

كلية الهندسة
القسم : هندسة النفط
الزمن : 3 ساعات
أستاذ المقرر : عبدالباسط على أبورويص
رقم الطالب :

جامعة مصراته
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الامتحان النهائي لمقرر / طرق الاسترداد الإضافي هن 529
تاريخ الامتحان: 2015/03/21
أسم الطالب :

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Answer all questions:

Question No.1

(10 marks).

- I. Show the target and path of EOR?
- II. Why the recovery factor is different for different oil reservoirs?
- III. What are the basic methods of enhanced oil recovery?
- IV. What are the reasons keep the water flood is a widely used for enhance oil recover?

Question No.2

(10 marks).

A field is expected to produce $(G) = 817$ BSCF, and the cumulative production (G_p) , had been 659 BSCF. The initial rate is estimated to be 80 MMSCFD and the economic rate = 20 MMSCFD. Determine the life of the field and calculate the annual production

Question No.3

(10 marks).

- I- Why the water flooding called secondary recovery method?
- II- Write the reasons of the secondary recovery methods are not enough to recover hydrocarbon remaining in the reservoir?
- III- List the benefits of application water injection for pressure maintenance?
- IV-When should be start of E.O.R projects?

Question No.4 By written all the steps of daily injection rate BBIs/D , estimate the daily injection rate for pressure maintenance Estimate the average daily injection rate of (2) injection wells as following data:-

Sector No	Oil (STBOPD)	Gas ,MMSCFD	Water, STBOPD	Inj.Water BBIs/D
1	8109	9892	3781	17055
	8809	10693	5565	6132
2	8338	9052	9186	13660
	7724	9269	9363	4902

Oil FVF = 1.58 RB/ST, reservoir pressure = 2000 psia, reservoir temperature = 130 °F. $Z = 0.828$, $B_w = 1.00$ RB/STB, & $R_S = 897$ SCF/STB. (15 marks)

Question No.5 Answer all questions:

(15 marks)

- I. What is the meaning of the voidage replacement ratio?
- II. How can be monitoring performance of the water injection? (3 marks)
- III. Why the secondary recovery methods are needed?
- IV. Explain the stages of oil recovery?
- V. Describe the types of water flood / injection to improve oil recovery?
- VI. What are the types of patterns / models for water floods?
- VII. When the water floods called pressure maintenance?
- VIII. When the term of "Flood Pattern" applies?
- IX. Write all the steps of water flood design?

Good Luck To All

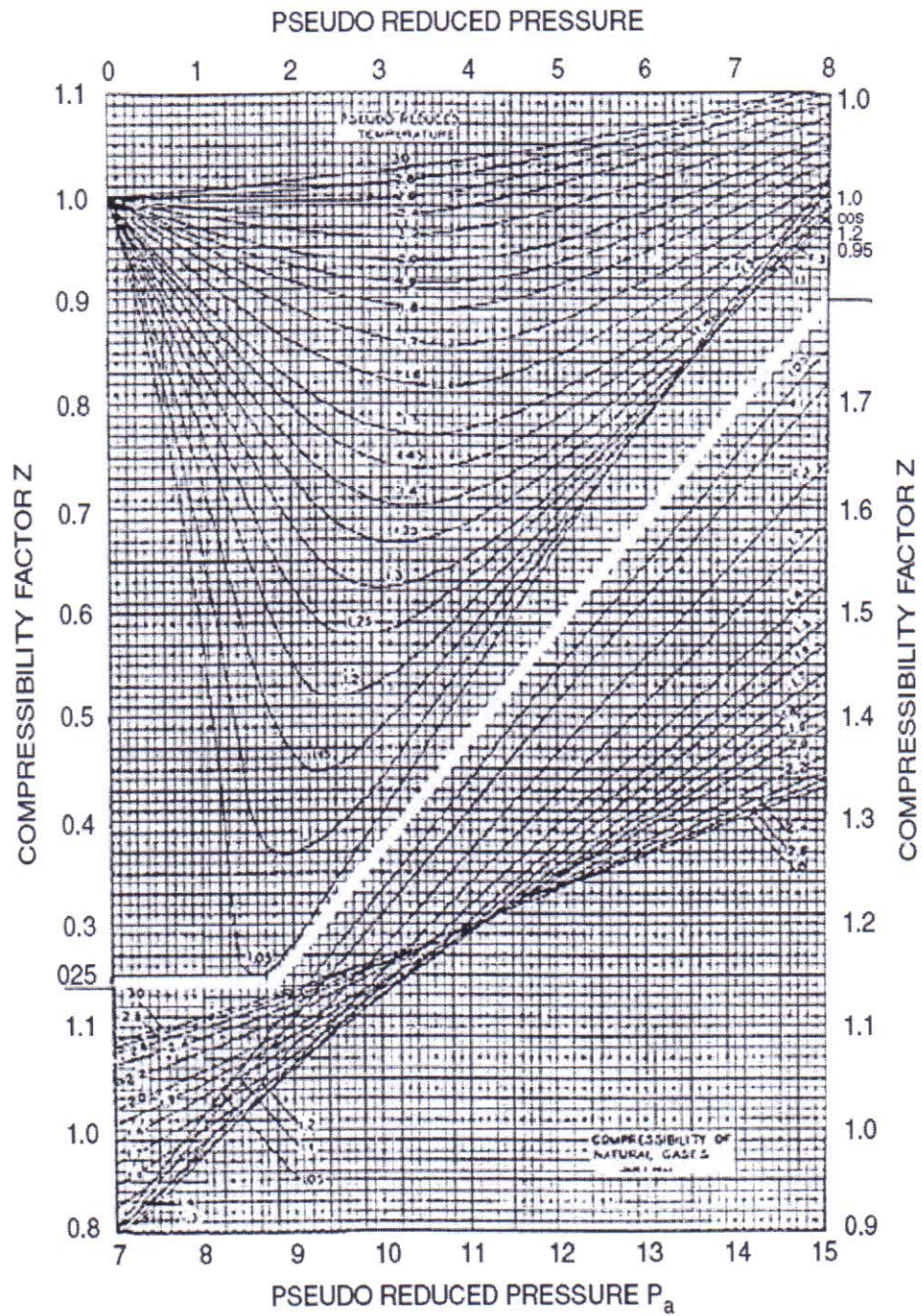


Figure 1-2. Compressibility of natural gases as a function of reduced pressure and temperature (Standing and Katz, 1942).