OCS has the expertise, key personnel and equipment to provide single source, cost effective, post trenching burial for marine pipelines. OCS owns all the key elements of the post trenching equipment spread. The equipment can be mobilized at relatively short notice onto an OCS barge or a third party barge provided by a customer. OCS post trenching system can be operated in deep or shallow water.

OCS owned and fabricated Jet sled is one of the OCS newest assets added to OCS post trenching equipment spread. The jet sled is designed, fabricated and tested completely at OCS facility and under the close supervision of OCS engineering team.

OCS already owns and operates pipe riding jet sleds but this sled have the disadvantage of requiring support while they are pulled along the pipeline to prevent them from turning over. A new proposed Articulated Jet Sled (AJS) does not ride on the pipeline but it is supported on either side of the buoyancy tank skids while a rotating arm s fitted that is equipped with jets and an educting facility to remove jetted spoil.

In general, AJS has the features as described below;

- *AJS is designed to be used in the extreme shallow water jetting system, the areas which are not accessible by using jetting equipment which must be supported by an attendant barge*
- *AJS is designed to be transportable in 2x 20ft open top containers*
- *AJS is designed to be floated with minimum draft into very shallow water.it is then ballasted down over the pipe*
- *In very shallow water, the whole sled and pontoon arrangement is maneuvered by winches on the beach and on the mother barge.*

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Specification of the OCS employed pipe riding jet sled are as follows:

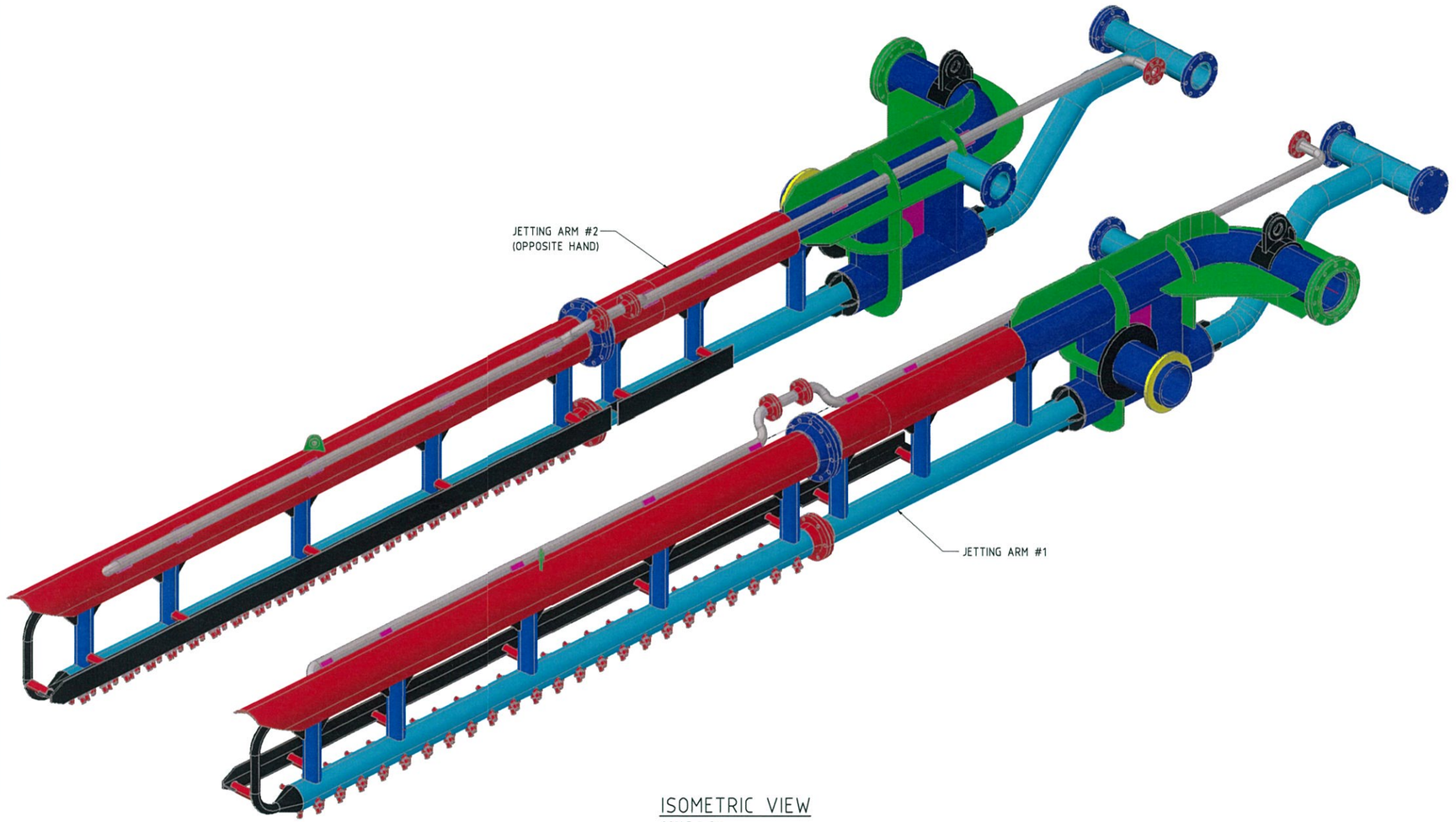
Pipe riding Jet sled	
Jetting Nozzles	322 nos stainless steel
Jetting Nozzle Dia	5/16” – 3/8” (7.93 – 25mm)
Nozzle Pattern	Vertical axis along the front of jetting arms
Flow Rate	1550 – 1650m^3 / hr
Eductors (Rear)	10” x 2nos
Trench Depth	Maximum 2.5m based on jetting arms adjustment
Dimensions, mm	11400 x 9310 x 2545 x 18MT
No of Units	1

OCS has Equipment passports for individual equipment which must be reviewed before each project to assess the status. The equipment passport gives the working history, maintenance and certification history of the equipment.

It is important to regularly review the list of critical parts of the equipment before each project and do the remedial works for any fault noticed.

Where failures occur during operations Equipment Bulletins will be issued to document the problem and the remediation solutions applied. The equipment bulletin will be circulated to all field engineers to be informed about the possible failure that can occur during the operation and thereby avoid future failure.

This equipment file remains a live document and will be constantly updated by the equipment department.



ISOMETRIC VIEW
SCALE 1 :30

ITEM	UNIT	SECTION	SIZE	LENGTH	WIDTH	TOTAL WEIGHT Kgs
72A	2	PIPE	Pipe Dia 273mm x 9.27mm W.T.	4682		564.74
72B	2	PIPE	Pipe Dia 273mm x 9.27mm W.T.	1625		196.01
73	2	PIPE	Pipe Dia 273mm x 15.09mm W.T.	1399		268.64
74	2	PIPE	Pipe Dia 273mm x 15.09mm W.T.	475		91.21
75	2	ELBOW	OD 273.05 ELBOW 90 DEG. SCH 80			114.06
76	6	FLANGE	10" 150# ANSI WELD NECK FLANGE			201.54
77	2	PIPE	Pipe Dia 168.3mm x 10.97mm W.T.	392		33.37
78	2	FLANGE	6" 150# ANSI WELD NECK FLANGE			29.22
79A	2	PIPE	Pipe Dia 60.3mm x 5.54mm W.T.	3654		54.66
79B	2	PIPE	Pipe Dia 60.3mm x 5.54mm W.T.	3936		58.88
79C	2	PIPE	Pipe Dia 60.3mm x 5.54mm W.T.	250		3.74
80	10	ELBOW	OD 60.3 ELBOW 90 DEG. SCH 80			8.80
81	2	PIPE	Pipe Dia 60.3mm x 5.54mm W.T.	195		2.92
82	10	FLANGE	2" 150# ANSI WELD NECK FLANGE			36.50
83	2	REDUCER	REDUCER CONE OD 168.3 TO OD 60.3	140		
84A	2	PIPE	Pipe Dia 168.3mm x 10.97mm W.T.	4303		366.27
84B	2	PIPE	Pipe Dia 168.3mm x 10.97mm W.T.	3433		292.22
85	65	COUPLING	HALF COUPLING #300 NPT ANSI B16.11 (1")			
86	2	ELBOW	OD 168.3 ELBOW 45 DEG. SCH 80			14.66
87	2	PIPE	Pipe Dia 168.3mm x 10.97mm W.T.	602		51.24
88	2	ELBOW	OD 168.3 ELBOW 45 DEG. SCH 80			14.66
89	2	PIPE	Pipe Dia 168.3mm x 10.97mm W.T.	349		29.71
90	2	TEE	OD 168.3 TEE SCH 80			26.86
91	4	PIPE	Pipe Dia 168.3mm x 10.97mm W.T.	212		36.09
92	6	FLANGE	6" 150# ANSI WELD NECK FLANGE			87.66
93	2	FLANGE	6" 150# ANSI WELD NECK WITH BLIND FLANGE			36.64
94	4	PIPE	Pipe Dia 60.3mm x 5.54mm W.T.	317		9.48
95	2	PIPE	Pipe Dia 60.3mm x 5.54mm W.T.	257		3.84
96	16	PIPE	Pipe Dia 141.3mm x 9.53mm W.T.	414		205.15
97	14	PIPE	Pipe Dia 60.3mm x 5.54mm W.T.	126		13.19
98	184	COUPLING	HALF COUPLING #300 NPT ANSI B16.11 (1")			
99	2	PIPE	Pipe Dia 273mm x 15.09mm W.T.	1051		201.81
100	2	PLATE	PL-16 mm.	1726	150	65.04
101	2	PLATE	PL-16 mm.	922	150	34.74
102	16	PLATE	PL-10 mm.	100	50	6.28
103	4	PLATE	PL-10 mm.	273	273	23.40
104	2	PIPE	Pipe Dia 273mm x 15.09mm W.T.	600		115.21
105A	2	PLATE	PL-16 mm.	229	229	13.17
105B	2	PLATE	PL-16 mm.	400	229	23.01
105C	2	PLATE	PL-16 mm.	292	100	7.34
106	2	PLATE	PL-16 mm.	528	453	60.08
107	2	PLATE	PL-16 mm.	1208	150	45.52
108	2	PLATE	PL-16 mm.	993	719	179.35
109	2	PLATE	PL-16 mm.	570	570	81.61
110	4	PLATE	PL-16 mm.	473	228	54.18
111	2	PLATE	PL-25 mm.	473	473	87.81
112	2	PLATE	PL-25 mm.	373	373	54.61
113	2	PIPE	Pipe Dia 273mm x 15.09mm W.T.	630		120.97
114	2	PIPE	Pipe Dia 273mm x 15.09mm W.T.	600		115.21
115	4	PLATE	PL-16 mm.	292	100	14.67
116	4	PLATE	PL-16 mm.	228	228	26.12
117	4	PLATE	PL-12 mm.	82	50	1.54
118	2	PLATE	PL-12 mm.	327	276	17.13
119	2	PLATE	PL- 6 mm.	120	97	1.10
120	2	PIPE	Pipe Dia 60.3mm x 5.54mm W.T.	167		2.50
121	26	PLATE	PL-10 mm.	100	100	20.41
122	32	PLATE	PL-10 mm.	100	36	9.04
123	2	ELBOW	OD 60.3 ELBOW 90 DEG. SCH 40			1.16
124	2	ELBOW	OD 60.3 ELBOW 45 DEG. SCH 40			0.58
125	2	PLATE	PL-20 mm.	410	150	19.31
126	2	PLATE	PL-30 mm.	251	263	31.09
127	4	PLATE	PL-12 mm.	140	140	7.39
128	2	PLATE	PL-16 mm.	148	114	4.24
129	2	PLATE	PL- 8 mm.	60	60	0.45
130	2	PLATE	PL-10 mm.	5633	150	132.66
131	2	PLATE	PL-10 mm.	5633	100	88.44
				TOTAL		4518.54

NOTES :

1. ALL DIMENSIONS ARE IN MM (U.N.O)
2. ALL PLATES & TUBULAR TO BE GRADE 36 KSI(U.N.O)
3. ALL WELDING TO BE FULPEN (U.N.O)
4. ALL FULL PENETRATION WELD AND FILLET WELD TO BE 100% MPI.
5. ALL WELDING ASPER AWS b1.1 & AS 1554.
6. ELECTRODE SMYS (MIN) - 70 K.S.I.
7. PADEYE HOLE TO BE LINE BORED AFTER WELDING CHEEK PLATES TO MAIN PLATE.
8. ROLLING DIRECTION OF PADEYE SHALL BE ORIENTED TO SUIT THE LINE OF SLING FORCE.
9. ALL FLANGE - TUBULAR CONNECTION TO BE BUTT WELD.
10. QUANTITIES LISTED IN MTO ARE FOR TWO NUMBERS OF JETTING ARM #1 & #2.

REV	BY	DATE	REVISION DESCRIPTIONS	DRFTG CHECK	ENG	APP	DATE	MASTER DRAWING
0	CSN	01.09.15	APPROVED FOR CONSTRUCTION	ARYO	SS	RR	01.09.15	
A	SVK	19.08.15	ISSUED FOR REVIEW	CSN	RAK	RR	19.08.15	

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DRAWN	: VINOTH S.	DATE: 25.07.15
CHECKED	: CHANIN S.	DATE: 25.07.15
ENGINEER	: RADITYA A. K.	DATE: 25.06.15
OCS APPD	: RAKUL R.	DATE: 25.06.15

DWG TITLE :
ARTICULATED JET SLED
JETTING ARM AND EDUCTOR #1
ISOMETRIC VIEW AND MTO

SCALE	DWG NO	SIZE	REV
AS SHOWN	OCS-INS-SLED-FAB-DWG-000	A3	0

P:\OCS Project\ON GOING PROJECT\ IN HOUSE PROJECTS\02-01-PONTOON SLED TO SUIT 24INCH, 4INCH P-BACK-JANKRIK PROJECT\DRAWING IN PROGRESS\OCS-INS-SLED-FAB-DWG-000 R0 JET SLED JETTING ARM & EDUCTOR #1 ISOMETRIC AND MTO).dwg