(1)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Thomas 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	9-23-12	
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	9-24-12	Anchor Positions	—
Tape Number	SD card 2		
Direction Flown	S-N	Digital File Name or DVD #	—
Water Depth	89'		
Current Year Span #	W-62	Current Year Span Length	46
Previous Span #(s)	W-62	Previous Year Span Length	49
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	7:20	12:30	
LinkQuest Northing	914596.66	914552.61	
LinkQuest Easting	1958399.88	1958392.52	
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 Rader

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/66
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	501
Direction Flown	S-N
Water Depth	85
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	9143160.07	9140246.40	
LinkQuest Easting	1957[illegible]13.68	1958402[illegible].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	Same
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
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 2
Direction Flown	B-A
Water Depth	75
Current Year Span #	W63-B
Previous Span #(s)	W-63-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	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	25:37	7:10	
LinkQuest Northing	9149241.40	9149172.89	
LinkQuest Easting	1958402552	1958402120	
Digital File Filename			
Digital File Time	8:45	7:50	
Display Time	9:42	8:50	
Bottom Type at Repair	Sandy	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 Sauer

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	8-21-12
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?	—

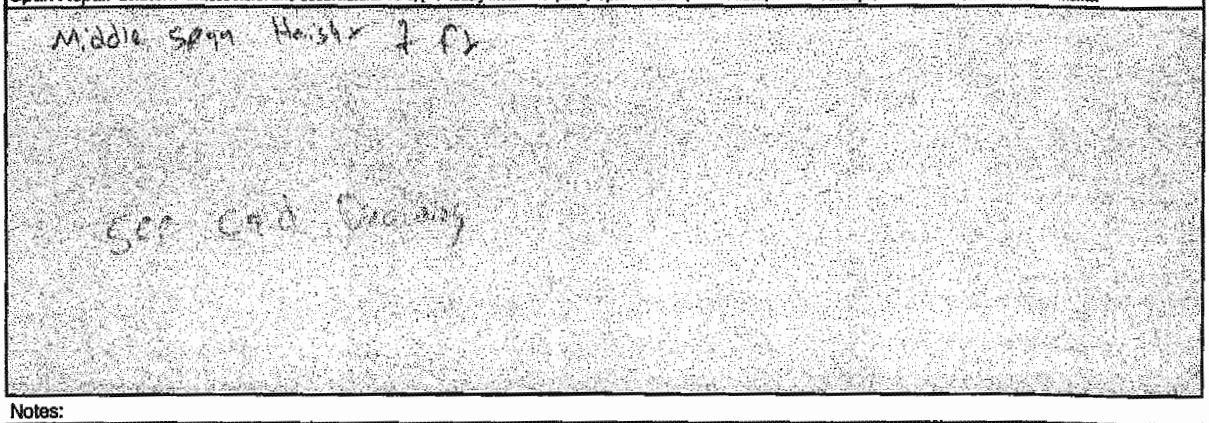
Anchor Positions	—
	—
Digital File Name or DVD #	—

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	6:23	9:25	
LinkQuest Northing	9191[illegible]0.61	9[illegible]3204.81	
LinkQuest Easting	1958[illegible]088.70	1958[illegible]08.36	
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	11'	11'	
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:

(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.	490259S.10.071	Chris Ryan

Pipeline Operation Information

Is leg shutdown?	Yes
If so, date shutdown	5.22.12
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	8-24-12
Tape Number	20 A
Direction Flown	S-N
Water Depth	73'
Current Year Span #	W-64
Previous Span #(s)	W-64
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	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/trash, 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

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	Air	Density	
If flowing, flow rate	N/A	Time System for Time Shutdown	

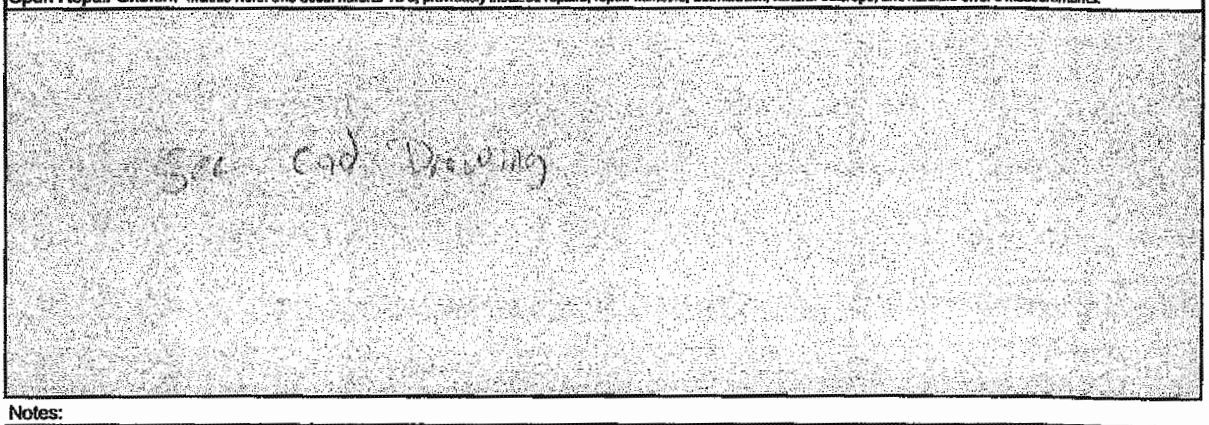
Span Information

Date Surveyed	8-24-12	Anchor Positions	
Tape Number	SD 1		
Direction Flown	S-N	Digital File Name or DVD #	
Water Depth	91		
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	22:25	00:15	
LinkQuest Northing	9194116.68	9194203.93	
LinkQuest Easting	1458915.54	1458418.57	
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 hardline 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	8-23-12	
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	~~no~~ yes
	—
	—

Span Information

Date Surveyed	8-24-12
Tape Number	202
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	5'46	7'35	
LinkQuest Northing	915687.90	915732.90	
LinkQuest Easting	1938'220.09	1938'243.59	
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 Ford	Sonar
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	4902595.10.071	Chris Reed

Pipeline Operation Information

Is leg shutdown?	Yes
If so, date shutdown	8-23-12
Time Shutdown	22:05
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	18
RTK Fix	Yes

Span Information

Date Surveyed	8-24-12
Tape Number	SO 1
Direction Flown	N-S
Water Depth	122
Current Year Span #	W-61
Previous Span #(s)	W-61
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	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	13:55	18:20	
LinkQuest Northing	914211.98	914143.23	
LinkQuest Easting	1958384.45	1958325.01	
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	Shane
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	480259S.10.071	Chris Rau

Pipeline Operation Information

Is leg shutdown?	Yes
If so, date shutdown	9-23-12
Time Shutdown	2300
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	9-24-12
Tape Number	SD 2
Direction Flown	S-N
Water Depth	137
Current Year Span #	W-79
Previous Span #(s)	W-79
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.

W-79 Sited 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	8-23-12		
Time Shutdown	2:15 PM		
Product In Line	Crude	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	146		
Current Year Span #	W60B	Current Year Span Length	91
Previous Span #(s)	W60B	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	0:30	21:45	
LinkQuest Northing	913984.49	914070.42	
LinkQuest Easting	1958378103	19583807.74	
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	20'	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	Some
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	8-24-12
Time Shutdown	22:15
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	8-24-12
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 —

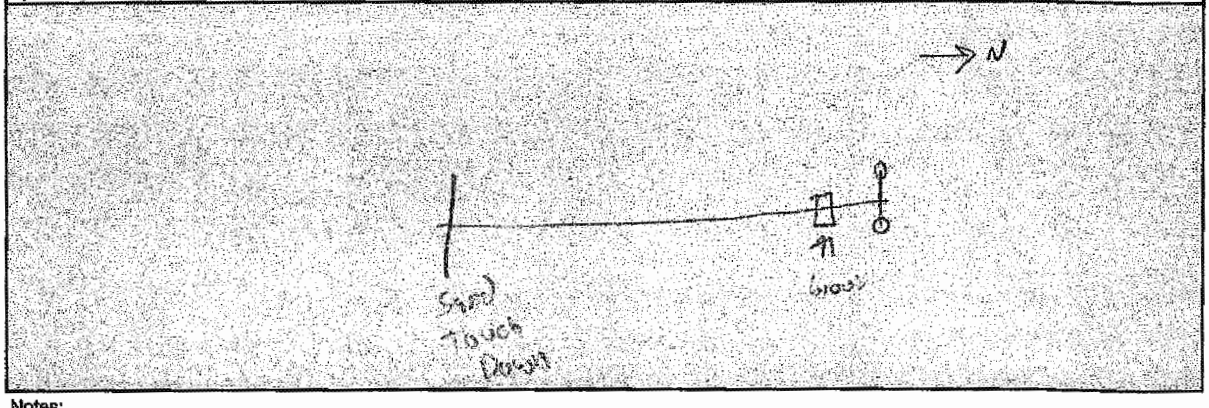
Digital File Name or DVD # —

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	08.06	0:3.6	
LinkQuest Northing	913927.33	913984.49	
LinkQuest Easting	19583768.64	19583781.03	
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:

(13)

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	9-23-12	
Time Shutdown	21:00	
Product In Line	Nat Gas	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	9-24-12
Tape Number	SD 1
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 Drew	Shane
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Ward

Pipeline Operation Information

Is leg shutdown?	Yes
If so, date shutdown	8-23-12
Time Shutdown	2300
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	SD1
Direction Flown	N-S
Water Depth	182
Current Year Span #	W-58AN
Previous Span #(s)	W-58A
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	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	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 Rowe

Pipeline Operation Information

Is leg shutdown?	Yes	
If so, date shutdown	8-23-12	
Time Shutdown	2 PM	
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	7
RTK Fix	Yes

Span Information

Date Surveyed	8-24-12
Tape Number	304
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	9176[illegible]2.58	913663.08	
LinkQuest Easting	1958369[illegible]1.04	1958370[illegible]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 Bauer

Pipeline Operation Information

Is leg shutdown?	yes
If so, date shutdown	8-23-12
Time Shutdown	23:00
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	8-24-12
Tape Number	SD2
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 -

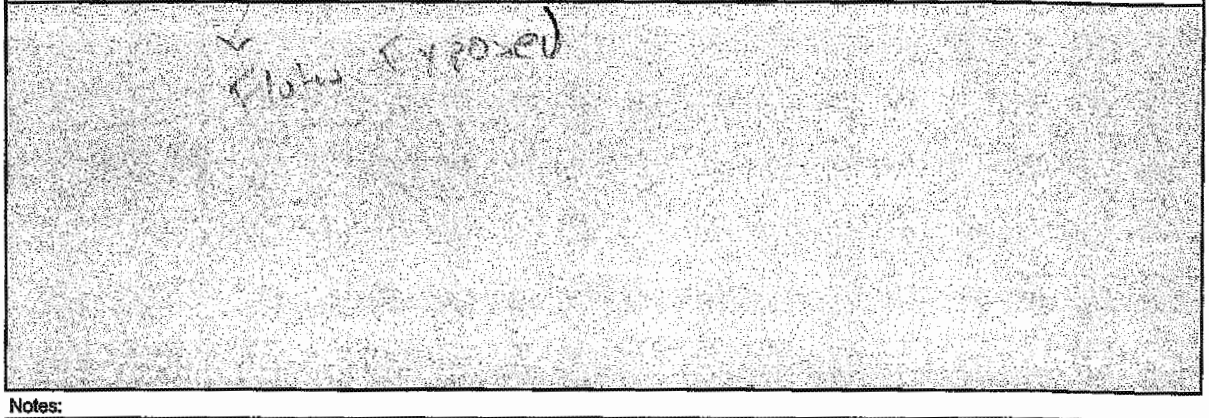
Digital File Name or DVD # -

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	1958366.34	1958369.04	
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.



Notes:

(16)

Straits of Mackinac Structural Integrity Support Span Repair Log

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

Pipeline Operation Information

Is leg shutdown?	Yes	
If so, date shutdown	8-03-12	
Time Shutdown	23:00	
Product In Line	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
	—
	—

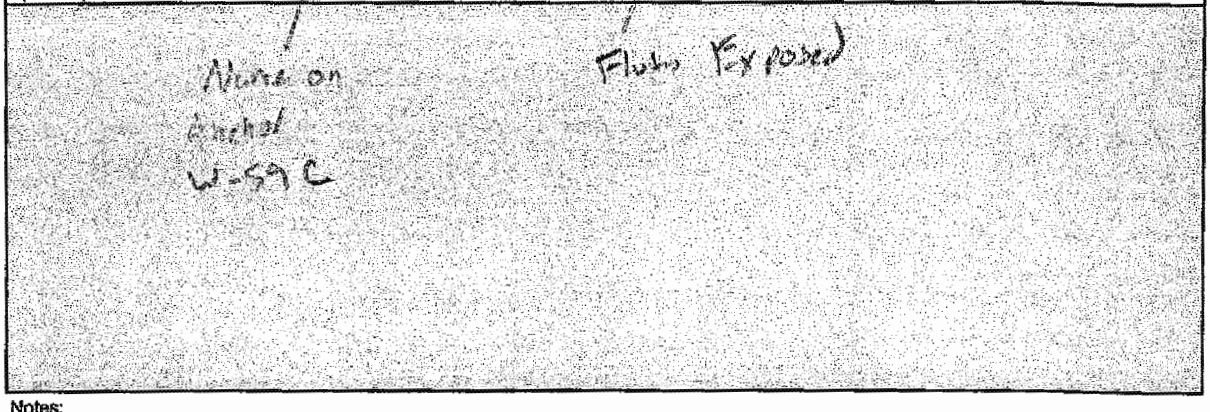
Span Information

Date Surveyed	8-24-12	Anchor Positions	—
Tape Number	201		—
Direction Flown	N-S	Digital File Name or DVD #	—
Water Depth	225		
Current Year Span #	W-59 A	Current Year Span Length	91
Previous Span #(s)	W-59 A	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	2:35	20:23	
LinkQuest Northing	913450.90	913539.50	
LinkQuest Easting	1958363 8.25	1958366 3.34	
Digital File Filename			
Digital File Time	11:55	11:49	
Display Time	11:55	11:49	
Bottom Type at Repair	Sand w/ Anchor	Sand w/ 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.	480269S.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 GL	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
—	—
—	—

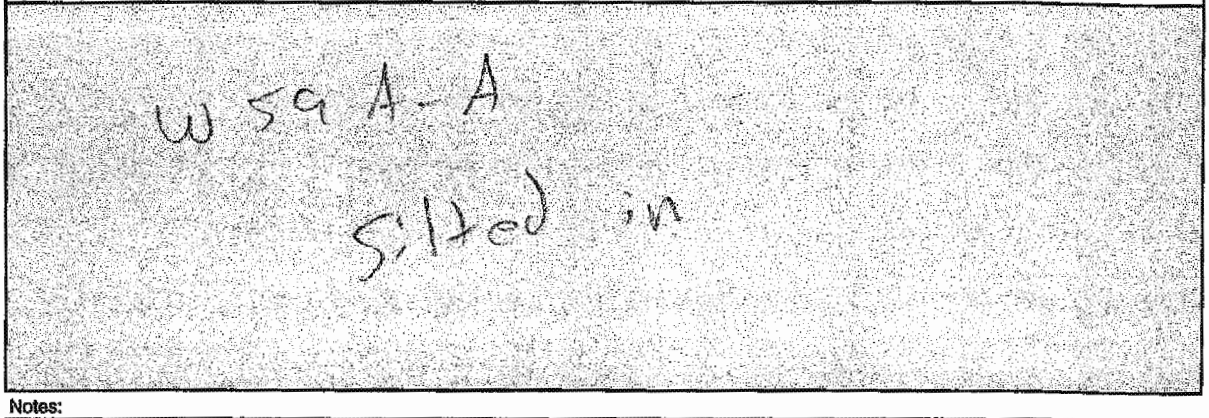
Span Information

Date Surveyed	8-24-12	Anchor Positions	—
Tape Number	SD1	—	—
Direction Flown	N-S	Digital File Name or DVD #	—
Water Depth	220		
Current Year Span #		Current Year Span Length	
Previous Span #(s)	W-59 A-A	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.



Notes:

(18)

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	9-23-12
Time Shutdown	22:00
Product in Line	Oil
If flowing, flow rate	NA

Density

Time System for Time Shutdown

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	19583579.29	19583559.96	
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 Pyeu	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	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	8-24-12	Anchor Positions	—
Tape Number	501	—	—
Direction Flown	N-S	Digital File Name or DVD #	—
Water Depth	237		
Current Year Span #	W54-B	Current Year Span Length	49
Previous Span #(s)	W54-B	Previous Year Span Length	88
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	13:20	9:00	
LinkQuest Northing	912953.18	913000.20	
LinkQuest Easting	1958511.73	1958323.28	
Digital File Filename			
Digital File Time	12:32	12:28	
Display Time	12:32	12:28	
Bottom Type at Repair	C/G/V	C/G/V	
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

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	SD1
Direction Flown	N-S
Water Depth	238
Current Year Span #	W54A
Previous Span #(s)	W54A
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	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	24:30	1810	
LinkQuest Northing	912866.17	912921.72	
LinkQuest Easting	1958591.22	1958361.25	
Digital File Filename			
Digital File Time	12:44	12:38	
Display Time	12:44	12:38	
Bottom Type at Repair	Clay	Sand w/ 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 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	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	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	1958432.31	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	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	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	9125286.03	9125776.45	
LinkQuest Easting	1958339.1.52	1958312.51	
Digital File Filename			
Digital File Time	12:01	12:58	
Display Time	12:09	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:

(77)

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 Bever

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	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	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	7:10	0:12	
LinkQuest Northing	912148.24	912504.66	
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 / Gravel 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

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	501
Direction Flown	N-S
Water Depth	248
Current Year Span #	4.72 B
Previous Span #(s)	4.72 B
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	100
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	11:45	3:10	
LinkQuest Northing	912354.18	912418.24	
LinkQuest Easting	1958356.31	1958379.67	
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 Rauel

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
If flowing, flow rate	N/A

Density

Time System for Time Shutdown

Span Information

Date Surveyed	8-24-12
Tape Number	SD1
Direction Flown	N-S
Water Depth	248
Current Year Span #	W72A
Previous Span #(s)	W72A
Addit. Extensions Used?	
Length of Extension(s)	
Drilling Issues?	

Anchor Positions	—
	—
Digital File Name or DVD #	—

Current Year Span Length	103
Previous Year Span Length	100
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	18:20	11:45	
LinkQuest Northing	9122 53.88	9123541.18	
LinkQuest Easting	1958327.12	1558327561.11	
Digital File Filename			
Digital File Time	13:28	13:22	
Display Time	13:28	13:22	
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 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	9
RTK Fix	Yes
—	—
—	—

Span Information

Date Surveyed	8-24-12
Tape Number	SD 1
Direction Flown	N-S
Water Depth	294
Current Year Span #	W-91
Previous Span #(s)	W-91
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	912178.26	912252.88	
LinkQuest Easting	1998308.25	1998329.12	
Digital File Filename			
Digital File Time	13:25	13:28	
Display Time	13:25	13:28	
Bottom Type at Repair	Sandy	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:

(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	9-23-12
Time Shutdown	22:00
Product In Line	N66
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	9-24-12
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	9120752	
LinkQuest Easting	1958326.45	1958329.65	
Digital File Filename			
Digital File Time	13:48	13:54	
Display Time	13:48	13:44	
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:

ENBDNR0000327

28

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 Bauer

Pipeline Operation Information

Is leg shutdown?	Yes	
If so, date shutdown	8-23-12	
Time Shutdown	Yes	
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	S01
Direction Flown	N-S
Water Depth	209
Current Year Span #	W-684
Previous Span #(s)	W-684
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	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	19.40	13.10	
LinkQuest Northing	911959.27	912032.67	
LinkQuest Easting	1958[illegible]2246.98	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 Rubble	
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

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
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	4:30	24:05	
LinkQuest Northing	911779.04	911846.81	
LinkQuest Easting	19 9 832.00.00	1958?.217.70	
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 Piew	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	501
Direction Flown	N-S
Water Depth	177
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	911720.11	
LinkQuest Easting	1958318[illegible]	1958318[illegible]	
Digital File Filename			
Digital File Time	14:13	14:11	
Display Time	14:13	14:11	
Bottom Type at Repair	Some 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

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	SD1
Direction Flown	N-S
Water Depth	177
Current Year Span #	W70 S
Previous Span #(s)	W70
Addit. Extensions Used?	
Length of Extension(s)	
Drilling Issues?	

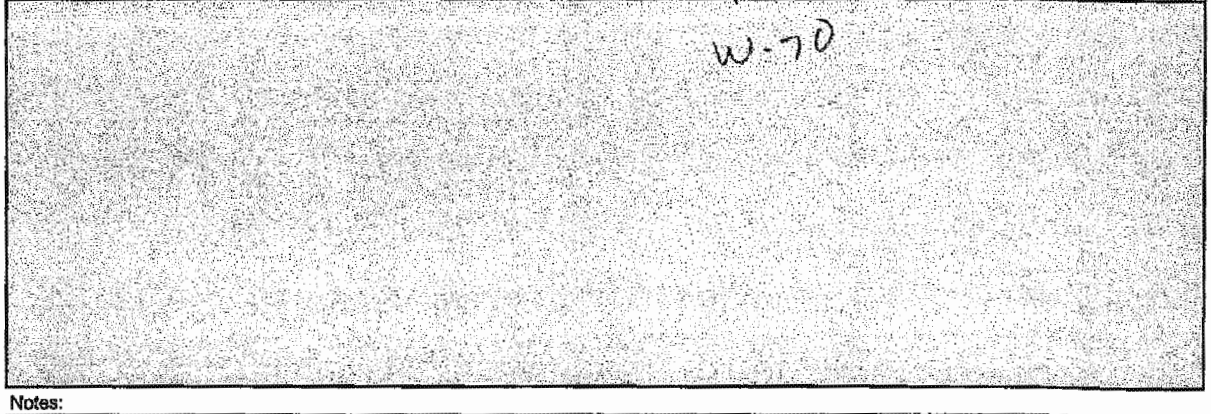
Anchor Positions	-
	-
Digital File Name or DVD #	-

Current Year Span Length	43
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	17:45	12:00	
LinkQuest Northing	93666.97	911707.64	
LinkQuest Easting	1958316.32	1958331.57	
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.



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 Bower

Pipeline Operation Information

Is leg shutdown?	Yes
If so, date shutdown	9-23-10
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	8-24-10
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	19583138.96	
Digital File Filename			
Digital File Time	14:29	14:24	
Display Time	14:29	14:24	
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	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	8
RTK Fix	Yes
	—
	—

Span Information

Date Surveyed	8-24-10
Tape Number	SD1
Direction Flown	N-S
Water Depth	172
Current Year Span #	W52-A
Previous Span #(s)	W52-A
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	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	9:30	1:50	
LinkQuest Northing	911474.35	911532.96	
LinkQuest Easting	1958318.69	1958313.27	
Digital File Filename			
Digital File Time	14:27	14:29	
Display Time	14:37	14:39	
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-19972-10	Tom Prew	Sam L
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:MD
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	8-24-12
Tape Number	S02
Direction Flown	N-S
Water Depth	173
Current Year Span #	W-52
Previous Span #(s)	W-52
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	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	17:45	14:10	
LinkQuest Northing	911335.15	911792.16	
LinkQuest Easting	1958307G.91	1958309G.09	
Digital File Filename			
Digital File Time	14:46	14:48	
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 Drew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Dever

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	9-23-12	
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 48 B	Current Year Span Length	67
Previous Span #(s)	W 48 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	23:30	20:30	
LinkQuest Northing	911245.27	911308.69	
LinkQuest Easting	19583053.12	19587072.91	
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 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	9
RTK Fix	Yes
	-
	-

Span Information

Date Surveyed	8-24-12
Tape Number	SO 9
Direction Flown	N-S
Water Depth	176
Current Year Span #	W-48A
Previous Span #(s)	W-48A
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	1958303.64	1958305.12	
Digital File Filename			
Digital File Time	14:58	14:51	
Display Time	14:58	14:51	
Bottom Type at Repair	Sandy Clay Hump	Sandy Anchor	
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 Frew	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	23:00
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	7
RTK Fix	Yes

Span Information

Date Surveyed	8-24-12
Tape Number	SD2
Direction Flown	N-S
Water Depth	176
Current Year Span #	W-49
Previous Span #(s)	W-49
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	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	9110	41.26	
LinkQuest Northing	911133.85	911185.28	
LinkQuest Easting	1958302[illegible].66	1958302[illegible].44	
Digital File Filename			
Digital File Time	15:02	14:58	
Display Time	15:02	14:50	
Bottom Type at Repair	Clay Mix	Sand Clay Mix	
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.

Notes:

(36)

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 Bauer

Pipeline Operation Information

Is leg shutdown?	Yes
If so, date shutdown	4-23-12
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

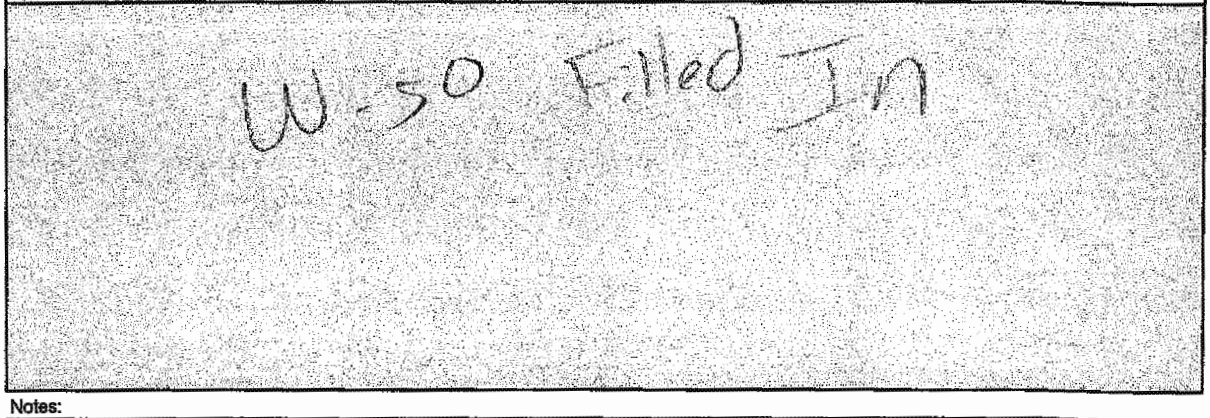
Date Surveyed	8-24-12
Tape Number	SD1
Direction Flown	N-S
Water Depth	176
Current Year Span #	
Previous Span #(s)	W-50
Addit. Extensions Used?	-
Length of Extension(s)	-
Drilling Issues?	-

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:

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 Bauer

Pipeline Operation Information

Is leg shutdown?	Yes
If so, date shutdown	8-23-12
Time Shutdown	2100
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	502
Direction Flown	N-S
Water Depth	174
Current Year Span #	W-518
Previous Span #(s)	W-518
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	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	17:54	13:15	
LinkQuest Northing	910974.63	911053.73	
LinkQuest Easting	1958248.27	1958300.29	
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:

(4D)

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	8-23-12	
Time Shutdown	22:20	
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	9-24-12
Tape Number	C01
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	1958298.15	1958299.87	
Digital File Filename			
Digital File Time	15:15	15:12	
Display Time	15:15	15:12	
Bottom Type at Repair	Sandy	Sandy / Mud	
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:

41

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	SD 1
Direction Flown	N-S
Water Depth	1754
Current Year Span #	4a-4a7
Previous Span #(s)	4a-4a7
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	910982.04	910937.18	
LinkQuest Easting	1958296817	1958297824	
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 handline 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 Piend	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Brown

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	8-24-12
Tape Number	SD 7
Direction Flown	N-S
Water Depth	170
Current Year Span #	W46
Previous Span #(s)	W46
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	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	19582910.91	19582919.99	
Digital File Filename			
Digital File Time	15:21	15:25	
Display Time	15:31	15:28	
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 hardline diver's measurements.

Notes:

ENBDNR0000342

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 Power

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	8-24-12
Tape Number	SD1
Direction Flown	N-S
Water Depth	166
Current Year Span #	W-595
Previous Span #(s)	W-414
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	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	1:10	24-10	
LinkQuest Northing	910621.00	910647.52	
LinkQuest Easting	1958289.47	1958297.21	
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 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 Bower

Pipeline Operation Information	
Is leg shutdown?	Yes
If so, date shutdown	8-22-12
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	8-24-12
Tape Number	SD 2
Direction Flown	N-S
Water Depth	166
Current Year Span #	W42 B
Previous Span #(s)	W42 B
Addit. Extensions Used?	-
Length of Extension(s)	-
Drilling Issues?	-

Anchor Positions	-
	-
Digital File Name or DVD #	-
Current Year Span Length	71
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	9:10	4:15	
LinkQuest Northing	9105 45.43	9106 15.01	
LinkQuest Easting	1953 286.33	1953 283.98	
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 Piret	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Dauer

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	8-23-12		
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	SD 1		-
Direction Flown	N-S	Digital File Name or DVD #	-
Water Depth	166		
Current Year Span #	W424	Current Year Span Length	70
Previous Span #(s)	W42-A	Previous Year Span Length	73
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	15:50	9:10	
LinkQuest Northing	910477.53	910545.43	
LinkQuest Easting	1958285.85	1958286.33	
Digital File Filename			
Digital File Time	16:00	15:54	
Display Time	16:00	15:54	
Bottom Type at Repair	Sand	Sandy Anchor	
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 Pruw	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	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	9
RTK Fix	Yes
—	—
—	—

Span Information

Date Surveyed	8-24-12	Anchor Positions	—
Tape Number	S01		—
Direction Flown	N-S	Digital File Name or DVD #	—
Water Depth	166		
Current Year Span #	W-43B	Current Year Span Length	68
Previous Span #(s)	W-43B	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	24:00	17:56	
LinkQuest Northing	910396.86	910462.05	
LinkQuest Easting	1958299.20	1958284636	
Digital File Filename			
Digital File Time	16:06	16:03	
Display Time	16:08	16:03	
Bottom Type at Repair	Sand / Anchor	Clay	
Highest Span Height	2'	2'	
TD O'clock Positions			

Span Repair Sketch: Include North end 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	Crew
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Shaw

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	8-24-12
Tape Number	SP 1
Direction Flown	N-S
Water Depth	162
Current Year Span #	W-43A
Previous Span #(s)	W-43A
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	64
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	10:15	24:00	
LinkQuest Northing	910336.66	910396.86	
LinkQuest Easting	1958282.58	1958289.30	
Digital File Filename			
Digital File Time	16:20	16:05	
Display Time	16:20	16:05	
Bottom Type at Repair	Sand	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 Hoag	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Ware

Pipeline Operation Information	
Is leg shutdown?	Yes
If so, date shutdown	8-23-12
Time Shutdown	82:00
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	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 43.39	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 Drew	Same
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	22:00	
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	8-24-12
Tape Number	SD2
Direction Flown	N-S
Water Depth	144
Current Year Span #	W414
Previous Span #(s)	W.414A
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	20:00	16:40	
LinkQuest Northing	9101560.03	9102413.39	
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	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Dacier

Pipeline Operation Information

Is leg shutdown?	Yes	
If so, date shutdown	8-23-12	
Time Shutdown	12:00	
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	7
RTK Fix	Yes

Span Information

Date Surveyed	8-24-12
Tape Number	SD 1
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	909952.85	909996.12	
LinkQuest Easting	1958708.83	1958719.31	
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 Rau	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	8-22-12
Time Shutdown	21:00
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	7
RTK Fix	Yes

Span Information

Date Surveyed	8-24-12
Tape Number	501
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 -

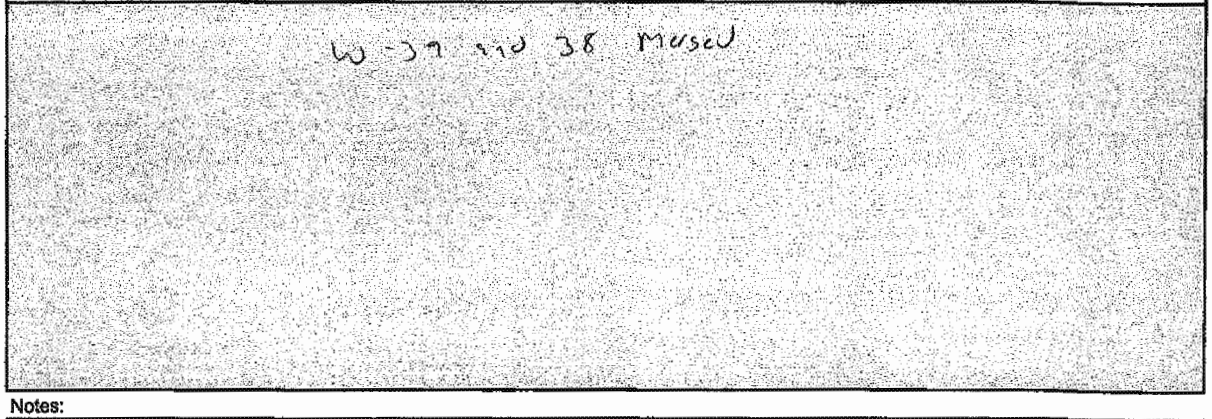
Digital File Name or DVD # -

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	909901.72	909952.35	
LinkQuest Easting	1958693.65	1958708.53	
Digital File Filename			
Digital File Time	16:56	16:45	
Display Time	16:56	16:48	
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:

(52)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Rew	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	8-23-12
Time Shutdown	22:00
Product in Line	N66
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	7
RTK Fix	Yes
—	—
—	—

Span Information

Date Surveyed	8-24-12
Tape Number	SD1
Direction Flown	N-S
Water Depth	122
Current Year Span #	W-35B
Previous Span #(s)	W-35D
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	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	13:00	8:30	
LinkQuest Northing	9099747.47	9098220.27	
LinkQuest Easting	19592646.36	19592671.02	
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	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	8
RTK Fix	Yes
—	—
—	—

Span Information

Date Surveyed	8-25-12
Tape Number	507
Direction Flown	N-S
Water Depth	122
Current Year Span #	W-351
Previous Span #(s)	W-351
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	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	19:45	15:30	
LinkQuest Northing	9097141.97	9097147.92	
LinkQuest Easting	1958265.86	1958265.32	
Digital File Filename			
Digital File Time	8:05	8:00	
Display Time	9:05	8:00	
Bottom Type at Repair	Sandy w/out Bags	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:

(54)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Rau	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	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	SD1
Direction Flown	N-S
Water Depth	122
Current Year Span #	W-36-B
Previous Span #(s)	W-36B
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	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	2:20	19:45	
LinkQuest Northing	909667.47	909714.97	
LinkQuest Easting	19582630.57	19582645.86	
Digital File Filename		8:05	
Digital File Time	8:16	8:05	
Display Time	8:16	Sandy / Gravel bag	
Bottom Type at Repair	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.

09-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 Pravel	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Sauer

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	8-25-12	Anchor Positions	—
Tape Number	SD1		—
Direction Flown	N-S	Digital File Name or DVD #	—
Water Depth	121		
Current Year Span #	W-364	Current Year Span Length	37
Previous Span #(s)	W-362	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	1958 2618.07	1958 2630.57	
Digital File Filename			
Digital File Time	8:22	8:16	
Display Time	8:22	8:16	
Bottom Type at Repair	Sandy	Loose Rock	
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:

(50)

Straits of Mackinac Structural Integrity Support Span Repair Log

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

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	9-25-12
Tape Number	SD1
Direction Flown	N-S
Water Depth	127
Current Year Span #	W-37
Previous Span #(s)	W-37
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	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	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	9:31	9:26	
Display Time	9:31	9:26	
Bottom Type at Repair	Sandy	Sandy	
Highest Span Height	0.7	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 Praw	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	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	9-25-12
Tape Number	503
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	9094591.62	9094190.62	
LinkQuest Easting	1958272.39	1958288.39	
Digital File Filename			
Digital File Time	8:38	8:36	
Display Time	8:30	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.	480259S.10.071	Chris Dever

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	9
RTK Fix	Yes
	-
	-

Span Information

Date Surveyed	8-25-12
Tape Number	SD2
Direction Flown	N-S
Water Depth	130
Current Year Span #	W-34B S
Previous Span #(s)	W-34B
Addit. Extensions Used?	-
Length of Extension(s)	-
Drilling Issues?	-

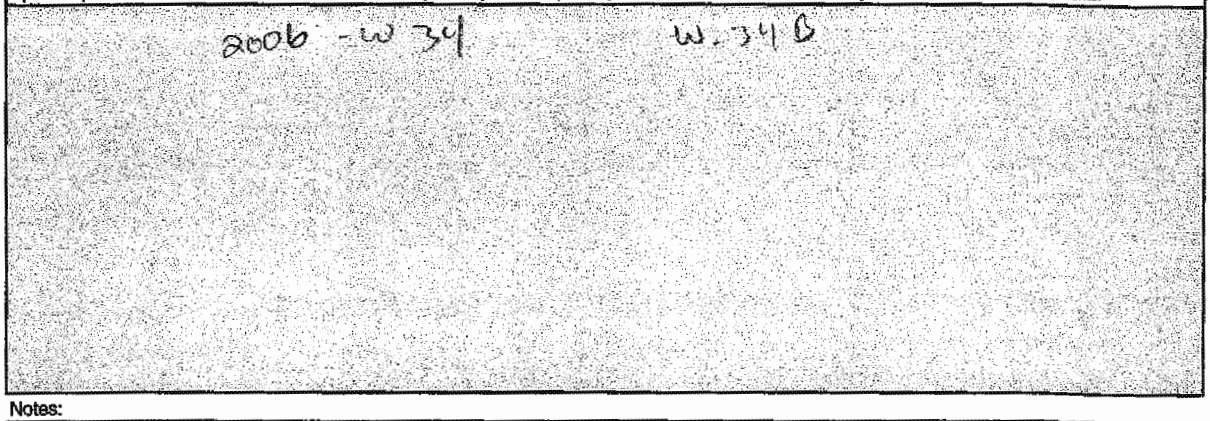
Anchor Positions	-
	-
Digital File Name or DVD #	-

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	1958257.23	1958257234	
Digital File Filename			
Digital File Time	8:45	8:35	
Display Time	8:45	8:38	
Bottom Type at Repair	Sand / Anchor	Sand / 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:

SC1

Straits of Mackinac Structural Integrity Support Span Repair Log

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

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	8-25-12
Tape Number	SD3
Direction Flown	N-S
Water Depth	130
Current Year Span #	
Previous Span #(s)	W-39A
Addit. Extensions Used?	—
Length of Extension(s)	—
Drilling Issues?	—

Anchor Positions: —

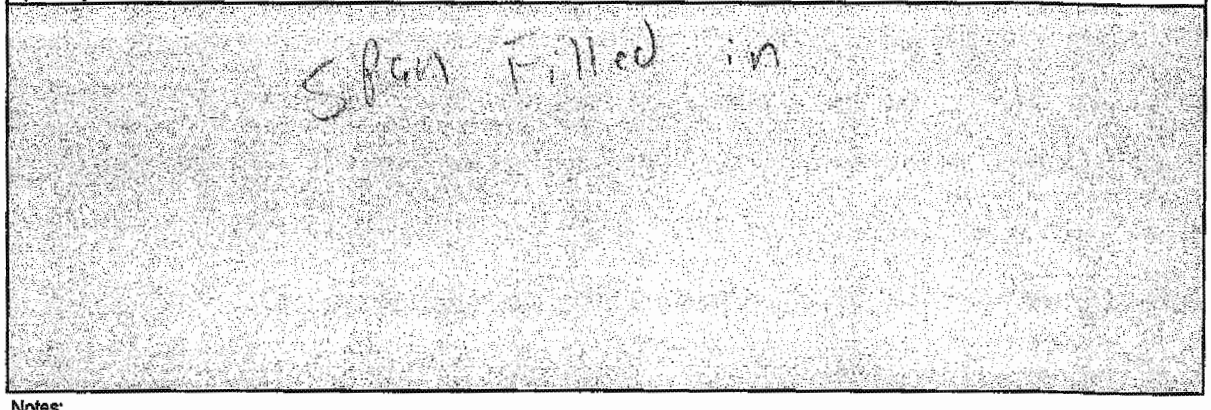
Digital File Name or DVD #: —

Current Year Span Length	6
Previous Year Span Length	18
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:

ENBDNR0000359

(60)

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.	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	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	9-25-12
Tape Number	SD 1
Direction Flown	N-S
Water Depth	134
Current Year Span #	W-31B
Previous Span #(s)	W-31B
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 Rock	
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 Prow	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	2230	
Product in Line	Wet	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	501		-
Direction Flown	N-S	Digital File Name or DVD #	-
Water Depth	133		
Current Year Span #	W31A	Current Year Span Length	90
Previous Span #(s)	W31A	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	5:27	21:30	
LinkQuest Northing	909188.68	909275.09	
LinkQuest Easting	1958502.51	1958525.86	
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

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	11
RTK Fix	Yes
	-
	-

Span Information

Date Surveyed	8-25-12
Tape Number	SD7
Direction Flown	N-S
Water Depth	173
Current Year Span #	-
Previous Span #(s)	W-76
Addit. Extensions Used?	-
Length of Extension(s)	-
Drilling Issues?	-

Anchor Positions	-
	-
Digital File Name or DVD #	-
Current Year Span Length	
Previous Year Span Length	20
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 Filled in
W-76

Notes:

(67)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Prew	Sam E
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	SD2
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	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	17:20	14:43	
LinkQuest Northing	909048.41	909077.67	
LinkQuest Easting	1958246.24	1958247.21	
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 Piew	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	8-27-12
Time Shutdown	22:00
Product in Line	Nat Gas
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	9-25-12
Tape Number	SD 2
Direction Flown	N-S
Water Depth	133
Current Year Span #	W-28D
Previous Span #(s)	W-28D
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	1458241.79	1458245.9.84	
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 Pfeil	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	8-23-12	
Time Shutdown	22:00	
Product In Line	Nat	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	8-25-12	Anchor Positions	-
Tape Number	SD 2		-
Direction Flown	N-S	Digital File Name or DVD #	-
Water Depth	183		
Current Year Span #	W-284	Current Year Span Length	70
Previous Span #(s)	W-284	Previous Year Span Length	77
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	10'45	1'45	
LinkQuest Northing	908905.08	908973.41	
LinkQuest Easting	1955824.19	1955821.39	
Digital File Filename			
Digital File Time	9:42	9:34	
Display Time	9:42	9:34	
Bottom Type at Repair	Sandy / clay	Sandy / 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:

(66)

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 Dauw

Pipeline Operation Information

Is leg shutdown?	Yes
If so, date shutdown	8-27-12
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	8-25-12
Tape Number	302
Direction Flown	N-S
Water Depth	131
Current Year Span #	W-30
Previous Span #(s)	W-30
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	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	21:37	18:09	
LinkQuest Northing	908702.39	908757.25	
LinkQuest Easting	1458236.24	1458238.74	
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 Tague

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	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	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 Silted 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.	490269S.10.071	Chris Sauer

Pipeline Operation Information

Is leg shutdown?	Yes
If so, date shutdown	8-27-12
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	8-27-12
Tape Number	502
Direction Flown	N-S
Water Depth	127
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 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 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	5-27-12	
Time Shutdown	2030	
Product in Line	Oil	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 #	
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:

(TD)

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	9
RTK Fix	yes
	-
	-

Span Information

Date Surveyed	9-25-12
Tape Number	SD 1
Direction Flown	N-S
Water Depth	126
Current Year Span #	W-21
Previous Span #(s)	W-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	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	20:13	16:58	
LinkQuest Northing	908228.78	908277.81	
LinkQuest Easting	1958240.72	1958252.69	
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 Grid

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	8-27-12	
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	SO 2
Direction Flown	N-S
Water Depth	123
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	9081741.18	
LinkQuest Easting	1958219.17	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.	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	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	SDA
Direction Flown	N-S
Water Depth	123
Current Year Span #	W-23B
Previous Span #(s)	W-23B
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	9080414.07	9080673.57	
LinkQuest Easting	1958292.06	1958298.06	
Digital File Filename	—	—	
Digital File Time	10:48	10:45	
Display Time	10:48	10:45	
Bottom Type at Repair	Sand w/ Gravel	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 hardtime 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 Haun

Pipeline Operation Information

Is leg shutdown?	Yes
If so, date shutdown	8-22-12
Time Shutdown	22:40
Product In Line	Air
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	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	907983.06	908041.07	
LinkQuest Easting	1958217.45	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 Bauer	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	9-27-12		
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	9-25-12	Anchor Positions	—
Tape Number	502		—
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	1958299.67	1958273.36	
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 Bauer

Pipeline Operation Information

Is leg shutdown?	Yes
If so, date shutdown	9-27-12
Time Shutdown	22:00
Product In Line	Mgt
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	SD 2
Direction Flown	N-S
Water Depth	121
Current Year Span #	W-20
Previous Span #(s)	W-20
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	417
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	12:40	10:13	
LinkQuest Northing	907829.29	907863.71	
LinkQuest Easting	19582132.09	19582142.63	
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 Signed 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 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	9-23-12
Time Shutdown	22:00
Product In Line	NGL
If flowing, flow rate	NA

Density

Time System for Time Shutdown

Span Information

Date Surveyed	8-25-12
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	907792.01	
LinkQuest Easting	19582101.48	19582122.80	
Digital File Filename	—	—	
Digital File Time	11:33	11:28	
Display Time	11:29	11:28	
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:

(77)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Prew	Sgmt
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	2d 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
	—
	—

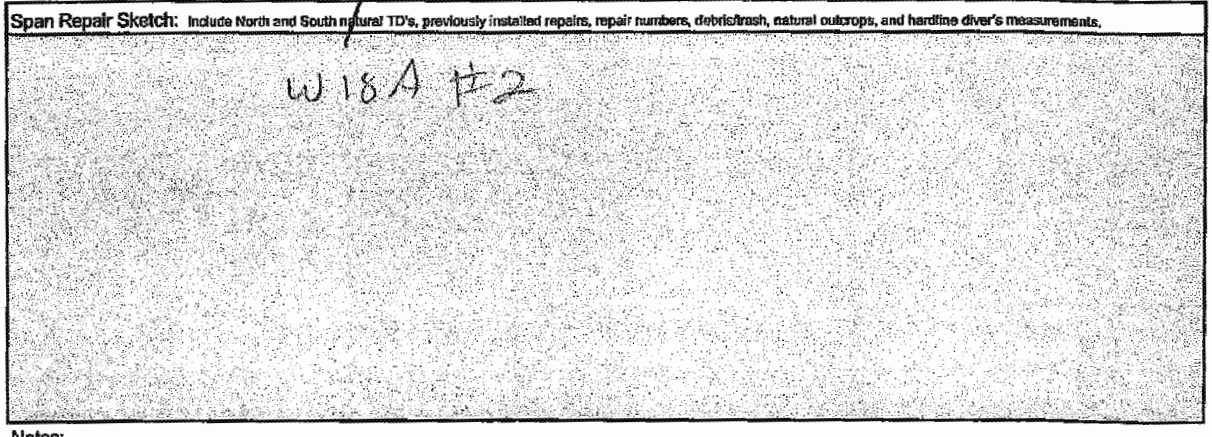
Span Information

Date Surveyed	8-25-12	Anchor Positions	—
Tape Number	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-18 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	19582087.60	19582101.40	
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 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 Prew	Sgmt
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bevis

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	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?	

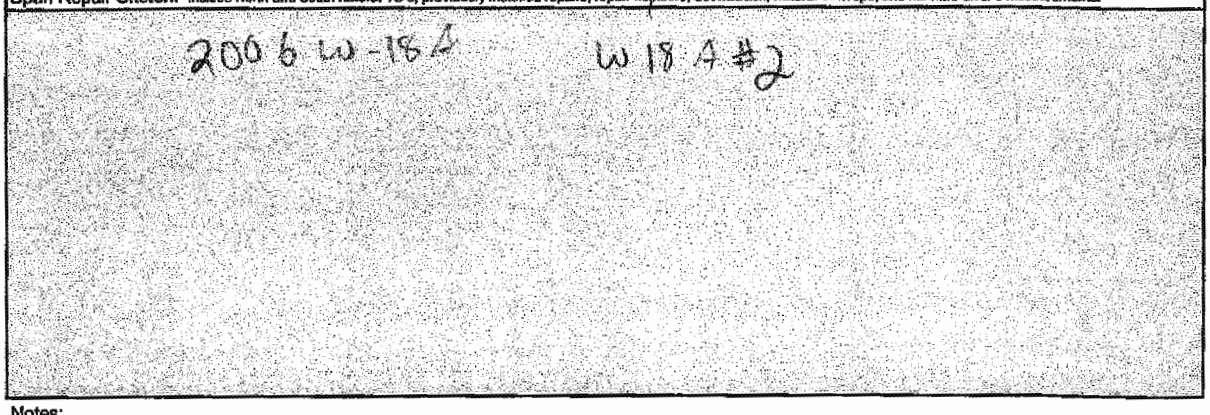
Anchor Positions	—
	—
Digital File Name or DVD #	—

Current Year Span Length	42
Previous Year Span Length	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	7:35	2:08	
LinkQuest Northing	907615.01	907659.75	
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	Sane
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Bgual

Pipeline Operation Information

Is leg shutdown?	Yes
If so, date shutdown	8-23-12
Time Shutdown	22:00
Product In Line	N64
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	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	1958207.96	
Digital File Filename	-	-	
Digital File Time	11:51	11:45	
Display Time	11:51	11:45	
Bottom Type at Repair	Sandy	Sandy / Anch	
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:

(90)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Piew	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	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	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	22:04	
LinkQuest Northing	9074115.21	9074149.45	
LinkQuest Easting	1958201.86	1958202.74	
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:

(41)

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	Nat
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	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	44
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	907169.94	
LinkQuest Easting	1958 1943.82	1958 1954.92	
Digital File Filename	—	—	
Digital File Time	12:47	12:44	
Display Time	12:47	12:44	
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:

(92)

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	Density	
If flowing, flow rate	NA	Time System for Time Shutdown	

Span Information

Date Surveyed	8-25-12	Anchor Positions	-
Tape Number	SD 2		-
Direction Flown	N-S	Digital File Name or DVD #	-
Water Depth	92		
Current Year Span #	W-14	Current Year Span Length	54
Previous Span #(s)	W-14	Previous Year Span Length	51
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	25:27	22:05	
LinkQuest Northing	907046.86	907098.67	
LinkQuest Easting	1958920.98	1958937.53	
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:

(93)

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	8-23-12	
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	SD2		—
Direction Flown	N-S	Digital File Name or DVD #	—
Water Depth	88		
Current Year Span #	W-17	Current Year Span Length	83
Previous Span #(s)	W-17	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	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:

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 Dauer

Pipeline Operation Information

Is leg shutdown?	yes	
If so, date shutdown	8-23-12	
Time Shutdown	22:00	
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	8-25-12
Tape Number	SD2
Direction Flown	N-S
Water Depth	85
Current Year Span #	W-12
Previous Span #(s)	W-12
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	906880.75	
LinkQuest Easting	1958852.92	1958878.18	
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:

(95)

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Drew	Sqna
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	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	SD2		-
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	5:28	
LinkQuest Northing	906603.15	906662.66	
LinkQuest Easting	1958300.55	1958318.76	
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 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 Dier	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
Tape Number	SD2
Direction Flown	N-S
Water Depth	74
Current Year Span #	W-11
Previous Span #(s)	W-11
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	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:

(87)

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
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	SD 2
Direction Flown	N-S
Water Depth	67
Current Year Span #	W-9
Previous Span #(s)	W-9
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	17:39	12:24	
LinkQuest Northing	9062821.31	9062721.7	
LinkQuest Easting	19581697.50	19581711.45	
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-768
Previous Span #(s)	W-718
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	14:12	1407	
Display Time	14:12	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:

(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 Beyer

Pipeline Operation Information

Is leg shutdown?	Yes
If so, date shutdown	8-27-12
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	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

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	8-25-12	Anchor Positions	—
Tape Number	SD-2		—
Direction Flown	N-S	Digital File Name or DVD #	—
Water Depth	67		
Current Year Span #	W20	Current Year Span Length	14
Previous Span #(s)	W2b	Previous Year Span Length	10
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	22:53	21:04	
LinkQuest Northing	905963.13	905976.90	
LinkQuest Easting	1958162637	1958163081	
Digital File Filename	—	—	
Digital File Time	14:35	14:33	
Display Time	14:35	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 Piret	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Hoover

Pipeline Operation Information

Is leg shutdown?	Yes		
If so, date shutdown	8-23-12		
Time Shutdown	2200		
Product In Line	NG1	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	502		—
Direction Flown	N-S	Digital File Name or DVD #	
Water Depth	67		
Current Year Span #	W-2A	Current Year Span Length	52
Previous Span #(s)	W-2A	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	3:20	22:52	
LinkQuest Northing	905914.22	905963.13	
LinkQuest Easting	1958163.43	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:

(52)

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	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	67'
Current Year Span #	W-3
Previous Span #(s)	W-3
Addit. Extensions Used?	—
Length of Extension(s)	—
Drilling issues?	—

Anchor Positions —

Digital File Name or DVD # —

Current Year Span Length	43
Previous Year Span Length	39
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	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.*

Shred 2' Touch Down with Span W-4

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 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	8
RTK Fix	Yes
—	—
—	—

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

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	19:10	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.

Shred touch down with W-3

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 Dguer

Pipeline Operation Information

Is leg shutdown?	Yes		
If so, date shutdown	8-23-12		
Time Shutdown	2200		
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	6
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	67		
Current Year Span #		Current Year Span Length	0
Previous Span #(s)	W-77	Previous Year Span Length	37
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-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 Prew	Same
Contractor	**Contractor Project Number**	**Contract supervisor**
Veolia ES Spec. Serv.	490259S.10.071	Chris Dugger

Pipeline Operation Information

Is leg shutdown?	Yes		
If so, date shutdown	8-23-12		
Time Shutdown	21:00		
Product In Line	N/L	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	70
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	9055714.63	9056410.98	
LinkQuest Easting	19581502.46	19581579.80	
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 Beaver

Pipeline Operation Information

Is leg shutdown?	Yes	
If so, date shutdown	8-22-12	
Time Shutdown	22:00	
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	10
RTK Fix	Yes
—	—
—	—

Span Information

Date Surveyed	8-25-12
Tape Number	SD 2
Direction Flown	N-S
Water Depth	71
Current Year Span #	W-013
Previous Span #(s)	W-010
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	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	12:45	830	
LinkQuest Northing	904866.18	904945.12	
LinkQuest Easting	19581334.66	19581356.62	
Digital File Filename	—	—	
Digital File Time	15:42	15:37	
Display Time	15:42	15:37	
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	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	SO2
Direction Flown	N-S
Water Depth	71
Current Year Span #	W-014
Previous Span #(s)	W-014
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	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	17:30	12:45	
LinkQuest Northing	904803.09	904866.18	
LinkQuest Easting	1958117.61	1958134.66	
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: