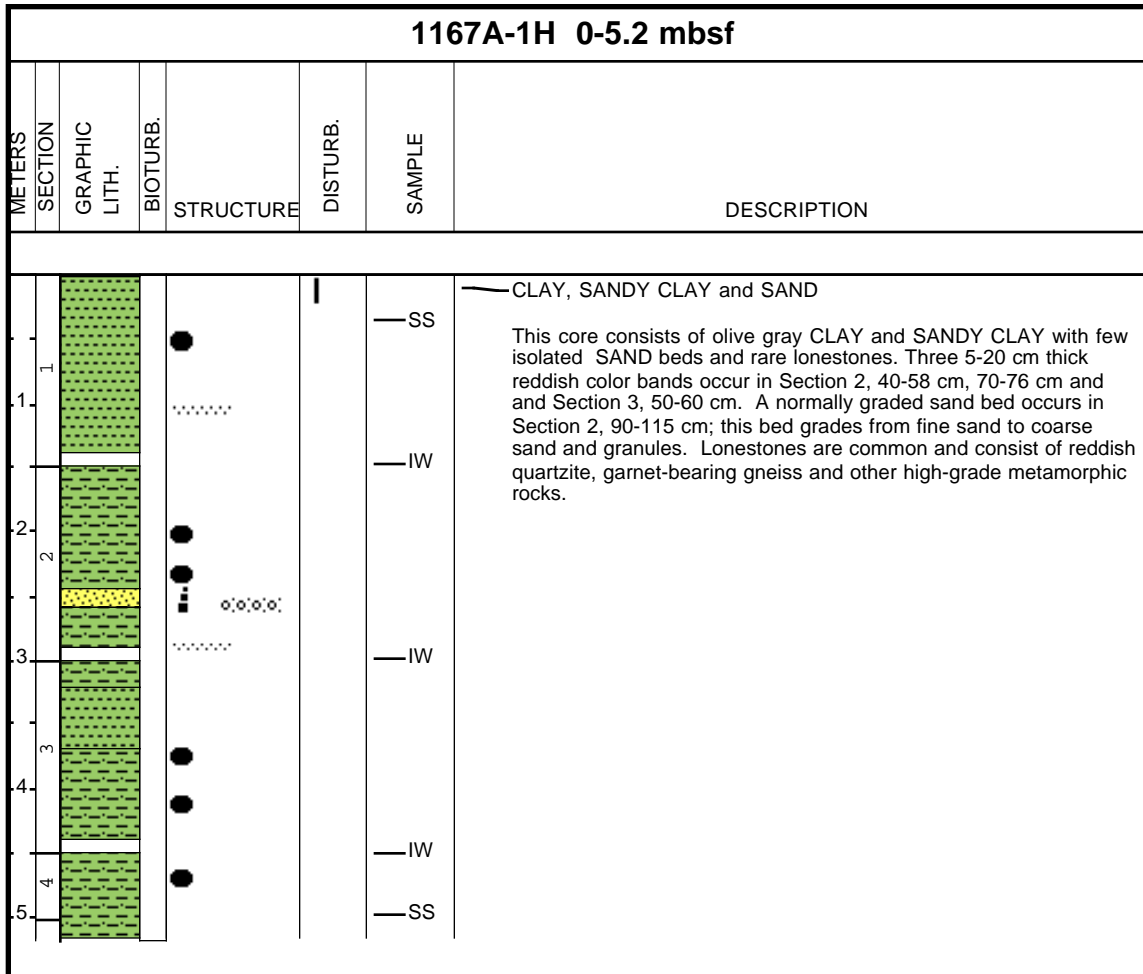
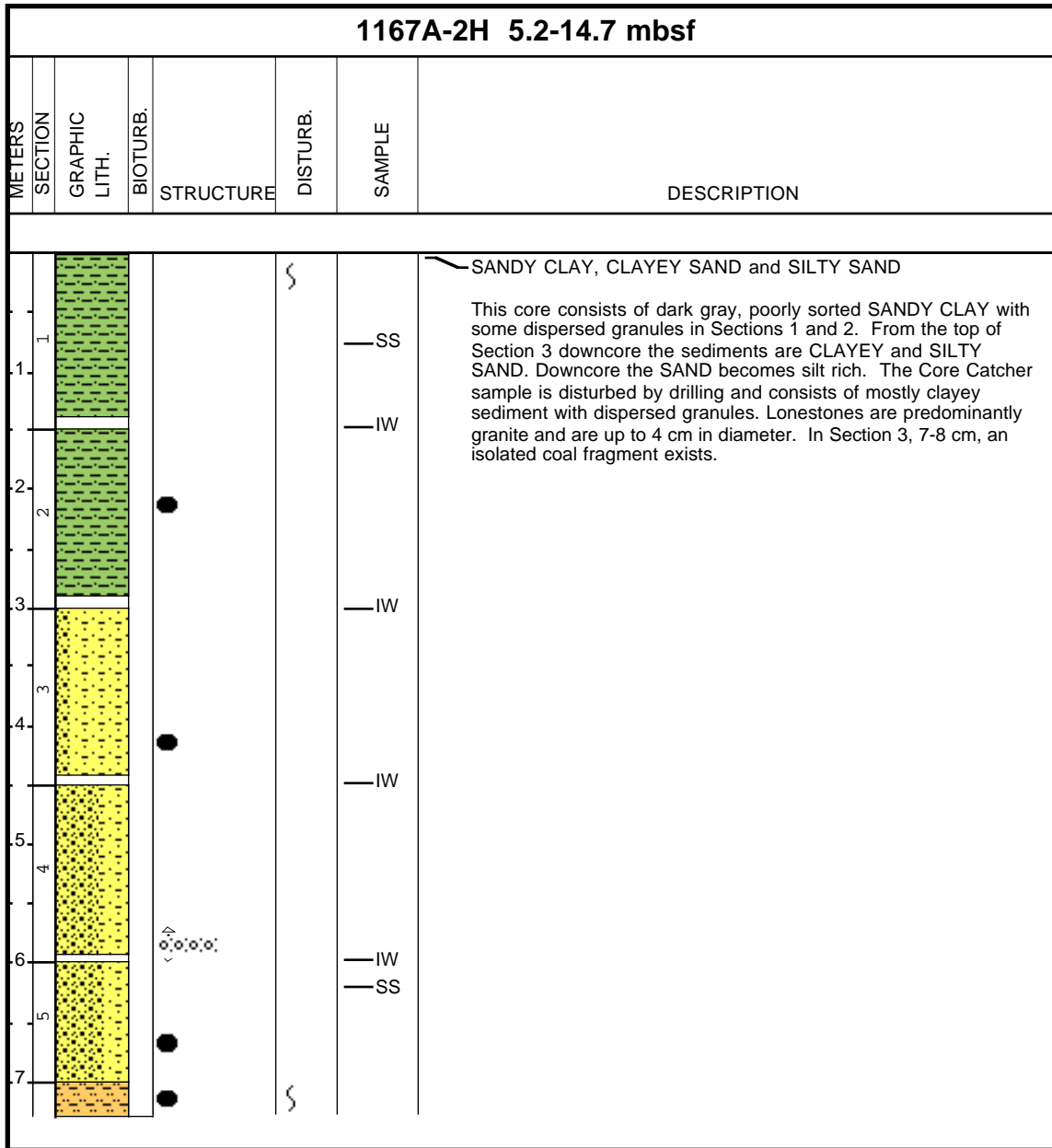


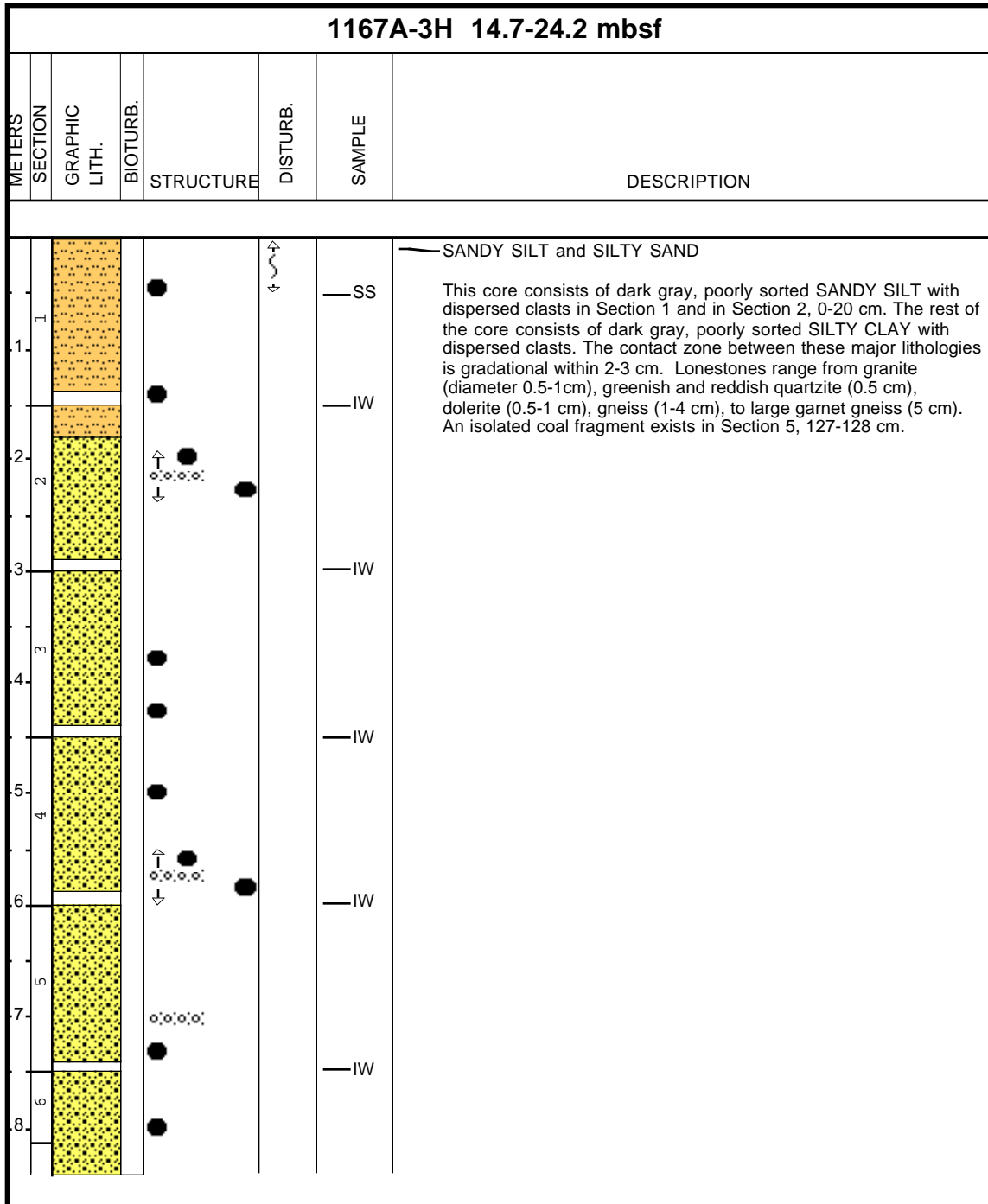
Core Photo



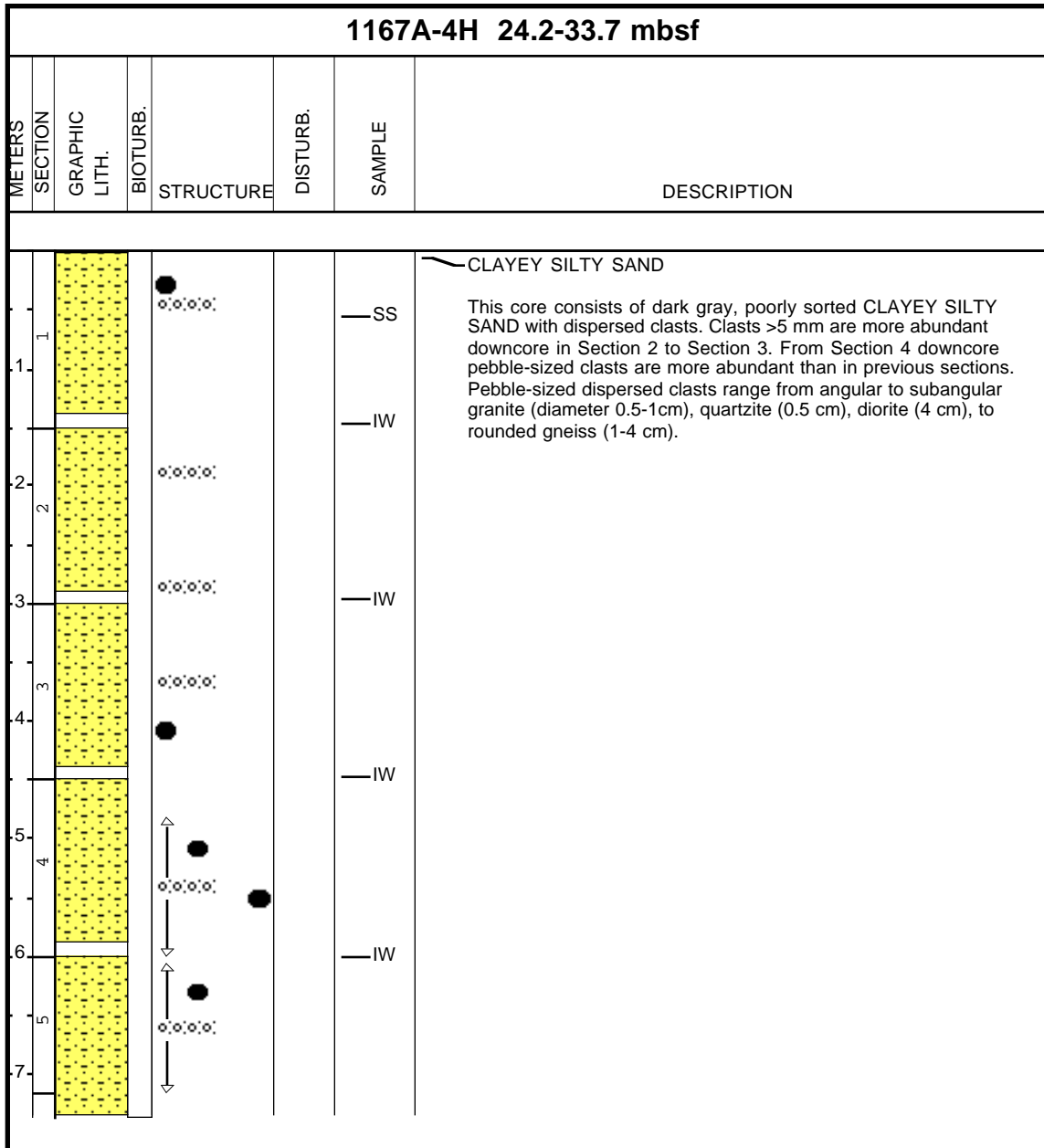
Core Photo



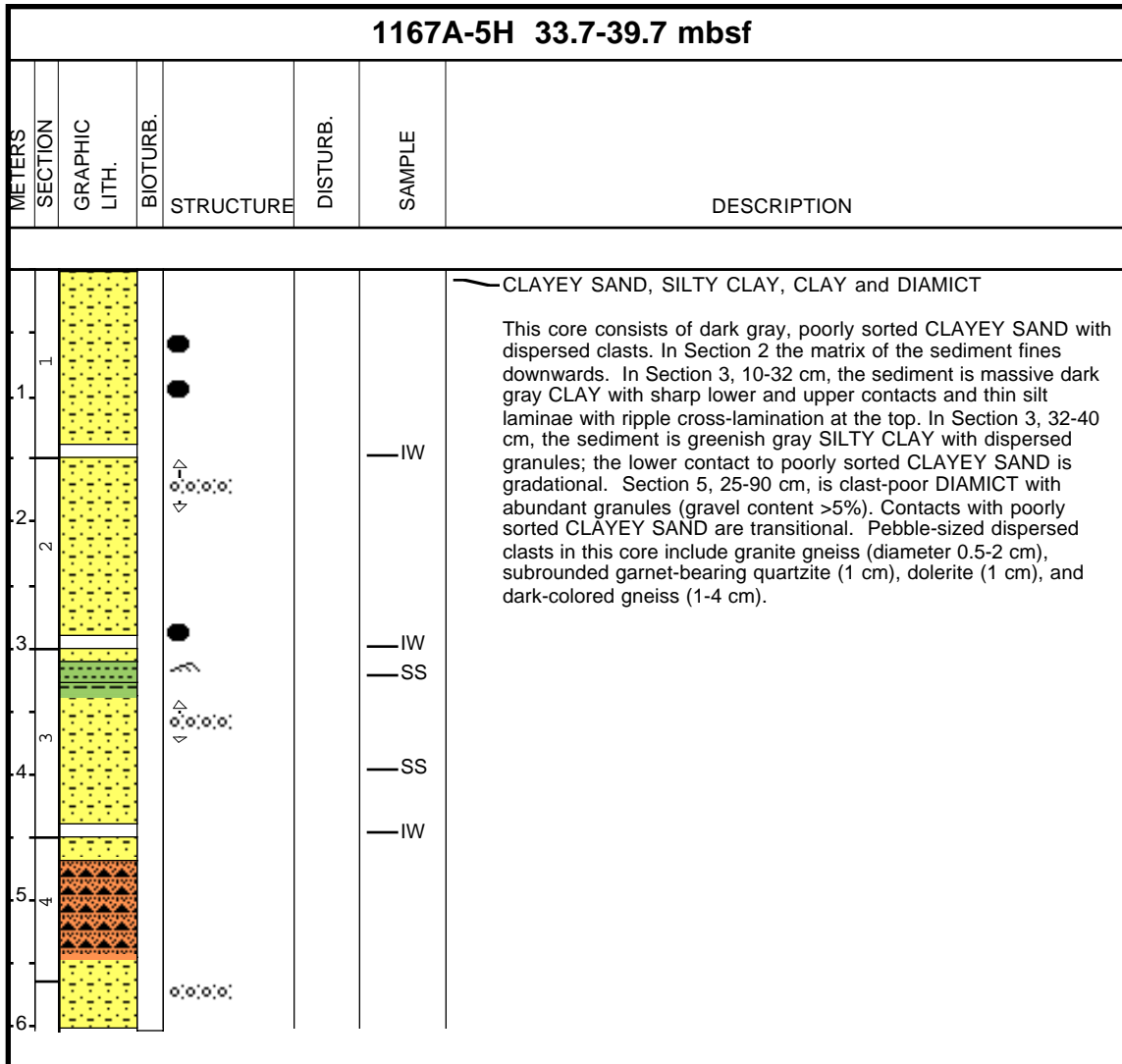
Core Photo



Core Photo

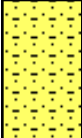

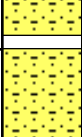



Core Photo

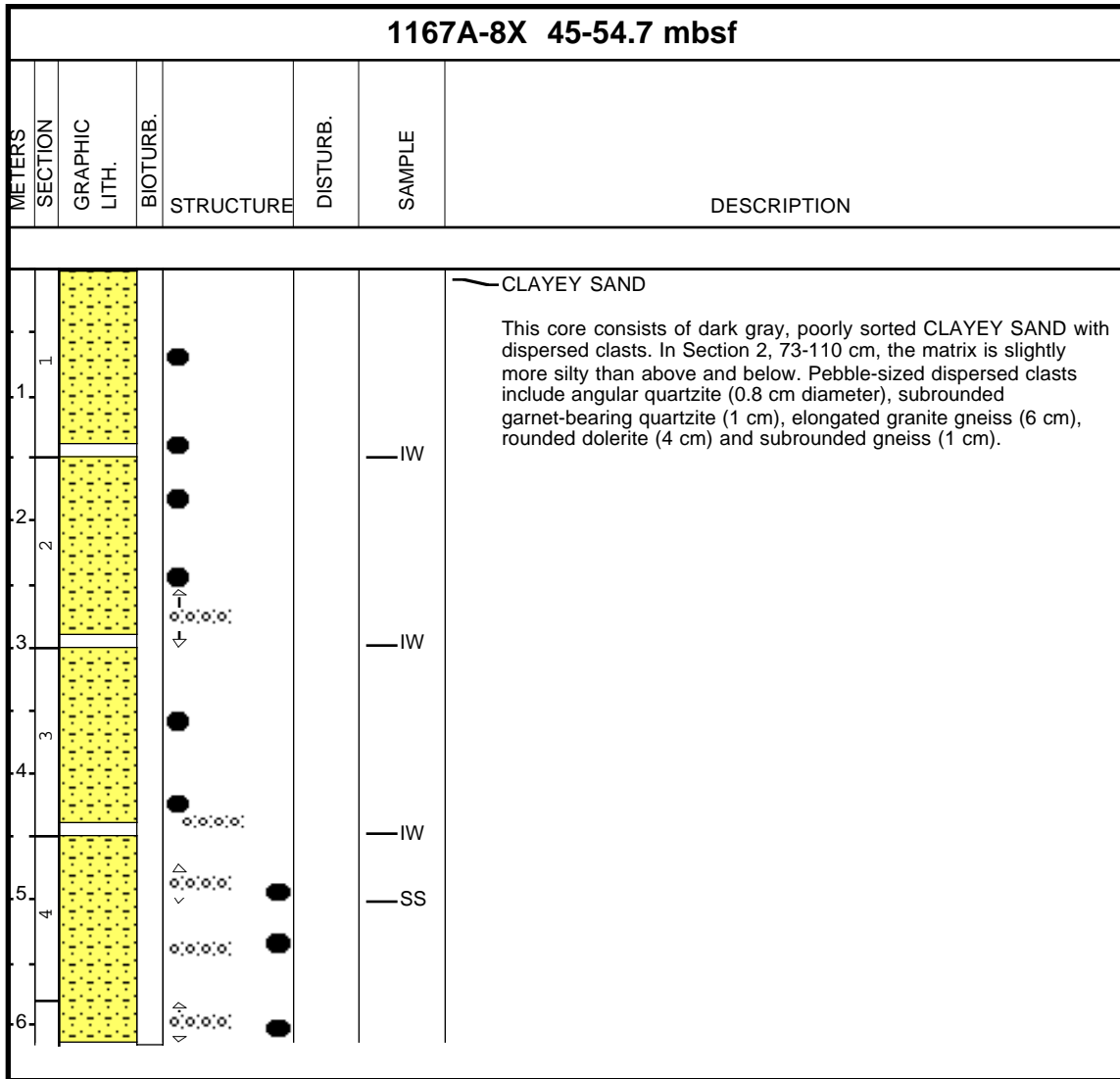


1167A-6H NO RECOVERY

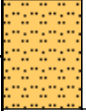

Core Photo

1167A-7X 39.7-45 mbsf						
METERS	SECTION	GRAPHIC LITH.	BIOTURB.	STRUCTURE	DISTURB.	DESCRIPTION
1						<p>— CLAYEY SAND</p> <p>This core consists of dark gray, poorly sorted CLAYEY SAND with dispersed clasts. The pebble-sized dispersed clasts include subrounded quartzite (2 cm), rounded dolerite (1 cm), and garnet-bearing gneiss (4 cm).</p> <p>— IW — SS</p>
2						

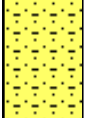
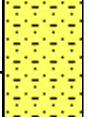
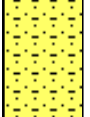
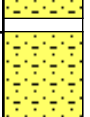
Core Photo



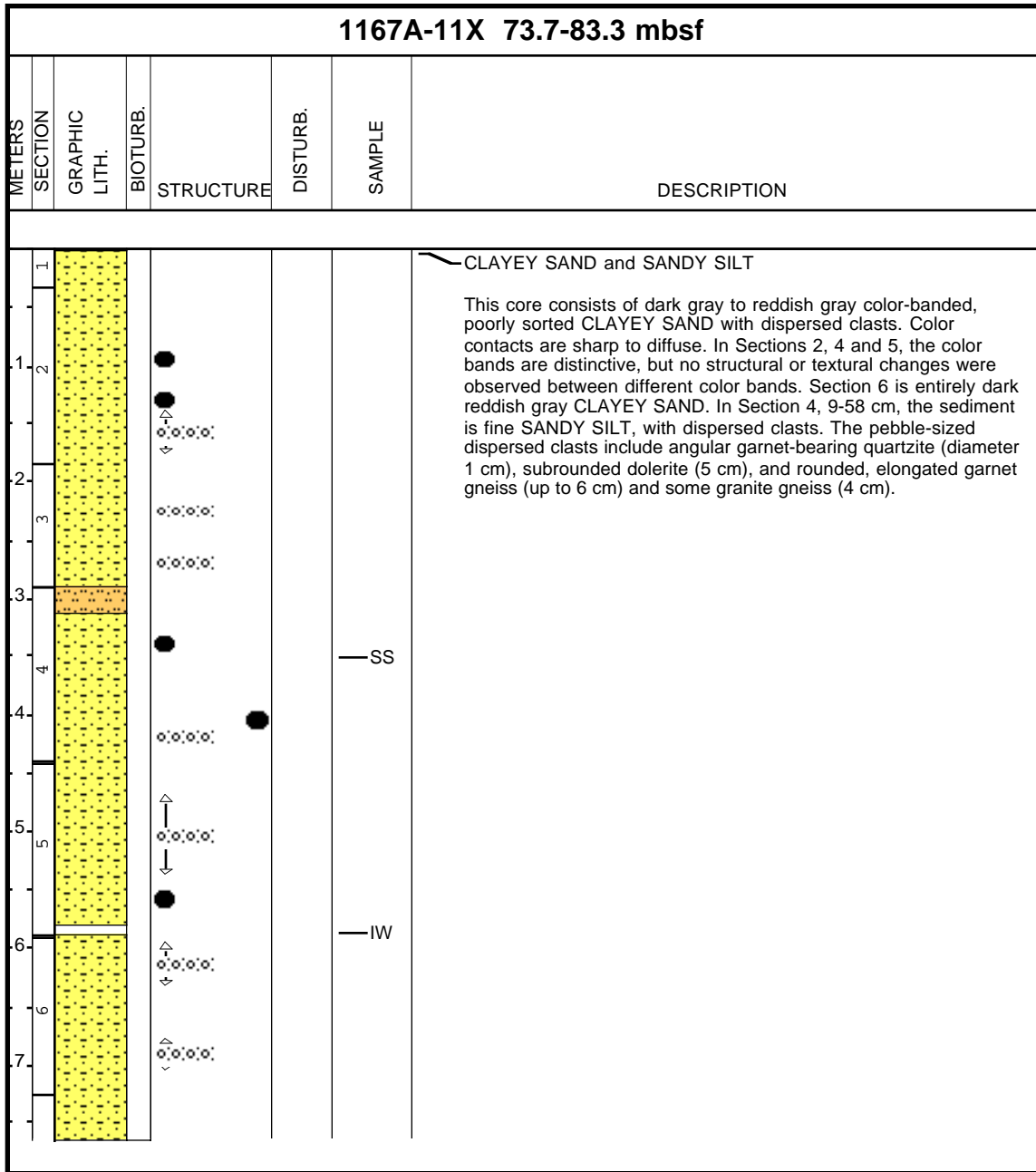
Core Photo

1167A-9X 54.7-64.3 mbsf							
METERS	SECTION	GRAPHIC LITH.	BIOTURB.	STRUCTURE	DISTURB.	SAMPLE	DESCRIPTION
1						SS	<p>SANDY SILT</p> <p>This core consists of dark gray, poorly sorted SANDY SILT with dispersed clasts. Pebble-sized dispersed clasts include dark-colored metamorphic rock and rounded granite (diameters up to 8 cm) .</p>

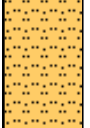


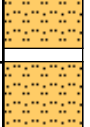

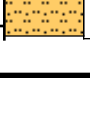

Core Photo

1167A-10X 64.3-73.7 mbsf						
METERS	SECTION	GRAPHIC LITH.	BIOTURB.	STRUCTURE	DISTURB.	DESCRIPTION
1	1					<p>CLAYEY SAND</p> <p>This core consists of dark gray to reddish gray color-banded, poorly sorted CLAYEY SAND with dispersed clasts. Color contacts are sharp. Some color bands are horizontal and some are mottled, but no structural or textural changes were observed between different color bands. In Section 2, 90-105 cm, very tight color banding is present. Pebble-sized dispersed clasts include angular garnet-bearing quartzite (diameter 1 cm), rounded dolerite (1 cm), and rounded, elongated garnet gneiss (up to 6 cm).</p>
2	2					
3	3					
4	3					
						<p>— IW</p> <p>— SS</p>

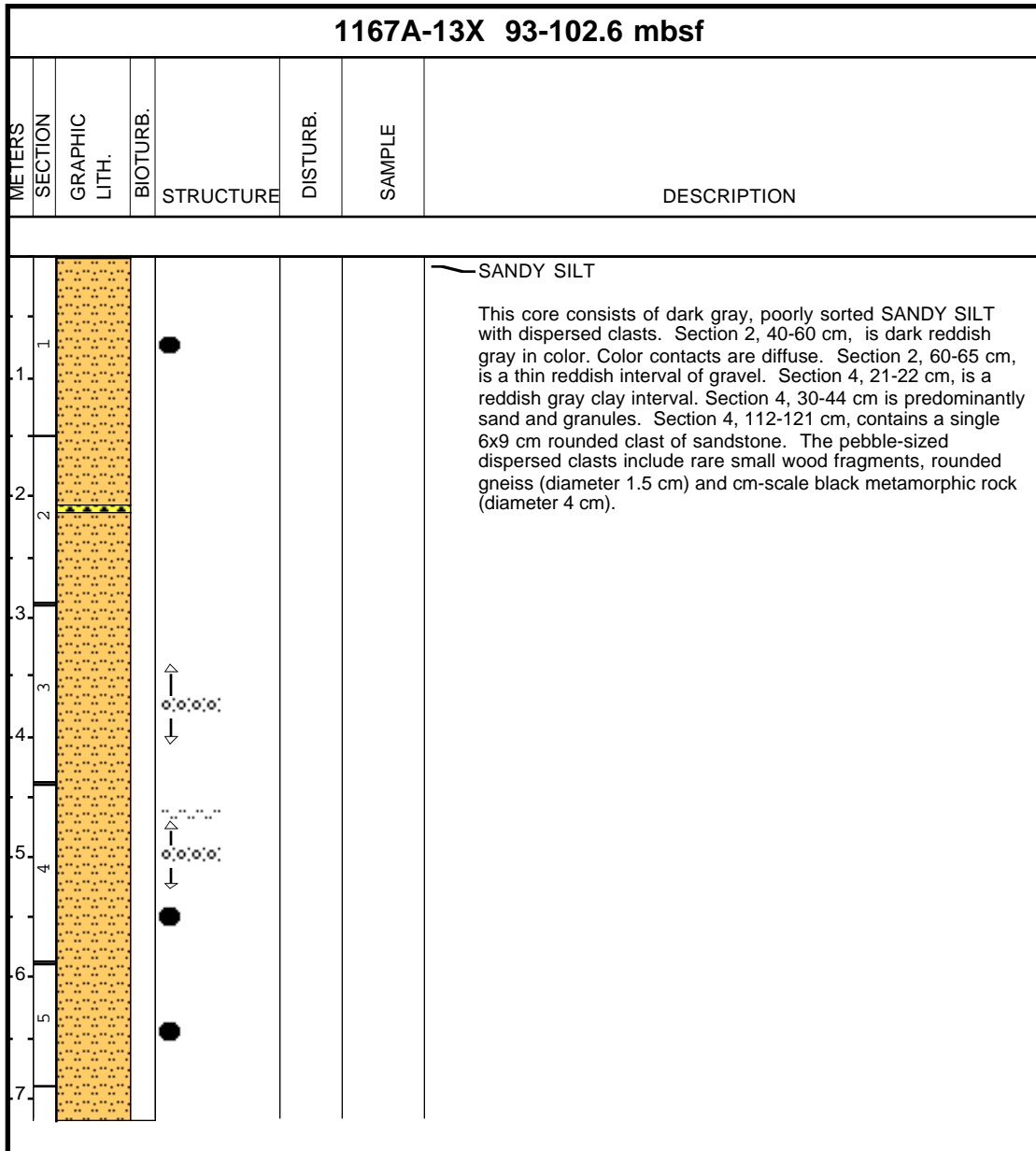
Core Photo



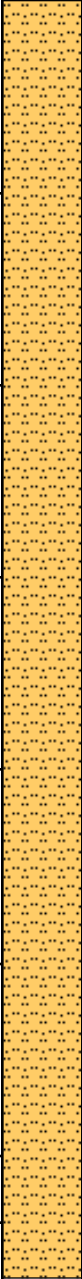
Core Photo

1167A-12X 83.3-93 mbsf							
METERS	SECTION	GRAPHIC LITH.	BIOTURB.	STRUCTURE	DISTURB.	SAMPLE	DESCRIPTION
1							<p>SANDY SILT</p> <p>This core consists of reddish gray and dark gray poorly sorted SANDY SILT with dispersed clasts. Color contacts are diffuse. The color bands are distinctive, but no structural or textural changes were observed between different color bands. The pebble-sized dispersed clasts include a black coal fragment (mm-sized), subrounded to rounded garnet gneiss (up to 4 cm) and rounded gneiss (4 cm).</p>
1.1						IW	
2							

Core Photo

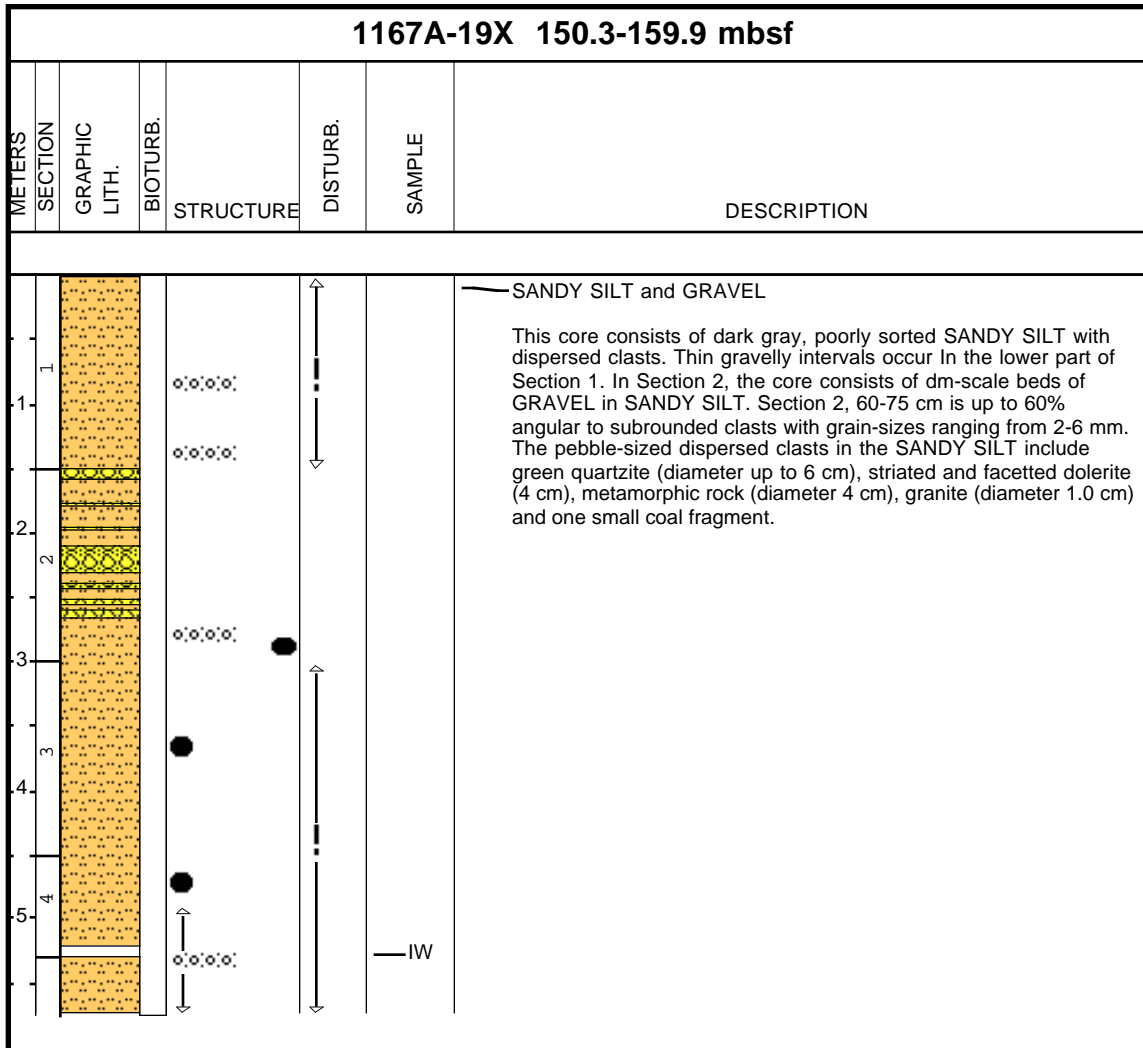


Core Photo

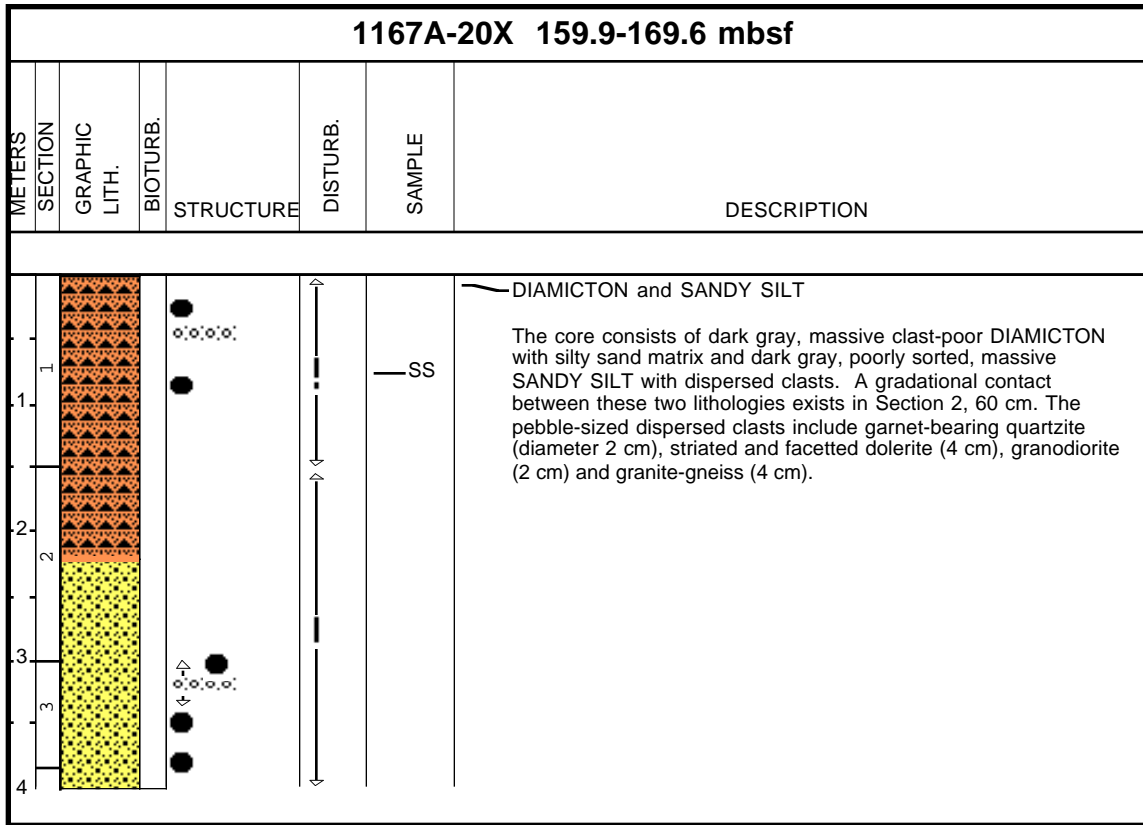
1167A-14X 102.6-112.3 mbsf							
METERS	SECTION	GRAPHIC LITH.	BIOTURB.	STRUCTURE	DISTURB.	SAMPLE	DESCRIPTION
1							<p>SANDY SILT</p> <p>This core consists of dark gray, poorly sorted SANDY SILT with dispersed clasts. In Section 4, the sediment is more clay rich than above. Sand content is slightly higher downcore below Section 5, 66 cm. The pebble-sized dispersed clasts include quartzite (diameter 1.5 cm), garnet-bearing quartzite (3 cm), granite (1.5 cm), dark-colored, elongated metamorphic rock (diameter 4 cm) and gneiss (diameter 1.5 cm). Metamorphic clasts are the most common.</p>
1.1			●				
2			●				
2.1			●				
2.2			●				
3			●				
3.1			●				
4			●				
4.1			○ ○ ○ ○ ○				
5			●				
5.1			↑				
5.2			○ ○ ○ ○ ○				
5.3			↓				
6			●				
6.1			●				
7			●				

1167A-15X NO RECOVERY
 1167A-16X NO RECOVERY
 1167A-17X ENTIRE CORE GIVEN TO PALEONTOLOGISTS
 1167A-18X NO RECOVERY

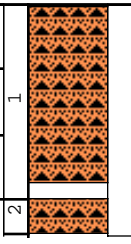

Core Photo



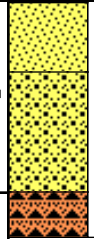

Core Photo




Core Photo

1167A-21X 169.6-179.2 mbsf							
METERS	SECTION	GRAPHIC LITH.	BIOTURB.	STRUCTURE	DISTURB.	SAMPLE	DESCRIPTION
1 1 2						IW	<p>DIAMICTON</p> <p>This core consists of dark gray massive, clast-poor DIAMICTON with sandy silt matrix. The pebble-sized clasts include quartzite (diameter 2 cm), dolerite (2 cm) and granite gneiss. One large (>10 cm) granite gneiss clast occurs in Section 1, 99-108 cm. One pyrite clast is present in Section 2, 9-10 cm.</p>



Core Photo

1167A-22X 179.2-188.8 mbsf							
METERS	SECTION	GRAPHIC LITH.	BIOTURB.	STRUCTURE	DISTURB.	SAMPLE	DESCRIPTION
1 1							<p>SILTY SAND, SAND and DIAMICTON</p> <p>This core consists of dark gray massive, poorly sorted SILTY SAND with dispersed clasts and moderately sorted coarse and very coarse SAND. Section CC is massive clast-rich DIAMICTON with sandy silt matrix. The moderately sorted coarse to very coarse SAND in the upper part of Section 1 is probably drilling slurry. The pebble-sized clasts include sandstone (diameter 1 cm), greenish quartzite (2.5 cm) and rare small coal fragments.</p>

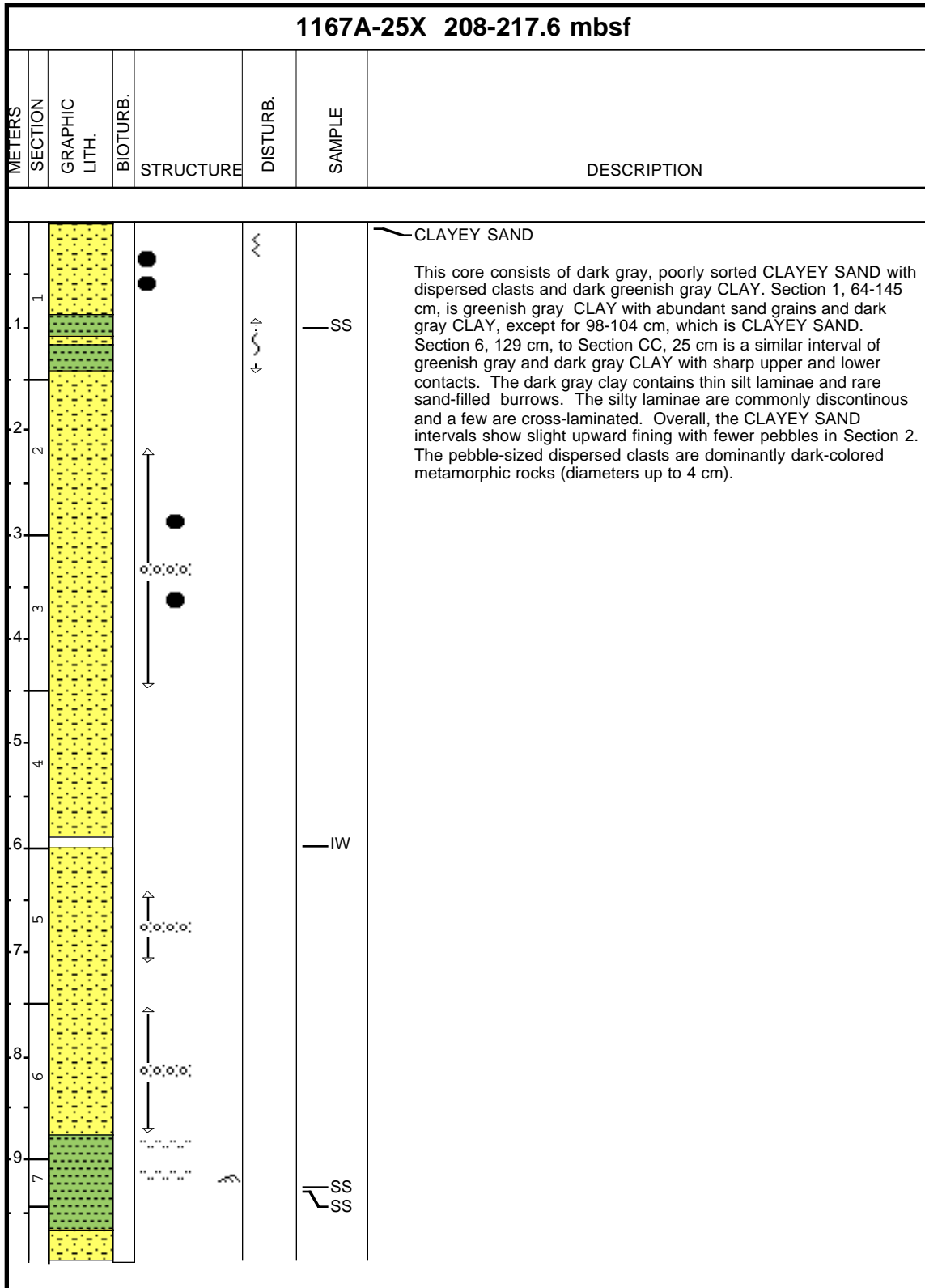
Core Photo

1167A-23X 188.8-198.4 mbsf							
METERS	SECTION	GRAPHIC LITH.	BIOTURB.	STRUCTURE	DISTURB.	SAMPLE	DESCRIPTION
1							<p>DIAMICTON</p> <p>This core consists of dark gray massive, clast-poor DIAMICTON with sandy silt matrix and low clay content. The pebble-sized clasts include sandstone (diameter 1 cm), angular garnet bearing gneiss (2.5 cm) and two gneiss clasts (4 and 5 cm).</p>

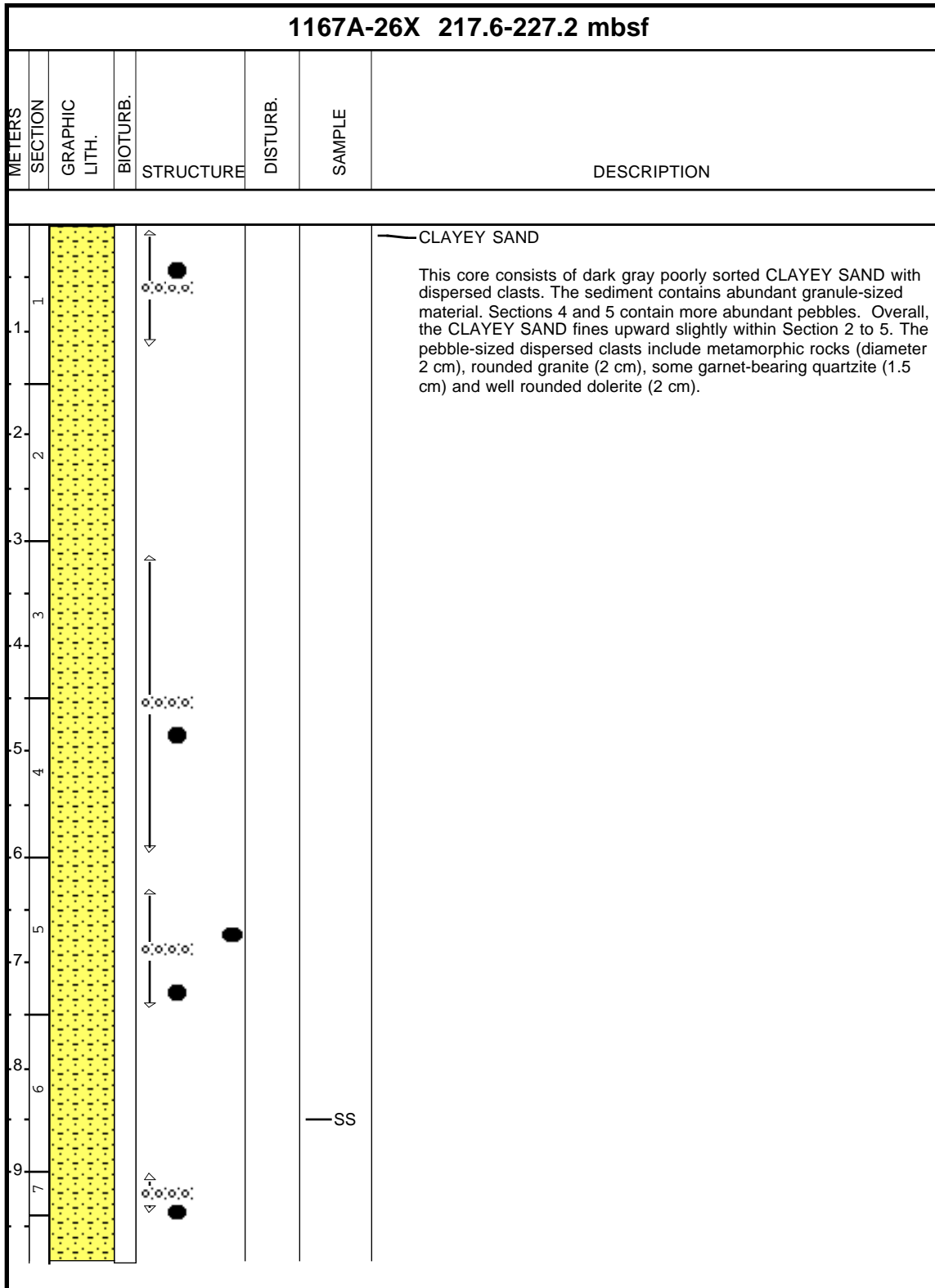
Core Photo

1167A-24X 198.4-208 mbsf;							
METERS	SECTION	GRAPHIC LITH.	BIOTURB.	STRUCTURE	DISTURB.	SAMPLE	DESCRIPTION
	1						<p>DIAMICTON</p> <p>This core consists of dark gray massive, clast-poor DIAMICTON with sandy silt matrix. Very faint lighter gray color banding occurs in Section 1, 35 cm, 59-60 cm and 71 cm and is possibly caused by increased clay content. The pebble-sized clasts include sandstone (diameter 3 cm), garnet-bearing gneiss (6 cm) and gneiss clasts (1-2 cm).</p>

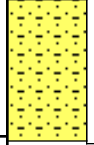


Core Photo



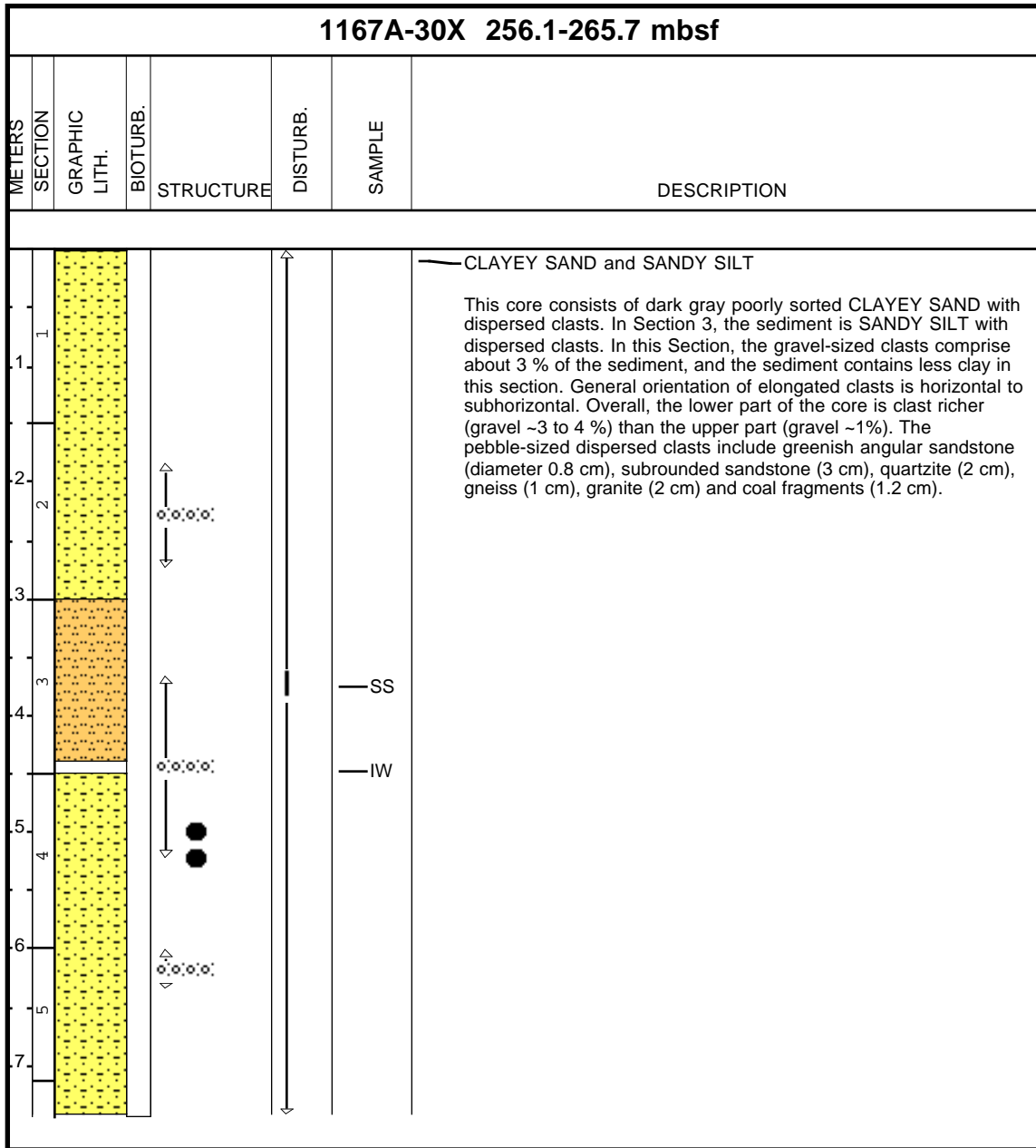
Core Photo



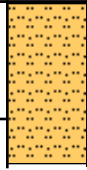


Core Photo

1167A-27X 227.2-236.9 mbsf							
METERS	SECTION	GRAPHIC LITH.	BIOTURB.	STRUCTURE	DISTURB.	SAMPLE	DESCRIPTION
1 0.1							<p>CLAYEY SAND</p> <p>This core consists of dark gray poorly sorted CLAYEY SAND with dispersed clasts. The pebble-sized dispersed clasts include light-colored quartzite (diameter 8 cm), subrounded garnet-bearing quartzite (2 cm) and rounded gneiss (6 cm).</p>

Core Photo



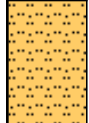
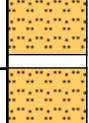

Core Photo

1167A-31X 265.7-275.3 mbsf							
METERS	SECTION	GRAPHIC LITH.	BIOTURB.	STRUCTURE	DISTURB.	SAMPLE	DESCRIPTION
1 -1							<p>SANDY SILT</p> <p>This core consists of dark gray poorly sorted SANDY SILT with dispersed clasts. The percentage of gravel-sized clast is 3-5 % of the total sediment. The pebble-sized dispersed clasts include sandstone (diameter 1 cm), dark dolerite (3 cm), dark-colored metamorphic rock (0.8 cm) and granite (1 cm).</p>

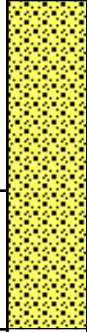
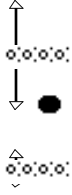

Core Photo

1167A-32X 275.3-284.6 mbsf							
METERS	SECTION	GRAPHIC LITH.	BIOTURB.	STRUCTURE	DISTURB.	SAMPLE	DESCRIPTION
1							<p>SANDY SILT</p> <p>This core consists of dark gray poorly sorted SANDY SILT with dispersed clasts. Gravel-sized clasts comprise ~3 % in Sections 3 and 4 and ~2 % in Section 1. The maximum clast size is 2x1.5 cm. The elongated clasts are oriented horizontal in Sections 1-3. The pebble-sized dispersed clasts include brownish sandstone (diameter 0.6 cm), greenish and garnet-bearing quartzite (2 cm), gneiss (1 cm), dark metamorphic rock (1 cm), granite (0.5 cm) and rare small coal fragments.</p>
2							
3							
4							
5							
6							
7							



Core Photo

1167A-33X 284.6-293.9 mbsf							
METERS	SECTION	GRAPHIC LITH.	BIOTURB.	STRUCTURE	DISTURB.	SAMPLE	DESCRIPTION
1							<p>SANDY SILT</p> <p>This core consists of dark gray poorly sorted SANDY SILT with dispersed clasts. Gravel-sized clasts comprise from 3 % in Section 2 to 1 % in Section 1 of the sediment. The maximum clast size is 2.5 x 2 cm in Section 2. The pebble-sized dispersed clasts include siltstone and sandstone (diameter 0.6 cm), garnet-bearing quartzite (2 cm), gneiss (1 cm), dark metamorphic rock (1 cm), granite (2 cm) and small coal fragments.</p>
2						IW	

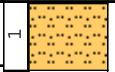


Core Photo

1167A-34X 293.9-303.2 mbsf							
METERS	SECTION	GRAPHIC LITH.	BIOTURB.	STRUCTURE	DISTURB.	SAMPLE	DESCRIPTION
1 1 2							<p>SILTY SAND</p> <p>This core consists of dark gray poorly sorted SILTY SAND with dispersed clasts. Section 2 contains less pebbles than in the rest of the core. The pebble-sized dispersed clasts include rounded to subrounded garnet gneiss (diameter up 6 cm) and granite gneiss (5 cm).</p>

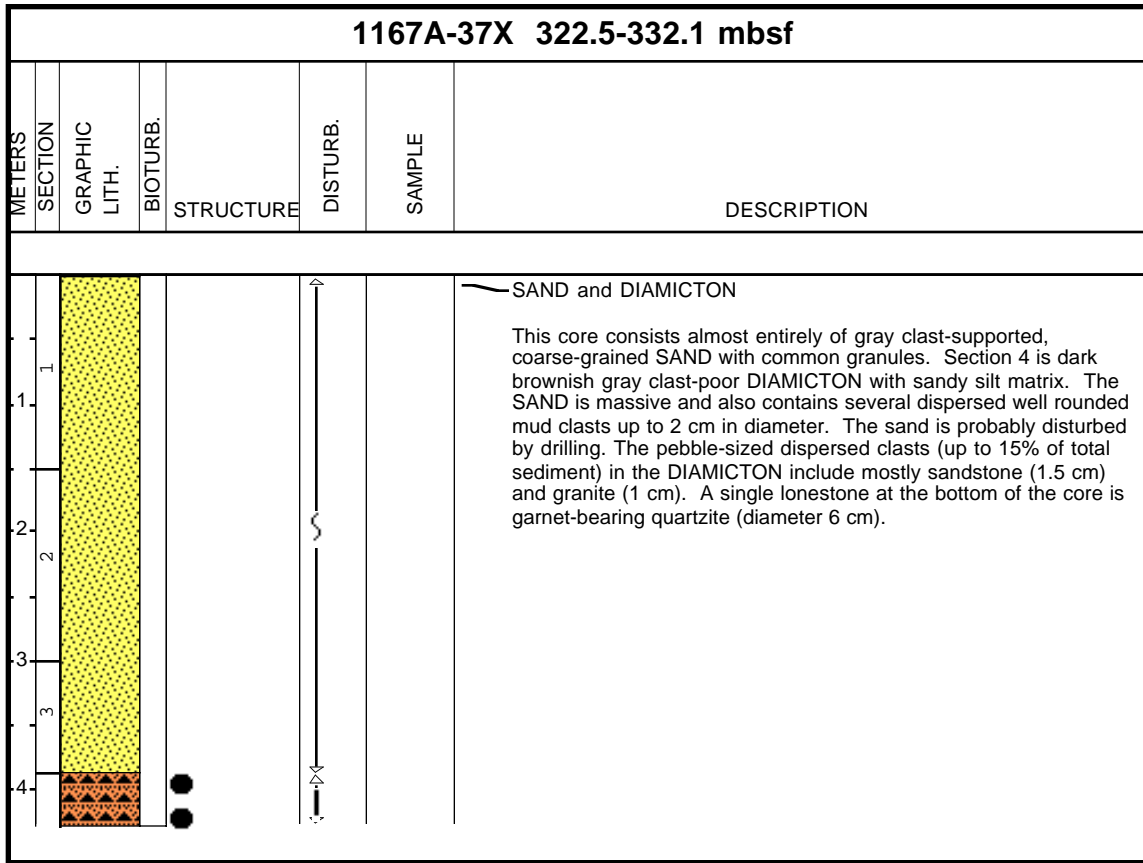
Core Photo

1167A-35X 303.2-312.8 mbsf							
METERS	SECTION	GRAPHIC LITH.	BIOTURB.	STRUCTURE	DISTURB.	SAMPLE	DESCRIPTION
						SS	<p>SANDY SILT</p> <p>This core consists of dark gray, poorly sorted SANDY SILT with dispersed clasts. Maximum clast size is 3x5 cm. The pebble-sized dispersed clasts include greenish sandstone (diameter 1 cm), quartzite (0.6 cm), diorite (5 cm), and a coal fragment.</p>

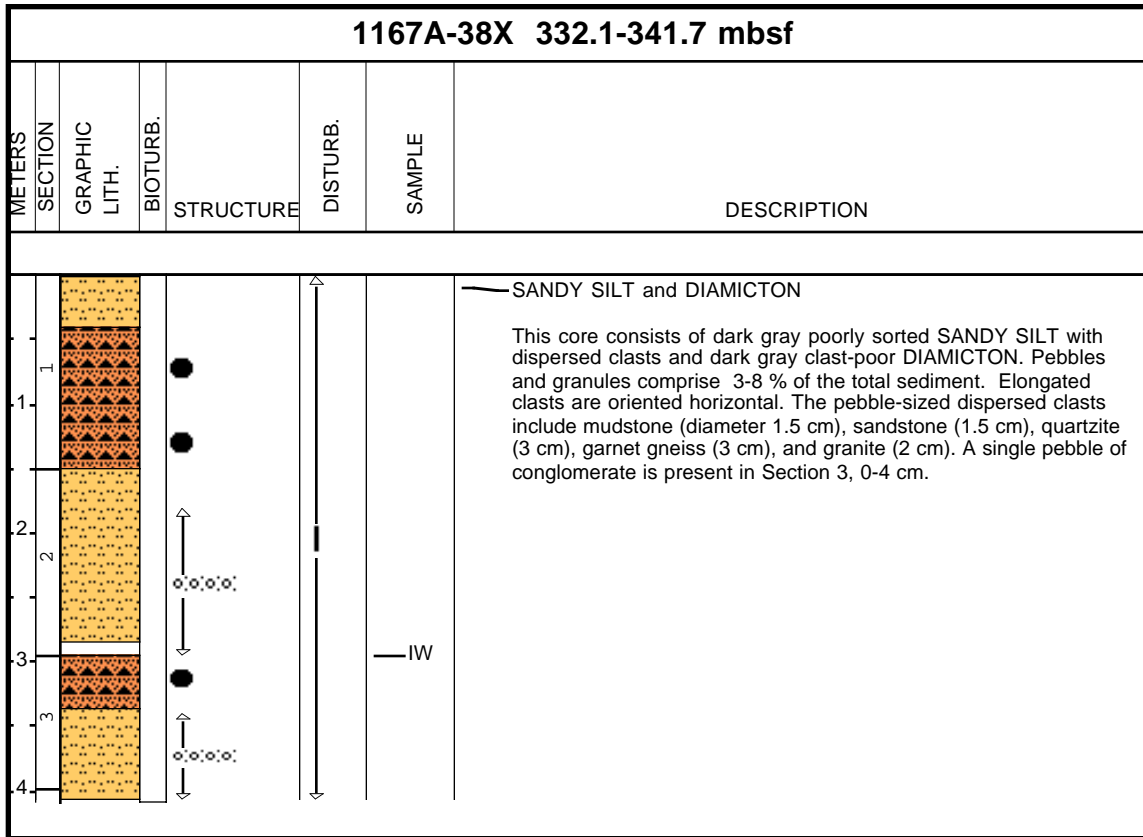
Core Photo

1167A-36X 312.8-322.5 mbsf							
METERS	SECTION	GRAPHIC LITH.	BIOTURB.	STRUCTURE	DISTURB.	SAMPLE	DESCRIPTION
1							<p>SANDY SILT</p> <p>This core consists of dark gray poorly sorted SANDY SILT with dispersed clasts. Maximum clast size is 5x6 cm. The pebble-sized dispersed clasts include purple quartzite (diameter 2.5 cm), dark metamorphic rock (1 cm), and gneiss (6 cm).</p>

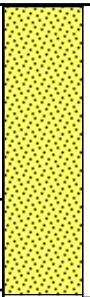


Core Photo



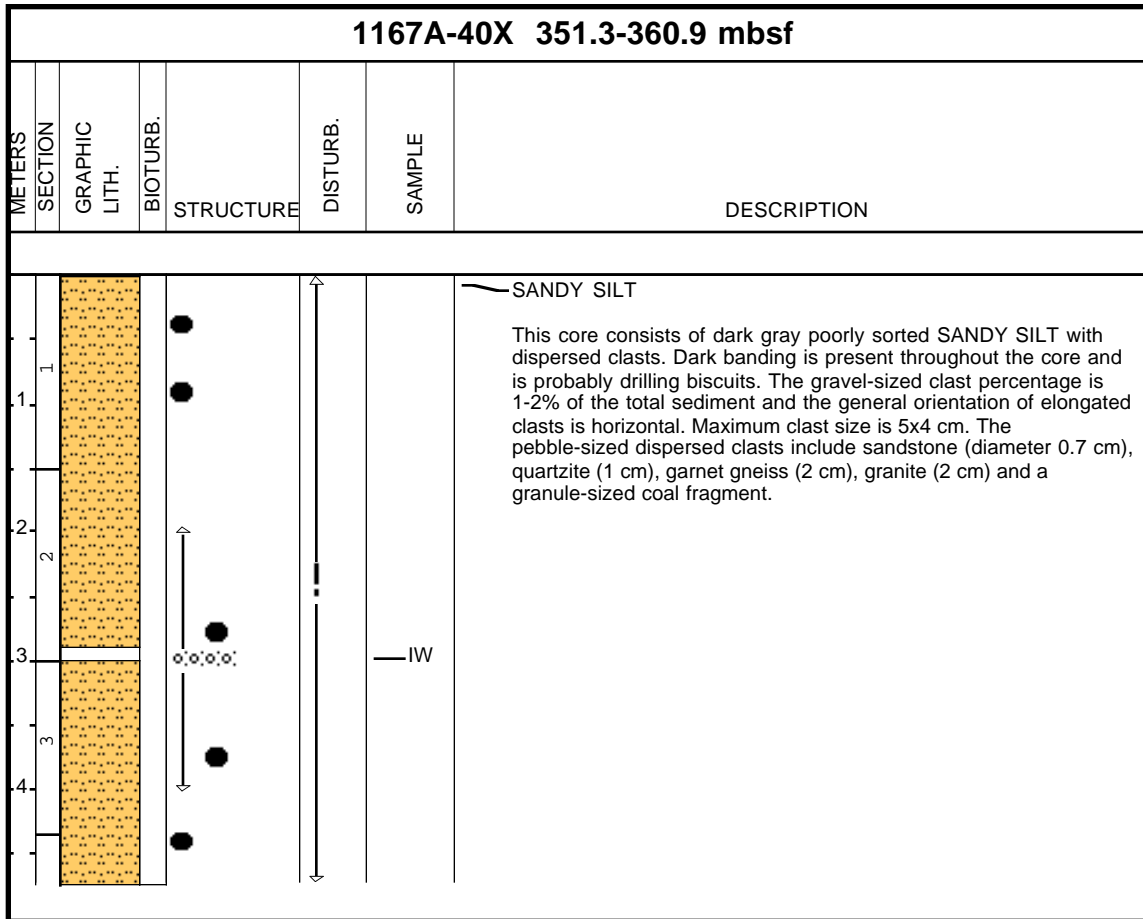
Core Photo



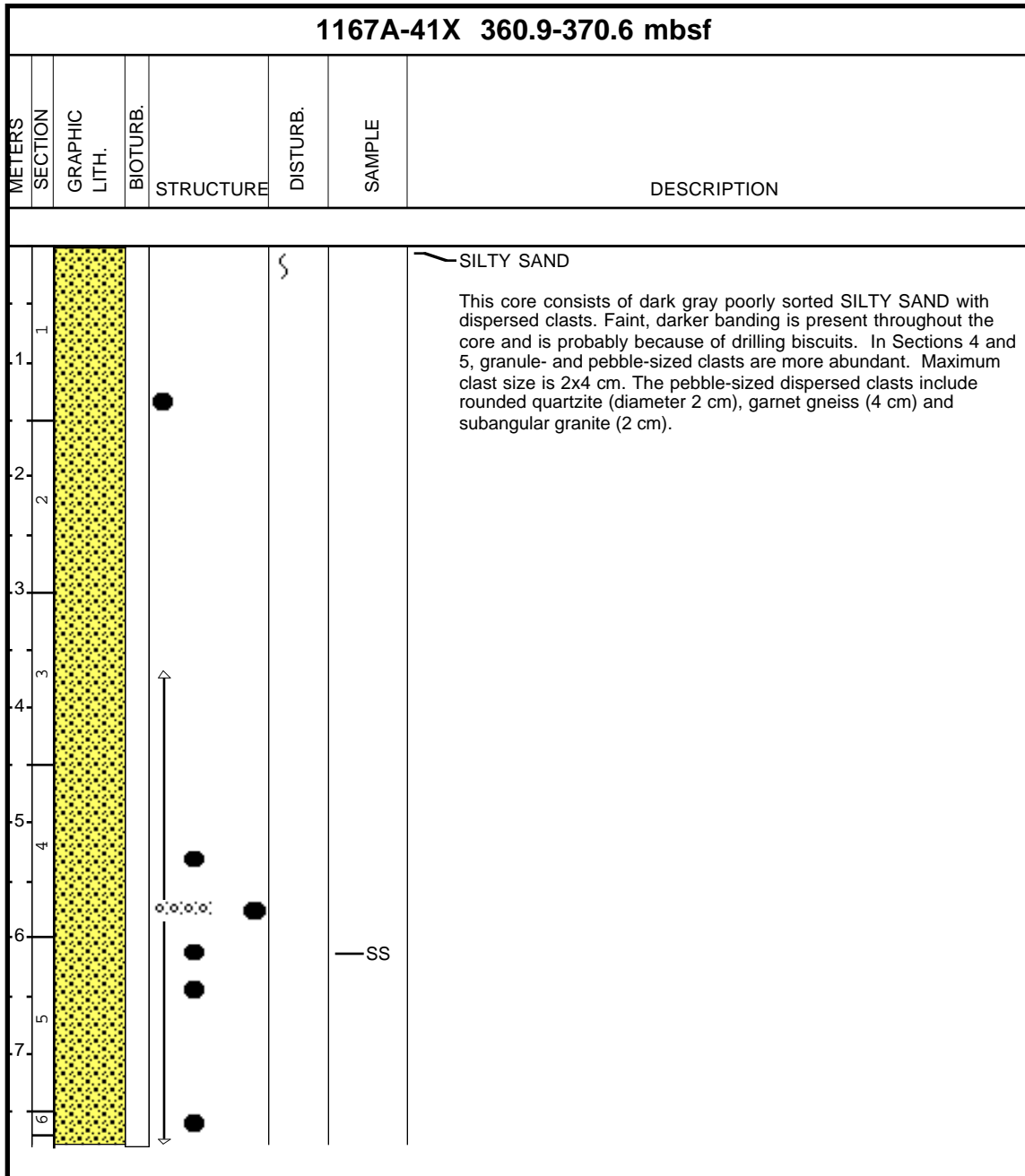
Core Photo

1167A-39X 341.7-351.3 mbsf							
METERS	SECTION	GRAPHIC LITH.	BIOTURB.	STRUCTURE	DISTURB.	SAMPLE	DESCRIPTION
1 1.1 2							<p>SAND</p> <p>This core consists of gray moderately sorted, coarse to very coarse SAND with rare granules. The sand is slightly graded from predominantly coarse at the top to very coarse at the base. The sand may be disturbed by drilling.</p>

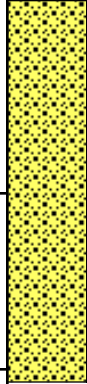
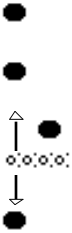

Core Photo



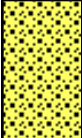



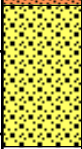

Core Photo



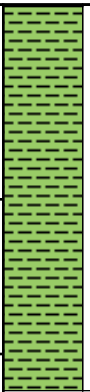
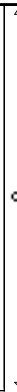

Core Photo

1167A-42X 370.6-380.2 mbsf							
METERS	SECTION	GRAPHIC LITH.	BIOTURB.	STRUCTURE	DISTURB.	SAMPLE	DESCRIPTION
1 1.1 2 2.1							<p>SILTY SAND</p> <p>This core consists of dark gray poorly sorted SILTY SAND with dispersed clasts. Horizontal to concave downward fractures occur because of drilling. Maximum clast size is 3x8 cm. The pebble-sized dispersed clasts include rounded quartzite (diameter 3 cm), greenish quartzite (8 cm), gneiss (2 cm) and subangular granite (2 cm).</p>

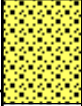
Core Photo

1167A-43X 380.2-389.8 mbsf							
METERS	SECTION	GRAPHIC LITH.	BIOTURB.	STRUCTURE	DISTURB.	SAMPLE	DESCRIPTION
1	1		●				<p>— SILTY SAND and DIAMICTON</p> <p>This core consists of dark gray poorly sorted SILTY SAND with dispersed clasts and dark gray clast-poor DIAMICTON. Some faint, horizontal to concave down fractures are likely due to drilling biscuits. In Section 2, larger pebble-sized clasts are more abundant. Maximum clast size is 4x8 cm. The pebble-sized dispersed clasts include subrounded to rounded quartzite (diameter 2 cm), rounded garnet gneiss (4 cm) and subangular granite (2 cm).</p>
1.5	2		●			IW	
2	2		●				
2.5	2		●				
3	3		●				
3.5	3		●				




Core Photo

1167A-44X 389.8-399.4 mbsf							
METERS	SECTION	GRAPHIC LITH.	BIOTURB.	STRUCTURE	DISTURB.	SAMPLE	DESCRIPTION
1 1.1 2 3							<p>SILTY CLAY</p> <p>This core consists of dark gray poorly sorted SILTY CLAY with dispersed clasts. Horizontal and concave down fractures exist due to drilling biscuits. Maximum clast size is 5x6 cm. The pebble-sized dispersed clasts include light colored sandstone (diameter 3 cm), an indurated mud clast (3 cm), rounded green quartzite (2 cm), dark gabbro (4 cm) and garnet gneiss (3 cm).</p>

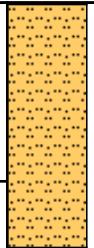


Core Photo

1167A-45X 399.4-409 mbsf							
METERS	SECTION	GRAPHIC LITH.	BIOTURB.	STRUCTURE	DISTURB.	SAMPLE	DESCRIPTION
1							<p>SILTY SAND</p> <p>This core consists of dark gray poorly sorted SILTY SAND with dispersed clasts. Some horizontal and concave down fractures are probably drilling biscuits. Clasts larger than 5 mm are rare.</p>

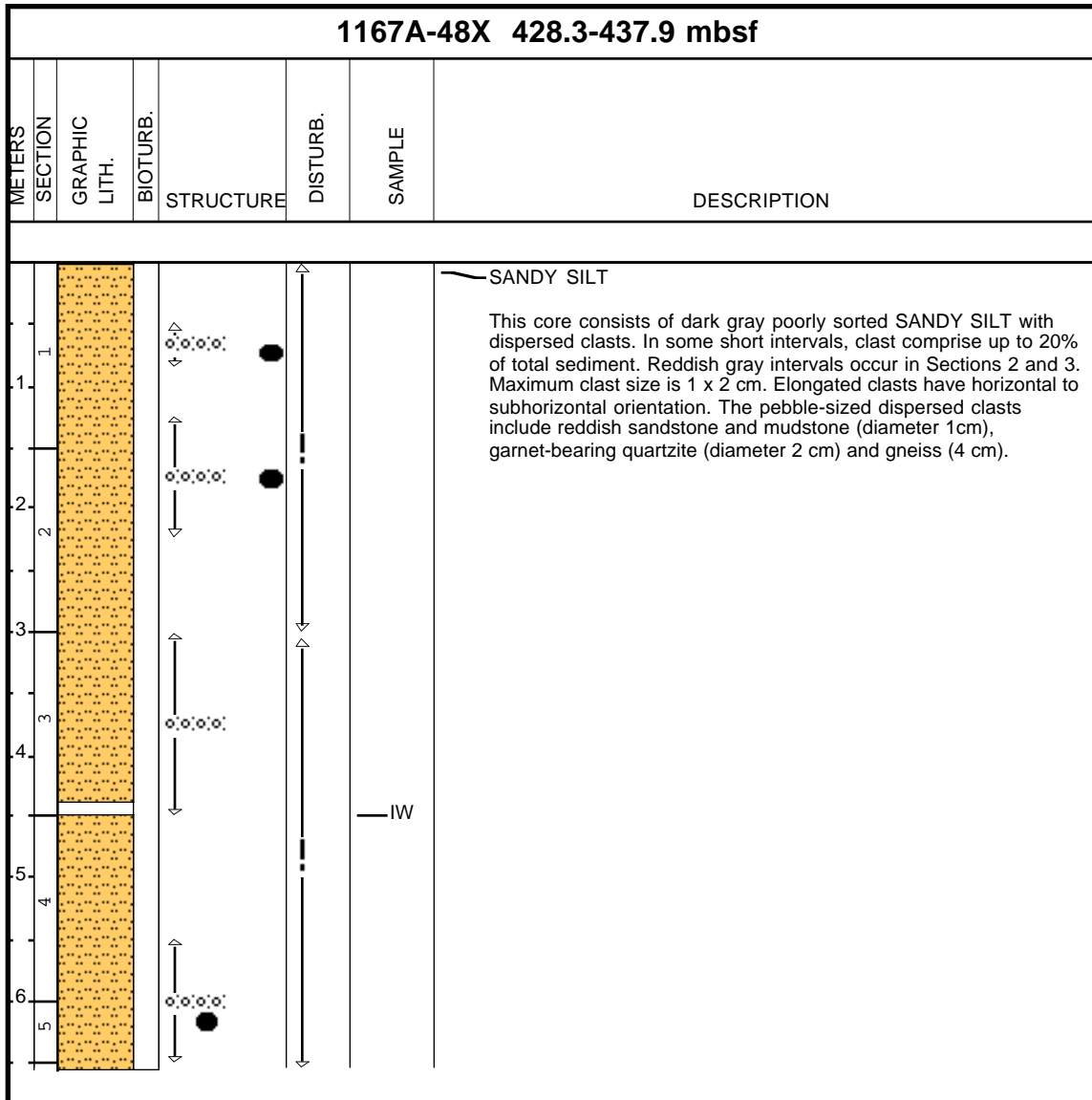
Core Photo

1167A-46X 409-418.7 mbsf							
METERS	SECTION	GRAPHIC LITH.	BIOTURB.	STRUCTURE	DISTURB.	SAMPLE	DESCRIPTION
1							<p>SILTY SAND</p> <p>This core consists of dark gray poorly sorted SILTY SAND with dispersed clasts. The dispersed clasts include two garnet gneiss pebbles (diameter 5 cm) and some blueish minerals (kyanite, cordierite).</p>

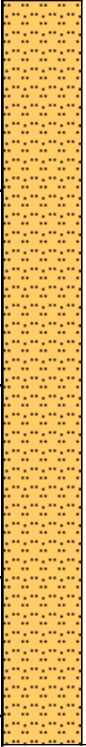
Core Photo

1167A-47X 418.7-428.3 mbsf							
METERS	SECTION	GRAPHIC LITH.	BIOTURB.	STRUCTURE	DISTURB.	SAMPLE	DESCRIPTION
1 1							<p>SANDY SILT</p> <p>This core consists of dark gray poorly sorted SANDY SILT with dispersed clasts. Sediment composition varies slightly and some intervals are SILTY SAND. Maximum clast size is 1.5 x 2 cm. Elongated clasts show horizontal to subhorizontal orientation. The pebble-sized dispersed clasts include sandstone (diameter 1 cm), dolerite (1.5 cm), granite (1.5 cm) and some gneiss (1.5 cm).</p>

Core Photo



Core Photo

1167A-49X 437.9-447.5 mbsf							
METERS	SECTION	GRAPHIC LITH.	BIOTURB.	STRUCTURE	DISTURB.	SAMPLE	DESCRIPTION
1	1						<p>SANDY SILT</p> <p>This core consists of dark gray poorly sorted SANDY SILT with dispersed clasts. The percentage of pebble-sized clast is 2-8 % of the total sediment composition. The pebble-sized dispersed clasts include sandstone, quartzite, and gneiss. In Section 1, 45-52 cm, a single large gneiss cobble exists (12 cm in diameter).</p>
2	2						
3	3						
4	3						
5	4						

188-1167A-19X-2-136-141cm			Unit:			OBSERVER:		
ROCK NAME:		Quartz metasiltstone						
WHERE SAMPLED:								
GRAIN SIZE:		Fine grained, ~60 microns						
TEXTURE:								
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			APPROX. COMP.	MORPHOLOGY	COMMENTS
			min.	max.	av.			
Quartz	87							Well-sorted quartz meta-siltstone
K-spar	5							
Plag.	5							
Heavies	3							
SECONDARY MINERALOGY	PERCENT		SIZE (mm)				REPLACING / FILLING	COMMENTS
			min.	max.	av.			
VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm)				FILLING / MORPHOLOGY	COMMENTS
			min.	max.	av.			
COMMENTS :								

188-1167A-20X-3-0-4cm		Unit:		OBSERVER:				
ROCK NAME: Metaquartzite								
WHERE SAMPLED:								
GRAIN SIZE: sand size								
TEXTURE:								
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			APPROX. COMP.	MORPHOLOGY	COMMENTS
			min.	max.	av.			
Quartz	50							Thin section is >30 microns--biref. too high
Feldspars	15	10						
Accessories	3							
GROUNDMASS								
Matrix	22							
SECONDARY MINERALOGY	PERCENT		SIZE (mm)				REPLACING / FILLING	COMMENTS
			min.	max.	av.			
Sericite	10							
VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm)				FILLING / MORPHOLOGY	COMMENTS
			min.	max.	av.			
COMMENTS :								

188-1167A-38X-3-105-106cm			Unit:			OBSERVER:		
ROCK NAME: Bitumen								
WHERE SAMPLED:								
GRAIN SIZE:								
TEXTURE: in places laminated								
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			APPROX. COMP.	MORPHOLOGY	COMMENTS
silt grains			min.	max.	av.			removed by grinding process
GROUNDMASS								
Bitumen								
SECONDARY MINERALOGY	PERCENT		SIZE (mm)				REPLACING / FILLING	COMMENTS
			min.	max.	av.			
VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm)				FILLING / MORPHOLOGY	COMMENTS
			min.	max.	av.			
COMMENTS :								

188-1167A-46X-CC-24-25cm			Unit: II			OBSERVER:		
ROCK NAME:		Cordierite gneiss						
WHERE SAMPLED:								
GRAIN SIZE:		medium grained (1-5 mm)						
TEXTURE:		phanerocrystalline						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			APPROX. COMP.	MORPHOLOGY	COMMENTS
			min.	max.	av.			
PHENOCRYSTS								Blue Gneiss
Biotite								
Plagioclase								
Cordierite								
Quartz								
Hypersthene								
GROUNDMASS								
SECONDARY MINERALOGY	PERCENT		SIZE (mm)				REPLACING / FILLING	COMMENTS
			min.	max.	av.			
Chlotite??								
VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm)				FILLING / MORPHOLOGY	COMMENTS
			min.	max.	av.			
COMMENTS :								