Competency Matrix for Formation Evaluation
SPE Task Force on Minimal Competency

Formation Evaluation Task	Formation Evaluation Knowledge/Skill		
	Minimum Competence Breadth	**Minimum Competence Depth**	**Above Minimum Competence**
Determine formation properties (porosity, saturation, net pay) from well log interpretation.	Determine properties from log readings in clean sands.	Determine properties from log readings in both clean and shaly sands. State most common water saturation models.	Be able to depth-shift and normalize in complex lithology, multiwell field.
Determine lithology from well logs.	Determine lithology from combination of porosity log reading in clean sands.	Determine lithology from combination of porosity log readings in sands with mixed lithology.	Be able to depth-shift and normalize then determine lithology in complex, multiwell field.
Specify objectives of well test program.	State what can be learned about a well and reservoir from conventional well testing procedures.	Given a set of property values needed from a given reservoir, specify the tests available to measure those properties.	State what can be learned about a well and reservoir from conventional and the state-of-the-art well testing procedures, and specify the optimal tests available to determine a desired set of properties.
Design well testing program to meet guidelines.	Determine duration of well test required to measure specific near-well and reservoir properties in homogeneous, isotropic reservoirs.	Determine duration of well test, flow rates, and general testing equipment required to measure specified near-well and reservoir properties in heterogeneous, anisotropic reservoirs.	Determine duration of well tests, flow rate(s), general and specialized testing equipment to measure most possible responses in situations with poorly defined well and reservoir characteristics.
Determine formation properties (drainage area pressure, permeability, skin, distance to boundaries) from well test analysis.	Determine formation properties for single-phase flow of oil or water in buildup or constant rate flow tests. Boundaries limited to single no-flow boundaries. Formation homogeneous and isotropic.	Determine formation properties for single-phase flow of oil, gas, or water in buildup or multirate flow tests. Boundaries include single, multiple, or complete closure. Formation can be heterogeneous and anisotropic.	Determine formation properties for multi-phase flow of gas, oil, and/or water in buildup or multirate flow tests. Reservoir boundaries can be closed, partially sealing, or constant pressure. Formation can have complex heterogeneities, be anisotropic, and have fluid contacts within the area of influence of the test.

Formation Evaluation Task	Formation Evaluation Knowledge/Skill		
	Minimum Competence Breadth	**Minimum Competence Depth**	**Above Minimum Competence**
Specify objectives of wireline testing program.	State what can be learned about a well and reservoir from wireline well-test tools.	Given a set of property values needed from a given reservoir, specify the conventional tools available to measure these properties.	State what can be learned about a well and reservoir from conventional and state-of-the-art tools and procedures, and specify the optimal tools and procedures available to determine a desired set of properties.
Determine fluid densities, fluid contacts, and productivity from wireline formation test analysis.	Determine gradients and thus densities and contact location from pressure in wireline formation testers. Estimate productivity directly from test data.	Determine gradients and thus densities and contact location from pressure in wireline formation testing. Estimate productivity using results of analysis of transient test data.	Determine gradients and thus densities and contact location from pressure in wireline formation testing. Estimate productivity and desired well type from analysis of transient data in multi-probe wireline tester.
Design bottomhole and surface sampling procedures to obtain representative reservoir fluids.	State the procedures commonly used to sample black oil, volatile oil, dry gas, wet gas, and gas condensate wells.	Specify bottomhole and surface sampling procedures to sample black oil, volatile oil, dry gas, wet gas, and gas condensate wells.	Design bottomhole and surface sampling procedures to sample black oil, volatile oil, dry gas, wet gas, and gas condensate wells. Based on data obtained in the field and in the laboratory, state whether a sample is truly representative or not.
Determine objectives of coring programs and laboratory requirements.	State the properties obtained in routine and special laboratory procedures, conventional laboratory procedures used in these tests, and their limitations.	State the properties obtained in routine and special laboratory procedures, conventional laboratory procedures used in these tests, and their limitations. State the applications of this information to construct geological and engineering models of a reservoir.	Given the objectives of a reservoir study, state detailed procedures to be used in coring, amount of coring to be done, the specific tests to be run on the cores in the laboratory to ensure that the reservoir study meets its objectives. State how laboratory measurements should be transformed to data in the form needed for the reservoir study.