

₹ 200

ISSN - 2249-555X

Volume : 1

Issue : 7

April 2012



Journal for All Subjects

[www.ijar.in](http://www.ijar.in)

Listed in International ISSN Directory, Paris.



ISSN - 2249-555X

# Indian Journal of Applied Research

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## A Study on Lithology and Petrography of the Tipam Sandstones Exposed along the Tipong Pani River Section of Upper Assam Basin

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### ABSTRACT

*The Tipong-Pani river section is on the southern limb of the Namdang Syncline and it exposes most of the Tertiary rock strata. The area of present investigation is situated in the northeastern part of the Tinsukia district of Assam near Tipong Colliery within 27°13'N-27°20'N latitude and 95°30' E-95°55' E longitude. It falls within the Naga Hills ranges, which is a part of the Assam Arakan geological province. The Tipam Sandstone Formation in the study area comprises of sandstones of massive nature with alternation of shale and gritty sandstone at places. They sandstones are medium to fine grained and characterized by typical salt and pepper texture. The bottommost unit shows current bedding and contains carbonized wood. Clay balls are also present in the base of certain sandstone bed. In the lower part of the section, a sandstone unit with gritty nature exhibiting graded bedding and an arenite band containing red coloured jasper are recorded. This band is overlain by about 5.5ft thick conglomerate bed. Graded bedding and arenites are usually not developed in fluvial environment. These facts indicate that this part of the section was not deposited in fluvial environment. Therefore, conglomeratic band in this section may be the base of Tipam Sandstone Formation and the part below the conglomerate band belong to the Surma Group. However, to establish this fact further extensive work need to be done. The presence of prominent current bedding in the Tipam Sandstone Formation indicates that the sediments were deposited under fluvial environment. The petrographic analysis reveals that the sandstones are mainly quartz dominating followed by feldspar, rock fragments, chert and mica. They are sublithic arenites and lithic-greywacke type and moderate to ill sorted. Various triangular plots indicates that the sediments were derived mainly from recycled orogen sources, tectonically uplifted subduction complexes and crustal collision orogen sources comprising of sedimentary and metasedimentary thrust sheets. Diamond diagram plot also supports this view.*

**Keywords :** Lithology, Petrography, Tipam sandstone, Tipong Pani River section, Upper

### Introduction

The area of present investigation is situated in the northeastern part of the Tinsukia district of Assam near Tipang colliery within 27°13'N-27°20'N latitude and 95°30' E-95°55' E longitude (figure 1). It falls within the Naga Hills ranges, which is a part of the Assam Arakan geological province. Almost all the Tertiary rock strata are well developed in the area. In this area the river Tipang-Pani is flowing across the hills from south to north direction. The Tipang-Pani section is on the southern limb of the Namdang syncline and it exposes most of the Tertiary rock strata. The occurrence of coal and petroleum in the sedimentary sequence has increased the importance of the area. The main objective of present study is to prepare the vertical lithosection of the aretail petrography of the out-cropped Tipam sandstones to unravel its sedimentological characteristics.

### Materials and Methods :

The line of traverse is plotted on a map using GPS reading. To get actual thickness of the bed, thickness correction for the litho units for strike and dip of the bed is made on the map. Using the actual thickness of the lithounits three lithosections are prepared. Sandstone samples are collected at regular intervals for petrographic study.

### Results and Discussion :

**Field study :** The vertical lithosection of Tipam Sandstone Formation is prepared by observing the distinctive megascopic field characteristics such as the lithologic features including composition, grain size, bedding characteristics as well as the sedimentary structures. For preparing the vertical lithosection of the study area, geological traverse is done along the Tipong Pani River section and various lithounits are measured. For the convenience of description the whole traverse section has been divided into three units as shown in lithosection 1, 2

& 3 from top to bottom respectively. Due to logistic problem the true thickness of the lithounits cannot be measured in the field. The Tipam Sandstone Formation is mainly comprises of massive sandstones with alternation of shale and sandstone with gritty characteristics at places. These sandstones are medium to fine grained and characterized by typical salt and pepper texture. The bottommost unit (lithounit 3) shows current bedding structure and contains carbonized wood and lensoidal body of gritty nature. In certain places small graded bedding structure, not significantly prominent, are noticed. Clay ball are also present at the base of a sandstone bed. The average amount of dip is 770 and dip direction is 3400. The lithounits are covered by thick overburden and vegetation in certain places. In the lower part of the section a sandstone unit is observed which is gritty in nature and exhibits graded bedding. An arenite band containing red coloured jasper is also observed. This band is overlain by about 5.5ft thick conglomerate band. Graded bedding and arenite are usually not developed in fluvial environment. These facts indicate that this part of the section was not deposited in fluvial environment. Therefore, conglomeratic band may be the base of Tipam Sandstone Formation and the part below the conglomerate band is a part of the Surma Group. However, to establish this fact further extensive work need to be done. However, the presence of prominent current bedding in the Tipam sandstone Formation indicates that the sediments were deposited under fluvial environment. Field photographs are shown in figure - 5.

**Rock thin section study :** The petrographic analysis reveals that the sandstones are mainly quartz dominating followed by feldspar, rock fragments, chert and mica. Quartz is the most dominant and primary constituent of the Tipam sandstones of the Upper Assam Shelf. It occurs in the form of monocrystalline and polycrystalline varieties. In the present study, the

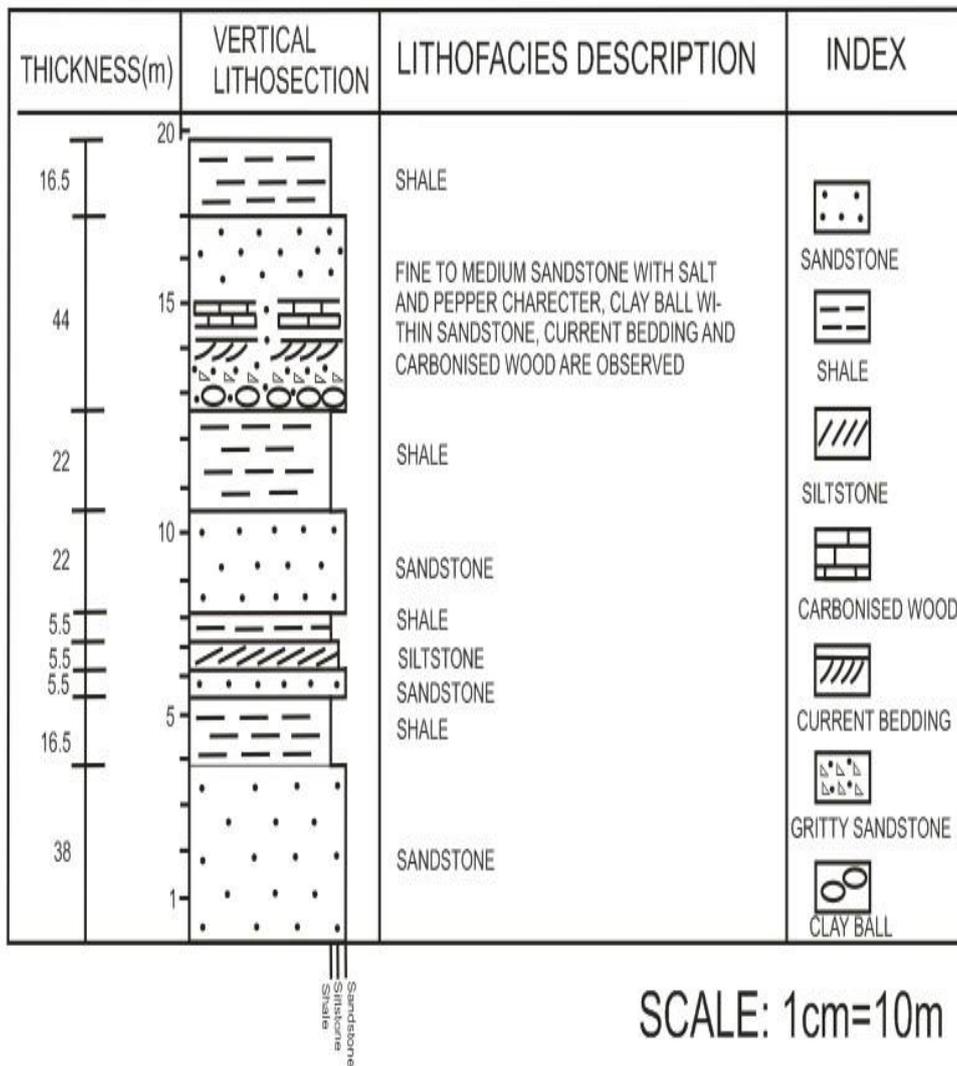
polycrystalline variety of quartz includes composite quartz, schistose quartz and sheared or stretched metamorphic quartz. The >3 crystal unit per grain variety of polycrystalline quartz is dominant over the 2-3 crystal unit per grain variety. The quartz grains are found to be mainly sub- angular to sub- rounded. Normally quartz grains occur as floating grains in the cement and matrix. Feldspar plays a role subordinate to quartz in the sandstone of the present study. Both plagioclase and potash feldspar varieties are present in the sandstone. The grains occur as sub-angular to sub- rounded to prismatic variety. Some large Intergranular dissolution pores are observed in some of the potash feldspar grains. Plagioclase is least affected by dissolution as indicated by its clear outlines and distinct relief. In terms of size they are smaller than quartz grain. Feldspar are supposed to be more susceptible to mechanical wear than quartz and during surface weathering, the feldspar gradually alters to clay minerals thereby cloudiness in the grain. The average feldspar in the sandstone of the present study is about 2.2%. The recorded rock fragments are mainly low rank metamorphic variety. The Tipam sandstones are mainly sublithic arenites and lithic-greywacke type (figure 2). The sandstones are moderate to ill sorted. From the various triangular plots, it is observed that the sandstones

were derived mainly from recycled orogenic sources (figure 3). Tectonically uplifted subduction complexes, crustal collision orogen comprise of sedimentary and metasedimentary thrust sheets, forelands, fault thrust belts together constitute the recycled orogen provenance. From the diamond diagram plot (figure 4) it is observed that the sediments were derived from lower rank metamorphic sources. Photomicrographs are shown in figure-6.

**Conclusion :**

From the vertical litho - sections it is revealed that the Tipam sandstone of Tipong Pani area is mainly composed of hard massive sandstones with alternating shales and siltstones and occasionally carbonaceous shale and coal seams. The sediments were derived from tectonically uplifted subduction complexes, crustal collision orogen comprising of sedimentary and metasedimentary thrust sheets. The presence of current bedding structure indicates that the sediments were deposited under fluvial environment. From the overall analysis it can be concluded that the sediments were derived perhaps from the Himalayas, Mikir and Mishmi Hills and were deposited off the marine basin under fluvial environments.

### LITHOSECTION-1



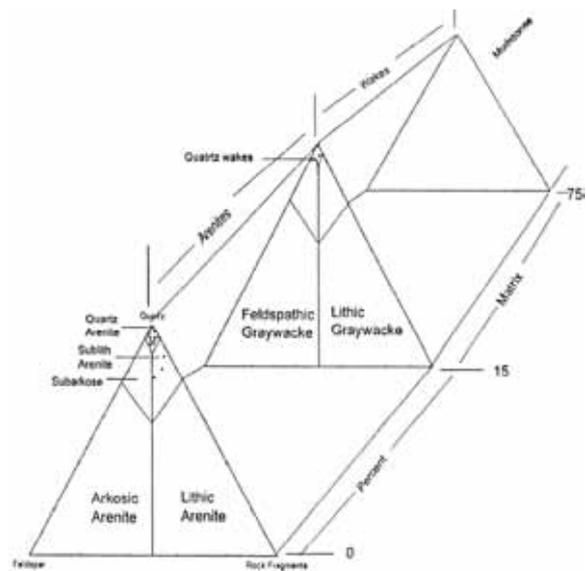
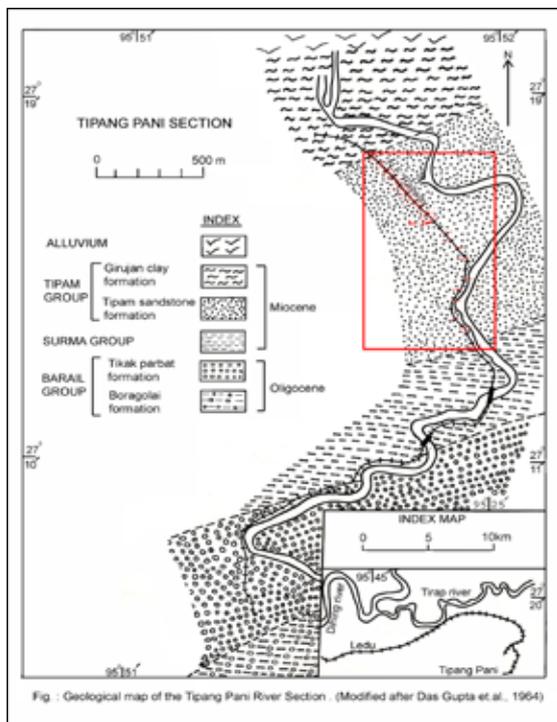
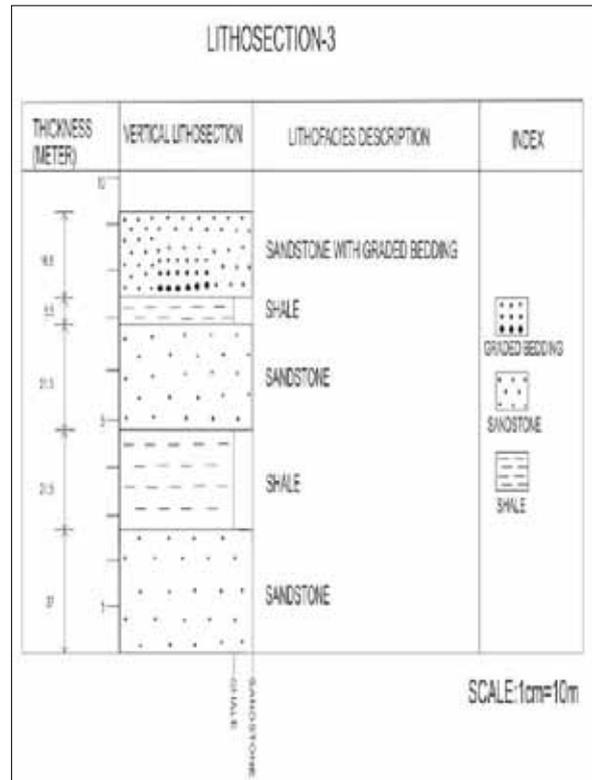
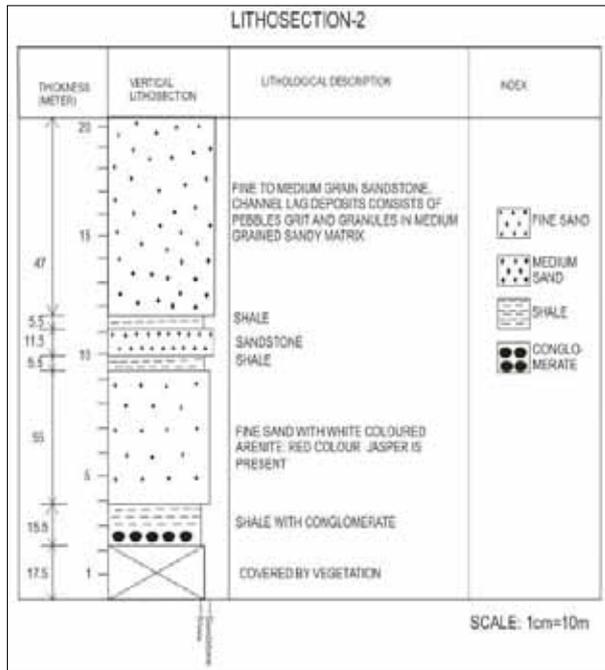


Fig. 1 : Geological map of the Tipong River (modified after, Dasupta et.al., 1964)

Fig. 2 : Classification of Tipam Sandstones (modified after Dott, 1964)

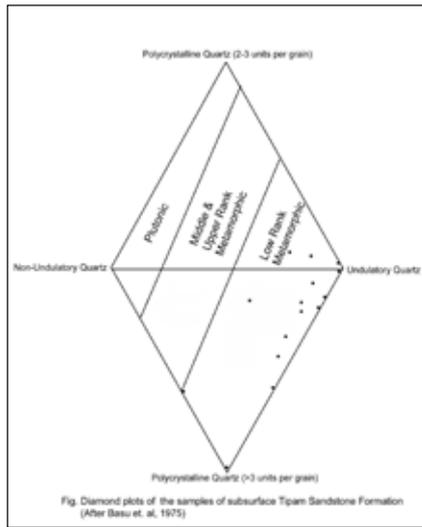


Fig. 3: Tectonic setting of the of the provenance (after, Dickinson & Suczeck, 19790)

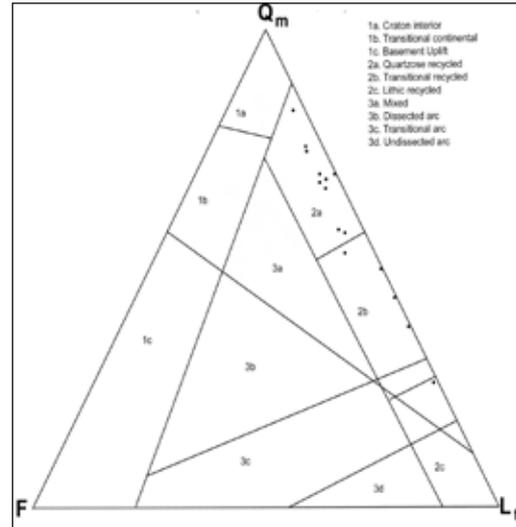


Fig. 4: Diamond diagram showing types of source rock ( after Basu et.al.1975)



(a)



(b)



(c)



(d)



(e)



(f)

Figure 5: Field photographs showing (a) graded bedding within Tipam Sandstones associated with current bedding, (b) Tipam Sandstone showing arenitic characteristics, (c) conglomeritic band, (d) massive Tipam Sandstone, (e) carbonaceous wood within Tipam Sandstone

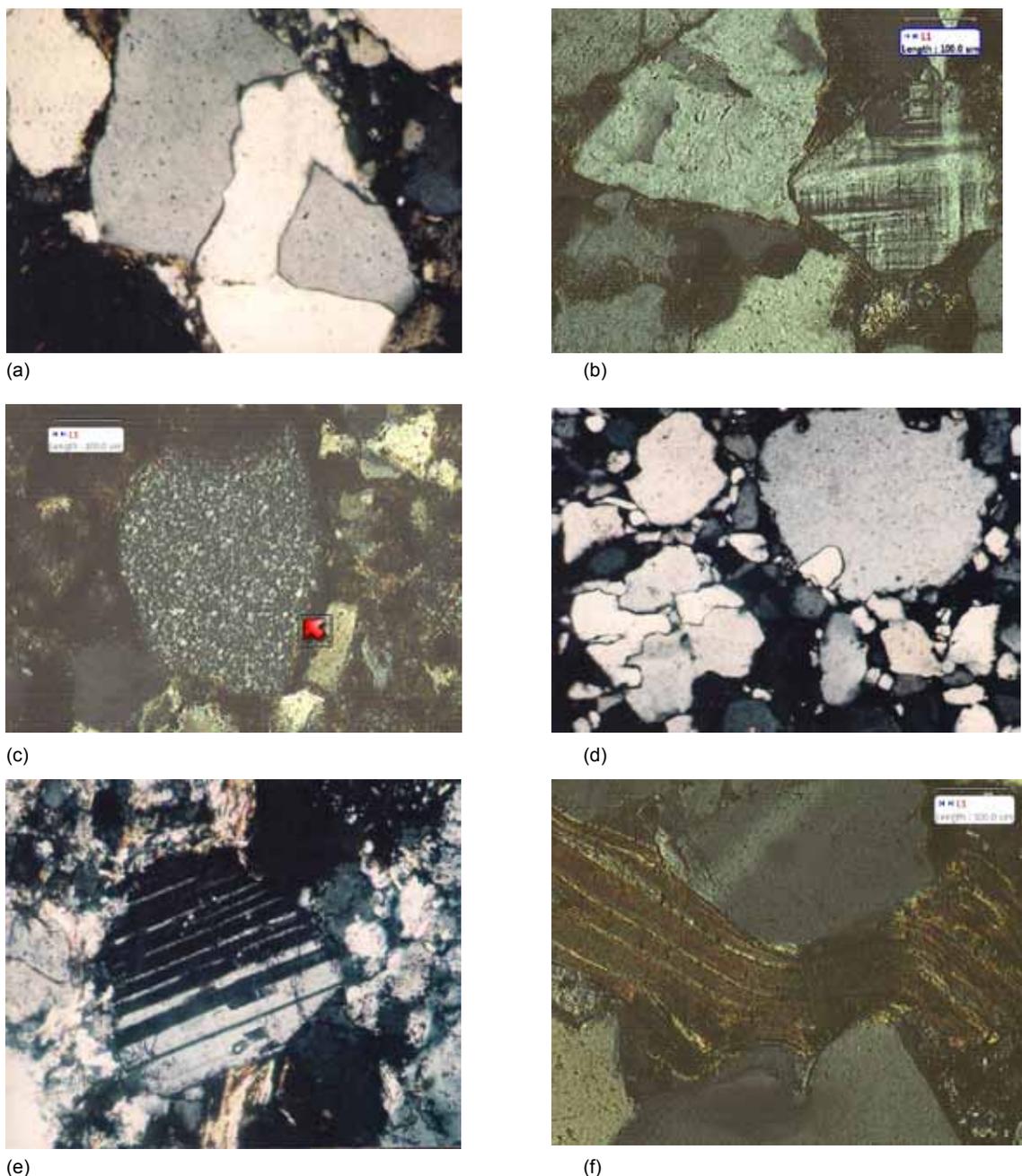


Figure 6: Photomicrograph showing (a) sutured contact due to pressure solution effect, (b) microcline feldspar, (c) chert grain, (d) secondary precipitation of quartz, (e) plagioclase feldspar (f) kinked mica developed due to compressional effect (magnification 100x)

## REFERENCES

- Basu, A., Young, S. W., Suttner, L. J., James, W. C. and Mack, G. H. (1975) Re-evaluation of the use of undulatory extinction and polycrystallinity in detrital quartz for provenance interpretation. *Jour. Sed. Pet.* 45 ; 873-882. | Burley, S.D. and Kantorowicz, J.D. (1986) : Thin section and S.E.M. textural criteria for the recognition of cement-dissolution porosity in sandstones. *Sedimentology*, 33, 587-604. | Dapples, E.C. (1967) Diagenesis in Sandstones. In *Diagenesis in Sediments* (ed. Larsen G. and Chillingier V. G.), Elsevier Publishing Company, Amsterdam, pp. 91-125. | Dickinson, W. R. and Suczek, C. A. (1979) Plate Tectonics and Sandstone Compositions. *AAPG Bulletin*, 63, 2164-2182 | Dott, R. H. Jr.(1964) Wacke, greywacke and matrix – what approach to immature sandstone classification? *Jour. Sed. Pet.*, 34, 625-632. | Ehenberg, S.N. (1990) Relationship between Diagenesis and Reservoir Quality in sandstone of Garn Formation, Haltenbanken, Mid- Norwegian Continental Shelf. *AAPG Bulletin*, 74, 1538 – 1558. | Guven, N.,(1988) Smectites. In *Review in Mineralogy, Hydrous Phyllosilicates* (ed. Baily J.W.), 497 – 558 | Handique, G.K. and Mallick, R.K. (1990) Hydrocarbon Exploration in Upper Assam Basin; Problems and Challenges. *Petroleum Asia Journal*, 2, 141-147 | Houseknecht, D.W. (1987) Assessing the relative importance of compaction processes and cementation to reduction of porosity in sandstones. *AAPG Bulletin*, 71, 633-642. | Pettijohn, F.J., *Sedimentary Rocks*. (1984) CBS Publishers and Distributors, New Delhi, 1984



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