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credit. For instance, for a 20% PPT a 50% uplift would be equal to a 10% tax credit. Uplifts and tax credits can therefore be used in order to create identical economic effects. However, it would be more complicated to have separately uplifts and tax credits based on negative cash flows and allow both the uplifts and the tax credits to be traded. This would create confusion. So it seems easier to simply only adopt tax credits, which can then be traded without distinction.

Carry forwards

A similar issue is related to carry forwards. Instead of converting a negative cash flow into tax credits, it is possible to apply the more traditional way of permitting carry forwards. It is simpler to have both for the uplifts and the carry forwards, tax credits instead.

Minimum Tax

Considerable study was done of the possibility to have a minimum tax. During periods of low oil prices or periods of strong investment, the State of Alaska would always be assured of some type of minimum payment. This would have psychological-political value and would provide some assistance to State budgeting in case of such conditions.

In reality, the minimum tax is not very useful. It is fair to carry forward any minimum tax and offset such minimum taxes from the full PPT to be paid as soon as economic conditions improve. It is highly unlikely that strong investment would co-exist very long with sustained periods of low oil prices. Therefore, it is highly likely that periods of minimum tax would be of limited duration. Under these conditions, the minimum tax becomes really an interest-free loan of short duration. For the long term future of the State this is an irrelevant feature.

In addition, the minimum tax, when applied would complicate the tax credit system and the overall administration of the tax credits, which now would have to be split between tax credits that can be traded and tax credits as a result of minimum tax which cannot be traded. This is a complex system for a very modest purpose.

Furthermore, the minimum tax would interfere with the concept of a tax free allowance. It would mean that small companies and new investors would always pay the minimum tax. This seems contradictory to the objective of providing support for these investors.

For these reasons a minimum tax is not recommended.

6. ANALYSIS OF INTERNATIONAL COMPETITIVENESS OF THE PETROLEUM PROFITS TAX ("PPT")

(Note: After the initial scoping a PPT tax rate of 20% and a credit rate of 15% seemed a reasonable combination. Therefore much economic work was done on this combination. As a result of subsequent work it was concluded that a 25% tax rate and 20% tax credit rate is more in the interest of Alaska. Nevertheless in the interest of providing the maximum information about the PPT it was considered desirable to leave the Chapters that were based on the 20% tax rate and 15% credit rate in the report. These are Chapters 4,5,6,7 and 8. Chapter 9,10 and 11 are based on the recommended fiscal terms.)

The competitive level of PPT that can be sustained in Alaska depends very much on the international framework. As indicated in Chapter 2, this framework has changed rather drastically as a result of the high oil prices.

In this chapter a comparative analysis will be done of proposed PPT with fiscal systems of other countries. It is not possible to isolate the PPT for comparison. The total fiscal terms need to be compared. These total terms include the US Federal income tax.

Eight different fiscal systems were selected for the comparison. The fiscal systems were selected to present a reasonable distribution of high and low government take regimes around the world, in order to ensure that the total comparison reflects the world wide conditions. However, the eight specific areas were all selected based on the level of activity. All eight areas represent significant developments by large international oil companies, including the ones also operating in Alaska. Therefore, it is confirmed that these investment terms result in considerable activity in the particular areas.

The eight areas that were selected are:

- Norway
- UK
- US Gulf of Mexico
- Nigeria
- Alberta Oil Sands
- Angola
- Russia-Sakhalin
- Azerbaijan

6.1. Preliminary economic comments

The comparison will be made on the basis of the same fields as were provided in Chapter 3. These fields reflect a wide enough cost range to be relevant for international conditions. In order to provide an overview over the entire cost range the High Cost and the Low Costs scenario results will be compared. Also to test a large range, graphs for the 50 MM and 500 MM barrel fields will be provided.

A major difference between Alaska North Slope and most other jurisdictions in the world is that the net back value at the well head in Alaska North Slope is much lower than in most other jurisdictions, due to the high transport costs and a quality of crude oil that is less than WTI or Brent. Therefore, an international comparison has to take this difference into account.

Therefore all fiscal systems will be compared on the basis of the same WTI price. For each system an approximate net back will be included in the analysis. The net backs differentials relative to WTI are the following:

Jurisdiction	Net back differential
	($ per barrel)
Alaska-North Slope	$ 7
Norway	$ 1
UK	$ 1
US Gulf of Mexico – Deep water	0
Nigeria – Deep Water	$ 2
Alberta - oil sands	$ 2
Angola	$ 2
Russia-Sakhalin	$ 1
Azerbaijan	$ 6

First fiscal comparisons will be made between Alaska and each jurisdiction and in Chapter 6 subsequently an overall rating will be provided in Chapters 7 and 8.

The main emphasis in this report is an analysis of the attractiveness of Alaska to new investors. Therefore, for the analysis of the international competitiveness of the PPT the $ 73 million allowance will be included.

Also for convenience two fiscal systems are included in each graph. In order to make the graphs easier to analyze typically a system with a high government take and a low government take selected.

The main emphasis of the analysis will be on the $ 22 – $ 40 per barrel WTI price range. This is the long term price range which is still applied by most oil companies. As indicated in Chapter 3, these prices are escalated by 2% per year.

Some fiscal systems feature signature bonuses. These include Alaska, Canada, the US Gulf of Mexico, Angola, Russia, etc. For economic comparison, the signature bonuses were set at zero, since in all cases they are freely biddable or negotiable. Where there were specific requirements for social expenditures, such as in Russia, these expenditures were included in the fiscal terms.

6.2. Comparisons with other jurisdictions

Of course, the attractiveness of the petroleum resources of each country is different. International comparisons on the basis of the same standard fields do not reflect actual investment decisions of investors, which are based on specific prospects and projects in the various countries. These opportunities could be less attractive or more attractive than Alaska. The comparison in this chapter and the subsequent rating in the following chapters therefore serve only as a very general benchmarking of the attractiveness of Alaska terms.

6.2.1. Norway

The comparison between Alaska and Norway is relevant because Norway typically has a high cost environment. Also Norway has seen over the last decade a gradual outflow of capital from the major oil companies and therefore Norway has recently taken some steps to increase the interest of new investors. One of these measures was to provide new investors with a tax rebate equal to the tax value of their losses in case their operations in Norway would be unsuccessful. This is very similar to the proposed Alaska tax credit that can be traded for capital expenditures. Therefore, Norway and Alaska are considering the same type of policies in order to make their jurisdictions more attractive to new investors.

Norwegian terms. The terms of Norway are a basic 28% corporate income tax and a 50% hydrocarbon tax. The hydrocarbon tax has a 30% uplift which can be earned over a 4 year period. Furthermore, there are modest surface rentals. It is assumed that Norway would have a $ 6 per barrel advantage over Alaska North Slope at the well head.

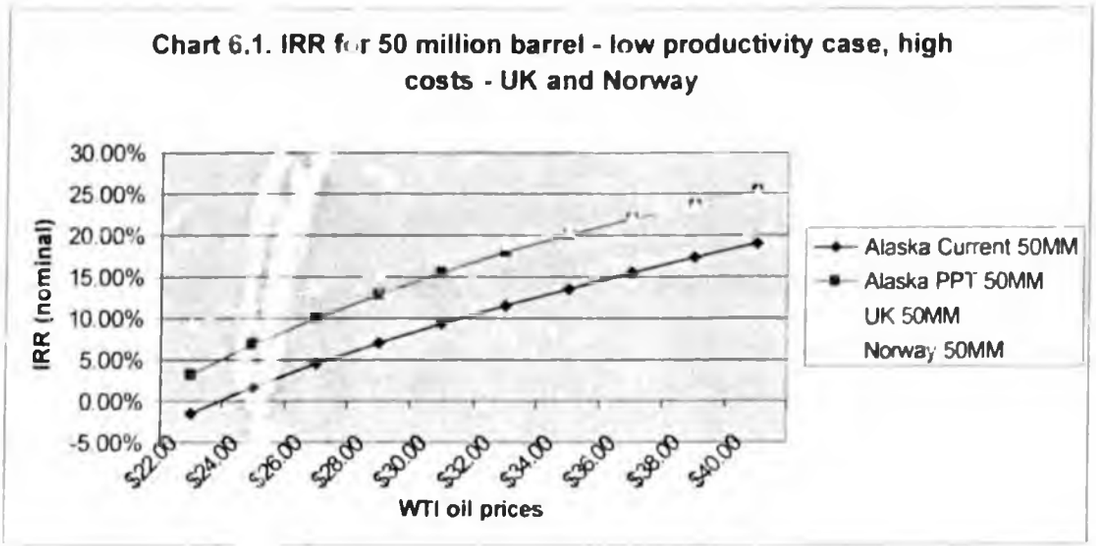
Norway does not provide fiscal stability on its terms.

50MM high cost

The following graphs display the economics for the UK and Norway for the 50 MM high cost field compared with fiscal conditions for a new investors in Alaska. In this section we will discuss the Norway results.

Chart 6.1. illustrates how the proposed PPT relative to the current severance tax will be a very material improvement relative to the Norwegian fiscal system with respect to the IRR. The WTI break even point with Norway was $ 42 per barrel under the current system and this is now

reduced to $ 28 per barrel under the PPT proposal. This means that the Alaska PPT terms are now more attractive than the Norwegian terms for prices over $ 28 per barrel. These terms are therefore considerably more competitive than the current severance tax with respect to the IRR.



The NPV@10% results show a similar pattern. The WTI break even oil price is $ 36 per barrel under the current severance taxes and would now be $ 28 per barrel.

The PPT would also improve the EMV results relative to Norway. With the current severance tax the WTI break even point would be $ 42 per barrel. However, with the new PPT the EMV@10% is better than Norway over $ 30 per barrel.

Chart 6.2. NPV @10% for a 50 million barrel field - low well productivity, high costs, UK and Norway

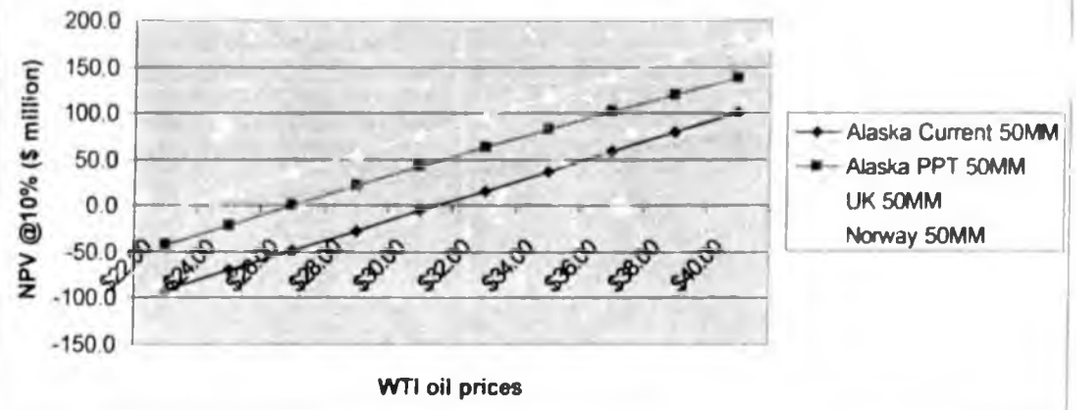
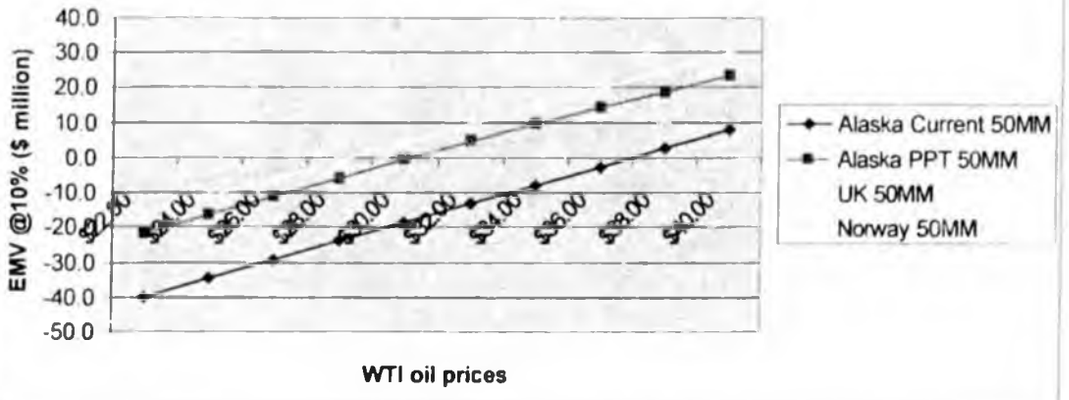
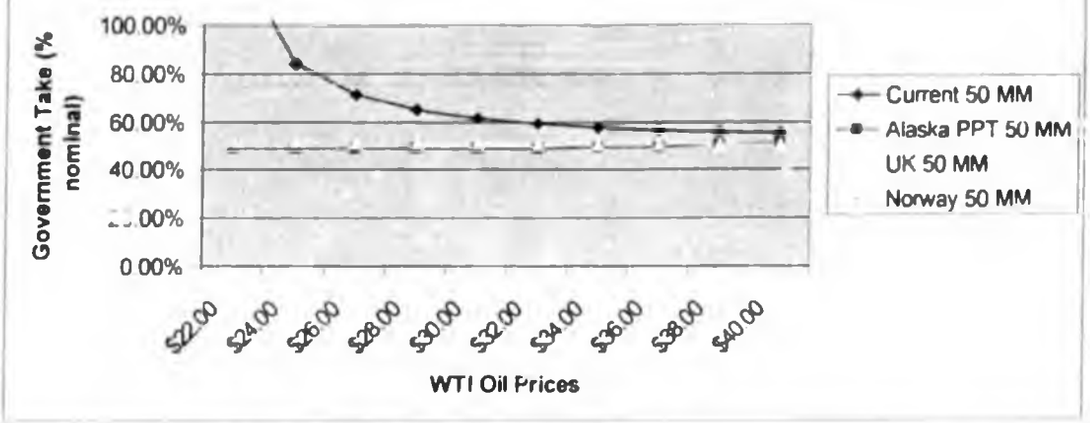


Chart 6.3. EMV @10% for a 50 million barrel field - low well productivity, high costs, UK and Norway



The proposed PPT **lowers** the overall Federal/Alaska government take for this field for new investors. This is because new investors receive the tax credits, but will actually not pay PPT on this field, because of the tax free allowance. This makes the overall government take attractive from an international perspective as can be seen by comparing this with the government take in Norway.

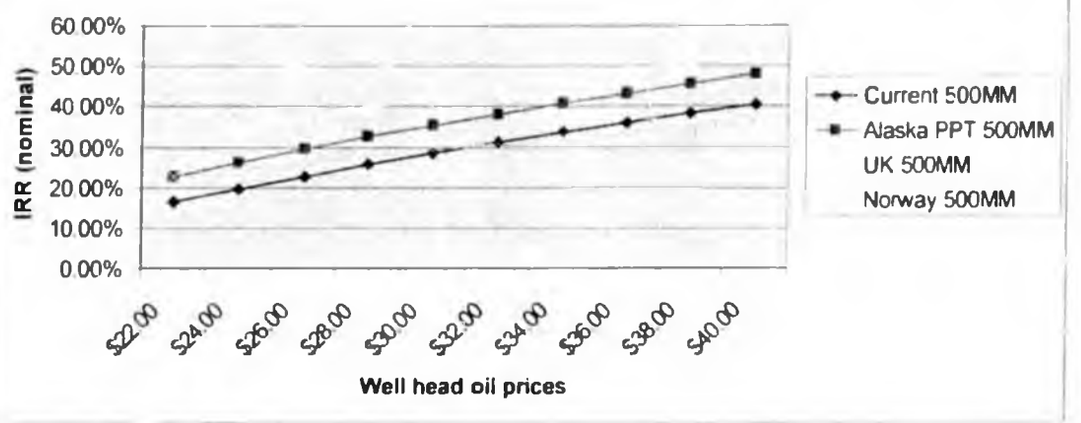
Chart 6.4. Overall Government Take for a 50 million barrel field with low well productivities, high costs, UK and Norway



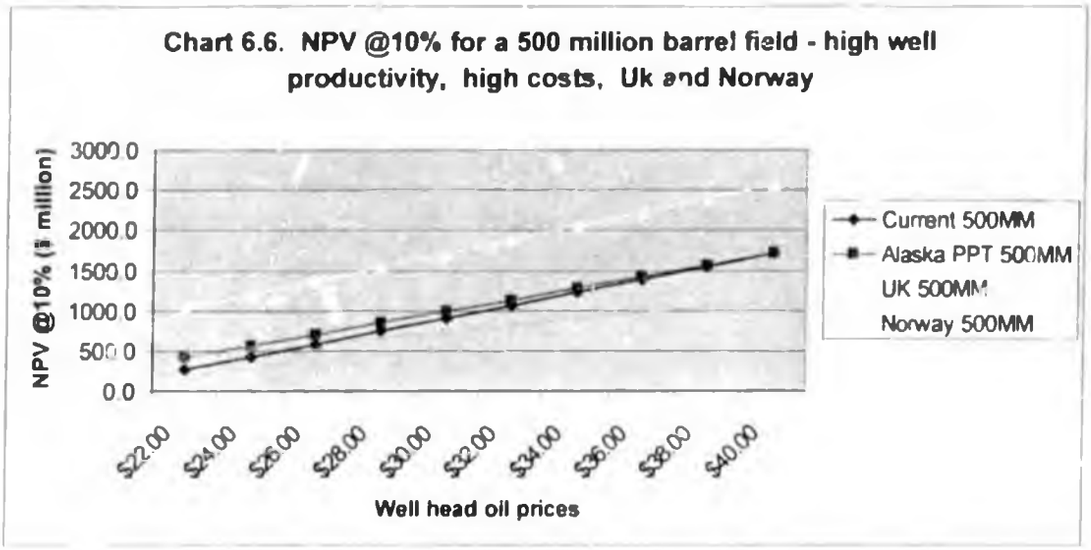
500MM high cost

Also for the IRR of a 500 MM barrel field the PPT system results in a very substantial reduction of the WTI break even points relative to Norway, making the Alaska PPT fiscal system much more competitive.

Chart 6.5. IRR of 500 million barrel - high productivity case, high costs, UK and Norway



For the NPV@10% and EMV@10% there are significant improvements in the competitiveness with a lower WTI break even point for the PPT compared to the current severance tax. This is in part caused by the tax free allowance for new investors, which still has a significant impact even on the 500 MM barrel field.



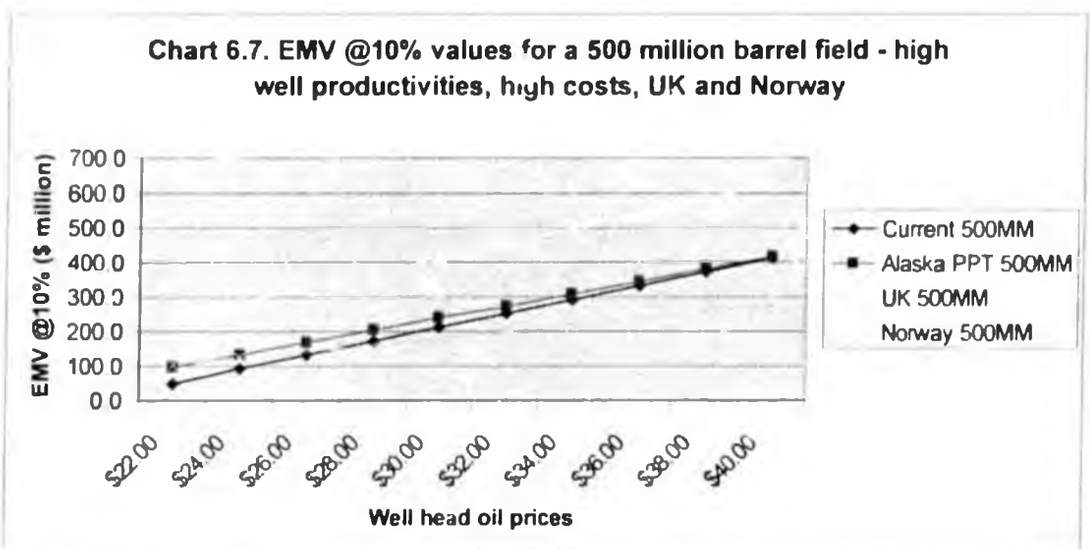
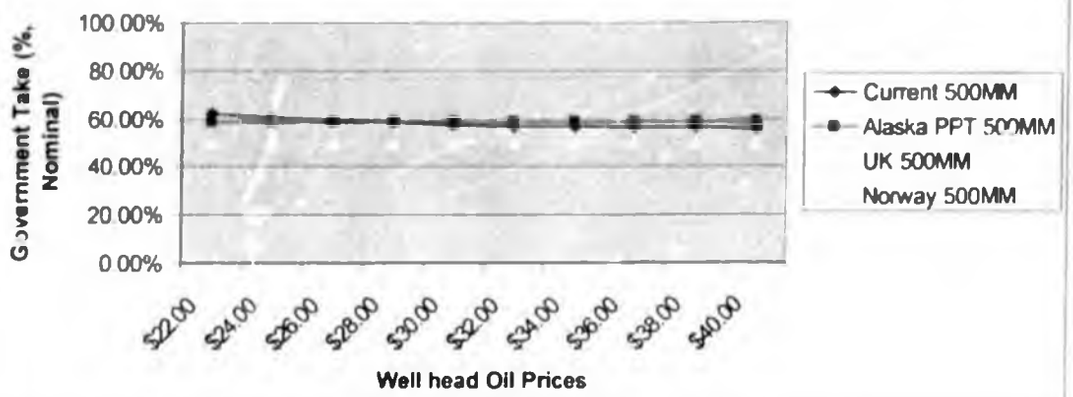


Chart 6.8 indicates that the overall government take for the 500 million barrel field is higher than for the 50 million barrel field as a result of the progressive nature of the PPT. Yet, this government take is still substantially less than the government take in Norway.

Chart 6.8. Overall Government Take for a 500 million barrel field with high well productivities, high costs, UK and Norway.



50MM low cost

As can be observed in Charts 6.9, 6.10 and 6.11, the results for the low costs cases provide the same overall conclusion as those for the high cost cases. For all profitability indicators the WTI break even points for the new PPT are considerably below those of the current severance tax compared to Norway.

Chart 6.9. IRR for 50 million barrel - low productivity case, low costs, UK and Norway

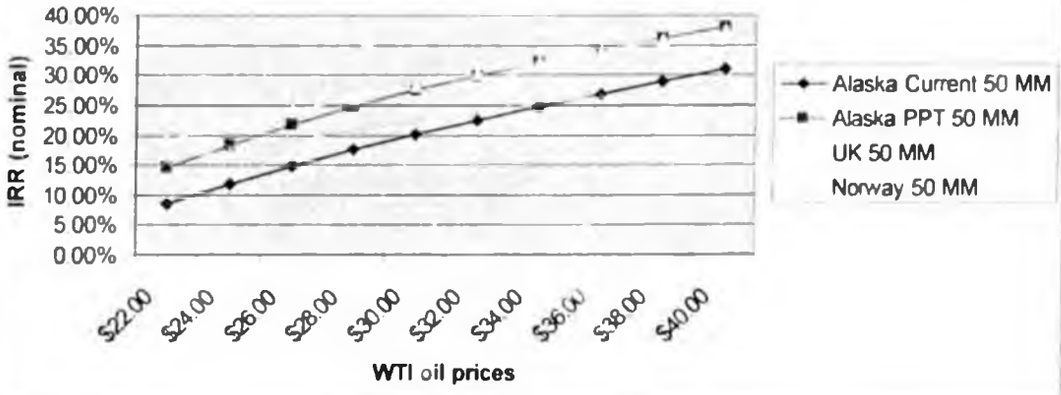
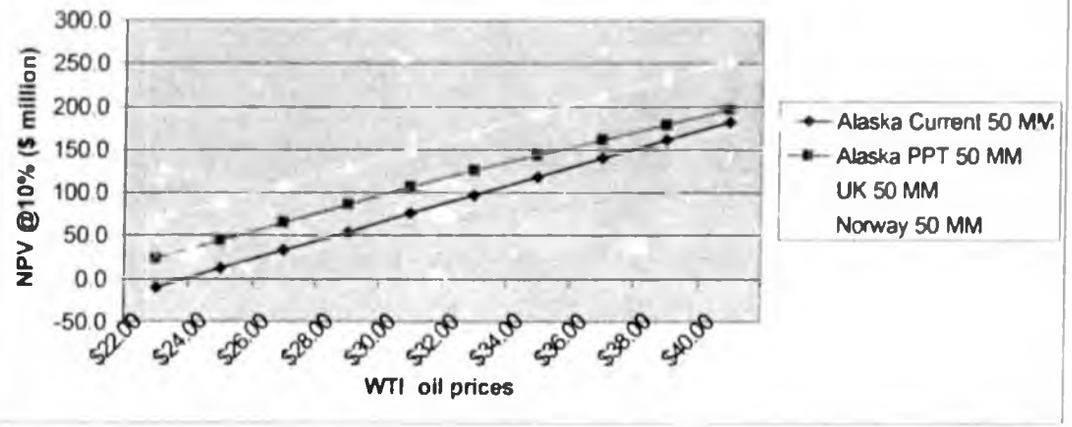
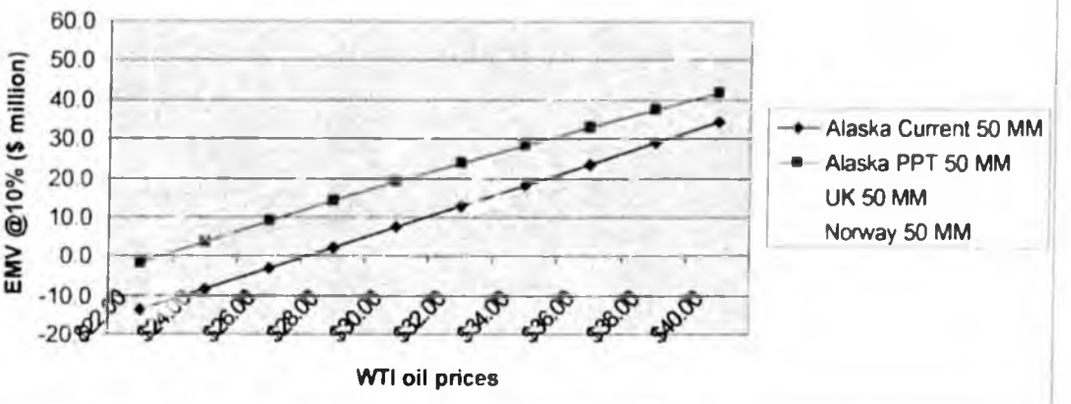


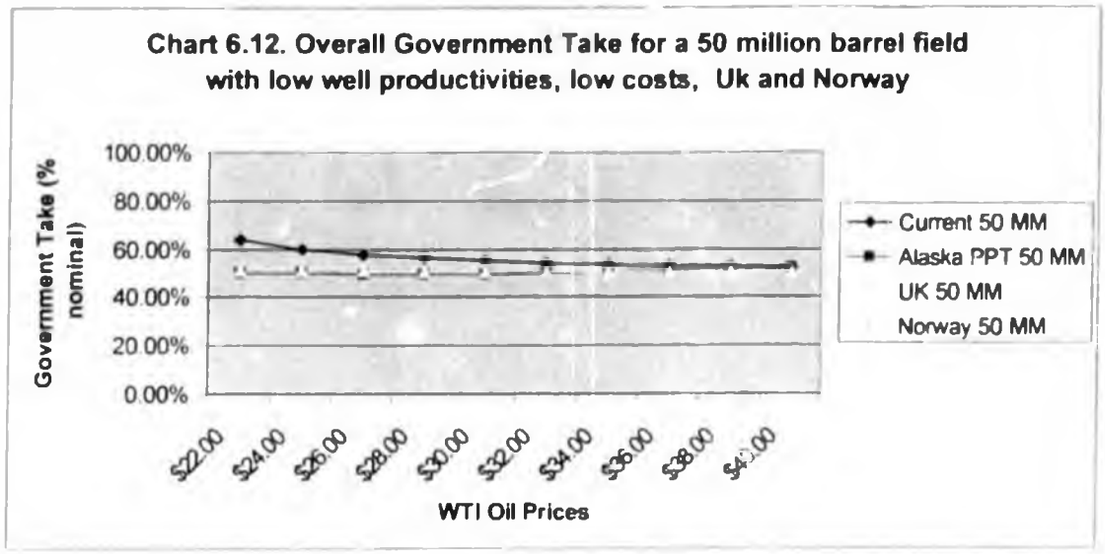
Chart 6.10. NPV @10% for a 50 million barrel field - low well productivity, low costs, UK and Norway



The government take results are also very similar to the 50 MM high cost case. A new investment in a 50 MM barrel field even with low costs, has a considerably lower government take than in Norway.

Chart 6.11. EMV @10% for a 50 million barrel field - low well productivity, low costs, UK and Norway





500 MM low cost

The results for the 500 MM low cost field are very similar to the 500 MM high cost field as can be seen from Charts 6.13, 6.14., 6.15 and 6.16.

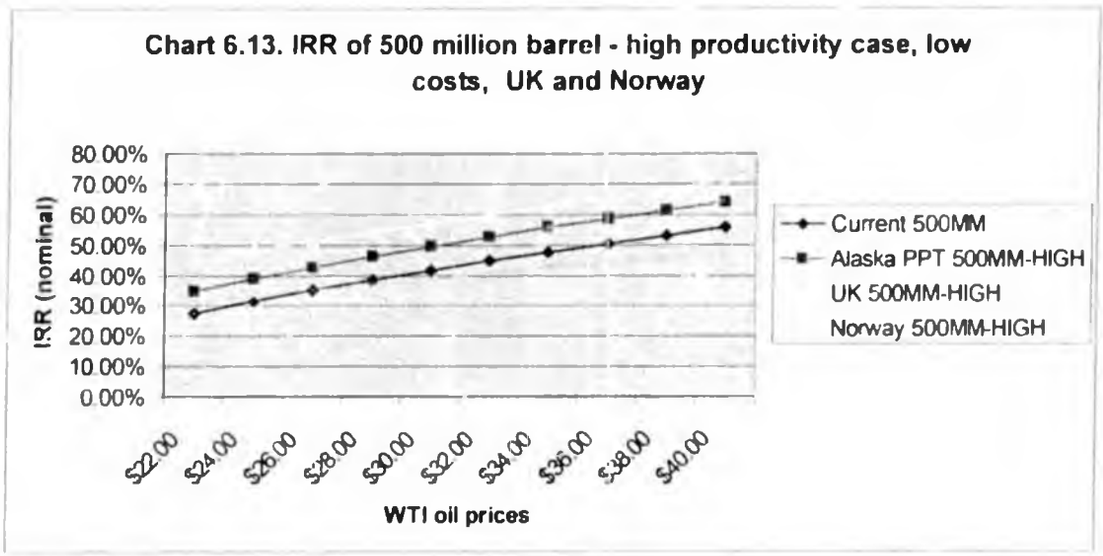
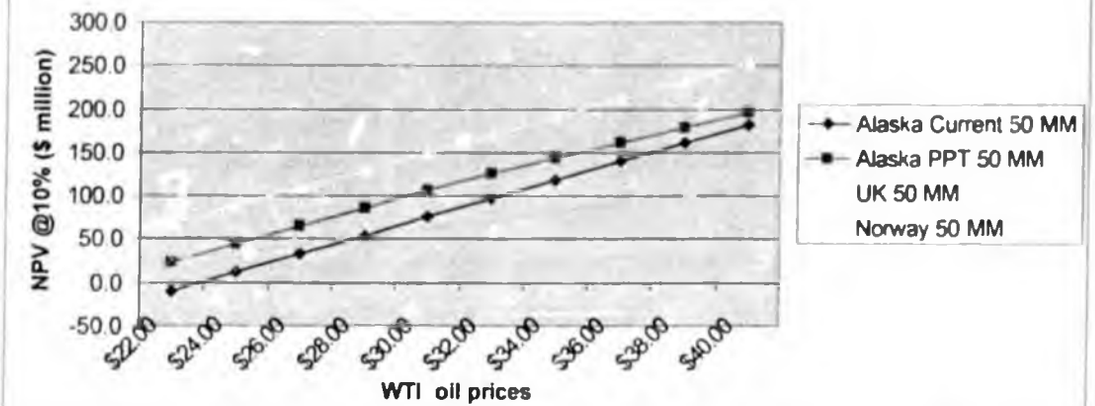


Chart 6.10. NPV @10% for a 50 million barrel field - low well productivity, low costs, UK and Norway



The government take results are also very similar to the 50 MM high cost case. A new investment in a 50 MM barrel field even with low costs, has a considerably lower government take than in Norway.

Chart 6.11. EMV @10% for a 50 million barrel field - low well productivity, low costs, UK and Norway

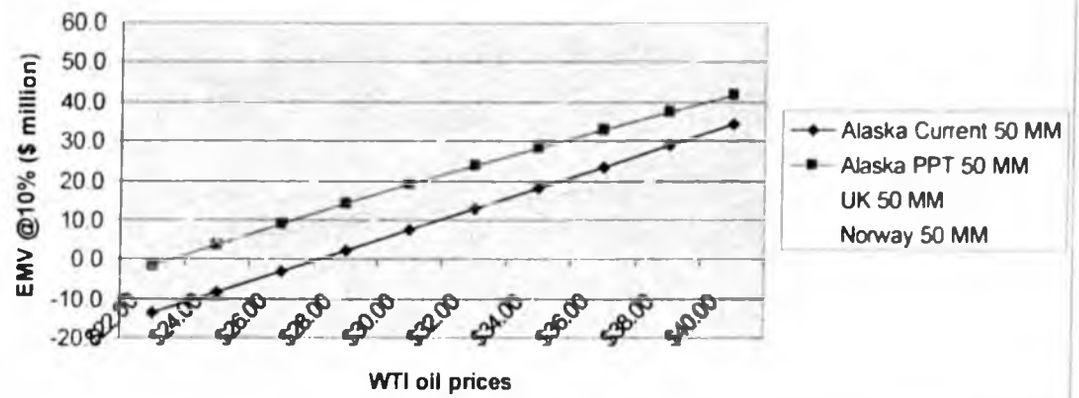
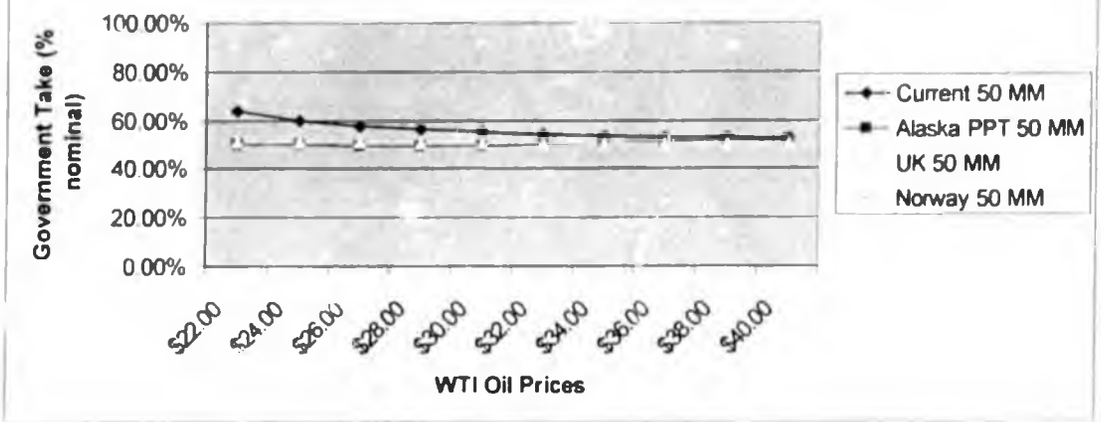


Chart 6.12. Overall Government Take for a 50 million barrel field with low well productivities, low costs, Uk and Norway



500 MM low cost

The results for the 500 MM low cost field are very similar to the 500 MM High cost field as can be seen from Charts 6.13, 6.14., 6.15 and 6.16.

Chart 6.13. IRR of 500 million barrel - high productivity case, low costs, UK and Norway

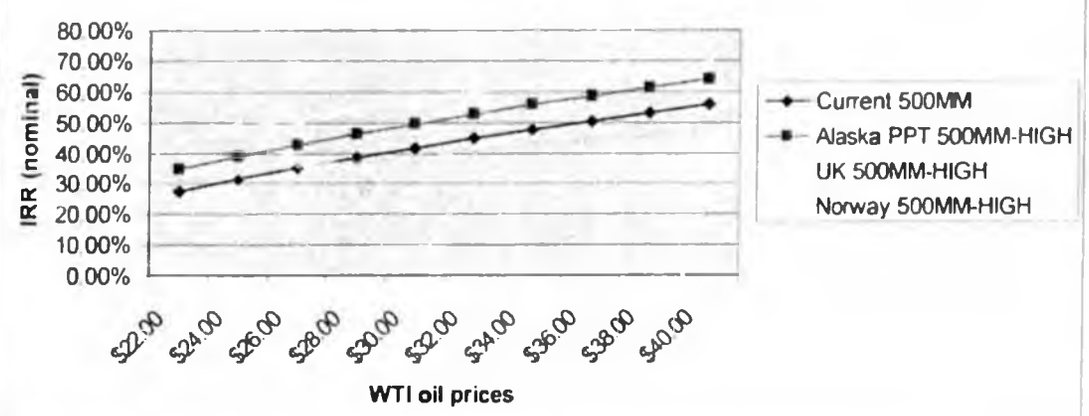


Chart 6.14. NPV @10% for a 500 million barrel field - high well productivity, low costs, Uk and Norway

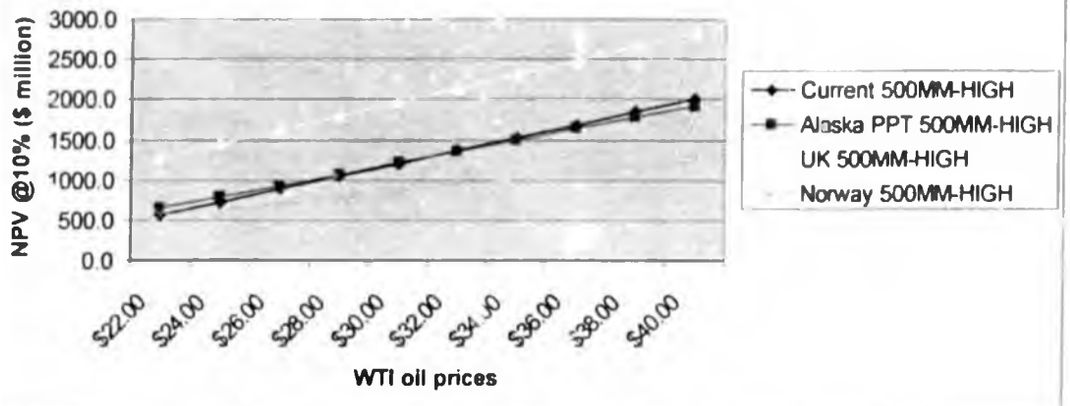
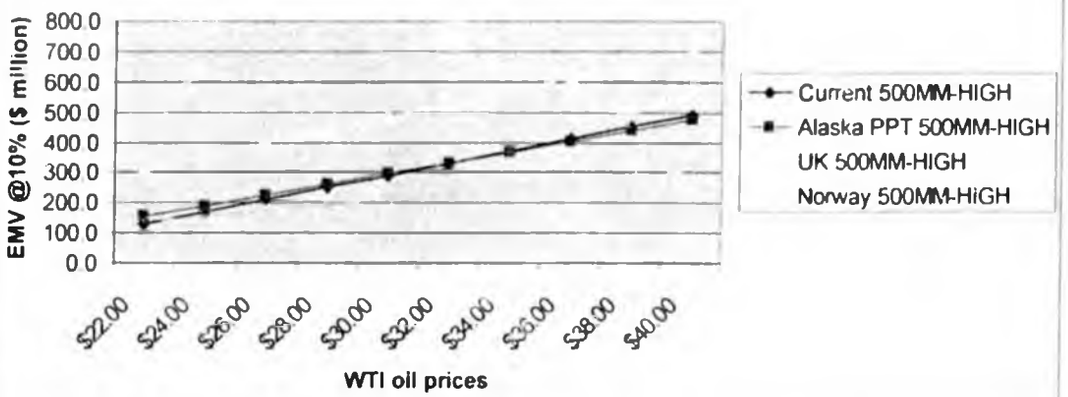
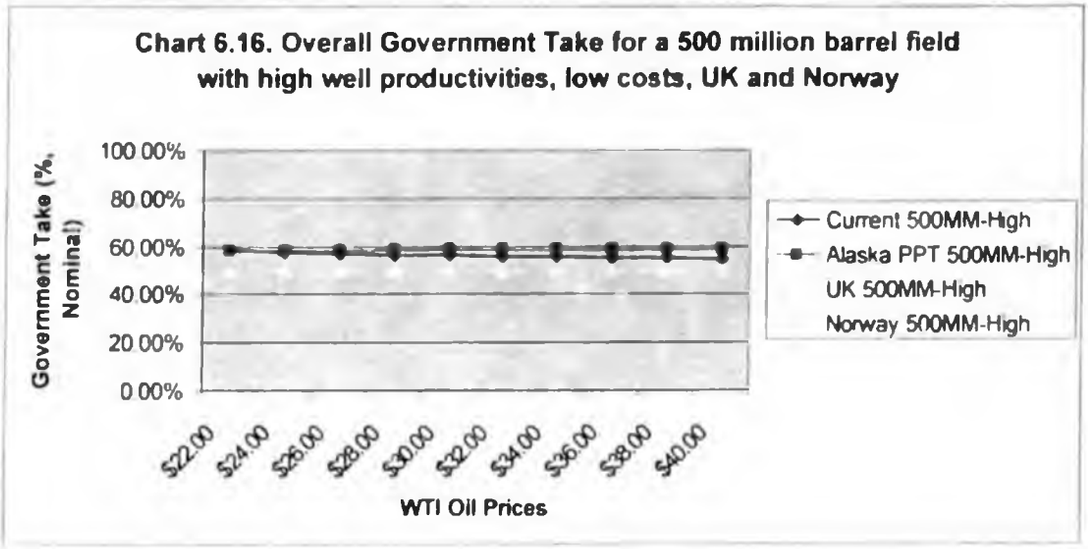


Chart 6.15. EMV @10% values for a 500 million barrel field - high well productivities, low costs, UK and Norway





Norway Conclusion. The PPT makes Alaska more competitive relative to Norway for new investors compared to the current production tax. Relative to Norway the PPT has attractive IRR results, also under high prices the NPV and EMV are better. The PPT is in particular more attractive for first investments in small fields.

6.2.2. UK

UK terms. The UK fundamentally changed its fiscal system in the North Sea in 1993 when it removed the Petroleum Revenue Tax and established that for new licenses the only applicable fiscal terms would be corporate income tax and some rentals. A surcharge was established for corporate income tax, creating a total rate of 40%. In December 2005 the UK proposed to increase the surtax, so that the total tax rate is now 50%. The UK change in fiscal terms is an important indication of the world wide trend to a higher government take.

It is assumed that the UK has a $ 6 per barrel advantage over Alaska North Slope at the well head.

The previous UK system was one of the most attractive in the world. With the increase in the surtax, the US Gulf of Mexico terms have clearly become more attractive. It should be noted, however, that the UK offshore went through a very rapid development in only four decades and that as a result the remaining prospects are small and marginal. As a result, even under these very favorable fiscal terms investors are looking abroad for new opportunities.

The UK does not provide fiscal stability on its terms.

Charts 6.1 through 6.4 show that for small high cost fields the PPT terms do not compare unfavorably with the UK terms. For high prices the IRR is the same. The NPV and EMV are somewhat less due to the much higher well head values in the UK. The government take is similar.

Tables 6.5 through 6.16 show that the UK has a more favorable fiscal system than Alaska under the proposed PPT terms for low cost fields and large fields.

UK Conclusion. The PPT terms would be less attractive than the fiscal terms for the UK. Nevertheless, the PPT would significantly reduce the gap in competition and the PPT compares relatively favorable for small high cost fields. Small high cost fields are typical for the North Sea today.

6.2.3. US – Gulf of Mexico – Deep water

The deep waters of the US Gulf of Mexico have been an area of intensive oil activity and therefore, the fiscal terms are attractive for the environment. The Gulf of Mexico is for US oil companies a direct alternative to Alaska. Therefore, this comparison is important.

US-Gulf of Mexico-Deep Water terms. The area has a favorable royalty regime of 12.5%. An initial royalty suspension volume of 87.5 million barrel equivalent of oil was assumed. Furthermore, the area is subject to the Federal corporate income tax, as well as rentals and bonuses. It is assumed that the US Gulf has a $ 7 per barrel advantage over Alaska North Slope at the well head.

The Federal Government of the United States does not provide fiscal stability on its terms.

50MM high cost

Charts 6.17 through 6.20 clearly indicate that for a 50 MM barrel high cost field the fiscal terms in the US Gulf of Mexico are considerably more attractive to investors, assuming the same costs conditions, than the proposed Alaska PPT terms. This is true in terms of IRR, NPV@10%, EMV@% and Undiscounted Government Take.

The relative attractiveness of the EMV@10% depends very much on the assumptions about bonuses in either the US Gulf of Mexico or Alaska. Bonuses influence these values considerably and therefore investor assumptions about the level of bonuses that may have to be paid has a large impact on the relative outcome.

However, it is also obvious from the graphs that the Alaska PPT is an important step in reducing the gap in competitiveness between the Gulf of Mexico and Alaska. Therefore, the Alaska PPT terms will increase interest of new US investors in Alaska.

Chart 6.17. IRR for 50 million barrel - iow productivity case, high costs, US GOM and Nigeria

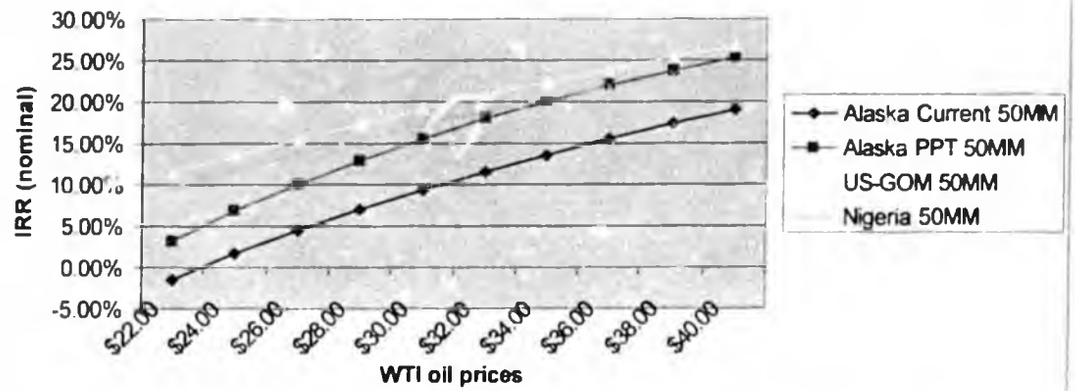


Chart 6.18. NPV @10% for a 50 million barrel field - low well productivity, high costs, US GOM and Nigeria

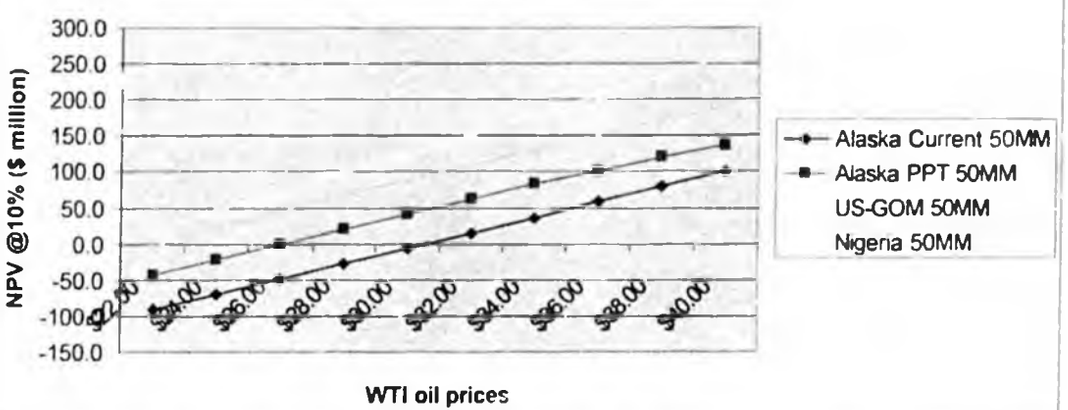


Chart 6.19. EMV @10% for a 50 million barrel field - low well productivity, high costs, US GOM and Nigeria

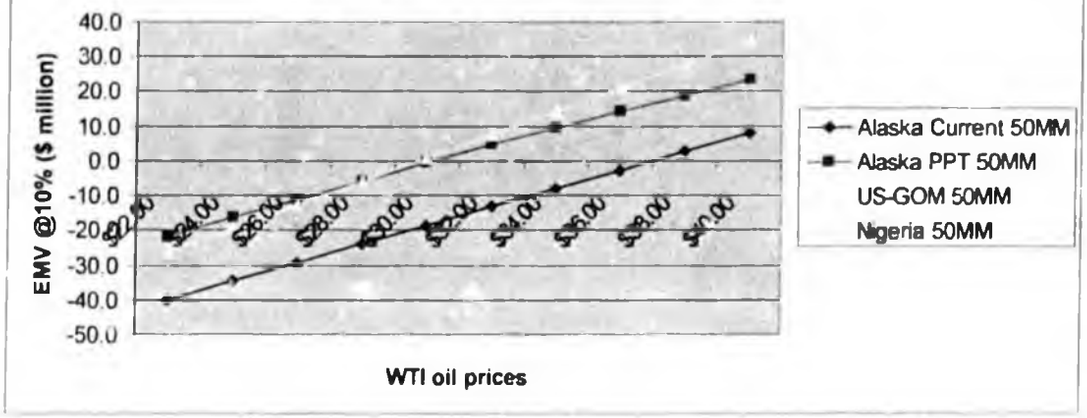
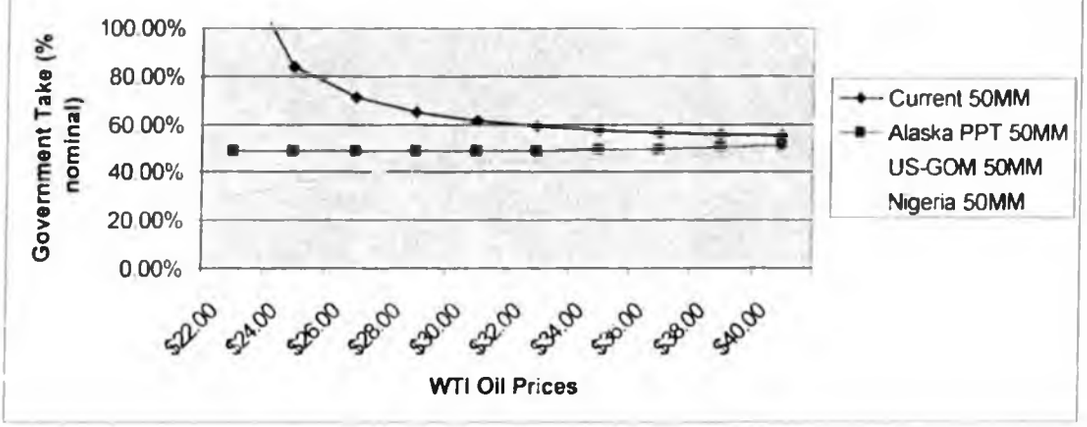


Chart 6.20. Overall Government Take for a 50 million barrel field with low well productivities, high costs, US GOM and Nigeria



500MM high cost

Charts 6.21 through 6.24 indicate that for a 500 MM barrel, high cost, field the fiscal terms for the US GOM are considerably more attrac e than the Alaska PPT terms for new investors. The Alaska PPT terms narrow the gap somewhat relative to the current severance tax and therefore more interest from US investors can be expected.

Chart 6.21. IRR of 500 million barrel - high productivity case, high costs, US GOM and Nigeria

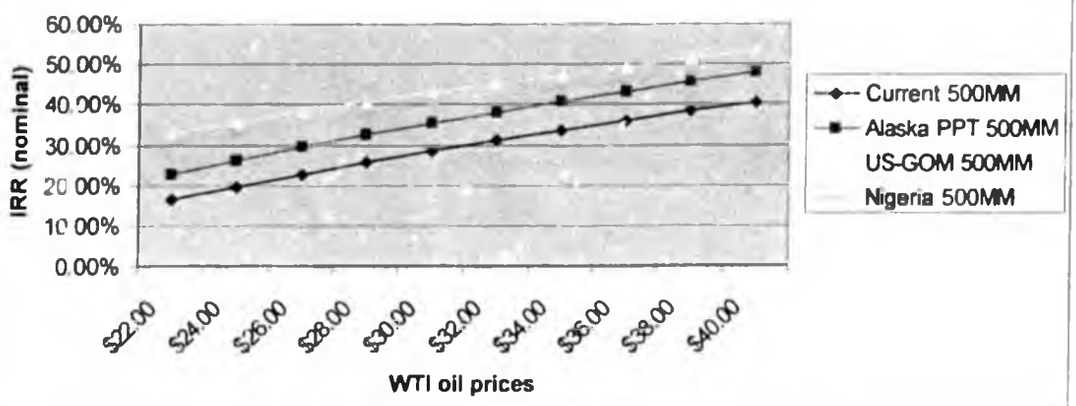


Chart 6.22. NPV @10% for a 500 million barrel field - high well productivity, high costs, US GOM and Nigeria

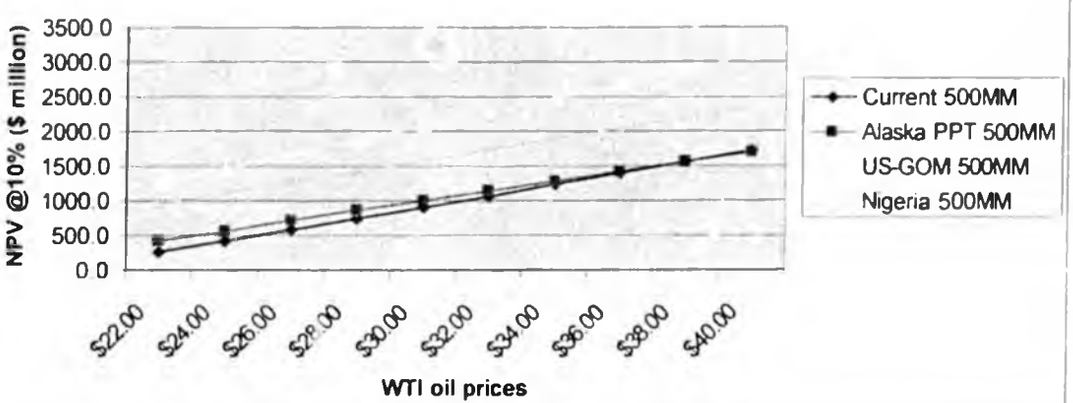


Chart 6.23. EMV @10% values for a 500 million barrel field - high well productivities, high costs, US GOM and Nigeria

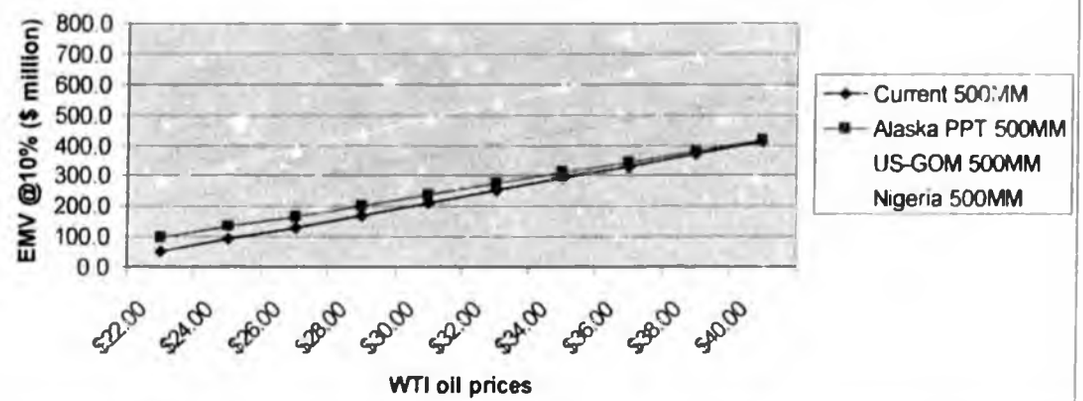
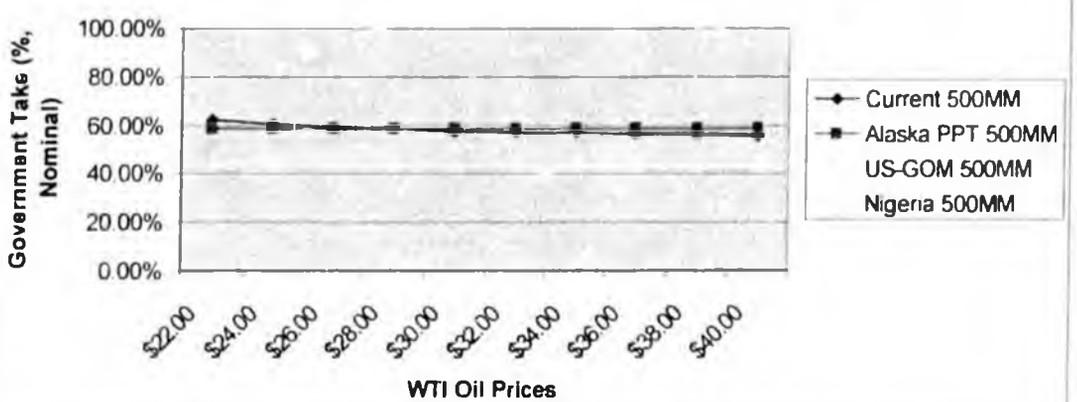


Chart 6.24. Overall Government Take for a 500 million barrel field with high well productivities, high costs, US GOM and Nigeria



50MM low cost

Charts 6.25 through 6.28 indicate that also for a 50 MM barrel low cost field the fiscal terms of the US Gulf of Mexico are much more attractive than the proposed Alaska PPT terms. However, also the PPT terms narrow the competitiveness gas with the US Gulf of Mexico.

Chart 6.25. IRR for 50 million barrel - low productivity case, low costs, US GOM and Nigeria

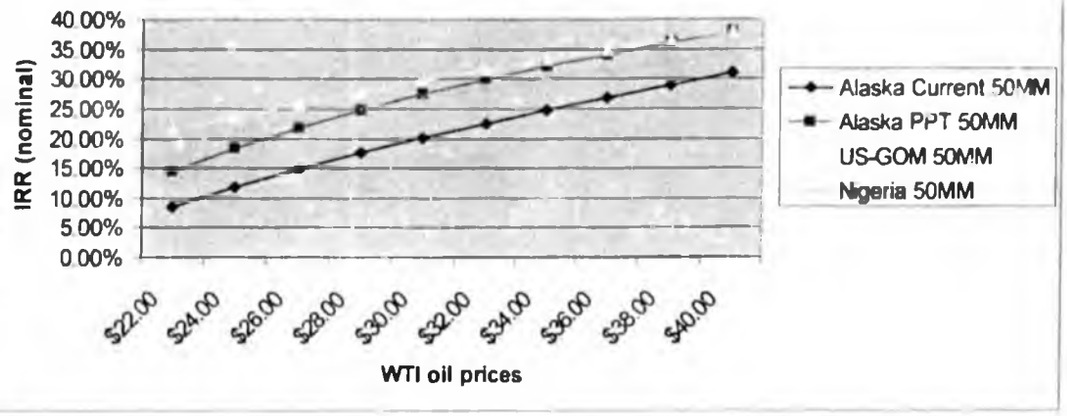


Chart 6.26. NPV @10% for a 50 million barrel field - low well productivity, low costs, US GOM and Nigeria

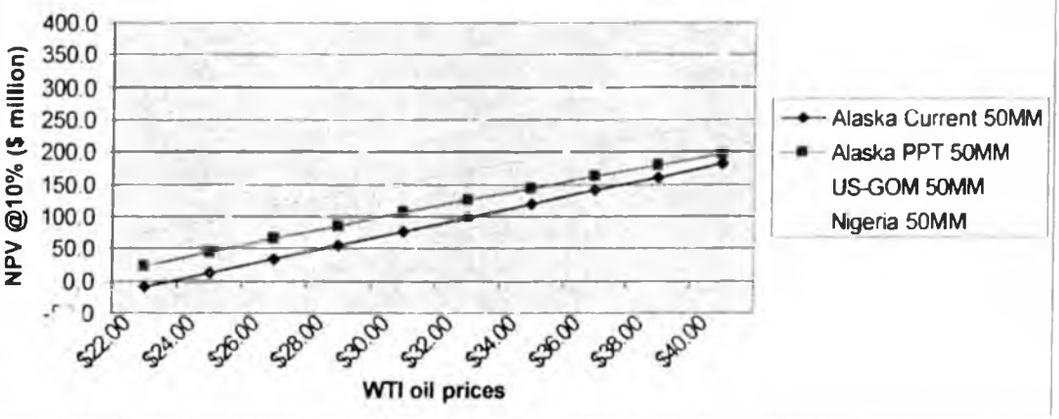


Chart 6.27. EMV @10% for a 50 million barrel field - low well productivity, low costs, US GOM and Nigeria

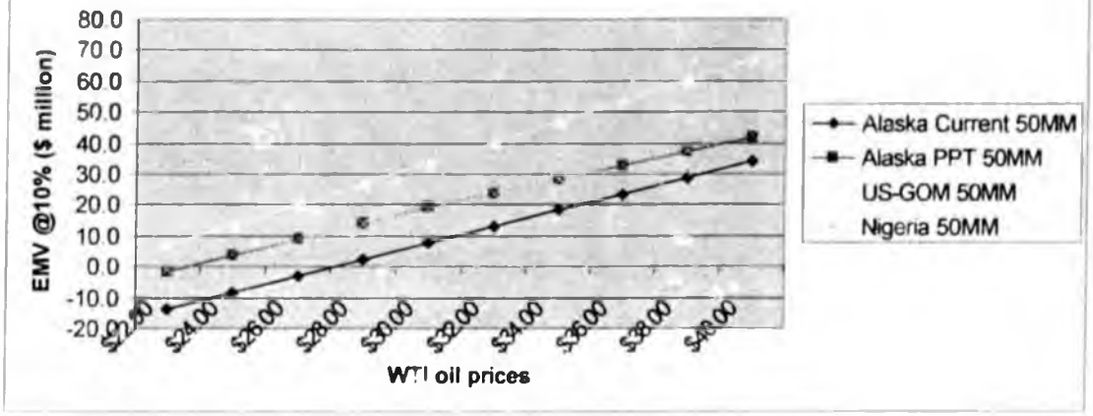
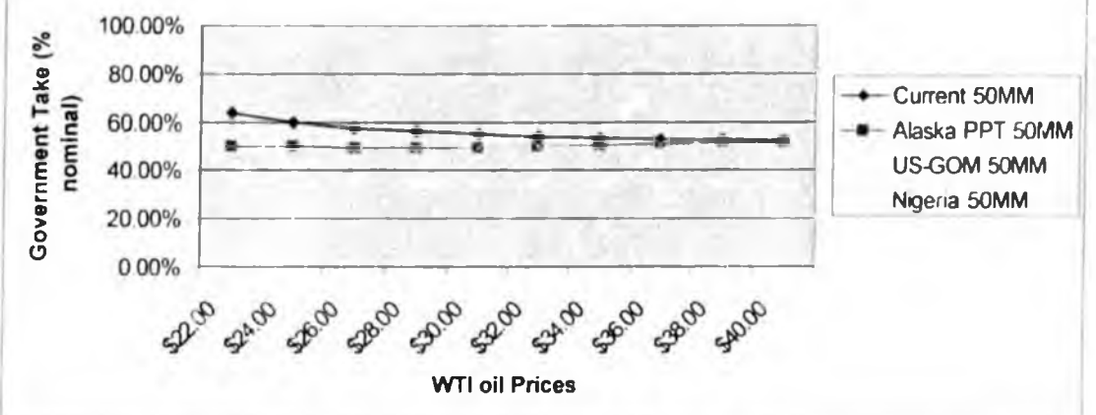


Chart 6.28. Overall Government Take for a 50 million barrel field with low well productivities, low costs, US GOM and Nigeria



500 MM low cost

For low cost 500 MM barrel fields, the fiscal terms of the US Gulf are clearly more attractive than the Alaska PPT terms for new investors as can be seen in Charts 6.29 through 6.32. Chart 6.29 indicates, however, the strong IRR characteristics that the Alaska PPT would have.

Chart 6.29. IRR of 500 million barrel - high productivity case, low costs, US GOM and Nigeria

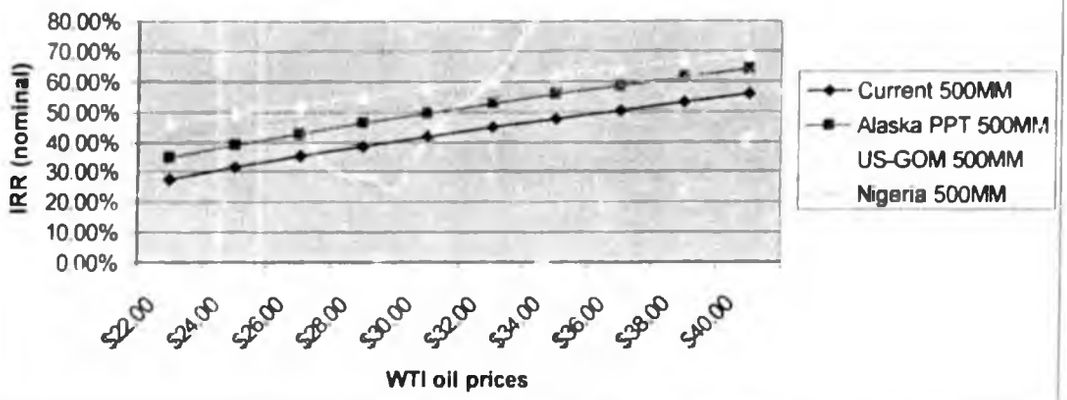


Chart 6.30. NPV @10% for a 500 million barrel field - high well productivity, low costs, US GOM and Nigeria

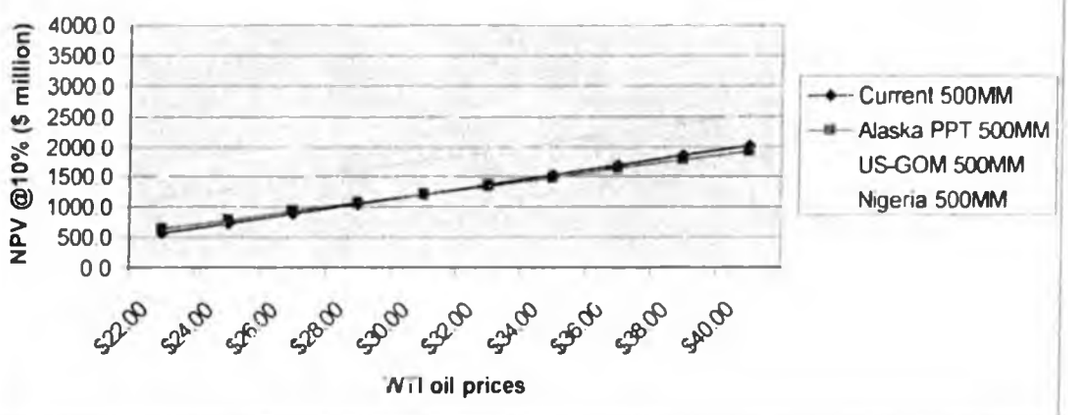


Chart 6.31. EMV @10% values for a 500 million barrel field - high well productivities, low costs, US GOM and Nigeria

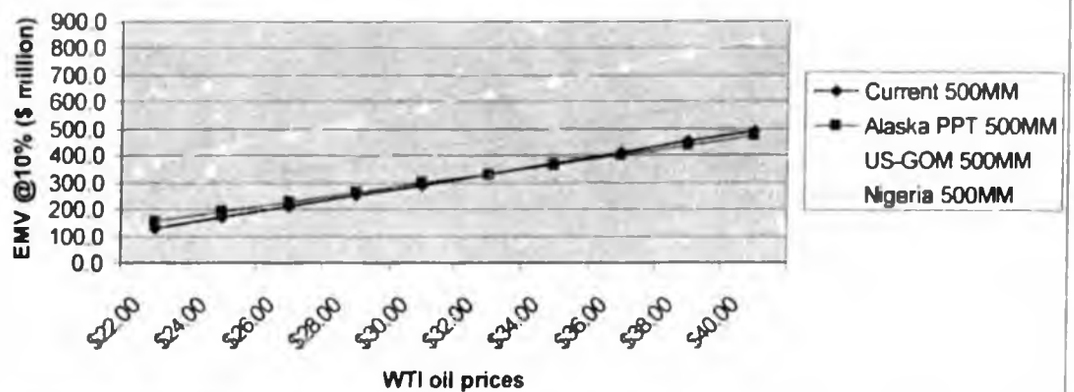
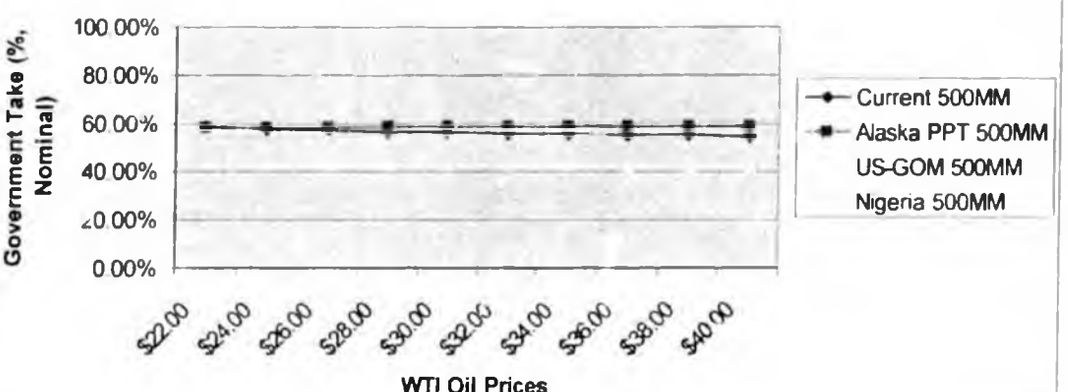


Chart 6.32. Overall Government Take for a 500 million barrel field with high well productivities, low costs, US GOM and Nigeria



US Gulf of Mexico Conclusion. The US Gulf of Mexico has a much more attractive fiscal system than Alaska. Also the value of oil at the well head is considerably higher. For these reasons the Alaska PPT would not be competitive with the US Gulf of Mexico. However, the Alaska PPT will help narrow the gap compared to the current severance tax.

6.2.4. Nigeria – Deep water

The deep waters in the offshore of Nigeria have experienced considerable activity during the last decade. This due to the relatively attractive terms that Nigeria is offering, which include a 0% royalty for very deep water in excess of 1000 meter water depth.

Nigeria-Deep water terms. The Nigerian terms are different from block to block, but following terms are representative of typical terms. These terms provide for a 50% corporate income tax, but with tax credits of 25% on capital expenditures. Furthermore, Nigeria has a production sharing agreement with a profit oil share ranging from 20% to 60% based on a sliding scale based on cumulative production, starting at 300 million barrels and going up to 2 billion barrels. It is assumed that Nigeria has a $ 5 per barrel advantage over Alaska North Slope at the well head.

Nigeria does not provide fiscal stability under its production sharing contracts, but Nigeria has traditionally negotiated MOU's with a typical duration of 10 years which may provide for some fiscal stability.

50 MM high cost

Fields of 50 MM barrels with high costs are not necessarily economic offshore Nigeria. However, fiscal conditions for larger fields up to 300 million barrels, which would be competitive, are the same and therefore this analysis can be used as a proxy for such fields.

Chart 6.17 illustrates how the Alaska PPT would compete well on the basis of IRR, with a cross over point of a WTI price of $ 34 under which Alaska terms would become more competitive.

Chart 6.18 shows how the NPV@10% would be less attractive, but the EMV@10% would be more attractive in Alaska. Much depends in this case on the ability to consolidate in Nigeria.

Chart 6.19 indicates how the government take in Nigeria for low prices is relative low due to the considerable tax credits, at higher prices the government take is only slightly less than in Alaska.

500 MM high cost

Charts 6.21 through 6.24 indicate how for high cost 500 MM barrel fields, Nigerian terms would be more attractive than the Alaska PPT for new investors. Nevertheless, the Alaska PPT narrows the competitive gap compared to the current severance tax.

50 MM low cost

The fiscal comparison for the 50 MM low cost field is similar to the 50 MM high cost field as is indicated in Charts 6.25 through 6.28. However, for the low cost field the EMV@10% values are equal in Nigeria and Alaska.

500 MM low cost

Charts 6.29 through 6.32 indicate that for 500MM low cost fields, Nigeria has typically much more attractive fiscal terms than the Alaska PPT.

Nigeria deep water Conclusion. Alaska competes relatively well with Nigeria on an IRR and EMV@10% basis, in particular for smaller fields, however, the NPV% is more attractive in Nigeria. Also the government take is less and the well head values are considerably higher. For these reasons the Alaska PPT would not be competitive with Nigeria, except for exploration investments in smaller fields.

6.2.5. Alberta – Oil Sands

The Alberta oil sands are the subject of major expansion and investment. This is in part due to an attractive fiscal regime offered by the Province of Alberta. The oil sands plants are often of a scale that is larger than oil field developments on the North Slope. Nevertheless, a fiscal comparison seems important since the Alberta oil sands form one of the most important upstream petroleum investment opportunities in North America. Therefore, for comparative purposes the 50 and 500 MM barrel field comparisons will be provided, in order to provide consistency in the analysis.

Also, of course, the oil sands have already been discovered. Therefore, the EMV analysis is only illustrative.

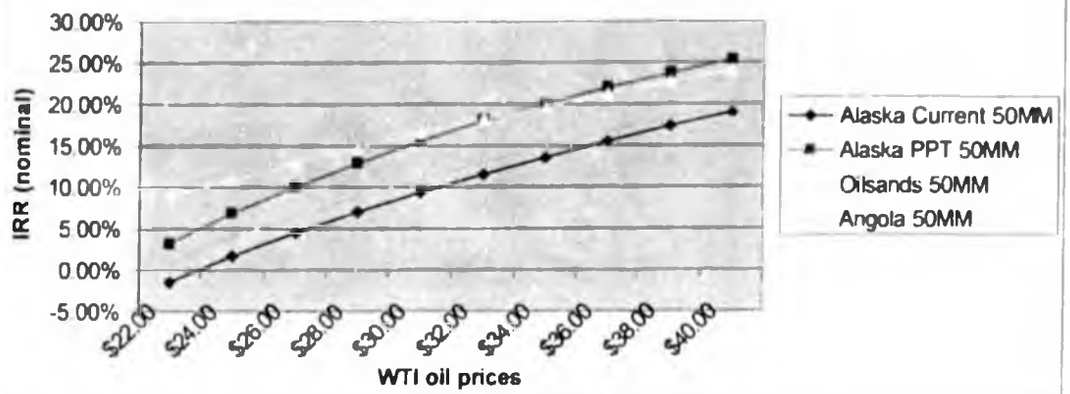
Alberta oil sand terms. The province requires a profit share of 25% after payout or a royalty of 1% whatever is the higher amount. Furthermore Alberta requires rentals and a bonus. The Federal Canadian/Alberta corporate income tax rate is 33.62%. It is assumed that the Alberta oil sand oil has an advantage of US $ 5 per barrel at the delivery point over Alaska North Slope crude.

The province of Alberta and the Federal Government of Canada typically do not provide fiscal stability on their terms.

50 MM high cost

Chart 6.33 shows how the IRR for the Alaska PPT would be rather competitive with Alberta oil sands terms, despite the $ 5 per barrel advantage for the oil sands.

Chart 6.33. IRR for 50 million barrel - low productivity case, high costs, Oilsands and Angola



The NPV@10% is more favorable for the Alberta oil sands for the entire price range. The EMV@10% is less favorable, however, this depends primarily on the respective bonus assumptions.

Chart 6.34. NPV @10% for a 50 million barrel field - low well productivity, high costs, Oilsands and Angola

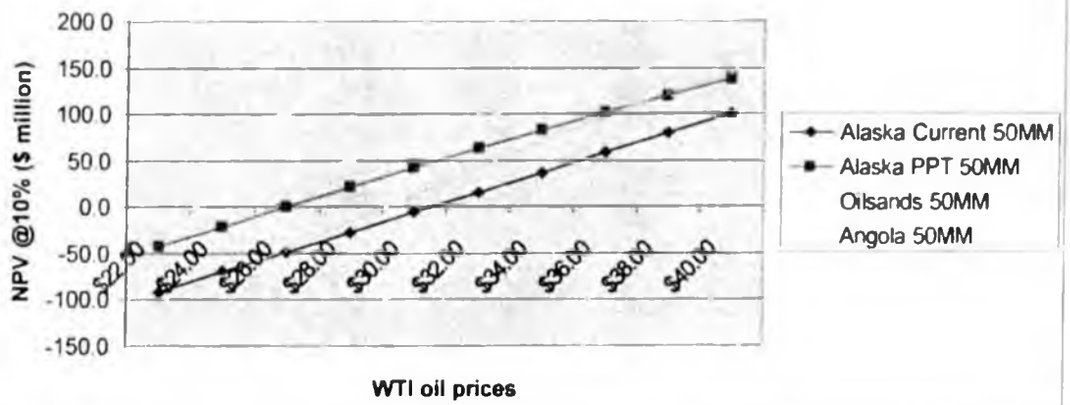
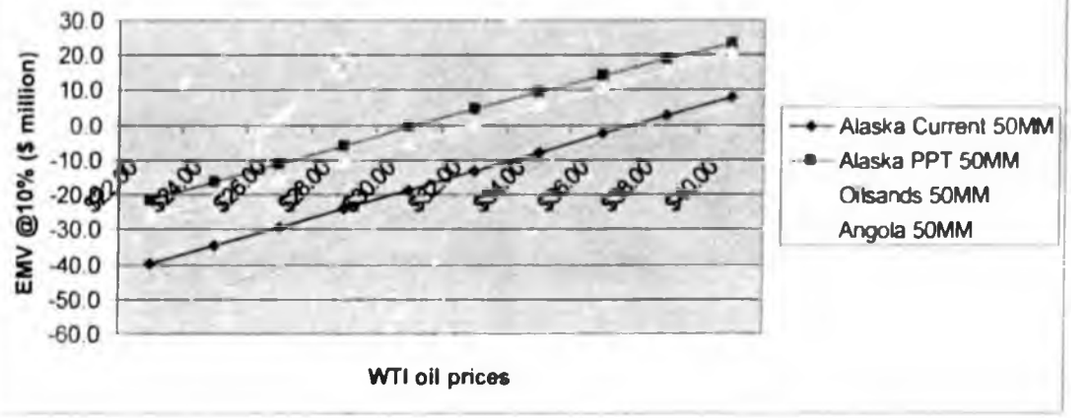
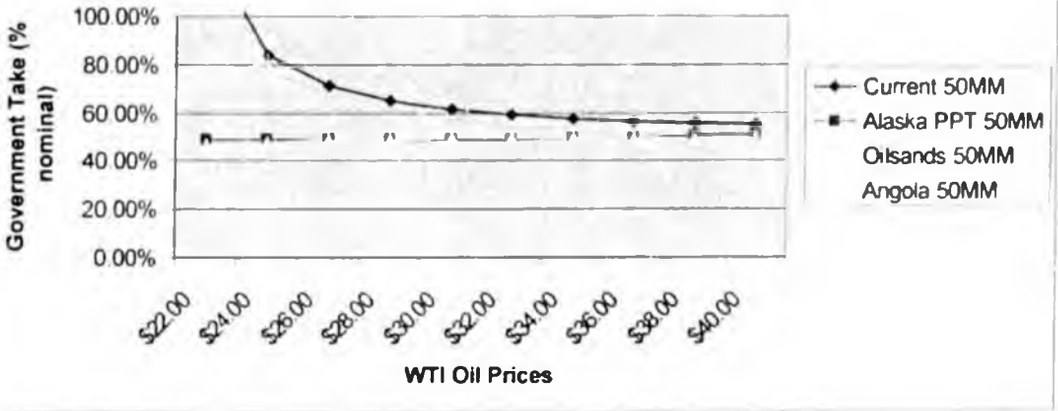


Chart 6.35. EMV @10% for a 50 million barrel field - low well productivity, high costs, Oilsands and Angola



The overall government take is remarkably similar. Therefore the better NPV@10% for the Alberta oil sands is primarily due to the higher net back value of the oil.

Chart 6.36. Overall Government Take for a 50 million barrel field with low well productivities, low costs, Oilsands and Angola



500 MM high cost

Charts 6.37 through 6.40 indicate how the Alberta oil sands economics are better for all indicators for the $ 22 - $ 40 per barrel price range. This is due to the lower government take and the higher net back.

Chart 6.37. IRR of 500 million barrel - high productivity case, high costs, Oilsands and Angola

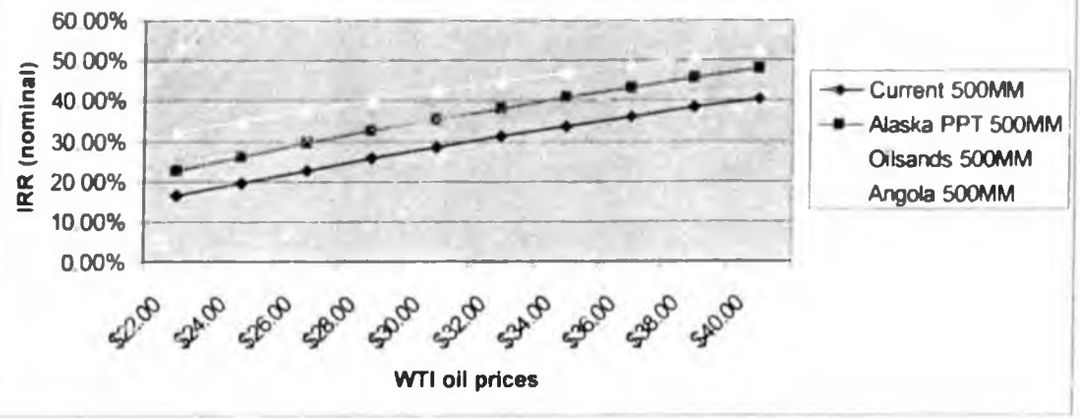


Chart 6.38. NPV @10% for a 500 million barrel field - high well productivity, high costs, Oilsands and Angola

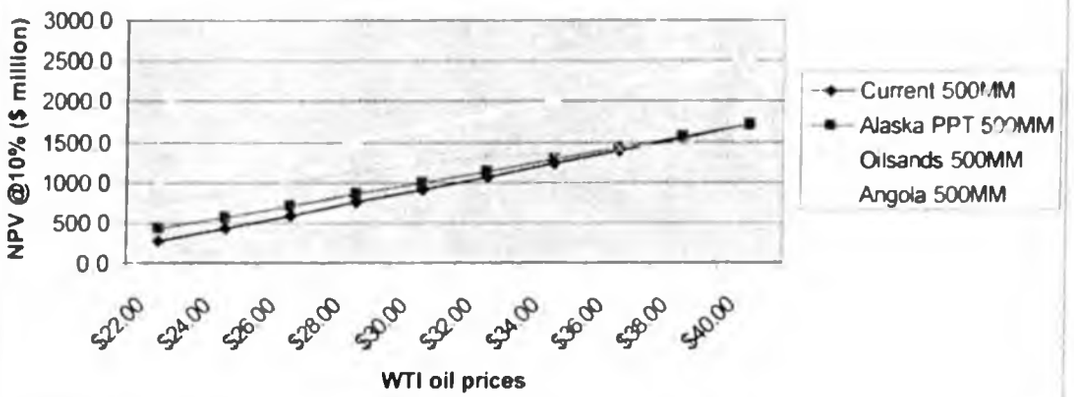


Chart 6.39. EMV @10% values for a 500 million barrel field - high well productivities, high costs, Oilsands and Angola

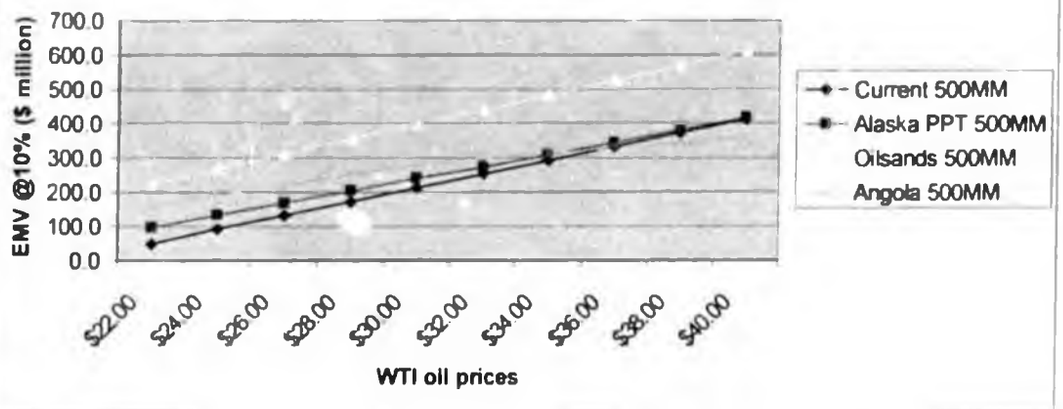
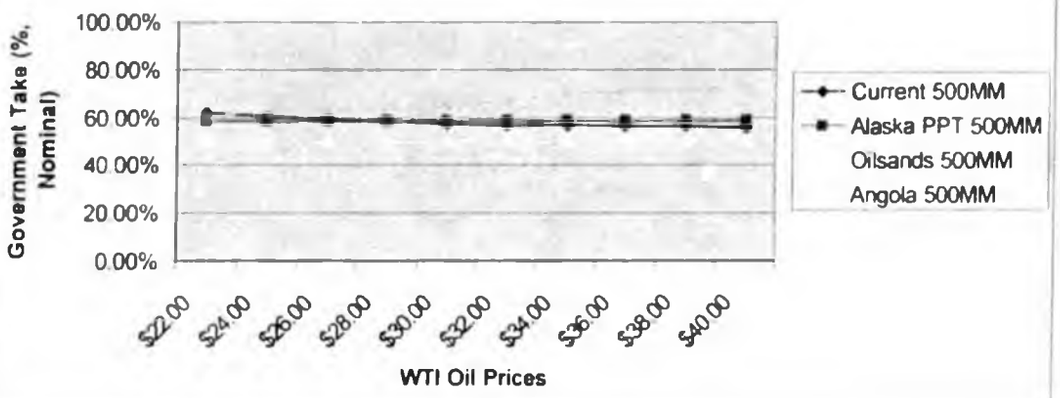


Chart 6.40. Overall Government Take for a 500 million barrel field with high well productivities, high costs, Oilsands and Angola



50 MM low cost

Charts 6.41 through 6.44 indicate about the same economics as for the 50 MM high cost case. The IRR of the Alaska PPT compares rather favorable, the NPV@10% does not, the EMV@10% depends primarily on bonus assumptions and the government take is almost identical.

Chart 6.41. IRR for 50 million barrel - low productivity case, low costs, Oil sands and Angola

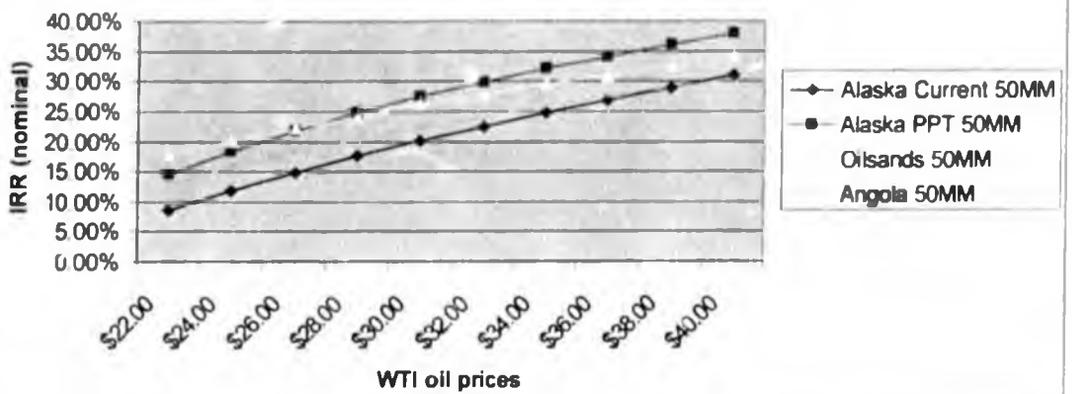


Chart 6.42. NPV @10% for a 50 million barrel field - low well productivity, low costs, Oil Sands and Angola

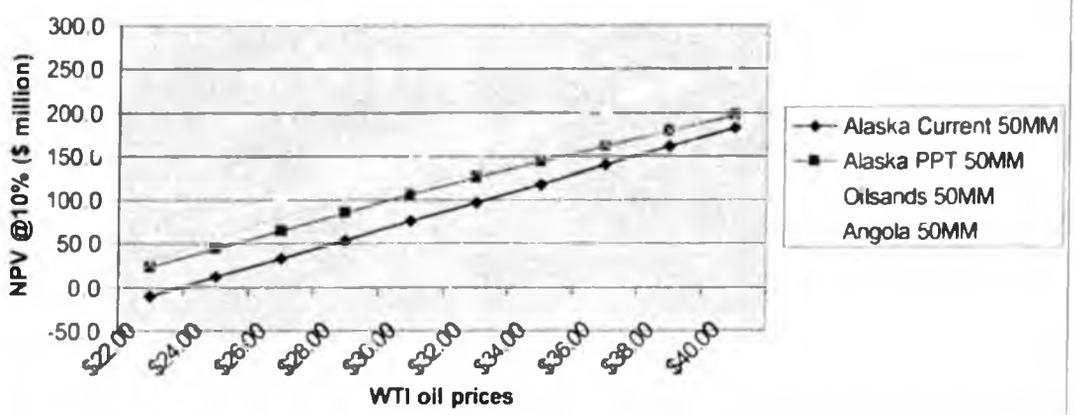


Chart 6.43. EMV @10% for a 50 million barrel field - low well productivity, low costs, Oilsands and Angola

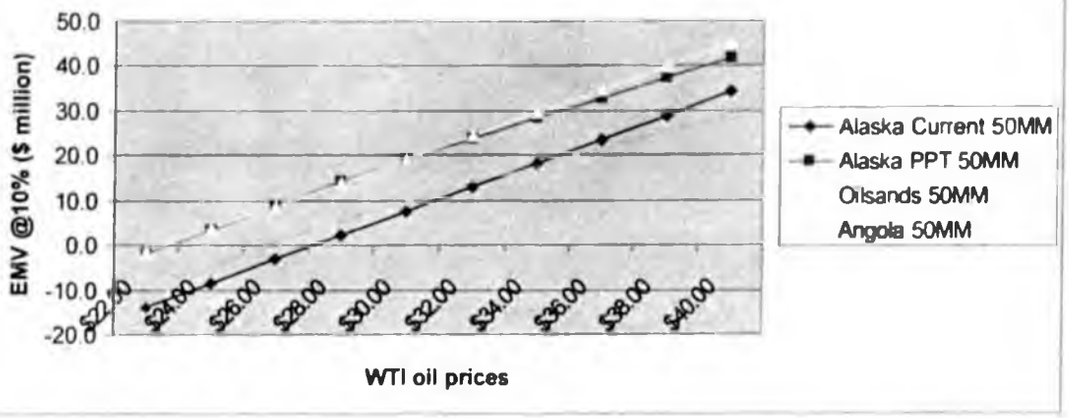
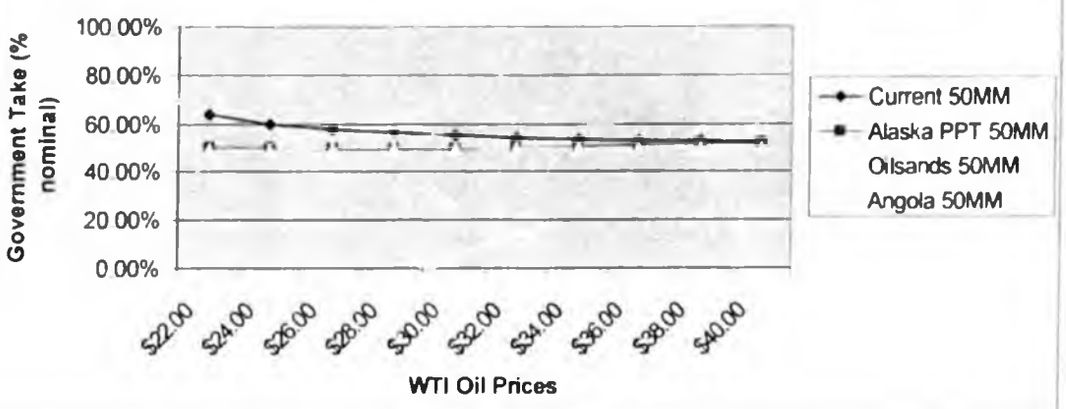


Chart 6.44. Overall Government Take for a 50 million barrel field with low well productivities, low costs, Oilsands and Angola



500 MM low cost

The 500 MM low cost case also indicates more favorable economics for the Alberta oil sands, primarily due to the higher net back and lower government take.

Chart 6.45. IRR of 500 million barrel - high productivity case, low costs, Oilsands and Angola

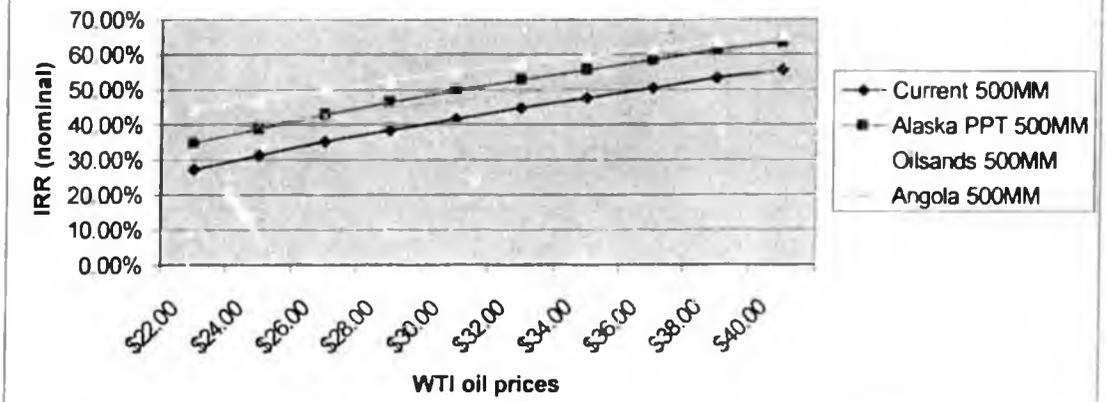
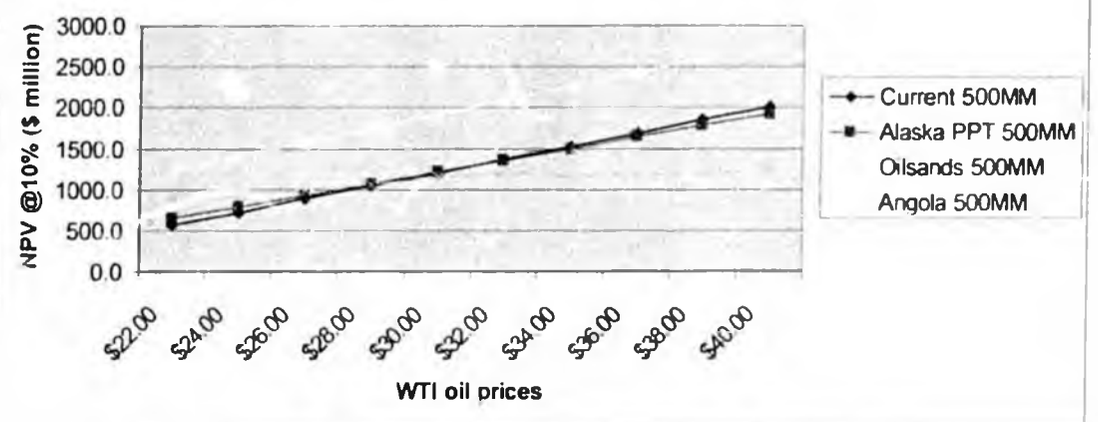
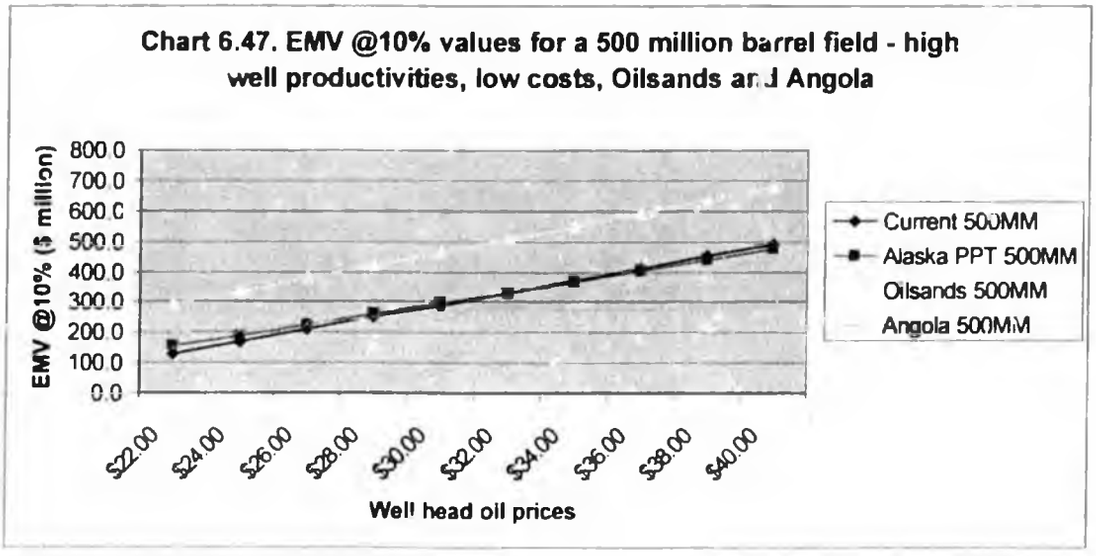
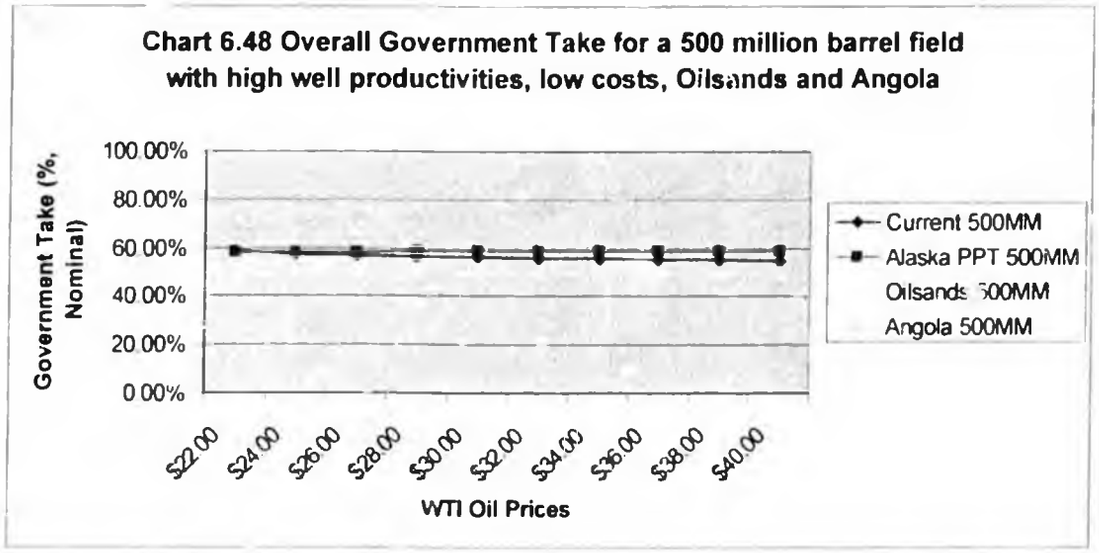


Chart 6.46. NPV @10% for a 500 million barrel field - high well productivity, low costs, Oilsands and Angola







Alberta Oil Sands Conclusion. The Alberta Oil Sands fiscal terms are more favorable than those of the Alaska PPT because the government take for large fields is less and the net back value is higher. For small fields, Alaska PPT and EMV@10% compares relatively favorably.

6.2.6. Angola – Deep offshore

The Angola Deep offshore has been a prime area of development, in particular for large companies that work also in Alaska, such as BP and ExxonMobil. Angola has a rfather progressive system, which in particular under current high oil prices will result eventually in a high government take for most fields, if prices continue. As for Nigeria, in the deep waters offshore Angola, 50 MM barrel fields are not economic. However, for consistency such fields will be reviewed.

Angola terms. The Angolan terms are based on a production sharing agreement. These agreements are different from block to block. Following are representative terms. It is assumed that there is a cost oil limit of 50%. The profit oil is based on an IRR sliding scale and moves from 20% profit oil for government to 80% profit oil for government depending on profitability. There is a 45% uplift on capital expenditures. The corporate income tax is 50%. **It should be noted that very high bonuses were paid for the blocks offshore Angola.** A negative feature of the Angola system is that each development area is ring-fenced for production sharing and tax purposes. It is assumed that Angola has a $ 5 per barrel advantage relative to the Alaska North Slope at the well head.

Angola provides for near complete fiscal stability on its terms.

50 MM high cost

Charts 6.33 through 6.36 show some interesting features. The IRR for the Alaska PPT is much higher than for Angola. This is primarily due to the ring-fenced nature of the Angolan operations. The NPV@10% is higher than the Alaska Current system but less attractive than the Alaska PPT system. The EMV@10% is much better in Alaska, due to the possibility for consolidation in Alaska. The government take is regressive for the small field in the $ 22 - $ 40 price range, despite the progressive sliding scale and follows approximately the Alaska Current system. This is largely due to the cost oil limit.

500 MM high cost

For the 500 MM high the IRR is much better than the Alaska Current system, but straddles the Alaska PPT system. Both for the NPV@10% and the EMV@10% Angola is better than Alaska for low prices but worse than Alaska for high prices. This is due to the progressive nature of the Angolan system. The government take is about equal to Alaska for low prices, but becomes much higher for high prices.

50 MM low cost

The 50 MM low cost field provides for and IRR that is again between the Alaska Current and the Alaska PPT system. The NPV@10% is about equal to the Alaska PPT system. The EMV@10% is about equal to the Alaska Current system. The government take is higher for high prices.

500 MM low cost

The Angolan terms result in an IRR which is between the Alaska Current and Alaska PPT systems. The NPV@10% and EMV@10% become much less at high prices. The government take is considerably higher across the board.

Angola Deep Water Conclusion. The Alaska PPT terms are generally competitive with Angolan terms. The IRR is generally more attractive for the PPT despite the lower net backs. The Alaska PPT is more attractive for larger fields and for high prices. Angola is more attractive for low prices and small fields.

6.2.7. Russia - Sakhalin

The Russia-Sakhalin developments have been very important over the last decade. ExxonMobil and Shell have large projects in Sakhalin. The Sakhalin projects relate to developments of both oil and gas. The projects are very large scale and the fiscal systems that were negotiated for these contracts reflect the nature of these activities. The Sakhalin terms are based on production sharing contracts.

Russia – Sakhalin terms. The Sakhalin terms include a 6% royalty, a 32% corporate income tax and a production sharing agreement based on an after tax rate of return based sliding scale. There is no cost oil limit under the contract. The sliding scale moves the profit oil share earned by the government upward in three steps based on the real after tax rate of return. The steps are as follows:

Up to 17.5% IRR	- 10% to government
Up to 24% IRR	- 50% to government
Over 24% IRR	- 70% to government

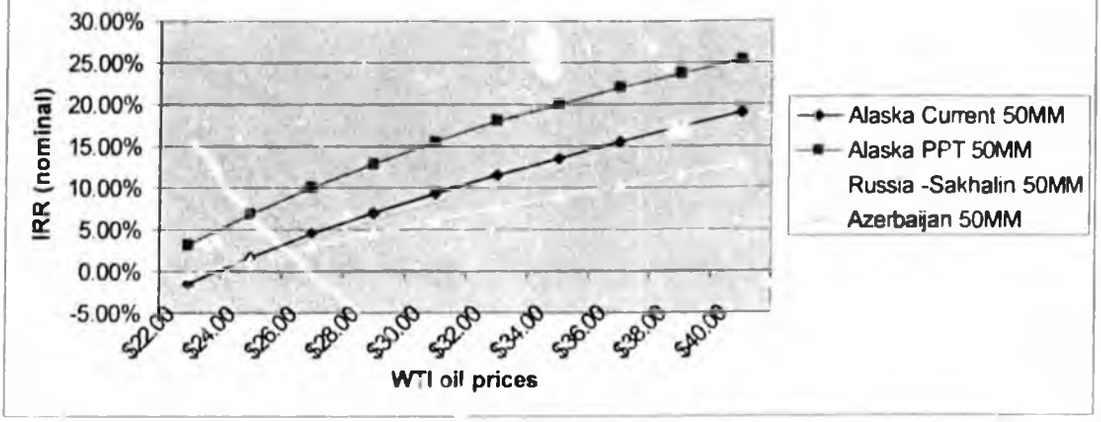
It should be noted that a high bonus was paid on the Sakhalin contract, in the Shell contract this was a $ 55 million bonus. As states previously this bonus is not taken into consideration. The Sakhalin project involved considerable expenditures for local costs. These costs have been included.

Russia provides for a high degree of fiscal stability on its production sharing contracts.

50 MM high cost

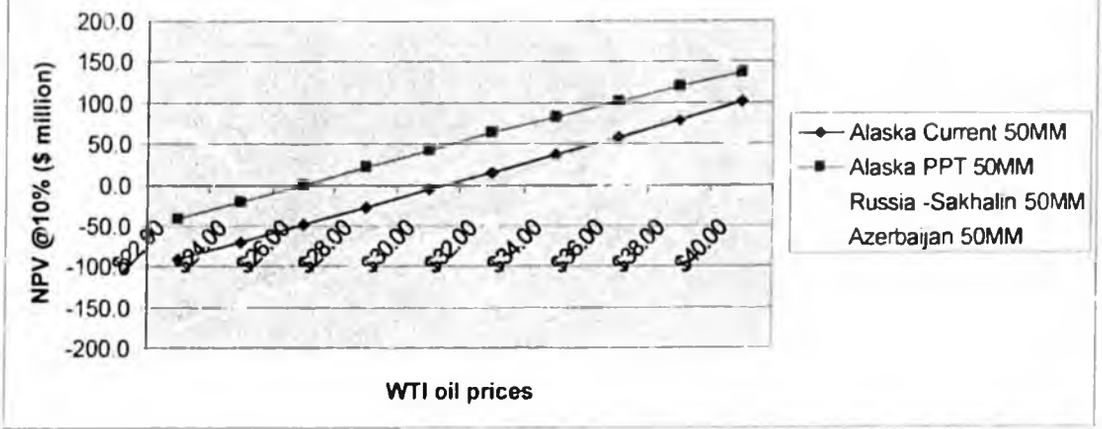
Chart 6.49 shows how the Sakhalin contracts have a rate of return that is much less than the Alaska Current system and the Alaska PPT. This is in part due to the high social expenditures required during the construction phase. For very low prices, Alaska Current becomes less attractive because of the low net back values.

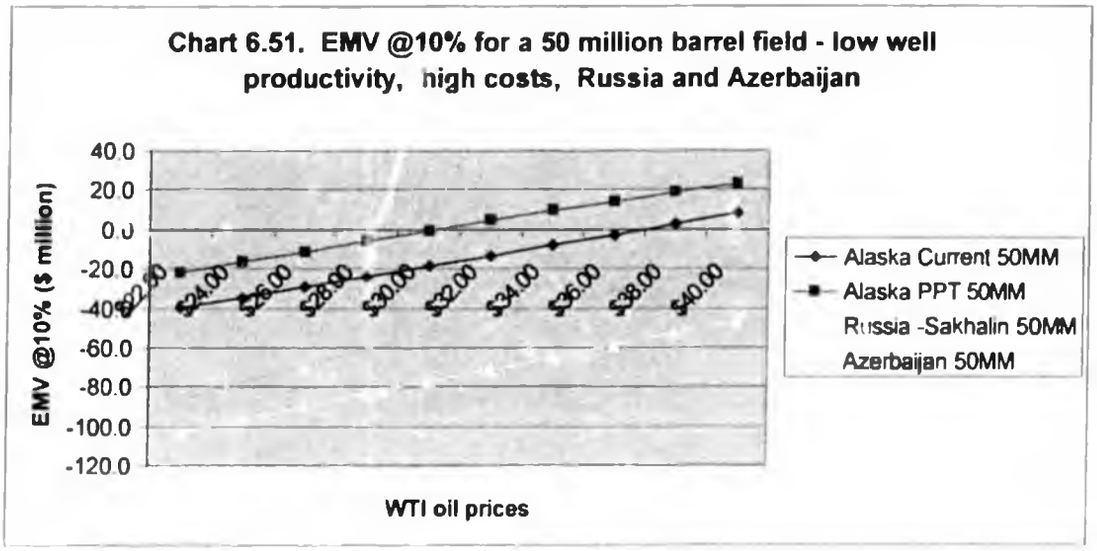
Chart 6.49. IRR for 50 million barrel - low productivity case, high costs, Russia and Azerbaijan



The NPV@10% and the EMV@10% are substantially less favorable than Alaska.

Chart 6.50. NPV @10% for a 50 million barrel field - low well productivity, high costs, Russia and Azedrbaijan





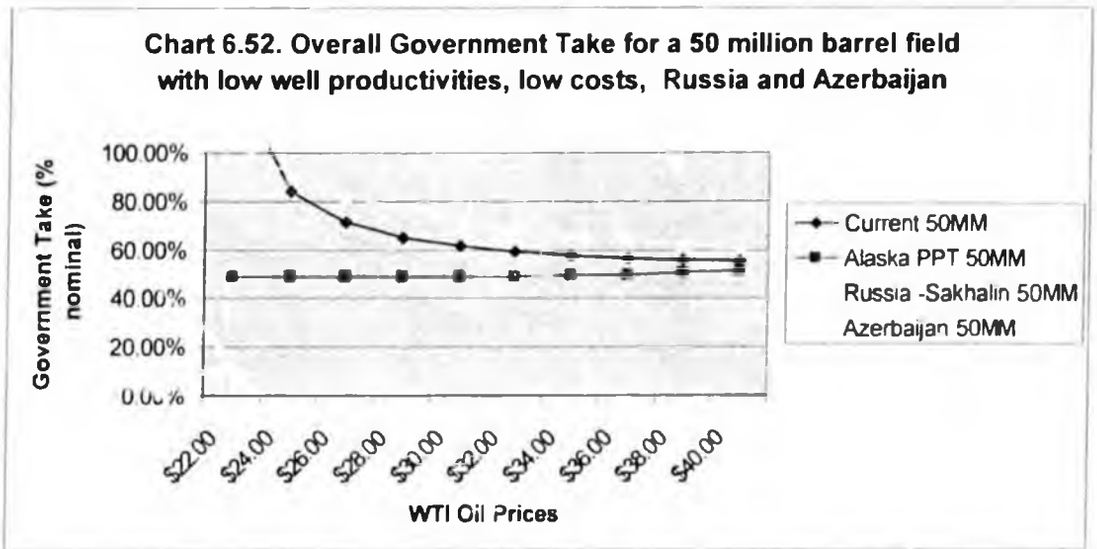


Chart 6.52 shows how the Russian system for small fields is rather regressive, primarily due to the high social expenditures. The Russion system is not designed for small fields.

500 MM high cost

Charts 6.53 through 6.56 indicate how the high government take over high rates of return result in a much flatter IRR, NPV and EMV curve than for Alaska. For large fields, Alaska is less attractive than Russia at low prices, but at higher prices Alaska becomes rapidly more attractive.

Chart 6.53. IRR of 500 million barrel - high productivity case, high costs, Russia and Azerbaijan

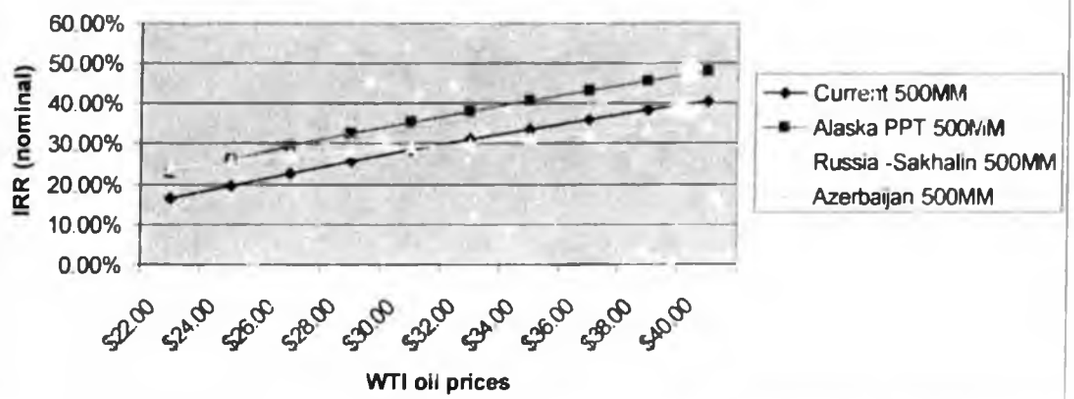
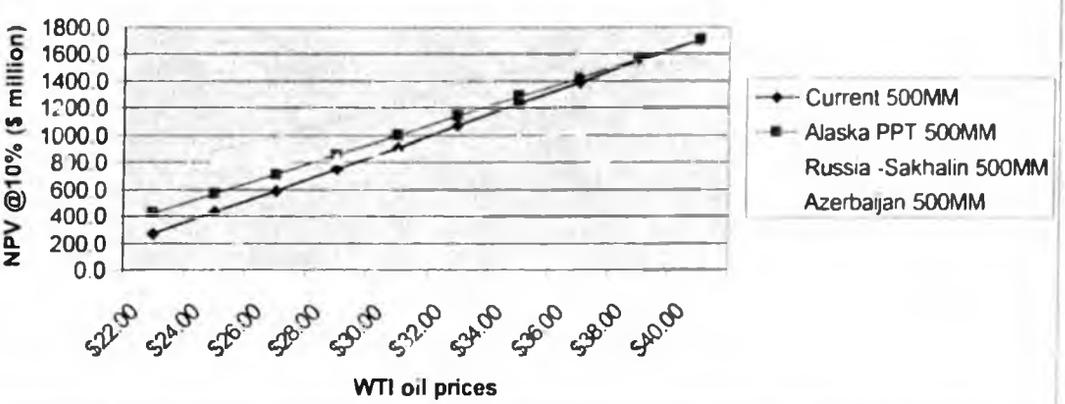
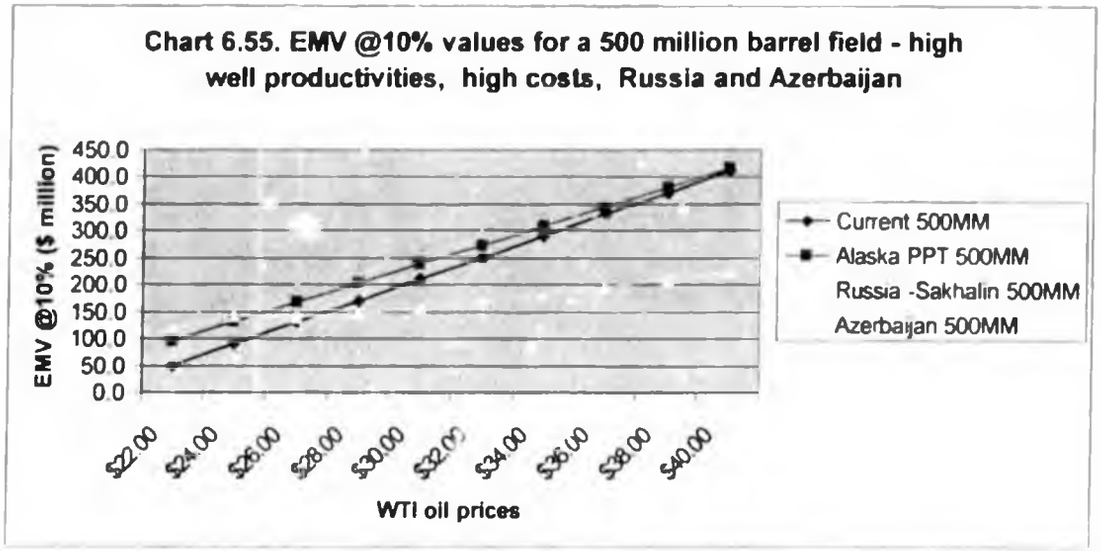
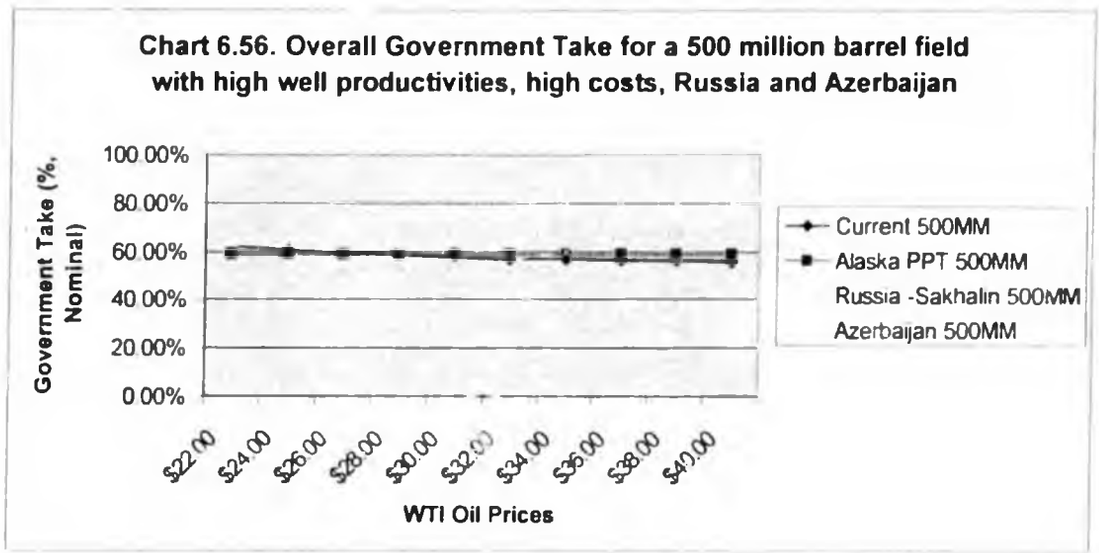


Chart 6.54. NPV @10% for a 500 million barrel field - high well productivity, high costs, Russia and Azerbaijan





The strongly progressive Russian system is clearly illustrated in Chart 6.56.



50 MM low cost

Charts 6.57 through 6.60 indicate about the same economics as for the 50 MM high cost case. The Russian system is clearly less attractive than the Alaska system for small fields, whether it is the current system of the PPT. Also the system is regressive.

Chart 6.57. IRR for 50 million barrel - low productivity case, low costs, Russia and Azerbaijan

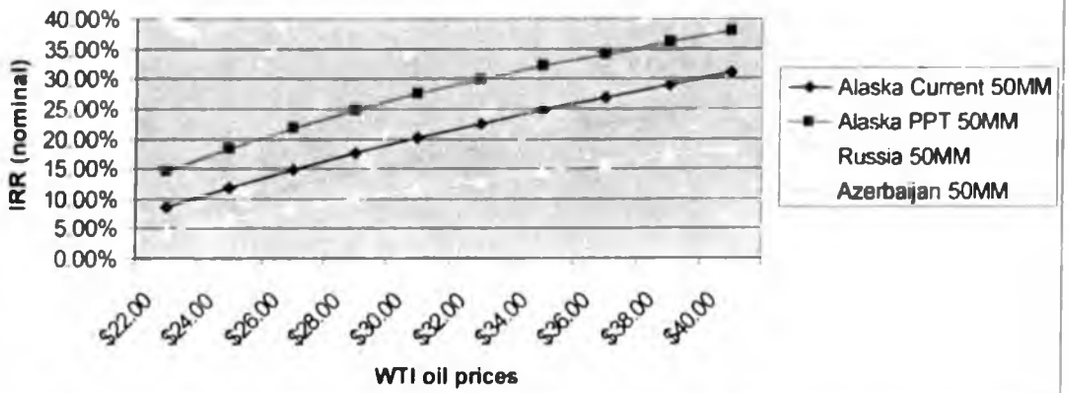


Chart 6.58. NPV @10% for a 50 million barrel field - low well productivity, low costs, Russia and Azerbaijan

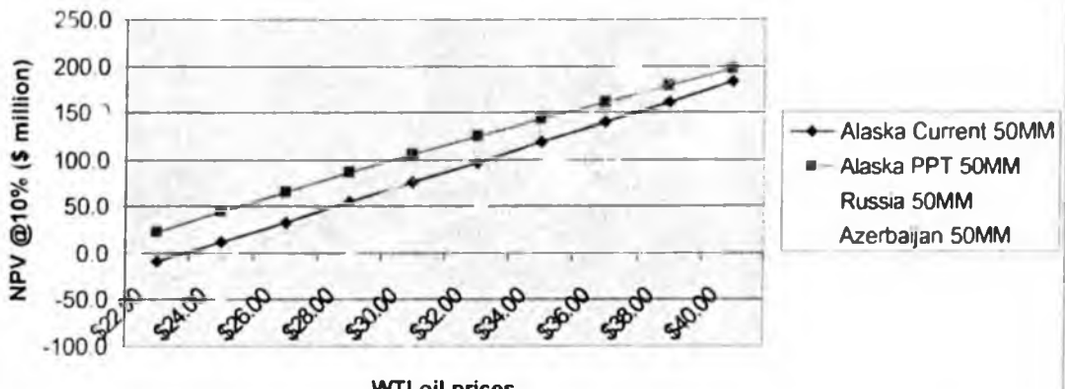


Chart 6.59. EMV @10% for a 50 million barrel field - low well productivity, low costs, Russia and Azerbaijan

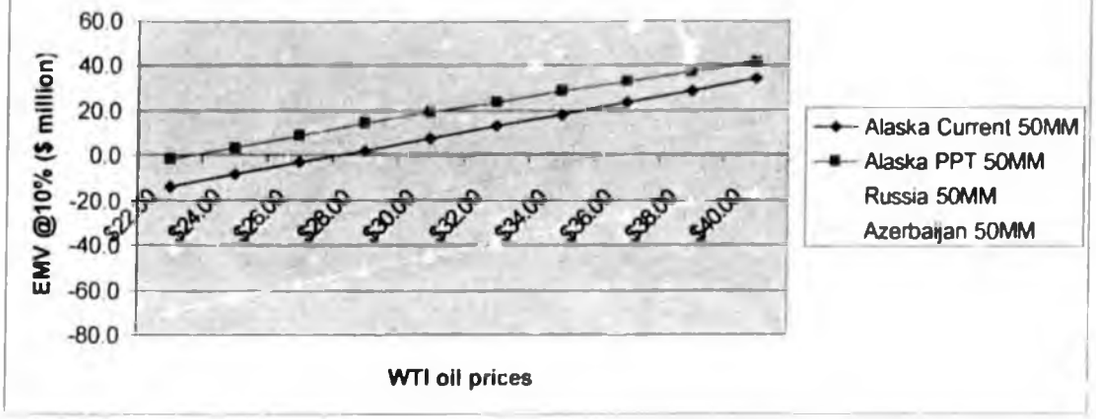
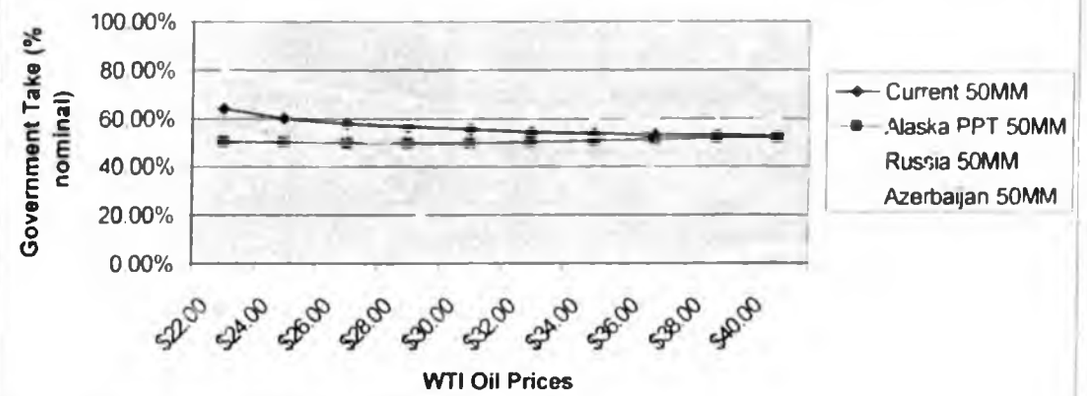


Chart 6.60. Overall Government Take for a 50 million barrel field with low well productivities, low costs, Russia and Azerbaijan



500 MM low cost

Charts 6.61 through 6.64 indicates how the Russian system is much less attractive than the Alaska system for the low cost case. This is because the low cost result in a situation where the rate of return benchmarks are reached earlier in time and therefore the profit oil shares for the government increase more rapidly.

Chart 6.61. IRR of 500 million barrel - high productivity case, low costs, Russia and Azerbaijan

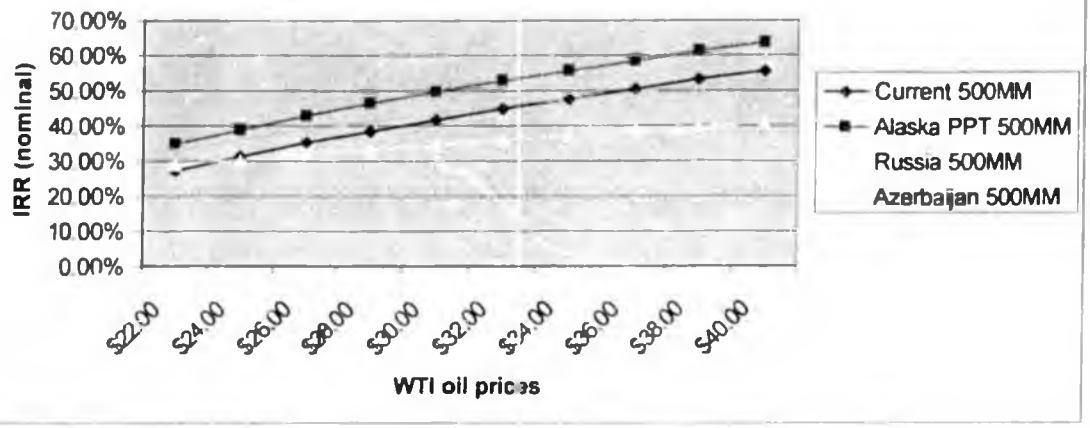


Chart 6.62 NPV @10% for a 500 million barrel field - high well productivity, low costs, Russia and Azerbaijan

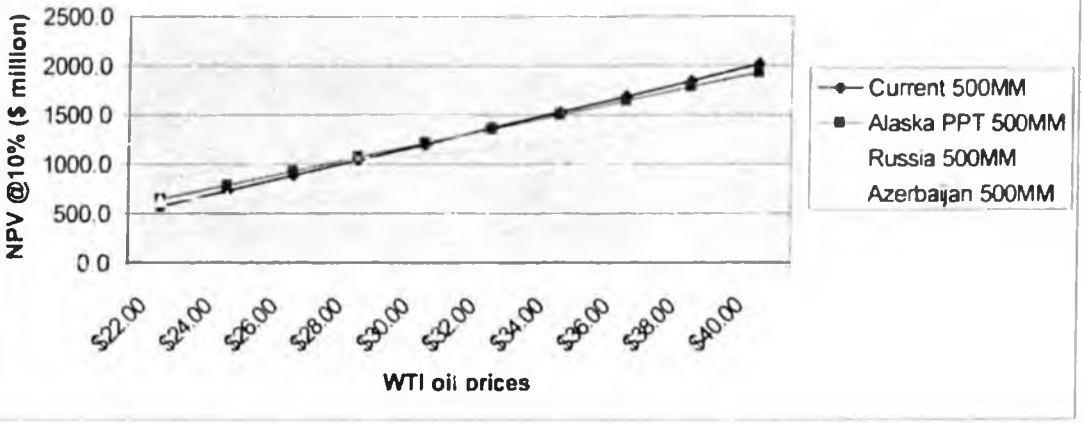


Chart 6.63. EMV @10% values for a 500 million barrel field - high well productivities, low costs, Russia and Azerbaijan

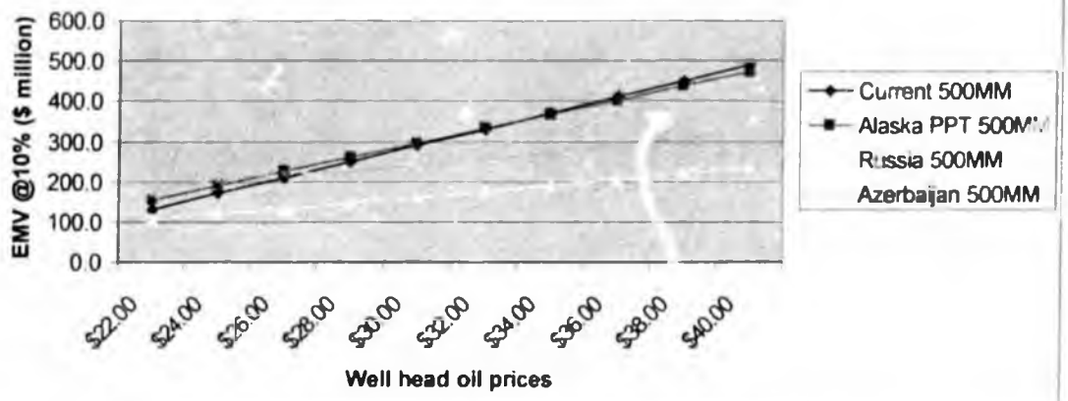
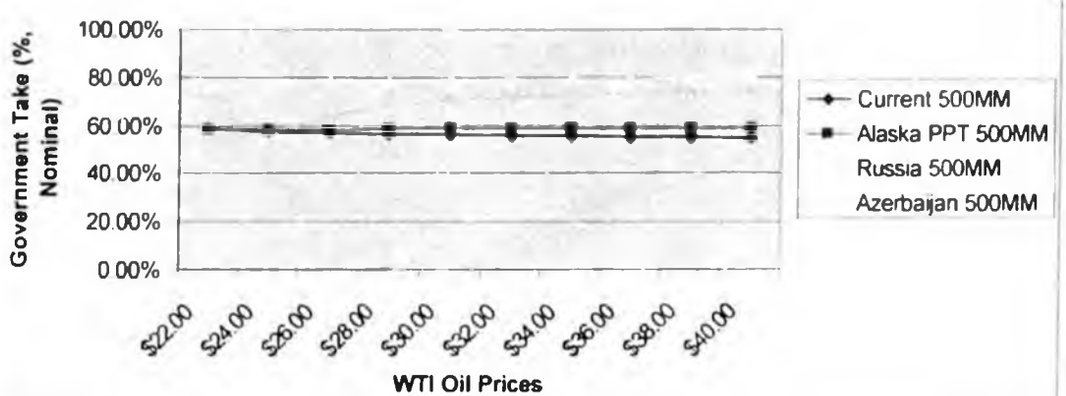


Chart 6.64 Overall Government Take for a 500 million barrel field with high well productivities, low costs, Russia and Azerbaijan



Russia-Sakhalin Conclusion. The Russian system is designed for large fields and is not attractive for small fields compared to Alaska. In general, under average or high oil prices and low costs, the rate of return based system creates conditions of a high government take in Russia. This makes Alaska more competitive. The PPT increases the competitiveness relative to Russia.

6.2.8. Azerbaijan

Azerbaijan represents a very important new oil development for the petroleum industry. Just as Alaska, Azerbaijan has to export its crude through long distance and costly pipeline systems and therefore the net back price for its crudes is relatively low. It is therefore an important country to compare with. Azerbaijan concludes its terms through production sharing agreements.

Azerbaijan terms. Azerbaijan does not have royalties. There is a 25% corporate income tax. Furthermore there is a production sharing arrangements. The cost oil limit is 50% for capital expenditures. Operating costs are not subject to the limit. The profit oil is based on an IRR based sliding scale which related to a real after tax IRR. This sliding scale is based on the pipeline transport costs. Higher transport costs result in a lower scale. It is assumed here that the transport costs are in excess of $ 4 per barrel. For these costs, the following scale of profit oil to government is being used:

Up to a real IRR of 16 [illegible]% - 20% profit oil to government
Up to a real IRR of 24.75% - 50% profit oil to government
Over a real IRR of 24.75% - 75% profit oil to government

The national oil company SOCAR participates for 20% in the venture, but this is almost on a "straight up" basis and therefore this is participation is not included in the government take.

There was a bonus of $ 120 million on the project. However, that bonus is excluded for analysis as explained in the beginning of this Chapter. A sequence of social expenditures was included.

Azerbaijan provides near absolute fiscal stability on its fiscal terms.

50 MM high cost

Chart 6.49 shows how the IRR and NPV@10% in Azerbaijan is generally worse than the Alaska Current system and in particular relative to the Alaska PPT. But the Alaska PPT is fare more favorable than Azerbaijan.

The EMV@10% is far less favorable in Azerbaijan, due to the ring-fenced nature of the production sharing agreement and the social expenditures.

The government take in Azerbaijan for small high cost fields is regressive, because the higher benchmarks on the IRR sliding scale do not click in.

500 MM high cost

For a high cost field, the IRR feature works rather favorable under low prices (with very low netbacks). Therefore, IRR is between the PPT and the Alaska Current system. The NPV@10% and the EMV@10% are actually more favorable under low prices than the Alaska PPT due to the relatively low government take at low prices, but these indicators become more favorable for Alaska at higher prices..

As can be seen from Chart 6.56 the government take is rather progressive. It is less than Alaska for low prices and becomes about higher than Alaska at high prices for this large field.

50 MM low cost

The 50 MM low cost field has about the same characteristics as the high cost field. The NPV performance worse than the PPT and has a cross over with the Alaska Current system.

500 MM low cost

Under low cost conditions, the government take under the Azerbaijan terms becomes strongly progressive. Therefore, compared to the high cost case, the IRR, NPV@10% and EMV@10% all become considerable less than the PPT for high prices.

Azerbaijan conclusion. The system is strongly progressive with costs and prices. Therefore under low cost and high price conditions the PPT is far more favorable than the system in Azerbaijan for investors. Under low prices and high costs, the system in Azerbaijan is more favorable. It should be noted that the production sharing contract was designed for large fields.

7. INTERNATIONAL RATING OF THE ALASKA PETROLEUM PROFITS TAX ("PPT")

(Note: After the initial scoping a PPT tax rate of 20% and a credit rate of 15% seemed a reasonable combination. Therefore much economic work was done on this combination. As a result of subsequent work it was concluded that a 25% tax rate and 20% tax credit rate is more in the interest of Alaska. Nevertheless in the interest of providing the maximum information about the PPT it was considered desirable to leave the Chapters that were based on the 20% tax rate and 15% credit rate in the report. These are Chapters 4,5,6,7 and 8. Chapter 9,10 and 11 are based on the recommended fiscal terms.)

7.1. Introduction

This chapter contains an rating analysis of the Alaska PPT in order to evaluate in more detail the actual improvement in competitiveness that this fiscal change would create.

The rating is done by comparing in detail the economic results of the 8 world fiscal systems evaluated in Chapter 6.

The same fields will be used for the rating analysis, based on the high and the low cost cases. However, three of the fields were selected for the analysis:

- 50 MM barrels with low well productivities
- 150 MM barrels with low well productivities
- 500 MM barrels with high well productivities

The rating is done for two price levels:

- a WTI price of $ 26 per barrel
- a WTI price of $ 36 per barrel

These two levels reflect approximately the long term average price range that some oil companies may use to evaluate opportunities in Alaska. Large international major oil companies may still use lower prices in the $ 25 to $ 30 price range, but many of the large and medium sized oil companies have now shifted to higher levels of long term price expectation. Therefore, this price range may be representative of possible new investors in Alaska.

The rating will be based on the PPT for new investors, which means including the tax free allowance.

The same weighting was given to the 50 MM, 150 MM and 500 MM fields. This implies that the distribution of field sizes will be logarithmic. In other words a typical distribution is ten 50 MM barrel fields, about three 150 MM barrel fields and one 500 MM barrel field. This is a fairly representative distribution for the North Slope.

7.2. IRR rating

Table 7.1 and 7.2 summarize the IRR results that were obtained for the 10 fiscal systems.

Table 7.1

IRR	50MM $26 high	50MM $36 high	150MM $26 high	150MM $36 high	500MM $26 high	500MM $36 high
Alaska Current	4.54%	15.47%	9.69%	20.67%	22.76%	36.00%
Alaska PPT	9.98%	21.96%	14.35%	25.44%	29.38%	43.29%
Norway	11.75%	17.98%	15.38%	21.47%	26.06%	33.54%
UK	13.50%	22.17%	18.81%	28.12%	37.13%	48.90%
US GOM	15.51%	23.84%	21.04%	30.47%	38.26%	49.52%
Nigeria	13.73%	21.76%	19.12%	27.99%	35.45%	45.82%
Alberta-Oil Sands	12.84%	21.21%	19.07%	28.50%	37.75%	48.91%
Angola	6.46%	16.68%	13.08%	22.80%	30.67%	40.80%
Russia-Sakhalin	3.02%	10.30%	12.69%	20.40%	26.98%	32.49%
Azerbaijan	3.79%	13.72%	11.21%	21.84%	28.71%	39.85%

Table 7.2

IRR	50MM $26 low	50MM $36 low	150MM $26 low	150MM $36 low	500MM $26 low	500MM $36 low
Alaska Current	14.75%	26.91%	19.92%	32.93%	35.07%	50.47%
Alaska PPT	21.63%	34.06%	25.25%	38.45%	42.70%	58.54%
Norway	19.22%	26.48%	22.79%	30.17%	35.20%	44.27%
UK	23.99%	34.01%	30.16%	41.32%	51.42%	64.73%
US GOM	25.83%	34.93%	32.83%	43.48%	52.26%	64.49%
Nigeria	23.13%	31.51%	29.49%	39.30%	47.59%	59.20%
Alberta-Oil Sands	22.15%	31.09%	29.74%	40.20%	50.07%	61.77%
Angola	18.26%	27.44%	24.39%	34.47%	42.38%	52.36%
Russia-Sakhalin	8.21%	15.91%	19.70%	25.58%	31.90%	38.34%
Azerbaijan	11.95%	22.34%	20.70%	31.69%	38.90%	49.49%

Tables 7.3 and 7.4 rank these results from "1" to "10". In other words the highest IRR is number "1" and the lowest IRR is number "10"

The total ranking for the IRR is done by simply adding the ranking numbers. The last column in table 7.4 provides the total for the high and the low cases. The lower the number the more attractive the fiscal system is for investors.

The competitiveness index for the IRR indicates the relative competitiveness of the 10 fiscal systems related to each other, based on 6 fields for the high and low cost scenarios. If the IRR rates best in all 10 of them, the index is 12 (1 x 6 x 2 = 12). If the system rates worst in all of them, the index is 120 (10 x 6 x 2 = 120).

The US Gulf of Mexico is the most attractive system with a number 13. The Russia-Sakhalin agreement is the least attractive system with a number 116. The Alaska Current system is the next least attractive with a score of 100. The Alaska PPT improves the number to 58. In other words with respect to the IRR, the Alaska PPT improves the competitive position from a # 9 ranking for the current severance tax to a # 5 ranking among 10 fiscal systems. This means that the PPT improves the Alaska terms considerably from an IRR point of view.

Table 7.3

IRR	50MM $26 high	50MM $36 high	150MM $26 high	150MM $36 high	500MM $26 high	500MM $36 high	Subtotal
Alaska Current	8	8	10	9	10	8	53
Alaska PPT	6	3	6	5	6	5	31
Norway	5	6	5	8	9	9	42
UK	3	2	4	3	3	3	18
US GOM	1	1	1	1	1	1	6
Nigeria	2	4	2	4	4	4	20
Alberta-Oil Sands	4	5	3	2	2	2	18
Angola	7	7	7	6	5	6	38
Russia-Sakhalin	10	10	8	10	8	10	56
Azerbaijan	9	9	9	7	7	7	48

Table 7.4

IRR	50MM $26 low	50MM $36 low	150MM $26 low	150MM $36 low	500MM $26 low	500MM $36 low	Subtotal	TOTAL for high and low
Alaska Current	8	7	9	7	9	7	47	100
Alaska PPT	5	2	5	5	5	5	27	58
Norway	6	8	7	9	8	9	47	89
UK	2	3	2	2	2	1	12	30
US GOM	1	1	1	1	1	2	7	13
Nigeria	3	4	4	4	4	4	23	43
Alberta-Oil Sands	4	5	3	3	3	3	21	39
Angola	7	6	6	6	6	6	37	75
Russia-Sakhalin	10	10	10	10	10	10	60	116
Azerbaijan	9	9	8	8	7	8	49	97

7.3. NPV @10% rating

Tables 7.5 through 7.8 provide the same analysis for the NPV@10%. It can be seen how the Alaska Current system would rank # 8 and the Alaska PPT would rank # 7 under the 10 fiscal systems. The relative competitiveness improvement of the PPT relative to the Current System is moderate for the PPT. This is caused by the fact that the government take under high prices is higher for the PPT.

Table 7.5

NPV @10%	50MM $26 high	50MM $36 high	150MM $26 high	150MM $36 high	500MM $26 high	500MM $36 high
Alaska Current	-48.6	57.8	-7.1	281.2	589.0	1390.5
Alaska PPT	-0.1	101.5	78.6	317.6	711.1	1423.9
Norway	11.0	56.5	90.4	214.9	590.9	970.4
UK	35.5	139.0	220.5	503.5	1365.4	2228.0
US GOM	71.4	205.8	322.6	677.8	1667.2	2685.6
Nigeria	45.3	151.0	245.7	519.0	1273.8	2045.1
Alberta-Oil Sands	30.3	135.5	220.0	504.3	1338.6	2201.0
Angola	-45.2	98.6	97.1	391.2	1003.0	1420.6
Russia-Sakhalin	-119.8	5.7	95.6	366.0	797.5	1023.3
Azerbaijan	-91.5	59.3	38.4	409.1	990.2	1476.6

Table 7.6

NPV @10%	50MM $26 low	50MM $36 low	150MM $26 low	150MM $36 low	500MM $26 low	500MM $36 low
Alaska Current	33.2	139.7	172.9	461.2	885.4	1687.0
Alaska PPT	64.9	161.2	211.0	447.8	928.7	1638.9
Norway	44.5	90.0	163.2	287.7	709.3	1081.8
UK	109.1	212.5	381.8	664.8	1628.0	2490.6
US GOM	163.5	297.8	522.4	877.6	1993.5	3012.0
Nigeria	114.0	210.0	381.0	641.2	1465.5	2232.0
Alberta-Oil Sands	102.6	206.2	372.3	655.6	1580.3	2439.5
Angola	81.3	164.1	290.3	493.5	991.6	1176.3
Russia-Sakhalin	-25.9	95.5	260.0	379.8	729.2	1026.7
Azerbaijan	22.2	155.6	256.8	511.3	1023.5	1312.7

Table 7.7

NPV @10%	50MM $26 high	50MM $36 high	150MM $26 high	150MM $36 high	500MM $26 high	500MM $36 high	Subtotal
Alaska Current	8	8	10	9	9	8	**52**
Alaska PPT	6	5	8	8	8	6	**41**
Norway	5	9	7	10	10	10	**51**
UK	3	3	3	4	2	2	**17**
US GOM	1	1	1	1	1	1	**6**
Nigeria	2	2	2	2	4	4	**16**
Alberta-Oil Sands	4	4	4	3	3	3	**21**
Angola	7	6	5	6	5	7	**36**
Russia-Sakhalin	10	10	6	7	7	9	**49**
Azerbaijan	9	7	9	5	6	5	**41**

Table 7.8 NPV @10%	50MM $26 low	50MM $36 low	150MM $26 low	150MM $36 low	500MM $26 low	500MM $36 low	Subtotal	TOTAL for high and low
Alaska Current	8	8	9	7	8	5	45	97
Alaska PPT	6	6	8	8	7	6	41	82
Norway	7	10	10	10	10	9	56	107
UK	3	2	2	2	2	2	13	30
US GOM	1	1	1	1	1	1	6	12
Nigeria	2	3	3	4	4	4	20	36
Alberta-Oil Sands	4	4	4	3	3	3	21	42
Angola	5	5	5	6	6	8	35	71
Russia-Sakhalin	10	9	6	9	9	10	53	102
Azerbaijan	9	7	7	5	5	7	40	81

7.4. EMV @10% rating

Tables 7.9 through 7.12 provide the analysis for the EMV@10%. From an EMV perspective, the Alaska current system would rank # 8 and the Alaska PPT would rank # 5. The EMV improvement for the PPT is due to a large extent to the tax credits which have a significant impact on the EMV. The PPT improvement therefore is very significant for explorers.

Table 7.9 EMV @10%	50MM $26 high	50MM $36 high	150MM $26 high	150MM $36 high	500MM $26 high	500MM $36 high
Alaska Current	-29.3	-2.7	-18.9	53.2	130.1	330.5
Alaska PPT	-11.2	14.2	8.5	68.3	166.6	344.8
Norway	-3.7	7.6	16.1	47.2	141.2	236.1
UK	-6.0	19.9	40.3	111.0	326.5	542.2
US GOM	-12.7	20.9	50.1	138.9	386.2	640.8
Nigeria	-17.8	8.6	32.3	100.6	289.3	482.1
Alberta-Oil Sands	-15.7	10.6	31.7	102.8	311.4	527.0
Angola	-40.4	-4.5	-4.9	68.7	221.6	326.0
Russia-Sakhalin	-90.1	-58.7	-36.2	31.4	139.2	195.7
Azerbaijan	-68.9	-31.2	-36.4	56.2	201.5	323.1

Table 7.10

EMV @10%	50MM $26 low	50MM $36 low	150MM $26 low	150MM $36 low	500MM $26 low	500MM $36 low
Alaska Current	-3.1	23.5	31.8	103.9	209.9	410.3
Alaska PPT	8.8	32.9	45.3	104.5	224.8	402.3
Norway	6.8	18.2	36.4	67.6	173.0	267.9
UK	17.3	43.2	85.5	156.2	397.0	612.7
US GOM	20.0	53.6	109.7	198.5	477.5	732.1
Nigeria	9.1	33.1	75.8	140.9	347.0	538.6
Alberta-Oil Sands	8.8	34.7	76.2	147.1	378.2	593.0
Angola	0.9	21.6	53.1	103.9	228.5	274.6
Russia-Sakhalin	-56.9	-25.5	14.6	44.5	131.9	206.3
Azerbaijan	-30.8	2.6	27.9	91.5	219.5	291.8

Table 7.11

EMV @10%	50MM $26 high	50MM $36 high	150MM $26 high	150MM $36 high	500MM $26 high	500MM $36 high	Subtotal
Alaska Current	7	7	8	8	10	6	**46**
Alaska PPT	3	3	6	6	7	5	**30**
Norway	1	6	5	9	8	9	**38**
UK	2	2	2	2	2	2	**12**
US GOM	4	1	1	1	1	1	**9**
Nigeria	6	5	3	4	4	4	**26**
Alberta-Oil Sands	5	4	4	3	3	3	**22**
Angola	8	8	7	5	5	7	**40**
Russia-Sakhalin	10	10	9	10	9	10	**58**
Azerbaijan	9	9	10	7	6	8	**49**

Table 7.12

EMV @10%	50MM $26 low	50MM $36 low	150MM $26 low	150MM $36 low	500MM $26 low	500MM $36 low	Subtotal	TOTAL for high and low
Alaska Current	8	6	8	7	8	5	**42**	**88**
Alaska PPT	5	5	6	5	6	6	**33**	**63**
Norway	6	8	7	9	9	9	**48**	**86**
UK	2	2	2	2	2	2	**12**	**24**
US GOM	1	1	1	1	1	1	**6**	**15**
Nigeria	3	4	4	4	4	4	**23**	**49**
Alberta-Oil Sands	4	3	3	3	3	3	**19**	**41**
Angola	7	7	5	6	5	8	**38**	**78**
Russia-Sakhalin	10	10	10	10	10	10	**60**	**118**
Azerbaijan	9	9	9	8	7	7	**49**	**98**

7.5. Government Take rating

Tables 7.13 through 7.16 show the attractiveness of the government take to investors. In this case, of course, the lower the government take is the more attractive the fiscal system is for investors. So here a "1" is given for the lowest government take and an "10" is provided for the highest government take.

The Alaska current system ranks # 7. Alaska needs a somewhat better government take in order to compensate for the low net back.

The PPT for new investors, with the tax free allowance, would on an overall basis be slightly less because of the government take improves strongly on small fields and higher government take on large fields. Therefore the Alaska PPT would rate # 6. On an overall basis the government take improvement is very modest.

Table 7.13
Gov Take

	50MM $26 high	50MM $36 high	150MM $26 high	150MM $36 high	500MM $26 high	500MM $36 high
Alaska Current	71.03%	56.57%	61.48%	54.67%	59.25%	56.37%
Alaska PPT	48.80%	49.70%	53.98%	55.73%	58.54%	58.64%
Norway	75.65%	76.74%	75.17%	76.33%	76.43%	76.97%
UK	51.25%	50.67%	50.50%	50.30%	50.15%	50.10%
US GOM	35.16%	35.13%	41.41%	40.40%	43.91%	43.27%
Nigeria	39.27%	46.92%	45.97%	49.82%	53.66%	54.74%
Alberta-Oil Sands	48.60%	49.53%	49.13%	49.70%	49.86%	49.98%
Angola	68.24%	50.31%	53.43%	58.26%	63.10%	71.29%
Russia-Sakhalin	82.36%	63.79%	54.26%	59.16%	72.42%	77.81%
Azerbaijan	65.76%	47.07%	44.81%	41.94%	51.62%	66.24%

Table 7.14
Gov Take

	50MM $26 low	50MM $36 low	150MM $26 low	150MM $36 low	500MM $26 low	500MM $36 low
Alaska Current	57.70%	53.13%	55.54%	52.52%	57.00%	55.23%
Alaska PPT	49.66%	51.00%	54.39%	55.93%	58.30%	58.51%
Norway	77.13%	77.47%	76.59%	77.09%	77.08%	77.38%
UK	50.90%	50.55%	50.41%	50.26%	50.14%	50.09%
US GOM	35.14%	35.12%	40.24%	39.76%	43.16%	42.79%
Nigeria	47.64%	50.58%	50.23%	51.99%	54.87%	55.47%
Alberta-Oil Sands	49.76%	49.98%	49.81%	49.97%	50.01%	50.10%
Angola	51.17%	60.31%	59.41%	63.53%	72.15%	80.94%
Russia-Sakhalin	70.12%	59.47%	58.68%	69.84%	78.00%	79.51%
Azerbaijan	50.60%	45.56%	42.90%	53.99%	64.20%	73.44%

Table 7.15
Gov Take

	50MM $26 high	50MM $36 high	150MM $26 high	150MM $36 high	500MM $26 high	500MM $36 high	Subtotal
Alaska Current	8	8	9	6	7	5	43
Alaska PPT	4	5	7	7	6	6	35
Norway	9	10	10	10	10	9	58
UK	5	7	5	5	3	3	28
US GOM	1	1	1	1	1	1	6
Nigeria	2	2	3	4	5	4	20
Alberta-Oil Sands	3	4	4	3	2	2	18
Angola	7	6	6	8	8	8	43
Russia-Sakhalin	10	9	8	9	9	10	55
Azerbaijan	6	3	2	2	4	7	24

Table 7.16
Gov Take

	50MM $26 low	50MM $36 low	150MM $26 low	150MM $36 low	500MM $26 low	500MM $36 low	Subtotal	TOTAL for high and low
Alaska Current	8	7	7	5	5	4	36	79
Alaska PPT	3	6	6	7	6	6	34	69
Norway	10	10	10	10	9	8	57	115
UK	6	4	5	3	3	2	23	51
US GOM	1	1	1	1	1	1	6	12
Nigeria	2	5	4	4	4	5	24	44
Alberta-Oil Sands	4	3	3	2	2	3	17	35
Angola	7	9	9	8	8	10	51	94
Russia-Sakhalin	9	8	8	9	10	9	53	108
Azerbaijan	5	2	2	6	7	7	29	53

7.6. Overall rating

It can be seen from the previous tables that the Alaska PPT strongly boosts the IRR and the EMV@10%. The NPV@10% is less strongly affected but the Alaska PPT still provides an improvement. The Government Take is about the same for new investors because it improves significantly for small fields for new investors but is higher on large fields.

Despite the relatively modest government take compared Norway and Angola, the Alaska PPT does not rate that well on an NPV@10% basis due to the low net back prices.

The reason therefore that the Alaska current system rates # 8 economically is because of the low net back prices.

Therefore, the current severance tax and the proposed Alaska PPT need to accommodate the low net back through a generally modest government take compared to world wide standards. Compared to some other high cost environments in North America the government take is tougher.

Table 7.17 provides the overall ranking. The table summarizes the results for the four variables. The overall ranking of the Alaska PPT would be # 5 compared with # 8 for the current system. It can be seen how there is a considerable reduction in number from 364 to 272.

This indicates that the improvement in competitiveness of the Alaska PPT is considerable for new investors. It should result in attracting new entrants to Alaska.

Table 7.17
Overall

	IRR Subtotal	NPV Subtotal	EMV Subtotal	GOV TAKE Subtotal	SUM TOTAL	Ranking
Alaska Current	100	97	88	79	364	#8
Alaska PPT	58	82	63	69	272	#5
Norway	89	107	86	115	397	#9
UK	30	30	24	51	135	#2
US GOM	13	12	15	12	52	#1
Nigeria	43	36	49	44	172	#4
Alberta-Oil Sands	39	42	41	35	157	#3
Angola	75	71	78	94	318	#6
Russia-Sakhalin	116	102	118	108	444	#10
Azerbaijan	97	81	98	53	329	#7

The following table summarizes the total competitiveness index from attractive to unattractive for new investors in Alaska.

Table 7.18
COMPETITIVENESS INDEX

Hypothetical best	48	
US GOM	52	#1
UK	135	#2
Alberta-Oil Sands	157	#3
Nigeria	172	#4
Alaska PPT	272	#5
Angola	318	#6
Azerbaijan	329	#7
Alaska Current	364	#8
Norway	397	#9
Russia-Sakhalin	444	#10
Hypothetical worst	480	

8. COMPETITIVENESS AND THE PPT RATE

(Note: After the initial scoping a PPT tax rate of 20% and a credit rate of 15% seemed a reasonable combination. Therefore much economic work was done on this combination. As a result of subsequent work it was concluded that a 25% tax rate and 20% tax credit rate is more in the interest of Alaska. Nevertheless in the interest of providing the maximum information about the PPT it was considered desirable to leave the Chapters that were based on the 20% tax rate and 15% credit rate in the report. These are Chapters 4,5,6,7 and 8. Chapter 9,10 and 11 are based on the recommended fiscal terms.)

8.1. Introduction

As was illustrated in Chapter 4, a new investor will not be concerned about the PPT rate for small fields because of the tax free allowance. The new investor will receive the tax credits for negative cash flow and for capital expenditures on the small field, but will typically not pay PPT unless oil prices are very high. Therefore, small companies and new investors in small fields will not be concerned about the PPT rate.

The PPT rate will be mainly a concern for existing larger oil companies. It is therefore important to analyze the international economic competitiveness with respect to the PPT rate for a situation where companies have already used their tax free allowance and are re-investing in Alaska. Such re-investments should be attractive from an international perspective, otherwise there is not an increased incentive to re-invest in Alaska.

An important Alaska PPT concept is that large oil companies that actively re-invest in Alaska should be rewarded with better economics. Large oil companies that are largely in a "harvest" mode and re-direct their Alaska profits in other jurisdictions, should pay a higher tax.

A PPT rate that is too high might discourage re-investment if the overall economic rating becomes unattractive. In order to review the effect of a high PPT rate, an analysis was done of various rates.

In this chapter the analysis will be provided for PPT rates of 30%, 25% and 20% in order to evaluate the economics from this perspective.

Following is the same competitiveness analysis as done in Chapter 7 for the proposed PPT for new investors, but now for re-investment by oil companies which have already used their tax free allowance.

8.2. Results of the analysis

8.2.1. IRR results

The IRR results show the IRR is not very different depending on the PPT rate, for the 30%, 25% and 20% cases (indicated in the table as PPT-30, PPT-25 and PPT-20). The reason is that both the negative as well as the positive cash flows are subject to the PPT rate and therefore, a higher rate also results in higher tax credits for negative cash flows.

Table 8.1

IRR	50MM $26 high	50MM $36 high	150MM $26 high	150MM $36 high	500MM $26 high	500MM $36 high
Alaska Current	4.54%	15.47%	4.54%	20.67%	22.76%	36.00%
PPT-20	7.33%	18.56%	12.54%	23.97%	28.61%	42.61%
Norway	11.75%	17.98%	15.38%	21.47%	26.06%	33.54%
UK	13.50%	22.17%	18.81%	28.12%	37.13%	48.90%
US GOM	15.51%	23.84%	21.04%	30.47%	38.26%	49.52%
Nigeria	13.73%	21.76%	19.12%	27.99%	35.45%	45.82%
Alberta-Oil Sands	12.84%	21.21%	19.07%	28.50%	37.75%	48.91%
Angola	6.46%	16.68%	13.08%	22.80%	30.67%	40.80%
Russia-Sakhalin	3.02%	10.30%	12.69%	20.40%	26.98%	32.49%
Azerbaijan	3.79%	13.72%	11.21%	21.84%	28.71%	39.85%
PPT-30	7.58%	18.62%	12.61%	23.80%	28.22%	41.96%
PPT-25	7.45%	18.59%	12.57%	23.89%	28.43%	42.30%

Table 8.2

IRR	50MM $26 low	50MM $36 low	150MM $26 low	150MM $36 low	500MM $26 low	500MM $36 low
Alaska Current	14.75%	26.91%	19.92%	32.93%	35.07%	50.47%
PPT-20	17.82%	30.38%	23.19%	36.73%	41.66%	57.75%
Norway	19.22%	26.48%	22.79%	30.17%	35.20%	44.27%
UK	23.99%	34.01%	30.16%	41.32%	51.42%	64.73%
US GOM	25.83%	34.93%	32.82%	43.48%	52.26%	64.49%
Nigeria	23.13%	31.51%	29.49%	39.30%	47.59%	59.20%
Alberta-Oil Sands	22.15%	31.09%	29.74%	40.20%	50.07%	61.77%
Angola	18.26%	27.44%	24.39%	34.47%	42.38%	52.36%
Russia-Sakhalin	8.21%	15.91%	19.70%	25.58%	31.90%	38.34%
Azerbaijan	11.95%	22.34%	20.70%	31.69%	38.90%	49.49%
PPT-30	17.89%	30.30%	23.04%	36.35%	41.03%	56.90%
PPT-25	17.86%	30.34%	23.12%	36.55%	41.36%	57.35%

Even without specific rating analysis, it can be seen how the IRR results for all PPT rates are generally more attractive than the Current system. This is because of the tax credits on negative cash flow and on capital expenditures, which are important during the first part of the cash flow.

8.2.2. NPV@10% results

The NPV@10% results are sensitive to the PPT rate as can be seen in Tables 8.3 and 8.4. The lower the PPT rate, the more attractive the NPV@10%. As can be expected for the large fields and under high prices is the PPT 30% system less attractive than the Current system, in view of the fact that the 30% takes away considerable positive cash flow.

Table 8.3

NPV @10%	50MM $26 high	50MM $36 high	150MM $26 high	150MM $36 high	500MM $26 high	500MM $36 high
Alaska Current	-48.6	57.8	-7.1	281.2	589.0	1390.5
PPT-20	-17.7	67.5	43.3	276.3	668.6	1378.8
Norway	11.0	56.5	90.4	214.9	590.9	970.4
UK	35.5	139.0	220.5	503.5	1365.4	2228.0
US GOM	71.4	205.8	322.6	677.8	1667.2	2685.6
Nigeria	45.3	151.0	245.7	519.0	1273.8	2045.1
Alberta-Oil Sands	30.3	135.5	220.0	504.3	1338.6	2201.0
Angola	-45.2	98.6	97.1	391.2	1003.0	1420.6
Russia-Sakhalin	-119.8	5.7	95.6	366.0	797.5	1023.3
Azerbaijan	-91.5	59.3	38.4	409.1	990.2	1476.6
PPT-30	-14.3	60.3	39.6	243.5	586.5	1207.9
PPT-25	-16.0	63.9	41.5	259.9	627.5	1293.3

Table 8.4

NPV @10%	50MM $26 low	50MM $36 low	150MM $26 low	150MM $36 low	500MM $26 low	500MM $36 low
Alaska Current	33.2	139.7	172.9	461.2	885.4	1687.0
PPT-20	40.7	125.9	172.5	405.4	883.6	1593.8
Norway	44.5	90.0	163.2	287.7	709.3	1088.8
UK	109.1	212.5	381.8	664.8	1628.0	2490.6
US GOM	163.5	297.8	522.4	877.6	1993.5	3012.0
Nigeria	114.0	210.0	381.0	641.2	1465.5	2232.0
Alberta-Oil Sands	102.6	206.2	372.3	655.6	1580.3	2439.5
Angola	81.3	164.1	290.3	493.5	991.6	1176.3
Russia-Sakhalin	-25.9	95.5	260.0	379.8	729.2	1026.7
Azerbaijan	22.2	155.6	256.8	511.3	1023.5	1312.7
PPT-30	36.4	111.0	152.1	355.9	774.1	1395.5
PPT-25	38.6	118.4	162.3	380.7	828.9	1494.7

8.2.3. EMV@10% results.

Also with respect to the EMV@10% the PPT rate is important. Generally, the higher the PPT rate, the less attractive the exploration for the field. An exception is the small field under low prices. In fact in this case the PPT 30% indicates the least unattractive results. This is because the exploration costs are also subject to the tax credit. With a PPT of 30% the tax credit is more and therefore, the net costs of an exploratory dry hole is less.

Table 8.5

EMV @10%	50MM $26 high	50MM $36 high	150MM $26 high	150MM $36 high	500MM $26 high	500MM $36 high
Alaska Current	-29.3	-2.7	-18.9	53.2	130.1	330.5
PPT-20	-15.6	5.7	-0.3	57.9	156.0	333.6
Norway	-3.7	7.6	16.1	47.2	141.2	236.1
UK	-6.0	19.9	40.3	111.0	326.5	542.2
US GOM	-12.7	20.9	50.1	138.9	386.2	640.8
Nigeria	-17.8	8.6	32.3	100.6	289.3	482.1
Alberta-Oil Sands	-15.7	10.6	31.7	102.8	311.4	527.0
Angola	-40.4	-4.5	-4.9	68.7	221.6	326.0
Russia-Sakhalin	-90.1	-58.7	-36.2	31.4	139.2	195.7
Azerbaijan	-68.9	-31.2	-36.4	56.2	201.5	323.1
PPT-30	-13.0	5.6	0.5	51.4	137.2	292.5
PPT-25	-14.3	5.7	0.1	54.7	146.6	313.1

Table 8.6

EMV @10%	50MM $26 low	50MM $36 low	150MM $26 low	150MM $36 low	500MM $26 low	500MM $36 low
Alaska Current	-3.1	23.5	31.8	103.9	209.9	410.3
PPT-20	2.8	24.1	35.7	93.9	213.5	391.0
Norway	6.8	18.2	36.4	67.6	173.0	267.9
UK	17.3	43.2	85.5	156.2	397.0	612.7
US GOM	20.0	53.6	109.7	198.5	477.5	732.1
Nigeria	9.1	33.1	75.8	140.9	347.0	538.6
Alberta-Oil Sands	8.8	34.7	76.2	147.1	378.2	593.0
Angola	0.9	21.6	53.1	103.9	228.5	274.6
Russia-Sakhalin	-56.9	-26.5	14.6	44.5	131.9	206.3
Azerbaijan	-30.8	2.6	27.9	91.5	219.5	291.8
PPT-30	2.8	21.5	31.7	82.7	187.2	342.6
PPT-25	2.8	22.8	33.7	88.3	200.4	366.8

8.2.4. Government Take results

The most negative factor of a high PPT of 30% for large oil companies with large operations in Alaska would be the resulting high government take, which means losses on undiscounted cash. This is unattractive from a long term perspective. This is clearly illustrated in the following two tables. The higher the PPT rate, the higher the government take (which means a correspondingly lower corporate take) and the less attractive the field economics are to the investors.

Table 8.7

Gov Take	50MM $26 high	50MM $36 high	150MM $26 high	150MM $36 high	500MM $26 high	500MM $36 high
Alaska Current	71.03%	56.57%	61.48%	54.67%	59.25%	56.37%
FPT-20	65.10%	61.07%	62.92%	60.71%	61.12%	60.14%
Norway	75.65%	76.74%	75.17%	76.33%	76.43%	76.97%
UK	51.25%	50.67%	50.50%	50.30%	50.15%	50.10%
US GOM	35.16%	35.13%	41.41%	40.40%	43.91%	43.27%
Nigeria	39.27%	46.92%	45.97%	49.82%	53.66%	54.74%
Alberta-Oil Sands	48.60%	49.53%	49.13%	49.70%	49.86%	49.98%
Angola	68.24%	50.31%	53.43%	58.26%	63.10%	71.29%
Russia-Sakhalin	82.36%	63.79%	54.26%	59.16%	72.42%	77.81%
Azerbaijan	65.76%	47.07%	44.81%	41.94%	51.62%	66.24%
PPT-30	68.00%	65.41%	66.85%	65.30%	65.76%	65.00%
PPT-25	66.55%	63.24%	64.88%	63.00%	63.44%	62.57%

Table 8.8

Gov Take	50MM $26 low	50MM $36 low	150MM $26 low	150MM $36 low	500MM $26 low	500MM $36 low
Alaska Current	57.70%	53.13%	55.54%	52.52%	57.00%	55.23%
PPT-20	61.84%	60.34%	61.33%	60.19%	60.61%	59.90%
Norway	77.13%	77.47%	76.59%	77.09%	77.08%	77.38%
UK	50.90%	50.55%	50.41%	50.26%	50.14%	50.09%
US GOM	35.14%	35.12%	40.24%	39.76%	43.16%	42.79%
Nigeria	47.64%	50.58%	50.23%	51.99%	54.87%	55.47%
Alberta-Oil Sands	49.76%	49.98%	49.81%	49.97%	50.01%	50.10%
Angola	51.17%	60.31%	59.41%	63.53%	72.15%	80.94%
Russia-Sakhalin	70.12%	59.47%	58.68%	69.84%	78.00%	79.51%
Azerbaijan	50.60%	45.56%	42.90%	53.99%	64.20%	72.44%
PPT-30	66.07%	65.02%	65.83%	64.99%	65.41%	64.84%
PPT-25	63.95%	62.68%	63.58%	62.59%	63.01%	62.37%

8.3. Rating

The rating will be done separately for the 8 fiscal systems, comparing a PPT of 30%, 25% and 20% with the other 7 fiscal terms, including the Current System.

The PPT 30% will be shown in detail. Subsequently, the summary results of the PPT of 25% and 20% will also be provided.

8.3.1. Rating of the PPT of 30%

Following are all the tables for the PPT rating of 30%.

Table 8.9

IRR	50MM $26 high	50MM $36 high	150MM $26 high	150MM $36 high	500MM $26 high	500MM $36 high	Subtotal
Alaska Current	8	8	10	9	10	8	53
PPT-30	6	5	8	5	7	5	36
Norway	5	6	5	8	9	9	42
UK	3	2	4	3	3	3	18
US GOM	1	1	1	1	1	1	6
Nigeria	2	3	2	4	4	4	19
Alberta-Oil Sands	4	4	3	2	2	2	17
Angola	7	7	6	6	5	6	37
Russia-Sakhalin	10	10	7	10	8	10	55
Azerbaijan	9	9	9	7	6	7	47

Table 8.10

IRR	50MM $26 low	50MM $36 low	150MM $26 low	150MM $36 low	500MM $26 low	500MM $36 low	Subtotal	TOTAL for high and low
Alaska Current	8	7	9	7	9	7	47	100
PPT-30	7	5	6	5	6	5	34	70
Norway	5	8	7	9	8	9	46	88
UK	2	2	2	2	2	1	11	29
US GOM	1	1	1	1	[illegible]	2	7	13
Nigeria	3	3	4	4	4	4	22	41
Alberta-Oil Sands	4	4	3	3	3	3	20	37
Angola	6	6	5	6	5	6	34	71
Russia-Sakhalin	10	10	10	10	10	10	60	115
Azerbaijan	9	9	8	8	7	8	49	96

Table 8.11
NPV @10%

	50MM $26 high	50MM $36 high	150MM $26 high	150MM $36 high	500MM $26 high	500MM $36 high	Subtotal
Alaska Current	8	8	10	8	9	7	50
PPT-30	6	6	8	9	10	8	47
Norway	5	9	7	10	8	10	49
UK	3	3	3	4	2	2	17
US GOM	1	1	1	1	1	1	6
Nigeria	2	2	2	2	4	4	16
Alberta-Oil Sands	4	4	4	3	3	3	21
Angola	7	5	5	6	5	6	34
Russia-Sakhalin	10	10	6	7	7	9	49
Azerbaijan	9	7	9	5	6	5	41

Table 8.12
NPV @10%

	50MM $26 low	50MM $36 low	150MM $26 low	150MM $36 low	500MM $26 low	500MM $36 low	Subtotal	TOTAL for high and low
Alaska Current	8	7	8	7	7	5	42	92
PPT-30	7	8	10	9	8	7	49	96
Norway	6	10	9	10	10	9	54	103
UK	3	2	2	2	2	2	13	30
US GOM	1	1	1	1	1	1	6	12
Nigeria	2	3	3	4	4	4	20	36
Alberta-Oil Sands	4	4	4	3	3	3	21	42
Angola	5	6	5	6	6	8	36	70
Russia-Sakhalin	10	9	7	8	9	10	53	102
Azerbaijan	9	5	6	5	5	6	36	77

Table 8.13
EMV @10%

	50MM $26 high	50MM $36 high	150MM $26 high	150MM $36 high	500MM $26 high	500MM $36 high	Subtotal
Alaska Current	7	7	8	7	10	5	44
PPT-30	4	6	6	8	9	8	41
Norway	1	5	5	9	7	9	36
UK	2	2	2	2	2	2	12
US GOM	3	1	1	1	1	1	8
Nigeria	6	4	3	4	4	4	25
Alberta-Oil Sands	5	3	4	3	3	3	21
Angola	8	8	7	5	5	6	39
Russia-Sakhalin	10	10	9	10	8	10	57
Azerbaijan	9	9	10	6	6	7	47

Table 8.14
EMV @10%

	50MM $26 low	50MM $36 low	150MM $26 low	150MM $36 low	500MM $26 low	500MM $36 low	Subtotal	TOTAL for high and low
Alaska Current	8	5	7	6	7	5	38	82
PPT-30	6	7	8	8	8	6	43	84
Norway	5	8	6	9	9	9	46	82
UK	2	2	2	2	2	2	12	24
US GOM	1	1	1	1	1	1	6	14
Nigeria	3	4	4	4	4	4	23	48
Alberta-Oil Sands	4	3	3	3	3	3	19	40
Angola	7	6	5	5	5	8	36	75
Russia-Sakhalin	10	10	10	10	10	10	60	117
Azerbaijan	9	9	9	7	6	7	47	94

Table 8.15
Gov Take

	50MM $26 high	50MM $36 high	150MM $26 high	150MM $36 high	500MM $26 high	500MM $36 high	Subtotal
Alaska Current	8	7	8	6	6	5	40
PPT-30	6	9	9	9	8	6	47
Norway	9	10	10	10	10	9	58
UK	4	6	5	5	3	3	26
US GOM	1	1	1	1	1	1	6
Nigeria	2	2	3	4	5	4	20
Alberta-Oil Sands	3	4	4	3	2	2	18
Angola	7	5	6	7	7	8	40
Russia-Sakhalin	10	8	7	8	9	10	52
Azerbaijan	5	3	2	2	4	7	23

Table 8.16
Gov Take

	50MM $26 low	50MM $36 low	150MM $26 low	150MM $36 low	500MM $26 low	500MM $36 low	Subtotal	TOTAL for high and low
Alaska Current	7	6	6	5	5	4	33	73
PPT-30	8	9	9	8	7	6	47	94
Norway	10	10	10	10	9	8	57	115
UK	5	4	5	3	3	2	22	48
US GOM	1	1	1	1	1	1	6	12
Nigeria	2	5	4	4	4	5	24	44
Alberta-Oil Sands	3	3	3	2	2	3	16	34
Angola	6	8	8	7	8	10	47	87
Russia-Sakhalin	9	7	7	9	10	9	51	103
Azerbaijan	4	2	2	6	6	7	27	50

As can be seen from the above eight tables, in general the PPT 30% rates favorably compared to the Current System with respect to the IRR, but rates unfavorably with respect to NPV@10% and the EMV@10% and rates very unfavorably with respect to the Government Take.

The following two summary tables illustrate how on balance the PPT has about the same competitiveness rating as the Current Systems in total.

A PPT rate of 30% would not improve the competitiveness of Alaska for . -investment by large companies which have already used their tax free allowance. Therefore this rate would be too high.

Table 8.17

Overview	IRR Subtotal	NPV Subtotal	EMV Subtotal	GOV TAKE Subtotal	SUM TOTAL	Ranking
Alaska Current	100	92	82	73	347	#8
PPT-30	70	96	84	94	344	#7
Norway	88	103	82	115	388	#9
UK	29	30	24	48	131	#2
US GOM	13	12	14	12	51	#1
Nigeria	41	36	48	44	169	#4
Alberta-Oil Sands	37	42	40	34	153	#3
Angola	71	70	75	87	303	#5
Russia-Sakhalin	115	102	117	103	437	#10
Azerbaijan	96	77	94	50	317	#6

Table 8.18
COMPETITIVENESS INDEX

Hypothetical best	48	
US GOM	51	#1
UK	131	#2
Alberta-Oil Sands	153	#3
Nigeria	169	#4
Angola	302	#5
Azerbaijan	317	#6
PPT-30	344	#7
Alaska Current	347	#8
Norway	388	#9
Russia-Sakhalin	438	#10
Hypothetical worst	480	

8.3.2. Rating of the PPT of 25%

Comparing Table 8.19 with 8.17 it can be seen how the PPT of 25% improves with respect to the NPV@10% and EMV@10%. This results in an overall better rating of the PPT at 25%. Which is now slightly more attractive than the Current system, as can be seen from Table 8.20. Nevertheless the competitive position is still close to the Current System based on a tax credit of 15%.

Table 8.19

Overview	IRR Subtotal	NPV Subtotal	EMV Subtotal	GOV TAKE Subtotal	SUM TOTAL	Ranking
Alaska Current	100	93	84	73	350	#8
PPT-25	70	93	79	92	334	#7
Norway	88	104	83	115	390	#9
UK	29	30	24	48	131	#2
US GOM	13	12	14	12	51	#1
Nigeria	41	36	48	44	169	#4
Alberta-Oil Sands	37	42	40	34	153	#3
Angola	71	70	76	88	305	#5
Russia-Sakhalin	115	103	118	103	439	#10
Azerbaijan	96	77	94	51	318	#6

Table 8.20
COMPETITIVENESS INDEX

Hypothetical best	48	
US GOM	51	#1
UK	131	#2
Alberta-Oil Sands	153	#3
Nigeria	169	#4
Angola	305	#5
Azerbaijan	318	#6
PPT-25	334	#7
Alaska Current	350	#8
Norway	390	#9
Russia-Sakhalin	439	#10
Hypothetical worst	480	

Subsequent to these results, a further rating was done on a 25% tax rate and a 20% tax credit. This rating resulted in a rather attractive rating as will be discussed in Chapter 9.

8.3.3. Rating of the PPT of 20%

Comparing Tables 8.21 and 8.19, the NPV@10% and EMV@10% improve further relative to the Current System. Also the Government Take difference in rating is now less. This now results in a much better rating for the PPT with 20% relative to the Current System.

Table 8.21

Overview	IRR Subtotal	NPV Subtotal	EMV Subtotal	GOV TAKE Subtotal	SUM TOTAL	Ranking
Alaska Current	100	93	87	73	353	#8
PFT-20	70	91	72	89	322	#6
Norway	88	105	83	115	391	#9
UK	29	30	24	48	131	#2
US GOM	13	12	14	12	51	#1
Nigeria	41	36	48	44	169	#4
Alberta-Oil Sands	37	42	40	34	153	#3
Angola	71	70	77	89	307	#5
Russia-Sakhalin	115	103	118	104	440	#10
Azerbaijan	96	78	97	52	323	#7

The competitiveness index for a PPT of 20% shows some considerable improvement over the Current System.

In this case much depends on how investors attribute weight to the various factors. If a low government take is considered very important, a PPT of 20% may be considered still less attractive. If on the other hand the IRR and EMV@10% are considered important the PPT of 20% offers a better deal than the Current System.

On average the improvement in competitiveness of the PPT-20 is enough to ensure that the behavior of large producers will not be negatively impacted relative to the current situation. Large producers may maintain operations unchanged or may accelerate their investments, in particular in exploration, while smaller producers will find a considerable incentive to invest and explore.

It should be noted that the competitive position depends considerably on price levels. As can be seen from Charts 6.6, 6.38 and 6.54, the PPT improves the competitive position for new investors rapidly under high prices relative to Norway, Angola, Russia-Sakhalin and Azerbaijan. The same would be true for a wide variety of other fiscal systems in the world which are progressive, as discussed in Chapter 2. Therefore, as long as WTI long term price

predictions of investors are $ 30 per barrel or higher, considerable interest can be expected for investment in Alaska by such investors.

Table 8.22
COMPETITIVENESS INDEX

Hypothetical best	48	
US GOM	51	#1
UK	131	#2
Alberta-Oil Sands	153	#3
Nigeria	169	#4
Angola	307	#5
PPT-20	322	#6
Azerbaijan	323	#7
Alaska Current	353	#8
Norway	391	#9
Russia-Sakhalin	440	#10
Hypothetical worst	480	

9. FURTHER RATING BASED ON HIGHER TAX CREDIT RATES.

9.1. Introduction

The DOR model indicated that the overall revenues to the State were primarily determined by the tax rate. Higher tax credits result only in a modest reduction of these overall revenues. This required a new look at the PPT tax rate and tax credit rate. Therefore, more sensitivity analysis was done on higher tax rates with higher tax credit rates. This indicated that a 25% tax rate with a 20% tax credit was a better combination for the State. The rating analysis for new investors also indicated that such a system would be even more attractive for new investors. This chapter discusses the rating of this new package for new investors.

9.2. IRR rating

Table 9.1 and 9.2 summarize the IRR results that were obtained.

Table 9.1

IRR	50MM $26 high	50MM $36 high	150MM $26 high	150MM $36 high	500MM $26 high	500MM $36 high
Alaska Current	4.54%	15.47%	9.69%	20.67%	22.76%	36.00%
Alaska PPT	12.16%	24.58%	16.18%	27.40%	30.95%	45.01%
Norway	11.75%	17.98%	15.38%	21.47%	26.06%	33.54%
UK	13.50%	22.17%	18.81%	28.12%	37.13%	48.90%
US GOM	15.51%	23.84%	21.04%	30.47%	38.26%	49.52%
Nigeria	13.73%	21.76%	19.12%	27.99%	35.45%	45.82%
Alberta-Oil Sands	12.84%	21.21%	19.07%	28.50%	37.75%	48.91%
Angola	6.46%	16.68%	13.08%	22.80%	30.67%	40.80%
Russia-Sakhalin	3.02%	10.30%	12.69%	20.40%	26.98%	32.49%
Azerbaijan	3.79%	13.72%	11.21%	21.84%	28.71%	39.85%

Table 9.2

IRR	50MM $26 low	50MM $36 low	150MM $26 low	150MM $36 low	500MM $26 low	500MM $36 low
Alaska Current	14.75%	26.91%	19.92%	32.93%	35.07%	50.47%
Alaska PPT	24.39%	36.99%	27.37%	40.74%	44.53%	60.49%
Norway	19.22%	26.48%	22.79%	30.17%	35.20%	44.27%
UK	23.99%	34.01%	30.16%	41.32%	51.42%	64.73%
US GOM	25.83%	34.93%	32.83%	43.48%	52.26%	64.49%
Nigeria	23.13%	31.51%	29.49%	39.30%	47.59%	59.20%
Alberta-Oil Sands	22.15%	31.09%	29.74%	40.20%	50.07%	61.77%
Angola	18.26%	27.44%	24.39%	34.47%	42.38%	52.36%
Russia-Sakhalin	8.21%	15.91%	19.70%	25.58%	31.90%	38.34%
Azerbaijan	11.95%	22.34%	20.70%	31.69%	38.90%	49.49%

As can be seen by comparing this table with the one in Chapter 7, the 20% tax credit has a very favorable impact on the rate of return.

Tables 9.3 and 9.4 rank these results again from "1" to "10".

Table 9.3

IRR	50MM $26 high	50MM $36 high	150MM $26 high	150MM $36 high	500MM $26 high	500MM $36 high	Subtotal
Alaska Current	8	8	10	9	10	8	**53**
Alaska PPT	5	1	5	5	5	5	**26**
Norway	6	6	6	8	9	9	**44**
UK	3	3	4	3	3	3	**19**
US GOM	1	2	1	1	1	1	**7**
Nigeria	2	4	2	4	4	4	**20**
Alberta-Oil Sands	4	5	3	2	2	2	**18**
Angola	7	7	7	6	6	6	**39**
Russia-Sakhalin	10	10	8	10	8	10	**56**
Azerbaijan	9	9	9	7	7	7	**48**

Table 9.4

IRR	50MM $26 low	50MM $36 low	150MM $26 low	150MM $36 low	500MM $26 low	500MM $36 low	Subtotal	TOTAL for high and low
Alaska Current	8	7	9	7	9	7	47	100
Alaska PPT	2	1	5	3	5	4	20	46
Norway	6	8	7	9	8	9	47	91
UK	3	3	2	2	2	1	13	32
US GOM	1	2	1	1	1	2	8	15
Nigeria	4	4	4	5	4	5	26	46
Alberta-Oil Sands	5	5	3	4	3	3	23	41
Angola	7	6	6	6	6	6	37	76
Russia-Sakhalin	10	10	10	10	10	10	60	116
Azerbaijan	9	9	8	8	7	8	49	97

It can be seen how the overall IRR ranking improves from 58 on Table 7.4 to 46 on the above table. By international standards the IRR would be highly attractive for small and new investors.

9.3. NPV @10% rating

Tables 9.5 through 9.8 provide the same analysis for the NPV@10%. It can be seen how the NPV@10% only modestly improves relative to table 7.8 from 82 to 79.

Table 9.5

NPV @10%	50MM $26 high	50MM $36 high	150MM $26 high	150MM $36 high	500MM $26 high	500MM $36 high
Alaska Current	-48.6	57.8	-7.1	281.2	589.0	1390.5
Alaska PPT	14.0	114.4	103.0	328.9	707.4	1376.5
Norway	11.0	56.5	90.4	214.9	590.9	970.4
UK	35.5	139.0	220.5	503.5	1365.4	2228.0
US GOM	71.4	205.8	322.6	677.8	1667.2	2685.6
Nigeria	45.3	151.0	245.7	519.0	1273.8	2045.1
Alberta-Oil Sands	30.3	135.5	220.0	504.3	1338.6	2201.0
Angola	-45.2	98.6	97.1	391.2	1003.0	1420.6
Russia-Sakhalin	-119.8	5.7	95.6	366.0	797.5	1023.3
Azerbaijan	-91.5	59.3	38.4	409.1	990.2	1476.6

Table 9.6

NPV @10%	50MM $26 low	50MM $36 low	150MM $26 low	150MM $36 low	500MM $26 low	500MM $36 low
Alaska Current	33.2	139.7	172.9	461.2	885.4	1687.0
Alaska PPT	74.2	167.9	222.0	445.2	903.1	1568.9
Norway	44.5	90.0	163.2	287.7	709.3	1088.8
UK	109.1	212.5	381.8	664.8	1628.0	2490.6
US GOM	163.5	297.8	522.4	877.6	1993.5	3012.0
Nigeria	114.0	210.0	381.0	641.2	1465.5	2232.0
Alberta-Oil Sands	102.6	206.2	372.3	655.6	1580.3	2439.5
Angola	81.3	164.1	290.3	493.5	991.6	1176.3
Russia-Sakhalin	-25.9	95.5	260.0	379.8	729.2	1026.7
Azerbaijan	22.2	155.6	256.8	511.3	1023.5	1312.7

Table 9.7

NPV @10%	50MM $26 high	50MM $36 high	150MM $26 high	150MM $36 high	500MM $26 high	500MM $36 high	Subtotal
Alaska Curren..	8	8	10	9	9	7	51
Alaska PPT	5	5	5	8	8	8	39
Norway	6	9	8	10	10	10	53
UK	3	3	3	4	2	2	17
US GOM	1	1	1	1	1	1	6
Nigeria	2	2	2	2	4	4	16
Alberta-Oil Sands	4	4	4	3	3	3	21
Angola	7	6	6	6	5	6	36
Russia-Sakhalin	10	10	7	7	7	9	50
Azerbaijan	9	7	9	5	6	5	41

Table 9.8

NPV @10%	50MM $26 low	50MM $36 low	150MM $26 low	150MM $36 low	500MM $26 low	500MM $36 low	Subtotal	TOTAL for high and low
Alaska Current	8	8	9	7	8	5	45	96
Alaska PPT	6	5	8	8	7	6	40	79
Norway	7	10	10	10	10	9	56	109
UK	3	2	2	2	2	2	13	30
US GOM	1	1	1	1	1	1	6	12
Nigeria	2	3	3	4	4	4	20	36
Alberta-Oil Sands	4	4	4	3	3	3	21	42
Angola	5	6	5	6	6	8	36	72
Russia-Sakhalin	10	9	6	9	9	10	53	103
Azerbaijan	9	7	7	5	5	7	40	81

9.4. EMV @10% rating

Tables 9.9 through 9.12 provide the analysis for the EMV@10%. Relative to Table 7.12, it can be seen how the EMV improved from 63 to 56. This indicates that the 25% tax rate resulting in a 25% loss carry forward credit plus the 20% investment credit rate, would be an unusual strong incentive to explore in Alaska.

Table 9.9

EMV @10%	50MM $26 high	50MM $36 high	150MM $26 high	150MM $36 high	500MM $26 high	500MM $36 high
Alaska Current	-29.3	-2.7	-18.9	53.2	130.1	330.5
Alaska PPT	-5.9	19.2	16.3	72.8	167.4	334.7
Norway	-3.7	7.6	16.1	47.2	141.2	236.1
UK	-6.0	19.9	40.3	111.0	326.5	542.2
US GOM	-12.7	20.9	50.1	138.9	386.2	640.8
Nigeria	-17.8	8.6	32.3	100.6	289.3	482.1
Alberta-Oil Sands	-15.7	10.6	31.7	102.8	311.4	527.0
Angola	-40.4	-4.5	-4.9	68.7	221.6	326.0
Russia-Sakhalin	-90.1	-58.7	-36.2	31.4	139.2	195.7
Azerbaijan	-68.9	-31.2	-36.4	56.[illegible]	201.5	323.1

Table 9.10

EMV @10%	50MM $26 low	50MM $36 low	150MM $26 low	150MM $36 low	500MM $26 low	500MM $36 low
Alaska Current	-3.1	23.5	31.8	103.9	209.9	410.3
Alaska PPT	12.3	35.7	49.2	105.0	219.5	385.9
Norway	6.8	18.2	36.4	67.6	173.0	267.9
UK	17.3	43.2	85.5	156.2	397.0	612.7
US GOM	20.0	53.6	109.7	198.5	477.5	732.1
Nigeria	9.1	33.1	75.8	140.9	347.0	538.6
Alberta-Oil Sands	8.8	34.7	76.2	147.1	378.2	593.0
Angola	0.9	21.6	53.1	103.9	228.5	274.6
Russia-Sakhalin	-56.9	-26.5	14.6	44.5	131.9	206.3
Azerbaijan	-30.8	2.6	27.9	91.5	219.5	2[illegible].8

Table 9.11

EMV @10%	50MM $26 high	50MM $36 high	150MM $26 high	150MM $36 high	500MM $26 high	500MM $36 high	Subtotal
Alaska Current	7	7	8	8	10	6	46
Alaska PPT	2	3	5	5	7	5	27
Norway	1	6	6	9	8	9	39
UK	3	2	2	2	2	2	13
US GOM	4	1	1	1	1	1	9
Nigeria	6	5	3	4	4	4	26
Alberta-Oil Sands	5	4	4	3	3	3	22
Angola	8	8	7	6	5	7	41
Russia-Sakhalin	10	10	9	10	9	10	58
Azerbaijan	9	9	10	7	6	8	49

Table 9.12

EMV @10%	50MM $26 low	50MM $36 low	150MM $26 low	150MM $36 low	500MM $26 low	500MM $36 low	Subtotal	TOTAL for high and low
Alaska Current	8	6	8	7	8	5	42	88
Alaska PPT	3	3	6	5	3	6	29	56
Norway	6	8	7	9	9	9	48	87
UK	2	2	2	2	2	2	12	25
US GOM	1	1	1	1	1	1	6	15
Nigeria	4	5	4	4	4	4	25	51
Alberta-Oil Sands	5	4	3	3	3	3	21	43
Angola	7	7	5	6	5	8	38	79
Russia-Sakhalin	10	10	10	10	10	10	60	118
Azerbaijan	9	9	9	8	7	7	49	98

9.5. Government Take rating

Tables 9.13 through 9.16 show the attractiveness of the government take to investors. In comparison with Table 7.16 the government take is actually more attractive in the rating despite the higher tax rate. The rating drops from 69 to 63. This is directly due to the fact that on the 50 MM barrel field the tax credits are very important and actually lower the government take.

Table 9.13
Gov Take

	50MM $26 high	50MM $36 high	150MM $26 high	150MM $36 high	500MM $26 high	500MM $36 high
Alaska Current	71.03%	56.57%	61.48%	54.67%	59.25%	56.37%
Alaska PPT	42.26%	47.64%	51.84%	55.92%	59.64%	60.36%
Norway	75.65%	76.74%	75.17%	76.33%	76.43%	76.97%
UK	51.25%	50.67%	50.50%	50.30%	50.15%	50.10%
US GOM	35.16%	35.13%	41.41%	40.40%	43.91%	43.27%
Nigeria	39.27%	46.92%	45.97%	49.82%	53.66%	54.74%
Alberta-Oil Sands	48.60%	49.53%	49.13%	49.70%	49.86%	49.98%
Angola	68.24%	50.31%	53.43%	58.26%	63.10%	71.29%
Russia-Sakhalin	82.36%	63.79%	54.26%	59.16%	72.42%	77.81%
Azerbaijan	65.76%	47.07%	44.81%	41.94%	51.62%	66.24%

Table 9.14
Gov Take

	50MM $26 low	50MM $36 low	150MM $26 low	150MM $36 low	500MM $26 low	500MM $36 low
Alaska Current	57.70%	53.13%	55.54%	52.52%	57.00%	55.23%
Alaska PPT	47.29%	50.29%	54.02%	56.78%	59.79%	60.43%
Norway	77.13%	77.47%	76.59%	77.09%	77.08%	77.38%
UK	50.90%	50.55%	50.41%	50.26%	50.14%	50.09%
US GOM	35.14%	35.12%	40.24%	39.76%	43.16%	42.79
Nigeria	47.64%	50.58%	50.23%	51.99%	54.87%	55.47%
Alberta-Oil Sands	49.76%	49.98%	49.81%	49.97%	50.01%	50.10%
Angola	51.17%	60.31%	59.41%	63.53%	72.15%	80.94%
Russia-Sakhalin	70.12%	59.47%	58.68%	69.84%	78.00%	79.51%
Azerbaijan	50.60%	45.56%	42.90%	53.99%	64.20%	73.44%

Table 9.15
Gov Take

	50MM $26 high	50MM $36 high	150MM $26 high	150MM $36 high	500MM $26 high	500MM $36 high	Subtotal
Alaska Current	8	8	9	6	7	5	**43**
Alaska PPT	3	4	6	7	6	6	**32**
Norway	9	10	10	10	10	9	**58**
UK	5	7	5	5	3	3	**28**
US GOM	1	1	1	1	1	1	**6**
Nigeria	2	2	3	4	5	4	**20**
Alberta-Oil Sand	4	5	4	3	2	2	**20**
Angola	7	6	7	8	8	8	**44**
Russia-Sakhalin	10	9	8	9	9	10	**55**
Azerbaijan	6	3	2	2	4	7	**24**

Table 9.16
Gov Take

	50MM $26 low	50MM $36 low	150MM $26 low	150MM $36 low	500MM $26 low	500MM $36 low	Subtotal	TOTAL for high and low
Alaska Current	8	7	7	5	5	4	36	79
Alaska PPT	2	4	6	7	6	6	31	63
Norway	10	10	10	10	9	8	57	115
UK	6	5	5	3	3	2	24	52
US GOM	1	1	1	1	1	1	6	12
Nigeria	3	6	4	4	4	5	26	46
Alberta-Oil Sands	4	3	3	2	2	3	17	37
Angola	7	9	9	8	8	10	51	95
Russia-Sakhalin	9	8	8	9	10	9	53	108
Azerbaijan	5	2	2	6	7	7	29	53

9.6. Overall rating

It can be seen in comparing with the tables in Chapter 7 that that the Alaska PPT with a 25% tax rate and 20% tax credit rate strongly boosts the IRR and the EMV@10%. The NPV@10% is less strongly affected but the Alaska PPT still provides an improvement. The Government Take also shows a slight improvement on small fields.

Table 9.17 provides the overall ranking. Relative to a 20/15 system the 25/20 system improves the competitiveness index improves from 272 to 244.

This indicates that the improvement in competitiveness of the Alaska PPT with a 25% tax rate and 20% tax credit rate is more attractive to new and small investors than the option to have a 20% tax rate and 15% tax credit rate.

Table 9.17
Overall

	IRR Subtotal	NPV Subtotal	EMV Subtotal	GOV TAKE Subtotal	SUM TOTAL	Ranking
Alaska Current	100	96	88	79	363	#8
Alaska PPT	46	79	56	63	244	#5
Norway	91	109	87	115	402	#9
UK	32	30	25	52	139	#2
US GOM	15	12	15	12	54	#1
Nigeria	46	36	51	46	179	#4
Alberta-Oil Sands	41	42	43	37	163	#3
Angola	76	72	79	95	322	#6
Russia-Sakhalin	116	103	118	108	445	#10
Azerbaijan	97	81	98	53	329	#7

The following table summarizes the total competitiveness index from attractive to unattractive for new investors in Alaska.

Table 9.18
COMPETITIVENESS INDEX

Hypothetical best	**48**	
US GOM	**54**	**#1**
UK	**139**	**#2**
Alberta-Oil Sands	**163**	**#3**
Nigeria	**179**	**#4**
Alaska PPT	**244**	**#5**
Angola	**322**	**#6**
Azerbaijan	**329**	**#7**
Alaska Current	**363**	**#8**
Norway	**402**	**#9**
Russia-Sakhalin	**445**	**#10**
Hypothetical worst	**480**	

9.7. Tide water analysis

9.7.1. New Investors

An important issue is whether the 25% tax rate and 20% tax credit rate would be a reasonable system from an overall word wide government take point of view.

In order to analyze this matter it is important to "filter out" the low net back value of the Alaska crude oil.

This can be done by taking the transport costs of $ 5 per barrel and converting this to an equivalent government take. At $ 40 per barrel there is really no difference between an extra 12.5% royalty on tide water or the lower net back. In other words it is possible to analyze Alaska by simply not deducting the $ 5 transport charge, but instead assuming that the royalty is 25%. Based on this high royalty, the overall government take can then easily be compared with other countries. In other words it is the same as placing the Alaska North Slope in Texas and assuming a 25% royalty.

The following table displays these "tide water" government takes for the high cost scenarios.

Table 9.19.
Undiscounted Government Take on "tide water" basis of the 25% tax and 20% tax credit system
High Cost Scenarios (with low and high well productivities)

	50MM-LOW	150MM-LOW	500MM-LOW	50MM-HIGH	150MM-HIGH	500MM-HIGH
$22.00	65.57%	65.25%	68.32%	62.77%	63.59%	67.52%
$24.00	63.37%	64.95%	68.09%	61.60%	63.72%	67.41%
$26.00	62.01%	64.90%	67.94%	60.78%	63.90%	67.32%
$28.00	61.08%	64.92%	67.82%	60.18%	64.02%	67.26%
$30.00	60.40%	64.92%	67.73%	60.04%	64.14%	67.23%
$32.00	60.00%	64.94%	67.66%	60.11%	64.28%	67.21%
$34.00	59.92%	65.00%	67.59%	60.24%	64.42%	67.18%
$36.00	60.07%	65.07%	67.54%	60.38%	64.57%	67.16%
$38.00	60.31%	65.15%	67.48%	60.54%	64.72%	67.15%
$40.00	60.58%	65.26%	67.42%	60.72%	64.86%	67.13%

The table shows how the overall government take would range from about 60% to 67%. This is a world average government take. The table shows how the government take would be rather progressive with field size for a new investor. This is primarily due to the tax free allowance of $ 73 million and the tax credits. Otherwise the government take is relatively flat with price, because the progressive PPT compensates for the regressive royalties and property taxes.

A very important question is whether the Alaska resource base is sufficiently attractive to have a 60 - 67% government take. It is therefore interesting to search for jurisdictions with similar government takes. The Van Meurs Corporation rating of 2001 can be used in this respect. A search of this data base indicates that the following jurisdictions would have a government take in this range for approximately a $ 30 price level:

- Denmark
- Albania
- Azerbaijan, some onshore PSC's
- Newfoundland offshore
- British Columbia onshore
- Nova Scotia offshore
- Trinidad and Tobago
- Guatemala
- Peru
- Jordan
- Egypt Deep Water
- Nigeria, about 500 m water depth
- Cote d'Ivoire
- Cambodia
- Joint Development Area between Thailand and Malaysia
- Thailand offshore
- Nepal
- Bangladesh
- Timor Gap (joint offshore area between Australia and East Timor)

It would be difficult to argue that all or most of the above areas would have more attractive petroleum resource conditions than Alaska in terms of costs, oil field sizes or exploratory risk. In fact it can be easily seen that most areas would have less attractive resource conditions.

Therefore, Alaska would compete very well with these areas on the basis of a "tide water" government take of 60% - 67%.

In summary the overall Federal and Alaska government take that results from a PPT with a 25% tax rate, a 20% tax credit rate and a 73 million tax free allowance would clearly be attractive to new and small investors.

9.7.2. New Investors

The following table shows the same results for large producers which cannot benefit on an incremental basis from the tax free allowance.

Table 9.20.
Undiscounted Government Take on a "tide water" basis of the 25% tax and 20% tax credit system
High Cost Scenarios (with low and high well productivities)
Undiscounted Government Take

	50MM-LOW	150MM-LOW	500MM-LOW	50MM-HIGH	150MM-HIGH	500MM-HIGH
$22.00	79.29%	74.47%	71.92%	74.41%	71.42%	70.47%
$24.00	76.39%	73.16%	71.19%	73.08%	70.79%	70.03%
$26.00	74.60%	72.23%	70.64%	72.15%	70.32%	69.69%
$28.00	73.37%	71.55%	70.22%	71.47%	69.95%	69.42%
$30.00	72.49%	71.02%	69.88%	70.94%	69.65%	69.20%
$32.00	71.81%	70.60%	69.61%	70.52%	69.40%	69.01%
$34.00	71.29%	70.25%	69.38%	70.18%	69.20%	68.85%
$36.00	70.86%	69.97%	69.19%	69.90%	69.03%	68.71%
$38.00	70.51%	69.73%	69.03%	69.67%	68.88%	68.59%
$40.00	70.22%	69.52%	68.88%	69.47%	68.75%	68.49%

As can be seen, the "tide water" government take would range from about 68% to 75%.

The following jurisdictions would be in this range:

- Albania onshore
- Turkmenistan
- Azerbaijan, some onshore PSC's
- Alberta Conventional Oil
- Newfoundland - Hibernia
- Venezuela Heavy Oil (prior to the recently imposed increased take)
- Trinidad and Tobago
- Egypt Onshore
- Egypt Gulf of Suez
- Syria

- Yemen, revised PSC terms
- Equatorial Guinea
- Cameroon
- Congo – offshore
- Namibia
- Nigeria - shallow water
- Indonesia – general frontier terms
- Vietnam
- China offshore
- Thailand onshore
- Myanmar
- India

Most of these jurisdictions would have a resource attractiveness that is less than Alaska. Therefore, Alaska seems very well competitive with these areas.

9.7.3. Conclusion

It can be concluded that the 25% tax rate and 20% credit rate would be competitive from an international point of view and the overall government take would be similar to countries that have an equal or lesser resource quality. Therefore this is a fair and reasonable system.

10. ANALYSIS OF POSSIBLE HEAVY OIL INCENTIVES

10.1. Introduction

Heavy oils and viscous medium gravity oils play an important role in the future of Alaska. These resources are relatively expensive and in some cases not economic.

The potential of these oils is very considerable. The following table displays the two broad types of heavy oils that are available on the North Slope.

Table 10.1

	"West Sak"	"Ugnu"
Gravity (API)	14 - 26	8 - 15
Viscosity	"Olive Oil"	"Molasses"
Oil in Place (billion bbls)	6 - 12	16-24
Recoverable	10% - 25%	4% - 8%
Recoverable Oil (billion bbls)	1 - 3	0.5 - 2
Current Fields	West Sak, Orion Polaris, Milne Schrader	none

For simplicity the heavy oils will be grouped as "West Sak" and "Ugnu". The West Sak group stands for a variety of heavy oils from different fields and reservoirs. Ugnu is largely from the Ugnu reservoir. The Ugnu reservoir is typically shallower than the West Sak Group of reservoirs.

In the Alaska Arctic shallow reservoirs are relatively cold, which in turn creates problems with viscosity. Therefore, in general, the shallower the reservoirs are, the more viscous the oil is and the more difficult the oil is to produce.

Apart from the heavy oils, there is relatively viscous medium gravity oil present in some fields, such as the Polaris field. Similar reservoirs will for simplicity called "Polaris" type crudes.

Heavy oils are difficult to produce because of their viscosity.

The importance of these resources to Alaska can not be under-estimated as can be seen from the large possible recoverable resource estimates. It is not impossible that over the next three decades as much as 4 billion barrels will be produced.

Because of the high costs to produce heavy oils and the large potential resource base on the North Slope it is important to evaluate whether special incentives relative to the terms proposed in Chapter 9 might result in an accelerated development.

Therefore, special incentives were analyzed in terms of lower tax rates and/or lower tax credit rates.

The special incentives were analyzed separately for "West Sak" and "Ugnu" reservoirs.

10.2. Net back value

An important reason why heavy oils are less attractive to produce is because these crude oils sell for a lower price in the market.

Some of the Kern River heavy crude oils of California have a gravity of 14 degrees API. Currently, these crude oils sell at about $ 10 to $ 12 less than WTI crude.

It should be noted, however, that this quality differential is sensitive to the oil prices. Typically, when the WTI price goes down the quality differential becomes less. Heavy oils produce large volumes of heavy fuel oil or so-called bunker fuel. This is fuel used for marine transportation, for heating in industrial processes as well as power generation. At low oil prices, heavy fuel oil becomes more competitive with other energy sources, such as coal and gas. This reduces the quality differential. It is difficult to make exact estimates of this.

However, the following table illustrates the assumptions that were made about the quality plus transport differential differentials between WTI and the well head values at the North Slope for heavy oils.

The average gravity for West Sak was assumed to be 19 degrees API and for Ugnu it was assumed 14 degrees API.

Table 10.2
WELL HEAD VALUES

WTI	West Sak Diff	West Sak Well head	Ugnu Diff	Ugnu Well head
$20.00	$9.00	**$11.00**	$10.00	**$10.00**
$25.00	$9.00	**$16.00**	$11.00	**$14.00**
$30.00	$10.00	**$20.00**	$12.00	**$18.00**
$35.00	$10.00	**$25.00**	$12.00	**$23.00**
$40.00	$10.00	**$30.00**	$13.00	**$27.00**
$45.00	$11.00	**$34.00**	$13.00	**$32.00**
$50.00	$11.00	**$39.00**	$13.00	**$37.00**
$55.00	$11.00	**$44.00**	$14.00	**$41.00**
$60.00	$12.00	**$48.00**	$14.00	**$46.00**
$65.00	$12.00	**$53.00**	$15.00	**$50.00**
$70.00	$12.00	**$58.00**	$15.00	**$55.00**
$75.00	$12.00	**$63.00**	$15.00	**$60.00**

10.3. Field and cost assumptions

In order to do economic analysis certain assumptions were made about the fields and the costs.

A 100 million barrel field was assumed, which would be developed with an equal number of water injectors and producers. The wells would be horizontal multilateral wells. At initial maximum production the the number of producers was assumed to be 17 for West Sak and 34 for Ugnu. The total number of wells was assumed to be 32 and 64.

A relatively aggressive production and abandonment program was assumed with a total field life of 23 years.

Each producers and injector was assumed to be $ 5 million. In addition facilities costs were assumed. This brings the total capital expenditure costs to $ 8 per barrel for West Sak and $ 12 per barrel for Ugnu.

The following table provides the overview of these assumptions.

Table 10.3
Technical and Economic Assumptions

	West Sak	Ugnu
Field size (million barrels)	100	100
Maximum production (bopd)	16,500	16,500
Producers at maximum production	17	34
Injectors at maximum production	17	34
Maximum producers	32	64
Maximum injectors	32	64
Total wells at abandonment	30	60
Duration of production (years)	23	23
Costs per producer and injector ($ million)	5	5
Exploration ($ million)	30	30
Total well costs ($ million)	320	640
Total facilities costs ($ million)	450	530
Total Capex per barrel	8	12
Total Opex per barrel	6	7

Based on all these data it is possible to calculate WTI break even prices for the various North Slope crude oils. For information a typical Prudhoe Bay and Polaris were also included. Quality differentials were based on the above table on the basis of $ 40 per barrel WTI for simplicity.

Table 10.4 shows these break even prices for new investments with respect to four different types of crudes on the North Slope.