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To Steve Reynolds  
Imperial Oil

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From Steve Franklin  
Kansas Geological Survey

Date April 25, 1996

No. of pages (including cover sheet) 5

Priority ( ) Normal ( ) Urgent

**Comments**

Report of the Zajac Core

SHELL Zq. Zajic

Interval  
3200-3205

Lithology  
dolomite

Porosity  
BC, VG

Notes

SHELL E. Zajic #1

**core #1**  
3162  
1rst of 5

dolomite

BC

light oil stain

3167  
last of 5

dolomite with  
green shale and  
quartz grains

BC

clasts of peloid to ooid  
packstone up to  
2cm in size  
indistinct layering

**core #2**  
3165  
1rst ft of 3

dolomite with  
green shale

filled BC

3166  
2nd ft of 3

dolomite with  
green shale

filled BC

3167  
last ft of 3

dolomite

BC (rare)

**core #3**  
3170-3174 (?)  
1rst ft of 2

dolomite with  
pyrite

BC, VG (rare)

euhedral pyrite (3mm)  
relict stylolite texture

3171-3174 (?)  
last ft of 2

dolomite

VG, BC (rare)

**core #4**  
3174-3180  
1rst ft of 5

dolomite with  
fine sandstone

BC

euhedral pyrite  
stylolite, can not determine  
if dolo is post- or pre-  
pyrite is post-stylotization

3175-3180  
2nd ft of 5

dolomite with  
fine sandstone

BC

light oil stain

**core #8**  
3187-91  
last ft of 4

dolomite

BC

fine xtalline, *mudcracks?*  
stylolite across core  
finely-laminated

**core #9**  
3191-3195  
1rst ft of 4

A) fine dolomite  
B) med dolomite

BC  
BC

B) Autobrecciated before  
dolomitization  
oil stain  
clasts (0.5-1.5 cm) appear to  
have been fine mud

3191-3195 2nd ft of 4	dolomite	none	very very fine (mud) finely laminated
3191-3195 3rd ft of 4	dolomite	BC, VG	oil stain
3191-3195 last ft of 4	A) fine dolomite with green sandy shale B) med dolomite	none	stylolite chert along stylolite  oil stain
<b>core #10</b> 3196 1rst ft of 5	dolomite	BC,FR,VG	
3197 2nd ft of 5	dolomite with green sandy shale	none	indistinctly laminated
3198 3rd ft of 5	dolomite	VG	oil stain geopetally- filling vugs
3199 4rth ft of 5	dolomite	VG	finely xtalline
3200 5th ft of 5	fine dolomite with green shale	none	<u>anhedral</u> pyrite
<b>core #11</b> 3201 1rst ft of 5	dolomite	VG (rare)	
3202 2nd ft of 5	dolomite	VG, BC	
3203 3rd ft of 5	dolomite	BC (rare)	
3204 4rth ft of 5	dolomite	BC	heavy oil stain
3205 5th ft of 5	dolomite	BC	heavy oil stain
<b>core #12</b> 3206-3210 2nd ft of 3	dolomite	BC	
3206-3210 last ft of 3	dolomite	BC	light oil stain
<b>core #13</b> 3211-3215 1rst ft of 3	dolomite with layers of green shale	BC (rare)	indistinctly laminated

3211-3215 2nd ft of 3	dolomite	none	finely xtalline
3211-3215 last ft of 3	dolomite and chert	VG	finely xtalline dolo laminated(?) large chert nodule 5cm, white
<b>core #14</b> 3216-3220 1rst ft of 3	fine dolomite & mottled green shale	none	lamination
3216-3220 2nd ft of 3	dolomite	BC	heavy oil stain
3216-3220 3rd ft of 3	dolomite	BC	heavy oil stain
<b>core #15</b> 3221- 1rst ft of 4	dolomite	BC (rare)	
3222- 2nd ft of 4	dolomite	none	
3223- 3rd ft of 4	dolomite	none	
3224- last ft of 4	dolomite	none	very fine dolo mud indistinct lamination
<b>core #16</b> 3226- 1rst ft of 4	dolomite	none	crinoid (?) relict
3227- 2nd ft of 4	dolomite	VG (rare)	
3228- 3rd ft of 4	A) fine dolo mud B) dolomite	none	
3229- last ft of 4	dolomite	BC	long, bladed xtal with fine striations. Present around cracks. [Gypsum or Anhydrite...softer than nail]
<b>core #17</b> 3231-3235 1rst ft of 1	dolomite	BC (rare)	

## GENERAL NOTES

BC= intercrystalline porosity    VG= vug

All Dolomite is a medium-grained crystalline mosaic unless otherwise noted.

Representative samples of a foot of core, typically consisting of several irregular pieces ranging in size from 0.5 cm to 8 cm, were all that was present.

Core # typically reported five feet of interval, yet rarely had five feet of core recovered. I did the best I could for depth. The notation under the interval , ex. 1rst ft of 4, means that this is the first foot of the four feet of recovered core.

An A) and B) under lithology means that two different rock types were present in the collection of pieces for that interval.

Feel free to contact me, Steve Franklin, at the Kansas Geological Survey (phone number is 913-864-8048 for the core facility and 913-864-3965 for the KGS switchboard) if you have any questions.

9-11:30 pm

4 1/2 hrs wk time + 1

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SHELL E. Zajic #1

Interval	Lithology	porosity	notes
3200-05 SHELL Z <sub>8</sub> Zajic	dolomite	Intercrystalline vug	1) medium-grained mosaic of dolomite, no original texture left. 2) sample consists of ~40 pieces ranging in diameter from 1 cm to 6 cm.
core #1 3162 (?) 1 ft recovered	dolomite	Intercrystalline	1) 3) oil stain 2) one piece ~ 6 cm long
core #1 3167 (?) last foot recovered	dolomite / green shale / Qtz BC		4) clasts of peloid to ooid packstone upto 2 cm in size. 5) indistinct layering ? = reports 5 feet of interval and 2 ft recovered.
core #2 3165 1 ft RC	dolomite w/ green shale filling BC	filled BC	2) 11 pieces; 1-4 cm in diam
3166 2 ft RC	"	"	2) 8 pieces, 1-3 cm diam.

## SHELL Zajic #1

(2)

Interval	lithology	porosity	notes
core #2 3167 last foot RC of 3	dolomite	BC (rare)	8 pieces; 1-3 cm
core 3 3170 1st RC of 2	dolomite w/ pyrite	BC (rare) Vvy (rare)	6) euhedral pyrite (3mm) 7) relict stylolite texture (dolo after stylolite) 2) 17 pc; 0.5-2 cm diam
3174 last foot of 2 RC	dolomite	Vvy (<5%) BC	6) 2) 10 piece 0.5-2 cm
core #4 3174-80 1st RC of 5	dolomite / fine sds	BC	6) 2) 9 piece; 1-7 cm diam 8) stylolite, can't determine if dolomite is post or pre, pyrite is defn post-stylolite
3175-80 2st RC of 5	dolomite / fine sds	BC	2) 15 piece 0.5-2cm 3) tiny oil stain
core 8 3187-91 last foot RC of 4 st	dolomite	BC	1) V. fine crystalline dolomite 2) 12 pc, 0.5cm - 7cm 9) stylolite continuous across core 10) finely laminated 11) mud-cracks?

## SHELL #1 Zajic

3

Interval	Lithology	porosity	notes
core 9	A) finely x-line dolomite	BC	
3191-3195 1st RC of 4	B) med x-line dolomite	BC (extant)	12) auto brecciated before dolomitization 3) oil stain 13) clasts appear to have been fine mud. clast size from 0.5 cm to 1.5 in diameter
3191-95 2ft of 4	dolomite	NONE	v.v. fine, (d.f. mud) 10) finely laminated 2) 4 pieces; 5-7 cm
3191-95 3ft of 4	dolomite	BC, vug	medium x-line oil stain
3191-95 last 1ft of 4	A) finely x-line dolomite w green sandy shale	-	A) stylolite   chert along stylolite
	B) med x-line dolomite	vug, BC	oil stain
core #10 3195-3200 1st of 5 RC	dolomite	BC, Fracture, vug	2) 3 pc. 5cm+
3195-3200 2nd 1ft of 5 RC	dolomite / w green sandy shale	-	2) 3 pc, 3-7 cm ; 15 pc 0.5cm indistinctly laminated

## SHELL # Zajic

(4)

Interval	Lithology	porosity	notes
Core #10			
3195-3200 3ft RC of 5	dolomite	Vug	1) medium x-talline 2) 5 pc, 3-5 cm 3) oil stain, generally filling vugs
3195-3200 4ft of 5 RC	dolomite	Vug	1) finely x-talline 2) 9 pc, 1cm-5
3195-3200 5 ft of 5 RC	fine dolomite w/ green shale	-	2) 4 pc, 2-5 cm NOT euhedral (ie Anhydrit) prisms
Core #11			
3200-05 1ft of 5 RC	dolomite	Vug (Rare)	1) 2) 2 pc a) 2cm b) 1cm
3200-05 2ft of 5 RC	dol	Vug, BC	1) 2) 6 pc 1-6 cm
3200-05 3ft of 5 RC	dol	BC (Rare)	1) med x-talline mosaic
3200-05 4ft of 5 RC	dol	BC	1) med xt 2) 5 pc 2-6 cm 3) oil stain, heavy
3200-05 5ft of 5 RC	dol	BC	1) med x-talline 2) 4 pc 3-5 cm 3) heavy oil stain
Core #12			
3205-3210 2ft of 3 RC	dol	BC	1) med x-talline 2) 3 pc 5 cm

## SHELL # Zajic

(5)

Interval	lithology	porosity	notes
core #12			
3205-3210 1st ft RC of 3	dol	BC	1) med 2) 3pc, 4-7 cm 3) light oil stain
core #13			
3210-3215 1 ft of 3RC	dol w/ thin layers of green shale	BC (Rare)	1) med 2) 4pc <sup>3 = 2cm</sup> / <sub>1 = 3" core</sub> 7cm Indistinctly laminated
3210-3215 2nd ft of 3RC	dol	-	1) fine x-linc 2) 4pc 1.5-4cm
3210-3215 1st of 3 ft RC	dol / chert	vug	1) fine x-linc 2) 4p 2-6cm lamination (?) * large chert nodule (5 cm in dia) white
core #14			
3215-3220 1 ft of 3RC	fine dolomite & mottled w/ green shale	-	2) 2pc 2-6cm lamination
3215-3220 2 ft of 3RC	dolomite med x-linc	BC	2) 4pc 1-5cm oil stain (heavy)
3215-3220 last of 3 ft RC	dolomite	BC	1) med x-linc 2) 4pc 2-5cm oil stain (heavy)

SHELL E Zajic #1

Interval	Lithology	porosity	notes
Core #15	dolomite	BC (Rare)	1) med-fine xline 2) 3pc - 4cm
3220-25 1ft of 4 RC			
3220-25 2ft of 4 RC	dolomite	-	1) med xline 2) 5pc 1-6cm
3220-25 3rd ft of 4 RC	dol	-	1) med x 2) 4pc 2-5cm
3220-25 4th ft of 4 RC	dol	-	1) very fine dolomite med 2) 4pc 3-5 cm 3) lamination (indistinct)
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Core 16			
3225-30 1ft of 4 RC	dol	-	1) med xline 2) 3p 3-7cm = fossil? relict
3225-30 2ft of 4 RC	dol	vug (Rare)	1) med xline 2) 2pc, 6cm
3225-3230 last ft of 4 RC	dol	BC	1) med xline 2) 3pc, 6cm * is a long, bladed crystal with fine striations present around cracks [Gypsum or Anhydrite] (softer than nail)
3225-30 3rd ft of 4 RC	A) fine dolomite med		2) 4pc, 2-5 cm
	B) med-xline dolomite		
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Core 17 3230-35 1ft of 1 RC	dol	BC (Rare)	1) med xline 2) 2pc 6-7cm 5pc 0.5-1cm