

Glossary

Acronyms and Abbreviations

Term	Definition
General Terms and Measurements	
1wtt	one-way travel time
Adv	the depth the hole was advanced
API	American Petroleum Institute (standard units of measurement)
ASK	Automated Station Keeping (Dynamic Positioning System)
bar/bars	measure of pressure (1 bar of pressure = 100,000 Pascals)
bbbl	barrel(s)
BDL	below detectable level
BHA	bottom hole assemblage (bit, drill collars, and outer barrel components)
BSR	bottom-simulating reflector
C ₁	methane
C ₂	ethane
C ₃	propane
C ₄	butane
C ₄₊	butane plus liquid hydrocarbons
C'BBL	core barrel
C'BIT	center bit
CC	core catcher in core barrel system
CEL	cell enumeration (microbiology)
CLDC	Control Length Drill Collar
CMT	cement
CO ₂ /L	carbon dioxide per liter
cm	centimeter
cm ²	square centimeters
cm ³	cubic centimeter
cc	cubic centimeter
cm/ky	centimeters per thousand years
CSG	steel drill casing
CSMHI	Consortium for Scientific Methane Hydrate Investigations
CTR	center
CUM	cumulative
deg	degree
DES	Dual Elevator Stool (at rig floor)
DGH	Directorate General of Hydrocarbons
DP	Dynamic Positioning or Drill Pipe depending upon context
"drift"	Verify proper clearance exists down the inside diameter of a tubular
DVTP	Davis-Villinger Temperature Probe
Ω _v	effective vertical stress
gAPI	American Petroleum Institute gamma-ray units
gpm	gallons per minute
g/cc	grams per cubic centimeter
g/cm ³	grams per cubic centimeter
ΔT	change in temperature
°C/km	degrees Celsius per kilometer
DES	dual elevator stool
ER	electrical resistivity
ETA	estimated time of arrival
ETD	estimated time of departure
FeS	Iron sulfide
ft/hr	foot per hour
FUGRO	FUGRO McClelland Marine Geosciences
GD	Godavari Basin (off the east coast of India)

Acronyms and Abbreviations—Continued

Term	Definition
General Terms and Measurements—Continued	
GHSZ	gas-hydrate stability zone
hr	hour(s)
HS	head space
HYD	hydrate sample
Hz	hertz
IC	ion-chromatography
I.D.	inside diameter
IODP	Integrated Ocean Drilling Program
IPTC	Integrated Pressure Testing Chamber
in	inch
in ³	cubic inches
IR	infrared
IW	interstitial (pore) water
JR	<i>JOIDES Resolution</i> Drill Ship
K	one thousand (for example 30K = 30,000)
ka	thousand years ago
keV	thousand electron volts
kHz	kilohertz
KG	Krishna-Godavari Basin (off the central east coast of India)
KK	Konkan-Kerala Basin (off the central west coast of India)
km/s	kilometers per second
kN/m ³	kilonewton per cubic meter
kPa	kilopascals
kPa/m	kilopascals per meter
kt	knot(s)
ky	thousand years
L	liters
LA	last appearance
lb	pounds
LDEO–BRG	Lamont-Doherty Earth Observatory–Borehole Research Group
LFV	lockable float (flapper) valve
LN ₂	liquid nitrogen
m	meter (s)
m/h	meters per hour
m/s	meters per second
m/s ²	meters per seconds squared
Ma	million years ago
MAD	moisture and density physical properties
MBIO	microbiological sample
mbrf	meters below rig floor
mbsf	meters below sea floor
mbsl	meters below sea level
mbss	meters below sea surface
MeV	mega electron volts
MHz	megahertz
min	minutes
ML	Micro-Logger (miniature data recorders)
MN	Mahanadi Basin (off the northeast coast of India)
MPa	megapascals
μL	microliter
μm	micrometer
mL	milliliter
mL/L	milliliters per liter
mm	millimeter
mM	milli-mole
mmol	milli-mole

Acronyms and Abbreviations—Continued

Term	Definition
General Terms and Measurements—Continued	
mM/m	milli-moles per meter
mW	milliwatt
MSCL	MultiSensor Core Logger
MSCL-P	MultiSensor Core Logger-pressurized
MSCL-S	Geotek Multisensor Core Logger
NCR	noncontact resistivity
NDT	nondestructive testing
NGHP	National Gas Hydrate Program
nm	nanometers
nmi	nautical mile(s)
NMR	Nuclear Magnetic Resonance
NSF	National Science Foundation (USA)
O/P	overpull
O/S	overshot (recovery tool for core barrels)
OCB	outer core barrel
ODL	Overseas Drilling Limited (<i>JOIDES Resolution</i> Operator)
ODP	Ocean Drilling Program
ohm-m	ohm-meters
ONGC	Oil and Natural Gas Company Limited (India)
p/t	pressure and temperature
PDR	precision depth recorder
"pig"	Wiper plug pumped down drill string to remove loose particles of rust
POOH	pull out of the hole (recover drill string or wire-line tool)
PP	physical-property
PP	Pocket Penetrometer
ppg	pounds per gallon
ppm	parts per million
ppmv	parts per million by volume
ppt	parts per thousand
PRESS	PREssurized SubSampler
psi	pounds per square inch
PTP	pressure/temperature probe (micro-logger)
ROP	rate of penetration
S/m	siemens per meter
SBTD	set back top drive
sec	second(s)
SF	seafloor
SI	sample tracking code
SIO	Scripps Institution of Oceanography
SMI	sulfate-methane interface
SPH	hydrogenase activity analysis (microbiology)
SPM	strokes per minute
Spp	shear vane strength
spud	begin to drill the well (but enter the sea floor)
Srem	remolded vane shear strength
Sres	shear vane stress
St	shear strength sensitivity (Sv/Srem)
"stand"/std	three joints of drill pipe screwed together (drill pipe is racked and tripped in stands)
"strap"	Strap Pipe (as in measuring the length of a tubular)
Stv	shear vane test sensitivity
Sv	peak vane shear strength
ROP	rate of penetration
rpm	revolutions per minute
TAMU	Texas A&M University
TBD	to be determined
TC	sample tracking code

Acronyms and Abbreviations—Continued

Term	Definition
General Terms and Measurements—Continued	
TCI	Tungsten Carbide Insert
TD	top drive or total depth depending upon context
“tubular”	Cylindrical joint of pipe (typically drill pipe, drill collar, knobby joint)
TV	television
TWT	two-way travel time
UW	underway
USDOE	U.S. Department of Energy
USGS	United States Geological Survey
VIT	vibration-isolated transport (frame for subsea television deployment)
V _p	compression-wave velocity (P-wave velocity)
V _s	shear-wave velocity (S-wave velocity)
W-PACKS	whirlpaks (glass micro-bead packages used for Microbio contamination control)
WCs	the corrected water content based on the solid grain mass
WCt	the corrected water content based on the total specimen mass
WHC	wire-line heave compensator
wire-line	wire used to lower either logging or coring tools
WOB	weight-on-bit (or drilling weight)
WOW	waiting-on-weather (operating delays due to environment)
YEOP	yeoperson on the ship, responsible for report management
Coring tools	
APC	Advanced (Hydraulic) Piston Corer
APCM	Temperature-Pressure-Conductivity “Methane Tool” (used with APC)
APCT	APC Temperature Tool (2nd generation—ADARA replacement)
APCT-3	APC Temperature Tool (3rd generation)
DIT	Phasor Dual Induction—Spherically Focused Resistivity Tool
FMS	Formation MicroScanner Tool
GPIT	General Purpose Inclinator Tool
HRC	Hyacinth Rotary Core—Pressure Core Barrel
HYACE	Hydrate Autoclave Coring Equipment
HYACINTH	HYACE pressure-core tools
PCS	Pressure Core Sampler—TAMU Pressure Core Barrel
PCSM	Temperature-Pressure-Conductivity “Methane Tool” (used with PCS)
RCB	Rotary Core Barrel
SBDC	Seal Bore Drill Collar (OCB used with APC/XCB coring systems)
XCB	(X) Extended Core Barrel
_E	Fugro (Hyacinth) Rotary Pressure Core (HRC)
_H	Advance (Hydraulic) Piston Corer (APC)
_P	Pressure Core Sampler (PCS)
_R	Rotary Core Barrel (RCB)
_X	Extended Core Barrel (XCB)
_Y	Fugro Pressure Core (FPC)
Downhole logging measurements and acronyms (also see Tables 3 and 4 from Methods)	
a	Archie tortuosity constant
APS	Accelerator Porosity Sonde
CGR	computed gamma ray emission
DSI	Dipole Shear Sonic Imager
DVD	EcoScope multifunction tool
EOP	end of (drill) pipe (OR) end of program (depending on context)
F	formation factor
HLDT	Hostile Environment Litho-Density Tool
HNGS	Hostile Environment Spectral Gamma Ray Sonde
IDEAL	Schlumberger Drilling and Measurements Integrated Drilling Evaluation and Logging system
IDRO	image-derived density curve
ILD	induction log deep (resistivity measurement)
I/o	lay out logging or coring tools
LWD	logging-while-drilling

Acronyms and Abbreviations—Continued

Term	Definition
Downhole logging measurements and acronyms (also see Tables 3 and 4 from Methods)—Continued	
m	Archie cementation constant
MWD	measurement-while-drilling
MU	makeup of logging or coring tools
n	Archie saturation exponent
p/u	pick-up logging or core tools
PEF	photoelectric factor
PDR	Precision Depth Recorder
ϕ	porosity
PU	pick-up logging or core tools
RAB	resistivity-at-bit
RHOB	bulk density
RIH	run-in-hole (lower drill string or wire-line tool to bottom of the hole)
Ro	formation resistivity with 100% water
Rt	formation resistivity
R_w	pore fluid resistivity
SBs	sinker bars
SFLU	spherically focused unaveraged resistivity
SGT	Scintillation Gamma Ray Tool
S_h	gas hydrate saturation (percent pore space occupied by gas hydrate)
SP	shot point
S_w	water saturation
VSI	Versatile Seismic Imager
VSP	vertical seismic profile
VTU	velocity test unit
WL	wireline
WSVP	walkaway vertical seismic profile
Symbols and Directions	
~	approximately
<	less than
>	greater than
%	percent
±	plus or minus
N	north
S	south
E	east
W	west
NE	northeast
SE	southeast
NW	northwest
SW	southwest
SSE	south southeast

NGHP Expedition 01—Site Summary Data

Prospectus designation	Leg	Site number	Water depth (m)	Depth to base of methane hydrate stability zone (mbsf)	BSR depth (mbsf)	Dominant sediment type	Gas hydrate reservoir type	Gas source
KKGH01	1	NGHP-01-01	2,663	360	no BSR	Carbonate oozes	None	None
KKGH03-A	2	NGHP-01-02	1,058	NA	170	Clay/silt?	Combination?	Microbial?
GDGH05-A	2	NGHP-01-03	1,076	203	209	Clay with silt/sand beds	Silt/sand	Microbial
KKGH01	2	NGHP-01-04	1,081	NA	182	Clay/silt?	Combination?	Microbial?
KKGH02-A	2	NGHP-01-05	945	130	~125	Clay with silt/sand beds	Combination	Microbial
KKGH04	2	NGHP-01-06	1,160	NA	210	Clay/silt?	Combination	Microbial?
KKGH06-A	2	NGHP-01-07	1,285	198	188	Clay with silt/sand beds	Combination	Microbial
MNGH01-1-A	2	NGHP-01-08	1,689	NA	257	Clay/silt?	Combination?	Microbial?
MNGH-01-2	2	NGHP-01-09	1,935	NA	~290	Clay/silt?	Combination?	Microbial?
KKGH03-A (GD-3-1)	2	NGHP-01-10	1,038	160	~160	Clay/silt	Fracture	Microbial
GDGH12-A	2	NGHP-01-11	1,007	NA	150	Clay/silt?	Combination	Microbial?
KKGH03-A (1st new site)	3A	NGHP-01-12	1,038	NA	~160	Clay/silt	Fracture	Microbial
KKGH03-A (2nd new site)	3A	NGHP-01-13	1,038	NA	~160	Clay/silt	Fracture	Microbial
GDGH14-A	3B	NGHP-01-14	895	150	109	Clay with silt/sand beds	Silt/sand	Microbial
GDGH11	3B	NGHP-01-15	926	126	126	Clay with silt/sand beds	Silt/sand	Microbial
Stepout Site	3B	NGHP-01-16	1,253	178	170	Clay with silt/sand beds	Silt/sand	Microbial
ANGH01	4	NGHP-01-17	1,344	620	~608	Clay/silt with volcanic ash beds	Silt/ash	Micro/thermo
MNGH-REL 5	4	NGHP-01-18	1,374	210	~210	Clay/silt	Clay/silt?	Micro/thermo
MNGH-Gap	4	NGHP-01-19	1,422	220	205	Clay with silt/sand beds	Silt/sand	Micro/thermo
KKGH05	4	NGHP-01-20	1,146	NA	~220	Clay with silt/sand beds	Silt/sand	Microbial
KKGH03-A (new FR1)	4	NGHP-01-21	1,049	NA	~160	Clay/silt	Fracture	Microbial

Uncertain values or assumptions have been queried with a question mark.

Combination = silt/sand and fracture reservoirs