E-61B

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 Boyer

Pipeline Operation Information

Is leg shutdown?	NO
If so, date shutdown	NA
Time Shutdown	NA
Product In Line	Crude
If flowing, flow rate	2020 BPD
Density	
Time System for Time Shutdown	

Survey Geodetic Parameters

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

Span Information

Date Surveyed	9-2-12
Tape Number	SD4
Direction Flown	S-N
Water Depth	147
Current Year Span #	E-61B
Previous Span #(s)	E-61B
Addit. Extensions Used?	1
Length of Extension(s)	6'
Drilling Issues?	Rock on Right side

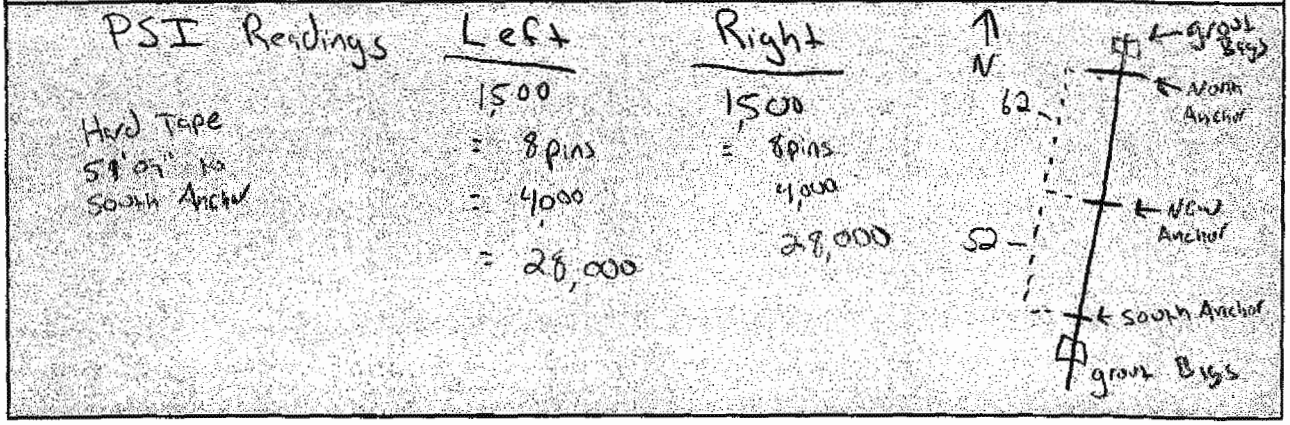
Anchor Positions	—
	—
Digital File Name or DVD #	—

Current Year Span Length	114
Previous Year Span Length	114
Number of Dives to Complete	2
Date(s) of Dive(s)	9-2-12
Dive number(s) for current campaign	1 & 2

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

	South End	North End	Repair
Tape Counter	1:37	3:48	3:34
LinkQuest Northing	911163.36	911281.14	911211.19
LinkQuest Easting	1958430.36	1958430.36	1958432.31
Digital File Filename	—	—	—
Digital File Time	11:09	11:14	17:36
Display Time	11:09	11:14	17:36
Bottom Type at Repair	Sand/Clay	Sand/clay	Sand/Clay/Rock
Highest Span Height	2'	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:

E-01 B-A

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.	4902593.10.071	Chris Bauer

Pipeline Operation Information

Is leg shutdown?	No
If so, date shutdown	NA
Time Shutdown	NA
Product In Line	Crude
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	10
RTK Fix	Yes

Span Information

Date Surveyed	9-5-12
Tape Number	SD 5
Direction Flown	S-N
Water Depth	205
Current Year Span #	E-01 B-A
Previous Span #(s)	E-01 B-A
Addit. Extensions Used?	N
Length of Extension(s)	3'
Drilling Issues?	Rocks

Anchor Positions: —

Digital File Name or DVD #: —

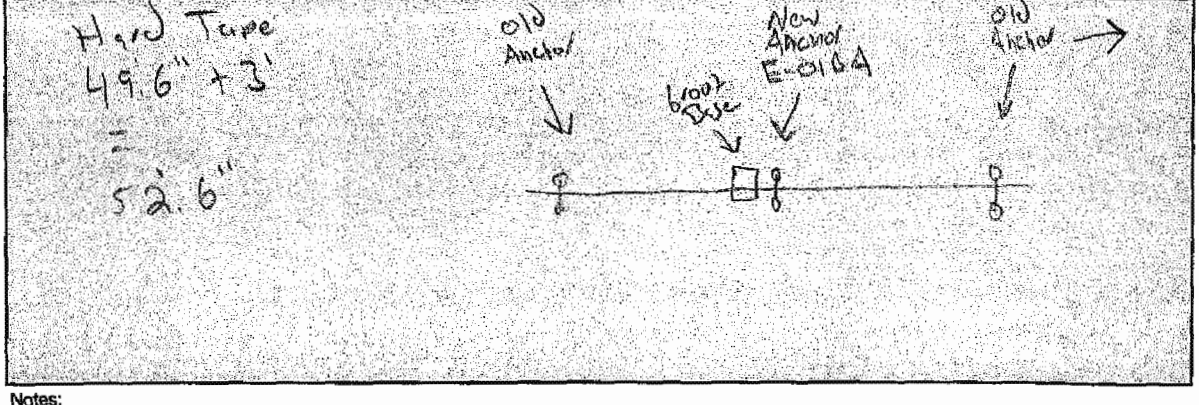
Current Year Span Length	96
Previous Year Span Length	100
Number of Dives to Complete	3
Date(s) of Dive(s)	9-5-12
Dive number(s) for current campaign	6, 7, 8

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

	South End	North End	Repair
Tape Counter	7:23	11.22	8:59
LinkQuest Northing	913796.51	913895.41	913853.99
LinkQuest Easting	19585031.71	19585062.99	19585048.74
Digital File Filename	—	—	—
Digital File Time	15:16	15:19	15:17
Display Time	15:16	15:19	15:17
Bottom Type at Repair	Clay	Clay	Clay
Highest Span Height	2	2'	2'
TD O'clock Positions	—	—	—

Fol...

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:

W-24

Straits of Mackinac Structural Integrity Support Span Repair Log

Enbridge Project #	Enbridge Project Manager	Enbridge on-site Rep
WJPJ-19972-10	Tom Prew	Scott
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?	NO
If so, date shutdown	NA
Time Shutdown	NA
Product in Line	Crude
If flowing, flow rate	

Density

Time System for Time Shutdown

Span Information

Date Surveyed	9-7-12
Tape Number	SD4
Direction Flown	S-N
Water Depth	120
Current Year Span #	W-24
Previous Span #(s)	W-24
Addit. Extensions Used?	Yes
Length of Extension(s)	7'
Drilling Issues?	NO

Anchor Positions	—
	—
Digital File Name or DVD #	—

Current Year Span Length	86
Previous Year Span Length	91
Number of Dives to Complete	1
Date(s) of Dive(s)	9-7-12
Dive number(s) for current campaign	10

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

	South End	North End	Repair
Tape Counter	1:30	11:00	5:24
LinkQuest Northing	907889,72	907974,37	907906,12
LinkQuest Easting	1958240.98	1958216.73	1958243,48
Digital File Filename	—	—	—
Digital File Time	12:02	12:11	12:06
Display Time	12:02	12:11	12:06
Bottom Type at Repair	Clay/Silt	Clay/Silt	Clay/Silt
Highest Span Height	2'	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:

E-66A

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?	NO
If so, date shutdown	NA
Time Shutdown	NA
Product In Line	Crude
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	9-9-12
Tape Number	SD 5
Direction Flown	S-N
Water Depth	120
Current Year Span #	E-66A
Previous Span #(s)	E-66A
Addit. Extensions Used?	1
Length of Extension(s)	7'
Drilling Issues?	None

Anchor Positions —

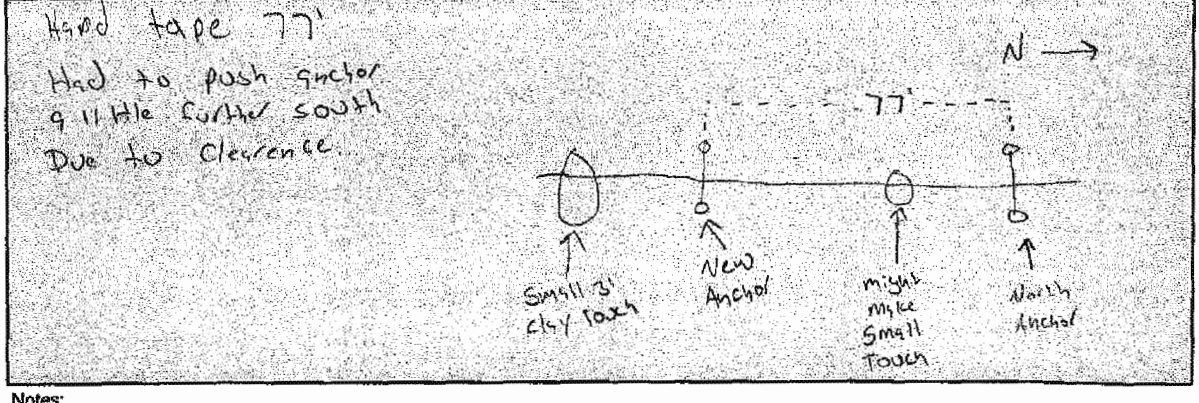
Digital File Name or DVD # —

Current Year Span Length	99
Previous Year Span Length	97
Number of Dives to Complete	2
Date(s) of Dive(s)	9-9-12
Dive number(s) for current campaign	11 & 12

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

	South End	North End	Repair
Tape Counter	1:17	04:36	2:37
LinkQuest Northing	909938.39	910030.53	909959.67
LinkQuest Easting	19583981.39	19584004.09	19583986.26
Digital File Filename	—		
Digital File Time	13:24	13:27	13:25
Display Time	13:24	13:27	13:25
Bottom Type at Repair	Clay	Clay	Clay
Highest Span Height	21'	11'	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:

W-59B

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 Beuer

Pipeline Operation Information

Is leg shutdown?	NO
If so, date shutdown	NA
Time Shutdown	NA
Product in Line	Crude
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	8
RTK Fix	Yes

Span Information

Date Surveyed	9-10-12
Tape Number	SD 5
Direction Flown	S-N
Water Depth	220
Current Year Span #	W-59B
Previous Span #(s)	W-59B
Addit. Extensions Used?	2
Length of Extension(s)	1-3' & 1-7'
Drilling Issues?	Light material

Anchor Positions —

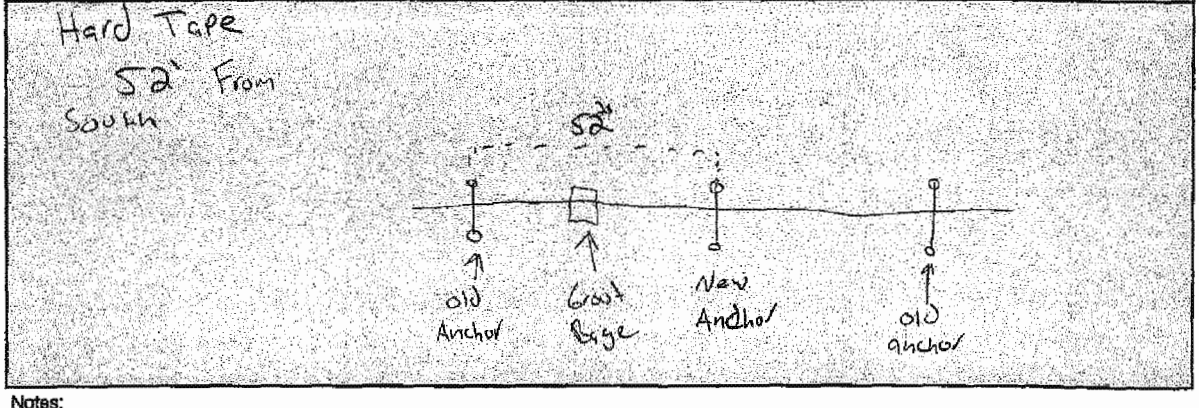
Digital File Name or DVD # —

Current Year Span Length	104
Previous Year Span Length	104
Number of Dives to Complete	2
Date(s) of Dive(s)	9-10-12
Dive number(s) for current campaign	14 & 15

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

	South End	North End	Repair
Tape Counter	00:38	8:00	3:20
LinkQuest Northing	9135 23.23	5136 24.15	913572.67
LinkQuest Easting	19583659.15	19583684.05	19583671.98
Digital File Filename	—	—	—
Digital File Time	13:52	14:00	13:55
Display Time	13:52	14:00	13:55
Bottom Type at Repair	Sand	Sand	Sand
Highest Span Height	3'	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:

E-42

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.	4902595.10.071	Chris Beaver

Pipeline Operation Information

Is leg shutdown?	NO	
If so, date shutdown	NA	
Time Shutdown	NA	
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	8
RTK Fix	Yes
—	—
—	—

Span Information

Date Surveyed	9-10-12
Tape Number	SD5
Direction Flown	S-N
Water Depth	105
Current Year Span #	E-42
Previous Span #(s)	E-42
Addit. Extensions Used?	2
Length of Extension(s)	3', 7'
Drilling Issues?	NO

Anchor Positions: —

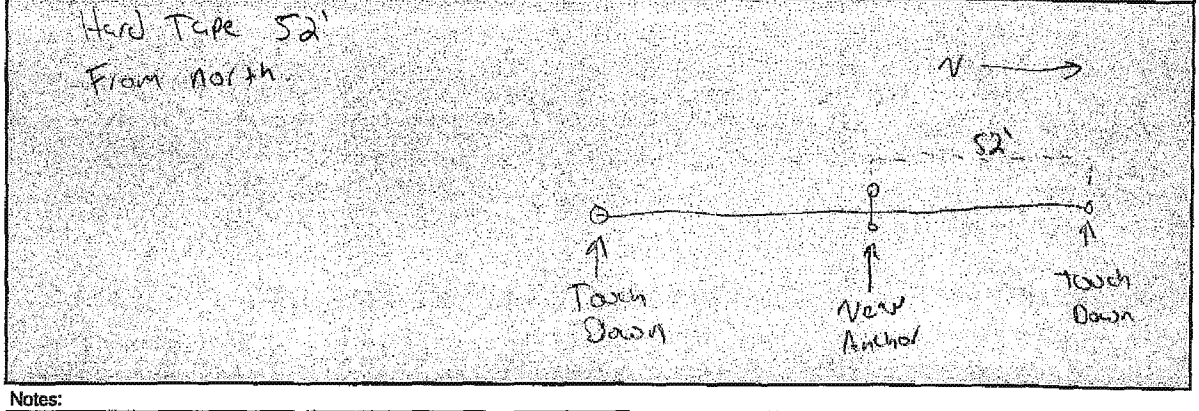
Digital File Name or DVD #: —

Current Year Span Length	97
Previous Year Span Length	91
Number of Dives to Complete	2
Date(s) of Dive(s)	9-10-12
Dive number(s) for current campaign	16 & 17

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

	South End	North End	Repair
Tape Counter	2:05	20:21	3:45
LinkQuest Northing	908885.60	908976.59	908928.48
LinkQuest Easting	1958369[illegible]6	19583715.71	19583703.03
Digital File Filename	—	—	—
Digital File Time	18:48	19:06	18:50
Display Time	18:48	19:06	18:50
Bottom Type at Repair	Clay	Clay	Clay
Highest Span Height	0.5'	0.5'	2'
TD O'clock Positions	—	—	—

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



Notes:

W-59A

Straits of Mackinac Structural Integrity Support Span Repair Log

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

Survey 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	Diff

Pipeline Operation Information

Is leg shutdown?	No		
If so, date shutdown	NA		
Time Shutdown	NA		
Product in Line	Crude	Density	—
If flowing, flow rate		Time System for Time Shutdown	—

Span Information

Date Surveyed	9-15-12	Anchor Positions	—
Tape Number	SOS		—
Direction Flown	S-N	Digital File Name or DVD #	—
Water Depth	220		
Current Year Span #	W59-A	Current Year Span Length	91
Previous Span #(s)	W-51-A	Previous Year Span Length	91
Addit. Extensions Used?	1	Number of Dives to Complete	2
Length of Extension(s)	71	Date(s) of Dive(s)	9-15-12
Drilling Issues?	NA	Dive number(s) for current campaign	20, 21, 22, 23

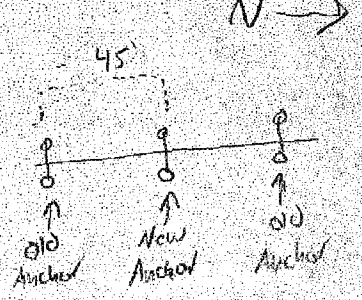
* Drilling Issues: Include torque spec not met, modified screws, modified assembly, etc...

	South End	North End	Repair
Tape Counter	NA	NA	NA
LinkQuest Northing	913435.27	913521.07	913480.00
LinkQuest Easting	1958363.96	1958365.14	1958364.06
Digital File Filename	—	—	—
Digital File Time	NA	NA	NA
Display Time	NA	NA	NA
Bottom Type at Repair	Clay	Clay	Clay
Highest Span Height	1'	1'	1'
TD O'clock Positions			

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

Hard Tape
42'+3=45'

Current became too severe to
Perform ROV inspection points
Used From Pre inspection



Notes:

W-12

Straits of Mackinac Structural Integrity Support Span Repair Log

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

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

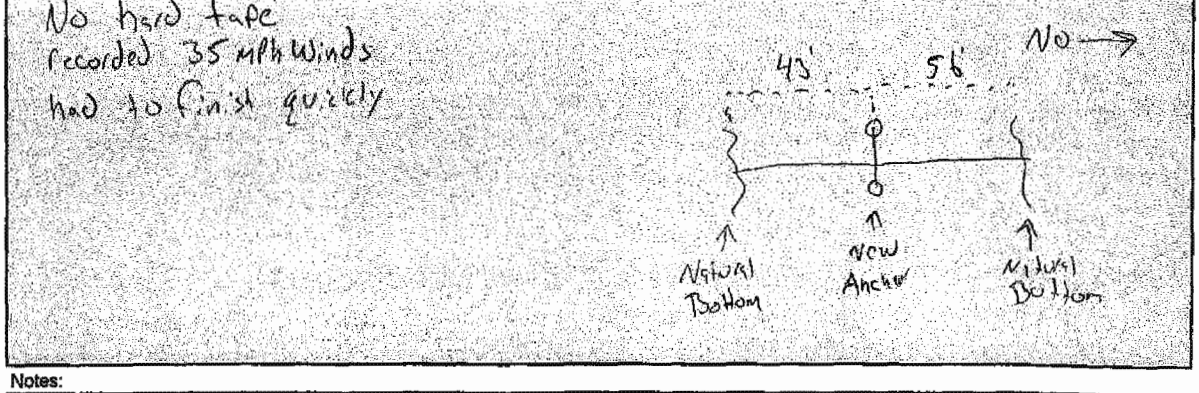
Pipeline Operation Information			
Is leg shutdown?	NO		
If so, date shutdown	NA		
Time Shutdown	NA		
Product In Line	Crude	Density	—
If flowing, flow rate		Time System for Time Shutdown	—

Span Information			
Date Surveyed	9-16-12	Anchor Positions	—
Tape Number	SP5		—
Direction Flown	S-N	Digital File Name or DVD #	—
Water Depth	90'		
Current Year Span #	W-12	Current Year Span Length	92
Previous Span #(s)	W-12	Previous Year Span Length	92
Addit. Extensions Used?	1	Number of Dives to Complete	1
Length of Extension(s)	7'	Date(s) of Dive(s)	9-15-12
Drilling Issues?	None	Dive number(s) for current campaign	#24'

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

	South End	North End	Repair
Tape Counter	1:33	4:33	3:43
LinkQuest Northing	906780.33	906877.02	906822.48
LinkQuest Easting	1958185B.12	1958187B.71	1958184.66
Digital File Filename	—	—	—
Digital File Time	10:47	10:50	10:49
Display Time	10:47	10:50	10:49
Bottom Type at Repair	Sand	Sand	Sand
Highest Span Height	1'	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:

W-64

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 Davis

Pipeline Operation Information

Is leg shutdown?	NO
If so, date shutdown	NA
Time Shutdown	NA
Product In Line	Crude
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	7
RTK Fix	Yes
	—
	—

Span Information

Date Surveyed	9-21-12
Tape Number	305
Direction Flown	S-N
Water Depth	66'
Current Year Span #	W-64
Previous Span #(s)	W-64
Addit. Extensions Used?	Yes
Length of Extension(s)	1-7'
Drilling Issues?	Hard Rock

Anchor Positions —

—

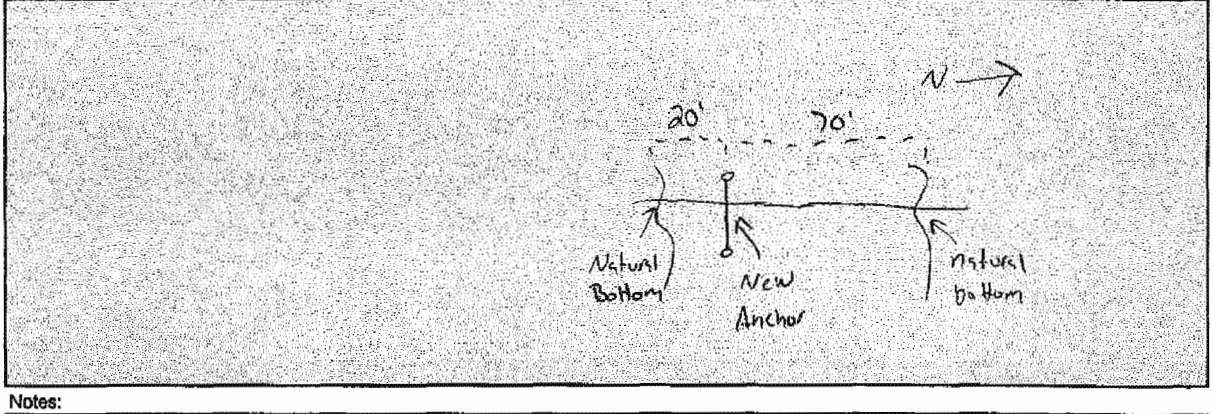
Digital File Name or DVD # —

Current Year Span Length	90'
Previous Year Span Length	90'
Number of Dives to Complete	3
Date(s) of Dive(s)	9-21-12
Dive number(s) for current campaign	25,26,27

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

	South End	North End	Repair
Tape Counter	NA	NA	8:30
LinkQuest Northing	915292.80	915317.83	915250.60
LinkQuest Easting	1958412.2.04	1958142.06	1958124.24
Digital File Filename	—	—	—
Digital File Time	NA	NA	15:18
Display Time	NA	NA	15:18
Bottom Type at Repair	Clay	Clay	Clay
Highest Span Height	1'	7'	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:

W-72A

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?	NO
If so, date shutdown	NA
Time Shutdown	NA
Product in Line	Crude
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	D.FL

Span Information

Date Surveyed	9-26-12
Tape Number	SD 6
Direction Flown	S-N
Water Depth	235
Current Year Span #	W-72A
Previous Span #(s)	W-72A
Addit. Extensions Used?	2
Length of Extension(s)	1-3', 1-7'
Drilling Issues?	NO

Anchor Positions: —

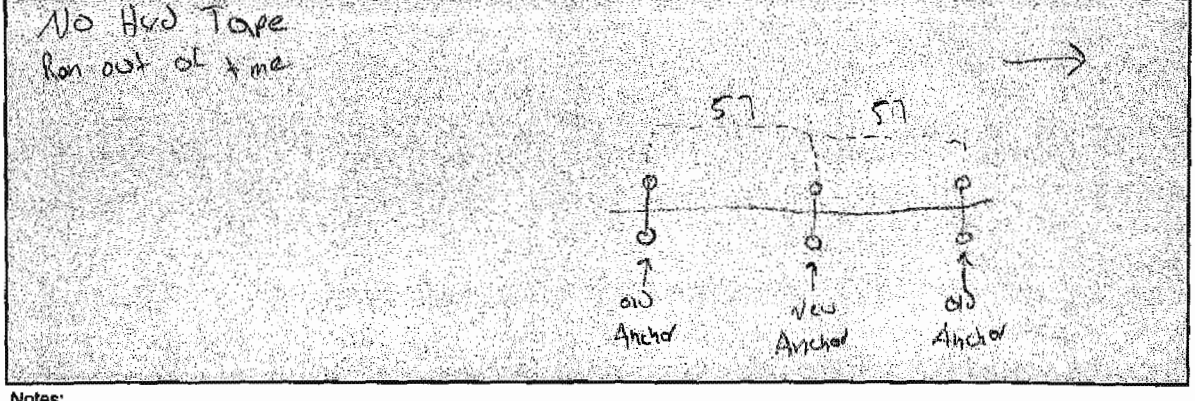
Digital File Name or DVD #: —

Current Year Span Length	105
Previous Year Span Length	100
Number of Dives to Complete	2
Date(s) of Dive(s)	9-26-12
Dive number(s) for current campaign	28, 29

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

	South End	North End	Repair
Tape Counter	00:33	4:20	2:30
LinkQuest Northing	912239.60	912345.55	912290.01
LinkQuest Easting	19583317.70	19583342.36	19583331.86
Digital File Filename	—	—	—
Digital File Time	14:19	14:23	14:21
Display Time	14:19	14:23	14:21
Bottom Type at Repair	Clay	Clay	Clay
Highest Span Height	3'	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:

E-23B

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	Diff
—	—
—	—

Pipeline Operation Information

Is leg shutdown?	No
If so, date shutdown	NA
Time Shutdown	NA
Product In Line	crude
If flowing, flow rate	—

Density

Time System for Time Shutdown

Span Information

Date Surveyed	9-26-12
Tape Number	SD 6
Direction Flown	S-N
Water Depth	80
Current Year Span #	E-23B
Previous Span #(s)	E-23B
Addit. Extensions Used?	Yes
Length of Extension(s)	7'
Drilling Issues?	No

Anchor Positions —

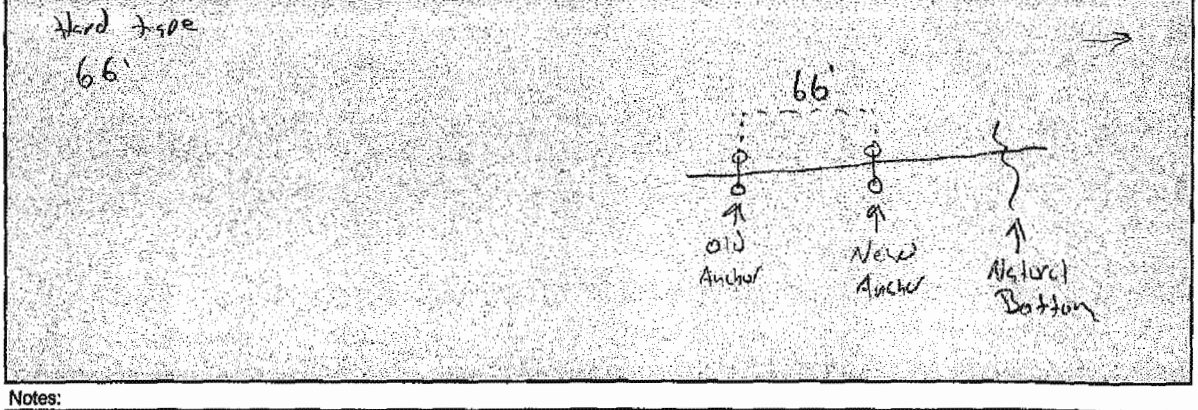
Digital File Name or DVD # —

Current Year Span Length	93
Previous Year Span Length	87
Number of Dives to Complete	1
Date(s) of Dive(s)	9-26-12
Dive number(s) for current campaign	30

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

	South End	North End	Repair
Tape Counter	0000	3:50	1:36
LinkQuest Northing	906044.39	906140.87	906119.40
LinkQuest Easting	1958239.79	1958264.83	1958255.88
Digital File Filename	—	—	—
Digital File Time	18:02	18:06	18:04
Display Time	18:02	18:06	18:04
Bottom Type at Repair	Sand/Clay	Sand/clay	Sand/Clay
Highest Span Height	2'	1'	0.5'
TD O'clock Positions			

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



Notes:

W-72B

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 Bell

Pipeline Operation Information

Is leg shutdown?	NO	
If so, date shutdown	NA	
Time Shutdown	NA	
Product in Line	Crude	Density
If flowing, flow rate	–	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	Diff
–	–
–	–

Span Information

Date Surveyed	9-27-12
Tape Number	SD6
Direction Flown	S-N
Water Depth	250
Current Year Span #	W-72B
Previous Span #(s)	W-72B
Addit. Extensions Used?	Y
Length of Extension(s)	7'.
Drilling Issues?	NO

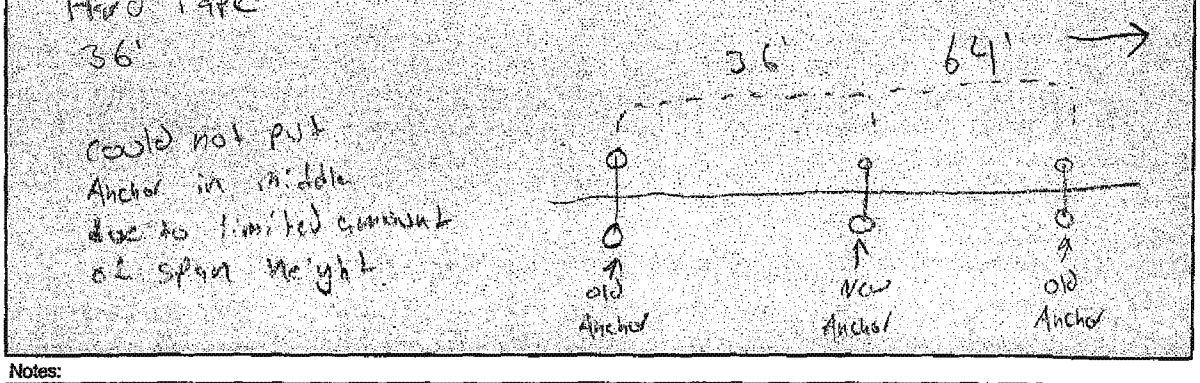
Anchor Positions	–
	–
Digital File Name or DVD #	✓

Current Year Span Length	100
Previous Year Span Length	100
Number of Dives to Complete	2
Date(s) of Dive(s)	9-27-12
Dive number(s) for current campaign	31, 32

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

	South End	North End	Repair
Tape Counter	00:00	03:26	01:20
LinkQuest Northing	912337.16	912441.22	912375.43
LinkQuest Easting	1958334.21	1958367.00	1958353.84
Digital File Filename	–	–	–
Digital File Time	13:03	13:07	13:05
Display Time	13:03	13:07	13:05
Bottom Type at Repair	Sand/clay	Sand clay	Sand clay
Highest Span Height	3'	2'	1'
TD O'clock Positions			

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



Notes:

F-32A

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?	No
If so, date shutdown	N/A
Time Shutdown	N/A
Product in Line	Crude
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	D:1.6
	-
	-

Span Information

Date Surveyed	9-27-12
Tape Number	SD7
Direction Flown	S-N
Water Depth	90
Current Year Span #	E-32A
Previous Span #(s)	E-32A
Addit. Extensions Used?	Yes
Length of Extension(s)	7'
Drilling Issues?	No

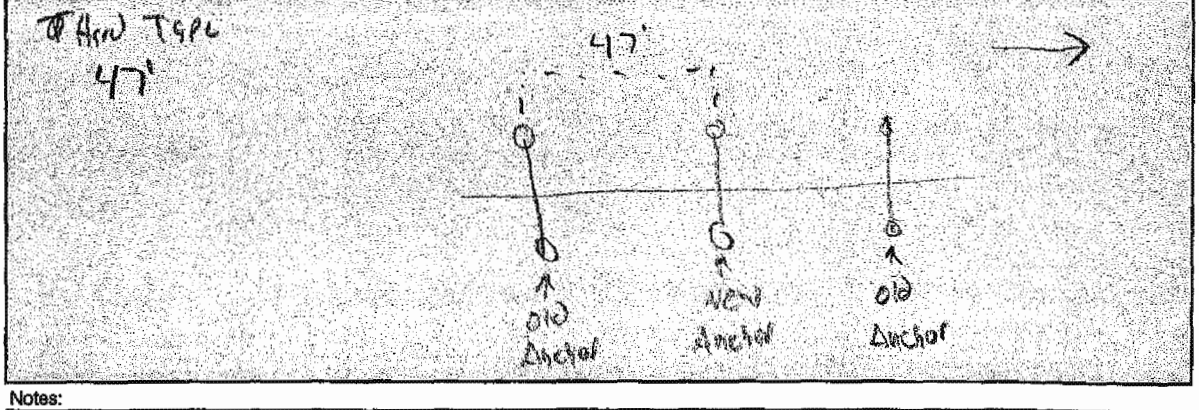
Anchor Positions	-
	-
Digital File Name or DVD #	✓

Current Year Span Length	92
Previous Year Span Length	92
Number of Dives to Complete	1
Date(s) of Dive(s)	9-27-12
Dive number(s) for current campaign	34

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

	South End	North End	Repair
Tape Counter	0:00	[redacted] 3:02	01:25
LinkQuest Northing	907433.29	907592.52	907479.22
LinkQuest Easting	1958306.39	1958326.91	1958314.60
Digital File Filename	-	-	-
Digital File Time	19:14	19:17	19:15
Display Time	19:14	19:17	19:15
Bottom Type at Repair	Sand	Sand	Sand
Highest Span Height	2'	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:

E-61C

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 Beuer

Pipeline Operation Information

Is leg shutdown?	No
If so, date shutdown	NA
Time Shutdown	NA
Product in Line	Crude
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	10
RTK Fix	Diff
=	
~	

Span Information

Date Surveyed	9-28-12
Tape Number	SD7
Direction Flown	S-N
Water Depth	145
Current Year Span #	E-61C
Previous Span #(s)	E-61C
Addit. Extensions Used?	1
Length of Extension(s)	7'
Drilling Issues?	NO

Anchor Positions —

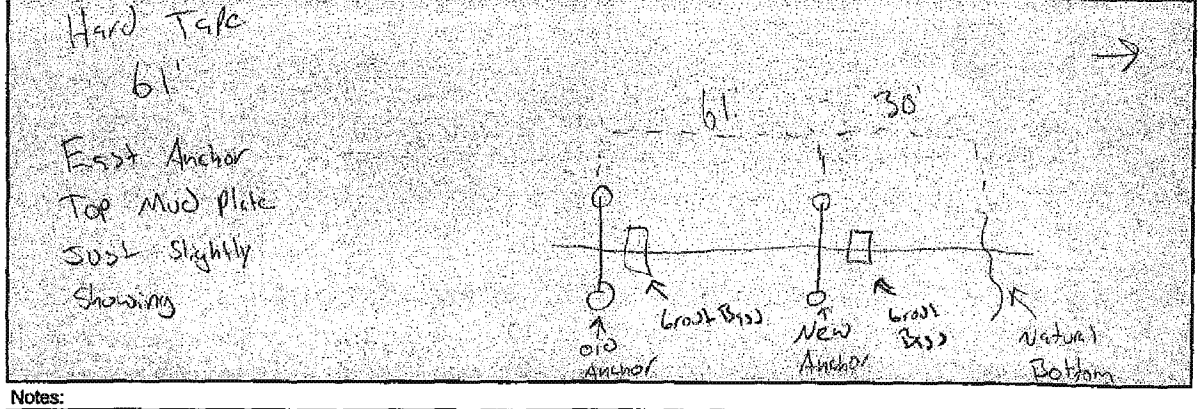
Digital File Name or DVD # —

Current Year Span Length	91'
Previous Year Span Length	65'
Number of Dives to Complete	1
Date(s) of Dive(s)	9-28-12
Dive number(s) for current campaign	35

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

	South End	North End	Repair
Tape Counter	0:00	4:10	1:35
LinkQuest Northing	911270.10	911356.62	911325.93
LinkQuest Easting	1958435.28	1958437.88	1958436.81
Digital File Filename	—	—	—
Digital File Time	10:33	10:38	10:35
Display Time	10:33	10:38	10:35
Bottom Type at Repair	Clay	Clay	Clay
Highest Span Height	2'	0'	2'
TD O'clock Positions			

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



Notes:

E-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

Survey 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	DGPS

Pipeline Operation Information			
Is leg shutdown?	NO		—
If so, date shutdown	NA		—
Time Shutdown	NA	Density	—
Product in Line	crude	Time System for Time Shutdown	—
If flowing, flow rate	—		

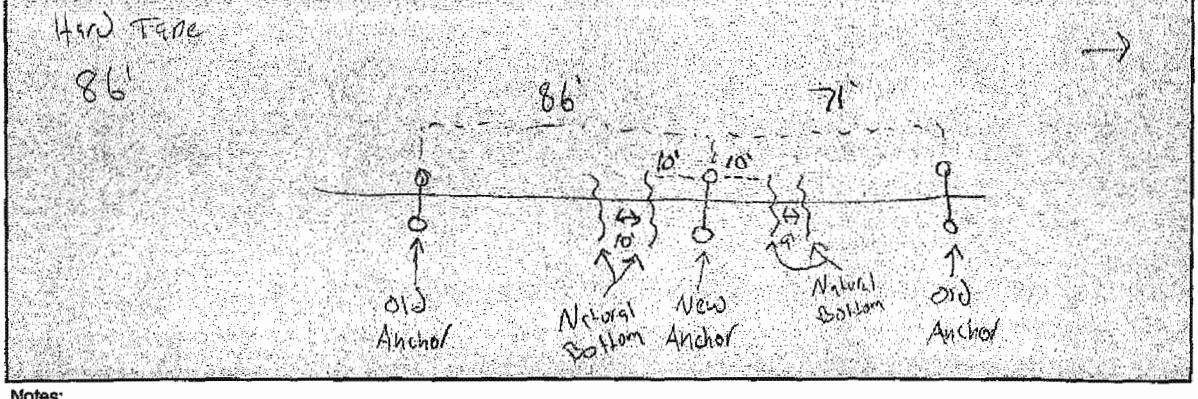
Span Information

Date Surveyed	9-28-12	Anchor Positions	—
Tape Number	SD8		—
Direction Flown	S-N	Digital File Name or DVD #	—
Water Depth	125		
Current Year Span #	E-52	Current Year Span Length	16
Previous Span #(s)	E-52	Previous Year Span Length	14
Addit. Extensions Used?	Yes	Number of Dives to Complete	1
Length of Extension(s)	1-3' ; 1-7'	Date(s) of Dive(s)	9-28-12
Drilling Issues?		Dive number(s) for current campaign	36

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

	South End	North End	Repair
Tape Counter	13:03	16:02	14:45
LinkQuest Northing	910476.35	910497.54	910486.74
LinkQuest Easting	1958413 6.29	1958414 1.11	1958413 8.82
Digital File Filename	—	—	—
Digital File Time	13:54	13:57	13:55
Display Time	13:54	13:57	13:55
Bottom Type at Repair	Clay	Clay	Clay
Highest Span Height	0'	0'	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:

W-60B

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 Beuer

Survey 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	0.02

Pipeline Operation Information

Is leg shutdown?	No
If so, date shutdown	NA
Time Shutdown	NA
Product in Line	Crude
If flowing, flow rate	—

Density: —

Time System for Time Shutdown: —

Span Information

Date Surveyed	9-28-12
Tape Number	SD 8
Direction Flown	S-N
Water Depth	155
Current Year Span #	W-60B
Previous Span #(s)	W-60B
Addit. Extensions Used?	Yes
Length of Extension(s)	1-3' & 1-7'
Drilling Issues?	NO

Anchor Positions: —

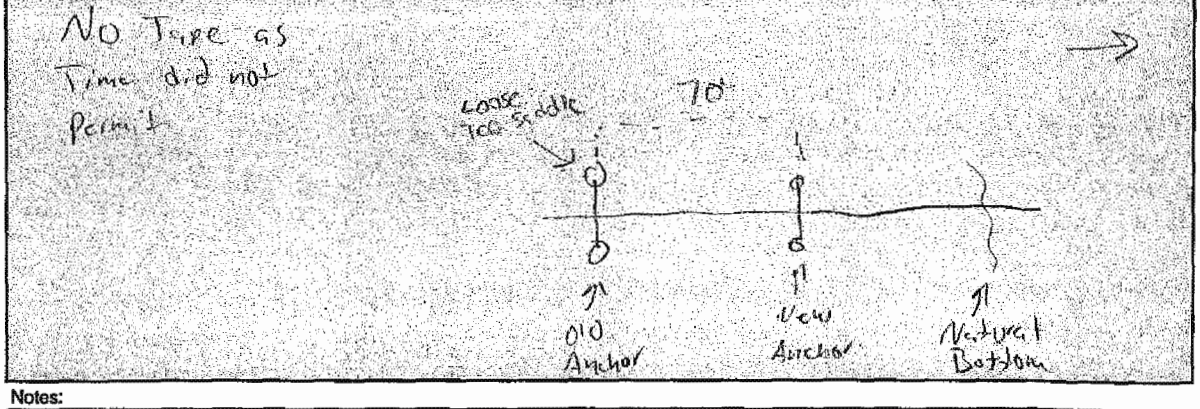
Digital File Name or DVD #: —

Current Year Span Length	90
Previous Year Span Length	91
Number of Dives to Complete	1
Date(s) of Dive(s)	9-28-12
Dive number(s) for current campaign	37

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

	South End	North End	Repair
Tape Counter	0:30	5:30	2:15
LinkQuest Northing	913963.81	914068.01	914031.30
LinkQuest Easting	1958384.60	1958312.72	1958302.98
Digital File Filename	—	—	—
Digital File Time	19:11	19:15	19:13
Display Time	19:11	19:15	19:13
Bottom Type at Repair	Clay	Clay	Clay
Highest Span Height	1'	0'	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:

W-41A

Straits of Mackinac Structural Integrity Support Span Repair Log

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

Pipeline Operation Information

Is leg shutdown?	9-29-12		
If so, date shutdown	NO		
Time Shutdown	NA		
Product In Line	crude	Density	
If flowing, flow rate	—	Time System for Time Shutdown	

Survey Geodetic Parameters

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

Span Information

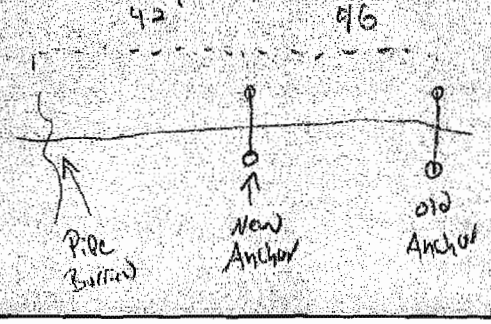
Date Surveyed	9-29-12	Anchor Positions	—
Tape Number	SD9		—
Direction Flown	S-N	Digital File Name or DVD #	—
Water Depth	145		
Current Year Span #	W-41A	Current Year Span Length	92
Previous Span #(s)	W-41A	Previous Year Span Length	89
Addit. Extensions Used?	Yes	Number of Dives to Complete	1
Length of Extension(s)	1-3' & 1-7'	Date(s) of Dive(s)	9-29-12
Drilling Issues?	NO	Dive number(s) for current campaign	39

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

	South End	North End	Repair
Tape Counter	0:00	2:07	1:20
LinkQuest Northing	910147.35	910235.36	910189.03
LinkQuest Easting	1958276.52	1958287.87	1958273.30
Digital File Filename	—	—	—
Digital File Time	11:11	11:18	11:13
Display Time	11:11	11:18	11:13
Bottom Type at Repair	Clay	Clay	Clay
Highest Span Height	0'	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.

Not enough time for Hard Tape



Notes:

ENBDNR0000300