Full wwPDB X-ray Structure Validation Report ⓘ

May 27, 2020 – 02:32 am BST

PDB ID	:	2PO4
Title	:	X-ray crystal structure of polymerase domain of the bacteriophage N4 virion RNA polymerase
Authors	:	Murakami, K.S.; Davydova, E.K.; Rothman-Denes, L.B.
Deposited on	:	2007-04-25
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*
A user guide is available at
https://www.wwpdb.org/validation/2017/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:

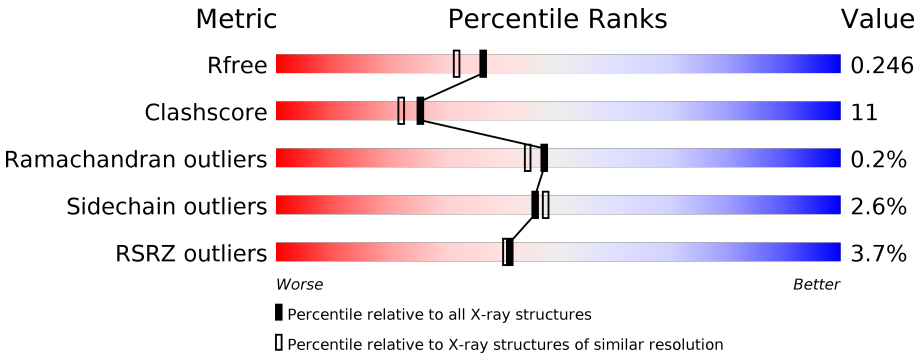
MolProbity	:	4.02b-467
Xtriage (Phenix)	:	1.13
EDS	:	2.11
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.11

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_{free}	130704	8085 (2.00-2.00)
Clashscore	141614	9178 (2.00-2.00)
Ramachandran outliers	138981	9054 (2.00-2.00)
Sidechain outliers	138945	9053 (2.00-2.00)
RSRZ outliers	127900	7900 (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 >=3, 2, 1 and 0 types of geometric quality criteria respectively. 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 <=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	1104	4% 76% 22%

2 Entry composition (i)

There are 2 unique types of molecules in this entry. The entry contains 8916 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 Virion RNA polymerase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	1094	8441	5299	1435	1666	41	0	0	0

- Molecule 2 is water.

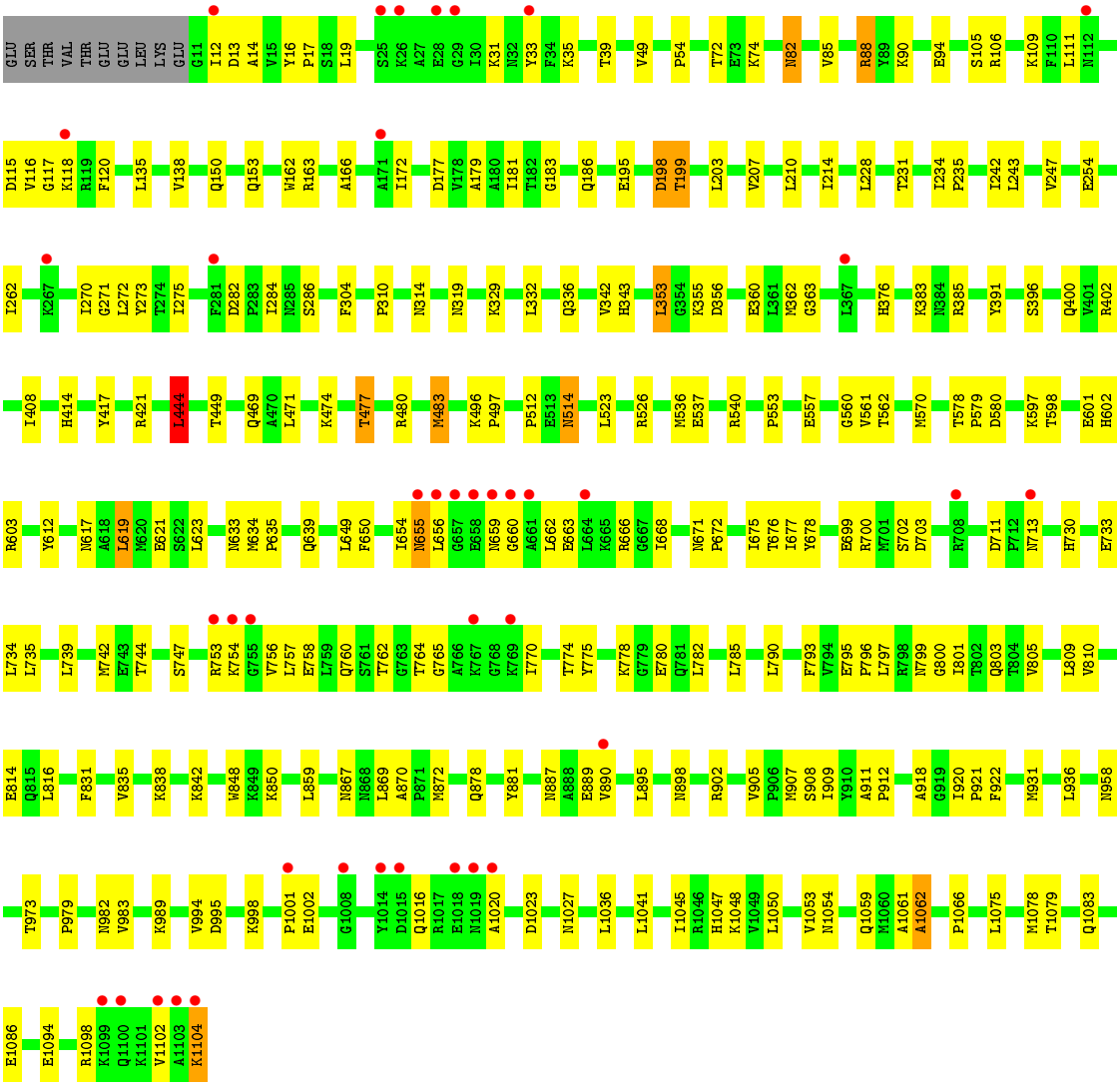
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
			Total	O		
2	A	475	475	475	0	0

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 the various outlier classes 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: Virion RNA polymerase

Chain A:



4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α, β, γ	83.05Å 103.26Å 159.43Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	50.00 – 2.00 44.76 – 2.00	Depositor EDS
% Data completeness (in resolution range)	93.1 (50.00-2.00) 93.1 (44.76-2.00)	Depositor EDS
R_{merge}	0.07	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	2.10 (at 2.00Å)	Xtriage
Refinement program	CNS	Depositor
R, R_{free}	0.219 , 0.248 0.217 , 0.246	Depositor DCC
R_{free} test set	9139 reflections (9.99%)	wwPDB-VP
Wilson B-factor (Å^2)	24.8	Xtriage
Anisotropy	0.176	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.35 , 46.1	EDS
L-test for twinning[2]	$< \|L\| > = 0.49$, $< L^2 > = 0.32$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.94	EDS
Total number of atoms	8916	wwPDB-VP
Average B, all atoms (Å^2)	32.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.86% of the height of the origin peak. No significant pseudotranslation is detected.*

[1] Intensities estimated from amplitudes.

[2] Theoretical values of $< |L| >$, $< L^2 >$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

5 Model quality

5.1 Standard geometry

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	0/8570	0.60	1/11590 (0.0%)

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	444	LEU	CA-CB-CG	8.08	133.88	115.30

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-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 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	8441	0	8477	180	0
2	A	475	0	0	5	0
All	All	8916	0	8477	180	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 11.

All (180) 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)
1:A:469:GLN:HE22	1:A:557:GLU:H	1.10	0.94

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:336:GLN:HE21	1:A:417:TYR:H	1.20	0.86
1:A:13:ASP:HA	1:A:35:LYS:HE3	1.69	0.75
1:A:90:LYS:O	1:A:94:GLU:HG3	1.87	0.73
1:A:198:ASP:CB	1:A:666:ARG:HH21	2.01	0.73
1:A:898:ASN:HD21	1:A:902:ARG:HB2	1.56	0.70
1:A:677:ILE:HD11	1:A:805:VAL:HG11	1.73	0.70
1:A:512:PRO:HB2	1:A:514:ASN:ND2	2.07	0.69
1:A:633:ASN:OD1	1:A:635:PRO:HG2	1.93	0.69
1:A:810:VAL:O	1:A:814:GLU:HG3	1.93	0.69
1:A:908:SER:O	1:A:909:ILE:HD12	1.92	0.69
1:A:54:PRO:HG2	1:A:153:GLN:HB2	1.75	0.68
1:A:920:ILE:HB	1:A:921:PRO:HD3	1.75	0.68
1:A:747:SER:OG	1:A:765:GLY:HA3	1.93	0.68
1:A:195:GLU:HG3	1:A:383:LYS:HG2	1.75	0.68
1:A:711:ASP:OD1	1:A:713:ASN:HB2	1.94	0.68
1:A:16:TYR:HB3	1:A:19:LEU:HG	1.77	0.66
1:A:753:ARG:HD2	1:A:758:GLU:OE2	1.94	0.66
1:A:363:GLY:HA2	1:A:662:LEU:HD11	1.77	0.66
1:A:597:LYS:HE2	1:A:602:HIS:HB2	1.76	0.66
1:A:678:TYR:HB3	1:A:921:PRO:HG3	1.77	0.66
1:A:639:GLN:OE1	1:A:744:THR:HG22	1.96	0.66
1:A:617:ASN:O	1:A:621:GLU:HG3	1.96	0.66
1:A:918:ALA:O	1:A:921:PRO:HD2	1.95	0.65
1:A:496:LYS:HB3	1:A:497:PRO:HD3	1.77	0.65
1:A:449:THR:H	1:A:958:ASN:HD21	1.45	0.65
1:A:356:ASP:O	1:A:360:GLU:HG3	1.97	0.65
1:A:195:GLU:O	1:A:199:THR:HB	1.97	0.64
1:A:649:LEU:HD21	1:A:734:LEU:HD22	1.80	0.63
1:A:1075:LEU:HA	1:A:1078:MET:HE3	1.82	0.62
1:A:177:ASP:O	1:A:181:ILE:HG13	1.99	0.62
1:A:1041:LEU:O	1:A:1045:ILE:HG12	2.00	0.61
1:A:117:GLY:HA2	1:A:120:PHE:HB3	1.82	0.61
1:A:198:ASP:HB2	1:A:666:ARG:HH21	1.65	0.61
1:A:1075:LEU:HD21	1:A:1086:GLU:HG2	1.83	0.61
1:A:421:ARG:HG2	1:A:922:PHE:CZ	2.35	0.61
1:A:82:ASN:HD22	1:A:82:ASN:C	2.03	0.61
1:A:181:ILE:HG22	1:A:270:ILE:HD13	1.83	0.61
1:A:514:ASN:H	1:A:514:ASN:HD22	1.48	0.61
1:A:228:LEU:HD11	1:A:859:LEU:CD1	2.30	0.60
1:A:106:ARG:HA	1:A:109:LYS:HD2	1.83	0.60
1:A:314:ASN:HD22	1:A:329:LYS:CE	2.15	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:54:PRO:HG2	1:A:153:GLN:CB	2.33	0.59
1:A:214:ILE:HD11	1:A:242:ILE:HD12	1.85	0.59
1:A:343:HIS:HE1	1:A:537:GLU:OE2	1.86	0.59
1:A:12:ILE:HG12	1:A:39:THR:HA	1.85	0.58
1:A:31:LYS:HE2	1:A:33:TYR:OH	2.02	0.58
1:A:186:GLN:HG2	1:A:668:ILE:HD13	1.86	0.58
1:A:676:THR:HG21	1:A:801:ILE:HD12	1.85	0.58
1:A:514:ASN:HD22	1:A:514:ASN:N	2.02	0.57
1:A:314:ASN:HD22	1:A:329:LYS:HE3	1.69	0.57
1:A:199:THR:HG21	1:A:385:ARG:NE	2.20	0.57
1:A:790:LEU:O	1:A:795:GLU:HG3	2.05	0.57
1:A:1075:LEU:HA	1:A:1078:MET:CE	2.35	0.56
1:A:355:LYS:HD3	1:A:391:TYR:CD2	2.41	0.56
1:A:730:HIS:HD2	1:A:733:GLU:OE2	1.89	0.56
1:A:228:LEU:HD11	1:A:859:LEU:HD12	1.86	0.56
1:A:198:ASP:CG	1:A:666:ARG:HE	2.07	0.56
1:A:619:LEU:HD22	1:A:797:LEU:HB2	1.88	0.56
1:A:135:LEU:O	1:A:138:VAL:HG22	2.06	0.55
1:A:1016:GLN:O	1:A:1020:ALA:HB2	2.06	0.55
1:A:597:LYS:NZ	1:A:602:HIS:HD2	2.03	0.55
1:A:639:GLN:OE1	1:A:744:THR:CG2	2.55	0.55
1:A:1098:ARG:O	1:A:1102:VAL:HG23	2.07	0.54
1:A:474:LYS:O	1:A:477:THR:HB	2.08	0.54
1:A:12:ILE:N	1:A:12:ILE:HD12	2.23	0.54
1:A:887:ASN:HD21	1:A:890:VAL:HG23	1.72	0.53
1:A:111:LEU:O	1:A:116:VAL:O	2.27	0.53
1:A:234:ILE:HB	1:A:235:PRO:HD3	1.91	0.53
1:A:1061:ALA:O	1:A:1062:ALA:HB2	2.09	0.53
1:A:376:HIS:HD2	1:A:702:SER:OG	1.92	0.52
1:A:848:TRP:CH2	1:A:850:LYS:HA	2.45	0.52
1:A:887:ASN:HB2	1:A:889:GLU:OE1	2.10	0.52
1:A:172:ILE:HG23	1:A:198:ASP:OD1	2.09	0.52
1:A:162:TRP:CG	1:A:210:LEU:HD13	2.44	0.52
1:A:286:SER:O	1:A:400:GLN:HG2	2.10	0.51
1:A:362:MET:HB2	1:A:662:LEU:HD21	1.93	0.51
1:A:228:LEU:HA	1:A:231:THR:OG1	2.11	0.50
1:A:105:SER:O	1:A:109:LYS:HG3	2.11	0.50
1:A:672:PRO:HA	1:A:675:ILE:HG12	1.93	0.50
1:A:619:LEU:HD12	1:A:619:LEU:O	2.11	0.50
1:A:800:GLY:O	1:A:803:GLN:HG2	2.12	0.50
1:A:831:PHE:O	1:A:835:VAL:HG23	2.11	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:598:THR:OG1	1:A:601:GLU:HG3	2.11	0.49
1:A:1045:ILE:HD12	1:A:1094:GLU:HG3	1.93	0.49
1:A:801:ILE:O	1:A:805:VAL:HG22	2.12	0.49
1:A:619:LEU:C	1:A:619:LEU:HD12	2.32	0.49
1:A:578:THR:HG22	1:A:580:ASP:H	1.78	0.49
1:A:739:LEU:HD21	1:A:770:ILE:HD12	1.95	0.49
1:A:902:ARG:HD2	2:A:1334:HOH:O	2.13	0.48
1:A:842:LYS:HE2	1:A:848:TRP:CD1	2.48	0.48
1:A:1061:ALA:O	1:A:1062:ALA:CB	2.62	0.48
1:A:878:GLN:NE2	1:A:931:MET:HG2	2.29	0.48
1:A:332:LEU:O	1:A:336:GLN:HG3	2.14	0.48
1:A:660:GLY:HA3	1:A:663:GLU:HG3	1.96	0.48
1:A:887:ASN:HD22	1:A:889:GLU:HB2	1.78	0.48
1:A:304:PHE:CD2	1:A:310:PRO:HG3	2.49	0.48
1:A:72:THR:HB	1:A:74:LYS:HE2	1.95	0.48
1:A:762:THR:HB	1:A:764:THR:HG22	1.95	0.47
1:A:870:ALA:HB2	1:A:989:LYS:HD3	1.95	0.47
1:A:793:PHE:O	1:A:796:PRO:HG2	2.14	0.47
1:A:179:ALA:O	1:A:183:GLY:N	2.45	0.47
1:A:654:ILE:O	1:A:656:LEU:HG	2.15	0.47
1:A:1053:VAL:HG11	1:A:1075:LEU:HD12	1.96	0.47
1:A:396:SER:O	1:A:400:GLN:HG3	2.15	0.47
1:A:82:ASN:ND2	1:A:85:VAL:H	2.13	0.47
1:A:1041:LEU:C	1:A:1041:LEU:HD13	2.35	0.47
1:A:271:GLY:C	1:A:272:LEU:HD12	2.35	0.46
1:A:512:PRO:HB2	1:A:514:ASN:HD22	1.78	0.46
1:A:282:ASP:OD1	1:A:284:ILE:HG22	2.16	0.46
1:A:203:LEU:O	1:A:207:VAL:HG23	2.16	0.45
1:A:570:MET:O	1:A:1047:HIS:HE1	2.00	0.45
1:A:514:ASN:H	1:A:514:ASN:ND2	2.13	0.45
1:A:994:VAL:HG22	1:A:995:ASP:N	2.31	0.45
1:A:523:LEU:O	1:A:526:ARG:HB2	2.17	0.45
1:A:700:ARG:O	1:A:703:ASP:HB2	2.17	0.45
1:A:16:TYR:OH	1:A:150:GLN:NE2	2.48	0.45
1:A:911:ALA:HB1	1:A:912:PRO:HD2	1.98	0.45
1:A:199:THR:HG21	1:A:385:ARG:HE	1.81	0.45
1:A:1104:LYS:HA	1:A:1104:LYS:HE2	1.99	0.44
1:A:477:THR:HA	1:A:603:ARG:HG2	1.98	0.44
1:A:796:PRO:HA	1:A:799:ASN:HD22	1.81	0.44
1:A:654:ILE:O	1:A:656:LEU:N	2.51	0.44
1:A:262:ILE:HD11	2:A:1187:HOH:O	2.17	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:82:ASN:HB2	2:A:1359:HOH:O	2.18	0.44
1:A:742:MET:HE1	1:A:785:LEU:HD11	2.00	0.44
1:A:816:LEU:HD13	1:A:983:VAL:HG21	2.00	0.44
1:A:598:THR:HG22	1:A:1066:PRO:HD3	1.99	0.44
1:A:756:VAL:HG12	1:A:757:LEU:N	2.33	0.44
1:A:560:GLY:HA2	1:A:1059:GLN:O	2.18	0.44
1:A:561:VAL:O	1:A:562:THR:C	2.56	0.44
1:A:19:LEU:HD12	1:A:35:LYS:HD2	2.00	0.44
1:A:764:THR:HG21	1:A:780:GLU:HB3	1.99	0.44
1:A:797:LEU:O	1:A:801:ILE:HG13	2.18	0.44
1:A:778:LYS:HA	1:A:782:LEU:HB2	2.00	0.43
1:A:1053:VAL:HG12	1:A:1054:ASN:N	2.34	0.43
1:A:872:MET:HG2	1:A:881:TYR:HB2	2.00	0.43
1:A:402:ARG:HA	1:A:408:ILE:HG22	2.00	0.43
1:A:536:MET:O	1:A:540:ARG:HG3	2.19	0.43
1:A:105:SER:OG	1:A:109:LYS:HE3	2.19	0.43
1:A:254:GLU:HB2	1:A:273:TYR:CE1	2.53	0.43
1:A:512:PRO:HB2	1:A:514:ASN:HD21	1.83	0.43
1:A:1023:ASP:O	1:A:1027:ASN:ND2	2.51	0.43
1:A:342:VAL:HG11	1:A:408:ILE:HD12	2.00	0.43
1:A:655:ASN:ND2	1:A:671:ASN:HD21	2.15	0.43
1:A:995:ASP:OD2	1:A:998:LYS:HE3	2.19	0.43
1:A:753:ARG:CZ	1:A:760:GLN:HE22	2.32	0.43
1:A:895:LEU:HD13	1:A:907:MET:HE2	2.00	0.43
1:A:243:LEU:O	1:A:247:VAL:HG23	2.19	0.43
1:A:562:THR:HG22	1:A:612:TYR:CE1	2.53	0.43
1:A:166:ALA:HB3	1:A:275:ILE:CD1	2.49	0.43
1:A:753:ARG:O	1:A:754:LYS:HB2	2.19	0.43
1:A:343:HIS:CE1	1:A:537:GLU:OE2	2.71	0.42
1:A:634:MET:N	1:A:635:PRO:HD2	2.33	0.42
1:A:650:PHE:CE2	1:A:700:ARG:HG3	2.53	0.42
1:A:82:ASN:ND2	1:A:82:ASN:C	2.71	0.42
1:A:314:ASN:ND2	1:A:329:LYS:CE	2.81	0.42
1:A:336:GLN:HE21	1:A:417:TYR:N	2.01	0.42
1:A:650:PHE:HE2	1:A:700:ARG:HG3	1.84	0.42
1:A:1047:HIS:HD2	2:A:1161:HOH:O	2.01	0.42
1:A:88:ARG:HD3	1:A:282:ASP:OD1	2.19	0.42
1:A:49:VAL:O	1:A:150:GLN:NE2	2.52	0.42
1:A:336:GLN:O	1:A:414:HIS:HD2	2.03	0.42
1:A:480:ARG:O	1:A:483:MET:HG3	2.19	0.42
1:A:353:LEU:HA	1:A:353:LEU:HD23	1.91	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:887:ASN:ND2	1:A:889:GLU:HB2	2.35	0.42
1:A:115:ASP:O	1:A:118:LYS:HB2	2.19	0.42
1:A:444:LEU:HG	1:A:553:PRO:HB2	2.01	0.42
1:A:774:THR:O	1:A:775:TYR:C	2.58	0.42
1:A:1001:PRO:HG2	1:A:1002:GLU:OE1	2.19	0.41
1:A:979:PRO:HA	1:A:982:ASN:HD22	1.85	0.41
1:A:672:PRO:HB2	1:A:797:LEU:HD21	2.01	0.41
1:A:1079:THR:O	1:A:1083:GLN:HG3	2.21	0.41
1:A:376:HIS:CE1	1:A:699:GLU:HG3	2.55	0.41
1:A:805:VAL:HB	1:A:809:LEU:HD23	2.02	0.41
1:A:14:ALA:O	1:A:17:PRO:HD3	2.20	0.40
1:A:578:THR:HG23	1:A:579:PRO:HD2	2.04	0.40
1:A:1048:LYS:HD2	2:A:1317:HOH:O	2.21	0.40
1:A:207:VAL:HG11	1:A:905:VAL:HG21	2.04	0.40
1:A:895:LEU:HD13	1:A:907:MET:CE	2.51	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	1092/1104 (99%)	1055 (97%)	35 (3%)	2 (0%)	47 44

All (2) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	1062	ALA
1	A	655	ASN

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	914/924 (99%)	890 (97%)	24 (3%)	46 48

All (24) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	82	ASN
1	A	88	ARG
1	A	163	ARG
1	A	198	ASP
1	A	199	THR
1	A	319	ASN
1	A	353	LEU
1	A	444	LEU
1	A	471	LEU
1	A	477	THR
1	A	483	MET
1	A	514	ASN
1	A	619	LEU
1	A	623	LEU
1	A	659	ASN
1	A	735	LEU
1	A	838	LYS
1	A	867	ASN
1	A	869	LEU
1	A	936	LEU
1	A	973	THR
1	A	1036	LEU
1	A	1050	LEU
1	A	1104	LYS

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (38) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	60	GLN

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Mol	Chain	Res	Type
1	A	82	ASN
1	A	314	ASN
1	A	316	GLN
1	A	319	ASN
1	A	324	ASN
1	A	336	GLN
1	A	343	HIS
1	A	348	GLN
1	A	375	ASN
1	A	376	HIS
1	A	384	ASN
1	A	393	GLN
1	A	414	HIS
1	A	469	GLN
1	A	514	ASN
1	A	563	ASN
1	A	600	ASN
1	A	602	HIS
1	A	655	ASN
1	A	730	HIS
1	A	760	GLN
1	A	799	ASN
1	A	815	GLN
1	A	817	GLN
1	A	833	GLN
1	A	878	GLN
1	A	887	ASN
1	A	914	GLN
1	A	954	ASN
1	A	958	ASN
1	A	976	GLN
1	A	982	ASN
1	A	1027	ASN
1	A	1035	ASN
1	A	1038	ASN
1	A	1047	HIS
1	A	1059	GLN

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

There are no ligands in this entry.

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^{th} 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^2)	Q<0.9
1	A	1094/1104 (99%)	0.11	40 (3%) 41 41	13, 29, 58, 79	0

All (40) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	1104	LYS	4.3
1	A	755	GLY	4.3
1	A	754	LYS	3.9
1	A	1103	ALA	3.7
1	A	659	ASN	3.7
1	A	658	GLU	3.7
1	A	1015	ASP	3.5
1	A	1019	ASN	3.4
1	A	664	LEU	3.3
1	A	660	GLY	3.2
1	A	112	ASN	3.2
1	A	12	ILE	3.1
1	A	657	GLY	3.1
1	A	767	LYS	3.1
1	A	1099	LYS	3.0
1	A	656	LEU	3.0
1	A	367	LEU	3.0
1	A	661	ALA	2.7
1	A	26	LYS	2.7
1	A	28	GLU	2.7
1	A	118	LYS	2.7
1	A	1014	TYR	2.6
1	A	25	SER	2.6
1	A	1102	VAL	2.5
1	A	713	ASN	2.5
1	A	1008	GLY	2.5
1	A	753	ARG	2.5

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Mol	Chain	Res	Type	RSRZ
1	A	267	LYS	2.4
1	A	708	ARG	2.4
1	A	890	VAL	2.3
1	A	29	GLY	2.3
1	A	1020	ALA	2.2
1	A	1001	PRO	2.2
1	A	769	LYS	2.1
1	A	171	ALA	2.1
1	A	655	ASN	2.1
1	A	33	TYR	2.1
1	A	281	PHE	2.0
1	A	1018	GLU	2.0
1	A	1100	GLN	2.0

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)

There are no ligands in this entry.

6.5 Other polymers (i)

There are no such residues in this entry.