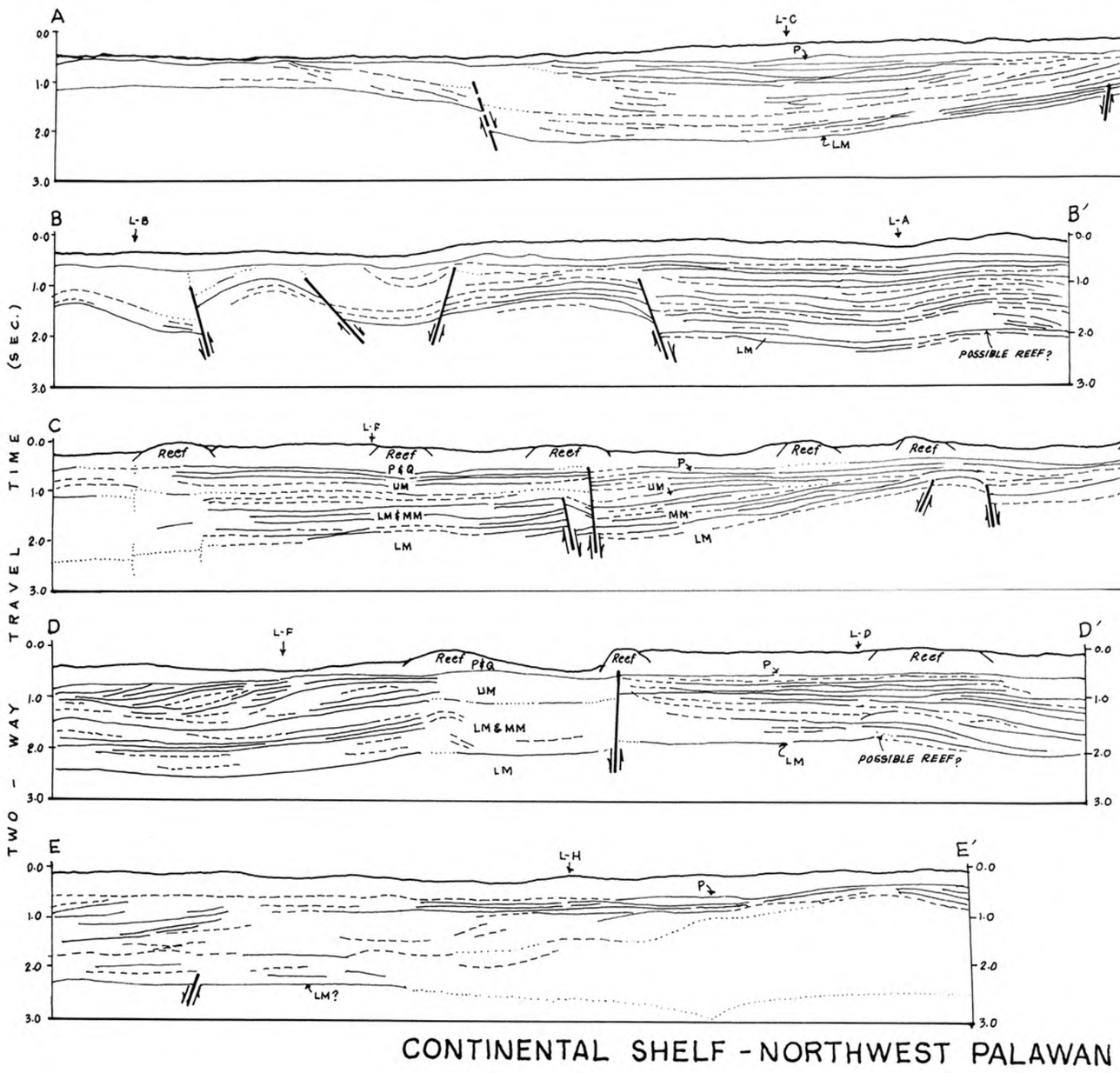
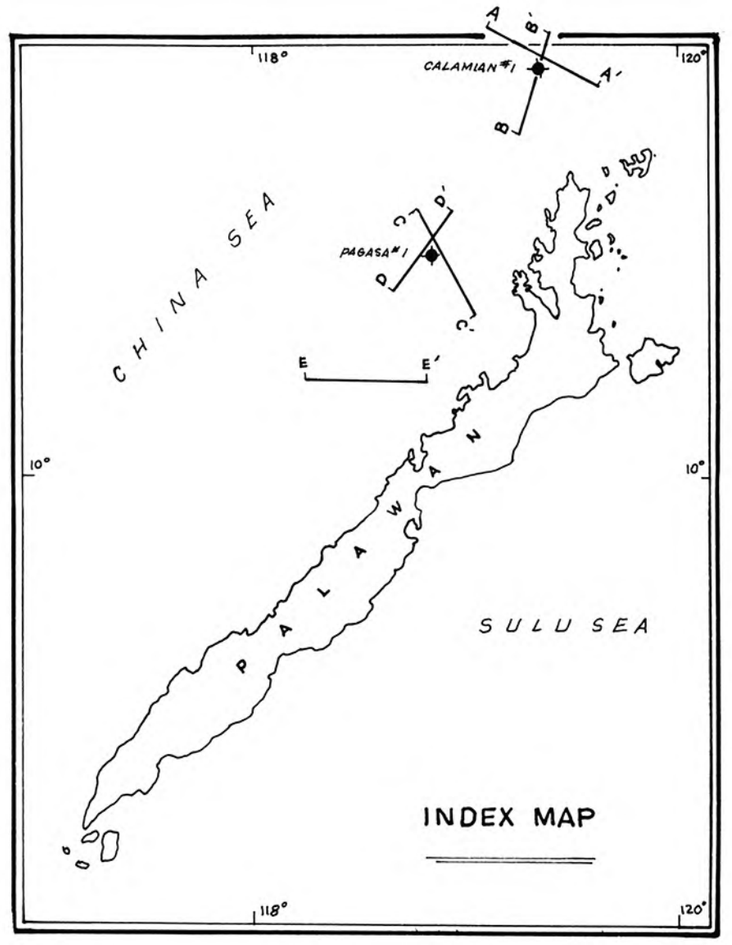


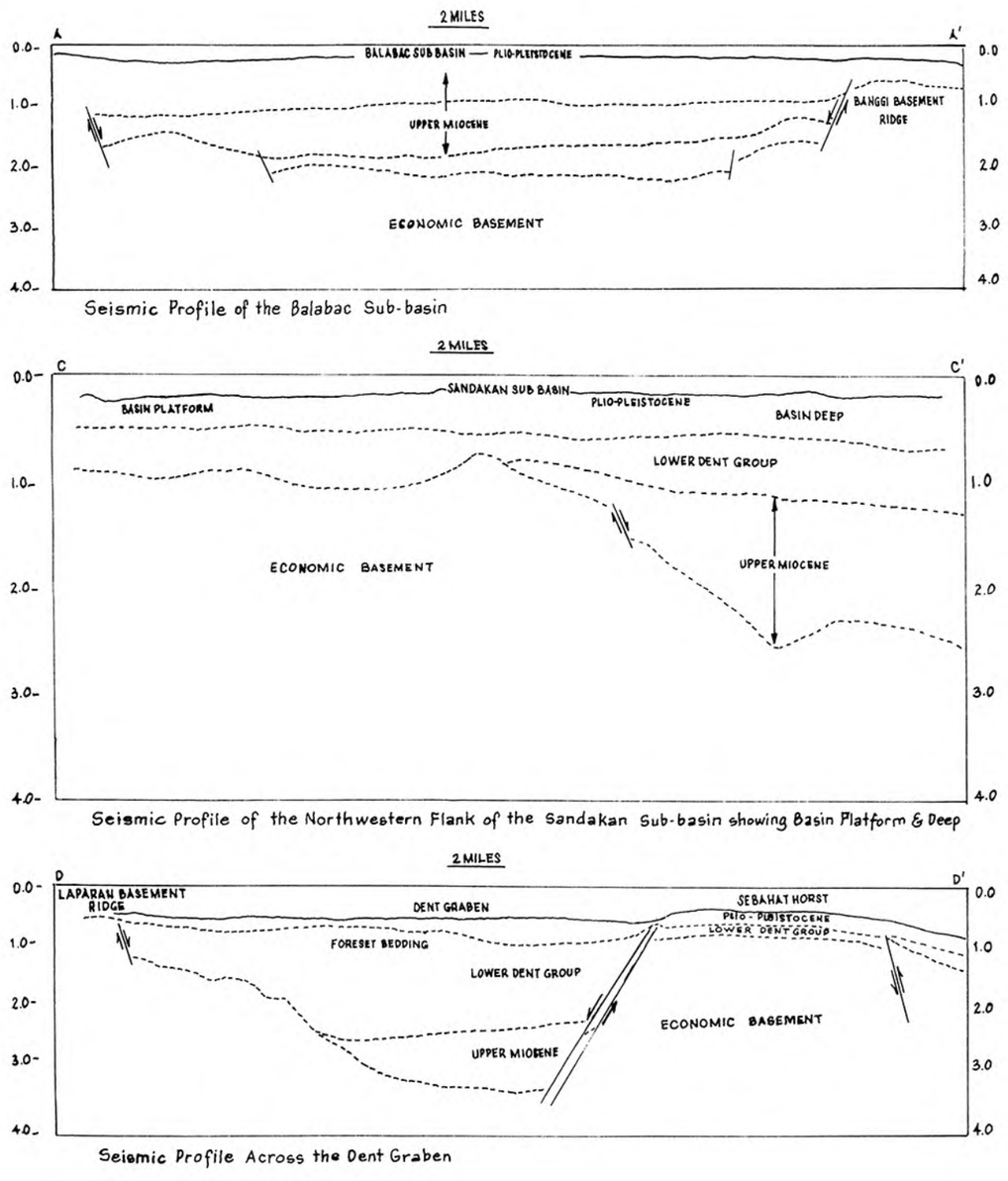
CONTINENTAL SHELF - NORTHWEST PALAWAN



Adapted from "Late Tertiary Geologic History of the Continental Shelf Off Northwestern Palawan Philippines" by E. V. Tamesis, et al., 1973

To accompany "A REVIEW OF OIL EXPLORATION AND STRATIGRAPHY OF THE SEDIMENTARY BASINS OF THE PHILIPPINES"

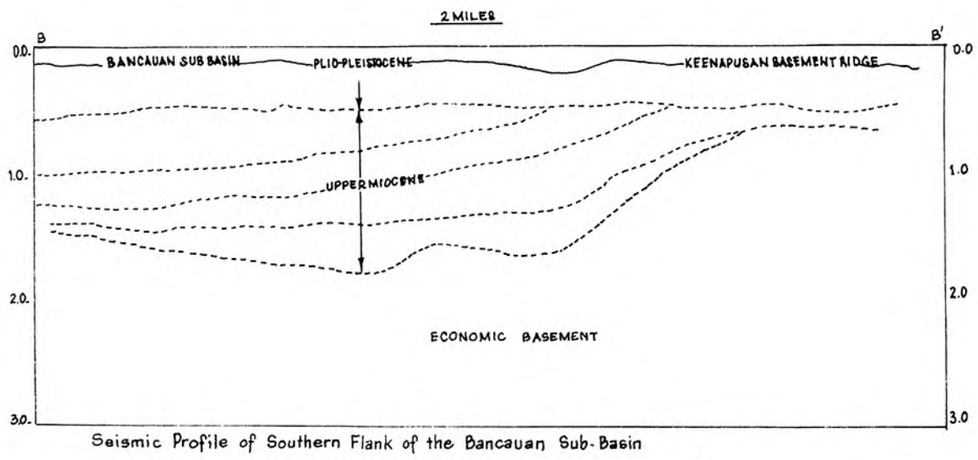
Figure 11.



Seismic Profile of the Balabac Sub-basin

Seismic Profile of the Northwestern Flank of the Sandakan Sub-basin showing Basin Platform & Deep

Seismic Profile Across the Dent Graben



Seismic Profile of Southern Flank of the Bancauan Sub-Basin

WEST SULU BASIN Showing MAJOR FEATURES and SEISMIC CROSS SECTION LOCATIONS

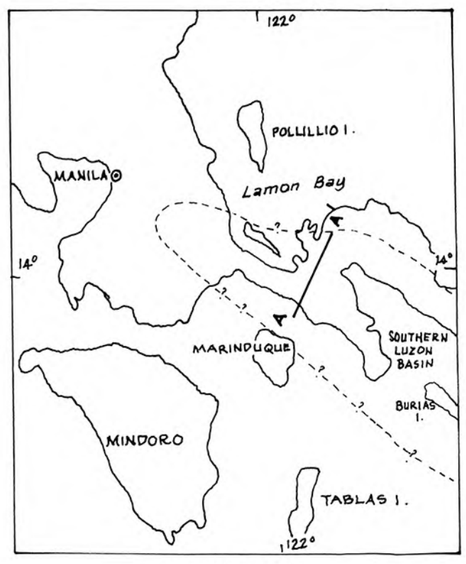
Adapted from "Exploration and Geology of West Sulu Basin, Philippines" by R. G. C. Jessop & R. M. Bell Endeavour Oil Co.

To Accompany "A Review of Oil Exploration and Stratigraphy of Sedimentary Basins of the Philippines"

Figure 12.

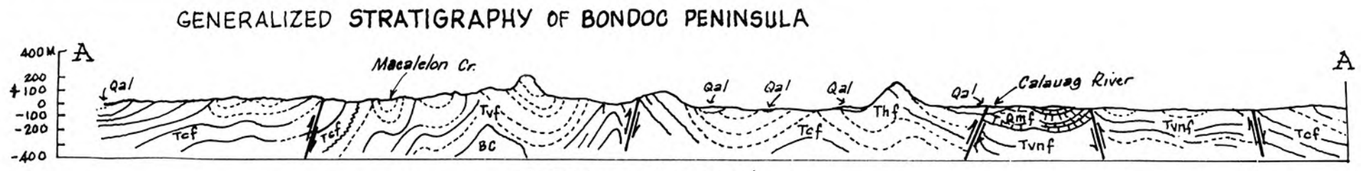
System	Series	Stage	Formation/Member		COLUMNAR SECTION (Composite)	LITHOLOGIC DESCRIPTION	Thickness in FEET	ENVIRONMENT of DEPOSITION
	Recent		Alluvium			Loose sand, gravel and clay		Terrestrial
Quaternary	Pleistocene		Malumbang Formation	Upper limestone Member		Coralline sandy limestone with occasional interbeds, of clayey siltstone and silty sandstone and calcareous fined medium grained porous Cudiapi sandstone.	5580	Shallow to moderately deep marine
				Cudiapi Sandstone				
				Lower Limestone Member				
Tertiary	Pliocene		Vinas Formation			Interbedded shale and sandstone w/ limestone base.	1530	Lagoonal
			Hondagua Formation			Tuffaceous bentonitic siltstone	3,300	deep marine
	Miocene	Upper	Canguinsa Formation	Upper Canguinsa Member		Detrital sandstones and conglomerate w/ limestone, shale.	7,140	Shallow to deep marine
				Middle Canguinsa Member		Sandstone and silty shale interbeds.		
				Lower Canguinsa Member		Massive conglomerate and sandstone		
		Middle	Vigo Formation			Carbonaceous, calcareous shale with occasional interbeds of sandstone and lenses of coralline limestone.	8,300	Shallow to deep marine
		Lower						
	pre-Miocene		Basement Complex			Epidote chlorite schist		

GENERALIZED STRATIGRAPHY OF BONDOC PENINSULA



INDEX MAP

Adapted from "GEOLOGY AND SECTION MEASUREMENT OF BONDOC PENINSULA" by S.G. Martin & E. A. ESPIRITU



SECTION along A-A'

STRATIGRAPHY

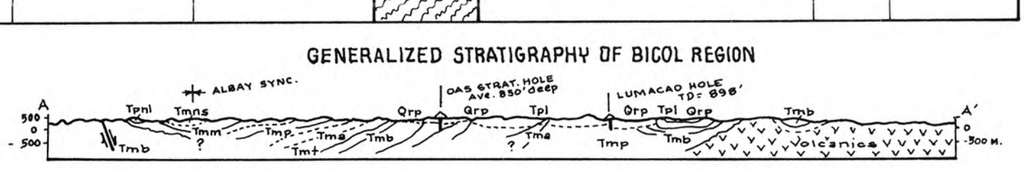
Recent	Qal	ALLUVIUM
h_2	Qmf	MALUMBANG FORMATION
h_1	Tvnf	VIÑAS FORMATION
g-h	Thf	HONDAGUA FORMATION
f_3	Tcf	CANGUINSA FORMATION
C_{4-5} - f_2	Tvf	VIGO FORMATION
pre Miocene	BC	BASEMENT COMPLEX

Figure 5.

To accompany "A REVIEW OF OIL EXPLORATION AND STRATIGRAPHY OF SEDIMENTARY BASINS OF THE PHILIPPINES"

SYSTEM	SERIES	STAGE	GROUP / FORMATION			COLUMNAR SECTION (Composite)	LITHOLOGIC DESCRIPTION			THICKNESS in FEET	ENVIRONMENT of DEPOSITION
QUAT.	Pleistocene		San Roque Tuff				Tuffy lava flows and black cinders				Terrestrial
Tertiary	Pleistocene		NABUA Formation	SORSOGON Formation	LIGAO Formation		Medium to Coarse grained, calcareous sandstone.	Clastics, tuff w/ Basalt flows and marl	Corralline limestone & pyroclastics		Shallow Marine
	Pliocene										
	Miocene	Upper	Albay Group	Malama Siltstone			Thick bedded calcareous siltstone With occasional shale interbeds.			5,920	Shallow to moderately deep marine
				Paulba Sandstone			Thin bedded tuffaceous sandstone			640	
				Aliang Siltstone			Thin bedded calcareous siltstone			1,120	
				Talisay limestone			Thin bedded sandy to corralline limestone			960	
		Middle	BICOL FORMATION				Carbonaceous slate & metasandstone Calcareous sandstone Massive limestone Carbonaceous conglomerate & Sandstone			3,840	Shallow marine
		Lower									
	Eocene		Pantao limestone				Gray to black schistose limestone				Shallow marine
	Pre-Eocene		Basement Complex				Basic igneous rocks & metamorphics				

GENERALIZED STRATIGRAPHY OF BICOL REGION



SECTION ACROSS BICOL PENINSULA, LUZON, PHIL.

INDEX MAP

Note: Cross-section was based from geologic survey conducted by the staff of the Petroleum Division, Bureau of Mines in 1961 and from strat. hole data of Philex Oil in 1963.

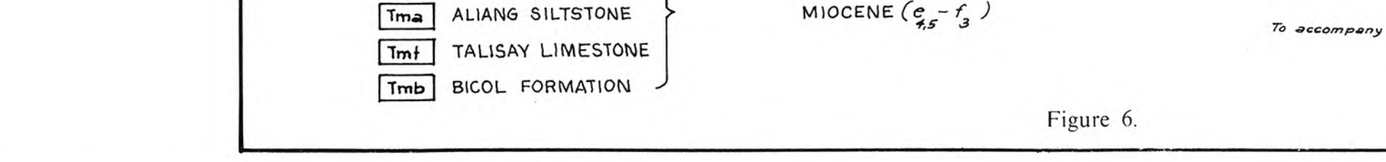
FORMATION		AGE		
Qrp	SAN ROQUE TUFF	PLEISTOCENE	Tpnl	NABUA (Limestone Member)
Tpl	LIGAO FORMATION	PLIOCENE (g-h)	Tmns	NABUA (Sandstone Member)
Tmm	MALAMA SILTSTONE	MIOCENE ($e_{4,5}$ - f_3)		
Tmp	PAULBA SANDSTONE			
Tma	ALIANG SILTSTONE			
Tmt	TALISAY LIMESTONE			
Tmb	BICOL FORMATION			

To accompany "A REVIEW OF OIL EXPLORATION AND STRATIGRAPHY OF SEDIMENTARY BASINS OF THE PHILIPPINES"

Figure 6.

SYSTEM	SERIES	STAGE	GROUP / FORMATION		COLUMNAR SECTION (Composite)	LITHOLOGIC DESCRIPTION	THICKNESS in FEET	ENVIRONMENT of DEPOSITION
Quaternary	Pleistocene		Hubay Group	Aweden / Ilagan Mesa Fm. Formation Carcar Formation		Shale, sandstone, Tuff. Micritic Vuggy Limestone, Locally marly	1010	Terrestrial to shallow marine; Neritic
Tertiary	Pliocene							
	Miocene	Upper	Barili Group	Bolok Formation		Pale white thin to thick bedded sandy marl	3240	Neritic to Bathyal
				Barili Limestone		Thick bedded massive chalky Limestone	1050	Neritic
		Middle	Talavera Group	Maingit Formation		Corralline limestone, conglomerate, carbonaceous sandstone and shale	1320	Inner neritic-Bathyal
				Toledo Formation		Micritic, crystalline limestone grading upsection to calcareous, tuffaceous sandstone, shale, siltstone.	1830	Neritic to Bathyal
		Lower	Argao Group	Malubog Formation		Interbedded carbonacceous, calcareous Sandstone and Shale and Siltstone With lenses of limestone	6500	Deltaic to Bathyal
				Cebu Limestone		Micritic, skeletal, argillaceous limestone	320	Inner Neritic
				Calagagan Formation		Carbonaceous claystone, siltstone and conglomerate.	2770	Deltaic to Bathyal
	Oligocene	Upper						
		Lower	Mindanao Group	Lutak Limestone Dumatata Formation		Metasediments, tuff, aglomerate basalt flows.	2930	Terrestrial to Marine
	Eocene							
	Paleocene			Unamed Limestone		Orbitolina Limestone		Shallow Marine
Cretaceous			Basement Complex including Pandan Formation			Igneous rocks and slightly to highly metamorphosed sediments		Terrestrial to Marine

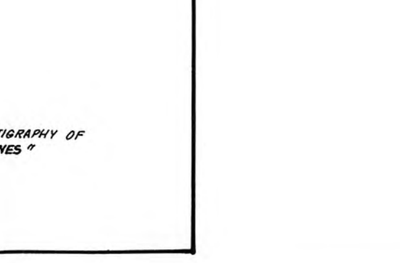
GENERALIZED STRATIGRAPHY OF VISAYAN SEA BASIN



EAST-WEST SECTION ACROSS VISAYAN AREA

SYSTEM	SERIES	STAGE	FORMATION		COLUMNAR SECTION (Composite)	LITHOLOGIC DESCRIPTION			THICKNESS in FEET	ENVIRONMENT of DESPOSITION
Quat'ry	Recent		Alluvium			Silt, Clay, Gravel				Terrestrial
	Pleistocene		Carcar Formation			Corralline limestone			984	Shallow marine
Tertiary	Pliocene		Barili Formation	Barili Marl		highly fossiliferous marl			1,600	Shallow marine
	Miocene	Upper		Barili limestone		Corralline, locally marly limestone			2,240	
		Middle	Maingit Formation			Upper sandstone & shale Middle conglomerate Lower limestone			9,200	Inner neritic-bathyal
			Toledo Fm.	Uling Limestone		Calcareous, Tuffaceous sandstone.	White, massive limestone.		800	Shallow marine
		Lower	Malubog Formation			Essentially clastics consisting of mudstone, sandstone, shale, conglomerate with Coal and Limestone			6,400	Shallow to bathyal depth marine
	Oligocene		Cebu Formation			Impervious limestone and shale, ss. & cgl.			400	
	Eocene/Paleocene		Lutak Limestone			Massive coralline limestone.				
			Unnamed Limestone			orbitolina limestone				
Cretaceous			Pandan Formation			Metamorphosed limestone, shale and conglomerate unfolded w/ basement complex.				
Pre-Cretaceous			Basement Complex			metasediments, volcanics intrussives.				

GENERALIZED STRATIGRAPHY OF CEBU



INDEX MAP

• SEDIMENTARY ROCK UNITS •		• AGE •	• IGNEOUS & METAMORPHIC ROCKS •	
Qth	HUBAY GROUP (Hubay & Carcar formations; reef limestone)	PLIOCENE - RECENT (g-recent)	Qv	YOUNG VOLCANICS ROCK
Tb	BARILI GROUP (Bata, Tuktok, Calubian, Talave, & Barili form.)	UPPER MIOCENE-PLIOCENE (f_3 - g)	Tiu	INTRUSIVE ROCKS (Kanturao formation)
Tt	TALAVERA GROUP (Kadium, Paril, Maingit, Toledo & Makasilao form.)	MIDDLE MIOCENE (f_3 - f_3)	Tv	FLOWS & PYROCLASTICS (Hibulungan)
Tq	ARGAO GROUP (Tognokot, Taog, Uling, Malubog, Cebu & Malabago form.)	UPPER OLIGOCENE - LOWER MIOCENE (d - f_1)		
Tmi	MINDANAO GROUP (Dumatata, Lutak form., & unnamed limestone)	PALEOCENE - OLIGOCENE (e-d)		
		CRETACEOUS	B	BASEMENT COMPLEX (Pandan & others)

Note: Cross-sections were adapted from REGIONAL GEOLOGICAL STUDY OF THE VISAYAN AREA" by J.B. Huth, 1963

To accompany "A REVIEW OF OIL EXPLORATION AND STRATIGRAPHY OF THE SEDIMENTARY BASINS OF THE PHILIPPINES"

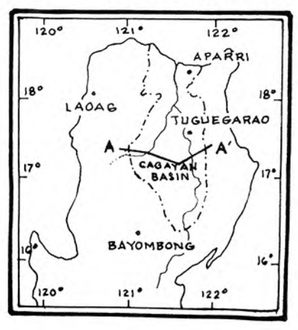
Figure 7.

System	Series	Stage	Formation	Columnar Section (Composite)	Lithologic Description	Thickness in Feet	Environment of Deposition
Quaternary	Recent		Alluvium		Loose sand, clay		Terrestrial
			Terrace Gravel		Sand clay, gravel	1000	Lagoonal
	Pleistocene		Awiden Mesa Fm.		Dacitic Tuff., Tuffaceous ss. and claystone	2200	Shallow Marine
Tertiary	Pleistocene		Ilagan Formation		Tuff, graywacke, Sandstone, Cgl. basal Sandstone & shale.	7120	Shallow marine to Continental
	Pliocene		Cabagan Formation		Carbonaceous shale, thinbeds of limestone & graywacke sandstone	9000	Inner to Outer Neritic
	Miocene	Upper	Lubuagan Formation		Thick bedded sandstone w/ conglomerate & thin shale beds to interbedded, graywacke sandstone and gray shale downsection	19,420	Inner to outer Neritic
		Middle					
		Lower					
			Ibulao Fm.		Massive biohermal limestone	1790	Inner Neritic
	Oligocene or Pre-olig.		Dumatata Fm.		Basic lava flows, tuff, breccia, agglo., ss. & Slst.	1800	Terretrial to shallow marine
pre-teriary			Basement Complex		Basalt, andesite & agglomerate		

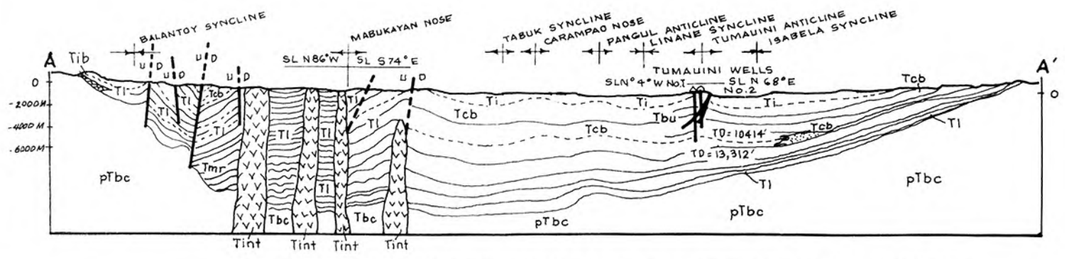
GENERALIZED STRATIGRAPHY OF WEST CAGAYAN VALLEY

System	Series	Stage	Formation	Columnar Section (Composite)	Lithologic Description	Thickness in Feet	Environment of Deposition
Quaternary	Recent		ALLUVIUM		Loose sand, clay		Terrestrial
	Pleistocene		Terrace Gravel		Sand, clay, gravel	1000	Lagoonal
Tertiary	Pliocene		Ilagan Fm.		Graywacke sandstone, conglomerate and shale.	3280	Shallow marine to Continental
			Cabagan Fm.		Carbonaceous shale w/ sparce thin beds of graywacke sandstone	2395	Inner to outer neritic
	Miocene	Upper	Callao Fm.		Massive biohermal limestone	3280	Inner Neritic
		Middle	Lubuagan Formation		Interbedded graywacke sandstone Shale, thin beds of limestone at base	5180	Inner to outer Neritic
		Lower	Ibulao Fm.		massive biohermal limestone	450	Inner Neritic
	pre-Tertiary		Basement Complex		Andesite, Basalt, Agglomerate		

GENERALIZED STRATIGRAPHY OF EAST CAGAYAN VALLEY



Note: Cross-section was adapted from "Summary Report, Geology of the Cagayan Basin, Northern Luzon, Phils." by F. M. Ayers and S. L. Pedderson, 1959.



WEST-EAST SECTION ACROSS CAGAYAN VALLEY BASIN, LUZON, PHIL.

FORMATION

- Ti — ILAGAN FORMATION (*Plio. to Pleist. - h*)
- Tcb — CABAGAN FORMATION (*Late Mio. to Plio. - f_3 - h*)
- Tc — CALLAO FORMATION (*Middle Mio. - f_1 - f_2*)
- Tl — LUBUAGAN FORMATION (*Early to Middle Mio. - e_{4-5} - f_1*)
- Tib — IBULAO FORMATION (*Early Mio. e_4 - 5*)

VOLCANICS

- Tint — TERTIARY INTRUSIVE (*Pleist. to Recent - h_2*)
- pTbc — BASEMENT COMPLEX (*Pre-Tertiary*)

To accompany "A REVIEW OF OIL EXPLORATION AND STRATIGRAPHY OF SEDIMENTARY BASINS OF THE PHILIPPINES"

Figure 2.

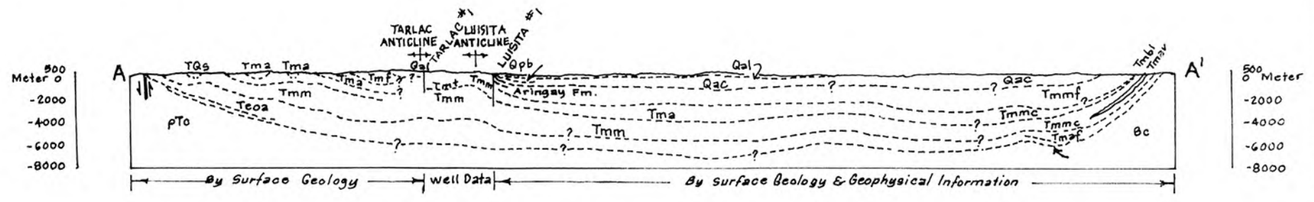
System	Series	Stage	Formation	Columnar Section (Composite)	Lithologic Description	Thickness in Feet	Environment of Deposition
Quat.	Recent		Alluvium		Loose Sand, clay, gravel		terrestrial
	Pleistocene Pliocene		BAMBAN FORMATION		Lapilli tuff, tuffaceous sandstone & coralline limestone	60	partly terrestrial shallow marine
			San Sotero LIMESTONE				
Tertiary	Miocene	Upper	TARLAC FORMATION		Interbedded sequence of shale sandstone and pebble conglomerate	3890	deep marine
		Middle	MALINTA FORMATION		Interbeds of fine to medium grained sandstone, calcareous shale conglomerate and Lapilli tuff.	4500	outer neritic
		Lower	MORIONES FORMATION		Dominantly calcareous sandstone w/ shale, conglomerate and limestone interbeds.	10,460	deep bathyal to outer neritic
	Oligocene Eocene		AKSITERO FORMATION		clastics and siliceous limestone	660	Bathyal
Pre-Tertiary			BASEMENT COMPLEX		Meta-volcanics, intrusives, metasediments		

GENERALIZED STRATIGRAPHY OF MID-WEST LUZON CENTRAL VALLEY

System	Series	Stage	Formation		Columnar Section (Composite)	Lithologic Description	Thickness in Feet	Environment of Deposition
Quaternary	Recent		Alluvium			Sand, clay, gravel		Terrestrial
	Pleistocene		Guadalupe Formation	Diliman Tuff Member		Volcanic ash, Volcanic breccia with tuffaceous sandstone.	6560	Continental
				Alat Congl. Mem.		massive conglomerate with silty mudstone & tuffaceous sandstone	660	
			Tartaro Formation			clayey sandstone & silty mudstone	490	Lagoonal
Tertiary	Pliocene	Upper	Makapilapil Formation			Flat bedded tuffaceous sandstone & silty shale w/ thin lenses of cgl.	3280	Shallow to open sea marine
			Lambac Shale			Massive Sandy shale conglomeratic arkosic sandstone		
	Miocene	Middle	Madlum Formation	Buenacop Ls. Member		Massive to bedded reefal to arenaceous limestone	3280	Continental to Shallow marine
				Alagao Volcanic Member		Agglomerate, meta-tuff, metamorphosed graywacke, Volcanic flows		
				Clastic Member		sandstone, silty shale w/ minor amt of conglomerate		
		Lower	Angat Formation			Biohermal to detrital limestone w/ thin bedded calcareous shale and clayey sandstone.	6400	Shallow to moderate deep Marine
pre-Tertiary			Basement Complex			Meta-volcanics, intrusives metasediments		

GENERALIZED STRATIGRAPHY OF MID-EAST LUZON CENTRAL VALLEY

INDEX MAP



MID-WEST CENTRAL VALLEY

QUATERNARY	Rec.	Qal	Alluvium
	Plio/Pleistocene	Qpl	Intrussives
		Qpb	Bamban Fm.
		TQs	San Sotero Ls.
TERTIARY	Plio.	Tmt	Tarlac Fm.
	Miocene	Tma	Malinta Fm.
		Tmm	Moriones Fm.
	Oligo	Teoa	Aksitero Fm.
	Eocene		
Pre-tert.		pTv	Volcanic Rocks

MID-EAST CENTRAL VALLEY

	Alluvium	Qal	Rec.
QUATERNARY	Guadalupe Fm. — Diliman Tuff Member	Qdt	Pleistocene
	Guadalupe Fm. — Alat Cgl. Member	Qac	
	Tartaro Fm.	TQt	Plio.
TERTIARY	Makapilapil Fm. — Lambak Shale	Tmml / Tml	Miocene
	Madlum Fm. — Buenacop Limestone Member / Alagao Volcanic Member / Clastic Member	Tmma / Tmmc	
	Angat Fm.	Tmaf	
	Basement	Bc	

To accompany "A REVIEW OF OIL EXPLORATION AND STRATIGRAPHY OF SEDIMENTARY BASINS OF THE PHILIPPINES"

Figure 3.

System	Series	Stage	Formation	Columnar Section (Composite)	Lithologic Description	Thickness	Environment of Deposition
Quat.	RECENT		Alluvium		Sand, clay, gravel		Terrestrial
	Pleistocene		Mirador Limestone / Bacnotan Limestone		Massive crystalline to reef limestone	400	shallow marine
Tertiary	Pliocene		Aringay Formation		Sandy shale alternating with siltstone and fine to medium grained sandstone to interbedded coarse grained sandstone & sandy shale.	8640	continental to shallow marine
	Miocene	Upper	Amlang Formation		Interbedded tuffaceous sandstone and sandy shale.	2490	outer neritic - bathyal depth
		Middle	Bued Canyon Formation		Well consolidated conglomerate alternating with graywacke and sandy shale.	7040	Outer shelf to marine bathyal depth
			Labayog Limestone		Corraline sandy limestone, marl & S'dstone	640	shallow marine
			Benguet Limestone		massive limestone w/ sandstone agglomerate at base.	480	shallow marine
		pre-Middle Miocene	Basement Complex		meta-volcanics, intrusives, metasecliments		

GENERALIZED STRATIGRAPHY OF NORTHERN LUZON CENTRAL VALLEY

System	Series	Stage	Formation / Member		Columnar Section (Composite)	Lithologic Description		Thickness in Feet	Environment of Deposition
Quat.	Recent		Alluvium			clay, sand, gravel			terrestrial
	Pleistocene		Guadalupe Formation	Laguna Formation		tuff, agglomerate	volcanic breccia flow tuff pebble to boulder cgl.	1640	continental Littoral
Tertiary	Miocene	Middle	Madlum Formation	Buenacop Limestone Member, Clastic Member		coralline, detrital limestone Interbedded shale & sandstone and limestone lenses		5400	Neritic
		Lower	Angat Formation			conglomeratic coralline limestone		1100	Neritic
	Oligocene	Lower	Maybangain Formation	Clastic Volcanic Member		Well consolidated shale and sandstone with occasional interbeds of sandy limestone, agglomerate basalt and andesite		6500	littoral neritic
	Eocene								
	Paleocene			Masungit Limestone Member		Massive to bedded coralline limestone			
Cretaceous			Kinabuan Formation			interbedded silty shale and calcareous sandstone grading to sandy limestone		2070	Bathyal - Abyssal
pre-Cretaceous			Basement Complex			meta-volcanics, intrusives, metasediments			

GENERALIZED STRATIGRAPHY OF SOUTH EASTERN LUZON CENTRAL VALLEY

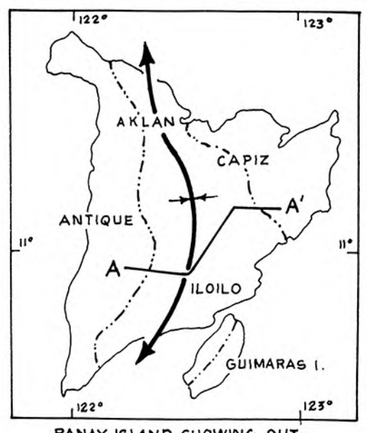
Figure 4.

SYSTEM	SERIES	STAGE	FORMATION / MEMBER	COLUMNAR SECTION (Composite)	LITHOLOGIC DESCRIPTION	Thickness in FEET	ENVIRONMENT of DEPOSITION
	Recent		Alluvium / Terrace gravel		Sand, volcanic clastics limestone, gravels		Terrestrial
QUAT.	Pleistocene		Cabaluan Formation: Maraget Gs. Member; Sta. Barbara Silt. Mb.; Balic Clay Member		Cross bedded sandstone, siltstone w/ minor claystone. Thick bedded mudstone and silty claystone	1290	Neritic to Abyssal
Tertiary	Pliocene		Ulian Formation		Calcareous claystone and mudstone w/in impure limestone and conglomerate at base.	1760	Bathyal
			Iday Formation		Interbedded sandstone, mudstone and conglomerate.	2290	Neritic to Abyssal
	Miocene	Upper	TARAO FORMATION: Guimbal Mudstone Member		Thick bedded calcareous mudstone	3320	Bathyal to Abyssal
			TARAO FORMATION: Tubungan Siltstone Member		Rhythmic sequence of siltstone Claystone, shale and sandstone	7260	
			SINGIT FORMATION: Barasan Sandstone Member		Thick bedded graywacke sandstone w/ thin bands of shale and siltstone	6670	Neritic to Abyssal
		Middle	SINGIT FORMATION: Igtalongan shale Member		Carbonaceous, Calcareous shale with sandstone interbeds	4685	
			SINGIT FORMATION: Tanian Lst. Memb.		Fragmental crystalline limestone	490	
		Lower	SINGIT FORMATION: Sewaragan Complex Member		Meta-sandstone, argillites, slates and basalt.	7350	
	Oligocene						
	pre-Oligocene		Basement Complex		Volcanics, metamorphics diorite marbolized limestone		

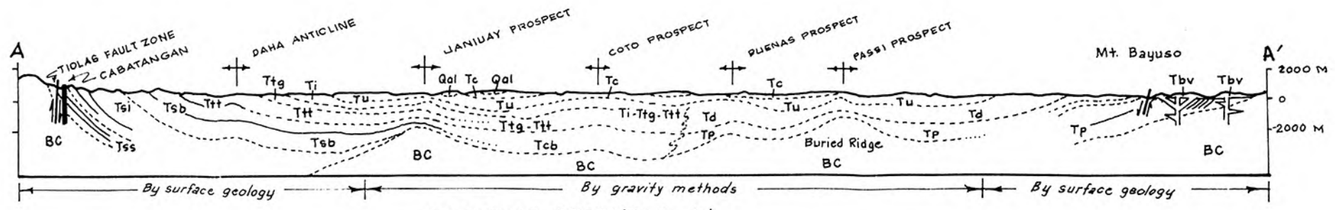
GENERALIZED STRATIGRAPHY OF WEST SIDE ILOILO BASIN

SYSTEM	SERIES	STAGE	FORMATION / MEMBER	COLUMNAR SECTION (Composite)	LITHOLOGIC DESCRIPTION	Thickness in Feet	ENVIRONMENT of DEPOSITION
	Recent		Alluvium / Terrace gravel		Sand, volcanic, clastics, limestone, gravel		Terrestrial
Quat.	Pleistocene		Cabatuan Formation: Maraget Ss. Mb.		Cross-bedded Sandstone	1290	Neritic
Tertiary	Pliocene		Ulian Formation		Calcareous claystone and mudstone	1760	Bathyal
	Miocene	Upper	Dingle Formation: Sto. Thomas Limestone Member		Well stratified bioherm	3690	Neritic
			Dingle Formation: Summit Clastic Member		Sequences of sandstone, mudstone, impure limestone	1585	
			Dingle Formation: Aglalana Lst. Member		Stratified limestone with sandstone and mudstone at base.	1940	
		Middle	Passi Formation: Assisig Member		Thin bedded fine grained to pebbly sandstone and shale.	1540	Bathyal to Abyssal
		Lower	Passi Formation: Salngan Mb. Bayuso Volc.		Massive mudstone, indurated sandstone agglomerate, basalt and andesite	1220	
	Oligocene		Basement Complex		Volcanics, metamorphics, Diorite, marbleized limestone.		

GENERALIZED STRATIGRAPHY
EAST SIDE ILOILO BASIN



PANAY ISLAND SHOWING OUTLINE OF ILOILO BASIN AND BASINAL AXIS.



GEOLOGIC SECTION A-A'
ACROSS ILOILO BASIN

WESTERN ILOILO

Recent	Qal	ALLUVIUM
f_3-h	Td	CABATUAN (*Maraget, Sta. Barbara, Balic*)
	Tu	ULIAN FORMATION
	Ti	IDAY FORMATION
	Ttg	TARAO (*Guimbal*)
	Ttt	TARAO (*Tubungan*)
	Tsb	SINGIT (*Barasan*)
	Tsi	SINGIT (*Igtalongon*)
Pre-C-f_2	Tss	SINGIT (*Sawaragan*)
	Bc	BASEMENT COMPLEX

EASTERN ILOILO

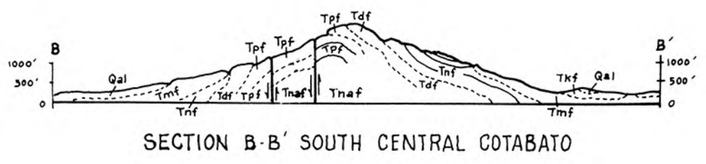
Recent	Qal	ALLUVIUM
e_{4-5}-h	Tc	CABATUAN (*Maraget Member*)
	Tu	ULIAN FORMATION
	Td	DINGLE (*Sto. Thomas, Summit, Aglalana*)
	Tbv	BAYUSO VOLCANICS
	Tp	PASSI (*Asisig, Salngan*)
Pre-$e_{4.5}$	Bc	BASEMENT COMPLEX

Note:
Cross-section was adapted from "GEOLOGY & SECTION MEASUREMENTS OF ILOILO BASIN, PANAY IS., PHILIPPINES" by P. J. Santos & "GEOLOGY AND PET. POSSIBILITIES OF ILOILO BASIN", 1958.

Figure 8.

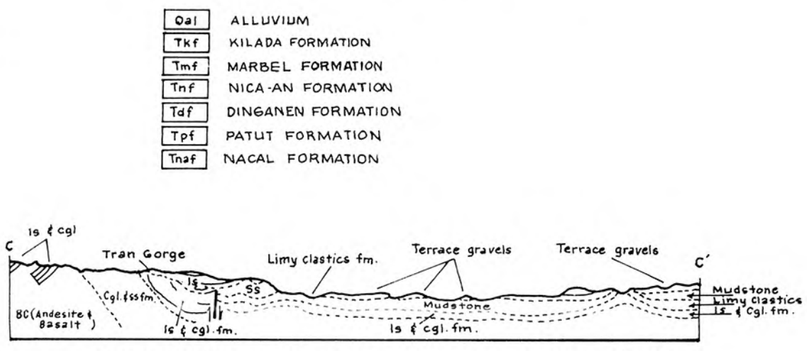
SYSTEM	SERIES	STAGE	FORMATION	COLUMNAR SECTION (Composite)	LITHOLOGIC DESCRIPTION	Thickness in FEET	ENVIRONMENT of DEPOSITION
	Recent		Alluvium		loose sand, clay, gravel		Terrestrial
Quat.	Pleistocene		Dmanay Marl; Carmen Formation		Marine clastics, marl w/ oyster beds. Tuffaceous sandstone, conglomerate, clay or agglomerate & extensive volcanics	1640	Shallow marine
			Kilada formation		Ferruginous sandstone, calcareous siltstone and conglomerate.	330	Fluviatile to Shallow limestone
	Pliocene	Upper	Marbel Formation		Biothermal limestone, marl, sandstone & volcanic conglomerate	3940	
		Lower	Nica-an Formation		Cross-bedded sandstone to interbedded tuffaceous siltstone, sandstone, pebble conglomerate, agglomerate and marl and limestone.	5580	Shallow Marine
Tertiary	Miocene	Upper	Dinganen Formation		Interbedded sandstone, claystone, tuffaceous sandstone and lenses of boulder conglomerate.	6560	Continental to shallow marine
		Middle	Patut Formation		Cobble conglomerate, medium grained graywacke sandstone occasional mudstone and siltstone and reefal limestone.	3770	Continental to shallow to moderately deep marine.
		Lower	Nakal Formation		Indurated graywacke sandstone & conglomerate with argillite or shale and local massive lenticular limestone	4920	Shallow to moderately deep marine
			Maganoy Formation		Highly indurated partly recrystallized limestone, conglomerate, and sandstone.	1640	Shallow marine
	Oligocene						
	pre-Miocene		Basement Complex		Andesite, basalt and metasediments		

GENERALIZED STRATIGRAPHY
of
COTABATO BASIN



SECTION B-B' SOUTH CENTRAL COTABATO

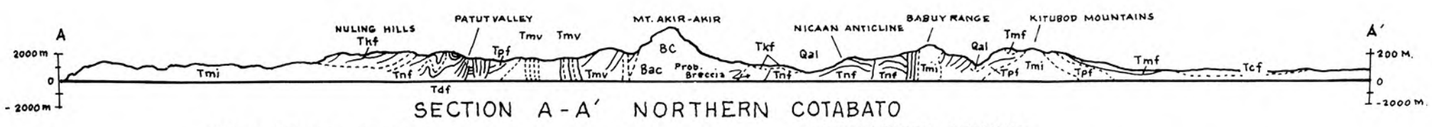
Qal	ALLUVIUM
Tkf	KILADA FORMATION
Tmf	MARBEL FORMATION
Tnf	NICA-AN FORMATION
Tdf	DINGANEN FORMATION
Tpf	PATUT FORMATION
Tnaf	NACAL FORMATION



DIAGRAMMATIC CROSS SECTION ALONG TRAN RIVER (C-C')

Note: Cross-sections were adapted from RECONNAISSANCE GEOLOGY AND OIL POSSIBILITY OF COTABATO PROVINCE" Island of Mindanao, Philippines by: Albert J. Froelich, Aug. 25, 1958

INDEX MAP



SECTION A-A' NORTHERN COTABATO

NORTHWESTERN COTABATO

h	Tkf	KILADA FORMATION
f_3-h	Tnf	NICA-AN FORMATION
f_3	Tdf	DINGANEN FORMATION
f_1-f_2	Tpf	PATUT FORMATION
$c_{4.5}$	Tmi	MIOCENE VOLCANICS
pre-Miocene	BC	BASEMENT COMPLEX

NORTHEASTERN COTABATO

h	Tcf	CARMEN FORMATION
	Tkf	KILADA FORMATION
g-h	Tmf	MARBEL FORMATION
f_3-h	Tnf	NICA-AN FORMATION
f_1-f_2	Tpf	PATUT FORMATION
c_4-5	Tmv	MIOCENE VOLCANICS

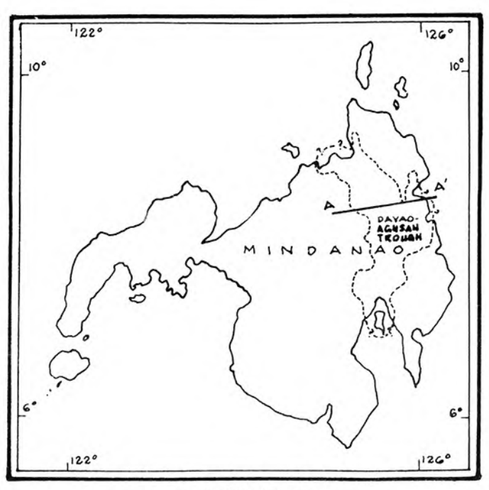
GEOLOGIC SECTIONS
IN COTABATO, MINDANAO
PHILIPPINES

Figure 9.

To accompany "A REVIEW OF OIL EXPLORATION AND STRATIGRAPHY OF SEDIMENTARY BASINS OF THE PHILIPPINES"

SYSTEM	SERIES	STAGE	FORMATION	COLUMNAR SECTION (Composite)	LITHOLOGIC DESCRIPTION	THICKNESS in FEET	ENVIRONMENT of DEPOSITION
QUAT.	RECENT		ALLUVIUM		LOOSE SAND, SILT, TRAVEL		Terrestial
Tertiary	Plocene		Adgaoan Formation		Marine mudstone, shale, siltstone and conglomerate grading up-section into thin continental clastic beds.	8000	Continental to deep marine
	Miocene	Upper					
		Middle	Wawa Formation		Marine Shale, sandstone conglomerate and limestone lenses.	3000	Shallow marine
		Lower	Hinatuan Limestone		Reefal crystalline to clastic limestone	1000	Shallow marine
			Saugan Formation		Argillaceous shale and Sandstone	960	Deep marine
	Eocene		Baggao Limestone		Massive Crystalline limestone	80	
	Pre-Eocene		Basement Complex		Ultrabasic igneous rocks, metasediments.		Shallow Marine

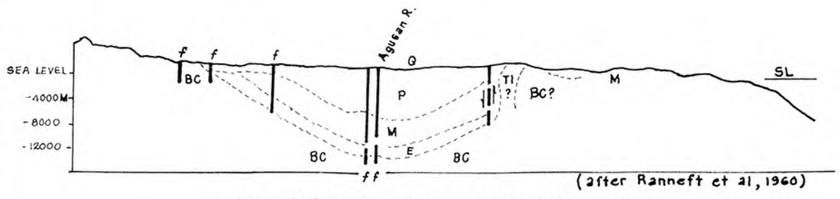
GENARALIZED STRATIGRAPHY OF EASTERN AGUSAN



• INDEX MAP •

SYSTEM	SERIES	STAGE	FORMATION	COLUMNAR SECTION (Composite)	LITHOLOGIC DESCRIPTION	THICKNESS in FEET	ENVIRONMENT of DEPOSITION
	Recent		Aluvium		Loose sand, silt, gravel		Terrestrial
QUATERNARY	Pleistocene		Liuanan Sandstone		Cross bedded sandstone & conglomerate	1120	Terrestrial Shallow marine
			Diwata Limestone		Massive coralline Limestone	60	Shallow marine
	Pliocene		Nasipit Formation		Coarse Sandstone, shale, Conglomerate and marly limestone	240	
			Carmen Formation		Massive graywacke & cgl. to tuffaceous Sandstone & Shale.	1600	Continental to shallow marine
Tertiary	Miocene	Upper	Adgaoan Formation		Interbeds of marine mudstone Shale, Siltstone, graywacke w/ occasional limestone	6400	Neritic to deep marine
		Middle	Wawa Formation		Sequence of marine graywacke, Shale and conglomerate.		Shallow to moderately deep marine
		Lower					
	Eocene		Umayan limestone		Massive, poorly, bedded crystalline, reefal limestone w/ occasional calcareous shale.	2000	Neritic
	Pre-Eocene		Basement Complex		Ultrabasic igneous rocks metasediments.		

GENERALIZED STRATIGRAPHY OF WESTERN AGUSAN



CROSS SECTION ACROSS AGUSAN-DAVAO BASIN

SEDIMENTARY ROCKS

Quaternary	Q	RECENT ALLUVIUM GRAVEL, ETC. (Recent)
Quaternary	P	PLIO. PLEIST. SS, ls, cgl, ms. (n-Plei/st)
Tertiary	M	LOW. MIOCENE - LOW. PLIO., sh, ss, cgl., ls. (c_{4-5}-h)
	E	EOCENE Ls. (o-b)

IGNEOUS ROCKS

Tertiary	TI	TERTIARY INTRUSIVE ROCKS (a-b-h)
Pre-Tert.	BC	BASEMENT COMPLEX - (Pre e_{4-5}) PRE-TERTIARY & PRE-MIOCENE IGNEOUS ROCKS & METAMORPHIC ROCKS (Pre-a-b)

To accompany "A REVIEW OF OIL EXPLORATION AND STRATIGRAPHY OF SEDIMENTARY BASINS OF THE PHILIPPINES"

Figure 10.