GSA Data Repository 2020143

Davidson, S.R., et al., 2020, Conjugate strike-slip faulting across a subduction front driven by incipient seamount subduction: Geology, v. 48, https://doi.org/10.1130/G47154.1

Supplementary material to include:

Table DR1: Survey details for multi-channel seismic reflection surveys used for interpretation in this study. This includes the high resolution seismic reflection (TOPAS) survey TAN1510. Filled peaks in seismic images represent positive polarity.

Figure DR1. Un-interpreted (A) and interpreted (B) seismic section SO191-04 highlighting Bennett Knoll seamount geometry atop the regional Hikurangi Plateau, and largely buried by the overlying pelagic/turbidite sequences. Black lines signify active thrust faults, dashed lines represent individual proto-thrusts. Location of seismic profile indicated in Fig. 1 (Main text).

Fig. DR2. Un-interpreted seismic section SO191-03. Profile location as indicated in Fig. 2 (main text).

Fig. DR3. Un-interpreted seismic profiles TAN1510-35 (A), TAN1510-33 (B), and TAN1213-2B (C). Locations of profiles as indicated in Fig. 3 (main text).

Fig. DR4. Un-interpreted version of Figure 4 from main text with: (A) un-interpreted bathymetric map of southern faults, and un-interpreted seismic profiles TAN1510-34 (B), TAN1510-33 (C), and TAN1213-2B (D). Locations of profiles as indicated in Fig. 4 (main text).

Fig. DR5. Time structure contour maps of horizons R5 (A) and R8 (B), highlighting the subsurface geometry of the accreting sedimentary sequence, and the geometry of Bennett Knoll seamount relative to the top of the surrounding Hikurangi Plateau.

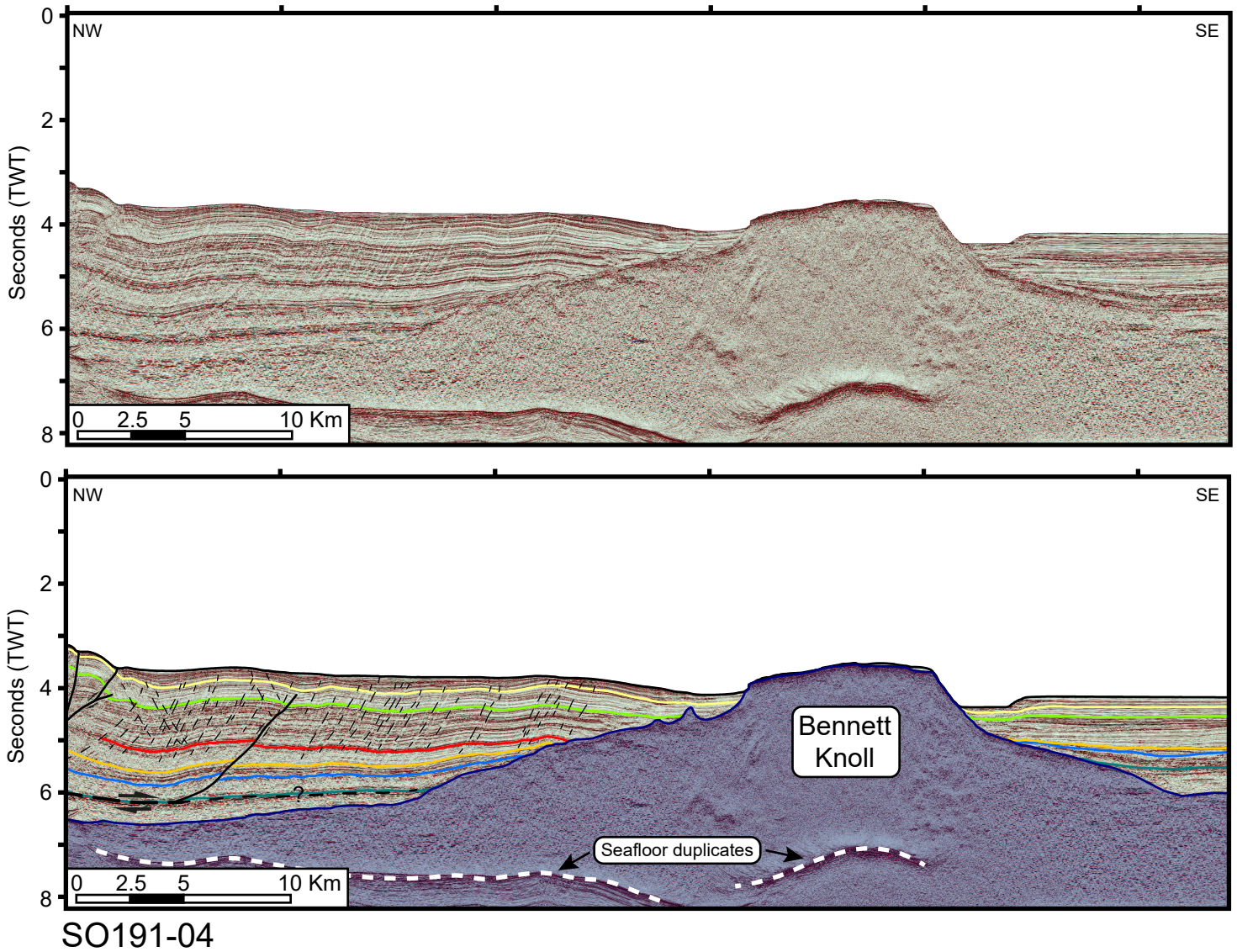

NW
SE
Seconds (TWT)
0
2
4
6
8
0 2.5 5 10 Km
NW
SE
Seconds (TWT)
0
2
4
6
8
Bennett Knoll
Seafloor duplicates
?
0 2.5 5 10 Km
SO191-04

Fig. DR1

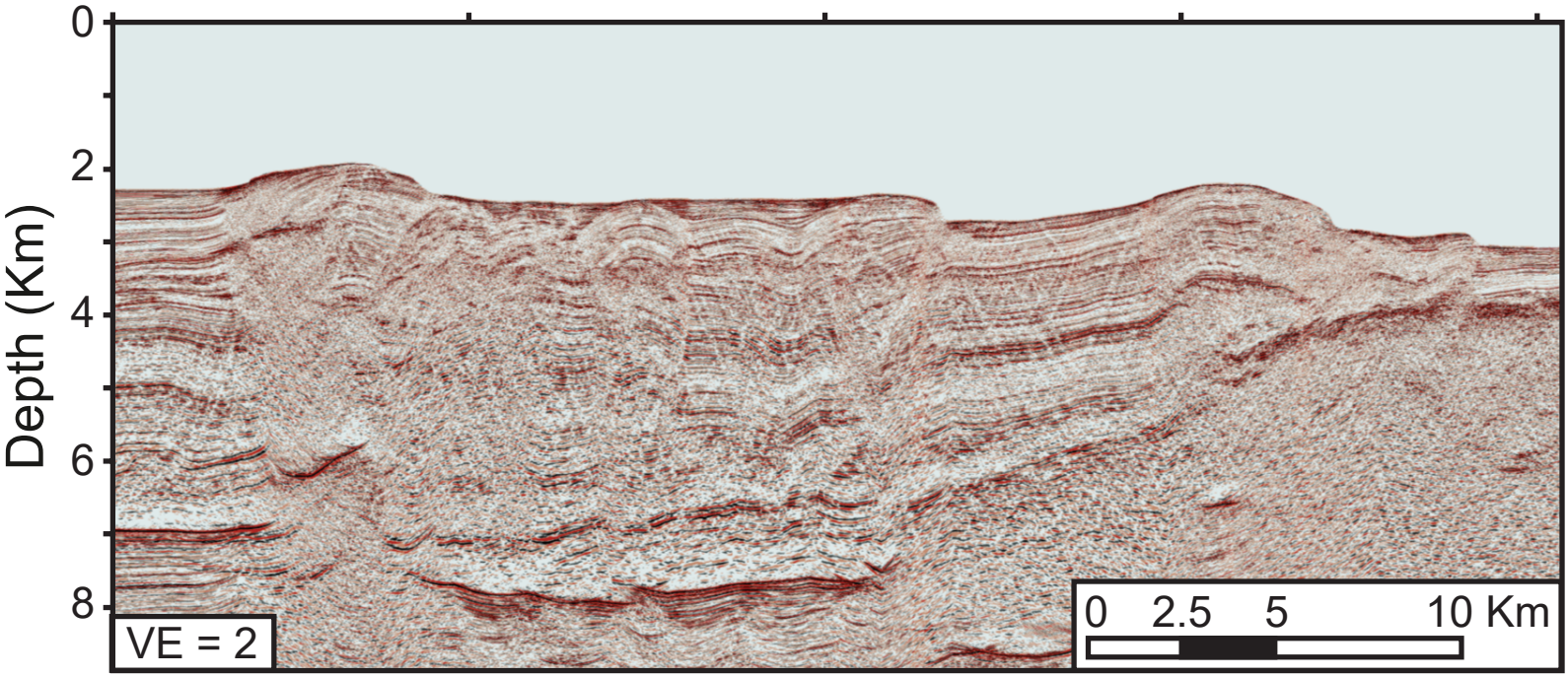


Fig. DR2

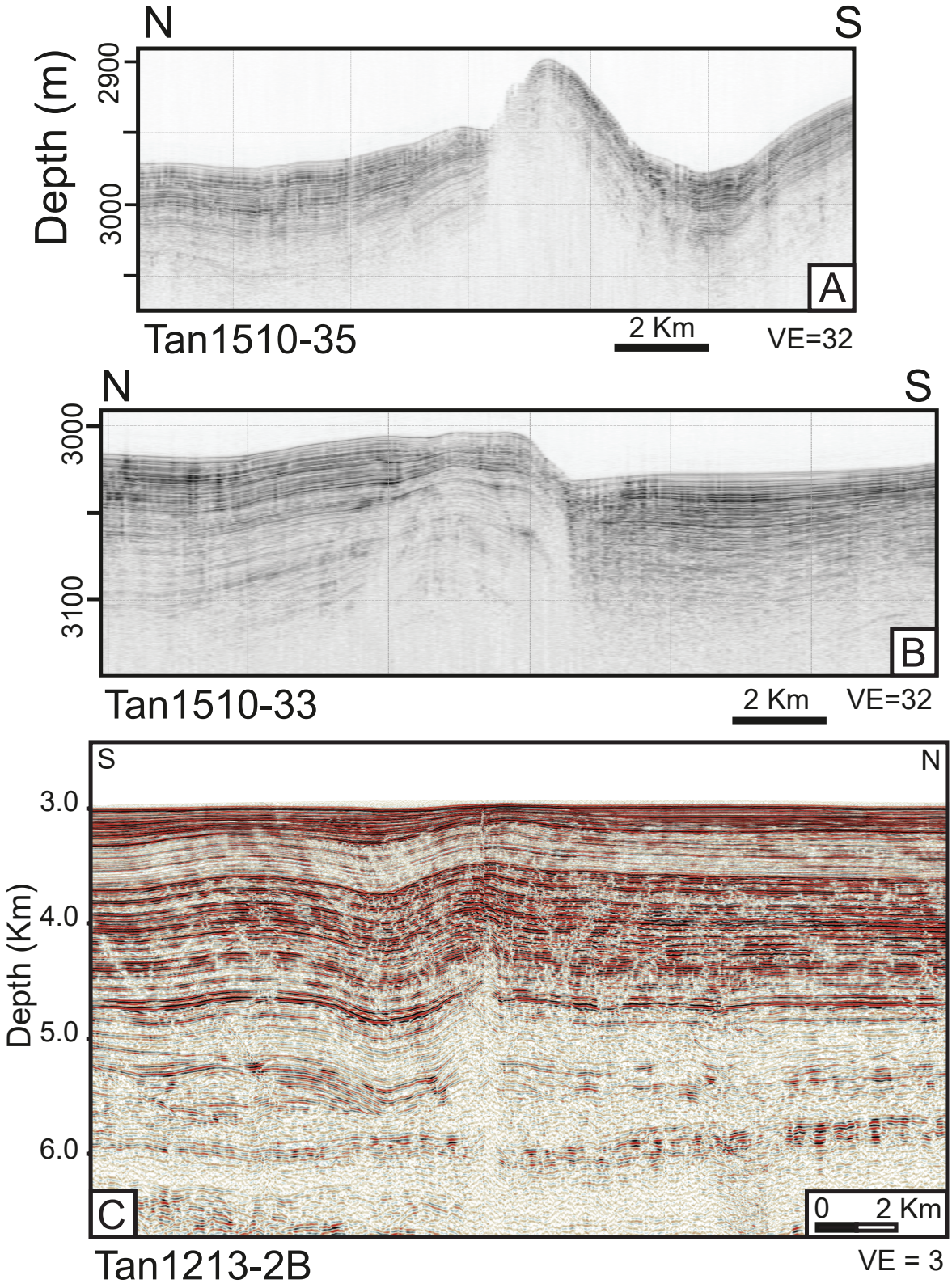

N
S
Depth (m)
2900
3000
A
Tan1510-35
2 Km
VE=32
N
S
3000
3100
B
Tan1510-33
2 Km
VE=32
S
N
3.0
4.0
5.0
6.0
Depth (Km)
C
0
2 Km
Tan1213-2B
VE = 3

Fig. DR3

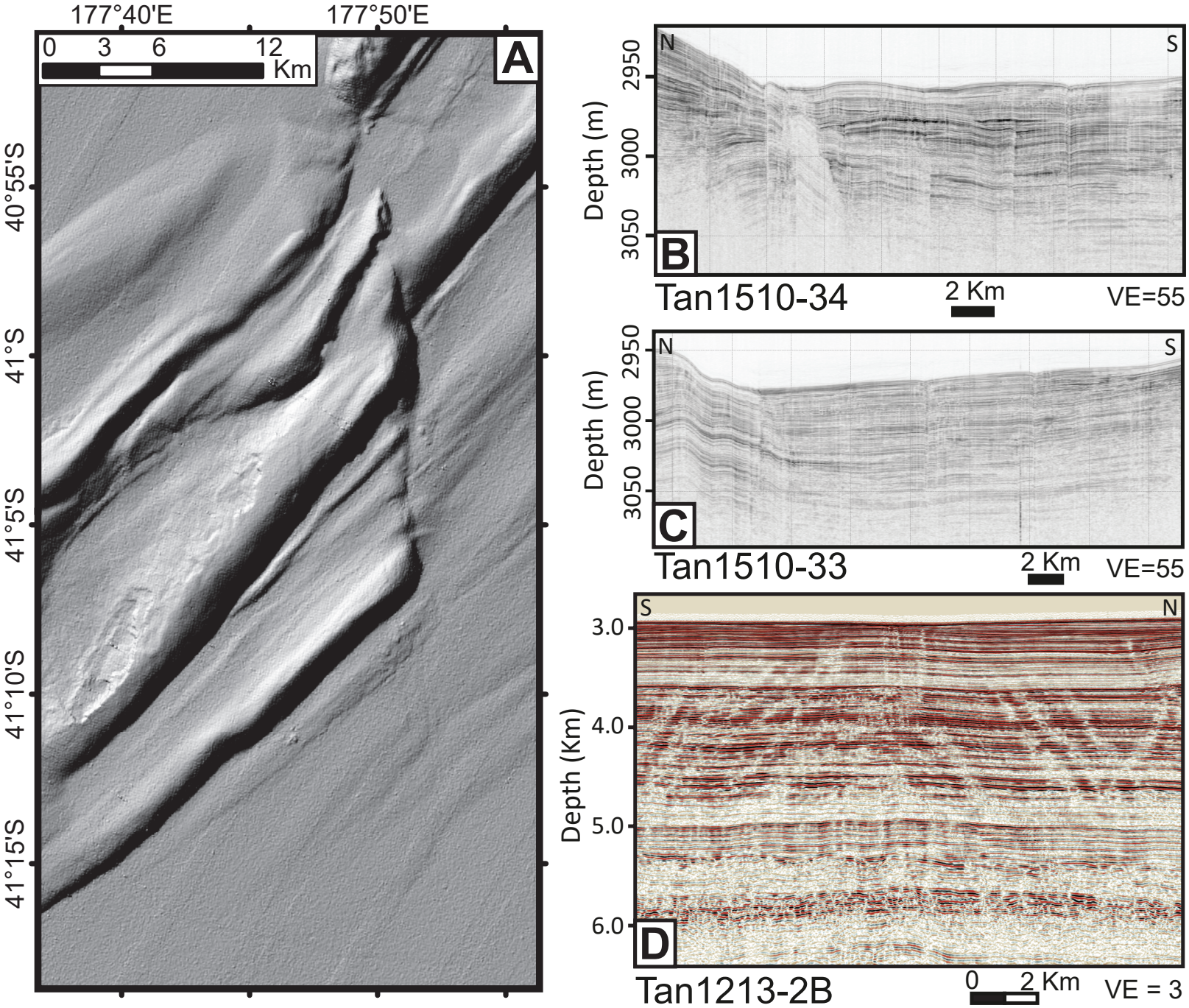
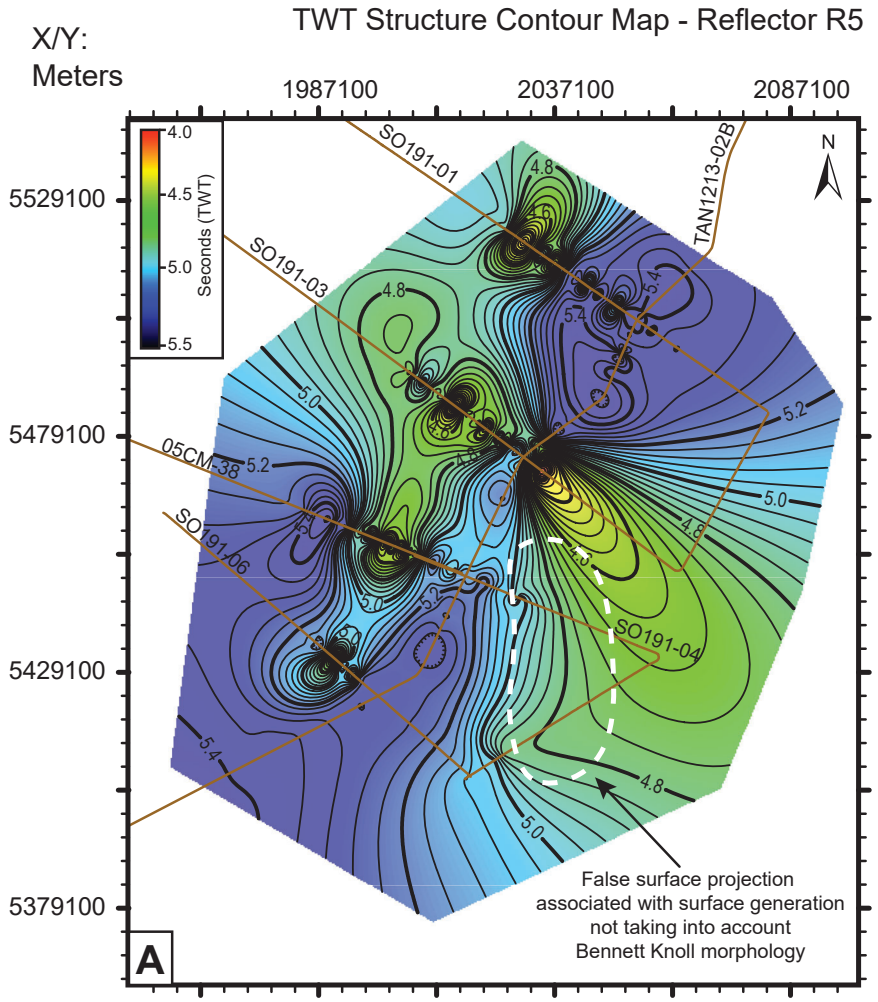

177°40'E
177°50'E
0 3 6 12
Km
A
40°55'S
41°S
41°5'S
41°10'S
41°15'S
N
S
Depth (m)
2950
3000
3050
B
Tan1510-34
2 Km
VE=55
N
S
Depth (m)
2950
3000
3050
C
Tan1510-33
2 Km
VE=55
S
N
Depth (Km)
3.0
4.0
5.0
6.0
D
Tan1213-2B
0 2 Km
VE = 3

Fig. DR4


TWT Structure Contour Map - Reflector R5
X/Y:
Meters
1987100
2037100
2087100
5529100
5479100
5429100
5379100
Seconds (TWT)
4.0
4.5
5.0
5.5
SO191-01
SO191-03
TAN1213-02B
05CM-38
SO191-06
SO191-04
N
False surface projection
associated with surface generation
not taking into account
Bennett Knoll morphology
A

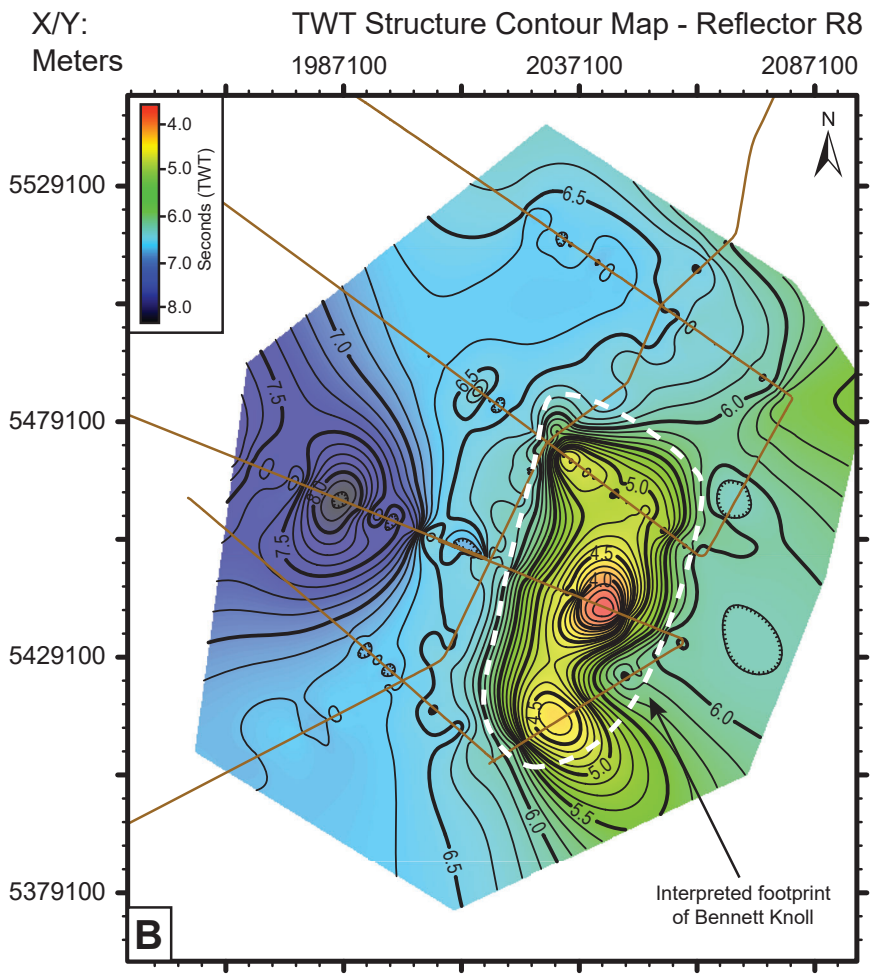

TWT Structure Contour Map - Reflector R8
X/Y:
Meters
1987100
2037100
2087100
5529100
5479100
5429100
5379100
Seconds (TWT)
4.0
5.0
6.0
7.0
8.0
N
Interpreted footprint
of Bennett Knoll
B

Fig. DR5