(1)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Thomas Praul	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bauer

Pipeline Operation Information

Is leg shutdown?	Yes
If so, date shutdown	8-23-12
Time Shutdown	22:00
Product in Line	N/A
If flowing, flow rate	N/A
Density	
Time System for Time Shutdown	

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	9
RTK Fix	Yes

Span Information

Date Surveyed	8-24-12
Tape Number	SD card 1
Direction Flown	S-N
Water Depth	89'
Current Year Span #	W-62
Previous Span #(s)	W-62
Addit. Extensions Used?	—
Length of Extension(s)	—
Drilling Issues?	—

Anchor Positions	—
Digital File Name or DVD #	—

Current Year Span Length	46
Previous Year Span Length	49
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	7:20	12:30	
LinkQuest Northing	914596.66	914552.61	
LinkQuest Easting	1958399.88	1958392.92	
Digital File Filename			
Digital File Time	8:25	8:30	
Display Time	8:25	8:30	
Bottom Type at Repair	Sandy	Sandy	
Highest Span Height	1'	1'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

See Cad Drawing

Notes:

(2)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Drew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Reuter

Pipeline Operation Information

Is leg shutdown?	Yes 8-23-12
If so, date shutdown	8-23-12
Time Shutdown	22:00
Product In Line	N/A
If flowing, flow rate	
Density	
Time System for Time Shutdown	

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	9
RTK Fix	Yes

Span Information

Date Surveyed	8-24
Tape Number	SD 1
Direction Flown	S-N
Water Depth	305
Current Year Span #	W63-A
Previous Span #(s)	W63-A
Addit. Extensions Used?	
Length of Extension(s)	
Drilling Issues?	

Anchor Positions

Digital File Name or DVD #

Current Year Span Length	66
Previous Year Span Length	57
Number of Dives to Complete	
Date(s) of Dive(s)	
Dive number(s) for current campaign	

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	22:25	25:07	
LinkQuest Northing	914860.07	914926.40	
LinkQuest Easting	1984913.69	1984029.52	
Digital File Filename			
Digital File Time	8:42	8:45	
Display Time	8:39	8:42	
Bottom Type at Repair	Sandy	Sandy	
Highest Span Height	1' at anchor →		
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

See Cad Drawing

Notes:

(3)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Drew	Sonc
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris

Pipeline Operation Information

Is leg shutdown?	Yes		
If so, date shutdown	8-23-12		
Time Shutdown	22:00		
Product In Line	N/A	Density	
If flowing, flow rate	N/A	Time System for Time Shutdown	

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	9
RTK Fix	Yes

Span Information

Date Surveyed	8-24-12	Anchor Positions	
Tape Number	SD 2		
Direction Flown	B-A	Digital File Name or DVD #	
Water Depth	75		
Current Year Span #	W63-B	Current Year Span Length	50
Previous Span #(s)	W-63-B	Previous Year Span Length	54
Addit. Extensions Used?		Number of Dives to Complete	
Length of Extension(s)		Date(s) of Dive(s)	
Drilling Issues?		Dive number(s) for current campaign	

* Drilling Issues: Include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	25:37	7:10	
LinkQuest Northing	9149241.40	9149172.89	
LinkQuest Easting	1958102552	1958102120	
Digital File Filename			
Digital File Time	8:45	7:50	
Display Time	8:42	8:50	
Bottom Type at Repair	Sand	Sandy	
Highest Span Height	1' anchor	Touch Down	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

See Cad Drawing

Notes:

(4)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Drew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bauer

Pipeline Operation Information	
Is leg shutdown?	Yes
If so, date shutdown	8-23-12
Time Shutdown	22:00
Product in Line	NGL
If flowing, flow rate	N/A

Density

Time System for Time Shutdown

Survey Geodetic Parameters	
Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	10
RTK Fix	Yes

Span Information

Date Surveyed	8-24-12
Tape Number	SO 2
Direction Flown	S-N
Water Depth	73
Current Year Span #	W-65
Previous Span #(s)	W-65
Addit. Extensions Used?	—
Length of Extension(s)	—
Drilling Issues?	—

Anchor Positions —

Digital File Name or DVD # —

Current Year Span Length	77
Previous Year Span Length	80
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling Issues: Include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	6:25	9:25	
LinkQuest Northing	915130.61	915284.81	
LinkQuest Easting	1958 9088.70	1958 9108.36	
Digital File Filename			
Digital File Time	9:08	9:11	
Display Time	9:08	9:11	
Bottom Type at Repair	Sandy	Sandy	
Highest Span Height	1'	1'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Middle Span Washer 1 of 2

See Cad Survey

Notes:

(5)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Drew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	4902598.10.071	Chris Rowe

Survey Geodetic Parameters	
Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	11
RTK Fix	Yes
	—
	—

Pipeline Operation Information

Is leg shutdown?	Yes		
If so, date shutdown	9-22-12		
Time Shutdown	22:00		
Product In Line	N/A	Density	
If flowing, flow rate	N/A	Time System for Time Shutdown	

Span Information

Date Surveyed	9-24-12	Anchor Positions	—
Tape Number	3.0 d		—
Direction Flown	S-N	Digital File Name or DVD #	—
Water Depth	72'		
Current Year Span #	W-64	Current Year Span Length	90
Previous Span #(s)	W-64	Previous Year Span Length	90
Addit. Extensions Used?	—	Number of Dives to Complete	—
Length of Extension(s)	—	Date(s) of Dive(s)	—
Drilling Issues?	—	Dive number(s) for current campaign	—

* Drilling Issues: Include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	12:07	17:25	
LinkQuest Northing	915234.81	915321.84	
LinkQuest Easting	1958410.86	1958436.32	
Digital File Filename			
Digital File Time	9:17	9:18	
Display Time	9:13	9:18	
Bottom Type at Repair	Sandy	Sandy	
Highest Span Height	.5-1'	0.5-1'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/mesh, natural outcrops, and hardline diver's measurements.

See Cad Drawing

Notes:

(6)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Drew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bauer

Pipeline Operation Information

Is leg shutdown?	Yes	
If so, date shutdown	8-23-12	
Time Shutdown	12:00	
Product in Line	Air	Density
If flowing, flow rate	NA	Time System for Time Shutdown

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	10
RTK Fix	Yes

Span Information

Date Surveyed	8-24-12	Anchor Positions	—
Tape Number	SD 1		—
Direction Flown	S-N	Digital File Name or DVD #	—
Water Depth	71		
Current Year Span #	W-67	Current Year Span Length	89
Previous Span #(s)	W-67	Previous Year Span Length	87
Addit. Extensions Used?	—	Number of Dives to Complete	—
Length of Extension(s)	—	Date(s) of Dive(s)	—
Drilling Issues?	—	Dive number(s) for current campaign	—

* Drilling Issues: Include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	02:25	00:15	
LinkQuest Northing	919416.68	919504.96	
LinkQuest Easting	1958415.59	1958418.97	
Digital File Filename			
Digital File Time	9:29	9:27	
Display Time	9:24	2:27	
Bottom Type at Repair	Sandy	Sandy	
Highest Span Height	1.5-2'	1.5-2'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and handline diver's measurements.

See End Drawing

Notes:

(7)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Drew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Baker

Pipeline Operation Information

Is leg shutdown?	Yes
If so, date shutdown	8-23-12
Time Shutdown	22:00
Product in Line	N/A
If flowing, flow rate	N/A

Density

Time System for Time Shutdown

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	10
RTK Fix	Yes

Span Information

Date Surveyed	9-24-12
Tape Number	502
Direction Flown	S-N
Water Depth	67
Current Year Span #	W-66
Previous Span #(s)	W-66
Addit. Extensions Used?	—
Length of Extension(s)	—
Drilling Issues?	—

Anchor Positions —

Digital File Name or DVD # —

Current Year Span Length	67
Previous Year Span Length	41
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	5:40	7:35	
LinkQuest Northing	915687.90	915732.90	
LinkQuest Easting	1958421.09	1958243.59	
Digital File Filename			
Digital File Time	9:33	9:34	
Display Time	9:39	9:35	
Bottom Type at Repair	Sandy	Sandy	
Highest Span Height	1-1.5'	1-1.5'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Last Span on North Side

Notes:

(8)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Beno	Some
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Mauer

Survey Geodetic Parameters	
Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	16
RTK Fix	Yes

Pipeline Operation Information			
Is leg shutdown?	Yes		
If so, date shutdown	8-23-12		
Time Shutdown	22:00		
Product In Line	Nat Gas	Density	
If flowing, flow rate	N/A	Time System for Time Shutdown	

Span Information			
Date Surveyed	8-24-12	Anchor Positions	—
Tape Number	SO 1		—
Direction Flown	N-S	Digital File Name or DVD #	—
Water Depth	122		
Current Year Span #	W-61	Current Year Span Length	72
Previous Span #(s)	W-61	Previous Year Span Length	80
Addit. Extensions Used?	—	Number of Dives to Complete	—
Length of Extension(s)	—	Date(s) of Dive(s)	—
Drilling Issues?	—	Dive number(s) for current campaign	—

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End ⟷	North End	Repair
Tape Counter	13:55	18:20	
LinkQuest Northing	914211.98	914143.23	
LinkQuest Easting	1958784.45	1958825.01	
Digital File Filename			
Digital File Time	10:52	10:56	
Display Time	10:52	10:56	
Bottom Type at Repair	Sand / Clay	Sand	
Highest Span Height	1.5'	1.5'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Notes:

(9)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Drew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Thaw

Survey Geodetic Parameters	
Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	10
RTK Fix	Yes

Pipeline Operation Information

Is leg shutdown?	Yes		
If so, date shutdown	9-23-12		
Time Shutdown	22:00		
Product In Line	N/A	Density	
If flowing, flow rate	N/A	Time System for Time Shutdown	

Span Information

Date Surveyed	9-24-12	Anchor Positions	
Tape Number	SD 2		
Direction Flown	S-N	Digital File Name or DVD #	
Water Depth	197		
Current Year Span #	W-79	Current Year Span Length	
Previous Span #(s)	W-79	Previous Year Span Length	
Addit. Extensions Used?		Number of Dives to Complete	
Length of Extension(s)		Date(s) of Dive(s)	
Drilling Issues?		Dive number(s) for current campaign	

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter			
LinkQuest Northing			
LinkQuest Easting			
Digital File Filename			
Digital File Time			
Display Time			
Bottom Type at Repair			
Highest Span Height			
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

W-79 Sighted in

Notes:

10

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Drew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bauer

Pipeline Operation Information

Is leg shutdown?	Yes	
If so, date shutdown	8-29-12	
Time Shutdown	2100	
Product in Line	Oil	Density
If flowing, flow rate	200	Time System for Time Shutdown

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	9
RTK Fix	Yes

Span Information

Date Surveyed	8-24-12
Tape Number	SD2
Direction Flown	N-S
Water Depth	146
Current Year Span #	W60B
Previous Span #(s)	W60B
Addit. Extensions Used?	
Length of Extension(s)	
Drilling Issues?	

Anchor Positions

Digital File Name or DVD #

Current Year Span Length	91
Previous Year Span Length	91
Number of Dives to Complete	
Date(s) of Dive(s)	
Dive number(s) for current campaign	

* Drilling Issues: Include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	0:36	21:45	
LinkQuest Northing	913984.45	914070.42	
LinkQuest Easting	1955378103	1955382807.74	
Digital File Filename			
Digital File Time	11:03	11:00	
Display Time	11:03	11:00	
Bottom Type at Repair	Zebra / Anchor	Zebra	
Highest Span Height	8.0'	2'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Notes:

(11)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Drew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Reuver

Pipeline Operation Information

Is leg shutdown?	Yes	
If so, date shutdown	8-24-12	
Time Shutdown	2215 EDT	
Product In Line	Air	Density
If flowing, flow rate	N/A	Time System for Time Shutdown

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	9
RTK Fix	Y/N
	—
	—

Span Information

Date Surveyed	8-24-12
Tape Number	S01
Direction Flown	N-S
Water Depth	157 - 165
Current Year Span #	W60A
Previous Span #(s)	W60A
Addit. Extensions Used?	—
Length of Extension(s)	—
Drilling Issues?	—

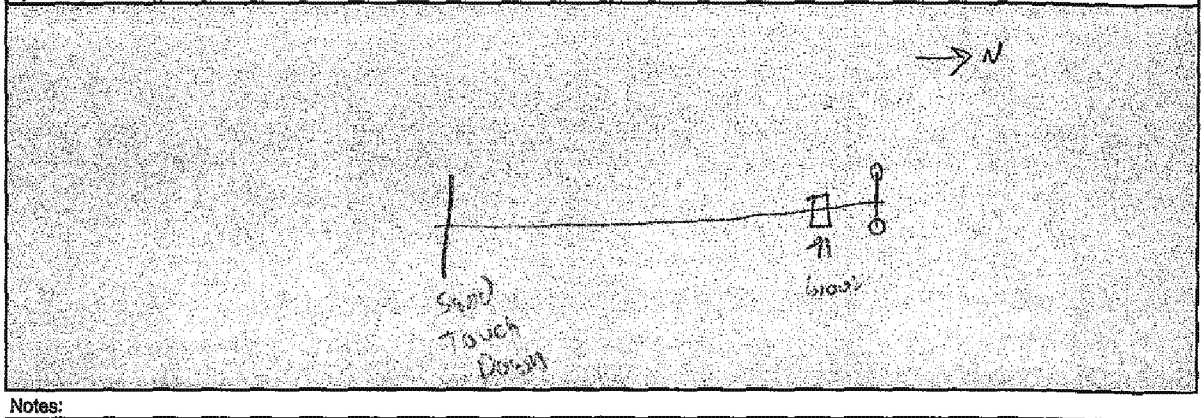
Anchor Positions	—
	—
Digital File Name or DVD #	—

Current Year Span Length	58
Previous Year Span Length	55
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling Issues: Include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	08.00	0:30	
LinkQuest Northing	913927.33	913984.45	
LinkQuest Easting	1958376 8.64	1958378 1.03	
Digital File Filename			
Digital File Time	11:11	11:03	
Display Time	11:11	11:03	
Bottom Type at Repair	Zebra sand	Zebra / Anchor	
Highest Span Height	2'	2'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.



Notes:

(12)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Drew	Some
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Mauer

Pipeline Operation Information	
Is leg shutdown?	Yes
If so, date shutdown	8-23-12
Time Shutdown	22:00
Product In Line	NGL
If flowing, flow rate	NA
Density	
Time System for Time Shutdown	

Survey Geodetic Parameters	
Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	9
RTK Fix	Yes

Span Information

Date Surveyed	8-24-12
Tape Number	SD2
Direction Flown	N-S
Water Depth	182
Current Year Span #	W-58B
Previous Span #(s)	W-58W
Addit. Extensions Used?	—
Length of Extension(s)	—
Drilling Issues?	—

Anchor Positions	—
	—
Digital File Name or DVD #	—

Current Year Span Length	36
Previous Year Span Length	38
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	19:00	16:05	
LinkQuest Northing	913759.42	913794.28	
LinkQuest Easting	1958324.05	1958332.07	
Digital File Filename			
Digital File Time	11:22	11:20	
Display Time	11:22	11:20	
Bottom Type at Repair	Sandy Anchor Touch	Sandy touch	
Highest Span Height	1-1.5'	1'-1.5'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Notes:

13

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Prew	Steve
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Rowe

Survey Geodetic Parameters	
Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	9
RTK Fix	Yes
	—
	—

Pipeline Operation Information			
Is leg shutdown?	Yes		
If so, date shutdown	8-23-12		
Time Shutdown	2:00		
Product in Line	Oil	Density	
If flowing, flow rate	N/A	Time System for Time Shutdown	

Span Information			
Date Surveyed	8-24-12	Anchor Positions	—
Tape Number	S02		—
Direction Flown	N-S	Digital File Name or DVD #	—
Water Depth	182		
Current Year Span #	W-58A N	Current Year Span Length	70
Previous Span #(s)	W-58A	Previous Year Span Length	126
Addit. Extensions Used?		Number of Dives to Complete	—
Length of Extension(s)		Date(s) of Dive(s)	—
Drilling Issues?		Dive number(s) for current campaign	—

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	2:40	19.00	
LinkQuest Northing	913693.00	913759.42	
LinkQuest Easting	1958705.02	1958724.05	
Digital File Filename			
Digital File Time	11:31	11:22	
Display Time	11:31	11:22	
Bottom Type at Repair	Sandy Anchor	Sandy Anchor touch	
Highest Span Height	3'	1-1.5'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Notes:

(14)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Drew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Drew

Pipeline Operation Information

Is leg shutdown?	Yes	
If so, date shutdown	8-23-12	
Time Shutdown	2130	
Product in Line	N/A	Density
If flowing, flow rate	N/A	Time System for Time Shutdown

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	8
RTK Fix	Yes
	—
	—

Span Information

Date Surveyed	8-24-12
Tape Number	201
Direction Flown	N-S
Water Depth	203
Current Year Span #	W-58 A 5
Previous Span #(s)	W-58 A
Addit. Extensions Used?	
Length of Extension(s)	
Drilling Issues?	

Anchor Positions	—
	—
Digital File Name or DVD #	—

Current Year Span Length	62
Previous Year Span Length	126
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	10:45	2:40	
LinkQuest Northing	912672.58	912663.00	
LinkQuest Easting	1958369 1.04	1958370 5.02	
Digital File Filename			
Digital File Time	11:40	11:31	
Display Time	11:40	11:38	
Bottom Type at Repair	Sandy Anchor	Sandy Anchor	
Highest Span Height	2-3'	2-3'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Notes:

(15)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Drew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Baker

Pipeline Operation Information

Is leg shutdown?	Yes
If so, date shutdown	8-23-12
Time Shutdown	23:00
Product In Line	N/A
If flowing, flow rate	N/A

Density

Time System for Time Shutdown

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	8
RTK Fix	Yes
	-
	-

Span Information

Date Surveyed	8-24-12
Tape Number	SN2
Direction Flown	N-S
Water Depth	212
Current Year Span #	W-59B
Previous Span #(s)	W-59D
Addit. Extensions Used?	-
Length of Extension(s)	-
Drilling Issues?	-

Anchor Positions -

Digital File Name or DVD # -

Current Year Span Length	97
Previous Year Span Length	104
Number of Dives to Complete	-
Date(s) of Dive(s)	-
Dive number(s) for current campaign	-

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	20:23	10:45	
LinkQuest Northing	913539.50	913632.58	
LinkQuest Easting	1958366334	1958369104	
Digital File Filename			
Digital File Time	11:49	11:40	
Display Time	11:49	11:40	
Bottom Type at Repair	Sandy Anchor	Sandy Anchor	
Highest Span Height	2'-3'	2'-3'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

N

Notes:

(16)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Pierce	Shane
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Weaver

Pipeline Operation Information

Is leg shutdown?	YES
If so, date shutdown	8-23-12
Time Shutdown	2:30 PM
Product in Line	Water
If flowing, flow rate	NA

Density

Time System for Time Shutdown

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	9
RTK Fix	Yes
	—
	—

Span Information

Date Surveyed	8-24-12
Tape Number	201
Direction Flown	N-S
Water Depth	225
Current Year Span #	W-59 A
Previous Span #(s)	W-59 A
Addit. Extensions Used?	—
Length of Extension(s)	—
Drilling Issues?	—

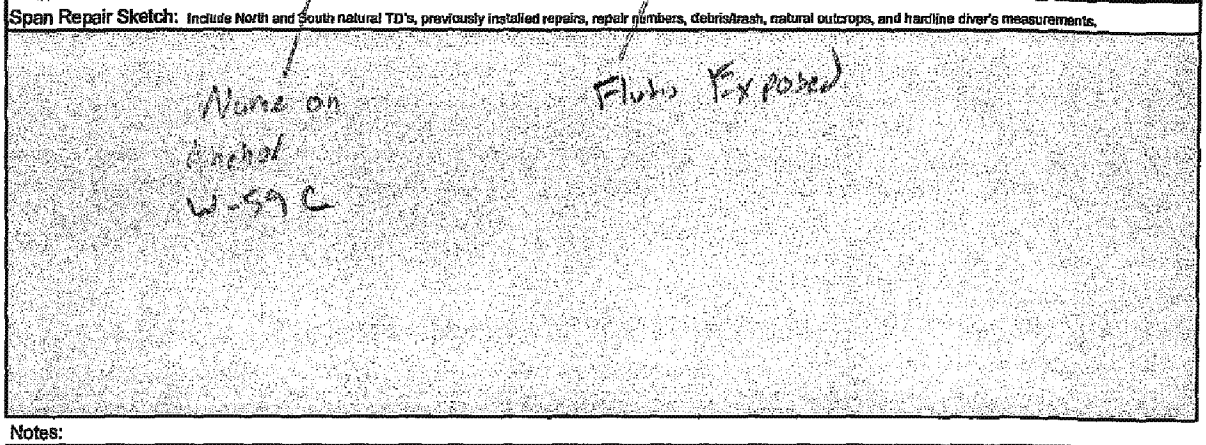
Anchor Positions	—
	—
Digital File Name or DVD #	—

Current Year Span Length	91
Previous Year Span Length	91
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	2:35	20:23	
LinkQuest Northing	912450.90	912539.50	
LinkQuest Easting	1958 3638.25	1958 3663.34	
Digital File Filename			
Digital File Time	11:55	11:49	
Display Time	11:55	11:49	
Bottom Type at Repair	Sand w/ Anchor	Sandy Anchor	
Highest Span Height	L2	2-3	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.



Notes:

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Drew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bauer

Pipeline Operation Information

Is leg shutdown?	Yes
If so, date shutdown	8-23-12
Time Shutdown	22:00
Product In Line	NGL
If flowing, flow rate	NA
Density	—
Time System for Time Shutdown	—

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	8
RTK Fix	Yes

Span Information

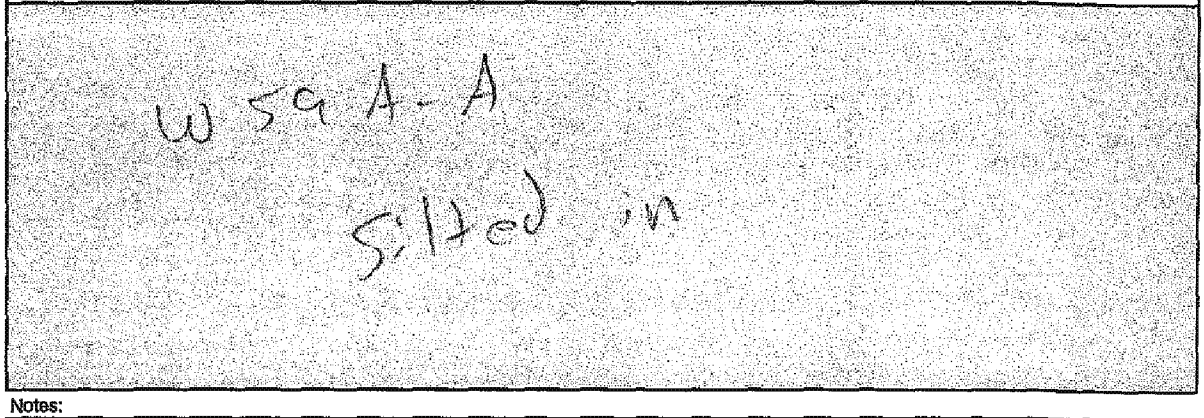
Date Surveyed	8-24-12
Tape Number	SD1
Direction Flown	N-S
Water Depth	270'
Current Year Span #	
Previous Span #(s)	W-59 A-A
Addit. Extensions Used?	—
Length of Extension(s)	—
Drilling Issues?	—

Anchor Positions	—
	—
Digital File Name or DVD #	—
Current Year Span Length	
Previous Year Span Length	
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter			
LinkQuest Northing			
LinkQuest Easting			
Digital File Filename			
Digital File Time			
Display Time			
Bottom Type at Repair			
Highest Span Height			
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.



Notes:

(19)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Drew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Beaver

Pipeline Operation Information

Is leg shutdown?	yes	
If so, date shutdown	9-23-12	
Time Shutdown	22:00	
Product in Line	N/A	Density
If flowing, flow rate	NA	Time System for Time Shutdown

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	9
RTK Fix	yes

Span Information

Date Surveyed	9-24-12
Tape Number	SD2
Direction Flown	N-S
Water Depth	330
Current Year Span #	W-57
Previous Span #(s)	W-57
Addit. Extensions Used?	—
Length of Extension(s)	—
Drilling Issues?	—

Anchor Positions	
Digital File Name or DVD #	

Current Year Span Length	79
Previous Year Span Length	77
Number of Dives to Complete	
Date(s) of Dive(s)	
Dive number(s) for current campaign	

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	5:10	13:25	
LinkQuest Northing	913068.19	913145.18	
LinkQuest Easting	19583529.29	19583559.36	
Digital File Filename			
Digital File Time	12:24	12:08	
Display Time	12:24	12:08	
Bottom Type at Repair	Clay	Clay	
Highest Span Height	2-3'	2-3	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Notes:

(19)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Pfau	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Ravel

Pipeline Operation Information

Is leg shutdown?	Yes	
If so, date shutdown	8-23-12	
Time Shutdown	22:00	
Product In Line	N/L	Density
If flowing, flow rate	N/A	Time System for Time Shutdown

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	8
RTK Fix	Yes
	—
	—

Span Information

Date Surveyed	8-24-12
Tape Number	SO1
Direction Flown	N-S
Water Depth	237
Current Year Span #	W54-B
Previous Span #(s)	W54-B
Addit. Extensions Used?	—
Length of Extension(s)	—
Drilling Issues?	—

Anchor Positions	—
	—
Digital File Name or DVD #	—

Current Year Span Length	49
Previous Year Span Length	88
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	13:20	9:00	
LinkQuest Northing	912953.18	913000.20	
LinkQuest Easting	1958351.73	1958320.28	
Digital File Filename			
Digital File Time	12:32	12:28	
Display Time	12:32	12:28	
Bottom Type at Repair	Clay	Clay	
Highest Span Height	1'	1'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Notes:

(20)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Prow	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bauer

Survey Geodetic Parameters	
Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	9
RTK Fix	Yes
—	—
—	—

Pipeline Operation Information

Is leg shutdown?	Yes	
If so, date shutdown	8-23-12	
Time Shutdown	22:00	
Product In Line	NGL	Density
If flowing, flow rate	NA	Time System for Time Shutdown

Span Information

Date Surveyed	8-24-12	Anchor Positions	—
Tape Number	SD1		—
Direction Flown	N-S	Digital File Name or DVD #	—
Water Depth	238		
Current Year Span #	W54A	Current Year Span Length	56
Previous Span #(s)	W54A	Previous Year Span Length	54
Addit. Extensions Used?	—	Number of Dives to Complete	—
Length of Extension(s)	—	Date(s) of Dive(s)	—
Drilling Issues?	—	Dive number(s) for current campaign	—

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	24:30	18:06	
LinkQuest Northing	9128617	9129121.72	
LinkQuest Easting	1958591.22	1958361498.25	
Digital File Filename			
Digital File Time	12:44	12:38	
Display Time	12:44	12:38	
Bottom Type at Repair	clay	Survey / Anchor	
Highest Span Height	1'	1'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Rope Around Anchor

Notes:

(21)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Prew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bauer

Survey Geodetic Parameters	
Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	9
RTK Fix	Yes

Pipeline Operation Information

Is leg shutdown?	Yes		
If so, date shutdown	8-23-12		
Time Shutdown	22:00		
Product In Line	N/G	Density	—
If flowing, flow rate	NA	Time System for Time Shutdown	—

Span Information

Date Surveyed	8-24-12	Anchor Positions	—
Tape Number	SD1		—
Direction Flown	N-S	Digital File Name or DVD #	—
Water Depth	241		
Current Year Span #	W-56	Current Year Span Length	59
Previous Span #(s)	W-56	Previous Year Span Length	67
Addit. Extensions Used?		Number of Dives to Complete	—
Length of Extension(s)		Date(s) of Dive(s)	—
Drilling Issues?		Dive number(s) for current campaign	—

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	7:10	4:06	
LinkQuest Northing	9126418.90	9127055.82	
LinkQuest Easting	1958343.21	1958346.78	
Digital File Filename			
Digital File Time	12:52	12:50	
Display Time	12:52	12:50	
Bottom Type at Repair	Sand	Clay	
Highest Span Height	6" - 1'	6" - 1'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Notes:

(22)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Drew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bauer

Pipeline Operation Information

Is leg shutdown?	Yes
If so, date shutdown	8-23-12
Time Shutdown	2200
Product In Line	Air/Gas
If flowing, flow rate	N/A
Density	
Time System for Time Shutdown	

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	9
RTK Fix	Yes

Span Information

Date Surveyed	8-24-12
Tape Number	SD2
Direction Flown	N-S
Water Depth	247
Current Year Span #	W-75
Previous Span #(s)	W-75
Addit. Extensions Used?	—
Length of Extension(s)	—
Drilling Issues?	—

Anchor Positions	—
	—
Digital File Name or DVD #	—
Current Year Span Length	52
Previous Year Span Length	78
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling Issues: Include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	17:10	12:40	
LinkQuest Northing	9125360.3	9125776.45	
LinkQuest Easting	1958339.1.53	1958341 2.51	
Digital File Filename			
Digital File Time	13:01	12:58	
Display Time	13:01	12:58	
Bottom Type at Repair	Sandy	Sandy	
Highest Span Height			
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Notes:

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Prew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bauer

Pipeline Operation Information

Is leg shutdown?	Yes	
If so, date shutdown	9-8-12	
Time Shutdown	2200	
Product In Line	NG	Density
If flowing, flow rate	NA	Time System for Time Shutdown

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	9
RTK Fix	Yes
	—
	—

Span Information

Date Surveyed	8-24-12	Anchor Positions	—
Tape Number	SD2		—
Direction Flown	N-S	Digital File Name or DVD #	—
Water Depth	248		
Current Year Span #	W72C	Current Year Span Length	59
Previous Span #(s)	W72C	Previous Year Span Length	56
Addit. Extensions Used?		Number of Dives to Complete	—
Length of Extension(s)		Date(s) of Dive(s)	—
Drilling Issues?		Dive number(s) for current campaign	—

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	3:10	0:12	
LinkQuest Northing	912148.24	912304.66	
LinkQuest Easting	1958379.67	1958339.15	
Digital File Filename			
Digital File Time	13:14	13:10	
Display Time	13:14	13:10	
Bottom Type at Repair	Sandy / Anchor	Sandy / Grout Bag	
Highest Span Height	2'	2'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Notes:

24

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Prew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bauer

Survey Geodetic Parameters	
Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	9
RTK Fix	Yes

Pipeline Operation Information			
Is leg shutdown?	Yes		
If so, date shutdown	9-23-12		
Time Shutdown	22:00		
Product In Line	NGL	Density	—
If flowing, flow rate	NA	Time System for Time Shutdown	—

Span Information			
Date Surveyed	8-24-12	Anchor Positions	—
Tape Number	SD1		—
Direction Flown	N-S	Digital File Name or DVD #	—
Water Depth	248		
Current Year Span #	W72B	Current Year Span Length	97
Previous Span #(s)	W72B	Previous Year Span Length	100
Addit. Extensions Used?		Number of Dives to Complete	—
Length of Extension(s)		Date(s) of Dive(s)	—
Drilling Issues?		Dive number(s) for current campaign	—

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	11:45	3:10	
LinkQuest Northing	912354.18	912418.24	
LinkQuest Easting	1558336.11	1558379.67	
Digital File Filename			
Digital File Time	13:22	13:19	
Display Time	13:22	13:19	
Bottom Type at Repair	Sandy Anchor	Sandy / Anchors	
Highest Span Height	1-1.5	1-1.5	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Notes:

(25)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Prew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Ravel

Survey Geodetic Parameters	
Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	9
RTK Fix	YES
—	—
—	—

Pipeline Operation Information

Is leg shutdown?	YES		
If so, date shutdown	8-23-12		
Time Shutdown	22:00		
Product in Line	N/A	Density	
If flowing, flow rate	NA	Time System for Time Shutdown	

Span Information

Date Surveyed	8-24-12	Anchor Positions	—
Tape Number	SD1		—
Direction Flown	N-S	Digital File Name or DVD #	—
Water Depth	248		
Current Year Span #	W72A	Current Year Span Length	103
Previous Span #(s)	W72A	Previous Year Span Length	100
Addit. Extensions Used?		Number of Dives to Complete	—
Length of Extension(s)		Date(s) of Dive(s)	—
Drilling Issues?		Dive number(s) for current campaign	—

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	18:20	11:45	
LinkQuest Northing	9122533.88	9123541.18	
LinkQuest Easting	1958332.12	1558356.11	
Digital File Filename			
Digital File Time	12:28	12:22	
Display Time	12:28	12:22	
Bottom Type at Repair	Sandy Anchor	Sandy Anchor	
Highest Span Height	1-1.5'	1-1.5'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Notes:

(26)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Prew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bauer

Pipeline Operation Information

Is leg shutdown?	Yes
If so, date shutdown	8-23-12
Time Shutdown	2200
Product In Line	Wet
If flowing, flow rate	NA

Density

Time System for Time Shutdown

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	9
RTK Fix	Yes
—	—
—	—

Span Information

Date Surveyed	8-24-12
Tape Number	SD 1
Direction Flown	N-S
Water Depth	248
Current Year Span #	W-71
Previous Span #(s)	W-71
Addit. Extensions Used?	
Length of Extension(s)	
Drilling Issues?	

Anchor Positions —

—

Digital File Name or DVD # —

Current Year Span Length	77
Previous Year Span Length	84
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	25:10	18:20	
LinkQuest Northing	9121178.36	9122352.88	
LinkQuest Easting	1998308.25	1998327.12	
Digital File Filename			
Digital File Time	13:25	13:28	
Display Time	13:25	13:28	
Bottom Type at Repair	Silty	Sandy Archw	
Highest Span Height	1-1.5	1-1.5'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Notes:

27

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Drew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bauer

Pipeline Operation Information

Is leg shutdown?	Yes	
If so, date shutdown	8-23-12	
Time Shutdown	22:00	
Product In Line	N/A	Density
If flowing, flow rate	NA	Time System for Time Shutdown

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	9
RTK Fix	Yes
	—
	—

Span Information

Date Surveyed	8-24-12
Tape Number	SO 2
Direction Flown	N-S
Water Depth	209
Current Year Span #	W-68 B
Previous Span #(s)	W-68 B
Addit. Extensions Used?	
Length of Extension(s)	
Drilling Issues?	

Anchor Positions —

Digital File Name or DVD # —

Current Year Span Length	60
Previous Year Span Length	43
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling Issues: Include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	12:10	9:54	
LinkQuest Northing	912032.69	912075.92	
LinkQuest Easting	1958326.48	1958329.48	
Digital File Filename			
Digital File Time	13:48	13:49	
Display Time	13:48	13:44	
Bottom Type at Repair	Clay / Gravel	Clay	
Highest Span Height	1'	1'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Notes:

28

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Praul	Sam L.
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bauer

Survey Geodetic Parameters	
Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	9
RTK Fix	Yes
—	—
—	—

Pipeline Operation Information

Is leg shutdown?	Yes	
If so, date shutdown	8-22-12	
Time Shutdown	1403	
Product In Line	Nat Gas	Density
If flowing, flow rate	NA	Time System for Time Shutdown

Span Information

Date Surveyed	8-24-12	Anchor Positions	—
Tape Number	S01		—
Direction Flown	N-S	Digital File Name or DVD #	—
Water Depth	209		
Current Year Span #	W-684	Current Year Span Length	77
Previous Span #(s)	W-684	Previous Year Span Length	85
Addit. Extensions Used?		Number of Dives to Complete	—
Length of Extension(s)		Date(s) of Dive(s)	—
Drilling Issues?		Dive number(s) for current campaign	—

* Drilling issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	19:40	12:10	
LinkQuest Northing	911959.27	912032.67	
LinkQuest Easting	1958[illegible]3246.98	1958[illegible]66.45	
Digital File Filename			
Digital File Time	13:54	13:48	
Display Time	13:54	13:48	
Bottom Type at Repair	Sandy Clay	Sandy Rock	
Highest Span Height	1'-2"	1'-2"	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Notes:

(29)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Drew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bauer

Pipeline Operation Information

Is leg shutdown?	Yes	
If so, date shutdown	8-23-12	
Time Shutdown	22:00	
Product In Line	NGL	Density
If flowing, flow rate	NA	Time System for Time Shutdown

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	9
RTK Fix	Yes
	—
	—

Span Information

Date Surveyed	8-24-12
Tape Number	SD 2
Direction Flown	N-S
Water Depth	184
Current Year Span #	W-69
Previous Span #(s)	W-69
Addit. Extensions Used?	
Length of Extension(s)	
Drilling Issues?	

Anchor Positions	—
	—
Digital File Name or DVD #	—

Current Year Span Length	70
Previous Year Span Length	96
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	41:30	24:05	
LinkQuest Northing	911779.84	911846.81	
LinkQuest Easting	19 5 8:32 00.00	19587217.70	
Digital File Filename			
Digital File Time	14:06	14:00	
Display Time	14:06	14:00	
Bottom Type at Repair	Sandy / clay	Sandy / clay	
Highest Span Height	0.5'	0.5 - 1'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Notes:

30

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Plew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	480259S.10.071	Chris Bauer

Pipeline Operation Information

Is leg shutdown?	Yes	
If so, date shutdown	8-23-12	
Time Shutdown	22:00	
Product In Line	N/A	Density
If flowing, flow rate	N/A	Time System for Time Shutdown

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	9
RTK Fix	Yes
	-
	-

Span Information

Date Surveyed	8-24-12
Tape Number	SD 1
Direction Flown	N-S
Water Depth	179
Current Year Span #	W-70 N
Previous Span #(s)	W-70
Addit. Extensions Used?	
Length of Extension(s)	
Drilling Issues?	

Anchor Positions	-
	-
Digital File Name or DVD #	-

Current Year Span Length	25
Previous Year Span Length	115
Number of Dives to Complete	-
Date(s) of Dive(s)	-
Dive number(s) for current campaign	-

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	12:20	9:10	
LinkQuest Northing	911707.64	911730.11	
LinkQuest Easting	19583181.53	19583186.02	
Digital File Filename			
Digital File Time	14:13	14:33	
Display Time	14:13	14:11	
Bottom Type at Repair	Sandy Anchor	Sandy Clay	
Highest Span Height	0.5'	0.5'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

W-70

Notes:

(21)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Prew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bauer

Survey Geodetic Parameters	
Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	9
RTK Fix	Yes

Pipeline Operation Information

Is leg shutdown?	Yes		
If so, date shutdown	8-23-12		
Time Shutdown	22.00		
Product in Line	N/A	Density	
If flowing, flow rate	NA	Time System for Time Shutdown	

Span Information

Date Surveyed	8-24-12	Anchor Positions	—
Tape Number	501		—
Direction Flown	N-S	Digital File Name or DVD #	—
Water Depth	177		
Current Year Span #	W20 5	Current Year Span Length	43
Previous Span #(s)	W10	Previous Year Span Length	115
Addit. Extensions Used?		Number of Dives to Complete	—
Length of Extension(s)		Date(s) of Dive(s)	—
Drilling Issues?		Dive number(s) for current campaign	—

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	17.45	12.00	
LinkQuest Northing	911886.97	911707.64	
LinkQuest Easting	1958316.32	1959331.57	
Digital File Filename			
Digital File Time	14:19	14:13	
Display Time	14:19	14:13	
Bottom Type at Repair	Clay	Clay Rock	
Highest Span Height	0.5 - 1'	0.5' - 1	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

W-10

Notes:

20

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Drew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bauer

Pipeline Operation Information

Is leg shutdown?	Yes
If so, date shutdown	8-23-10
Time Shutdown	24:00
Product In Line	N/A
If flowing, flow rate	N/A

Density

Time System for Time Shutdown

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	9
RTK Fix	Yes

Span Information

Date Surveyed	8-24-10
Tape Number	601
Direction Flown	N-S
Water Depth	172
Current Year Span #	W53-B
Previous Span #(s)	W52-B
Addit. Extensions Used?	
Length of Extension(s)	
Drilling Issues?	

Anchor Positions

Digital File Name or DVD #

Current Year Span Length	25
Previous Year Span Length	31
Number of Dives to Complete	
Date(s) of Dive(s)	
Dive number(s) for current campaign	

* Drilling Issues: Include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	1:50	24:10	
LinkQuest Northing	911537.86	911561.50	
LinkQuest Easting	19583134.27	19583138.99	
Digital File Filename			
Digital File Time	14:29	14:24	
Display Time	14:29	14:20	
Bottom Type at Repair	Sandy Anchor	Clay	
Highest Span Height	0.5'	0.5'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Notes:

(37)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Prow	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bower

Pipeline Operation Information

Is leg shutdown?	Yes	
If so, date shutdown	8-23-10	
Time Shutdown	22:00	
Product In Line	N/A	Density
If flowing, flow rate	NA	Time System for Time Shutdown

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	8
RTK Fix	Yes
	—
	—

Span Information

Date Surveyed	8-24-10	Anchor Positions	—
Tape Number	SD2		—
Direction Flown	N-S	Digital File Name or DVD #	—
Water Depth	172		
Current Year Span #	W52-A	Current Year Span Length	67
Previous Span #(s)	W52-A	Previous Year Span Length	78
Addit. Extensions Used?		Number of Dives to Complete	—
Length of Extension(s)		Date(s) of Dive(s)	—
Drilling Issues?		Dive number(s) for current campaign	—

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	9:30	1:50	
LinkQuest Northing	911474.35	911532.86	
LinkQuest Easting	1958318.69	1958313.27	
Digital File Filename			
Digital File Time	14:37	14:29	
Display Time	14:37	14:29	
Bottom Type at Repair	Clay	Clay / Anchor	
Highest Span Height	0.5'	0.5'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Notes:

(34)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-16	Tom Prew	Sam K
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Dyer

Survey Geodetic Parameters	
Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	9
RTK Fix	yes
	—
	—

Pipeline Operation Information

Is leg shutdown?	Yes		
If so, date shutdown	8-23-12		
Time Shutdown	22:00		
Product in Line	N/A	Density	—
If flowing, flow rate	N/A	Time System for Time Shutdown	—

Span Information

Date Surveyed	8-24-12	Anchor Positions	—
Tape Number	502		—
Direction Flown	N-S	Digital File Name or DVD #	—
Water Depth	173		
Current Year Span #	W-52	Current Year Span Length	60
Previous Span #(s)	W-52	Previous Year Span Length	90
Addit. Extensions Used?		Number of Dives to Complete	—
Length of Extension(s)		Date(s) of Dive(s)	—
Drilling Issues?		Dive number(s) for current campaign	—

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	17:45	14:10	
LinkQuest Northing	911335.15	911292.18	
LinkQuest Easting	1958307G.91	1958094.09	
Digital File Filename			
Digital File Time	14:46	14:42	
Display Time	14:46	14:42	
Bottom Type at Repair	Clay	Clay	
Highest Span Height	0.5'	0.5'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Notes:

(35)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Piew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Beaver

Survey Geodetic Parameters	
Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	9
RTK Fix	Yes
—	—
—	—

Pipeline Operation Information

Is leg shutdown?	Yes		
If so, date shutdown	8-23-12		
Time Shutdown	22:00		
Product In Line	NGL	Density	
If flowing, flow rate	N/A	Time System for Time Shutdown	

Span Information

Date Surveyed	8-24-12	Anchor Positions	—
Tape Number	SD1		—
Direction Flown	N-S	Digital File Name or DVD #	—
Water Depth	W 176		
Current Year Span #	W 48B	Current Year Span Length	67
Previous Span #(s)	W 48A	Previous Year Span Length	78
Addit. Extensions Used?	—	Number of Dives to Complete	—
Length of Extension(s)	—	Date(s) of Dive(s)	—
Drilling Issues?	—	Dive number(s) for current campaign	—

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	23:30	20:30	
LinkQuest Northing	911245.23	911308.69	
LinkQuest Easting	19583053.12	19583072.91	
Digital File Filename			
Digital File Time	14:51	14:49	
Display Time	14:51	14:49	
Bottom Type at Repair	Clay/Anchor	Clay	
Highest Span Height	0.5-1'	0.5'-1	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Notes:

(36)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Prew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bauer

Pipeline Operation Information

Is leg shutdown?	Yes	
If so, date shutdown	8-22-12	
Time Shutdown	22:00	
Product in Line	N/A	Density
If flowing, flow rate	NA	Time System for Time Shutdown

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	9
RTK Fix	Yes
	—
	—

Span Information

Date Surveyed	8-24-12
Tape Number	SD9
Direction Flown	N-S
Water Depth	176
Current Year Span #	W-484
Previous Span #(s)	W-484
Addit. Extensions Used?	—
Length of Extension(s)	—
Drilling Issues?	—

Anchor Positions: —

Digital File Name or DVD #: —

Current Year Span Length	61
Previous Year Span Length	57
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	4:20	23:20	
LinkQuest Northing	911185.78	911245.23	
LinkQuest Easting	1958303.7.64	1958303.3.12	
Digital File Filename			
Digital File Time	14:58	14:51	
Display Time	14:58	14:51	
Bottom Type at Repair	Sandy clay lump	Sandy shale	
Highest Span Height	1-1.5'	0.5'-1'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Notes:

(37)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Hew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Baur

Pipeline Operation Information

Is leg shutdown?	Yes	
If so, date shutdown	8-23-12	
Time Shutdown	22:00	
Product In Line	Oil	Density
If flowing, flow rate	NA	Time System for Time Shutdown

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	7
RTK Fix	Yes

Span Information

Date Surveyed	8-24-12	Anchor Positions	—
Tape Number	SP2		—
Direction Flown	N-S	Digital File Name or DVD #	—
Water Depth	176		
Current Year Span #	W-49	Current Year Span Length	54
Previous Span #(s)	W-49	Previous Year Span Length	53
Addit. Extensions Used?	—	Number of Dives to Complete	—
Length of Extension(s)	—	Date(s) of Dive(s)	—
Drilling Issues?	—	Dive number(s) for current campaign	—

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	9110	4:26	
LinkQuest Northing	911133.85	911185.28	
LinkQuest Easting	1958 2027.66	1958 2029.44	
Digital File Filename			
Digital File Time	15:02	14:58	
Display Time	15:02	14:50	
Bottom Type at Repair	Clay Hump	Sandy Clay Hump	
Highest Span Height	1'	1.5'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Notes:

(34)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Pearl	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Dauer

Pipeline Operation Information	
Is leg shutdown?	Yes
If so, date shutdown	8-23-12
Time Shutdown	22:00
Product In Line	N/A
If flowing, flow rate	N/A
Density	
Time System for Time Shutdown	

Survey Geodetic Parameters	
Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	8
RTK Fix	Yes

Span Information

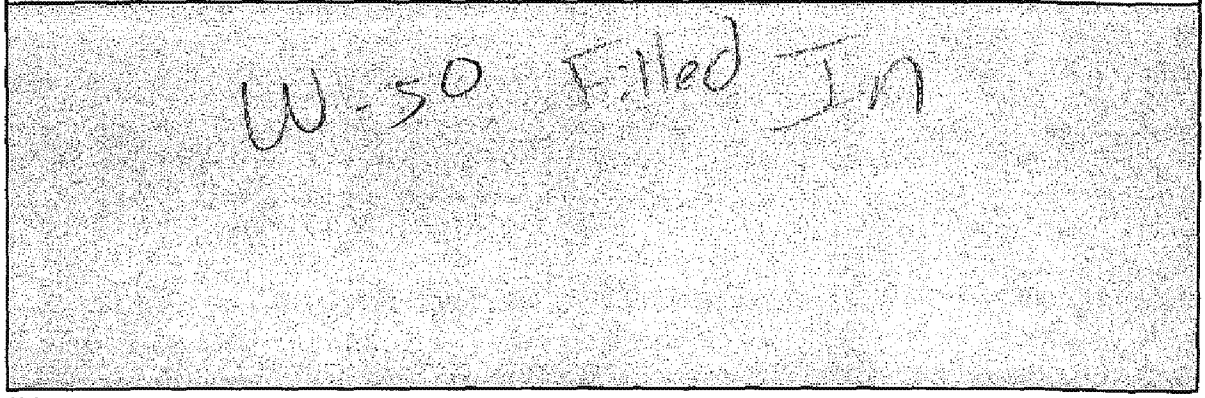
Date Surveyed	8-24-12
Tape Number	SD 1
Direction Flown	N-S
Water Depth	176
Current Year Span #	
Previous Span #(s)	W-50
Addit. Extensions Used?	-
Length of Extension(s)	-
Drilling Issues?	-

Anchor Positions	-
	-
Digital File Name or DVD #	-
Current Year Span Length	
Previous Year Span Length	23
Number of Dives to Complete	-
Date(s) of Dive(s)	-
Dive number(s) for current campaign	-

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter			
LinkQuest Northing			
LinkQuest Easting			
Digital File Filename			
Digital File Time			
Display Time			
Bottom Type at Repair			
Highest Span Height			
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.



Notes:

29

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Prow	SqMC
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bauer

Survey Geodetic Parameters	
Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	9
RTK Fix	Yes

Pipeline Operation Information

Is leg shutdown?	Yes		
If so, date shutdown	8-23-12		
Time Shutdown	2:30		
Product in Line	N/A	Density	
If flowing, flow rate	N/A	Time System for Time Shutdown	

Span Information

Date Surveyed	8-24-12	Anchor Positions	—
Tape Number	502		—
Direction Flown	N-S	Digital File Name or DVD #	—
Water Depth	174		
Current Year Span #	W-518	Current Year Span Length	82
Previous Span #(s)	W-518	Previous Year Span Length	84
Addit. Extensions Used?	—	Number of Dives to Complete	—
Length of Extension(s)	—	Date(s) of Dive(s)	—
Drilling Issues?	—	Dive number(s) for current campaign	—

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	17.54	13:15	
LinkQuest Northing	910974.63	911053.73	
LinkQuest Easting	1958298O.27	1958300Z.90	
Digital File Filename			
Digital File Time	15:12	15:07	
Display Time	15:12	15:07	
Bottom Type at Repair	Sandy / Anchor	Sandy	
Highest Span Height	1'	1'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Notes:

(40)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Drew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Rose

Survey Geodetic Parameters	
Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	8
RTK Fix	Yes
	-
	-

Pipeline Operation Information

Is leg shutdown?	Yes
If so, date shutdown	8-23-12
Time Shutdown	22:20
Product In Line	NGL
If flowing, flow rate	NA

Density

Time System for Time Shutdown

Span Information

Date Surveyed	8-24-12
Tape Number	CD 1
Direction Flown	N-S
Water Depth	174
Current Year Span #	4-514
Previous Span #(s)	4-514
Addit. Extensions Used?	-
Length of Extension(s)	-
Drilling Issues?	-

Anchor Positions	-
	-
Digital File Name or DVD #	-

Current Year Span Length	14
Previous Year Span Length	14
Number of Dives to Complete	-
Date(s) of Dive(s)	-
Dive number(s) for current campaign	-

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	21:20	17:54	
LinkQuest Northing	910960.65	910974.63	
LinkQuest Easting	1958290.15	1958290.87	
Digital File Filename			
Digital File Time	15:15	15:12	
Display Time	15:15	15:12	
Bottom Type at Repair	Sandy	Sandy / Rocky	
Highest Span Height	1'	1'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Notes:

(11)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Drew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bauer

Survey Geodetic Parameters	
Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	8
RTK Fix	Yes
	-
	-

Pipeline Operation Information

Is leg shutdown?	Yes
If so, date shutdown	8-23-12
Time Shutdown	22:00
Product In Line	NGL
If flowing, flow rate	NA

Density: -

Time System for Time Shutdown: -

Span Information

Date Surveyed	8-24-12
Tape Number	SD 2
Direction Flown	N-S
Water Depth	136
Current Year Span #	4.2-417
Previous Span #(s)	4.1-417
Addit. Extensions Used?	-
Length of Extension(s)	-
Drilling Issues?	-

Anchor Positions	-
	-
Digital File Name or DVD #	-

Current Year Span Length	37
Previous Year Span Length	61
Number of Dives to Complete	-
Date(s) of Dive(s)	-
Dive number(s) for current campaign	-

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	1:05	22:50	
LinkQuest Northing	910962.04	910937.18	
LinkQuest Easting	1958962.17	1958979.24	
Digital File Filename			
Digital File Time	15:21	15:17	
Display Time	15:21	15:17	
Bottom Type at Repair	Clay	Sandy	
Highest Span Height	1.5-2'	1.5'-2'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Notes:

42

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Pruss	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bow

Pipeline Operation Information

Is leg shutdown?	Yes	
If so, date shutdown	8-22-12	
Time Shutdown	22:00	
Product In Line	N/L	Density
If flowing, flow rate	N/A	Time System for Time Shutdown

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	10
RTK Fix	Yes

Span Information

Date Surveyed	8-24-12
Tape Number	SD 3
Direction Flown	N-S
Water Depth	170
Current Year Span #	W46
Previous Span #(s)	W46
Addtl. Extensions Used?	-
Length of Extension(s)	-
Drilling Issues?	-

Anchor Positions	-
	-
Digital File Name or DVD #	-

Current Year Span Length	44
Previous Year Span Length	53
Number of Dives to Complete	-
Date(s) of Dive(s)	-
Dive number(s) for current campaign	-

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	12:30	9:25	
LinkQuest Northing	910705.56	910747.53	
LinkQuest Easting	1958290.91	1958291.99	
Digital File Filename			
Digital File Time	15:31	15:25	
Display Time	15:31	15:26	
Bottom Type at Repair	Sandy / Clay	Sandy	
Highest Span Height	0.5-1'	0.5-1'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and handline diver's measurements.

Notes:

43

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Prow	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Dewar

Pipeline Operation Information			
Is leg shutdown?	Yes		
If so, date shutdown	8-24-12		
Time Shutdown	22:00		
Product in Line	NGL	Density	
If flowing, flow rate	NA	Time System for Time Shutdown	

Survey Geodetic Parameters	
Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	10
RTK Fix	Yes
-	-
-	-

Span Information

Date Surveyed	8-24-12	Anchor Positions	-
Tape Number	502		-
Direction Flown	N-S	Digital File Name or DVD #	-
Water Depth	166		
Current Year Span #	W-595	Current Year Span Length	27
Previous Span #(s)	W-614	Previous Year Span Length	25
Addit. Extensions Used?	-	Number of Dives to Complete	-
Length of Extension(s)	-	Date(s) of Dive(s)	-
Drilling Issues?	-	Dive number(s) for current campaign	-

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	1:10	24:10	
LinkQuest Northing	910621.00	910647.52	
LinkQuest Easting	1958289.47	1958289.21	
Digital File Filename			
Digital File Time	15:46	15:44	
Display Time	15:46	15:44	
Bottom Type at Repair	Sand	Sand	
Highest Span Height	0.5'	0.5'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hard/me diver's measurements.

Notes:

(4C)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Drew	Sam
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bower

Survey Geodetic Parameters	
Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	10
RTK Fix	Yes

Pipeline Operation Information

Is leg shutdown?	Yes		
If so, date shutdown	8-22-12		
Time Shutdown	22:00		
Product In Line	N/A	Density	
If flowing, flow rate	N/A	Time System for Time Shutdown	

Span Information

Date Surveyed	8-24-12	Anchor Positions	-
Tape Number	SD 2		-
Direction Flown	N-S	Digital File Name or DVD #	-
Water Depth	166		
Current Year Span #	W 42 B	Current Year Span Length	71
Previous Span #(s)	W 42 B	Previous Year Span Length	71
Addit. Extensions Used?	-	Number of Dives to Complete	-
Length of Extension(s)	-	Date(s) of Dive(s)	-
Drilling Issues?	-	Dive number(s) for current campaign	-

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	9:10	4:15	
LinkQuest Northing	9105 45.43	9106 15.01	
LinkQuest Easting	1958 2852.33	1958 2953.98	
Digital File Filename			
Digital File Time	15:54	15:49	
Display Time	15:54	15:49	
Bottom Type at Repair	Sandy Anchor	Sandy	
Highest Span Height	1.5-2	1-1.5'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Notes:

45

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Drew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bauer

Pipeline Operation Information

Is leg shutdown?	Yes	
If so, date shutdown	8-23-12	
Time Shutdown	22:00	
Product In Line	NGL	Density
If flowing, flow rate	N/A	Time System for Time Shutdown

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	10
RTK Fix	Yes
	-
	-

Span Information

Date Surveyed	8-24-12
Tape Number	SD 1
Direction Flown	N-S
Water Depth	166
Current Year Span #	W-42-A
Previous Span #(s)	W-42-A
Addit. Extensions Used?	-
Length of Extension(s)	-
Drilling Issues?	-

Anchor Positions: -

Digital File Name or DVD #: -

Current Year Span Length	70
Previous Year Span Length	73
Number of Dives to Complete	-
Date(s) of Dive(s)	-
Dive number(s) for current campaign	-

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	15:50	9:10	
LinkQuest Northing	9104 77.53	9105 05.43	
LinkQuest Easting	1958 285 1.85	1958 28 62.38	
Digital File Filename			
Digital File Time	16:00	15:54	
Display Time	16:00	15:54	
Bottom Type at Repair	Sand	Sandy Rocky	
Highest Span Height	1-1.5'	1.5-2'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Notes:

46

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Prow	Some
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bauer

Pipeline Operation Information

Is leg shutdown?	Yes	
If so, date shutdown	8-23-12	
Time Shutdown	22:00	
Product In Line	Air	Density
If flowing, flow rate	NA	Time System for Time Shutdown

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	9
RTK Fix	Yes
—	—
—	—

Span Information

Date Surveyed	8-24-12
Tape Number	SD1
Direction Flown	N-S
Water Depth	166
Current Year Span #	W-43B
Previous Span #(s)	W-43B
Addit. Extensions Used?	—
Length of Extension(s)	—
Drilling Issues?	—

Anchor Positions	—
	—
Digital File Name or DVD #	—

Current Year Span Length	68
Previous Year Span Length	67
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling Issues: Include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	24:00	17:50	
LinkQuest Northing	910396.86	910462.05	
LinkQuest Easting	1958209.20	1958284636	
Digital File Filename			
Digital File Time	16:06	16:03	
Display Time	16:08	16:07	
Bottom Type at Repair	Sand / Anchor	Clay	
Highest Span Height	2'	2'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Notes:

(47)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Drew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Ward

Survey Geodetic Parameters	
Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	8
RTK Fix	Yes

Pipeline Operation Information

Is leg shutdown?	Yes		
If so, date shutdown	8-23-12		
Time Shutdown	22:00		
Product in Line	NGL	Density	
If flowing, flow rate	NA	Time System for Time Shutdown	

Span Information

Date Surveyed	8-24-12	Anchor Positions	—
Tape Number	SD 1		—
Direction Flown	N-S	Digital File Name or DVD #	—
Water Depth	162		
Current Year Span #	W-43A	Current Year Span Length	64
Previous Span #(s)	W-43A	Previous Year Span Length	64
Addit. Extensions Used?		Number of Dives to Complete	—
Length of Extension(s)	—	Date(s) of Dive(s)	—
Drilling Issues?	—	Dive number(s) for current campaign	—

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	10:18	24:00	
LinkQuest Northing	910336.66	910396.86	
LinkQuest Easting	1958281.2.58	1958283.30	
Digital File Filename			
Digital File Time	16:20	16:08	
Display Time	16:20	16:08	
Bottom Type at Repair	Sandy	Sand / Anchor	
Highest Span Height	1-1.5'	2'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Notes:

(48)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Pratt	Shane
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Dean

Pipeline Operation Information		
Is leg shutdown?	Yes	
If so, date shutdown	6-23-12	
Time Shutdown	22:00	
Product In Line	NGL	Density
If flowing, flow rate	NA	Time System for Time Shutdown

Survey Geodetic Parameters	
Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	8
RTK Fix	yes

Span Information

Date Surveyed	6-24-12
Tape Number	502
Direction Flown	N-S
Water Depth	153
Current Year Span #	W-411B
Previous Span #(s)	W-411B
Addit. Extensions Used?	—
Length of Extension(s)	—
Drilling Issues?	—

Anchor Positions	—
	—
Digital File Name or DVD #	—

Current Year Span Length	66
Previous Year Span Length	73
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	16:40	13:00	
LinkQuest Northing	9102 93.39	910307.36	
LinkQuest Easting	19582787.81	19582805.33	
Digital File Filename			
Digital File Time	16:26	16:23	
Display Time	16:26	16:23	
Bottom Type at Repair	Sand / Anchor	Sand	
Highest Span Height	1'	1'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Notes:

49

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Frew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Dover

Survey Geodetic Parameters	
Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	8
RTK Fix	Yes

Pipeline Operation Information

Is leg shutdown?	Yes		
If so, date shutdown	8-23-12		
Time Shutdown	22:00		
Product In Line	NGL	Density	
If flowing, flow rate	NA	Time System for Time Shutdown	

Span Information

Date Surveyed	8-24-12	Anchor Positions	-
Tape Number	502		-
Direction Flown	N-S	Digital File Name or DVD #	-
Water Depth	144		
Current Year Span #	W414	Current Year Span Length	91
Previous Span #(s)	W.414	Previous Year Span Length	91
Addit. Extensions Used?	-	Number of Dives to Complete	-
Length of Extension(s)	-	Date(s) of Dive(s)	-
Drilling Issues?	-	Dive number(s) for current campaign	-

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	20:00	16:40	
LinkQuest Northing	910156.03	910243.39	
LinkQuest Easting	19582762.66	19582787.31	
Digital File Filename			
Digital File Time	16:35	16:30	
Display Time	16:35	16:30	
Bottom Type at Repair	Clay / Sand	Sand / Anchor	
Highest Span Height	1'	1'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Notes:

(50)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Drew	Syme
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Dauer

Pipeline Operation Information

Is leg shutdown?	Yes	
If so, date shutdown	8-23-12	
Time Shutdown	22:00	
Product In Line	N/C	Density
If flowing, flow rate	NA	Time System for Time Shutdown

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	7
RTK Fix	Yes

Span Information

Date Surveyed	8-24-12
Tape Number	SD 2
Direction Flown	N-S
Water Depth	123
Current Year Span #	W-40
Previous Span #(s)	W-40
Addit. Extensions Used?	-
Length of Extension(s)	-
Drilling Issues?	

Anchor Positions	-
	-
Digital File Name or DVD #	-
Current Year Span Length	44
Previous Year Span Length	50
Number of Dives to Complete	-
Date(s) of Dive(s)	-
Dive number(s) for current campaign	-

* Drilling Issues: Include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	13:60	9:13	
LinkQuest Northing	909952.95	909996.12	
LinkQuest Easting	1958270B.83	1958271B.31	
Digital File Filename			
Digital File Time	16:48	16:45	
Display Time	16:48	16:45	
Bottom Type at Repair	Sandy Anchor	Sandy	
Highest Span Height	0.5'	0.5 - 1'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Notes:

(51)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Drew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Dwyer

Pipeline Operation Information

Is leg shutdown?	Yes
If so, date shutdown	4-22-12
Time Shutdown	2:00
Product In Line	N/A
If flowing, flow rate	N/A

Density

Time System for Time Shutdown

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	7
RTK Fix	Yes

Span Information

Date Surveyed	9-24-12
Tape Number	SD2
Direction Flown	N-S
Water Depth	123
Current Year Span #	W-39 & 38
Previous Span #(s)	W-39 & 38
Addit. Extensions Used?	—
Length of Extension(s)	—
Drilling Issues?	—

Anchor Positions —

Digital File Name or DVD # —

Current Year Span Length	53
Previous Year Span Length	261.47
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	20:55	13:00	
LinkQuest Northing	9094901.72	9099952.85	
LinkQuest Easting	1958369.65	1958208.83	
Digital File Filename			
Digital File Time	16:56	16:45	
Display Time	16:56	16:58	
Bottom Type at Repair	Sandy	Sandy Anchor	
Highest Span Height	0.5'	0.5'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

W-39 and 38 Mussel

Notes:

(52)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Drew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Denver

Survey Geodetic Parameters	
Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	7
RTK Fix	yes

Pipeline Operation Information

Is leg shutdown?	yes		
If so, date shutdown	8-22-12		
Time Shutdown	2200		
Product In Line	N/A	Density	—
If flowing, flow rate	N/A	Time System for Time Shutdown	—

Span Information

Date Surveyed	8-24-12	Anchor Positions	—
Tape Number	SD7		—
Direction Flown	N-S	Digital File Name or DVD #	—
Water Depth	122		
Current Year Span #	W-35B	Current Year Span Length	79
Previous Span #(s)	W-35D	Previous Year Span Length	90
Addit. Extensions Used?	—	Number of Dives to Complete	—
Length of Extension(s)	—	Date(s) of Dive(s)	—
Drilling Issues?	—	Dive number(s) for current campaign	—

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	13:00	8:30	
LinkQuest Northing	9097647.47	9098828.27	
LinkQuest Easting	19592646.36	19588671.02	
Digital File Filename			
Digital File Time	17:14	17:10	
Display Time	17:14	17:10	
Bottom Type at Repair	Sand / Anchor	Sand	
Highest Span Height	0.5'	0.5'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Notes:

(53)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Drew	Sam
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Shaw

Survey Geodetic Parameters	
Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	8
RTK Fix	yes
—	—
—	—

Pipeline Operation Information

Is leg shutdown?	yes	
If so, date shutdown	8-22-12	
Time Shutdown	22:00	
Product In Line	N/A	Density
If flowing, flow rate	N/A	Time System for Time Shutdown

Span Information

Date Surveyed	8-25-12	Anchor Positions	—
Tape Number	SD3		—
Direction Flown	N-S	Digital File Name or DVD #	—
Water Depth	122		
Current Year Span #	W-354	Current Year Span Length	32
Previous Span #(s)	W-354	Previous Year Span Length	33
Addit. Extensions Used?	—	Number of Dives to Complete	—
Length of Extension(s)	—	Date(s) of Dive(s)	—
Drilling Issues?	—	Dive number(s) for current campaign	—

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	19:45	18:30	
LinkQuest Northing	909714.97	905747.92	
LinkQuest Easting	1958264.5.86	1955265233	
Digital File Filename			
Digital File Time	8:05	8:00	
Display Time	9:05	8:00	
Bottom Type at Repair	Sandy 16 oval Bags	Sandy 1 Anchor	
Highest Span Height	0.5'	0.5'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Notes:

(54)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Frew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	4902593.10.071	Chris Beaver

Survey Geodetic Parameters	
Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	8
RTK Fix	yes
—	—
—	—

Pipeline Operation Information

Is leg shutdown?	Yes	
If so, date shutdown	8-23-12	
Time Shutdown	22:00	
Product In Line	N6L	Density
If flowing, flow rate	N/A	Time System for Time Shutdown

Span Information

Date Surveyed	8-25-12	Anchor Positions	—
Tape Number	SD 1		—
Direction Flown	N-S	Digital File Name or DVD #	—
Water Depth	122		
Current Year Span #	W-36-B	Current Year Span Length	50
Previous Span #(s)	W-36B	Previous Year Span Length	53
Addit. Extensions Used?	—	Number of Dives to Complete	—
Length of Extension(s)	—	Date(s) of Dive(s)	—
Drilling Issues?	—	Dive number(s) for current campaign	—

* Drilling issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	2:20	19:45	
LinkQuest Northing	909667.47	909714.97	
LinkQuest Easting	1958230.57	1958264.86	
Digital File Filename		8:05	
Digital File Time	8:16	8:05	
Display Time	8:16	Sandy / Gravel bag	
Bottom Type at Repair	Sand / Anchor		
Highest Span Height	1-1.5'	1-1.5'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

05-W??

Notes:

55

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Prew	[illegible]
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	[illegible]

Pipeline Operation Information

Is leg shutdown?	Yes		
If so, date shutdown	8-23-12		
Time Shutdown	22:00		
Product In Line	N/A	Density	
If flowing, flow rate	N/A	Time System for Time Shutdown	

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	8
RTK Fix	Yes
	-
	-

Span Information

Date Surveyed	8-25-12	Anchor Positions	-
Tape Number	SD1		-
Direction Flown	N-S	Digital File Name or DVD #	-
Water Depth	121		
Current Year Span #	W-36A	Current Year Span Length	32
Previous Span #(s)	W-36A	Previous Year Span Length	39
Addit. Extensions Used?	-	Number of Dives to Complete	-
Length of Extension(s)	-	Date(s) of Dive(s)	-
Drilling Issues?	-	Dive number(s) for current campaign	-

* Drilling Issues: Include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	8:05	21:20	
LinkQuest Northing	909632.47	909667.47	
LinkQuest Easting	1958261807	1958261857	
Digital File Filename			
Digital File Time	9:22	9:16	
Display Time	8:22	8:16	
Bottom Type at Repair	Sandy	Sandy Rocky	
Highest Span Height	1-1.5'	1-1.5'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and handline diver's measurements.

Notes:

(58)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Pruno	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Tyner

Pipeline Operation Information

Is leg shutdown?	Yes		
If so, date shutdown	8-23-12		
Time Shutdown	22:00		
Product In Line	NGL	Density	
If flowing, flow rate	NA	Time System for Time Shutdown	

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	8
RTK Fix	Yes
—	—
—	—

Span Information

Date Surveyed	8-25-12	Anchor Positions	—
Tape Number	SD1		—
Direction Flown	N-S	Digital File Name or DVD #	—
Water Depth	187		
Current Year Span #	W-37	Current Year Span Length	79
Previous Span #(s)	W-37	Previous Year Span Length	79
Addit. Extensions Used?	—	Number of Dives to Complete	—
Length of Extension(s)	—	Date(s) of Dive(s)	—
Drilling Issues?	—	Dive number(s) for current campaign	—

* Drilling issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	17:6	13:10	
LinkQuest Northing	909534.75	909610.47	
LinkQuest Easting	1 5 582 593.97	1 5 582 614.57	
Digital File Filename			
Digital File Time	8:31	8:26	
Display Time	8:31	8:26	
Bottom Type at Repair	Sandy	Sandy	
Highest Span Height	0.5	0.5	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Notes:

(57)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Pfaff	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bauer

Pipeline Operation Information

Is leg shutdown?	Yes
If so, date shutdown	8-23-12
Time Shutdown	22:00
Product In Line	NGL
If flowing, flow rate	N/A

Density

Time System for Time Shutdown

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	8
RTK Fix	Yes

Span Information

Date Surveyed	8-25-12
Tape Number	201
Direction Flown	N-S
Water Depth	130
Current Year Span #	W-348 N
Previous Span #(s)	W-348
Addit. Extensions Used?	—
Length of Extension(s)	—
Drilling Issues?	—

Anchor Positions

Digital File Name or DVD #

Current Year Span Length	35
Previous Year Span Length	21
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	25:10	21:55	
LinkQuest Northing	9094599.62	9094190.62	
LinkQuest Easting	1958257.2.39	1958258.2.39	
Digital File Filename			
Digital File Time	8:38	8:36	
Display Time	8:20	8:36	
Bottom Type at Repair	Sandy Anchor	Sandy	
Highest Span Height		0.5-1'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Notes:

(58)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Drew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Glover

Pipeline Operation Information

Is leg shutdown?	YES
If so, date shutdown	8-22-12
Time Shutdown	2200
Product In Line	Oil
If flowing, flow rate	N/A
Density	
Time System for Time Shutdown	

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	9
RTK Fix	YES

Span Information

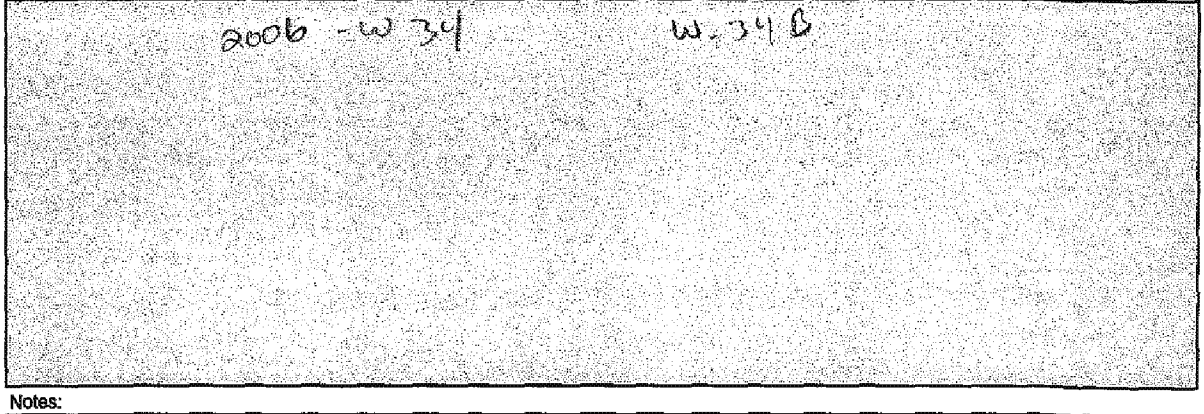
Date Surveyed	8-25-12
Tape Number	SD1
Direction Flown	N-S
Water Depth	130
Current Year Span #	W-3465
Previous Span #(s)	W-346
Addit. Extensions Used?	—
Length of Extension(s)	—
Drilling Issues?	—

Anchor Positions	—
Digital File Name or DVD #	—
Current Year Span Length	69
Previous Year Span Length	67
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling Issues: Include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	6:37	25:10	
LinkQuest Northing	909392.97	909459.62	
LinkQuest Easting	19582557.23	19582572.39	
Digital File Filename			
Digital File Time	8:45	8:38	
Display Time	8:45	8:38	
Bottom Type at Repair	Sandy / Anchor	Sandy Anchor	
Highest Span Height			
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.



Notes:

59

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Praw	Sgmt
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Dawe

Pipeline Operation Information

Is leg shutdown?	yes	
If so, date shutdown	8-23-12	
Time Shutdown	22:00	
Product In Line	NGL	Density
If flowing, flow rate	NA	Time System for Time Shutdown

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	9
RTK Fix	Yes
—	—
—	—

Span Information

Date Surveyed	8-25-12	Anchor Positions	—
Tape Number	SD3		—
Direction Flown	N-S	Digital File Name or DVD #	—
Water Depth	150		
Current Year Span #		Current Year Span Length	6
Previous Span #(s)	W-3924	Previous Year Span Length	18
Addit. Extensions Used?	—	Number of Dives to Complete	—
Length of Extension(s)	—	Date(s) of Dive(s)	—
Drilling Issues?	—	Dive number(s) for current campaign	—

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter			
LinkQuest Northing			
LinkQuest Easting			
Digital File Filename			
Digital File Time			
Display Time			
Bottom Type at Repair			
Highest Span Height			
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Span Filled in

Notes:

(60)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Pray	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bauer

Pipeline Operation Information

Is leg shutdown?	Yes
If so, date shutdown	8-23-12
Time Shutdown	22:40
Product In Line	NGL
If flowing, flow rate	N/A

Density

Time System for Time Shutdown

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	9
RTK Fix	Yes

Span Information

Date Surveyed	8-25-12
Tape Number	SD 2
Direction Flown	N-S
Water Depth	134
Current Year Span #	W-318
Previous Span #(s)	W-318
Addit. Extensions Used?	—
Length of Extension(s)	—
Drilling Issues?	—

Anchor Positions: —

Digital File Name or DVD #: —

Current Year Span Length	78
Previous Year Span Length	74
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	21:30	15:27	
LinkQuest Northing	909275.29	909351.97	
LinkQuest Easting	19582525.86	19582546.73	
Digital File Filename			
Digital File Time	9:00	8:54	
Display Time	9:00	8:54	
Bottom Type at Repair	Sandy / Anchor	Sandy / Gravel Bed	
Highest Span Height	0.5	0.5	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Notes:

(61)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Pray	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Tabor

Pipeline Operation Information

Is leg shutdown?	Yes	
If so, date shutdown	8-23-12	
Time Shutdown	22:00	
Product in Line	N/A	Density
If flowing, flow rate	N/A	Time System for Time Shutdown

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	10
RTK Fix	Yes
	-
	-

Span Information

Date Surveyed	8-25-12
Tape Number	SD 2
Direction Flown	N-S
Water Depth	133
Current Year Span #	W314
Previous Span #(s)	W314
Addit. Extensions Used?	
Length of Extension(s)	-
Drilling Issues?	-

Anchor Positions	-
	-
Digital File Name or DVD #	-

Current Year Span Length	90
Previous Year Span Length	90
Number of Dives to Complete	-
Date(s) of Dive(s)	-
Dive number(s) for current campaign	-

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	5:27	21:50	
LinkQuest Northing	9091188.68	9092750.29	
LinkQuest Easting	1958502.51	1958252.586	
Digital File Filename			
Digital File Time	9:00	9:00	
Display Time	9:10	9:00	
Bottom Type at Repair	Clay	Clay / Anchor	
Highest Span Height	0.5-1	0.5-1	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Notes:

62

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Drew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bauer

Survey Geodetic Parameters	
Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	11
RTK Fix	Yes

Pipeline Operation Information

Is leg shutdown?	Yes		
If so, date shutdown	8-23-12		
Time Shutdown	22:00		
Product In Line	N/A	Density	
If flowing, flow rate	N/A	Time System for Time Shutdown	

Span Information

Date Surveyed	8-25-12	Anchor Positions	
Tape Number	SD7		
Direction Flown	N-S	Digital File Name or DVD #	
Water Depth	122		
Current Year Span #		Current Year Span Length	
Previous Span #(s)	W-76	Previous Year Span Length	20
Addit. Extensions Used?		Number of Dives to Complete	
Length of Extension(s)		Date(s) of Dive(s)	
Drilling Issues?		Dive number(s) for current campaign	

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter			
LinkQuest Northing			
LinkQuest Easting			
Digital File Filename			
Digital File Time			
Display Time			
Bottom Type at Repair			
Highest Span Height			
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Span Filled in
W-76

Notes:

(13)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Prew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490258S.10.071	Chris Bauer

Pipeline Operation Information

Is leg shutdown?	Yes
If so, date shutdown	8-22-12
Time Shutdown	22:00
Product in Line	NGL
If flowing, flow rate	N/A

Density

Time System for Time Shutdown

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	10
RTK Fix	Yes
—	—
—	—

Span Information

Date Surveyed	8-25-12
Tape Number	SD1
Direction Flown	N-S
Water Depth	133
Current Year Span #	W-28
Previous Span #(s)	W-28
Addit. Extensions Used?	—
Length of Extension(s)	—
Drilling Issues?	—

Anchor Positions: —

Digital File Name or DVD #: —

Current Year Span Length	30
Previous Year Span Length	30
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	17:20	14:43	
LinkQuest Northing	909048.41	909077.67	
LinkQuest Easting	1958 2462.24	1958 2471.21	
Digital File Filename			
Digital File Time	9:23	9:20	
Display Time	9:23	9:20	
Bottom Type at Repair	Sandy	Sandy	
Highest Span Height	0.5'	0.5	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Notes:

(64)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Pilon	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Davis

Pipeline Operation Information

Is leg shutdown?	Yes	
If so, date shutdown	8-23-12	
Time Shutdown	22:00	
Product In Line	Nil	Density
If flowing, flow rate	NA	Time System for Time Shutdown

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	10
RTK Fix	Yes
	-
	-

Span Information

Date Surveyed	9-25-12
Tape Number	SD 2
Direction Flown	N-S
Water Depth	133
Current Year Span #	W-280
Previous Span #(s)	W-280
Addit. Extensions Used?	-
Length of Extension(s)	-
Drilling Issues?	-

Anchor Positions	-
	-
Digital File Name or DVD #	-

Current Year Span Length	67
Previous Year Span Length	70
Number of Dives to Complete	-
Date(s) of Dive(s)	-
Dive number(s) for current campaign	-

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	1:45	23:20	
LinkQuest Northing	9089723.41	9095036.91	
LinkQuest Easting	1458241.29	1458459.84	
Digital File Filename			
Digital File Time	9:24	9:29	
Display Time	9:34	9:29	
Bottom Type at Repair	Sandy Anchor	Clay	
Highest Span Height	3'	3'	
TD O'clock Positions			

Span Repair Sketch: *Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.*

Notes:

65

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Pfau	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Flower

Pipeline Operation Information

Is leg shutdown?	Yes
If so, date shutdown	8-23-12
Time Shutdown	22:00
Product In Line	N/A
If flowing, flow rate	N/A
Density	
Time System for Time Shutdown	

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	11
RTK Fix	Yes

Span Information

Date Surveyed	8-25-12
Tape Number	SD 2
Direction Flown	N-S
Water Depth	187
Current Year Span #	W-284
Previous Span #(s)	W-284
Addit. Extensions Used?	
Length of Extension(s)	
Drilling Issues?	

Anchor Positions	
Digital File Name or DVD #	
Current Year Span Length	70
Previous Year Span Length	71
Number of Dives to Complete	
Date(s) of Dive(s)	
Dive number(s) for current campaign	

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	10'45	1'45	
LinkQuest Northing	908905.08	908973.41	
LinkQuest Easting	1958424.19	1958211.39	
Digital File Filename			
Digital File Time	9:42	9:34	
Display Time	9:42	9:34	
Bottom Type at Repair	Sandy / clay	Sandy / Rocks	
Highest Span Height	3'	3'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Notes:

(66)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Pfeil	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bauw

Pipeline Operation Information

Is leg shutdown?	Yes		
If so, date shutdown	8-27-12		
Time Shutdown	22:00		
Product in Line	NGL	Density	
If flowing, flow rate	NA	Time System for Time Shutdown	

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	9
RTK Fix	Yes

Span Information

Date Surveyed	8-25-12	Anchor Positions	
Tape Number	302		
Direction Flown	N-S	Digital File Name or DVD #	
Water Depth	131		
Current Year Span #	W-30	Current Year Span Length	57
Previous Span #(s)	W-20	Previous Year Span Length	62
Addit. Extensions Used?	-	Number of Dives to Complete	
Length of Extension(s)	-	Date(s) of Dive(s)	
Drilling Issues?	-	Dive number(s) for current campaign	

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	21:37	18:09	
LinkQuest Northing	908702.75	908757.25	
LinkQuest Easting	1958369.24	1958382.74	
Digital File Filename			
Digital File Time	9:52	9:45	
Display Time	9:52	9:49	
Bottom Type at Repair	Sandy	Clay	
Highest Span Height	1'	1'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Notes:

(67)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Drew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Baur

Pipeline Operation Information

Is leg shutdown?	Yes	
If so, date shutdown	8-22-12	
Time Shutdown	22:00	
Product in Line	N/A	Density
If flowing, flow rate	N/A	Time System for Time Shutdown

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	9
RTK Fix	Yes

Span Information

Date Surveyed	8-25-12
Tape Number	SD 2
Direction Flown	N-S
Water Depth	130
Current Year Span #	
Previous Span #(s)	W-27
Addit. Extensions Used?	—
Length of Extension(s)	—
Drilling Issues?	—

Anchor Positions	—
	—
Digital File Name or DVD #	—

Current Year Span Length	0
Previous Year Span Length	12
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter			
LinkQuest Northing			
LinkQuest Easting			
Digital File Filename			
Digital File Time			
Display Time			
Bottom Type at Repair			
Highest Span Height			
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

W-27 Filled in

Notes:

68

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Prow	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bauer

Pipeline Operation Information	
Is leg shutdown?	Yes
If so, date shutdown	8-22-12
Time Shutdown	2200
Product In Line	N/A
If flowing, flow rate	N/A

Density

Time System for Time Shutdown

Survey Geodetic Parameters	
Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	9
RTK Fix	Yes
	-
	-

Span Information

Date Surveyed	8-23-12
Tape Number	302
Direction Flown	N-S
Water Depth	137
Current Year Span #	W-26
Previous Span #(s)	W-26
Addit. Extensions Used?	-
Length of Extension(s)	-
Drilling Issues?	-

Anchor Positions	-
	-
Digital File Name or DVD #	-

Current Year Span Length	53
Previous Year Span Length	66
Number of Dives to Complete	-
Date(s) of Dive(s)	-
Dive number(s) for current campaign	-

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	6:30	02:27	
LinkQuest Northing	9084 95. 85	9085 46.68	
LinkQuest Easting	1958 2312.31	1958 2326.60	
Digital File Filename	-	-	
Digital File Time	10:02	9:58	
Display Time	10:02	9:58	
Bottom Type at Repair	Sandy	Sandy	
Highest Span Height	1.5'	1-1.5'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Notes:

69

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Prey	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Beuer

Pipeline Operation Information

Is leg shutdown?	Yes
If so, date shutdown	9-27-12
Time Shutdown	2230
Product in Line	Yes
If flowing, flow rate	NA

Density

Time System for Time Shutdown

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	9
RTK Fix	Yes

Span Information

Date Surveyed	9-29-12
Tape Number	501
Direction Flown	N-S
Water Depth	105
Current Year Span #	
Previous Span #(s)	W-25
Addit. Extensions Used?	—
Length of Extension(s)	—
Drilling Issues?	—

Anchor Positions —

Digital File Name or DVD # —

Current Year Span Length	0
Previous Year Span Length	9
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling Issues: Include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter			
LinkQuest Northing			
LinkQuest Easting			
Digital File Filename			
Digital File Time			
Display Time			
Bottom Type at Repair			
Highest Span Height			
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

W-25 Silted in

Notes:

(10)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Drew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Dawe

Pipeline Operation Information

Is leg shutdown?	yes	
If so, date shutdown	8-23-12	
Time Shutdown	22:00	
Product in Line	NGL	Density
If flowing, flow rate	N/A	Time System for Time Shutdown

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	8+
RTK Fix	yes

Span Information

Date Surveyed	8-25-12	Anchor Positions	
Tape Number	SD 1		
Direction Flown	N-S	Digital File Name or DVD #	
Water Depth	126		
Current Year Span #	W-21	Current Year Span Length	50
Previous Span #(s)	W-21	Previous Year Span Length	60
Addit. Extensions Used?	-	Number of Dives to Complete	-
Length of Extension(s)	-	Date(s) of Dive(s)	-
Drilling Issues?	-	Dive number(s) for current campaign	-

* Drilling Issues: Include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	20:13	16:58	
LinkQuest Northing	908228.78	908277.81	
LinkQuest Easting	1958240.72	1959252.64	
Digital File Filename	-	-	
Digital File Time	10:17	10:17	
Display Time	10:17	10:17	
Bottom Type at Repair	Clay/Sand	Sand	
Highest Span Height	1.5-2'	1.5-2'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Change of SD Card

Notes:

(71)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Prew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bauer

Pipeline Operation Information

Is leg shutdown?	Yes	
If so, date shutdown	9-23-12	
Time Shutdown	22:00	
Product In Line	Nat Gas	Density
If flowing, flow rate	NA	Time System for Time Shutdown

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	9
RTK Fix	Yes
-	-
-	-

Span Information

Date Surveyed	8-25-12
Tape Number	SD2
Direction Flown	N-S
Water Depth	127
Current Year Span #	W-22
Previous Span #(s)	W-22
Addit. Extensions Used?	-
Length of Extension(s)	-
Drilling Issues?	-

Anchor Positions	-
	-
Digital File Name or DVD #	-

Current Year Span Length	33
Previous Year Span Length	34
Number of Dives to Complete	-
Date(s) of Dive(s)	-
Dive number(s) for current campaign	-

* Drilling Issues: Include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	15:20	13:07	
LinkQuest Northing	9081411.61	9081744.18	
LinkQuest Easting	1958218.17	1958222.67	
Digital File Filename	-	-	
Digital File Time	10:27	10:34	
Display Time	10:37	10:34	
Bottom Type at Repair	Sandy	Sandy	
Highest Span Height	0.5	0.5	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Notes:

(72)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Drew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	4902595.10.071	Chris Thuver

Pipeline Operation Information

Is leg shutdown?	yes	
If so, date shutdown	8-23-12	
Time Shutdown	22:00	
Product In Line	N/A	Density
If flowing, flow rate	N/A	Time System for Time Shutdown

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	9
RTK Fix	yes
-	-
-	-

Span Information

Date Surveyed	8-25-12
Tape Number	SD2
Direction Flown	N-S
Water Depth	123
Current Year Span #	W-23 B
Previous Span #(s)	W-23 B
Addit. Extensions Used?	-
Length of Extension(s)	-
Drilling Issues?	-

Anchor Positions	-
	-
Digital File Name or DVD #	-

Current Year Span Length	23
Previous Year Span Length	57
Number of Dives to Complete	-
Date(s) of Dive(s)	-
Dive number(s) for current campaign	-

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	1:26	24:53	
LinkQuest Northing	908014.07	908067.57	
LinkQuest Easting	1958219.2.06	1958219.8.06	
Digital File Filename	-	-	
Digital File Time	10:48	10:45	
Display Time	10:48	10:45	
Bottom Type at Repair	Sand w Anchor	Sandy	
Highest Span Height	0.5	0.5	
TD O'clock Positions			

Span Repair Sketch: *Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.*

Notes:

79

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Drew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bauer

Pipeline Operation Information

Is leg shutdown?	Yes	
If so, date shutdown	8-23-12	
Time Shutdown	22:40	
Product In Line	N/A	Density
If flowing, flow rate	N/A	Time System for Time Shutdown

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	10
RTK Fix	Yes
	-
	-

Span Information

Date Surveyed	8-25-12
Tape Number	SO 2
Direction Flown	N-S
Water Depth	121
Current Year Span #	W-23A
Previous Span #(s)	W-23A
Addit. Extensions Used?	
Length of Extension(s)	
Drilling Issues?	

Anchor Positions	-
	-
Digital File Name or DVD #	-

Current Year Span Length	63
Previous Year Span Length	63
Number of Dives to Complete	-
Date(s) of Dive(s)	-
Dive number(s) for current campaign	-

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	9:54	1:26	
LinkQuest Northing	907982.06	9090411.07	
LinkQuest Easting	1958274.45	1958292.06	
Digital File Filename	-	-	
Digital File Time	10:56	10:48	
Display Time	10:56	10:48	
Bottom Type at Repair	Sandy	Sandy / Anchor	
Highest Span Height	0.5	0.5	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Notes:

(74)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Chris Ngwe	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Ngwe

Survey Geodetic Parameters	
Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	9
RTK Fix	Yes

Pipeline Operation Information

Is leg shutdown?	Yes		
If so, date shutdown	9-27-12		
Time Shutdown	22:00		
Product in Line	NGL	Density	
If flowing, flow rate	NA	Time System for Time Shutdown	

Span Information

Date Surveyed	9-25-12	Anchor Positions	—
Tape Number	SD2		—
Direction Flown	N-S	Digital File Name or DVD #	—
Water Depth	120		
Current Year Span #	W-24	Current Year Span Length	86
Previous Span #(s)	W-24	Previous Year Span Length	91
Addit. Extensions Used?	—	Number of Dives to Complete	—
Length of Extension(s)	—	Date(s) of Dive(s)	—
Drilling Issues?	—	Dive number(s) for current campaign	—

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	25:03	19:30	
LinkQuest Northing	907891.84	907974.96	
LinkQuest Easting	1958219.67	1958217.30	
Digital File Filename	—	—	
Digital File Time	11:11	11:06	
Display Time	11:11	11:06	
Bottom Type at Repair	Sandy	Sandy	
Highest Span Height	2'-3'	2'-3'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Notes:

(75)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Drew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Rowe

Pipeline Operation Information		
Is leg shutdown?	Yes	
If so, date shutdown	8-27-12	
Time Shutdown	22:00	
Product In Line	N/A	Density
If flowing, flow rate	N/A	Time System for Time Shutdown

Survey Geodetic Parameters	
Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	8
RTK Fix	Yes
—	—
—	—

Span Information

Date Surveyed	8-25-12	Anchor Positions	—
Tape Number	SD2	—	—
Direction Flown	N-S	Digital File Name or DVD #	—
Water Depth	121		
Current Year Span #	W-20	Current Year Span Length	27
Previous Span #(s)	W-20	Previous Year Span Length	417
Addit. Extensions Used?	—	Number of Dives to Complete	—
Length of Extension(s)	—	Date(s) of Dive(s)	—
Drilling Issues?	—	Dive number(s) for current campaign	—

* Drilling Issues: Include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	12:40	10:13	
LinkQuest Northing	907829.29	907863.71	
LinkQuest Easting	19582132.09	19582142.62	
Digital File Filename	—	—	
Digital File Time	11:25	11:22	
Display Time	11:25	11:22	
Bottom Type at Repair	Sand	Sand / Growth	
Highest Span Height	0.5	.5'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Had to see if Spanned due to marine growth

Notes:

(76)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Prew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Buel

Pipeline Operation Information

Is leg shutdown?	Yes
If so, date shutdown	8-23-12
Time Shutdown	22:00
Product in Line	NGL
If flowing, flow rate	NA
Density	
Time System for Time Shutdown	

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	8
RTK Fix	Yes
—	—
—	—

Span Information

Date Surveyed	8-25-12
Tape Number	502
Direction Flown	N-S
Water Depth	120
Current Year Span #	W-18B
Previous Span #(s)	W-18B
Addit. Extensions Used?	
Length of Extension(s)	
Drilling Issues?	

Anchor Positions	—
—	—
Digital File Name or DVD #	—

Current Year Span Length	82
Previous Year Span Length	91
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	21:02	16:57	
LinkQuest Northing	907712.70	907792.09	
LinkQuest Easting	19582101.40	19582122.80	
Digital File Filename	—	—	
Digital File Time	11:33	11:28	
Display Time	11:29	11:28	
Bottom Type at Repair	Sandy / Anchor	Sandy	
Highest Span Height	0.5'	0.5'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Notes:

(77)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Piew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Beaver

Pipeline Operation Information			
Is leg shutdown?	Yes		
If so, date shutdown	8-23-12		
Time Shutdown	22:00		
Product In Line	NGL	Density	
If flowing, flow rate	NA	Time System for Time Shutdown	

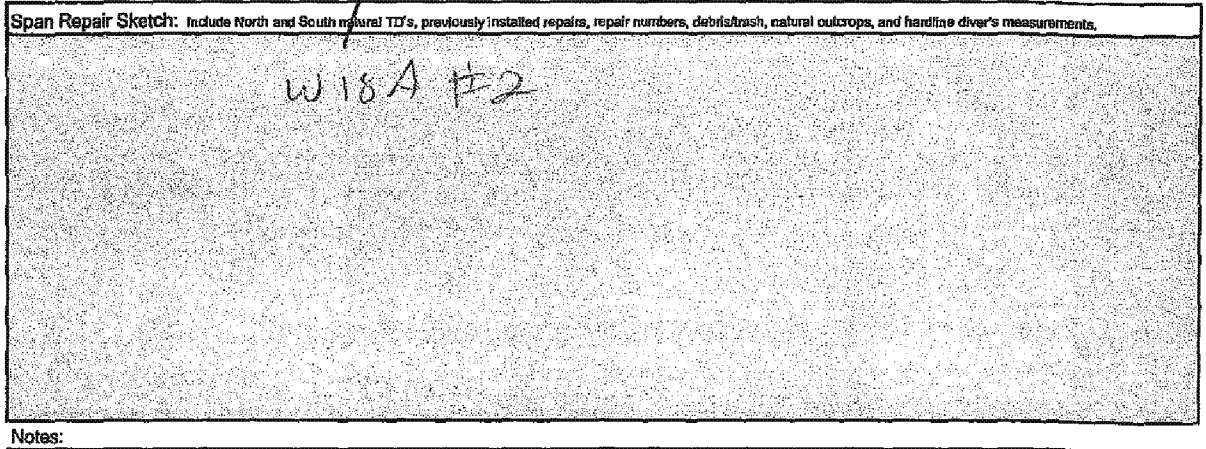
Survey Geodetic Parameters	
Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	8
RTK Fix	Yes
	-
	-

Span Information			
Date Surveyed	8-25-12	Anchor Positions	-
Tape Number	SD2		-
Direction Flown	N-S	Digital File Name or DVD #	-
Water Depth	114		
Current Year Span #	W-18AN	Current Year Span Length	55
Previous Span #(s)	W-19 AN	Previous Year Span Length	55
Addit. Extensions Used?		Number of Dives to Complete	-
Length of Extension(s)		Date(s) of Dive(s)	-
Drilling Issues?		Dive number(s) for current campaign	-

* Drilling Issues: Include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	2:08	21:02	
LinkQuest Northing	907657.75	907712.70	
LinkQuest Easting	1958087.60	1958201.40	
Digital File Filename	-		
Digital File Time	11:39	11:33	
Display Time	11:39	11:38	
Bottom Type at Repair	Sandy / Anchor	Sandy / Anchor	
Highest Span Height	2'	2'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.



Notes:

78

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Prow	Sgmc
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bevis

Pipeline Operation Information

Is leg shutdown?	Yes	
If so, date shutdown	8-22-12	
Time Shutdown	22:00	
Product In Line	N/L	Density
If flowing, flow rate	N/A	Time System for Time Shutdown

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	8
RTK Fix	Yes
	-
	-

Span Information

Date Surveyed	8-25-12
Tape Number	SD 2
Direction Flown	N-S
Water Depth	110
Current Year Span #	W-18 A3
Previous Span #(s)	W-18 A3
Addit. Extensions Used?	
Length of Extension(s)	
Drilling Issues?	

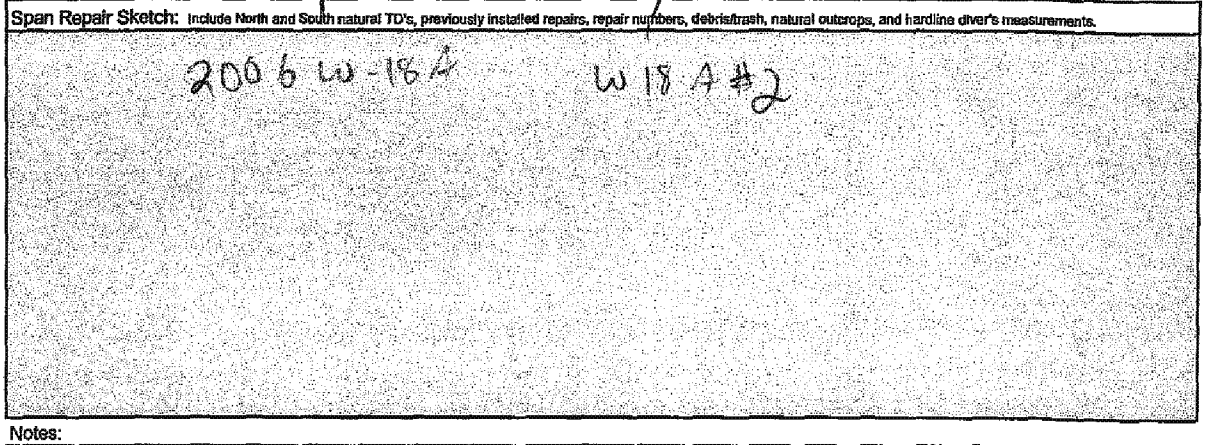
Anchor Positions	-
	-
Digital File Name or DVD #	-

Current Year Span Length	42
Previous Year Span Length	42
Number of Dives to Complete	-
Date(s) of Dive(s)	-
Dive number(s) for current campaign	-

* Drilling Issues: Include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	7:35	2:08	
LinkQuest Northing	907615.01	907657.75	
LinkQuest Easting	1958207S.94	1958208 7.60	
Digital File Filename			
Digital File Time	11:45	11:39	
Display Time	11:45	11:39	
Bottom Type at Repair	Sandy Anchor	Sandy Anchor	
Highest Span Height	2'	2'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.



Notes:

(79)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Drew	Sgne
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bgner

Pipeline Operation Information

Is leg shutdown?	Yes	
If so, date shutdown	8-23-12	
Time Shutdown	22:00	
Product In Line	NGL	Density
If flowing, flow rate	N/A	Time System for Time Shutdown

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	9
RTK Fix	Yes
	-
	-

Span Information

Date Surveyed	8-25-12
Tape Number	502
Direction Flown	N-S
Water Depth	105
Current Year Span #	W-184-A
Previous Span #(s)	W-184-A
Addit. Extensions Used?	
Length of Extension(s)	
Drilling Issues?	

Anchor Positions	-
	-
Digital File Name or DVD #	-
Current Year Span Length	14
Previous Year Span Length	15
Number of Dives to Complete	-
Date(s) of Dive(s)	-
Dive number(s) for current campaign	-

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	14:02	7:35	
LinkQuest Northing	907604.23	907615.01	
LinkQuest Easting	1958207.58	1958207.94	
Digital File Filename	-	-	
Digital File Time	11:51	11:45	
Display Time	11:51	11:45	
Bottom Type at Repair	Sandy	Sandy / Anchor	
Highest Span Height	2'	2'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Notes:

(40)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Prow	Jane
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Beaver

Pipeline Operation Information

Is leg shutdown?	Yes	
If so, date shutdown	8-23-12	
Time Shutdown	2200	
Product In Line	N/A	Density
If flowing, flow rate	N/A	Time System for Time Shutdown

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	9
RTK Fix	Yes

Span Information

Date Surveyed	8-25-12
Tape Number	SD2
Direction Flown	N-S
Water Depth	96
Current Year Span #	W-15
Previous Span #(s)	W-15
Addit. Extensions Used?	
Length of Extension(s)	
Drilling Issues?	

Anchor Positions

Digital File Name or DVD #

Current Year Span Length	37
Previous Year Span Length	38
Number of Dives to Complete	
Date(s) of Dive(s)	
Dive number(s) for current campaign	

* Drilling Issues: Include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	0:19	23:04	
LinkQuest Northing	9074115.21	9074119.45	
LinkQuest Easting	19582018.66	19582029.74	
Digital File Filename	-	-	
Digital File Time	12:03	12:00	
Display Time	12:03	12:00	
Bottom Type at Repair	Sand	Sand	
Highest Span Height	0.25	0.8	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Notes:

(91)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Prell	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bauer

Pipeline Operation Information

Is leg shutdown?	YES	
If so, date shutdown	8-23-12	
Time Shutdown	22:00	
Product in Line	N/A	Density
If flowing, flow rate	N/A	Time System for Time Shutdown

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	9
RTK Fix	YES
—	—
—	—

Span Information

Date Surveyed	8-25-12
Tape Number	SD 2
Direction Flown	N-S
Water Depth	93
Current Year Span #	W-16
Previous Span #(s)	W-16
Addit. Extensions Used?	
Length of Extension(s)	
Drilling Issues?	

Anchor Positions	—
	—
Digital File Name or DVD #	—

Current Year Span Length	94
Previous Year Span Length	46
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	17:45	14:10	
LinkQuest Northing	907125.31	907167.94	
LinkQuest Easting	1958 1943.82	1958 1954.92	
Digital File Filename	—	—	
Digital File Time	12:47	12:46	
Display Time	12:47	12:46	
Bottom Type at Repair	Sand	Sand	
Highest Span Height	0.25-0.5'	0.25-0.5'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and handline diver's measurements.

Notes:

(82)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-16	Tom Drew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bauer

Pipeline Operation Information

Is leg shutdown?	Yes
If so, date shutdown	8-23-12
Time Shutdown	22:00
Product in Line	NGL
If flowing, flow rate	N/A
Density	
Time System for Time Shutdown	

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	8
RTK Fix	Yes
	-
	-

Span Information

Date Surveyed	8-25-12
Tape Number	GD 2
Direction Flown	N-S
Water Depth	92
Current Year Span #	W-14
Previous Span #(s)	W-14
Addit. Extensions Used?	-
Length of Extension(s)	-
Drilling Issues?	-

Anchor Positions	-
	-
Digital File Name or DVD #	-
Current Year Span Length	54
Previous Year Span Length	51
Number of Dives to Complete	-
Date(s) of Dive(s)	-
Dive number(s) for current campaign	-

* Drilling Issues: Include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	25:27	22:05	
LinkQuest Northing	907046.86	907098.67	
LinkQuest Easting	1958 1920.98	1958 1937.53	
Digital File Filename	-	-	
Digital File Time	12:55	12:51	
Display Time	12:55	12:51	
Bottom Type at Repair	Sandy	Sandy	
Highest Span Height	0.5-1'	0.5-1'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Notes:

(83)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Pruu	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Beur

Survey Geodetic Parameters	
Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	8
RTK Fix	Yes

Pipeline Operation Information

Is leg shutdown?	Yes
If so, date shutdown	8-22-12
Time Shutdown	22:00
Product In Line	NGL
If flowing, flow rate	N/A

Density

Time System for Time Shutdown

Span Information

Date Surveyed	8-25-12
Tape Number	SD2
Direction Flown	N-S
Water Depth	88
Current Year Span #	W-17
Previous Span #(s)	W-17
Addit. Extensions Used?	—
Length of Extension(s)	—
Drilling Issues?	—

Anchor Positions —

Digital File Name or DVD # —

Current Year Span Length	83
Previous Year Span Length	87
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	9:50	5:00	
LinkQuest Northing	906943.22	907022.44	
LinkQuest Easting	1958893.35	1958916.54	
Digital File Filename		—	
Digital File Time	13:05	13:00	
Display Time	18:05	13:00	
Bottom Type at Repair	Sand	Sand	
Highest Span Height	1'	1'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Notes:

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Drew	Some
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Dover

Pipeline Operation Information

Is leg shutdown?	YES
If so, date shutdown	8-23-12
Time Shutdown	22:ecd
Product In Line	NGL
If flowing, flow rate	NA
Density	
Time System for Time Shutdown	

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	9
RTK Fix	YES
	-
	-

Span Information

Date Surveyed	8-25-12
Tape Number	SD2
Direction Flown	N-S
Water Depth	85
Current Year Span #	W-12
Previous Span #(s)	W-18
Addit. Extensions Used?	-
Length of Extension(s)	-
Drilling Issues?	-

Anchor Positions	-
	-
Digital File Name or DVD #	-

Current Year Span Length	91'
Previous Year Span Length	91'
Number of Dives to Complete	-
Date(s) of Dive(s)	-
Dive number(s) for current campaign	-

* Drilling Issues: Include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	23:23	16:30	
LinkQuest Northing	906795.05	906880.35	
LinkQuest Easting	1958185.92	1958178.18	
Digital File Filename	-	-	
Digital File Time	13:19	13:12	
Display Time	13:19	13:12	
Bottom Type at Repair	Sand	Sand	
Highest Span Height	0.25	0.25	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Notes:

(85)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Drew	Sgne
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Baur

Survey Geodetic Parameters	
Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	9
RTK Fix	Yes
-	-
-	-

Pipeline Operation Information

Is leg shutdown?	Yes		
If so, date shutdown	8-25-12		
Time Shutdown	22:00		
Product in Line	NGL	Density	
If flowing, flow rate	NA	Time System for Time Shutdown	

Span Information

Date Surveyed	8-25-12	Anchor Positions	-
Tape Number	S02		-
Direction Flown	N-S	Digital File Name or DVD #	-
Water Depth	81		
Current Year Span #	W-10	Current Year Span Length	64
Previous Span #(s)	W-10	Previous Year Span Length	69
Addit. Extensions Used?	-	Number of Dives to Complete	-
Length of Extension(s)	-	Date(s) of Dive(s)	-
Drilling Issues?	-	Dive number(s) for current campaign	-

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	12:32	4:28	
LinkQuest Northing	906603.15	906662.66	
LinkQuest Easting	1958180.95	1958168.76	
Digital File Filename	-	-	
Digital File Time	13:23	13:30	
Display Time	13:23	13:30	
Bottom Type at Repair	Sand	Sand	
Highest Span Height	0.25	0.25	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and handline diver's measurements.

Notes:

(88)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Pierz	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Boyd

Survey Geodetic Parameters	
Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	8
RTK Fix	Yes
—	—
—	—

Pipeline Operation Information

Is leg shutdown?	Yes		
If so, date shutdown	8-27-12		
Time Shutdown	22:00		
Product In Line	NGL	Density	
If flowing, flow rate	NA	Time System for Time Shutdown	

Span Information

Date Surveyed	8-25-12	Anchor Positions	—
Tape Number	SD2		—
Direction Flown	N-S	Digital File Name or DVD #	—
Water Depth	74		
Current Year Span #	W-11	Current Year Span Length	52
Previous Span #(s)	W-11	Previous Year Span Length	47
Addit. Extensions Used?	—	Number of Dives to Complete	—
Length of Extension(s)	—	Date(s) of Dive(s)	—
Drilling Issues?	—	Dive number(s) for current campaign	—

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	3:20	24:37	
LinkQuest Northing	906376.36	906425.08	
LinkQuest Easting	19581788.52	19581755.75	
Digital File Filename	—	—	
Digital File Time	13:49	13:45	
Display Time	13:49	13:45	
Bottom Type at Repair	Sand	Sand	
Highest Span Height	2'	2'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Notes:

(47)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Prev	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bauer

Pipeline Operation Information

Is leg shutdown?	Yes		
If so, date shutdown	8-23-12		
Time Shutdown	22:00		
Product In Line	NGL	Density	
If flowing, flow rate	NA	Time System for Time Shutdown	

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	8
RTK Fix	Yes
—	—
—	—

Span Information

Date Surveyed	8-25-12	Anchor Positions	—
Tape Number	SD 2		—
Direction Flown	N-S	Digital File Name or DVD #	—
Water Depth	67		
Current Year Span #	W-9	Current Year Span Length	53
Previous Span #(s)	W-9	Previous Year Span Length	53
Addit. Extensions Used?	—	Number of Dives to Complete	—
Length of Extension(s)	—	Date(s) of Dive(s)	—
Drilling Issues?	—	Dive number(s) for current campaign	—

* Drilling Issues: Include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	17:39	12:24	
LinkQuest Northing	906821.31	90627217	
LinkQuest Easting	1958169 7.50	1958 1711.45	
Digital File Filename	—	—	
Digital File Time	14:03	13:58	
Display Time	14:03	13:58	
Bottom Type at Repair	Clay	Clay	
Highest Span Height	2'	2'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Notes:

(84)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Drew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bauer

Pipeline Operation Information

Is leg shutdown?	Yes
If so, date shutdown	9-23-12
Time Shutdown	22:00
Product in Line	NGL
If flowing, flow rate	NA
Density	
Time System for Time Shutdown	

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	8
RTK Fix	Fix
—	—
—	—

Span Information

Date Surveyed	8-25-12
Tape Number	SD2
Direction Flown	N-S
Water Depth	67.0
Current Year Span #	W-7.8
Previous Span #(s)	W-7.8
Addit. Extensions Used?	
Length of Extension(s)	
Drilling Issues?	

Anchor Positions	—
	—
Digital File Name or DVD #	—
Current Year Span Length	46
Previous Year Span Length	50
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling Issues: Include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	1:36	21:03	
LinkQuest Northing	906142.64	906186.85	
LinkQuest Easting	19581676.32	19581688.70	
Digital File Filename	—	—	
Digital File Time	14:13	1407	
Display Time	14:13	14:07	
Bottom Type at Repair	Sand/Clay	Sand/Clay	
Highest Span Height	2'	2'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Notes:

(89)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Drew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Kaiser

Pipeline Operation Information

Is leg shutdown?	Yes	
If so, date shutdown	8-27-12	
Time Shutdown	22.00	
Product In Line	NGL	Density
If flowing, flow rate	NA	Time System for Time Shutdown

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	8
RTK Fix	Yes

Span Information

Date Surveyed	8-25-12
Tape Number	SD 2
Direction Flown	N-S
Water Depth	67
Current Year Span #	W-6
Previous Span #(s)	W-6
Addit. Extensions Used?	
Length of Extension(s)	
Drilling Issues?	

Anchor Positions	
Digital File Name or DVD #	
Current Year Span Length	721
Previous Year Span Length	841
Number of Dives to Complete	
Date(s) of Dive(s)	
Dive number(s) for current campaign	

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	15:28	9:24	
LinkQuest Northing	905987.56	906057.81	
LinkQuest Easting	1958163.47	1958165.88	
Digital File Filename	—	—	
Digital File Time	14:27	14:29	
Display Time	14:27	14:21	
Bottom Type at Repair	Sand	Sand/Clay	
Highest Span Height	3'	3'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Notes:

(90)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Drew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bauer

Pipeline Operation Information

Is leg shutdown?	Yes	
If so, date shutdown	8-23-12	
Time Shutdown	22:00	
Product In Line	NGL	Density
If flowing, flow rate	NA	Time System for Time Shutdown

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	8
RTK Fix	Yes
—	—
—	—

Span Information

Date Surveyed	9-25-12
Tape Number	SD-2
Direction Flown	N-S
Water Depth	67
Current Year Span #	W20
Previous Span #(s)	W20
Addit. Extensions Used?	—
Length of Extension(s)	—
Drilling Issues?	—

Anchor Positions	—
	—
Digital File Name or DVD #	—

Current Year Span Length	14
Previous Year Span Length	10
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	22.53	21:04	
LinkQuest Northing	905963.13	905976.90	
LinkQuest Easting	1958162637	1958163081	
Digital File Filename	—	—	
Digital File Time	14:25	14:33	
Display Time	14:25	14:30	
Bottom Type at Repair	Sand clay / Anchor	Sand clay	
Highest Span Height	2'	3'	
TD O'clock Positions			

Span Repair Sketch: *Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.*

Notes:

(21)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Prev	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	4902595.10.071	Chris Hoover

Pipeline Operation Information

Is leg shutdown?	Yes
If so, date shutdown	8-23-12
Time Shutdown	2200
Product In Line	NGL
If flowing, flow rate	NA

Density

Time System for Time Shutdown

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	9
RTK Fix	Yes
—	—
—	—

Span Information

Date Surveyed	8-25-12
Tape Number	S02
Direction Flown	N-S
Water Depth	67
Current Year Span #	W-2A
Previous Span #(s)	W-2A
Addit. Extensions Used?	—
Length of Extension(s)	—
Drilling Issues?	—

Anchor Positions —

Digital File Name or DVD # —

Current Year Span Length	52
Previous Year Span Length	54
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	3:20	22:52	
LinkQuest Northing	9059141.22	9059163.13	
LinkQuest Easting	1958163.42	1958126.37	
Digital File Filename		—	
Digital File Time	14:41	14:35	
Display Time	14:41	14:35	
Bottom Type at Repair	Sand Clay	Sand Clay / Anchor	
Highest Span Height	3'	3'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Notes:

(60)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Prow	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bauer

Pipeline Operation Information

Is leg shutdown?	Yes		
If so, date shutdown	8-23-12		
Time Shutdown	22:00		
Product In Line	NGL	Density	
If flowing, flow rate	NA	Time System for Time Shutdown	

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	8
RTK Fix	Yes
—	—
—	—

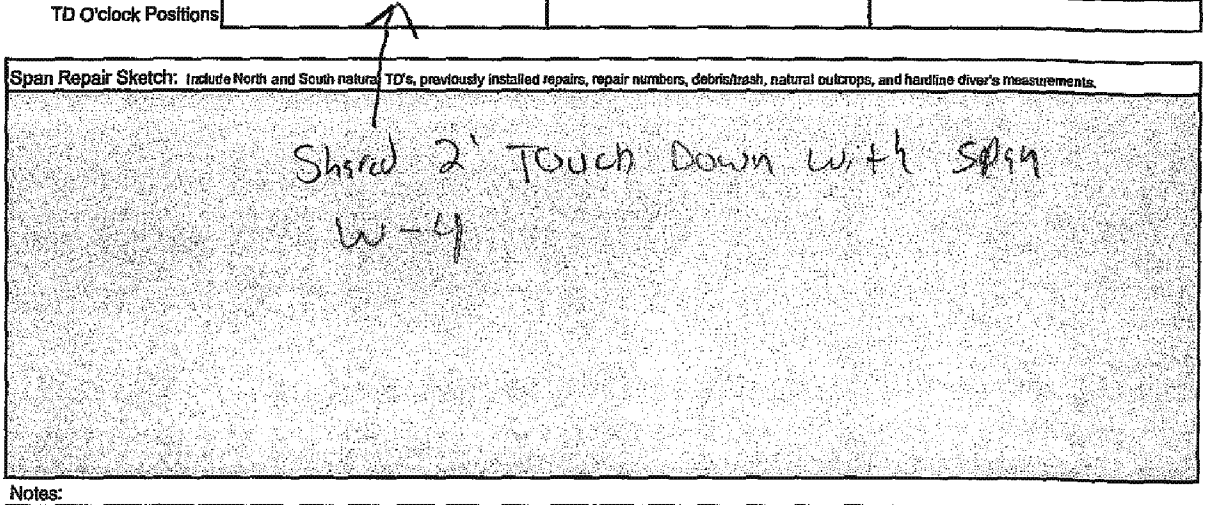
Span Information

Date Surveyed	8-25-12	Anchor Positions	—
Tape Number	502		—
Direction Flown	N-S	Digital File Name or DVD #	—
Water Depth	67'		
Current Year Span #	W-3	Current Year Span Length	43
Previous Span #(s)	W-3	Previous Year Span Length	39
Addit. Extensions Used?	—	Number of Dives to Complete	—
Length of Extension(s)	—	Date(s) of Dive(s)	—
Drilling Issues?	—	Dive number(s) for current campaign	—

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	13:10	9.20	
LinkQuest Northing	905866.71	905907.56	
LinkQuest Easting	19581601.88	19581612.10	
Digital File Filename	—	—	
Digital File Time	14:50	14:49	
Display Time	14:50	14:49	
Bottom Type at Repair	Clay	Sand / Clay	
Highest Span Height	1.5'	1.5'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.



Notes:

93

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Drew	Scott
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bauer

Pipeline Operation Information

Is leg shutdown?	YES	
If so, date shutdown	8-23-12	
Time Shutdown	22:00	
Product in Line	NGL	Density
If flowing, flow rate	NA	Time System for Time Shutdown

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	8
RTK Fix	Yes
—	—
—	—

Span Information

Date Surveyed	8-25-12
Tape Number	SD 2
Direction Flown	N-S
Water Depth	67
Current Year Span #	W-4
Previous Span #(s)	W-4
Addit. Extensions Used?	
Length of Extension(s)	
Drilling Issues?	

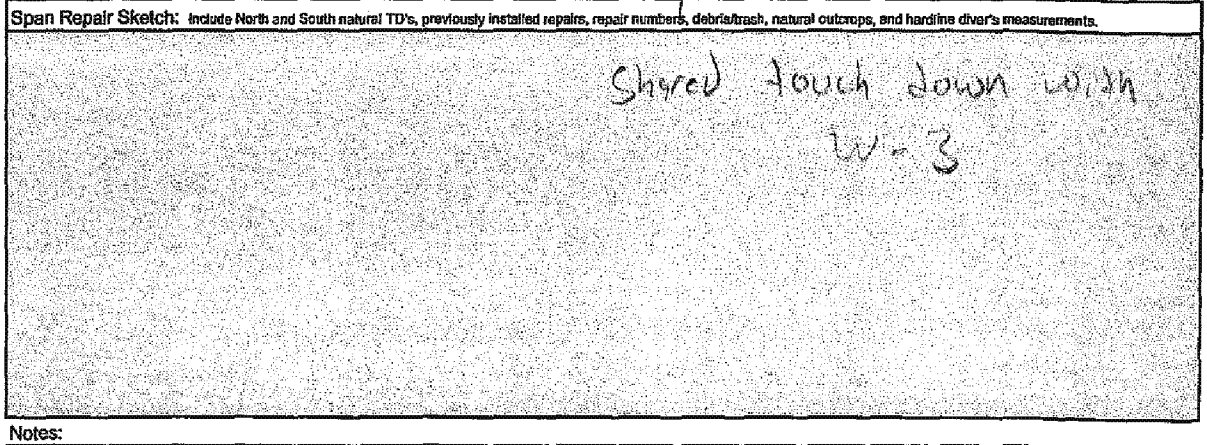
Anchor Positions	—
	—
Digital File Name or DVD #	—

Current Year Span Length	16
Previous Year Span Length	13
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	13:10	13:10	
LinkQuest Northing	905851.15	905866.71	
LinkQuest Easting	1958596.76	1958601.88	
Digital File Filename	—	—	
Digital File Time	14:56	14:50	
Display Time	14:56	14:50	
Bottom Type at Repair	Clay/Sand	Clay	
Highest Span Height	1'	1'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.



Notes:

94

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Prew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Dyer

Pipeline Operation Information

Is leg shutdown?	Yes
If so, date shutdown	8-23-12
Time Shutdown	2200
Product In Line	NGL
If flowing, flow rate	NA

Density —

Time System for Time Shutdown —

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	6
RTK Fix	Yes

Span Information

Date Surveyed	8-25-12
Tape Number	SD2
Direction Flown	N-S
Water Depth	67
Current Year Span #	
Previous Span #(s)	W-77
Addit. Extensions Used?	—
Length of Extension(s)	—
Drilling Issues?	—

Anchor Positions —

Digital File Name or DVD # —

Current Year Span Length	0
Previous Year Span Length	37
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling Issues: Include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter			
LinkQuest Northing			
LinkQuest Easting			
Digital File Filename			
Digital File Time			
Display Time			
Bottom Type at Repair			
Highest Span Height			
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

W-77 silted in

Notes:

(95)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Drew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bauer

Pipeline Operation Information

Is leg shutdown?	Yes		
If so, date shutdown	8-23-12		
Time Shutdown	21:00		
Product In Line	NGL	Density	
If flowing, flow rate	NA	Time System for Time Shutdown	

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	10
RTK Fix	Yes
—	—
—	—

Span Information

Date Surveyed	8-25-12	Anchor Positions	—
Tape Number	SD2		—
Direction Flown	N-S	Digital File Name or DVD #	—
Water Depth	70		
Current Year Span #	W-5	Current Year Span Length	76
Previous Span #(s)	W-5	Previous Year Span Length	81
Addit. Extensions Used?	—	Number of Dives to Complete	—
Length of Extension(s)	—	Date(s) of Dive(s)	—
Drilling Issues?	—	Dive number(s) for current campaign	—

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	19:45	14:00	
LinkQuest Northing	9055 74.63	9056 40.98	
LinkQuest Easting	19581502.46	19581539.80	
Digital File Filename	—	—	
Digital File Time	15:22	15:16	
Display Time	15:22	15:11	
Bottom Type at Repair	Sand / Clay	Sand / Clay	
Highest Span Height	0.5'	0.5'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Notes:

96

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Drew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bauer

Pipeline Operation Information

Is leg shutdown?	Yes		
If so, date shutdown	8-27-12		
Time Shutdown	22:00		
Product In Line	N/A	Density	
If flowing, flow rate	N/A	Time System for Time Shutdown	

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	10
RTK Fix	Yes
—	—
—	—

Span Information

Date Surveyed	8-25-12	Anchor Positions	—
Tape Number	SD 2		—
Direction Flown	N-S	Digital File Name or DVD #	—
Water Depth	71		
Current Year Span #	W-018	Current Year Span Length	80
Previous Span #(s)	W-010	Previous Year Span Length	79
Addit. Extensions Used?	—	Number of Dives to Complete	—
Length of Extension(s)	—	Date(s) of Dive(s)	—
Drilling Issues?	—	Dive number(s) for current campaign	—

* Drilling Issues: Include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	12:45	830	
LinkQuest Northing	904866.18	904945.12	
LinkQuest Easting	19581334.66	19581356.62	
Digital File Filename	—	—	
Digital File Time	15:42	15:39	
Display Time	15:42	15:39	
Bottom Type at Repair	Sand clay	Sand clay	
Highest Span Height	2'	2'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Notes:

97

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Drew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bauer

Pipeline Operation Information

Is leg shutdown?	Yes	
If so, date shutdown	9-23-12	
Time Shutdown	22:40	
Product In Line	NGL	Density
If flowing, flow rate	N/A	Time System for Time Shutdown

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	10
RTK Fix	Yes
	—
	—

Span Information

Date Surveyed	9-25-12	Anchor Positions	—
Tape Number	502		—
Direction Flown	N-S	Digital File Name or DVD #	—
Water Depth	71		
Current Year Span #	W-01A	Current Year Span Length	65
Previous Span #(s)	W-01A	Previous Year Span Length	80
Addit. Extensions Used?	—	Number of Dives to Complete	—
Length of Extension(s)	—	Date(s) of Dive(s)	—
Drilling Issues?	—	Dive number(s) for current campaign	—

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	17:30	12:45	
LinkQuest Northing	904803.09	904866.18	
LinkQuest Easting	19581317.61	19581324.66	
Digital File Filename	—		
Digital File Time	15:46	15:42	
Display Time	15:46	15:42	
Bottom Type at Repair	Sand clay	Sand / clay	
Highest Span Height	2'	2'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Notes:

1

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Prew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bauer

Pipeline Operation Information

Is leg shutdown?	Yes
If so, date shutdown	8-27-12
Time Shutdown	6:00
Product in Line	NGL
If flowing, flow rate	NA
Density	
Time System for Time Shutdown	

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	8
RTK Fix	Yes
—	—
—	—

Span Information

Date Surveyed	8-27-12
Tape Number	502
Direction Flown	S-N
Water Depth	63
Current Year Span #	
Previous Span #(s)	E-75
Addit. Extensions Used?	
Length of Extension(s)	
Drilling Issues?	

Anchor Positions	—
	—
Digital File Name or DVD #	—
Current Year Span Length	0
Previous Year Span Length	70
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling Issues: Include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter			
LinkQuest Northing			
LinkQuest Easting			
Digital File Filename			
Digital File Time			
Display Time			
Bottom Type at Repair			
Highest Span Height			
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Span Silted in

Notes:

(2)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Prew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bauer

Pipeline Operation Information

Is leg shutdown?	Yes
If so, date shutdown	8-27-12
Time Shutdown	6:00
Product in Line	NGL
If flowing, flow rate	NA

Density

Time System for Time Shutdown

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	Yes
RTK Fix	8
—	—
—	—

Span Information

Date Surveyed	8-27-12
Tape Number	S02
Direction Flown	S-N
Water Depth	66
Current Year Span #	E74A
Previous Span #(s)	E74A
Addit. Extensions Used?	—
Length of Extension(s)	—
Drilling Issues?	—

Anchor Positions: —

Digital File Name or DVD #: —

Current Year Span Length	80
Previous Year Span Length	61
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	15:10	15:01	
LinkQuest Northing	904903.08	904980.02	
LinkQuest Easting	1958618.25	1958640.67	
Digital File Filename	—	—	
Digital File Time	11:26	11:30	
Display Time	11:26	11:36	
Bottom Type at Repair	Sandy	Sandy / Anchor	
Highest Span Height	0.5'	0.5'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Anchor with cross bar

Notes:

(3)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Drew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bauer

Pipeline Operation Information

Is leg shutdown?	Yes	
If so, date shutdown	6-27-12	
Time Shutdown	6:00	
Product In Line	NGL	Density
If flowing, flow rate	NA	Time System for Time Shutdown

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	8
RTK Fix	Yes

Span Information

Date Surveyed	8-27-12
Tape Number	SD2
Direction Flown	S-N
Water Depth	166
Current Year Span #	E-74DS
Previous Span #(s)	E-74D
Addit. Extensions Used?	—
Length of Extension(s)	—
Drilling Issues?	—

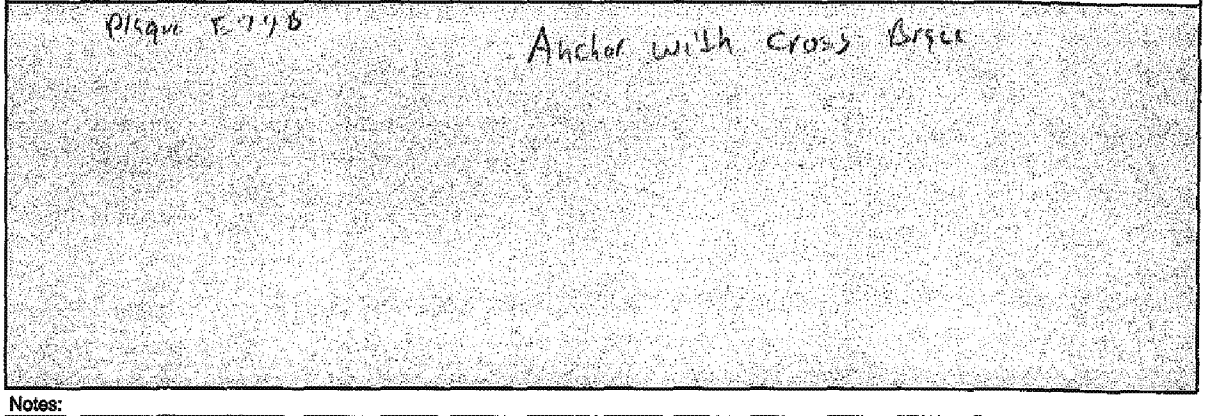
Anchor Positions	—
	—
Digital File Name or DVD #	—

Current Year Span Length	56
Previous Year Span Length	108
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	1:20	1906	
LinkQuest Northing	905032.81	904980.03	
LinkQuest Easting	1958265.74	1958264.0.67	
Digital File Filename	—	—	
Digital File Time	11:38	11:30	
Display Time	11:38	11:30	
Bottom Type at Repair	Sand Anchor	Sandy Anchor	
Highest Span Height	0.5'	0.5'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.



Notes:

(4)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Drew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bauer

Pipeline Operation Information

Is leg shutdown?	Yes
If so, date shutdown	8-27-12
Time Shutdown	6:00
Product In Line	NGL
If flowing, flow rate	NA
Density	
Time System for Time Shutdown	

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	9
RTK Fix	Yes
—	—
—	—

Span Information

Date Surveyed	8-27-12
Tape Number	SD 2
Direction Flown	S-N
Water Depth	66
Current Year Span #	E-74D N
Previous Span #(s)	E-74D
Addit. Extensions Used?	—
Length of Extension(s)	—
Drilling Issues?	—

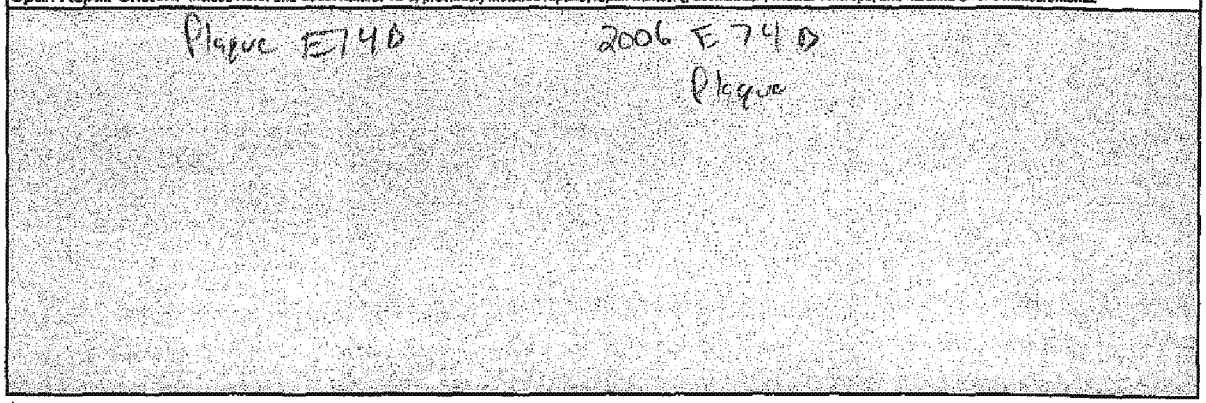
Anchor Positions	—
	—
Digital File Name or DVD #	—

Current Year Span Length	48
Previous Year Span Length	108
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	120	8:10	
LinkQuest Northing	905032.81	905077.66	
LinkQuest Easting	1958265L.74	1958268.37	
Digital File Filename	—	—	
Digital File Time	11:38	11:45	
Display Time	11:38	11:45	
Bottom Type at Repair	Sand/Anchor	Sandy Anchor	
Highest Span Height	0.5'-1'	0.5-1'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.



Notes:

(5)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Prew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Dauer

Pipeline Operation Information

Is leg shutdown?	Yes
If so, date shutdown	8-27-12
Time Shutdown	6:00
Product in Line	NGL
If flowing, flow rate	NA

Density

Time System for Time Shutdown

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	10
RTK Fix	Yes

Span Information

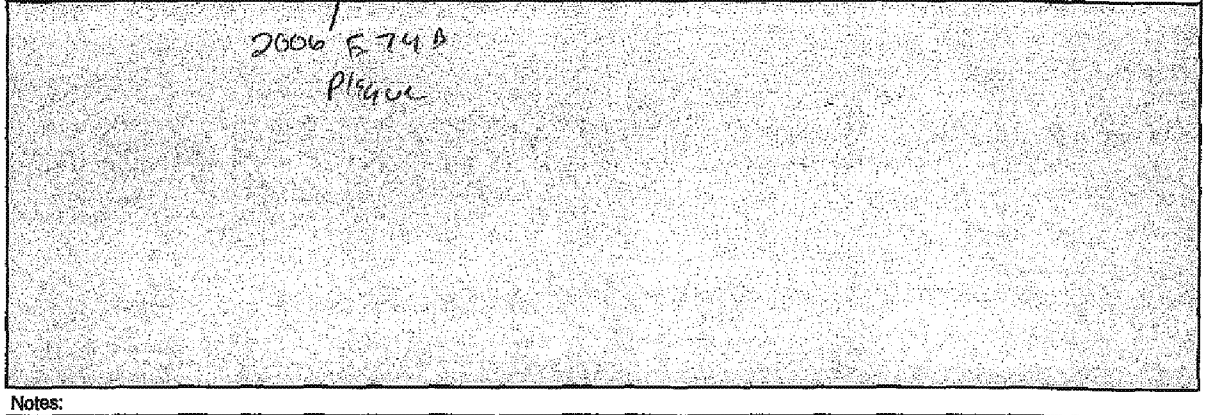
Date Surveyed	8-27-12
Tape Number	SD 2
Direction Flown	S-N
Water Depth	66
Current Year Span #	E-74C
Previous Span #(s)	E-74C
Addit. Extensions Used?	—
Length of Extension(s)	—
Drilling Issues?	—

Anchor Positions	—
	—
Digital File Name or DVD #	—
Current Year Span Length	16'
Previous Year Span Length	13
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling Issues: Include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	8:10	17:52	
LinkQuest Northing	905077.66	905093.57	
LinkQuest Easting	19582668.37	19582671.48	
Digital File Filename	—	—	
Digital File Time	11:45	11:54	
Display Time	11:45	11:54	
Bottom Type at Repair	Sandy / Anchor	Sandy	
Highest Span Height	1'	0.5'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.



Notes:

(6)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Prew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bauer

Pipeline Operation Information

Is leg shutdown?	Yes
If so, date shutdown	8-27-12
Time Shutdown	6:00
Product in Line	NGL
If flowing, flow rate	NA
Density	
Time System for Time Shutdown	

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	9
RTK Fix	Yes
—	—
—	—

Span Information

Date Surveyed	8-27-12
Tape Number	SD2
Direction Flown	S-N
Water Depth	62
Current Year Span #	E-71
Previous Span #(s)	E-71
Addit. Extensions Used?	—
Length of Extension(s)	—
Drilling Issues?	—

Anchor Positions	—
	—
Digital File Name or DVD #	—
Current Year Span Length	76
Previous Year Span Length	87
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling Issues: Include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	24:50	4:52	
LinkQuest Northing	905215.62	905287.90	
LinkQuest Easting	1958206.37	1958227.01	
Digital File Filename	—	—	
Digital File Time	12:02	12:07	
Display Time	12:02	12:07	
Bottom Type at Repair	Sandy	Sandy Anchor	
Highest Span Height	0.5'	0.5'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and handline diver's measurements.

Notes:

(7)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Drew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Dauer

Pipeline Operation Information

Is leg shutdown?	Yes
If so, date shutdown	8-27-12
Time Shutdown	6:00
Product In Line	NGL
If flowing, flow rate	NA

Density

Time System for Time Shutdown

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	10
RTK Fix	Yes
—	—
—	—

Span Information

Date Surveyed	8-27-12
Tape Number	SD1
Direction Flown	S-N
Water Depth	S-N
Current Year Span #	E-72
Previous Span #(s)	E-72
Addit. Extensions Used?	
Length of Extension(s)	
Drilling Issues?	

Anchor Positions	—
	—
Digital File Name or DVD #	—

Current Year Span Length	40
Previous Year Span Length	40
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	4:52	8:33	
LinkQuest Northing	90528790	90532716	
LinkQuest Easting	19582727.01	19582738.28	
Digital File Filename	—	—	
Digital File Time	12:07	12:11	
Display Time	12:09	12:11	
Bottom Type at Repair	Sandy / Anchor	Sandy	
Highest Span Height	0.5'	0.5'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Notes:

(8)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Prew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bauer

Pipeline Operation Information

Is leg shutdown?	Yes	
If so, date shutdown	8-27-12	
Time Shutdown	6:00	
Product in Line	NGL	Density
If flowing, flow rate	NA	Time System for Time Shutdown

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	9
RTK Fix	Yes
—	—
—	—

Span Information

Date Surveyed	8-27-12	Anchor Positions	—
Tape Number	SN 2		—
Direction Flown	S-N	Digital File Name or DVD #	—
Water Depth	69		
Current Year Span #	E-77	Current Year Span Length	34
Previous Span #(s)	E-77	Previous Year Span Length	44
Addit. Extensions Used?	—	Number of Dives to Complete	—
Length of Extension(s)	—	Date(s) of Dive(s)	—
Drilling Issues?	—	Dive number(s) for current campaign	—

* Drilling issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	11:06	14:22	
LinkQuest Northing	905336.50	905369.48	
LinkQuest Easting	1958273.90	1958274.82	
Digital File Filename	—	—	
Digital File Time	12:13	12:17	
Display Time	12:13	12:17	
Bottom Type at Repair	Sandy	Sandy	
Highest Span Height	0.5'	0.5'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Notes:

(9)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Prew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bauer

Survey Geodetic Parameters	
Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	9
RTK Fix	Yes
—	—
—	—

Pipeline Operation Information

Is leg shutdown?	Yes	
If so, date shutdown	8-27-12	
Time Shutdown	6:00	
Product in Line	NGL	Density
If flowing, flow rate	NA	Time System for Time Shutdown

Span Information

Date Surveyed	8-27-12	Anchor Positions	—
Tape Number	SD2		—
Direction Flown	S-N	Digital File Name or DVD #	—
Water Depth	74'		
Current Year Span #	E-26	Current Year Span Length	48
Previous Span #(s)	E-26	Previous Year Span Length	54
Addit. Extensions Used?	—	Number of Dives to Complete	—
Length of Extension(s)	—	Date(s) of Dive(s)	—
Drilling Issues?	—	Dive number(s) for current campaign	—

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	21:00	00:00	
LinkQuest Northing	905562.77	905607.30	
LinkQuest Easting	1958283.44	1958281.83	
Digital File Filename	—	—	
Digital File Time	12:24	12:28	
Display Time	12:24	12:28	
Bottom Type at Repair	Sandy	Sandy	
Highest Span Height	0.5'	0.5'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Notes:

(10)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Prew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bauer

Pipeline Operation Information

Is leg shutdown?	Yes
If so, date shutdown	8-27-12
Time Shutdown	6:00
Product in Line	N/G
If flowing, flow rate	N/A

Density —

Time System for Time Shutdown —

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	10
RTK Fix	Yes

Span Information

Date Surveyed	8-27-12
Tape Number	SD 2
Direction Flown	S-N
Water Depth	76
Current Year Span #	E-25
Previous Span #(s)	E-25
Addit. Extensions Used?	—
Length of Extension(s)	—
Drilling Issues?	—

Anchor Positions —

Digital File Name or DVD # —

Current Year Span Length	87
Previous Year Span Length	91
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	10:40	15:46	
LinkQuest Northing	905649.67	905732.79	
LinkQuest Easting	19582827.67	19582852.28	
Digital File Filename	—	—	
Digital File Time	12:39	12:44	
Display Time	12:39	12:44	
Bottom Type at Repair	Sandy	Sandy	
Highest Span Height	0.5'	0.5'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Notes:

(11)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Prew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bauer

Pipeline Operation Information

Is leg shutdown?	Yes
If so, date shutdown	8-27-12
Time Shutdown	6:00
Product In Line	NGL
If flowing, flow rate	NA

Density

Time System for Time Shutdown

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	9
RTK Fix	Y/N
—	—
—	—

Span Information

Date Surveyed	8-27-12
Tape Number	SD2
Direction Flown	S-N
Water Depth	78
Current Year Span #	E-24
Previous Span #(s)	E-24
Addit. Extensions Used?	—
Length of Extension(s)	—
Drilling Issues?	—

Anchor Positions	—
	—
Digital File Name or DVD #	—

Current Year Span Length	461
Previous Year Span Length	459
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	20:24	21:05	
LinkQuest Northing	905841.00	905883.32	
LinkQuest Easting	1558288 1.83	1558289 0.37	
Digital File Filename	—	—	
Digital File Time	12:48	12:51	
Display Time	12:48	12:51	
Bottom Type at Repair	Sandy	Sandy	
Highest Span Height	0.5'	0.5'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and handline diver's measurements.

Notes:

(12)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Prew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bauer

Pipeline Operation Information

Is leg shutdown?	Yes	
If so, date shutdown	8-27-12	
Time Shutdown	6:00	
Product in Line	NGL	Density
If flowing, flow rate	NA	Time System for Time Shutdown

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	9
RTK Fix	Yes
—	—
—	—

Span Information

Date Surveyed	8-27-12
Tape Number	SD2
Direction Flown	S-N
Water Depth	81
Current Year Span #	E-23A
Previous Span #(s)	E-23A
Addit. Extensions Used?	—
Length of Extension(s)	—
Drilling Issues?	—

Anchor Positions	—
	—
Digital File Name or DVD #	—
Current Year Span Length	86
Previous Year Span Length	85
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling Issues: Include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	2:30	6:00	
LinkQuest Northing	905977.20	906058.84	
LinkQuest Easting	1952829.64	1952942.72	
Digital File Filename	—	—	
Digital File Time	12:56	12:59	
Display Time	12:56	12:59	
Bottom Type at Repair	Sandy	Sandy Anchor	
Highest Span Height	0.5'	0.5'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Notes:

(13)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Prew	Sgme
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bgue

Pipeline Operation Information

Is leg shutdown?	Yes
If so, date shutdown	8-27-12
Time Shutdown	6:00
Product in Line	NGL
If flowing, flow rate	NA

Density —

Time System for Time Shutdown —

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	9
RTK Fix	Yes

Span Information

Date Surveyed	8-27-12
Tape Number	SD2
Direction Flown	S-N
Water Depth	81
Current Year Span #	E 20 B
Previous Span #(s)	E-20. B
Addit. Extensions Used?	—
Length of Extension(s)	—
Drilling Issues?	—

Anchor Positions —

Digital File Name or DVD # —

Current Year Span Length	92
Previous Year Span Length	87
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	6:00	14:15	
LinkQuest Northing	906058.84	906147.37	
LinkQuest Easting	19582942.72	19582967.46	
Digital File Filename	—	—	
Digital File Time	12:59	13:08	
Display Time	12:59	13:08	
Bottom Type at Repair	Sandy Anchor	Sandy	
Highest Span Height	0.5-1'	0.5'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Notes:

(14)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Prew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bauer

Pipeline Operation Information

Is leg shutdown?	Yes
If so, date shutdown	8-27-12
Time Shutdown	6:00
Product in Line	NGL
If flowing, flow rate	NA

Density —

Time System for Time Shutdown —

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	
RTK Fix	

Span Information

Date Surveyed	8-27-12
Tape Number	SD 2
Direction Flown	S-N
Water Depth	80
Current Year Span #	E-27
Previous Span #(s)	E-27
Addit. Extensions Used?	—
Length of Extension(s)	—
Drilling Issues?	—

Anchor Positions —

Digital File Name or DVD # —

Current Year Span Length	58
Previous Year Span Length	69
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling Issues: Include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	18:25	21:30	
LinkQuest Northing	906223.86	906281.18.18	
LinkQuest Easting	1958296.00	1958300275	
Digital File Filename	—	—	
Digital File Time	13:11	13:15	
Display Time	13:11	13:15	
Bottom Type at Repair	Sandy	Sandy	
Highest Span Height	1'	1'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Notes:

(13)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-16	Tom Pfeil	Signe
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Vogel

Pipeline Operation Information

Is leg shutdown?	Y/S	
If so, date shutdown	8-27-12	
Time Shutdown	6:00	
Product In Line	NGL	Density
If flowing, flow rate	NA	Time System for Time Shutdown

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	8
RTK Fix	Yes
—	—
—	—

Span Information

Date Surveyed	8-27-12
Tape Number	302
Direction Flown	S-N
Water Depth	79
Current Year Span #	E-28A
Previous Span #(s)	E-28A
Addit. Extensions Used?	—
Length of Extension(s)	—
Drilling Issues?	—

Anchor Positions	—
	—
Digital File Name or DVD #	—

Current Year Span Length	70
Previous Year Span Length	81
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	4:58	7:15	
LinkQuest Northing	906335.92	906404.07	
LinkQuest Easting	1958316.00	1958703.46	
Digital File Filename	—	—	
Digital File Time	13:24	13:26	
Display Time	13:24	13:26	
Bottom Type at Repair	Sand	Sand	
Highest Span Height	2'	2'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

2005 E28

Notes:

(16)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Prew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bauer

Pipeline Operation Information

Is leg shutdown?	Yes
If so, date shutdown	8-27-12
Time Shutdown	6:00
Product in Line	NGL
If flowing, flow rate	NA

Density

Time System for Time Shutdown

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	8
RTK Fix	Yes
—	—
—	—

Span Information

Date Surveyed	8-27-12
Tape Number	SD 2
Direction Flown	S-N
Water Depth	79
Current Year Span #	E-28B
Previous Span #(s)	E-28B
Addit. Extensions Used?	—
Length of Extension(s)	—
Drilling Issues?	—

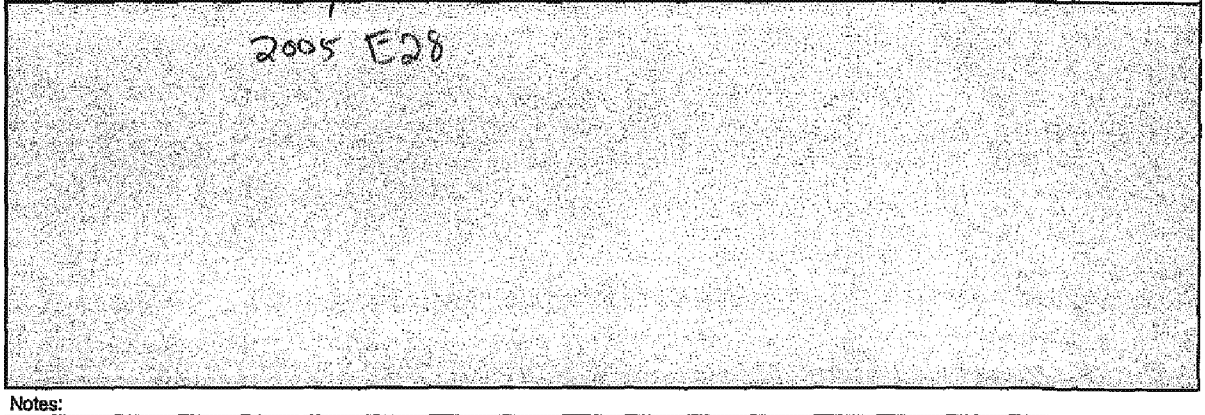
Anchor Positions	—
	—
Digital File Name or DVD #	—

Current Year Span Length	66
Previous Year Span Length	69
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling Issues: Include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	7:15	12:29	
LinkQuest Northing	906404.07	906469.32	
LinkQuest Easting	1958307.16	1958305.12	
Digital File Filename	—	—	
Digital File Time	13:26	13:32	
Display Time	13:26	13:32	
Bottom Type at Repair	Sandy/Anchor	Sandy	
Highest Span Height	7'	7'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.



Notes:

(17)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Drew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bauer

Pipeline Operation Information

Is leg shutdown?	Yes
If so, date shutdown	8-27-12
Time Shutdown	6:00
Product In Line	NGL
If flowing, flow rate	NA

Density

Time System for Time Shutdown

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	8
RTK Fix	YES
—	—
—	—

Span Information

Date Surveyed	8-27-12
Tape Number	SD2
Direction Flown	S-N
Water Depth	78
Current Year Span #	E-25
Previous Span #(s)	E-25
Addit. Extensions Used?	—
Length of Extension(s)	—
Drilling Issues?	—

Anchor Positions	—
	—
Digital File Name or DVD #	—

Current Year Span Length	60
Previous Year Span Length	55
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	15:57	19:47	
LinkQuest Northing	906486.91	906546.56	
LinkQuest Easting	1958305.08	1958306.18	
Digital File Filename	—	—	
Digital File Time	13:35	13:38	
Display Time	13:35	13:38	
Bottom Type at Repair	Sandy	Sandy	
Highest Span Height	2'	1'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Notes:

(18)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Prew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bauer

Pipeline Operation Information

Is leg shutdown?	Yes
If so, date shutdown	8-27-12
Time Shutdown	6:00
Product in Line	NGL
If flowing, flow rate	NA

Density

Time System for Time Shutdown

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	9
RTK Fix	Yes
—	—
—	—

Span Information

Date Surveyed	8-27-12
Tape Number	SD 2
Direction Flown	S-N
Water Depth	76
Current Year Span #	E-30
Previous Span #(s)	E-30
Addit. Extensions Used?	—
Length of Extension(s)	—
Drilling Issues?	—

Anchor Positions: —

Digital File Name or DVD #: —

Current Year Span Length	72
Previous Year Span Length	83
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling Issues: Include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	21:53	24:43	
LinkQuest Northing	906564.70	906635.44	
LinkQuest Easting	1958207.5.78	1958091.96	
Digital File Filename	—	—	
Digital File Time	13:40	13:43	
Display Time	13:40	13:43	
Bottom Type at Repair	Sandy	Sandy	
Highest Span Height	2	2'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Notes:

(19)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Drew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bauer

Pipeline Operation Information

Is leg shutdown?	Yes		
If so, date shutdown	8-27-12		
Time Shutdown	6:00		
Product in Line	NGL	Density	
If flowing, flow rate	NA	Time System for Time Shutdown	

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	8
RTK Fix	Yes
—	—
—	—

Span Information

Date Surveyed	8-27-12	Anchor Positions	—
Tape Number	502		—
Direction Flown	S-N	Digital File Name or DVD #	—
Water Depth	70		
Current Year Span #	E-38	Current Year Span Length	34
Previous Span #(s)	E-31	Previous Year Span Length	45
Addit. Extensions Used?	—	Number of Dives to Complete	—
Length of Extension(s)	—	Date(s) of Dive(s)	—
Drilling Issues?	—	Dive number(s) for current campaign	—

* Drilling Issues: Include torque spec not met, modified screws, modified assembly, etc,..

	South End	North End	Repair
Tape Counter	16:43	4:56	
LinkQuest Northing	906716.26	906749.75	
LinkQuest Easting	1958311.36	1958312.53	
Digital File Filename	—	—	
Digital File Time	13:47	13:50	
Display Time	13:47	13:50	
Bottom Type at Repair	Sandy	Sandy	
Highest Span Height	1'	1'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Notes:

(20)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Prew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bauer

Pipeline Operation Information

Is leg shutdown?	yes
If so, date shutdown	8-27-12
Time Shutdown	6:00
Product in Line	NGL
If flowing, flow rate	NA

Density

Time System for Time Shutdown

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	8
RTK Fix	Yes

Span Information

Date Surveyed	8-27-12
Tape Number	SP 2
Direction Flown	S-N
Water Depth	71
Current Year Span #	E-37
Previous Span #(s)	E-37
Addit. Extensions Used?	—
Length of Extension(s)	—
Drilling Issues?	—

Anchor Positions	—
	—
Digital File Name or DVD #	—

Current Year Span Length	54
Previous Year Span Length	54
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	11:53	13:48	
LinkQuest Northing	906404.28	906956.55	
LinkQuest Easting	1958316301	1958317517	
Digital File Filename	—	—	
Digital File Time	13:50	13:58	
Display Time	13:56	13:58	
Bottom Type at Repair	0.5	0.5	
Highest Span Height			
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Notes:

(27)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-16	Tom Prew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bauer

Pipeline Operation Information

Is leg shutdown?	Yes
If so, date shutdown	8-27-12
Time Shutdown	6:00
Product In Line	NGL
If flowing, flow rate	NA

Density

Time System for Time Shutdown

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	8
RTK Fix	Yes
—	—
—	—

Span Information

Date Surveyed	8-27-12
Tape Number	302
Direction Flown	S-N
Water Depth	70
Current Year Span #	E-36
Previous Span #(s)	E-36
Addit. Extensions Used?	—
Length of Extension(s)	—
Drilling Issues?	—

Anchor Positions: —

Digital File Name or DVD #: —

Current Year Span Length	42
Previous Year Span Length	41
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling Issues: Include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	15:90	17:45	
LinkQuest Northing	906972.38	907013.27	
LinkQuest Easting	1958179.13	1958188.39	
Digital File Filename	—	—	
Digital File Time	14:00	1402	
Display Time	14:00	14:02	
Bottom Type at Repair	Sandy	Sandy	
Highest Span Height	0.50'	0.5'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and handline diver's measurements.

Notes:

(22)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Prow	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Dyer

Pipeline Operation Information

Is leg shutdown?	Yes
If so, date shutdown	8-27-12
Time Shutdown	6:00
Product in Line	NGL
If flowing, flow rate	NA

Density

Time System for Time Shutdown

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	8
RTK Fix	Yes
—	—
—	—

Span Information

Date Surveyed	8-27-12
Tape Number	SD 2
Direction Flown	S-N
Water Depth	71
Current Year Span #	E-35
Previous Span #(s)	E-35
Addit. Extensions Used?	—
Length of Extension(s)	—
Drilling Issues?	—

Anchor Positions: —

Digital File Name or DVD #: —

Current Year Span Length	60
Previous Year Span Length	67
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	22:50	00:20	
LinkQuest Northing	907059.39	907115.43	
LinkQuest Easting	1958720.63	1958721.80	
Digital File Filename	—	—	
Digital File Time	14:07	14:18	
Display Time	14:03	14:10	
Bottom Type at Repair	Sand	Sand	
Highest Span Height	1'	1'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Notes:

(23)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Drew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bauer

Pipeline Operation Information

Is teg shutdown?	Yes
If so, date shutdown	8-27-12
Time Shutdown	6:00
Product In Line	NGL
If flowing, flow rate	NA

Density

Time System for Time Shutdown

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	9
RTK Fix	Yes
	—
	—

Span Information

Date Surveyed	8-27-12
Tape Number	SD2
Direction Flown	S-N
Water Depth	77
Current Year Span #	E-09A
Previous Span #(s)	E-09A
Addit. Extensions Used?	—
Length of Extension(s)	—
Drilling Issues?	—

Anchor Positions	—
	—
Digital File Name or DVD #	—

Current Year Span Length	58
Previous Year Span Length	62
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	7:05	5:55	
LinkQuest Northing	907141.15	907196.11	
LinkQuest Easting	1958322.89	1958329.72	
Digital File Filename	—	—	
Digital File Time	14:13	14:16	
Display Time	14:13	14:16	
Bottom Type at Repair	Sand	Sand Anchor	
Highest Span Height	1.5'	1.5'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and handline diver's measurements.

Notes:

24

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Prew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Boyer

Pipeline Operation Information

Is leg shutdown?	Yes
If so, date shutdown	8-27-12
Time Shutdown	6:00
Product In Line	NGL
If flowing, flow rate	NA

Density —

Time System for Time Shutdown —

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	8
RTK Fix	Yes

Span Information

Date Surveyed	8-27-12
Tape Number	502
Direction Flown	S-N
Water Depth	73
Current Year Span #	E-34B
Previous Span #(s)	E-34D
Addit. Extensions Used?	—
Length of Extension(s)	—
Drilling Issues?	—

Anchor Positions —

Digital File Name or DVD # —

Current Year Span Length	73
Previous Year Span Length	79
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling Issues: Include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	5.55	12.45	
LinkQuest Northing	907196.11	907267.53	
LinkQuest Easting	1958229.78	1958256.87	
Digital File Filename	—	—	
Digital File Time	14:16	14:22	
Display Time	14:16	14:22	
Bottom Type at Repair	Sand Anchor	Sand	
Highest Span Height	1.5	1'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and handline diver's measurements.

Notes:

25

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Prow	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bauer

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	7
RTK Fix	Yes
—	—
—	—

Pipeline Operation Information

Is leg shutdown?	Yes
If so, date shutdown	8-27-12
Time Shutdown	600
Product in Line	NGL
If flowing, flow rate	NA

Density

Time System for Time Shutdown

Span Information

Date Surveyed	8-27-12
Tape Number	502
Direction Flown	S-N
Water Depth	80
Current Year Span #	E-33
Previous Span #(s)	E33
Addit. Extensions Used?	—
Length of Extension(s)	—
Drilling Issues?	—

Anchor Positions —

Digital File Name or DVD # —

Current Year Span Length	46
Previous Year Span Length	52
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	22:10	0:55	
LinkQuest Northing	907370.72	907114.69	
LinkQuest Easting	1958285.64	1958397.51	
Digital File Filename	—	—	
Digital File Time	14:37	14:37	
Display Time	14:37	14:37	
Bottom Type at Repair	Sandy	Sandy	
Highest Span Height	0.5'	0.5'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Notes:

26

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Prew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bauer

Pipeline Operation Information

Is leg shutdown?	Yes		
If so, date shutdown	8-27-12		
Time Shutdown	6:00		
Product In Line	NGL	Density	
If flowing, flow rate	NA	Time System for Time Shutdown	

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	8
RTK Fix	Yes

Span Information

Date Surveyed	8-27-12	Anchor Positions	—
Tape Number	SD2		—
Direction Flown	S-N	Digital File Name or DVD #	—
Water Depth	87		
Current Year Span #		Current Year Span Length	6
Previous Span #(s)	FJ2A-A	Previous Year Span Length	11
Addit. Extensions Used?	—	Number of Dives to Complete	—
Length of Extension(s)	—	Date(s) of Dive(s)	—
Drilling Issues?	—	Dive number(s) for current campaign	—

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter			
LinkQuest Northing			
LinkQuest Easting			
Digital File Filename			
Digital File Time			
Display Time			
Bottom Type at Repair			
Highest Span Height			
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Silted in

Notes:

ENBDNR0000534

(27)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Prew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bauer

Pipeline Operation Information

Is leg shutdown?	Yes
If so, date shutdown	8-27-12
Time Shutdown	6:00
Product In Line	NGL
If flowing, flow rate	NA

Density

Time System for Time Shutdown

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	8
RTK Fix	Yes

Span Information

Date Surveyed	8-27-12
Tape Number	502
Direction Flown	S-N
Water Depth	87
Current Year Span #	E-32A
Previous Span #(s)	E-32A
Addit. Extensions Used?	—
Length of Extension(s)	—
Drilling Issues?	—

Anchor Positions	—
	—
Digital File Name or DVD #	—

Current Year Span Length	91
Previous Year Span Length	92
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	5:45	10:50	
LinkQuest Northing	907440.62	907524.22	
LinkQuest Easting	1958330.89	1958722.40	
Digital File Filename	—	—	
Digital File Time	14:41	14:45	
Display Time	14:41	14:45	
Bottom Type at Repair	Sand / Anchor	Sand Anchor	
Highest Span Height	1.5	1.5	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

2006
E-32A
Marine growth cover base of Anchor

Notes:

(29)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Prow	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bauer

Pipeline Operation Information

Is leg shutdown?	Yes	
If so, date shutdown	8-27-12	
Time Shutdown	6:00	
Product in Line	NGL	Density
If flowing, flow rate	NA	Time System for Time Shutdown

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	8
RTK Fix	Yes
	—
	—

Span Information

Date Surveyed	8-27-12	Anchor Positions	—
Tape Number	SD 2		—
Direction Flown	S-N	Digital File Name or DVD #	—
Water Depth	87		
Current Year Span #	E-32 B	Current Year Span Length	88
Previous Span #(s)	E-32 B	Previous Year Span Length	87
Addit. Extensions Used?	—	Number of Dives to Complete	—
Length of Extension(s)	—	Date(s) of Dive(s)	—
Drilling Issues?	—	Dive number(s) for current campaign	—

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	10:50	16:10	
LinkQuest Northing	907524.22	907610.51	
LinkQuest Easting	1958327.40	1958325.11	
Digital File Filename	—	—	
Digital File Time	14:45	14:52	
Display Time	14:45	14:52	
Bottom Type at Repair	Sandy Anchor	Sand	
Highest Span Height	1.5'	1.5	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Notes:

30

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Prcw	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bauer

Pipeline Operation Information

Is leg shutdown?	YES	
If so, date shutdown	8-27-12	
Time Shutdown	6:00	
Product in Line	NGL	Density
If flowing, flow rate	NA	Time System for Time Shutdown

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	8
RTK Fix	Yes
	—
	—

Span Information

Date Surveyed	8-27-12	Anchor Positions	—
Tape Number	SD2		—
Direction Flown	S-N	Digital File Name or DVD #	—
Water Depth	95		
Current Year Span #	E-39	Current Year Span Length	74
Previous Span #(s)	E-39	Previous Year Span Length	83
Addit. Extensions Used?	—	Number of Dives to Complete	—
Length of Extension(s)	—	Date(s) of Dive(s)	—
Drilling Issues?	—	Dive number(s) for current campaign	—

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	25:00	3:02	
LinkQuest Northing	907721.08	907791.53	
LinkQuest Easting	1958381.62	1958400.83	
Digital File Filename	—	—	
Digital File Time	15:00	15:04	
Display Time	15:00	15:04	
Bottom Type at Repair	Sand / Clay	Sand / Clay	
Highest Span Height			
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Notes:

31

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Prew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Beaver

Pipeline Operation Information

Is leg shutdown?	Yes
If so, date shutdown	8-27-12
Time Shutdown	6:00
Product In Line	NGL
If flowing, flow rate	NA

Density

Time System for Time Shutdown

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	10
RTK Fix	Yes

Span Information

Date Surveyed	8-27-12
Tape Number	SD3
Direction Flown	S-N
Water Depth	101
Current Year Span #	E-40
Previous Span #(s)	E-40
Addit. Extensions Used?	—
Length of Extension(s)	—
Drilling Issues?	—

Anchor Positions —

Digital File Name or DVD # —

Current Year Span Length	85
Previous Year Span Length	81
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling Issues: Include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	8:44	12:48	
LinkQuest Northing	908137.98	908218.89	
LinkQuest Easting	19583492.55	19583517.47	
Digital File Filename		—	
Digital File Time	15:15	15:15	
Display Time	15:15	15:15	
Bottom Type at Repair	Sandy/clay	Sandy/clay	
Highest Span Height	0.5	0.5	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and handline diver's measurements.

Notes:

32

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Prew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bauer

Pipeline Operation Information

Is leg shutdown?	Yes
If so, date shutdown	8-27-12
Time Shutdown	6:00
Product In Line	NGL
If flowing, flow rate	NA

Density

Time System for Time Shutdown

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	10
RTK Fix	Yes
—	—
—	—

Span Information

Date Surveyed	8-27-12
Tape Number	SD3
Direction Flown	S-N
Water Depth	103
Current Year Span #	E-46
Previous Span #(s)	E-46
Addit. Extensions Used?	—
Length of Extension(s)	—
Drilling Issues?	—

Anchor Positions —

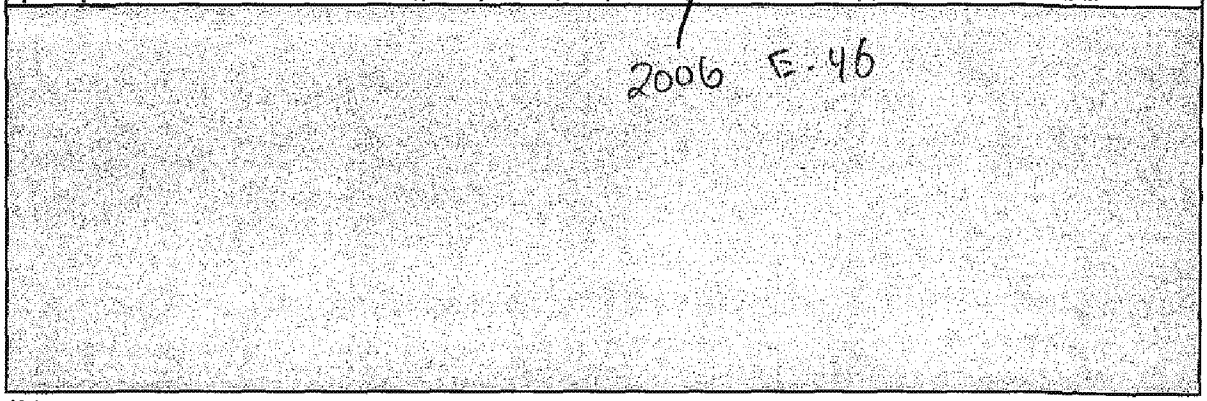
Digital File Name or DVD # —

Current Year Span Length	53
Previous Year Span Length	50
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling Issues: Include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	22:14	24:36	
LinkQuest Northing	908425.44	908475.29	
LinkQuest Easting	1958357.37	1958358.24	
Digital File Filename	—	—	
Digital File Time	15:29	15:31	
Display Time	15:29	15:31	
Bottom Type at Repair	Clay/Sandy	Sandy Anchor	
Highest Span Height	1'	1'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.



Notes:

(33)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Prew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bauer

Pipeline Operation Information

Is leg shutdown?	Yes
If so, date shutdown	8-27-12
Time Shutdown	6:00
Product In Line	NGL
If flowing, flow rate	NA

Density

Time System for Time Shutdown

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	10
RTK Fix	Yes

Span Information

Date Surveyed	8-27-12
Tape Number	503
Direction Flown	S-N
Water Depth	103
Current Year Span #	E-45
Previous Span #(s)	E-45
Addit. Extensions Used?	—
Length of Extension(s)	—
Drilling Issues?	—

Anchor Positions —

Digital File Name or DVD # —

Current Year Span Length	86
Previous Year Span Length	93
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	24:36	6:08	
LinkQuest Northing	9084175.29	9085555.25	
LinkQuest Easting	19583587.24	19587609.36	
Digital File Filename	—	—	
Digital File Time	15:31	15:08	
Display Time	15:31	15:38	
Bottom Type at Repair	Clay/Sandy Anchor	Clay/Sandy	
Highest Span Height	1'	2	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

2006

E-46

Notes:

(34)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Drew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bauer

Pipeline Operation Information

Is leg shutdown?	Yes	
If so, date shutdown	8-27-12	
Time Shutdown	6:00	
Product in Line	N/GL	Density
If flowing, flow rate	N/A	Time System for Time Shutdown

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	10
RTK Fix	yes
—	—
—	—

Span Information

Date Surveyed	8-27-12
Tape Number	SD 7
Direction Flown	S-N
Water Depth	98
Current Year Span #	E-44
Previous Span #(s)	E-44
Addit. Extensions Used?	—
Length of Extension(s)	—
Drilling Issues?	—

Anchor Positions	—
	—
Digital File Name or DVD #	—

Current Year Span Length	45
Previous Year Span Length	37
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	11:20	14:41	
LinkQuest Northing	908692.35	908734.11	
LinkQuest Easting	1958364818.17	1958366202.03	
Digital File Filename	—	—	
Digital File Time	15:44	15:47	
Display Time	15:44	15:47	
Bottom Type at Repair	Clay	Clay	
Highest Span Height	1'	1'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and handline diver's measurements.

Notes:

(33)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Prew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bauer

Pipeline Operation Information

Is leg shutdown?	Yes
If so, date shutdown	8-27-12
Time Shutdown	6:00
Product in Line	NGL
If flowing, flow rate	NA

Density

Time System for Time Shutdown

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	10
RTK Fix	Yes
—	—
—	—

Span Information

Date Surveyed	8-27-12
Tape Number	503
Direction Flown	S-N
Water Depth	101
Current Year Span #	E-43
Previous Span #(s)	E-43
Addit. Extensions Used?	—
Length of Extension(s)	—
Drilling Issues?	—

Anchor Positions	—
	—
Digital File Name or DVD #	—

Current Year Span Length	50
Previous Year Span Length	54
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	18:04	21:40	
LinkQuest Northing	908802.20	908851.90	
LinkQuest Easting	1958367 8.76	1958369 2.54	
Digital File Filename	—	—	
Digital File Time	15:56	15:54	
Display Time	15:50	15:54	
Bottom Type at Repair	Clay	Clay	
Highest Span Height	0.5'	0.5'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Notes:

(36)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Prew	Sume
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bauer

Survey Geodetic Parameters	
Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	9
RTK Fix	Yes

Pipeline Operation Information

Is leg shutdown?	Yes		
If so, date shutdown	8-27-12		
Time Shutdown	6:00		
Product In Line	NGL	Density	—
If flowing, flow rate	NA	Time System for Time Shutdown	—

Span Information

Date Surveyed	8-27-12	Anchor Positions	—
Tape Number	507		—
Direction Flown	S-N	Digital File Name or DVD #	—
Water Depth	101		
Current Year Span #	E-42	Current Year Span Length	92
Previous Span #(s)	E-42	Previous Year Span Length	91
Addit. Extensions Used?	—	Number of Dives to Complete	—
Length of Extension(s)	—	Date(s) of Dive(s)	—
Drilling Issues?	—	Dive number(s) for current campaign	—

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	00:14	16:50	
LinkQuest Northing	9088841.86	9089078.99	
LinkQuest Easting	1958370 1.65	1958372 5.73	
Digital File Filename	—	—	
Digital File Time	15:58	16:14	
Display Time	15:58	16:14	
Bottom Type at Repair	Clay	Clay	
Highest Span Height	21'	21'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Notes:

37

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Prew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bauer

Pipeline Operation Information

Is leg shutdown?	Yes
If so, date shutdown	8-27-12
Time Shutdown	6:00
Product In Line	NGL
If flowing, flow rate	N/A

Density

Time System for Time Shutdown

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	8
RTK Fix	Yes
—	—
—	—

Span Information

Date Surveyed	8-27-12
Tape Number	SD 3
Direction Flown	S-N
Water Depth	96
Current Year Span #	E-41
Previous Span #(s)	E-41
Addit. Extensions Used?	—
Length of Extension(s)	—
Drilling Issues?	—

Anchor Positions	—
	—
Digital File Name or DVD #	—

Current Year Span Length	70
Previous Year Span Length	74
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling Issues: Include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	20:50	00:00	
LinkQuest Northing	909097.43	909164.28	
LinkQuest Easting	1958375 8.28	1958377 7.05	
Digital File Filename	—	—	
Digital File Time	16:18	16:22	
Display Time	16:18	16:22	
Bottom Type at Repair	Clay	Clay	
Highest Span Height	1.5'	1.5'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Notes:

(39)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Prew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bauer

Pipeline Operation Information

Is leg shutdown?	Yes
If so, date shutdown	8-27-12
Time Shutdown	~~AM~~ 6:00
Product in Line	NGL
If flowing, flow rate	NA

Density

Time System for Time Shutdown

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	8
RTK Fix	Yes
—	—
—	—

Span Information

Date Surveyed	8-27-12
Tape Number	SD3
Direction Flown	S-N
Water Depth	96
Current Year Span #	E-47
Previous Span #(s)	E-47
Addit. Extensions Used?	—
Length of Extension(s)	—
Drilling Issues?	—

Anchor Positions —

Digital File Name or DVD # —

Current Year Span Length	76
Previous Year Span Length	74
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	4:20	7:42	
LinkQuest Northing	909301.88	909375.25	
LinkQuest Easting	1958381S.83	1958383 7.14	
Digital File Filename	—	—	
Digital File Time	16:27	16:30	
Display Time	16:27	16:76	
Bottom Type at Repair	Clay	Clay	
Highest Span Height	1.5'	1.5'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Notes:

39

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Prew	Sean
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bauer

Pipeline Operation Information

Is leg shutdown?	Yes
If so, date shutdown	8-27-12
Time Shutdown	6:00
Product in Line	NGL
If flowing, flow rate	N/A

Density

Time System for Time Shutdown

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	9
RTK Fix	Yes

Span Information

Date Surveyed	8-27-12
Tape Number	SD3
Direction Flown	S-N
Water Depth	98
Current Year Span #	E48A
Previous Span #(s)	E-48A
Addit. Extensions Used?	—
Length of Extension(s)	—
Drilling Issues?	—

Anchor Positions

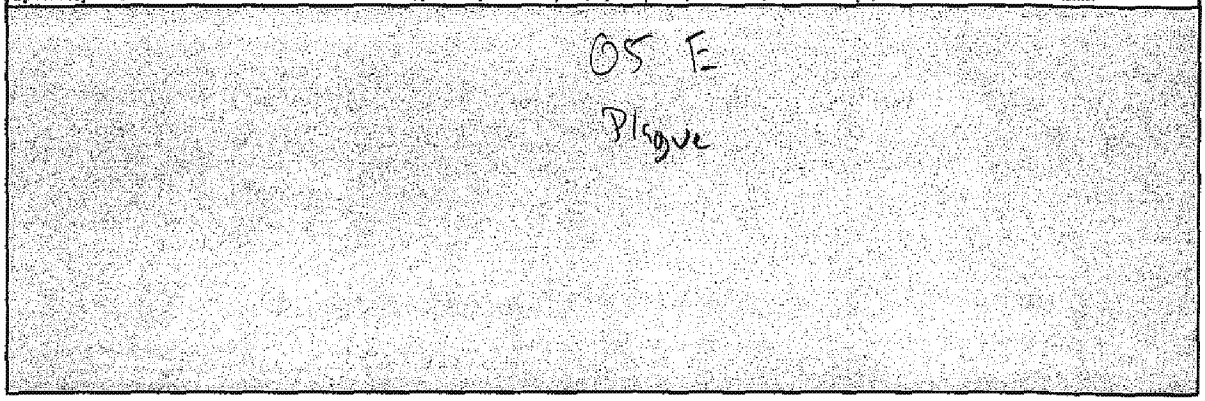
Digital File Name or DVD #

Current Year Span Length	48
Previous Year Span Length	59
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	17:33	15:10	
LinkQuest Northing	909396.97	909441.82	
LinkQuest Easting	1558384.81	1958385.56	
Digital File Filename	—	—	
Digital File Time	16:35	16:38	
Display Time	11:35	16:38	
Bottom Type at Repair	Clay / weedy	Clay / Anchor	
Highest Span Height	1.5	1.5	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.



Notes:

40

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Prew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bauer

Pipeline Operation Information

Is leg shutdown?	Yes
If so, date shutdown	8-27-12
Time Shutdown	6:00
Product In Line	NGL
If flowing, flow rate	NA

Density

Time System for Time Shutdown

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	9
RTK Fix	Yes
—	—
—	—

Span Information

Date Surveyed	8-27-12
Tape Number	S03
Direction Flown	S-N
Water Depth	98
Current Year Span #	E48B
Previous Span #(s)	E48B
Addit. Extensions Used?	—
Length of Extension(s)	—
Drilling Issues?	—

Anchor Positions —

Digital File Name or DVD # —

Current Year Span Length	67
Previous Year Span Length	66
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	15:10	23:21	
LinkQuest Northing	9094411.82	9095508.05	
LinkQuest Easting	19583855.56	19583872.82	
Digital File Filename	—	—	
Digital File Time	16:38	16:45	
Display Time	16:38	16:45	
Bottom Type at Repair	Clay / Anchor	Clay	
Highest Span Height	1.5	1.5	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

05 E

Plague

Notes:

41

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Prew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Prew

Pipeline Operation Information

Is leg shutdown?	Yes
If so, date shutdown	8-27-12
Time Shutdown	6:00
Product In Line	N/L
If flowing, flow rate	NA

Density

Time System for Time Shutdown

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	9
RTK Fix	Yes

Span Information

Date Surveyed	8-27-12
Tape Number	SD 3
Direction Flown	S-N
Water Depth	107
Current Year Span #	E-70
Previous Span #(s)	E-70
Addit. Extensions Used?	—
Length of Extension(s)	—
Drilling Issues?	—

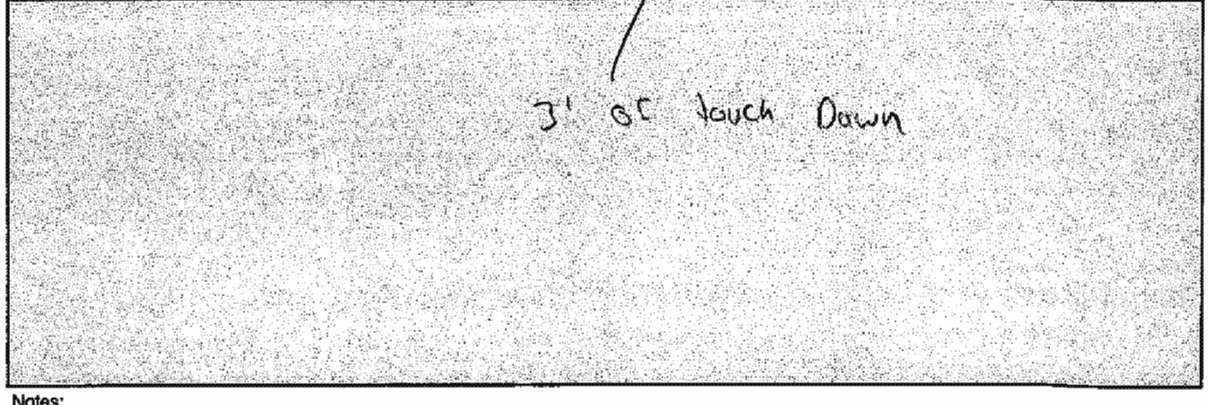
Anchor Positions	—
	—
Digital File Name or DVD #	—

Current Year Span Length	53
Previous Year Span Length	53
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling Issues: Include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	5:37	8:44	
LinkQuest Northing	909881.89	909932.37	
LinkQuest Easting	19583974.83	19583988.78	
Digital File Filename	—	—	
Digital File Time	16:55	16:58	
Display Time	16:55	16:58	
Bottom Type at Repair	Clay	Sandy/Clay	
Highest Span Height	1	1	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.



Notes:

42

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Prew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	4902595.10.071	Chris Bauer

Pipeline Operation Information

Is leg shutdown?	Yes
If so, date shutdown	8-27-12
Time Shutdown	6:00
Product in Line	N/A
If flowing, flow rate	N/A

Density

Time System for Time Shutdown

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	9
RTK Fix	Yes

Span Information

Date Surveyed	8-27-12
Tape Number	SO 3
Direction Flown	S-N
Water Depth	107
Current Year Span #	E-66A
Previous Span #(s)	E-66A
Addit. Extensions Used?	—
Length of Extension(s)	—
Drilling Issues?	—

Anchor Positions —

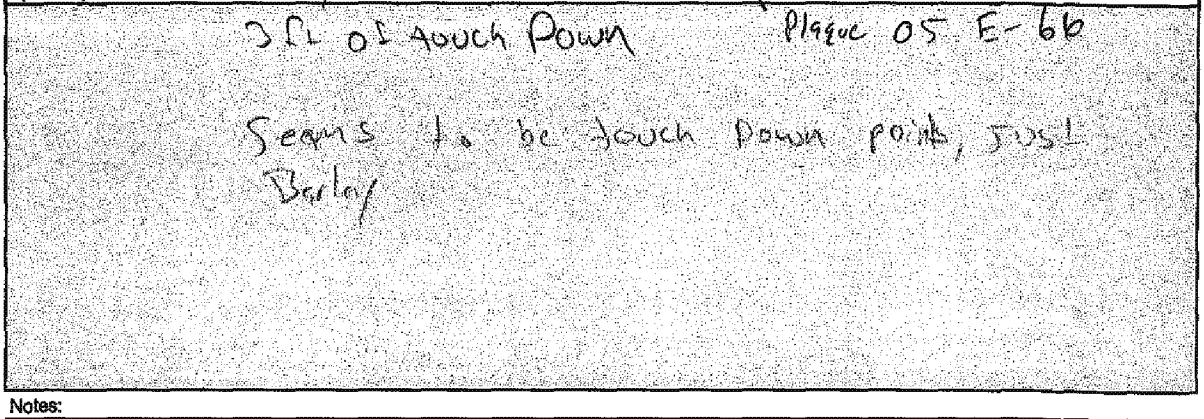
Digital File Name or DVD # —

Current Year Span Length	97
Previous Year Span Length	97
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	8:49	17:07	
LinkQuest Northing	9094232.37	9100027.52	
LinkQuest Easting	1958298878	1958401686	
Digital File Filename	—	—	
Digital File Time	16:58	17:06	
Display Time	16:50	17:06	
Bottom Type at Repair	Clay	Clay Anchor	
Highest Span Height	1'	1'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardtime diver's measurements.



Notes:

(43)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Prew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Beaver

Pipeline Operation Information

Is teg shutdown?	Yes
If so, date shutdown	8-27-12
Time Shutdown	6:00
Product in Line	NGL
If flowing, flow rate	NA

Density

Time System for Time Shutdown

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	10
RTK Fix	Yes
	—
	—

Span Information

Date Surveyed	8-27-12
Tape Number	507
Direction Flown	S-N
Water Depth	111
Current Year Span #	E-66B
Previous Span #(s)	E-66B
Addit. Extensions Used?	—
Length of Extension(s)	—
Drilling Issues?	—

Anchor Positions	—
	—
Digital File Name or DVD #	—

Current Year Span Length	56'
Previous Year Span Length	89'
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling Issues: Include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	17:07	1:08	
LinkQuest Northing	910027.52	910082.73	
LinkQuest Easting	1958401 6.86	1958410 28.94	
Digital File Filename	—	—	
Digital File Time	17:06	17:15	
Display Time	17:06	17:15	
Bottom Type at Repair	Clay Anchor	Clay	
Highest Span Height	0.5	0.5	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Notes:

44

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Prew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bauer

Pipeline Operation Information

Is leg shutdown?	Yes
If so, date shutdown	8-27-12
Time Shutdown	6:00
Product In Line	NGL
If flowing, flow rate	NA
Density	
Time System for Time Shutdown	

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	10
RTK Fix	Yes
	—
	—

Span Information

Date Surveyed	8-29-12
Tape Number	SD3
Direction Flown	S-N
Water Depth	112
Current Year Span #	E-56A
Previous Span #(s)	E-56A
Addit. Extensions Used?	—
Length of Extension(s)	—
Drilling Issues?	—

Anchor Positions	—
	—
Digital File Name or DVD #	—
Current Year Span Length	44
Previous Year Span Length	44
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	3:20	7:45	
LinkQuest Northing	910108.64	910151.29	
LinkQuest Easting	1955840 36.64	1955840 50.44	
Digital File Filename	—	—	
Digital File Time	17:19	17:22	
Display Time	17:19	17:22	
Bottom Type at Repair	Clay	Clay / Anchor	
Highest Span Height	2'	2'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

2006 E-56

Notes:

(45)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Drew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Beaver

Pipeline Operation Information

Is leg shutdown?	Yes
If so, date shutdown	8-27-12
Time Shutdown	6:00
Product in Line	NGL
If flowing, flow rate	NA
Density	
Time System for Time Shutdown	

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	9+
RTK Fix	Yes
—	—
—	—

Span Information

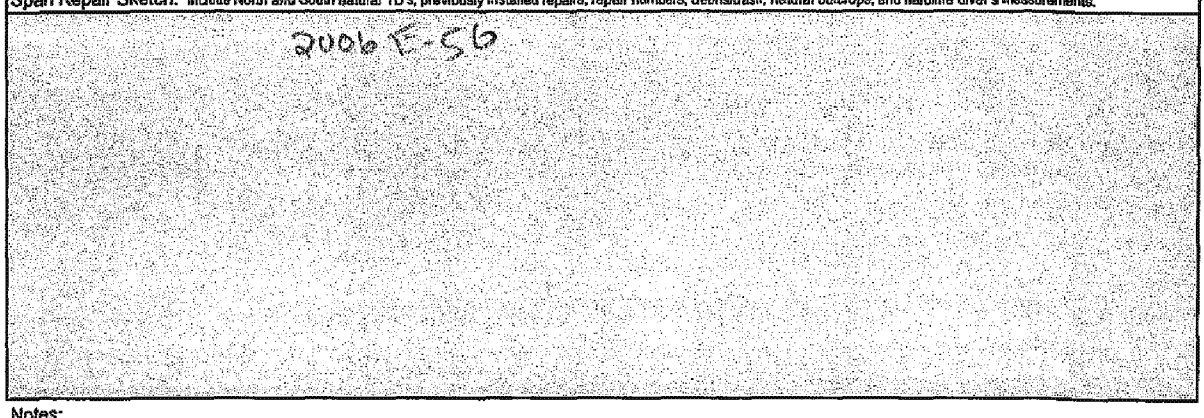
Date Surveyed	8-27-12
Tape Number	SD3
Direction Flown	S-N
Water Depth	109
Current Year Span #	E-56b
Previous Span #(s)	E-56b
Addit. Extensions Used?	—
Length of Extension(s)	—
Drilling Issues?	—

Anchor Positions	—
	—
Digital File Name or DVD #	—
Current Year Span Length	44
Previous Year Span Length	42
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	7:45	12:08	
LinkQuest Northing	910151.39	910192.73	
LinkQuest Easting	1958405 0.41	1958406 5.43	
Digital File Filename	—	—	
Digital File Time	17:22	17:26	
Display Time	17:22	17:26	
Bottom Type at Repair	Clay/Anchor	Clay	
Highest Span Height	2'	2'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.



Notes:

ENBDNR0000552

(48)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Pfeil	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Beaver

Pipeline Operation Information

Is leg shutdown?	Yes		
If so, date shutdown	8-27-12		
Time Shutdown	6:00		
Product in Line	N/A	Density	
If flowing, flow rate	N/A	Time System for Time Shutdown	

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	9
RTK Fix	Yes
—	—
—	—

Span Information

Date Surveyed	8-27-12	Anchor Positions	—
Tape Number	SD 3		—
Direction Flown	S-N	Digital File Name or DVD #	—
Water Depth	111		
Current Year Span #	E-55	Current Year Span Length	45
Previous Span #(s)	E-55	Previous Year Span Length	46
Addit. Extensions Used?	—	Number of Dives to Complete	—
Length of Extension(s)	—	Date(s) of Dive(s)	—
Drilling Issues?	—	Dive number(s) for current campaign	—

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	14:03	16:28	
LinkQuest Northing	910223.16	910266.77	
LinkQuest Easting	1958407.0.88	1958408451	
Digital File Filename	—	—	
Digital File Time	17:28	17:30	
Display Time	17:28	17:30	
Bottom Type at Repair	Clay	Clay	
Highest Span Height	0.5' - 1'	0.5-1'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

End of Day

Notes:

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Drew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490269S.10.071	Chris Dauer

Pipeline Operation Information

Is leg shutdown?	Yes
If so, date shutdown	8-27-12
Time Shutdown	6:00
Product in Line	N/A
If flowing, flow rate	NA

Density

Time System for Time Shutdown

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	9
RTK Fix	Yes

Span Information

Date Surveyed	8-28-12
Tape Number	SD 3
Direction Flown	S-N
Water Depth	114
Current Year Span #	E-54A
Previous Span #(s)	E-54A
Addit. Extensions Used?	—
Length of Extension(s)	—
Drilling Issues?	—

Anchor Positions	—
	—
Digital File Name or DVD #	—

Current Year Span Length	58
Previous Year Span Length	62
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	22:43	00:20	
LinkQuest Northing	910281.44	910337.23	
LinkQuest Easting	1958408 5.08	1958 9100.98	
Digital File Filename	—	—	
Digital File Time	8:43	8:46	
Display Time	8:43	8:46	
Bottom Type at Repair	Clay	Clay / Anchor	
Highest Span Height	3'	3'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

05 - E - 54

Start of Dry

Notes:

(48)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Brew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Carver

Pipeline Operation Information

Is leg shutdown?	Yes
If so, date shutdown	8-27-12
Time Shutdown	6:00
Product in Line	NGL
If flowing, flow rate	NA

Density

Time System for Time Shutdown

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	10
RTK Fix	Yes
—	—
—	—

Span Information

Date Surveyed	8-28-12
Tape Number	503
Direction Flown	S-N
Water Depth	117
Current Year Span #	E-54B
Previous Span #(s)	E-54B
Addit. Extensions Used?	—
Length of Extension(s)	—
Drilling Issues?	—

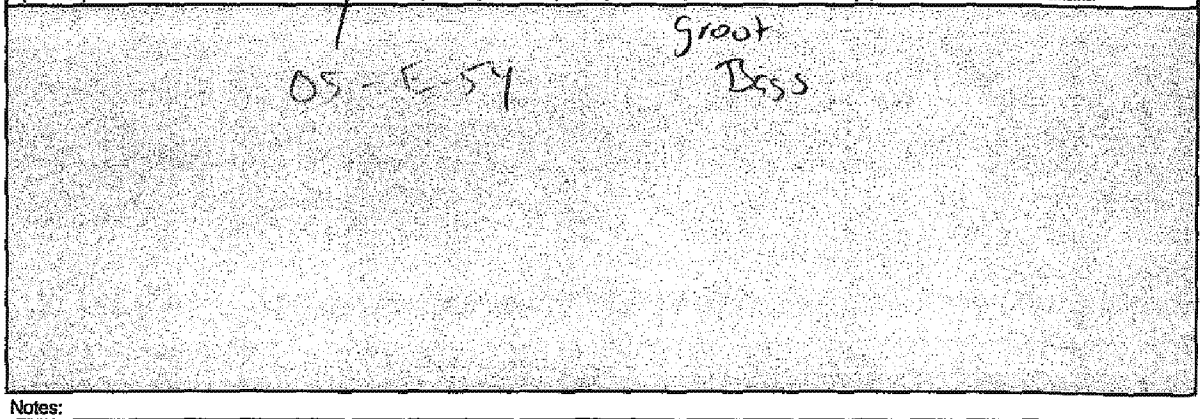
Anchor Positions	—
	—
Digital File Name or DVD #	—

Current Year Span Length	32
Previous Year Span Length	37
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling issues: Include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	00120	5:47	
LinkQuest Northing	910337.23	910306.93	
LinkQuest Easting	1958 4100.52	1958 4109.05	
Digital File Filename	—	—	
Digital File Time	8:46	8:50	
Display Time	8:46	8:50	
Bottom Type at Repair	Clay Anchor	Clay/Gravel Boss	
Highest Span Height	3'	3'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and handline diver's measurements.



Notes:

ENBDNR0000555

(49)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Drew	Sam L
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Dyer

Pipeline Operation Information

Is leg shutdown?	Yes	
If so, date shutdown	8-27-12	
Time Shutdown	6:00	
Product In Line	NGL	Density
If flowing, flow rate	NA	Time System for Time Shutdown

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	10
RTK Fix	Yes

Span Information

Date Surveyed	8-28-12	Anchor Positions	—
Tape Number	SD3		—
Direction Flown	S-N	Digital File Name or DVD #	—
Water Depth	120		
Current Year Span #	E-53A	Current Year Span Length	44
Previous Span #(s)	E-53A	Previous Year Span Length	38
Addit. Extensions Used?	—	Number of Dives to Complete	—
Length of Extension(s)	—	Date(s) of Dive(s)	—
Drilling Issues?	—	Dive number(s) for current campaign	—

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	5:47	9:20	
LinkQuest Northing	910366.37	910409.54	
LinkQuest Easting	1958 4109.05	1958 4122.07	
Digital File Filename	—	—	
Digital File Time	8:50	8:55	
Display Time	8:50	8:55	
Bottom Type at Repair	Clay/Gravel Base	Clay/Anchor	
Highest Span Height	3'	3'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

05 E-53

Notes:

(50)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Prew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bauer

Pipeline Operation Information

Is leg shutdown?	Yes	
If so, date shutdown	8-27-12	
Time Shutdown	6:30	
Product In Line	N6L	Density
If flowing, flow rate	NA	Time System for Time Shutdown

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	11
RTK Fix	Yes
—	—
—	—

Span Information

Date Surveyed	8-28-12
Tape Number	503
Direction Flown	S-N
Water Depth	122
Current Year Span #	E-53B
Previous Span #(s)	E-53B
Addit. Extensions Used?	—
Length of Extension(s)	—
Drilling Issues?	—

Anchor Positions	—
	—
Digital File Name or DVD #	—

Current Year Span Length	57
Previous Year Span Length	104
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	9:20	16:05	
LinkQuest Northing	910409.54	910466.15	
LinkQuest Easting	1958412.2.03	1958413.5.46	
Digital File Filename	—	—	
Digital File Time	8:55	9:00	
Display Time	8:55	9:00	
Bottom Type at Repair	Clay/Anchor	Clay	
Highest Span Height	3'	3'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

05 E-53

Notes:

(5)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Prew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Beuve

Pipeline Operation Information

Is leg shutdown?	Yes	
If so, date shutdown	8-27-12	
Time Shutdown	6:00	
Product in Line	NGL	Density
If flowing, flow rate	NA	Time System for Time Shutdown

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	10
RTK Fix	Yes
	—
	—

Span Information

Date Surveyed	9-28-12
Tape Number	S03
Direction Flown	S-N
Water Depth	186
Current Year Span #	E-52
Previous Span #(s)	E-52
Addit. Extensions Used?	—
Length of Extension(s)	—
Drilling Issues?	—

Anchor Positions	—
	—
Digital File Name or DVD #	—
Current Year Span Length	17
Previous Year Span Length	14
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	18:44	2109	
LinkQuest Northing	910476.27	910492.98	
LinkQuest Easting	1958413791	1958 4142.32	
Digital File Filename	—	—	
Digital File Time	9:04	9:06	
Display Time	9:04	9:06	
Bottom Type at Repair	Sand / Clay 17:11	Sand / Clay 11:11	
Highest Span Height	0.5	0.5	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and handline diver's measurements.

Notes:

(E7)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Krow	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bauer

Pipeline Operation Information

Is leg shutdown?	Yes
If so, date shutdown	8-27-12
Time Shutdown	6:00
Product in Line	N/A
If flowing, flow rate	N/A

Density

Time System for Time Shutdown

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	10
RTK Fix	Yes

Span Information

Date Surveyed	8-28-12
Tape Number	SD 3
Direction Flown	S-N
Water Depth	128
Current Year Span #	E-49C
Previous Span #(s)	E-49C
Addit. Extensions Used?	—
Length of Extension(s)	—
Drilling Issues?	—

Anchor Positions —

Digital File Name or DVD # —

Current Year Span Length	48
Previous Year Span Length	46
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	0:05	2'49	
LinkQuest Northing	910503.23	910549.87	
LinkQuest Easting	1958411 45.67	1958415 9.38	
Digital File Filename	—	—	
Digital File Time	9:11	9:14	
Display Time	9:11	9:14	
Bottom Type at Repair	Sand / Clay	Clay / Anchor	
Highest Span Height	2.5'	2.5	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Notes:

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Prow	Sam L
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Baker

Pipeline Operation Information

Is leg shutdown?	Yes	
If so, date shutdown	8-27-12	
Time Shutdown	6:00	
Product In Line	NGL	Density
If flowing, flow rate	NA	Time System for Time Shutdown

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	10
RTK Fix	Yes
—	—
—	—

Span Information

Date Surveyed	8-28-12	Anchor Positions	—
Tape Number	SD-3		—
Direction Flown	S-N	Digital File Name or DVD #	—
Water Depth	130		
Current Year Span #	E-49B	Current Year Span Length	86
Previous Span #(s)	E-49B	Previous Year Span Length	82
Addit. Extensions Used?	—	Number of Dives to Complete	—
Length of Extension(s)	—	Date(s) of Dive(s)	—
Drilling Issues?	—	Dive number(s) for current campaign	—

* Drilling issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	2:41	9:05	
LinkQuest Northing	910549.87	910633.06	
LinkQuest Easting	1958411 59.30	1958418 1.02	
Digital File Filename	—	—	
Digital File Time	9:14	9:19	
Display Time	0:14	9:14	
Bottom Type at Repair	Clay/Anchor	Clay/Anchor	
Highest Span Height	2.5	1.5	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and handline diver's measurements.

Notes:

(54)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Prew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Power

Pipeline Operation Information

Is leg shutdown?	YES
If so, date shutdown	8-27-12
Time Shutdown	6:30
Product In Line	N/GL
If flowing, flow rate	N/A

Density

Time System for Time Shutdown

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	10
RTK Fix	4=3

Span Information

Date Surveyed	8-28-12
Tape Number	SD-3
Direction Flown	S-N
Water Depth	136
Current Year Span #	E-49A
Previous Span #(s)	E-49A
Addit. Extensions Used?	—
Length of Extension(s)	—
Drilling Issues?	—

Anchor Positions	—
	—
Digital File Name or DVD #	—

Current Year Span Length	87
Previous Year Span Length	75
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	9:05	16:20	
LinkQuest Northing	910633.06	910717.18	
LinkQuest Easting	1958 4181.02	1958 4201.34	
Digital File Filename	—	—	
Digital File Time	9:19	9:27	
Display Time	9:19	9:27	
Bottom Type at Repair	Clay / Anchor	Clay	
Highest Span Height	1.5	1'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Notes:

(55)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Prev	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bauer

Pipeline Operation Information

Is leg shutdown?	Yes
If so, date shutdown	8-22-12
Time Shutdown	6:00
Product in Line	NGL
If flowing, flow rate	NA

Density

Time System for Time Shutdown

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	9
RTK Fix	Yes

Span Information

Date Surveyed	8-28-12
Tape Number	SD-2
Direction Flown	S-N
Water Depth	141
Current Year Span #	E-58
Previous Span #(s)	E-58
Addit. Extensions Used?	—
Length of Extension(s)	—
Drilling Issues?	—

Anchor Positions —

Digital File Name or DVD # —

Current Year Span Length	60
Previous Year Span Length	51
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	23:04	0119	
LinkQuest Northing	910800.77	910858.05	
LinkQuest Easting	1958423.50	1958424.25	
Digital File Filename	—	—	
Digital File Time	9:32	9:37	
Display Time	9:33	9:37	
Bottom Type at Repair	Sand / Clay	Sand / Clay	
Highest Span Height	3	3	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Notes:

(50)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Drew	Sgne
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bauer

Pipeline Operation Information

Is leg shutdown?	Yes
If so, date shutdown	8-27-12
Time Shutdown	6:00
Product In Line	NGL
If flowing, flow rate	NA

Density

Time System for Time Shutdown

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	9
RTK Fix	Yes

Span Information

Date Surveyed	8-29-12
Tape Number	SD-7
Direction Flown	S→N
Water Depth	140
Current Year Span #	E-61A-A
Previous Span #(s)	E-61A-A
Addit. Extensions Used?	—
Length of Extension(s)	—
Drilling Issues?	—

Anchor Positions

Digital File Name or DVD #

Current Year Span Length	52
Previous Year Span Length	47
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	8:58	12:51	
LinkQuest Northing	911048.14	911098.02	
LinkQuest Easting	1958429.98	1958404.07	
Digital File Filename	—	—	
Digital File Time	9:46	9:49	
Display Time	9:46	9:49	
Bottom Type at Repair	Clay	Clay	
Highest Span Height	4'	4'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

2006 E-61A

Notes:

(57)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Drew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bauer

Pipeline Operation Information

Is leg shutdown?	Yes	
If so, date shutdown	8-27-12	
Time Shutdown	6:00	
Product In Line	NGL	Density
If flowing, flow rate	NA	Time System for Time Shutdown

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	9
RTK Fix	Yes

Span Information

Date Surveyed	8-28-12
Tape Number	SD-3
Direction Flown	S-N
Water Depth	143
Current Year Span #	E-61A
Previous Span #(s)	E-61A
Addit. Extensions Used?	—
Length of Extension(s)	—
Drilling Issues?	—

Anchor Positions —

Digital File Name or DVD # —

Current Year Span Length	65
Previous Year Span Length	60
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling Issues: Include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	12'.51	20'.01	
LinkQuest Northing	911098.02	911161.70	
LinkQuest Easting	1958 4304.07	1958 4319.08	
Digital File Filename	—	—	
Digital File Time	9:49	9:57	
Display Time	9:49	9:57	
Bottom Type at Repair	Clay	Clay / Anchor	
Highest Span Height	4'	4'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

2006 E-61A

Notes:

(59)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Piew	Scott
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bauer

Pipeline Operation Information

Is leg shutdown?	Yes	
If so, date shutdown	8-27-18	
Time Shutdown	1:00	
Product in Line	NGL	Density
If flowing, flow rate	NA	Time System for Time Shutdown

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	9
RTK Fix	Yes
	—
	—

Span Information

Date Surveyed	9-28-18
Tape Number	SD-3
Direction Flown	S-N
Water Depth	143
Current Year Span #	E-61B
Previous Span #(s)	E-61D
Addit. Extensions Used?	—
Length of Extension(s)	—
Drilling Issues?	—

Anchor Positions	—
	—
Digital File Name or DVD #	—

Current Year Span Length	114
Previous Year Span Length	114
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	20:01	6:00	
LinkQuest Northing	911161.70	911270.35	
LinkQuest Easting	1958 4319.08	1958 4249.32	
Digital File Filename	—	—	
Digital File Time	9:57	10:08	
Display Time	9:57	10:08	
Bottom Type at Repair	Clay/Anchor	Clay/Anchor	
Highest Span Height	4'	2	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Notes:

(54)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Drew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Dove

Pipeline Operation Information

Is leg shutdown?	YES	
If so, date shutdown	8-27-12	
Time Shutdown	6:00	
Product in Line	NGL	Density
If flowing, flow rate	NA	Time System for Time Shutdown

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	9
RTK Fix	Yes

Span Information

Date Surveyed	8-28-12
Tape Number	SD-3
Direction Flown	S-N
Water Depth	142
Current Year Span #	E61C
Previous Span #(s)	E61C
Addit. Extensions Used?	—
Length of Extension(s)	—
Drilling Issues?	—

Anchor Positions	—
	—
Digital File Name or DVD #	—

Current Year Span Length	91
Previous Year Span Length	86
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	6:00	17:20	
LinkQuest Northing	911270.35	911258.10	
LinkQuest Easting	1958434 9.33	1958437 4.75	
Digital File Filename	—	—	
Digital File Time	10:08	10:19	
Display Time	10:08	10:19	
Bottom Type at Repair	Clay/ Anchor	Clay	
Highest Span Height	2	3	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Notes:

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Hren	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Daw

Pipeline Operation Information

Is leg shutdown?	Yes
If so, date shutdown	8-27-12
Time Shutdown	6:00
Product In Line	N/C
If flowing, flow rate	NA

Density

Time System for Time Shutdown

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	9
RTK Fix	Yes

Span Information

Date Surveyed	8-28-12
Tape Number	SD-3
Direction Flown	S-N
Water Depth	134
Current Year Span #	E-62
Previous Span #(s)	E-62
Addit. Extensions Used?	—
Length of Extension(s)	—
Drilling Issues?	—

Anchor Positions: —

Digital File Name or DVD #: —

Current Year Span Length	37
Previous Year Span Length	32
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	20:30	22:45	
LinkQuest Northing	911796.85	911432.84	
LinkQuest Easting	19584384.55	19584392.77	
Digital File Filename	—	—	
Digital File Time	10:23	10:25	
Display Time	10:23	10:25	
Bottom Type at Repair	Clay	Clay	
Highest Span Height	1'		
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Notes:

(61)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Pruw	Sam E
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bauer

Pipeline Operation Information

Is leg shutdown?	Yes
If so, date shutdown	8-27-12
Time Shutdown	6:00
Product In Line	NGL
If flowing, flow rate	NA

Density

Time System for Time Shutdown

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	9
RTK Fix	Yes

Span Information

Date Surveyed	8-28-12
Tape Number	SD-3
Direction Flown	S-N
Water Depth	122
Current Year Span #	E-63
Previous Span #(s)	E-63
Addit. Extensions Used?	—
Length of Extension(s)	—
Drilling Issues?	—

Anchor Positions	—
	—
Digital File Name or DVD #	—

Current Year Span Length	18
Previous Year Span Length	23
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	0:20		
LinkQuest Northing	911442.31	911459.89	
LinkQuest Easting	1958439 2.91	1958439 9.05	
Digital File Filename	—	—	
Digital File Time	10:28	10:30	
Display Time	10:28	10:30	
Bottom Type at Repair	Sand / clay	Sand clay	
Highest Span Height			
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and handline diver's measurements.

Notes:

(60)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Plew	Shane
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Boyer

Survey Geodetic Parameters	
Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	10
RTK Fix	Yes
—	—
—	—

Pipeline Operation Information

Is leg shutdown?	8-27-12
If so, date shutdown	Yes
Time Shutdown	6:00
Product in Line	N/A
If flowing, flow rate	NA

Density

Time System for Time Shutdown

Span Information

Date Surveyed	8-28-12
Tape Number	SD-3
Direction Flown	S-N
Water Depth	131
Current Year Span #	E-64
Previous Span #(s)	E-64
Addit. Extensions Used?	—
Length of Extension(s)	—
Drilling Issues?	—

Anchor Positions —

Digital File Name or DVD # —

Current Year Span Length	52
Previous Year Span Length	47
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	6:00	8:35	
LinkQuest Northing	911477.34	911526.83	
LinkQuest Easting	1958 4402.18	1958 4417.72	
Digital File Filename	—	—	
Digital File Time	10:34	10:36	
Display Time	10:34	10:36	
Bottom Type at Repair	Sand/Clay	Sand/Clay	
Highest Span Height	7.	7.	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Notes:

(67)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Prow	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Dyer

Pipeline Operation Information

Is leg shutdown?	Yes	
If so, date shutdown	8-27-12	
Time Shutdown	6:00	
Product In Line	NGL	Density
If flowing, flow rate	NA	Time System for Time Shutdown

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	10
RTK Fix	Yes

Span Information

Date Surveyed	8-28-12	Anchor Positions	—
Tape Number	SD-3		—
Direction Flown	S-N	Digital File Name or DVD #	—
Water Depth	131		
Current Year Span #	E-22	Current Year Span Length	76
Previous Span #(s)	E-22	Previous Year Span Length	80
Addit. Extensions Used?	—	Number of Dives to Complete	—
Length of Extension(s)	—	Date(s) of Dive(s)	—
Drilling Issues?	—	Dive number(s) for current campaign	—

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	11:51	16:27	
LinkQuest Northing	911562.34	911688.23	
LinkQuest Easting	1958441 27.75	1958441 51.03	
Digital File Filename	—	—	
Digital File Time	10:40	10:42	
Display Time	10:40	10:43	
Bottom Type at Repair	Clay	Clay	
Highest Span Height	4-5'	4-5'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Notes:

64

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	TOM PRW	SAMC
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	4902598.10.071	Chris Brow

Survey Geodetic Parameters	
Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	9
RTK Fix	yes

Pipeline Operation Information

Is leg shutdown?	Yes
If so, date shutdown	8-27-12
Time Shutdown	6:00
Product in Line	NGL
If flowing, flow rate	NA

Density —

Time System for Time Shutdown —

Span Information

Date Surveyed	8-28-12
Tape Number	SD-3
Direction Flown	S-N
Water Depth	126
Current Year Span #	E-21
Previous Span #(s)	E-21
Addit. Extensions Used?	—
Length of Extension(s)	—
Drilling Issues?	—

Anchor Positions —

Digital File Name or DVD # —

Current Year Span Length	50
Previous Year Span Length	43
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	15:04	22:22	
LinkQuest Northing	911672.58	911721.65	
LinkQuest Easting	1458445 9.61	1458447 1.92	
Digital File Filename	—	—	
Digital File Time	10:47	10:51	
Display Time	10:47	10:51	
Bottom Type at Repair	clay	clay	
Highest Span Height	0.25 - 0.50"	0.25 - 0.50"	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and handline diver's measurements.

Notes:

65

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Drew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bauer

Pipeline Operation Information

Is leg shutdown?	Yes
If so, date shutdown	8-27-12
Time Shutdown	6:00
Product In Line	NGL
If flowing, flow rate	NA
Density	
Time System for Time Shutdown	

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	8
RTK Fix	Yes
—	—
—	—

Span Information

Date Surveyed	9-28-12
Tape Number	SD-3
Direction Flown	S-N
Water Depth	133
Current Year Span #	E-19A
Previous Span #(s)	E-19A
Addit. Extensions Used?	—
Length of Extension(s)	—
Drilling Issues?	—

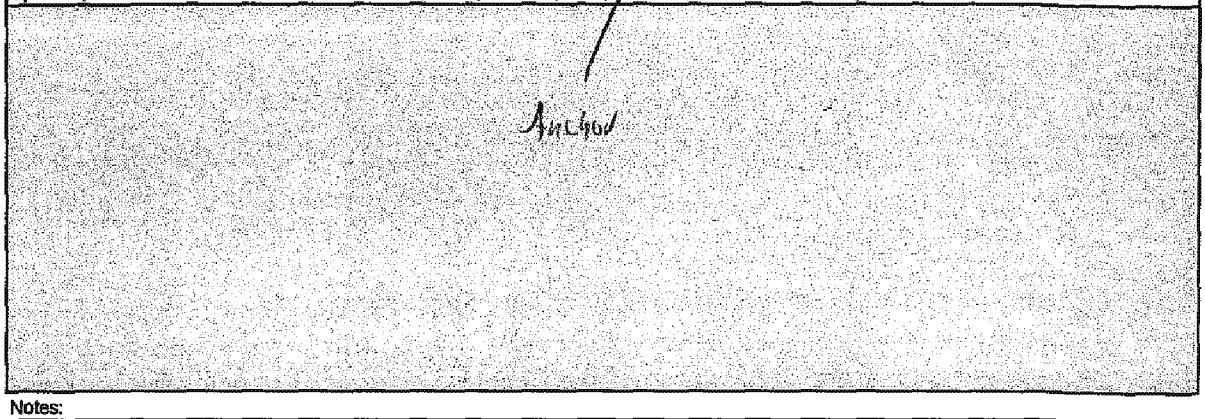
Anchor Positions	—
	—
Digital File Name or DVD #	—

Current Year Span Length	75
Previous Year Span Length	87
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	3:00	7:00	
LinkQuest Northing	911793.50	911866.20	
LinkQuest Easting	1958448.88	1958509.45	
Digital File Filename	—	—	
Digital File Time	10:56	11:06	
Display Time	10:56	11:00	
Bottom Type at Repair	Sand/clay	Sand/clay / Mud	
Highest Span Height	0.5	0.5	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.



Notes:

66

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Prev	Jame
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	4902598.10.071	Chris Dlow

Survey Geodetic Parameters	
Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	8
RTK Fix	Yes
—	—
—	—

Pipeline Operation Information

Is leg shutdown?	Yes
If so, date shutdown	8-27-12
Time Shutdown	6:00
Product in Line	N/G
If flowing, flow rate	NA

Density

Time System for Time Shutdown

Span Information

Date Surveyed	8-28-12
Tape Number	SD-3
Direction Flown	S-N
Water Depth	124
Current Year Span #	E-19B
Previous Span #(s)	E-19B
Addit. Extensions Used?	—
Length of Extension(s)	—
Drilling Issues?	—

Anchor Positions —

Digital File Name or DVD # —

Current Year Span Length	82
Previous Year Span Length	75
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	7.00	13:54	
LinkQuest Northing	911866.20	911944.93	
LinkQuest Easting	1958450.45	1958452.84	
Digital File Filename	—	—	
Digital File Time	11:00	11:07	
Display Time	11:00	11:07	
Bottom Type at Repair	clay / Anchor	Clay	
Highest Span Height	1	1	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Notes:

(67)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Praw	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Beuer

Pipeline Operation Information

Is leg shutdown?	8-27-12	
If so, date shutdown	Yes	
Time Shutdown	6:00	
Product in Line	N/A	Density
If flowing, flow rate	N/A	Time System for Time Shutdown

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	8
RTK Fix	Yes
—	—
—	—

Span Information

Date Surveyed	8-28-12
Tape Number	SD-3
Direction Flown	S-N
Water Depth	149
Current Year Span #	E-18B
Previous Span #(s)	E-18B
Addit. Extensions Used?	—
Length of Extension(s)	—
Drilling Issues?	—

Anchor Positions	—
	—
Digital File Name or DVD #	—
Current Year Span Length	83
Previous Year Span Length	25
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	18:37	21:20	
LinkQuest Northing	911979.56	912001.09	
LinkQuest Easting	19584542.81	19584546.96	
Digital File Filename	—	—	
Digital File Time	11:11	11:14	
Display Time	11:11	11:14	
Bottom Type at Repair	Clay	Clay	
Highest Span Height	0.25	0.25	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and handline diver's measurements.

Notes:

(69)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Prew	Steve
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bauer

Pipeline Operation Information

Is leg shutdown?	8-27-12	
If so, date shutdown	Yes	
Time Shutdown	6:00	
Product In Line	NGL	Density
If flowing, flow rate	NA	Time System for Time Shutdown

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	8
RTK Fix	Yes
—	—
—	—

Span Information

Date Surveyed	8-28-12	Anchor Positions	—
Tape Number	SD-2		—
Direction Flown	S-N	Digital File Name or DVD #	—
Water Depth	150		
Current Year Span #	E-18C	Current Year Span Length	0
Previous Span #(s)	E-18C	Previous Year Span Length	16
Addit. Extensions Used?	—	Number of Dives to Complete	—
Length of Extension(s)	—	Date(s) of Dive(s)	—
Drilling Issues?	—	Dive number(s) for current campaign	—

* Drilling issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter			
LinkQuest Northing			
LinkQuest Easting			
Digital File Filename			
Digital File Time			
Display Time			
Bottom Type at Repair			
Highest Span Height			
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Silted in

Notes:

69

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Prew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Dauer

Pipeline Operation Information

Is leg shutdown?	yes
If so, date shutdown	8-27-12
Time Shutdown	6:00
Product in Line	N/G
If flowing, flow rate	NA
Density	—
Time System for Time Shutdown	—

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	8
RTK Fix	Yes

Span Information

Date Surveyed	8-28-12
Tape Number	SD-3
Direction Flown	S-N
Water Depth	151
Current Year Span #	E18A
Previous Span #(s)	E18A
Addit. Extensions Used?	—
Length of Extension(s)	—
Drilling Issues?	—

Anchor Positions	—
	—
Digital File Name or DVD #	—
Current Year Span Length	20
Previous Year Span Length	16
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	1:06	4:22	
LinkQuest Northing	912017.70	912039.19	
LinkQuest Easting	19584551.85	19584551.85	
Digital File Filename	—	—	
Digital File Time	11:19	11:22	
Display Time	11:19	11:22	
Bottom Type at Repair	clay	clay	
Highest Span Height	0.5	0.5	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Notes:

(70)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Drew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bauer

Pipeline Operation Information

Is leg shutdown?	Yes
If so, date shutdown	8-27-12
Time Shutdown	6:00
Product in Line	N6L
Density	
If flowing, flow rate	N/A
Time System for Time Shutdown	

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	8
RTK Fix	Yes
	—
	—

Span Information

Date Surveyed	8-28-12
Tape Number	SD-3
Direction Flown	S-N
Water Depth	161
Current Year Span #	E-17
Previous Span #(s)	E-17
Addit. Extensions Used?	—
Length of Extension(s)	—
Drilling Issues?	—

Anchor Positions	—
	—
Digital File Name or DVD #	—
Current Year Span Length	39
Previous Year Span Length	36
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling Issues: Include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	6:58	11:07	
LinkQuest Northing	9120692.0	9121076.3	
LinkQuest Easting	19584565.40	19584575.17	
Digital File Filename	—	—	
Digital File Time	11:26	11:29	
Display Time	11:26	11:29	
Bottom Type at Repair	Clay	Clay	
Highest Span Height	0.25'~0.50'	0.25-0.50	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Notes:

(71)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Prew	—
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Tom Prew

Pipeline Operation Information

Is leg shutdown?	Yes
If so, date shutdown	8-27-12
Time Shutdown	6:00
Product in Line	NGL
If flowing, flow rate	NA
Density	—
Time System for Time Shutdown	—

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	8
RTK Fix	Yes

Span Information

Date Surveyed	8-28-12
Tape Number	SD-3
Direction Flown	S-N
Water Depth	178
Current Year Span #	E-16
Previous Span #(s)	E-16
Addit. Extensions Used?	—
Length of Extension(s)	—
Drilling Issues?	—

Anchor Positions	—
Digital File Name or DVD #	—
Current Year Span Length	38
Previous Year Span Length	48
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	14:50	19:07	
LinkQuest Northing	912162.54	912200.95	
LinkQuest Easting	1958 4592	1958 4602.07	
Digital File Filename	—	—	
Digital File Time	11:37	11:37	
Display Time	11:37	11:37	
Bottom Type at Repair	Clay	Clay	
Highest Span Height	2-3'	2-3'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Clay Hump touch Down for 3'

Notes:

(72)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Drew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Dyer

Pipeline Operation Information

Is leg shutdown?	Yes
If so, date shutdown	8-27-12
Time Shutdown	6:00
Product in Line	NGL
If flowing, flow rate	NA
Density	
Time System for Time Shutdown	

Survey Geodetic Parameters	
Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	9
RTK Fix	Yes
	—
	—

Span Information

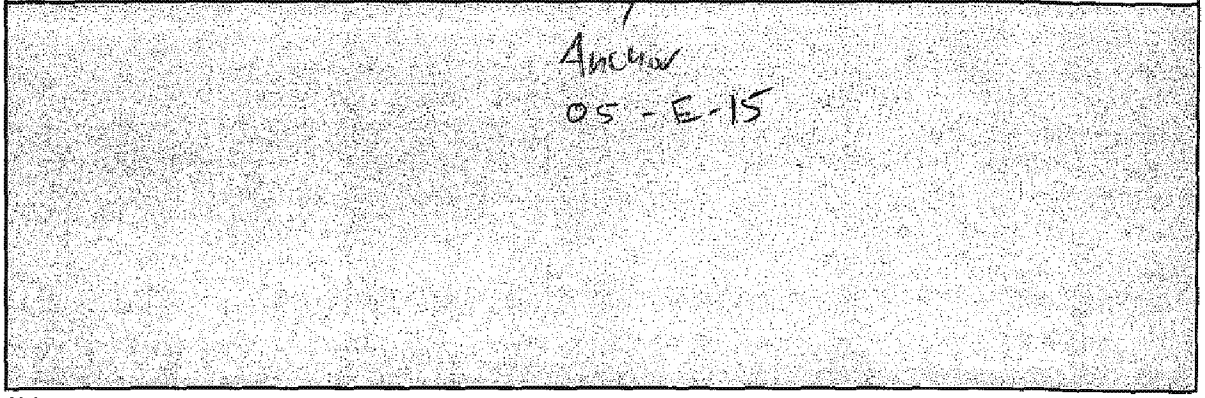
Data Surveyed	8-28-12
Tape Number	SD-3
Direction Flown	E-W
Water Depth	186
Current Year Span #	E-15A
Previous Span #(s)	E-15A
Addit. Extensions Used?	—
Length of Extension(s)	—
Drilling Issues?	—

Anchor Positions	—
	—
Digital File Name or DVD #	—
Current Year Span Length	31
Previous Year Span Length	29
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	19:03	22:54	
LinkQuest Northing	912200.95	912231.01	
LinkQuest Easting	1585460.03	1585461.0.21	
Digital File Filename	—	—	
Digital File Time	11:37	11:41	
Display Time	11:37	11:41	
Bottom Type at Repair	Clay	Clay / Clay / Gravel	
Highest Span Height	2	4	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.



Notes:

(73)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Drew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Dyer

Survey Geodetic Parameters	
Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	9
RTK Fix	Yes

Pipeline Operation Information

Is leg shutdown?	8-27-12
If so, date shutdown	Yes
Time Shutdown	6:00
Product in Line	NGL
If flowing, flow rate	NA

Density: —

Time System for Time Shutdown: —

Span Information

Date Surveyed	8-28-12
Tape Number	SD3
Direction Flown	S-N
Water Depth	188
Current Year Span #	E-15D
Previous Span #(s)	E-15 O
Addit. Extensions Used?	—
Length of Extension(s)	—
Drilling Issues?	—

Anchor Positions: —

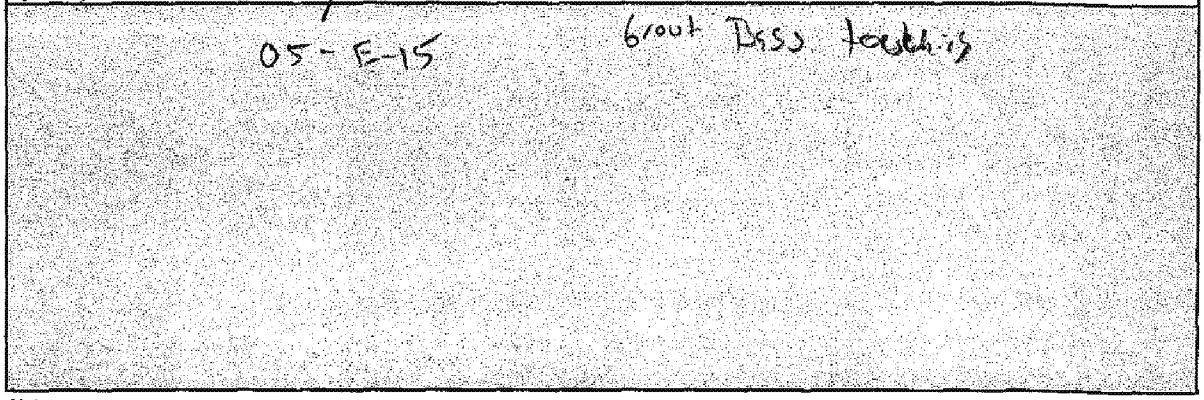
Digital File Name or DVD #: —

Current Year Span Length	52
Previous Year Span Length	52
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	22:54	2:24	
LinkQuest Northing	912271.01	912281.73	
LinkQuest Easting	1558 4610.21	1558 4620.90	
Digital File Filename	—	—	
Digital File Time	11:41	11:46	
Display Time	11:41	11:46	
Bottom Type at Repair	Clay / Anchor	Clay / Grout Bag	
Highest Span Height	2'	2'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.



Notes:

(74)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Drew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bauer

Survey Geodetic Parameters	
Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	10
RTK Fix	Yes

Pipeline Operation Information

Is leg shutdown?	Yes		
If so, date shutdown	8-27-12		
Time Shutdown	6:00		
Product In Line	N/A	Density	—
If flowing, flow rate	N/A	Time System for Time Shutdown	—

Span Information

Date Surveyed	8-28-12	Anchor Positions	—
Tape Number	SD3		—
Direction Flown	S-N	Digital File Name or DVD #	—
Water Depth	213		
Current Year Span #	E8A	Current Year Span Length	56
Previous Span #(s)	E8A	Previous Year Span Length	54
Addit. Extensions Used?	—	Number of Dives to Complete	—
Length of Extension(s)	—	Date(s) of Dive(s)	—
Drilling Issues?	—	Dive number(s) for current campaign	—

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	2:24	6:47	
LinkQuest Northing	912291.73	912336.30	
LinkQuest Easting	1958 4620.90	1958 4632.74	
Digital File Filename	—	—	
Digital File Time	11:46	11:51	
Display Time	11:46	11:51	
Bottom Type at Repair	Clay / Grout Dive	Clay / Anchor	
Highest Span Height	2'	21	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.



Notes:

(75)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Drew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bevir

Pipeline Operation Information

Is leg shutdown?	Yes
If so, date shutdown	8-27-12
Time Shutdown	6:00
Product In Line	N/C
If flowing, flow rate	NA
Density	
Time System for Time Shutdown	

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	9
RTK Fix	Yes
—	—
—	—

Span Information

Date Surveyed	8-28-12
Tape Number	SD-3
Direction Flown	S-N
Water Depth	213
Current Year Span #	E-8 B
Previous Span #(s)	E-8 D
Addit. Extensions Used?	—
Length of Extension(s)	—
Drilling Issues?	—

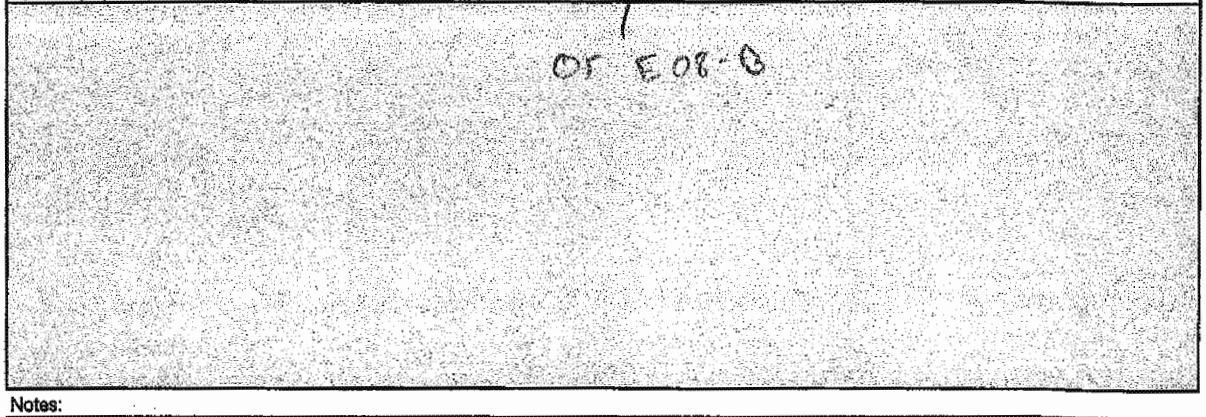
Anchor Positions	—
	—
Digital File Name or DVD #	—

Current Year Span Length	70
Previous Year Span Length	71
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	6:47	15:18	
LinkQuest Northing	912326.70	912403.92	
LinkQuest Easting	1958463.74	1958465.05	
Digital File Filename	—	—	
Digital File Time	11:51	11:58	
Display Time	11:51	11:58	
Bottom Type at Repair	Clay Anchor	Clay Anchor	
Highest Span Height	3	3	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.



Notes:

(76)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Drew	SAMC
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bgun

Pipeline Operation Information

Is leg shutdown?	Yes		
If so, date shutdown	8-27-12		
Time Shutdown	6:00		
Product In Line	NGL	Density	
If flowing, flow rate	NA	Time System for Time Shutdown	

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	9
RTK Fix	Yes
—	—
—	—

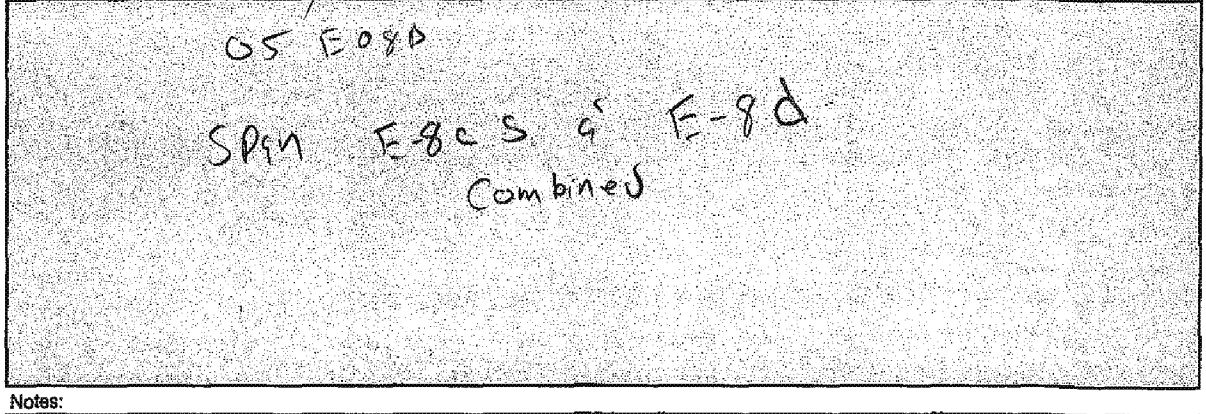
Span Information

Date Surveyed	8-28-12	Anchor Positions	—
Tape Number	SD-3		—
Direction Flown	S-N	Digital File Name or DVD #	—
Water Depth			
Current Year Span #	F-8C	Current Year Span Length	76
Previous Span #(s)	F-8C 5	Previous Year Span Length	39 & 19
Addit. Extensions Used?	—	Number of Dives to Complete	—
Length of Extension(s)	—	Date(s) of Dive(s)	—
Drilling Issues?	—	Dive number(s) for current campaign	—

* Drilling Issues: Include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	15:18	22:20	
LinkQuest Northing	912403.92	912478.19	
LinkQuest Easting	1958 4652.05	1958 4671.97	
Digital File Filename	—	—	
Digital File Time	11:58	12:05	
Display Time	11:58	12:05	
Bottom Type at Repair	Clay Anchor	Sand Clay	
Highest Span Height	3'	2'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.



Notes:

(77)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Prow	Sam
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bauer

Survey Geodetic Parameters	
Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	9
RTK Fix	Yes

Pipeline Operation Information

Is leg shutdown?	Yes
If so, date shutdown	8-27-12
Time Shutdown	6:00
Product In Line	NGL
If flowing, flow rate	NA

Density: —

Time System for Time Shutdown: —

Span Information

Date Surveyed	8-29-12
Tape Number	30-3
Direction Flown	S-N
Water Depth	232
Current Year Span #	E-9
Previous Span #(s)	E-9
Addit. Extensions Used?	—
Length of Extension(s)	—
Drilling Issues?	—

Anchor Positions: —

Digital File Name or DVD #: —

Current Year Span Length	41
Previous Year Span Length	33
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	0:30	3:45	
LinkQuest Northing	912501.14	912540.02	
LinkQuest Easting	1958 4676.78	1958 4688.73	
Digital File Filename	—	—	
Digital File Time	12'10	12'12	
Display Time	12:10	12:12	
Bottom Type at Repair	Clay	Clay	
Highest Span Height	0.5'	0.5'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Notes:

(78)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Drew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Dyer

Pipeline Operation Information

Is leg shutdown?	Yes
If so, date shutdown	8-27-12
Time Shutdown	4:00
Product in Line	NGL
If flowing, flow rate	NA

Density

Time System for Time Shutdown

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	9
RTK Fix	Yes

Span Information

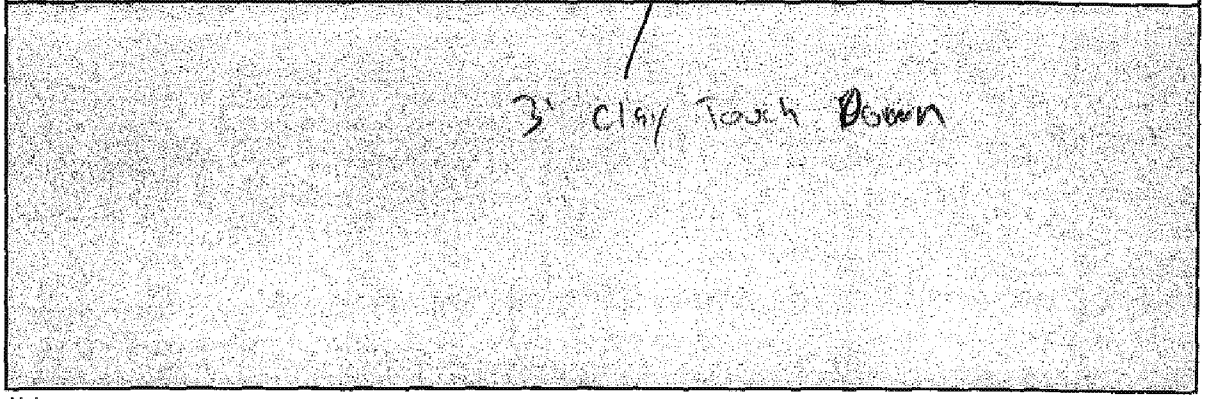
Date Surveyed	8-28-12
Tape Number	50-3
Direction Flown	S-N
Water Depth	207
Current Year Span #	E-10
Previous Span #(s)	E-10
Addit. Extensions Used?	—
Length of Extension(s)	—
Drilling Issues?	—

Anchor Positions	—
Digital File Name or DVD #	—
Current Year Span Length	52
Previous Year Span Length	50
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	8:05	10:30	
LinkQuest Northing	912607.82	912657.41	
LinkQuest Easting	1958471.34	1958472.27	
Digital File Filename	—	—	
Digital File Time	12:17	12:19	
Display Time	17:17	12:19	
Bottom Type at Repair	Clay	Clay	
Highest Span Height	1-2'	1'-2'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.



Notes:

79

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Prow	Sam
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bauer

Survey Geodetic Parameters	
Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	9
RTK Fix	Yes

Pipeline Operation Information

Is leg shutdown?	Yes		
If so, date shutdown	8-27-12		
Time Shutdown	6:00		
Product In Line	N/G	Density	—
If flowing, flow rate	NA	Time System for Time Shutdown	—

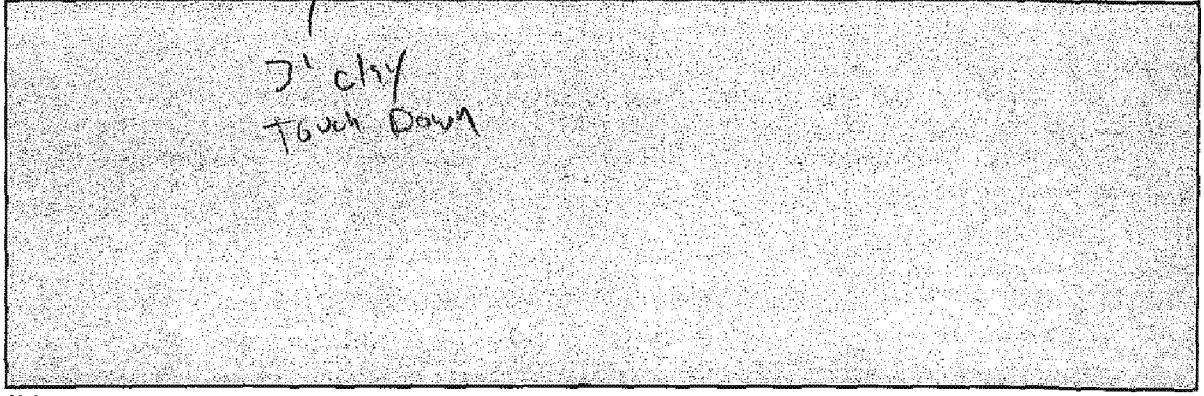
Span Information

Date Surveyed	8-28-12	Anchor Positions	—
Tape Number	SO-3		—
Direction Flown	S-N	Digital File Name or DVD #	—
Water Depth	234		
Current Year Span #	E-11	Current Year Span Length	63
Previous Span #(s)	E-11	Previous Year Span Length	74
Addit. Extensions Used?	—	Number of Dives to Complete	—
Length of Extension(s)	—	Date(s) of Dive(s)	—
Drilling Issues?	—	Dive number(s) for current campaign	—

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	10:30	15:10	
LinkQuest Northing	912653.41	912720.66	
LinkQuest Easting	1958472321	1958473807	
Digital File Filename	—	—	
Digital File Time	12:19	12:24	
Display Time	12:19	12:24	
Bottom Type at Repair	clay	clay	
Highest Span Height	1-2'	1-2'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.



Notes:

(80)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Drew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bauer

Survey Geodetic Parameters	
Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	9
RTK Fix	Yes

Pipeline Operation Information			
Is leg shutdown?	Yes		
If so, date shutdown	8-27-12		
Time Shutdown	6:00		
Product In Line	N/G	Density	
If flowing, flow rate	—	Time System for Time Shutdown	—

Span Information			
Date Surveyed	8-28-12	Anchor Positions	—
Tape Number	SD-3		—
Direction Flown	S-N	Digital File Name or DVD #	—
Water Depth	332		
Current Year Span #	E-12	Current Year Span Length	39
Previous Span #(s)	E-12	Previous Year Span Length	41
Addit. Extensions Used?	—	Number of Dives to Complete	—
Length of Extension(s)	—	Date(s) of Dive(s)	—
Drilling Issues?	—	Dive number(s) for current campaign	—

* Drilling Issues: Include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	7:15	9:30	
LinkQuest Northing	912785.96	912822.72	
LinkQuest Easting	1958 4752.89	1958 4762.91	
Digital File Filename	—	—	
Digital File Time	12:42	12:44	
Display Time	12:42	12:44	
Bottom Type at Repair	Clay	Clay	
Highest Span Height	0.5'	0.5'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and handline diver's measurements.

Notes:

(87)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Prow	Sam L
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Dauer

Pipeline Operation Information

Is leg shutdown?	Yes	
If so, date shutdown	8-27-12	
Time Shutdown	6:00	
Product In Line	N/L	Density
If flowing, flow rate	N/A	Time System for Time Shutdown

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	8
RTK Fix	Yes
—	—
—	—

Span Information

Date Surveyed	8-28-12
Tape Number	SD-3
Direction Flown	S-N
Water Depth	232
Current Year Span #	E-13A
Previous Span #(s)	E-13A
Addit. Extensions Used?	—
Length of Extension(s)	—
Drilling Issues?	—

Anchor Positions	—
	—
Digital File Name or DVD #	—
Current Year Span Length	27
Previous Year Span Length	27
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	12:50	14:55	
LinkQuest Northing	912882.51	912908.77	
LinkQuest Easting	1958 4780.36	1958 4785.61	
Digital File Filename	—	—	
Digital File Time	12:47	12:50	
Display Time	12:47	12:50	
Bottom Type at Repair	Clay	Clay / Anchor	
Highest Span Height	2'	2'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Notes:

(82)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Drew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bauer

Pipeline Operation Information

Is leg shutdown?	Yes	
If so, date shutdown	8-27-12	
Time Shutdown	6:00	
Product In Line	NGL	Density
If flowing, flow rate	NA	Time System for Time Shutdown

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	8
RTK Fix	Yes
—	—
—	—

Span Information

Date Surveyed	8-28-12
Tape Number	SD-3
Direction Flown	S-N
Water Depth	200
Current Year Span #	E-13B S
Previous Span #(s)	E-13B
Addit. Extensions Used?	—
Length of Extension(s)	—
Drilling Issues?	—

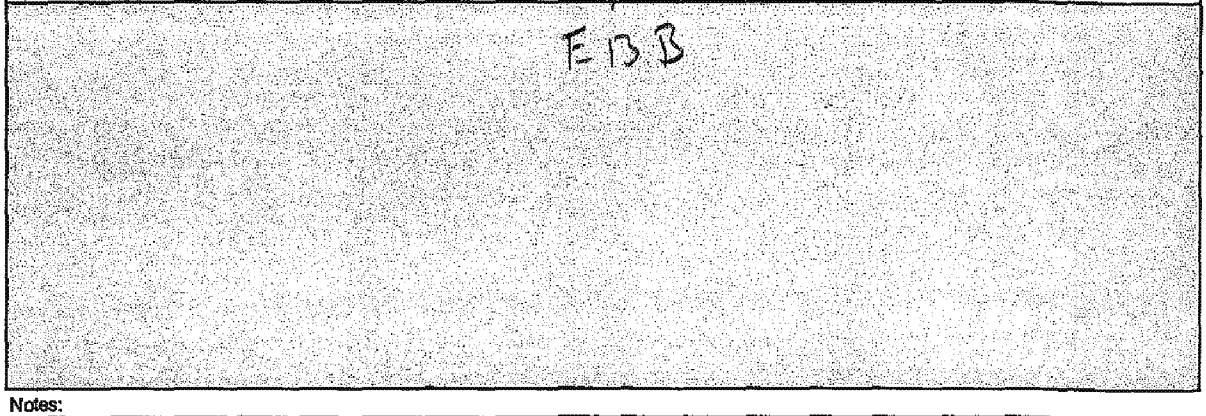
Anchor Positions	—
	—
Digital File Name or DVD #	—

Current Year Span Length	56'
Previous Year Span Length	116'
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling Issues: Include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	14:55	20:45	
LinkQuest Northing	912908.77	912962.61	
LinkQuest Easting	1958 4785.61	1958 4799.52	
Digital File Filename	—	—	
Digital File Time	12:50	12:55	
Display Time	12:50	12:55	
Bottom Type at Repair	Clay / Anchor	clay / Anchor	
Highest Span Height	1'	1'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.



Notes:

(43)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Drew	—
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Dauv

Survey Geodetic Parameters	
Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	9
RTK Fix	Yes

Pipeline Operation Information			
Is leg shutdown?	Yes		
If so, date shutdown	8-27-12		
Time Shutdown	6:00		
Product In Line	N/A	Density	—
If flowing, flow rate	NA	Time System for Time Shutdown	—

Span Information			
Date Surveyed	8-28-12	Anchor Positions	—
Tape Number	SD-3		—
Direction Flown	S-N	Digital File Name or DVD #	—
Water Depth	230		
Current Year Span #	E-13 B N	Current Year Span Length	56
Previous Span #(s)	E-12 B	Previous Year Span Length	116
Addit. Extensions Used?		Number of Dives to Complete	—
Length of Extension(s)		Date(s) of Dive(s)	—
Drilling Issues?		Dive number(s) for current campaign	—

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	20:45	0:20	
LinkQuest Northing	912962.61	913016.38	
LinkQuest Easting	1958479.52	1958481.12	
Digital File Filename	—	—	
Digital File Time	12:55	13:00	
Display Time	12:55	13:00	
Bottom Type at Repair	Clay/Anchor	Clay/Anchor	
Highest Span Height	1	1-1.5'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

E 13 B

Notes:

(89)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Prew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Mower

Survey Geodetic Parameters	
Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	9
RTK Fix	Yes
—	—
—	—

Pipeline Operation Information

Is leg shutdown?	Yes	
If so, date shutdown	8-27-12	
Time Shutdown	16:00	
Product In Line	N/A	Density
If flowing, flow rate	N/A	Time System for Time Shutdown

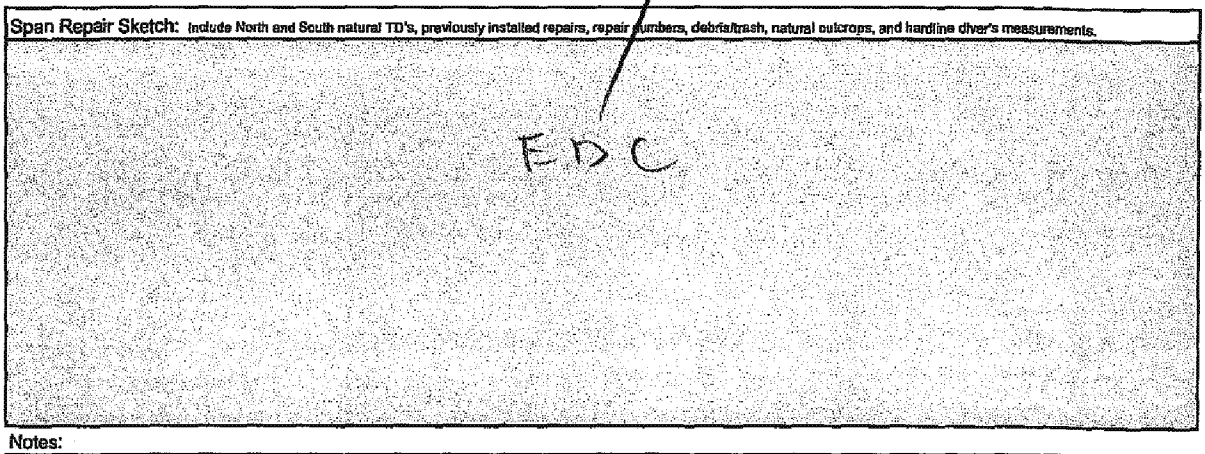
Span Information

Date Surveyed	8-29-12	Anchor Positions	—
Tape Number	503	—	—
Direction Flown	S-N	Digital File Name or DVD #	—
Water Depth	228		
Current Year Span #	E-13C S	Current Year Span Length	48
Previous Span #(s)	E-13C	Previous Year Span Length	108
Addit. Extensions Used?	—	Number of Dives to Complete	—
Length of Extension(s)	—	Date(s) of Dive(s)	—
Drilling Issues?	—	Dive number(s) for current campaign	—

* Drilling issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	0:20	5:50	
LinkQuest Northing	913016.38	913062.64	
LinkQuest Easting	19584815.12	19584828.01	
Digital File Filename	—	—	
Digital File Time	12:00	12:06	
Display Time	12:00	12:06	
Bottom Type at Repair	Clay / Anchor	Clay Anchor	
Highest Span Height	1-1.5'	1-1.5	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.



Notes:

(83)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Drew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bovir

Survey Geodetic Parameters	
Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	9
RTK Fix	Yes
—	—
—	—

Pipeline Operation Information

Is leg shutdown?	Yes
If so, date shutdown	8-27-12
Time Shutdown	6:00
Product in Line	NGL
Density	
If flowing, flow rate	NA
Time System for Time Shutdown	

Span Information

Date Surveyed	9-28-12
Tape Number	50-3
Direction Flown	S-N
Water Depth	224
Current Year Span #	E-13C N
Previous Span #(s)	E-13C
Addit. Extensions Used?	—
Length of Extension(s)	—
Drilling Issues?	—

Anchor Positions	—
	—
Digital File Name or DVD #	—

Current Year Span Length	56
Previous Year Span Length	108
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling Issues: Include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	5:50	11:00	
LinkQuest Northing	913063.94	913119.24	
LinkQuest Easting	19584828.01	19584844.28	
Digital File Filename	—	—	
Digital File Time	13:06	13:11	
Display Time	13:06	13:11	
Bottom Type at Repair	Clay / Anchor	clay / sand	
Highest Span Height	1-1.5	1	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

E-13C

Notes:

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Brow	Sam L
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bauer

Survey Geodetic Parameters	
Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	8
RTK Fix	Yes

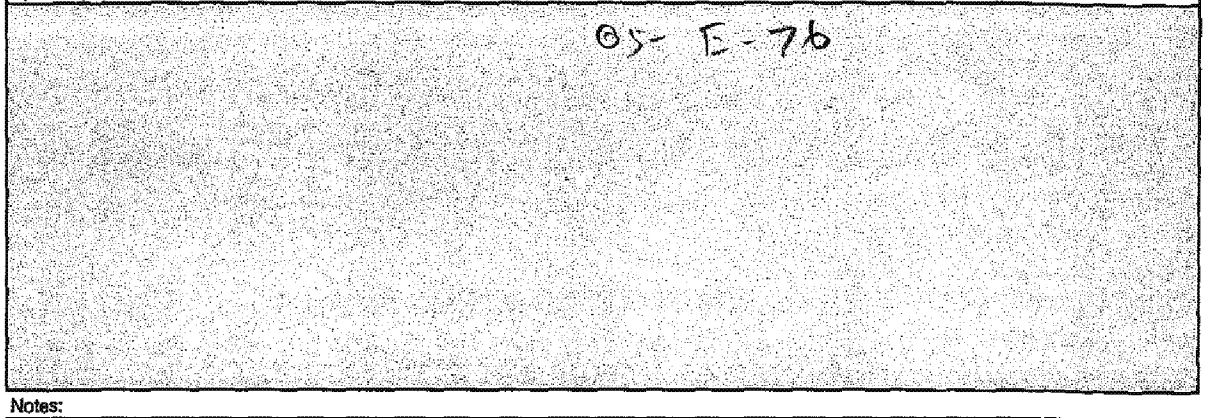
Pipeline Operation Information			
Is leg shutdown?	Yes		
If so, date shutdown	8-27-12		
Time Shutdown	8:00		
Product In Line	NGL	Density	
If flowing, flow rate	NA	Time System for Time Shutdown	

Span Information			
Date Surveyed	9-28-12	Anchor Positions	
Tape Number	SO-2		
Direction Flown	S-N	Digital File Name or DVD #	
Water Depth	220		
Current Year Span #	E-3	Current Year Span Length	87
Previous Span #(s)	E-3	Previous Year Span Length	76
Addit. Extensions Used?	—	Number of Dives to Complete	
Length of Extension(s)	—	Date(s) of Dive(s)	
Drilling Issues?	—	Dive number(s) for current campaign	

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	17:25	21:59	
LinkQuest Northing	913239.17	913324.69	
LinkQuest Easting	19584878.00	19584902.89	
Digital File Filename	—	—	
Digital File Time	17:18	17:21	
Display Time	17:18	17:21	
Bottom Type at Repair	Clay	Clay / Anchor	
Highest Span Height	0.5'	2'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.



Notes:

(87)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Drew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bauer

Pipeline Operation Information

Is leg shutdown?	Yes
If so, date shutdown	8-27-12
Time Shutdown	6:20
Product in Line	NGL
If flowing, flow rate	NA

Density

Time System for Time Shutdown

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	8
RTK Fix	Yes

Span Information

Date Surveyed	8-28-12
Tape Number	SD-1
Direction Flown	S-N
Water Depth	215
Current Year Span #	E-7 A i D
Previous Span #(s)	E-7 6 A i D
Addit. Extensions Used?	—
Length of Extension(s)	—
Drilling Issues?	—

Anchor Positions: —

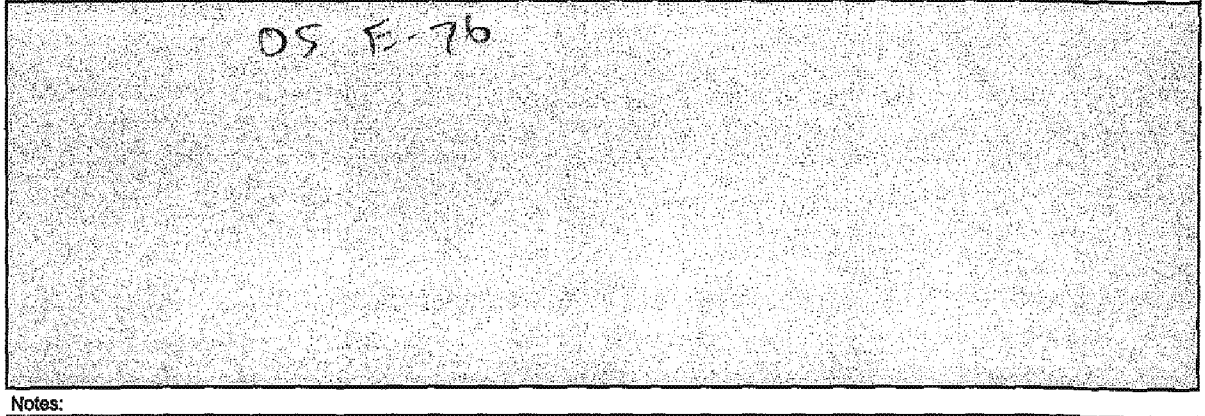
Digital File Name or DVD #: —

Current Year Span Length	58
Previous Year Span Length	67
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	21'59	0:53	
LinkQuest Northing	913324.69	913381.15	
LinkQuest Easting	1958 4962.87	1958 4915.88	
Digital File Filename	—	—	
Digital File Time	12:31	12:27	
Display Time	12:21	12:27	
Bottom Type at Repair	Clay/Sand/Rock	Clay/Sand	
Highest Span Height	1		
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.



Notes:

(88)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Drew	Steve
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Isaac

Pipeline Operation Information	
Is leg shutdown?	Yes
If so, date shutdown	8-27-12
Time Shutdown	6:00
Product in Line	NGL
If flowing, flow rate	NA
Density	
Time System for Time Shutdown	

Survey Geodetic Parameters	
Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	8
RTK Fix	Yes
—	—
—	—

Span Information

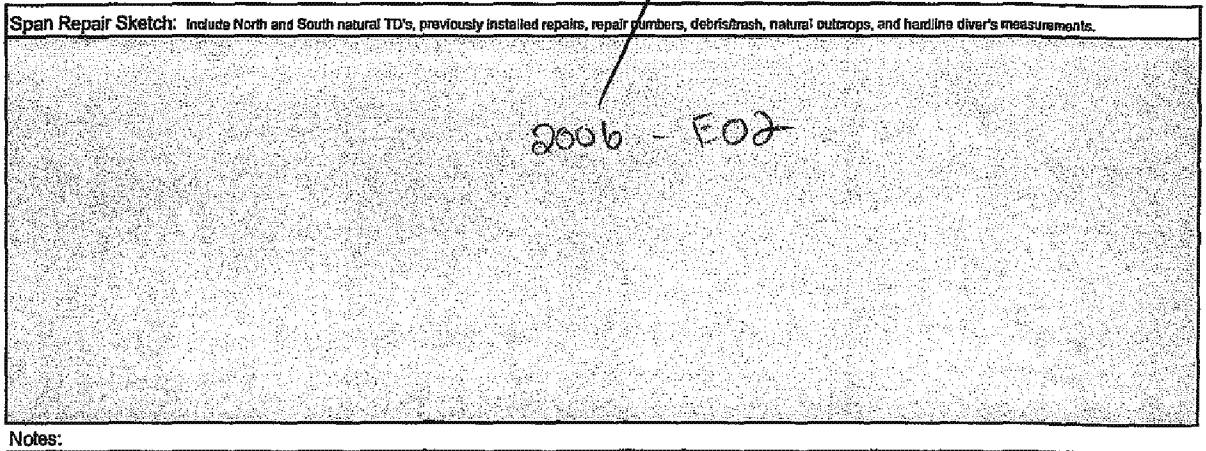
Date Surveyed	8-28-12
Tape Number	S01
Direction Flown	S-N
Water Depth	220
Current Year Span #	E02A
Previous Span #(s)	E-02A
Addit. Extensions Used?	—
Length of Extension(s)	—
Drilling Issues?	—

Anchor Positions	—
	—
Digital File Name or DVD #	
Current Year Span Length	76
Previous Year Span Length	80
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	7:30	1408	
LinkQuest Northing	913610.82	913681.35	
LinkQuest Easting	1584980.62	1584998.16	
Digital File Filename	—	—	
Digital File Time	12:36	12:40	
Display Time	12:36	12:40	
Bottom Type at Repair	Sand/Clay	Sand Clay (Anchor)	
Highest Span Height	1'	0.5'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.



Notes:

(89)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Jim Drew	Sam L.
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bigue

Pipeline Operation Information

Is leg shutdown?	Yes	
If so, date shutdown	8-27-12	
Time Shutdown	6:00	
Product In Line	NGL	Density
If flowing, flow rate	N/A	Time System for Time Shutdown

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	8
RTK Fix	Yes
—	—
—	—

Span Information

Date Surveyed	8-28-12	Anchor Positions	—
Tape Number	SP3		—
Direction Flown	S-N	Digital File Name or DVD #	—
Water Depth	215		
Current Year Span #	E-02B	Current Year Span Length	32
Previous Span #(s)	E-02B	Previous Year Span Length	30
Addit. Extensions Used?	—	Number of Dives to Complete	—
Length of Extension(s)	—	Date(s) of Dive(s)	—
Drilling Issues?	—	Dive number(s) for current campaign	—

* Drilling Issues: Include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	14:04	18:25	
LinkQuest Northing	913681.35	913711.41	
LinkQuest Easting	19584998.16	19585006.05	
Digital File Filename	—	—	
Digital File Time	13:40	17:44	
Display Time	13:40	13:44	
Bottom Type at Repair	Sand/Clay	Sand	
Highest Span Height	0.6'	0.5	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

2006 - E02

Notes:

90

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-16	Tom Prow	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bauer

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	8
RTK Fix	Yes
—	—
—	—

Pipeline Operation Information

Is leg shutdown?	Yes		
If so, date shutdown	8-27-12		
Time Shutdown	6:00		
Product In Line	N/A	Density	
If flowing, flow rate	N/A	Time System for Time Shutdown	

Span Information

Date Surveyed	8-28-12	Anchor Positions	—
Tape Number	SO-7		—
Direction Flown	S-N	Digital File Name or DVD #	—
Water Depth	220		
Current Year Span #	E-01A	Current Year Span Length	81
Previous Span #(s)	E-01A	Previous Year Span Length	84
Addit. Extensions Used?	—	Number of Dives to Complete	—
Length of Extension(s)	—	Date(s) of Dive(s)	—
Drilling Issues?	—	Dive number(s) for current campaign	—

* Drilling issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	20:35	24:59	
LinkQuest Northing	913728.17	913806.46	
LinkQuest Easting	19585609.50	19585033.00	
Digital File Filename	—	—	
Digital File Time	13:47	13:50	
Display Time	13:47	13:50	
Bottom Type at Repair	Sand	Sand / Anchor	
Highest Span Height	3'	7'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardtime diver's measurements.

Notes:

(71)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Prew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bauer

Survey Geodetic Parameters	
Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	8
RTK Fix	Yes

Pipeline Operation Information			
Is leg shutdown?	Yes		
If so, date shutdown	8-27-12		
Time Shutdown	6:00		
Product In Line	N/A	Density	
If flowing, flow rate	N/A	Time System for Time Shutdown	

Span Information			
Date Surveyed	8-28-12	Anchor Positions	—
Tape Number	SD-3		—
Direction Flown	S-N	Digital File Name or DVD #	—
Water Depth	215		
Current Year Span #	E-01B-A	Current Year Span Length	95
Previous Span #(s)	E-01B-A	Previous Year Span Length	100
Addit. Extensions Used?	—	Number of Dives to Complete	—
Length of Extension(s)	—	Date(s) of Dive(s)	—
Drilling Issues?	—	Dive number(s) for current campaign	—

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	24:55	6:20	
LinkQuest Northing	913806.46	913894.57	
LinkQuest Easting	1958503.30	1958505.9.85	
Digital File Filename	—	—	
Digital File Time	12:50	12:57	
Display Time	12:50	12:57	
Bottom Type at Repair	Sand/Anchor	Sand, Anchor	
Highest Span Height	3'	2-3'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Notes:

(62)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Drew	—
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Drew

Survey Geodetic Parameters	
Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	8
RTK Fix	Yes
—	—
—	—

Pipeline Operation Information

Is leg shutdown?	Yes	
If so, date shutdown	8-27-12	
Time Shutdown	6:00	
Product In Line	N/A	Density
If flowing, flow rate	N/A	Time System for Time Shutdown

Span Information

Date Surveyed	8-28-12	Anchor Positions	—
Tape Number	SD-3		—
Direction Flown	S-N	Digital File Name or DVD #	—
Water Depth	205		
Current Year Span #	E-01B-D	Current Year Span Length	81
Previous Span #(s)	E-01B-B	Previous Year Span Length	62
Addit. Extensions Used?	—	Number of Dives to Complete	—
Length of Extension(s)	—	Date(s) of Dive(s)	—
Drilling Issues?	—	Dive number(s) for current campaign	—

* Drilling issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	6:20	14:03	
LinkQuest Northing	913894.51	913973.92	
LinkQuest Easting	19585059.85	19585080.37	
Digital File Filename	—	—	
Digital File Time	13:57	14:03	
Display Time	13:57	14:03	
Bottom Type at Repair	Sandy / Anchor	Sandy	
Highest Span Height	31	1	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Notes:

(93)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Vicu	Sqm
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Baker

Pipeline Operation Information

Is leg shutdown?	YES	
If so, date shutdown	8-27-12	
Time Shutdown	6:00	
Product In Line	NGL	Density
If flowing, flow rate	NA	Time System for Time Shutdown

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	9
RTK Fix	Yes

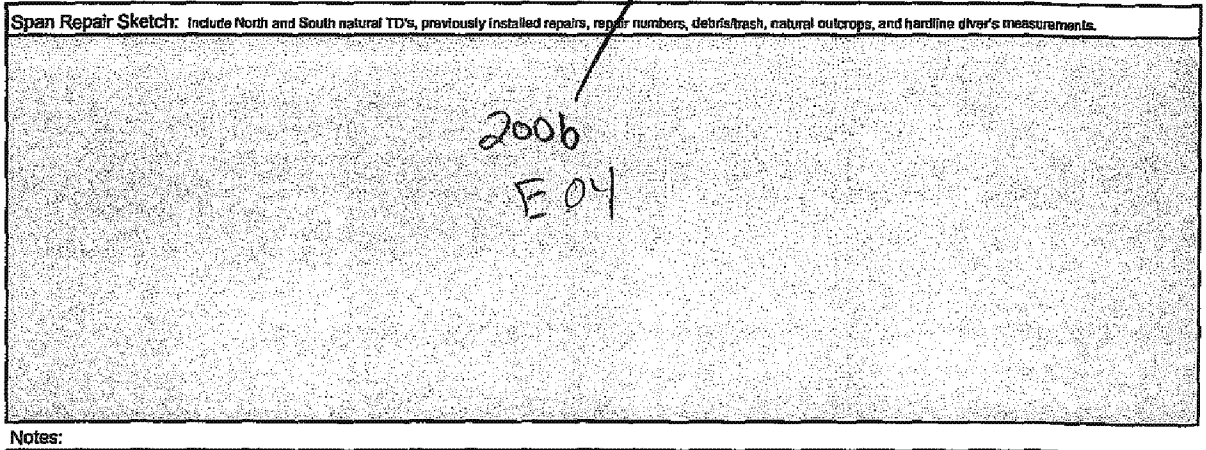
Span Information

Date Surveyed	8-28-12	Anchor Positions	-
Tape Number	SP-3		-
Direction Flown	S-N	Digital File Name or DVD #	-
Water Depth	188		
Current Year Span #	E-04A	Current Year Span Length	84
Previous Span #(s)	E-04A	Previous Year Span Length	82
Addit. Extensions Used?	-	Number of Dives to Complete	-
Length of Extension(s)	-	Date(s) of Dive(s)	-
Drilling Issues?	-	Dive number(s) for current campaign	-

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	2040	22'20	
LinkQuest Northing	914012.01	914090.61	
LinkQuest Easting	19585093.04	19585118.04	
Digital File Filename	—	—	
Digital File Time	14:11	14:14	
Display Time	14:11	14:14	
Bottom Type at Repair	Sandy	Sandy / Anchor	
Highest Span Height	1'	1'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.



Notes:

(94)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Drew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Beyer

Pipeline Operation Information

Is leg shutdown?	Yes
If so, date shutdown	9-27-12
Time Shutdown	6:00
Product In Line	N/A
If flowing, flow rate	N/A
Density	
Time System for Time Shutdown	

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	8
RTK Fix	Yes
	—
	—

Span Information

Date Surveyed	8-28-12
Tape Number	SD-3
Direction Flown	S-N
Water Depth	176
Current Year Span #	E04B
Previous Span #(s)	E04D
Addit. Extensions Used?	—
Length of Extension(s)	—
Drilling Issues?	—

Anchor Positions: —

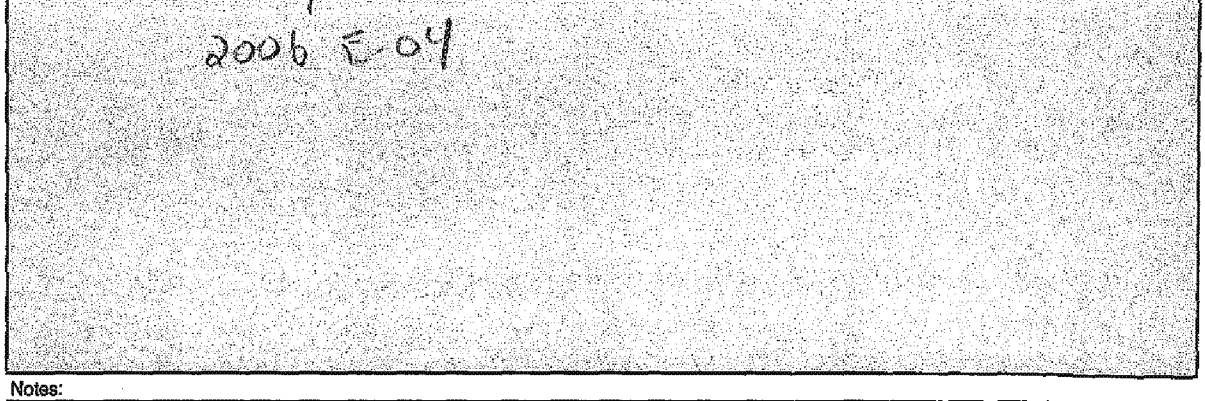
Digital File Name or DVD #: —

Current Year Span Length	20
Previous Year Span Length	26
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	23:20	3:02	
LinkQuest Northing	914090.61	914107.21	
LinkQuest Easting	1958518.01	1958520.42	
Digital File Filename	—	—	
Digital File Time	14:14	14:19	
Display Time	14:14	14:19	
Bottom Type at Repair	Sandy / Anchor	Sandy	
Highest Span Height	2'	0.5'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.



Notes:

(95)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Prow	Sage
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bauer

Pipeline Operation Information

Is leg shutdown?	Yes
If so, date shutdown	8-27-12
Time Shutdown	6:00
Product in Line	NGL
If flowing, flow rate	NA

Density

Time System for Time Shutdown

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	8
RTK Fix	Yes

Span Information

Date Surveyed	8-28-12
Tape Number	SO-2
Direction Flown	S-N
Water Depth	169
Current Year Span #	E-05A
Previous Span #(s)	E-05A
Addit. Extensions Used?	—
Length of Extension(s)	—
Drilling Issues?	—

Anchor Positions	—
	—
Digital File Name or DVD #	—

Current Year Span Length	80
Previous Year Span Length	75
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	5:20	9:10	
LinkQuest Northing	914148.81	914228.13	
LinkQuest Easting	1958513.94	1958585.62	
Digital File Filename	—	—	
Digital File Time	14:21	14:26	
Display Time	14:21	14:26	
Bottom Type at Repair	Sand	Sand / Anchor	
Highest Span Height	1'	1'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Notes:

(96)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Plew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Daw

Pipeline Operation Information

Is leg shutdown?	Yes	
If so, date shutdown	8-27-12	
Time Shutdown	6:00	
Product In Line	NGL	Density
If flowing, flow rate	N/A	Time System for Time Shutdown

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	9
RTK Fix	Yes
—	—

Span Information

Date Surveyed	8-28-12
Tape Number	SD-7
Direction Flown	S-N
Water Depth	158
Current Year Span #	E-05B
Previous Span #(s)	E-05B
Addit. Extensions Used?	—
Length of Extension(s)	—
Drilling Issues?	—

Anchor Positions	—
	—
Digital File Name or DVD #	—

Current Year Span Length	65
Previous Year Span Length	63
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	9:10	12:55	
LinkQuest Northing	914228.13	914291.35	
LinkQuest Easting	19585154	19585171.35	
Digital File Filename	—	—	
Digital File Time	14:26	14:29	
Display Time	14:26	14:29	
Bottom Type at Repair	Sand / Anchor	Sand	
Highest Span Height	1	1	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and handline diver's measurements.

Notes:

(97)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Plow	Jime
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Dever

Pipeline Operation Information

Is leg shutdown?	8-27-12
If so, date shutdown	Yes
Time Shutdown	6:00
Product In Line	N/A
If flowing, flow rate	N/A

Density —

Time System for Time Shutdown —

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	8
RTK Fix	Yes

Span Information

Date Surveyed	8-28-12
Tape Number	SD-3
Direction Flown	S-N
Water Depth	114
Current Year Span #	E-06
Previous Span #(s)	E-06
Addit. Extensions Used?	—
Length of Extension(s)	—
Drilling Issues?	—

Anchor Positions —

Digital File Name or DVD # —

Current Year Span Length	60
Previous Year Span Length	60
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	19:25	22:00	
LinkQuest Northing	914507.96	914567.06	
LinkQuest Easting	1958537.91	1958549.72	
Digital File Filename	—	—	
Digital File Time	14:36	14:39	
Display Time	14:36	14:39	
Bottom Type at Repair	Sand	Sand	
Highest Span Height	0.5'	0.5'	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Notes:

(98)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Drew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Dunn

Pipeline Operation Information			
Is leg shutdown?	Yes		
If so, date shutdown	8-27-12		
Time Shutdown	6:40		
Product In Line	N/A	Density	
If flowing, flow rate	N/A	Time System for Time Shutdown	

Survey Geodetic Parameters	
Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	8
RTK Fix	Yes
—	—
—	—

Span Information

Date Surveyed	8-28-12	Anchor Positions	—
Tape Number	SD-3		—
Direction Flown	S-N	Digital File Name or DVD #	—
Water Depth	102		
Current Year Span #	E-07	Current Year Span Length	62
Previous Span #(s)	E-07	Previous Year Span Length	72
Addit. Extensions Used?	—	Number of Dives to Complete	—
Length of Extension(s)	—	Date(s) of Dive(s)	—
Drilling Issues?	—	Dive number(s) for current campaign	—

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	24:25	1:00	
LinkQuest Northing	914605.60	914664.25	
LinkQuest Easting	19585261.74	19585278.24	
Digital File Filename	—	—	
Digital File Time	14:41	14:43	
Display Time	14:41	14:43	
Bottom Type at Repair	Sand	Sand	
Highest Span Height	0.5	0.5	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.

Notes:

(99)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Prew	Sage
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bauer

Pipeline Operation Information

Is leg shutdown?	Yes	
If so, date shutdown	8-27-12	
Time Shutdown	6:00	
Product in Line	NGL	Density
If flowing, flow rate	N/A	Time System for Time Shutdown

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	8
RTK Fix	Yes
—	—
—	—

Span Information

Date Surveyed	8-28-12
Tape Number	SD-3
Direction Flown	S-N
Water Depth	6-3
Current Year Span #	E-65A
Previous Span #(s)	E-65A
Addit. Extensions Used?	—
Length of Extension(s)	—
Drilling Issues?	—

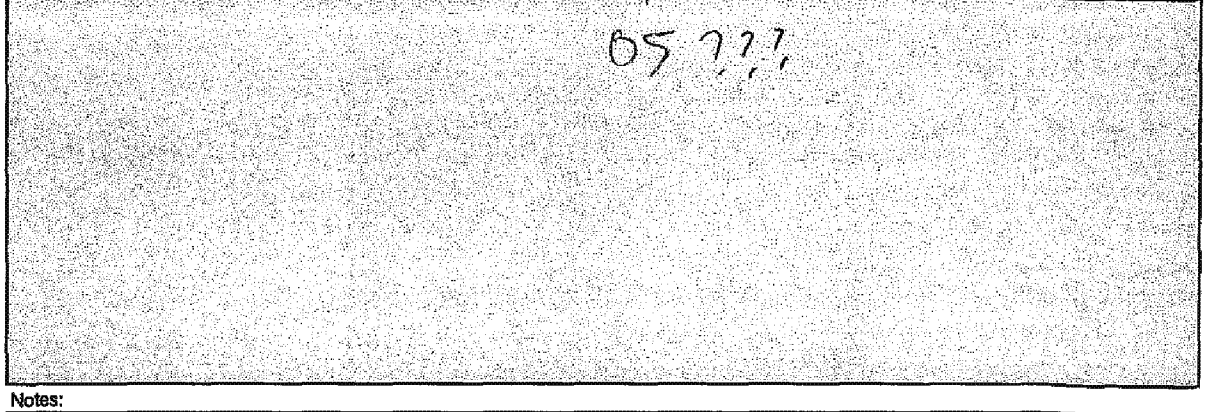
Anchor Positions	—
	—
Digital File Name or DVD #	—

Current Year Span Length	64
Previous Year Span Length	67
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	15:10	18:55	
LinkQuest Northing	915102.41	915162.89	
LinkQuest Easting	19585399.82	19585415.87	
Digital File Filename	—	—	
Digital File Time	14:57	15:00	
Display Time	14:57	15:00	
Bottom Type at Repair	Sand	Soft Anchor	
Highest Span Height	0.5	2	
TD O'clock Positions			

Span Repair Sketch: Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.



Notes:

100

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Drew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Beaver

Pipeline Operation Information

Is leg shutdown?	8-27-12	
If so, date shutdown	Yes	
Time Shutdown	6:00	
Product In Line	N/A	Density
If flowing, flow rate	N/A	Time System for Time Shutdown

Survey Geodetic Parameters

Grid	SP (NAD 83)
Zone	MI Central 2112
Survey Units	U.S. Feet
Ellipsoid	WGS-84
GPS Correction	RTK
Qty of Satellites	8
RTK Fix	Yes
	—
	—

Span Information

Date Surveyed	8-28-12
Tape Number	SD-3
Direction Flown	S-N
Water Depth	58
Current Year Span #	E-65D
Previous Span #(s)	E-65D
Addit. Extensions Used?	—
Length of Extension(s)	—
Drilling Issues?	—

Anchor Positions	—
	—
Digital File Name or DVD #	—

Current Year Span Length	101
Previous Year Span Length	60
Number of Dives to Complete	—
Date(s) of Dive(s)	—
Dive number(s) for current campaign	—

* Drilling Issues: include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	18:55	22:20	
LinkQuest Northing	915162.89	915223.38	
LinkQuest Easting	1958541 5.87	1958 5430.04	
Digital File Filename	—	—	
Digital File Time	15:00	15:04	
Display Time	15:00	15:04	
Bottom Type at Repair	Sand / Anchor	Sand	
Highest Span Height	1'	0.5'	
TD O'clock Positions			

Span Repair Sketch: *Include North and South natural TD's, previously installed repairs, repair numbers, debris/trash, natural outcrops, and hardline diver's measurements.*

Notes: