**ES486 Video Review Exercise Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Introduction to Wireline Logging Techniques**

Watch the YouTube video lecture (~45 min) at the following URL:

<https://www.youtube.com/watch?v=PJmMSgM8GN8>

Answer the review questions below. Use internet search resources as needed to augment your answers. Provide sketches or image-capture diagrams where required.

1. What is a “sidewall core” sample and how is it collected in a drill hole? What types of geologic data are collected from sidewall cores?
2. What are drill cuttings and how are they sampled as part of the drilling process? Provide a sketch or image capture illustrating the cutting collection procedure. What types of geologic information are gathered from drill cuttings. What are the limitations in working with well cuttings?
3. Examine slide 6 shown by the lecturer, pause the video, and provide a summary of the slide.
   1. What types of wireline logs are used to analyze subsurface drill holes?
   2. What types of geologic properties are measured with the wireline logs.
4. Examine slide 7, what the are 5 wireline logs that are the focus of presentation?
5. What are the primary controls on the diameter of the bore hole, as the drill bit is advanced into the subsurface strata?
6. Examine slide 9, what are caliper logs, and what types of information results from this type of wireline analysis?
7. What is implied by a “washout” in a drill hole?
8. Compare and contrast the difference between Gamma Ray vs. Spontaneous Potential wireline logs.
9. True or False: Shale lithologies are associated with natural high Gamma Ray emissions in a drill hole.
10. True or False: Sandstone lithologies are associated with natural low Gamma Ray emissions in a drill hole.
11. True or False: Shale lithologies are associated with low values of Spontaneous Potential readings in a drill hole.
12. True or False: Sandstone lithologies are associated with high values of Spontaneous Potential readings in a drill hole.
13. Examine slide 11, what is the difference between Density Porosity vs. Neutron porosity logs. How are these logs used to identify lithology and fluid types in the subsurface. Provide examples
14. Examine slide 12 in the presentation, briefly describe the concept of a sonic log and what is measured by the wireline test.
15. From slide 13, describe the basic premise of a resistivity wireline log. What does it measure.
16. True or False: electrical resistivity is inversely proportional to electrical conductivity of the lithologic formations.
17. Examine Slide 16, how are wireline geophysical logs used to determine the lithology and fluid content of the subsurface. Provide a 3-4 sentence summary of the take-home message associated with this slide and related discussion.
18. Describe the basic process of well log correlation. Why is it necessary? What are the steps in the process of well correlation.
19. What are the two basic approaches to well log correlation described in the review of slide 18. What is the primary goal of well log correlation?
20. What is the difference between lithostratigraphic correlation vs. “chronostratigraphic” correlation.
21. Examine slide 26, well correlation example, why is it important to identify and correlate sandstone bodies and their geometry.
22. True or False: there are more many options available in terms of interpreting well-log correlations and subsurface stratigraphy from drilling information.
23. Is it better to be an oil geologist who is lucky? Or one who is technically correct in their interpretations?
24. Summarize the nature of the audience questions asked of the lecturer regarding the presentation.
25. List three questions of your own regarding the basics of wireline geophysics and the summary provided in this presentation.