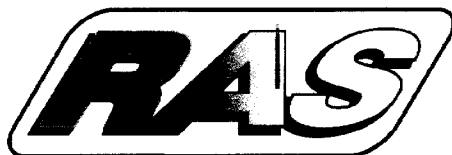


# Log Selection Chart for Geological Applications Using Common Geophysical Logs

Required Hole Conditions		ACOUSTIC		ELECTRIC & INDUCTION					FLUID LOGS					RADIOACTIVE or NUCLEAR			OTHER METHODS								
		Acoustic Televiwer	Borehole Radar/Tomography	Acoustic Velocity AI, CHL, VDL, FWS	Induced Polarization	Multi-electrode Resistivity Normal, Lateral, Micro Guard Resistivity	Formation Microresistivity	Single Point Resistance	Spontaneous Potential	Induction (Conductivity)	Hydrophysical Logging	Flow Meter - EM, Impeller, Heat Pulse	Fluid Resistivity	Temperature, Differential Temperature	Fluid Sampler	Colloidal Boreoscope Fixed, Scanning	Gamma-Gamma density	Gamma	Neutron	Spectral Gamma	Optical Televiwer	Magnetic Resonance	Calliper	Casing Collar Locator	Deviation
Information Desired	Measurement	■	□	■	□	■	□	■	□	■	□	■	□	■	□	■	□	■	□	■	□	■	□	■	□
		■ Cased fluid-filled hole	□ Screened or open fluid-filled hole	■ Steel casing only	□ Open or non-conductive cased holes, dry or fluid-filled	■ Possible applications	□ Clear fluid or dry cased hole	■ Clear fluid or dry open hole	□ Active nuclear log to be run in stable holes	■ Open fluid-filled holes only	□ No restrictions														
Lithology & Correlation	Bed/Aquifer thickness; correlation, structure	●		●		●	●	●	★							△	✓	△	✓			✓			
	Lithology - Depositional environment	?		●		●	●	●	★							△	✓	△	✓			✓			
	Shale or Clay Content				●	●		●	★							△	✓	△	✓						
	Bulk Density															△									
	Formation Resistivity		?			●	●		★																
	Injection/Production Profiles							?	?	□	□	□	□			△		△							
	Permeability estimates			●						□	□	□	□				✓					✓			
	Porosity (amount & type)	●		●		●			★							△		△				✓			
Mineral identification				●											△			✓							
Potassium-Uranium-Thorium content (KUT)																		✓							
Rock Structure	Strike & Dip of bedding	●	★					●												◇			✓		
	Fracture detection (number of fractures) ROD	●	★	●		●	●													◇		✓			
	Fracture Orientation & character	●						●												◇			✓		
	Thin bed resolution	●	?			?	●	●												◇		✓			
Fluid Parameters	Borehole Fluid characteristics								□		□	□	□									✓			
	Vertical Fluid Flow								□	□															
	Horizontal Fluid Flow								●					□						◇					
	Formation Water Quality					●		●	★	□			□												
	Moisture Content - Water Saturation					?			?							△		△							
	Temperature									□		□													
	Water level & water table	●		●		●	●	●	?	□		□	□			△		△		◇					
Borehole Parameters	Casing evaluation Integrity, leaks, damage, Screen location	■		■					?	■	■	■								◆		✓	■		
	Deviation of borehole																							✓	
	Diameter of borehole	●																					✓		
	Examination behind casing			●					★							△		△							
	Location of debris in wells	●																		◆		✓	✓		
Well completion evaluation e.g. cement bond, Seal location, Grout location	?		■					★							△	✓	△								
Contaminant Detection	<b>Organics</b>					●	●		?	□			□		△		△		?	✓					
	Hydrocarbons -LNAPL/DNAPL					●	●		?	□			□		△		△		?	✓					
	NAPL Solvents/Chlorinated Solvents					●	●		?	□			□		△		△		?	✓					
	High Volume Organic Wastes /Animal Wastes						●		?	?		□	□												
	<b>Inorganics</b>								?	□		□	□												
	Electrically Conductive Wastes/Salts						●		?	□		□	□												
	Metals/Metal Processing Wastes			?		●			?	□		□	□												
	Nutrients								?	□			□												
	<b>Mixed Wastes</b>								?																
	Nuclear wastes/NORM							?		?						?	✓	?	✓						
Landfills					●		●	★			□	□			?	?	?	?	?	?					

modified from Keys, 1993



Integrated Subsurface Evaluation

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