



# DSR The Unique Value

**Key to Success in Your Business** 

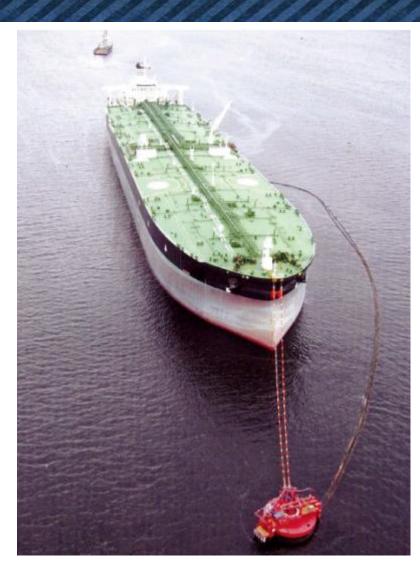
Fiber Rope
For Offshore
Single Point Mooring







## 1. SPM



#### **▶** Oil Tanker Loading & off-loading

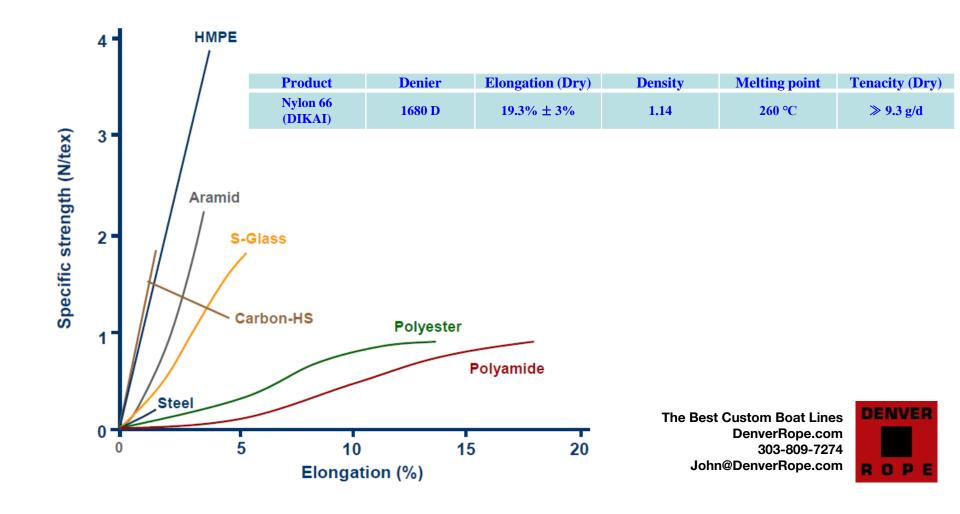
- FPSO Tanker
- Tanker Buoy
- Material
- Nylon, PET, PP+PET mixed
- → Nylon
- Costruction
- 8 S/T, 12 S/T, D/B, Parallel core
- **→** D/B
- **Length**
- 45 ~ 100m
- Single leg or Grommet type
- Soft eye, Thimble eye
- **→** Thimble : Cast thimble, tubular, bell mouth
- ► Lloyd, BV, ABS (DNV)

The Best Custom Boat Lines
DenverRope.com

John@DenverRope.com



# 2. MATERIAL (DSR SPM - Nylon 66)

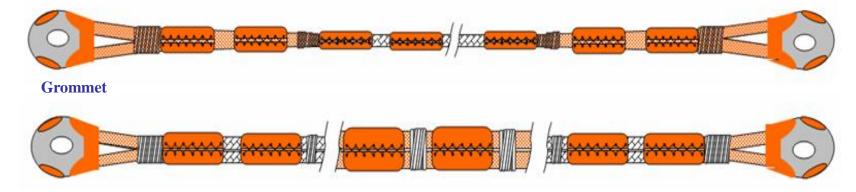




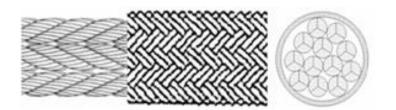
# 3. DSR SPM CONSTRUCTION

#### **▶** Rope Construction

#### Single Leg



#### Parallel Type (NYLON PL12 ROPE)



#### **Double Braid Type (NYLON DOUBLE BRAID ROPE)**



**The Best Custom Boat Lines** DenverRope.com 303-809-7274 John@DenverRope.com







# 4. DSR SPM ROPE SPEC.

► Material; Nylon 66 – Core, Nylon 6 - Cover

**▶** Construction ; Parallel Type

#### Parallel Type (NYLON PL12 ROPE)



Rope Size				Unit	weight	Breaking Strength				
CIR. DIA.		in Air	submerged	NDBS		NWBS				
mm /	mm / inch mm / inch		kg/100m	kg/100m	kN Ton		kN	Ton		
251	10	80	3-1/8"	400	40	1,550	158	1,392	142	
276	11	88	3-1/2"	480	48	1,900	194	1,706	174	
302	12	96	3-3/4"	574	58	2,300	234	2,065	211	
327	13	104	4-1/8"	688	69	2,700	275	2,425	247	
352	14	112	4-3/8"	788	79	3,100	316	2,784	284	
377	15	120	4-3/4"	929	94	3,580	365	3,215	328	
402	16	128	5"	1,038	105	4,000	408	3,592	366	
427	17	136	5-3/8"	1,200	121	4,580	467	4,113	419	
452	18	144	5-5/8	1,332	134	5,100	520	4,580	467	
478	19	152	6"	1,463	148	5,600	571	5,029	513	
503	20	160	6-1/4"	1,623	164	6,150	627	5,523	563	
528	21	168	6-5/8"	1,790	181	6,700	683	6,017	613	
553	22	176	7"	1,980	200	7,400	754	6,645	677	





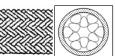
# 4. DSR SPM ROPE SPEC.

► Material; Nylon 66 – Core, Nylon 6 - Cover

**▶** Construction ; Double Braid Type

#### NYLON DOUBLE BRAID ROPE





Rope Size				Unit	weight	Breaking Strength				
CIR.		DIA.		in Air	submerged	Dry		Wet		
mm / inch		mm / inch		kg/100m	kg/100m	Ton	kN	Ton	kN	
251	10	80	3-1/8"	400	40	148	1,452	133	1,304	
276	11	88	3-1/2"	480	48	175	1,717	157	1,542	
302	12	96	3-3/4"	574	58	208	2,040	187	1,832	
327	13	104	4-1/8"	688	69	245	2,403	220	2,158	
352	14	112	4-3/8"	788	79	280	2,747	251	2,467	
377	15	120	4-3/4"	929	94	325	3,188	292	2,863	
402	16	128	5"	1,038	105	363	3,561	326	3,198	
427	17	136	5-3/8"	1,200	121	418	4,101	375	3,682	
452	18	144	5-5/8	1,332	134	460	4,513	413	4,052	
478	19	152	6"	1,463	148	500	4,905	449	4,405	
503	20	160	6-1/4"	1,623	164	550	5,396	494	4,845	
528	21	168	6-5/8"	1,790	181	605	5,935	543	5,330	
553	22	176	7"	1,980	200	673	6,602	604	5,929	





Size 6 Standard Deviation (enter test result): 2.34 tonf



# 5. Lloyd FORM A Cert.

#### FORM A OCIMF GUIDELINES FOR THE PURCHASING AND TESTING OF SPM HAWSERS COMPLIANCE CERTIFICATE

Date: 12-August-2014

Rope Manufacturer:

7, Noksansaneopjung-ro, 192beon-gil, Gangseo-gu, Busan, Koera

Rope Design Designation: NY Double B/D (SPM)

Material Type (nylon, polyester, etc.): Material Description (or mfg's code): Nylon 6.6

Rope Structure (8-strand, double braid, etc.): Load-bearing 12-Strand Core and Protective Jacket Maximum Rope Size to be Made: Wight / Unit Length: 19,600 g/m

Prototype Rope Production

Quantity Produced Plant Location: Busan, Korea Date: 30-June-2014

Quality Control Supervisor: Kyung-Wook Kang Name of Independent Inspector: Tae-Hoon Kim Inspection Company: Lloyd's Register

Address: #22, DoosanVolvo-ro Seongsan-gu, Changwon, Gyeongnam, Korea

Certified by Independent Inspector (indicate Yes or No if listed requirements have been reviewed)

Rope Design Specification?: Material Specification?: Yes Manufacturing Specification?: Splicing Instructions?: Yes Quality Assurance Manual?: Yes Quality Control Report?: Yes Yarn Quality Testing?: Rope/Yarn Strength Ratio Determination?: Yes

Prototype Rope Testing

Test Facility: 4,000kN / 12,000kN Location: Busan, Korea Date: 01-July-2014

Yong sik Yim / Hyung-il Cho

Name of Independent Inspector: Tae-Hoon Kim Inspection Company: Lloyd's Register

Address: #22, DoosanVolvo-ro Seongsan-gu, Changwon, Gyeongnam, Korea

Certified by Independent Inspector (enter average test result)

DExt20% NDBS DExt50% NWBS. WExt20% WExt50% Size 6 64.9 tonf 6.54% 10.05% 58.9 tonf 8.30% 11.62% 338.4 tonf 6.32% 10.03% 11.71% Size 15 288.9 tonf 8.17% Largest Size tested (if maximum rope greater than size 20) (enter size and average test result) 678.1 tonf 10.02% Size 22 Size 6 TCLL (enter test result): 75.65% Size 6 Standard Deviation (enter test result): 2.34 tonf

Certified by Independent Inspector (indicate Yes or No if listed calculations have been reviewed): Yes

Extension at 20% (Ext20%) and 50% (Ext50%) Determination? Yes

Thousand Cycle Load Level (TCLL) Determination? Yes

Rope Size/Strength Power Determination? SP=1.830

Rope/Yarn Strength Ratio Determination? 6": 0.882 / 15": 0.81 / 22": 0.751

Signature/Seal of Independent Inspector

Certification indicates that documents have been reviewed for full compliance and that tests have been witnessed by

Compliance and/or certification do not indicate approval and/or certification by OCIME

Certified by Independent Inspector (enter average test result) DEv+2004

	NDBS	DEXIZU%	DEXISU%	NWBS	WEXIZU%	WEXIOU%
Size 6	64.9 tonf	6.54%	10.05%	58.9 tonf	8.30%	11.62%
Size 15	338.4 tonf	6.32%	10.03%	288.9 tonf	8.17%	11.71%
La	rgest Size tested (i	f maximum rope	greater than size	20) (enter size an	d average test res	ult)

Size 22 11.27% 678.1 tonf 6.26% 10.02% 622.7 tonf 7.73%

Certified by Independent Inspector (indicate Yes or No if listed calculations have been reviewed): Yes

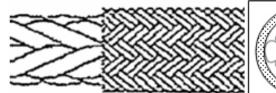
Extension at 20% (Ext20%) and 50% (Ext50%) Determination? Yes Thousand Cycle Load Level (TCLL) Determination? Yes

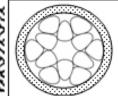
Rope Size/Strength Power Determination? SP=1.830

Size 6 TCLL (enter test result): 75.65%

Rope/Yarn Strength Ratio Determination? 6": 0.882 / 15": 0.81 / 22": 0.751

#### NYLON DOUBLE BRAID ROPE





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# 5. Lloyd Cert Sample

Certificate no: SEO 1514566/1

**DIA.** 7" (176 mm)

Project: PEMEX REFINACION (RFC: PRE9207163T7)

Inspection Certificate

Office: Energy Korea

Client's Order Number: PO No.: 1563

Client: DSR CORP.

Date: 22 October 2015

(Invoice No.: LF5100P1)

Inspection Dates

First: 22 October 2015

Final: 22 October 2015

This certificate is issued to Messrs, DSR CORP, Busan, Korea to certify that the undersigned Surveyor did to attend at their works on and between the above dates for the purpose of inspecting and testing the undermentioned products in accordance with the requirement of OCIMF Guidelines for the purchasing and testing of SPM Haweser (First Edition 2000)

NY DOUBLE B/D (SPM)

FLOATING: Tube type of 1 m & the material of celluar foam of the density of 30-35kg/m^3

With galvanized mooring rope thimble acc. to ASTM A-536 at both ends

Number of Coil: Specified Diameter: 7 inch Actual Diameter: 7 inch

Specified Length: 65.00 m Actual Length: 64.8 m / 64.8 m / 64.8 m / 64.8 m / 64.8 m

Specified Net Weight per Coil: 1,451.60 kgs Stated Net Weight per Coil: 1,451.60 kgs Specified New Dry Breaking Strength: 673.0 tonf Actual New Dry Breaking Strength: 690.1 tonf

For identification purpose, each bale/rope was marked as follows : -

Mark · FACOMEX

MANZANILLO PO No. 1563

NY DOUBLE B/D (SPM) 7 inch X 65 m

No. 220 to 224

Surveyor to Lloyd's Register Asia

A subsidiary of Lloyd's Register Group Limited

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Form 1123 (2013.12)

Certificate no: SEO 1514566/2



(128 mm)

Project: PEMEX REFINACION (RFC: PRE9207163T7)

Client: DSR CORP.

Office: Energy Korea

Client's Order Number: PO No. ; 1563

Date: 22 October 2015

(Invoice No.: LF5100P3)

Order Status: Complete

Inspection Dates

First: 22 October 2015

Final: 22 October 2015

This certificate is issued to Messrs, DSR CORP, Busan, Korea to certify that the undersigned Surveyor did to attend at their works on and between the above dates for the purpose of inspecting and testing the undermentioned products in accordance with the requirement of

OCIMF Guidelines for the purchasing and testing of SPM Haweser (First Edition 2000)

FLOATING: Tube type of 1 m & the material of celluar foam of the density of 30-35kg/m<sup>3</sup>

With galvanized mooring rope thimble acc. to ASTM A-536 at one end & the other end with 1.75 m soft eye spliced

Number of Coil: Specified Diameter: 5 inch Actual Diameter: 5 inch Specified Length: 50.00 m

Actual Length: 50.3 m / 50.3 m / 50.3 m / 50.3 m / 50.3 m

Specified Net Weight per Coil: 665.30 kgs Stated Net Weight per Coil: Specified New Dry Breaking Strength: 367.0 tonf Actual New Dry Breaking Strength :

For identification purpose, each bale/rope was marked as follows : -

Mark: FACOMEX

MANZANILLO PO No. 1563

NY DOUBLE B/D (SPM) 5 inch X 50 m No. 225 to 228

SL 22. OCT. 205

Sung-Taek, Leem Surveyor to Lloyd's Register Asia

A subsidiary of Lloyd's Register Group Limited

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Form 1123 (2013.12)





## 6. ABS SPM FOAM A & ABS TEST CERTIFICATE

#### FORM A OCIMF GUIDELINES FOR THE PURCHASING AND TESTING OF SPM HAWSERS COMPLIANCE CERTIFICATE

Date: 26 February 2016

Date: 09 November 2015

Rope Manufacturer:

Address:

7, Noksansaneopjung-ro, 192beon-gil, Gangseo-gu, Busan, Koera

Rope Design Designation:

Nylon

20

Material Type (nylon, polyester, etc.):

Material Description (or mfg's code): Nylon 6.6 Rope Structure (8-strand, double braid, etc.): 12 Parallel Strand (3-Strand Sub Rope) with Protective Jacket

Maximum Rope Size to be Made:

Wight / Unit Length: 16,230 g/m

Prototype Rope Production

Plant Location: Busan Korea Quantity Produced

Quality Control Supervisor: Kyung-Wook Kang Name of Independent Inspector: Pan-Jun Kim

Inspector Company:

Address:

#22, 6th Floor, DK Building 6-12, Jungang-daero 180beon-gil, Dong-gu.

Busan, Republic of Korea

Certified by Independent Inspector (indicate Yes or No if listed requirements have been reviewed)

Rope Design Specification?: Material Specification?: Yes Manufacturing Specification?: Splicing Instructions?: Yes Yes Quality Assurance Manual?: Yes Quality Control Report?: Yes Yarn Quality Testing?: Rope/Yarn Strength Ratio Determination?:

Prototype Rope Testing

Test Facility: 4,000kN / 12,000kN Location: Busan Korea Date: 26 November 2015

Test Engineer: Yong sik Yim / Hyung-il Cho

Name of Independent Inspector: Pan-Jun Kim

Inspector Company:

Address: #22, 6th Floor, DK Building 6-12, Jungang-daero 180beon-gil, Dong-gu,

Busan, Republic of Korea

Certified by Independent Inspector (enter average test result)

DExt20% DExt50% WExt20% WExt50% Size 6 67.4 tonf 6.07% 10.11% 62.0 tonf 7.73% 11.54% Size 15 371.4 tonf 6.59% 10.48% 338.5 tonf 7.95%

Largest Size tested (if maximum rope greater than size 20) (enter size and average test result) Size 6 TCLL (enter test result): 76.1% Size 6 Standard Deviation (enter test result): 2.04 tonf

Certified by Independent Inspector (indicate Yes or No if listed calculations have been reviewed): Yes

Extension at 20% (Ext20%) and 50% (Ext50%) Determination? Yes Thousand Cycle Load Level (TCLL) Determination? Yes

Rope Size/Strength Power Determination? SP=1.857

Signature/Seal of Independent Inspector

Independent Inspector.

Rope/Yarn Strength Ratio Determination? 6": 0.793 / 15": 0.747

PAN-JUNKIM 26 FEB. 2016 Certification indicates that documents have been reviewed for full compliance and that tests have been witnessed by

Compliance and/or certification do not indicate approval and/or certification by OCIMF.

#### AMERICAN BUREAU OF SHIPPING

First Visit Date

DSR CORPORATION **Busan Port** 08-Jul-2015

Last Visit Date

BK2941788 26-Feb-2016

Certification Of:

Prototype Test for SPM Hawsers NY PL12 (SPM)

Survey Location

Manufacturer Stamping

DSR CORPORATION

This is to Certify that the undersigned surveyor(s) to this Bureau did, at the request of the customer, carry out the following survey and report as follows

Manufacturer's production processes were generally examined and material flow, control and identification

technique found satisfactory

Manufacturer's quality system and workmanship standards reviewed and considered satisfactory or requested to be modified to suit the particular project requirements

Principal data verified in accordance with the applicable specification and approved plans, and confirmed to be

Inspection and testing of machinery/equipment parts and assembly satisfactorily carried out in accordance with the

applicable specification.

Testing machines are maintained in satisfactory condition and records of their recheck or calibration dates

Description: Prototype Test for SPM Hawsers NY PL12 (SPM)

Rope Size: 6" and 15"

Material Specification: Nylon 6.6 Multifilament Yan

Drawing No: SMP-151110-01

ITP No.: SPM Hawsers NY PL12 (SPM)\_REV.0

The prototype tests for SPM Hawsers NY PL12 (SPM) were carried out in accordance with OCIMF Guidelines and manufacturer's specifications as follows and considered satisfactory

- 1. Material Test
- Linear Density
- Dry & Wet Tenacity
- Dry & Wet Elongation at Break - Yarn on Yarn Abrasion
- 2. Sub Rope Test
- New Dry Breaking Strength Test
- New Wet Breaking Strength Test
- 3. New Dry Breaking Strength Test & Elongation Measurements
- 4. New Wet Breaking Strength Test & Elongation Measurements
- 5 Cyclic Load Test
- 6. Rope/Yarn Strength Ratio

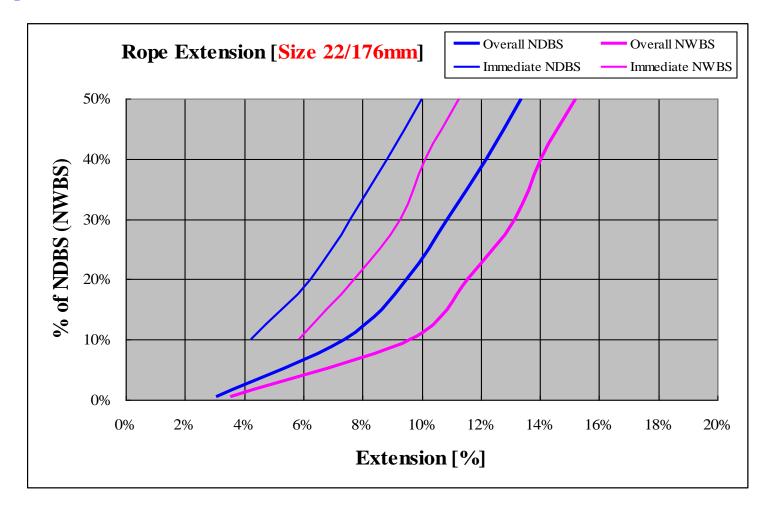
#### NYLON PL12 ROPE





## 7. SPM ROPE EXTENSION

► Rope Extension : Dia 176mm





# 8. DSR SPM ROPE

► Lloyd & ABS

► Max Size ; DIA. 176mm (Cir. 22")

Length; All Length

► Float Type ; Lace-on-Float , Integral









# 9. DSR SPM PRODUCTION

#### **▶ PRODUCTION**









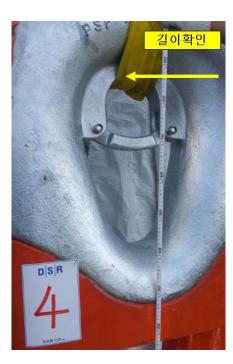




# 10. DSR SPM - LENGTH

#### **▶** Checking the length









\* Length; 64.84M (1) / 64.74M (2)/ 64.65M (3) / 64.87M (4) / 64.80M (5)

\* Average; 64.78 M

→ Tolerance ; 64.35M ~ 65.65 M

\* Wooden Packing Label No; 154(1) / 155(2) / 156(3) / 157(4) / 158(5)

\* Load: 3,900 ~ 4,300 kgf





# 11. DSR SPM - PACKING

#### **Packing**

















#### 12. DSR SPM REFERENCE

#### ▶ Reference (1)

Customer	PEMEX	PEMEX	Oceanic Offshore	BOGO E&C	PEMEX	PEMEX	Hendrik Veder	BOGO E&C
DSR Job No.	KF5040	LF5024	LF1003	LF1032	LF5100P1	LF5100P3	MF3070	NF1008
End User	MEXICO	MEXICO	-	SHEVRON (INDONESIA)	MEXICO	MEXICO	SHEVRON (ITALY)	SHEVRON (INDONESIA)
Date	2014.07.14	2015.02.13	2015.02.05	2015.04.22	2015.09.18	2015.10.16	2016.6.16	2017.03.03
Rope Size	176mm X 65m	176mm X 65m	176mm X 80m	168mm X 45.75m	176mm X 65m	128mm X 50m	128mm X 60m	120mm X 60m
Quantity	5 PCs	1 PCs	1 PCs	1 PCs	5 PCs	4 PCs	2 PCs	2 PC

- ▶ We have been selling SPM rope to Mexico consistently since 2014. Also, scheduled to sell in 2017.
- ▶ We had started business with Chevron Indonesia in 2015 and received new order in March 2017.





#### 12. DSR SPM REFERENCE

#### Reference (2)

Customer	BOGO E&C	BOGO E&C	CORCIMEX	Hendrik Veder	Tyson's	CORCIMEX	PT. DEWI SARTIKA KENCANA	
DSR Job No.	NF1022	OF1054	NF5131	NF3141	PF3003	PF5026	PF1958	PF1087
End User	-	-	MEXICO	-	-	PEMEX	PERTAMINA	
Date	2017.04.16	2017.05.16	2018.02.28	2018.04.27	2019.03.10	2019.05.26	2019.11.25	
Rope Size	168mm X 45.72m	168mm X 45.72m	176mm X 65m	168mm X 71m	168mm X 100m	194111111 X	160mm x 60.92m	
Quantity	1 PCs	1 PCs	8 PCs	2 PCs	1 PCs	2 PCs	1 PCs	

- ▶ We have been selling SPM rope to Mexico consistently since 2014. Also, scheduled to sell in 2017.
- ▶ We had started business with Chevron Indonesia in 2015 and received new order in March 2017.





#### 12. DSR SPM REFERENCE

#### ▶ Reference (3)

Customer	BOGO E&C	BOGO E&C	CORCIMEX	Hendrik Veder	Tyson's		
DSR Job No.	NF1022	OF1054	NF5131	NF3141	PF3003		
End User	-	-	MEXICO	-	-		
Date	2017.04.16	2017.05.16	2018.02.28	2018.04.27	2019.03.10		
Rope Size	168mm X 45.72m		176mm X 65m	168mm X 71m	168mm X 100m		
Quantity	1 PCs	1 PCs	8 PCs	2 PCs	1 PCs		

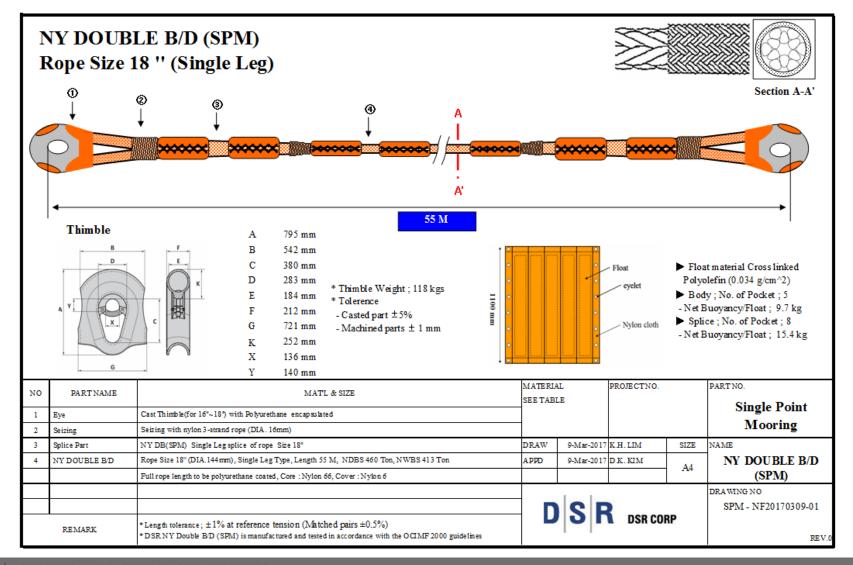
- ▶ We have been selling SPM rope to Mexico consistently since 2014. Also, scheduled to sell in 2017.
- ▶ We had started business with Chevron Indonesia in 2015 and received new order in March 2017.







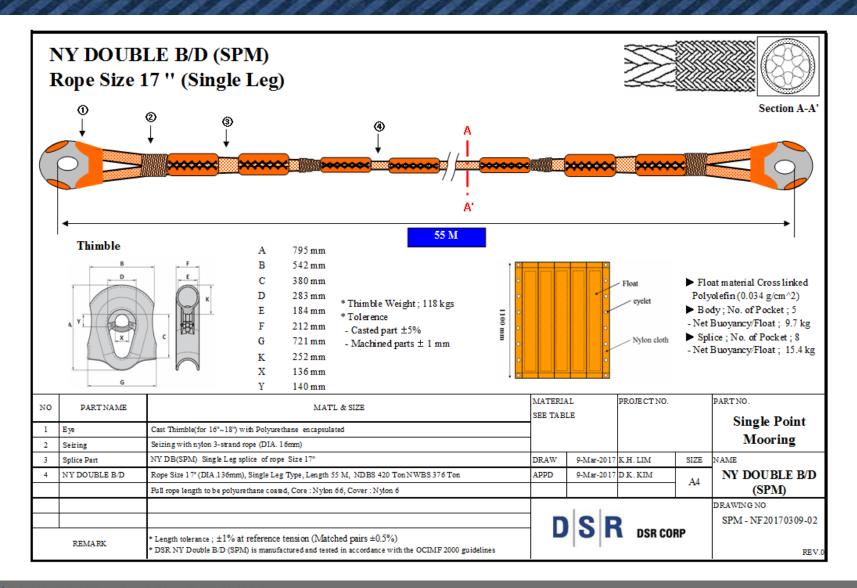
## 13. DRAWING – NYLON DOUBLE B/D 18" DRAWING







# 13. DRAWING – NYLON DOUBLE B/D 17" DRAWING





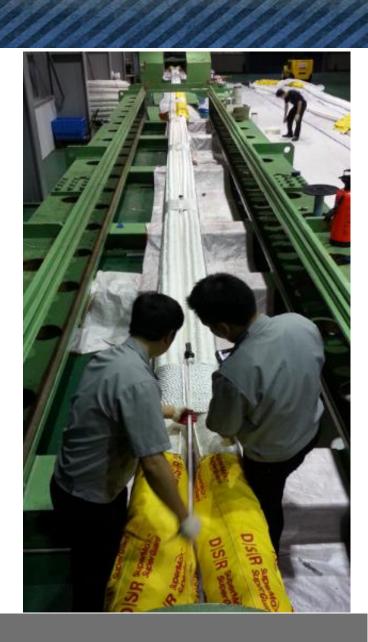


# 14. SPM ROPE TEST



#### **DSR** New Testing Machine

- Max. 1,200 Ton
- Max Sample Length 20 M
- Max. Speed 1000mm/min
- 5 m stroke [Test for offshore mooring]
- $\hbox{-} Breaking, Tension\ Fatigue (TCLL),\ Stiffness,\ Initial\ Creep\ Test\ etc.$





DSR promises to keep improving customer service and delivery standards.

Always Together with Customer

The Best Custom Boat Lines
DenverRope.com
303-809-7274
John@DenverRope.com

