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Jefatura de Obras Hidráulicas  
de Baleares

CORRELATION AND GEOMETRY OF THE MESSINIAN FACIES  
ON THE ORIENTAL EDGE OF THE PLAIN OF PALMA  
(ISLAND OF MALLORCA)

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CORRELATION AND GEOMETRY OF THE MESSINIAN FACIES ON THE ORIENTAL EDGE OF THE PLAIN OF PALMA (ISLAND OF MALLORCA).

BARON, A and GONZALEZ, C. - JEFATURA DE OBRAS HIDRAULICAS DE BALEARES.

With the motive of hydrogeological studies on the edge of the eastern plain of Palma, with the intention of incrementing the capacity of water supply to this city, the J.O.H. of the Balearic Islands, in collaboration with the S.G.O.P.U., have performed 7 borings of investigation, (see plane situation on plate number 1).

The objective of the above was divided in 3 steps in order to complete our geological knowledge of the plain, to establish in that zone some piezometric control points, and finally to confirm the possibility of finding saturated the reef facies. We are relating in this work the results that have been obtained from the geological point of view. These borings have permitted to noticeably our knowledge of the messinian facies in this zone, and to bring about its geometrical relations. We still have to make a detailed sedimentological and paleontological study.

On the schema of the figure, are resumed the geometry and relations that exist between the different facies. Then follows a description which synthesizes the different facies that show on the above-quoted schema.

- Red silts of Palma (Q). We can see remnants that only appear at times as red silts, and others as wind calcarenites. The thicknesses that have been recorded oscillate between 4 & 14 m.

- Calcarenites of San Jordi (PL2). Lithologically, it's a sequence that is composed of calcarenites that have a grain which goes from medium to fine, and that has a cross-bedding, lumaquella which alternate with calcarenites and calcarenites of a grain each time finer that transits in a gradual manner towards its next formation. Between 20 & 35 m. of potency.

- Calcisiltites of Son Mir (PL1). This formation is manifested here by its fa—

cies on the edges which are made up with yellow calcisiltites with burrows, Ammu-  
sium and other rests from a fragmented macro-fauna. At the base, we can see a pe-  
bbles that has been more or less rounded. Between 5 & 35 m. of potency.

- Terminal complex (limestones of Santany) (M52). It's constituted by various fa-  
cies, but all of them come from shallow surroundings that from E to W are the fo-  
llowing:

- a) Carbonated complex, formed by a superior level of dark macrocrystalline limes-  
tones, and another inferior level that starts with oolitic level and conti-  
nues in recrystallized brechoids and other laminaes which contain molds of bi-  
valve molluscs and cerites.
  - b) White marls with fish.- White marls in which fine and detrital levels alterna-  
te until they reach a micro-sized conglomerate. These levels show stratifica-  
tion. Their stratification is a cross-bedding type, and its elements are main-  
ly soft amberlike grains (possible phosphates?), quartz gravel and abundant  
fish-scales, teeth, fish bones and vertebraes. At the bottom, there are le-  
vels, siliceous nodules followed by greenish marls that are generally finely lami-  
nated with horizontal lamination, although there exists some level of cross-  
bedding on a smaller scale and others with burrows. They do contain some ---  
rests from plants and fish that are, in some cases, well preserved. In the bo-  
ttom levels, some serpulids and oysters do appear locally at times.
  - c) Gypsum of San Jordi.- Macro-crystalline plasters with interpenetrated and wa-  
ter flailed big crystals. The carstificated zones contain insertions that are  
not very potent in laminated marly levels and calcareous marls of oysters, ---  
rests of miliolids, a few fish-scales and a few amber-like grains, and rests  
of plants. The marl-calcareous stretches contain gasteropods and bi-valve mo-  
lluscs. Some levels of gypsum present a stromatolitical aspect. Potency: 90 M.
- Reef complex.- Except for the borehole n° 30, the only visible component of -  
the above-mentioned complex corresponds to the facies of the talus and it is  
constituted by banks of Halimeda lumaquella. In between these banks one can -  
find marl levels with burrows, gasteropods, lamellibranchiaes, and foraminifers.

The potency oscillates between 3 & 8.m. (M <sup>2</sup> 4-5).

- Facies of plataform.- The reef complex, its Halimedas talus slope and the gyp sum of San Jordi, rest upon some grey facies that have initially been constituted of lumaquella banks with foraminifers, lamellibranchiaes, gasteropods, and that locally show a great accumulation of Heterosteginas, bryozoans and serpulids which onto the same facies, yet much finer ones and with burrows, with lumaquella levels, miliolids, some occasional Heterostegina, serpulids, bryozoans, echinidae-barbs and fish-bones. The finer biodisarranged stretches alternate with the lumaquella ones. (M <sup>1</sup> 4-5).

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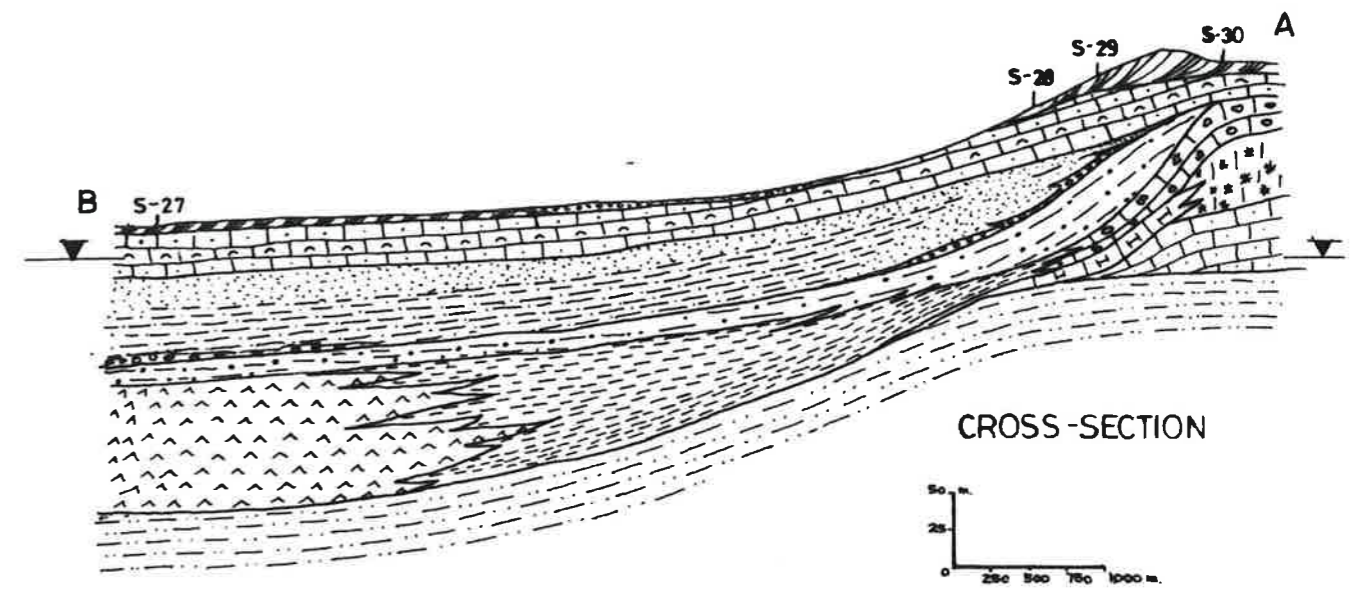
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\* BARON PERIZ, A. y GONZALEZ CASASNOVAS, C. Distribución espacial del Mioplioceno en la isla de Mallorca. I Congreso Español de Geología. Segovia. Tomo I pág. - 137-148. 1984.

\* NOTE: In These references there are only included the internal reports. For a complete references see the "Guía de excursiones del X Congreso Español de Sedimentología". Menorca 1983. (Ed. by L. Pomar, A. Obrador, J. Fornós y A. Rodríguez Perea.



CROSS-SECTION

- Q RED SILTS OF PALMA
- PL<sub>2</sub> CALCARENITES OF SANT JORDI
- PL<sub>1</sub> CALCISILTITES OF SON MIR
- CARBONATES COMPLEX
- M<sub>52</sub> WHITE MARLS WITH FISH
- GYPSUM OF SANT JORDI
- M<sub>4,5</sub><sup>2</sup> REEF COMPLEX
- M<sub>4,5</sub> PLATFORM FACIES

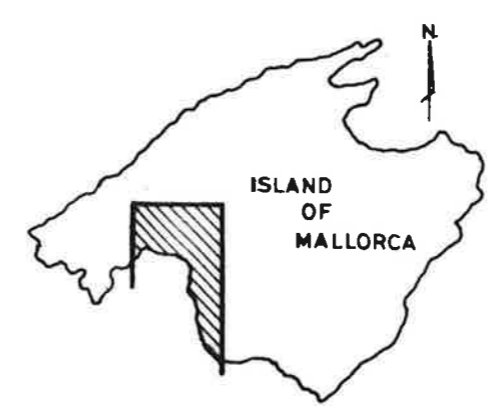


FIGURE - 1