



Full wwPDB X-ray Structure Validation Report ⓘ

Feb 27, 2014 – 01:45 AM GMT

PDB ID : 1TXC
Title : Complex crystal structure of SPE16 with ANS
Authors : Wu, F.; Wei, Z.; Zhou, Z.; Gong, W.
Deposited on : 2004-07-02
Resolution : 2.30 Å(reported)

This is a full wwPDB validation report for a publicly released PDB entry.
We welcome your comments at validation@mail.wwpdb.org
A user guide is available at <http://wwpdb.org/ValidationPDFNotes.html>

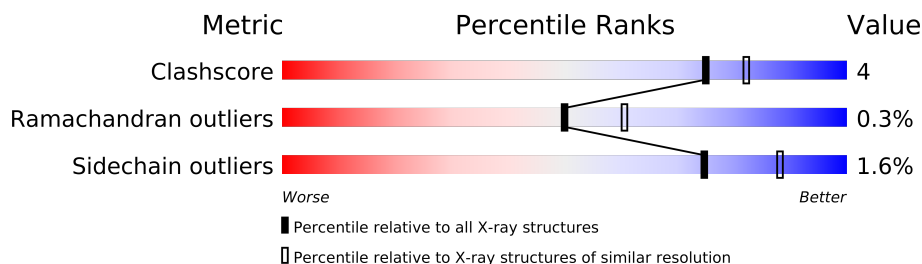
The following versions of software and data (see [references](#)) were used in the production of this report:

MolProbity : 4.02b-467
Mogul : 1.15 2013
Xtriage (Phenix) : **NOT EXECUTED**
EDS : **NOT EXECUTED**
Percentile statistics : 21963
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et. al. (1996)
Validation Pipeline (wwPDB-VP) : stable22683

1 Overall quality at a glance

The reported resolution of this entry is 2.30 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
Clashscore	79885	3679 (2.30-2.30)
Ramachandran outliers	78287	3642 (2.30-2.30)
Sidechain outliers	78261	3641 (2.30-2.30)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments on the lower bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria. The upper red bar (where present) indicates the fraction of residues that have poor fit to the electron density.

Note EDS was not executed.

Mol	Chain	Length	Quality of chain
1	A	157	
1	B	157	

2 Entry composition

There are 3 unique types of molecules in this entry. The entry contains 2537 atoms, of which 0 are hydrogen and 0 are deuterium.

In the tables below, the ZeroOcc column contains the number of atoms modelled with zero occupancy, the AltConf column contains the number of residues with at least one atom in alternate conformation and the Trace column contains the number of residues modelled with at most 2 atoms.

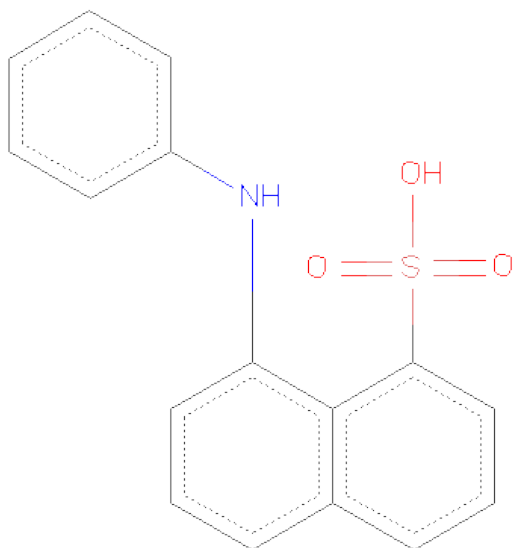
- Molecule 1 is a protein called pathogenesis-related class 10 protein SPE-16.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
1	A	157	Total	C	N	O	0	0	0
			1156	732	187	237			
1	B	157	Total	C	N	O	0	0	0
			1156	732	187	237			

There are 20 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	148	GLY	-	CLONING ARTIFACT	UNP Q6T6J0
A	149	TYR	-	CLONING ARTIFACT	UNP Q6T6J0
A	150	VAL	-	CLONING ARTIFACT	UNP Q6T6J0
A	151	LEU	-	CLONING ARTIFACT	UNP Q6T6J0
A	152	ALA	-	CLONING ARTIFACT	UNP Q6T6J0
A	153	ASN	-	CLONING ARTIFACT	UNP Q6T6J0
A	154	PRO	-	CLONING ARTIFACT	UNP Q6T6J0
A	155	ALA	-	CLONING ARTIFACT	UNP Q6T6J0
A	156	GLU	-	CLONING ARTIFACT	UNP Q6T6J0
A	157	TYR	-	CLONING ARTIFACT	UNP Q6T6J0
B	148	GLY	-	CLONING ARTIFACT	UNP Q6T6J0
B	149	TYR	-	CLONING ARTIFACT	UNP Q6T6J0
B	150	VAL	-	CLONING ARTIFACT	UNP Q6T6J0
B	151	LEU	-	CLONING ARTIFACT	UNP Q6T6J0
B	152	ALA	-	CLONING ARTIFACT	UNP Q6T6J0
B	153	ASN	-	CLONING ARTIFACT	UNP Q6T6J0
B	154	PRO	-	CLONING ARTIFACT	UNP Q6T6J0
B	155	ALA	-	CLONING ARTIFACT	UNP Q6T6J0
B	156	GLU	-	CLONING ARTIFACT	UNP Q6T6J0
B	157	TYR	-	CLONING ARTIFACT	UNP Q6T6J0

- Molecule 2 is 8-ANILINO-1-NAPHTHALENESULFONATE (three-letter code: 2AN) (formula: C₁₆H₁₃NO₃S).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
2	A	1	Total	C	N	O	S	0	0
			21	16	1	3	1		
2	A	1	Total	C	N	O	S	0	0
			21	16	1	3	1		
2	B	1	Total	C	N	O	S	0	0
			21	16	1	3	1		
2	B	1	Total	C	N	O	S	0	0
			21	16	1	3	1		
2	B	1	Total	C	N	O	S	0	0
			21	16	1	3	1		

- Molecule 3 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	62	Total	O	0	0
			62	62		
3	B	58	Total	O	0	0
			58	58		

3 Residue-property plots

These plots are drawn for all protein, RNA and DNA chains in the entry. The first graphic for a chain summarises the proportions of errors displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red dot above a residue indicates a poor fit to the electron density ($\text{RSRZ} > 2$). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

Note EDS was not executed.

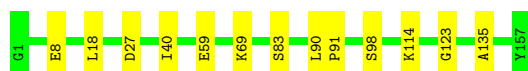
- Molecule 1: pathogenesis-related class 10 protein SPE-16

Chain A: 



- Molecule 1: pathogenesis-related class 10 protein SPE-16

Chain B: 



4 Data and refinement statistics

Xtriage (Phenix) and EDS were not executed - this section will therefore be incomplete.

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α , β , γ	57.90Å 65.09Å 78.10Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	28.99 – 2.30	Depositor
% Data completeness (in resolution range)	95.2 (28.99-2.30)	Depositor
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
Refinement program	CNS 1.0	Depositor
R, R_{free}	0.182 , 0.239	Depositor
Estimated twinning fraction	No twinning to report.	Xtriage
Total number of atoms	2537	wwPDB-VP
Average B, all atoms (Å ²)	22.0	wwPDB-VP

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: 2AN

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 5$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	$\# Z > 5$	RMSZ	$\# Z > 5$
1	A	0.35	0/1173	0.57	0/1582
1	B	0.33	0/1173	0.59	0/1582
All	All	0.34	0/2346	0.58	0/3164

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

5.2 Close contacts

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogens added by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, and the number in parentheses is this value normalized per 1000 atoms of the molecule in the chain. The Symm-Clashes column gives symmetry related clashes, in the same way as for the Clashes column.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	1156	0	1160	12	0
1	B	1156	0	1160	6	0
2	A	42	0	26	1	0
2	B	63	0	39	2	0
3	A	62	0	0	1	0
3	B	58	0	0	0	0
All	All	2537	0	2385	19	0

Clashscore is defined as the number of clashes calculated for the entry per 1000 atoms (including hydrogens) of the entry. The overall clashscore for this entry is 4.

All (19) close contacts within the same asymmetric unit are listed below.

Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:A:134:ASP:OD1	1:A:138:LYS:HE2	1.90	0.70
1:A:15:PRO:HG3	1:A:111:SER:HB3	1.78	0.66
1:A:58:ASN:OD1	1:A:63:THR:HG22	1.97	0.64
1:A:92:GLU:HG3	3:A:763:HOH:O	1.98	0.63
1:A:83:SER:HB3	1:A:98:SER:HA	1.80	0.62
2:A:715:2AN:H4	2:A:716:2AN:O3	2.02	0.59
1:B:8:GLU:HG2	1:B:114:LYS:HG2	1.86	0.56
1:A:104:VAL:HG23	1:A:112:ILE:HB	1.90	0.54
1:B:83:SER:HB3	1:B:98:SER:HA	1.90	0.52
1:A:104:VAL:CG2	1:A:112:ILE:HB	2.40	0.51
1:A:31:GLN:HE21	1:A:39:SER:HA	1.79	0.48
1:B:135:ALA:HB1	2:B:718:2AN:H14	1.94	0.48
1:A:69:LYS:O	1:A:82:TYR:HB2	2.14	0.47
1:B:90:LEU:HD12	1:B:91:PRO:HD2	1.97	0.46
1:A:46:ASN:HD22	1:A:46:ASN:C	2.20	0.45
1:B:27:ASP:HA	1:B:40:ILE:HD12	2.00	0.44
1:A:140:ALA:O	1:A:144:LYS:HG2	2.19	0.43
1:B:69:LYS:HE2	2:B:719:2AN:O3	2.21	0.41
1:A:106:GLY:N	1:A:111:SER:HA	2.36	0.41

There are no symmetry-related clashes.

5.3 Torsion angles

5.3.1 Protein backbone ⓘ

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution. The Analysed column shows the number of residues for which the backbone conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	155/157 (99%)	155 (100%)	0	0	100	100
1	B	155/157 (99%)	148 (96%)	6 (4%)	1 (1%)	33	39
All	All	310/314 (99%)	303 (98%)	6 (2%)	1 (0%)	50	60

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	123	GLY

5.3.2 Protein sidechains ⓘ

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution. The Analysed column shows the number of residues for which the sidechain conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	122/122 (100%)	120 (98%)	2 (2%)	75	88
1	B	122/122 (100%)	120 (98%)	2 (2%)	75	88
All	All	244/244 (100%)	240 (98%)	4 (2%)	75	88

All (4) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	18	LEU
1	A	46	ASN
1	B	18	LEU
1	B	59	GLU

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (4) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	31	GLN
1	A	46	ASN
1	B	58	ASN
1	B	77	ASN

5.3.3 RNA ⓘ

There are no RNA chains in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains ⓘ

There are no non-standard protein/DNA/RNA residues in this entry.

5.5 Carbohydrates ⓘ

There are no carbohydrates in this entry.

5.6 Ligand geometry ⓘ

5 ligands are modelled in this entry.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the chemical component dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# $ Z > 2$	Counts	RMSZ	# $ Z > 2$
2	2AN	A	715	-	23,23,23	4.69	17 (73%)	33,33,33	2.28	7 (21%)
2	2AN	A	716	-	23,23,23	4.70	17 (73%)	33,33,33	2.37	9 (27%)
2	2AN	B	717	-	23,23,23	4.78	16 (69%)	33,33,33	2.02	8 (24%)
2	2AN	B	718	-	23,23,23	4.48	17 (73%)	33,33,33	2.43	9 (27%)
2	2AN	B	719	-	23,23,23	4.71	17 (73%)	33,33,33	2.22	10 (30%)

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the chemical component dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	2AN	A	715	-	-	0/10/10/10	0/1/3/3
2	2AN	A	716	-	-	0/10/10/10	0/1/3/3
2	2AN	B	717	-	-	0/10/10/10	0/1/3/3
2	2AN	B	718	-	-	0/10/10/10	0/1/3/3
2	2AN	B	719	-	-	0/10/10/10	0/1/3/3

All (84) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	717	2AN	C9-S	-13.76	1.46	1.78
2	A	715	2AN	C9-S	-13.12	1.48	1.78
2	B	719	2AN	C9-S	-12.99	1.48	1.78
2	A	716	2AN	C9-S	-12.45	1.49	1.78
2	B	718	2AN	C9-S	-12.04	1.50	1.78
2	A	716	2AN	O2-S	7.74	1.81	1.43
2	B	717	2AN	O2-S	7.60	1.81	1.43
2	B	719	2AN	O2-S	7.60	1.81	1.43
2	A	715	2AN	O2-S	7.57	1.80	1.43

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	718	2AN	O2-S	7.56	1.80	1.43
2	A	716	2AN	C8-C9	6.29	1.45	1.37
2	B	719	2AN	C8-C9	6.28	1.45	1.37
2	B	717	2AN	O1-S	6.25	1.74	1.43
2	A	716	2AN	O1-S	6.23	1.74	1.43
2	B	718	2AN	O3-S	6.21	1.79	1.44
2	B	717	2AN	O3-S	6.12	1.78	1.44
2	A	715	2AN	O1-S	6.11	1.73	1.43
2	B	719	2AN	O3-S	6.10	1.78	1.44
2	B	718	2AN	O1-S	6.09	1.73	1.43
2	B	719	2AN	O1-S	6.05	1.73	1.43
2	A	715	2AN	O3-S	5.98	1.78	1.44
2	A	716	2AN	O3-S	5.97	1.77	1.44
2	B	717	2AN	C8-C9	5.76	1.44	1.37
2	A	715	2AN	C8-C9	5.66	1.44	1.37
2	B	718	2AN	C8-C9	5.62	1.44	1.37
2	A	716	2AN	C9-C10	5.30	1.51	1.43
2	A	715	2AN	C1-C10	4.98	1.49	1.42
2	A	715	2AN	C16-C11	4.93	1.47	1.39
2	A	716	2AN	C16-C11	4.83	1.47	1.39
2	B	717	2AN	C16-C11	4.76	1.47	1.39
2	B	719	2AN	C16-C11	4.71	1.47	1.39
2	A	715	2AN	C9-C10	4.69	1.50	1.43
2	B	717	2AN	C1-C10	4.65	1.48	1.42
2	A	716	2AN	C10-C5	4.63	1.52	1.42
2	B	718	2AN	C10-C5	4.58	1.52	1.42
2	A	716	2AN	C1-C10	4.58	1.48	1.42
2	B	719	2AN	C10-C5	4.57	1.52	1.42
2	B	719	2AN	C9-C10	4.54	1.50	1.43
2	B	718	2AN	C16-C11	4.52	1.46	1.39
2	B	717	2AN	C12-C11	4.50	1.46	1.39
2	B	719	2AN	C12-C11	4.48	1.46	1.39
2	A	715	2AN	C10-C5	4.47	1.52	1.42
2	B	718	2AN	C9-C10	4.41	1.50	1.43
2	A	716	2AN	C12-C11	4.32	1.46	1.39
2	B	717	2AN	C2-C1	4.17	1.48	1.38
2	B	718	2AN	C2-C1	4.16	1.48	1.38
2	B	718	2AN	C12-C11	4.16	1.46	1.39
2	A	716	2AN	C2-C1	4.16	1.48	1.38
2	B	719	2AN	C2-C1	4.10	1.48	1.38
2	B	717	2AN	C9-C10	4.10	1.49	1.43
2	A	715	2AN	C2-C1	3.97	1.47	1.38

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	717	2AN	C10-C5	3.92	1.51	1.42
2	B	719	2AN	C1-C10	3.91	1.47	1.42
2	A	715	2AN	C12-C11	3.86	1.45	1.39
2	B	717	2AN	C3-C4	3.69	1.45	1.36
2	B	718	2AN	C3-C4	3.40	1.44	1.36
2	A	715	2AN	C3-C4	3.33	1.44	1.36
2	A	715	2AN	C13-C12	3.25	1.46	1.39
2	A	716	2AN	C3-C4	3.23	1.44	1.36
2	B	719	2AN	C3-C4	3.22	1.44	1.36
2	B	719	2AN	C13-C12	3.22	1.46	1.39
2	B	717	2AN	C13-C12	3.13	1.46	1.39
2	A	716	2AN	C13-C12	2.87	1.45	1.39
2	B	718	2AN	C13-C12	2.80	1.45	1.39
2	B	718	2AN	C1-C10	2.77	1.46	1.42
2	B	717	2AN	C14-C13	2.76	1.45	1.37
2	B	719	2AN	C7-C6	2.69	1.42	1.36
2	B	719	2AN	C14-C13	2.66	1.45	1.37
2	A	716	2AN	C14-C13	2.64	1.45	1.37
2	B	717	2AN	C15-C16	2.61	1.45	1.39
2	A	716	2AN	C7-C6	2.57	1.42	1.36
2	B	719	2AN	C15-C16	2.55	1.44	1.39
2	B	718	2AN	C14-C13	2.49	1.45	1.37
2	A	715	2AN	C15-C16	2.48	1.44	1.39
2	B	718	2AN	C7-C6	2.44	1.42	1.36
2	A	715	2AN	C14-C13	2.41	1.44	1.37
2	B	717	2AN	C7-C6	2.40	1.42	1.36
2	B	718	2AN	C7-C8	2.37	1.44	1.39
2	B	718	2AN	C15-C16	2.31	1.44	1.39
2	A	715	2AN	C7-C6	2.31	1.41	1.36
2	B	719	2AN	C7-C8	2.30	1.44	1.39
2	A	716	2AN	C15-C16	2.21	1.44	1.39
2	A	715	2AN	C7-C8	2.13	1.43	1.39
2	A	716	2AN	C7-C8	2.08	1.43	1.39

All (43) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	A	716	2AN	C10-C9-S	8.24	130.75	121.05
2	A	715	2AN	C10-C9-S	8.02	130.49	121.05
2	B	718	2AN	C10-C9-S	7.62	130.02	121.05
2	B	719	2AN	C10-C9-S	7.28	129.63	121.05
2	B	717	2AN	C10-C9-S	6.67	128.91	121.05

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	B	718	2AN	O1-S-C9	6.15	113.17	106.20
2	A	715	2AN	O1-S-C9	4.78	111.61	106.20
2	B	719	2AN	O1-S-C9	4.40	111.18	106.20
2	A	716	2AN	C7-C8-C9	4.08	124.16	120.38
2	B	718	2AN	C7-C8-C9	4.07	124.15	120.38
2	B	717	2AN	O2-S-C9	4.06	110.80	106.20
2	B	717	2AN	O1-S-C9	4.02	110.76	106.20
2	A	715	2AN	C7-C8-C9	3.98	124.06	120.38
2	B	718	2AN	O2-S-C9	3.97	110.70	106.20
2	A	716	2AN	O2-S-C9	3.82	110.53	106.20
2	B	719	2AN	C7-C8-C9	3.74	123.84	120.38
2	A	716	2AN	O3-S-C9	3.72	110.62	106.09
2	B	718	2AN	C8-C9-C10	-3.63	115.99	121.45
2	B	719	2AN	O2-S-C9	3.61	110.29	106.20
2	A	716	2AN	O1-S-C9	3.48	110.14	106.20
2	B	717	2AN	C7-C8-C9	3.46	123.59	120.38
2	B	718	2AN	C11-N-C1	3.45	135.48	126.45
2	A	715	2AN	C8-C9-S	-3.24	112.60	117.34
2	A	716	2AN	C8-C9-C10	-3.22	116.62	121.45
2	A	716	2AN	C8-C9-S	-3.21	112.63	117.34
2	A	715	2AN	O2-S-C9	3.16	109.78	106.20
2	B	719	2AN	C11-N-C1	3.12	134.61	126.45
2	B	719	2AN	C8-C9-C10	-3.10	116.78	121.45
2	A	715	2AN	C8-C9-C10	-3.02	116.91	121.45
2	B	718	2AN	C9-C10-C5	2.90	118.81	116.01
2	B	717	2AN	C8-C9-C10	-2.65	117.47	121.45
2	A	716	2AN	C6-C5-C4	-2.61	117.17	123.22
2	A	715	2AN	C6-C5-C4	-2.59	117.22	123.22
2	B	719	2AN	C8-C9-S	-2.56	113.59	117.34
2	B	717	2AN	C8-C9-S	-2.54	113.62	117.34
2	B	718	2AN	C6-C5-C4	-2.45	117.55	123.22
2	B	719	2AN	C6-C5-C4	-2.42	117.62	123.22
2	A	716	2AN	C11-N-C1	2.41	132.75	126.45
2	B	719	2AN	C9-C10-C5	2.33	118.26	116.01
2	B	717	2AN	C6-C5-C4	-2.32	117.83	123.22
2	B	718	2AN	C8-C9-S	-2.28	113.99	117.34
2	B	717	2AN	C11-N-C1	2.19	132.19	126.45
2	B	719	2AN	O3-S-C9	2.09	108.64	106.09

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

5.7 Other polymers ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues

There are no chain breaks in this entry.

6 Fit of model and data ⓘ

6.1 Protein, DNA and RNA chains ⓘ

EDS was not executed - this section will therefore be empty.

6.2 Non-standard residues in protein, DNA, RNA chains ⓘ

EDS was not executed - this section will therefore be empty.

6.3 Carbohydrates ⓘ

EDS was not executed - this section will therefore be empty.

6.4 Ligands ⓘ

EDS was not executed - this section will therefore be empty.

6.5 Other polymers ⓘ

EDS was not executed - this section will therefore be empty.