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# MICROFCIES OF TEL HAJAR FORMATION IN SOUTH-WEST IRAQ

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## ABSTRACT

The Tel Hajar formation in the studied area has been divided into five microfacics units:

1) Fine hiogenic dolomite facies.
2) Sandy rich dolomite facies.
3) Dolomite diagenetic facies.
4) Recrystal1ized wackestone in microfacies.
5) Mudsione facies.

Microfacics reflect shallow marine water with open Circulation in the lower part of the formation and the environment of the upper is enclosed between upper tide and tide. The most important diagenesis was recrystallization and spary calcite deposit inside fossils chambers and pores.

## INTRODUCTION

Tel Hajar formalion was first described by (Kaddouri 1979) at the well Tel Hajar (30) km south-west of sinjar town (Fig.1) a new Cenomanian-Lower Turonian Stratigraphic Unit from North-west Iraq called the Tel Hajar formation. This new formation has been recorded from other part of Iraq (Ain zahal well No.16) (Kaddouri 1979). The section is reprsentcd in U.T.M. 729 428 .4.E 4001 971 N. In Iraq, and also in the N-E part of Syria. There was a regression towards the end of the Cretaccous and general erosion of the upper beds of the Maastrichtian (Dunnington 1955), Tel Hajar well was drilled on the Tel Hajar structure. The formation lies between drilling depths (2574m) and 2681m and consists of (107m) of thicknes .In the Tel Hajar well section, the formation underlies glohigerina, oligosteginal marly limestone of the Kometan formation (Late Sate Turonian-Early Campanian age), the contact being unconformable. The base of the Tel Hajar formation overlies the Qamchuqa formation uneonformably. In part of the palmyra mountains (N-E Syria) it is believed that there was continuous sedimentation from Cretaceous to the Tertiary (Dubertret 1959) like in the well Tell Hajar-1. (Kaddouri 1979) described the formation that consists of Conglomerate, limestone, dolostone pebbles with reworked fossils.

## MICROFACIES

Tel Hajar formation rocks in North-west Sinjar were divided after examining (69) thin sections by polarized microscope depending on (Dunham 1962) classilication and according to (Fluegel 1972) specifications which modified by (Wilson 1975) depending on litholoical component and some fossils (Fig.2) into live microsedimentary facies then drawing a sketch of microfacics distribution for sedimentaty basin of the formation according to (Wilson 1975) as in (Fig.3).

The sedimentary microfacies were as follow:

1) **Fine biogenic dolomite facies**
   This facies lies in the upper formation and consists of line ciystal of dolomite platc (1-1), some pores which appear arc resultant from the melting as the passing of the

unsaturated liquids.The existing detrital quartz and lack of fossils indicates that this facies is near the coast.According to this peculiarities the environment of this facies it is enclosed between upper tide and tide. This facics similar to the(S.M.F.21) zone (F.Z.8).

2) **Sandy rich dolomite facies**
This facies almost is spreading through all parts of the formation, the facies contain of coarse dolomite crystal pale (1-2) which some of them are idiomorph. The Rocks of this facies are exposed entire dolomitation and melting processes from the solutions, the base of this facies containing pyrite through the dolomite crystals plate (l-3) as well as including broken shell. Becouse of the existing of deterital quartz grains and Blioclast all these refer to depositing this facies in an environment exposed to wave, and this is available in mid tide coaster environment. This facies represents the standard micofacies (S.M.F.24) zone (F.Z.8).

3) **Dolomite diagenctic facies**
This facies lies in the middle of the formalion, this facies characterized by lacking of fossils, but there are some of (Ostracod) and (Shell fragment) plate (1-4) Thy are fractures in the base which tilled with pyrite, the fractures consociate a suitable lokal environment to deposite the pyrite metal, as well as they are a little of Quartz which indicates near the coast. This facies is similar to the (S.M.F. 19) zone (F.Z.8) which indicated to the lakes and lagoons of restricted waler.

4) **Rccrstallized wackestone facics**
This facies lies in the middle and lower of the intormation and the Matrix composed of (Osrtacod). The skeletal componets of (shell fragments). The most important diagenesis in the alteration of micrite Matrix by recrystallization which destoryed the most of them as well as deposit of calcite cement in fossils chambers plate (2-1). and there are also (Quartz) and some little of dolomite rhombohydral in the Matrix. This facies represents the standart microfacies ((S.M.F.9) zone (F.Z.7) which is the zone of shallow marine water with open circulation.

5) **Mudstone facies**
This facies lies in the lower formation. There are a little of (planktonic forams.) in the Matrix-Micritc plate (2-2), thcre is metal of precipitate pyrite in fractures and pores .This facies equivalent to standard microfitcies (S.M.F.3) zone (F.Z.3)' which indicated to quiet open marine environment below the wave base.

## CONCLUSION

A) Tel Hajar were divided into live microlacies they are
   1) Fine biogenic dolomite facies.
   2) Sandy rich dolomite facies.
   3) Dolomite diagenetic facies.
   4) Recrystallized wackestonc facies.
   5) Mudstone facies.

B) The most important diagcncsis processes were recrystallization and deposit of calcite cement in fossils chambers.

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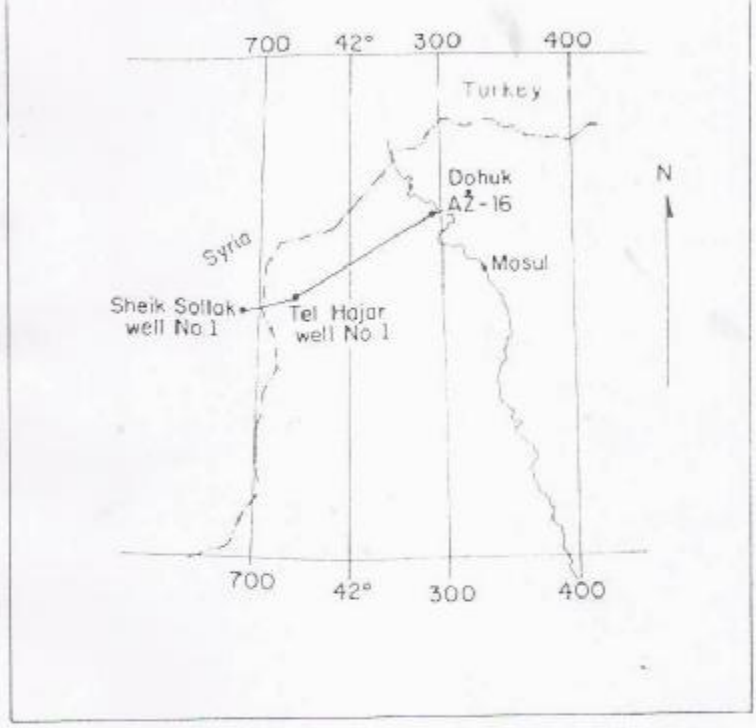



Figure 1. Location map of well Tel Hajar No. 1. Scale 1 : 8,000,000.

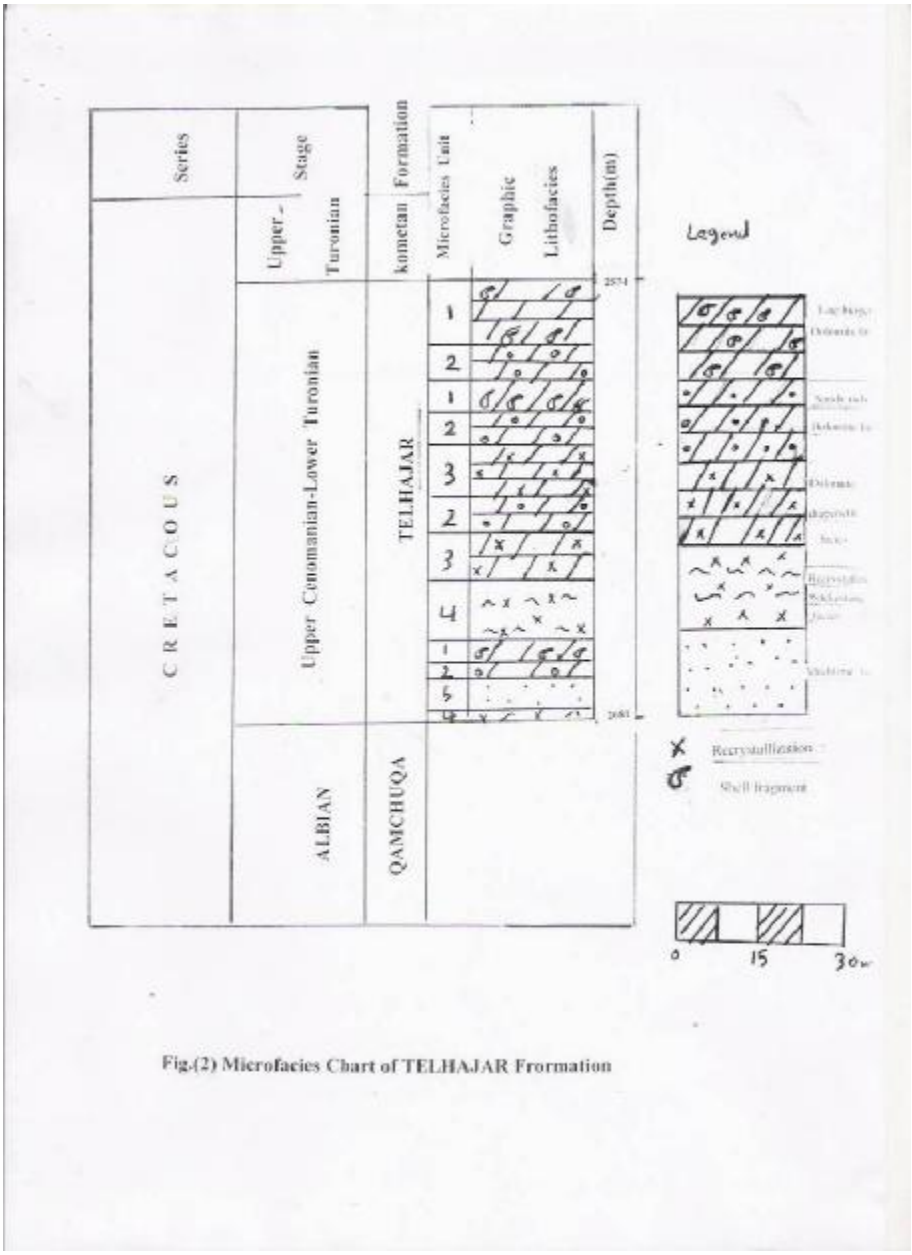



Fig.(2) Microfacies Chart of TELHAJAR Formation

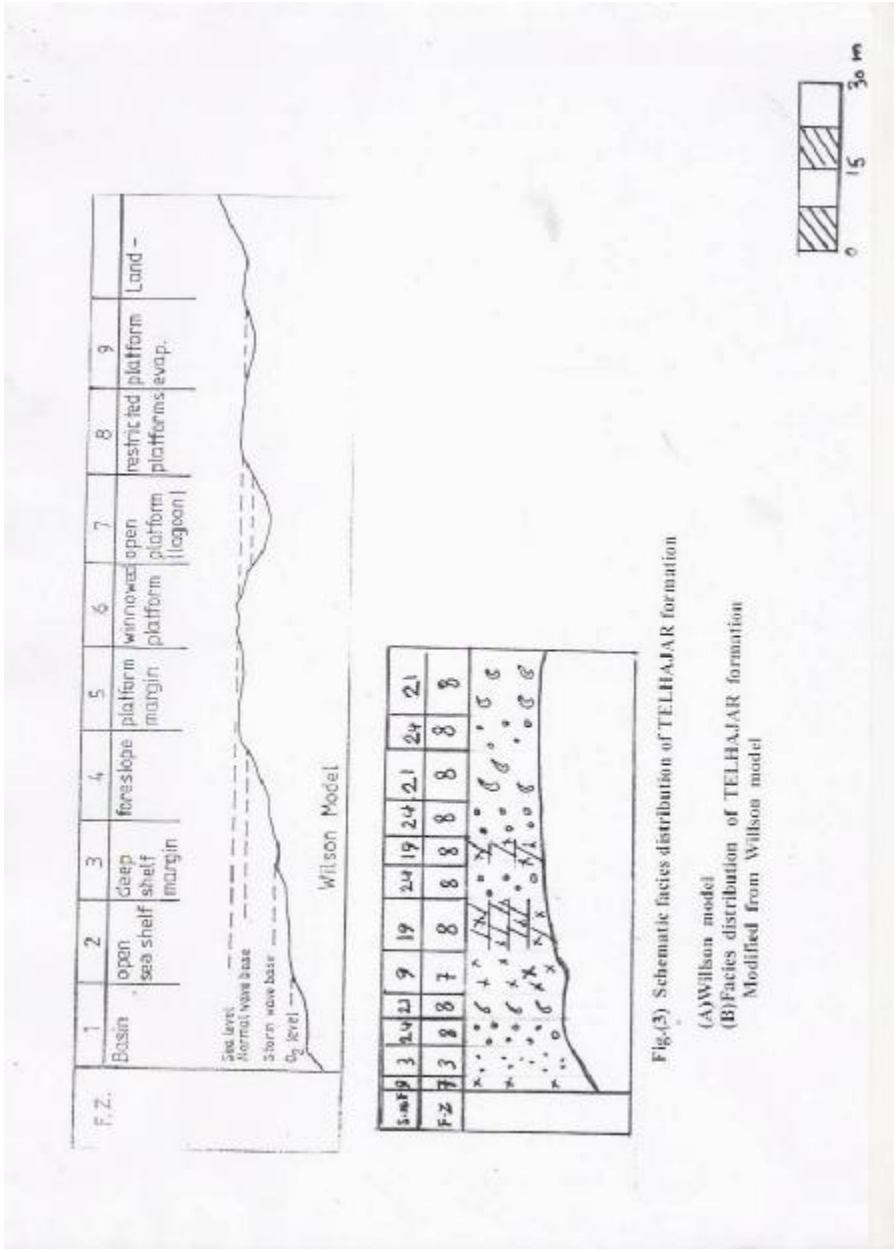



Fig.(3) Schematic facies distribution of TELHAJAR formation

(A)Wilson model
(B)Facies distribution of TELHAJAR formation
Modified from Wilson model

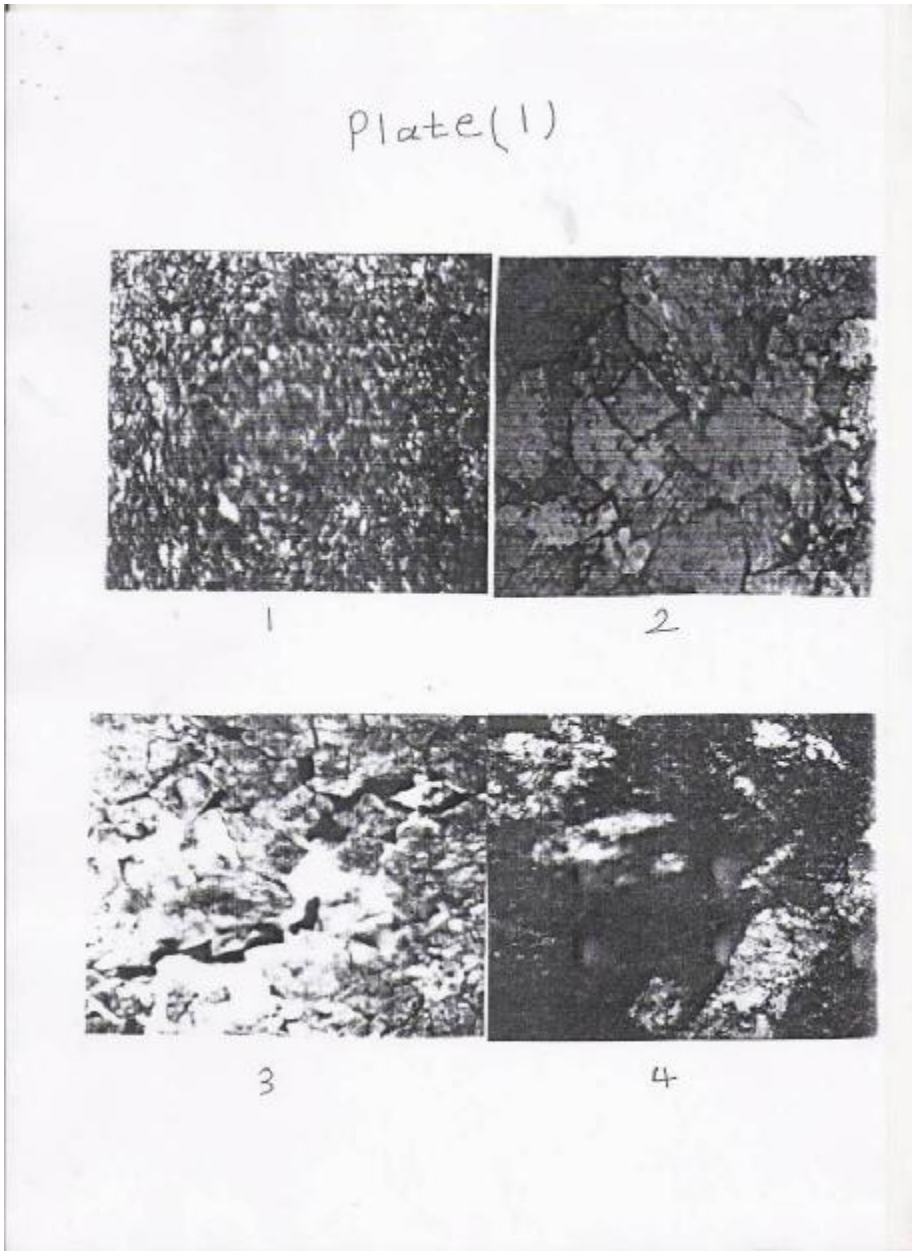
## Plate ( 1 )

1-1-Fine dolomite crystal 40 x
1-2 –Coarse dolomite 40 x
1-3-Pyrite through the dolomite 40 x
1-4-Shell fragment filled with calcite cement 40 x

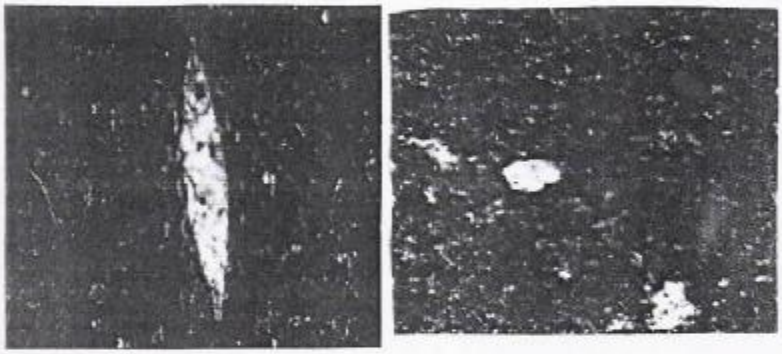
## P late (2)

2-1-Wackestone facies 100 x
2-2-Planktonic forams. In Mud stone facies 40x

Microfcies of Tel Hajar Formation



Plate(2)



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# قارعلا رغبوجيف رلجلا لتنيوتلقيقلا لحسلا

نلجلحلعس

**متحف التاريخ الطبيعي ، جامعة بغداد، باب المعظم، بغداد، العراق**

## الخلاصة

أ) ةارلدلاةقطنمفي لجلحا تنيوكتمسقتملإيهقيقلحسخم:

1) Fine hiogenic dolomite facies.
2) Sandy rich dolomite facies.
3) Dolomite diagenetic facies.
4) Recrystal1ized wackestone in microfacies.
5) Mudsione facies.

ب)همأيهقوحلاتليلحلاةداعإلتتاجظاتلجلابيرقرلبه.