



VANGUARD 1 (DH 18092) drillhole report

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

C Krapf, A Fabris, M Bockmann, G Gordon,
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1 Geological Survey of South Australia,
Department for Energy and Mining

2 CSIRO (*now FMG)

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Report Book 2023/00026



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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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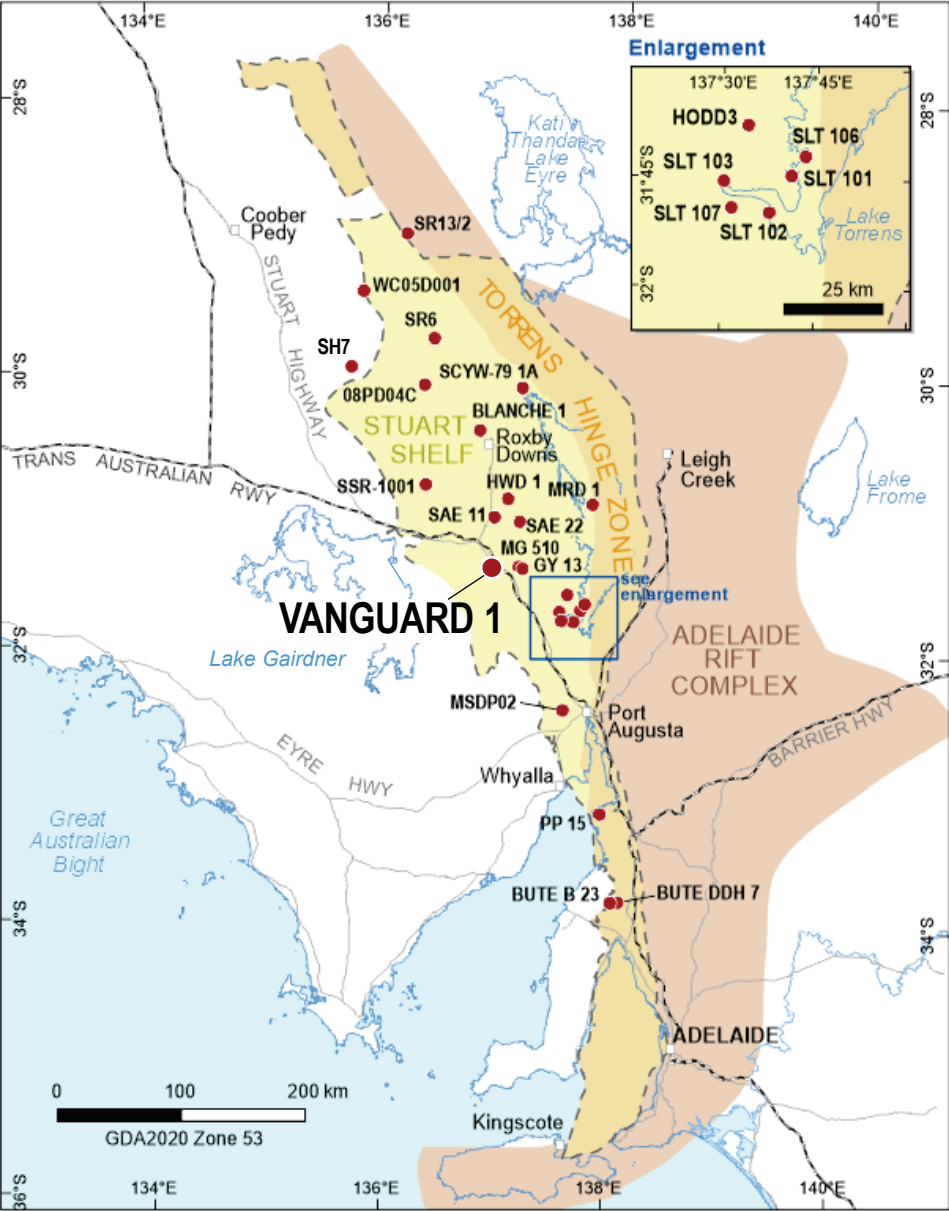
Drillhole information

Drillhole name	VANGUARD 1	
Drillhole number	18092	
Tenement	EL 951	
Location	136.9301497 Long	683428.73E
	-31.4397484 Lat	6520049.31N
	GDA2020, Zone 53	
Date drilled	20/11/1982	
Drillhole depth	1096 m	
Cored interval	1090 m	
Azimuth/Dip	150	-89
Reference	ENV06962	

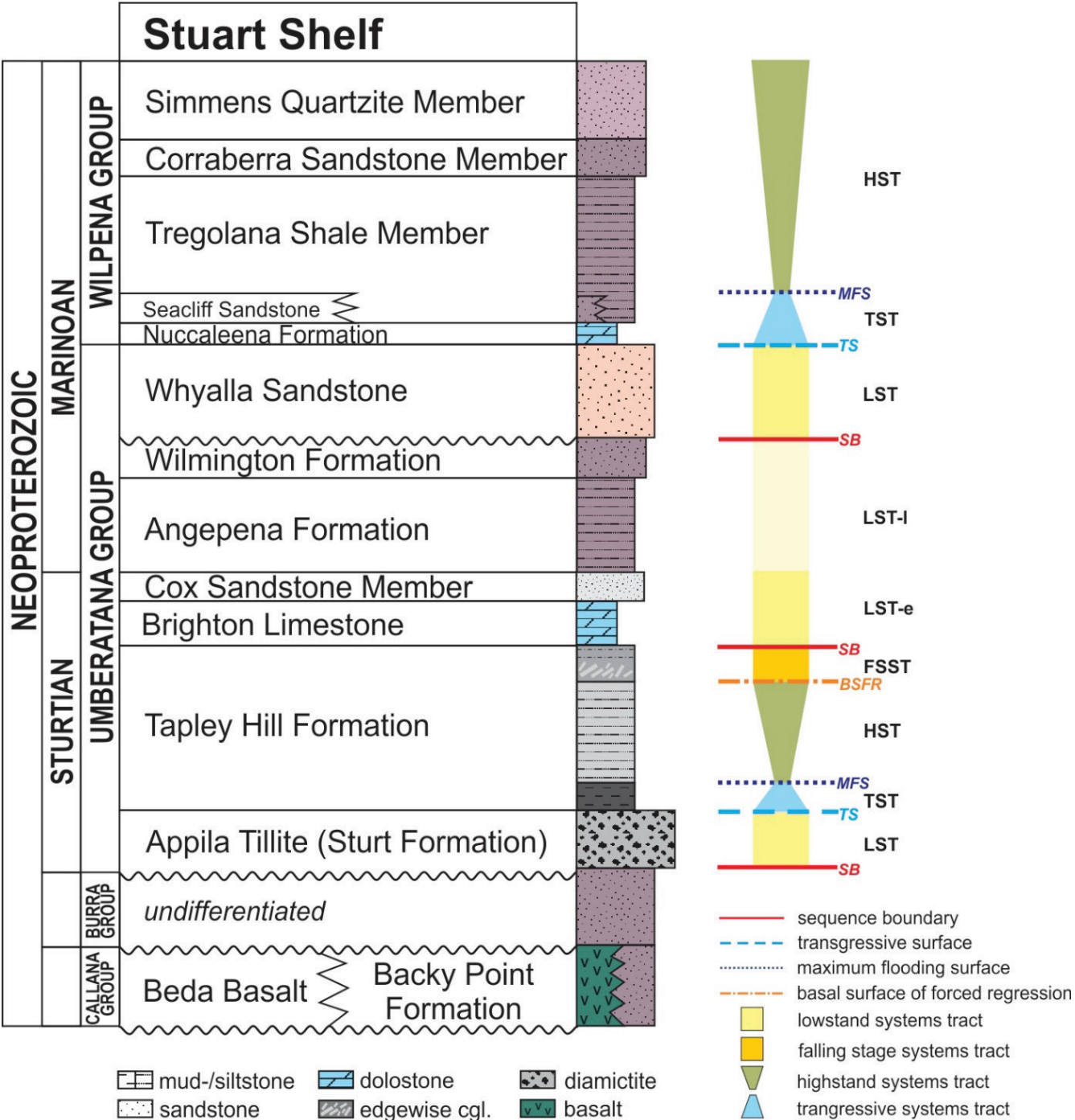
This drillhole report provides a summary of new logging and data collection undertaken as part of the Sedimentary Copper Mineral Systems of the Stuart Shelf GSSA-CSIRO project.

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

Drillhole location



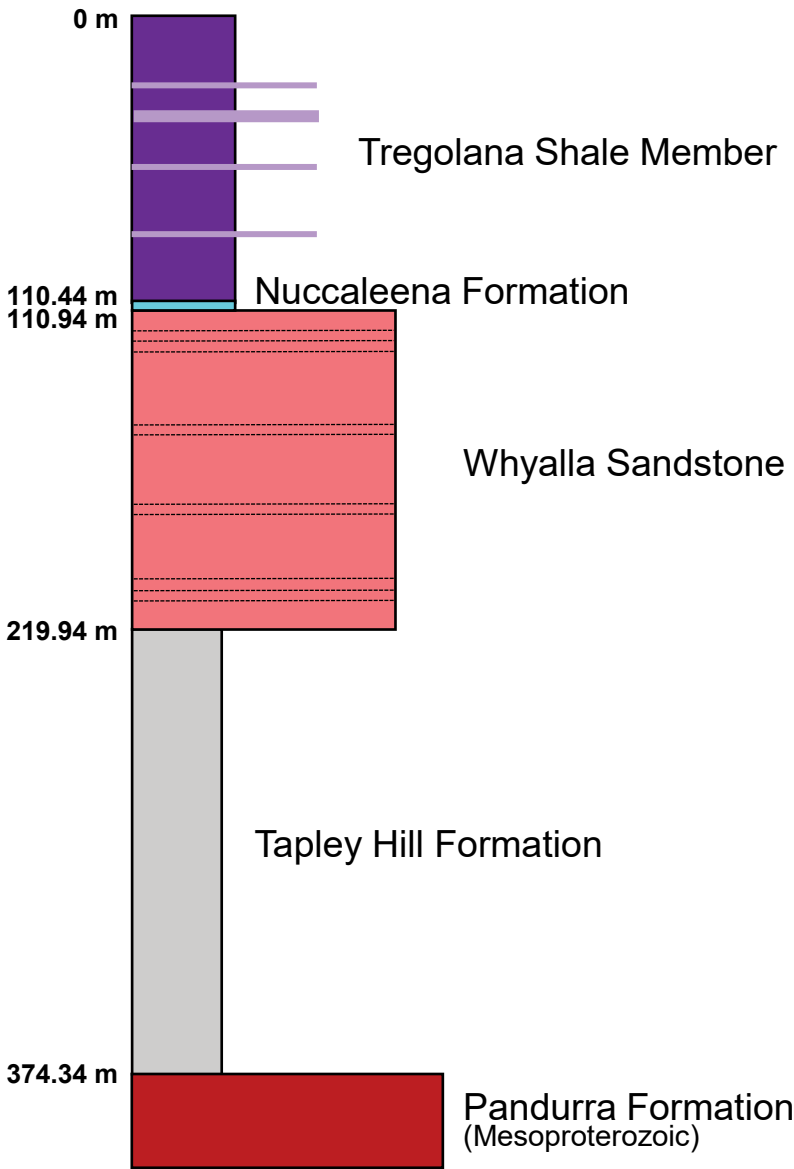
Generalised stratigraphy and sequence stratigraphy of the Stuart Shelf*



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

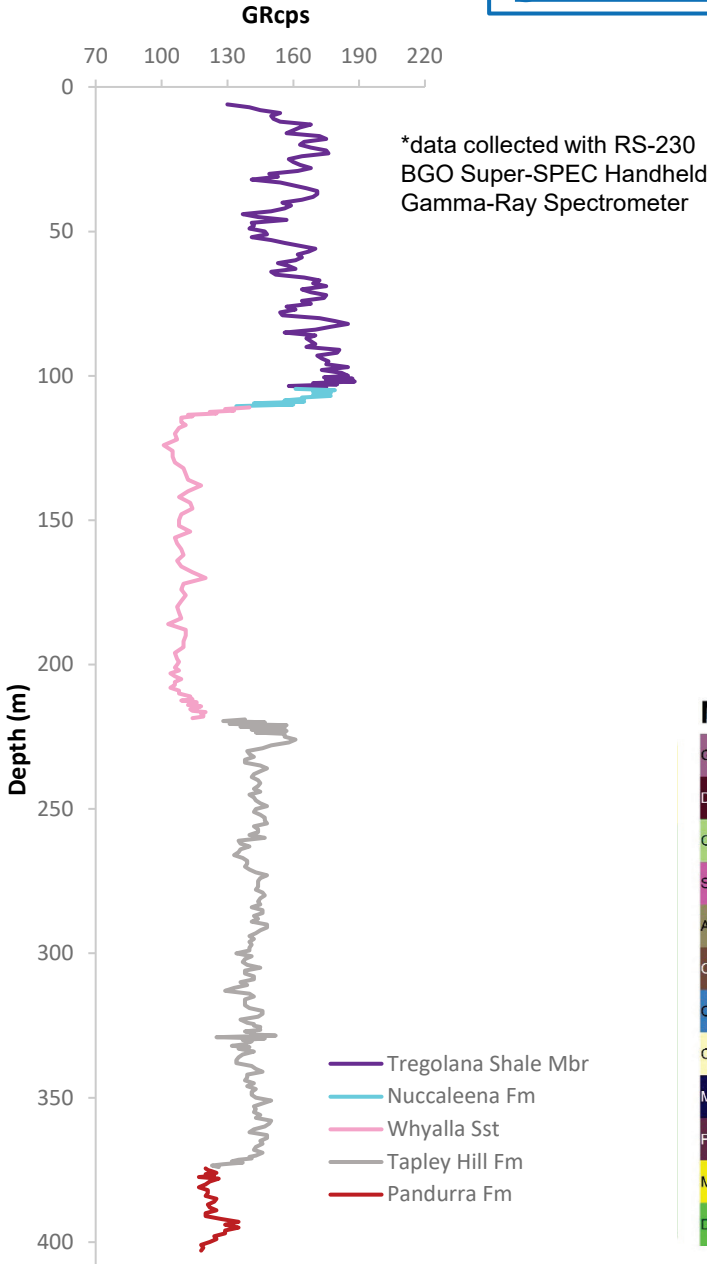
VANGUARD 1

generalised stratigraphic log
(depth interval 0 – 400 m)



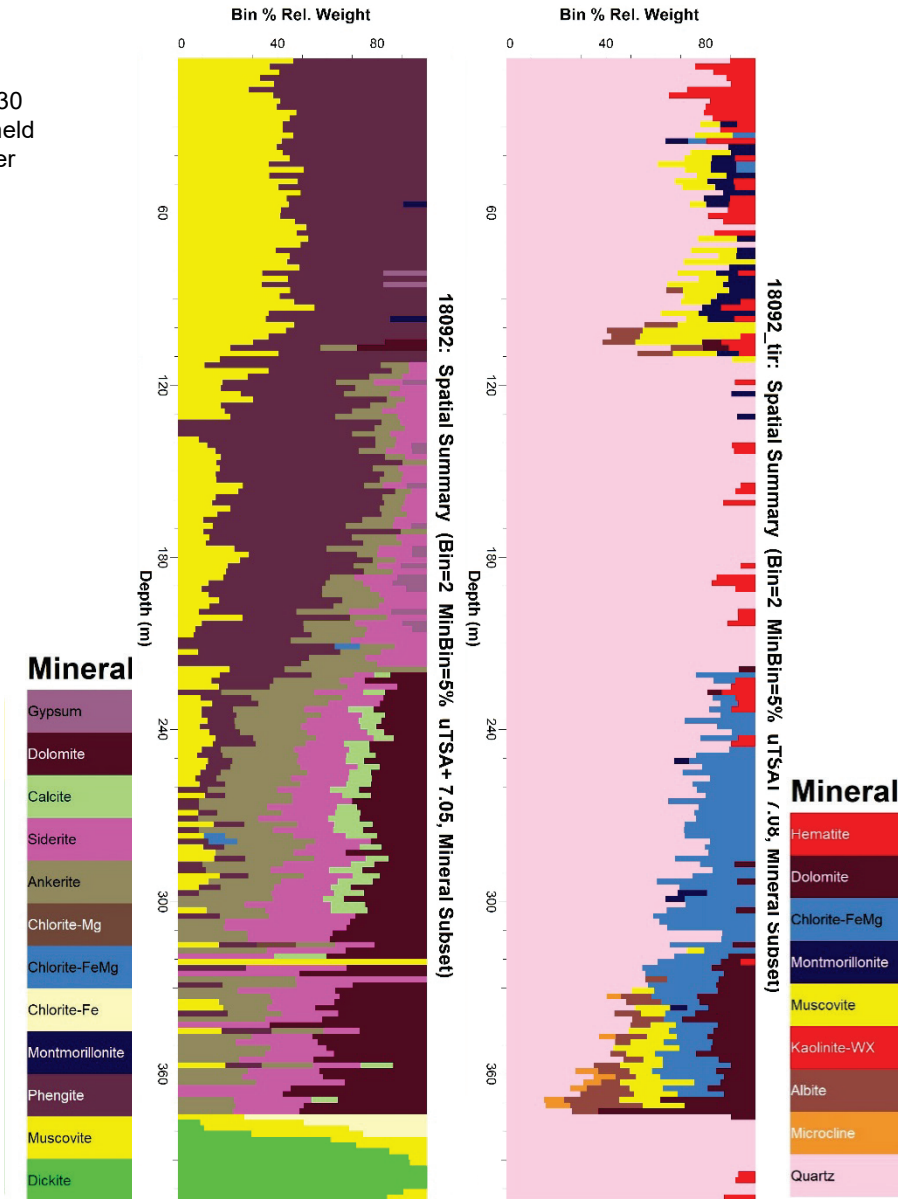
Handheld gamma*

[Download gamma data](#)



HyLogger™

[Download HyLogger™ data](#)

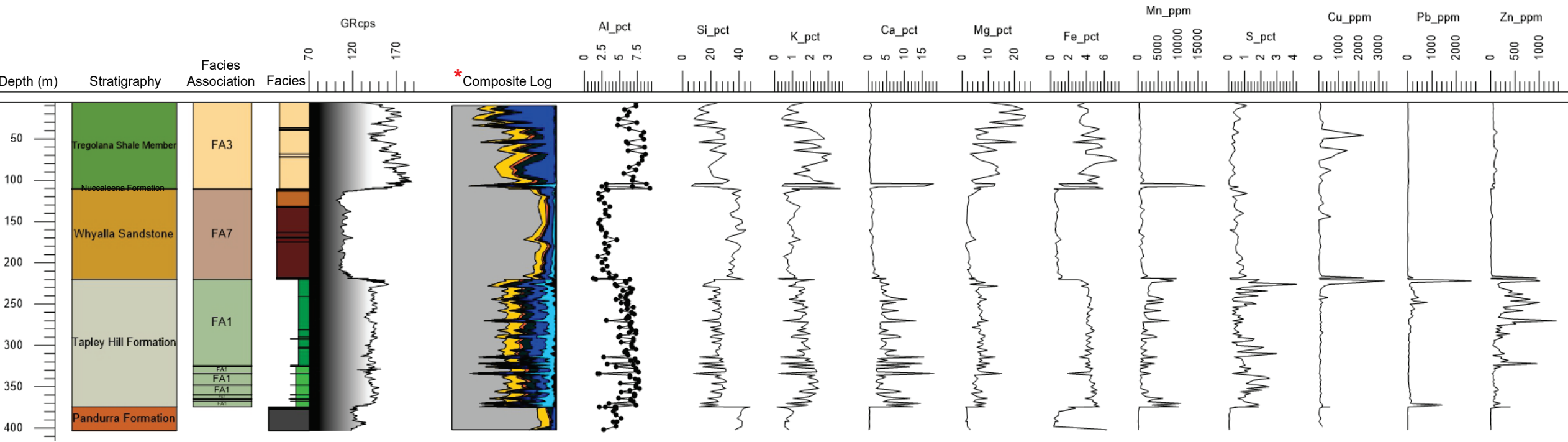


Combined STRATER log (stratigraphy, facies, gamma and handheld pXRF* - corrected)



[Download
pXRF data](#)

VANGUARD 1 (depth interval 0 – 400 m)



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

*

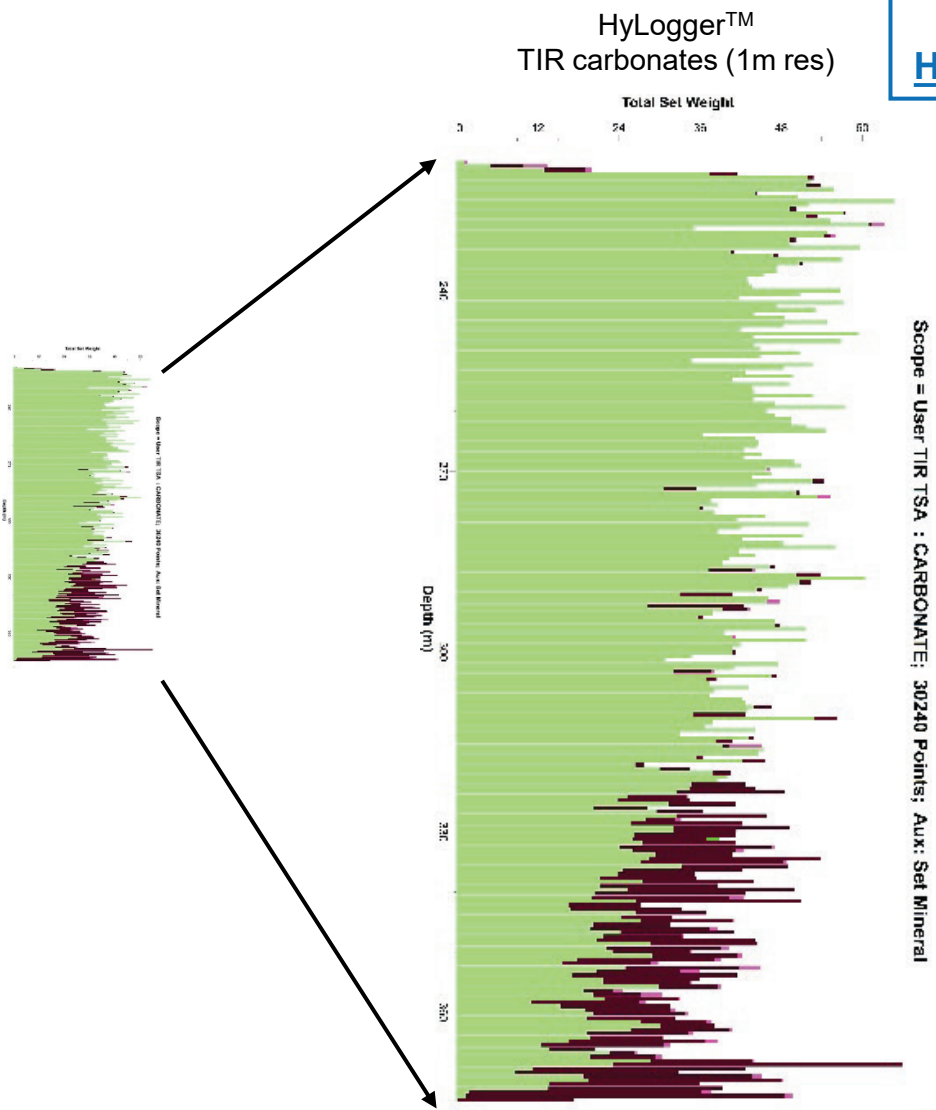
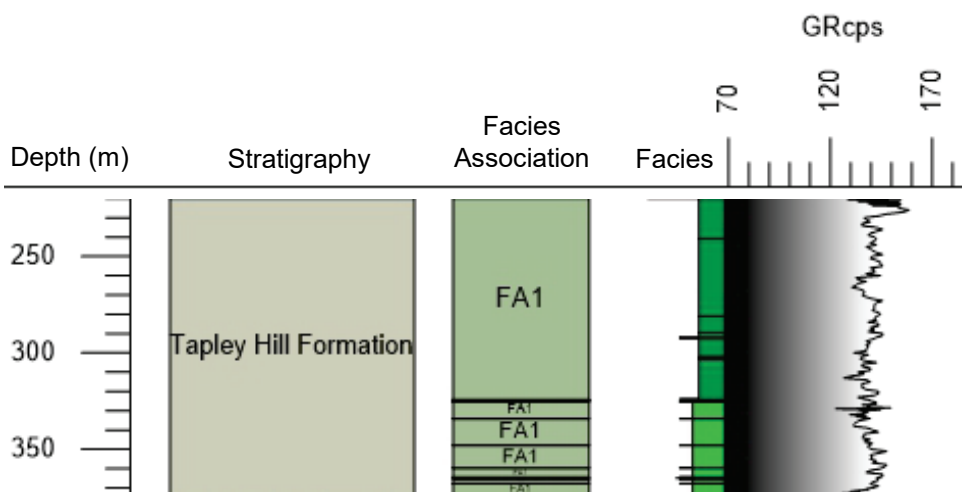
- Mg_pct
- Al_pct
- Si_pct
- S_pct
- K_pct
- Ca_pct
- Fe_pct
- Cu_ppm
- Pb_ppm
- Zn_ppm

*data collected with Vanta™ Handheld XRF

VANGUARD 1 Carbonate Content

Tapley Hill Formation interval (219.94 – 374.34 m)

[Download HyLogger™ data](#)



Scope = User TIR TSA : CARBONATE; 30240 Points; Aux: Set Mineral

Facies Association (FA)

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

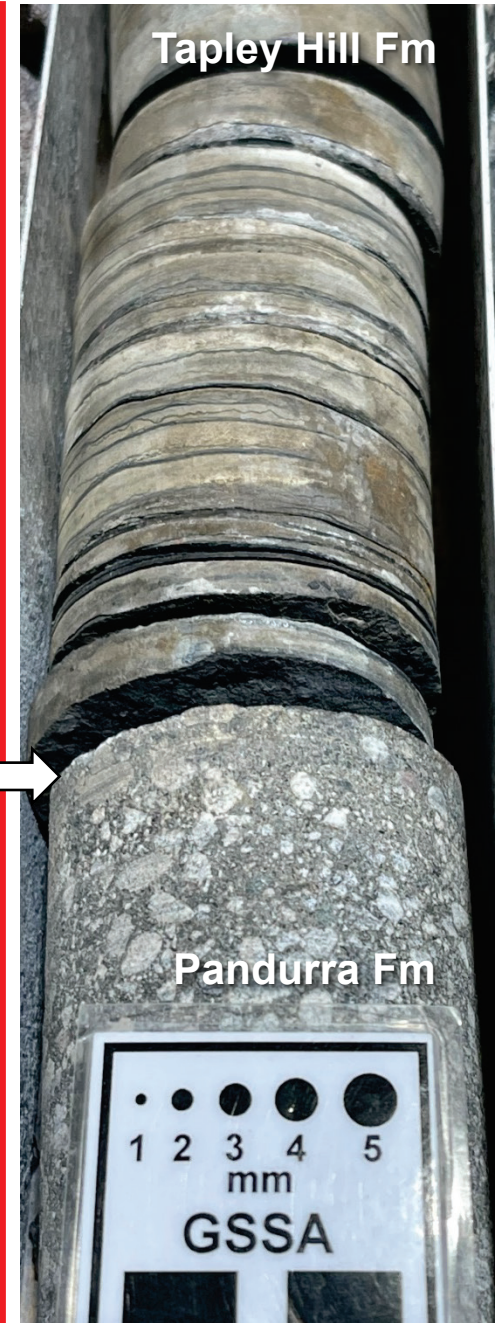
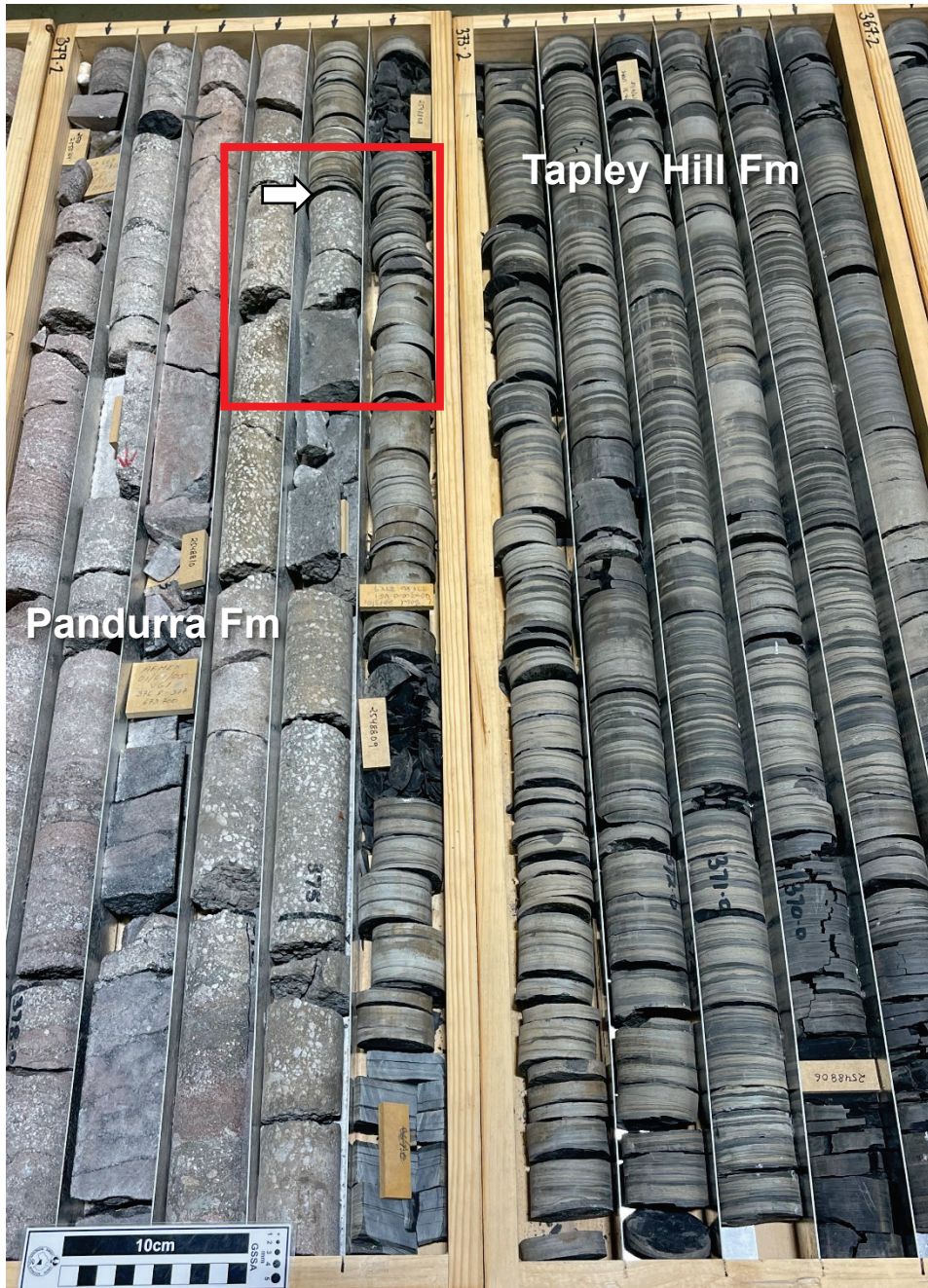
Dolomite Magnesite
Calcite Siderite

Pandurra Formation (depth 374.37 – 1067.47 m)

fluvial redbed deposits



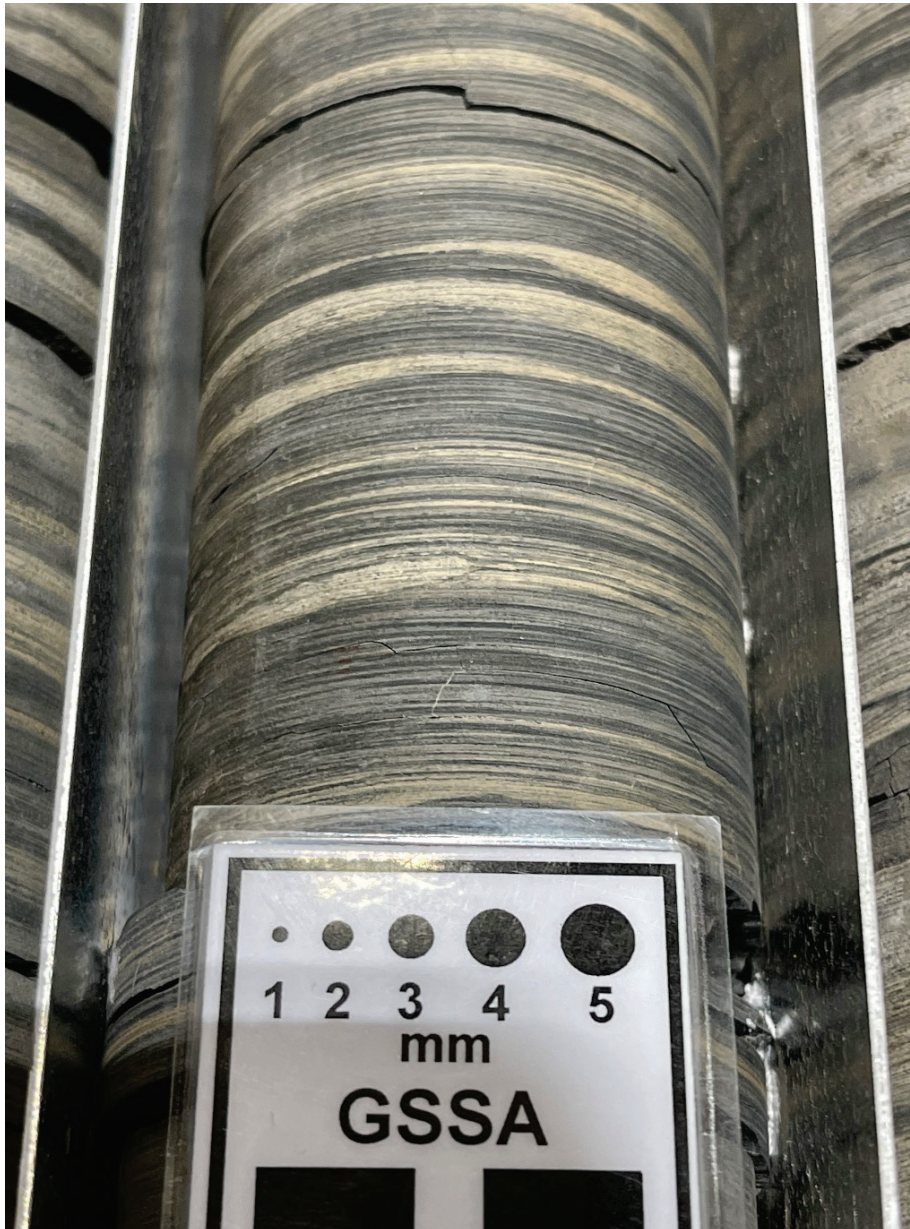
Transition Pandurra Formation – Tapley Hill Formation (THF)



Tapley Hill Formation

offshore marine – below wave storm base

cm-scale interbedded dolomitic and carbonaceous siltstone



Tapley Hill Formation

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

slump



debrite



Tapley Hill Formation

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

interbedded dolomitic and
carbonaceous siltstone

edgewise conglomerates



Tapley Hill Formation

offshore transition – between storm wave base and fair-weather wave base
sharp-based fine-grained sandstones



Tapley Hill Formation

offshore marine – below wave storm base
laminated siltstone fine-grained sandstones



Transition Tapley Hill Formation – Whyalla Sandstone



Whyalla Sandstone (depth 110.94 – 219.94 m)

massive to faintly planar bedded medium- to very coarse-grained sandstone



Transition Whyalla Sandstone – Nuccaleena Formation – Tregolana Shale Member



Nuccaleena Formation (depth 110.44 – 110.94 m)



Tregolana Shale Member (depth 1 – 110.44 m)

fining-upward laminated to ripple cross laminated silt- and sandstones

