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SEDIMENTO LOGICAL STUDY OF SHIRANISH FORMATION WELL DD-1 (N-IRAQ)

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ABSTRACT

Shiranish formation has been divided into two microfacies units:
1-Marly biowacke stone facies
2-Biogenic pack stone facies

These microfacies reflected marine deep shelf margin in the upper part of the formation, the lower part was deeper.

238 slides were investigated depending on Mineralogical, compositional and Biological processes, which reflect deep shelf margin at upper part of the formation, but at the lower part open sea environment.

The age of the formation is estimated depending on the recognized biostratigraphic zone using the index fossils to be Upper- Middle Maestrichtian.

INRODUCTION

Shiranish formation was first defined by Henson 1940 in (Buday et, al., 1980) from the High folded zone of northern Iraq near the village of shiranish Islam, northeast of Zakho .
The formation consists of blue marls in the upper part and marly limestone and dolomite in the lower part.

The present well is located in the northern part, 25 km west of Erbil city (Fig.1). The aim of the study is to identify lithology and fossil groups present in the rock. A total of 238 slides of rock cutting and core are examined for comparison purpose.

The thickness of an ideal section in Shiranish formation near shiranish village in north east of zakho is about (225) m. and the average of this thickness is changed in other areas from (100) m to (400) m. (Van Bellen, etal.,1959) has described shiranish formation and divided it into two parts: bottom part that consists of marly limestone and is rich with fossils, and upper part that consists of blue marls considering the formation as an open environment. Shiranish formation has been described by (Al-Shaibani, 1973) in Asmer Area, 15 miles north Sulaimaniya and he described the formation as consisting of blue, yellow and orange marls overlapped with layers of marly limestone. (kassab, 1973) has also studied shiranish formation in the ideal section in shiranish area to the north east of (zakho) and he has found that it consists of limestone of different shades varies from light gray to brown, leady and dark gray with marls vary from gray to blue. He has, also, limited the age of the formation to Upper-Middle Maastrichtian. (Kaddouri, 1989) has, also, studied the formation in the north west of Iraq and north east of Syria and confirms that Shiransh formation is located on the (Kometan) in the Iraqi wells. As for (Yahya Al-Shammary, 1993), he has studied Shiranish formation and (Tanjero) in Shaqlawa in north Iraq and divided the formation into four units.

MICROFACIES

The rocks of shiranish formation in the Northern Iraq, west of Erbil is divided into two micro sedimentary facies after examining (238) thin sections by polarized microscope depending on (Dunham 1962) specification which modified by (Wilson 1975) depending on litho logical component and some fossils (Fig.2) A sketch of distributing microfacies for sedimentary basin of the formation has been drawn according to (Wilson model 1975) (Fig.3) .

The sedimentary microfacies are as follows:

1- Marly biowackestone facies :

This facies lies in the upper part of the formation, with thickness of (120) m and constitutes 90% of the thickness of the formation , the most important fossils:

Hetrohelix glabrans , Globigerinelloides , Rugoglobigerina reichellli , Globotruncana aegyptica , Globotruncana stuarti plate(1-1) and Echinoderms plate(1-2). .

The matrix composed of micrite rich in clay. The most important diagenetic process is the precipitation of cement inside shells and cracking in foraminifera,and the alteration of micritic- matrix by recrystallization in which rhombic dolomite substitute the matrix leaving the fossil chambers empty of these dolomite plate (1-3). This reflects the autogenic dolomitzation since the dolomite crystals grains magnesium ions from the same place growing on it (Fuechtbauer 1977) .

This facies is similar to the (S.M.F. 3) of the facies zone (F.Z.3) which indicates to deep shelf margin

2-Biogenic pack stone facies

This facies lies in the lower part of the formation with thickness of (13) m and constitute 10% of the bulk formation. The skeletal components composed of plank tonic foraminifera in the matrix-micrite like *Globotruncana conica , Globotruncana duwi , globotruncana gansseri* .

The most important digenetic process is the alteration of micritic matrix by recrystallization in which rhombic dolomite substitute the matrix leaving the fossil chambers empty of these rhomboid. This reflects the autogenic dolomitzation since the dolomite crystals grains magnesium ions from the same place growing on it plate (2-1) (Fuechtbauer 1977).

Precipitation of drossy cement was also observed in some parts of plank tonic foraminifera .

These processes increase the lower part of this facies with the appearance of autogenic Pyrite (2-2) and Glauconite in the
micritc- matrix) in side some shells. This facies is equivalent to standard microfacies (S.M. F.2) zone (F.Z. 2) which indicates to open sea on normal salinity.

CONCLUSIONS

A – Shiranish formation is divided into two micro facies
1- Marley biowacke stone facies
2- Biogenic pack stone facies

B-Some autogenic minerals are present, like Glauconite accompanied with pyrite in the upper part of the formation. This means that its formation occurred in the strom wave base.

C- The deposition of shiranish formation represented by packstone facies in the lower part then changed into wackestone facies in the upper part.

This reflects the change in environment from high energy of low energy environment, that it means as a deepening upward cycle.

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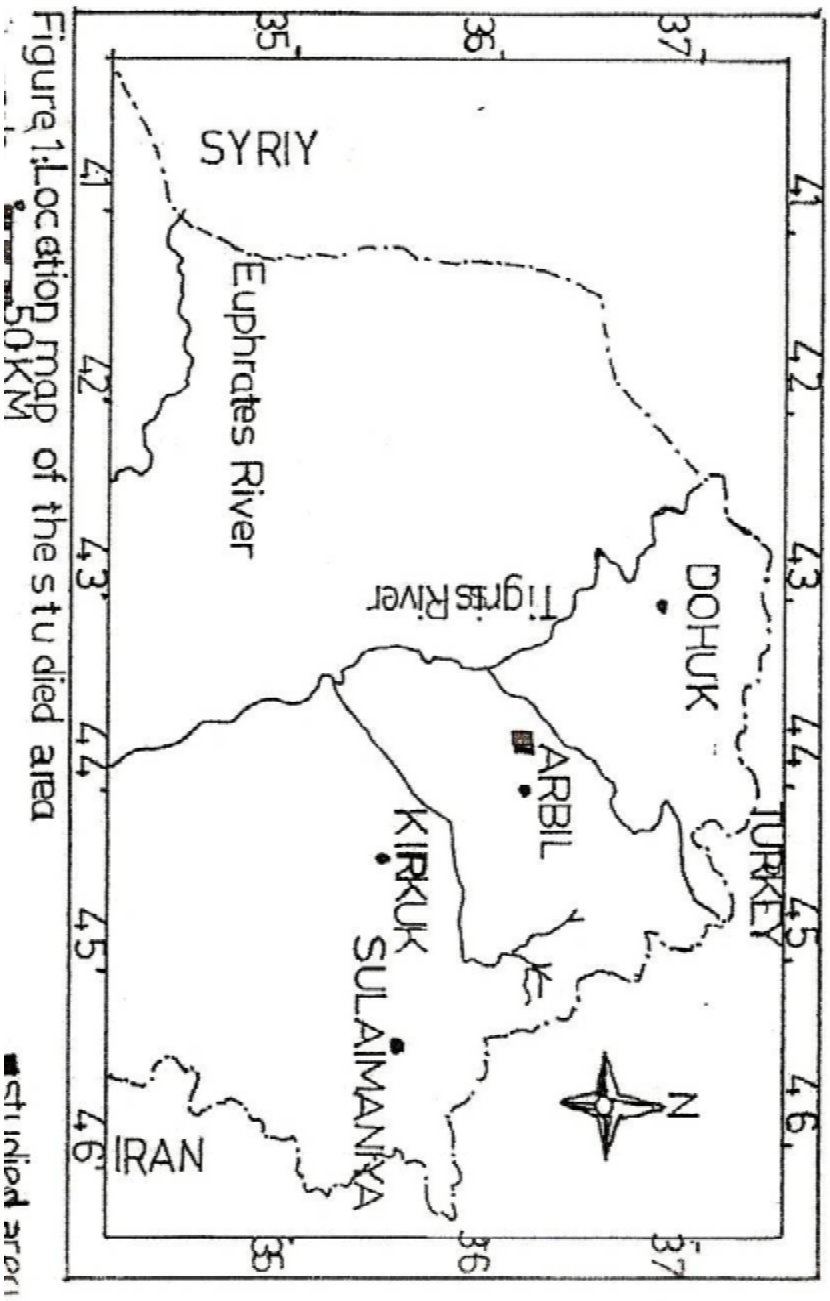


Figure 1:Location map of the studied area

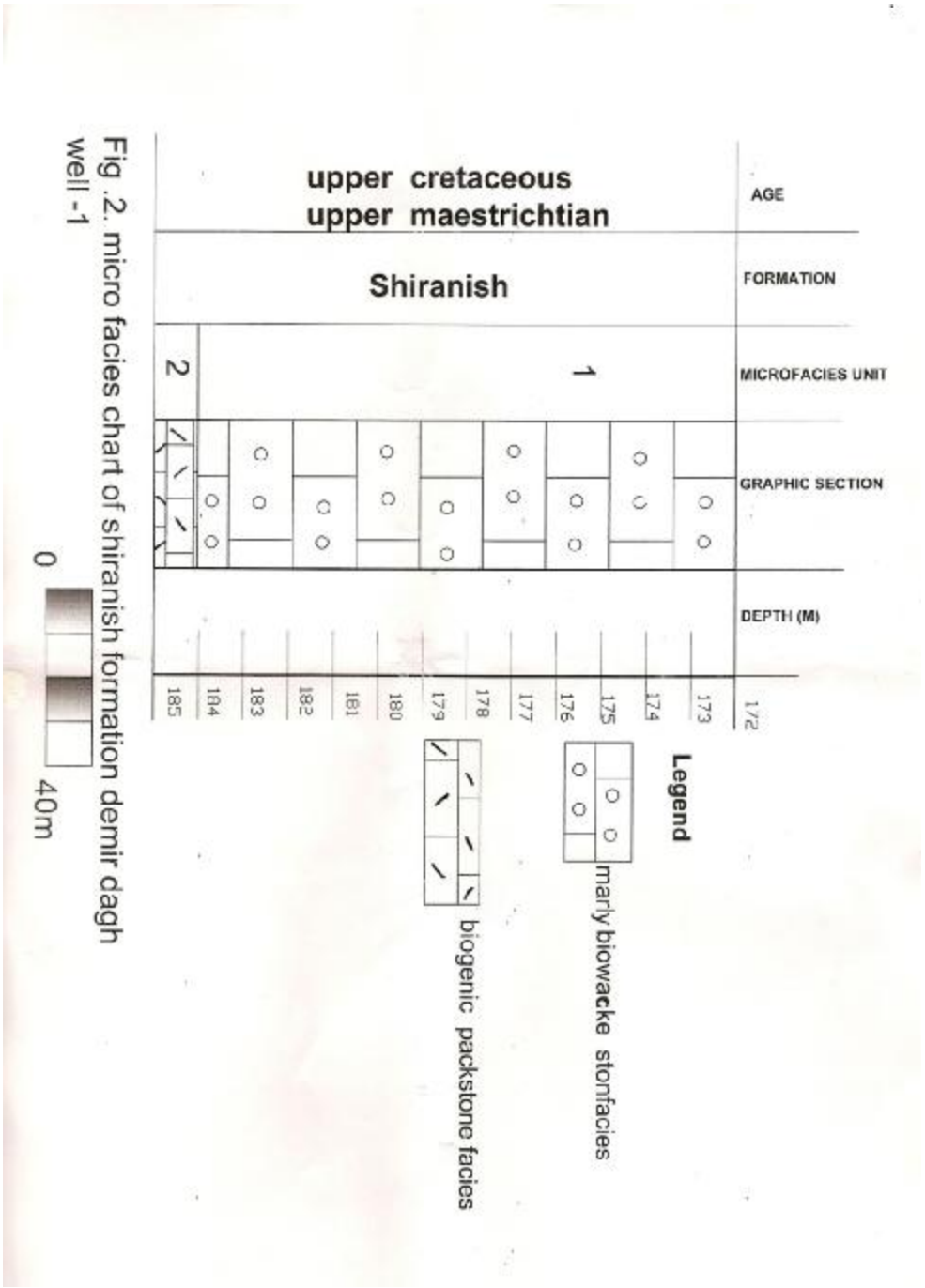


Fig .2. micro facies chart of shiranish formation demir dagh well -1

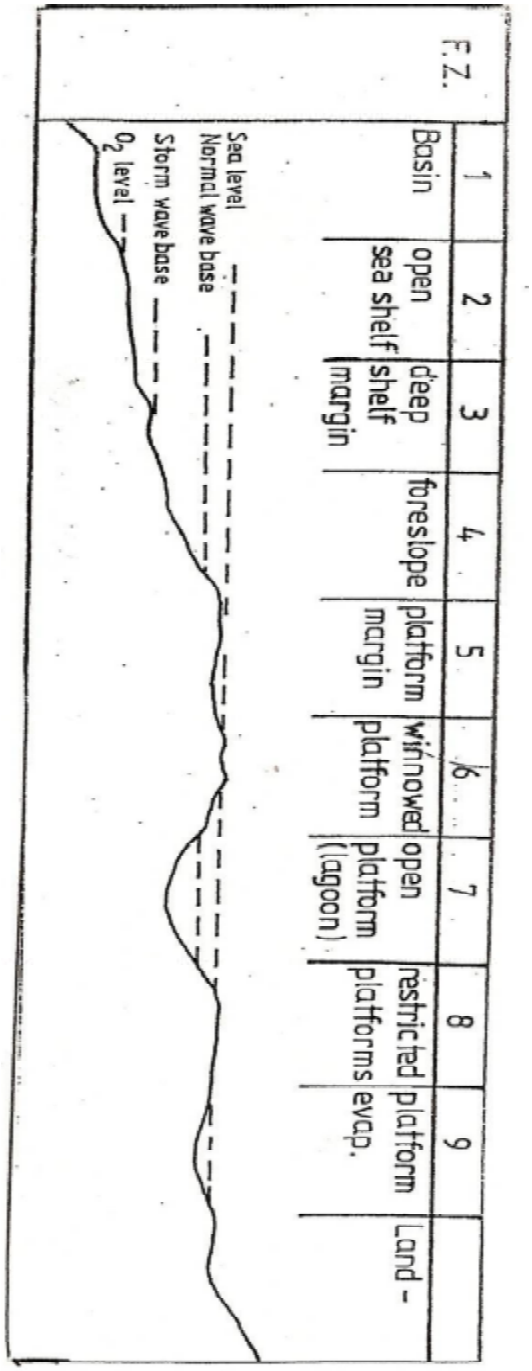


Fig. 3 Wilson model

Plate (1)

1-Planktonic foraminifera in wackestone 40x facies

2-Echinoderms in micritic-matrix 100x

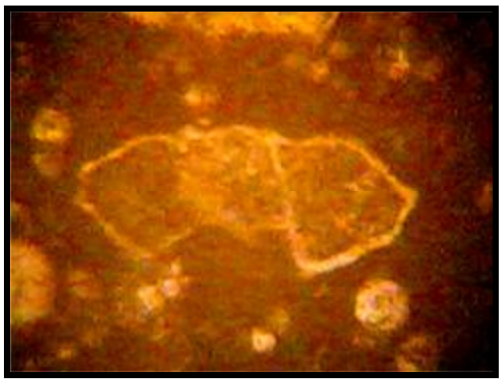
3- The chambers of Globotruncana filled with rhomboid dolomite 40x

Plate (2)

1-Rhombohedral dolomite in micritic-matrix 40x

2-Autogenic pyrite is in the chamber of the plank tonic foraminifera 40x

Plate (1)



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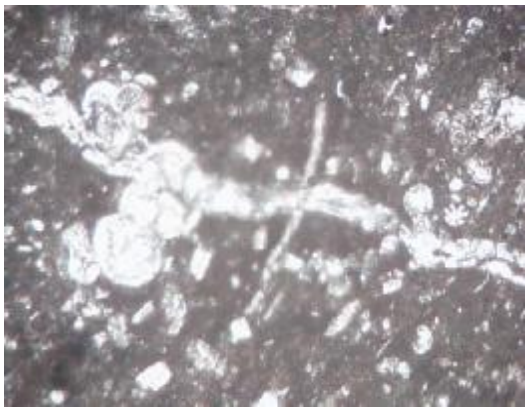

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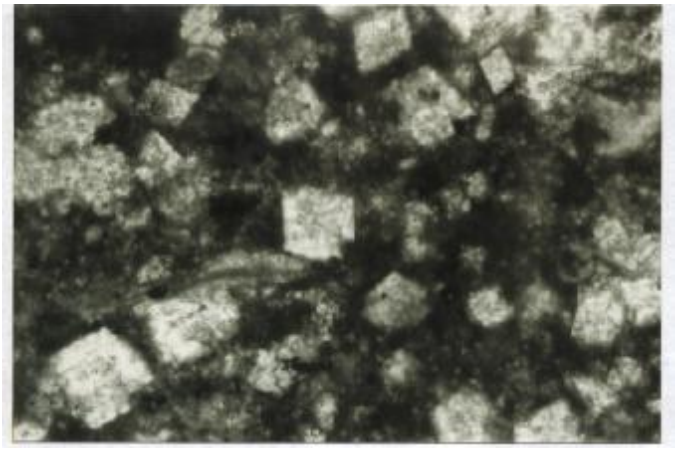
Plate (2)



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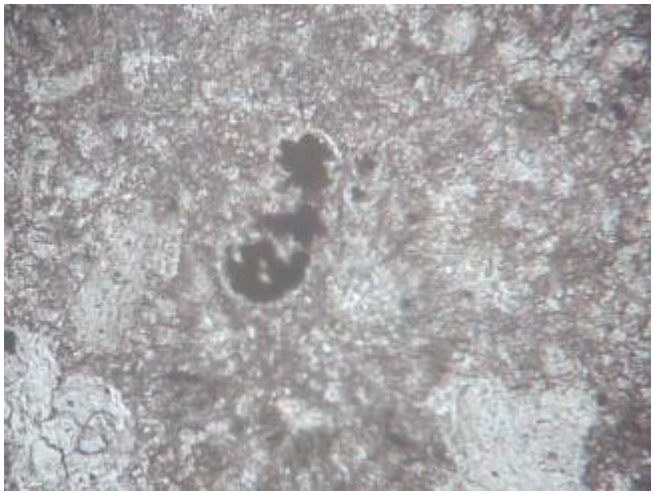

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دراسة رسوبية لتكوين الشيرانش فى بئر دمرداغ- ١ - (شمال العراق)

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الخلاصة

تم تقسيم صخور تكوين الشيرانش الى وحدتين سحنية باستخدام الشرائح الرقيقة المعمول لنماذج اللباب والفتات الصخرى وذالك بالاعتماد على المتحجرات المميزة بالاضافة الى نوعية النسيج الصخري والذي تتواجد فيه المتحجرات

١- سحنة الحجر الجيري الواكي العضوي المارلي .

٢- سحنة الحجر الجيري المرصوص العضوي .

تعكس هذه السحنات ظروف بيئية بحرية عميقة في اعلى التكوين والجزء الاسفل أكثر عمقاً في بيئة ساحل البحر المفتوح . وقد تم تحديد عمر تكوين الشيرانش في المنطقة التي شملها البحث استناداً إلى النطاق الطبقي لتواجد المتحجرات الدالة ب (الماسترختي) الأعلى والوسطى.