

INTERNATIONAL PETROLEUM FISCAL SYSTEM ANALYSIS

By:
Daniel Johnston



Table of Contents

	<u>Page</u>
Author's Note	xi
Country/System Listing	xiii
130 Countries	
352 Regimes	
Abbreviations, Acronyms and Symbols	xxi
Introduction	xxii
System Classification	xxiii
Database Format	xxvi
Example Analysis Format and Definitions	xx
Government Take	
Example Quick-look Government Take Calculation	
Effective Royalty Rate	
Lifting (Entitlement)	
Savings Index	
Data Quality	
Example Production Sharing Contract	xxxix
Production Sharing Contract Flow Diagrams	
Cash Flow Model	
Summary and Analysis	
Government Take vs. Project Profitability	
Basic Equations	
World Petroleum Fiscal System Statistics	xlvi
General	
20th Percentile	
Typical Contract Conditions (Summary)	
Glossary	xli
One-Line Summaries	lv

Authors Note

For the past 20 years, in the normal course of my work, I have collected information on petroleum fiscal systems and contract terms around the world. I have made every attempt to verify this information and to maintain the accuracy of my database. Those involved in this sector of the industry know this is a daunting task. I make no representations beyond the fact that this information is simply the best information I have available. The exception of course is that confidential information is excluded.

Every effort has been made to ensure the accuracy of the information in this report. However, neither Daniel Johnston nor Daniel Johnston & Co., Inc. can be held responsible for the consequences of any errors or omissions.

Country/System Listing

1	Abu Dhabi UAE	1	1980 R/T Amerada Hess
2	Ajman	2	1993 R/T Scimitar
3	Albania	3-a	1991 First Offshore Round
		3-b	1993 Model PSC
4	Algeria	4-a	Late-1980s/Early-1990s Partnership Contracts
		4-b	1996 PSC Example 1
		4-c	1996 PSC Example 2
		4-d	1996 PSC EOR Project
		4-e	1997 Petronas PSC
		4-f	1999 BP PSC
5	Angola	5-a	1989 Model PSC
		5-b	Mid-1990 Offshore PSC
		5-c	Block 16 PSC
		5-d	Ultra-Deepwater PSCs
		5-e	1982 Cabinda–Chevron Terms
6	Argentina	6	1990+ R/T
7	Australia	7-a	Federal R/T
		7-b	Western Australia R/T
		7-c	Western Australia R/T (cont'd)
		7-d	Western Australia R/T (cont'd)
		7-e	Western Australia R/T (cont'd)
8	Azerbaijan	8-a	Offshore PSCs
		8-b	1994 AIOC PSC I
		8-c	Variety of Terms
		8-d	1995 EDPSA II
9	Bahrain	9	1990 Harken PSC
10	Bangladesh	10-a	1989 Scimitar PSC
		10-b	1997 PSC
11	Belize	11	1996 PSC
12	Benin	12-a	Tarpon PSC
		12-b	1993 Model PSC
13	Bolivia	13-a	Various Older Contracts (1980s)
		13-b	1996 Shared Risk Contracts
		13-c	1997 Risk Service Contracts
14	Brazil	14-a	1994 Service Agreement
		14-b	1999 ANP Round 1
		14-c	1999 ANP Round 1
15	Brunei	15	1990s R/T
16	Bulgaria	16	1990s R/T
17	Cambodia	17-a	1991 PSC Regulations with 1994 Revisions
		17-b	1992 Premier
18	Cameroon	18-a	1990
		18-b	1995 Rio Del Ray
		18-c	1998 Model Convention
		18-d	1998 Model Convention (cont'd)
		18-e	Ringfence Revenue
19	Canada	19-a	Alberta R/T
		19-b	Newfoundland R/T
20	Central African Republic	20	1990s R/T
21	Chad	21	1990s R/T

22	Chile	22	1997 Shared Risk Service
23	China	23-a	1990s Offshore PSC
		23-b	1994/1995 Deepwater PSC
		23-c	Onshore PSC
		23-d	1997 EOR Project
24	Colombia	24-a	Early-1980s Association Contract
		24-b	Pre-1994 Association Contract
		24-c	Pre-1994 Risk Participation Contract
		24-d	Post-1994 Association Contract
		24-e	2000 Contract Adjustments
		24-f	1998± Tibu IPC
25	Congo Br.	25-a	1993 R/T
		25-b	R/T Conoco JV
		25-c	1994 PSC
		25-d	1994 Haute Mer PSC
		25-e	1990s Frontier Terms
26	Congo Z	26-a	1984 Fina/Shell R/T Contract
		26-b	1990s R/T
27	Costa Rica	27	1995 R/T Fixed Terms
28	Cote D'Ivoire	28-a	1988 Vintage PSC <1000m
		28-b	Early-1990s Standard PSC >1000m
		28-c	1995 PSC Pluspetrol Block CI-11
		28-d	1995 PSC Pluspetrol Block CI-12
		28-e	1990s Frontier PSC
29	Cuba	29	1997 PSCs
30	Czech Republic	30	1990s R/T
31	Denmark	31	1997 R/T
32	Dubai	32	1982 R/T BP Agreement
33	East Timor	33	1974 Ocean Exploration License
34	Ecuador	34-a	Pre-1994 Risk Service Agreements
		34-b	1995 Seventh Round PSCs
		34-c	RSC Structure Blocks 16 and 17
		34-d	PSC Structure Blocks 16 and 17
		34-e	1995 TRITON PSC Seventh Round
		34-f	1995 Block 27 Participation Contract
35	Egypt	35-a	1974 Deminex/Shell/BP SUCO Agreement
		35-b	Norsk Hydro—Kufpec—Ras El Hekma PSC
		35-c	1984 Typical PSC
		35-d	1986 Standard PSC
		35-e	1989 Amoco PSC
		35-f	1994 Vintage PSC
		35-g	1997 Alliance International PSC
36	Equatorial Guinea	36-a	1989 Clarion PSC
		36-b	1992 United Meridian/Conoco PSC
		36-c	1992 Renegotiated United Meridian Contract
		36-d	Pre-1995 ROR-based PSC
		36-e	1998 Model Provisions
		36-f	1999 MOU Signed PSCs Blocks D11/D12
		36-g	1999 MOU Signed PSCs Blocks H15/H16
37	Eritrea	37	1995 PSC
38	Ethiopia	38	1994 AFAR Exploration Contract
39	Falkland Islands	39	1996 R/T
40	France	40-a	Late-1980s R/T
		40-b	Late-1990s R/T
41	Fujairah	41	1966 R/T

42	Gabon	42-a	1989 PSC
		42-b	1992 PSC
		42-c	1994 Eighth Round
		42-d	Late-1990s Typical PSC
		42-e	Late-1990s Typical Deepwater PSC
43	Gambia	43	1990 ROR-based R/T
44	Georgia	44	1997 EOR PSC with JV
45	Ghana	45-a	1986 Vintage R/T
		45-b	1988 ROR-based R/T and 1997 Vintage
46	Greece	46	1995 Hydrocarbons Exploration & Production Act
47	Greenland	47-a	1990s R/T Model
		47-b	1996 Shell/Phillips R/T
48	Guatemala	48-a	1983 PSC Hydrocarbons Law 109–83
		48-b	1997 PSC
49	Guyana	49	1990s PSC
50	Haiti	50	1979 Anschutz Service Agreement
51	Honduras	51	1984 Model and Texaco Service Agreement
52	Hungary	52	1999 Barrows OGLTR R/T
53	India	53-a	Late-1980s Various PSCs
		53-b	Summary of Production Sharing Contract Terms
		53-c	Summary of Production Sharing Contract Terms
		53-d	1994 Command/Videocon Ravva PSC
54	Indonesia	54-a	1966 Offshore NW Java (The First PSC)
		54-b	Pre-1984 Standard PSC
		54-c	First PSCs Indonesia
		54-d	Standard PSC
		54-e	Standard PSC with FTP
		54-f	Post-1988/1989 Third Generation
		54-g	Post-1996 Standard PSC
		54-h	1994 Frontier Terms
		54-i	1998 E. Indonesian Frontier Terms
		54-j	Contract Arrangements
		54-k	1990 Fifi-Zaitun PSC
		54-l	Perkembangan PSC Di Indonesia
55	Iran	55-a	1995 Total Buy-back Contract
		55-b	Service Agreement “Buy-back” Model
		55-c	1997 NIOC/Bow Valley/Bakrie Buy-Back
		55-d	Buy-back Contracts
56	Iraq	56-a	1997 Lukoil PSC
		56-b	2000 Development Production Contract Buy-back
		56-c	1998 Planned Oil & Gas Field Development Projects
57	Ireland	57	1994 License Round Concession
58	Italy	58	1998 R/T
59	Jamaica	59	1980 Union Texas and AGIP PSC
60	Jordan	60	Early-1990s PSC Typical Terms
61	Kazakstan	61-a	1993 Anglo Dutch Tenge 50/50% JV
		61-b	1994 ORYX PSC
		61-c	1995± Model PSC
		61-d	1992 Chevron Tengiz 50/50% JV
62	Kenya	62	1985 Amoco PSC
63	Korea, South	63	1986 R/T Hadson
64	Kuwait	64-a	1998 Operating Service Agreement
		64-b	1998 Operating Service Agreement (cont’d)
		64-c	Kuwait Model
		64-d	Kuwait Operating Service Agreement
65	Kyrghyzstan	65	1995 PSC

66	Laos	66	Early-1990s PSC
67	Liberia	67	1982 Petroleum Act—Henry Energy 1985 PSC
68	Libya	68-a	1955 Vebe R/T Contract
		68-b	1966 AGIP PSC
		68-c	1966 Wintershall R/T Contract
		68-d	1990 Model Contract
		68-e	2-Dimensional Profit Oil Split
		68-f	1999 Model PSC
69	Madagascar	69	1995 Model PSC
70	Malaysia	70-a	Late-1980s/Early 1990s PSC
		70-b	1994 PSC
		70-c	1994 PSC Deepwater Terms
		70-d	1997± RC Model PSC
		70-e	1997 New R/C PSC Contract Features
71	Malaysia/Thailand	71	1994 MTJDA PSC
72	Mali	72	1988 R/T
73	Malta	73	1995 Model PSC
74	Mexico	74	2000 DSH
75	Mongolia	75	1990s Example PSC Negotiable Terms
76	Morocco	76-a	1983 R/T License Round
		76-b	1989 R/T Round with 1986 Incentives (Early 1990s)
		76-c	2000 R/T
77	Mozambique	77	1984 Amoco PSC
78	Myanmar	78-a	1989/1990 First Round PSC
		78-b	1989/1990 Summary of First License Round
		78-c	1992 Onshore PSC
		78-d	1992 Offshore PSC
		78-e	1994 Model PSC
		78-f	1995 Example PSC AIPN Newsletter
79	Namibia	79-a	1995 ROR R/T Round
		79-b	1998 R/T Incentives
80	Nepal	80-a	1986 Shell/Triton PSC
		80-b	1995 Model PSC
81	Netherlands	81	1990s Offshore R/T
82	Neutral Zone	82-a	1997 Onshore R/T
		82-b	Offshore R/T
83	New Zealand	83-a	Pre-1995
		83-b	1995+ New Minerals Programme R/T
84	Nicaragua	84	1996 Special Law R/T
85	Niger	85	1993 R/T
86	Nigeria	86-a	1973 Blocks 98/118 Ashland PSC
		86-b	1986 MOU
		86-c	Mid-1990s Onshore and Niger Delta
		86-d	1994 Model PSC
		86-e	1994 Offshore PSC
		86-f	Marginal Fields
		86-g	2000 License Round
		86-h	2000 License Round Bidding
		86-i	2000 Round
		86-j	1998 (?) OPL 98/118
		86-k	1998 ± Typical Arrangement
87	Norway	87	Late-1990s R/T
88	Oman	88-a	1989 Conquest PSC
		88-b	1992 PSC

89	Pakistan	89-a	1977 R/T Badin
		89-b	Onshore R/T Potwar
		89-c	1994 PSC Offshore
90	Palau	90	Late-1990s R/T
91	Panama	91	Late-1990s S/A
92	Papua New Guinea	92-a	1990s R/T (ROR)
		92-b	Mid- to Late-1990s R/T Fixed Terms
93	Paraguay	93	Mid-Late 1990s R/T
94	Peru	94-a	1989–1992 Risk Service Contract
		94-b	Risk Service Contract OXY Block 1a–b
		94-c	Peruvian PSC
		94-d	1993 Law/December 1994 “License” Contracts
		94-e	1995± Murphy R/T Contract
		94-f	1995 Lot II License Contract
		94-g	1996 Camisea
		94-h	2000 Announcement
95	Philippines	95-a	Early-1990s Service Agreement Contract
		95-b	Malampaya Original Terms
96	Poland	96	1993 R/T Model
97	Portugal	97	1994 R/T
98	Qatar	98-a	1985 Sohio PSC
		98-b	1992 RDPSA
		98-c	1994 Model PSC
		98-d	Arco
99	Republic of Guinea	99-a	1980 PSC Union Texas
		99-b	1987 Model PSC Typical Terms
100	Romania	100-a	1993 PSC
		100-b	1996 R/T
101	Russia	101-a	1992 ELF Interneft PSC
		101-b	1994 Astrahan Oblast
		101-c	Mid-1990s Amoco—Priobskoe PSA
		101-d	Priobskoe PSA
		101-e	Priobskoe PSA
		101-f	1994 Komi Republic
		101-g	1994 Sakhalin II
		101-h	1990 White Knights
		101-i	1993 Contract Term Summary
		101-j	1999 Comparison Russia vs. Kazakhstan
		101-k	1993 Xavier Mines
102	Saudi Arabia	102	SISCO
103	Senegal	103	1991 R/T
104	Seychelles	104-a	1988 R/T Model
		104-b	1996 R/T
105	Sharjah	105	1979 R/T Amoco
106	Somalia	106-a	1986 R/T Model
		106-b	1986 R/T Conoco
107	South Africa	107	1994 R/T Model
108	Spain	108	Late-1990s R/T
109	Sudan	109-a	1975 PSC Chevron
		109-b	1993 State Petroleum PSC Existing Fields
110	Suriname	110	2000 R/T
111	Syria	111-a	Late-1980s PSCs
		111-b	1992 PSC Unocal
		111-c	1994 Model PSC
		111-d	Transglobal PSC
112	Tanzania	112	1995 Model PSC

113	Thailand	113-a	R/T Unocal 2 PITA III Terms
		113-b	Late-1990s Thai III R/T Contract Terms
114	Timor Gap	114-a	PSC ZOCA
		114-b	PSC ZOCB
		114-c	CHART XXX
115	Togo	115	1998 Proposed PSC Terms
116	Trinidad & Tobago	116-a	1993 R/T Unocal
		116-b	Supplementary Petroleum Tax
		116-c	1996 PSC BHP/Elf Offshore
		116-d	1996 PSC BHP/Talisman
		116-e	1998 ARCO Block 27
		116-f	1999 Onshore Operating Lease
117	Tunisia	117-a	1980 R/T AGIP "R" Vintage
		117-b	1985 R/T New Hydrocarbons Law "R"
		117-c	Mid-1990s R/T "R"
		117-d	1993 PSC
118	Turkey	118	1990 R/T
119	Turkmenistan	119-a	Early-1990s "Joint Enterprise" Contracts
		119-b	1996 Monument PSC
		119-c	1996 Petronas PSC
120	Uganda	120-a	1993 Model PSC
		120-b	Late-1990s Hardeman Agreement
121	United Kingdom	121-a	2000 R/T
		121-b	Summary of 1983/1984 Changes
		121-c	Summary of 1983/1984 Changes (cont'd)
		121-d	Summary of 1983/1984 Changes (cont'd)
		121-e	Summary of 1983/1984 Changes (cont'd)
122	United States	122-a	OCS Gulf of Mexico Federal
		122-b	OCS Minerals Management Services
		122-c	1997–1998 US Gulf of Mexico Sales
		122-d	Alaska R/T
		122-e	Texas R/T
		122-f	Wyoming R/T
123	Uruguay	123	2000 R/T
124	Uzbekistan	124-a	1993 Proposed PSC Terms
		124-b	1997 Reported PSC
125	Venezuela	125-a	1996 Risk Service Agreements
		125-b	1996 Risk Service Agreements Chart
		125-c	1996 La Apertura
		125-d	Round Arrangements
		125-e	1996 Second Reactivation Round
		125-f	1996 Second Reactivation Round Chart
		125-g	1997 Third Reactivation Round
		125-h	1997 Third Reactivation Round Chart
126	Vietnam	126-a	1988 Fina/Shell Contract
		126-b	1991 PSC
		126-c	1992 Lasmo and Itoh
		126-d	1994 BHP Dai Hung
		126-e	1994 CanOXY
		126-f	1996 Do Van Ha Proposed Terms
127	Yemen North	127-a	1981 Hunt PSC
		127-b	1990 PSC
128	Yemen South	128	1990 PSC

129	Yemen		129-a	1995 PSC AIPN Newsletter
			129-b	1997± Malik
			129-c	1986 CanOXY/Total/Clyde/Clyde
			129-d	BP/OXY/Sun
			129-e	Norsk Hydro/Nimir/Shell/Crescent
			129-f	Exxon/Kufpec Total
			129-g	Nimir/Dusty Mac/Preussag/OXY
			129-h	Summary
130	Zambia		130	1986 Model PSC

Introduction

This report represents a collection of information that spans two decades. However, confidential information has been carefully excluded. While much of this information is obscure and difficult to gather, this report contains only information available in the public domain.

The objective is to provide a practical and useful database for those involved in contract negotiations and fiscal system design.

Variation on Two Themes

There are two main families of fiscal system: “concessionary” systems, more commonly known these days as royalty/tax (R/T) systems and “contractual based” systems, which include both production sharing contracts (PSC) as well as risk service agreements (S/A). There are, however, some risk service agreements that appear to have more of the characteristics of a royalty/tax system. The distinguishing characteristic of each is where, when and if ownership of the hydrocarbons transfers to the oil company. Numerous variations and twists are found under *both* the royalty/tax (*concessionary*) and *contractual* themes. The taxonomy of petroleum fiscal systems is outlined in Figure 1.

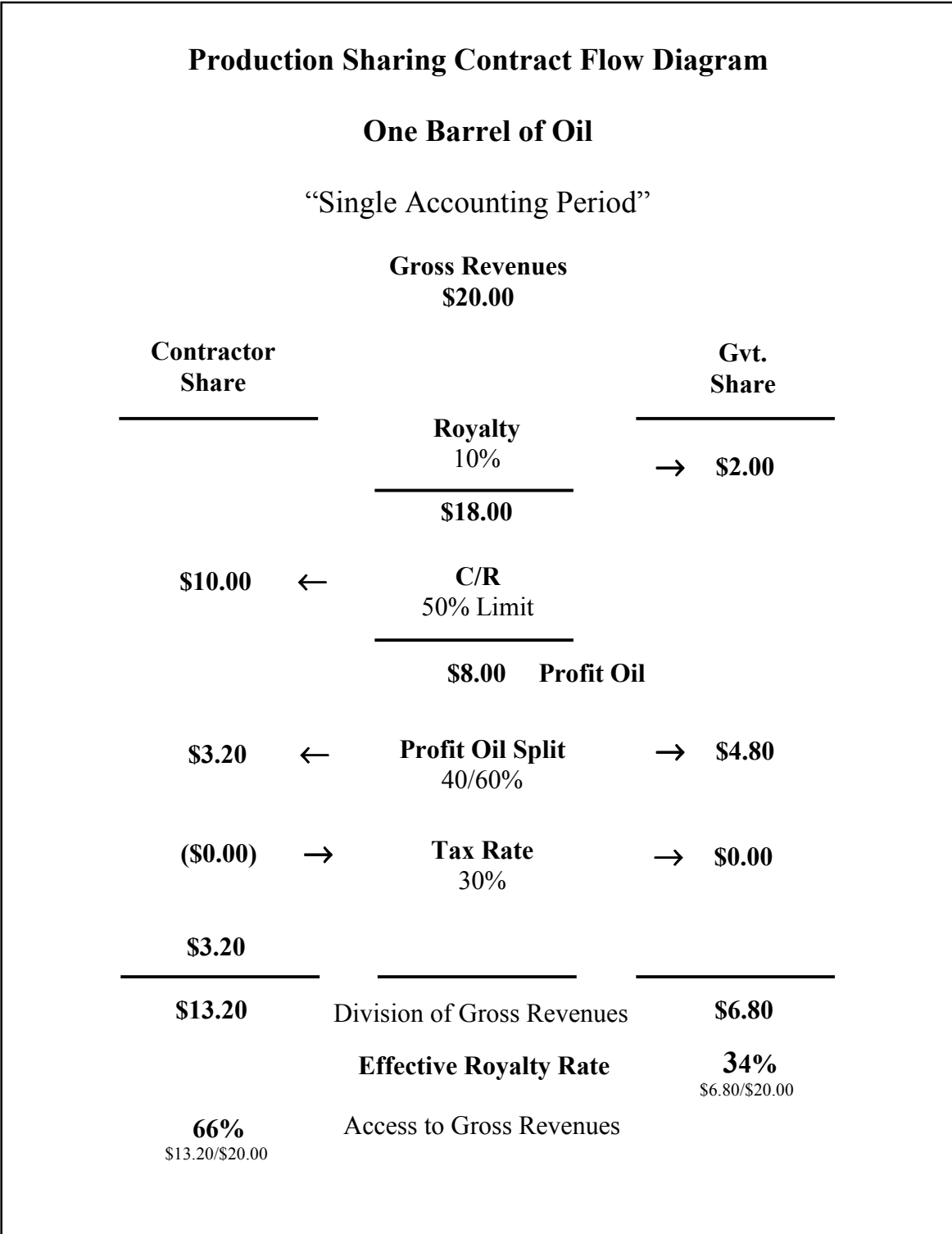


Figure 4

Table 3										
Example PSC Cash Flow Projection										
Field X 100 MMBLS										
Year	Annual Oil Production (MMBLS)	Oil Price (\$/BBL)	Gross Revenues (\$M)	Royalty 10% (\$M)	Net Revenue (\$M)	Capital Costs (\$M)	Op. Costs (\$M)	Depreciation (\$M)	C/R C/F (\$M)	Cost Recovery (\$M)
	A	B	C	D	E	F	G	H	I	J
1	0	\$20.00				30,000				0
2	0	\$20.00				40,000				0
3	578	\$20.00	11,560	1,156	10,404	100,000	3,156	34,000		5,780
4	6,100	\$20.00	122,000	12,200	109,800	60,000	16,200	46,000	31,376	61,000
5	9,420	\$20.00	188,400	18,840	169,560	70,000	22,840	60,000	32,576	94,200
6	12,400	\$20.00	248,000	24,800	223,200		28,800	60,000	21,216	110,016
7	10,850	\$20.00	217,000	21,700	195,300		25,700	60,000		85,700
8	9,494	\$20.00	189,880	18,988	170,892		22,988	26,000		48,988
9	8,307	\$20.00	166,140	16,614	149,526		20,614	14,000		34,614
10	7,269	\$20.00	145,380	14,538	130,842		18,538			18,538
11	6,360	\$20.00	127,200	12,720	114,480		16,720			16,720
12	5,565	\$20.00	111,300	11,130	100,170		15,130			15,130
13	4,869	\$20.00	97,380	9,738	87,642		13,738			13,738
14	4,261	\$20.00	85,220	8,522	76,698		12,522			12,522
15	3,728	\$20.00	74,560	7,456	67,104		11,456			11,456
16	3,262	\$20.00	65,240	6,524	58,716		10,524			10,524
17	2,854	\$20.00	57,080	5,708	51,372		9,708			9,708
18	2,498	\$20.00	49,960	4,996	44,964		8,996			8,996
19	2,185	\$20.00	43,700	4,370	39,330		7,370			7,370
20										
	100,000		2,000,000	200,000	1,800,000	300,000	265,000	300,000		565,000

Year	Total Profit Oil (\$M)	Gvt. Share (\$M)	Company Share (\$M)	Bonus (\$M)	TLCF (\$M)	Taxable Income (\$M)	Income Tax 30% (\$M)	Contractor Cash Flow	
								Undiscounted	12.5% DCF
	K	L	M	N	O	P	Q	R	S
1	0	0		5,000	0	(5,000)		(35,000)	(32,998)
2	0	0			5,000	(5,000)		(40,000)	(33,522)
3	4,624	2,774	1,850	5,000	(34,506)		(95,526)	(71,161)	
4	48,800	29,280	19,520		34,526	(16,206)		4,320	2,861
5	75,360	45,216	30,144		16,206	25,298	7,589	23,915	14,076
6	113,184	67,910	45,274			66,490	19,947	106,543	55,742
7	109,600	65,760	43,840			43,840	13,152	90,688	42,175
8	121,904	73,142	48,762			48,762	14,628	60,133	24,858
9	114,912	68,947	45,965			45,965	13,789	46,175	16,967
10	112,304	67,382	44,922			44,922	13,476	31,445	10,271
11	97,760	58,656	39,104			39,104	11,731	27,373	7,947
12	85,040	51,024	34,016			34,016	10,205	23,811	6,145
13	73,904	44,342	29,562			29,562	8,868	20,693	4,747
14	64,176	38,506	25,670			25,670	7,701	17,969	3,664
15	55,648	33,389	22,259			22,259	6,678	15,581	2,824
16	48,192	28,915	19,277			19,277	5,783	13,494	2,174
17	41,664	24,998	16,666			16,666	5,000	11,666	1,671
18	35,968	21,581	14,387			14,387	4,316	10,071	1,282
19	31,960	19,176	12,784			12,784	3,835	8,949	1,013
20									
Total	1,235,000	741,000	494,000				146,700	342,300	60,736

Gvt. Take vs Project Profitability

Example PSC with:

- 10% Royalty
- 50% C/R Limit
- 60% Gvt. P/O Share
- 30% Income Tax

The regressive effect here is due to both the royalty and the C/R limit.

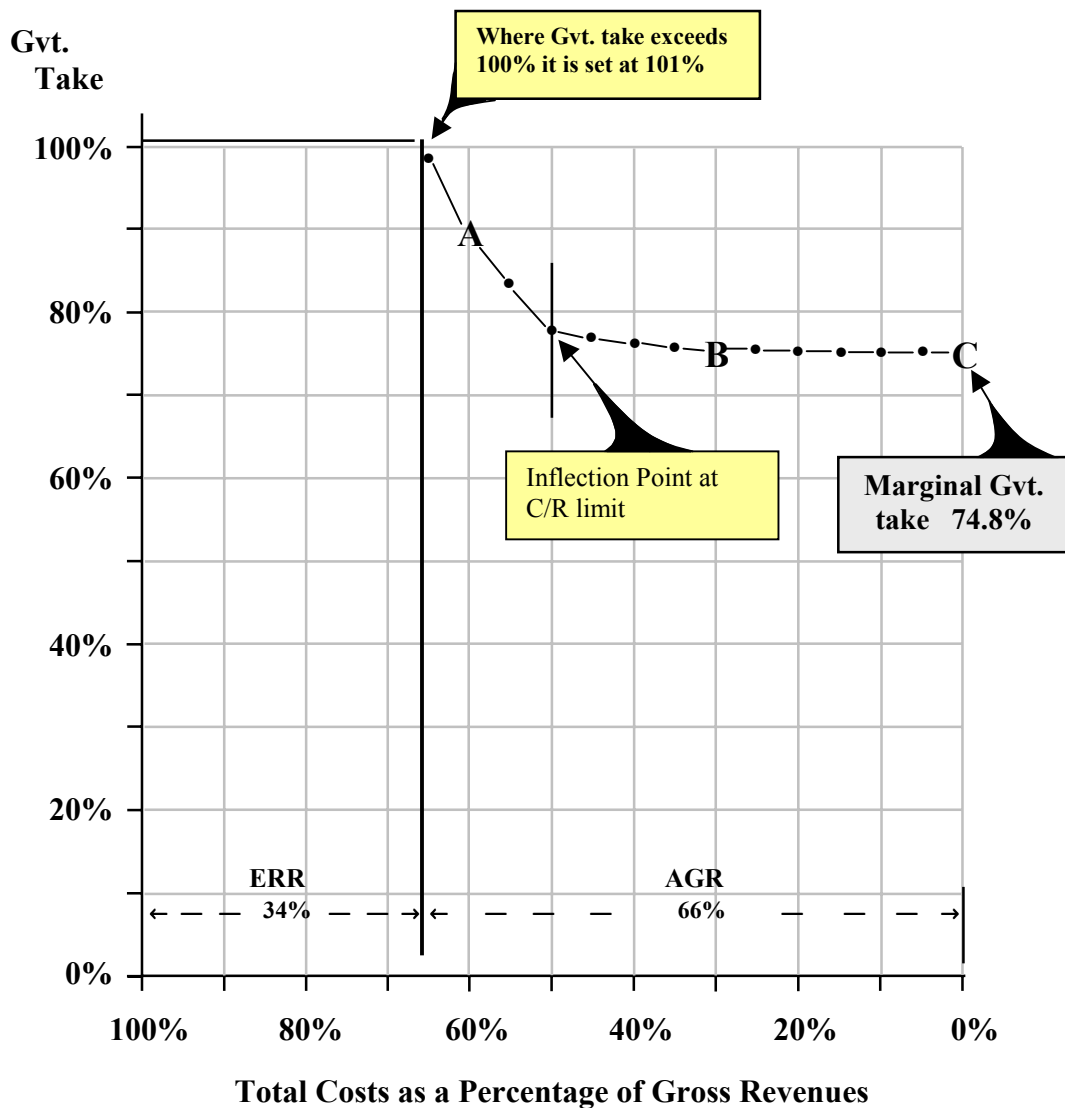


Figure 5

Typical Contract Conditions

Area	Block sizes range from extremely small for development/EOR projects to very large blocks for exploration. Typical exploration block sizes are on the order of 250,000 acres (1,000 km ²) to over a million acres (>4,000 km ²).
Duration	Exploration: Typically 3 phases totaling 6–8 years Production: 20–30 years, (typically at least 25 years)
Relinquishment	Exploration 25% after 1 st phase, 25% of “original” area after 2 nd phase This is most common but there is wide variation.
Exploration Obligations	Includes seismic data acquisition and drilling. Sometimes contract requirements can be very aggressive in terms of money and timing—depends on the situation. All blocks are different.
Royalty	World average is around 7%. Most systems either have a royalty or an effective royalty (ERR) due to the effect of a C/R limit.
Profit Oil Split	Most profit oil splits (approximately 55–60%) are based upon a production-based sliding scale. Others (around 20–25%) are based upon an “R” factor or ROR system.
C/R Limit	Average 65%. Typically PSCs have a limit and most are based on gross revenues. Some (perhaps around 20%) are based on net production or net revenues (net of royalty). Over 20% have no limit (<i>i.e.</i> , 100%). Approximately half of the worlds PSCs have no depreciation for C/R purposes (but almost all do for tax calculation purposes).
Taxation	World average Corporate Income Tax (CIT) is probably between 30–35% or so. However, many PSCs have taxes paid “in lieu”—“for and on behalf of the contractor” out of National Oil Company share of profit oil.
Depreciation	World average is 5-year Straight Line Decline (SLD) for capital costs. Usually depreciation begins “when placed in service” or “when production begins.”
Ringfencing	Most countries (55%) erect a “ringfence” or a modified ringfence (13%) around the contract area and do not allow costs from one block to be recovered from another, nor do they allow costs to “cross the fence” for tax calculation purposes.
Gvt. Participation	Approximately half of the countries with the option to participate do not reimburse “past costs.”