

TEMPERATURE EXERCISE

This exercises uses data from the Elysian Field.

Well: 24-1X
 Depth Range: 2900 – 3300 m
 Lithology: Variable

Several logs have been run in well 24-1X of the Elysian Field between depths of 2900 m and 3300 m (the bottom of the borehole).

The following data were collected:

	Process	Depth (m)	Temp. (°F)	Time & Date	T (hours)	(t+T)/T
	Drilling Stopped	3300	-	22:00/15 th	-	-
	Mud Circulation Stopped	-	-	04:00/16 th	-	-
1	DIL log	3300	241	12:15/16 th		
2	FDC log	3300	257	15:00/16 th		
3	SNP log	3300	266	17:30/16 th		
4	Dipmeter	3300	273	20:30/16 th		

- (a) Calculate the mud circulation time, t , in hours $t =$
- (b) Calculate the recovery time, T (hours), for each logging run and fill in last but one column. Note: remember to use decimal time in hours.
- (c) Calculate $(t+T)/T$, and fill in the table.
- (d) Make a Horner plot of temperature on the y-axis (linear, 230 to 310°F) against $(t + T)/T$ on the x-axis (linear 1.0 to 2.0).
- (e) What is the true formation temperature at 3300 m in °F and in °C? (Note that to convert °F to °C subtract 32, divide the result by 9, and then multiply by 5.)
- (f) Given that the mean annual temperature of the sea-floor is 10°C and that the sea-floor is 300 m below the logging depth measurement point, calculate the mean temperature gradient in the well in °C/m and in °F/m.
- (g) What is the temperature in °F and in °C at 3100 m?

