Full wwPDB X-ray Structure Validation Report ⓘ

Jan 31, 2016 – 08:37 PM GMT

PDB ID	:	1L5H
Title	:	FeMo-cofactor Deficient Nitrogenase MoFe Protein
Authors	:	Schmid, B.; Ribbe, M.W.; Einsle, O.; Yoshida, M.; Thomas, L.M.; Dean, D.R.; Rees, D.C.; Burgess, B.K.
Deposited on	:	2002-03-06
Resolution	:	2.30 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
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:

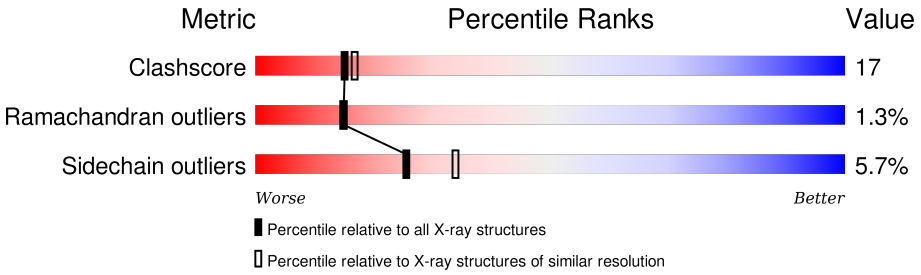
MolProbity	:	4.02b-467
Mogul	:	1.7 (RC4), CSD as536be (2015)
Xtriage (Phenix)	:	NOT EXECUTED
EDS	:	NOT EXECUTED
Percentile statistics	:	20151230.v01 (using entries in the PDB archive December 30th 2015)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	trunk26865

1 Overall quality at a glance

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

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	102246	4452 (2.30-2.30)
Ramachandran outliers	100387	4410 (2.30-2.30)
Sidechain outliers	100360	4409 (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. 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.

Note EDS was not executed.

Mol	Chain	Length	Quality of chain
1	A	491	50% 28% • 18%
2	B	522	72% 26% •

2 Entry composition

There are 5 unique types of molecules in this entry. The entry contains 7639 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 nitrogenase molybdenum-iron protein alpha chain.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	405	Total	C	N	O	S	0	0	0
			3208	2051	547	589	21			

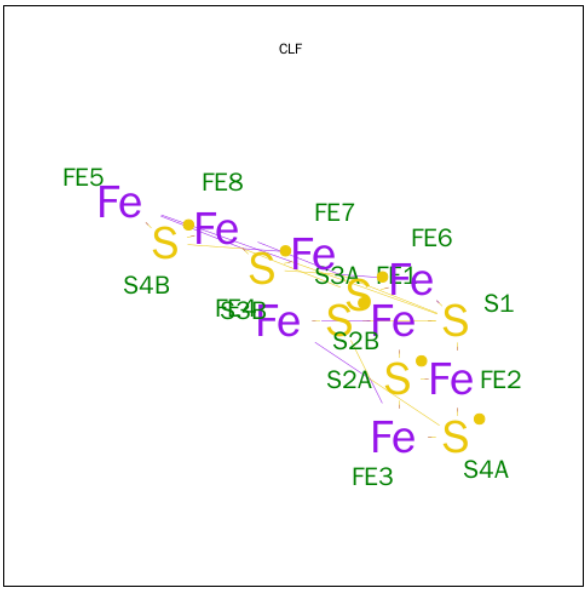
- Molecule 2 is a protein called nitrogenase molybdenum-iron protein beta chain.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	B	522	Total	C	N	O	S	0	0	0
			4174	2666	705	775	28			

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

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	B	1	Total	Ca	0	0
			1	1		

- Molecule 4 is FE(8)-S(7) CLUSTER (three-letter code: CLF) (formula: Fe_8S_7).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	B	1	Total Fe S 15 8 7	0	0

- Molecule 5 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	A	83	Total O 83 83	0	0
5	B	158	Total O 158 158	0	0

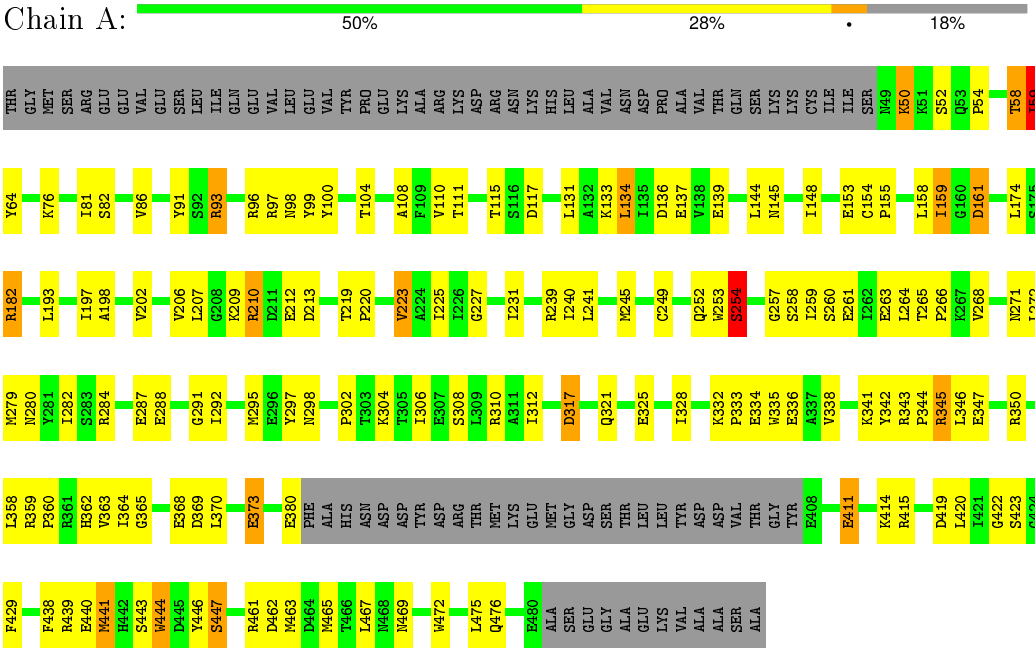
3 Residue-property plots (i)

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.

Note EDS was not executed.

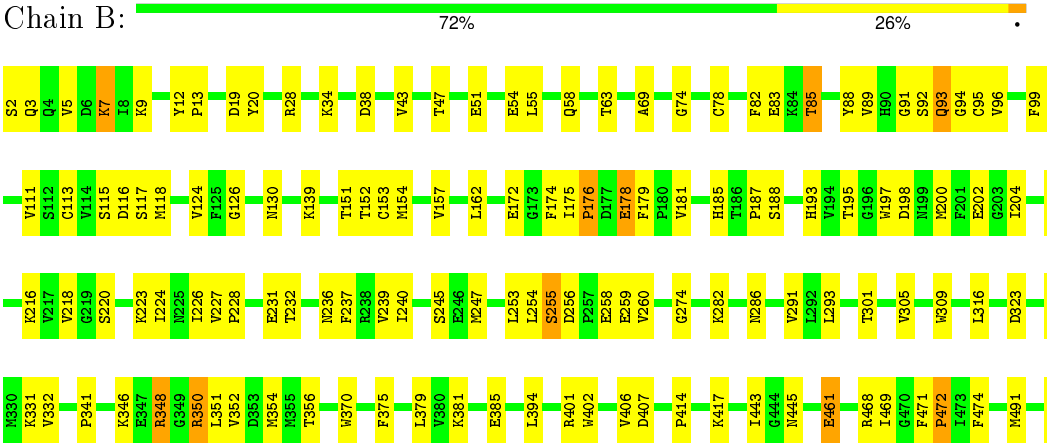
- Molecule 1: nitrogenase molybdenum-iron protein alpha chain

Chain A:



- Molecule 2: nitrogenase molybdenum-iron protein beta chain

Chain B:




I501
L502
E503
R504
L505
R523

4 Data and refinement statistics (i)

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

Property	Value	Source
Space group	C 2 2 21	Depositor
Cell constants a, b, c, α, β, γ	150.45Å 191.92Å 102.34Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	30.00 – 2.30	Depositor
% Data completeness (in resolution range)	5.0 (30.00-2.30)	Depositor
R_{merge}	0.09	Depositor
R_{sym}	(Not available)	Depositor
Refinement program	CNS	Depositor
R, R_{free}	0.249 , 0.289	Depositor
Estimated twinning fraction	No twinning to report.	Xtriage
Total number of atoms	7639	wwPDB-VP
Average B, all atoms (Å^2)	53.0	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: CLF, CA

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	0.39	0/3286	0.65	1/4429 (0.0%)
2	B	0.41	0/4280	0.61	0/5786
All	All	0.40	0/7566	0.63	1/10215 (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	254	SER	N-CA-C	-5.45	96.29	111.00

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	3208	0	3165	147	0
2	B	4174	0	4088	120	0
3	B	1	0	0	0	0
4	B	15	0	0	1	0
5	A	83	0	0	6	0
5	B	158	0	0	9	0
All	All	7639	0	7253	256	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 17.

All (256) 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:210:ARG:HD3	1:A:263:GLU:HB3	1.41	1.01
1:A:81:ILE:HD13	1:A:134:LEU:HD11	1.50	0.93
2:B:220:SER:HB3	2:B:286:ASN:HB3	1.52	0.91
2:B:178:GLU:H	2:B:178:GLU:CD	1.74	0.88
2:B:209:THR:HG21	2:B:309:TRP:NE1	1.90	0.86
1:A:209:LYS:HB2	1:A:209:LYS:NZ	1.89	0.86
2:B:209:THR:HG21	2:B:309:TRP:HE1	1.39	0.86
1:A:308:SER:O	1:A:312:ILE:HG12	1.76	0.86
1:A:59:ILE:H	1:A:59:ILE:HD12	1.42	0.85
2:B:461:GLU:CD	2:B:461:GLU:H	1.82	0.83
1:A:461:ARG:HH11	1:A:461:ARG:HG2	1.42	0.83
2:B:96:VAL:HG21	2:B:115:SER:HB2	1.61	0.82
1:A:298:ASN:HD22	1:A:304:LYS:HE2	1.45	0.81
2:B:7:LYS:NZ	2:B:9:LYS:HE3	1.94	0.81
1:A:280:ASN:HB2	1:A:284:ARG:NH1	1.97	0.80
1:A:419:ASP:HB3	1:A:467:LEU:HD11	1.65	0.77
1:A:209:LYS:HB2	1:A:209:LYS:HZ2	1.51	0.76
2:B:375:PHE:HZ	2:B:469:ILE:HG22	1.53	0.73
1:A:332:LYS:O	1:A:336:GLU:HG3	1.88	0.73
1:A:298:ASN:HD22	1:A:304:LYS:CE	2.01	0.73
2:B:352:VAL:O	2:B:356:THR:HG23	1.90	0.72
2:B:82:PHE:O	2:B:85:THR:HG23	1.92	0.70
2:B:328:PHE:O	2:B:332:VAL:HG23	1.92	0.70
1:A:420:LEU:HD22	1:A:467:LEU:HD21	1.74	0.69
2:B:256:ASP:OD1	2:B:258:GLU:HG2	1.91	0.69
1:A:207:LEU:HD22	1:A:282:ILE:HD11	1.75	0.69
1:A:306:ILE:HG23	1:A:328:ILE:HD13	1.74	0.69
1:A:210:ARG:HD3	1:A:263:GLU:CB	2.21	0.68
1:A:355:ILE:HD13	1:A:360:PRO:HA	1.74	0.68
2:B:82:PHE:HB2	2:B:85:THR:HG21	1.75	0.67
1:A:54:PRO:HB3	2:B:116:ASP:HA	1.76	0.67
1:A:139:GLU:HG3	1:A:174:LEU:HD13	1.77	0.67
1:A:193:LEU:O	1:A:197:ILE:HG13	1.95	0.67
1:A:365:GLY:O	1:A:368:GLU:HG2	1.95	0.66
1:A:341:LYS:HD2	2:B:5:VAL:HG22	1.78	0.65
2:B:231:GLU:CD	2:B:236:ASN:HD22	2.00	0.65
1:A:134:LEU:HD12	1:A:134:LEU:C	2.17	0.64

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:494:LEU:O	2:B:498:VAL:HG23	1.97	0.64
1:A:284:ARG:HG3	1:A:284:ARG:HH11	1.63	0.64
1:A:253:TRP:O	1:A:254:SER:HB2	1.97	0.64
1:A:310:ARG:HG3	1:A:310:ARG:HH11	1.63	0.63
2:B:301:THR:O	2:B:305:VAL:HG23	1.97	0.63
2:B:245:SER:HA	5:B:752:HOH:O	1.98	0.63
2:B:414:PRO:HA	2:B:417:LYS:HE2	1.82	0.62
1:A:364:ILE:HB	1:A:368:GLU:OE2	2.00	0.62
1:A:158:LEU:HD11	2:B:154:MET:HG3	1.82	0.62
2:B:223:LYS:C	2:B:224:ILE:HD12	2.20	0.62
1:A:411:GLU:OE2	1:A:414:LYS:HE3	2.01	0.61
1:A:287:GLU:O	1:A:291:GLY:HA2	2.01	0.61
1:A:423:SER:HB3	5:A:545:HOH:O	2.01	0.61
1:A:265:THR:O	1:A:268:VAL:HG22	2.00	0.60
1:A:461:ARG:NH1	1:A:461:ARG:HG2	2.15	0.60
2:B:178:GLU:N	2:B:178:GLU:CD	2.53	0.60
1:A:76:LYS:HG2	1:A:257:GLY:O	2.01	0.60
2:B:375:PHE:CZ	2:B:469:ILE:HG22	2.35	0.59
1:A:206:VAL:HA	1:A:209:LYS:HZ1	1.67	0.59
2:B:88:TYR:OH	2:B:116:ASP:HB3	2.02	0.59
2:B:7:LYS:HZ1	2:B:9:LYS:HE3	1.65	0.59
1:A:231:ILE:HG22	1:A:443:SER:HB2	1.85	0.59
2:B:211:LYS:HB3	2:B:211:LYS:NZ	2.18	0.58
1:A:462:ASP:HA	1:A:465:MET:HG2	1.84	0.58
2:B:153:CYS:O	2:B:157:VAL:HG23	2.03	0.58
2:B:153:CYS:HB3	2:B:188:SER:OG	2.04	0.58
1:A:465:MET:O	1:A:469:ASN:HB2	2.04	0.58
2:B:100:ARG:HD2	2:B:111:VAL:O	2.03	0.58
1:A:50:LYS:HE2	1:A:52:SER:HB3	1.86	0.57
1:A:154:CYS:HB2	1:A:155:PRO:HD3	1.85	0.57
1:A:206:VAL:HA	1:A:209:LYS:NZ	2.18	0.57
1:A:302:PRO:HD2	1:A:369:ASP:OD2	2.05	0.57
1:A:439:ARG:HD3	1:A:446:TYR:CE2	2.41	0.56
2:B:7:LYS:HZ2	2:B:9:LYS:HE3	1.71	0.56
1:A:207:LEU:CD2	1:A:282:ILE:HD11	2.35	0.56
1:A:54:PRO:HB3	2:B:116:ASP:CA	2.35	0.56
1:A:239:ARG:HD2	1:A:252:GLN:OE1	2.05	0.56
2:B:354:MET:SD	2:B:491:MET:HG2	2.45	0.56
1:A:280:ASN:HB2	1:A:284:ARG:HH12	1.71	0.56
1:A:266:PRO:O	1:A:292:ILE:HD11	2.06	0.56
2:B:445:ASN:HB2	2:B:472:PRO:O	2.06	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:34:LYS:HD3	5:B:728:HOH:O	2.06	0.56
2:B:51:GLU:CD	2:B:51:GLU:H	2.09	0.55
2:B:232:THR:HG21	2:B:471:PHE:CD1	2.42	0.55
2:B:130:ASN:HD22	2:B:130:ASN:N	2.03	0.55
2:B:209:THR:HA	5:B:650:HOH:O	2.05	0.55
1:A:145:ASN:OD1	1:A:176:LYS:HE2	2.07	0.55
1:A:62:CYS:SG	1:A:64:TYR:HB3	2.46	0.55
2:B:226:ILE:HG21	2:B:240:ILE:HD13	1.89	0.55
1:A:298:ASN:ND2	1:A:304:LYS:HE2	2.19	0.54
1:A:444:TRP:HA	1:A:444:TRP:CE3	2.43	0.54
2:B:151:THR:CG2	2:B:162:LEU:HD11	2.37	0.54
1:A:82:SER:HB3	1:A:153:GLU:OE2	2.07	0.54
2:B:231:GLU:HB3	2:B:237:PHE:CZ	2.43	0.53
2:B:74:GLY:HA3	2:B:193:HIS:O	2.08	0.53
2:B:91:GLY:HA3	2:B:152:THR:OG1	2.09	0.53
1:A:81:ILE:CD1	1:A:134:LEU:HD11	2.30	0.53
2:B:12:TYR:HB3	5:B:726:HOH:O	2.07	0.53
1:A:58:THR:OG1	1:A:60:ARG:HB2	2.09	0.53
2:B:323:ASP:O	2:B:326:ASP:HB2	2.09	0.53
1:A:97:ARG:NH1	1:A:99:TYR:OH	2.41	0.53
1:A:342:TYR:O	1:A:345:ARG:HG2	2.09	0.52
2:B:83:GLU:O	2:B:85:THR:HG22	2.10	0.52
2:B:224:ILE:N	2:B:224:ILE:HD12	2.25	0.52
2:B:497:LEU:O	2:B:501:ILE:HG12	2.10	0.52
1:A:50:LYS:HZ2	1:A:60:ARG:NE	2.09	0.51
2:B:200:MET:O	2:B:204:ILE:HG13	2.11	0.51
1:A:210:ARG:CD	1:A:263:GLU:HB3	2.28	0.51
2:B:105:ARG:HB3	2:B:474:PHE:CD1	2.46	0.51
1:A:240:ILE:HG23	1:A:241:LEU:N	2.25	0.51
1:A:353:LEU:HD23	1:A:422:GLY:HA3	1.93	0.51
2:B:226:ILE:HD13	2:B:291:VAL:CG2	2.41	0.51
2:B:494:LEU:HD23	2:B:494:LEU:O	2.11	0.50
1:A:50:LYS:HZ1	1:A:60:ARG:CZ	2.23	0.50
2:B:185:HIS:O	2:B:187:PRO:HD3	2.10	0.50
2:B:185:HIS:C	2:B:187:PRO:HD3	2.31	0.50
1:A:317:ASP:O	1:A:321:GLN:HG3	2.10	0.50
1:A:258:SER:HB3	1:A:261:GLU:HG3	1.93	0.50
1:A:463:MET:HA	1:A:463:MET:CE	2.42	0.50
1:A:287:GLU:HB3	1:A:288:GLU:OE2	2.10	0.50
1:A:93:ARG:HD2	1:A:111:THR:O	2.12	0.50
2:B:216:LYS:HA	2:B:286:ASN:HD21	1.76	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:176:PRO:HB3	2:B:178:GLU:OE2	2.12	0.49
1:A:444:TRP:HE3	1:A:444:TRP:HA	1.77	0.49
1:A:212:GLU:HG2	5:A:518:HOH:O	2.13	0.49
2:B:96:VAL:CG2	2:B:115:SER:HB2	2.39	0.49
2:B:236:ASN:HA	2:B:239:VAL:HG12	1.95	0.49
2:B:414:PRO:O	2:B:417:LYS:HD3	2.13	0.48
1:A:362:HIS:CG	1:A:363:VAL:H	2.31	0.48
1:A:219:THR:HB	1:A:220:PRO:HD2	1.95	0.48
2:B:505:LEU:HD13	2:B:523:ARG:CZ	2.43	0.48
1:A:209:LYS:HB2	1:A:209:LYS:HZ3	1.74	0.48
1:A:227:GLY:CA	1:A:279:MET:HG3	2.44	0.48
2:B:181:VAL:HG12	2:B:181:VAL:O	2.14	0.48
2:B:348:ARG:O	2:B:352:VAL:HG23	2.13	0.48
1:A:429:PHE:CE2	2:B:104:ASN:HB3	2.49	0.48
1:A:425:ILE:HD13	1:A:425:ILE:H	1.78	0.48
2:B:188:SER:N	5:B:730:HOH:O	2.40	0.48
1:A:446:TYR:CE1	1:A:447:SER:HB2	2.47	0.48
1:A:60:ARG:HB3	2:B:93:GLN:HE21	1.79	0.47
2:B:28:ARG:HG3	2:B:34:LYS:HD2	1.95	0.47
2:B:254:LEU:O	2:B:255:SER:CB	2.61	0.47
1:A:223:VAL:HG21	1:A:272:LEU:HD11	1.95	0.47
2:B:179:PHE:O	2:B:181:VAL:HG23	2.15	0.47
2:B:461:GLU:CD	2:B:461:GLU:N	2.59	0.47
1:A:439:ARG:NH1	1:A:446:TYR:HE2	2.13	0.47
1:A:227:GLY:HA2	1:A:279:MET:HG3	1.95	0.47
1:A:225:ILE:HD11	1:A:249:CYS:SG	2.54	0.47
1:A:86:VAL:HG12	5:A:508:HOH:O	2.15	0.47
1:A:148:ILE:O	1:A:178:ILE:HA	2.15	0.47
1:A:343:ARG:HB3	1:A:344:PRO:HD3	1.97	0.47
1:A:97:ARG:NH2	1:A:443:SER:HB3	2.30	0.46
1:A:155:PRO:O	1:A:159:ILE:HD13	2.15	0.46
1:A:439:ARG:HH11	1:A:446:TYR:HE2	1.63	0.46
1:A:144:LEU:HD22	2:B:43:VAL:HG21	1.97	0.46
1:A:159:ILE:HG12	1:A:159:ILE:O	2.14	0.46
1:A:58:THR:HG23	2:B:93:GLN:NE2	2.30	0.46
1:A:343:ARG:NH1	1:A:347:GLU:OE1	2.48	0.46
1:A:334:GLU:O	1:A:338:VAL:HG23	2.15	0.46
2:B:130:ASN:ND2	2:B:130:ASN:N	2.63	0.46
1:A:225:ILE:HD12	1:A:225:ILE:N	2.30	0.46
2:B:346:LYS:HE3	2:B:350:ARG:NH2	2.31	0.46
2:B:78:CYS:HB2	2:B:197:TRP:CD1	2.51	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:282:LYS:NZ	2:B:282:LYS:HB3	2.31	0.46
2:B:211:LYS:O	2:B:211:LYS:HG3	2.15	0.45
2:B:375:PHE:HZ	2:B:469:ILE:CG2	2.26	0.45
2:B:7:LYS:O	2:B:7:LYS:HD2	2.16	0.45
1:A:50:LYS:NZ	1:A:60:ARG:NE	2.65	0.45
2:B:258:GLU:HG3	2:B:259:GLU:N	2.30	0.45
1:A:272:LEU:HD22	1:A:312:ILE:HD12	1.99	0.45
2:B:247:MET:HG2	2:B:341:PRO:CD	2.47	0.44
1:A:265:THR:HB	1:A:266:PRO:HD3	1.99	0.44
2:B:417:LYS:N	2:B:417:LYS:HD2	2.32	0.44
1:A:62:CYS:HB3	2:B:94:GLY:HA3	1.98	0.44
2:B:240:ILE:HD12	2:B:293:LEU:HD11	2.00	0.44
1:A:91:TYR:OH	2:B:69:ALA:HB1	2.18	0.44
1:A:420:LEU:HD13	1:A:467:LEU:CD2	2.46	0.44
1:A:310:ARG:HG3	1:A:310:ARG:NH1	2.31	0.44
1:A:86:VAL:HB	1:A:117:ASP:OD1	2.18	0.44
1:A:115:THR:HG23	2:B:63:THR:HB	1.99	0.44
1:A:253:TRP:NE1	1:A:265:THR:OG1	2.47	0.44
1:A:415:ARG:HG3	1:A:415:ARG:HH11	1.82	0.44
2:B:82:PHE:CB	2:B:85:THR:HG21	2.44	0.44
2:B:316:LEU:HD11	2:B:331:LYS:HG2	1.99	0.44
1:A:359:ARG:HH11	1:A:359:ARG:HG2	1.82	0.43
2:B:494:LEU:HD23	2:B:498:VAL:HG23	2.00	0.43
1:A:100:TYR:CE1	1:A:110:VAL:HB	2.53	0.43
1:A:50:LYS:NZ	1:A:60:ARG:CZ	2.81	0.43
1:A:210:ARG:HB2	1:A:213:ASP:HB3	2.00	0.43
2:B:381:LYS:O	2:B:385:GLU:HG3	2.18	0.43
2:B:503:GLU:OE1	2:B:503:GLU:O	2.36	0.43
2:B:172:GLU:OE1	2:B:174:PHE:HE1	2.01	0.43
1:A:259:ILE:HG23	1:A:260:SER:N	2.34	0.43
2:B:19:ASP:OD1	2:B:20:TYR:N	2.51	0.43
1:A:104:THR:HA	1:A:108:ALA:O	2.18	0.43
2:B:2:SER:O	2:B:3:GLN:HG2	2.18	0.43
2:B:139:LYS:O	2:B:139:LYS:HD3	2.18	0.43
2:B:51:GLU:N	2:B:51:GLU:OE1	2.42	0.43
2:B:9:LYS:HD3	2:B:13:PRO:HG2	2.01	0.43
1:A:231:ILE:HG13	1:A:444:TRP:CZ3	2.53	0.43
1:A:159:ILE:HG12	1:A:161:ASP:OD1	2.18	0.43
1:A:439:ARG:HD3	1:A:446:TYR:OH	2.18	0.43
2:B:92:SER:HB2	4:B:602:CLF:S2A	2.58	0.43
2:B:95:CYS:HB3	2:B:99:PHE:CZ	2.53	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:195:THR:O	2:B:198:ASP:HB3	2.19	0.43
2:B:351:LEU:O	2:B:351:LEU:HD12	2.18	0.43
1:A:295:MET:CE	1:A:312:ILE:HD13	2.49	0.42
1:A:353:LEU:CD2	1:A:422:GLY:HA3	2.48	0.42
1:A:350:ARG:HA	1:A:373:GLU:O	2.18	0.42
1:A:332:LYS:N	1:A:333:PRO:HD2	2.34	0.42
2:B:259:GLU:HB2	5:B:634:HOH:O	2.18	0.42
2:B:402:TRP:CZ2	2:B:406:VAL:HG21	2.54	0.42
2:B:247:MET:HG2	2:B:341:PRO:HD3	2.02	0.42
1:A:198:ALA:O	1:A:202:VAL:HG23	2.19	0.42
1:A:133:LYS:O	1:A:137:GLU:HG3	2.19	0.42
1:A:182:ARG:HH11	1:A:182:ARG:HG3	1.84	0.42
1:A:210:ARG:HG2	5:A:543:HOH:O	2.19	0.42
1:A:59:ILE:HD13	1:A:426:LYS:CB	2.49	0.42
1:A:420:LEU:N	1:A:420:LEU:HD23	2.34	0.42
1:A:438:PHE:O	1:A:438:PHE:HD1	2.02	0.42
2:B:118:MET:CE	2:B:154:MET:HE1	2.49	0.42
1:A:111:THR:HG21	5:A:540:HOH:O	2.18	0.42
2:B:370:TRP:HA	2:B:394:LEU:O	2.20	0.42
1:A:420:LEU:HD13	1:A:467:LEU:HD21	2.01	0.42
1:A:346:LEU:CD1	1:A:370:LEU:HD13	2.50	0.42
1:A:276:TYR:CG	1:A:277:ARG:N	2.87	0.42
2:B:209:THR:CG2	2:B:309:TRP:HE1	2.21	0.41
1:A:272:LEU:HB3	1:A:297:TYR:CD2	2.55	0.41
1:A:295:MET:SD	1:A:312:ILE:HD13	2.60	0.41
2:B:43:VAL:O	2:B:47:THR:HG23	2.20	0.41
1:A:245:MET:O	1:A:245:MET:HG2	2.19	0.41
1:A:60:ARG:HG3	1:A:60:ARG:NH1	2.36	0.41
2:B:89:VAL:HG12	2:B:152:THR:HG23	2.01	0.41
1:A:446:TYR:CD1	1:A:447:SER:HB2	2.56	0.41
2:B:240:ILE:CD1	2:B:293:LEU:HD11	2.50	0.41
2:B:274:GLY:O	5:B:637:HOH:O	2.22	0.41
1:A:76:LYS:O	1:A:108:ALA:HA	2.20	0.41
1:A:271:ASN:HD22	1:A:271:ASN:HA	1.59	0.41
1:A:321:GLN:O	1:A:325:GLU:HG2	2.21	0.41
1:A:440:GLU:HB2	1:A:441:MET:H	1.61	0.41
1:A:355:ILE:CD1	1:A:360:PRO:HA	2.46	0.41
1:A:96:ARG:HD2	5:A:554:HOH:O	2.21	0.41
2:B:379:LEU:HD21	2:B:443:ILE:HG21	2.02	0.41
2:B:96:VAL:HG13	2:B:113:CYS:SG	2.61	0.41
1:A:297:TYR:CD1	1:A:297:TYR:C	2.94	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:332:LYS:HA	1:A:335:TRP:NE1	2.36	0.40
1:A:354:TYR:CZ	1:A:425:ILE:HD11	2.56	0.40
2:B:126:GLY:HA3	5:B:643:HOH:O	2.21	0.40
2:B:227:VAL:HA	2:B:228:PRO:HD2	1.96	0.40
1:A:426:LYS:HE2	1:A:440:GLU:OE2	2.21	0.40
2:B:253:LEU:HD23	2:B:256:ASP:OD2	2.22	0.40
2:B:226:ILE:HG21	2:B:240:ILE:CD1	2.49	0.40
1:A:240:ILE:CG2	1:A:241:LEU:N	2.84	0.40
2:B:401:ARG:HH11	2:B:401:ARG:HD3	1.78	0.40
2:B:105:ARG:HD2	5:B:639:HOH:O	2.21	0.40
1:A:359:ARG:HA	1:A:360:PRO:HD3	1.97	0.40
2:B:54:GLU:O	2:B:58:GLN:HG3	2.22	0.40
1:A:231:ILE:CG2	1:A:444:TRP:H	2.34	0.40
1:A:472:TRP:O	1:A:475:LEU:HD23	2.22	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	401/491 (82%)	369 (92%)	25 (6%)	7 (2%)	11 10
2	B	520/522 (100%)	478 (92%)	37 (7%)	5 (1%)	19 21
All	All	921/1013 (91%)	847 (92%)	62 (7%)	12 (1%)	15 15

All (12) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	50	LYS
1	A	254	SER
1	A	425	ILE
1	A	426	LYS

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Mol	Chain	Res	Type
2	B	212	SER
1	A	317	ASP
2	B	117	SER
2	B	176	PRO
2	B	255	SER
1	A	427	GLU
2	B	218	VAL
1	A	59	ILE

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	341/414 (82%)	317 (93%)	24 (7%)	19	23
2	B	454/454 (100%)	433 (95%)	21 (5%)	33	44
All	All	795/868 (92%)	750 (94%)	45 (6%)	25	34

All (45) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	58	THR
1	A	59	ILE
1	A	93	ARG
1	A	98	ASN
1	A	131	LEU
1	A	134	LEU
1	A	136	ASP
1	A	159	ILE
1	A	161	ASP
1	A	182	ARG
1	A	210	ARG
1	A	223	VAL
1	A	254	SER
1	A	264	LEU
1	A	276	TYR

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Mol	Chain	Res	Type
1	A	345	ARG
1	A	358	LEU
1	A	373	GLU
1	A	380	GLU
1	A	411	GLU
1	A	441	MET
1	A	444	TRP
1	A	447	SER
1	A	476	GLN
2	B	7	LYS
2	B	38	ASP
2	B	55	LEU
2	B	85	THR
2	B	93	GLN
2	B	124	VAL
2	B	175	ILE
2	B	178	GLU
2	B	202	GLU
2	B	211	LYS
2	B	260	VAL
2	B	329	LEU
2	B	348	ARG
2	B	350	ARG
2	B	407	ASP
2	B	461	GLU
2	B	468	ARG
2	B	472	PRO
2	B	502	LEU
2	B	505	LEU
2	B	523	ARG

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (15) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	151	GLN
1	A	196	HIS
1	A	199	ASN
1	A	271	ASN
1	A	298	ASN
1	A	321	GLN
1	A	432	GLN
1	A	451	HIS

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Mol	Chain	Res	Type
2	B	18	GLN
2	B	37	GLN
2	B	128	GLN
2	B	168	ASN
2	B	286	ASN
2	B	499	ASN
2	B	519	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 2 ligands modelled in this entry, 1 is monoatomic - leaving 1 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	$\#\|Z\| > 2$
4	CLF	B	602	1,2	0,24,24	0.00	-	0,57,57	0.00	-

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
4	CLF	B	602	1,2	-	0/0/132/132	0/12/10/10

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

1 monomer is involved in 1 short contact:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	B	602	CLF	1	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

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.