

Q1/ Answer in brief the following:

1. Why the caliper logs is plotted with the bit size in the same track?
2. What is the reason of oval shape in many boreholes?
3. What is the main cause of hole diameter is larger than bit size?
4. Why sometimes clean sandstone have high value of gamma ray?
5. In SP log, why it should be conductive bore hole exist?
6. Which fluid is higher resistive when SP log value is negative?
7. Why sometimes permeable formation also shows no deflection SP value?
8. Why electrical logs are important tool to petrophysicist?
9. Will the resistance changes if the size of rock sample changed?
10. What is the resistivity of the flushed zone if drilling fluid is fresh water based mud?
11. Why low porosity shales give erroneously high porosity reading by neutron porosity?
12. There is large positive separation for shale formation in density and neutron porosity log.
13. Why neutron porosity show low value of porosity in shale formation
14. What happened to neutron if formation have small amount of hydrogen.
15. How fracture can be indicated in the formation by spectral gamma ray.

Q2/Rmf is reported on the log heading as 0.08 at 75 F. use the proper figure to find:

- a) Rmf at 180 F
- b) The salinity of solution in ppm NaCl.
- c) Find Rmfe at formation temperature.
- d) If SSP is equal to -40 mV, find Rw.

Q3/ gamma ray log was done for formation at depth 4500 ft, and it was indicated that for clean sand = 20 API and for shale formation = 85API and depth of interest = 35 API. Determine the volume of shale by using Clavler and Stieber correlation.

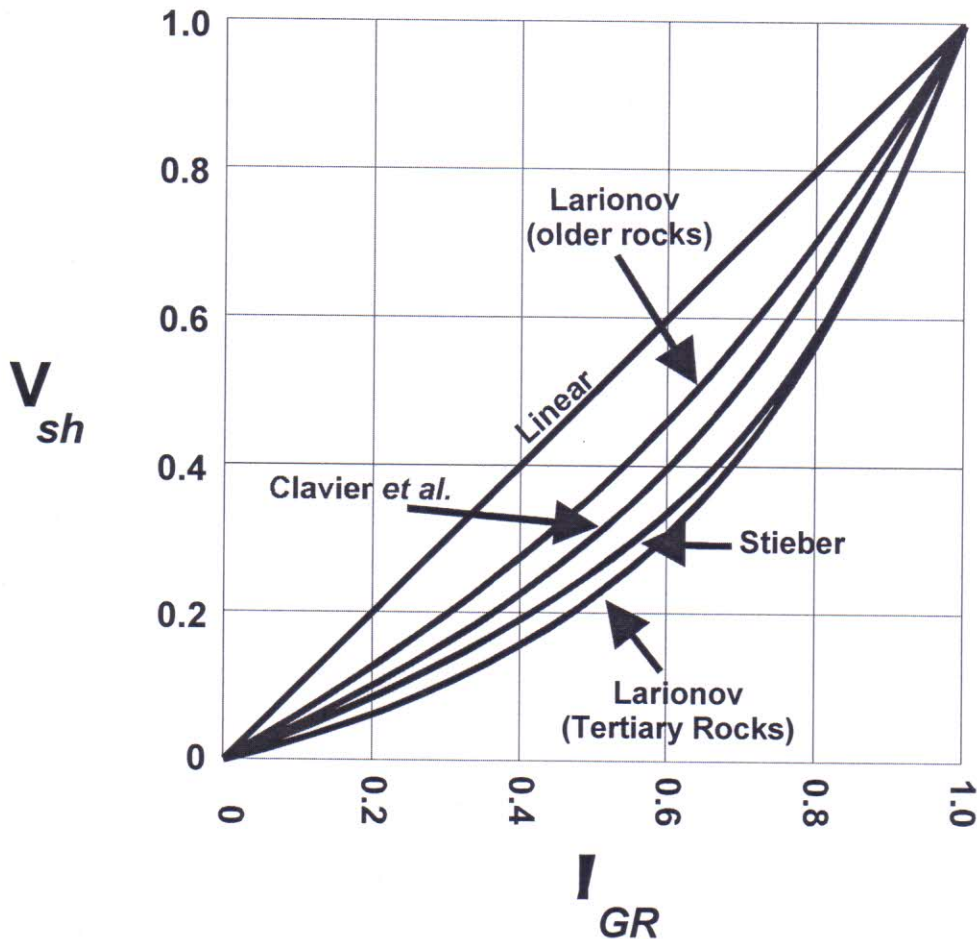


Figure 11.7 Calculation of shale volume.

### 10.10.3 Depth Matching

The gamma ray tool is run as part of almost every tool combination. It has a high reliability and a high vertical resolution. The tool will also show a useful decrease when opposite casing. For all these reasons, the tool is commonly used to match the depths of data from a given depth interval made at different times with different tool combinations. The depth matching may rely on the characteristic sudden reduction in gamma ray values when the tool encounters the casing of the section of borehole above the interval of interest, but more usually relies on matching the patterns in the gamma ray response from the gamma ray tools run with each tool combination.

### 10.10.4 Cased Hole Correlations

A different type of depth matching relates open hole measurements to cased hole and production logging measurements. Clearly, we would want to match accurately the depths at which open-hole data are taken and the depths at which cased-hole or production logging data are taken. The gamma ray log and the Casing Collar Locator allow this matching to be performed, ensuring that accurate

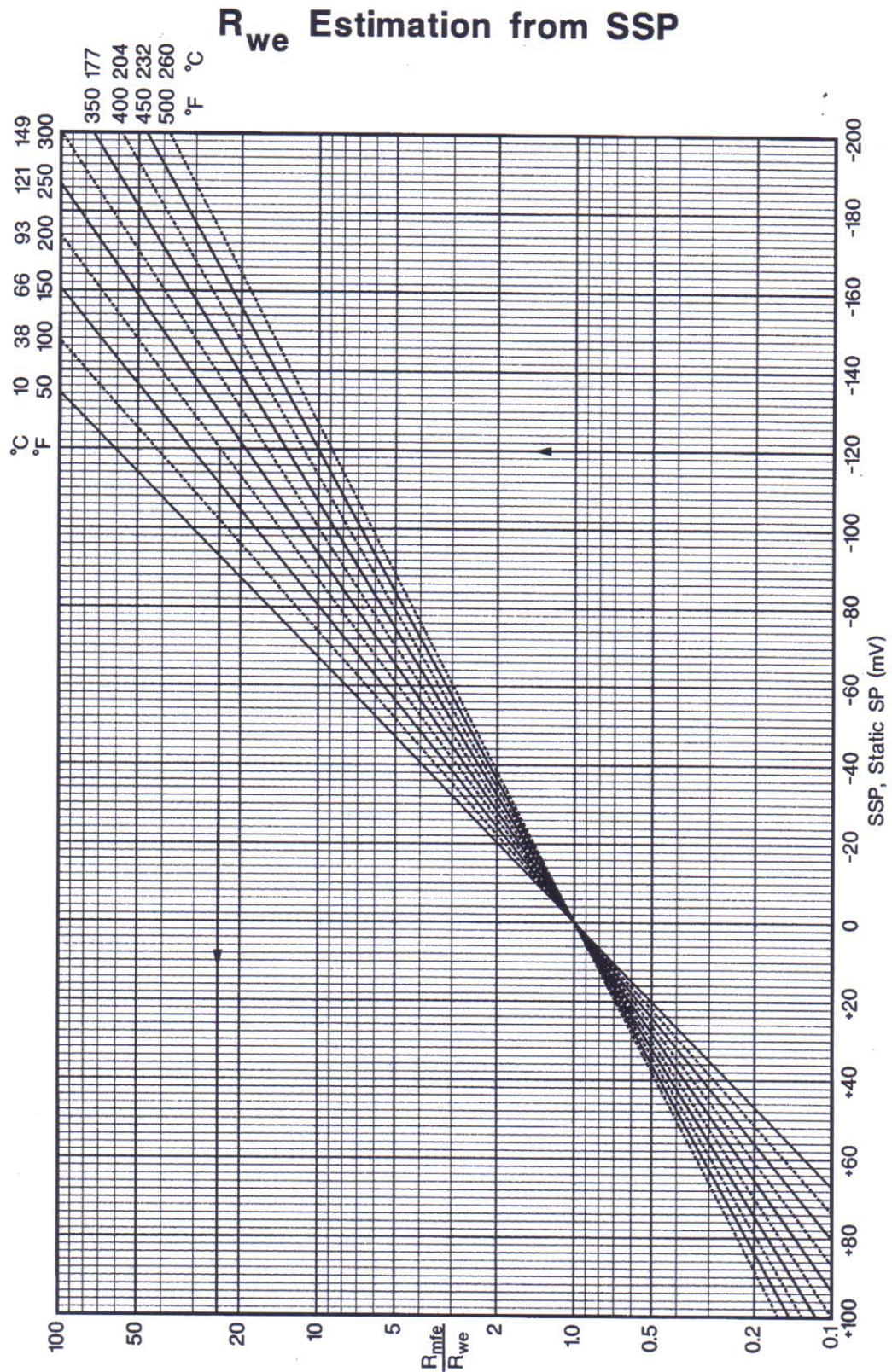


Figure 18.15 Correction chart for the  $R_{mfc}/R_{we}$  ratio from SSP for various formation temperatures.



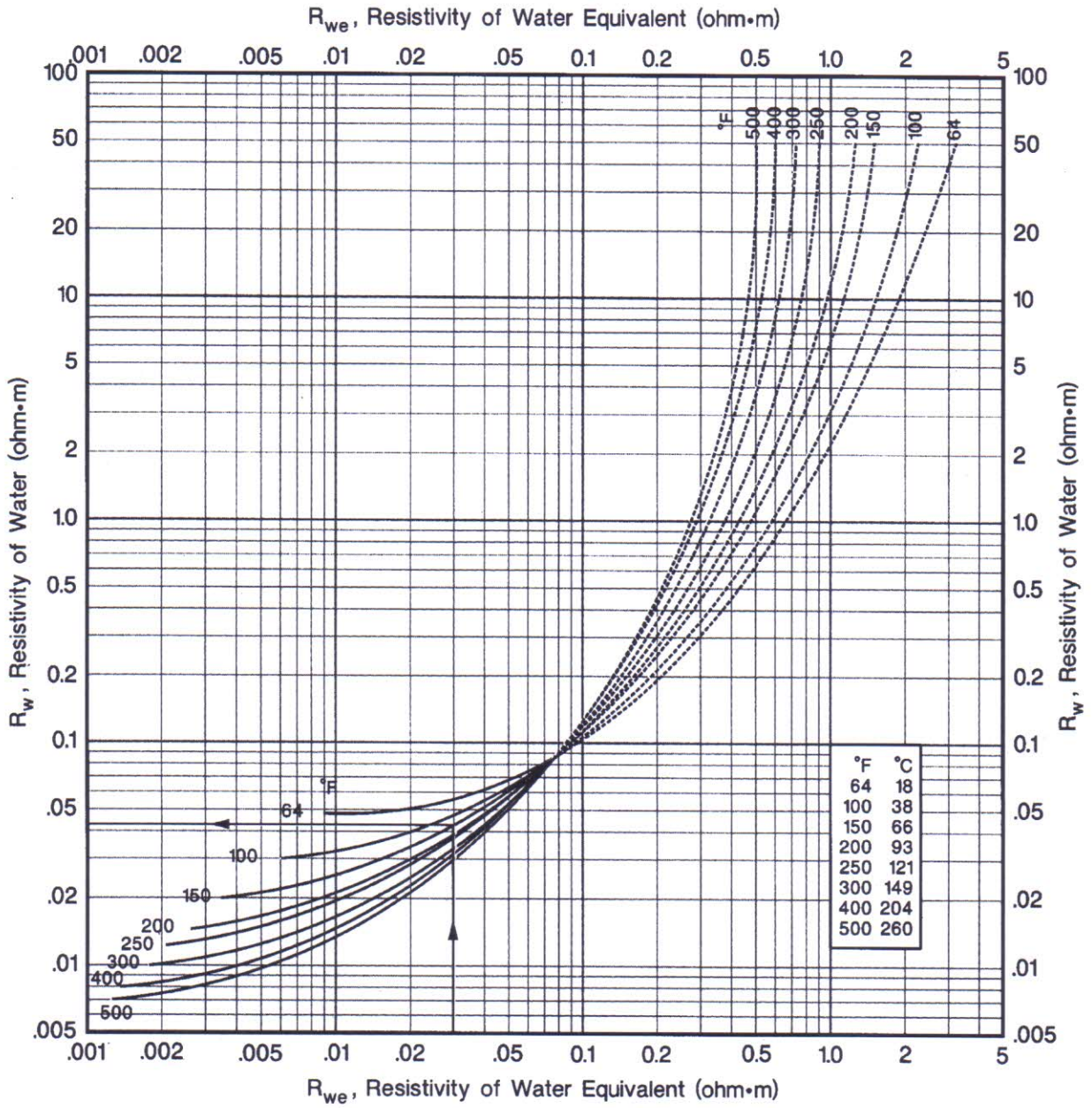


Figure 18.16 Correction chart for the  $R_w$  from  $R_{we}$  for various formation temperatures.



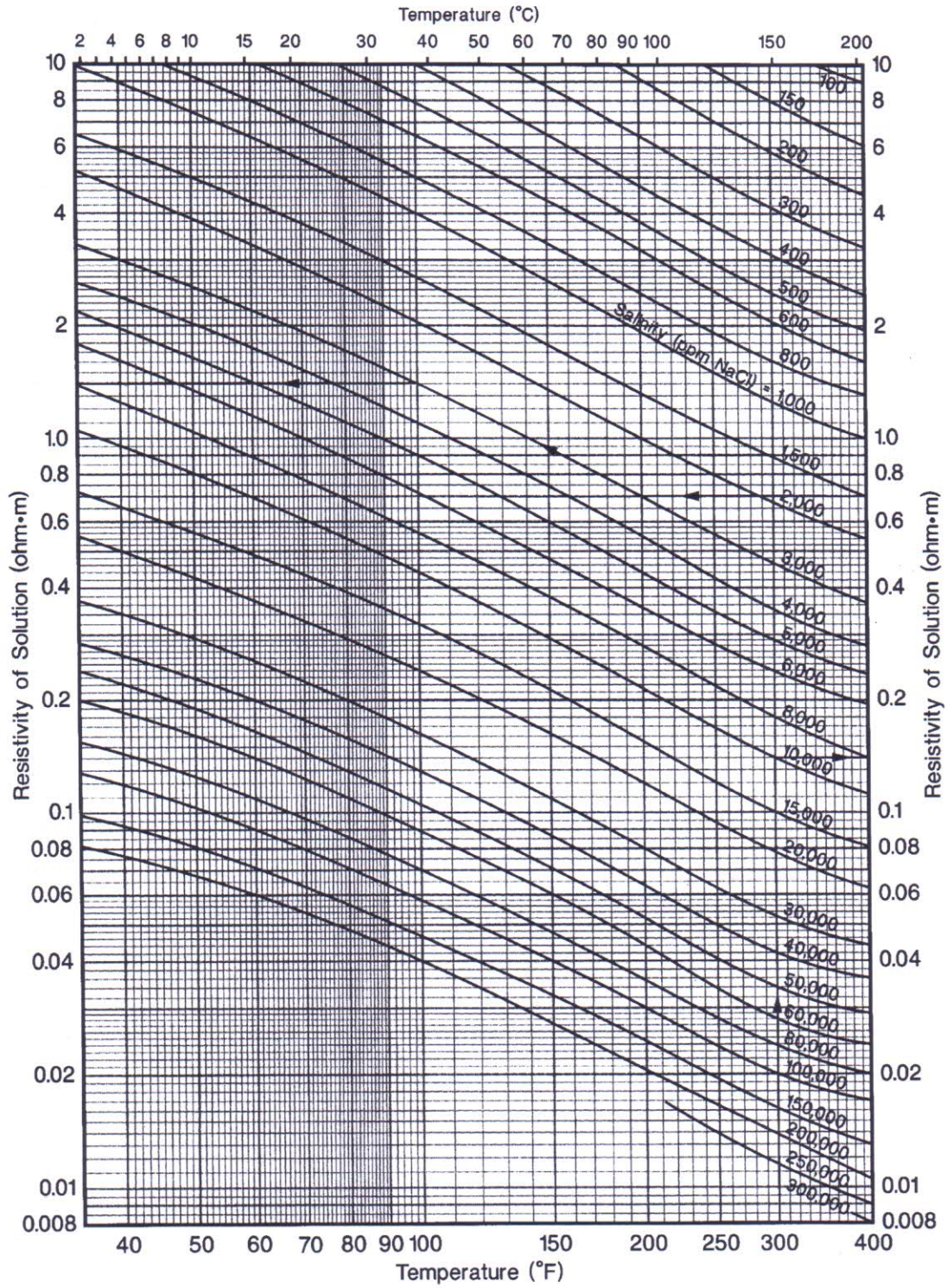


Figure 18.13 Correction chart for fluid resistivity-salinity-temperature.