



# Full wwPDB X-ray Structure Validation Report ⓘ

Jan 31, 2016 – 09:07 PM GMT

PDB ID : 1NKH  
Title : Crystal structure of Lactose synthase complex with UDP and Manganese  
Authors : Ramakrishnan, B.; Qasba, P.K.  
Deposited on : 2003-01-03  
Resolution : 2.00 Å(reported)

This is a Full wwPDB X-ray Structure 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/validation/2016/XrayValidationReportHelp>  
with specific help available everywhere you see the ⓘ symbol.

---

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

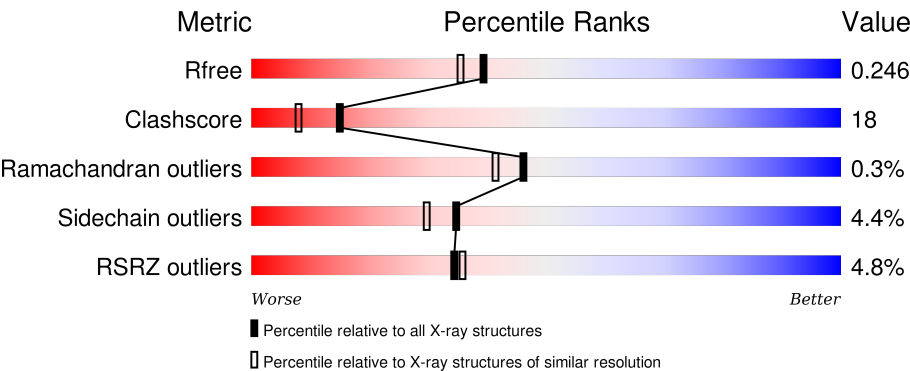
MolProbity : 4.02b-467  
Mogul : 1.7 (RC4), CSD as536be (2015)  
Xtriage (Phenix) : 1.9-1692  
EDS : rb-20026688  
Percentile statistics : 20151230.v01 (using entries in the PDB archive December 30th 2015)  
Refmac : 5.8.0135  
CCP4 : 6.5.0  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : trunk26865

# 1 Overall quality at a glance i

The following experimental techniques were used to determine the structure:  
*X-RAY DIFFRACTION*

The reported resolution of this entry is 2.00 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 <sub>free</sub>	91344	6249 (2.00-2.00)
Clashscore	102246	7340 (2.00-2.00)
Ramachandran outliers	100387	7248 (2.00-2.00)
Sidechain outliers	100360	7247 (2.00-2.00)
RSRZ outliers	91569	6262 (2.00-2.00)

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. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions  $\leq 5\%$ . The upper red bar (where present) indicates the fraction of residues that have poor fit to the electron density. The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	123	<div><div>7%</div><div><div></div><div>78%</div><div>20%</div><div>•</div></div></div>
1	C	123	<div><div>7%</div><div><div></div><div>74%</div><div>26%</div><div></div></div></div>
2	B	286	<div><div>4%</div><div><div></div><div>70%</div><div>22%</div><div>•</div><div>5%</div></div></div>
2	D	286	<div><div>4%</div><div><div></div><div>67%</div><div>24%</div><div>•</div><div>5%</div></div></div>

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard

residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
5	SO4	D	818	-	-	-	X
6	UDP	D	812	-	-	-	X
7	PG4	B	815	-	-	-	X
7	PG4	B	817	-	-	X	X
7	PG4	D	816	-	-	X	X

## 2 Entry composition

There are 8 unique types of molecules in this entry. The entry contains 7183 atoms, of which 0 are hydrogens and 0 are deuteriums.

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 ALPHA-LACTALBUMIN.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	123	Total	C	N	O	S	0	0	0
			980	620	156	195	9			
1	C	123	Total	C	N	O	S	0	0	0
			980	620	156	195	9			

- Molecule 2 is a protein called BETA-1,4-GALACTOSYLTRANSFERASE.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	B	272	Total	C	N	O	S	0	0	0
			2218	1424	382	398	14			
2	D	272	Total	C	N	O	S	0	0	0
			2218	1424	382	398	14			

There are 26 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
B	117	ALA	-	SEE REMARK 999	UNP P08037
B	118	SER	-	SEE REMARK 999	UNP P08037
B	119	MET	-	SEE REMARK 999	UNP P08037
B	120	THR	-	SEE REMARK 999	UNP P08037
B	121	GLY	-	SEE REMARK 999	UNP P08037
B	122	GLY	-	SEE REMARK 999	UNP P08037
B	123	GLN	-	SEE REMARK 999	UNP P08037
B	124	GLN	-	SEE REMARK 999	UNP P08037
B	125	MET	-	SEE REMARK 999	UNP P08037
B	126	GLY	-	SEE REMARK 999	UNP P08037
B	127	ARG	-	SEE REMARK 999	UNP P08037
B	128	GLY	-	SEE REMARK 999	UNP P08037
B	129	SER	-	SEE REMARK 999	UNP P08037
D	117	ALA	-	SEE REMARK 999	UNP P08037
D	118	SER	-	SEE REMARK 999	UNP P08037
D	119	MET	-	SEE REMARK 999	UNP P08037

*Continued on next page...*

*Continued from previous page...*

Chain	Residue	Modelled	Actual	Comment	Reference
D	120	THR	-	SEE REMARK 999	UNP P08037
D	121	GLY	-	SEE REMARK 999	UNP P08037
D	122	GLY	-	SEE REMARK 999	UNP P08037
D	123	GLN	-	SEE REMARK 999	UNP P08037
D	124	GLN	-	SEE REMARK 999	UNP P08037
D	125	MET	-	SEE REMARK 999	UNP P08037
D	126	GLY	-	SEE REMARK 999	UNP P08037
D	127	ARG	-	SEE REMARK 999	UNP P08037
D	128	GLY	-	SEE REMARK 999	UNP P08037
D	129	SER	-	SEE REMARK 999	UNP P08037

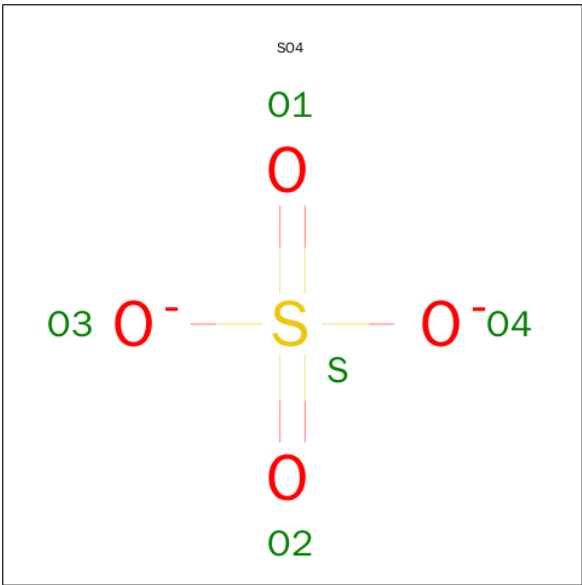
- Molecule 3 is CALCIUM ION (three-letter code: CA) (formula: Ca).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	A	1	Total Ca 1 1	0	0
3	C	1	Total Ca 1 1	0	0

- Molecule 4 is MANGANESE (II) ION (three-letter code: MN) (formula: Mn).

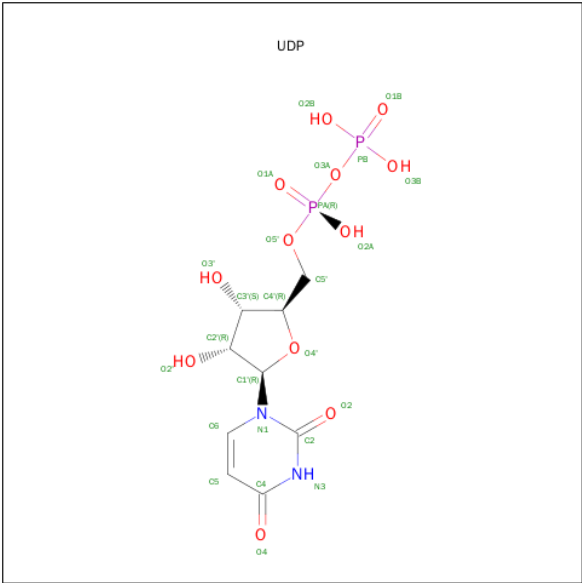
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	B	1	Total Mn 1 1	0	0
4	D	1	Total Mn 1 1	0	0

- Molecule 5 is SULFATE ION (three-letter code: SO4) (formula: O<sub>4</sub>S).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
5	D	1	Total	O	S	0	0
			5	4	1		
5	A	1	Total	O	S	0	0
			5	4	1		

- Molecule 6 is URIDINE-5'-DIPHOSPHATE (three-letter code: UDP) (formula: C<sub>9</sub>H<sub>14</sub>N<sub>2</sub>O<sub>12</sub>P<sub>2</sub>).



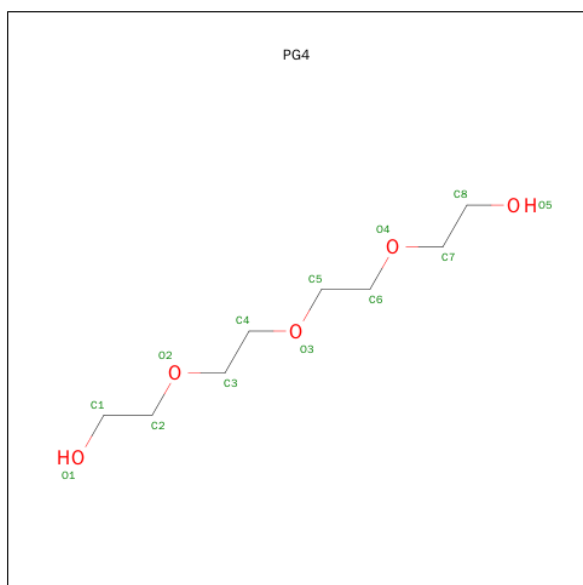
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
6	B	1	Total	C	N	O	P	0	0
			25	9	2	12	2		
6	D	1	Total	C	N	O	P	0	0
			25	9	2	12	2		

Continued on next page...

*Continued from previous page...*

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
6	B	1	Total	C	N	O	P	0	0
			25	9	2	12	2		
6	D	1	Total	C	N	O	P	0	0
			25	9	2	12	2		

- Molecule 7 is TETRAETHYLENE GLYCOL (three-letter code: PG4) (formula:  $C_8H_{18}O_5$ ).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
7	A	1	Total	C	O	0	0
			13	8	5		
7	C	1	Total	C	O	0	0
			13	8	5		
7	B	1	Total	C	O	0	0
			13	8	5		
7	D	1	Total	C	O	0	0
			13	8	5		
7	B	1	Total	C	O	0	0
			13	8	5		

- Molecule 8 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
8	A	110	Total	O	0	0
			110	110		
8	B	204	Total	O	0	0
			204	204		

*Continued on next page...*

*Continued from previous page...*

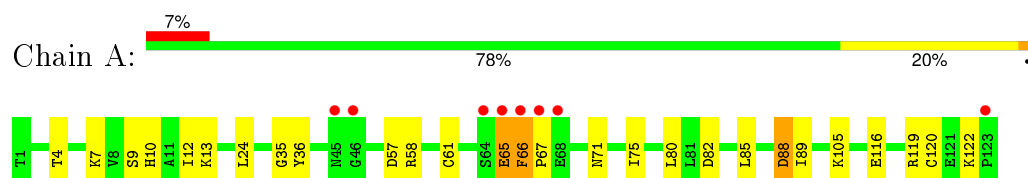
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
8	C	111	Total 111	O 111	0	0
8	D	183	Total 183	O 183	0	0



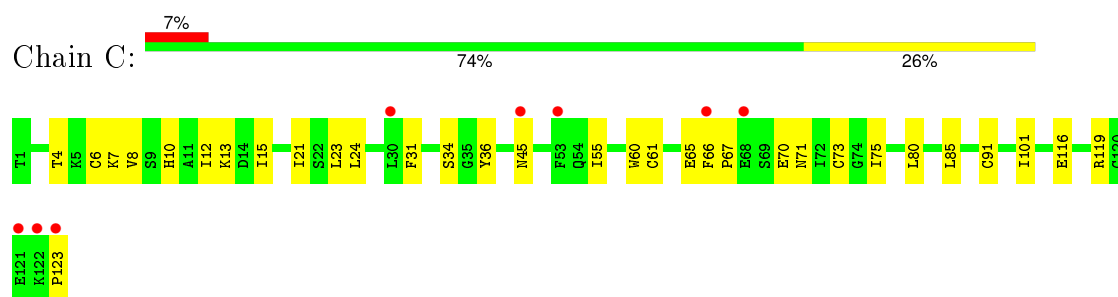
### 3 Residue-property plots [i](#)

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.

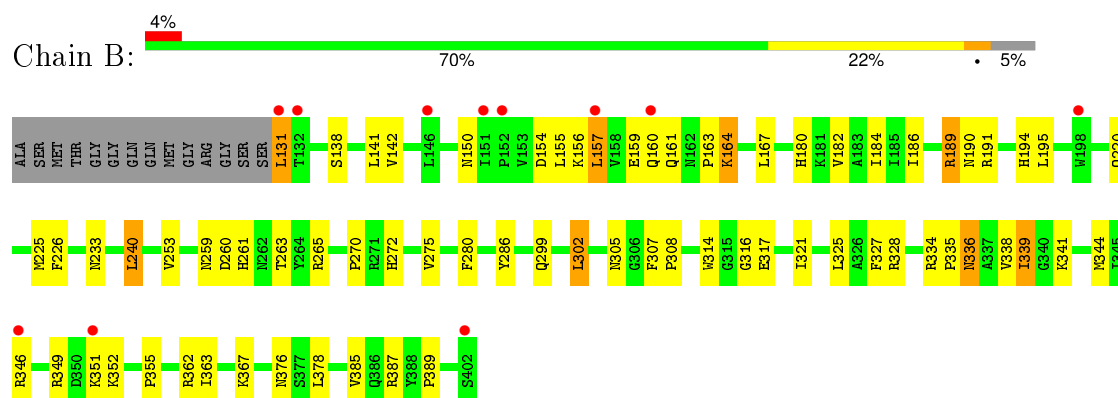
- Molecule 1: ALPHA-LACTALBUMIN



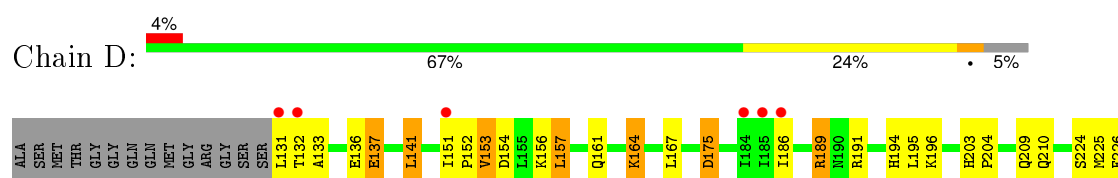
- Molecule 1: ALPHA-LACTALBUMIN

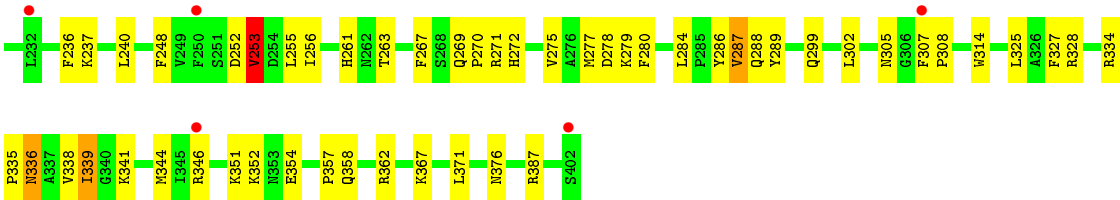


- Molecule 2: BETA-1,4-GALACTOSYLTRANSFERASE



- Molecule 2: BETA-1,4-GALACTOSYLTRANSFERASE





## 4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	55.47Å 99.14Å 102.26Å 90.00° 104.14° 90.00°	Depositor
Resolution (Å)	24.71 – 2.00 24.71 – 2.00	Depositor EDS
% Data completeness (in resolution range)	79.5 (24.71-2.00) 79.6 (24.71-2.00)	Depositor EDS
$R_{merge}$	(Not available)	Depositor
$R_{sym}$	0.08	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	1.94 (at 2.01Å)	Xtriage
Refinement program	CNS 1.0	Depositor
R, $R_{free}$	0.196 , 0.251 0.193 , 0.246	Depositor DCC
$R_{free}$ test set	5840 reflections (10.16%)	DCC
Wilson B-factor (Å <sup>2</sup> )	29.8	Xtriage
Anisotropy	0.528	Xtriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.31 , 47.3	EDS
Estimated twinning fraction	0.033 for h,-k,-h-l	Xtriage
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.48$ , $\langle L^2 \rangle = 0.31$	Xtriage
Outliers	0 of 57466 reflections	Xtriage
$F_o, F_c$ correlation	0.96	EDS
Total number of atoms	7183	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	40.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.60% of the height of the origin peak. No significant pseudotranslation is detected.*

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

<sup>2</sup>Theoretical values of  $\langle |L| \rangle$ ,  $\langle L^2 \rangle$  for acentric reflections are 0.5, 0.375 respectively for untwinned datasets, and 0.333, 0.2 for perfectly twinned datasets.

## 5 Model quality [i](#)

### 5.1 Standard geometry [i](#)

Bond lengths and bond angles in the following residue types are not validated in this section: PG4, UDP, MN, CA, SO4

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	0.48	0/1001	0.74	0/1350
1	C	0.53	0/1001	0.75	0/1350
2	B	0.52	0/2278	0.73	0/3085
2	D	0.51	0/2278	0.78	3/3085 (0.1%)
All	All	0.51	0/6558	0.75	3/8870 (0.0%)

There are no bond length outliers.

All (3) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	D	253	VAL	CB-CA-C	-6.42	99.19	111.40
2	D	278	ASP	CB-CG-OD1	5.34	123.10	118.30
2	D	284	LEU	CA-CB-CG	5.02	126.85	115.30

There are no chirality outliers.

There are no planarity outliers.

### 5.2 Too-close contacts [i](#)

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 hydrogen atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	980	0	936	23	0
1	C	980	0	936	27	0
2	B	2218	0	2185	83	0
2	D	2218	0	2185	87	0

*Continued on next page...*

*Continued from previous page...*

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	A	1	0	0	0	0
3	C	1	0	0	0	0
4	B	1	0	0	0	0
4	D	1	0	0	0	0
5	A	5	0	0	0	0
5	D	5	0	0	0	0
6	B	50	0	22	3	0
6	D	50	0	22	3	0
7	A	13	0	18	1	0
7	B	26	0	36	18	0
7	C	13	0	18	6	0
7	D	13	0	18	9	0
8	A	110	0	0	2	0
8	B	204	0	0	11	0
8	C	111	0	0	4	0
8	D	183	0	0	6	0
All	All	7183	0	6376	228	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 18.

All (228) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:387:ARG:HH21	7:B:815:PG4:H62	1.31	0.95
1:C:10:HIS:HA	1:C:13:LYS:HE2	1.49	0.95
2:B:275:VAL:HG11	8:B:951:HOH:O	1.70	0.88
2:D:336:ASN:ND2	2:D:338:VAL:HG12	1.92	0.84
2:D:336:ASN:ND2	2:D:339:ILE:H	1.77	0.83
2:D:225:MET:HE1	2:D:352:LYS:HA	1.60	0.82
2:D:336:ASN:HD21	2:D:339:ILE:H	1.29	0.81
2:D:151:ILE:HD12	2:D:152:PRO:HD2	1.64	0.79
2:B:385:VAL:HG21	7:B:815:PG4:H71	1.66	0.77
2:B:336:ASN:HD22	2:B:338:VAL:H	1.30	0.77
2:B:191:ARG:HH11	2:B:194:HIS:HD2	1.33	0.76
2:B:186:ILE:HG21	2:B:253:VAL:HG12	1.65	0.76
2:D:225:MET:HE2	2:D:352:LYS:HE3	1.66	0.76
2:D:314:TRP:HZ2	7:D:816:PG4:H81	1.51	0.75
2:D:151:ILE:HD12	2:D:152:PRO:CD	2.16	0.74
2:B:190:ASN:HB3	8:B:970:HOH:O	1.89	0.72
2:D:336:ASN:HD21	2:D:338:VAL:HG12	1.54	0.71

*Continued on next page...*

*Continued from previous page...*

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:280:PHE:HZ	7:B:817:PG4:H11	1.54	0.71
2:B:349:ARG:HG2	2:B:349:ARG:HH11	1.56	0.71
1:A:116:GLU:OE2	1:A:119:ARG:NH2	2.24	0.70
2:B:225:MET:HE2	2:B:352:LYS:HE3	1.73	0.70
2:D:336:ASN:HD22	2:D:338:VAL:H	1.38	0.70
2:D:314:TRP:CZ2	7:D:816:PG4:H81	2.26	0.70
2:D:336:ASN:HD22	2:D:336:ASN:C	1.94	0.69
2:D:225:MET:CE	2:D:352:LYS:HA	2.21	0.69
2:D:191:ARG:HH11	2:D:194:HIS:HD2	1.41	0.69
2:B:154:ASP:OD1	2:B:156:LYS:HB2	1.93	0.69
2:D:336:ASN:HD21	2:D:338:VAL:CG1	2.05	0.69
2:D:157:LEU:O	2:D:161:GLN:HG3	1.93	0.68
2:B:160:GLN:O	2:B:163:PRO:HD3	1.93	0.68
2:B:387:ARG:NH2	7:B:815:PG4:H62	2.06	0.68
1:C:71:ASN:HD21	1:C:75:ILE:H	1.38	0.68
2:B:155:LEU:O	2:B:159:GLU:HG3	1.93	0.68
2:B:138:SER:HB3	2:B:141:LEU:HD13	1.75	0.67
2:D:236:PHE:O	2:D:240:LEU:HD23	1.93	0.67
2:D:286:TYR:HE2	7:D:816:PG4:H52	1.59	0.67
2:B:186:ILE:CG2	2:B:253:VAL:HG12	2.24	0.67
2:B:336:ASN:ND2	2:B:338:VAL:H	1.92	0.67
2:B:349:ARG:NH1	2:B:355:PRO:HD3	2.11	0.66
1:C:21:ILE:HG13	1:C:101:ILE:HD13	1.77	0.65
2:D:336:ASN:ND2	2:D:338:VAL:H	1.93	0.65
2:D:358:GLN:OE1	2:D:362:ARG:NH1	2.29	0.65
1:A:66:PHE:CD2	1:A:66:PHE:O	2.49	0.65
2:D:191:ARG:NH1	2:D:194:HIS:HD2	1.95	0.64
1:A:71:ASN:HD21	1:A:75:ILE:H	1.44	0.64
2:B:286:TYR:HE2	7:B:817:PG4:H31	1.63	0.64
2:D:267:PHE:CE1	2:D:271:ARG:HD2	2.33	0.64
1:A:58:ARG:HA	1:A:66:PHE:CZ	2.33	0.64
2:B:280:PHE:CZ	7:B:817:PG4:H11	2.34	0.63
2:B:336:ASN:HD22	2:B:336:ASN:C	2.02	0.63
1:A:57:ASP:O	1:A:66:PHE:HE2	1.81	0.62
2:D:270:PRO:HG2	2:D:325:LEU:HD22	1.83	0.61
2:B:259:ASN:OD1	2:B:261:HIS:HB2	2.01	0.61
2:D:153:VAL:HG22	2:D:196:LYS:HB3	1.83	0.61
2:D:186:ILE:HG21	2:D:253:VAL:HG13	1.82	0.60
7:C:814:PG4:H51	2:D:314:TRP:CH2	2.35	0.60
2:B:194:HIS:HE1	8:B:955:HOH:O	1.85	0.60
2:B:154:ASP:HB3	2:B:157:LEU:HB2	1.84	0.60

*Continued on next page...*

*Continued from previous page...*

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:305:ASN:HD21	2:B:376:ASN:H	1.49	0.60
1:A:61:CYS:HA	1:A:71:ASN:ND2	2.16	0.60
2:B:314:TRP:CE2	7:B:817:PG4:H82	2.37	0.59
1:C:34:SER:HA	7:C:814:PG4:H32	1.84	0.59
2:D:336:ASN:HD22	2:D:338:VAL:N	2.01	0.58
7:B:817:PG4:H12	8:B:1026:HOH:O	2.02	0.58
2:D:338:VAL:O	2:D:341:LYS:HG3	2.02	0.58
2:D:236:PHE:O	2:D:240:LEU:CD2	2.52	0.58
1:C:119:ARG:HE	1:C:123:PRO:HD3	1.68	0.58
1:C:10:HIS:O	1:C:13:LYS:HG2	2.03	0.58
2:D:305:ASN:HD21	2:D:376:ASN:H	1.51	0.58
7:C:814:PG4:H51	2:D:314:TRP:HH2	1.69	0.58
2:D:151:ILE:HG13	2:D:152:PRO:O	2.05	0.57
1:A:65:GLU:O	1:A:67:PRO:HD3	2.04	0.57
1:C:4:THR:OG1	1:C:7:LYS:HG3	2.04	0.57
2:D:191:ARG:HH11	2:D:194:HIS:CD2	2.22	0.57
1:C:55:ILE:HB	1:C:80:LEU:HD13	1.86	0.56
1:A:4:THR:HG23	1:A:7:LYS:HZ3	1.71	0.56
2:B:385:VAL:HG21	7:B:815:PG4:C7	2.36	0.56
1:C:65:GLU:C	1:C:67:PRO:HD3	2.26	0.55
2:B:167:LEU:CD1	2:B:387:ARG:HB3	2.37	0.55
2:B:225:MET:CE	2:B:352:LYS:HE3	2.36	0.55
1:C:61:CYS:HA	1:C:71:ASN:ND2	2.21	0.55
2:B:189:ARG:HG3	2:B:220:GLN:HB3	1.90	0.54
2:D:153:VAL:HA	8:D:1443:HOH:O	2.06	0.54
2:D:225:MET:HE1	2:D:352:LYS:CA	2.37	0.54
2:B:314:TRP:CH2	7:B:817:PG4:H51	2.43	0.54
2:B:191:ARG:HD2	2:B:194:HIS:CD2	2.42	0.53
1:C:60:TRP:O	1:C:73:CYS:HB2	2.09	0.53
1:A:4:THR:HG23	1:A:7:LYS:NZ	2.22	0.53
2:D:137:GLU:N	2:D:137:GLU:CD	2.62	0.53
2:D:189:ARG:HB2	2:D:226:PHE:HE1	1.74	0.53
2:D:137:GLU:H	2:D:137:GLU:CD	2.12	0.53
2:B:233:ASN:HB3	2:B:378:LEU:HD22	1.89	0.53
2:D:132:THR:HG22	2:D:133:ALA:H	1.74	0.53
2:B:191:ARG:NH1	2:B:194:HIS:HD2	2.03	0.53
2:D:289:TYR:HE1	7:D:816:PG4:H21	1.73	0.53
2:D:191:ARG:NH1	2:D:194:HIS:CD2	2.77	0.53
2:D:167:LEU:CD1	2:D:387:ARG:HB3	2.39	0.53
2:B:316:GLY:H	7:B:817:PG4:H61	1.75	0.52
2:B:191:ARG:HH11	2:B:194:HIS:CD2	2.22	0.52

*Continued on next page...*

*Continued from previous page...*

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:61:CYS:HA	1:C:71:ASN:HD22	1.75	0.52
2:D:253:VAL:HG22	6:D:810:UDP:O2'	2.09	0.52
1:C:66:PHE:HB2	8:C:1311:HOH:O	2.08	0.52
2:B:272:HIS:HB3	2:B:334:ARG:HG2	1.92	0.52
2:D:336:ASN:ND2	2:D:336:ASN:C	2.61	0.52
2:D:277:MET:HE2	2:D:279:LYS:HD2	1.92	0.52
2:B:335:PRO:HB2	2:B:339:ILE:HG13	1.91	0.52
1:A:12:ILE:HD13	1:A:89:ILE:HD11	1.91	0.51
2:B:225:MET:CE	2:B:352:LYS:HA	2.41	0.51
1:C:8:VAL:HG21	1:C:36:TYR:CD1	2.45	0.51
2:B:307:PHE:HB3	2:B:308:PRO:HD2	1.92	0.51
2:B:182:VAL:HG12	2:B:184:ILE:HD12	1.91	0.51
1:C:116:GLU:OE1	1:C:119:ARG:NH2	2.45	0.50
2:B:131:LEU:HD23	2:B:131:LEU:N	2.26	0.50
2:B:186:ILE:CG2	2:B:253:VAL:CG1	2.89	0.50
1:C:119:ARG:HE	1:C:123:PRO:CD	2.24	0.50
1:C:6:CYS:O	1:C:10:HIS:CD2	2.65	0.50
2:D:253:VAL:CG2	6:D:810:UDP:H2'	2.41	0.50
2:B:184:ILE:HD12	2:B:184:ILE:N	2.26	0.50
1:C:10:HIS:CA	1:C:13:LYS:HE2	2.33	0.50
2:D:327:PHE:CE1	2:D:367:LYS:HB2	2.47	0.50
2:D:131:LEU:HD21	2:D:175:ASP:O	2.11	0.50
1:C:45:ASN:HB3	8:C:1502:HOH:O	2.13	0.49
2:D:153:VAL:CG2	2:D:196:LYS:HB3	2.43	0.49
1:C:12:ILE:O	1:C:15:ILE:HG22	2.12	0.49
2:B:142:VAL:HG12	2:B:142:VAL:O	2.12	0.49
2:B:225:MET:HE2	2:B:352:LYS:HA	1.94	0.49
2:D:132:THR:HG22	2:D:133:ALA:N	2.27	0.49
2:B:346:ARG:HG3	8:B:973:HOH:O	2.13	0.49
2:D:280:PHE:HZ	7:D:816:PG4:H71	1.78	0.49
1:A:58:ARG:HA	1:A:66:PHE:HZ	1.75	0.49
1:A:12:ILE:HG22	1:A:12:ILE:O	2.12	0.49
2:D:289:TYR:HE1	7:D:816:PG4:C2	2.25	0.49
7:C:814:PG4:H12	8:C:967:HOH:O	2.12	0.48
1:A:24:LEU:HD21	1:A:119:ARG:HB2	1.95	0.48
2:B:351:LYS:O	2:B:352:LYS:HB2	2.14	0.48
2:B:167:LEU:HD13	2:B:387:ARG:HB3	1.94	0.48
2:B:336:ASN:ND2	2:B:339:ILE:H	2.12	0.48
2:D:252:ASP:HB3	6:D:810:UDP:O3'	2.13	0.48
2:B:389:PRO:HG2	6:B:811:UDP:O4	2.14	0.48
2:D:328:ARG:HH22	2:D:371:LEU:HD21	1.78	0.48

*Continued on next page...*



*Continued from previous page...*

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:286:TYR:CE2	7:B:817:PG4:H31	2.47	0.48
2:B:131:LEU:N	8:B:1255:HOH:O	2.47	0.47
2:B:141:LEU:HD23	2:B:261:HIS:CD2	2.49	0.47
2:B:316:GLY:HA2	2:B:363:ILE:HD11	1.96	0.47
2:D:154:ASP:HB3	2:D:157:LEU:HB2	1.95	0.47
2:D:327:PHE:CZ	2:D:367:LYS:HB2	2.49	0.47
7:D:816:PG4:H41	7:D:816:PG4:H21	1.49	0.47
2:B:314:TRP:HZ2	7:B:817:PG4:H22	1.79	0.47
2:D:269:GLN:HE21	2:D:270:PRO:HD2	1.78	0.47
2:D:131:LEU:CD2	2:D:175:ASP:O	2.63	0.47
2:D:336:ASN:HD21	2:D:339:ILE:N	2.05	0.47
2:B:327:PHE:CZ	2:B:367:LYS:HB2	2.50	0.47
2:D:279:LYS:HE3	8:D:1181:HOH:O	2.15	0.47
2:B:189:ARG:HB2	2:B:226:PHE:HE1	1.80	0.47
2:D:209:GLN:NE2	2:D:263:THR:HA	2.29	0.47
2:D:336:ASN:ND2	2:D:338:VAL:N	2.61	0.46
2:B:253:VAL:HG22	6:B:809:UDP:H2'	1.96	0.46
7:A:813:PG4:H31	7:B:817:PG4:H22	1.97	0.46
2:B:154:ASP:O	2:B:157:LEU:N	2.47	0.46
2:D:307:PHE:HB3	2:D:308:PRO:HD2	1.97	0.46
2:B:156:LYS:HE3	6:B:811:UDP:O2	2.15	0.46
1:C:13:LYS:HD3	1:C:23:LEU:HD11	1.98	0.46
2:D:286:TYR:CE2	7:D:816:PG4:H52	2.45	0.46
1:C:55:ILE:HD13	1:C:91:CYS:SG	2.56	0.46
2:B:180:HIS:CE1	2:B:265:ARG:HD2	2.51	0.46
1:C:70:GLU:O	1:C:71:ASN:C	2.55	0.45
8:B:1466:HOH:O	2:D:167:LEU:HD23	2.15	0.45
2:B:336:ASN:HD22	2:B:338:VAL:N	2.08	0.45
2:D:154:ASP:OD2	2:D:156:LYS:HB2	2.17	0.45
2:D:351:LYS:O	2:D:352:LYS:HB2	2.16	0.45
7:C:814:PG4:H81	8:C:967:HOH:O	2.16	0.45
2:B:314:TRP:CZ2	7:B:817:PG4:H82	2.52	0.45
1:C:65:GLU:O	1:C:67:PRO:HD3	2.17	0.45
1:C:24:LEU:HD11	1:C:119:ARG:NH2	2.31	0.45
2:D:167:LEU:HD13	2:D:387:ARG:HB3	1.98	0.45
2:D:327:PHE:CD2	2:D:367:LYS:HD3	2.52	0.45
2:B:344:MET:HE2	8:B:908:HOH:O	2.16	0.44
2:B:336:ASN:ND2	2:B:336:ASN:C	2.70	0.44
7:B:817:PG4:H81	8:B:1026:HOH:O	2.17	0.44
2:B:270:PRO:HG2	2:B:325:LEU:HD22	2.00	0.44
2:D:141:LEU:HD23	2:D:261:HIS:CD2	2.53	0.44

*Continued on next page...*

*Continued from previous page...*

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:61:CYS:HA	1:A:71:ASN:HD22	1.81	0.44
1:A:12:ILE:CG2	1:A:12:ILE:O	2.65	0.44
2:B:157:LEU:O	2:B:161:GLN:HG3	2.17	0.44
2:D:287:VAL:HG12	2:D:288:GLN:OE1	2.18	0.44
2:D:299:GLN:H	2:D:299:GLN:CD	2.21	0.44
7:D:816:PG4:H71	8:D:1181:HOH:O	2.17	0.44
2:B:339:ILE:HD12	2:B:339:ILE:O	2.17	0.43
2:D:210:GLN:NE2	8:D:1353:HOH:O	2.51	0.43
2:D:224:SER:HA	2:D:352:LYS:HE2	1.99	0.43
2:B:335:PRO:HB2	2:B:339:ILE:CG1	2.47	0.43
1:A:80:LEU:CD2	1:A:88:ASP:HA	2.48	0.43
2:B:164:LYS:HE3	8:B:961:HOH:O	2.18	0.43
2:D:164:LYS:HB2	8:D:1073:HOH:O	2.19	0.43
2:B:385:VAL:HG11	7:B:815:PG4:H61	1.99	0.43
2:B:184:ILE:N	2:B:184:ILE:CD1	2.80	0.43
2:B:349:ARG:HG2	2:B:349:ARG:NH1	2.29	0.43
1:C:8:VAL:O	1:C:12:ILE:HG12	2.18	0.43
1:A:122:LYS:HG3	8:A:1288:HOH:O	2.17	0.43
2:D:277:MET:HE1	2:D:344:MET:HE3	1.99	0.43
2:D:275:VAL:HG21	2:D:335:PRO:HD2	2.00	0.43
2:B:338:VAL:O	2:B:341:LYS:HG3	2.19	0.43
2:B:349:ARG:CG	2:B:349:ARG:HH11	2.28	0.43
2:D:255:LEU:C	2:D:256:ILE:HD12	2.39	0.43
2:D:225:MET:HE1	2:D:354:GLU:OE1	2.18	0.43
2:D:240:LEU:HD21	2:D:248:PHE:CZ	2.55	0.42
2:B:191:ARG:NH1	2:B:194:HIS:CD2	2.84	0.42
1:A:10:HIS:O	1:A:13:LYS:HG2	2.19	0.42
7:B:817:PG4:H32	7:B:817:PG4:O4	2.20	0.42
1:A:9:SER:O	1:A:13:LYS:HE2	2.20	0.42
2:D:237:LYS:HB3	2:D:237:LYS:HE2	1.83	0.42
2:B:240:LEU:HA	2:B:240:LEU:HD12	1.92	0.41
2:D:358:GLN:O	2:D:362:ARG:HG3	2.20	0.41
2:D:186:ILE:CG2	2:D:253:VAL:HG13	2.49	0.41
2:B:362:ARG:NH2	8:B:1290:HOH:O	2.53	0.41
1:A:120:CYS:HB3	8:A:1080:HOH:O	2.20	0.41
2:B:336:ASN:HD21	2:B:339:ILE:H	1.67	0.41
1:C:31:PHE:O	7:C:814:PG4:H62	2.20	0.41
2:D:203:HIS:HB2	2:D:204:PRO:HD3	2.03	0.41
2:D:272:HIS:HB3	2:D:334:ARG:HG2	2.01	0.41
2:D:131:LEU:HA	2:D:131:LEU:HD23	1.77	0.41
2:B:142:VAL:H	2:B:260:ASP:CG	2.23	0.41

*Continued on next page...*

*Continued from previous page...*

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:35:GLY:O	1:A:36:TYR:HB2	2.21	0.41
1:A:105:LYS:HE3	1:A:105:LYS:HB2	1.86	0.41
2:D:357:PRO:HD2	8:D:1393:HOH:O	2.20	0.41
1:A:82:ASP:OD1	1:A:82:ASP:C	2.59	0.41
2:B:317:GLU:O	2:B:321:ILE:HG13	2.22	0.40
2:B:302:LEU:HD12	2:B:302:LEU:HA	1.96	0.40

There are no symmetry-related clashes.

## 5.3 Torsion angles [i](#)

### 5.3.1 Protein backbone [i](#)

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	121/123 (98%)	114 (94%)	6 (5%)	1 (1%)	24	15
1	C	121/123 (98%)	112 (93%)	9 (7%)	0	100	100
2	B	270/286 (94%)	261 (97%)	9 (3%)	0	100	100
2	D	270/286 (94%)	259 (96%)	10 (4%)	1 (0%)	39	33
All	All	782/818 (96%)	746 (95%)	34 (4%)	2 (0%)	46	41

All (2) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	65	GLU
2	D	189	ARG

### 5.3.2 Protein sidechains [i](#)

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	109/109 (100%)	106 (97%)	3 (3%)	51	50	
1	C	109/109 (100%)	108 (99%)	1 (1%)	84	88	
2	B	245/254 (96%)	232 (95%)	13 (5%)	28	22	
2	D	245/254 (96%)	231 (94%)	14 (6%)	25	19	
All	All	708/726 (98%)	677 (96%)	31 (4%)	35	30	

All (31) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	66	PHE
1	A	85	LEU
1	A	88	ASP
2	B	131	LEU
2	B	150	ASN
2	B	157	LEU
2	B	164	LYS
2	B	189	ARG
2	B	195	LEU
2	B	240	LEU
2	B	263	THR
2	B	299	GLN
2	B	302	LEU
2	B	328	ARG
2	B	336	ASN
2	B	339	ILE
1	C	85	LEU
2	D	136	GLU
2	D	137	GLU
2	D	141	LEU
2	D	153	VAL
2	D	157	LEU
2	D	164	LYS
2	D	175	ASP
2	D	195	LEU
2	D	253	VAL
2	D	287	VAL
2	D	302	LEU
2	D	336	ASN
2	D	339	ILE

*Continued on next page...*

*Continued from previous page...*

Mol	Chain	Res	Type
2	D	346	ARG

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (22) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	32	HIS
1	A	71	ASN
2	B	160	GLN
2	B	194	HIS
2	B	305	ASN
2	B	310	ASN
2	B	336	ASN
2	B	386	GLN
1	C	10	HIS
1	C	32	HIS
1	C	43	ASN
1	C	71	ASN
2	D	160	GLN
2	D	180	HIS
2	D	190	ASN
2	D	194	HIS
2	D	210	GLN
2	D	261	HIS
2	D	269	GLN
2	D	310	ASN
2	D	336	ASN
2	D	365	HIS

### 5.3.3 RNA ⓘ

There are no RNA molecules 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

Of 15 ligands modelled in this entry, 4 are monoatomic - leaving 11 for Mogul analysis.

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$
7	PG4	A	813	-	12,12,12	0.55	0	11,11,11	0.34	0
5	SO4	A	819	-	4,4,4	3.34	2 (50%)	6,6,6	0.94	0
6	UDP	B	809	4	18,26,26	2.10	5 (27%)	26,40,40	2.93	4 (15%)
6	UDP	B	811	-	18,26,26	1.91	4 (22%)	26,40,40	2.99	6 (23%)
7	PG4	B	815	-	12,12,12	0.55	0	11,11,11	0.25	0
7	PG4	B	817	-	12,12,12	0.59	0	11,11,11	0.35	0
7	PG4	C	814	-	12,12,12	0.62	0	11,11,11	0.14	0
6	UDP	D	810	4	18,26,26	1.81	5 (27%)	26,40,40	2.86	6 (23%)
6	UDP	D	812	-	18,26,26	2.01	4 (22%)	26,40,40	2.96	7 (26%)
7	PG4	D	816	-	12,12,12	0.43	0	11,11,11	0.41	0
5	SO4	D	818	-	4,4,4	3.35	2 (50%)	6,6,6	0.99	0

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
7	PG4	A	813	-	-	0/10/10/10	0/0/0/0
5	SO4	A	819	-	-	0/0/0/0	0/0/0/0
6	UDP	B	809	4	-	0/12/32/32	0/2/2/2
6	UDP	B	811	-	-	0/12/32/32	0/2/2/2
7	PG4	B	815	-	-	0/10/10/10	0/0/0/0
7	PG4	B	817	-	-	0/10/10/10	0/0/0/0
7	PG4	C	814	-	-	0/10/10/10	0/0/0/0
6	UDP	D	810	4	-	0/12/32/32	0/2/2/2
6	UDP	D	812	-	-	0/12/32/32	0/2/2/2
7	PG4	D	816	-	-	0/10/10/10	0/0/0/0
5	SO4	D	818	-	-	0/0/0/0	0/0/0/0

All (22) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
5	D	818	SO4	O3-S	-4.69	1.30	1.47
5	A	819	SO4	O3-S	-4.36	1.31	1.47
6	D	810	UDP	C6-C5	-2.71	1.32	1.38
6	B	809	UDP	C6-C5	-2.69	1.32	1.38
6	B	811	UDP	C6-C5	-2.42	1.32	1.38
6	D	812	UDP	C6-C5	-2.42	1.32	1.38
6	B	809	UDP	C3'-C2'	-2.20	1.47	1.53
6	D	810	UDP	C3'-C2'	-2.00	1.47	1.53
6	D	810	UDP	PB-O1B	2.11	1.58	1.51
6	B	809	UDP	PB-O1B	2.97	1.61	1.51
6	B	811	UDP	PB-O1B	3.18	1.61	1.51
6	D	812	UDP	PB-O1B	3.28	1.61	1.51
6	D	810	UDP	C6-N1	3.66	1.40	1.35
6	B	811	UDP	C6-N1	4.20	1.41	1.35
6	D	810	UDP	C4-N3	4.35	1.41	1.33
6	D	812	UDP	C6-N1	4.42	1.42	1.35
6	B	811	UDP	C4-N3	4.70	1.41	1.33
6	B	809	UDP	C6-N1	4.73	1.42	1.35
5	D	818	SO4	O1-S	4.75	1.63	1.47
6	B	809	UDP	C4-N3	4.90	1.42	1.33
5	A	819	SO4	O1-S	4.96	1.64	1.47
6	D	812	UDP	C4-N3	5.16	1.42	1.33

All (23) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
6	D	810	UDP	O4'-C4'-C3'	-3.57	97.96	105.15
6	D	812	UDP	C5-C4-N3	-3.39	114.42	123.12
6	B	811	UDP	C5-C4-N3	-3.32	114.60	123.12
6	B	809	UDP	C5-C4-N3	-3.30	114.65	123.12
6	D	810	UDP	C5-C4-N3	-3.14	115.06	123.12
6	B	809	UDP	O4'-C4'-C3'	-3.08	98.94	105.15
6	D	812	UDP	O3A-PA-O5'	-2.78	95.56	102.94
6	B	811	UDP	O3A-PA-O5'	-2.35	96.71	102.94
6	D	812	UDP	O4'-C4'-C3'	-2.07	100.97	105.15
6	D	810	UDP	O3A-PA-O5'	-2.06	97.48	102.94
6	B	811	UDP	C6-C5-C4	2.02	121.05	117.28
6	D	812	UDP	C6-C5-C4	2.16	121.32	117.28
6	D	810	UDP	C6-C5-C4	2.21	121.41	117.28
6	D	812	UDP	O5'-C5'-C4'	2.72	119.16	109.12
6	B	811	UDP	O5'-C5'-C4'	2.95	119.99	109.12
6	B	809	UDP	O3B-PB-O1B	4.66	125.57	110.58

*Continued on next page...*

*Continued from previous page...*

Mol	Chain	Res	Type	Atoms	Z	Observed( <sup>o</sup> )	Ideal( <sup>o</sup> )
6	B	811	UDP	O3B-PB-O1B	4.78	125.95	110.58
6	D	812	UDP	O3B-PB-O1B	4.80	126.04	110.58
6	D	810	UDP	O3B-PB-O1B	4.92	126.41	110.58
6	D	810	UDP	C4-N3-C2	11.71	125.74	114.14
6	D	812	UDP	C4-N3-C2	12.25	126.27	114.14
6	B	809	UDP	C4-N3-C2	12.46	126.48	114.14
6	B	811	UDP	C4-N3-C2	12.57	126.59	114.14

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

8 monomers are involved in 39 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
7	A	813	PG4	1	0
6	B	809	UDP	1	0
6	B	811	UDP	2	0
7	B	815	PG4	5	0
7	B	817	PG4	13	0
7	C	814	PG4	6	0
6	D	810	UDP	3	0
7	D	816	PG4	9	0

## 5.7 Other polymers [i](#)

There are no such residues in this entry.

## 5.8 Polymer linkage issues [i](#)

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	123/123 (100%)	-0.08	8 (6%) 22 23	26, 39, 60, 76	0
1	C	123/123 (100%)	0.05	8 (6%) 22 23	24, 34, 60, 93	0
2	B	272/286 (95%)	-0.15	11 (4%) 42 44	21, 35, 56, 65	0
2	D	272/286 (95%)	-0.10	11 (4%) 42 44	25, 38, 57, 76	0
All	All	790/818 (96%)	-0.09	38 (4%) 34 36	21, 37, 57, 93	0

All (38) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	C	123	PRO	11.4
1	C	122	LYS	8.7
2	D	402	SER	6.3
2	D	131	LEU	5.0
1	C	68	GLU	4.4
2	B	402	SER	4.2
1	C	121	GLU	3.5
1	A	68	GLU	3.5
2	B	131	LEU	3.4
2	D	132	THR	3.3
1	A	46	GLY	3.1
2	D	232	LEU	3.1
1	A	65	GLU	3.1
2	B	151	ILE	3.0
2	D	307	PHE	3.0
1	A	66	PHE	2.9
2	B	152	PRO	2.9
2	B	157	LEU	2.8
2	B	346	ARG	2.8
2	B	132	THR	2.7
1	A	123	PRO	2.7

*Continued on next page...*

*Continued from previous page...*

Mol	Chain	Res	Type	RSRZ
2	D	184	ILE	2.6
1	A	67	PRO	2.6
2	D	185	ILE	2.6
2	B	160	GLN	2.5
1	C	30	LEU	2.5
2	D	250	PHE	2.4
1	A	64	SER	2.4
1	C	66	PHE	2.4
2	B	146	LEU	2.4
1	A	45	ASN	2.3
1	C	53	PHE	2.3
2	B	351	LYS	2.2
2	D	346	ARG	2.2
1	C	45	ASN	2.2
2	D	151	ILE	2.2
2	D	186	ILE	2.1
2	B	198	TRP	2.1

## 6.2 Non-standard residues in protein, DNA, RNA chains [i](#)

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

## 6.3 Carbohydrates [i](#)

There are no carbohydrates in this entry.

## 6.4 Ligands [i](#)

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	RSCC	RSR	LLDF	B-factors(Å <sup>2</sup> )	Q<0.9
7	PG4	B	815	13/13	0.78	0.29	13.97	64,66,73,75	0
7	PG4	B	817	13/13	0.81	0.32	6.54	64,66,73,75	0
6	UDP	D	812	25/25	0.72	0.19	4.91	58,76,100,100	0
7	PG4	D	816	13/13	0.85	0.22	3.37	64,66,70,70	0

*Continued on next page...*

*Continued from previous page...*

Mol	Type	Chain	Res	Atoms	RSCC	RSR	LLDF	B-factors( $\text{\AA}^2$ )	Q<0.9
5	SO4	D	818	5/5	0.93	0.25	2.60	82,83,83,84	0
7	PG4	C	814	13/13	0.88	0.17	1.58	52,55,64,66	0
6	UDP	B	811	25/25	0.84	0.17	1.20	69,82,98,99	0
7	PG4	A	813	13/13	0.89	0.11	0.04	46,48,49,50	0
6	UDP	B	809	25/25	0.97	0.09	-0.60	30,34,38,40	0
6	UDP	D	810	25/25	0.98	0.08	-1.01	26,30,34,36	0
3	CA	A	805	1/1	0.99	0.05	-1.88	34,34,34,34	0
3	CA	C	806	1/1	0.99	0.07	-2.02	33,33,33,33	0
4	MN	D	808	1/1	1.00	0.08	-	35,35,35,35	0
5	SO4	A	819	5/5	0.85	0.23	-	88,89,89,89	0
4	MN	B	807	1/1	1.00	0.05	-	35,35,35,35	0

## 6.5 Other polymers [i](#)

There are no such residues in this entry.