

Oil and natural gas extraction data

Richard Heede
 Climate Mitigation Services
 File started: 11 January 2005
 Last modified: July 2019

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Petroleum Development Oman

yellow column indicates original reported units **60% SOE**

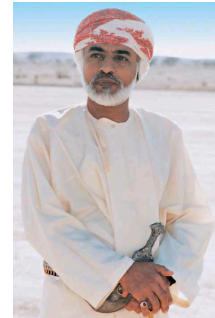
www.pdo.co.om Muscat Ministry of Petroleum and Minerals

Production / Extraction data

Year	Crude Oil & NGL			Natural Gas		
	Gross production	Gross production	Gross production	Gross production	Gross production	Gross production
	Thousand bbl /d	Million bbl /yr	Million bbl /yr	Trillion cf/yr	Billion cf/yr	Billion cf/yr
	PD Oman	PD Oman	PD Oman	PD Oman	PD Oman	PD Oman



شركة تنمية نفط عمان
 Petroleum Development Oman



His Majesty Sultan Qaboos bin Said
 Oman AR2011.

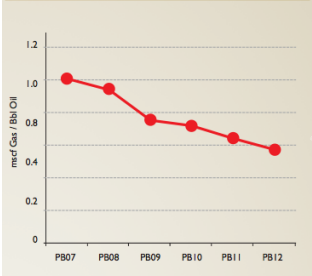
U.S. Bureau of Mines Minerals Yearbook 1976, page 888. Lists marketed and gross production of natural gas by country.

Year	OGJ100		Percentage of Omani Oil allocated to PDO	OGJ100		PDO Billion cf /yr	Utilization Rate	
	EIA	million bbl /yr		million bbl /yr	gross production			marketed prod
	million bbl /yr	million bbl /yr		Bcf/yr	Bcf/yr			
	OGJ100	PDO oil prod'n from PDO AnnRpts		Oman	EIA			
1964		23	10%	14	na	1.5	100%	
1965		88	10%	20	na	1.5	100%	
1966		120	10%	20	na	1.5	100%	
1967		121	10%	90	1.5	1.5	100%	
1968		107	60%	90	1.5	1.5	100%	
1969		103	60%	90	1.5	1.5	100%	
1970		107	60%	90	1.5	1.5	100%	
1971		106	60%	36.0	1.5	1.5	100%	
1972		125	60%	42.0	1.7	1.7	100%	
1973		134	60%	45.0	2.0	2.0	100%	
1974		124	60%	interpolated	8.5	8.5	100%	
1975		115	60%	interpolated	15.0	15	100%	
1976		108	60%	interpolated	21.5	22	100%	
1977		104	60%	NA	28.0	28	100%	
1978		117	60%	NA	33.0	33	100%	
1979		119	60%	NA	41.0	41	100%	
1980		138	60%	NA	51.0	72	100%	
1981		152	60%	NA	47.0	82	0.80 actual utiliz. rate	
1982		183	60%	NA	55.0	93	0.78 actual utiliz. rate	
1983		206	60%	NA	70.0	103		
1984		215	60%	NA	80.0	122		
1985		227	60%	NA	73.0	93		
1986		238	60%	NA	99.0	96		
1987		254	60%	186	215.4	134		
1988		258	60%	188	218.6	128		
1989		272	60%	215	122.3	146		
1990		285	60%	227	125.4	166		
1991		298	60%	237	163.7	164		
1992		314	60%	268	161.1	161		
1993		326	60%	251	163.7	164		
1994		332	60%	363	174.5	175		
1995		331	60%	370	200.0	176		
1996		334	60%	408	164.0	118	from column "AA"	
1997		356	60%	484	122.8	256		
1998		335	60%	730	139.2	420		
1999		329	60%	765	482.2	480	0.92 actual utiliz. rate	
2000		301	60%	879	518.3	500		
2001		276	60%	971	543.8	574		
2002		286	60%	918	555.5	578		
2003		272	60%	1,052	768.5	752		
2004		261	60%	1,070	813.5	796		
2005		278	60%	1,068	797.2	780	from column "I"	
2006		298	60%	1,097	838.0	832		
2007		317	60%	1,176	981.0	915		
2008		325	60%	1,028	1,020.3	954		
2009		337	60%	1,082	1,109.8	993		
2010		345	60%	1,128		1,031		
2011		347	60%			993	PD Oman Facts File 2016	
2012		361	60%			1,044	PD Oman Facts File 2016	
2013		370	60%			1,031	PD Oman Facts File 2016	
2014		357	60%			933	interpolated	
2015		360	60%			835	PD Oman Facts File 2018	
2016								
2017								
2018								
Total	na	7,353		na	4,147	17,052		

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31	Petroleum Development Oman: Annual Reports 1967-2018															
32		Oil	Condensate	Oil & cond	Oil											
33		k bbl/ d	k bbl /d	k bbl/d	million bbl /yr											
34	1967	63		23	23											
35	1968	241		88	88											
36	1969	327		327	119											
37	1970	328		328	120											
38	1971	294		294	107											
39	1972	282		282	103											
40	1973	293		293	107											
41	1974	291		291	106											
42	1975	386		386	141											
43	1976	363		363	132											
44	1977	340		340	124											
45	1978	314		314	115											
46	1979	295		295	108											
47	1980	282		282	103											
48	1981	317		317	116											
49	1982	325		325	118											
50	1983	377		377	137											
51	1984	407		407	149											
52	1985	489		489	178											
53	1986	551		551	201											
54	1987	571		571	208											
55	1988	601		601	219											
56	1989	616		616	225											
57	1990	652		652	238											
58	1991	665		665	243											
59	1992	692		692	253											
60	1993	733		733	268											
61	1994	761	40	801	292											
62	1995	803	41	844	308											
63	1996	830	42	872	318											
64	1997	846	49	895	327											
65	1998	835	54	889	324											
66	1999	832	59	891	325											
67	2000	840	65	905	330											
68	2001	831	73	904	330											
69	2002	771	72	843	308											
70	2003	702	60	762	278											
71	2004	661	49	710	259											
72	2005	631	59	690	252											
73	2006	589.0	52	641	234											
74	2007	561.0	46	607	222											
75	2008	556.0	77	633	231											
76	2009	553.0	95	648	237											
77	2010	553.0	95	648	237											
78	2011	549.3	94	643	235											
79	2012	566.3	93	659	240											
80	2013	569.7	86	656	239											
81	2014	PD On 571.0	78.0	649.0	236.9											
82	2015	PD On 589.0	83.0	672.0	245.3											
83	2016	PD On 600.2	81.3	681.5	248.7											
84	2017	605.2	73.3	678.5	247.6	interpolated										
85	2018	610.2	65.3	675.5	246.5											
86	Total				9,336											

Oman PDO Annual Rpt 2011, page 9.

PDO Oil Production Efficiency



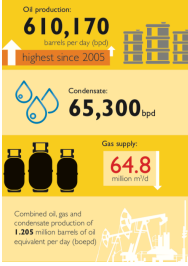
Oman AnnRpt 2011, page 15.

assume 6000 cf/BOEq

PDO data

gas delivered	gas	gas
million CM /day	billion CM /yr	billion cf/yr
70 to 92% utilis.		
5.6	2.0	72.2
6.4	2.3	82.5
7.2	2.6	92.8
8.0	2.9	103.1
9.5	3.5	122.5
7.2	2.6	92.5
7.4	2.7	95.8
10.4	3.8	134.1
9.9	3.6	127.6
11.3	4.1	145.7
12.9	4.7	166.3
12.7	4.6	163.7
12.5	4.6	161.1
12.7	4.6	163.7
13.5	4.9	174.5
13.7	5.0	176.1
13.8	5.0	177.8
19.7	7.2	253.9
34.3	12.5	442.1
37.4	13.7	482.1
	14.7	519.1
	15.4	543.8

2018 Production Highlights



PDO 2018 Fact File, p. 3

Bcf/yr
prod column "X" convert to Bcf/yr

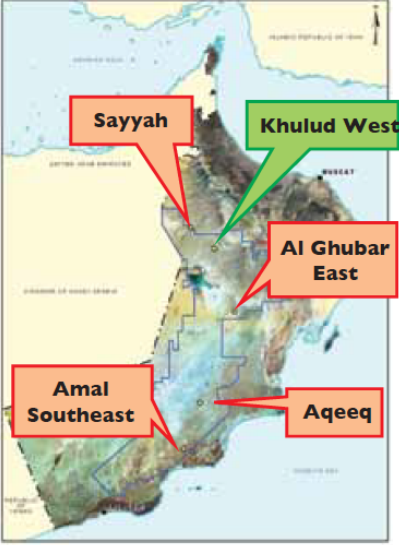
118
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780
832
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954
993
1,031
993
1,044
1,031
933
835

5,482.50 cf/bbl

PD Oman Facts 2016

million cm/d	
71.0	915.2
74.0	953.8
77.0	992.5
80.0	1,031.2
77.0	992.5
81.0	1,044.1
80.0	1,031.2
72.4	933.2
64.8	835.3

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Oil and Gas Discoveries
Oman PDO Annual Rpt 2010 p. 22.



Managing Director's Committee, AnnRpt 2012.

US Energy Information Administration, International Energy Statistics
www.eia.gov/emeu/international/energy.html

Year	Oman		Oman				Oman		Oman	
	Crude oil, condensate, & NGPL k bbl per day	million bbl per yr	Prod Marketed Gas Bcf per year	Dry natural gas Bcf per year	Vented & Flared Bcf per year	Flaring of gross gas prod'n, %	Reinjected Bcf per year	Gross Prod'n Bcf per year		
1970	332	121	NA	28	-	-	-	NA		
1971	294	107	NA	33	-	-	-	NA		
1972	282	103	NA	41	-	-	-	NA		
1973	293	107	NA	51	-	-	-	NA		
1974	290	106	NA	47	32.0	-	-	NA		
1975	343	125	NA	55	3.0	-	-	NA		
1976	366	134	NA	70	10.0	-	-	NA		
1977	341	124	NA	80	11.0	-	-	NA		
1978	315	115	NA	73	4.0	-	-	NA		
1979	295	108	NA	99	6.0	-	-	NA		
1980	284.0	104	109	99	25.0	13%	53.0	186.0		
1981	321.0	117	136	108	22.6	12%	47.7	187.9		
1982	326.0	119	131	117	21.9	10%	62.0	215.0		
1983	377.0	138	151	140	21.5	9%	54.7	227.1		
1984	417.0	152	162	150	16.2	7%	59.3	237.3		
1985	502.0	183	160	147	8.1	3%	99.6	267.7		
1986	564.0	206	158	145	7.8	3%	85.8	251.4		
1987	588.0	215	205	176	34.3	9%	124.3	363.4		
1988	623.0	227	289	248	28.6	8%	52.6	370.1		
1989	651.0	238	242	197	47.3	12%	119.0	407.9		
1990	695.0	254	392	322	31.8	7%	60.0	484.2		
1991	708.0	258	582	493	34.3	5%	114.4	730.3		
1992	746.0	272	625	530	31.8	4%	107.7	764.6		
1993	781.0	285	653	558	28.3	3%	197.8	879.3		
1994	816.2	298	703	607	28.3	3%	240.1	971.2		
1995	861.3	314	748	705	50.9	6%	85.8	917.8		
1996	893.4	326	906	837	50.5	5%	95.0	1,051.7		
1997	910.0	332	921	849	49.4	5%	99.2	1,070.0		
1998	905.8	331	917	850	49.6	5%	102.1	1,068.3		
1999	916.1	334	953	875	50.9	5%	92.9	1,097.1		
2000	974.0	356	1,035	957	45.6	4%	95.0	1,176.0		
2001	917.0	335	1,020	937	32.5	3%	104.5	1,157.3		
2002	901.7	329	1,110	1,060	45.9		89.3	1,270.3		
2003	825.3	301		1,073	54.0		101.0	1,312.3		
2004	756.5	276		1,091	56.2		101.7	1,338.7		
2005	782.3	286		1,057	50.5		131.0	1,335.6		
2006	745.7	272		1,076			-	NA		
2007	716.4	26								

Cell: I9

Comment: Rick Heede:

Wiki PDO history: Oman's growth into a successful oil- and gas-producing nation had humble beginnings — so humble, in fact, that it began with a dud. A geological survey of the country in 1925 found no conclusive evidence of oil. Twelve years later, however, when geologists began intensively searching for oil in neighbouring Saudi Arabia, Oman's Sultan Said bin Taimur granted a 75-year concession to the Iraq Petroleum Company (IPC). Pausing only for the Second World War, exploration for oil was underway in Oman.

The exploration and production operations were to be run on behalf of the IPC by Petroleum Development (Oman and Dhofar) Ltd. The operating company had four shareholders, each with an interest of 23.75%: the Royal Dutch/Shell Group, the Anglo-Persian Company (which would eventually become the British Petroleum Company, or BP), Compagnie Française des Pétroles (whose convoluted lineage would make it a predecessor of today's TotalFina-Elf) and the Near East Development Company (whose likewise convoluted lineage would make it a subsidiary of today's ExxonMobil). The remaining 5% stake was held by a fifth shareholder, Partex.

Having landed at Duqm in February 1954, IPC geologists were faced with tribal conflicts which made access to the most promising oil prospect, Jebel Fahud, difficult. They reached the jebel in October 1954 and began to survey the surrounding terrain. Supplies had to be transported from Duqm. In January 1956 the company started drilling its first well at Fahud but the hardships were all in vain: the well was dry. Later, when the supply line was switched to the Sumail Gap, warring tribes were able to disrupt convoys and bring operations to a halt. Further dry wells were drilled and this lack of success, combined with worsening logistical problems and a glut of oil on the world market, led most of the partners to withdraw from the venture in 1960. Only Shell and Partex opted to remain in Oman to continue the search for oil. Their optimism was soon to pay off, however: they struck oil at Yibal in 1962 — and from these inauspicious beginnings an oil-producing nation was born.

Emergence (1962–1970): The pipe laying was followed closely by the construction of an industrial complex at Saih al Maleh (later renamed Mina al Fahal), the building of a tank farm, the installation of single-buoy moorings for seagoing tankers and the erection of a 20-megawatt power plant. The whole development — including the pipeline, the coastal industrial area, the tank farm, the marine terminal, a chain of radio repeater stations and housing for staff at Ras al Hamra — cost \$70 million. The first export of Omani oil took place on 27 July 1967. The original debit note shows that the consignment consisted of 543,800 barrels (86,460 m³) of oil valued at \$1.42 a barrel. A month before, in June, the Compagnie Française des Pétroles rejoined the partnership by taking over two-thirds of Partex's equity share, resulting in the following shareholding in the company that by then had changed its name to Petroleum Development (Oman): Shell 85%, Compagnie Française des Pétroles 10% and Partex 5%.

On 23 July 1970 His Majesty Sultan Qaboos took over from his father as ruler of the country. He made his first visit to the PD(O) offices on 18 August 1970.

Consolidation (1970–1979): The oil price hike in 1973 greatly improved the economics of producing oil in remote locations. As a consequence, the focus of exploration activity was moved to the eastern flank of the south Oman geological basin. Wells soon revealed the Amal and Amin fields, amongst others. The Marmul field, considered uneconomic to develop when it was discovered in 1957, was now shown to be commercially viable upon reappraisal. The high oil prices compensated for the fact that the Marmul crude oil was heavy and viscous. These and other oil fields in south Oman would play a significant role in the growth of reserves and production in the coming years. The first half of the 1970s was important for other reasons as well. On 1 January 1974 the Government of Oman acquired a 25% shareholding in the Petroleum Development (Oman); six months later the shareholding was increased to 60%, backdated to the beginning of the year. As a result, the foreign interest in PD(O) was now made up of the Shell (34%), Compagnie Française des Pétroles (4%) and Partex (2%). These shareholdings have remained unchanged to the present day. (The Company, however, underwent a change six years later. On 15 May 1980, it was registered by Royal Decree as a limited liability company under the name Petroleum Development Oman — now without parentheses in its name.)

Growth (1979–1994): In the early 1980s production rose to new record levels, dispelling, it seemed, any doubts about the future of Oman's oil and gas industry. By the end of 1984 average daily production had risen to 400,000 barrels per day (64,000 m³/d) and reserves stood at 3.8 billion barrels (600,000,000 m³)."

en.wikipedia.org/wiki/Petroleum_Development_Oman

About PDO: Petroleum Development Oman (PDO) is the foremost exploration and production company in the Sultanate. It accounts for more than 70% of the country's crude oil production and nearly all of its natural gas supply. The Company is owned by the Government of Oman (with a 60% interest), Royal Dutch Shell (34%), Total (4%) and Partex (2%). The first economic oil find was made in 1962, and the first oil consignment was exported in 1967.

PDO operates in a concession area of about 100,000 km² (one third of Oman's geographical area), has more than 126 producing fields, more than 5,000 producing wells and a workforce of about 6,000 PDO staff and more than 35,000 contractors.

The objective of PDO is to engage efficiently, responsibly and safely in the exploration, production, development, storage and transportation of hydrocarbons in the Sultanate of Oman. The Company seeks a high standard of performance with the aim of furthering the long-term benefits of its shareholders, its employees and the society of Oman in line with our core values of honesty, integrity and respect.

<http://pdointernet.pdo.co.om/Pages/AboutUs.aspx> accessed April 2013.

Cell: M9

Comment: Rick Heede:

PDO and other sources state a 60 percent share of Omani production by PDO, with 34 percent (PDO, 2013) to Royal Dutch Shell, Total SA 4 percent, and Partex 2 percent.

"In 1974 the Government of Oman acquired a 60% shareholding in PDO, the remaining interest in the Company being shared amongst Royal Dutch Shell (34%), Total (4%) and the Partex Corporation (2%). On 1 January 1980 PDO was registered by Royal Decree as a limited liability company in the Sultanate. The company is controlled by the state through Oman's oil ministry." World Bank (2008b) A Citizen's Guide to National Oil Companies, Part B: Data Directory, World Bank, Washington, & Center for Energy Economics, Bureau of Economic Geology Jackson School of Geosciences University of Texas, Austin, 764 pp. At page 480.

Cell: E12

Comment: Rick Heede:

Total net worldwide crude oil plus natural gas liquids produced by each company or state-owned enterprise. Where data is available, we list gross production (before royalty production is netted out). More often, however, oil companies report production net of royalty production. Crude production includes natural gas liquids (NGL) unless noted.

Cell: I12

Comment: Rick Heede:

Natural gas is typically reported as dry gas; natural gas liquids are reported under crude oil.

Carbon dioxide is normally removed from the gas flow at the production site (see "Vented Carbon Dioxide").

"SCM/d" = standard cubic meters per day. "cf/d" = cubic feet per day.

Net production typically excludes a number of diverted gas streams. Quantities and fractions vary; ExxonMobil's exclusions are probably typical of the industry: "Net production available for sale quantities are the volumes withdrawn from ... natural gas reserves, excluding royalties and volumes due to others when produced, and excluding gas purchased from others, gas consumed in production operations, field processing plant losses, volumes used for gas lift, gas injections and cycling operations, quantities flared, and volume shrinkage due to the removal of condensate or natural gas liquids production."

ExxonMobil Corporation (2004) 2003 Financial and Operating Review, www.exxonmobil.com, p. 55.

Cell: E33

Comment: Rick Heede:

1967-1969 data from US Bureau of Mines (1971) International Petroleum Annual, p. 36.

Cell: AK33

Comment: Rick Heede:

Energy Information Administration International Energy Statistics, World Production of Crude Oil, lease condensate, plus NGPL, 1980-2010

Also Table 4.1c World Crude Oil Production (Including Lease Condensate), 1970-1979.

If needed, see U.S. Bureau of Mines (various years) Minerals Yearbook, Petroleum, 1950-

Cell: D34

Comment: Rick Heede:

Energy Information Administration International Energy Annual 2003, Table G.1 World Production of Crude Oil, NGPL, and Other Liquids, 1980-2003.

Also Table 4.1c World Crude Oil Production (Including Lease Condensate), 1970-1979 (detailed in Columns L and M).

1967-1969 data from US Bureau of Mines (1971) International Petroleum Annual, p. 36.

Cell: J35

Comment: Rick Heede:

PDO gas reporting is spotty prior to 1984, and while most of the associated gas is vented or flared, and only re-injected later in the 1970s, CMS assumes that gas is used in field equipment and refineries, plus significant flaring. While PDO's natural gas utilization rate is historically low, CMS assumes low re-gasification rates (for EOR: thus "sequestered") and that 90 percent of produced gas is combusted (marketed, internal use, or flared). Gas utilization is reported as 80 percent in 1986, increasing to 92 percent in 2002. This may be conservative. Also, it does not estimate the significant quantities of natural gas flared and vented in the fields.

Note: Also see PDO annual report for 1991, p. 8, North Oman Crude Stabilisation project at Mina al-Fihal tank farm, which extracts light hydrocarbons (methane and ethane, from the "live crude" to "improve safety, reduce flaring in the interior, and recover an additional 5,000 bbl per day of oil that would otherwise have been wasted."

We attribute 100 percent of gas production to PDO.

Cell: E36

Comment: Rick Heede:

PDO crude production for 1970-1986 assumes all Omani production reported by EIA is attributed to PDO.

Note: This is curious, in view of our later comparison with PDO annual reports, since PDO is allocated 60 percent of all oil & gas produced, and foreign concessionaires receive 40 percent (per an agreement signed in ~1974).

Cell: I38

Comment: Rick Heede:

U.S. Bureau of Mines Minerals Yearbook 1974, page 870. Lists marketed and gross production of natural gas by country.

Cell: I40

Comment: Rick Heede:

PD Oman AnnRpt 2013, p. 15. Black oil plus condensate totaled 656 thousand bbl per day, or 239 million bbl in 2013. Associated and non-associated gas totaled 598 kboepd (~1,100 Bcf). Chart at top of page.

Cell: T41**Comment:** Rick Heede:

Petroleum Development (Oman) Ltd annual report 1975 reports "total production from Oman," which is presumably total national crude oil production rather than PDO's 60 percent share, per the 1974 revised concession between Shell, Partex, and Compagnie Francaise des Petroles.

Cell: AC43**Comment:** Rick Heede:

"Reducing Energy Consumption : During the course of 2011, PDO continued to reduce the amount of energy used in its operations. Energy efficiency measures were implemented at many of PDO's locations and, as a result, the amount of gas used for energy fell from around 12 million cubic metres per day in 2005 to 8.4 million cubic metres per day in 2011."
PD Oman AnnRpt 2011, p. 15.

Cell: T44**Comment:** Rick Heede:

PDO annual report 1978

Cell: D46**Comment:** Rick Heede (Jan10):

Energy Information Administration International Energy Annual 2006, Table 2.2 World Crude Oil including Lease Condensate Production, 1980-2006 (Thousand Barrels per Day) for Oman.

Cell: H46**Comment:** Rick Heede:

Energy Information Administration International Energy Statistics, Dry Natural Gas Production, 1980-2010: Oman. See page 3 for details.

Cell: Y46**Comment:** Rick Heede:

Gas reporting varies, but is typically net gas production (typically gas delivered to the Govt Gas System, and from 2000 fwd also delivered to the Oman LNG facility). The PDO annual report for 1995, p. 14, shows gross production of 12.5 million cm per day, "a record level of 92 percent of this gas was used for fuel, electrical power generation, or added to the Government Gas System. The utilisation of prouced gas has risen from around 70 percent ten years ago."

Cell: Y49**Comment:** Rick Heede:

See note at 1986, below. PDO production and gas utilization is incomplete prior to 1986.

Cell: Y51**Comment:** Rick Heede:

PDO is not clear about total gas production in its 1985 annual report, mentioning rapidly increasing investment in gas processing and utilization of associated gas (rising from 5 to 60 percent 1980-1985); non-associated gas production is not quantified either (but 2.2 million SCM/day from the Saih Nahayda gas treatment facility alone). CMS estimates total utilized gas production based on the more complete data for 1986 (8 million SCM per day) by assuming that 1983 = 70 percent of 1986, 1984 = 80 percent of 1986, and 1985 = 90 percent of 1986.

Cell: E53**Comment:** Rick Heede:

Oil & Gas Journal OGJ100 data for 1987-2004.

Cell: Y54**Comment:** Rick Heede:

PDO annual report 1988, p. 14, "associated gas production amounted to 326 million cf/day (9.21 million cm/day) of which 78 percent was utilised." CMS reports the utilized gas (9.21 * 0.78 = 7.18 million cm/day).

Cell: I56**Comment:** Rick Heede:

Data 1990-2004 from Oil & Gas Journal OGJ100, various years. Also see EI data 2000 and 2001, below.

Cell: T56**Comment:** Rick Heede:

PDO annual report for 1991, p. 8, show crude oil production, no condensate reported (although certainly produced). Also mentions North Oman Crude Stabilisation project at Mina al-Fihal tank farm, which extracts light hydrocarbons (methane and ethane, from the "live crude" to "improve safety, reduce flaring in the interior, and recover an additional 5,000 bbl per day of oil that would otherwise have been wasted." Wasted, presumably to both flaring and direct venting (or, if all flared, safety is less of an issue).

Cell: Y59**Comment:** Rick Heede:

PDO annual report for 1993 reports (p. 10) 12.9 million cubic meters per day of "associated gas." However, in the next paragraph, the company states that of the 6.1 million cm/d delivered to the Govt Gsa System, some 77 percent was non-associated gas ..."

Cell: T61**Comment:** Rick Heede:

PDO annual report 2004, "Oil & Gas Production," shows crude, condensate, and gas production (gas in BOE) for 1995-2004 in thousand bbl oil equiv per day.

Cell: Y63**Comment:** Rick Heede:

PDO 1997 annual report, p. 14, shows 13.54 million cm per day of associated gas production, plus 86 percent of 7.7 million cm per day of gas delivered to GGS is "non-associated gas." This implies (but not stated explicitly), that PDO gas production totals at least 13.54 + 6.62 = 20.16 million cm per day, or 222 Bcf/yr.

Cell: T65**Comment:** Rick Heede (Jan10):

PDO (2009) Fact book (covers 1999-2008).

Cell: E66**Comment:** Rick Heede:

Energy Intelligence reports 327.4 and 326.7 million bbl in 2000 and 2001, respectively.

Cell: I66**Comment:** Rick Heede:

Energy Intelligence reports 276 Bcf and 411 Bcf for 2000 and 2001, respectively. EI is thus far closer to production reported by PDO than is OGJ.

Cell: I71**Comment:** Rick Heede:

Oil & Gas Journal OGJ100, various years.

Cell: E74**Comment:** Rick Heede:

OGJ100 6Sep2010 pg 69, and OGJ 3 Oct 2011 pg 49. We assume that Oil & Gas Journal reports PDO production without adjusting for the company's ownership share (60 percent), and we do this here. O&GJ reports 202.9 million bbl in 2008, 201.5 million bbl in 2009, and 201.8 million bbl in 2010.

Cell: I74**Comment:** Rick Heede:

OGJ100 6Ssep2010 pg 69

Cell: Z76**Comment:** Rick Heede:

PD Oman Fact File 2016, page 2.

Cell: F80

Comment: Rick Heede:

PD Oman Facts File 2016, page 4: Black Oil + Condensate Production times PDO share of 60%.

Page 1: "It accounts for around 70% of the country's crude oil production and nearly all its natural gas supply. The Company is owned by the Government of Oman (60%), the Shell Group (34%), Total (4%), and Partex (2%). Gas fields and processing plants are operated by PDO exclusively on behalf of the Government."

Cell: J80

Comment: Rick Heede:

PD Oman Facts File 2016, page 4. Million cubic m per day converted to BCF/yr.

Page 1: "Gas fields and processing plants are operated by PDO exclusively on behalf of the Government."

Cell: AT82

Comment: Rick Heede:

Oil & Gas Journal OGJ100, September 2018.

Cell: K83

Comment: Rick Heede:

PDO production data is not available for 2017 (no SustRpt or Fact File 2017 available), but interpolated from 2016 and 2018 -- and supported by SustRpt 2018 Figure on page 30 (reproduced at right).

Cell: X83

Comment: Rick Heede:

PDO production data is not available for 2017 (no SustRpt or Fact File 2017 available), but interpolated from 2016 and 2018 -- and supported by SustRpt 2018 Figure on page 30 (reproduced at right).

Cell: T84

Comment: Rick Heede:

Petroleum Development Oman 2018 Fact File, page 3: highlights; oil production 610,170 bpd, plus condensate of 65,300 bpd

Cell: Z84

Comment: Rick Heede:

Petroleum Development Oman 2018 Fact File, page 3: highlights; "gas Supply" of 64.8 million cubic meters per day (Mcmpd).