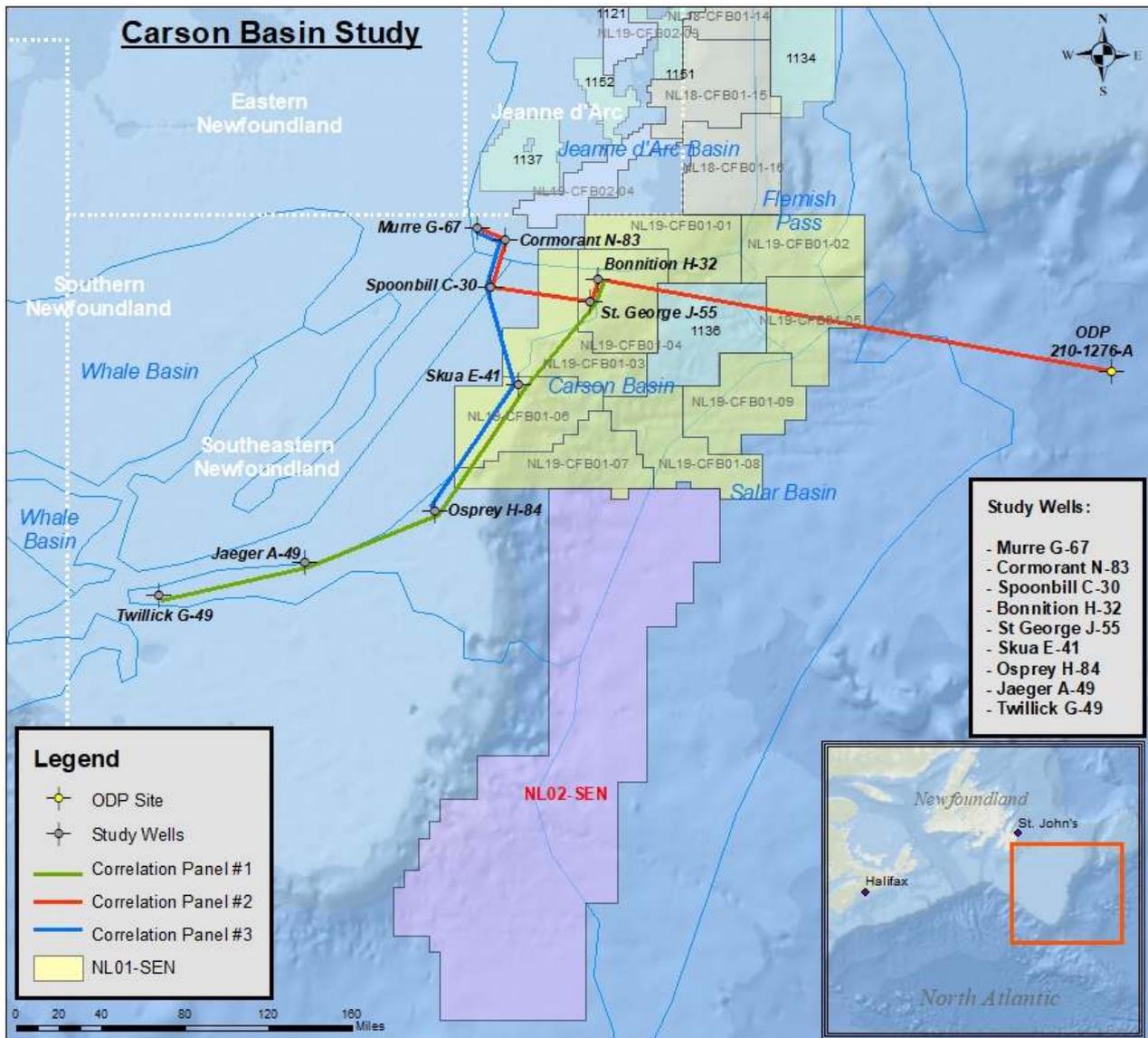


# Integrated Stratigraphic framework for Carson Basin, Offshore Newfoundland

Recent discoveries in Jurassic and Cretaceous sequences offshore eastern Canada have intensified exploration with new sectors opening to the south-east of Newfoundland in the Carson Basin (NL01-SEN) and undrilled Salar Basin (NL02-SEN). To help evaluate lease options in upcoming licensing rounds, a refined and robust integrated stratigraphic and provenance model have been completed to enable improved play fairway mapping along the south-eastern margin of the Grand Banks.



Future Geoscience provides a unique fully integrated stratigraphic solution that will assist correlation between continental and marine facies based on integration of quantitative biostratigraphy, chemostratigraphy, mineralogy, heavy mineral provenance and C-O isotope stratigraphy combined with E-log data.

This multi-disciplinary stratigraphic study focuses on 9 wells (listed above) located in or surrounding the Carson Basin, and extending along the South Bank High. In addition, published data from ODP Site 1276A is reviewed and integrated into an upgraded regional stratigraphic framework, calibrated to the latest Geological Timescale (GTS 2016).



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## Background

This study builds on the substantial eastern Canada experience base of Future Geoscience JV partners Chemostrat Ltd. and PetroStrat Ltd., industry leaders in chemostratigraphy and biostratigraphy, respectively. Data is comparable with recent non-exclusive studies by Chemostrat and PetroStrat which cover the Orphan Basin, Flemish Pass, Jeanne d'Arc Basin and other parts of the eastern Canada margin.

## Methodology

The workflow includes a thorough review of released biostratigraphic data and substantial program of new biostratigraphic analyses (quantitative micropalaeontology, nannopalaeontology & palynology). Chemostratigraphy analyses are concentrated in older (less fossiliferous) successions and new C-O isotope data also provides independent chronostratigraphic control. XRD and MLA mineral analysis enable significant refinement of the stratigraphic framework. A new stratigraphic framework is used to constrain high resolution forensic provenance investigations, using zircon U/Pb dating and RAMAN heavy mineral analysis. This data allows assessment of changes in sediment provenance and depositional facies, water depth and source rock potential.

**Biostratigraphy** - Following a review of released data and "gap analysis" around 1600 new analyses (micropalaeontology, nannopalaeontology & palynology) were run to verify, test, and improve interpretations. Analyses typically commenced within the lower Cenozoic, however, any pre-existing data from the overlying section was also reviewed and reinterpreted. When integrated with chemical/isotopic data (below) this enabled consistent and accurate age-dating (applying GTS 2016), identification of sequence boundaries, quantification of the magnitude of unconformities (allowing confident calibration of seismic), and characterization of depositional environments (which should assist understanding of source, seal, and reservoir distribution).

**Chemostratigraphy** - Analyses were concentrated in older (less fossiliferous) Lower Jurassic and Triassic successions and provide an independent stratigraphic framework, mineralogy and a provenance dataset. The inorganic geochemical data acquired for the current study come from a selection of cuttings and core samples.

**Isotope Stratigraphy** - Carbon-Oxygen isotope data provide independent chronostratigraphic control when compared to the global isotopic curves. The data can also be used to highlight zones of diagenetic alteration.

**Provenance** - The new stratigraphic framework has been used to constrain high resolution forensic provenance investigations, using zircon U/Pb dating and RAMAN heavy mineral analysis.

## Deliverables

Integrated summary logs and correlation panels incorporate chronostratigraphy, biozones, bioevents, chemosequences, isotope excursions, and candidate sequence stratigraphic surfaces (identified via integration of biostratigraphic and log criteria), all calibrated to GTS 2016. Summary logs also display significant previous (released) age interpretations for comparison.

The accompanying report text discusses degrees of interpretational certainty/uncertainty, explains major revisions relative to earlier interpretations, outlines the paleoenvironmental history of each well location, mineralogy and HM assemblages and discusses sand provenance. All new data are presented graphically and available digitally, as below.

**Delivery Format:** The report is in digital pdf format. Data can be delivered in digital Spotfire, StrataBugs, WellCAD and/or IC format, as required.

**Completion:** Completed August 2019.

## Price & Terms

This study is available via data licensing agreement to E&P companies on a single or group basis (applicable to *bona fide* license groups).

- Single company full price: **\$120,000 USD**

Group rates:

- 2 Company Group 180% (i.e. total cost 180% of single purchase price, a 10% discount for each partner)
- 3 Company Group 255%
- 4 Company Group 300%

A Data License Agreement will be issued to each client upon confirmation of licensing.

## Contacts

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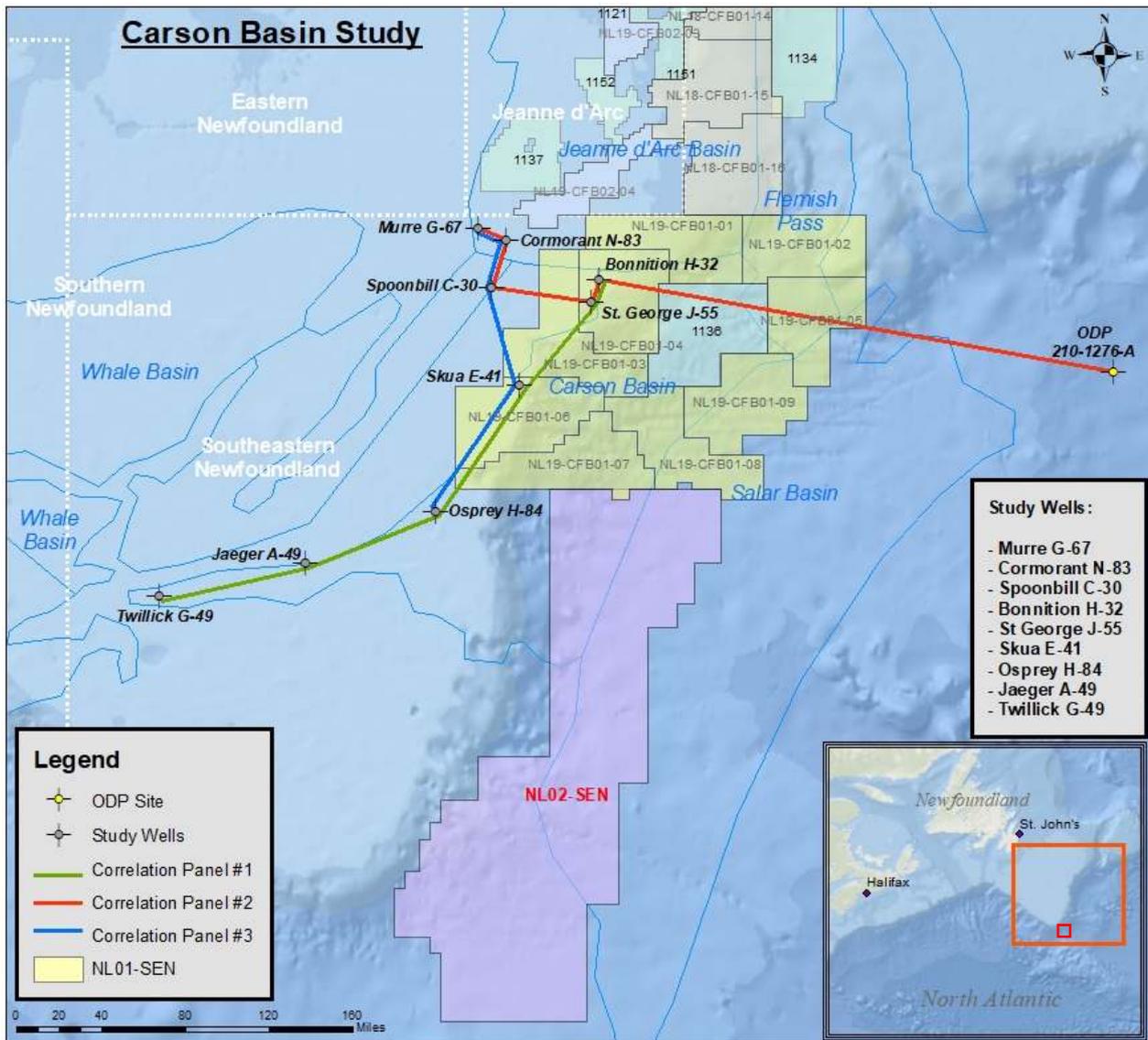
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