

# The SEC oil and gas reserves evaluation and its practical application

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**Abstract:** to the domestic proven reserves of oil in line with international standards, reflects the value of reserves, need to carry out SEC self-assessment of oil and gas reserves<sup>[1]</sup>. The new guidelines, the author of this paper put forward the reasonable certainty, the reliability of the technology, the whole process of analogy to make an interpretation.

**Keywords:** SEC guidelines Proved reserves Effective thickness Oil - bearing area Analogy

## I. INTRODUCTION

China petroleum and listed in New York in the United States since 1999, according to the SEC standards to carry out the assessment of oil and gas reserves and its value of the company to meet the company's annual report preparation and reserves information disclosure. 2009 SEC oil and gas reserves evaluation and implementation of new guidelines for disclosure, and the disclosure of the new guidelines, the company set up special "the SEC rules of oil and gas reserves evaluation" project<sup>[1,2,3]</sup>, in order to further promote and deepen the evaluation work, ensure stock company reserves development strategic target, and continuously enhance the value of the company. The proved reserves evaluation, is thorough development suited to the characteristics of the regional reservoir evaluation technique research, summarizes the different types of reservoir reserves evaluation data admission requirements and characteristic method, focus on strengthening to establish reliable technical argumentation and analogy reservoir sequences. In practice, felt: the new guidelines proposed reasonable certainty, the reliability of the technology, the whole process of analogy is the essence of the new standards.

## II. A FEW QUESTIONS NEED TO BE PAID ATTENTION TO

### 2-1. the reasonable certainty interpretation

Reserves of basic data required for evaluation, including comprehensive data, volumetric method, dynamic method of data, and the reserves value evaluation. For volumetric method of proved undeveloped, Information required for: Refers to the extension and the newly discovered reserves and has assessed the PUD reserves calculation block the basis of the data. Including data tables, graphs, curves and text reports<sup>[2]</sup>.

#### 2-1-1.Data tables

(1) oil layer group division data table, (2) petrophysical interpretation of the data table, (3) test the oil production test data sheet, (4) reserves parameters and results data table, (5) PUD annual tracking table, (6) PUD turn PD tracking table, (7) PUD drilling progress tracking table, (8) PUD reserves and investment progress tracking table, (9) the target reservoir and reservoir analogy basic parameters table.

#### 2-1-2. A variety of maps and curves

(1) the scope of exploration and mining rights figure (2) top structure maps of oil-gas reservoirs (3) oil-gas reservoirs profile (4) Typical seismic profiles (5) A typical log graph (6) Schematic diagram of oil and gas field development (7) containing oil-gas area chart (8) the contour map of effective thickness (9) historical

production curve in analog block (10)well deployment of PUD development and design

#### 2-1-3.Written report (summary)

(1) proved reserves report (reservoir geology summary) (2)Determining reasonable PUD development plan is, on the basis of available information, with combing existing wells to demonstrate reasonable conclusions.

#### 2-2. Reliability technology

Interpretation of D & M Company about "reliable technology" is the new standard allows to use combination of new technologies and technology; as long as the company established and proved its reliability<sup>[2]</sup>.

#### 2-3 Analogy

Analogy , namely, establish a database and analogous reservoir sequences with information of typical block , and then have a analogy between reservoir and sequences, to confirmed the credibility of the information<sup>[2]</sup>.

### III. THE APPLICATION IN THE PRACTICAL EVALUATION PROCESS

Example 1: development course and the present situation of the oilfield, as the table 1 and figure 1.2008 development of oilfield in 2003 years of chart and table shows along with the time and the data increases, the ultimate recoverable reserves increase, our reliable, therefore, according to the SEC criteria, on the basis of earthquake prediction results, all defined as proved reserves.

Table.1: table of the process of development

annual	reserves	production well	water wells	oil production	new capacity	annual oil production
2003	97	23	2	11	7.59	3.31
2004	2256	178	54	8-11	56.49	10.48
2005	939	133	38	10	39.9	98.00
2006	270	43	25	8.7	11.19	115.44
2007		17	9	8	4.08	121.37
2008		15	8	7	3.15	122.41
total	3562	409	136		122.4	

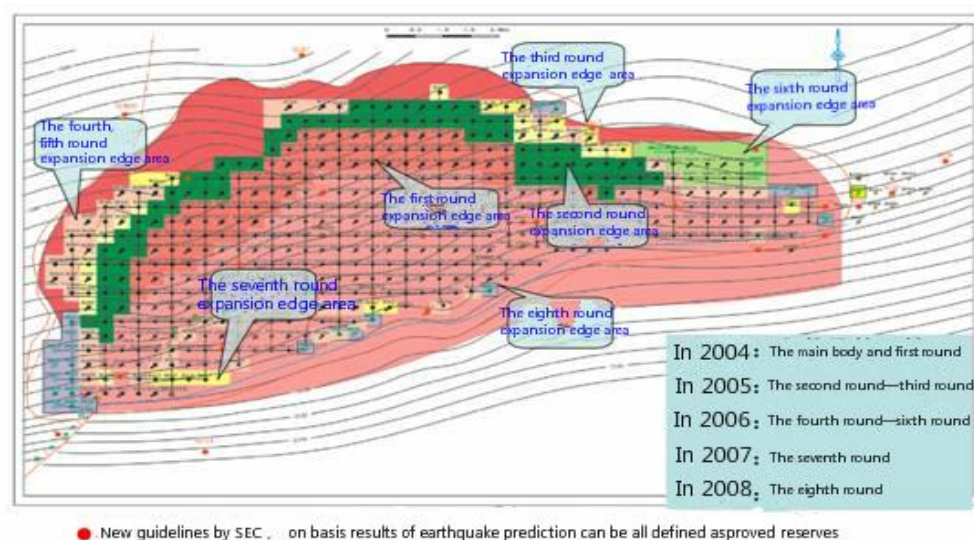


Fig.1:figure of the process of development

Example 2 : A well testing confirmed as pure oil, which is accurate and reliable; through the establishment of electric chart interpretation, accuracy is 98%, and the well logging interpretation technique is recognized, with wells in adjacent block data can be confirmed with the layer of pure oil, as the figure 2 and table 2.

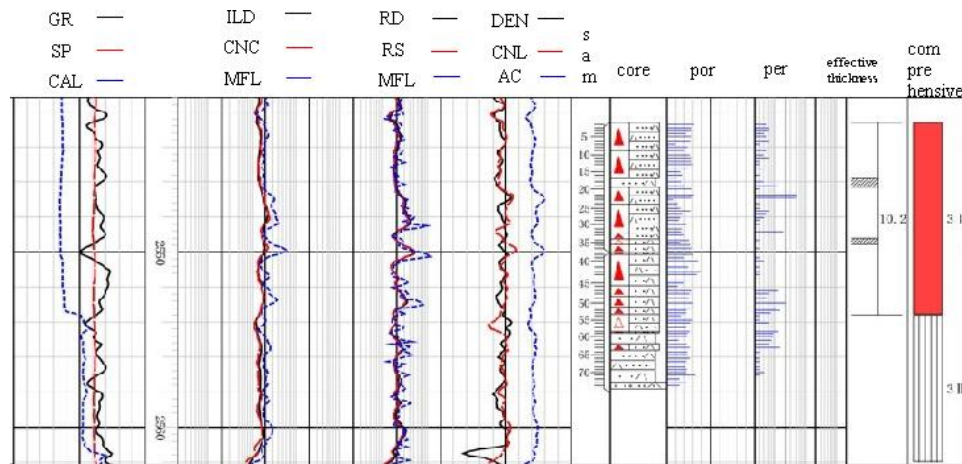


Fig.2: electrical interpretation plate

Table 2: adjacent well property

Lithology	Oil bearing	Porosity				Permeability			
		Number	maximum	minimum	Average	bearing	Number	maximum	minimum
Thin Sandstone	Oil spot	49	11.3	5.0	7.6	49	0.48	0.01	0.07

Example 3: Chart drawing test data of 12 wells in RFT oilfield, oil and water can be identified, confirmed that the technology is reliable<sup>[4]</sup>, as the figure 3.

Example 4: The results from the analysis and interpretation of well testing interpretation curve, after 184 days in the test range can reach 1223.9m, D&M company put forward, the stage to extend well or extrapolation distance evaluation of proved reserves<sup>[5]</sup>. The block there are at least 10 similar data well, therefore, the block of proved reserves by the curve analogy, expand the oil-bearing area parameters, as the figure 4.

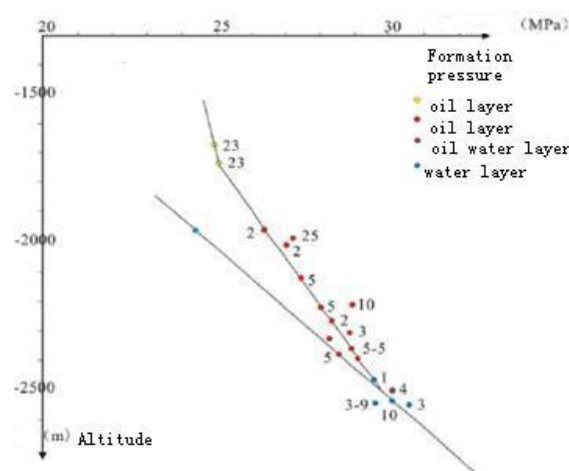


Fig.3: test data plate

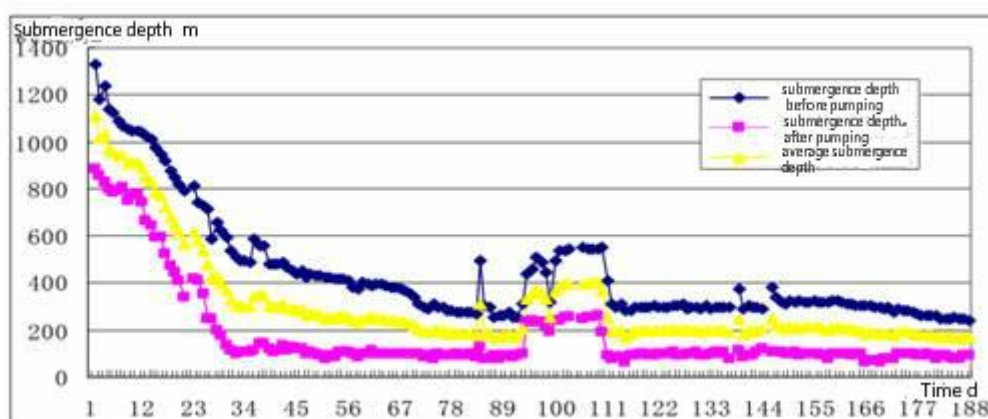


Fig.4: interpretation curve after the test

#### IV. APPLICATION PROSPECT

With the progress of reservoir evaluation technique level, when doing the evaluation, note the analogy reservoir reasonable certainty, reliability of technology, the whole process of analogical problem etc. Combined with the application of the drilling, logging, logging, oil testing fracturing technology, On the one hand it can enhance the use rate of reserves upgrade, On the other hand, the proved reserves evaluation result more accurate, especially some edge technologies such as well test interpretation method, the reservoir prediction technique, assessment provide a bigger help for SEC. It has wide application prospects in the proven reserves evaluation in petroChina.

#### V. CONCLUSION

The proved reserves in petroChina in order to reflect the value after the assessment of SEC, Therefore, reserves evaluation is very important. Our work should be self evaluation of reserves and exploration and development of production closely, realizing the integration of domestic and international reserves, enhance the value of the company.

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