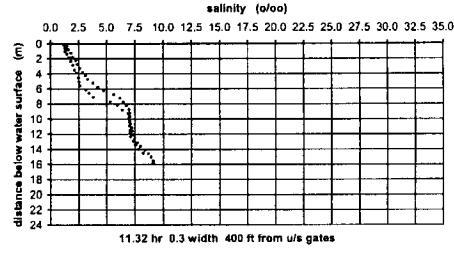
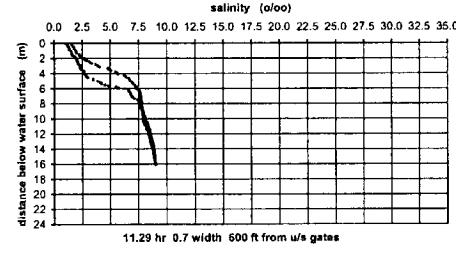
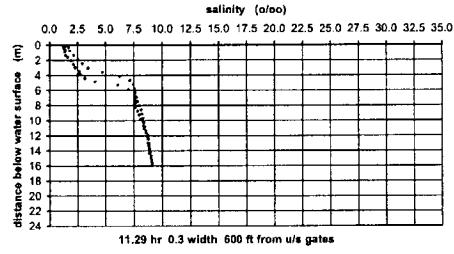
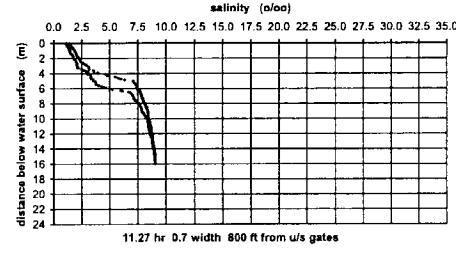
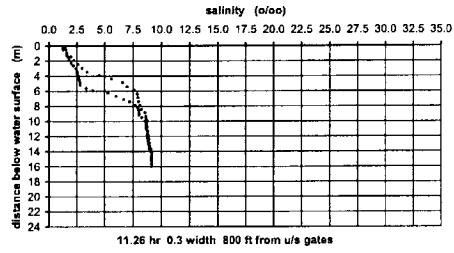
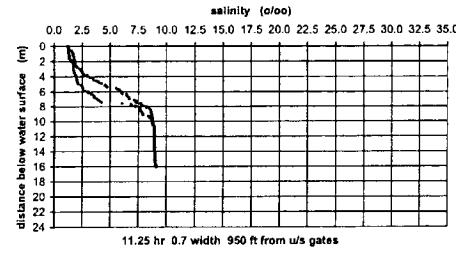
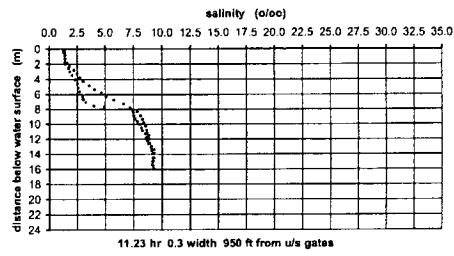
Q 3039

Fig. 40

□ 1359 hr
◆ 1400 hr
▲ 1402 hr
○ 1403 hr
● 1404 hr
▲ 1407 hr







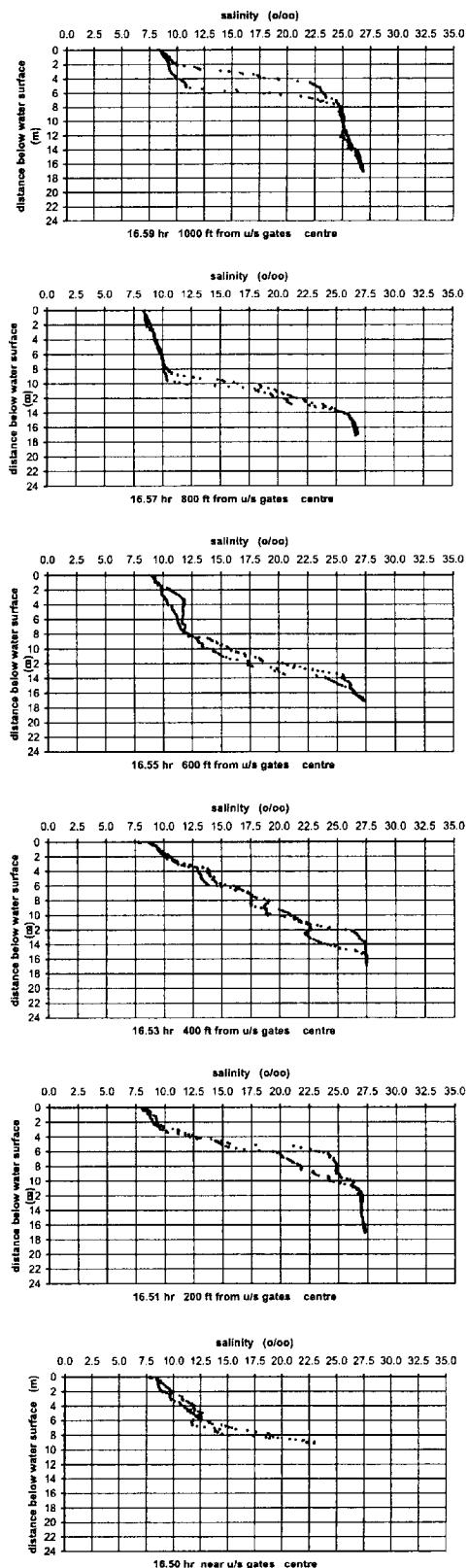
LOCK A
DOWNLOCKAGE, NO VESSEL

PHASE 4

WL | DELFT HYDRAULICS

Q 3039

Fig. A.43

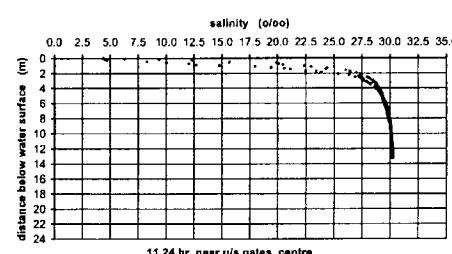
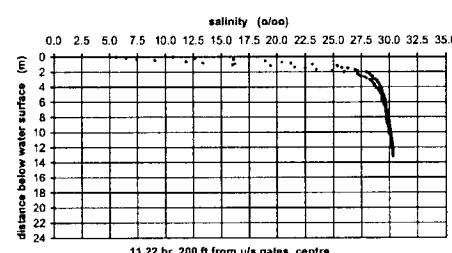
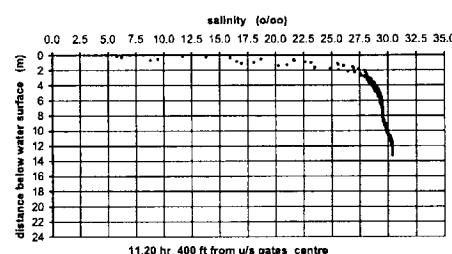
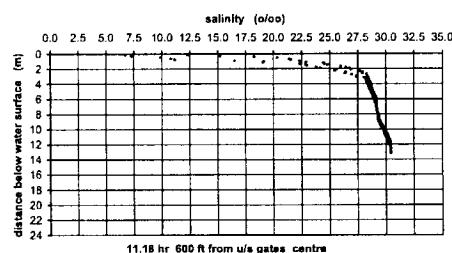
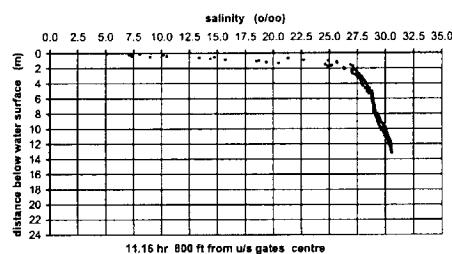
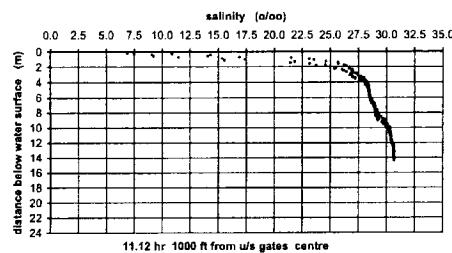


LOCK A - HIGH TIDE
DOWNLOCKAGE, SOUTHBOUND VESSEL

PHASE 4

LOCK D

UPLOCKAGE



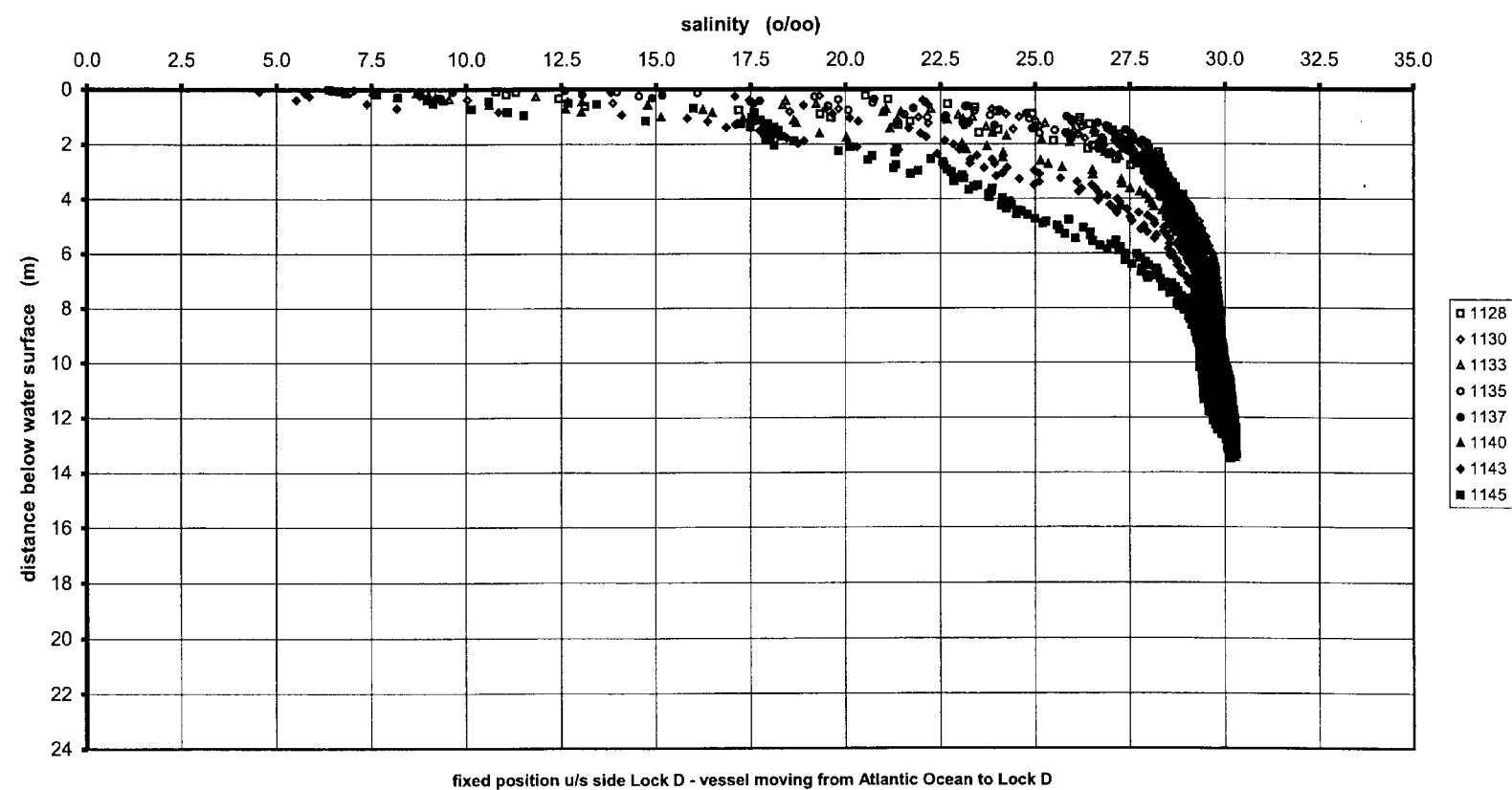
LOCK D
UPLOCKAGE, SOUTHBOUND VESSEL

PHASE 1

WL | DELFT HYDRAULICS

Q 3039

Fig. A.45



LOCK D
UPLOCKAGE, SOUTHBOUND VESSEL

PHASE 2

Q 3039

Fig. A.46

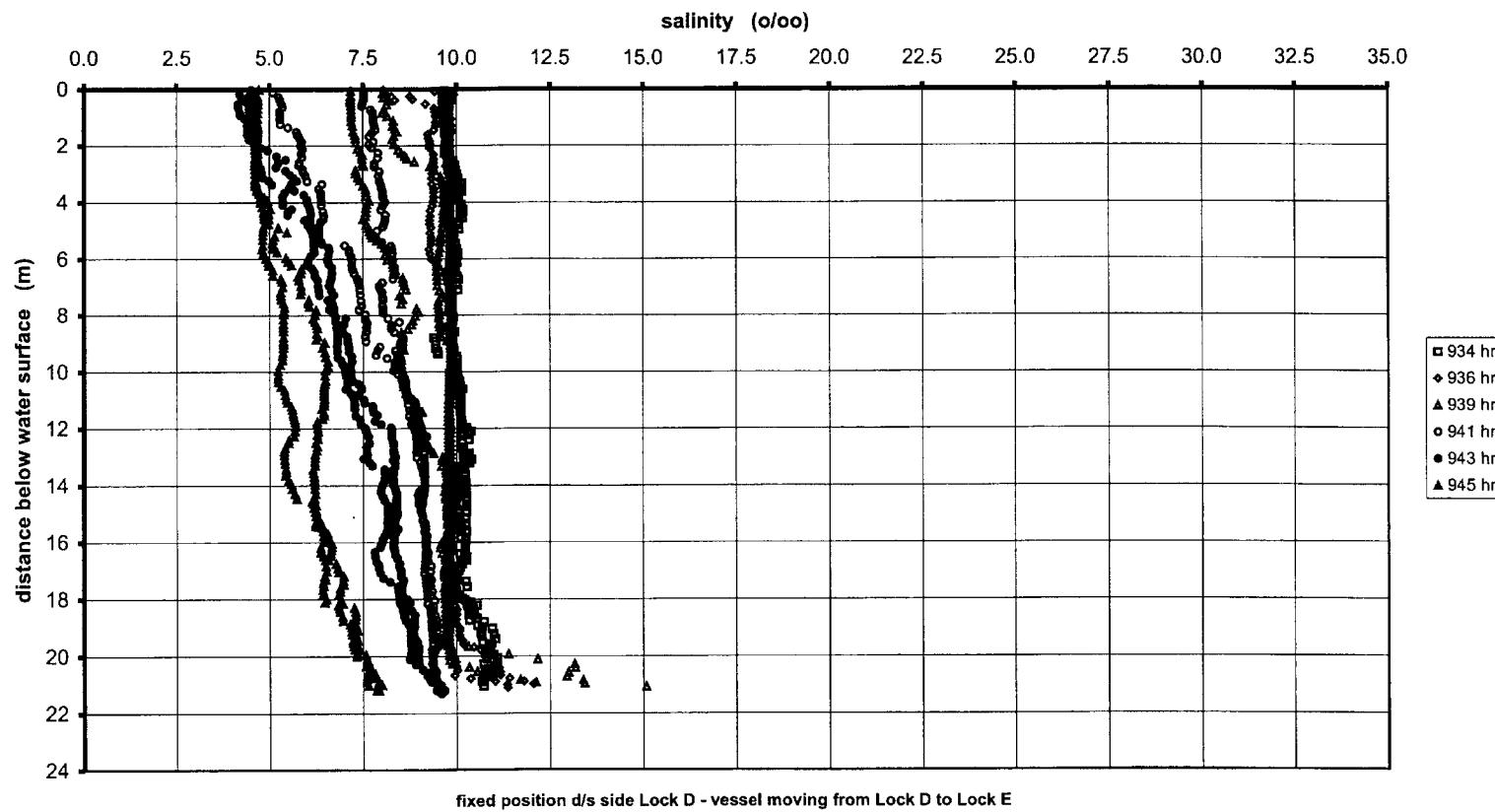
LOCK D
UPLOCKAGE, SOUTHBOUND VESSEL

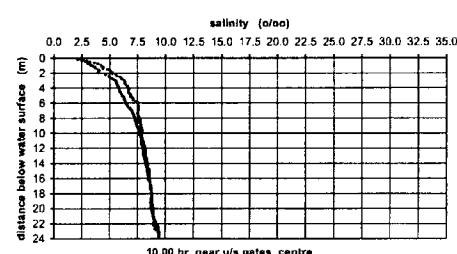
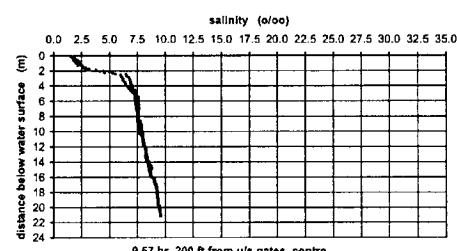
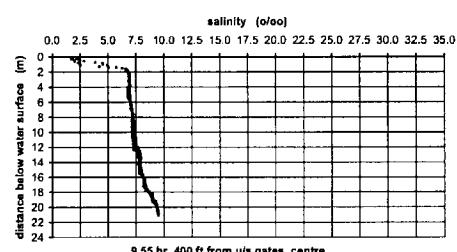
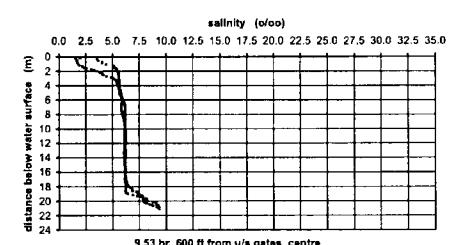
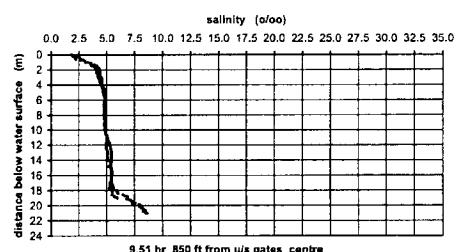
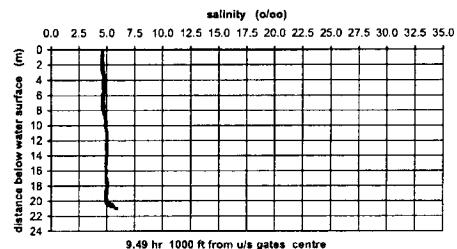
WL | DELFT HYDRAULICS

PHASE 3

Q 3039

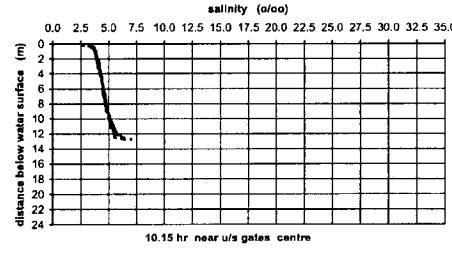
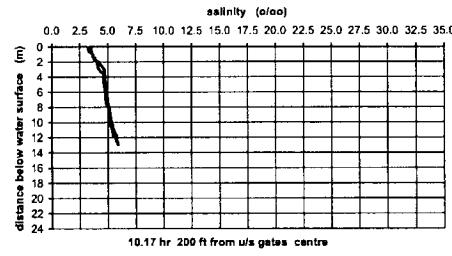
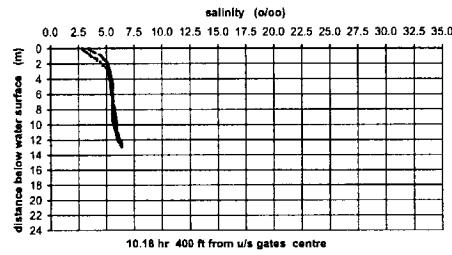
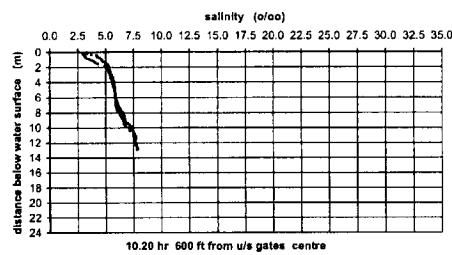
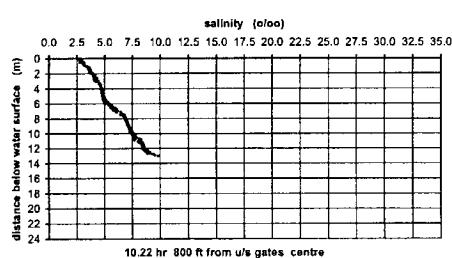
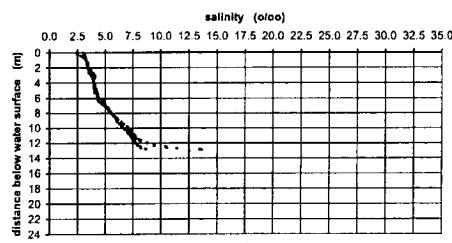
Fig. A.47





LOCK D
UPLOCKAGE, SOUTHBOUND VESSEL

PHASE 4



LOCK D
UPLOCKAGE, SOUTHBOUND VESSEL

PHASE 5

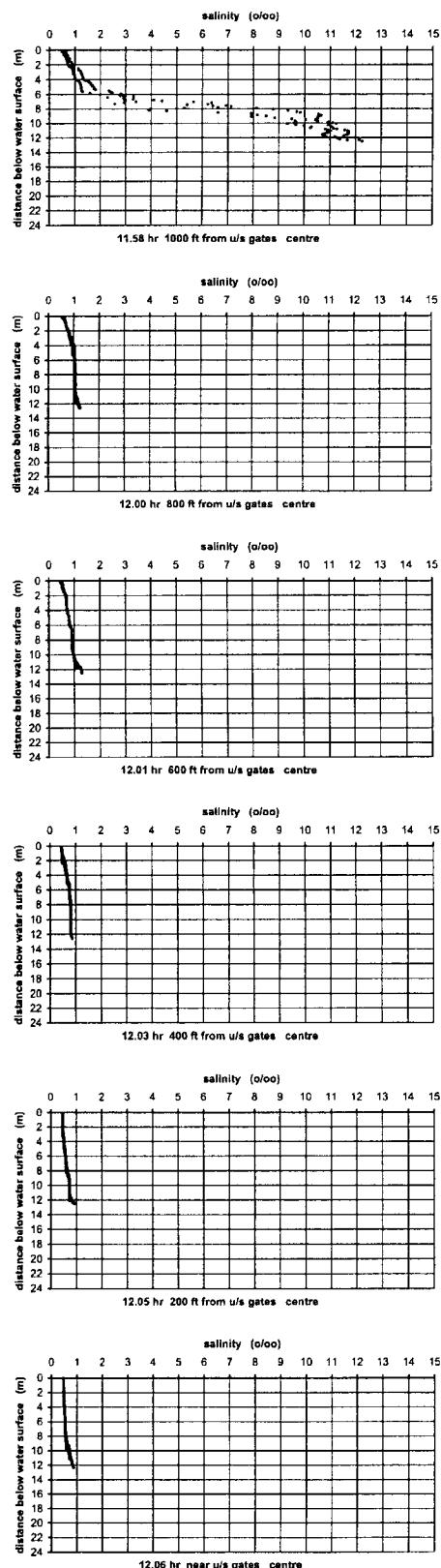
WL | DELFT HYDRAULICS

Q 3039

Fig. A.49

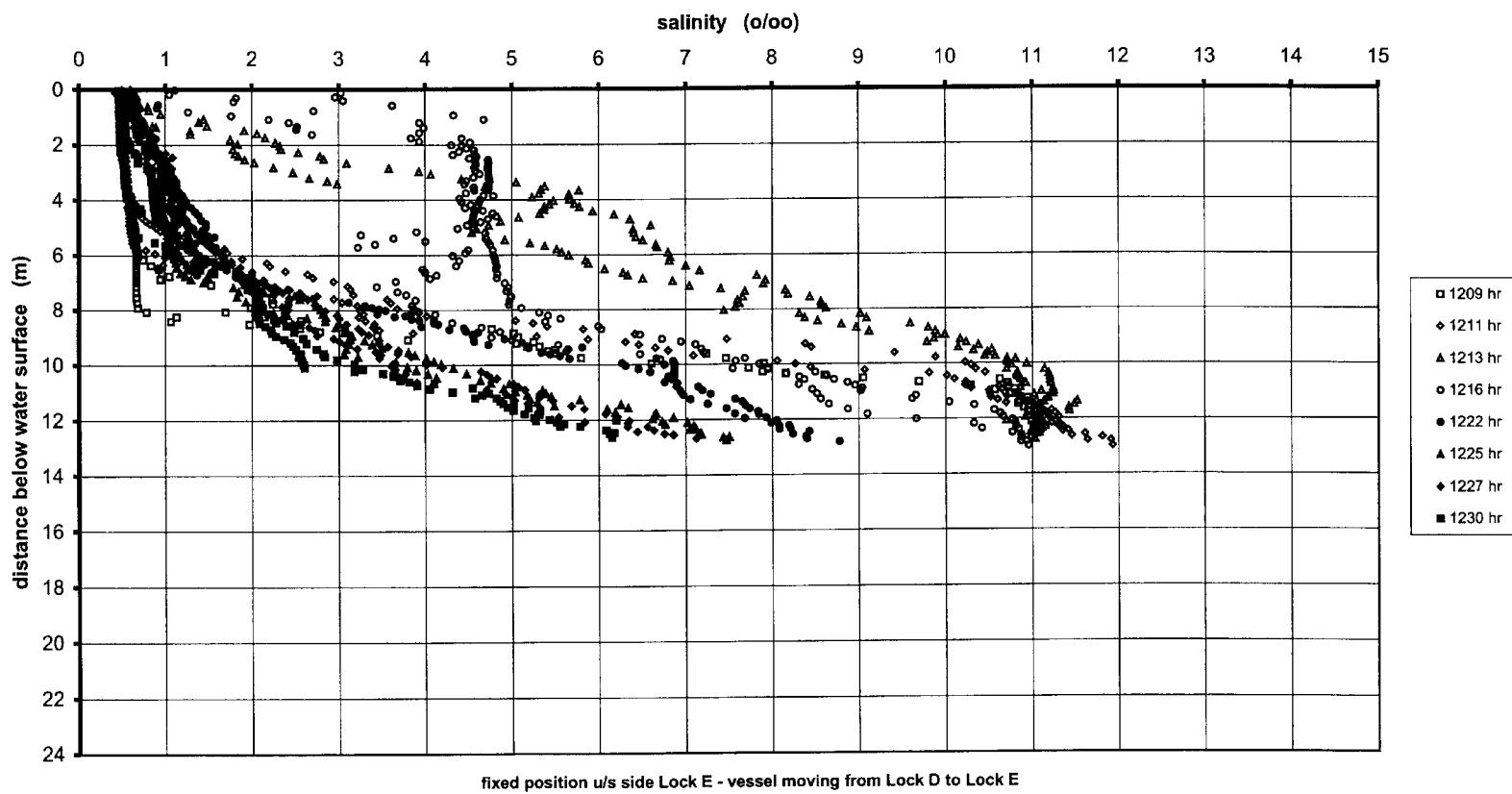
LOCK E

UPLOCKAGE



LOCK E
UPLOCKAGE, SOUTHBOUND VESSEL

PHASE 1



LOCK E
UPLOCKAGE, SOUTHBOUND VESSEL

PHASE 2

Q 3039

Fig. A.51

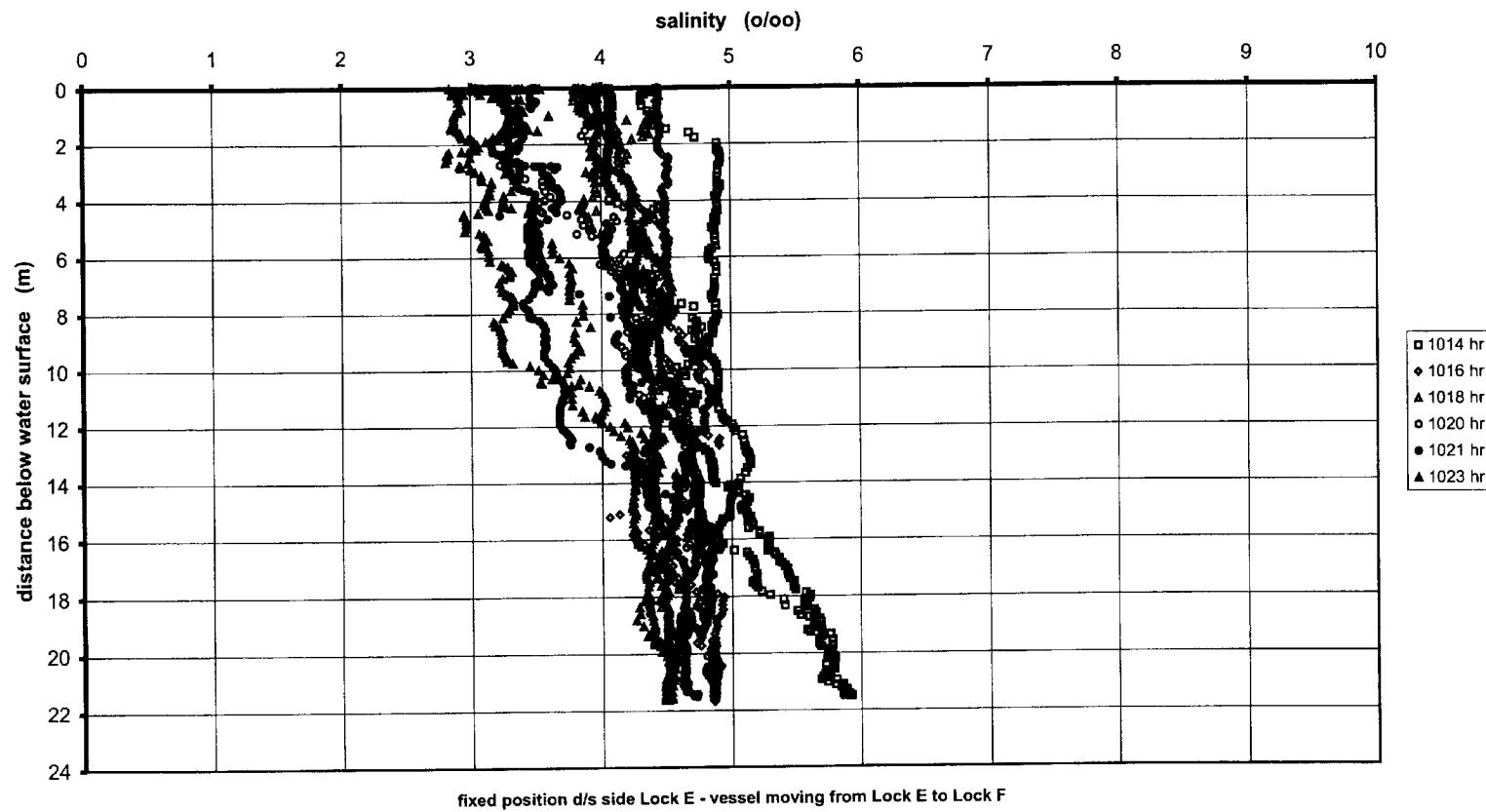
LOCK E
UPLOCKAGE, SOUTHBOUND VESSEL

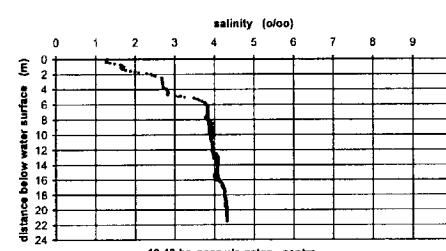
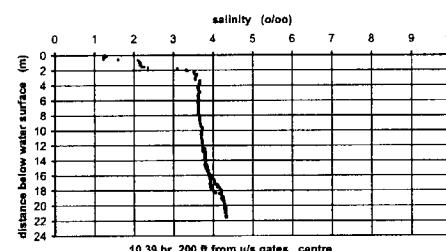
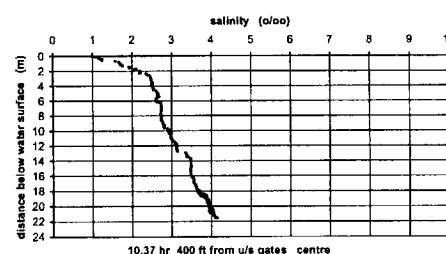
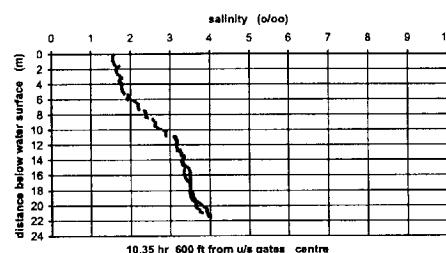
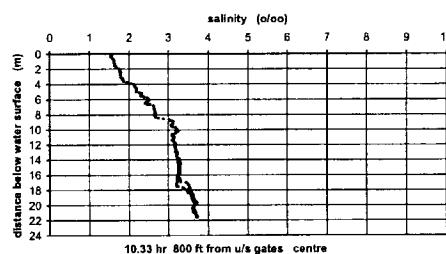
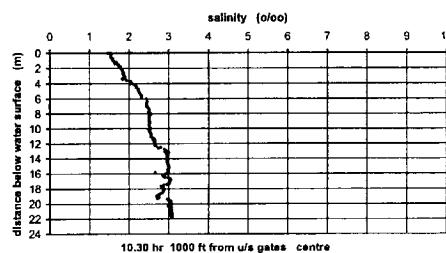
WL | DELFT HYDRAULICS

PHASE 3

Q 3039

Fig. A.52





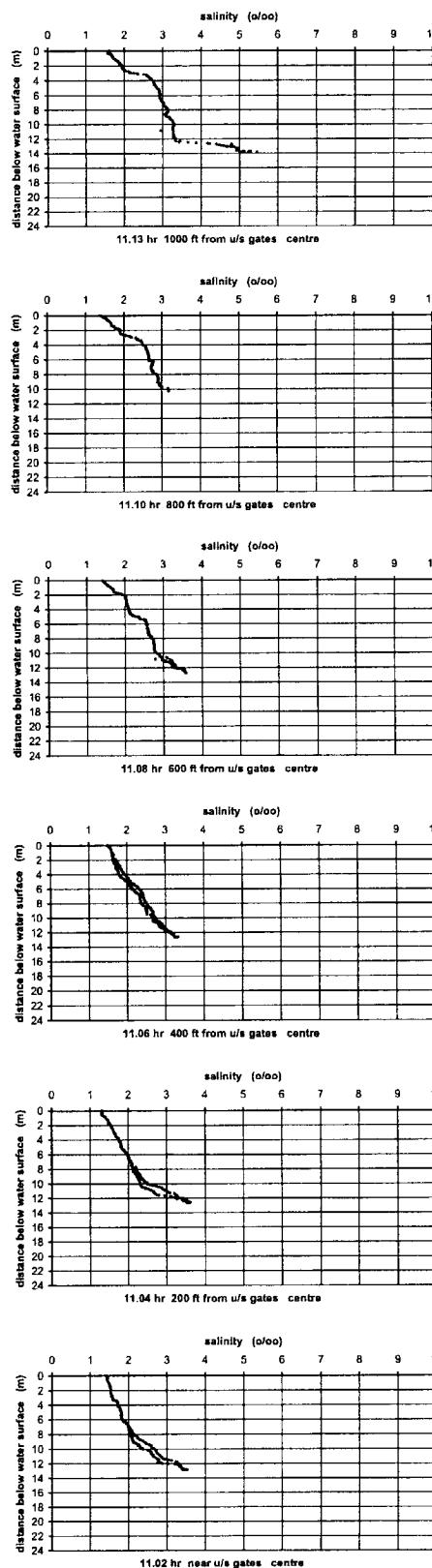
LOCK E
UPLOCKAGE, SOUTHBOUND VESSEL

PHASE 4

WL | DELFT HYDRAULICS

Q 3039

Fig. A.53



LOCK E
UPLOCKAGE, SOUTHBOUND VESSEL

PHASE 5

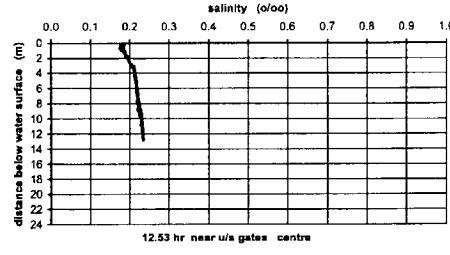
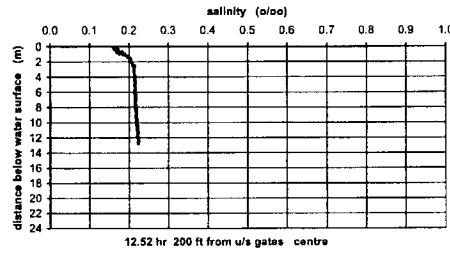
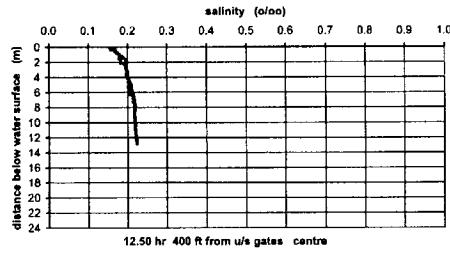
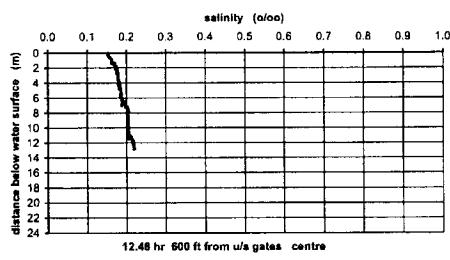
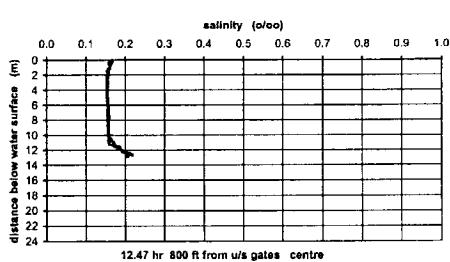
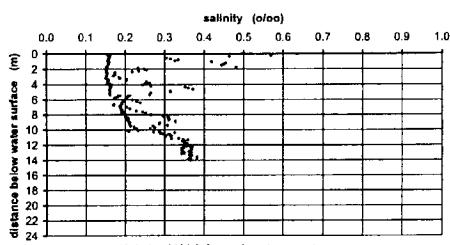
WL | DELFT HYDRAULICS

Q 3039

Fig. A.54

LOCK F

UPLOCKAGE



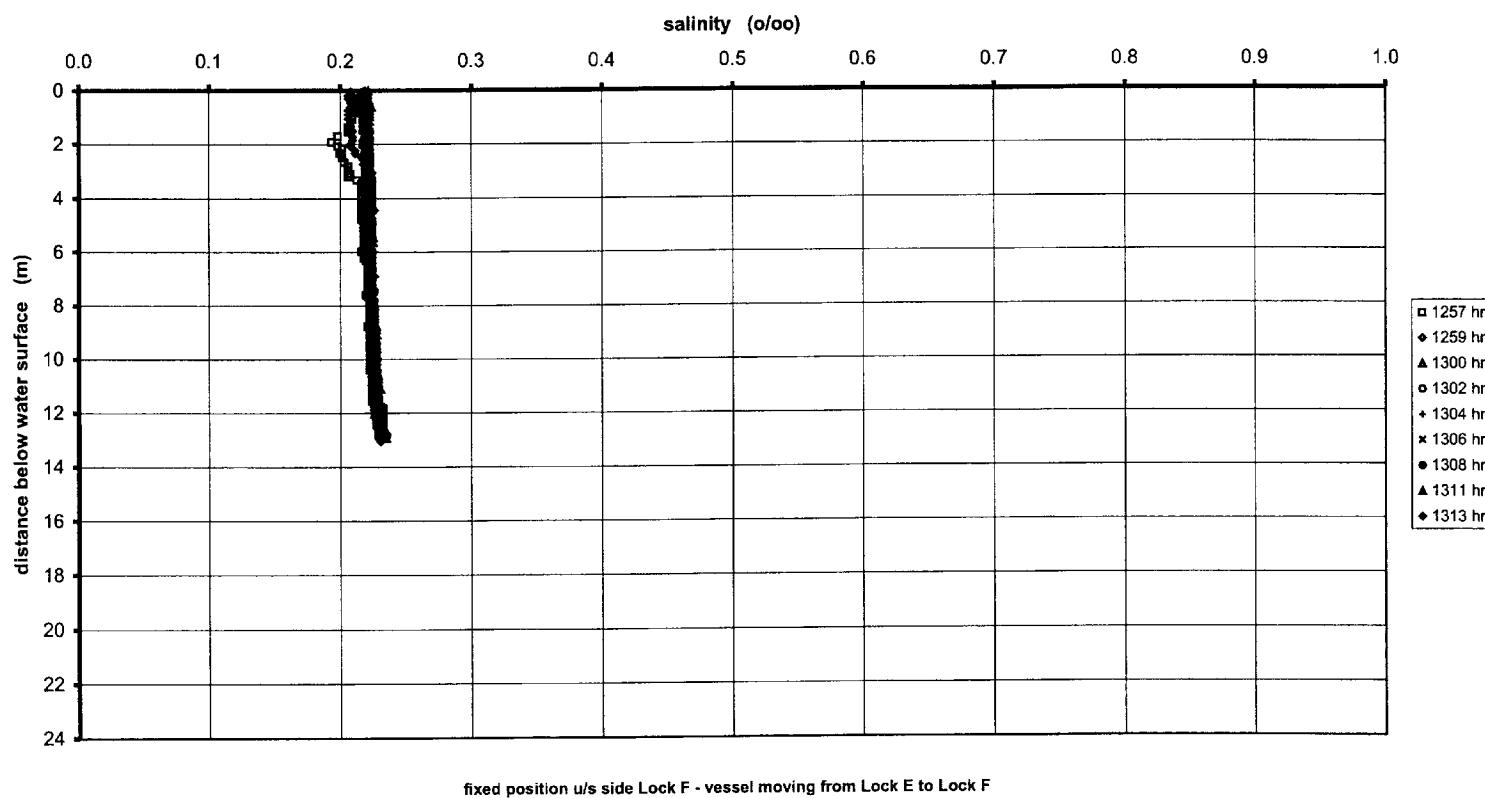
LOCK F
UPLOCKAGE, SOUTHBOUND VESSEL

PHASE 1

WL | DELFT HYDRAULICS

Q 3039

Fig. A.55



LOCK F
UPLOCKAGE, SOUTHBOUND VESSEL

PHASE 2

Q 3039

FIG. A.56

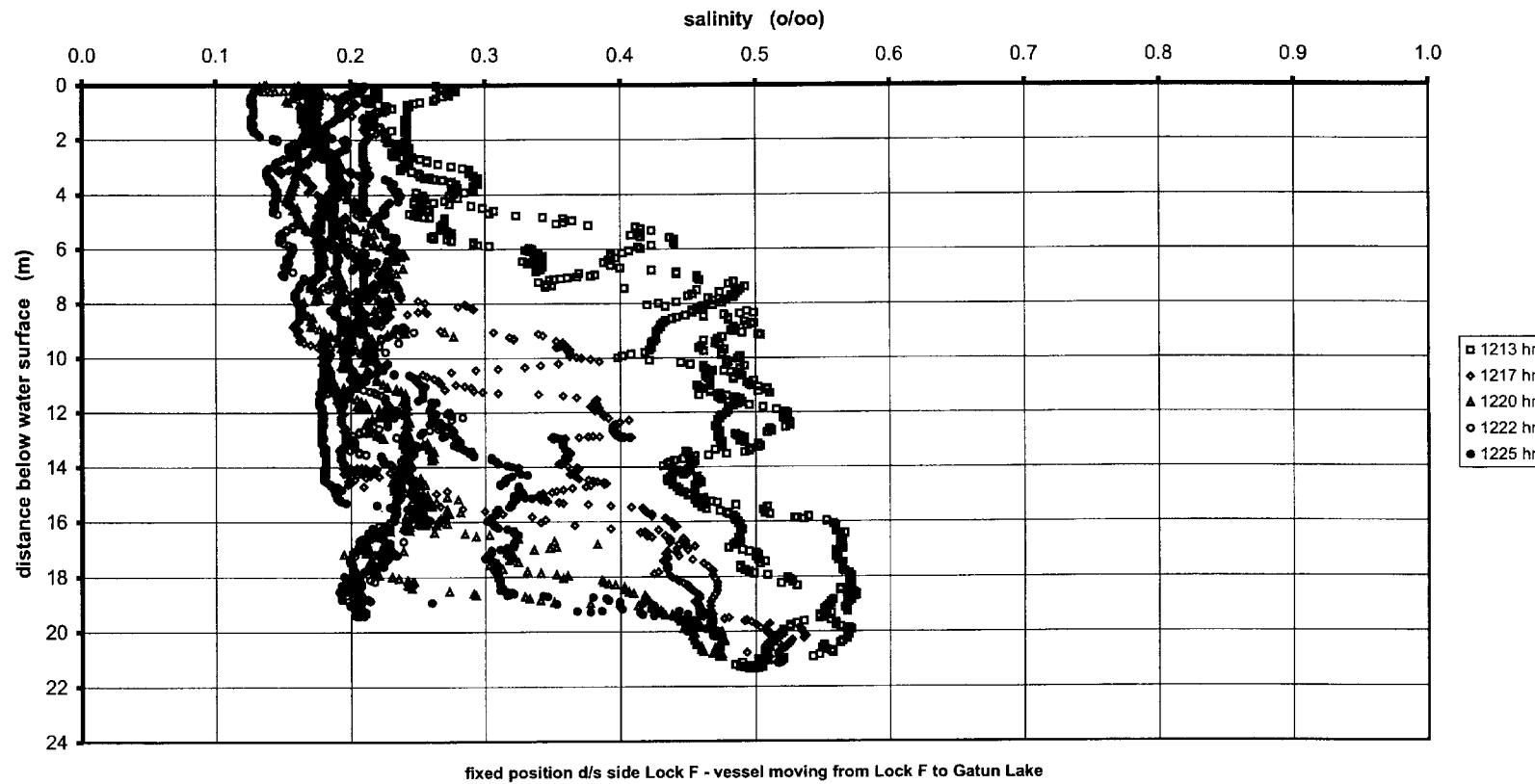
LOCK F
UPLOCKAGE, SOUTHBOUND VESSEL

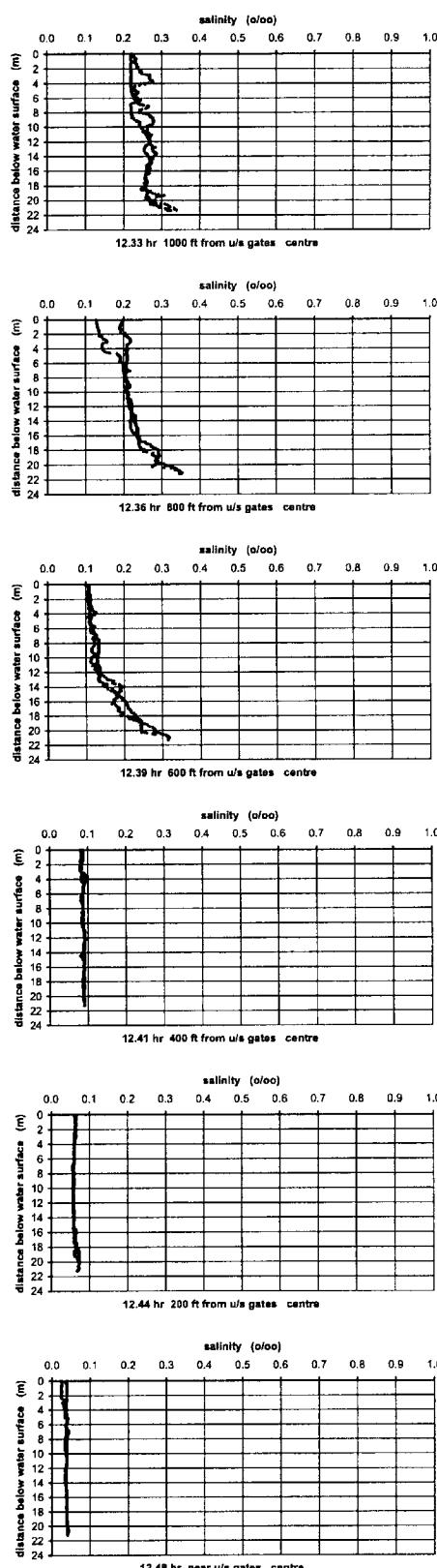
WL | DELFT HYDRAULICS

PHASE 3

Q 3039

Fig. A.57





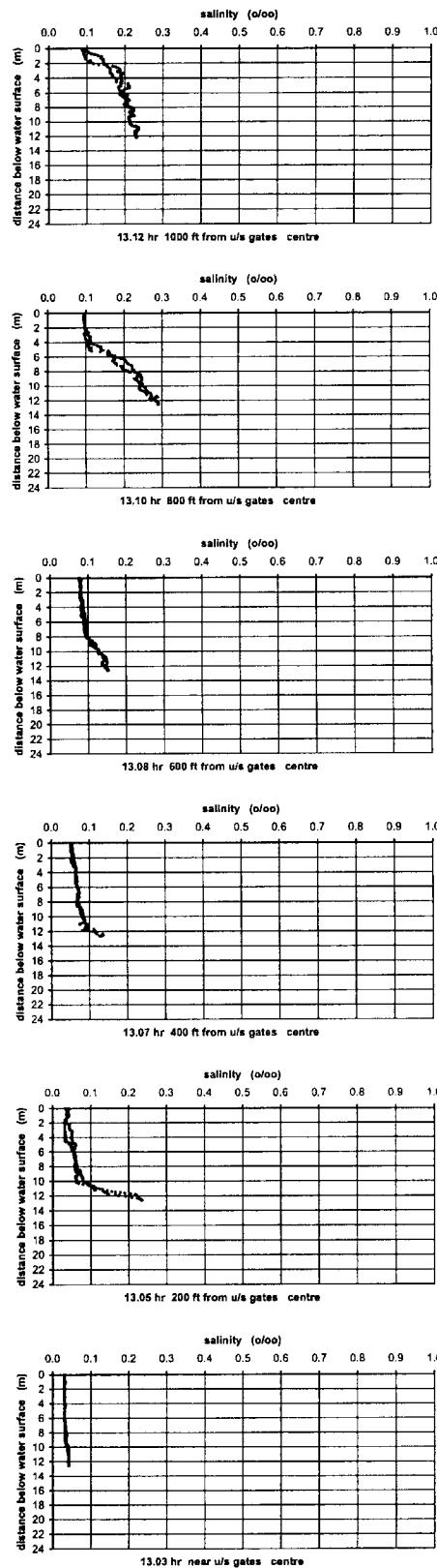
LOCK F
UPLOCKAGE, SOUTHBOUND VESSEL

PHASE 4

WL | DELFT HYDRAULICS

Q 3039

Fig. A.58



LOCK F
UPLOCKAGE, SOUTHBOUND VESSEL

PHASE 5

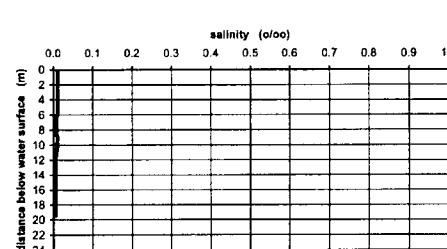
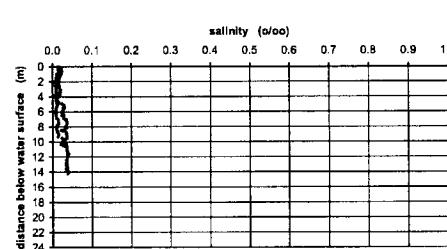
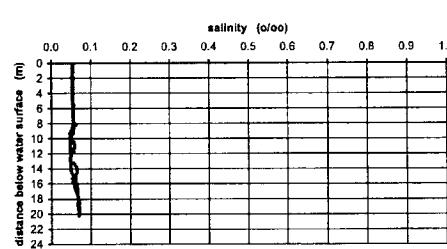
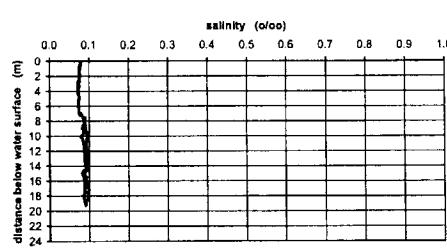
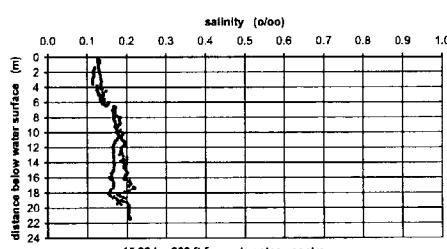
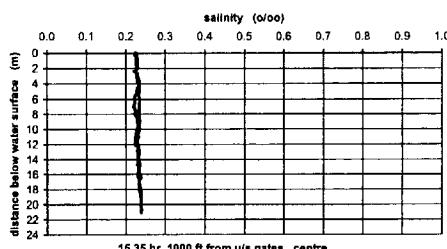
WL | DELFT HYDRAULICS

Q 3039

Fig. A.59

LOCK F

DOWNLOCKAGE



LOCK F
DOWNLOCKAGE, NORTHBOUND VESSEL

PHASE 1

WL | DELFT HYDRAULICS

Q 3039

Fig. A.60

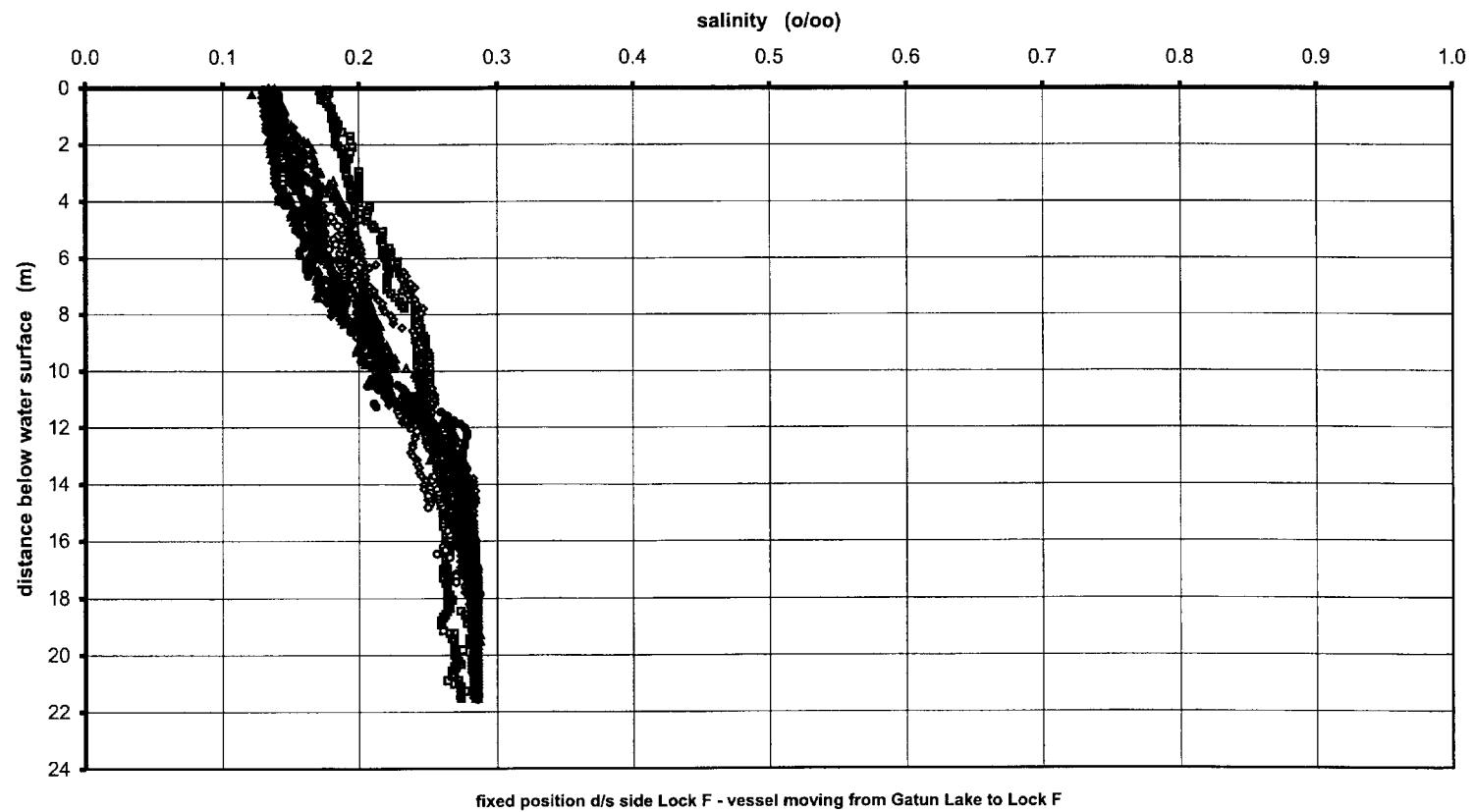
LOCK F
DOWNLOCKAGE, NORTHBOUND VESSEL

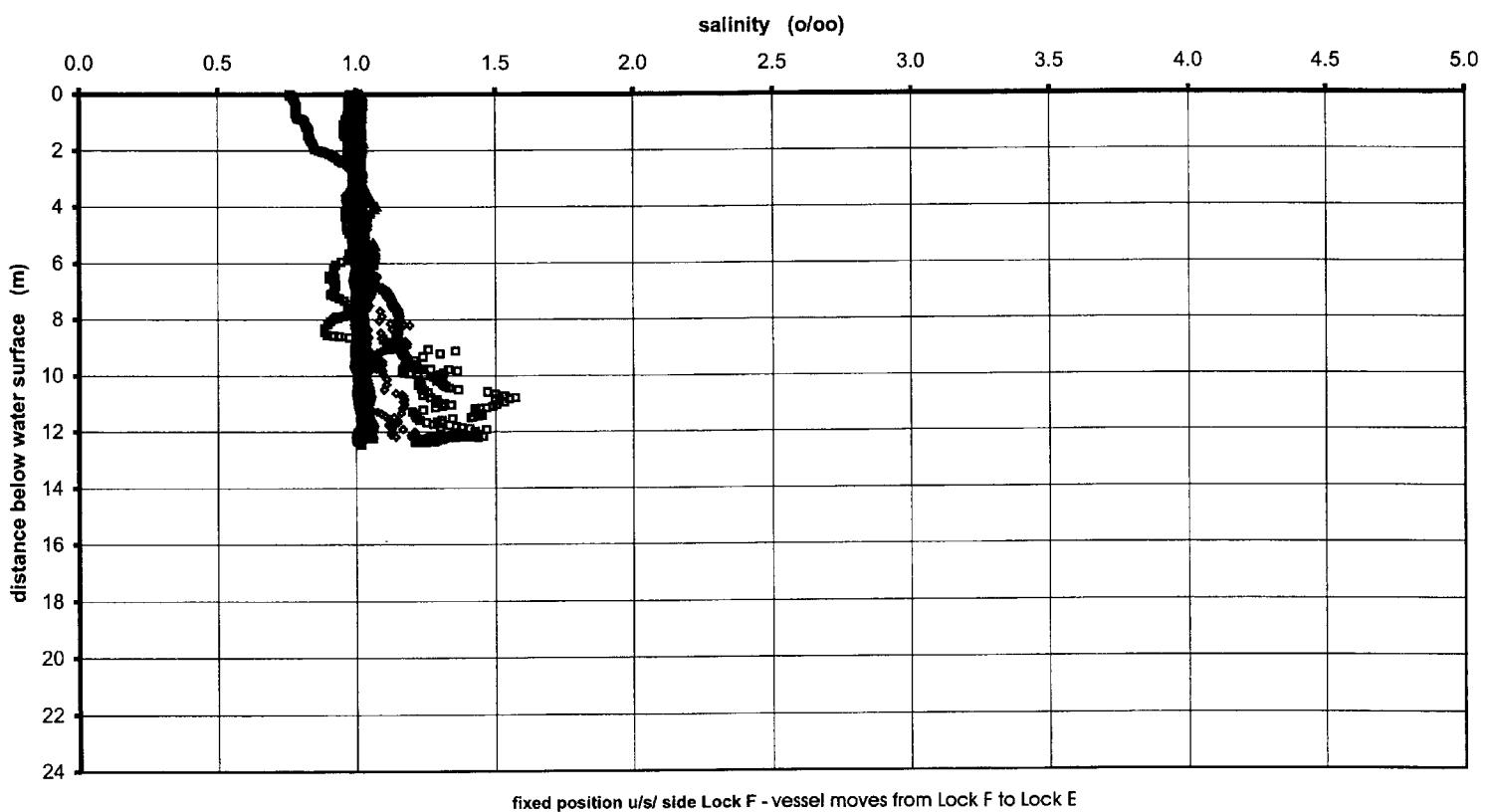
WL | DELFT HYDRAULICS

PHASE 2

Q 3039

FIG. A.61



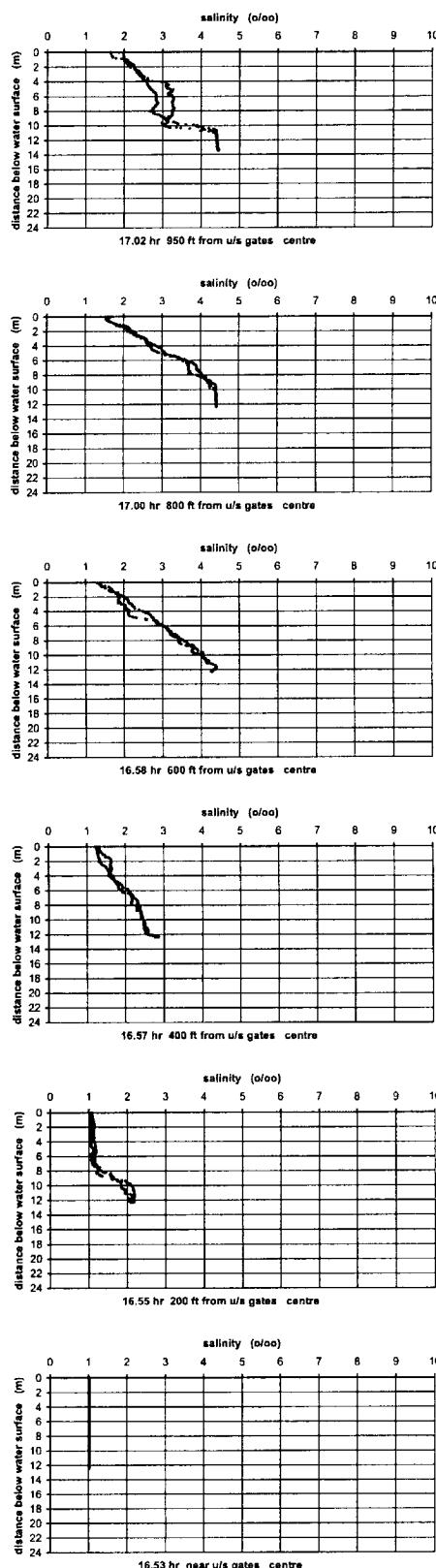


LOCK F
DOWNLOCKAGE, NORTHBOUND VESSEL

PHASE 3

Q 3039

Fig. A.62



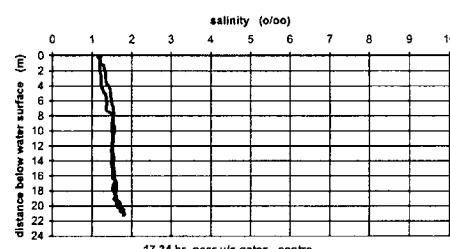
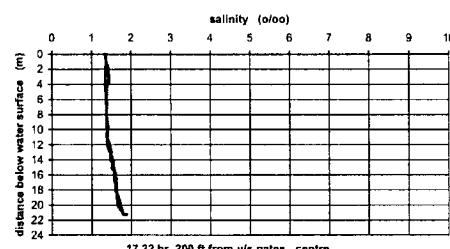
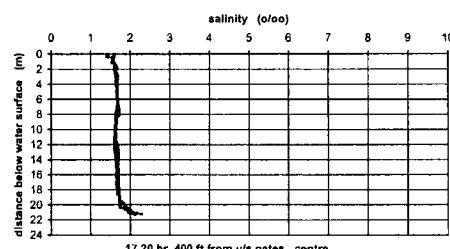
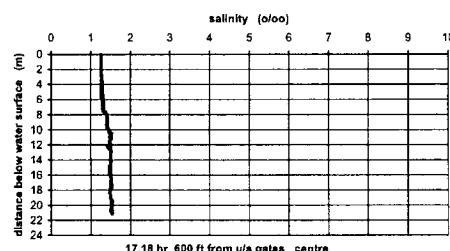
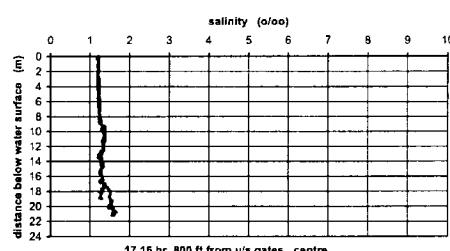
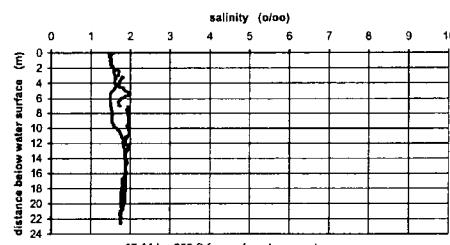
LOCK F
DOWNLOCKAGE, NORTHBOUND VESSEL

PHASE 4

WL | DELFT HYDRAULICS

Q 3039

Fig. A.63



LOCK F
DOWNLOCKAGE, NORTHBOUND VESSEL

PHASE 5

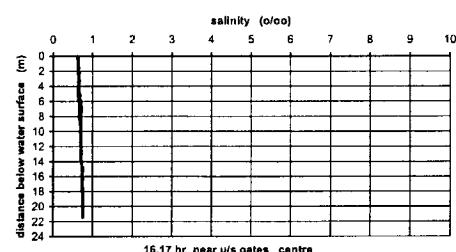
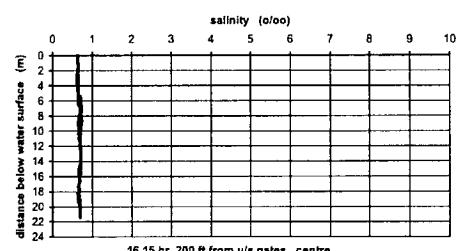
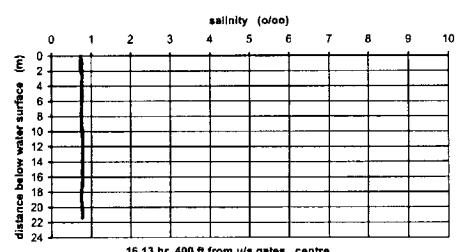
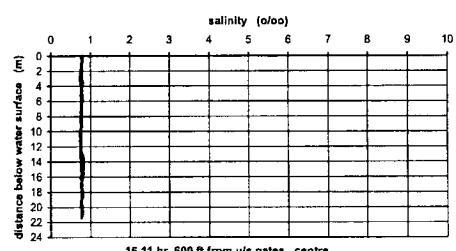
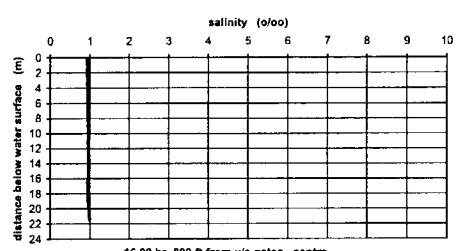
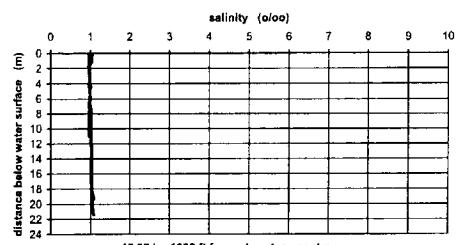
WL | DELFT HYDRAULICS

Q 3039

Fig. A.64

LOCK E

DOWNLOCKAGE



LOCK E
DOWNLOCKAGE, NORTHBOUND VESSEL

PHASE 1

WL | DELFT HYDRAULICS

Q 3039

Fig. A.65

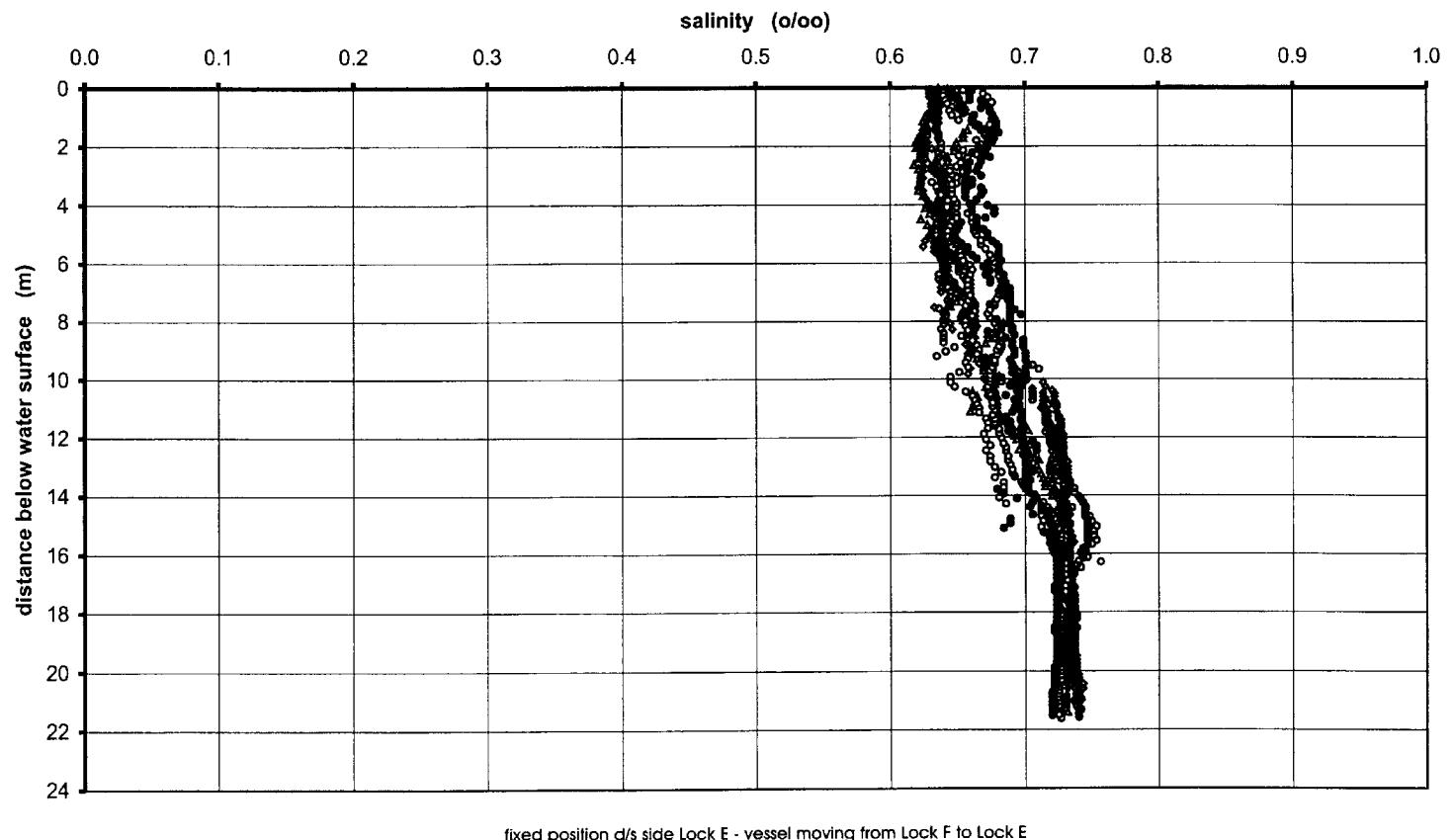
LOCK E
DOWNLOCKAGE, NORTHBOUND VESSEL

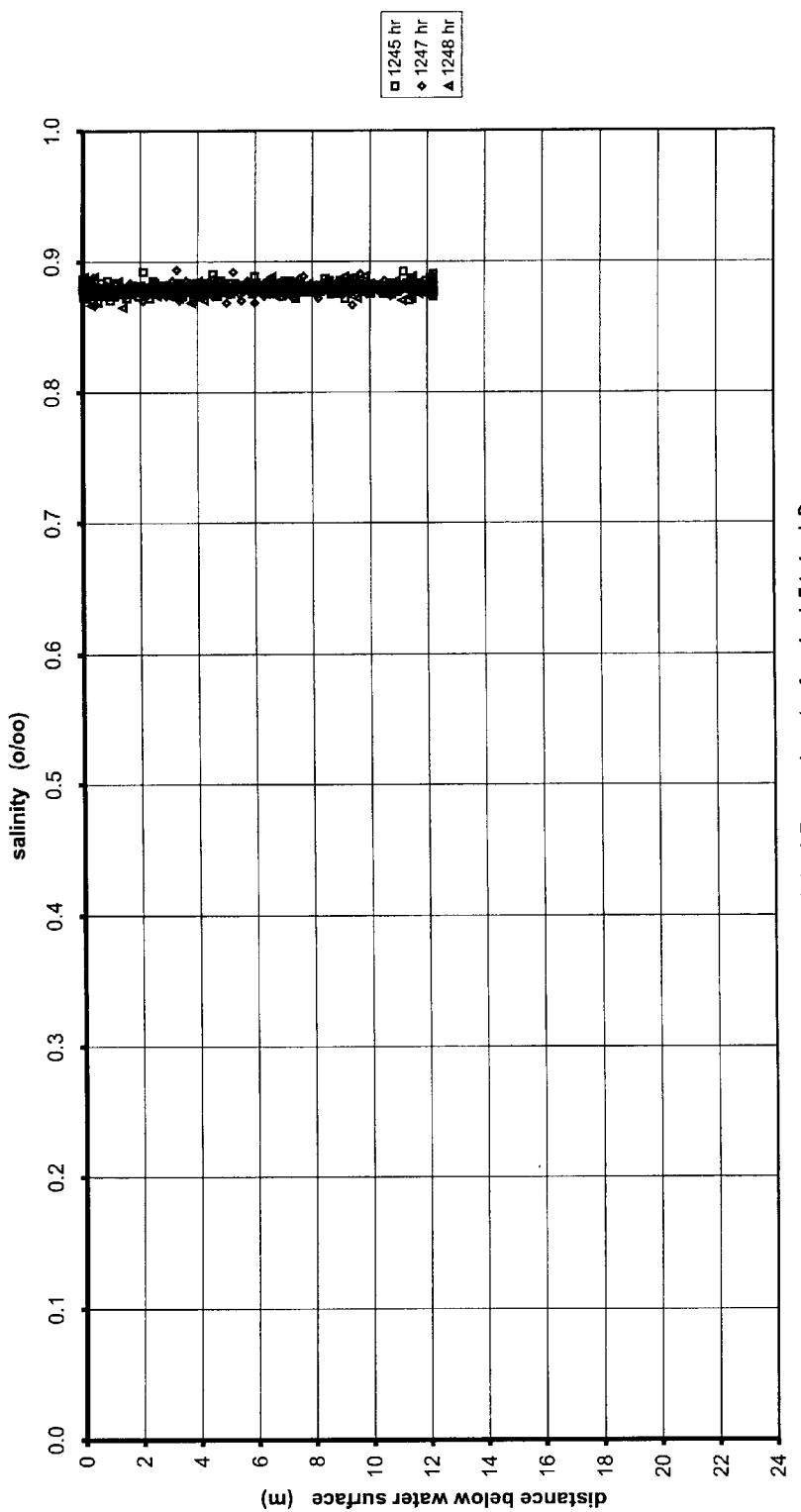
WL | DELFT HYDRAULICS

PHASE 2

Q 3039

Fig. A.66

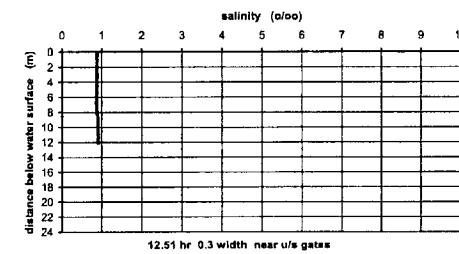
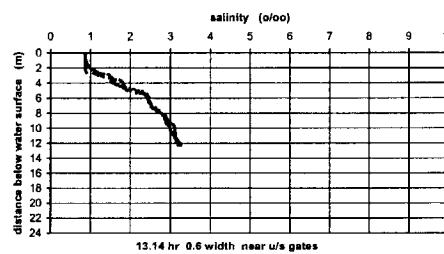
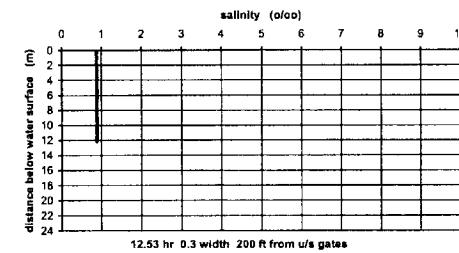
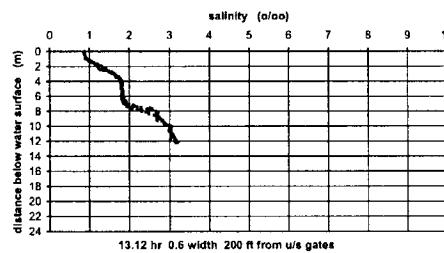
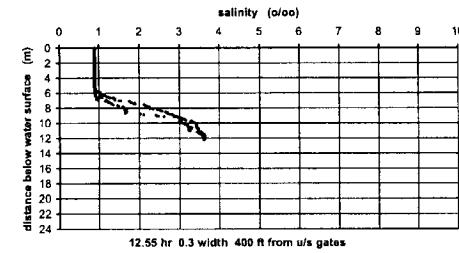
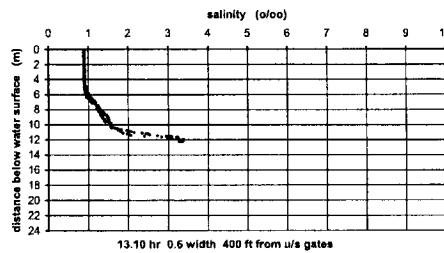
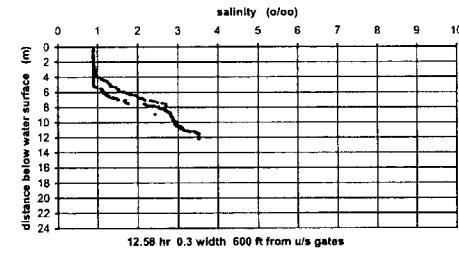
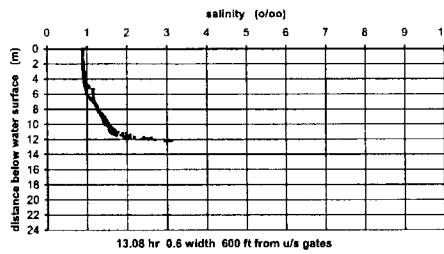
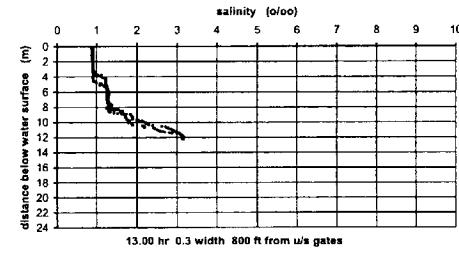
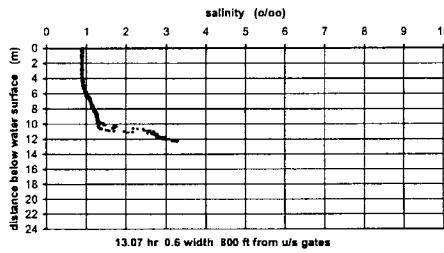
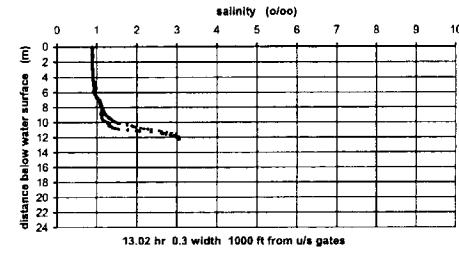
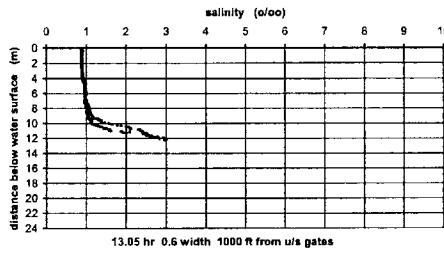




fixed position u/s side Lock E - vessel moving from Lock E to Lock D

LOCK E
DOWNLOCKAGE, NORTHBOUND VESSEL

PHASE 3



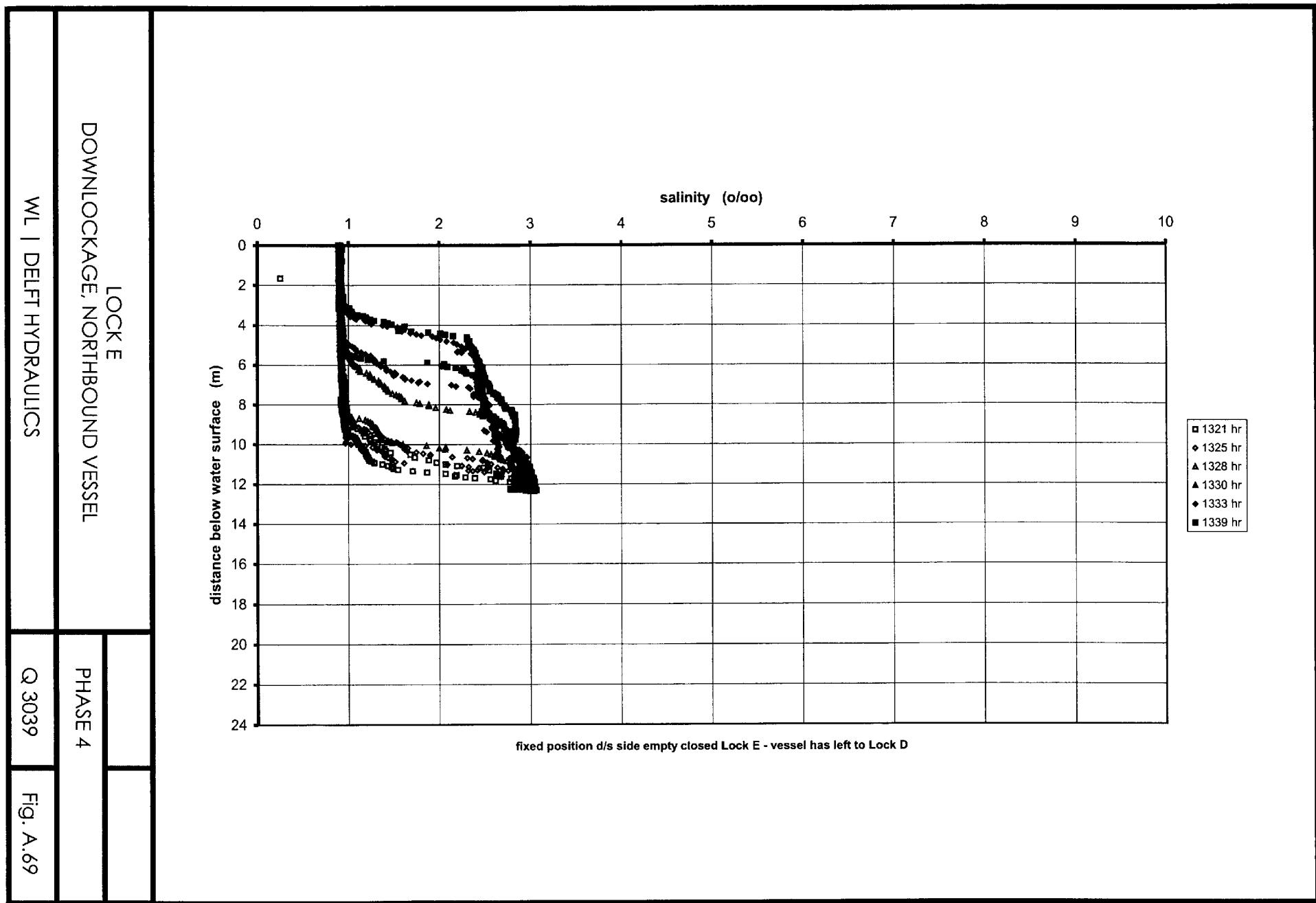
LOCK E
DOWNLOCKAGE, NORTHBOUND VESSEL

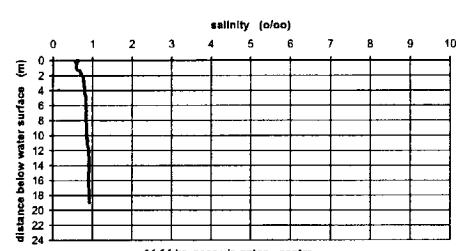
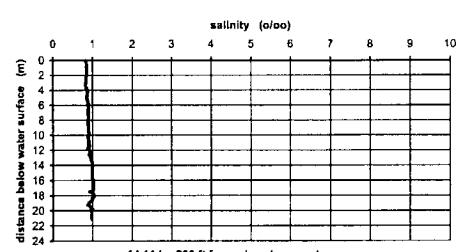
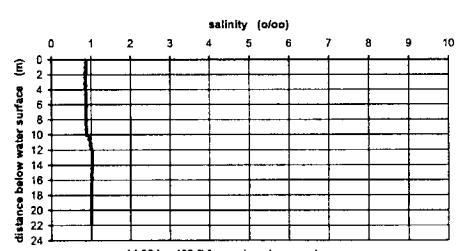
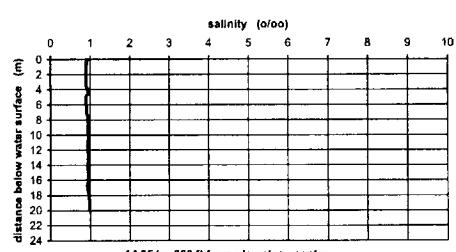
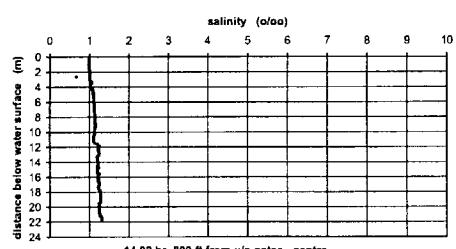
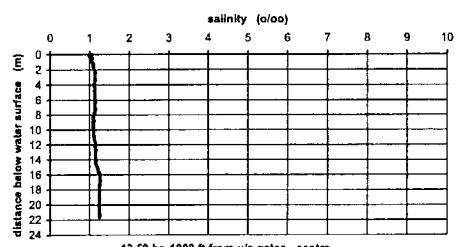
PHASE 4

WL | DELFT HYDRAULICS

Q 3039

Fig. A.68





LOCK E
DOWNLOCKAGE, NORTHBOUND VESSEL

PHASE 5

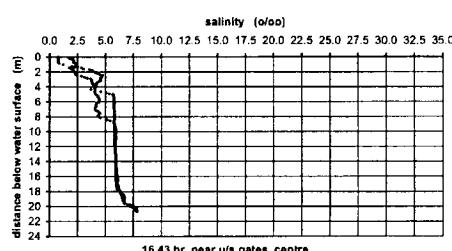
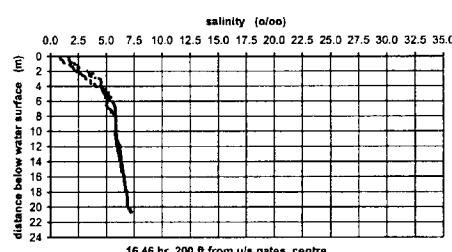
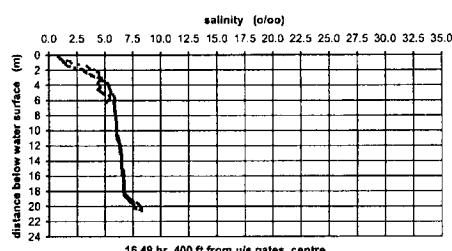
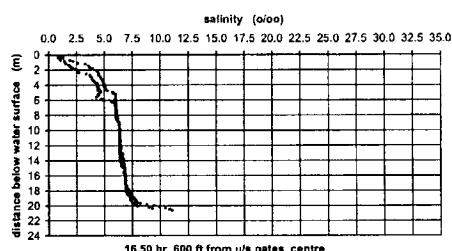
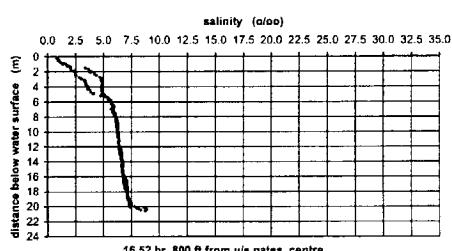
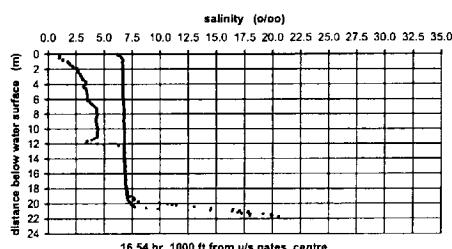
WL | DELFT HYDRAULICS

Q 3039

Fig. A.70

LOCK D

DOWNLOCKAGE



LOCK D
DOWNLOCKAGE, NORTHBOUND VESSEL

PHASE 1

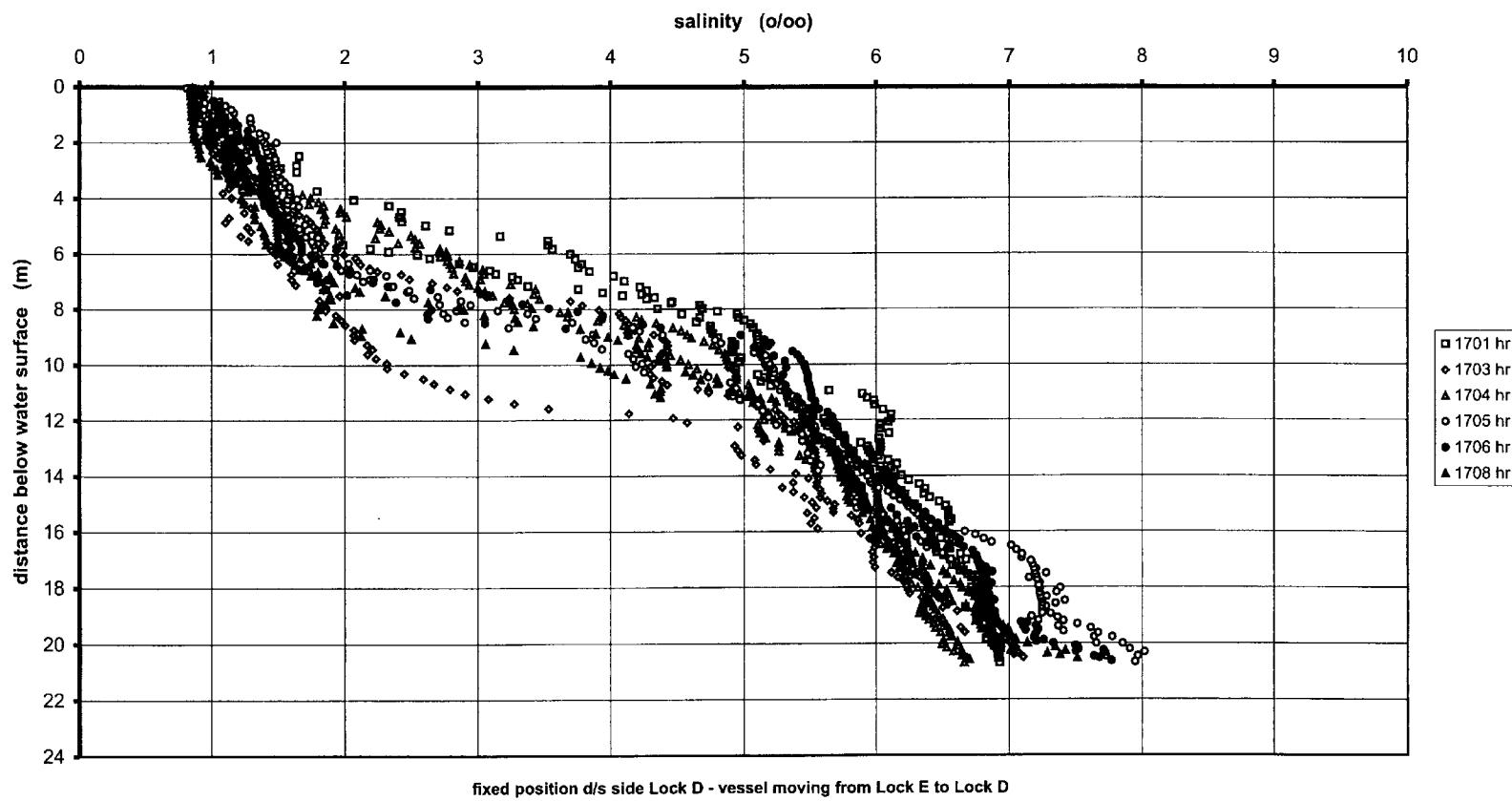
LOCK D
DOWNLOCKAGE, NORTHBOUND VESSEL

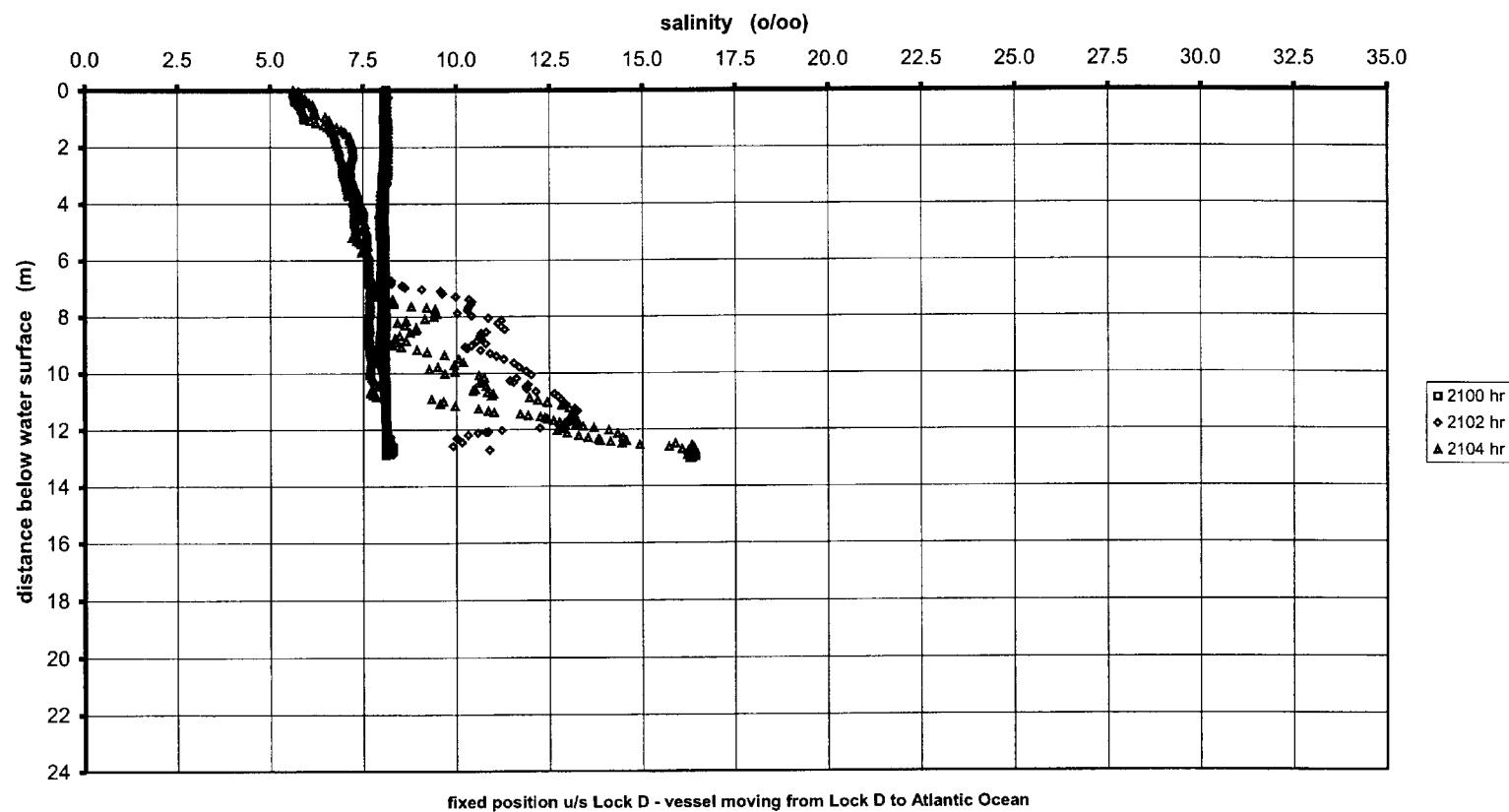
WL | DELFT HYDRAULICS

PHASE 2

Q 3039

Fig. A.72



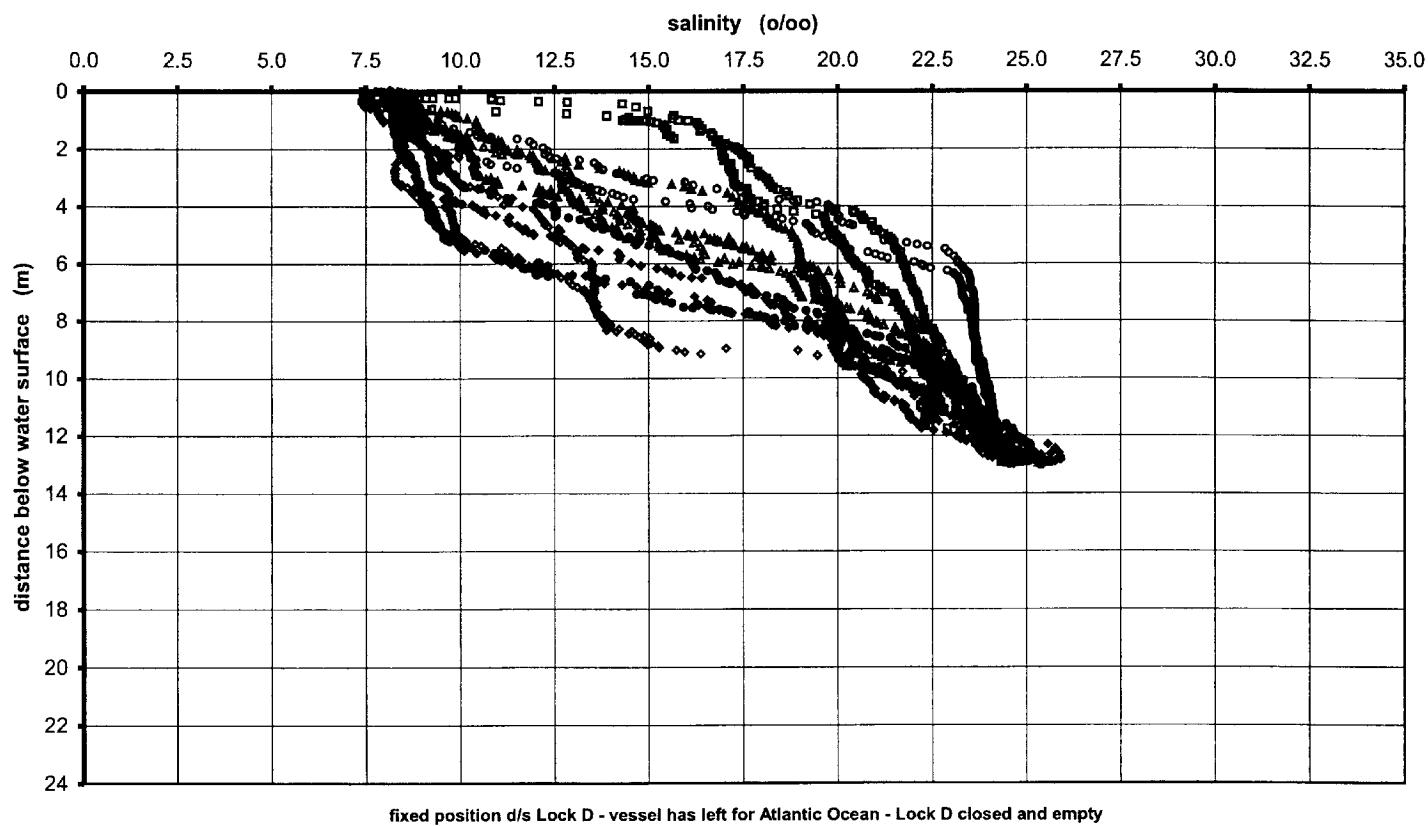


LOCK D
DOWNLOCKAGE, NORTHBOUND VESSEL

PHASE 3

Q 3039

FIG. A.73

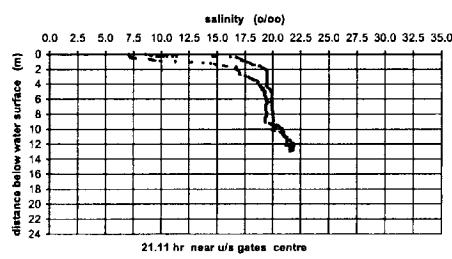
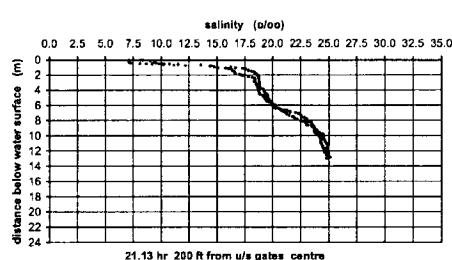
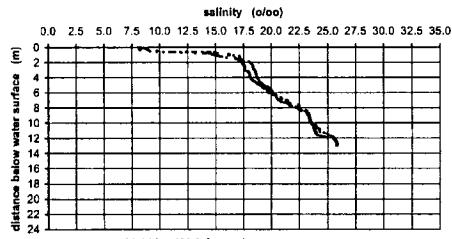
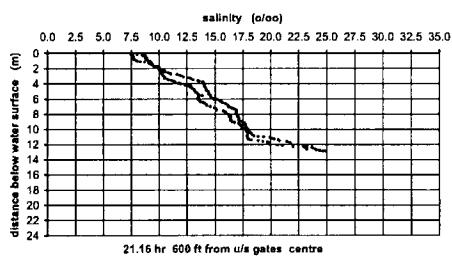
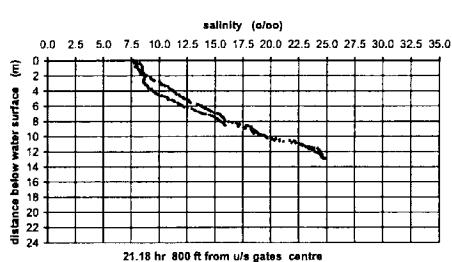
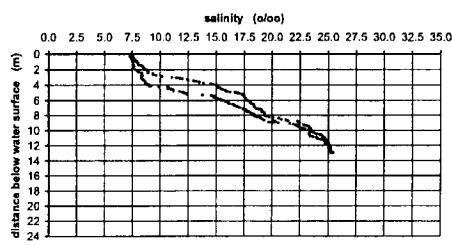


LOCK D
DOWNLOCKAGE, NORTHBOUND VESSEL

PHASE 4

Q 3039

Fig. A.74



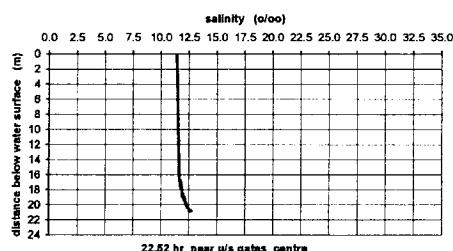
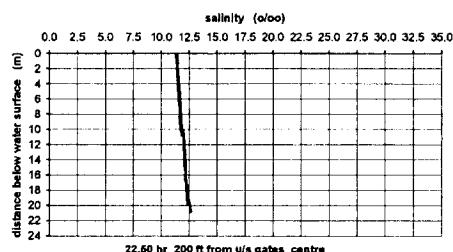
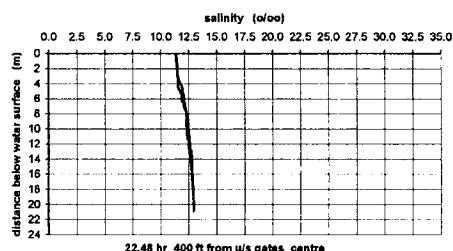
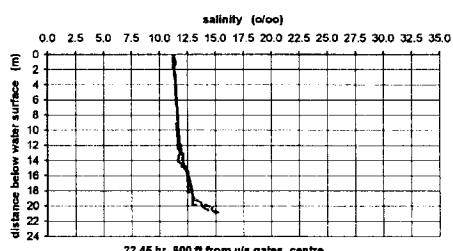
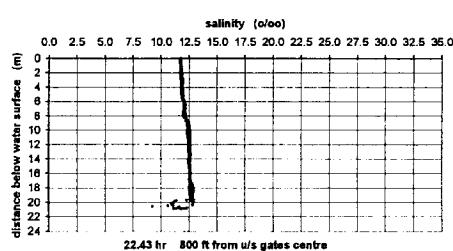
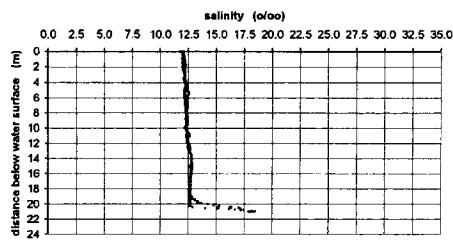
LOCK D
DOWNLOCKAGE, NORTHBOUND VESSEL

PHASE 4

WL | DELFT HYDRAULICS

Q 3039

Fig. A.75



LOCK D
DOWNLOCKAGE, NORTHBOUND VESSEL

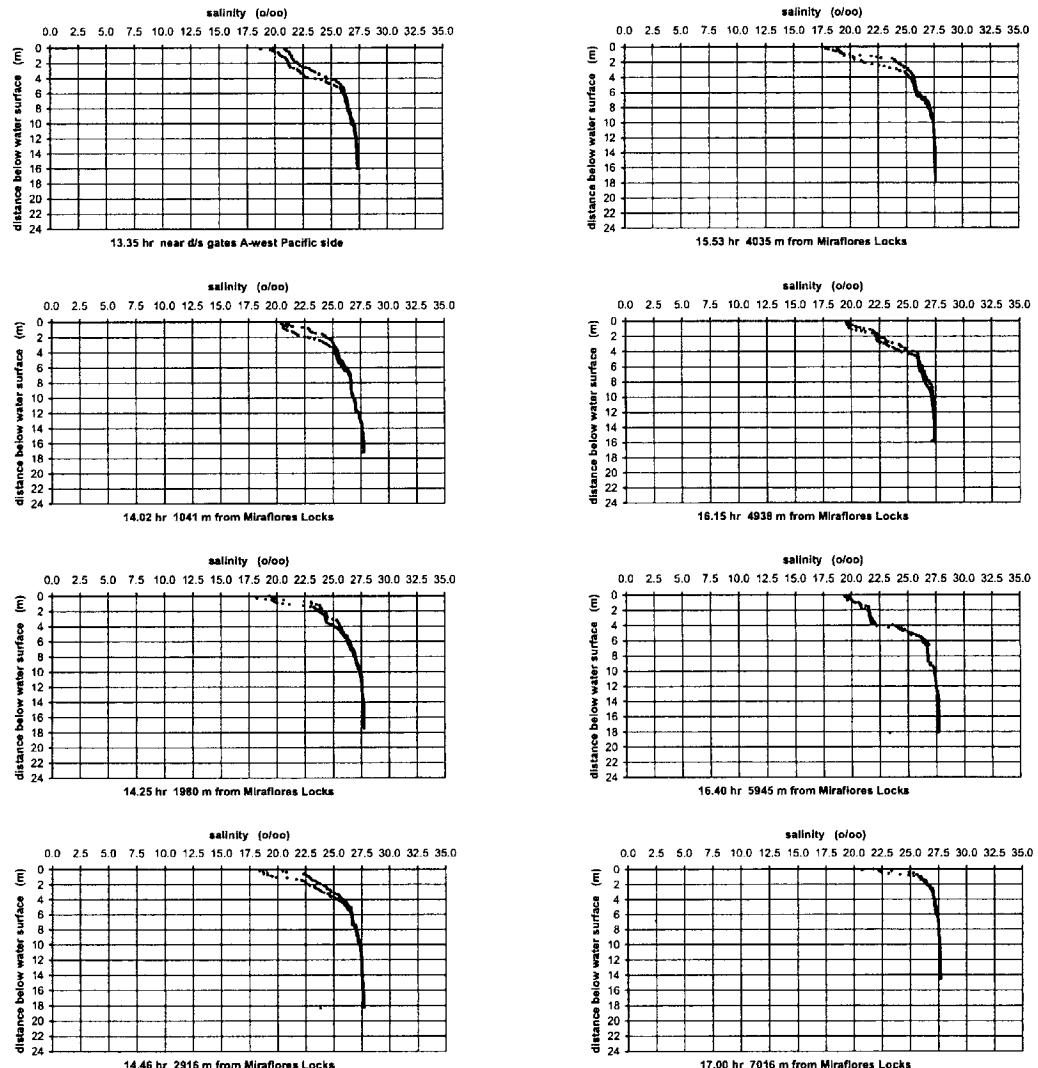
PHASE 5

WL | DELFT HYDRAULICS

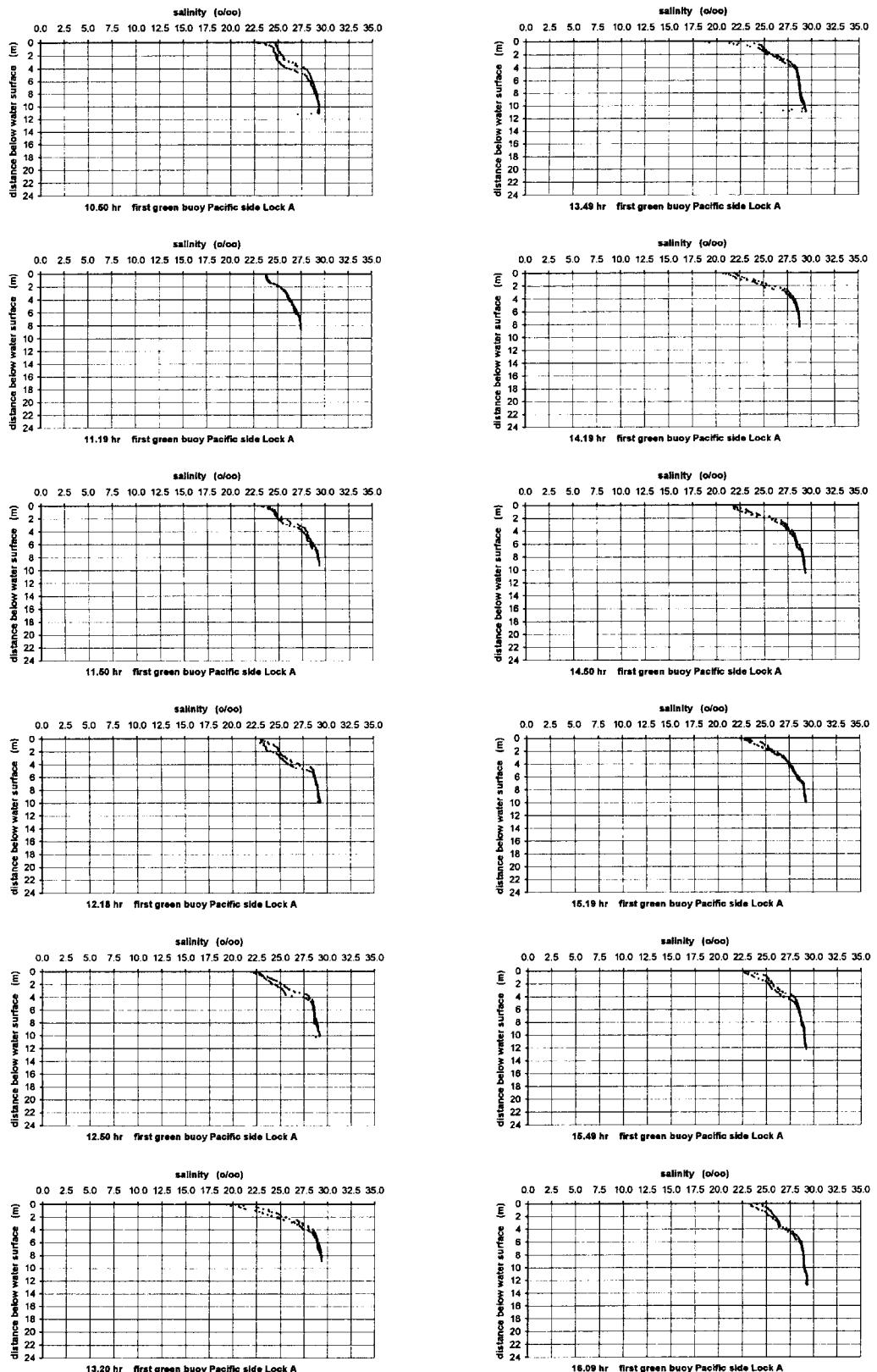
Q 3039

Fig. A.76

PACIFIC ENTRANCE

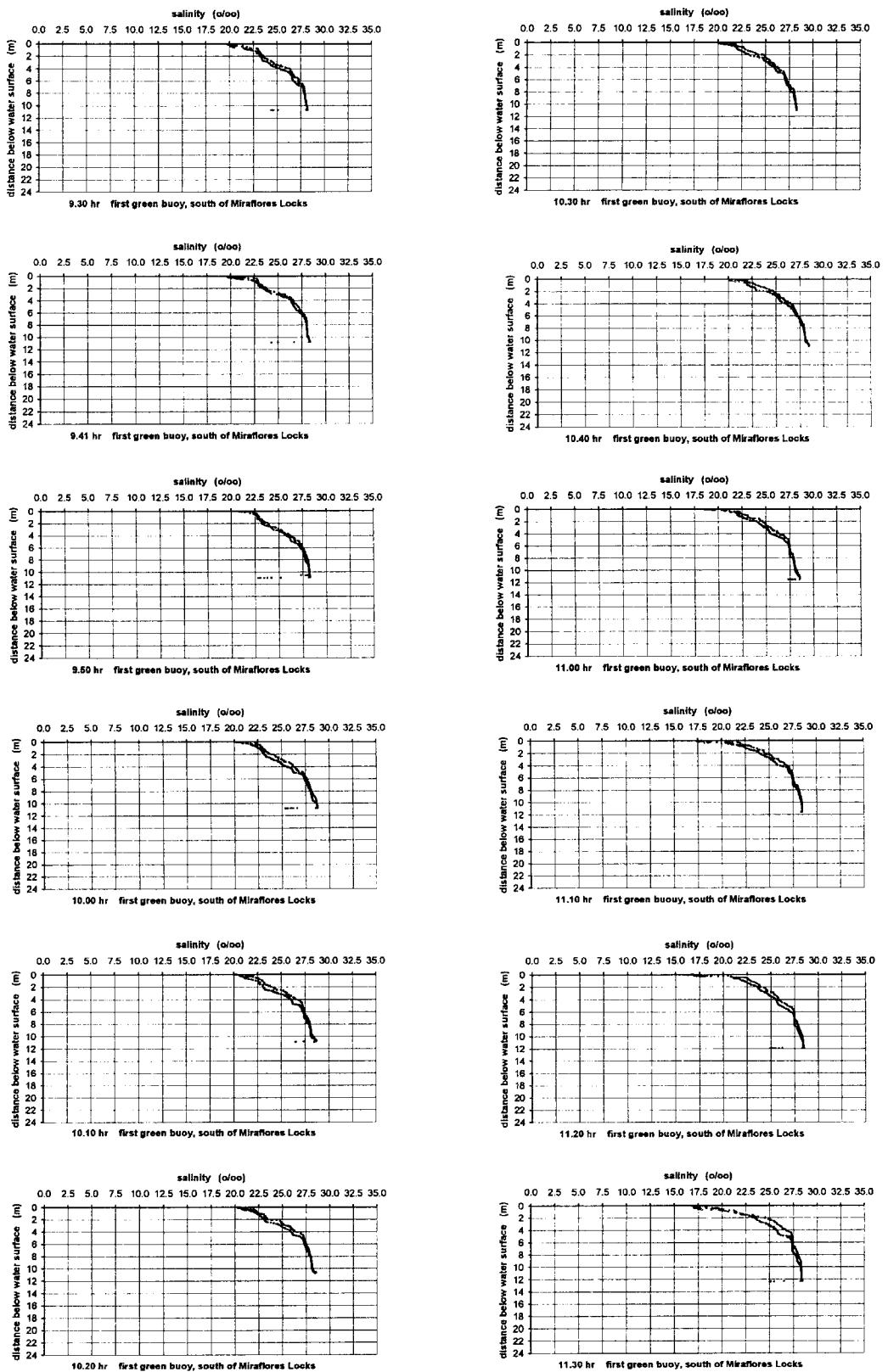


LONG SECTION
MIRAFLORES LOCKS TOWARDS PACIFIC OCEAN



FIXED POSITION AT
FIRST GREEN BUOY PACIFIC SIDE LOCK A

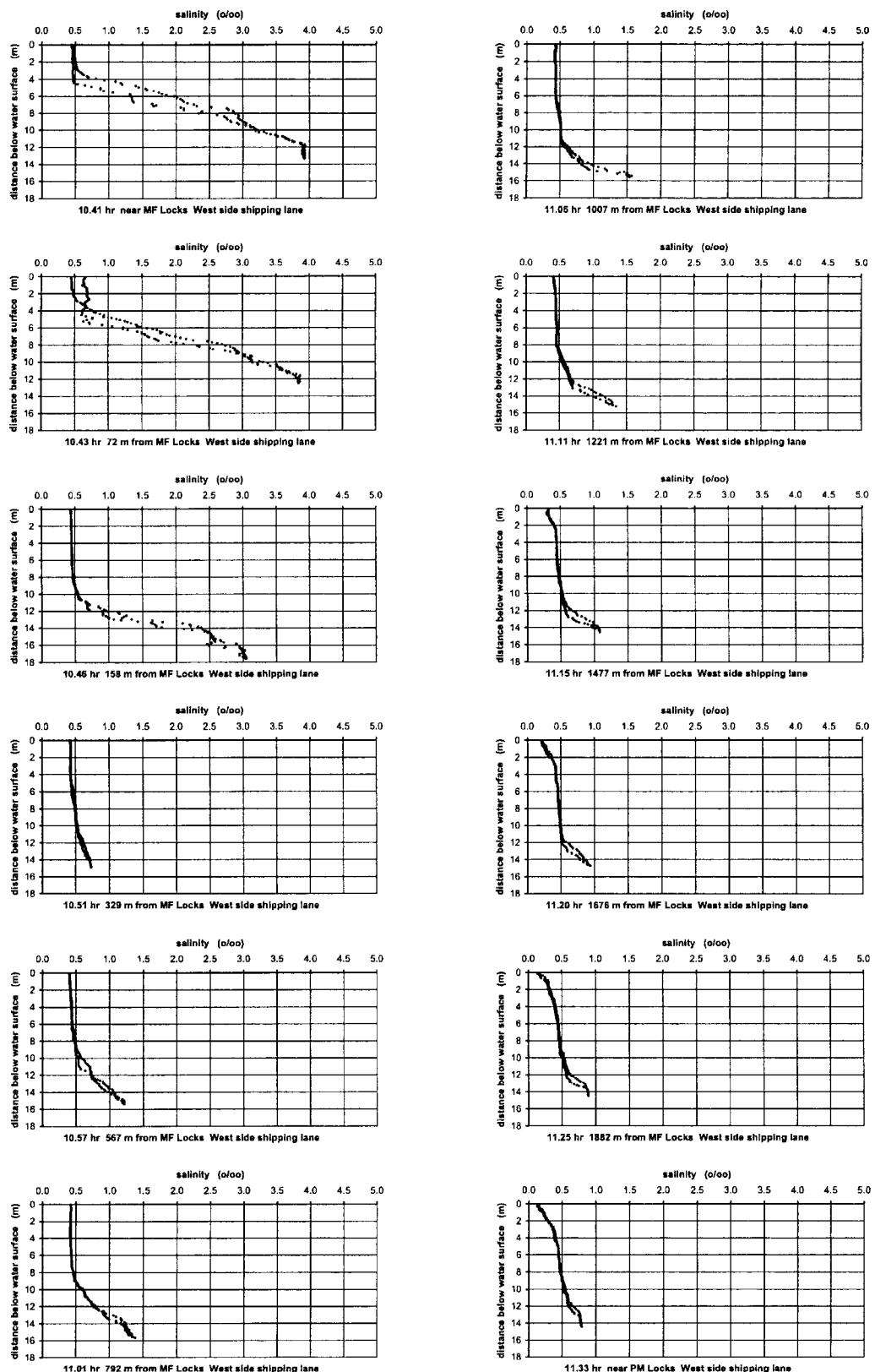
5 December 2001



FIXED POSITION AT FIRST GREENBUOY
SHIPPING LANE WEST SIDE, SOUTH OF MIRAFLORES LOCKS

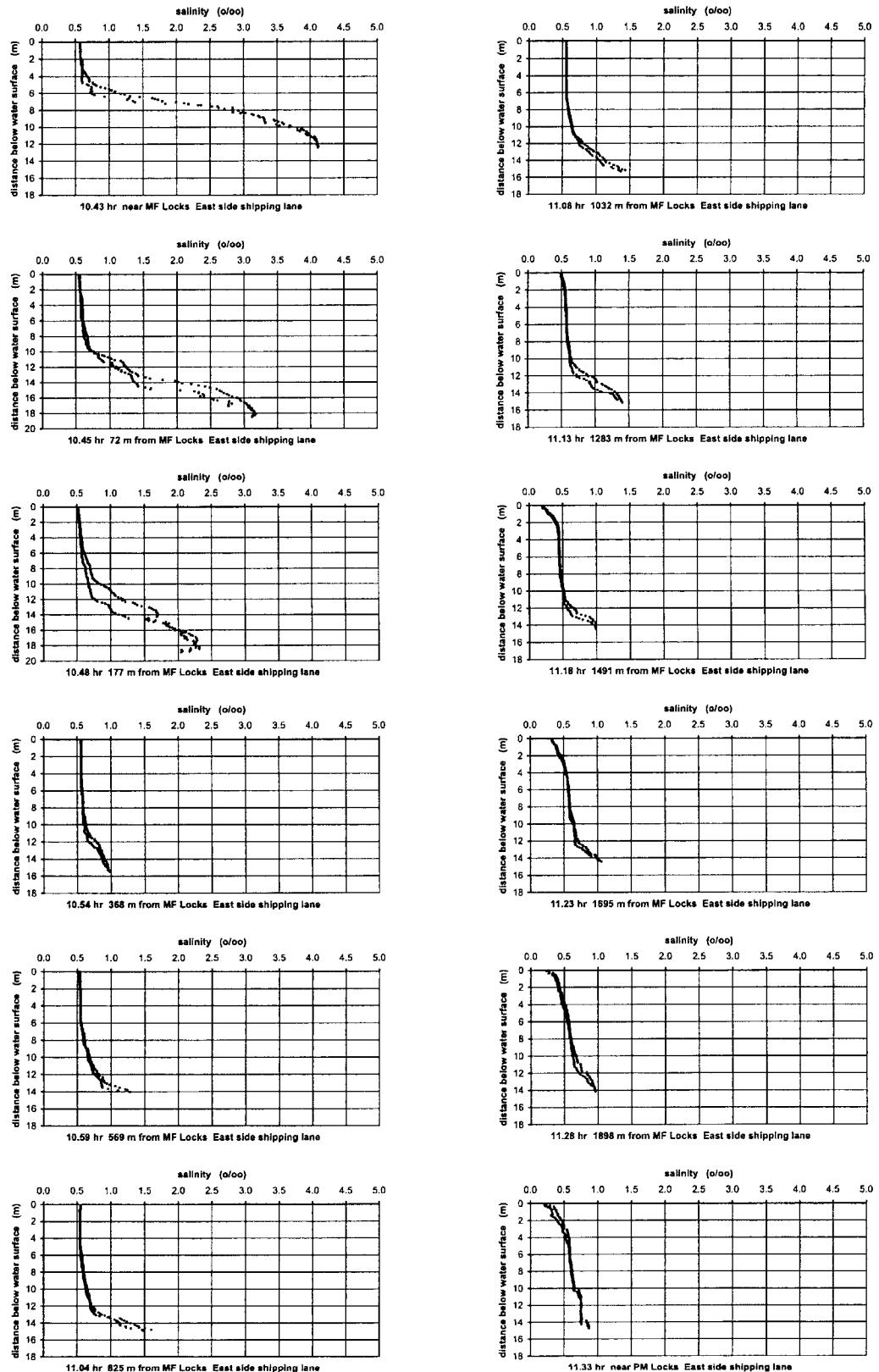
14 December 2001

MIRAFLORES LAKE



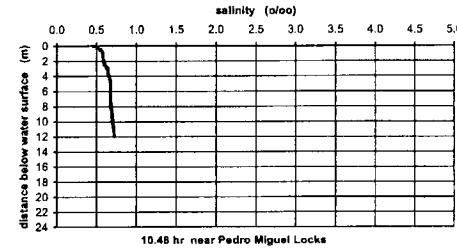
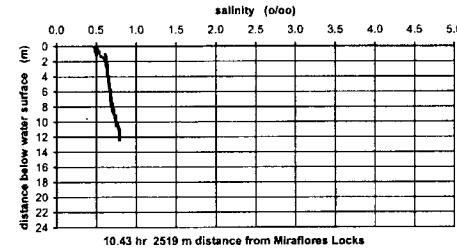
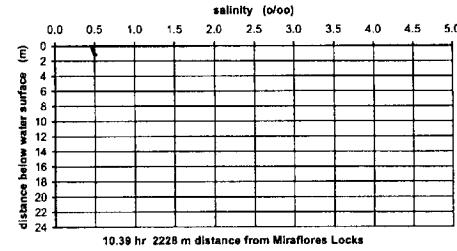
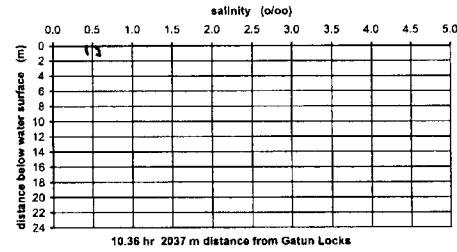
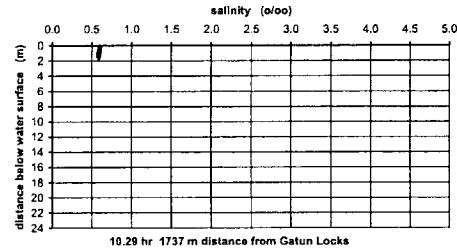
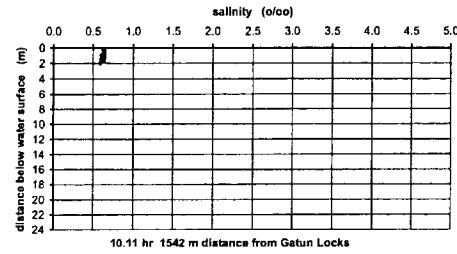
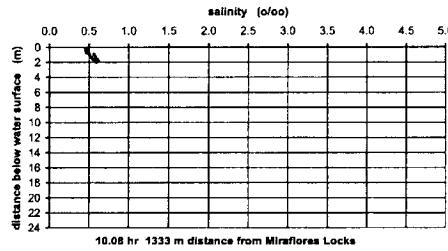
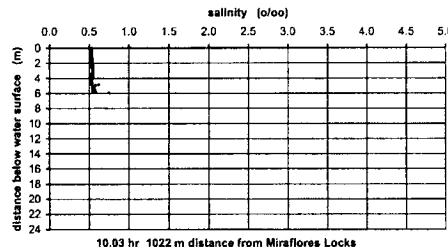
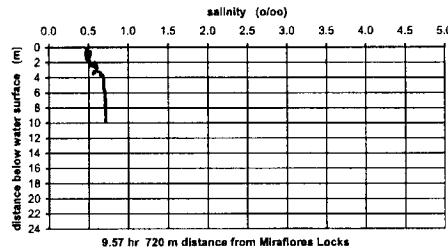
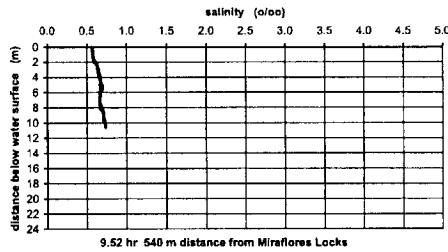
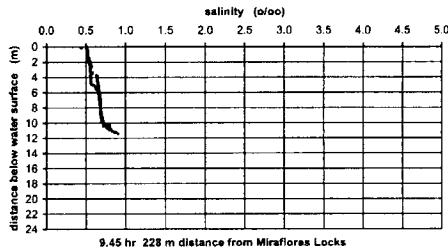
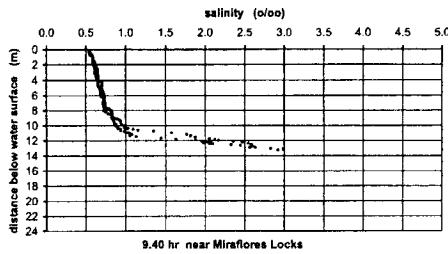
LONGITUDINAL SECTION MIRAFLORES LAKE
WEST SIDE OF SHIPPING LANE

LAKE LEVEL +54.7 ft PLD



LONGITUDINAL SECTION MIRAFLORES LAKE
EAST SIDE OF SHIPPING LANE

LAKE LEVEL +54.7 ft PLD



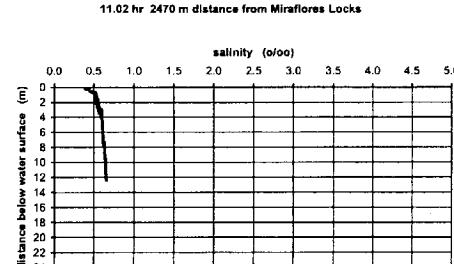
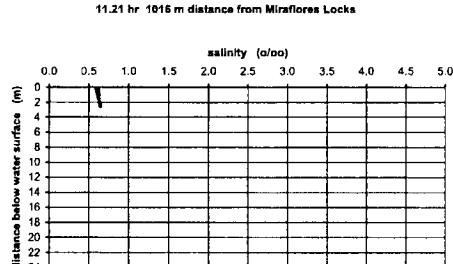
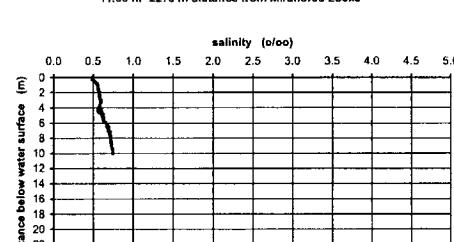
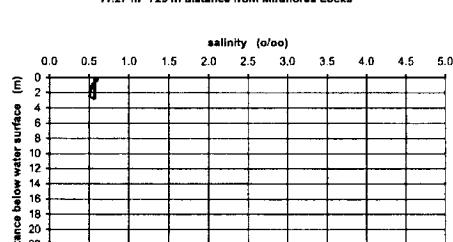
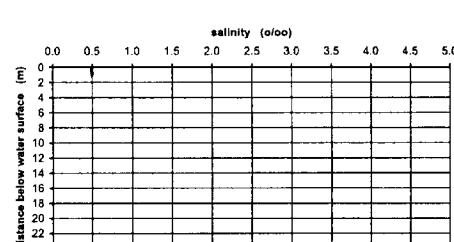
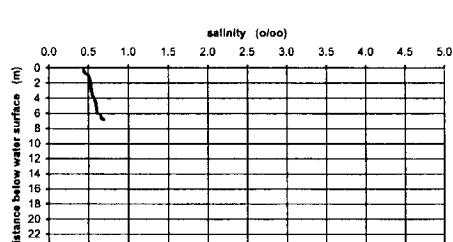
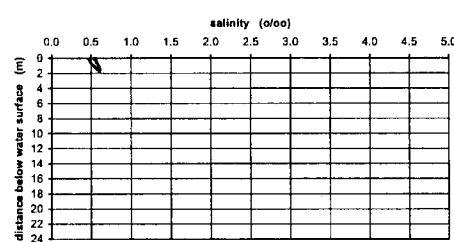
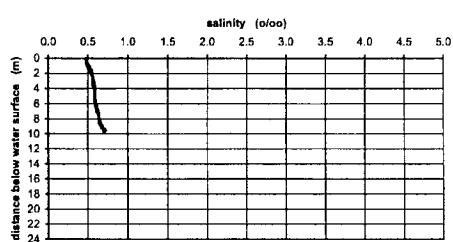
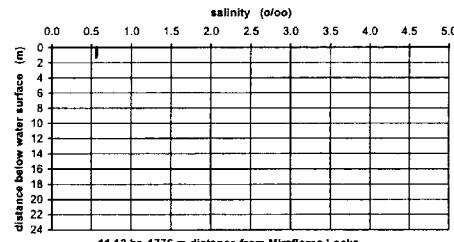
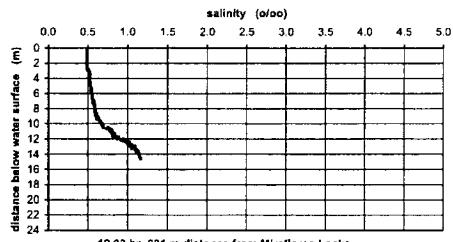
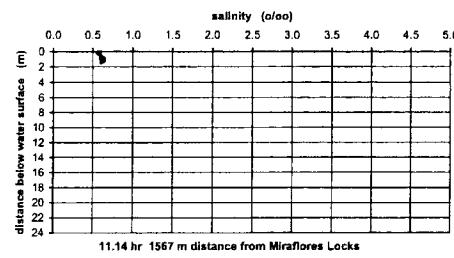
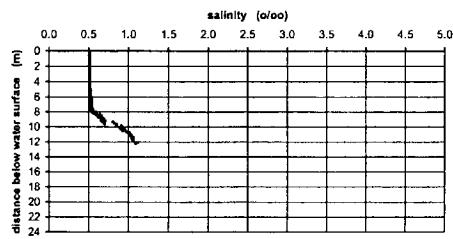
LONGITUDINAL SECTION ALONG WEST BANK MIRAFLORES LAKE

WATER LEVEL +54.3 FT PLD

WL | DELFT HYDRAULICS

Q 3039

Fig. A.81



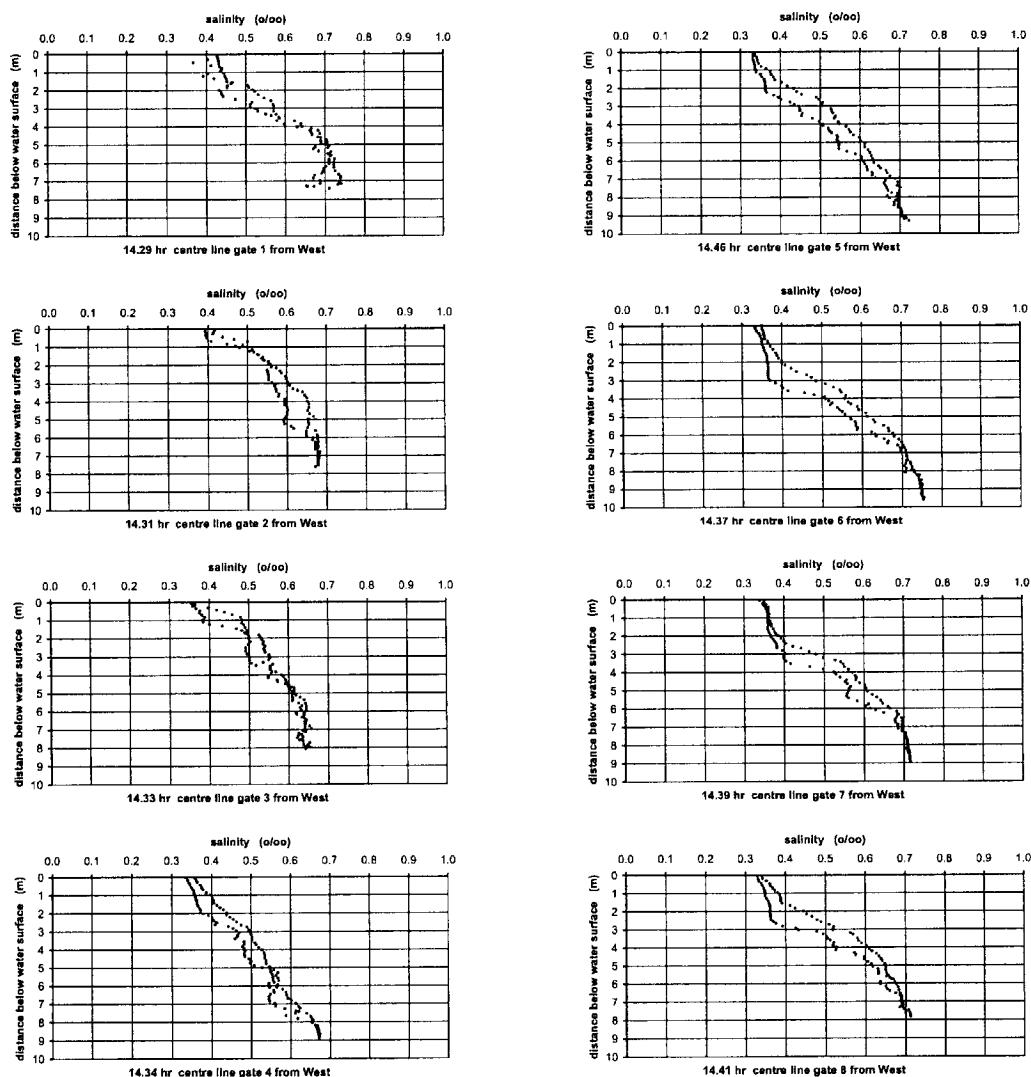
LONGITUDINAL SECTION ALONG EAST BANK MIRAFLORES LAKE

WATERLEVEL +54.3 FT PLD

WL | DELFT HYDRAULICS

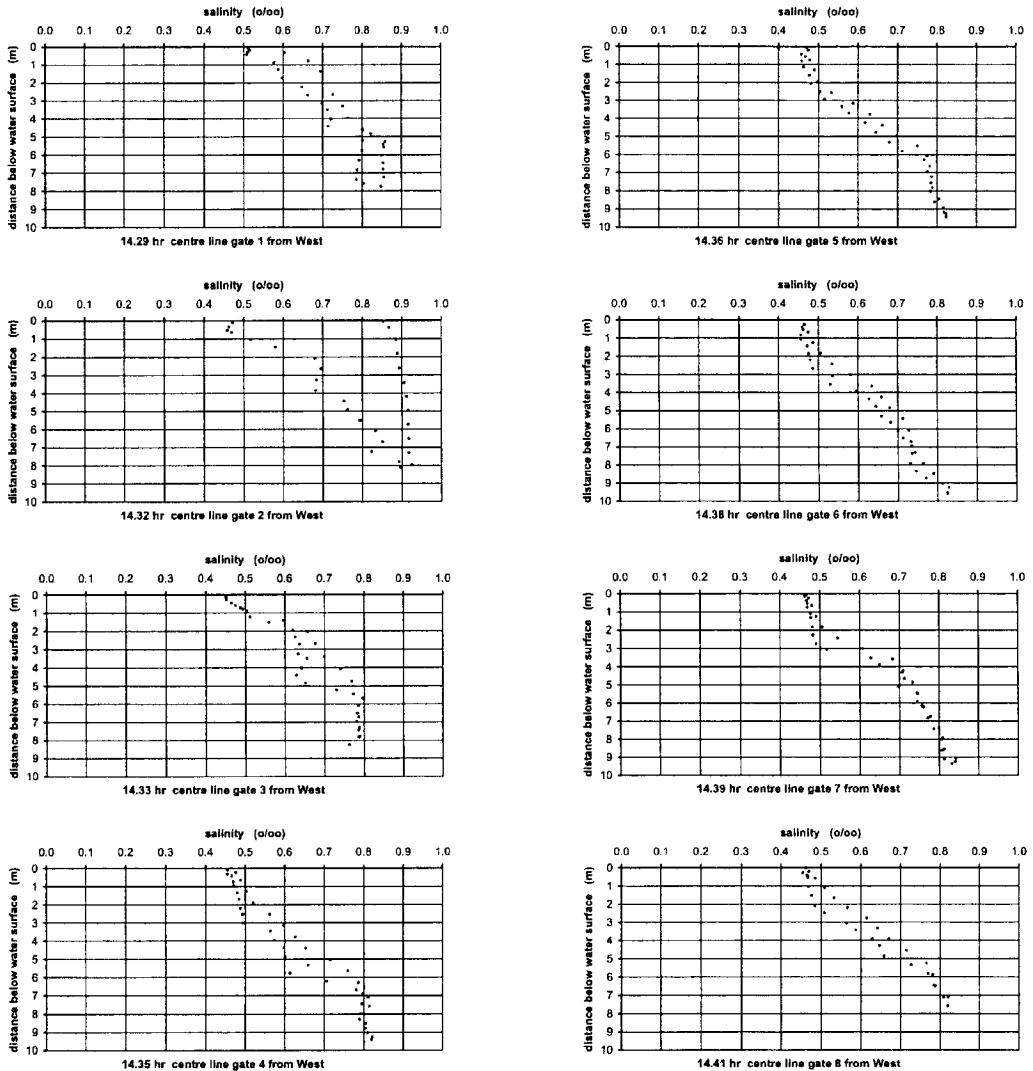
Q 3039

Fig. A.82



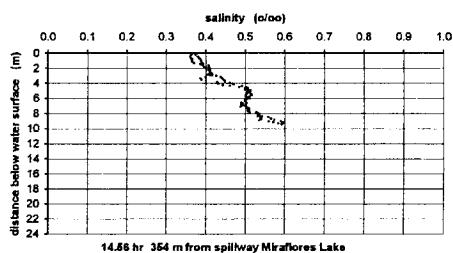
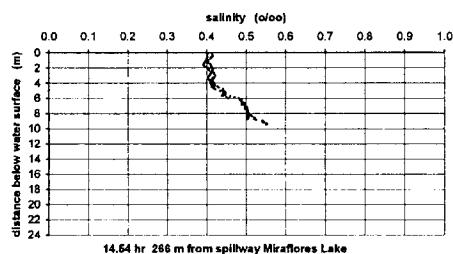
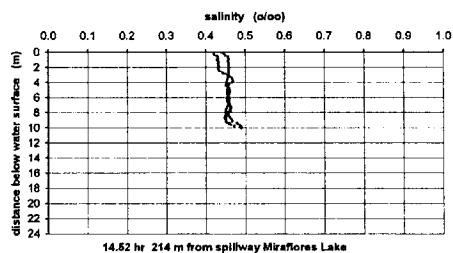
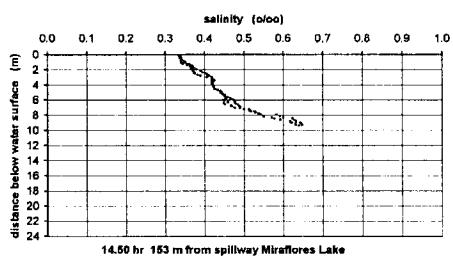
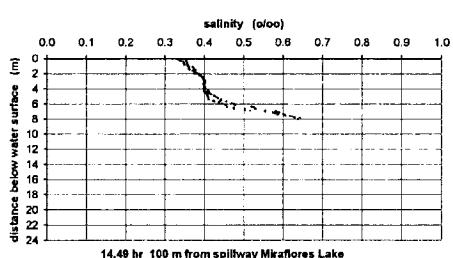
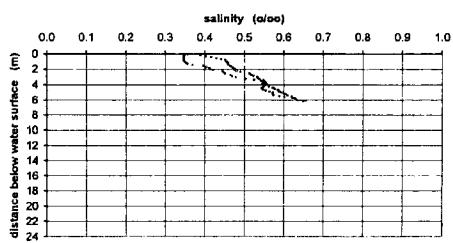
LONG SECTION MIRAFLORES LAKE
10 M DISTANCE FROM MIRAFLORES SPILLWAY

WATER LEVEL +54.7 FT PLD



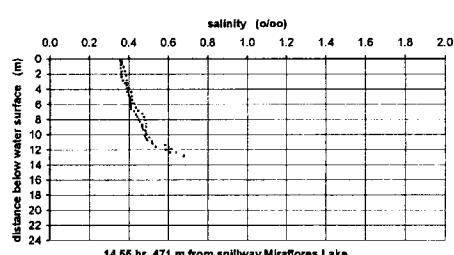
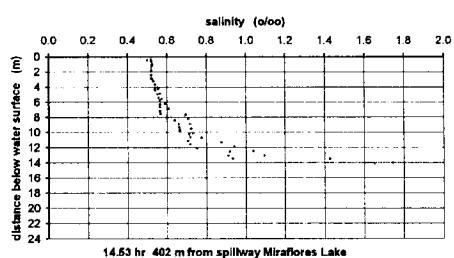
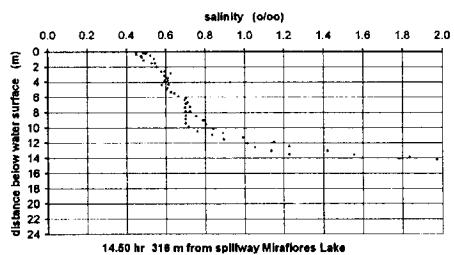
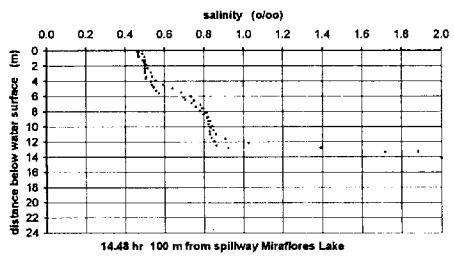
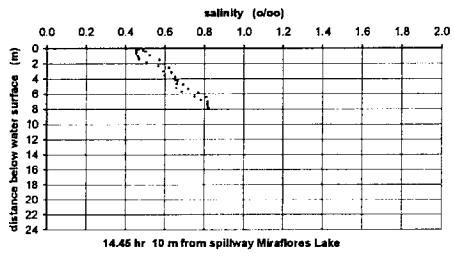
LONG SECTION MIRAFLORES LAKE
30 M DISTANCE FROM MIRAFLORES SPILLWAY

WATER LEVEL +54.7 FT PLD



LONGITUDINAL SECTION PERPENDICULAR
TO MIRAFLORES SPILLWAY, CENTRE LINE GATE 7

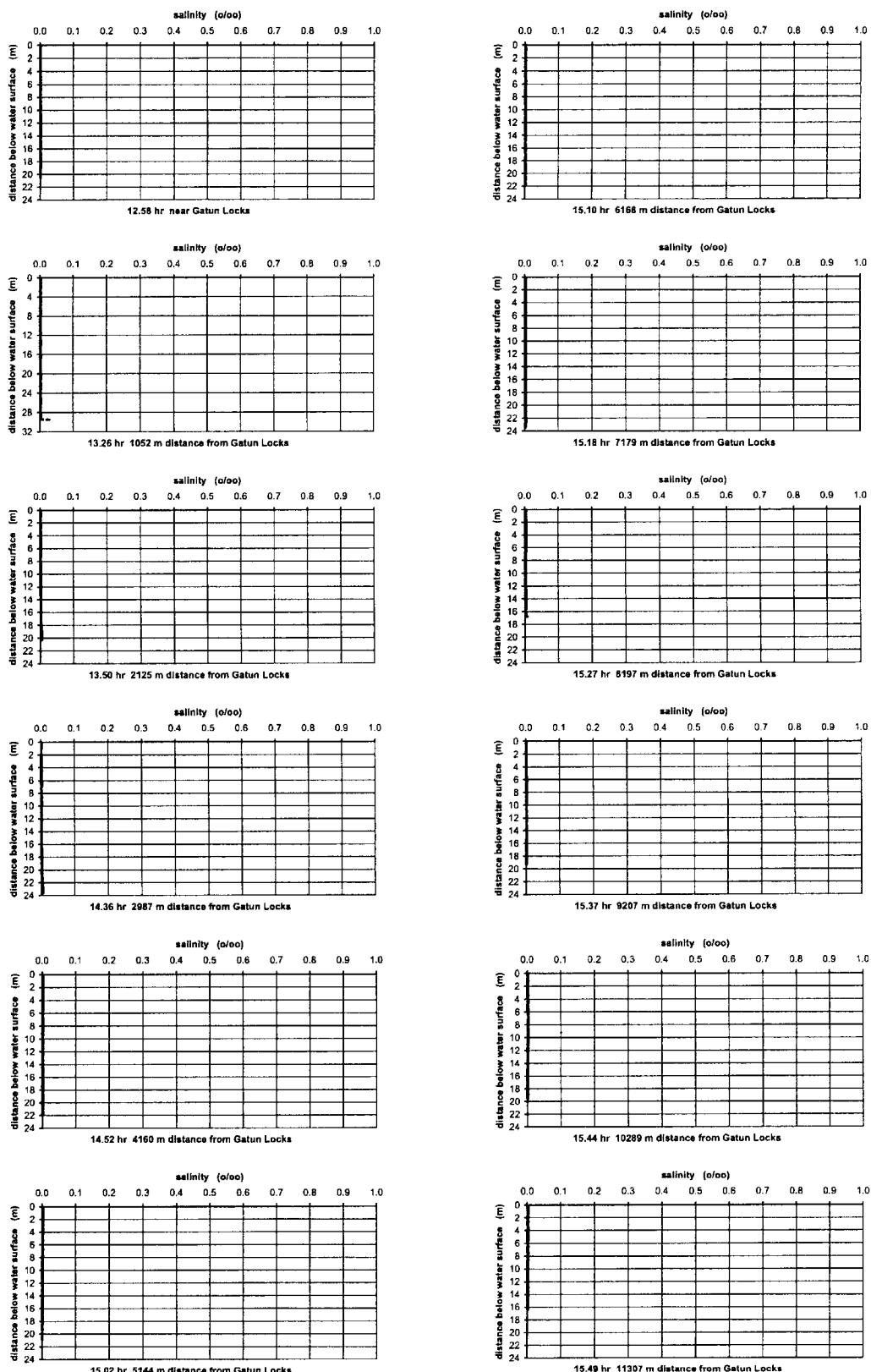
Water Level +54.7



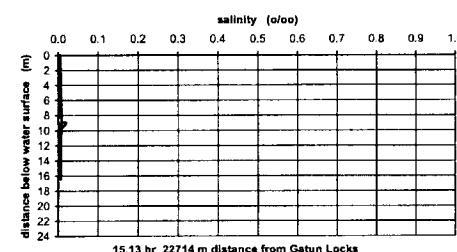
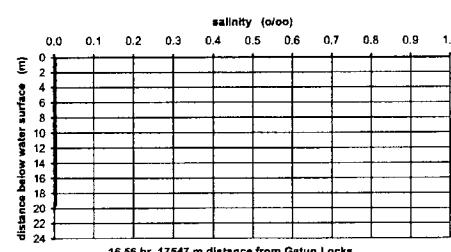
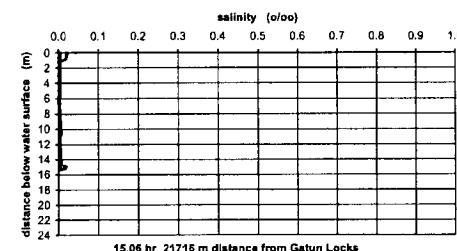
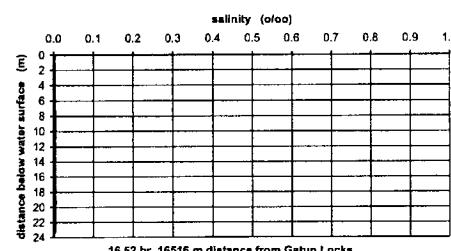
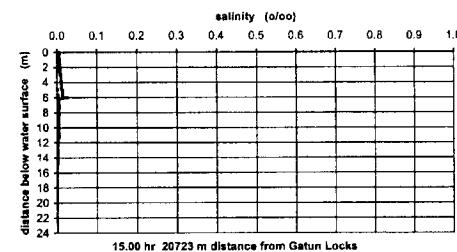
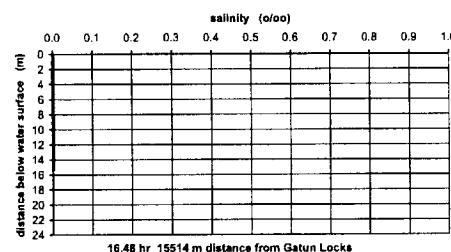
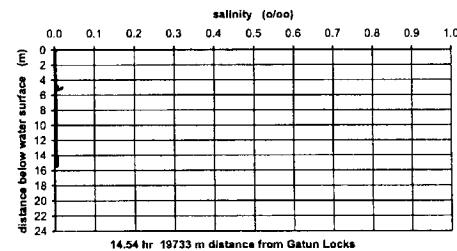
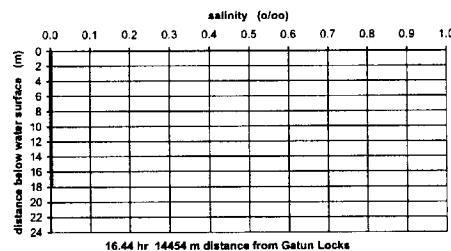
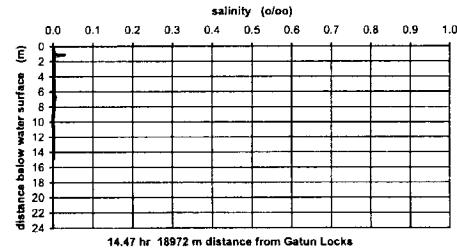
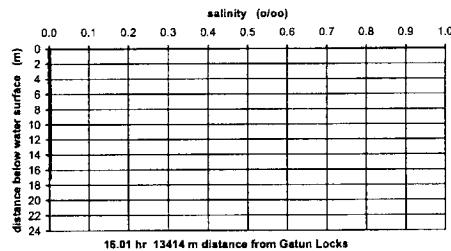
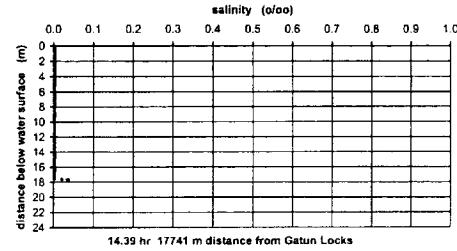
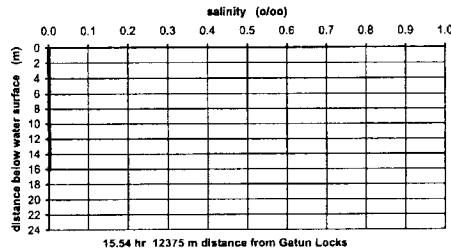
LONGITUDINAL SECTION PERPENDICULAR
TO MIRAFLORES SPILLWAY, CENTRE LINE GATE 3

Water Level +54.7

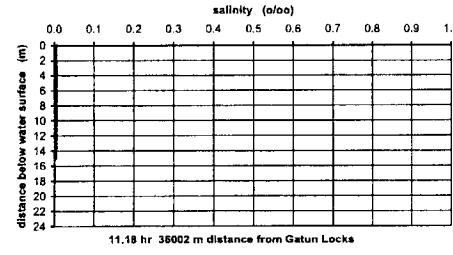
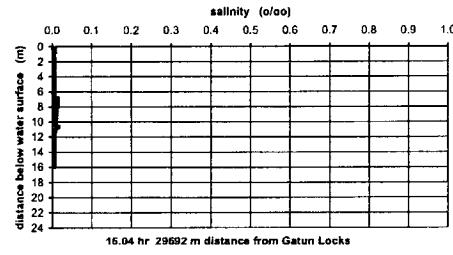
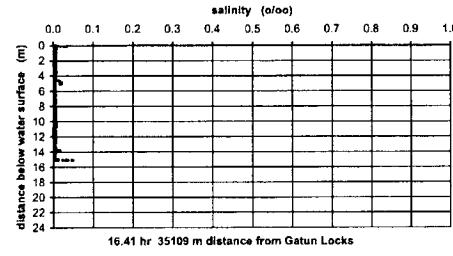
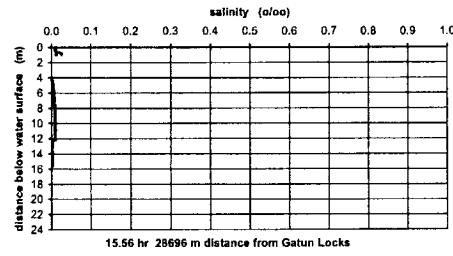
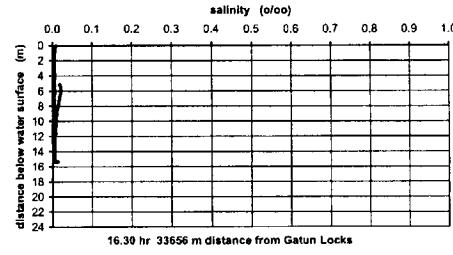
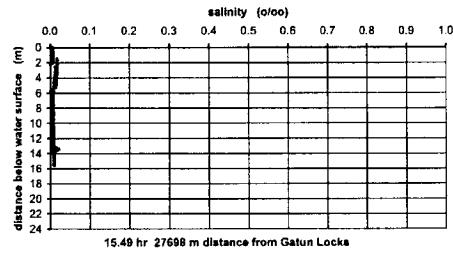
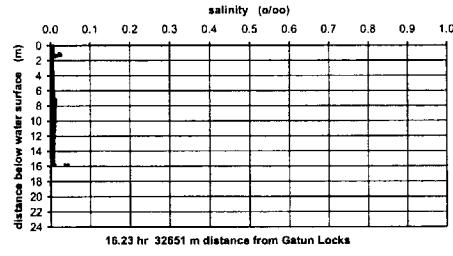
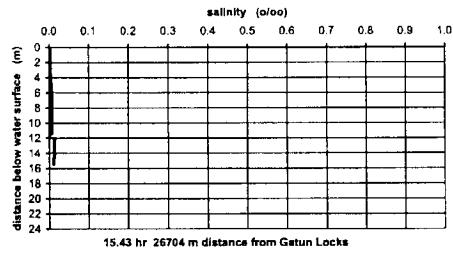
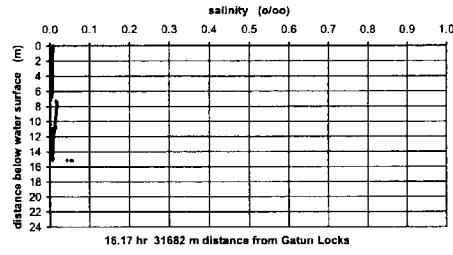
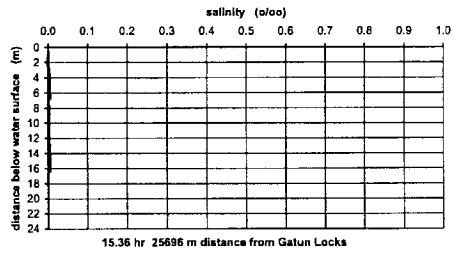
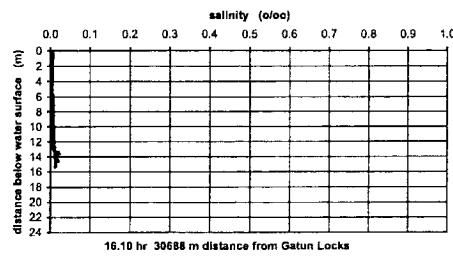
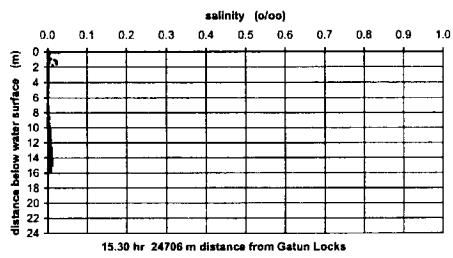
**GATUN LOCKS TO
PEDRO MIGUEL LOCKS**



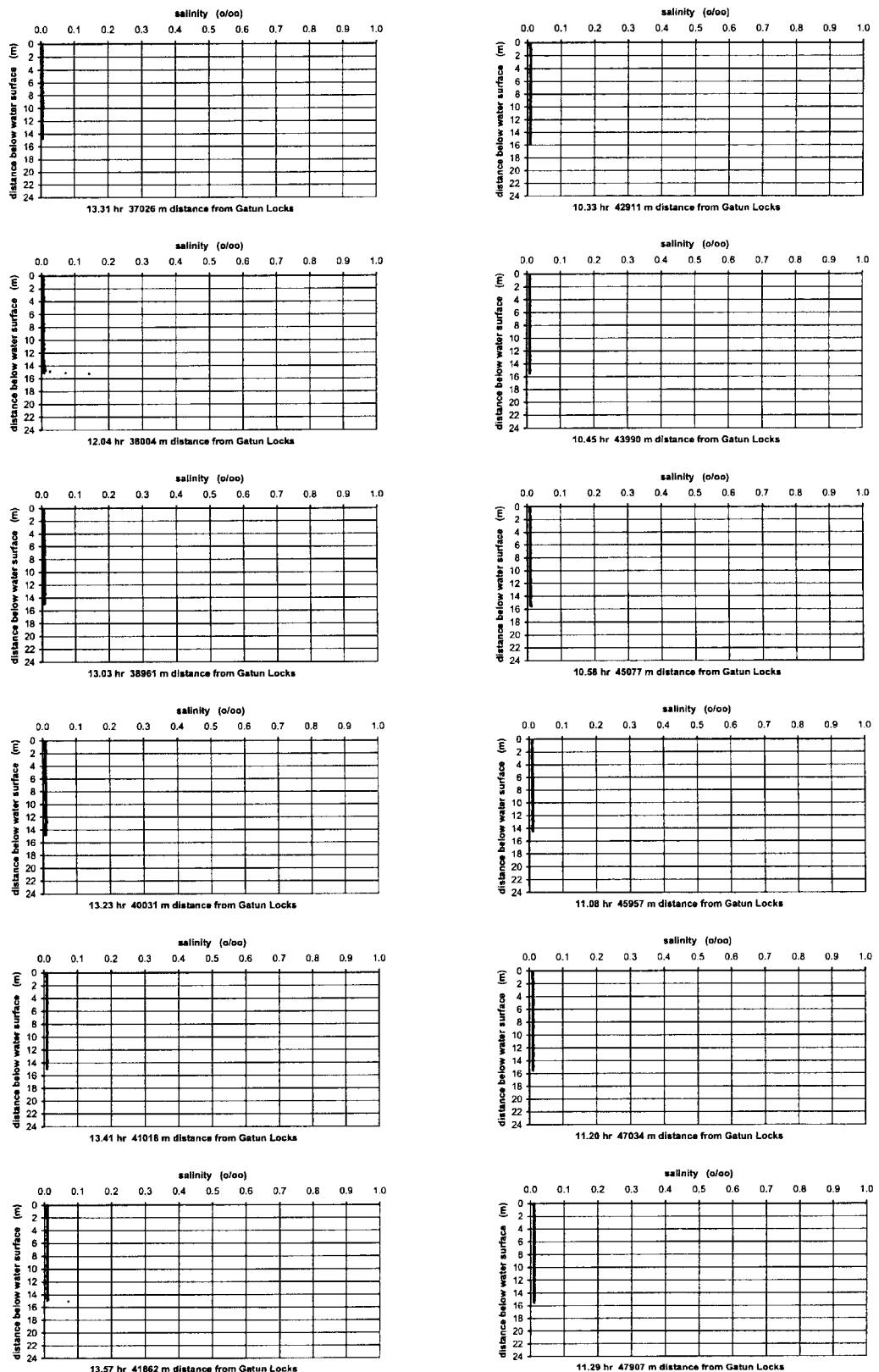
LONGITUDINAL SECTION GATUN LOCKS TO PEDRO MIGUEL LOCKS



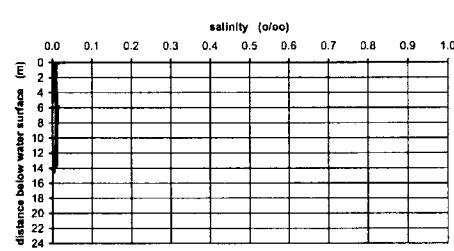
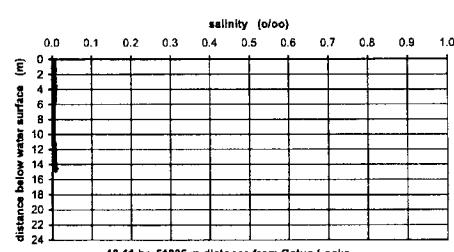
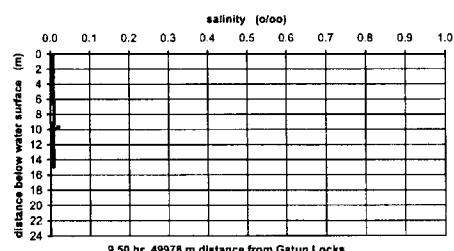
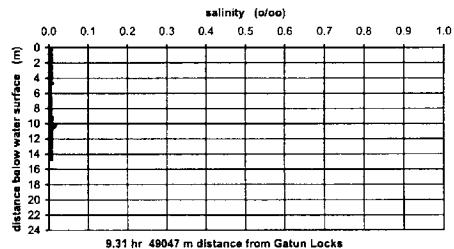
LONGITUDINAL SECTION GATUN LOCKS TO PEDRO MIGUEL LOCKS



LONGITUDINAL SECTION GATUN LOCKS TO PEDRO MIGUEL LOCKS

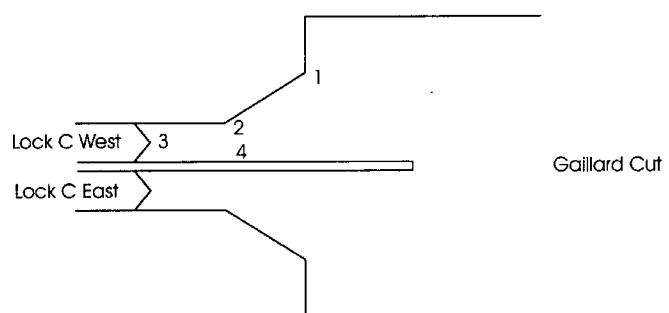
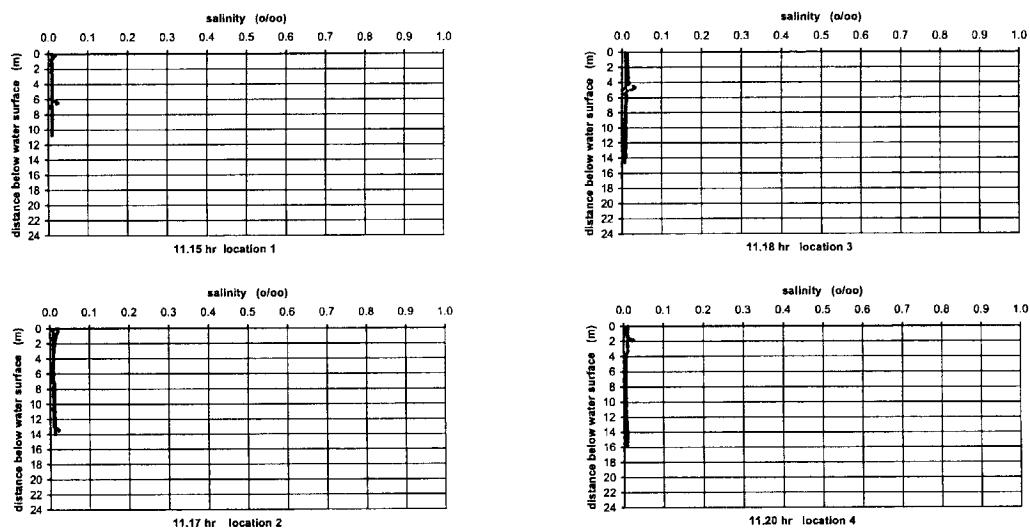


LONGITUDINAL SECTION
GATUN LOCKS TO PEDRO MIGUEL LOCKS

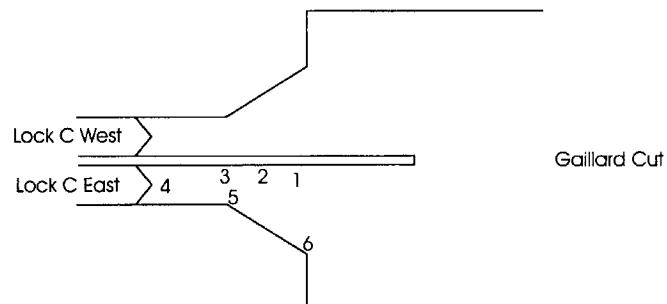
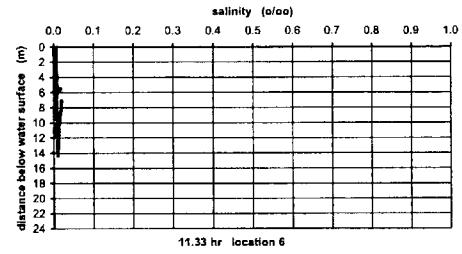
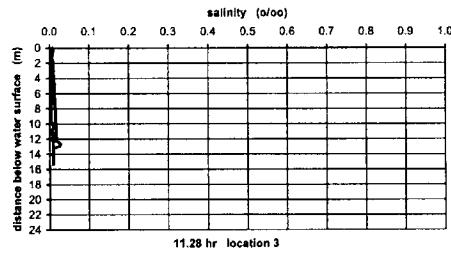
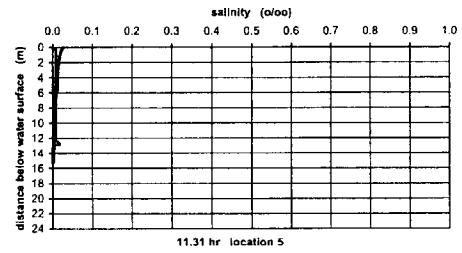
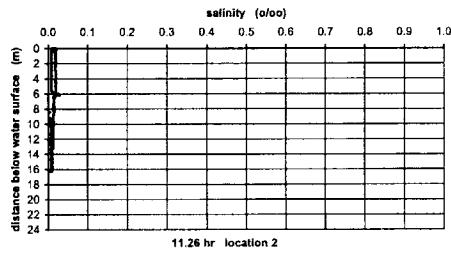
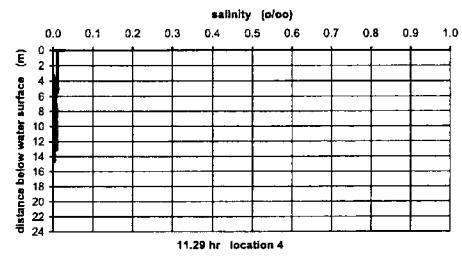
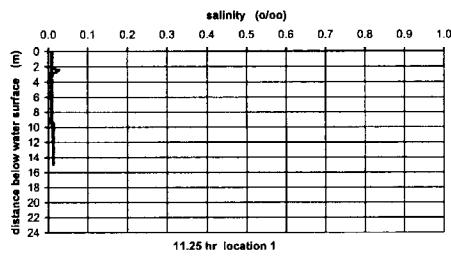


LONGITUDINAL SECTION
GATUN LOCKS TO PEDRO MIGUEL LOCKS

MEASUREMENTS NEAR PEDRO MIGUEL LOCKS



MEASUREMENTS AT UPSTREAM SIDE
PEDRO MIGUEL LOCKS



MEASUREMENTS AT UPSTREAM SIDE
PEDRO MIGUEL LOCKS

MEASUREMENTS NEAR GATUN LOCKS

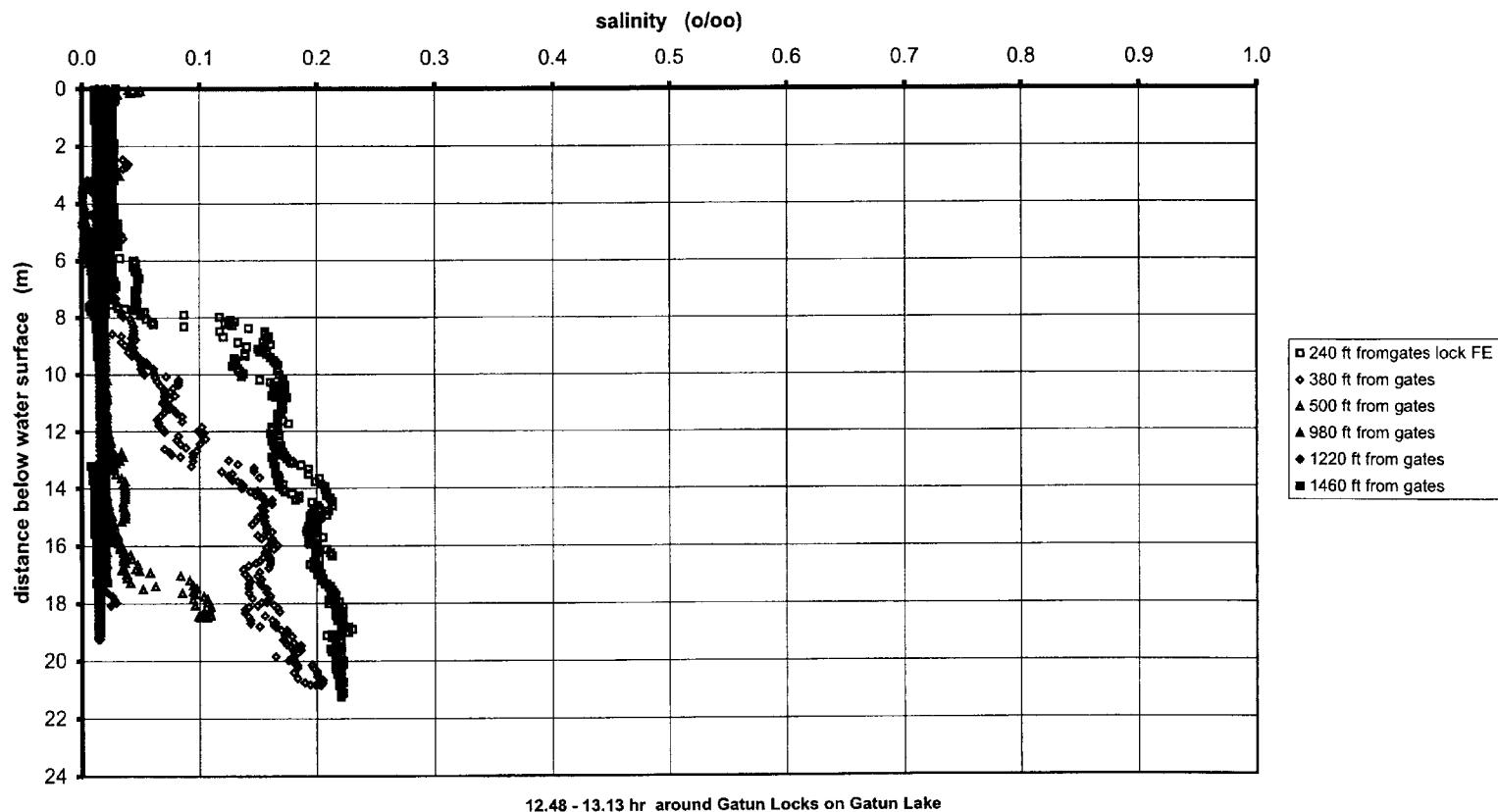
MEASUREMENTS NEAR GATUN LOCKS
EAST SIDE CENTRE WALL GATUN LAKE

WL | DELFT HYDRAULICS

WATER LEVEL +87.3 FT

Q 3039

Fig. A.94



MEASUREMENTS NEAR GATUN LOCKS

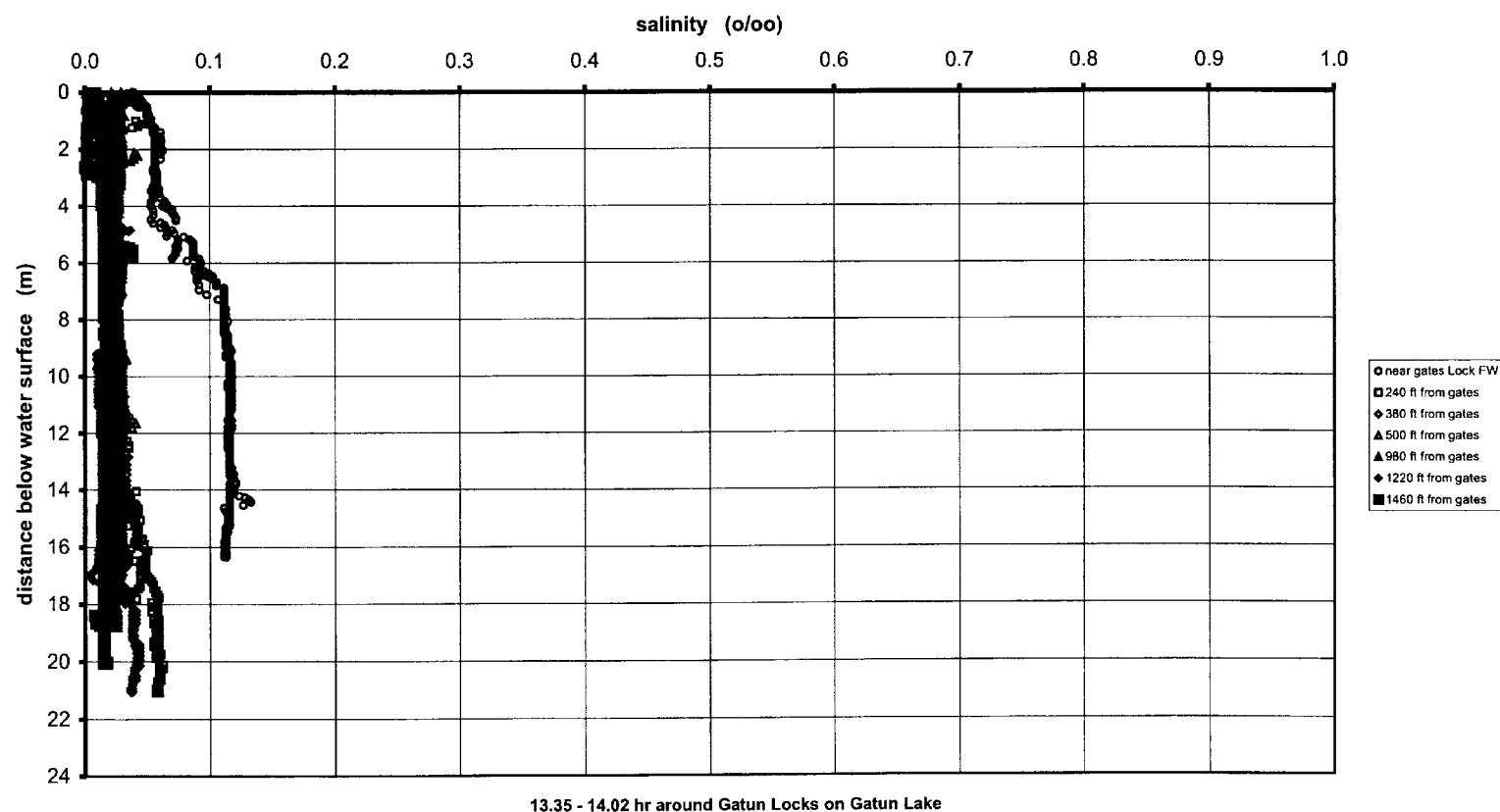
WEST SIDE CENTRE WALL GATUN LAKE

WL I DELFT HYDRAULICS

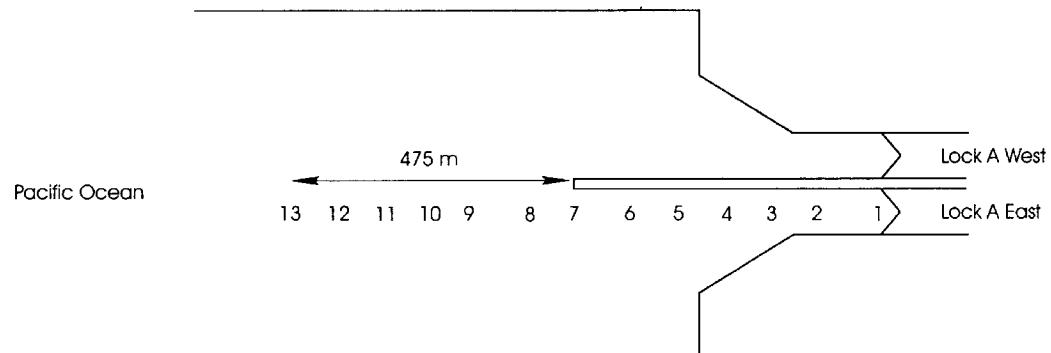
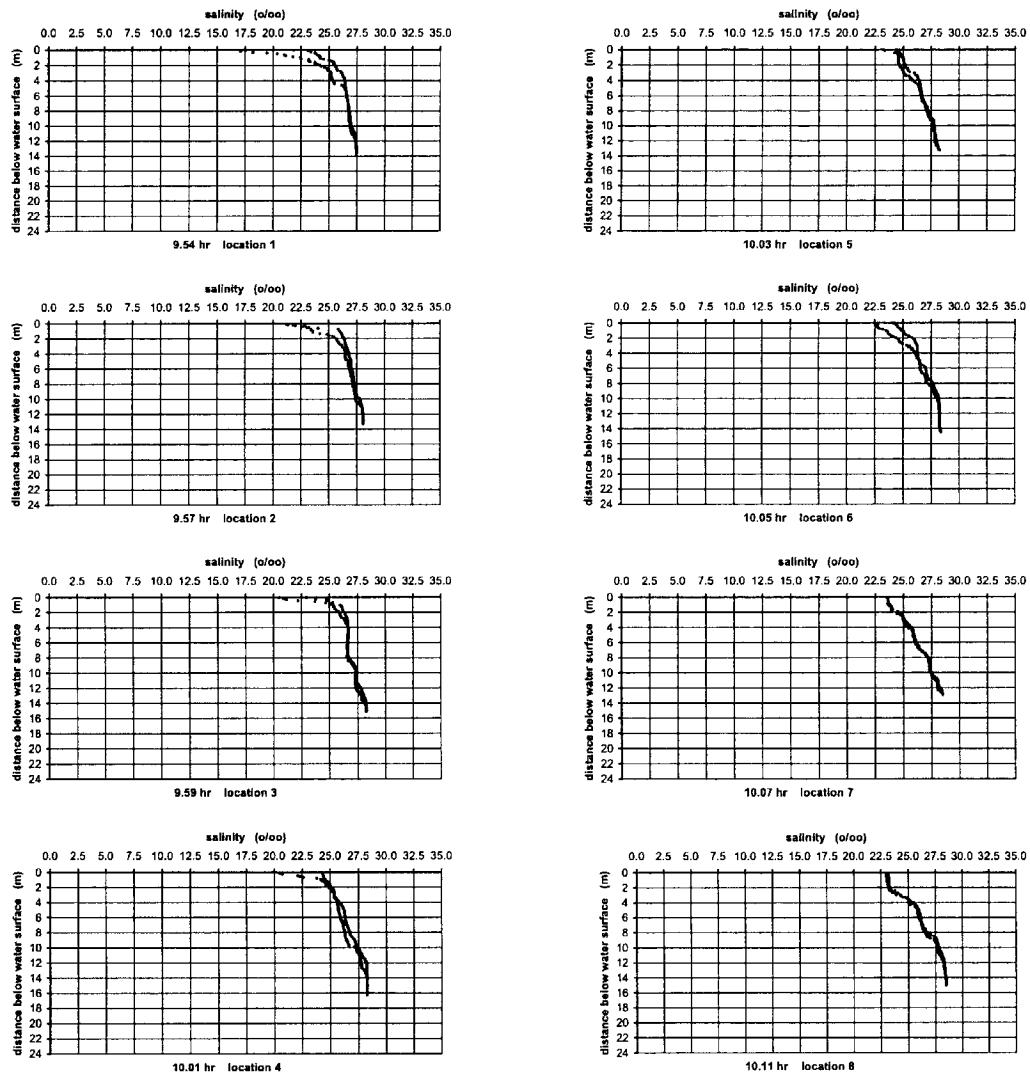
WATER LEVEL +87.3 FT

Q 3039

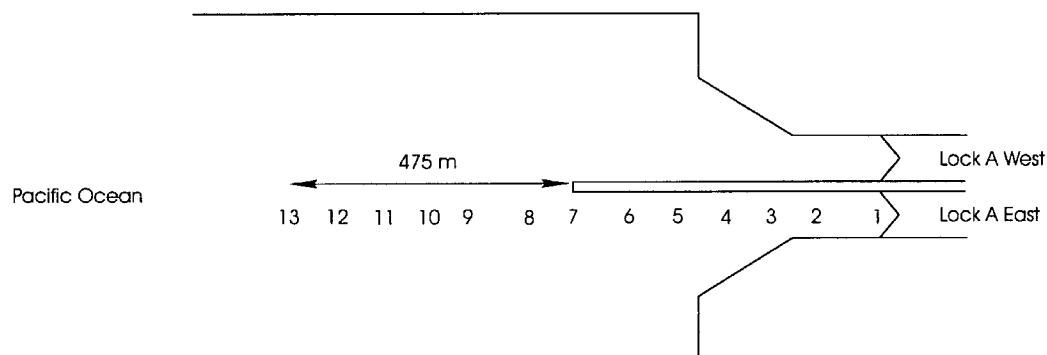
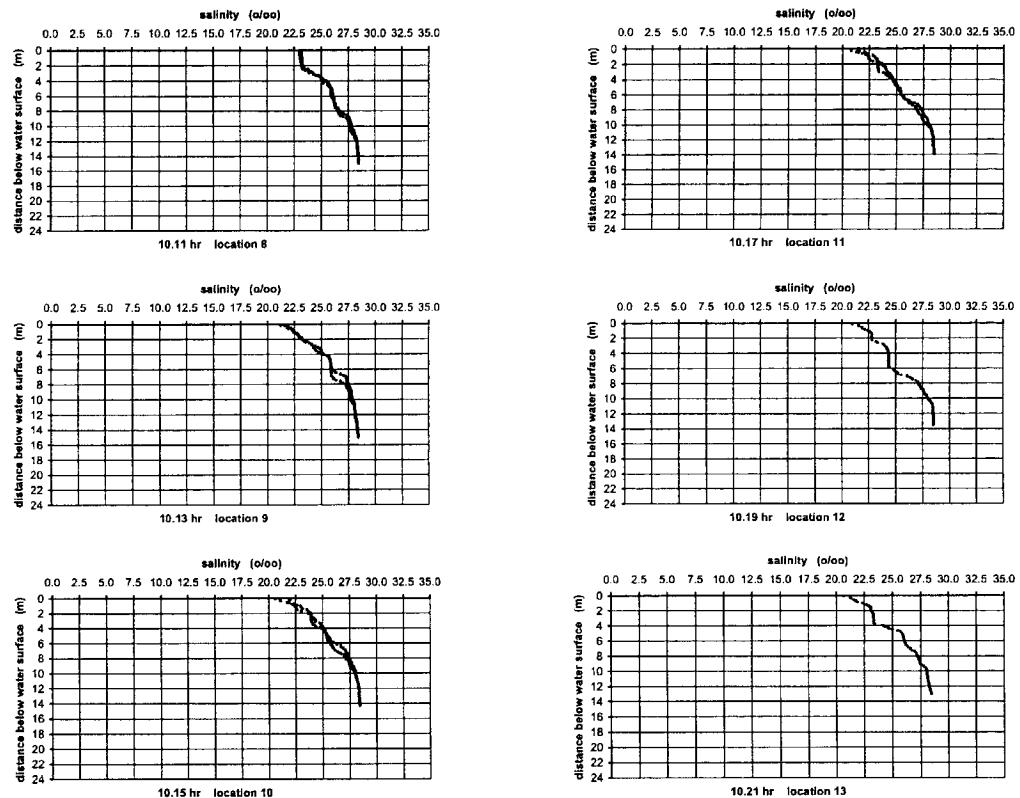
Fig. A.95



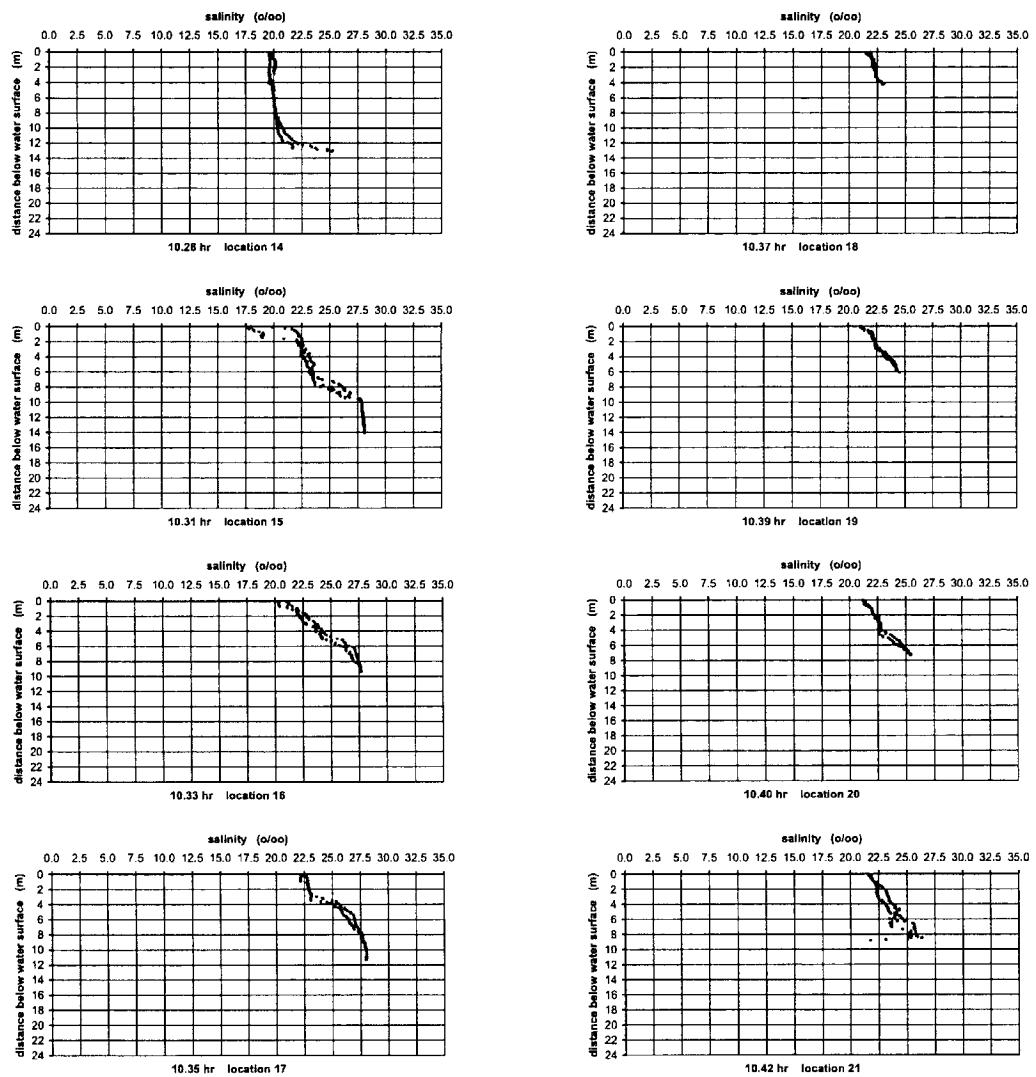
MEASUREMENTS NEAR MIRAFLORES LOCKS



MEASUREMENTS AT DOWNSTREAM SIDE
MIRAFLORES LOCKS, FALLING TIDE



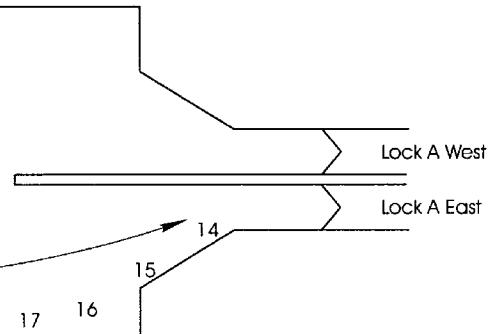
MEASUREMENTS AT DOWNSTREAM SIDE
MIRAFLORES LOCKS, FALLING TIDE



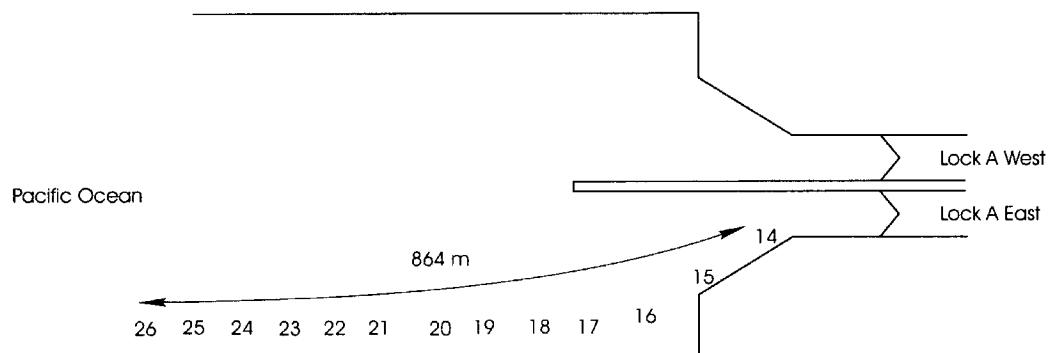
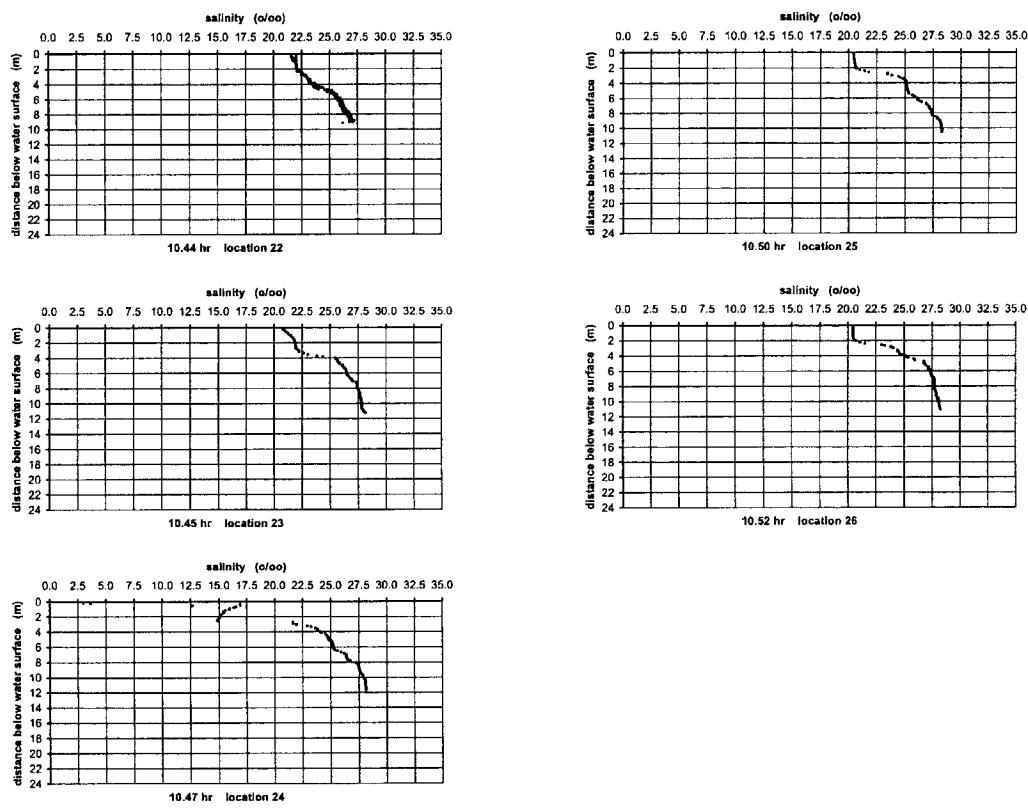
Pacific Ocean

864 m

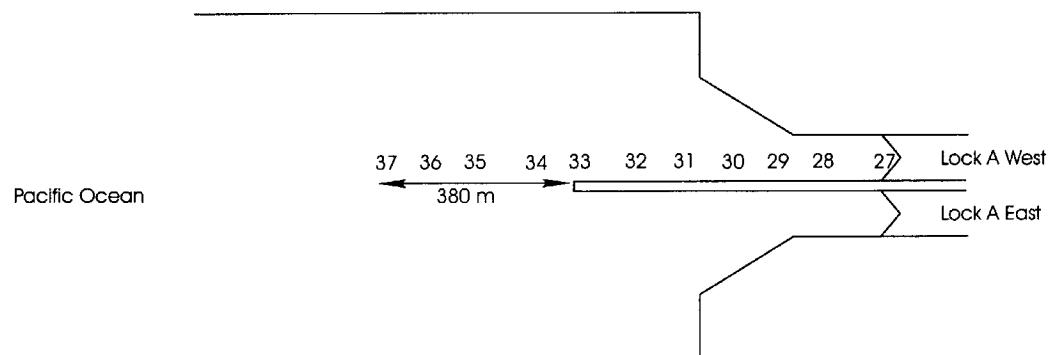
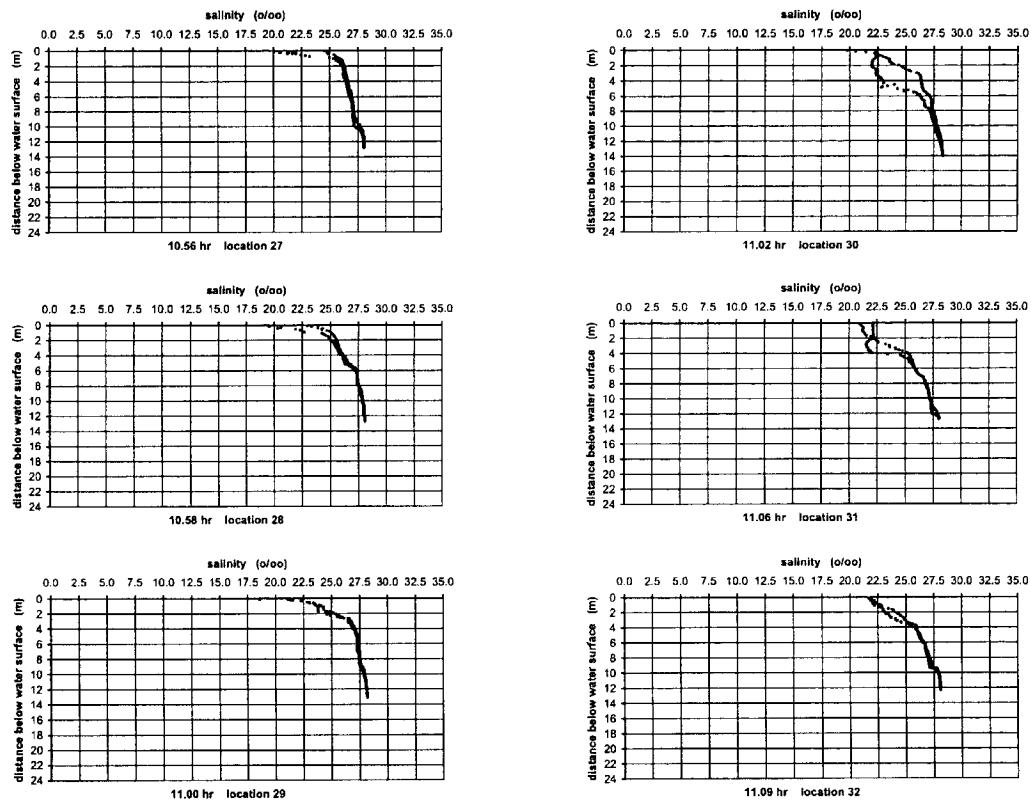
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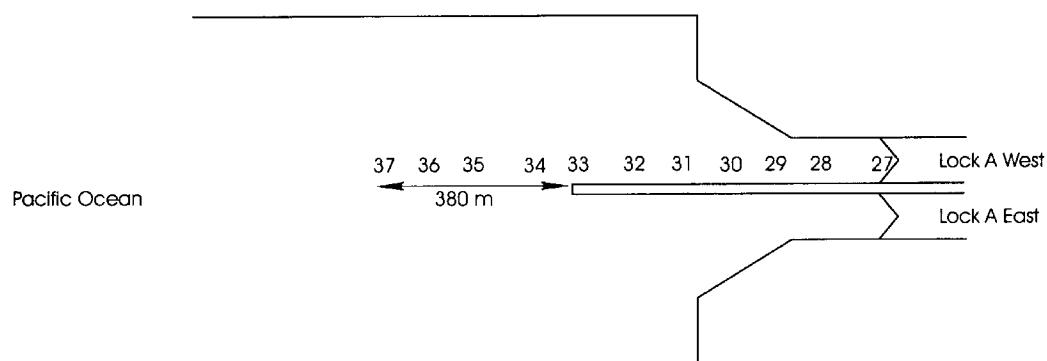
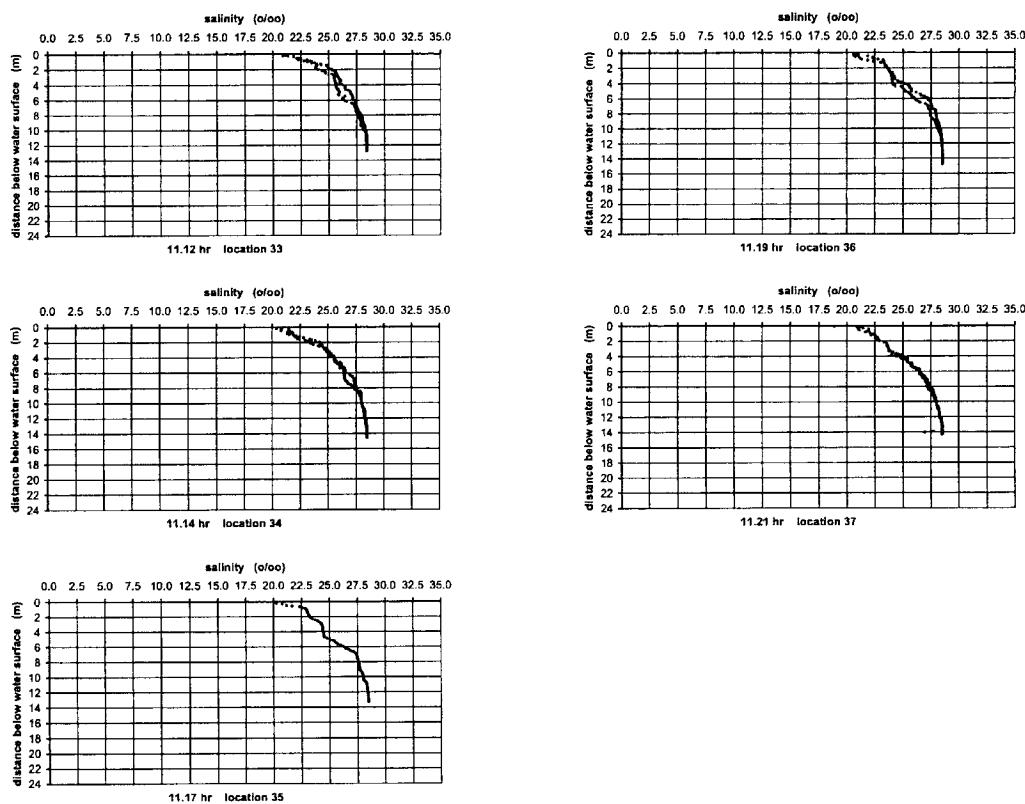
MEASUREMENTS AT DOWNSTREAM SIDE MIRAFLORES LOCKS, FALLING TIDE



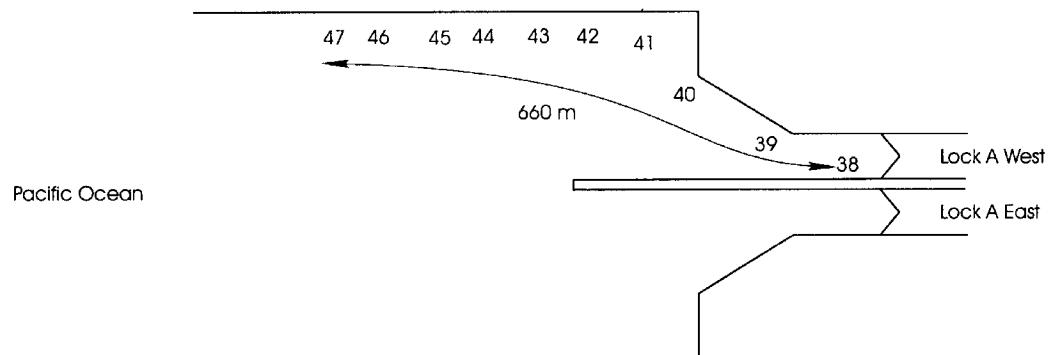
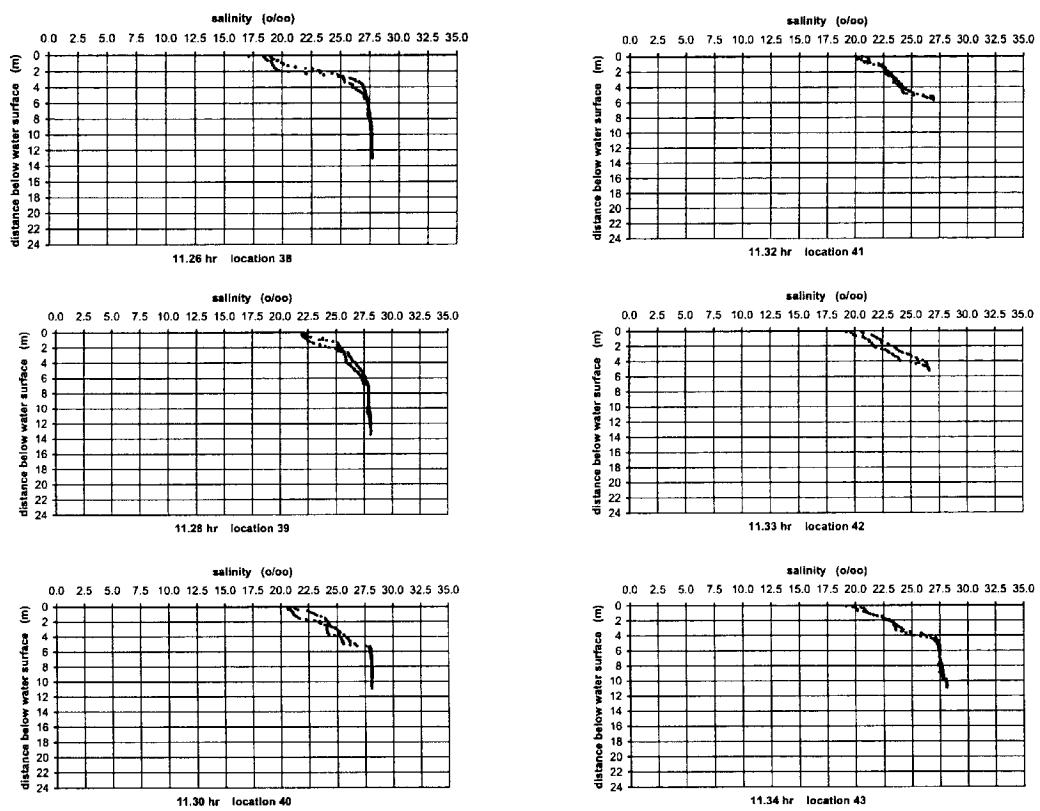
MEASUREMENTS AT DOWNSTREAM SIDE
MIRAFLORES LOCKS, FALLING TIDE



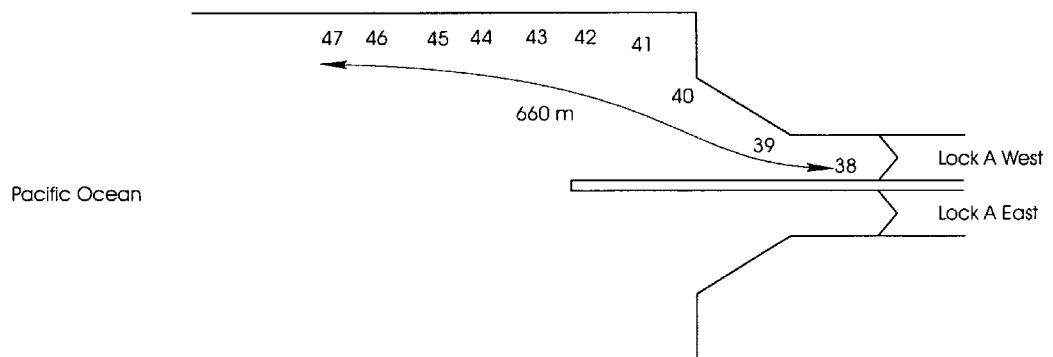
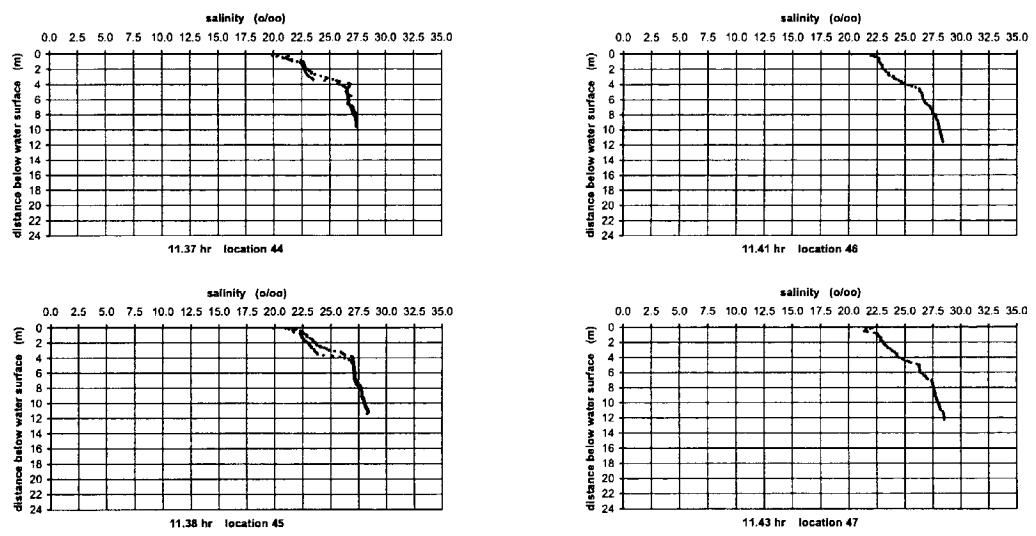
MEASUREMENTS AT DOWNSTREAM SIDE
MIRAFLORES LOCKS, FALLING TIDE



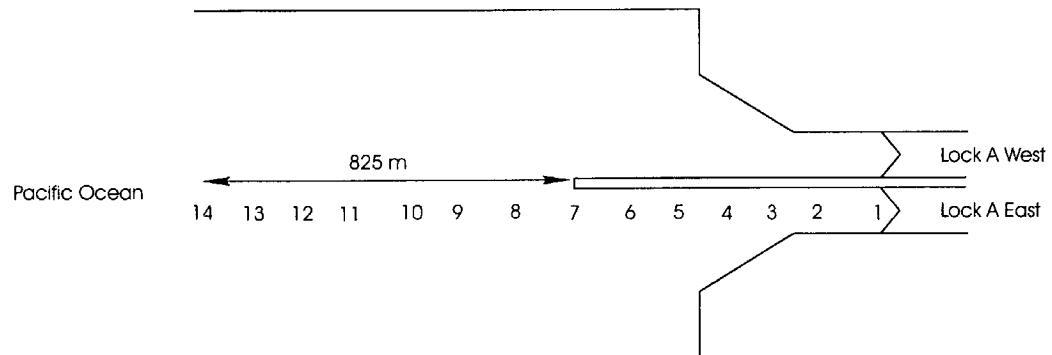
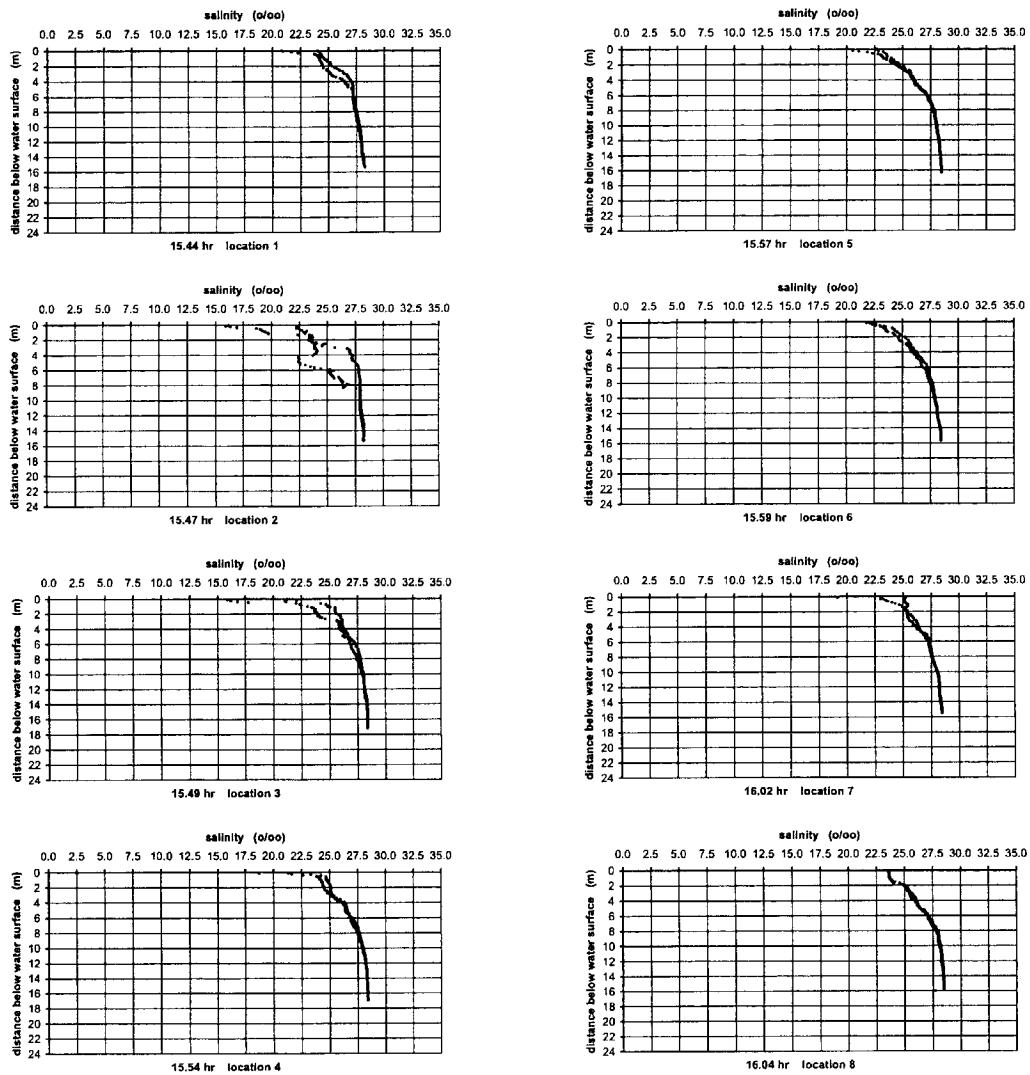
MEASUREMENTS AT DOWNSTREAM SIDE
MIRAFLORES LOCKS, FALLING TIDE



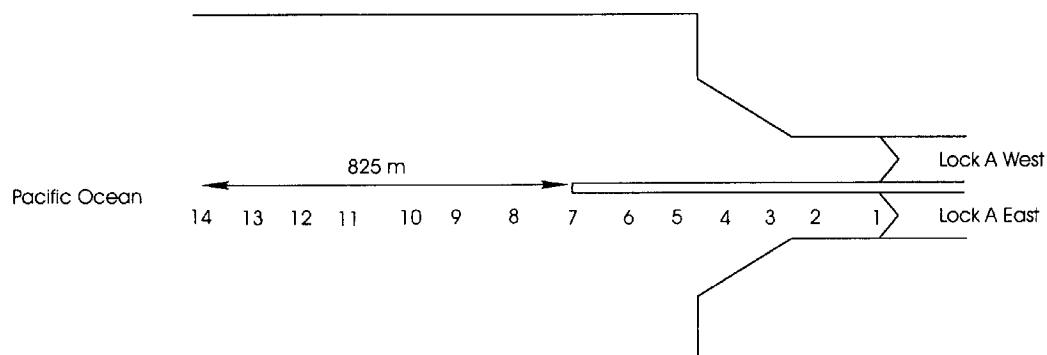
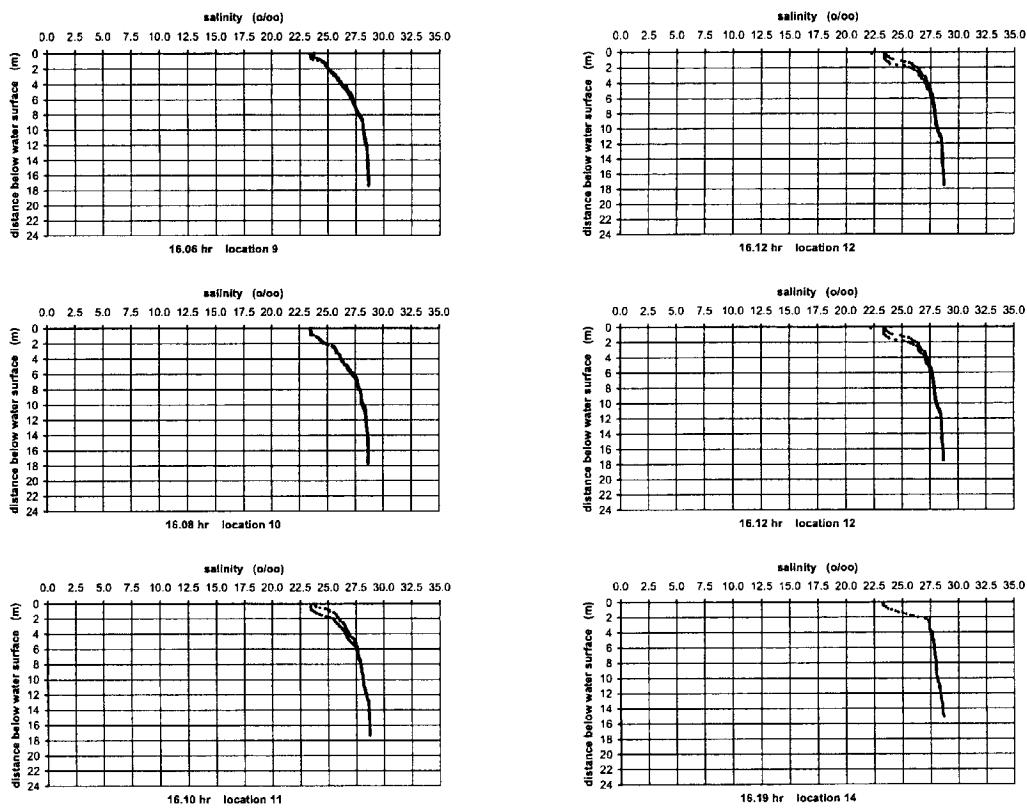
MEASUREMENTS AT DOWNSTREAM SIDE
MIRAFLORES LOCKS, FALLING TIDE



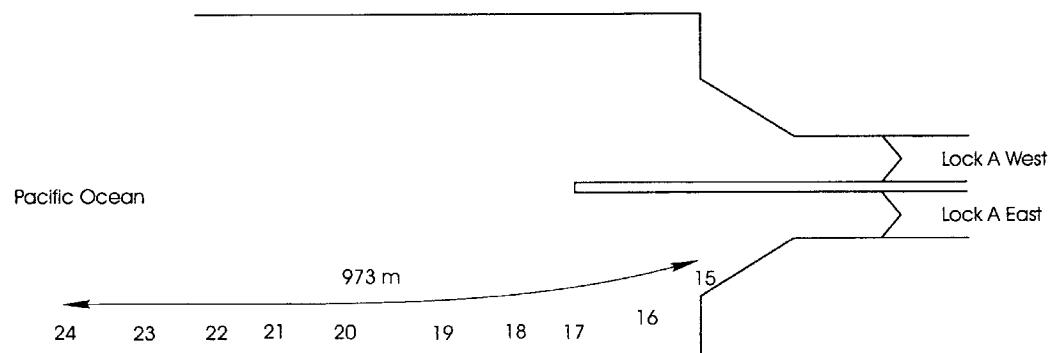
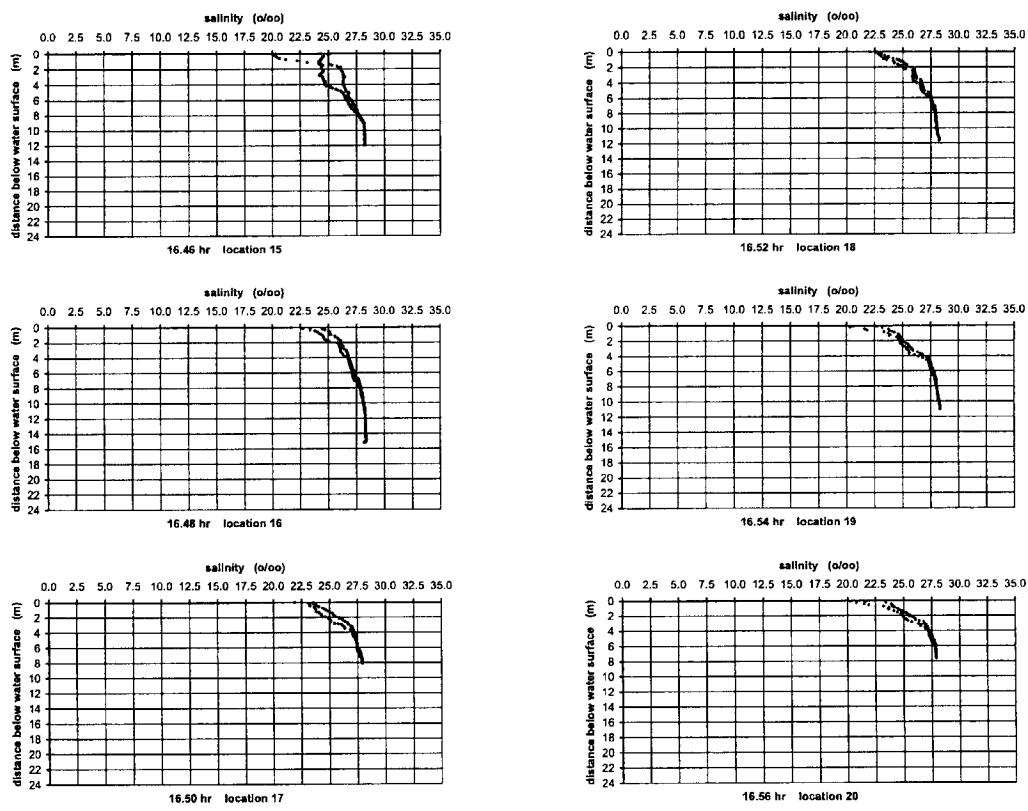
MEASUREMENTS AT DOWNSTREAM SIDE
MIRAFLORES LOCKS, FALLING TIDE



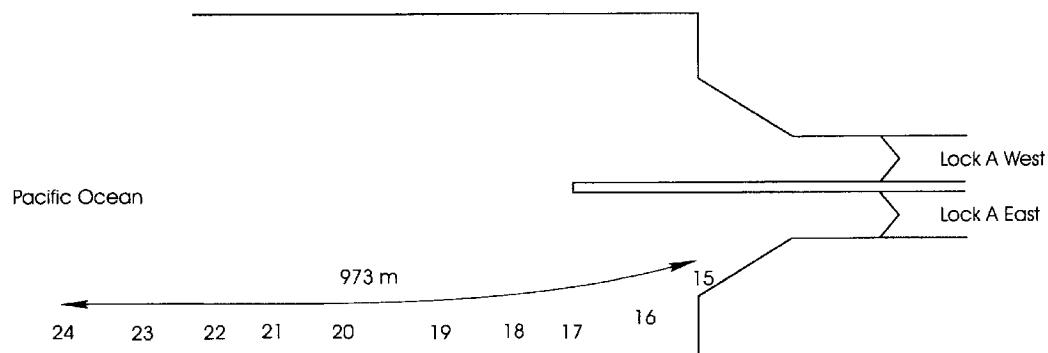
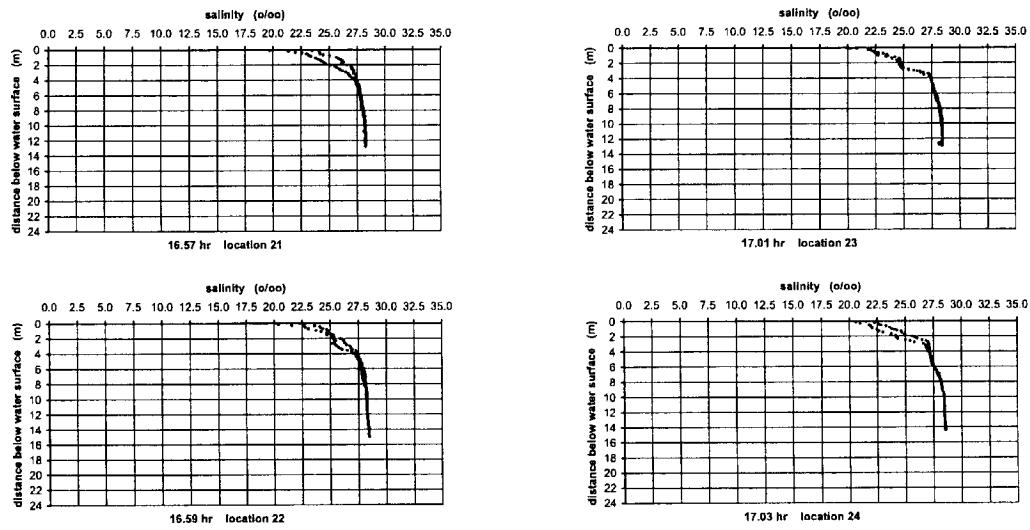
MEASUREMENTS AT DOWNSTREAM SIDE
MIRAFLORES LOCKS, INCOMING TIDE



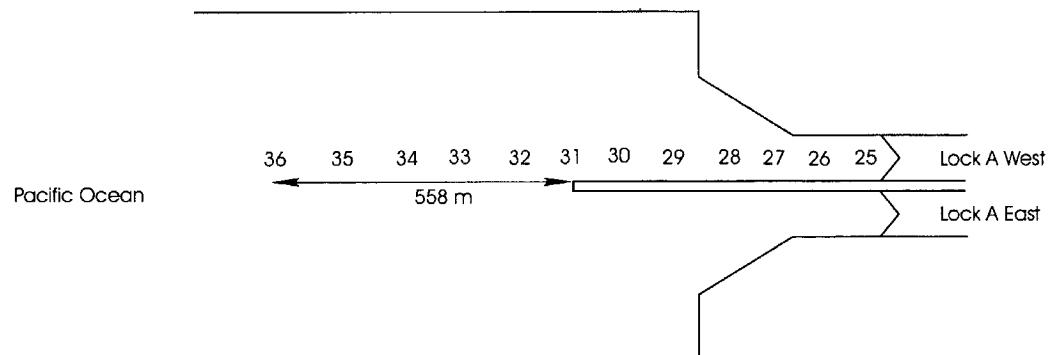
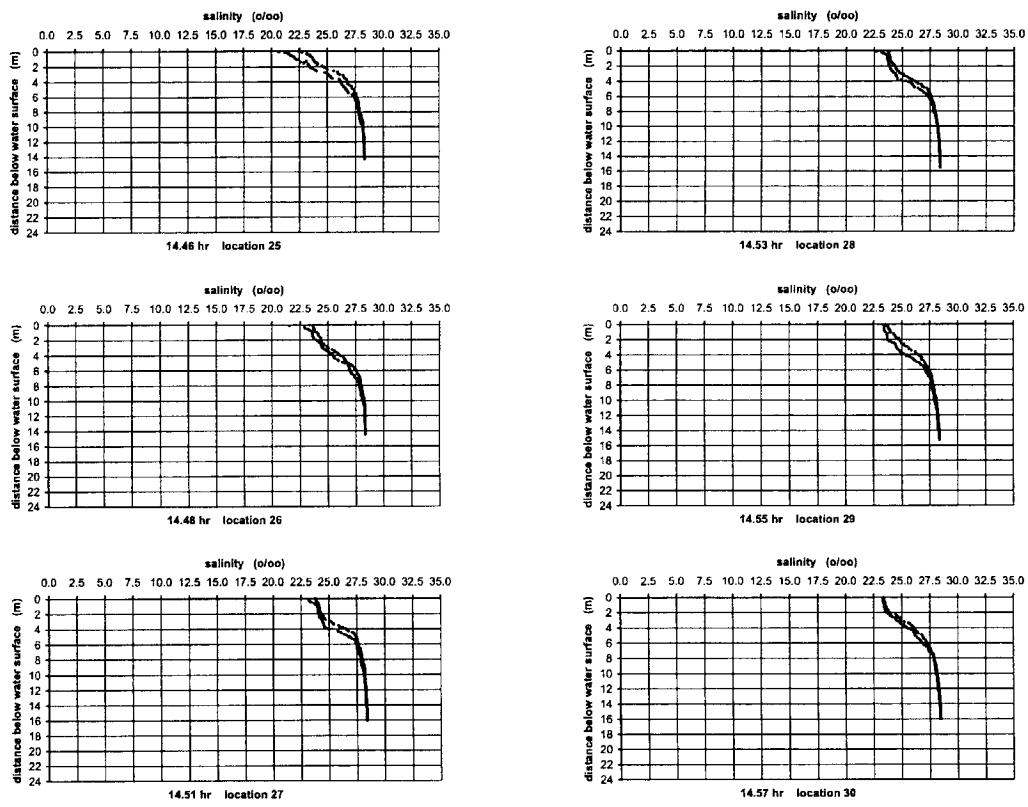
MEASUREMENTS AT DOWNSTREAM SIDE
MIRAFLORES LOCKS, INCOMING TIDE



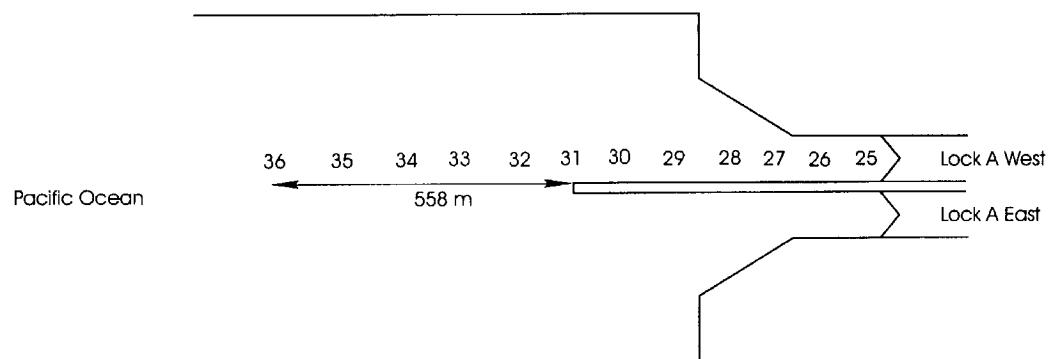
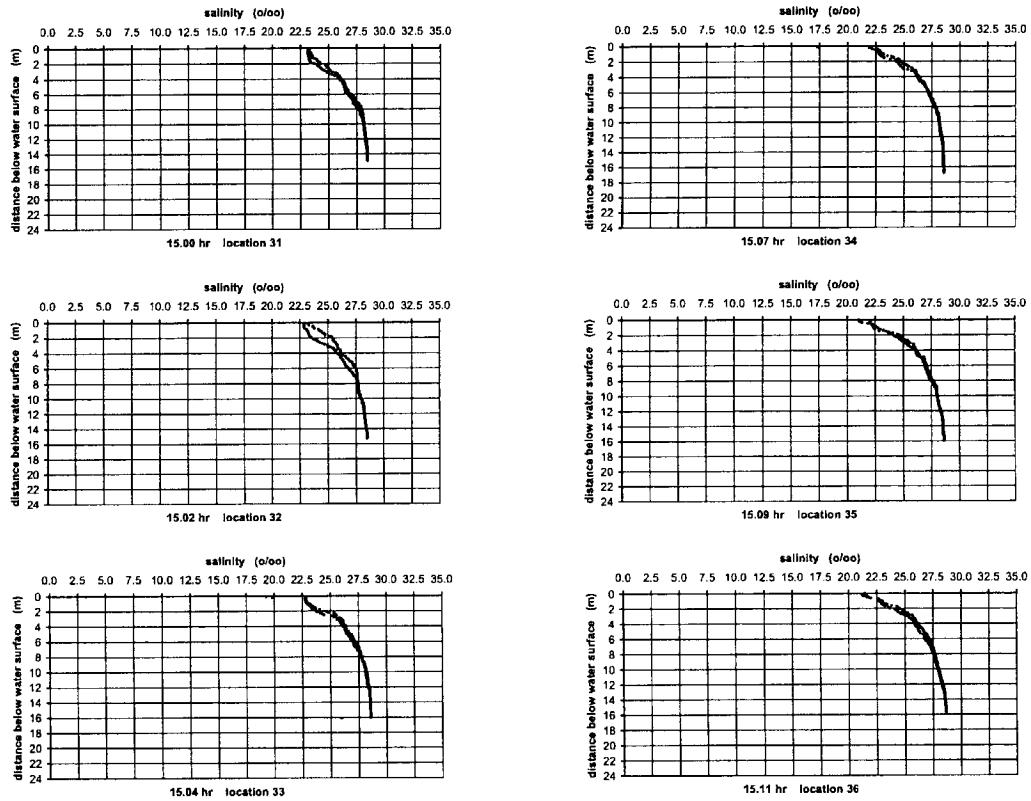
MEASUREMENTS AT DOWNSTREAM SIDE
MIRAFLORES LOCKS, INCOMING TIDE



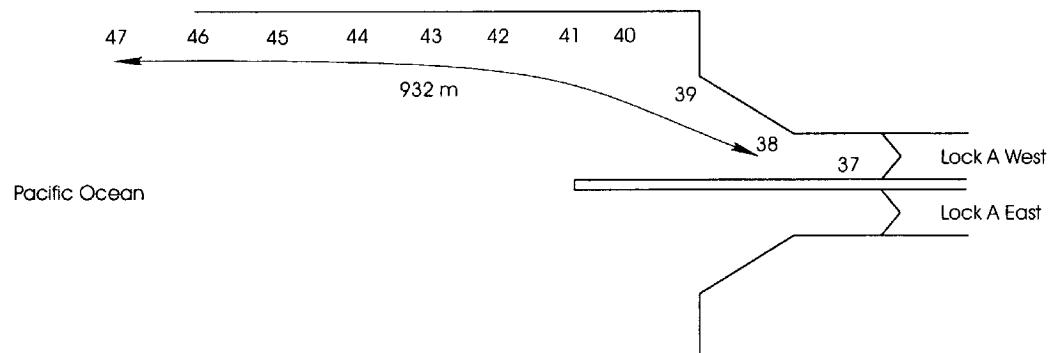
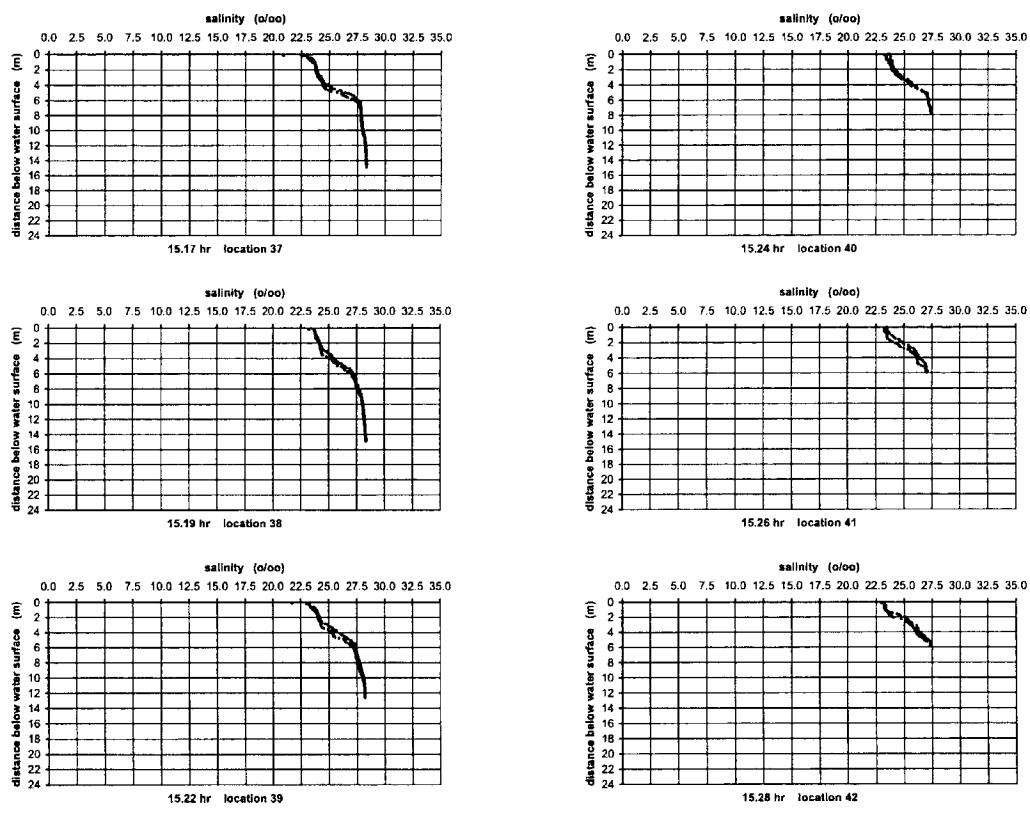
MEASUREMENTS AT DOWNSTREAM SIDE
MIRAFLORES LOCKS, INCOMING TIDE



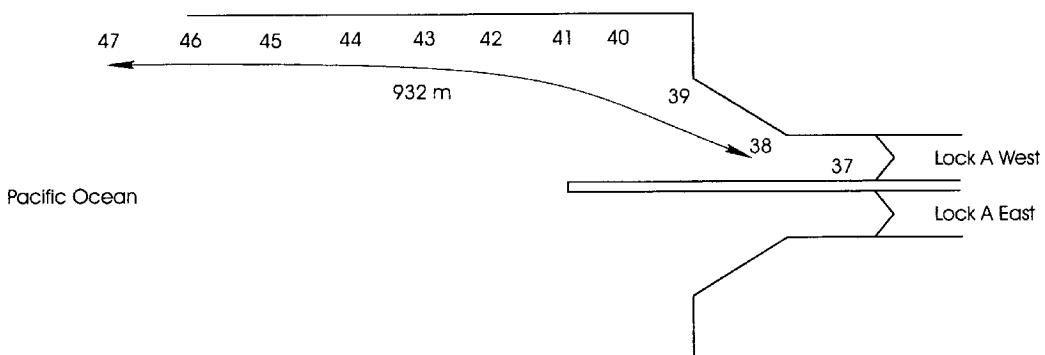
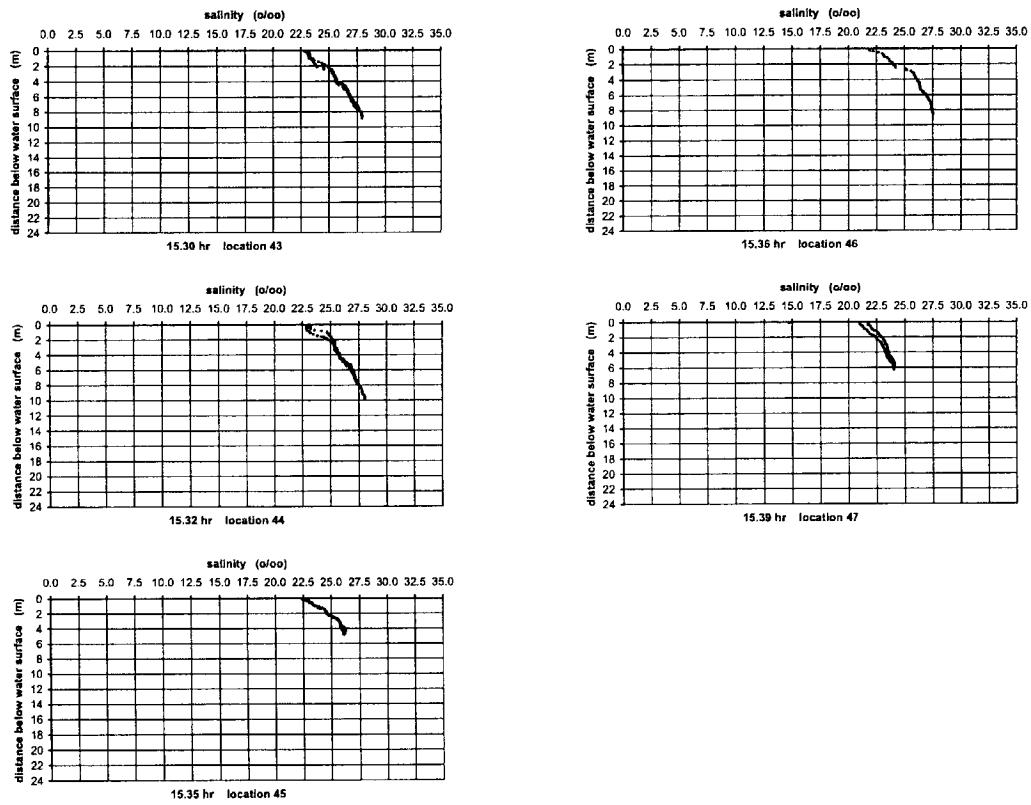
MEASUREMENTS AT DOWNSTREAM SIDE
MIRAFLORES LOCKS, INCOMING TIDE



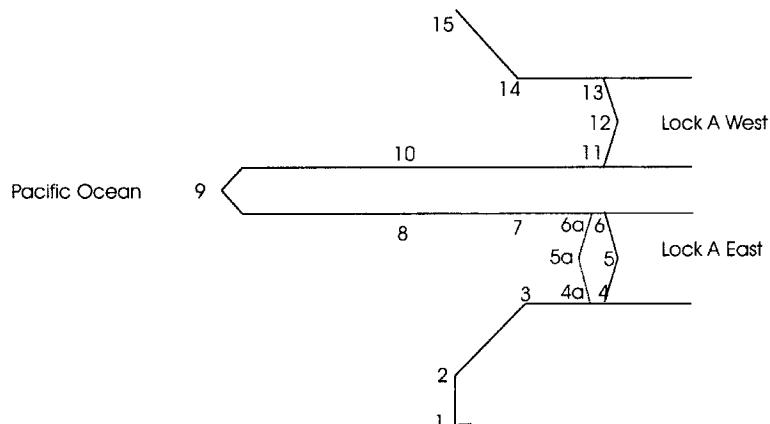
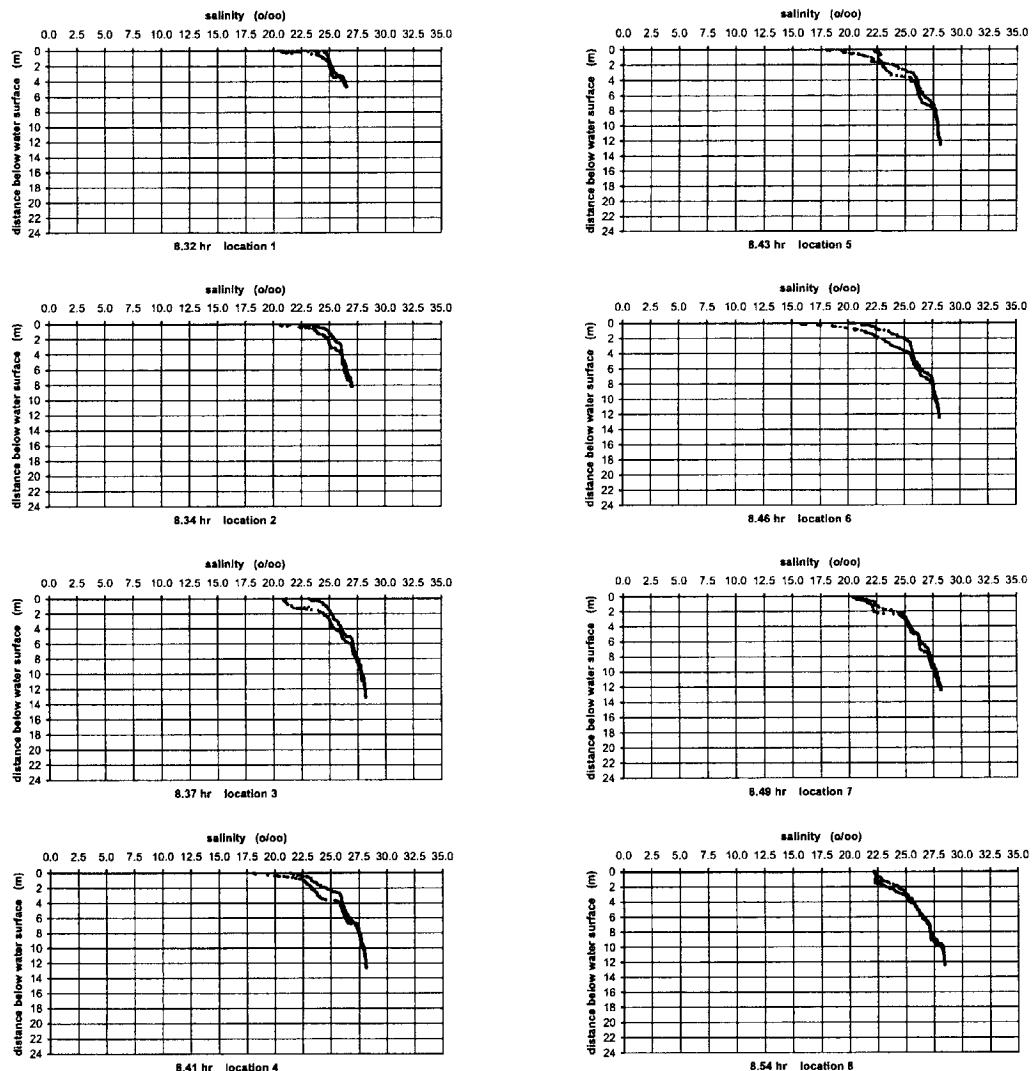
MEASUREMENTS AT DOWNSTREAM SIDE
MIRAFLORES LOCKS, INCOMING TIDE



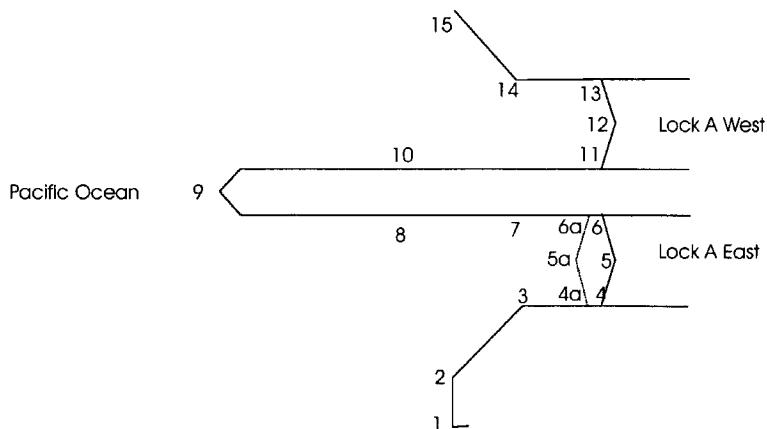
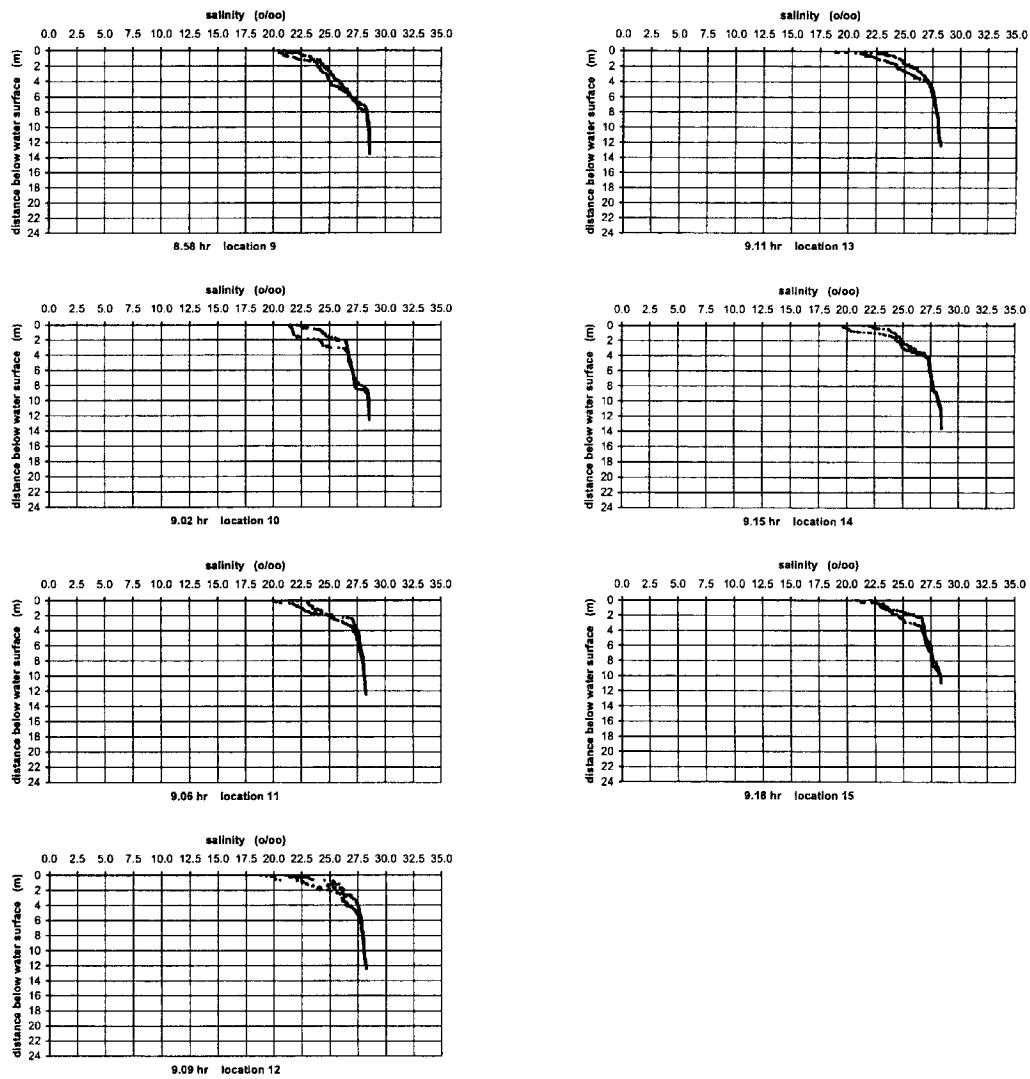
MEASUREMENTS AT DOWNSTREAM SIDE
MIRAFLORES LOCKS, INCOMING TIDE



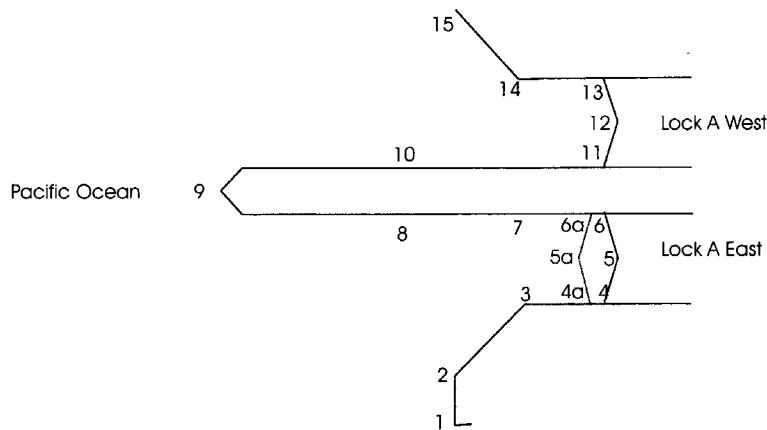
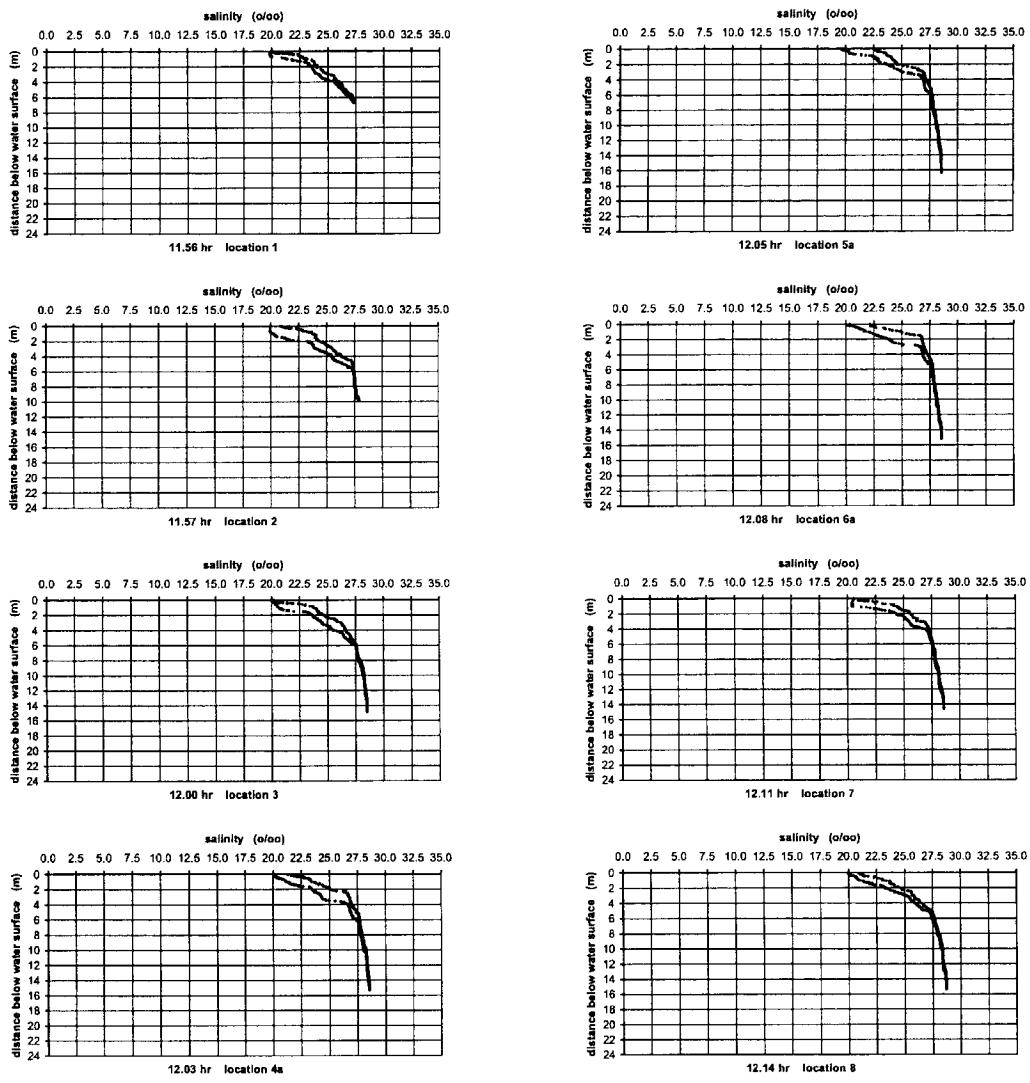
MEASUREMENTS AT DOWNSTREAM SIDE
MIRAFLORES LOCKS, INCOMING TIDE



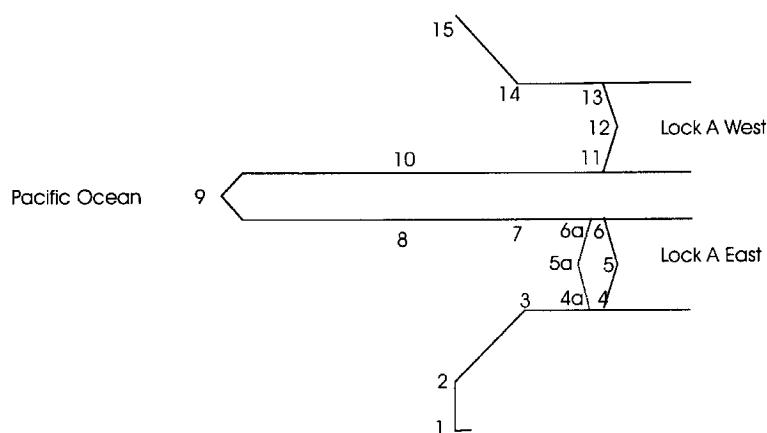
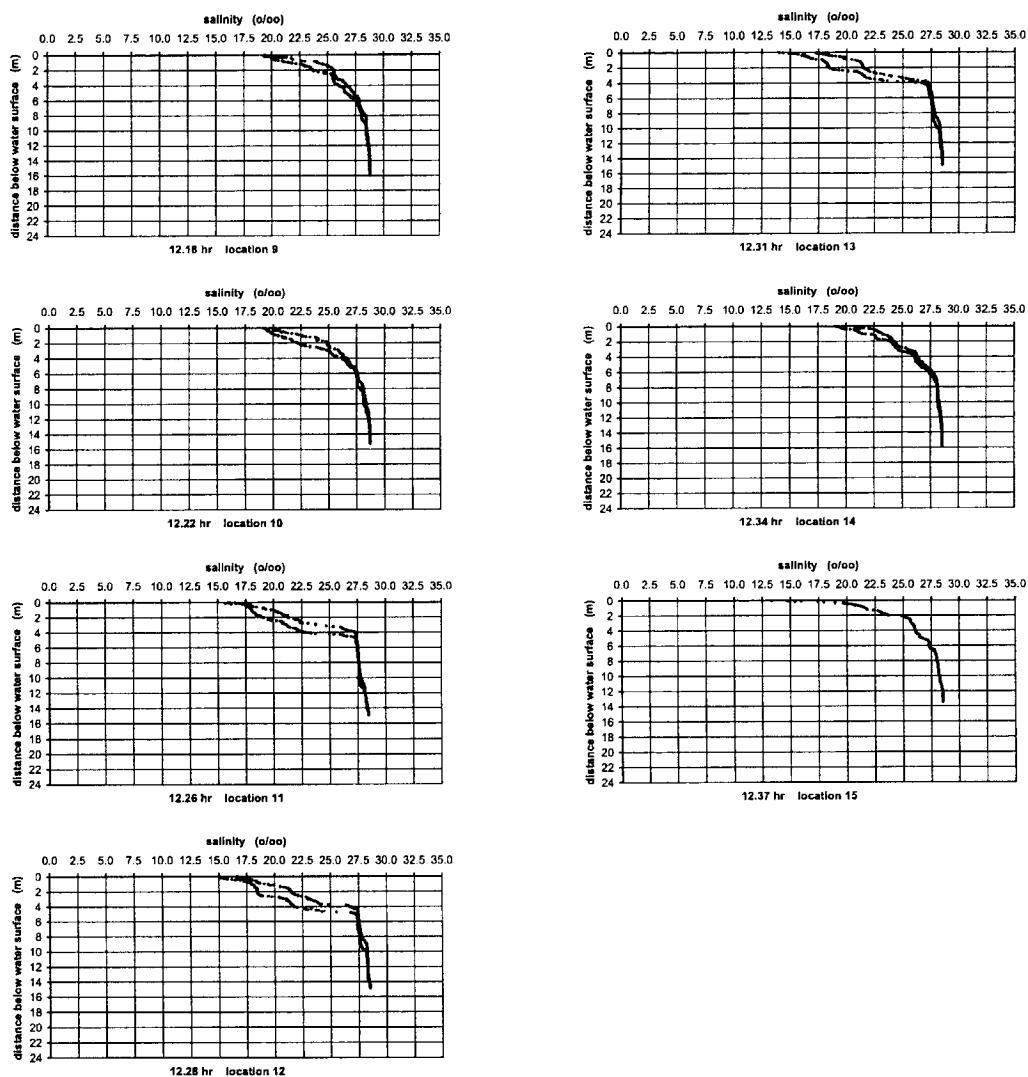
MEASUREMENTS AT DOWNSTREAM SIDE
MIRAFLORES LOCKS, FALLING TIDE



MEASUREMENTS AT DOWNSTREAM SIDE
MIRAFLORES LOCKS, FALLING TIDE

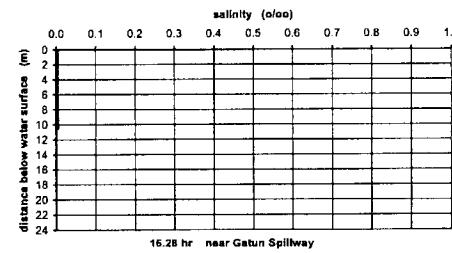
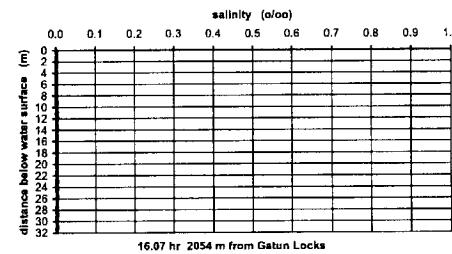
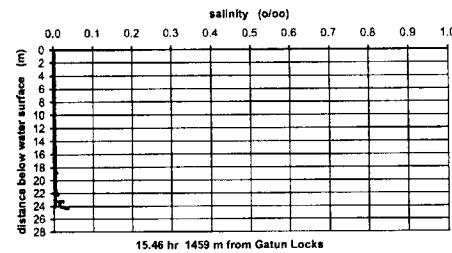
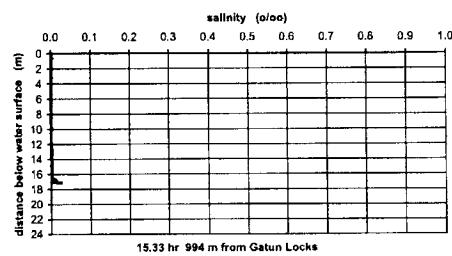
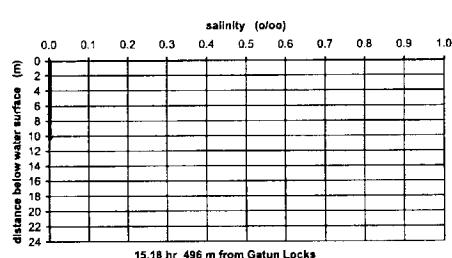
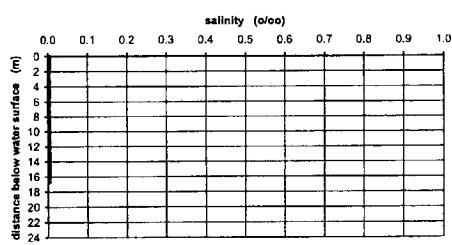


MEASUREMENTS AT DOWNSTREAM SIDE
MIRAFLORES LOCKS, INCOMING TIDE



MEASUREMENTS AT DOWNSTREAM SIDE
MIRAFLORES LOCKS, INCOMING TIDE

GATUN LAKE



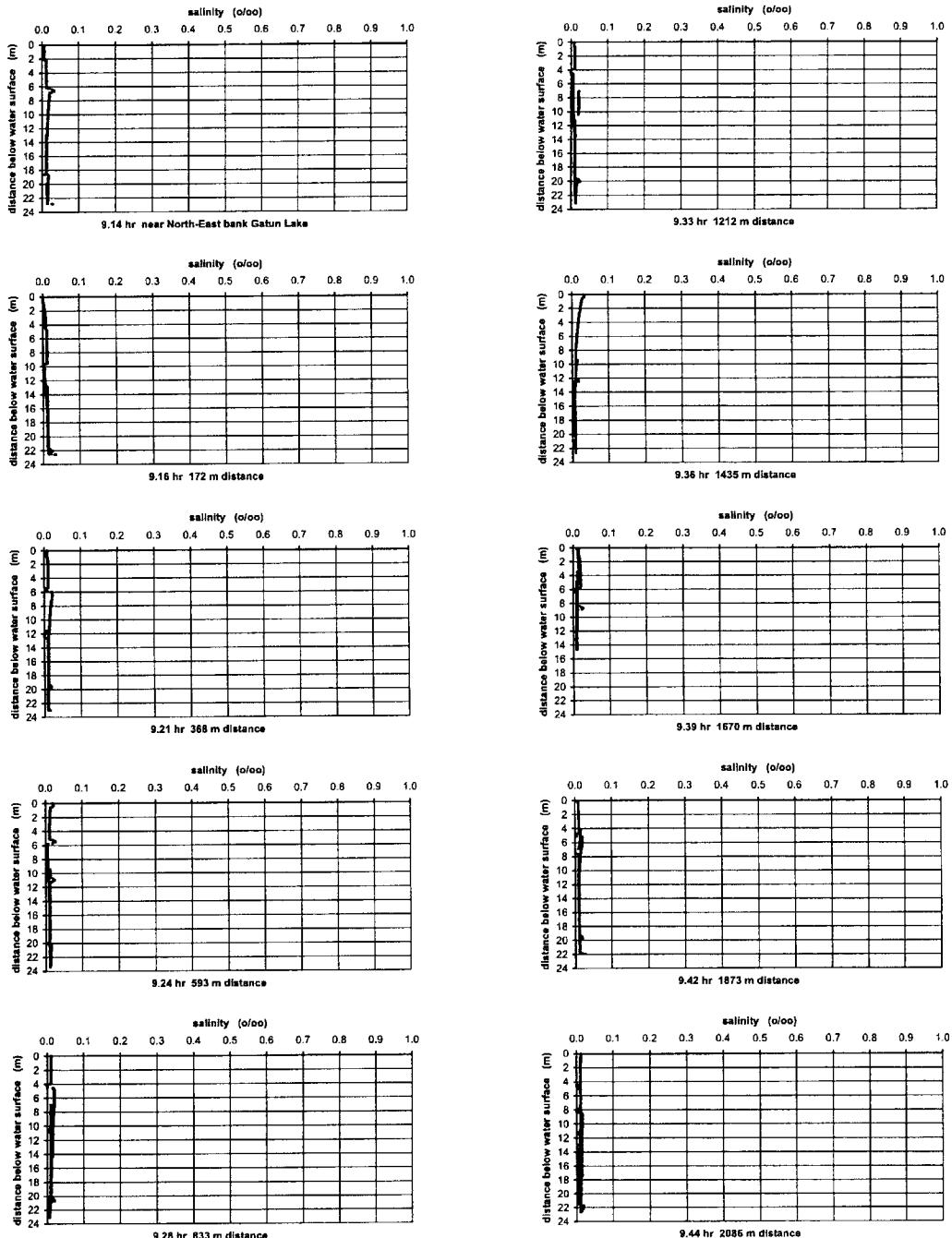
PROFILING GATUN LAKE FROM WEST WING
WALL GATUN LOCKS TO GATUN SPILLWAY

WATER LEVEL +87.3 FT PLD

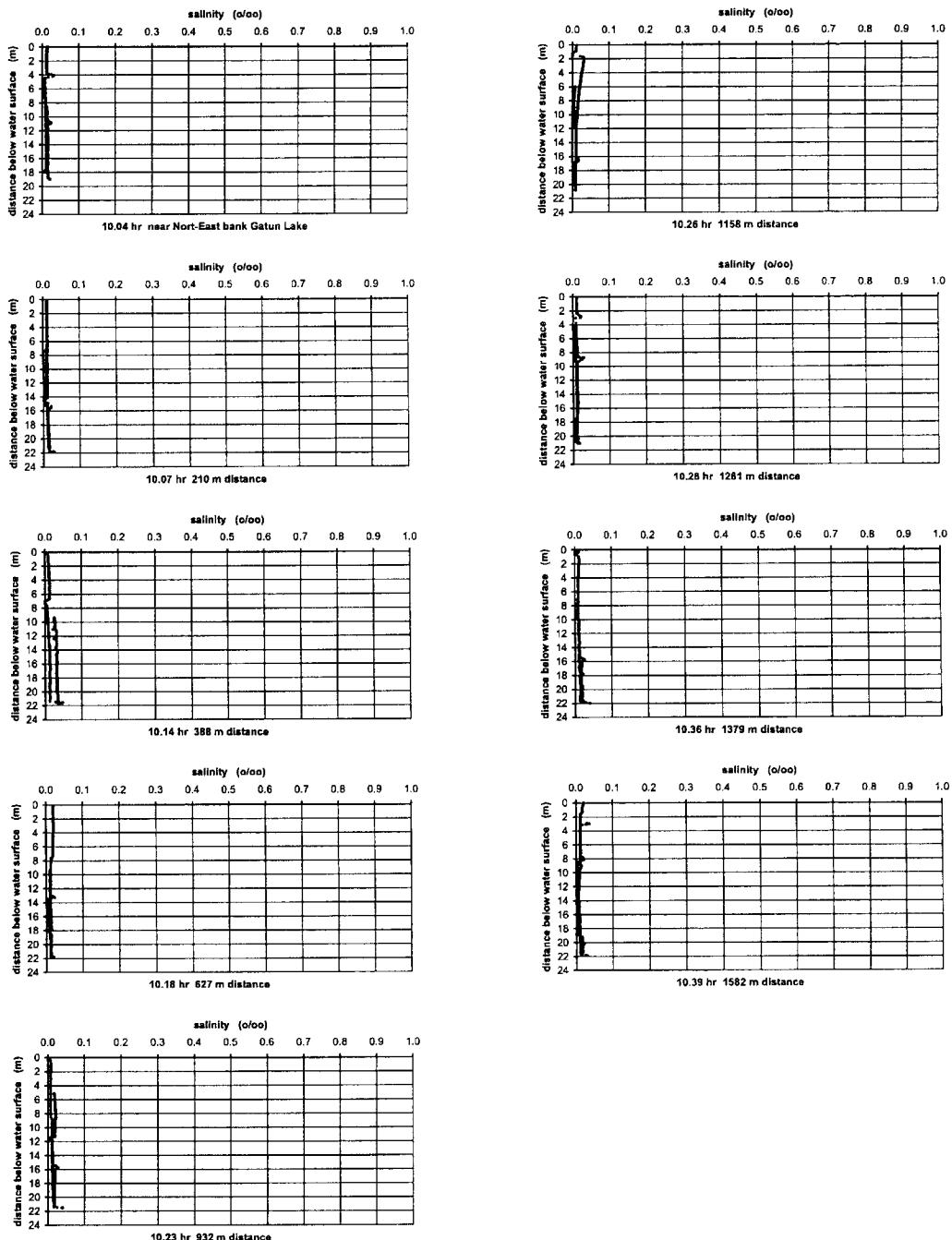
WL | DELFT HYDRAULICS

Q 3039

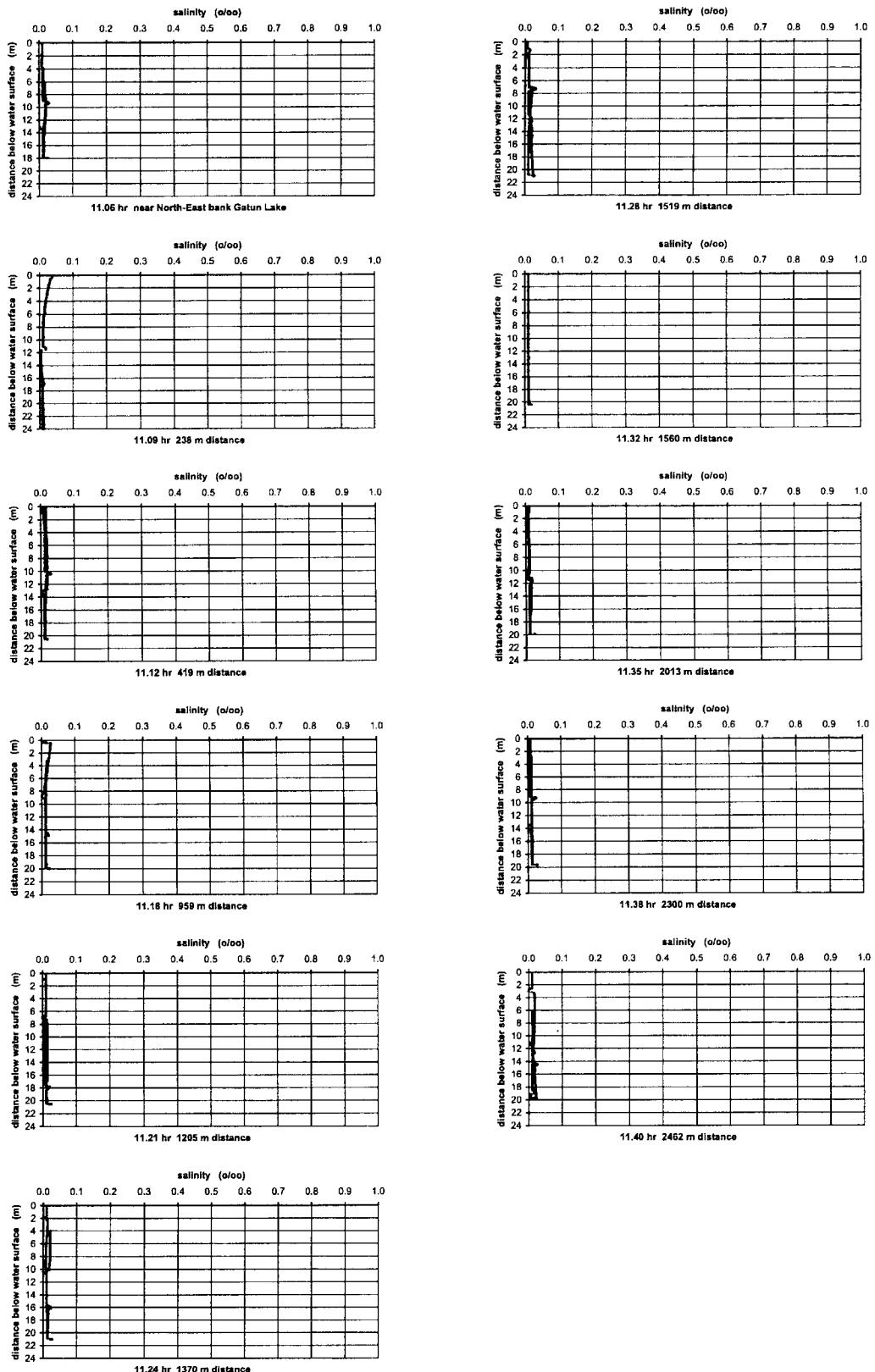
Fig. A.116



FIRST LONG SECTION PERPENDICULAR TO
NORTH-EAST BANK GATUN LAKE



SECOND LONG SECTION PERPENDICULAR TO
NORTH-EAST BANK GATUN LAKE



THIRD LONG SECTION PERPENDICULAR TO
NORTH-EAST BANK GATUN LAKE

ATLANTIC ENTRANCE

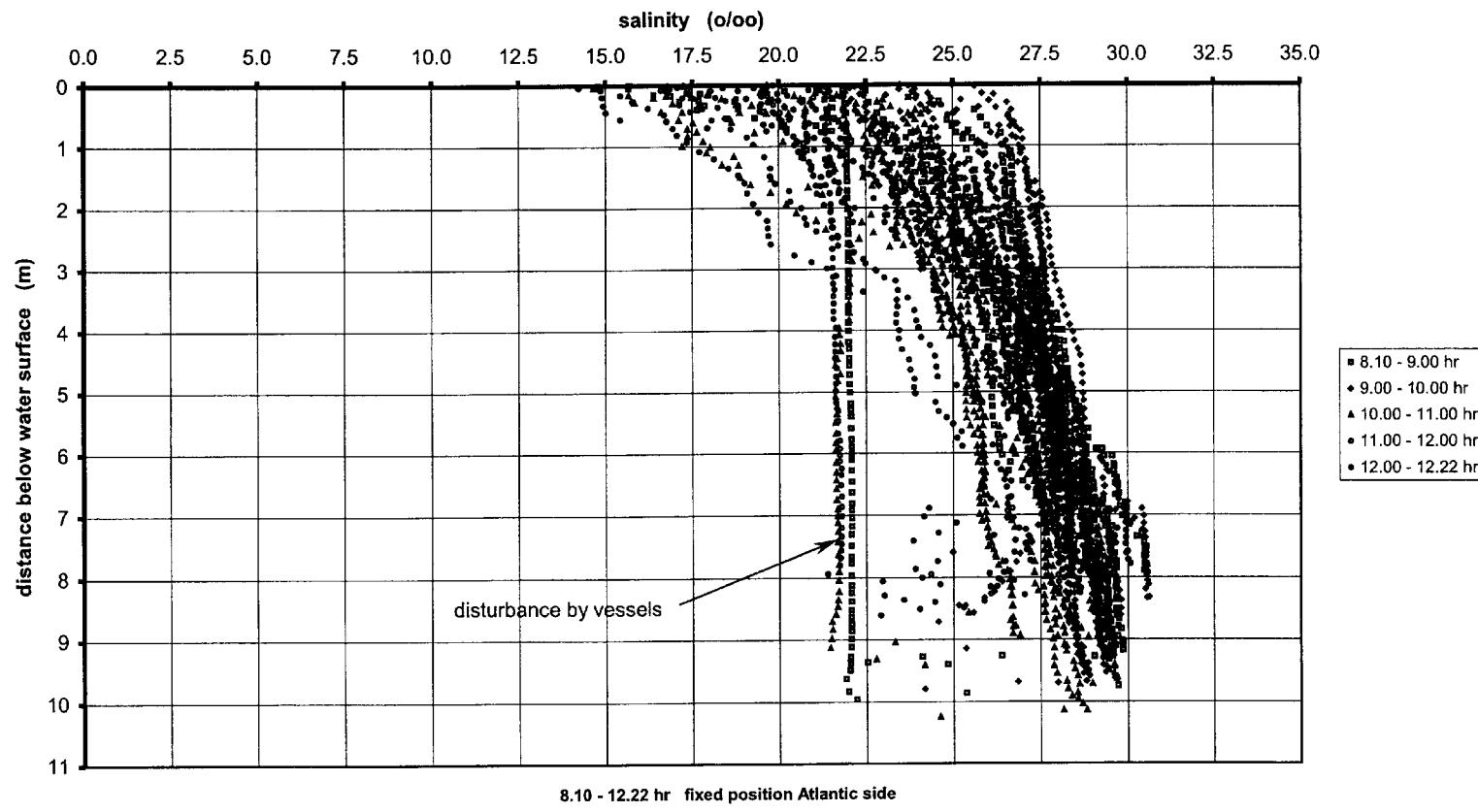
ATLANTIC ENTRANCE
MEASUREMENTS AT FIRST GREEN BUOY

WL | DELFT HYDRAULICS

FALLING TIDE (+0.26 - +0.07 Ft)

Q 3039

Fig. A.120



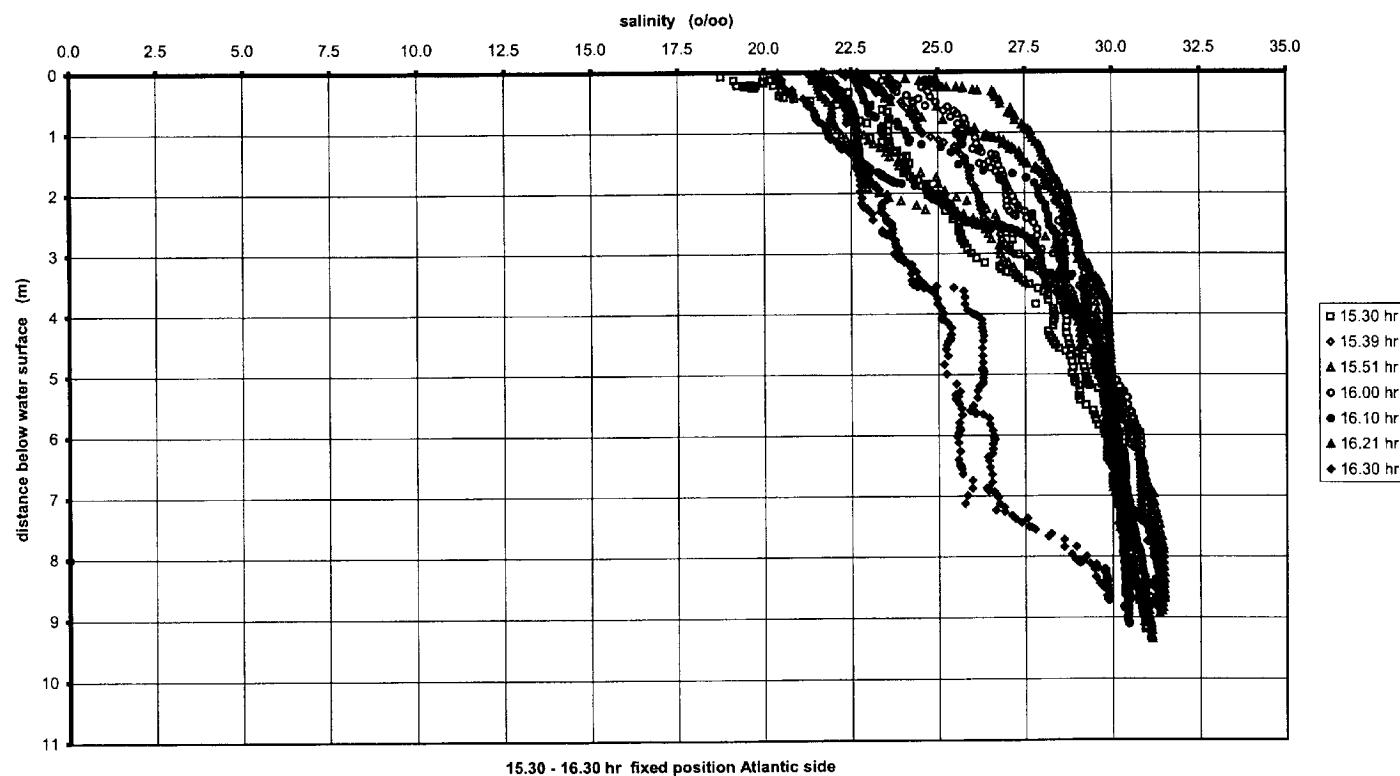
ATLANTIC ENTRANCE
MEASUREMENTS AT FIRST GREEN BUOY

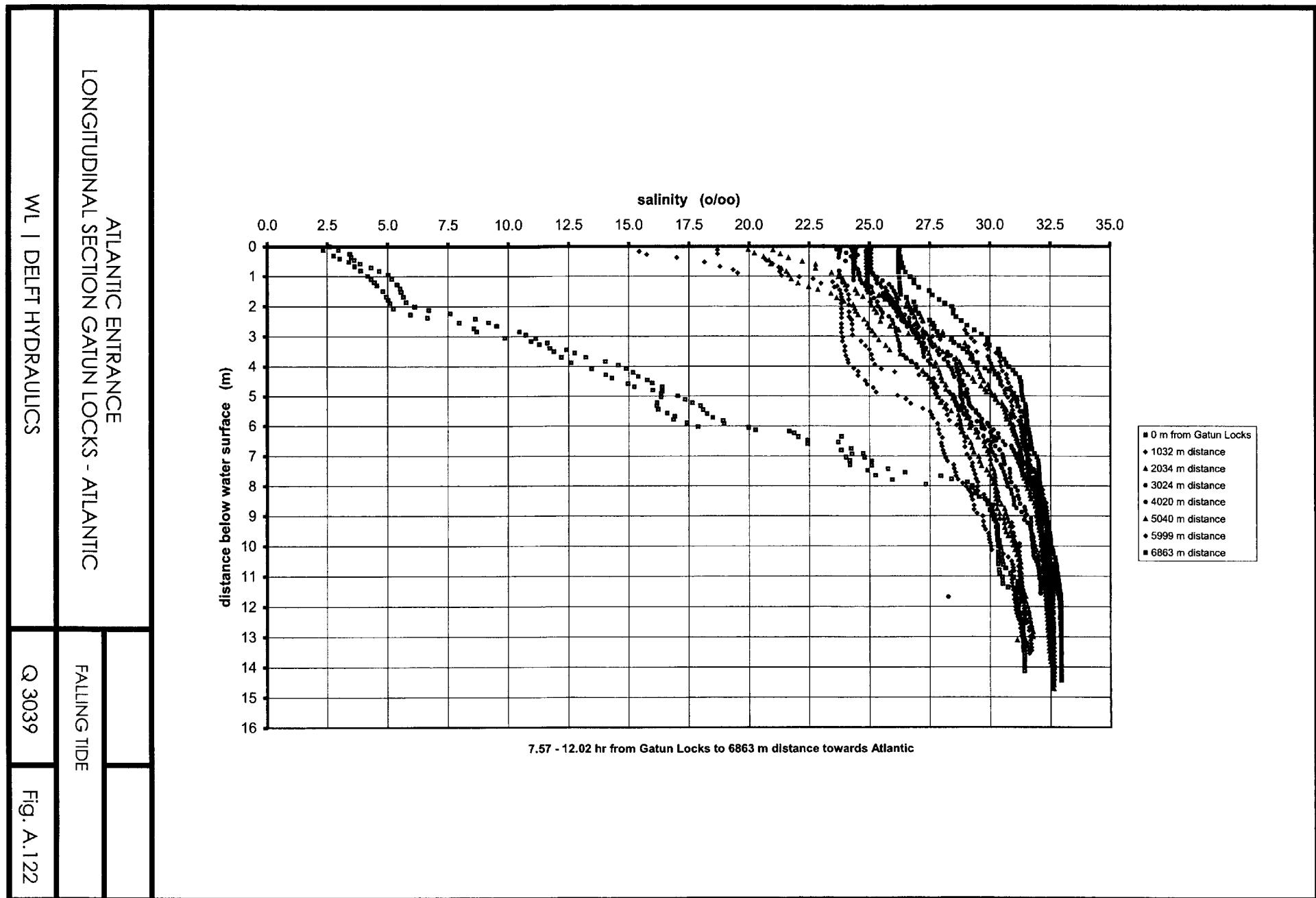
LOW TIDE (-0.1 FT)

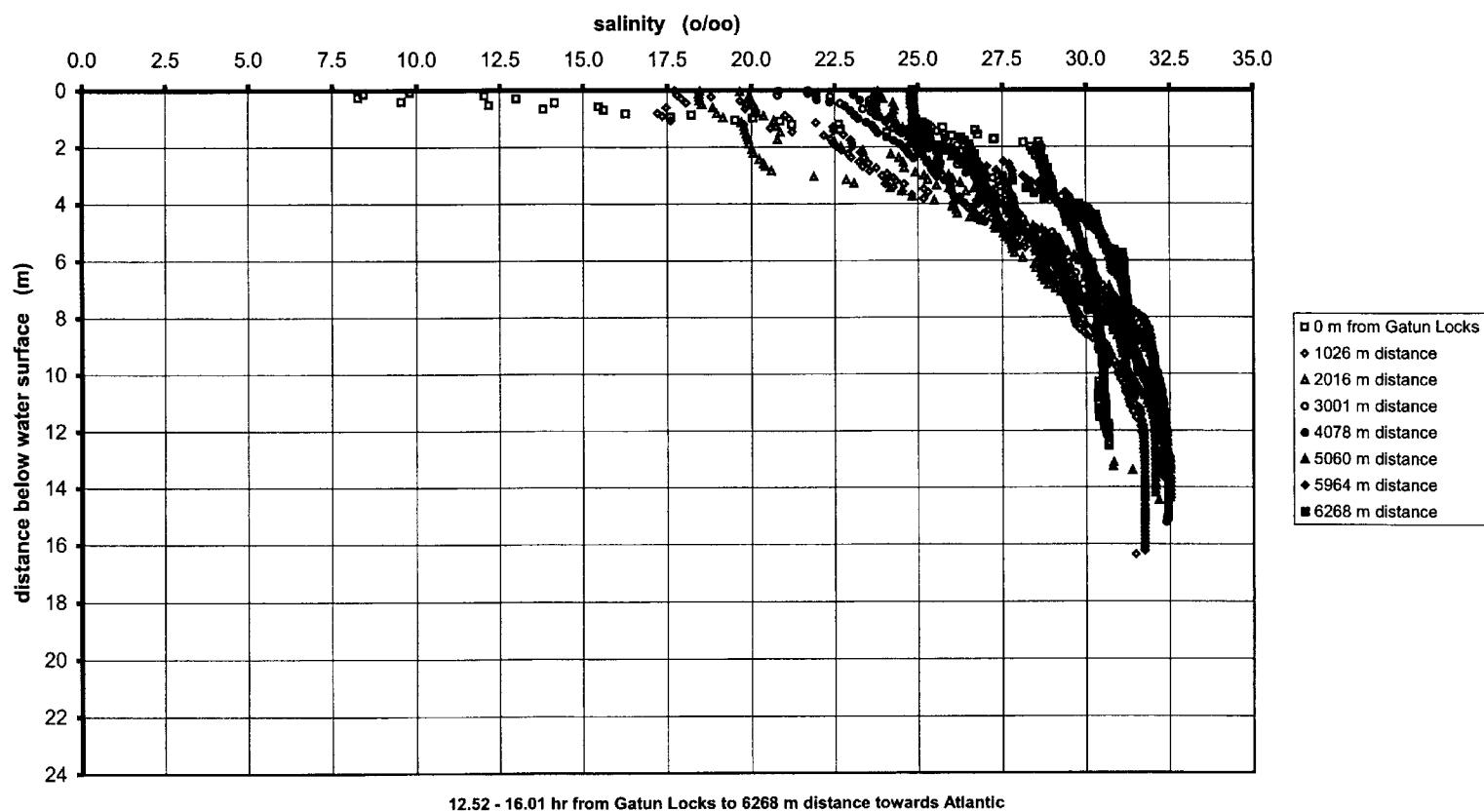
WL | DELFT HYDRAULICS

Q 3039

Fig. A.121







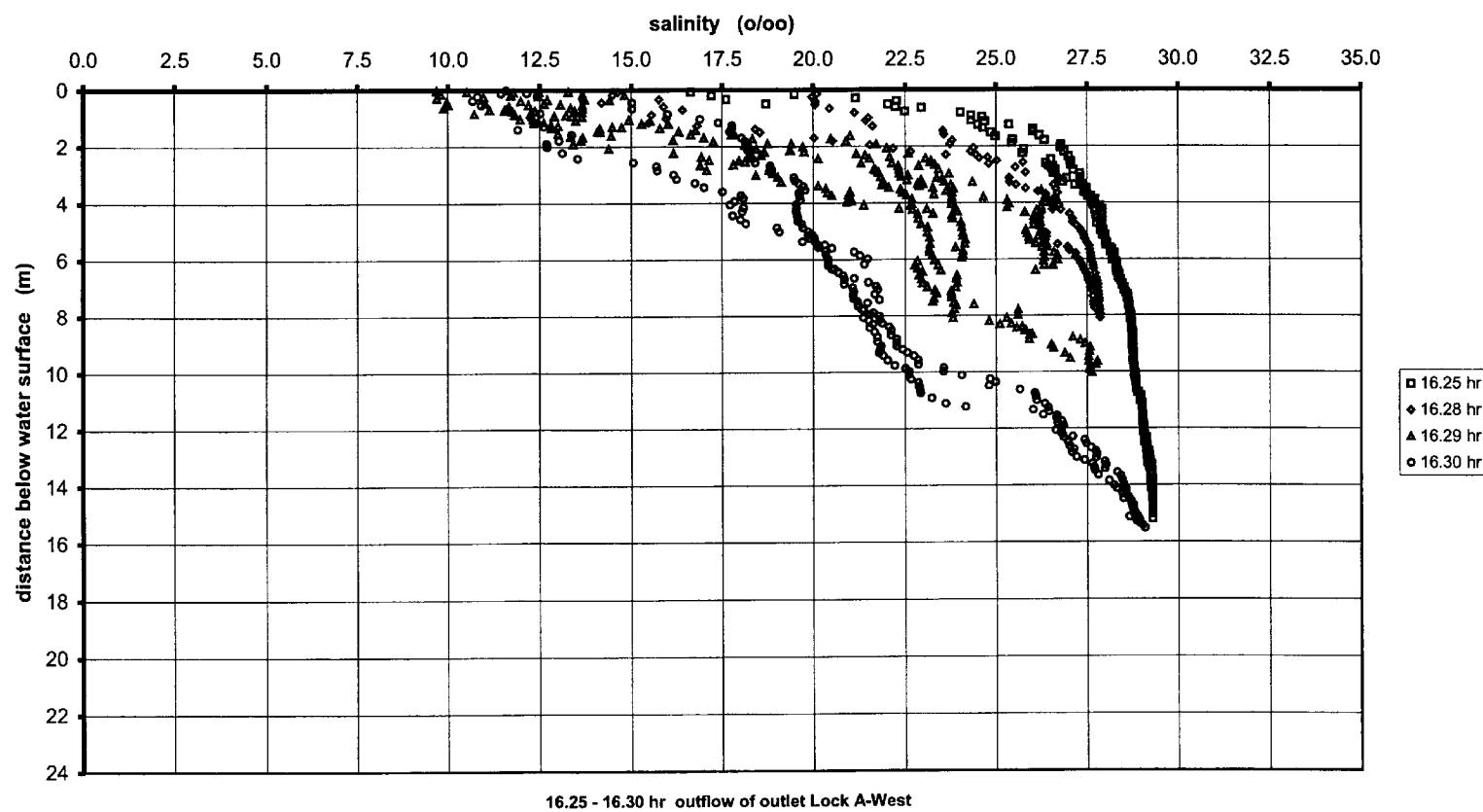
MEASUREMENTS IN OUTFLOW, INFLOW AND FILLING JETS

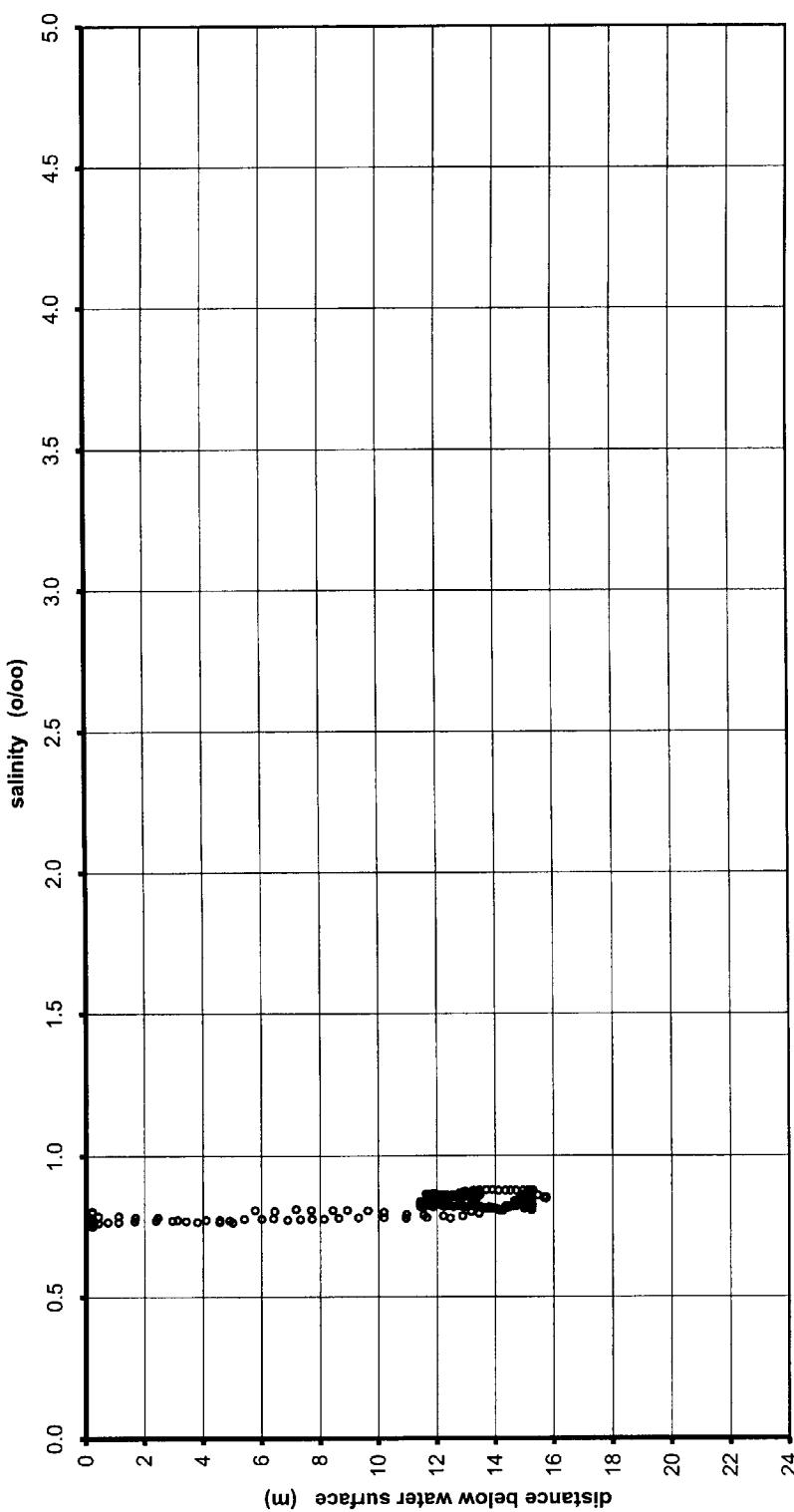
MEASUREMENTS IN OUTFLOW
OF OUTLET LOCK A-WEST

WL | DELFT HYDRAULICS

Q 3039

Fig. A.124





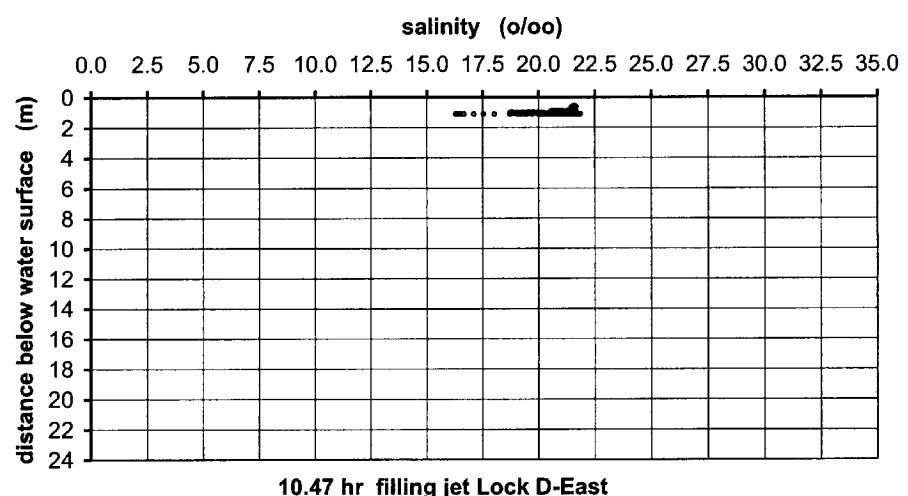
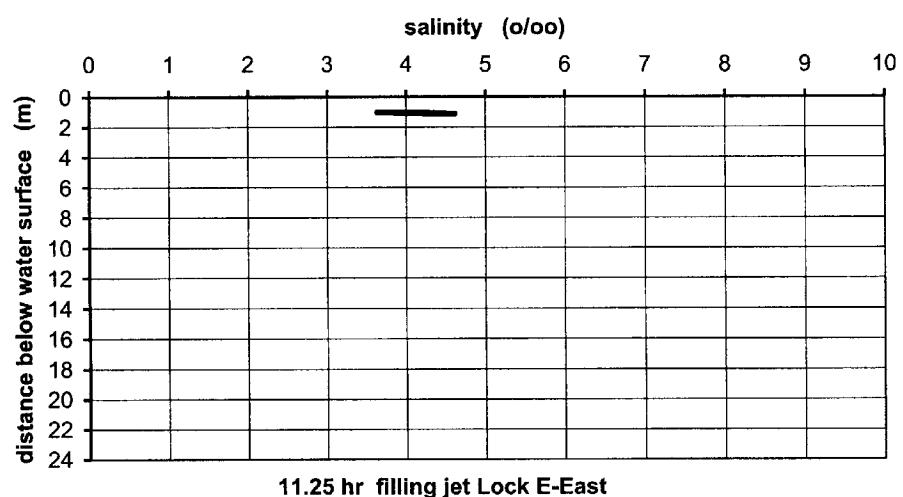
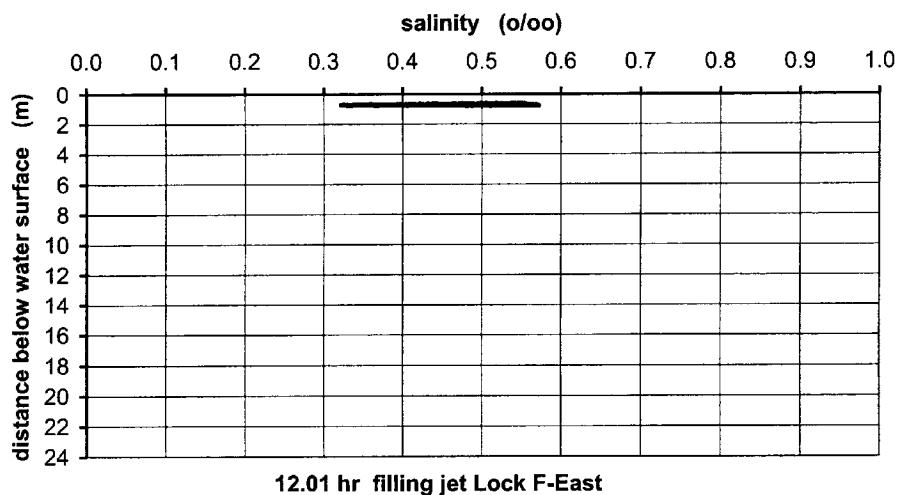
7.58 hr inflow section B-West

MEASUREMENTS BESIDE INFLOW OF LOCK B-WEST

WL | DELFT HYDRAULICS

Q 3039

Fig. A.125



MEASUREMENTS IN FILLING JETS
GATUN LOCKS, UPLOCKAGE

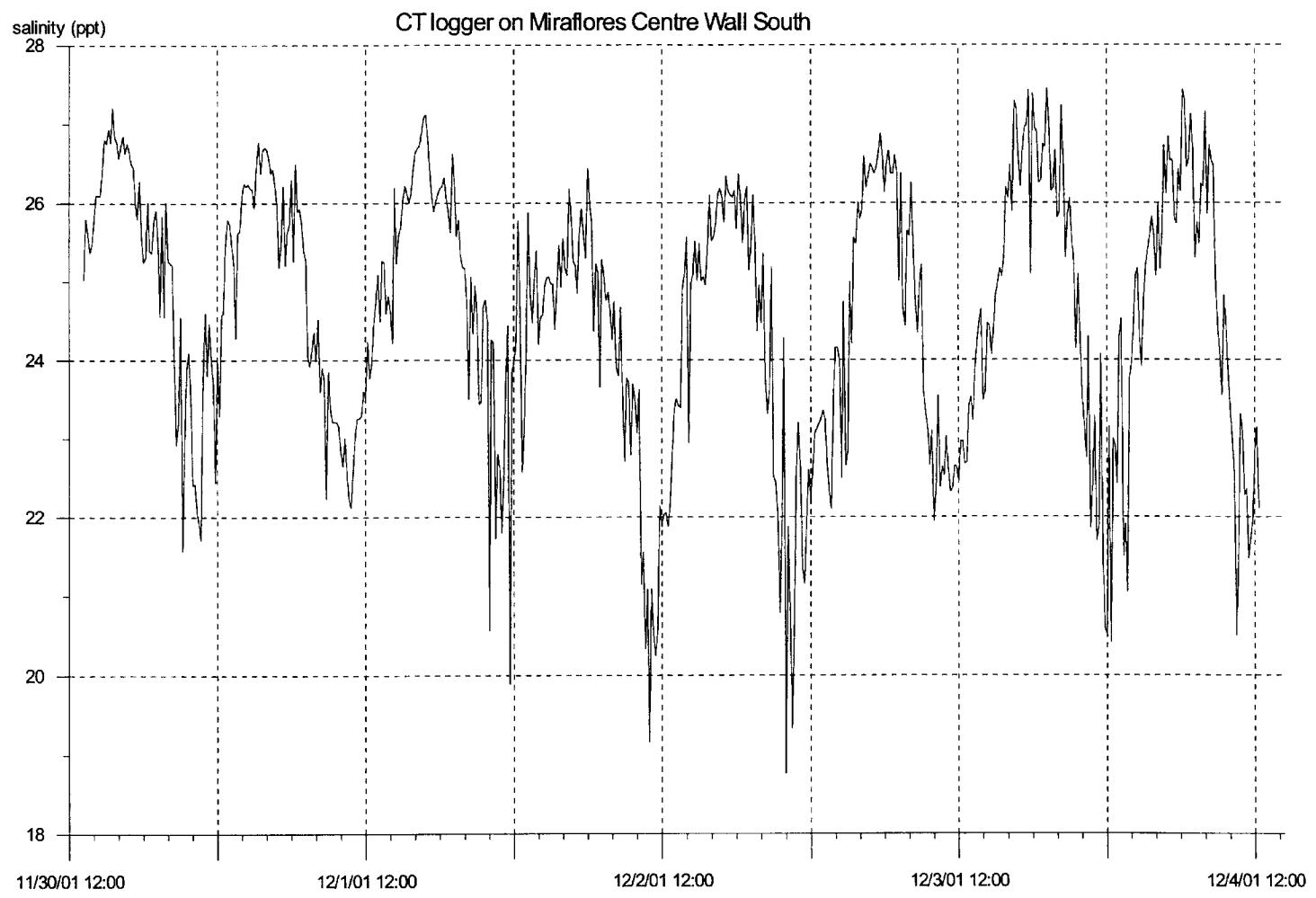
CT-LOGGER AT FIXED POSITION

FIXED POSITION END OF CENTRE WALL
PACIFIC SIDE MIRAFLORES LOCKS

WL | DELFT HYDRAULICS

Q 3039

Fig. A.127

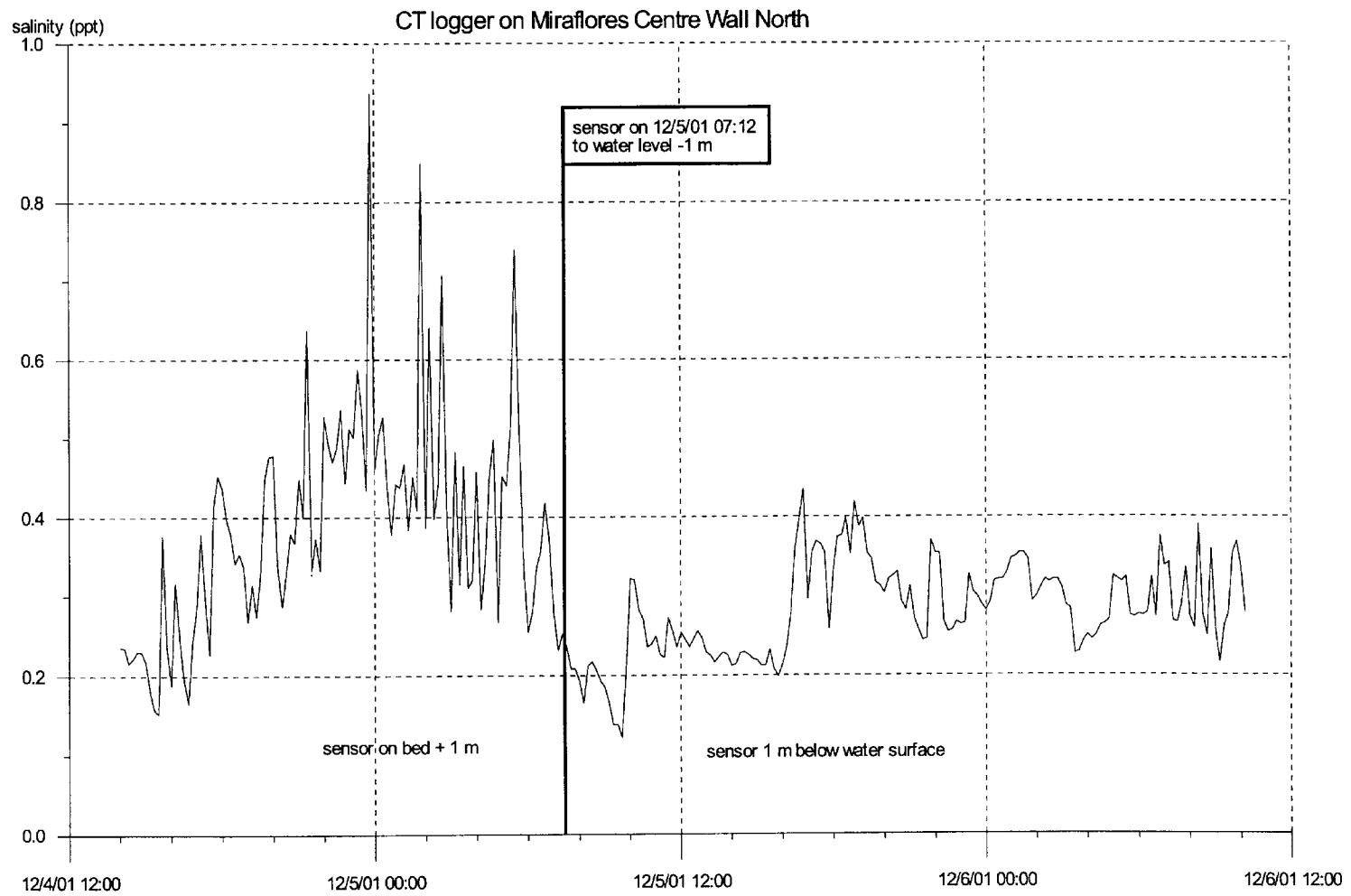


FIXED POSITION END OF CENTRE WALL
NORTH SIDE MIRAFLORES LOCKS

WL | DELFT HYDRAULICS

Q 3039

Fig. A.128

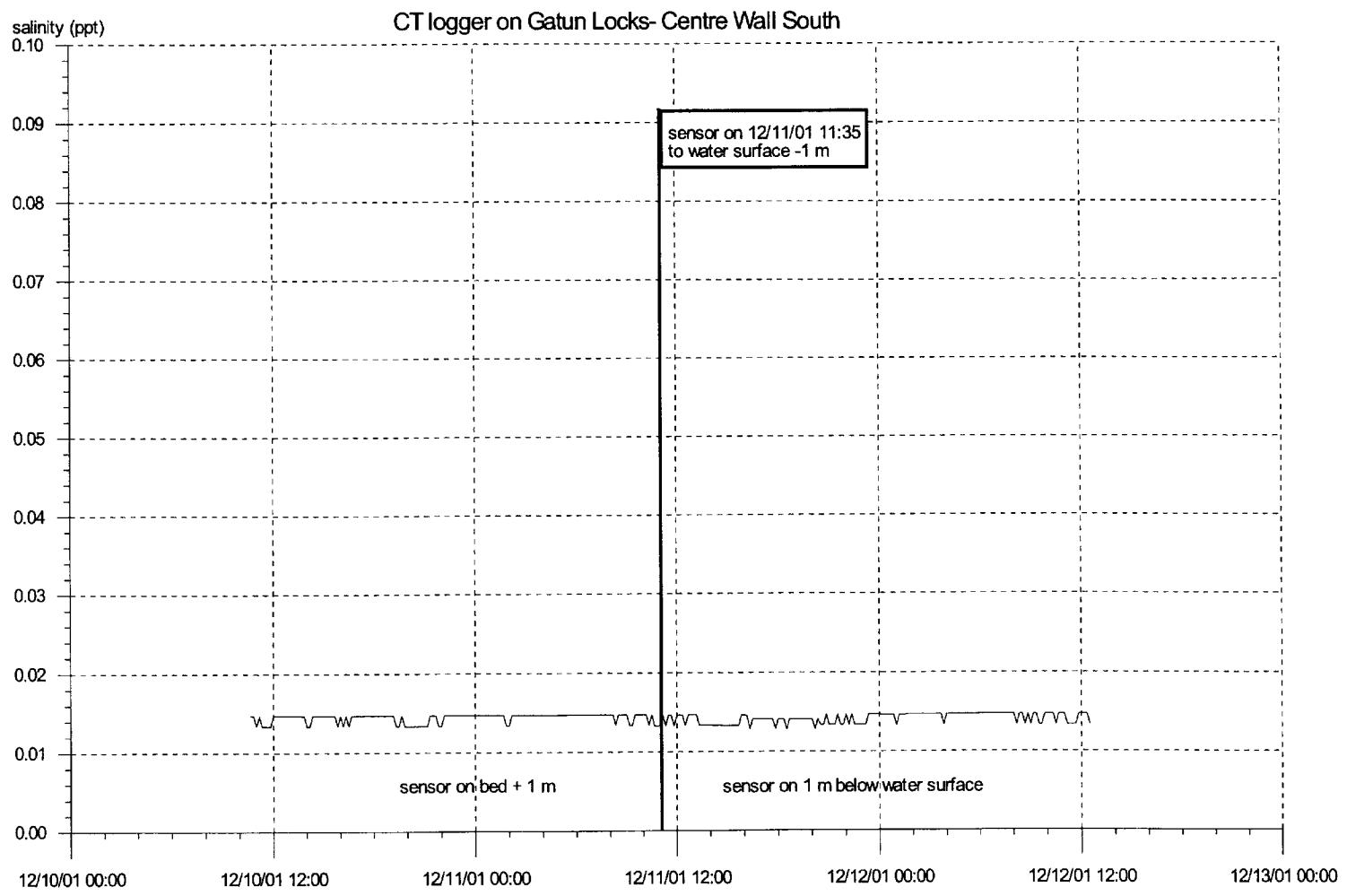


FIXED POSITION END OF CENTRE WALL
GATUN LAKE SIDE GATUN LOCKS

WL | DELFT HYDRAULICS

Q 3039

Fig. A.129



FIXED POSITION END OF CENTRE WALL
ATLANTIC SIDE GATUN LOCKS

WL | DELFT HYDRAULICS

Q 3039

Fig. A.130

