

**2090-511
GEOSTATISTICS
HOMEWORK # 4
SPRING 2021**

AAG

PROBLEM # 1

Suppose that drilling exploration wells can be regarded as a binomial experiment. We follow the general statistics of probability of successful drilling of 20% for a single trial. If we drill a total of five wells,

1. What is the probability of obtaining at least three oil/gas producers?
2. What is the probability of obtaining less than two producers?

PROBLEM # 2

The number of faults per unit area in a major oil field in the Middle East follows a Poisson distribution, with an average of 3 faults/km².

1. What is the probability of hitting 1 fault/ km² ?
2. What is the probability of hitting at most 1 fault/ km²?
3. What is the probability of hitting at least 2 fault/ km²?
4. What is the probability of hitting 3 faults/ 2 km²?

PROBLEM # 3

The time required to plug a semi-submersible pump with inorganic scale, and shut it down (in a particular oil field) is uniformly distributed between 250 hours and 350 hours. Assuming an oil company has just ordered a semi-submersible pump.

- a. What is the probability that the shut-in time for the semi-submersible pump is less than 290 hours?
- b. What is the probability that the shut-in time for the semi-submersible pump is between 290 hours and 330 hours?
- c. What percentage of shut-down operations will be within 310 hours?