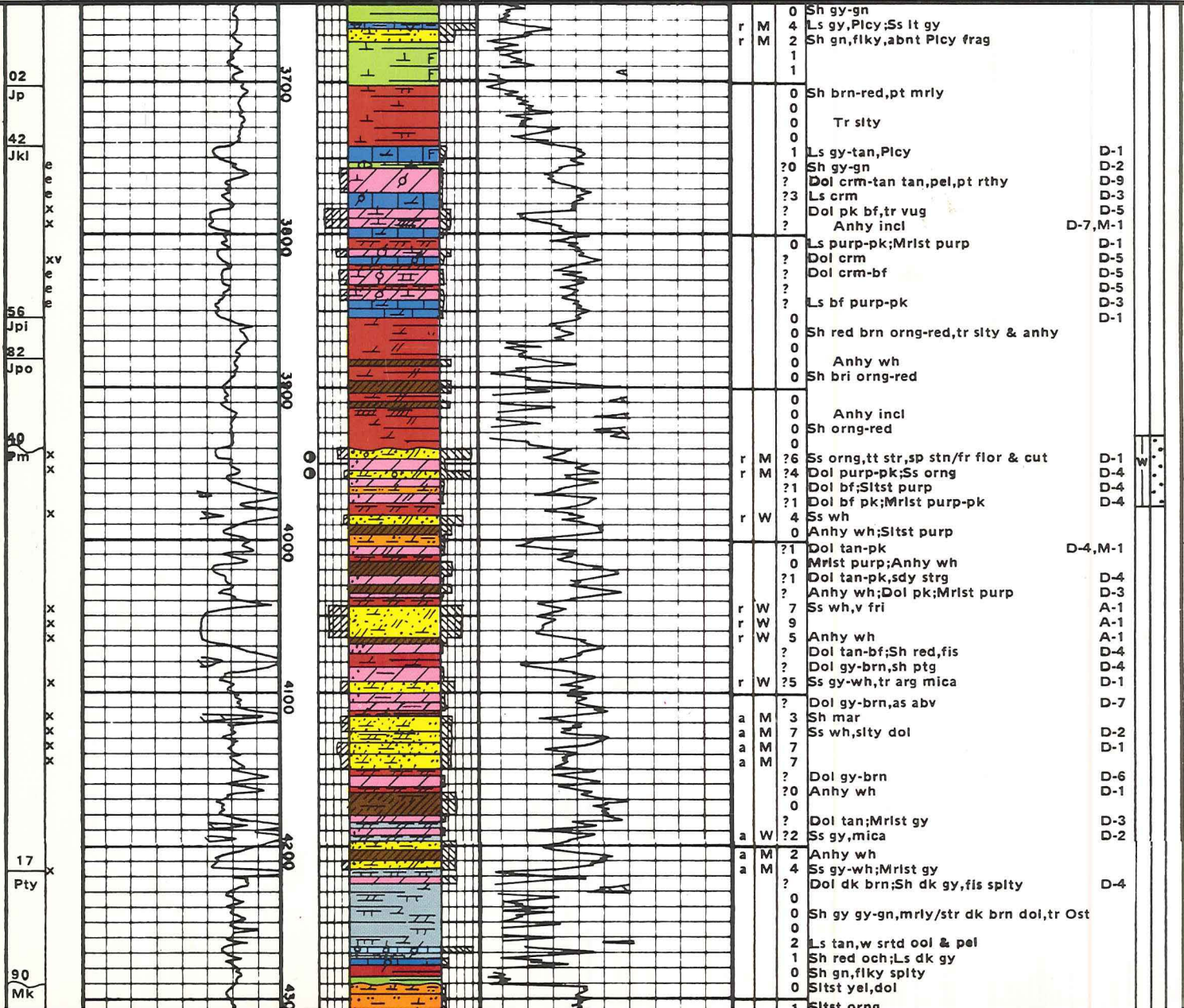


American/Canadian Stratigraphic



LITHOLOGIC SYMBOLS and ABBREVIATIONS



COMMON ABBREVIATIONS

@	At	coln	Colonial	grnl	Granule	nod	Nodule
abnt	Abundant	com	Common	grnt	Granite	num	Numerous
abv	Above	conc	Concretion (ary)	grnt.w	Granite wash		
acic	Acicular	conch	Conchoidal	gsy	Greasy	o	Oil
aft	After	Cono	Conodont	gvl	Gravel	occ	Occasional
aglm	Agglomerate	contm	Contaminated	gy	Gray	och	Ochre
Alg	Algae (al)	coq	Coquina	gyp	Gypsum (iferous)	od	Odor
alt	Altered (ing)	Cor	Coral	gywk	Graywacke	olvn	Olivine
amb	Amber	crbnt	Carbonate			onc	Oncolites
amor	Amorphous	Crin	Crinoid (al)	hd	Hard	ooc	Oocast (ic)
<u>Amph</u>	<u>Amphipora</u>	crm	Cream	hem	Hematite (ic)	ool	Oolite (ic)
amt	Amount	crpxl	Cryptocrystalline	hex	Hexagonal	oom	Oomold (ic)
ang	Angular	ctd	Coated	hi	High	op	Opaque
anhed	Anhedral	ctc	Contact	hornbd	Hornblende	org	Organic
anh	Anhydrite (ic)	cvg	Cavings	hrtl	Horizontal	orn	Orange
app	Appear	<u>Cyp</u>	<u>Cypridopsis</u>	hvy	Heavy	orth	Orthoclase
apr	Apparent			hydc	Hydrocarbon	Ost	Ostracod
aprox	Approximate (ly)	dd	Dead			ovgth	Overgrowth
arg	Argillaceous	deb	Debris	ig	Igneous	ox	Oxidized
argl	Argillite	decr	Decrease (ing)	imbd	Imbedded		
ark	Arkose (ic)	dend	Dendrite (ic)	imp	Impression	p	Poor (ly)
asph	Asphalt (ic)	dess	Desiccation	incl	Included (sion)	<u>Para</u>	<u>Paraparchites</u>
		dism	Disseminated	incr	Increase (ing)	pbl	Pebble
		dk	Dark (er)	ind	Indurated	pel	Pellet
bar	Barite (ic)	dns	Dense (er)	indst	Indistinct	<u>Pent</u>	<u>Pentamerus</u>
bcm	Become (ing)	dol	Dolomite (ic)	intbd	<u>Inoceramus</u>	perm	Permeability
bd	Bed	dolst	Dolostone	intcl	Interbedded	pet	Petroleum (iferous)
bdd	Bedded	drsy	Druse (y)	intcl	Intraclast (s)	phos	Phosphate (ic)
bdeye	Birdseye	dtrl	Detrital (us)	intfrag	Interfragmental	piso	Pisolite (ic)
bdg	Bedding			intgran	Intergranular	pit	Pitted
<u>Belm</u>	<u>Belemnites</u>	Ech	Echinoid	intgwn	Intergrown	pk	Pink
bent	Bentonite (ic)	elg	Elongate	intlam	Interlaminated	plag	Plagioclase
bf	Buff	<u>Endo</u>	<u>Endothyra</u>	intpt	Interpretation	plas	Plastic
biocl	Bioclastic	euhed	Euhedral	intr	Intrusion (ive)	Plcy	Pelecypod
biot	Biotite	<u>Euryamph</u>	<u>Euryamphipora</u>	intstl	Interstitial	pl	Plant
bioturb	Bioturbated			intv	Interval	plty	Platy
bit	Bitumen (inous)	f	Fine (ly)	intxl	Intercrystalline	pol	Polish (ed)
bl	Blue (ish)	fau	Fauna	ireg	Irregular	por	Porous (sity)
bldr	Boulder (256 mm +)	Fe	Iron-Ferruginous	irid	Iridescent	pos	Possible (ility)
blk	Black	Fe-mag	Ferro-magnesian	<u>Ivan</u>	<u>Ivanovia</u>	p-p	Pin point
blk	Blocky	fenst	Fenestral			pred	Predominant (ly)
bnd	Band (ed)	Fe-st	Ironstone	kao	Kaolin	pres	Preserved (ation)
boudg	Boudinage	fib	Fibrous	lam	Laminated	prim	Primary
Brac	Brachiopod	fis	Fissile	lav	Lavender	pris	Prism (atic)
brhg	Branching	fi	Fill (ed)	lchd	Leached	prry	Pearly
brec	Breccia (ted)	fld	Feldspar (thic)	len	Lentil (cular)	prob	Probable (ly)
bri	Bright	flk	Flake	lig	Lignite (ic)	prom	Prominent (ly)
brit	Brittle	flky	Flaky	lith	Lithographic	prphy	Porphyry
brd	Bored	flor	Fluorescence	lmn	Limonite (ic)	psdo	Pseudo
brn	Brown	fls	Flesh	lmpy	Lumpy	pt	Part (ly)
Bry	Bryozoa	flt	Fault (ed)	lmy	Limy	ptch	Patch (es)
bulb	Bulbous	flt	Floating	lrg	Large (er)	ptg	Parting
bur	Burrowed	fnt	Faint (ly)	ls	Limestone	purp	Purple
		Foram	Foraminifera	lse	Loose	pyr	Pyrite (ic) (ized)
c	Coarse (ly)	fos	Fossil (iferous)	lstr	Lustre	pyrbit	Pyrobitumen
¢	Core	fr	Fair	lt	Light (er)	pyrxn	Pyroxene
calc	Calcite (areous)	frac	Fracture (ed)				
carb	Carbonaceous	frag	Fragment (al)			qtz	Quartz
<u>Casph</u>	<u>Calcisphaera</u>	fri	Friable	m	Medium	qtzc	Quartzitic
cbl	Cobble (64-256 mm)	frmwk	Framework	magn	Magnetic	qtzs	Quartzose
Ceph	Cephalopod	fros	Frosted	magn	Magnetite	qtzt	Quartzite
cgl	Conglomerate	Fus	Fusulinid	mar	Maroon		
<u>Chaet</u>	<u>Chaetetes</u>	<u>Fvst</u>	<u>Favosites</u>	mas	Massive	rad	Radiate (ing)
chal	Chalcedony			mat	Material,matter	rd	Round (ed)
Chara	Charophytes	g	Good	meta	Metamorphic	<u>Ren</u>	<u>Renalcis</u>
chit	Chitin (ous)	<u>Gal</u>	<u>Galeolaria</u>	mica	Mica (eous)	repl	Replaced(ing) (ment)
chk	Chalk (y)	Gast	Gastropod	mic	Micro	resd	Residue (al)
chlor	Chlorite	gil	Gilsonite	mky	Milky	rexl	Recrystallize (ation)
cht	Chert	<u>Girv</u>	<u>Girvanella</u>	mnr	Minor	rhmb	Rhomb (ic)
chty	Cherty	gl	Glass (y)	mnrl	Mineral (ized)	rmn	Remains (nant)
Chtz	Chitinozoa	glau	Glauconite (ic)	mnut	Minute	rr	Rare
cl	Clastic	<u>Glob</u>	<u>Globigerina</u>	Mol	Mollusca	rsns	Resinous
cln	Clean	glos	Gloss (y)	mot	Mottled	rthy	Earthy
clr	Clear	gn	Green	mrlst	Marlstone	rug	Rugose (Rugosa)
clus	Cluster	gns	Gneiss	mrl	Marly		
cl	Clay (ey)	gr	Grain (ed)	msm	Metasomatic	s	Small
clyst	Claystone	gran	Granular	mtx	Matrix	sa	Salt
cmt	Cement (ed)	Grap	Graptolite	musc	Muscovite	sa-c	Salt cast (ic)
cncn	Concentric	grd	Grade (ed)			S	Sulphur
cntr	Center (ed)	grdg	Grading	n	No,none	s&p	Salt & pepper
col	Color (ed)						

sat	Saturated	<u>Solen</u>	<u>Solenopora</u>	sy-Ca	Sparry calcite	vgt	Varigated
sb	Sub	sp	Spot (ted) (ty)	sz	Size	vit	Vitreous
sc	Scales	spec	Speck (led)			vn	Vein
Scaph	Scaphopod	Spg	Sponge	tab	Tabular	volc	Volcanics
scat	Scattered	sph	Spherules	Tas	<u>Tasmanites</u>	vps	Very poor samples
sch	Schist	<u>Sphaer</u>	<u>Sphaerocodium</u>	Tent	<u>Tentaculites</u>	vrtl	Vertical
Scol	Scolecodonts	sphal	Sphalerite	tex	Texture	vrvd	Varved
sd	Sand (1/16-2 mm)	spic	Spicule (ar)	<u>Tham</u>	<u>Thamnopora</u>	vug	Vug (gy) (ular)
sdv	Sandy	spl	Sample	thk	Thick		
sec	Secondary	splty	Splintery	thn	Thin	/	With
sed	Sediment (ary)	Spr	Spore	thru	Throughout	w	Well
sel	Selenite	srt	Sort (ed) (ing)	tns	Tension	wh	White
sept	Septate	ss	Sandstone	tr	Trace	wk	Weak
sft	Soft	<u>Stach</u>	<u>Stachyodes</u>	trip	Tripoli (ic)	wthrd	Weathered
sh	Shale	stmg	Streaming	trnsl	Translucent	wtr	Water
shad	Shadow	stn	Stain (ed) (ing)	trnsp	Transparent	wvy	Wavy
shy	Shaly	str	Streak	tt	Tight (ly)	wxy	Waxy
sid	Siderite (ic)	strg	Stringer	tub	Tubular		
sil	Silica (eous)	stri	Striated	tuf	Tuffaceous	xbd	Cross-bedded
sks	Slickensided	Strom	Stromatoporoid			xbdg	Cross-bedding
sl	Slight (ly)	stromlt	Stromatolite	uncons	Unconsolidated	xl	Crystal (line)
sln	Solution	struc	Structure	unident	Unidentifiable	xlam	Cross-laminated
slky	Silky	styl	Stylolite (ic)	up	Upper		
silt	Silt	<u>Stylio</u>	<u>Styliolina</u>			yel	Yellow
siltst	Siltstone	suc	Sucrosic	v	Very		
silty	Silty	sug	Sugary	var	Variable	zeo	Zeolite
sm	Smooth	surf	Surface	vcol	Varicolored	zn	Zone
sol	Solitary	<u>Syring</u>	<u>Syringopora</u>	ves	Vesicular		

ENGINEERING ABBREVIATIONS

AOF	absolute open flow	GCM	gas cut mud	perf	perforated
BHFP	bottom hole flow pressure	GCW	gas cut water	PD	per day
BHP	bottom hole pressure	GAP	good air blow	PH	per hour
BHSIP	bottom hole shut in pressure	GIP	good initial puff	pkr	packer
BHT	bottom hole temperature	GOR	gas-to-oil ratio	psi	pounds per square inch
BO	barrels of oil	GR	ground		
BOPD	barrels of oil per day	GTS	gas to surface	rec	recovered
BOPH	barrels of oil per hour	gty	gravity	RT	rotary table
brk	brackish	HO	heavy oil	SAB	strong air blow
BW	barrels of water	IAB	initial air blow	SGCM	slight gas cut mud
BWPD	barrels of water per day	IP	initial production	SGCW	slight gas cut water
BWPH	barrels of water per hour			SI	shut in
				SIP	shut in pressure
circ	circulate (ed) (tion)	KB	kelly bushing	SO	show of oil
ck	choke			SO&G	show of oil and gas
comp	completed (tion)	loc	location	SO&W	show of oil and water
crd	cored	LSD	legal subdivision	SOCM	slight oil cut mud
csg	casing			SOCW	slight oil cut water
		MCFG	thousand cubic feet of gas	sqz	squeezed
(D)	development	MMCFG	million cubic feet of gas	SSO	slight show of oil
D & A	dry and abandoned	MCO	mud cut oil	SW	salt water
decr	decreasing	MCW	mud cut water	swbd	swabbed
DF	derrick floor			T.D.	total depth
dist	distillate	O&G	oil and gas	TSTM	too small to measure
drlr	driller	O&SW	oil and salt water	tstg	testing
DST	drill stem test	OC	oil cut		
		OCM	oil cut mud	V.op	valve open
est	estimated	OFM	oil flecked mud		
		op	open	(W)	wildcat
FTAB	faint air blow	OTD	old total depth	WAB	weak air blow
FAB	fair air blow	OTS	oil to surface	WCM	water cut mud
fl/	flowed (ing)	OWDD	old well drilled deeper	WIP	weak initial puff
FP	flowing pressure	OWPB	old well plugged back	wtr	water
		OWWO	old well worked over	wtr cush	water cushion
ga	gauged				
G&OCM	gas and oil cut mud	PB	plugged back		

MECHANICAL LOG ABBREVIATIONS

BHCS	bore hole compensated sonic	ES	electric	ML	microlog, minilog
Cal	caliper	IES	induction electric	MLL	microlaterolog
CN	compensated neutron	FDL	formation density log	N	Neutron
DI	dual induction log	GL	guard log	S	sonic, acoustilog
DIL	dual induction laterolog	GR	gamma ray	SNP	sidewall neutron porosity log
DLL	dual laterolog	LL	laterolog	SP	spontaneous potential
DL	density log	LL8	laterolog-8	PL	proximity log

LOG FORM

FORMATION TOPS FOOTNOTES	POROSITY TYPES	OIL STAIN	POROSITY GRADES	LITHOLOGY	CRYSTAL GRAIN OR FRAGMENT SIZE	ROUNDING	SORTING	PERCENT OF FRAMEWORK	DESCRIPTION	DIAGENESIS	DST RESULT	DST INTERVAL	CORE INTERVAL
1	2	3	4	5	6	7	8	9	10		11	12	13

COLUMN 1

FORMATION TOPS

FOOTNOTES

FAULTS

$\frac{65}{Kbc}$

1*



Normal
Reverse
Overtuned strata

COLUMN 2

POROSITY TYPES

X INTERCRYSTALLINE, INTERGRANULAR, INTERFRAGMENTAL

φ INTEROOLITIC, INTERPELLETOID

V VUGGY-voids greater than 1/16mm

P PINPOINT-voids less than 1/16mm

∫ MOLDIC

O ORGANIC-bridged, intrafossil

F FRACTURE

e EARTHY-low permeability, crystals less than 1/16mm

☐ FENESTRAL-voids from gas bubbles, shrinkage cracks & birdseye texture

COLUMN 3

OIL SHOWS

STAIN PRESENT

● Even staining, fluoresces in solvent

○ Spotted staining, fluoresces in solvent

D Dead, asphaltic, bitumen, etc.

○ Questionable, no fluorescence in solvent

NO STAIN PRESENT

■ Oil zone (from production data)

▲ Gas zone (from production data)

COLUMN 4

POROSITY GRADES

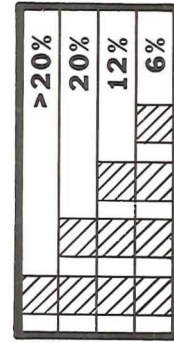
FOUR DIVISIONS — (right to left)

Division 1 3% — 6% Poor porosity with low permeability

Division 2 6% — 12% Fair porosity

Division 3 12% — 20% Good porosity

Division 4 OVER 20% Excellent porosity



COLUMN 5

ROCK TYPE

	BRECCIA
	CONGLOMERATE
	SANDSTONE
	SILTSTONE
	SHALE, gray
	SHALE, black
	SHALE, colored
	CLAYSTONE, gray
	CLAYSTONE, colored
	BENTONITE
	CHERT, bedded
	MARLSTONE, calcareous
	LIMESTONE, mudsupported (FW < 7)
	LIMESTONE, grainsupported (FW 7 or >)
	MARLSTONE, dolomitic
	DOLOMITE
	SIDERITE, LIMONITE, or HEMATITE
	ANHYDRITE, primary
	ANHYDRITE, secondary
	GYPSUM
	SALT
	COAL, pure and interbedded
	GLACIAL TILL
	IGNEOUS, basic
	IGNEOUS, acidic
	TUFF
	WELDED TUFF
	METAMORPHIC

	CHERT, tripolitic
	ARGILLACEOUS
	SHALE, laminae
	CARBONACEOUS FLAKES
	COAL, thin beds
	CEMENTING BITUMENOUS SUBSTANCE
	CALCAREOUS
	MARLSTONE, stringers-calc.
	LIMESTONE, stringers
	DOLOMITIC
	MARLSTONE, stringers-dol.
	DOLOMITE, stringers
	ANHYDRITIC
	ANHYDRITE, stringers
	GYPSIFEROUS
	GYPSUM, stringers
	SALT CAST or INFILL
	PHOSPHATE PELLETS
	FERRUGINOUS GRAINS or PELLETS
	FERRUGINOUS
	FERRUGINOUS, stringers
	NODULES
	TUFFACEOUS

SYMBOLS USED FOR SIGNIFICANT OCCURRENCES
(may be less than 10%)

	HEAVY, DARK MINERALS
	GLAUCONITE
	BENTONITE
	PYRITE
	KAOLIN
	PLANT SPORES
	PLANT REMAINS
	FISH REMAINS
	MINERAL CRYSTALS

ROCK BUILDERS

F = < 20%	2 symbols = 50 to 70%
1 symbol = 20 to 50%	3 symbols = 70 to 100%

ORGANIC

	FORAMINIFERA
	CRINOID
	PELECYPOD
	BIOLASTIC or FRAGMENTAL

	AMPHIPORA
	CORAL
	STROMATOPOROID
	BRYOZOA
	BRACHIOPOD
	OSTRACOD
	CEPHALOPOD
	GASTROPOD
	SCAPHOPOD
	BELEMNITE
	ECHINOID
	FOSSILS < 20%

ORGANIC or NON ORGANIC

	OOLITES
	PISOLITE 2mm. or over
	PSEUDO OOLITES or PELLETS
	INTRACLASTS

FRAMEWORK ALGAE

	SKELTAL
	OOTOID

NON-FRAMEWORK ALGAE

	NON-DESCRIPT
	LAMINATED

MISCELLANEOUS

	KARST TOPOGRAPHY
	NO SAMPLES
	CANNOT INTERPRET, cavings etc.
	QUESTIONABLE INTERPRETATION

TEXTURES

	EARTHY
	CHALKY
	LITHOGRAPHIC
	CRYPTOCRYSTALLINE

ACCESSORIES

1 symbol=10% or 20%
2 symbols=30% or 40%
3 symbols=50%

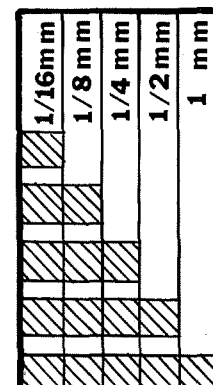
	SANDY
	SANDSTONE, stringers
	SILTY
	SILTSTONE, stringers
	PEBBLES > 2mm.
	SAND GRAINS > 1 to 2 mm.
	ARGILLITE GRAIN
	FELDSPAR
	BRECCIA, fragment
	SILICEOUS
	CHERT, light and dark

COLUMN 6

CRYSTAL, GRAIN or FRAGMENT SIZE

FIVE DIVISIONS (left to right) WENTWORTH SCALE

Division 1	.004mm — .0625mm	Silt
Division 2	.0625mm — .125mm	Very fine
Division 3	.125mm — .250mm	Fine
Division 4	.250mm — .500mm	Medium
Division 5	.500mm — 1.000mm	Coarse



COLUMN 7

ROUNDING

A	ANGULAR	R	ROUNDED
a	SUBANGULAR	r	SUBROUNDED

COLUMN 8

SORTING

W	WELL	1 or 2	sizegrades
M	MEDIUM	3 or 4	sizegrades
P	POOR	5 or more	sizegrades

COLUMN 9

FRAMEWORK

FRAMEWORK IS A RATIO BETWEEN CLASTIC MATERIAL OVER 1/16mm AND PRIMARY VOID FILLER OR MATERIAL 1/16mm AND LESS. ORGANIC DEPOSITS (fossils) ARE CONSIDERED AS FRAMEWORK WHETHER GROWING IN PLACE OR TRANSPORTED.

0	0 to 5%	5	50%	C	100%
1	10%	6	60%	?5	QUESTIONABLE INTERPRETATION
2	20%	7	70%	?	UNINTERPRETABLE
3	30%	8	80%		
4	40%	9	90%		

COLUMN 10

DESCRIPTION

USED FOR INFORMATION THAT CANNOT BE PRESENTED IN COLUMNS 1 THROUGH 9, E.G. COLOR, SPECIFIC FOSSIL IDENTIFICATION, OBSERVATIONS ON BEDDING, INDURATION, HARDNESS, STRUCTURE, ETC.

DESCRIPTIVE TERMS ARE ABBREVIATED. (see abbreviation list)

DIAGENESIS To the right of written description

TYPE





M	METASOMATISM	SECONDARY CEMENTATION
D	DOLOMITIZATION	A ANHYDRITE
R	RECRYSTALLIZATION	S SILICA
F	FRACTURING	K KAOLIN
L	LEACHING	C CARBONATE and OTHERS

DEGREE

1	10%	5	50%	9	90%
2	20%	6	60%	C	100%
3	30%	7	70%	?	Uninterpretable
4	40%	8	80%		

COLUMN 11

DRILL STEM & WIRELINE TEST RESULTS

	GAS RECOVERY
	OIL RECOVERY
	WATER RECOVERY
	GAS, OIL & WATER RECOVERY

COLUMN 12

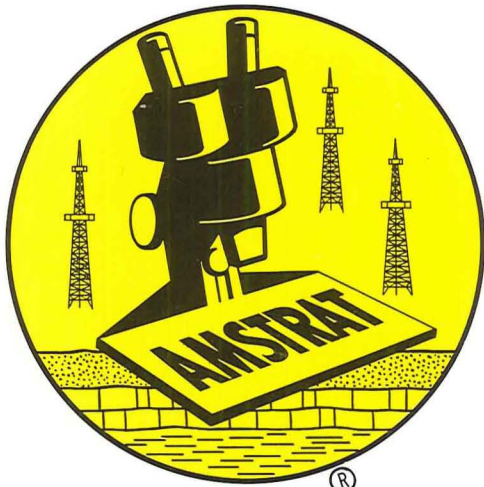
DRILL STEM & WIRELINE TEST INTERVALS

	DRILL STEM TEST INTERVAL
	WIRELINE TESTED ZONE

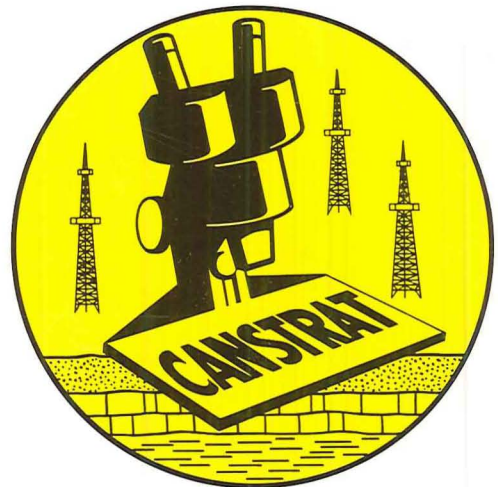
COLUMN 13

CORED INTERVALS

	CORED INTERVAL
	SIDEWALL CORE



Reg. U.S. Pat. Off. ®



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