



USR DRILLING LLC

USRD MECHANICAL SUCCESS ANALYSIS

Mechanical Milestones in USRD Technology

1990: RSS developed by Amoco and licensed to USRD founders

1999: 1st USR well drilled with Titanium Drill Pipe

2003: USRD Multi-lateral re-entry sub successfully trialed by PDO in Oman

2007: USRD Mud Motors developed and successfully tested (Curve & Lateral)

2007: 1st USR well completed with articulated sand screens - SnakeScreens™

2008: 2-3/8" S-135 DP introduced to USRD BHA

2014: Mud Lube Bearing Packs developed and successfully tested

2015: Resumed drilling operations in the US after a 20 year absence

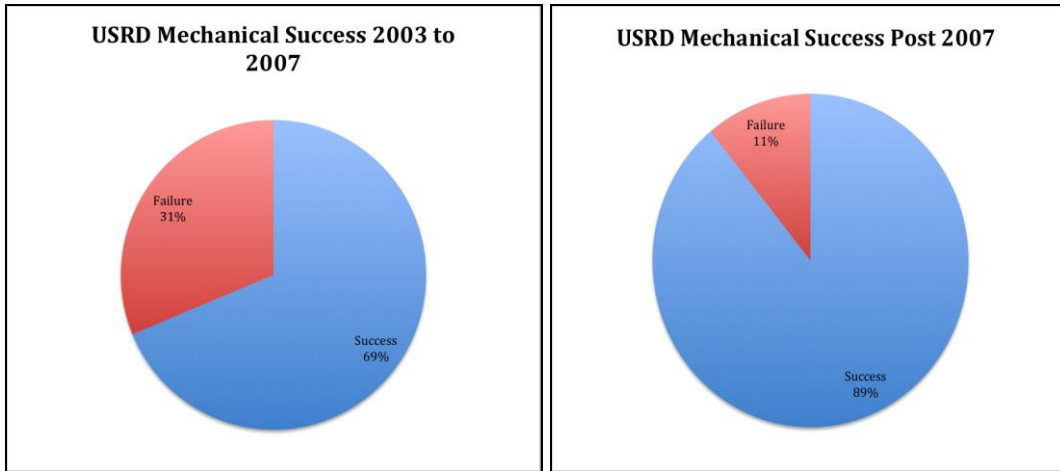
2019: Issued the first license to a third party granting access to the USR Technology

2020: Drilled 35 wells in China. Expanded operations to 6 USR drilling teams

USRD Mechanical Success History

Before USRD Mud Motors

After USRD Mud Motors



Risks and Mitigations for USR Drilling

RISK	MITIGATION	REMEDY
Formation related problems (unstable shale, swelling clay, unconsolidated sand, etc)	<p>Review petrophysical, core, log data and drilling reports on offset wells to identify potential problems.</p> <p>Address hole stability issues with drilling fluids.</p> <p>Design trajectory to avoid unstable lithology.</p>	Re-drill USR curve and/or lateral.

<p>Casing exit related problems (undergaged window, improperly anchored whipstock ramp, metal shavings or junk left in hole)</p>	<p>Review cased hole log to determine depth of collars, centralizers, scratchers and perforations to avoid these problems during milling.</p> <p>Perform dedicated clean out run prior to milling operations.</p> <p>Run magnets prior to under-reaming.</p>	<p>Mill a new window.</p>
<p>Incompetent cement plug due to improper slurry mix, too short a WOC period and hydrocarbon contamination – in other words cement is too soft to initiate a kickoff into the formation.</p>	<p>Perform lab test on water source and dry sample of cement.</p> <p>WOC minimum of 24 hours.</p> <p>Isolate existing perforations.</p>	<p>Pump new plug.</p>
<p>Incorrect or Uncertain Depth</p>	<p>Run correlation log and hole survey prior to commencement of operations.</p> <p>Insure that drillpipe is properly strapped.</p> <p>Correct depth from original RKB to new RKB.</p> <p>Issue instructions to driller with correct correlation depth.</p>	<p>Revise drilling plan and adjust window and kickoff depths, if possible. If not, abandon well.</p>
<p>Theoretical Build Up Rates (BUR) can be affected by lithology and compressive strength.</p>	<p>Adjust BHA to increase or decrease BUR.</p> <p>Adjust drilling parameters.</p>	<p>Re-drill USB curve and/or lateral.</p>
<p>Drillpipe Fatigue/Failure</p>	<p>Monitor Pipe Tracking System (PTS) and replace drillpipe after reaching 70% of projected Cycles to Failure (CTF) life.</p> <p>NOTE: PTS is a proprietary program written to monitor the number of rotations on each foot of drillpipe from when it enters the curve section until it exits the curve section. An SN curve has been created for to predict cycle life based on radius of curvature.</p>	<p>Fish drillpipe and continue drilling. If fish recovery fails, mill new window and re-drill curve and lateral.</p>

USRD RECENT HISTORY – Partial List of Wells

	Year Drilled	Client	Well number	Country	KOP depth	TD depth	KO from casing	R.O.C.	Horizontal Reach	USR Drilling and Survey Time in Hours (Approximate)	Successfully drilled	Success	Failure
1	2003	PDO	L 365 leg 1	Oman	4059'	4714.5	7"	34.38'	660'	64	Yes	1	
2	2003	PDO	L 365 leg 2	Oman	4146'	4214'	7"	31.86'	330'	39	Yes	1	
3	2003	PDO	L 366 leg 1	Oman	4042.65'	4586.61	7"	32.09'	490'	63	Yes	1	
4	2003	PDO	L 366 leg 2	Oman	4130'	4162'	7"	32.51'	0'	15	No, Curve successfully drilled, but sail angle was too high to drill lateral.		1
5	2003	PDO	L 130	Oman	3969.82'	4048'	7"	44.45'	618.5'	192	Yes	1	
6	2005	PDO	Rima 24	Oman	3128.3'	3442'	7"	32'	330'	78	Yes	1	
7	2005	PDO	Rima 14	Oman	3127.6'	3550'	7"	32'	330'	72	Yes	1	
8	2005	PDO	Rima 8	Oman	3211.94'	3241.8'+	7"	28.93'	0		No New Composite Drillpipe Manufactured by ACPT failed. Curve was successfully drilled, but CDP failed in lateral.		1
9	2005	PDO	Rima 53	Oman	3259.5'	3376'	7"		60'		No New Composite Drillpipe Manufactured by ACPT failed. Curve was successfully drilled, but CDP failed in lateral.		1
10	2005	PDO	Y 392 fishbone 1	Oman	6056.5'	6119'	4 1/2" Liner	250'	62.5	32	Yes	1	
11	2005	PDO	Y 392 fishbone 2	Oman	5546'	5612'	4 1/2" Liner	250'	66'		Yes	1	
12	2005	PDO	Y 139 fishbone 1	Oman	6154'	6383.2'	4 1/2" Liner	230'	228.2'		Yes	1	
13	2005	PDO	Y 141 fishbone 1	Oman	5283'	5340'	4 1/2" Liner	282'	57'		Yes	1	

14	2005	PDO	Sadad 20	Oman	N/A	N/A	4 1/2"	N/A	N/A		No Section Interval contaminated with metal and centralizer. Could not drill curve.		1
15	2005	Daleel	Daleel 4	Oman	5265.75'	5300'	7"	32.61'	443'		Yes	1	
16	2005	PTTEP	Shams 5	Oman	11567'	11658.5'	7"	48.23'	curve only	30.25hrs	No Composite Pipe Failed while reaming out the curve before drilling the lateral. Torque exceeded 7000ft.lbs NOTE: Production was achieved.		1
17	2006	PEMI	Selmo 36 - L1	Turkey	5412'	5517.5'	4 1/2" open hole	34'	81.5'		Yes TD early because of hitting overlying shale.	1	
18	2006	PEMI	Selmo 36 - L2	Turkey	5423'	5516'	4 1/2" open hole	38'	83'		Yes	1	
19	2006	PEMI	Selmo 44	Turkey	N/A	N/A	4 1/2" open hole	N/A	N/A		No Hole Collapsed due to shale		1
20	2006	PEMI	Selmo 43	Turkey	5817'	6315'	4 1/2" open hole	50.2'	457'		Yes	1	
21	2006	PEMI	Selmo 40	Turkey	5616'	6192'	4 1/2" open hole	53.8'	450.2'		Yes	1	
22	2007	ONGC	Balol 84	India	3364.5'	3419'	7"	30.12'	0		No Hole collapsed.		1
23	2007	ONGC	Balol 141	India	3507'	4046.26'	7"	33.26'	462.48'	15 to drill curve; 8 to drill lateral	Yes Lateral had to be drilled twice because of hole collapse due to highly unconsolidated sand. Successfully ran articulated sand screen.	1	

24	2007	ONGC	North Kadi 249	India	3415.35'	3842.19'	7"	33.76'	355.64'		Yes, but lateral had to be drilled four times because of hole collapse due to highly unconsolidated sand. Could not run sand screens. NOTE: First USR Motor was received and run on fourth attempt.	1	
25	2007	ONGC	Geleki 83	India	7958.33'	8342.19'	5 1/2"	44.68'	315.53'		Yes	1	
26	2007	ONGC	Geleki 86	India	N/A	N/A	5 1/2"	N/A	N/A		No Could not exit section due to junk in hole (Left Section Mill and Three Sets of Knives in the Hole. Did not attempt USR Kickoff).		1
27	2007	PEMI	Selmo 22	Turkey	5750'	6550'	7"	227'	554'		Yes	1	
28	2008	PEMI	Selmo 36 - L3	Turkey	5409'	5898'	4 1/2" open hole	37'	465'		Yes Plug back of L1 and L2.	1	
29	2008	PEMI	Selmo 41	Turkey	5026'	5833'	7"	537'	172'		Yes Drilled conventional sidetrack to recover wellbore that was not producing because of shallow set casing and collapsing shale.	1	
30	2009	OXY	Sahah 99	Oman	6550'	7017'	5 1/2"	34'	400'		Yes	1	
31	2009	OXY	Safah 111	Oman	6509'	7140'	5 1/2"	32.8'	631'		Yes	1	
32	2009	OXY	Safah 93	Oman	6515'	7511'	5 1/2"	36.8'	938'		Yes World Record	1	
33	2009	OXY	Safah 113	Oman	6499'	6805'	5 1/2"	38.3'	246'		Yes	1	
34	2009	OXY	Safah 114	Oman	6520'	7251'	5 1/2"	39.42'	679'		Yes	1	
35	2009	OXY	Safah 27	Oman	6484'	7288'	7"	38.74'	744'		Yes	1	
36	2009	OXY	Safah 52	Oman	6515'	7070'	7"	37.47'	500'		Yes	1	
37	2010	Citic	Nua-A3	Indonesia	7200'	7625.6'	9-5/8"	45'	400.6'		Yes	1	
38	2010	Citic	East Nief 1	Indonesia	5720'	6295'	7"	45'	491'		Yes	1	
39	2010	Pertamina	MLD-04	Indonesia	2216m	2492.2m	7"	21.76m	250m		Yes	1	

40	2011	Pertamina	RDL-01	Indonesia	1051m	1270.6m	7"	15.5m	200m		Yes	1	
41	2011	Perenco	OBA-9	Gabon	1430m	1610m	7"	13.0	161m		Yes First two attempts with mud motor did not land at desired TVD. Curve was successfully landed using Amoco CDA.	1	
42	2011	Perenco	OBA-4 ST1	Gabon	933m	1162m	7"	17.7m	200m		Yes	1	
43	2011	Perenco	OBA-4 ST2	Gabon	936m	1159m	7"	15.8m	200m		Yes	1	
44	2011	Perenco	OLD-10	Gabon	567.9m	1015m	7"	13.3m	430m		Yes World Record	1	
45	2012	Perenco	OLD-20	Gabon	360.2m	498.4m	5-1/2"	11.7m	124m		Yes	1	
46	2012	Perenco	OLD-49SL	Gabon	675m	1137m	5-1/2"	18.72m	398m		Yes Deviated well.	1	
47	2012	Perenco	OLD-50 SL	Gabon	649m	911m	5 1/2"	18.20m	200m		Yes Deviated well.	1	
48	2012	Perenco	OLD-51SL	Gabon	584m	809m	5 1/2"	16.25m	150m		Yes Deviated well.	1	
49	2012	Perenco	NIU-28 ST-1	Gabon	727m	910.5m	7"	10.21	149m		Yes S-135 DP parted. Fishing operations cancelled due to rig breakdown.	1	
50	2012	Perenco	NIU-28 ST-2	Gabon	727m	950m	7"	13.02	202m		Yes	1	
51	2012	Perenco	NIU-14	Gabon	724m	942m	7"	14.5m	199.5m		Yes	1	
52	2012	Perenco	NIU-1	Gabon	706m	779m	7"	11.46m	54.8m		Yes	1	
53	2012	Perenco	NIU-22	Gabon	695m	916m	7"	18.84m	201m		Yes	1	
54	2012	Perenco	Diga-5 ST-1	Gabon	1969m	N/A	7"	15.48m	N/A		No Failed to achieve desired BUR. Drilled ST-2.		1
55	2012	Perenco	Diga-5 ST-2	Gabon	1969m	2009m	7"	10.30m	31.8m		Yes	1	
56	2012	Perenco	OBA-26 ST-1	Gabon	948.6m	N/A	5-1/2"	15.58m	N/A		No Failed to achieve desired BUR. Drilled ST-2.		1
57	2013	Perenco	OBA-26 ST-2	Gabon	950m	1185m	5-1/2"	11.12m	200m		Yes	1	
58	2013	Perenco	OBA-26 ST-3	Gabon	948.6m	1202m	5-1/2"	12.27m	220m		Yes	1	
59	2013	UEPL	Khaskeli-18	Pakistan	5056'	5550'	7"	15.08m	273.4'		Yes	1	

60	2013	UEPL	Mohano-1	Pakistan	5348'	5431'	7"	17.18m	8'		No Could not drift curve with LDM.		1
61	2013	UEPL	Tajedi-2	Pakistan	5368'	6367'	7"	11.93m	945'		Yes	1	
62	2013	UEPL	Ghungro-3	Pakistan	4597'	5289'	7"	19.09m	603'		Yes	1	
63	2013	UEPL	Mazari-9	Pakistan	3788'	4694'	7"	14.44m	831'		Yes	1	
64	2013	UEPL	South Mazari-9	Pakistan	5406'	5989'	7"	23,81m	467'		Yes	1	
65	2013	UEPL	Liari-2	Pakistan	8841'	9488'	7"	23.16m	520'		Yes Achieved TD, but lateral collapsed before running completion.	1	
66	2014	MOGE	LPDO-7	Myanmar	2842'	3706'	5-1/2"	22.91m	796'		Yes	1	
67	2014	MOGE	LPDO-61	Myanmar	2755'	3581'	5-1/2"	19.57m	711'		Yes	1	
68	2014	MOGE	LPDO-67	Myanmar	3760'	4526'	5-1/2"	15.91m	762.9		Yes	1	
69	2014	MOGE	LPDO-48ST1	Myanmar	3666'	4702'	5-1/2"	16.13m	964'		Yes	1	
70	2014	MOGE	LPDO-48ST2	Myanmar	3634'	4595'	5-1/2"	14.68m	896'		Yes	1	
71	2014	MOGE	LPDO-17	Myanmar	3668'	4598'	5-1/2"	14.94m	935'		Yes	1	
72	2017	Carbon Field Energy	Apollo 1H ST1	Texas	3594'	4101'	7"	59.3'	507'		Yes	1	
73	2017	Carbon Field Energy	Apollo 1H ST2	Texas	3608'	4153'	7"	43.5'	545'		Yes	1	
74	2017	Petco Petroleum	McCullum 11 ST1	Illinois	3904'	4630'	7"	40'	726'		Yes	1	
75	2017	Petco Petroleum	McCullum 11 ST2	Illinois	3911'	5168'	7"	56.8'	1256'		Yes	1	
76	2018	Winchester Energy, Ltd	WHR 3803ML ST1	Texas	6699'	7226'	5-1/2"	42.5'	527'		Yes	1	
77	2018	Winchester Energy, Ltd	WHR 3803ML ST2	Texas	6705'	7175'	5-1/2"	66.2'	470'		Yes	1	
78	2018	Winchester Energy, Ltd	WHR 3803ML ST3	Texas	6759'	7409'	5-1/2"	41.92'	650'		Yes	1	
79	2018	Winchester Energy, Ltd	WHR 3901	Texas	6804'	7045'	5-1/2"	45'	241'		Yes	1	
80	2019	PetroChina	TAI 60-108	China	1419m	1414.2m	5-1/2"	14m	126.5m		Yes	1	
81	2019	PetroChina	TAI 82s-112	China	1432m	1552m	5-1/2"	16m	110m		Yes	1	

82	2019	PetroChina	TAI 87-102	China	1390m	1570m	5-1/2"	13m	160m		Yes	1	
83	2019	PetroChina	TAI 83-101	China	1404m	1427.5m	5-1/2"	13.5m	118m		Yes	1	
84	2019	PetroChina	Tai 76-98	China	1395.2m	1414.6	5-1/2"	19.4m	120.6m		Yes	1	
85	2019	PetroChina	TAI 861-SJ1021	China	1384m	1664m	5-1/2"	13m	180m		Yes	1	
86	2019	PetroChina	TAI 73-S89 ST-1 ST-2	China	1437m 1428.6m	1470.9m 1490.4m	5-1/2"	20.4m 19.0m	N/A		Drilling aborted on ST-1 and ST-2 due to collapsing shale		1
87	2019	PetroChina	TAI 72-S91 ST-1 ST-2	China	1405.3m 1401.9m	1463m 1435m	5-1/2"	15.4m 16.3m	N/A		Drilling aborted on ST-1 and ST-2 due to collapsing shale		1
88	2019	PetroChina	TAI 85-103	China	1398m	1549.2m	5-1/2"	14.8m	128.9m		Yes	1	
89	2019	PetroChina	TAI 85-104	China	1390m	1576m	5-1/2"	14.8m	123.3m		Yes	1	
90	2019	PetroChina	TAI 88-103	China	1395m	1532m	5-1/2"	13m	120m		Yes	1	
91	2019	PetroChina	TAI 58-110	China	1420m	1520m	5-1/2"	18m	80m		Yes	1	
92	2019	PetroChina	TAI 78-98	China	1390m	1506.8m	5-1/2"	15m	100m		Yes	1	
93	2019	PetroChina	TAI 78-102	China	1395m	1515.4m	5-1/2"	12m	110m		Yes	1	
94	2019	PetroChina	TAI 82-S110	China	1412m	1584.7m	5-1/2"	18m	156m		Yes	1	
95	2020	PetroChina	TAI 81-92	China	1380m	1481.3m	5-1/2"	14m	80m		Yes	1	
96	2020	PetroChina	BU 54-17	China	1685m	1805m	5-1/2"	18m	100m		Yes	1	
97	2020	PetroChina	TAI 76-86	China	1407m	1579.5m	5-1/2"	15.7m	161m		Yes	1	
98	2020	PetroChina	TAI 75-91	China	1388m	1546.5m	5-1/2"	15.1m	138.5m		Yes	1	
99	2020	PetroChina	GU 85-56	China	2012m	2074m	5-1/2"	19.9m	60m		Yes	1	
100	2020	PetroChina	TAI 73-90	China	1398m	1563.5m	5-1/2"	14.1m	150m		Yes	1	
101	2020	PetroChina	TAI 72-S89	China	1461m	1566.7m	5-1/2"	15.4m	90.5m		Yes	1	
102	2020	PetroChina	MAO X52-S30 ST-1 ST-2	China	1738m 1740.7m	1753m 1772m	5-1/2"	14.4m 21.9m	NIL NIL		No, ???		1
103	2020	PetroChina	TAI 74-S89	China	1461m	1531.5m	5-1/2"	15.7m	52.5m		Yes	1	
104	2020	PetroChina	TAI 74-S92	China	1421m	1535m	5-1/2"	20.3m	93m		Yes	1	
105	2020	PetroChina	SHU 334-SJ401	China	1906.5m	2043m	5-1/2"	16.6m	114m		Yes	1	
106	2020	PetroChina	TAI 71-S89	China	1459m	1593m	5-1/2"	14.3m	120m		Yes	1	
107	2020	PetroChina	X9-D1-351	China	1118.5m	1254.5m	5-1/2"	13.6m	104.6m		Yes	1	
108	2020	PetroChina	X10-3-B4111	China	1122.5m	1217.8m	5-1/2"	17.2m	85m		Yes	1	
109	2020	PetroChina	X9-31-B56	China	1134.5m	1246.2m	5-1/2"	15.6m	101m		Yes	1	

110	2020	PetroChina	X12-1-FB443	China	1135m	1283	5-1/2"	17.5m	103m		Yes	1	
111	2020	PetroChina	ZHAO 86-26	China	1696m	1797.7m	5-1/2"	17.5m	80m			1	
112	2020	PetroChina	L4-P2588	China	1104.6m	1242.5m	5-1/2"	13.4m	110m			1	
113	2020	PetroChina	X10-5-B342	China	1064m	1215.5m	5-1/2"	13.3m	110m			1	

