

SAFARI REPORT

The Formation Colton

Introduction

Low to high N/G alluvial plain deposits, with sandstone bodies formed in low to moderate sinuous fluvial channels with subordinate sheet flood and crevasse sheet sandstones, dominantly medium-grained stream deposits and interchanging units of floodplain mudstones.

General characteristics

Age: Palaeocene - Early Eocene

Basin type: Intermontaneous conti

Thickness: 400-1200 m

Rate of accommodation: 80-240 m/ma

Sand/Gross thickness ratio: 0.20-0.80

Dominant lithologies: Floodplain mudstones and medium-grained channel sandstones.

Subordinate lithologies: Sheetflood and crevasse sheet sandstones, lacustrine limestones.

Source area: Laramide structural highs of crystalline basement rocks and Palaeozoic-Mesozoic cover rocks to the ESE and SE.

Depositinal settings: Medial to distal alluvial plain southeast of the early Uinta Lake

Palaeoclimate: Semi-arid

Transport direction: From ESE to WNW

Formation below: Flagstaff Member of the Green River Formation, lacustrine.

Lower contact: Gradational, interfingering

Formation above: Green River Formation, lacustrine, deltaic, fluvial.

Upper contact: Gradational, interfingering

Analogues on the Norwegian Continental shelf.

- Upper member of Lunde Formation Quantified data, heterogeneity, environment
- Raude Member of Statfjord Formation Quantified data, heterogeneity, environment

Location

Uinta Basin, formed as intermontaneous continental lacustrine basin during the Laramide tectonic movements of latest Cretaceous to early Tertiary age when the marine Western Interior Basin was closed. Outcrops along the Roan Cliffs and upper part of the Nine Mile Canyon, Whitmore Park, Carbon County, 25 km northeast of Price, Utah, USA.

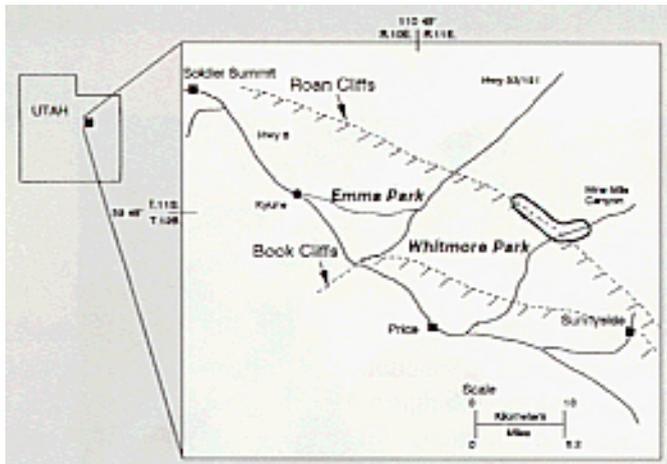


Fig. 1: Location of the studied area in the Roan Cliffs/Whitmore Park and uppermost part of the Nine Mile Canyon in the Price area Utah, USA. Stratigraphically position of the Colton Fm

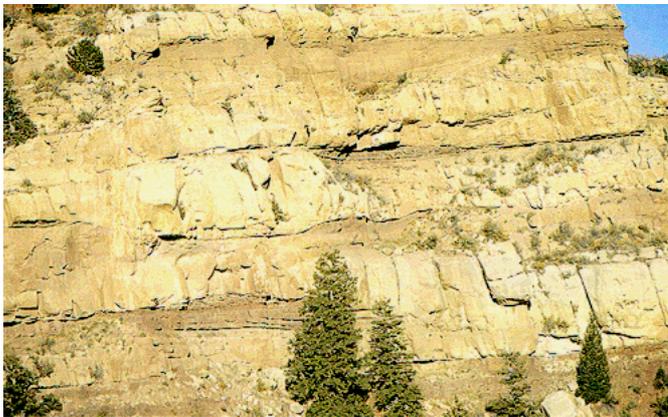


Fig. 2: Outcrop photo showing the Channel Belt Complex in the Panel Colton 13. Individual channel sandstones cut into each other with remains of fine-grained red levee and floodplain facies in between.

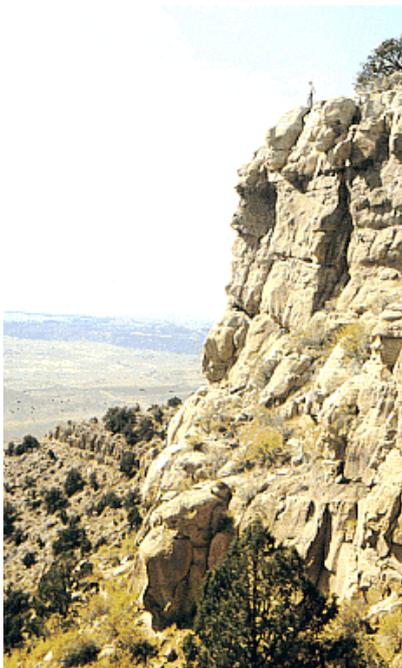


Fig. 3: Outcrop photo showing vertical section of the Channel Belt Complex at the edge between the Panels Colton 12 and 13.

The dataset and applications

The dataset from the Colton Formation was collected during the SAFARI project in 1989, 1990 and 1991, revised and supplemented by Saga Petroleum projects 1992 and 1993. It consists of: 20 two-dimensional projections (panels) covering the most sand-rich stratigraphical level of the Colton Formation. 17 of these panels (Colton I- 16 + Colton 19) are put into the data base pr. 3 1.12.94. Colton I- 16 form a continuous diagram of sections parallel, diagonal and transverse to the palaeoflow direction, altogether 5.7 kilometres. Scale 1:500. Document overall alluvial architecture, heterogeneity, sandstone continuity and lithological character of bounding surfaces of sandstone bodies.

Several detailed cross sections, showing lateral and vertical facies variations and internal heterogeneities of individual sandstone bodies.

Several vertical logs measured originally to scale 1:200 or larger

Palaeocurrent data.

The data set can be used to calculate channel belt widths, lateral S/G variation, lithofacies proportions, interconnectedness, modelling well stratigraphy, modelling seismic response pattern and testing of stochastic modelling.

Examples of panels

The three panels Colton 5, 6 and 8 (Fig. 4 and 5) illustrate the alluvial architecture of the Colton Formation in the Roan Cliffs, Whitmore Park. Datum horizon can be chosen to the upper boundary of the uppermost thick unit of sheetflood sandstone. The sheetflood sandstones can be followed through the whole studied area and are supposed to form a very large reservoir volume. It is characterized by sheet geometry, dominance of parallel laminated beds and subordinate channelized facies. The reservoir properties are anticipated to be very good.

The two main bodies of thick sheetflood sandstones occur on top of a thick succession of distal floodplain/lacustrine mudstone facies. In Colton 5 two thick medium sinuous channel sandstone bodies are recorded within this lower interval of dominated floodplain mudstones. The uppermost one of these two channels sandstone bodies passes laterally into a crevasse splay sheet.

The lower part of the panels are dominated by the Channel Belt Complex (CBC), consisting of 5 to 6 individual major channel sandstone bodies. The individual channel sandstone bodies are medium sinuous and dominated by laterally (LA) and downstream (DA) accretionary architectural elements of medium-grained sandstone. Fine-grained levee and floodplain facies between the individual channel sandstones are variously eroded, causing great lateral variation in S/G ratio and interconnectedness within the CBC. The channel sandstone bodies within the CBC have various types of lateral terminations, from abrupt cut-banks (Colton 5) to gradual lateral thinning of channel sandstone facies (Colton). The CBC has an extent of at least 4 kilometres lateral to palaeocurrent flow and some tens of kilometres parallel to palaeodrainage direction within the Colton Formation alluvial plain. Though it is a heterogeneous reservoir sandstone body it is considered to be of an

overall good reservoir quality.

The Channel Belt Complex is succeeded by a package of reddish-brown floodplain mudstone and several thick channelbelt sandstone units. These are also dominated by the LA- and DA elements and are up to several hundred metres in width. The reservoir quality is good to very good.

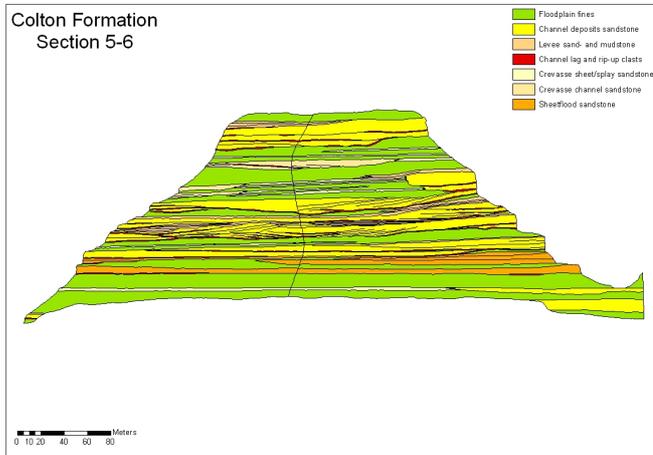


Fig. 4: Printouts from the Safari database illustrating the alluvial architecture of the Colton Formation.

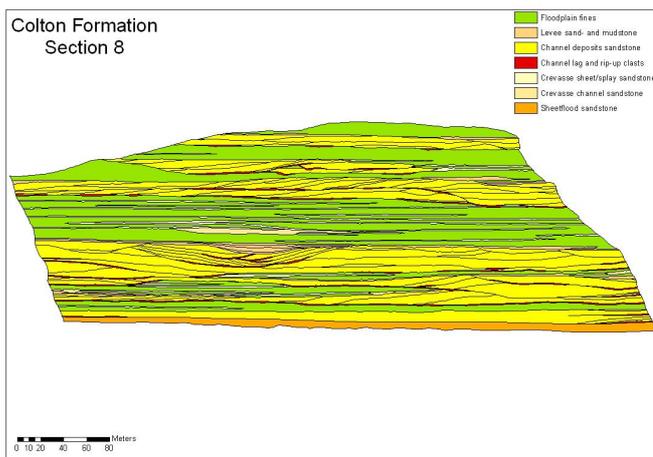
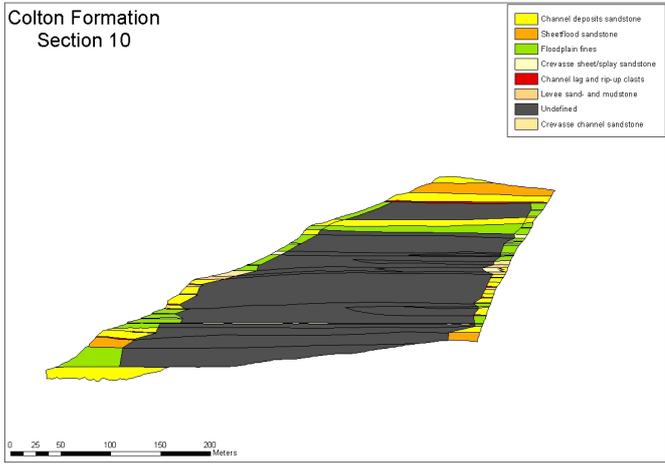
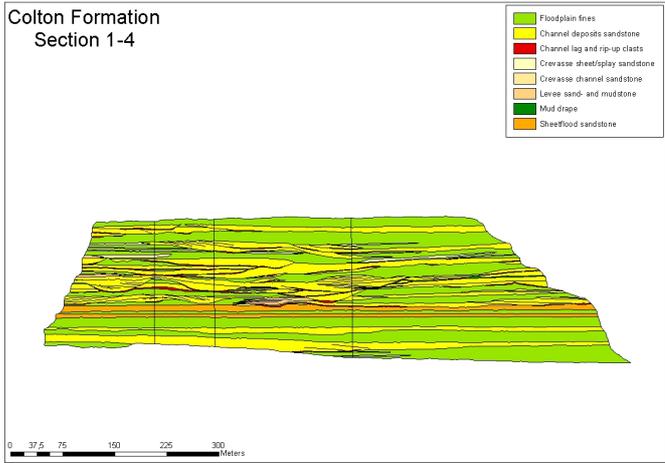


Fig. 5: Printouts from the Safari database illustrating the alluvial architecture of the Colton Formation.

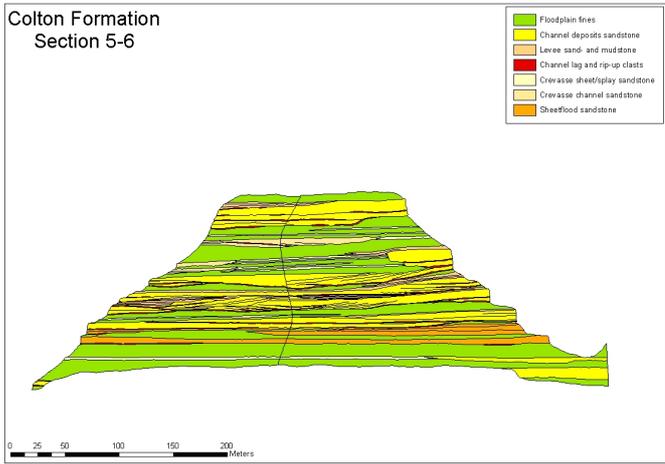
Cross sections



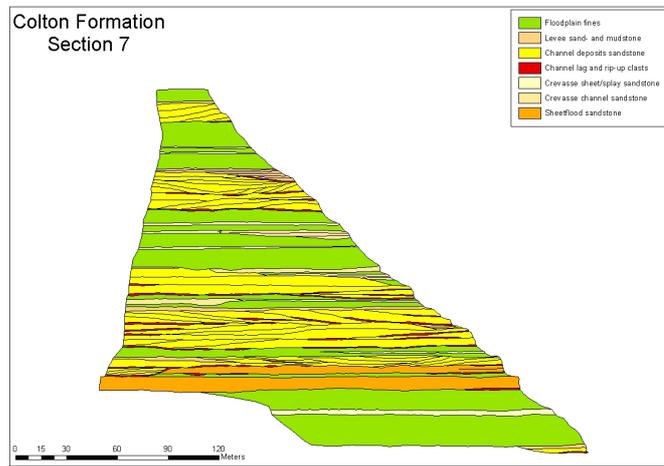
Colton - 10



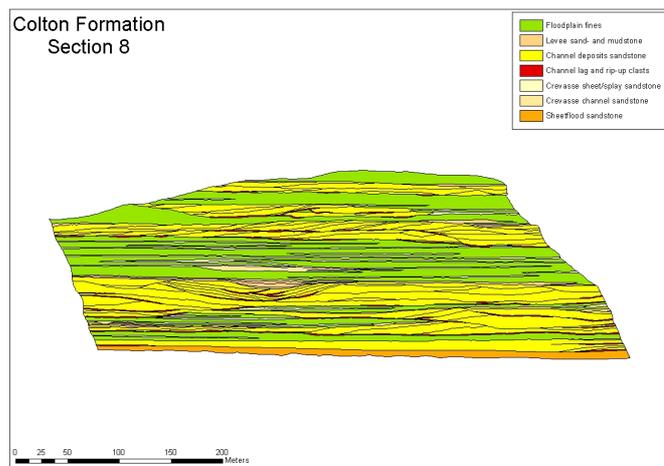
Colton - 1 - 4



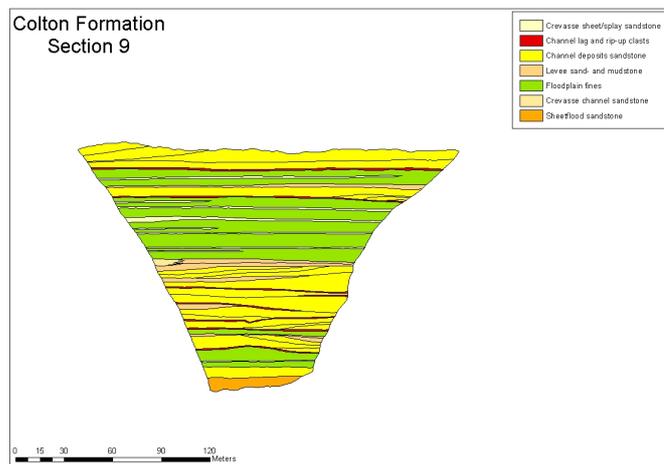
Colton - 5 - 6



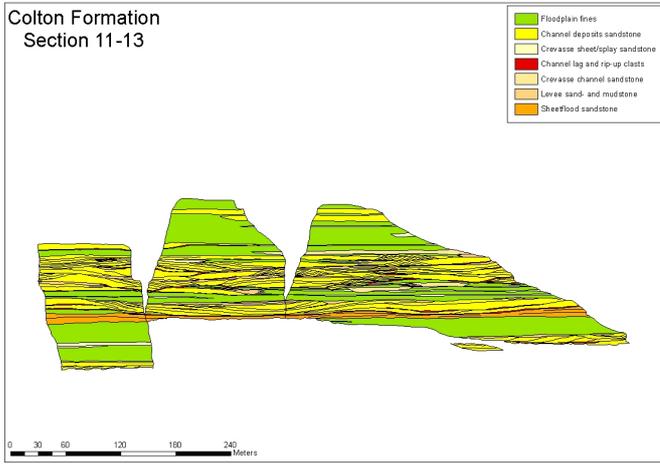
Colton - 7



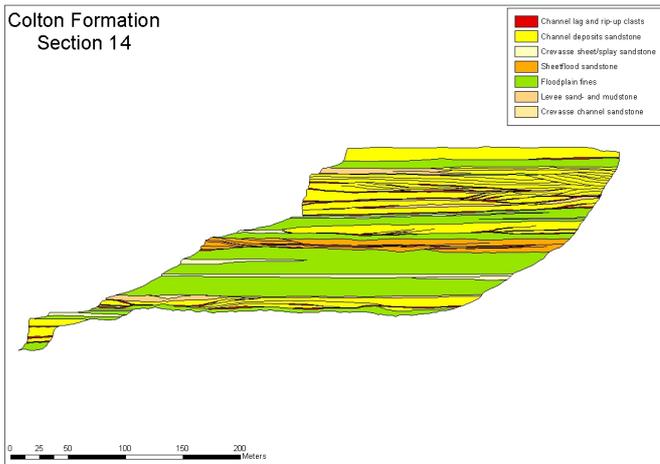
Colton - 8



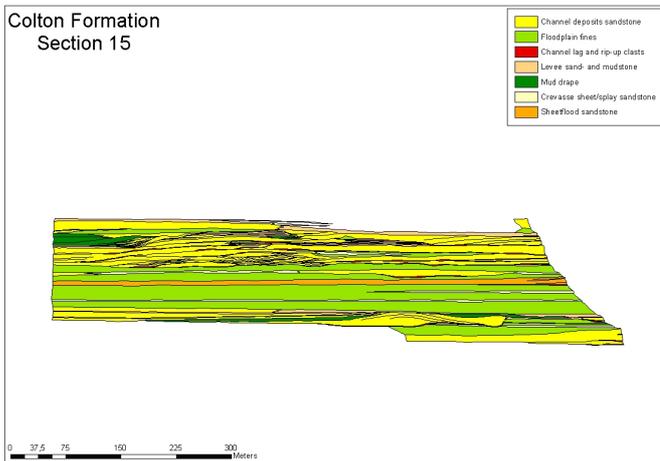
Colton - 9



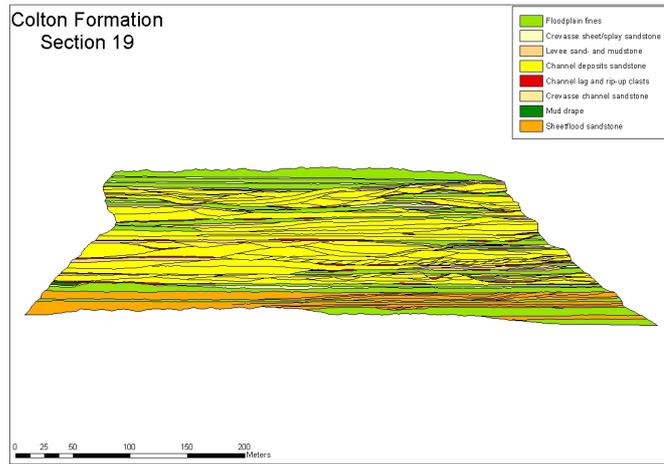
Colton - 11 - 13



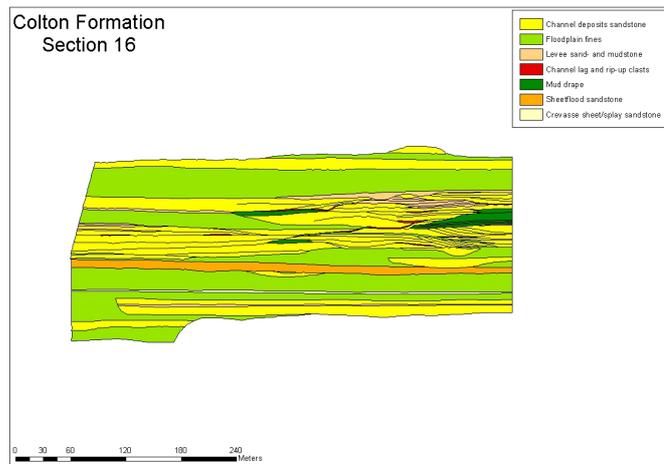
Colton - 14



Colton - 15



Colton - 19



Colton - 16

Available attachments to geographic features

No hyperlinks attached