

Royalty Suspension Viability Program, Version 2.1 - November 1, 1998

This paper is an addendum to the Royalty Suspension Viability Program, Version 2.0 Documentation issued by the Minerals Management Service (MMS) on May 1, 1998. Applicants filing for deep water royalty relief with the MMS after November 1, 1998 are required to use the Royalty Suspension Viability Program, Version 2.1 (RSVP 2.1) for their economic analysis. This paper describes changes that were made to RSVP 2.0 and instructs RSVP 2.1 users on how to cope with those changes.

Discounting:

The RSVP 2.0 used beginning of year discounting. This process employed the assumption that all expenses and revenues for a given year occur as of the first of the year. The MMS has decided that mid-year discounting is more appropriate and RSVP 2.1 reflects this change. This change modifies the assumption that all expenses/revenues occur at the start of the year to the assumption that they all occur at mid year. We feel this better simulates the more realistic situation that expenses and revenues are realized uniformly throughout the time period they represent.

The RSVP 2.1 is responsive to the application date in that all expenses and revenues occurring between the date of application and the end of the calendar year of application are discounted to the mid-point of that time period. Discounting in all other years following the first year is done to the mid-point of the year.

The only modification of the program input requirements to achieve mid-year discounting was that the "Current Year" input in spreadsheet cell AW8, in RSVP 2.0, has been removed. Instead, RSVP 2.1 as placed increased importance on the "Date of Application" in spreadsheet cell C8. Previously this input only provided supplementary data, now it controls all of the time scheduling and discounting features of the program. It is important, therefore, that the "Date of Application" be input correctly. The program accepts a variety of date expressions and when done right the date will be displayed in the format 01-JAN-99.

Loss-Limiting:

Improvements to RSVP's discounting algorithms spawned refinements to RSVP's loss-limiting feature. In RSVP 2.1 the Viability Module performs the identical internal economic check on each iteration to determine whether it is necessary to invoke loss-limiting for that iteration as was used by RSVP 2.0. The difference in RSVP 2.1 occurs on iterations where losses are limited. These iterations in RSVP 2.0 received the first year's capital and well costs as a loss. This application proved unsophisticated because it used the initial calendar year's costs regardless of when during the calendar year the application was filed. For example, if the application was filed

on January 1, a full years costs were included, however, if it were filed on December 31, probably no costs would be included.

Using the revised “Date of Application” feature described above, RSVP 2.1 now estimates a full year’s costs. The program uses all of the costs in the application year and estimates the remainder of a full year’s costs using the inverse of the proportion of the remaining fraction of the application year after the application date, times the first full year’s costs. Half of this first full year’s cost is then counted as a loss in loss-limited iterations unless it exceeds 5 percent of the total capital and well costs for all years. In these cases, 5 percent of the total capital and well costs for all years is used as the loss.

The RSVP 2.1 has no different input requirements than RSVP 2.0 for loss-limiting.

Operating Margin:

Aside from the loss-limiting feature described above, the RSVP programs employ another form of loss-limiting which is more rarely invoked. On each iteration, RSVP checks to see that in at least one year, revenues exceed operating costs. Should an iteration occur where in no single year do revenues exceed operating costs, all results for this iteration are reduced to a value of zero. The iteration is not counted as a typical loss-limited iteration as no loss is assigned for the iteration. These operating margin loss-limited iterations represent combinations of sampled data so erratic and poor that the result is deemed unrealistic and is eliminated from the simulation. Averaging in values of zero for these iterations affects the absolute values of the PNPV and the FNPV but will not affect whether either of these measures are positively or negatively valued, which is the important result.

These iterations were not kept track of in RSVP 2.0. The RSVP 2.1 counts these iterations in a separate forecast called “All Scenario Non-’0’ Trials”, and the number of these iterations is combined with the number of conventional loss-limited iterations in the “Cost Compliance Worksheet” at the end of the program. A further requirement of RSVP 2.1 simulations is that the number of loss-limited iterations plus the number of operating margin loss-limited iterations cannot exceed 100 of the simulations iterations. In RSVP 2.0 only the loss-limited iterations counted towards this requirement.

Prices:

Imbedded in RSVP 2.1 are the oil and gas prices that became effective on November 1, 1998. This configuration is good for any applications filed after January 1, 1999. Applications filed in 1998 must replace the price inputs in RSVP 2.1 with the following:

Parameter	Minimum	Most Likely	Maximum	Dependency
Starting Oil Price (\$/bbl)	\$14.94	\$16.83	\$18.72	
Real Oil Price Growth Rate 1		0%		
Year Second Oil Scenario Starts		1999		
Real Oil Price Growth Rate 2	2.5%	2.7%	2.9%	+1 with Starting Oil Price
Year Third Oil Scenario Starts		2010		
Real Oil Price Growth Rate 3	1.5%	1.8%	2.0%	
Starting Gas Price (\$/Mcf)	\$1.94	\$2.08	\$2.21	+1 with Starting Oil Price
Real Gas Price Growth Rate 1		0%		
Year Second Gas Scenario Starts		1999		
Real Gas Price Growth Rate 2	0.7%	1.2%	1.6%	+1 with Oil Price Growth Rate 2
Year Third Gas Scenario Starts		2010		
Real Gas Price Growth Rate 3	1.4%	1.9%	2.0%	+1 with Oil Price Growth Rate 3