



# Full wwPDB X-ray Structure Validation Report

Feb 26, 2014 – 04:06 PM GMT

PDB ID : 3CWJ  
Title : Crystal structure of hcv ns5b polymerase with a novel pyridazinone inhibitor  
Authors : Han, Q.; Showalter, R.E.; Zhao, Q.; Kissinger, C.R.  
Deposited on : 2008-04-21  
Resolution : 2.40 Å(reported)

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

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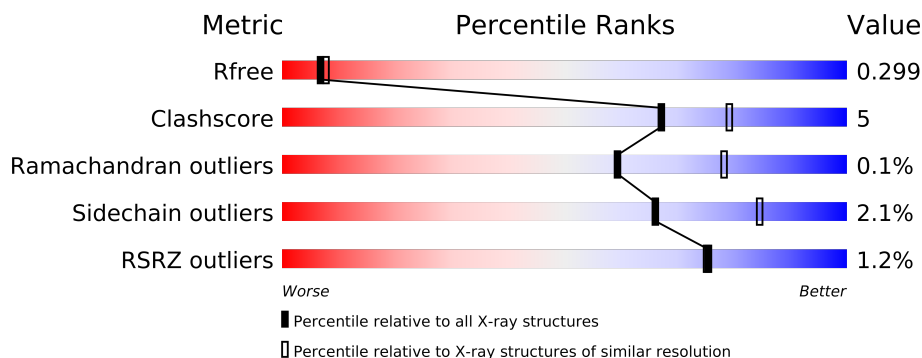
The following versions of software and data (see [references](#)) were used in the production of this report:

MolProbity : 4.02b-467  
Mogul : 1.15 2013  
Xtriage (Phenix) : dev-1323  
EDS : stable22639  
Percentile statistics : 21963  
Refmac : 5.8.0049  
CCP4 : 6.3.0 (Settle)  
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 2.40 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))
$R_{free}$	66092	2207 (2.40-2.40)
Clashscore	79885	2789 (2.40-2.40)
Ramachandran outliers	78287	2736 (2.40-2.40)
Sidechain outliers	78261	2737 (2.40-2.40)
RSRZ outliers	66119	2210 (2.40-2.40)

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  $\geq 3$ , 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.

Mol	Chain	Length	Quality of chain
1	A	578	
1	B	578	

## 2 Entry composition

There are 3 unique types of molecules in this entry. The entry contains 8947 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.

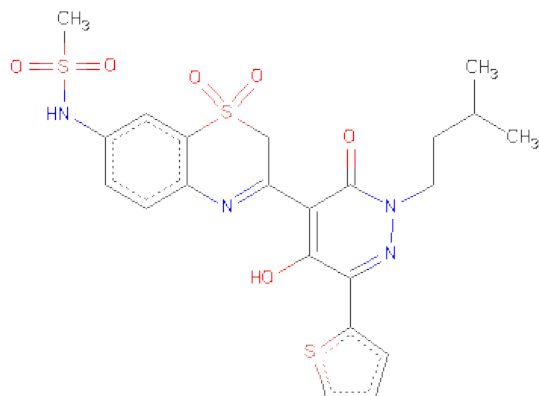
- Molecule 1 is a protein called RNA-DIRECTED RNA POLYMERASE.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	557	Total	C	N	O	S	0	0	0
			4334	2735	764	804	31			
1	B	557	Total	C	N	O	S	0	0	0
			4334	2735	764	804	31			

There are 16 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	571	LEU	-	INSERTION	UNP Q99AU2
A	572	GLU	-	INSERTION	UNP Q99AU2
A	573	HIS	-	INSERTION	UNP Q99AU2
A	574	HIS	-	INSERTION	UNP Q99AU2
A	575	HIS	-	INSERTION	UNP Q99AU2
A	576	HIS	-	INSERTION	UNP Q99AU2
A	577	HIS	-	INSERTION	UNP Q99AU2
A	578	HIS	-	INSERTION	UNP Q99AU2
B	571	LEU	-	INSERTION	UNP Q99AU2
B	572	GLU	-	INSERTION	UNP Q99AU2
B	573	HIS	-	INSERTION	UNP Q99AU2
B	574	HIS	-	INSERTION	UNP Q99AU2
B	575	HIS	-	INSERTION	UNP Q99AU2
B	576	HIS	-	INSERTION	UNP Q99AU2
B	577	HIS	-	INSERTION	UNP Q99AU2
B	578	HIS	-	INSERTION	UNP Q99AU2

- Molecule 2 is N-{3-[5-HYDROXY-2-(3-METHYLBUTYL)-3-OXO-6-THIOPHEN-2-YL-2,3-DIHYDROPYRIDAZIN-4-YL]-1,1-DIOXIDO-2H-1,4-BENZOTHAZIN-7-YL}METHANE SULFONAMIDE (three-letter code: 321) (formula: C<sub>22</sub>H<sub>24</sub>N<sub>4</sub>O<sub>6</sub>S<sub>3</sub>).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
2	A	1	Total	C	N	O	S	0	0
			35	22	4	6	3		
2	B	1	Total	C	N	O	S	0	0
			35	22	4	6	3		

- Molecule 3 is water.

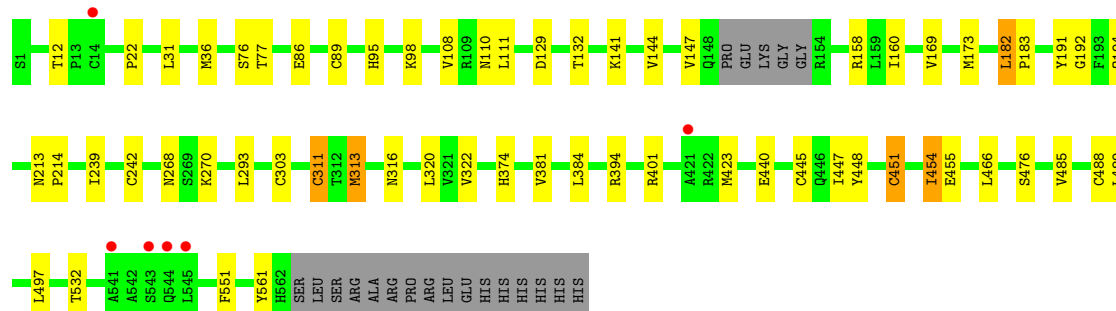
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	111	Total	O	0	0
			111	111		
3	B	98	Total	O	0	0
			98	98		

### 3 Residue-property plots i

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 ( $RSRZ > 2$ ). 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.

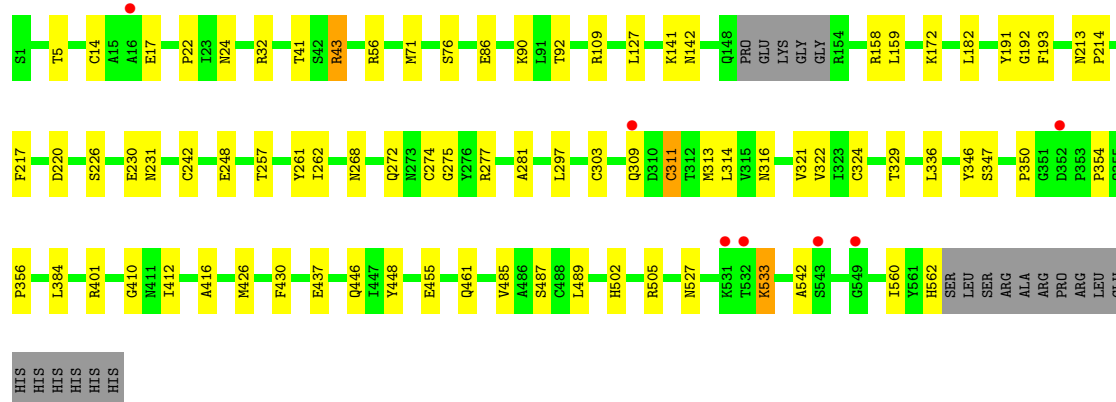
#### • Molecule 1: RNA-DIRECTED RNA POLYMERASE

Chain A: 



#### • Molecule 1: RNA-DIRECTED RNA POLYMERASE

Chain B: 



## 4 Data and refinement statistics

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	86.11Å 106.39Å 126.73Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	29.12 – 2.40 29.12 – 2.20	Depositor EDS
% Data completeness (in resolution range)	92.5 (29.12-2.40) 91.3 (29.12-2.20)	Depositor EDS
$R_{merge}$	0.12	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	1.28 (at 2.20Å)	Xtriage
Refinement program	REFMAC 5.2	Depositor
R, $R_{free}$	0.237 , 0.300 0.238 , 0.299	Depositor DCC
$R_{free}$ test set	2123 reflections (5.23%)	DCC
Wilson B-factor (Å <sup>2</sup> )	31.2	Xtriage
Anisotropy	0.585	Xtriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.35 , 34.4	EDS
Estimated twinning fraction	No twinning to report.	Xtriage
L-test for twinning	$\langle  L  \rangle = 0.46$ , $\langle L^2 \rangle = 0.29$	Xtriage
Outliers	4 of 54537 reflections (0.007%)	Xtriage
$F_o, F_c$ correlation	0.93	EDS
Total number of atoms	8947	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	45.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The analyses of the Patterson function reveals a significant off-origin peak that is 41.49 % of the origin peak, indicating pseudo translational symmetry. The chance of finding a peak of this or larger height randomly in a structure without pseudo translational symmetry is equal to 2.3435e-04. The detected translational NCS is most likely also responsible for the elevated intensity ratio.*

<sup>1</sup>Intensities estimated from amplitudes.

## 5 Model quality

### 5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section:  
321

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	0.41	0/4428	0.56	1/6009 (0.0%)
1	B	0.41	0/4428	0.56	0/6009
All	All	0.41	0/8856	0.56	1/12018 (0.0%)

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	31	LEU	CA-CB-CG	5.06	126.94	115.30

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	4334	0	4354	35	0
1	B	4334	0	4354	48	0
2	A	35	0	24	6	0
2	B	35	0	24	6	0
3	A	111	0	0	2	0
3	B	98	0	0	5	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
All	All	8947	0	8756	87	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 5.

All (87) close contacts within the same asymmetric unit are listed below.

Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:A:141:LYS:HE3	1:A:160:ILE:HB	1.50	0.92
1:B:448:TYR:HA	2:B:1002:321:H11	1.54	0.89
1:A:448:TYR:HA	2:A:1001:321:H11	1.59	0.84
1:B:41:THR:OG1	1:B:43:ARG:HB2	1.81	0.80
1:B:303:CYS:HG	1:B:311:CYS:HG	0.80	0.77
1:B:455:GLU:HB3	3:B:1039:HOH:O	1.87	0.74
1:B:22:PRO:HG2	1:B:401:ARG:HG3	1.72	0.71
1:A:12:THR:HG21	1:A:270:LYS:HD2	1.76	0.66
1:B:303:CYS:CB	1:B:311:CYS:HG	2.12	0.62
1:A:77:THR:O	1:B:24:ASN:HB2	1.99	0.61
1:B:172:LYS:HE3	1:B:560:ILE:HD13	1.82	0.61
1:B:92:THR:O	1:B:109:ARG:HD2	2.02	0.60
1:A:384:LEU:HD23	2:A:1001:321:H17B	1.85	0.57
1:B:336:LEU:HD12	1:B:356:PRO:HD3	1.86	0.57
1:B:230:GLU:HG3	1:B:262:ILE:HG23	1.87	0.56
1:B:314:LEU:HB3	1:B:321:VAL:HG13	1.89	0.55
1:B:562:HIS:CE1	3:B:1094:HOH:O	2.60	0.55
1:B:313:MET:HG2	1:B:322:VAL:HG22	1.91	0.53
1:B:217:PHE:CE1	1:B:322:VAL:HB	2.44	0.53
1:B:502:HIS:HA	1:B:505:ARG:HD2	1.91	0.52
1:A:182:LEU:HD21	1:A:293:LEU:HD11	1.92	0.51
1:A:313:MET:HG2	1:A:320:LEU:HD11	1.93	0.51
1:B:384:LEU:HD23	2:B:1002:321:H17B	1.92	0.50
1:A:86:GLU:HA	1:A:111:LEU:HD21	1.93	0.50
2:A:1001:321:N24	2:A:1001:321:O27	2.45	0.50
1:A:36:MET:O	1:A:147:VAL:HG13	2.12	0.50
1:A:451:CYS:HB3	1:A:561:TYR:HD1	1.78	0.49
1:B:336:LEU:HD13	1:B:354:PRO:HB2	1.95	0.49
1:A:313:MET:CG	1:A:322:VAL:HG22	2.43	0.48
2:B:1002:321:N24	2:B:1002:321:O27	2.47	0.48
1:B:32:ARG:HD3	3:B:1052:HOH:O	2.13	0.47
1:B:5:THR:O	1:B:275:GLY:HA3	2.14	0.47
1:B:426:MET:O	1:B:430:PHE:HB2	2.15	0.47
1:B:527:ASN:O	1:B:533:LYS:HE2	2.15	0.47
1:B:41:THR:HG1	1:B:43:ARG:HB2	1.79	0.47

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Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:A:191:TYR:O	1:A:194:GLN:NE2	2.43	0.47
1:B:257:THR:HA	1:B:261:TYR:HB2	1.96	0.46
1:B:412:ILE:O	1:B:416:ALA:HB2	2.16	0.46
1:A:466:LEU:HD22	1:A:551:PHE:HE2	1.80	0.46
1:A:374:HIS:HD2	1:A:476:SER:HB2	1.80	0.46
1:A:22:PRO:HG2	1:A:401:ARG:HG3	1.98	0.46
1:B:220:ASP:O	1:B:350:PRO:HA	2.15	0.46
1:A:89:CYS:HB3	1:A:108:VAL:O	2.15	0.46
2:B:1002:321:H4	2:B:1002:321:O32	2.16	0.46
1:A:76:SER:HA	1:A:242:CYS:O	2.17	0.45
1:A:129:ASP:OD2	1:A:132:THR:OG1	2.25	0.45
1:B:268:ASN:HB3	1:B:274:CYS:SG	2.57	0.45
1:A:485:VAL:O	1:A:489:LEU:HG	2.17	0.45
1:B:309:GLN:O	1:B:324:CYS:HB2	2.17	0.45
1:B:437:GLU:HG3	3:B:1026:HOH:O	2.17	0.44
1:A:303:CYS:SG	1:A:311:CYS:SG	3.08	0.44
1:A:95:HIS:CD2	1:A:95:HIS:H	2.35	0.44
1:A:455:GLU:HB3	3:A:1108:HOH:O	2.17	0.43
1:B:446:GLN:O	2:B:1002:321:H1	2.18	0.43
1:A:239:ILE:O	1:A:242:CYS:HB2	2.19	0.43
1:B:485:VAL:O	1:B:489:LEU:HG	2.18	0.43
1:B:141:LYS:CE	1:B:158:ARG:HH21	2.31	0.43
1:B:346:TYR:O	1:B:347:SER:HB3	2.18	0.43
1:B:172:LYS:NZ	3:B:1006:HOH:O	2.42	0.43
1:B:127:LEU:HD21	1:B:248:GLU:HG2	2.00	0.43
1:B:182:LEU:HD23	1:B:182:LEU:C	2.38	0.43
1:B:76:SER:HA	1:B:242:CYS:O	2.19	0.43
1:B:213:ASN:HA	1:B:214:PRO:HD3	1.88	0.42
1:A:182:LEU:HD11	1:A:239:ILE:HG22	2.00	0.42
1:A:144:VAL:HB	1:A:394:ARG:HG2	2.01	0.42
1:B:277:ARG:CZ	1:B:281:ALA:HB2	2.48	0.42
1:B:192:GLY:HA3	1:B:316:ASN:OD1	2.19	0.42
1:A:192:GLY:HA3	1:A:316:ASN:ND2	2.34	0.42
2:A:1001:321:H11A	2:A:1001:321:O32	2.20	0.42
1:B:86:GLU:O	1:B:90:LYS:HG2	2.20	0.42
1:B:71:MET:SD	1:B:297:LEU:HB2	2.60	0.42
1:A:169:VAL:O	1:A:173:MET:HG3	2.20	0.41
1:B:410:GLY:C	2:B:1002:321:H6	2.40	0.41
1:A:423:MET:HE1	1:A:497:LEU:HB3	2.03	0.41
2:A:1001:321:C11	2:A:1001:321:O32	2.68	0.41
1:B:268:ASN:ND2	1:B:272:GLN:HB2	2.36	0.41
1:B:17:GLU:HG2	1:B:142:ASN:HD21	1.86	0.41

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Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:B:191:TYR:CZ	1:B:193:PHE:HB2	2.56	0.41
1:A:141:LYS:HD2	1:A:158:ARG:HB2	2.03	0.41
1:A:374:HIS:CD2	1:A:476:SER:HB2	2.56	0.41
1:A:445:CYS:SG	1:A:454:ILE:HG13	2.61	0.41
1:A:213:ASN:HA	1:A:214:PRO:HD3	1.75	0.41
1:B:461:GLN:HB3	1:B:542:ALA:HA	2.02	0.41
1:A:182:LEU:N	1:A:183:PRO:CD	2.85	0.40
1:A:268:ASN:HB2	3:A:1074:HOH:O	2.21	0.40
1:A:447:ILE:HA	2:A:1001:321:H4	2.03	0.40
1:B:217:PHE:CD1	1:B:336:LEU:HD21	2.57	0.40

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	553/578 (96%)	533 (96%)	20 (4%)	0	100	100
1	B	553/578 (96%)	531 (96%)	21 (4%)	1 (0%)	56	74
All	All	1106/1156 (96%)	1064 (96%)	41 (4%)	1 (0%)	59	78

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	14	CYS

### 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	475/493 (96%)	464 (98%)	11 (2%)	63	82
1	B	475/493 (96%)	466 (98%)	9 (2%)	69	87
All	All	950/986 (96%)	930 (98%)	20 (2%)	66	84

All (20) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	98	LYS
1	A	110	ASN
1	A	182	LEU
1	A	311	CYS
1	A	313	MET
1	A	381	VAL
1	A	440	GLU
1	A	451	CYS
1	A	454	ILE
1	A	488	CYS
1	A	532	THR
1	B	43	ARG
1	B	56	ARG
1	B	159	LEU
1	B	226	SER
1	B	231	ASN
1	B	311	CYS
1	B	329	THR
1	B	487	SER
1	B	533	LYS

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (7) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	117	ASN
1	A	374	HIS
1	A	406	ASN
1	B	117	ASN
1	B	142	ASN
1	B	231	ASN
1	B	446	GLN

### 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 ⓘ

2 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	321	A	1001	-	38,38,38	3.25	10 (26%)	55,58,58	2.28	12 (21%)
2	321	B	1002	-	38,38,38	3.10	9 (23%)	55,58,58	2.34	14 (25%)

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	321	A	1001	-	-	0/13/33/33	0/2/4/4
2	321	B	1002	-	-	1/13/33/33	0/2/4/4

All (19) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	A	1001	321	C11-C14	-15.67	1.35	1.50

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	1002	321	C11-C14	-14.90	1.35	1.50
2	A	1001	321	S35-N26	6.43	1.72	1.63
2	B	1002	321	S35-N26	6.42	1.72	1.63
2	B	1002	321	C15-C12	5.41	1.49	1.40
2	A	1001	321	C15-C12	5.13	1.49	1.40
2	A	1001	321	C11-S34	-4.83	1.72	1.78
2	B	1002	321	C11-S34	-4.01	1.73	1.78
2	A	1001	321	C12-N23	-3.56	1.30	1.33
2	B	1002	321	C16-C13	3.26	1.52	1.43
2	B	1002	321	C12-N23	-3.18	1.30	1.33
2	A	1001	321	C16-C13	2.95	1.51	1.43
2	B	1002	321	C13-C15	-2.95	1.35	1.41
2	A	1001	321	C13-C15	-2.92	1.35	1.41
2	A	1001	321	C14-N24	2.87	1.38	1.31
2	B	1002	321	C14-N24	2.80	1.37	1.31
2	A	1001	321	C12-C10	-2.23	1.47	1.50
2	B	1002	321	C12-C10	-2.20	1.47	1.50
2	A	1001	321	C13-C14	-2.18	1.45	1.50

All (26) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	B	1002	321	C14-C11-S34	8.89	121.68	110.06
2	A	1001	321	C14-C11-S34	8.18	120.75	110.06
2	A	1001	321	C10-C12-N23	6.36	118.43	112.91
2	B	1002	321	C10-C12-N23	6.26	118.33	112.91
2	A	1001	321	C16-C13-C14	-5.33	117.58	124.05
2	A	1001	321	C15-C12-C10	-4.90	118.01	122.91
2	B	1002	321	C19-S35-N26	-4.65	101.03	106.80
2	B	1002	321	O29-S34-O28	4.50	121.50	117.64
2	B	1002	321	C16-C13-C14	-4.41	118.70	124.05
2	B	1002	321	C7-N24-C14	4.22	126.55	117.58
2	B	1002	321	C15-C12-C10	-4.08	118.83	122.91
2	A	1001	321	C7-N24-C14	3.95	125.97	117.58
2	A	1001	321	C16-N25-N23	-3.85	123.57	126.54
2	A	1001	321	O28-S34-C11	-3.80	106.22	109.35
2	B	1002	321	C16-N25-N23	-3.70	123.69	126.54
2	B	1002	321	O28-S34-C11	-3.27	106.67	109.35
2	A	1001	321	O29-S34-O28	3.16	120.35	117.64
2	A	1001	321	C19-S35-N26	-3.12	102.93	106.80
2	A	1001	321	C11-S34-C9	2.93	106.07	102.33
2	B	1002	321	C11-S34-C9	2.72	105.79	102.33

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	B	1002	321	C15-C13-C14	2.71	125.52	119.51
2	B	1002	321	O28-S34-C9	-2.41	106.43	108.51
2	A	1001	321	C15-C13-C14	2.24	124.47	119.51
2	A	1001	321	O30-S35-C19	-2.17	104.31	108.44
2	B	1002	321	C3-C8-N26	-2.16	115.28	120.07
2	B	1002	321	O31-S35-N26	2.09	111.61	107.15

There are no chirality outliers.

All (1) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	B	1002	321	C15-C13-C14-N24

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 ⓘ

In the following table, the column labelled ‘#RSRZ > 2’ contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95<sup>th</sup> percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled ‘Q < 0.9’ lists the number of (and percentage) of residues with an average occupancy less than 0.9.

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å <sup>2</sup> )	Q<0.9
1	A	557/578 (96%)	-0.24	6 (1%) 77 77	30, 44, 61, 81	0
1	B	557/578 (96%)	-0.25	7 (1%) 74 73	29, 44, 62, 90	0
All	All	1114/1156 (96%)	-0.24	13 (1%) 75 75	29, 44, 62, 90	0

All (13) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	532	THR	4.1
1	B	543	SER	3.4
1	A	14	CYS	3.0
1	B	531	LYS	2.6
1	B	16	ALA	2.5
1	A	544	GLN	2.4
1	A	421	ALA	2.3
1	B	352	ASP	2.3
1	A	543	SER	2.2
1	A	545	LEU	2.2
1	B	309	GLN	2.2
1	B	549	GLY	2.1
1	A	541	ALA	2.1

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

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

### 6.3 Carbohydrates ⓘ

There are no carbohydrates in this entry.

## 6.4 Ligands

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. LLDF column lists the quality of electron density of the group with respect to its neighbouring residues in protein, DNA or RNA chains. The B-factors column lists the minimum, median, 95<sup>th</sup> percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSR	LLDF	B-factors(Å <sup>2</sup> )	Q<0.9
2	321	B	1002	35/35	0.16	1.23	45,50,56,56	0
2	321	A	1001	35/35	0.14	0.34	52,54,56,58	0

## 6.5 Other polymers

There are no such residues in this entry.