MSDP02 (DH 287996) drillhole report

Sedimentary Copper Mineral Systems of the Stuart Shelf
GSSA–CSIRO project

C Krapf, A Fabris, G Gordon, S Schmid,
V Crombez and M Kunzmann

SOUTH AUSTRALIA

Government of South Australia
Department for Energy and Mining

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S Schmid[2], V Crombez[2] and M Kunzmann[2*]

1 Geological Survey of South Australia,
Department for Energy and Mining

2 CSIRO (*now FMG)

April 2023

Report Book 2023/00012

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Acknowledgement of Country
As guests on Aboriginal land, the Department for Energy and Mining (DEM) acknowledges everything this department does impacts on Aboriginal country, the sea, the sky, its people, and the spiritual and cultural connections which have existed since the first sunrise. Our responsibility is to share our collective knowledge, recognise a difficult history, respect the relationships made over time, and create a stronger future. We are ready to walk, learn and work together.

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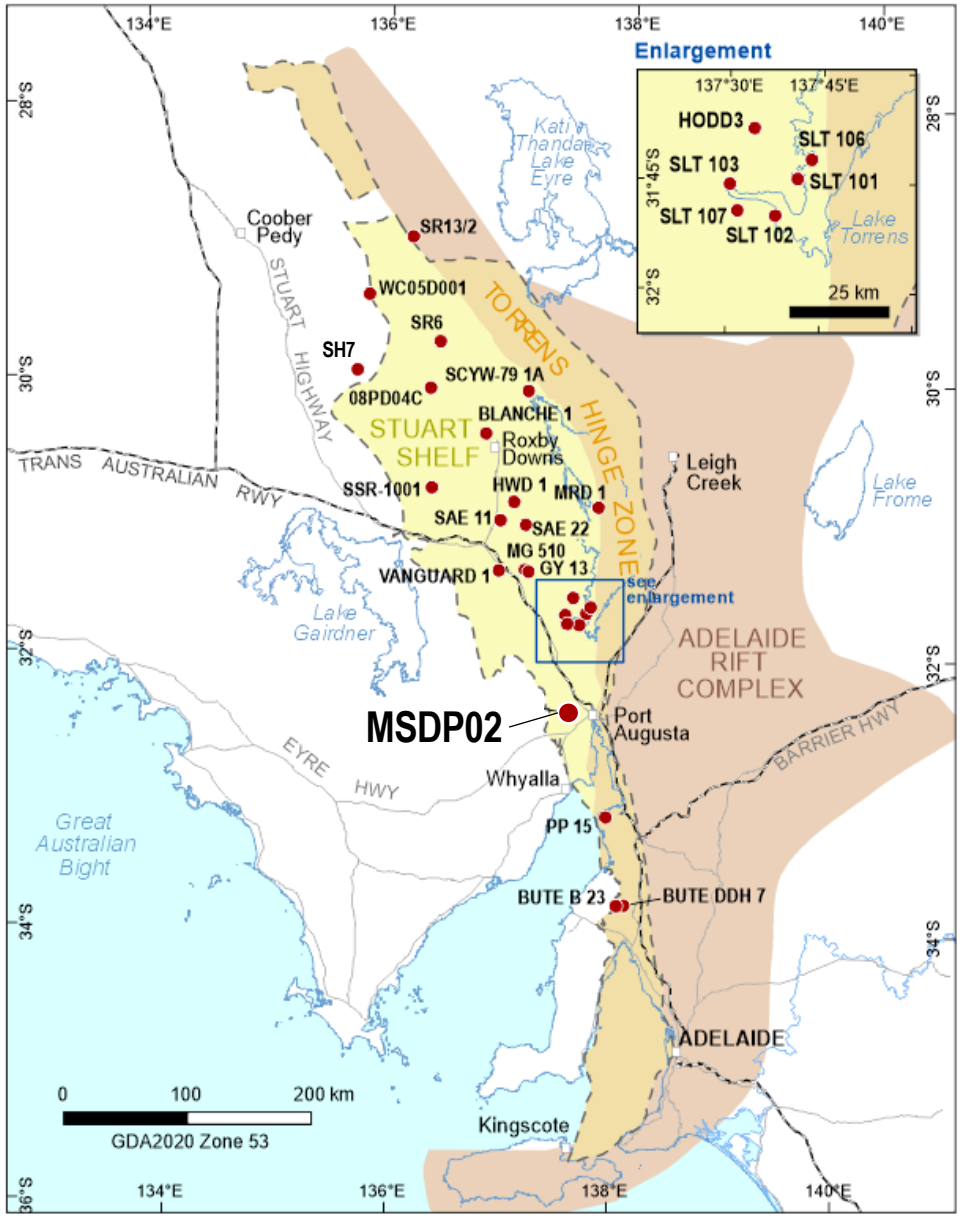
Drillhole information

Drillhole name	MSDP02	
Drillhole number	287996	
Tenement	EL 5498	Mineral Systems Drilling Program
Location	137.5525595 Long -32.4745014 Lat	739886.81E 6404097.19N GDA2020, Zone 53
Date drilled	23/09/2015	
Drillhole depth	564.50 m	
Cored interval	564.50 m	
Azimuth/Dip	0	-90
Reference	RB2016/00030	

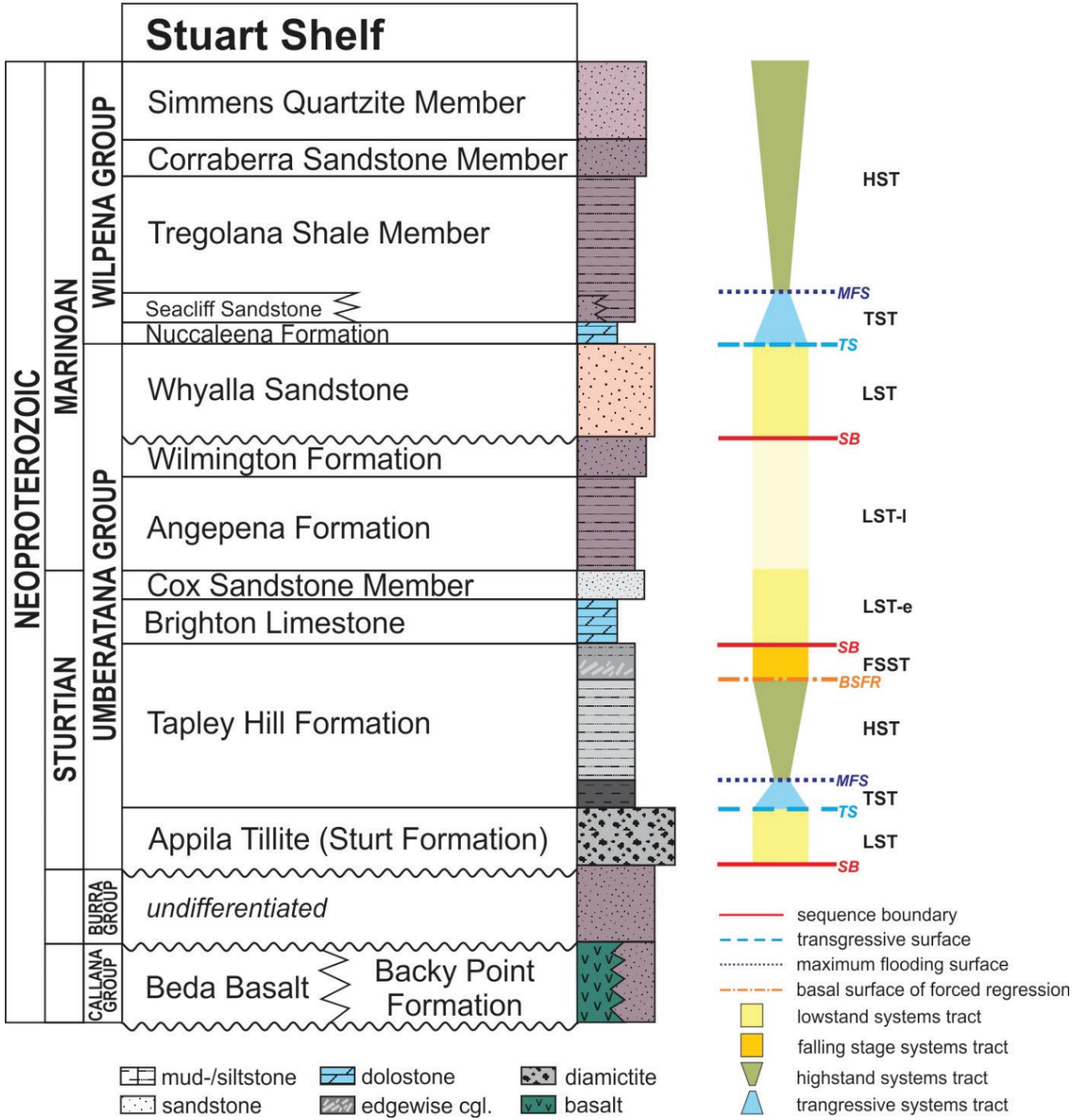
This drillhole report provides a summary of new logging and data collection undertaken as part of the Sedimentary Copper Mineral Systems of the Stuart Shelf GSSA-CSIRO project.

Associated newly collected handheld gamma, portable XRF and HyLogger™ data are available for download via the **blue hyperlinks** in this report.

Drillhole location



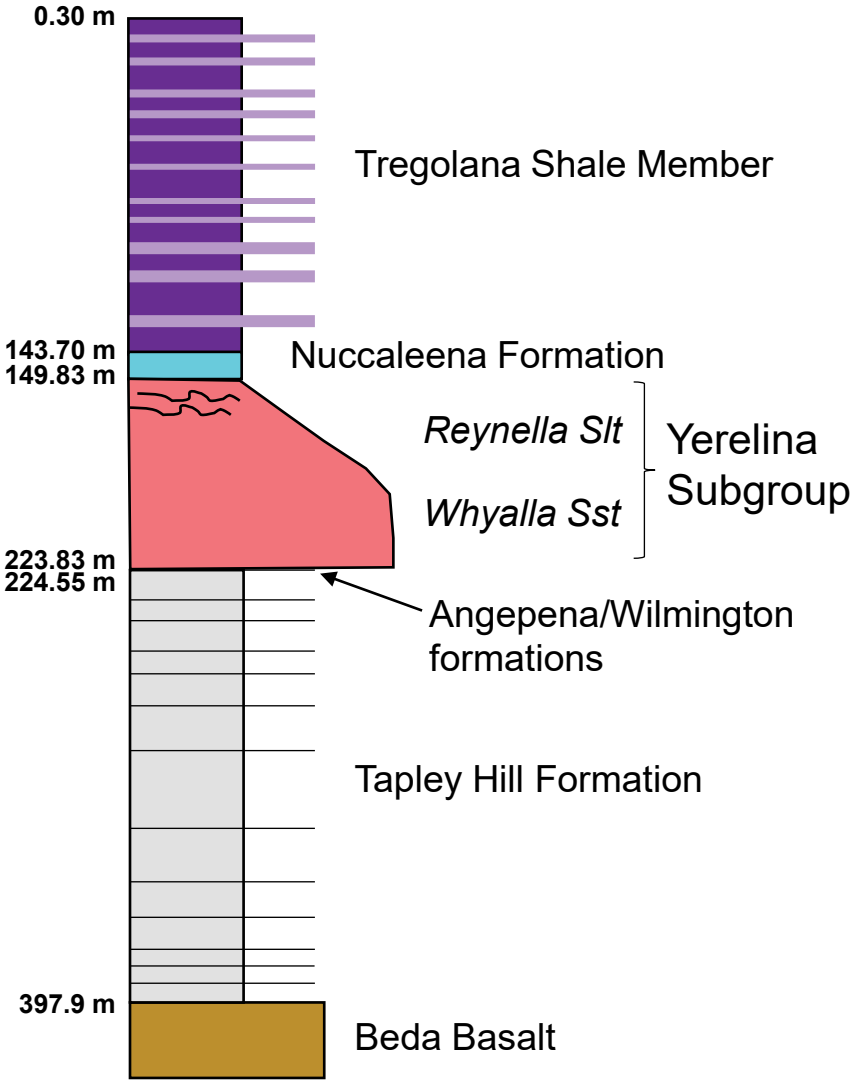
Generalised stratigraphy and sequence stratigraphy of the Stuart Shelf*



***Note:** not all stratigraphic units were deposited or preserved throughout the Stuart Shelf

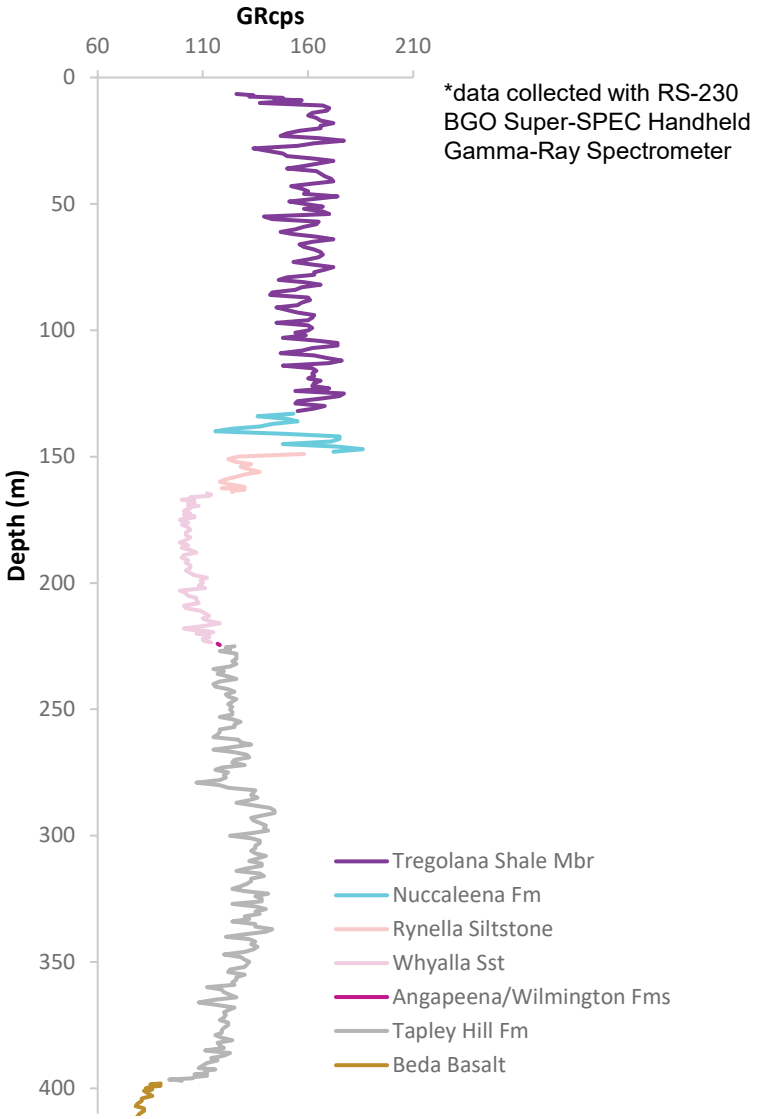
MSDP02

generalised stratigraphic log
(depth interval 0.3 – 398.8 m)



Handheld gamma*

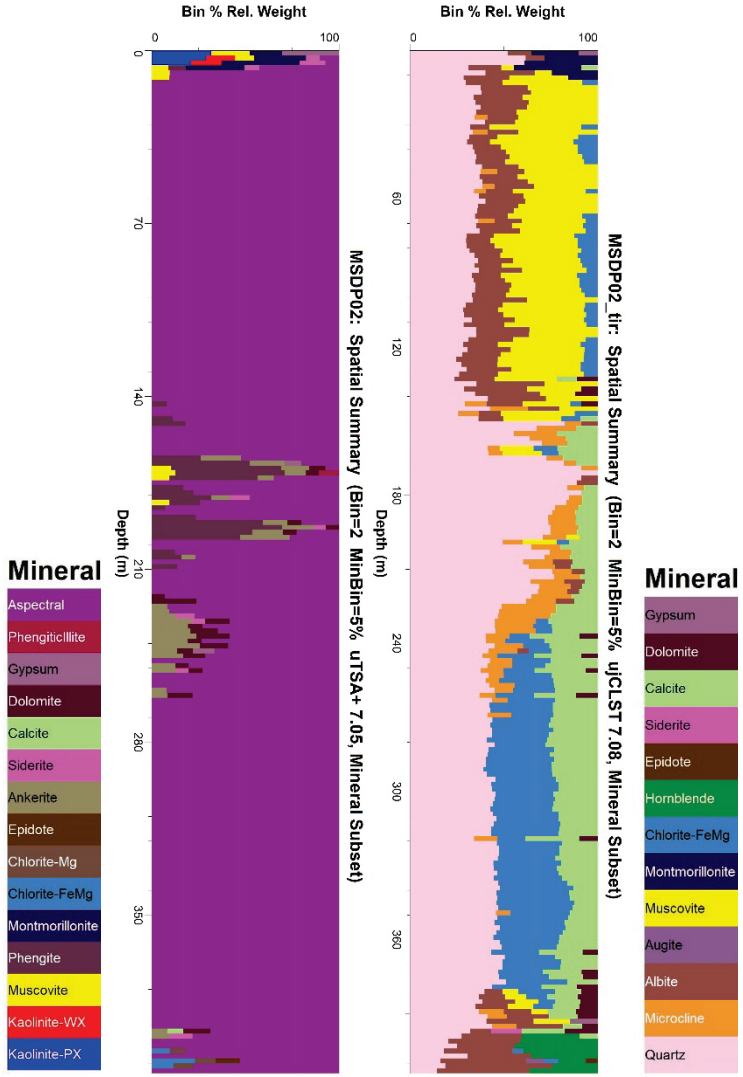
[Download gamma data]



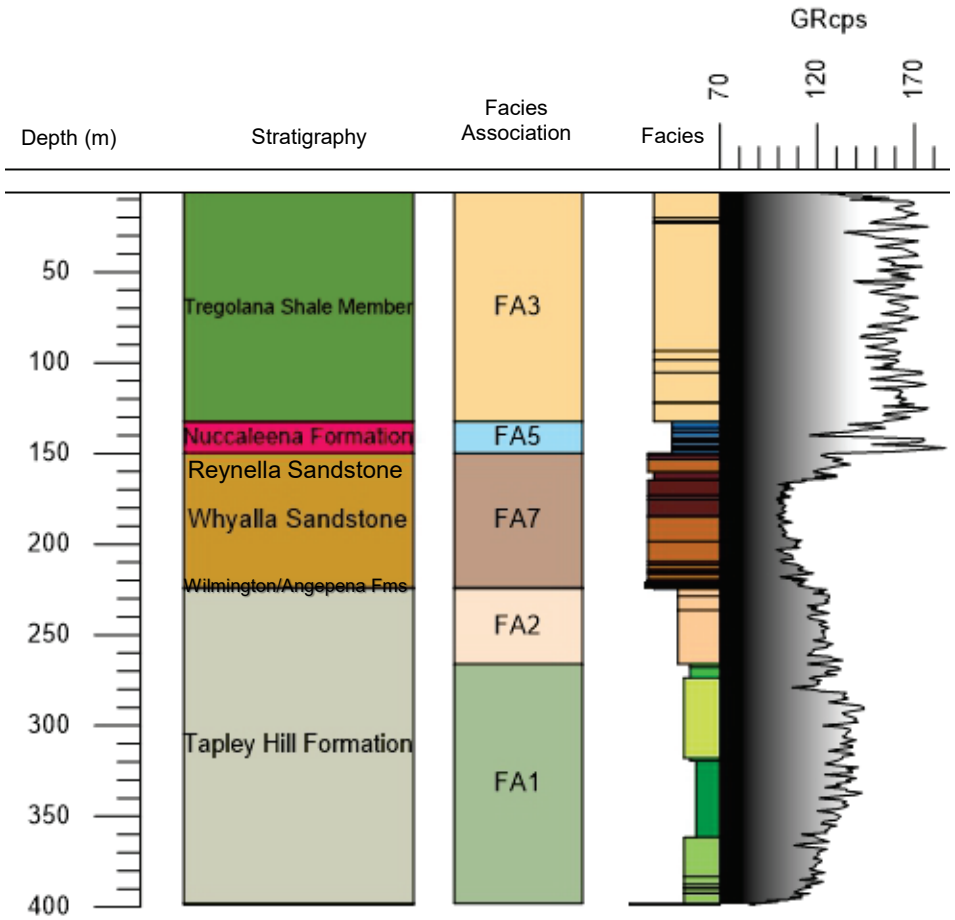
*data collected with RS-230 BGO Super-SPEC Handheld Gamma-Ray Spectrometer

HyLogger™

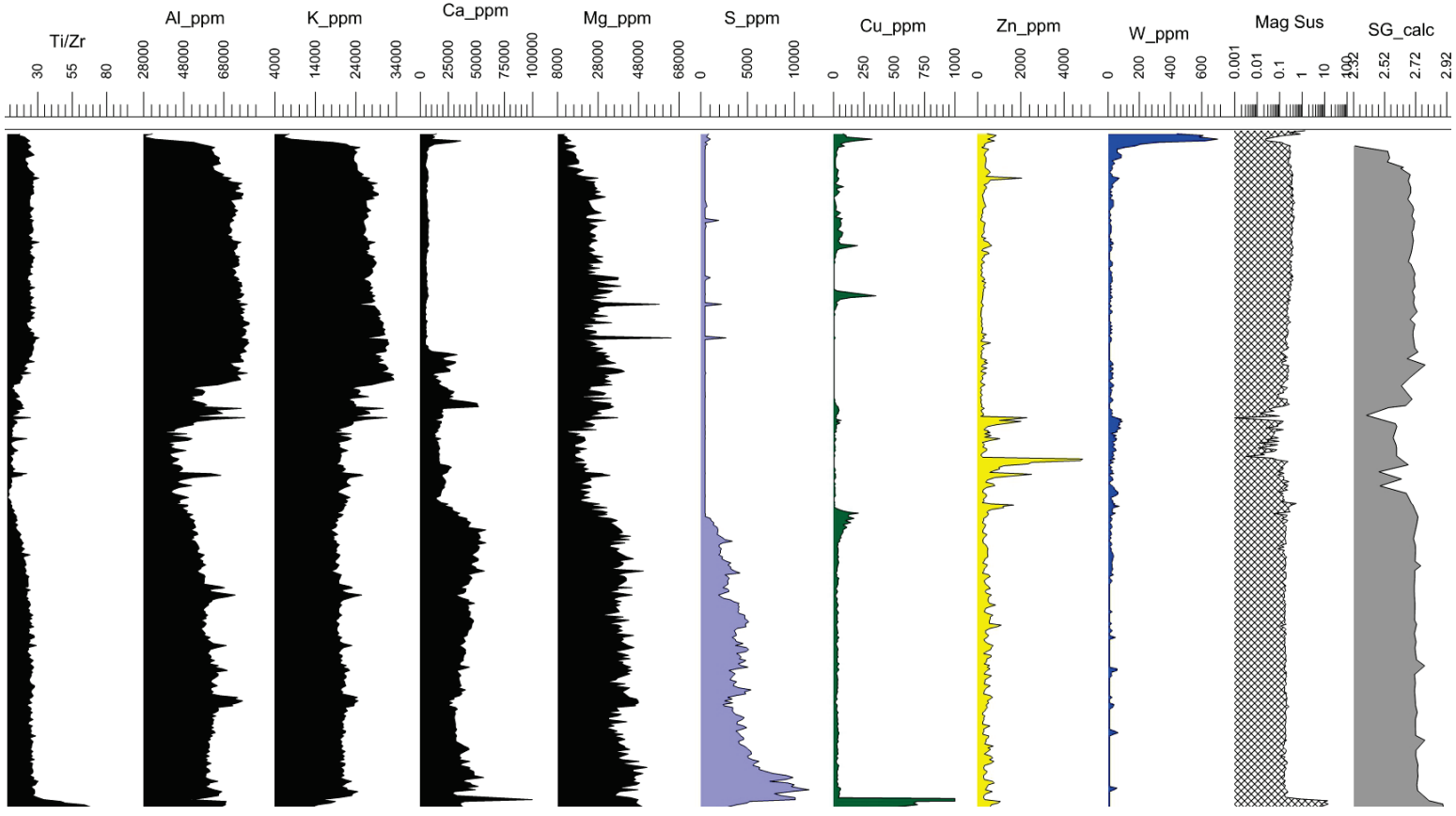
[Download HyLogger™ data]



Combined STRATER log (stratigraphy, facies, gamma)
MSDP02 (depth interval 0.3 – 398.8 m)



Lab-at-Rig™ (Fabris et al., 2017*)



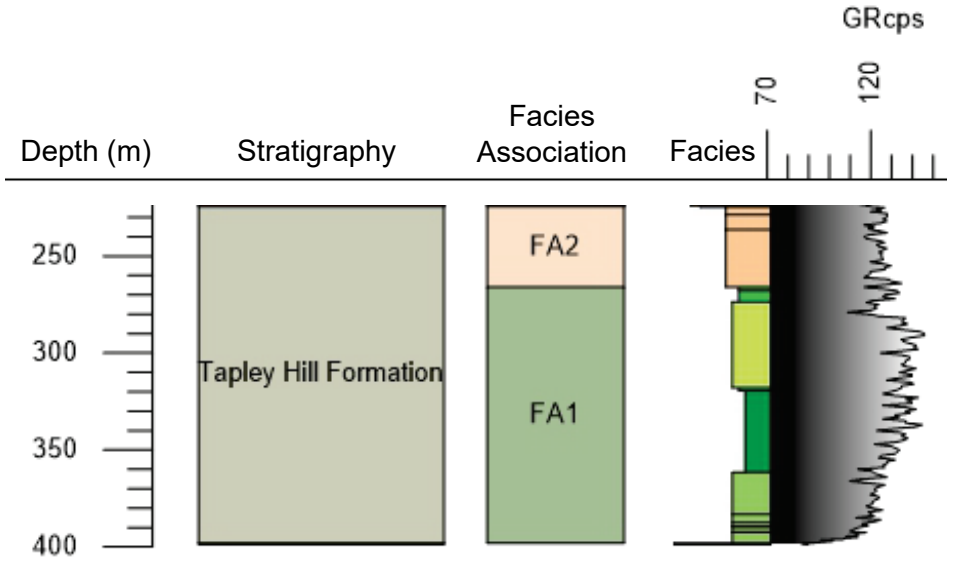
Facies Association (FA)

- FA1: offshore
- FA2: offshore transition
- FA3: lower shoreface - prodelta
- FA4: shoreface to delta front
- FA5: shallow subtidal to subtidal
- FA6: intertidal to supratidal
- FA7: glacial to fluvio-glacial

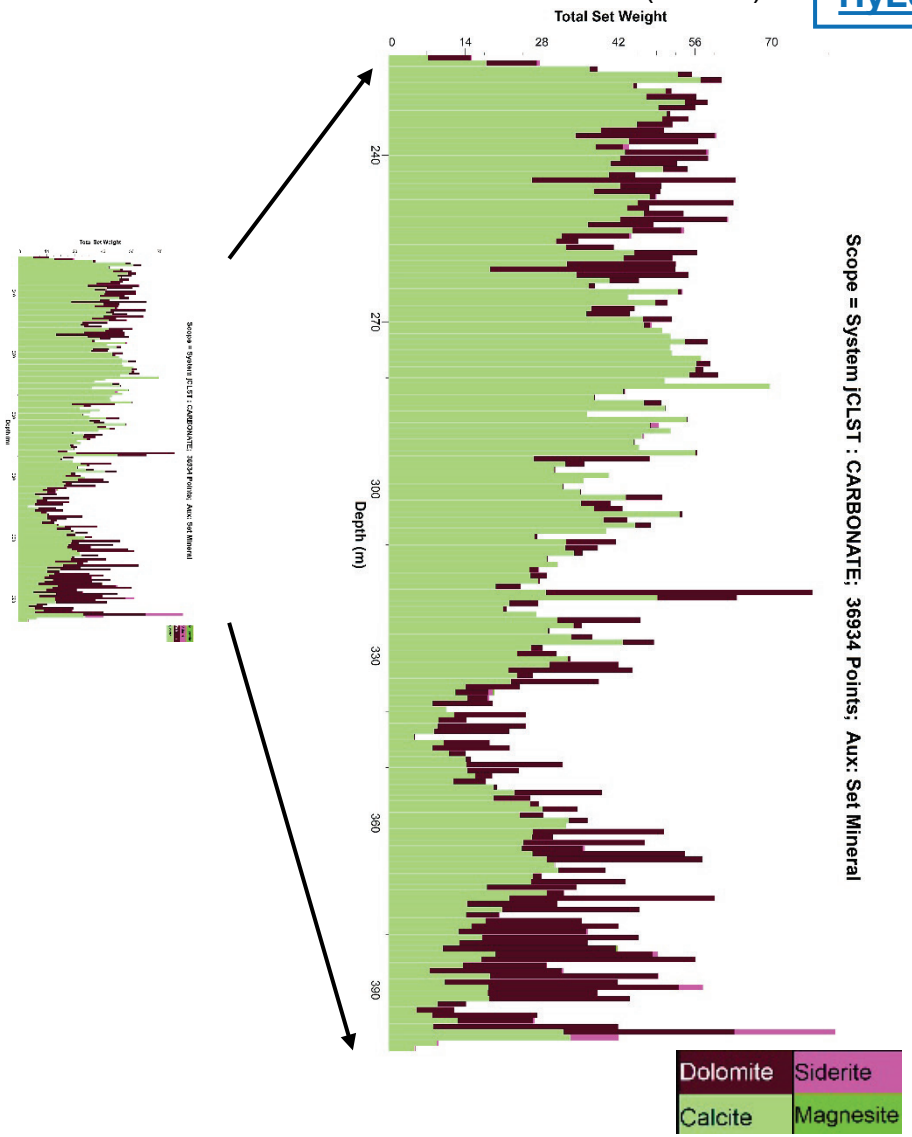
*Fabris AJ, Tylkowski L, Brennan J, Flint RB, Ogilvie A, McAvaney S, Werner M, Pawley M, Krapf C, Burtt AC, Rowe R, Henschke C, Chalmers NC, Rechner S, Hardwick I and Keeling J 2017. *Mineral Systems Drilling Program in the southern Gawler Ranges, South Australia*, Report Book 2016/00030. Department of the Premier and Cabinet, South Australia, Adelaide.

MSDP02 Carbonate Content

Tapley Hill Formation interval (224.55 – 397.95 m)



HyLogger™ TIR carbonates (1m res)



[Download HyLogger™ data]

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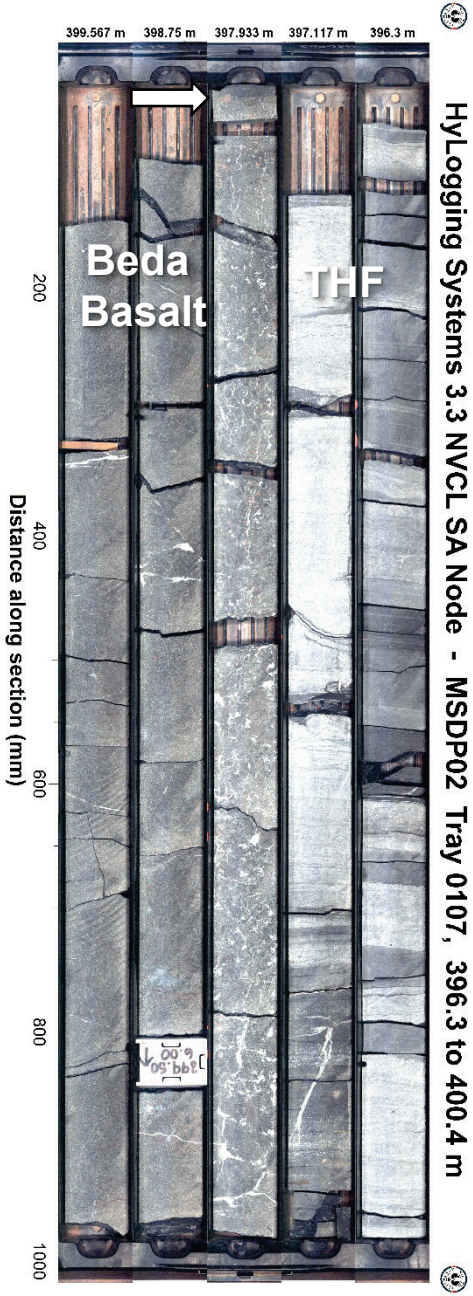
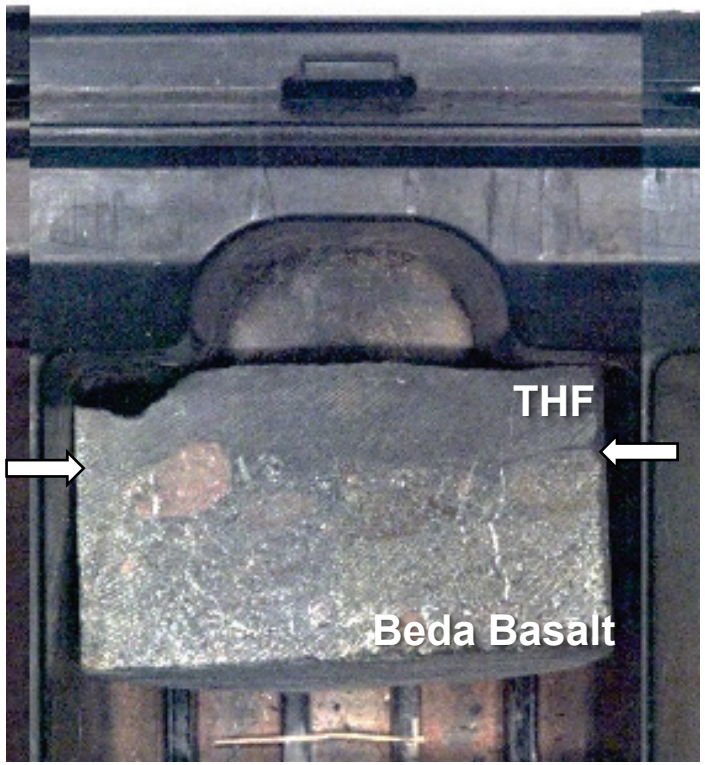
Transition Beda Basalt – Tapley Hill Formation (THF)



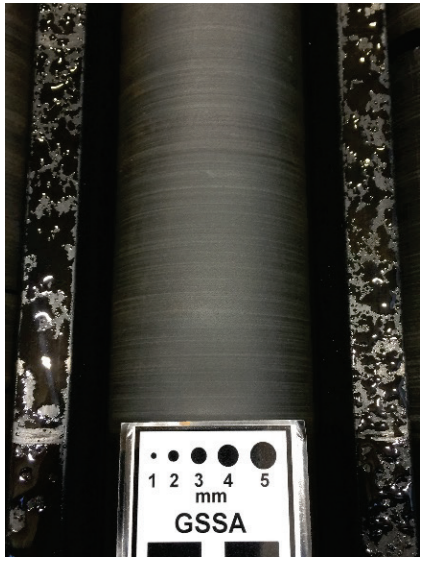
397.933 m

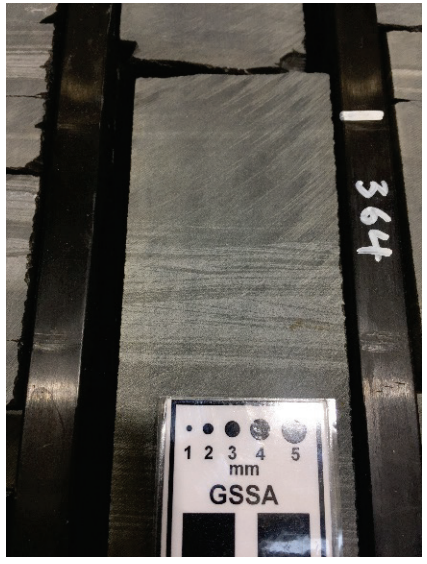


Tapley Hill Formation

offshore marine – below wave storm base

cm-scale interbedded dolomitic and carbonaceous siltstone, laminated siltstone, ripple-cross bedded fine-grains sandstone

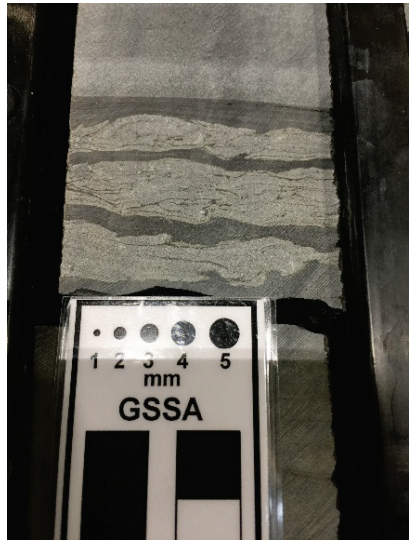




offshore transition – between storm wave base and fair-weather wave base

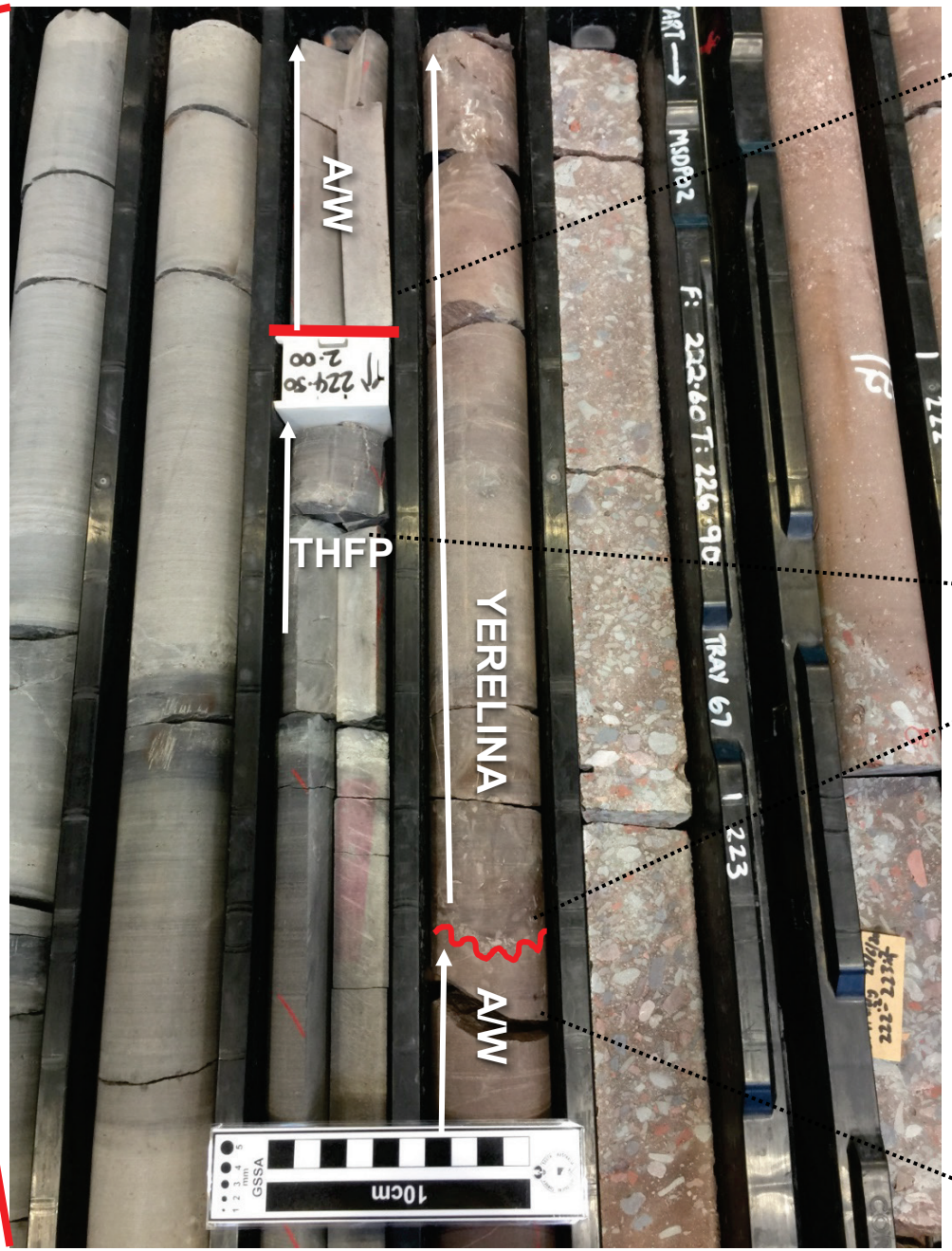
edgewise conglomerates

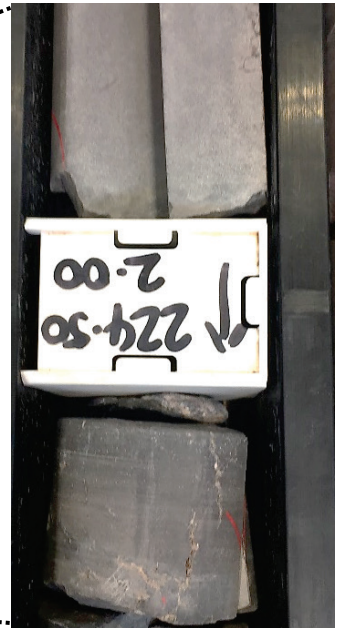




Transition Tapley Hill Formation – Angepena/Wilmington Formation – Yerelina Subgroup





Yerelina Subgroup – Whyalla Sandstone/Elatina Formation

polymict diamictic conglomerate

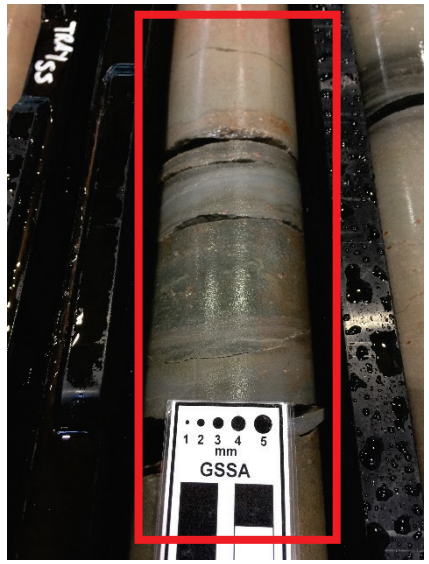

massive sandstone with coarse to pebbly grain clusters

porous sandstone with
coarse to pebbly grain clusters

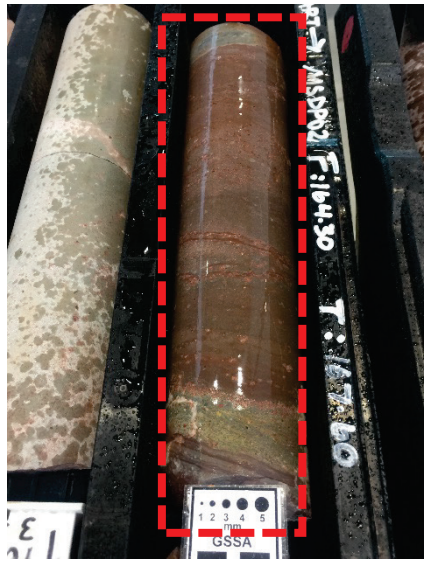
planar-bedded fine- and
coarse-grained sandstones

Yerelina Subgroup – Reynella Siltstone

sandstone fining upward to laminated (dolomitic) mudstone

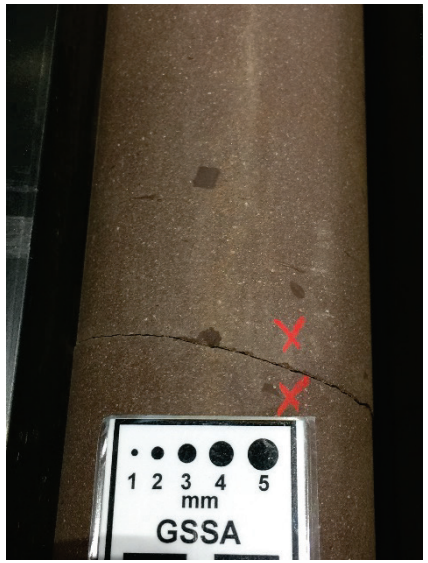


transition sandstone to mud-/sandflat deposits



mud/sandflat deposits

massive to horizontal bedded sandstone with rip up clasts

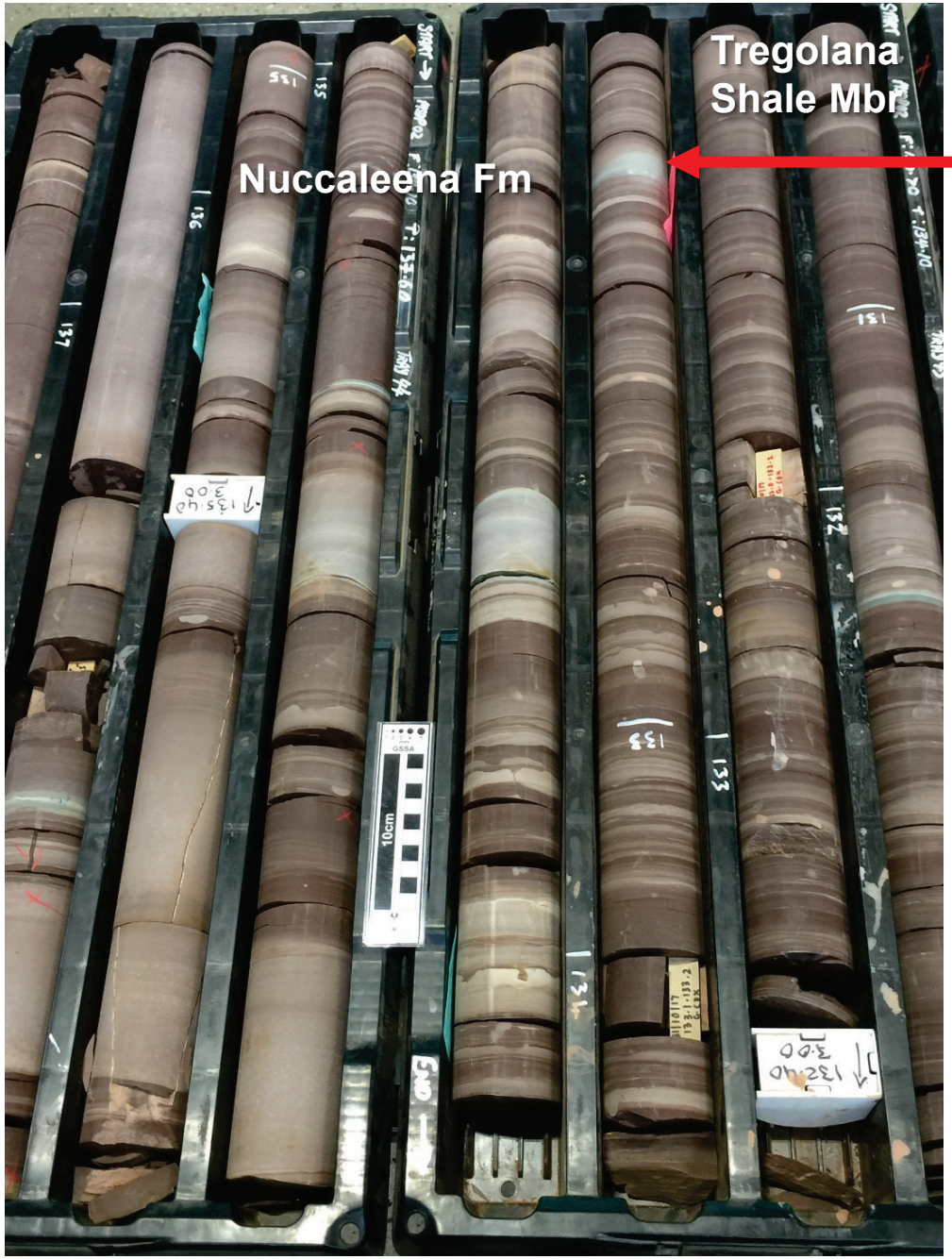


Nuccaleena Formation (depth 132.48 – 149.83 m)

transition sandstone to siltstone with first dolomite layer

coarsening upward dolomitic siltstone to laminated sandstone

Transition Nuccaleena Formation – Tregolana Shale Member



Tregolana Shale Member (depth 6.25 – 132.48 m)

fining upward laminated to ripple cross laminated sand- and siltstone with convolute bedding and soft sediment deformation