

**BIOSTRATIGRAPHY AND MICROFACIES ANALYSIS OF  
SAKESAR FORMATION IN NAMMAL GORGE, WESTERN  
SALT RANGE, UPPER INDUS BASIN, PAKISTAN**



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A thesis submitted to Bahria University, Islamabad in partial fulfillment of the  
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## ABSTRACT

The Sakesar Formation in Nammal Gorge, Western Salt Range, Pakistan was investigated to elaborate its Biostratigraphy, Microfacies and diagenetic settings. The Formation is widely distributed in the Salt Range and is composed of thin to thick bedded nodular Limestone, with minute distribution of shale, marls and chert in the upper part. It has a conformable lower contact with Nammal Formation. A detailed study was conducted after collecting 15 rock samples in vertical thickness of approx. 18.2m. Thorough detailed field observations and laboratory investigations revealed that the Sakesar Formation contains four Microfacies i.e. Bioclastic mudstone facies, Algal Miliolin mudstone and wackstone facies, Bioclastic wackstone facies and Nummulitic wackstone and packstone facies. A number of larger benthic Foraminifera i.e. *Nummulites mamillatus* (Fichtel and Moll), *Nummulites atacicus* (Leymerie), *Nummulites globulus* (Leymerie), *Assilina subspinosa* (Davies and Pinfold), *Assilina laminose* (Gill), *Viviparus malleatus*, *Alveolina eliptica*, *Lockhartia conditi* (Nuttall) and *Assilina granulosa* (d'Archiac). Research work also illustrates various cement types i.e. Micritic envelopes, Aragonite dissolution, Isopach bladed cement and sparry calcite. Vertical variation in the studied sections indicates repetition of the interpreted environments. Microfacies analysis and diagenetic settings leads towards the conclusion that formation was deposited in shallow shelf environment with different diagenetic settings.

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<b>CONTENTS</b>		<b>PageNo.</b>
<b>ABSTRACT</b>		<b>i</b>
<b>ACKNOWLEDGEMENTS</b>		<b>ii</b>
<b>FIGURES</b>		<b>iv</b>
<b>CHAPTER 1</b>		
<b>INTRODUCTION</b>		
1.1 Introduction		01
1.2 Location and Accessibility		01
1.3 Previous Work		02
1.4 Objectives		03
1.5 Methodology		03
1.5.1 Field Work		03
1.5.2 Laboratory Work		03
1.5.2.1 Thin Section Preparation		03
1.5.2.2 Microscopic Study		04
<b>CHAPTER 2</b>		
<b>GENERAL GEOLOGY</b>		
2.1 Regional Tectonic Setting		05
2.2 Salt Range thrust		05
<b>CHAPTER 3</b>		
<b>STRATIGRAPHY</b>		
3.1 Amb Formation		07
3.2 Wargal Formation		07
3.3 Chiddru Formation		08
3.4 Mianwali Formation		08
3.5 Tredian Formation		08
3.6 Kingriali Formation		09
3.7 Datta Formation		09
3.8 Samana Suk Formation		10
3.9 Hangu Formation		10
3.10 Lockhart Formation		11

3.11 Patala Formation	11
3.12 Nammal Formation	11
3.13 Sakesar Formation	12

## **CHAPTER 4**

### **BIOSTRATIGRAPHY**

4.1 Nummulites	14
4.2 Assilina granulosa	15
4.3 Assilina subspinosa	15
4.4 Assilina laminosa	15
4.5 Alveolina eliptica	15
4.6 Discocyclina dispansa	15
4.7 Lockhartia Conditi	15
4.8 Operculina patalensis	15
4.9 Ranikothalia sahni	16
4.10 Ranikothalia sindensis	16
4.11 Miliolid	16
4.12 Gastropod (Viviparus malleatus)	16
4.13 Marginopora	16
4.14 Sakesaria cotteri	16

## **CHAPTER 5**

### **MICROFACIES ANALYSIS**

5.1 Bioclastic Mudstone Facies (SK-MF-1)	20
5.2 Algal Miliolin Mudstone-Wackstone Facies (SK-MF-2)	21
5.3 Bioclastic Wackestone Facies (SK-MF-3)	21
5.4 Nummulitic Wackstone-Packstone Facies (SK-MF-4)	22
5.5 Depositional Environment	23

## **CHAPTER 6**

### **DIAGENETIC FEATURES OF SAKESAR LIMESTONE**

6.1 Introduction	26
6.2 Cementation	26
6.3 Fractures	28

**CONCLUSION**

29

**REFERENCES**

30

## FIGURES

Figure 1.1	Map showing the study area (Modified after Raza, 2015)	02
Figure 1.2	Thin Section preparation laboratory of Department of Geology, University of Peshawar	04
Figure 1.3	Photograph displaying the Nikon Polarizing microscope at Sedimentology Laboratory, NCE in Geology, University of Peshawar	04
Figure 2.1	Tectonic map of North Pakistan (Modified after Kazmi and Raza, 1982)	06
Figure 3.1	Showing contact between Kingriali Formation, Tredian Formation, Mianwali Formation and Chidru Formation	09
Figure 3.2	Showing oil Seepage of Datta Formation	10
Figure 3.3	Contacts between Datta Formation, Samanasuk Formation, Hangu Formation and Lockhart Formation	11
Figure 3.4	Field illustration showing the sampling trend from Sakesar Limestone	12
Figure 3.5	Red arrows showing the Chert Nodules	13
Figure 3.6	Stratigraphic column of Nammal Gorge	13
Figure 4.1	Showing distribution of different fossils in thin sections	19
Figure 5.1	Showing depositional environment of different microfacies	24
Figure 5.2	Lithology and Microfacies log of Sakesar Limestone.	25
Figure 6.1	Micritic envelop develop around fauna	26
Figure 6.2	Showing transformation of aragonitic shell into low Mg calcite	27
Figure 6.3	Partially altered skeletal grains and Sparry calcite vein	27
Figure 6.4	Showing Isopach Bladed cement (brown) present around the chambers of bioclast.	28
Figure 6.5	Showing Fracture present near the bioclast	28