



# Full wwPDB X-ray Structure Validation Report ⓘ

Dec 21, 2021 – 12:12 PM JST

PDB ID : 6K9E  
Title : The A form apo structure of NrS-1 C terminal region-CTR(305-718)  
Authors : Chen, X.; Gan, J.  
Deposited on : 2019-06-14  
Resolution : 2.90 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

<https://www.wwpdb.org/validation/2017/XrayValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

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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 : 1.8.5 (274361), CSD as541be (2020)  
Xtriage (Phenix) : 1.13  
EDS : 2.25  
buster-report : 1.1.7 (2018)  
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) : 2.25

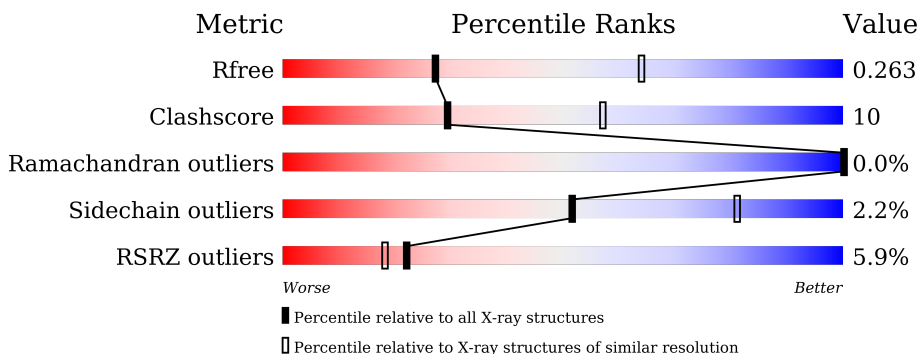
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 2.90 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	1957 (2.90-2.90)
Clashscore	141614	2172 (2.90-2.90)
Ramachandran outliers	138981	2115 (2.90-2.90)
Sidechain outliers	138945	2117 (2.90-2.90)
RSRZ outliers	127900	1906 (2.90-2.90)

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 of the lower bar indicate the fraction of residues that contain outliers for  $\geq 3$ , 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  $\leq 5\%$ . 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	415	 7% 75% 20% ..
1	B	415	 5% 72% 25% ..
1	C	415	 6% 78% 16% ..
1	D	415	 4% 76% 21% .
1	E	415	 7% 75% 21% .
1	F	415	 5% 75% 21% ..

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:

<b>Mol</b>	<b>Type</b>	<b>Chain</b>	<b>Res</b>	<b>Chirality</b>	<b>Geometry</b>	<b>Clashes</b>	<b>Electron density</b>
2	PO4	A	801	-	-	X	-

## 2 Entry composition [i](#)

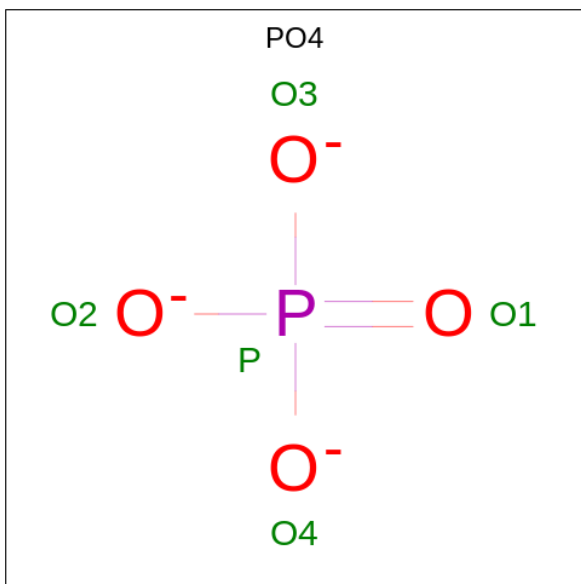
There are 2 unique types of molecules in this entry. The entry contains 19411 atoms, of which 0 are hydrogens and 0 are deuteriums.

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 Primase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	402	Total 3226	C 2101	N 526	O 588	S 11	0	0	0
1	B	404	Total 3260	C 2123	N 531	O 595	S 11	0	0	0
1	C	401	Total 3211	C 2093	N 525	O 583	S 10	0	0	0
1	D	404	Total 3237	C 2111	N 529	O 587	S 10	0	0	0
1	E	402	Total 3213	C 2095	N 526	O 581	S 11	0	0	0
1	F	404	Total 3234	C 2107	N 529	O 587	S 11	0	0	0

- Molecule 2 is PHOSPHATE ION (three-letter code: PO4) (formula: O<sub>4</sub>P) (labeled as "Ligand of Interest" by depositor).

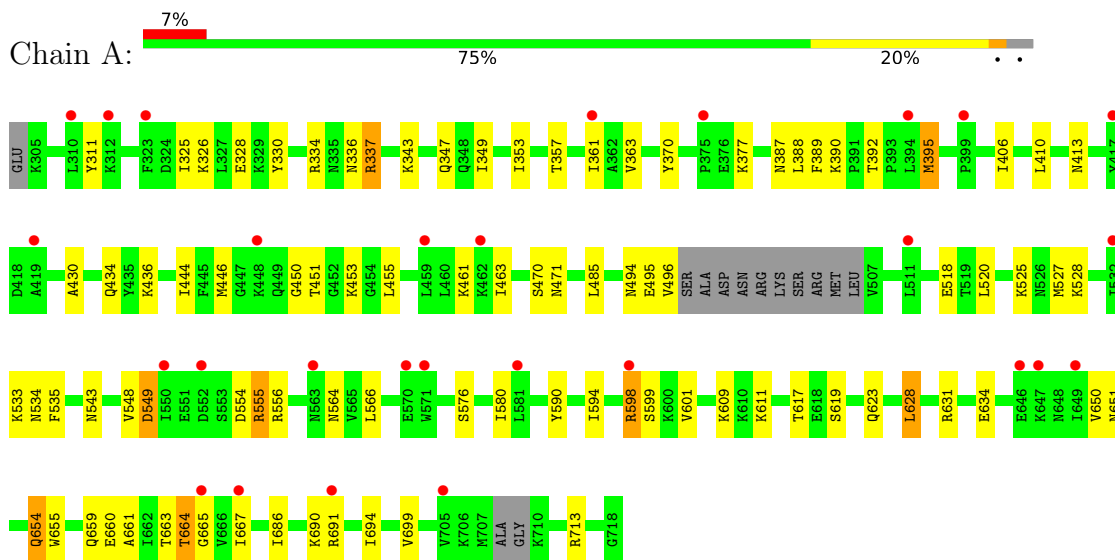


Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
2	A	1	Total	O	P	0	0
			5	4	1		
2	B	1	Total	O	P	0	0
			5	4	1		
2	C	1	Total	O	P	0	0
			5	4	1		
2	C	1	Total	O	P	0	0
			5	4	1		
2	D	1	Total	O	P	0	0
			5	4	1		
2	E	1	Total	O	P	0	0
			5	4	1		

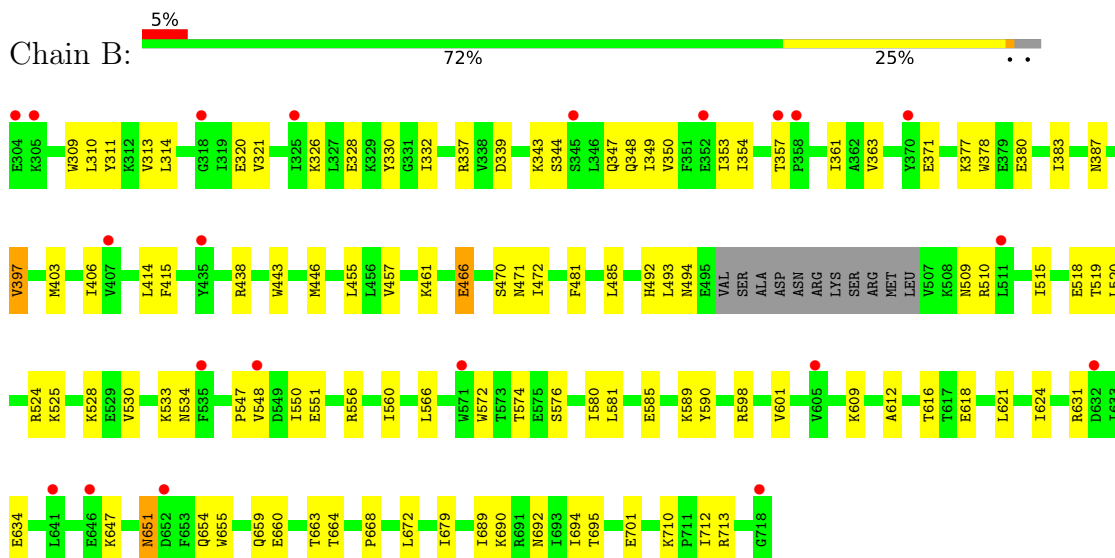
### 3 Residue-property plots [i](#)

These plots are drawn for all protein, RNA, DNA and oligosaccharide 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.

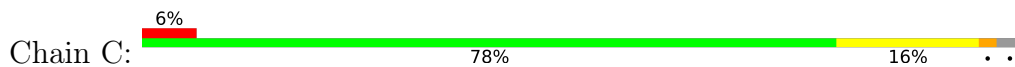
- Molecule 1: Primase

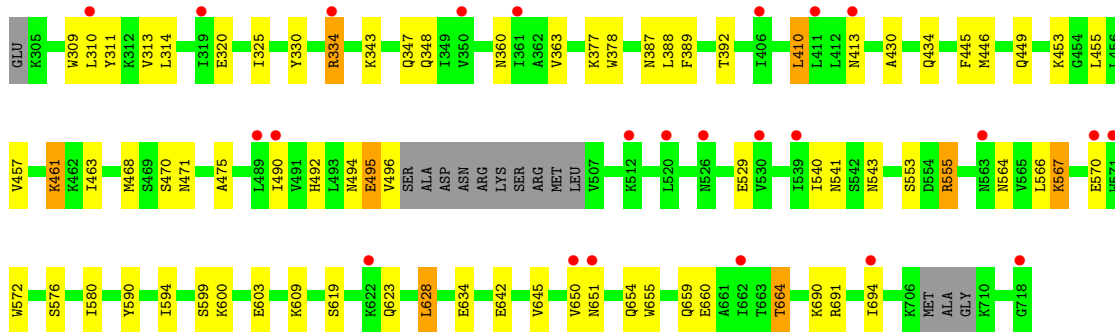


- Molecule 1: Primase

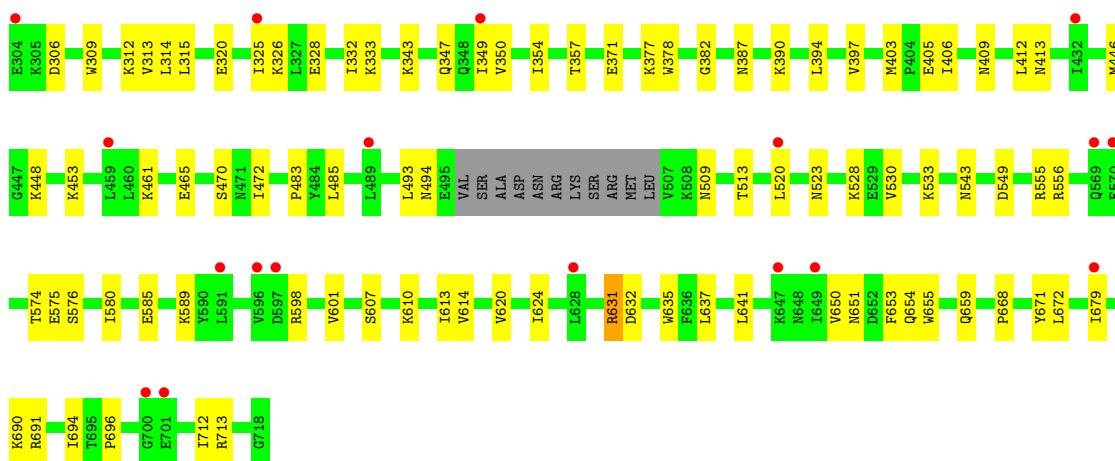
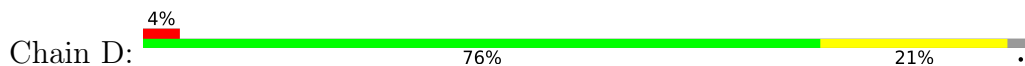


- Molecule 1: Primase

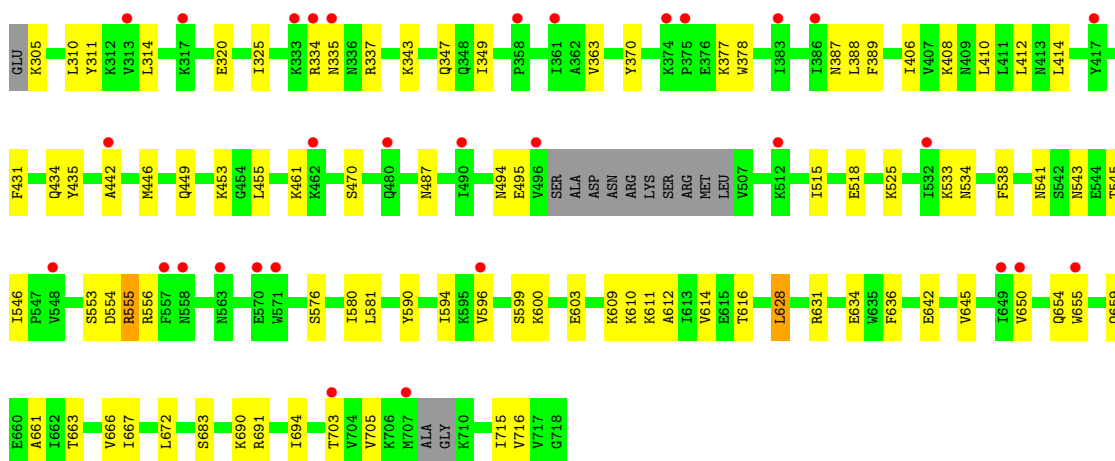
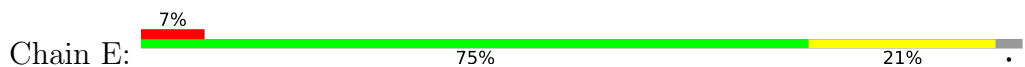




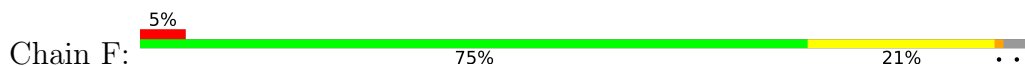
• Molecule 1: Primase

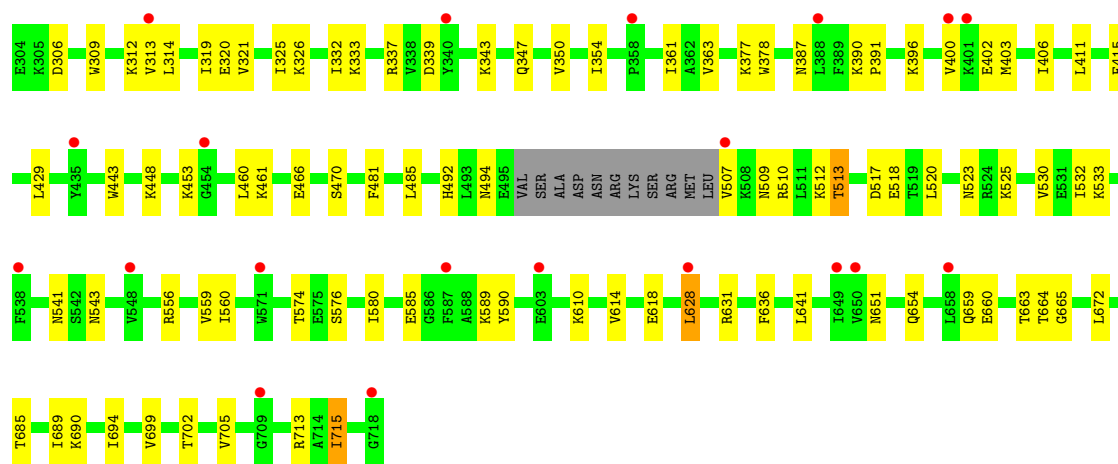


• Molecule 1: Primase



• Molecule 1: Primase







## 4 Data and refinement statistics i

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	159.69Å 159.91Å 159.71Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	29.69 – 2.90 29.69 – 2.88	Depositor EDS
% Data completeness (in resolution range)	88.5 (29.69-2.90) 87.1 (29.69-2.88)	Depositor EDS
$R_{merge}$	0.13	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	2.86 (at 2.90Å)	Xtriage
Refinement program	PHENIX (1.10.1_2155: ???)	Depositor
R, $R_{free}$	0.236 , 0.264 0.236 , 0.263	Depositor DCC
$R_{free}$ test set	4057 reflections (5.03%)	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	49.4	Xtriage
Anisotropy	0.039	Xtriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.29 , -38.4	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.42$ , $\langle L^2 \rangle = 0.24$	Xtriage
Estimated twinning fraction	0.059 for -h,l,k 0.058 for -k,-h,-l 0.059 for l,-k,h 0.437 for l,h,k 0.437 for k,l,h	Xtriage
$F_o, F_c$ correlation	0.89	EDS
Total number of atoms	19411	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 2.13% 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, 0.333 respectively for untwinned datasets, and 0.375, 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: PO4

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	0.33	0/3292	0.55	0/4465
1	B	0.39	2/3327 (0.1%)	0.57	0/4505
1	C	0.33	0/3277	0.53	1/4446 (0.0%)
1	D	0.37	0/3304	0.55	0/4479
1	E	0.33	0/3279	0.53	0/4447
1	F	0.47	2/3301 (0.1%)	0.55	0/4476
All	All	0.37	4/19780 (0.0%)	0.55	1/26818 (0.0%)

All (4) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	F	518	GLU	CD-OE1	-13.35	1.10	1.25
1	F	518	GLU	CD-OE2	-11.04	1.13	1.25
1	B	701	GLU	CD-OE1	-5.20	1.20	1.25
1	B	701	GLU	CD-OE2	-5.09	1.20	1.25

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	C	410	LEU	CA-CB-CG	5.53	128.03	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	3226	0	3251	75	0
1	B	3260	0	3313	83	0
1	C	3211	0	3236	73	0
1	D	3237	0	3276	66	0
1	E	3213	0	3239	67	0
1	F	3234	0	3271	66	0
2	A	5	0	0	2	0
2	B	5	0	0	1	0
2	C	10	0	0	1	0
2	D	5	0	0	1	0
2	E	5	0	0	1	0
All	All	19411	0	19586	371	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 10.

All (371) 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:C:410:LEU:HD12	1:C:580:ILE:HG21	1.35	1.09
1:B:509:ASN:HB3	1:C:495:GLU:HG2	1.39	1.04
1:D:509:ASN:CB	1:E:495:GLU:OE1	2.08	1.01
1:D:325:ILE:CD1	1:E:349:ILE:HD11	1.91	0.99
1:D:325:ILE:HD12	1:E:349:ILE:HD11	1.45	0.94
1:C:410:LEU:HD12	1:C:580:ILE:HD13	1.49	0.94
1:C:410:LEU:CD1	1:C:580:ILE:HG21	1.99	0.92
1:A:349:ILE:HD11	1:F:325:ILE:CD1	2.00	0.91
1:A:349:ILE:HD11	1:F:325:ILE:HD12	1.51	0.90
1:B:509:ASN:OD1	1:C:495:GLU:HG3	1.70	0.90
1:B:651:ASN:OD1	1:B:654:GLN:N	2.06	0.88
1:D:320:GLU:OE2	1:D:377:LYS:NZ	2.09	0.86
1:C:650:VAL:HG22	1:C:654:GLN:HB2	1.59	0.85
1:D:513:THR:HG22	1:E:494:ASN:HD22	1.40	0.84
1:C:360:ASN:ND2	1:D:357:THR:OG1	2.11	0.83
1:B:509:ASN:OD1	1:C:495:GLU:CG	2.32	0.78
1:F:453:LYS:NZ	1:F:543:ASN:HD21	1.82	0.77
1:B:320:GLU:OE2	1:B:377:LYS:NZ	2.14	0.77
1:F:320:GLU:OE2	1:F:377:LYS:NZ	2.18	0.77
1:B:509:ASN:CB	1:C:495:GLU:HG2	2.13	0.76
1:B:672:LEU:CD2	1:B:689:ILE:HG21	2.17	0.75

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:429:LEU:HD21	1:F:460:LEU:HD21	1.67	0.75
1:A:361:ILE:O	1:B:348:GLN:NE2	2.20	0.75
1:D:461:LYS:HD3	1:D:470:SER:HB3	1.69	0.74
1:F:333:LYS:HD3	1:F:390:LYS:HE2	1.69	0.74
1:A:496:VAL:HG11	1:A:548:VAL:HG22	1.69	0.73
1:E:555:ARG:NH2	2:E:801:PO4:O3	2.22	0.72
1:E:650:VAL:HG22	1:E:654:GLN:HB2	1.70	0.72
1:C:494:ASN:O	1:C:495:GLU:HB2	1.89	0.72
1:A:651:ASN:HB2	1:A:654:GLN:HG2	1.72	0.71
1:C:461:LYS:HD3	1:C:470:SER:HB2	1.72	0.71
1:B:330:TYR:OH	1:C:348:GLN:HG3	1.89	0.71
1:F:319:ILE:HD11	1:F:332:ILE:HD11	1.74	0.70
1:A:461:LYS:HD3	1:A:470:SER:HB2	1.72	0.70
1:D:325:ILE:CD1	1:E:349:ILE:CD1	2.69	0.70
1:F:306:ASP:OD2	1:F:312:LYS:NZ	2.25	0.70
1:F:314:LEU:HB3	1:F:319:ILE:HG23	1.74	0.69
1:F:651:ASN:OD1	1:F:654:GLN:N	2.17	0.69
1:A:446:MET:HE1	1:A:609:LYS:HE2	1.74	0.69
1:D:713:ARG:NH2	1:E:634:GLU:OE1	2.22	0.68
1:D:575:GLU:N	1:D:575:GLU:OE2	2.26	0.68
2:A:801:PO4:O4	1:F:556:ARG:NH2	2.26	0.68
1:D:306:ASP:OD2	1:D:312:LYS:NZ	2.26	0.68
1:B:310:LEU:O	1:B:314:LEU:HD12	1.95	0.67
1:C:410:LEU:HD12	1:C:580:ILE:CD1	2.24	0.67
1:B:461:LYS:HD3	1:B:470:SER:HB3	1.74	0.67
1:A:453:LYS:NZ	2:A:801:PO4:O2	2.27	0.66
1:B:361:ILE:O	1:C:348:GLN:NE2	2.28	0.66
1:B:672:LEU:HD21	1:B:689:ILE:HG21	1.77	0.65
1:C:651:ASN:HB2	1:C:654:GLN:HG3	1.77	0.65
1:A:713:ARG:HH12	1:B:634:GLU:CD	2.00	0.65
1:B:406:ILE:HG12	1:B:580:ILE:HG12	1.78	0.65
1:D:513:THR:HG22	1:E:494:ASN:ND2	2.10	0.65
1:A:690:LYS:HA	1:A:694:ILE:HB	1.79	0.64
1:D:461:LYS:NZ	1:D:465:GLU:O	2.30	0.64
1:E:599:SER:HA	1:F:574:THR:HG21	1.78	0.64
1:E:631:ARG:HB3	1:E:663:THR:HA	1.80	0.64
1:D:406:ILE:HA	1:D:409:ASN:HD22	1.62	0.64
1:E:408:LYS:HE3	1:E:412:LEU:HD11	1.78	0.64
1:D:333:LYS:HD3	1:D:390:LYS:HD2	1.80	0.64
1:E:554:ASP:OD1	1:E:555:ARG:N	2.31	0.64
1:D:650:VAL:HG13	1:D:654:GLN:HG3	1.79	0.64

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:336:ASN:HA	1:A:390:LYS:HD3	1.79	0.63
1:B:353:ILE:HG13	1:B:354:ILE:HG23	1.81	0.63
1:B:510:ARG:HD3	1:C:475:ALA:HB2	1.79	0.63
1:A:691:ARG:NH1	1:B:618:GLU:O	2.31	0.62
1:D:556:ARG:NH1	1:E:449:GLN:OE1	2.33	0.62
1:A:599:SER:HA	1:B:574:THR:HG21	1.82	0.62
1:C:453:LYS:NZ	1:C:543:ASN:OD1	2.31	0.62
1:F:660:GLU:O	1:F:664:THR:OG1	2.12	0.62
1:B:690:LYS:O	1:B:695:THR:HG22	1.99	0.62
1:E:461:LYS:HD3	1:E:470:SER:HB2	1.81	0.62
1:A:406:ILE:HG12	1:A:580:ILE:HG12	1.80	0.61
1:C:495:GLU:HA	1:C:495:GLU:OE1	1.99	0.61
1:D:610:LYS:O	1:D:614:VAL:HG23	1.99	0.61
1:A:554:ASP:OD1	1:A:555:ARG:N	2.33	0.61
1:A:634:GLU:OE2	1:F:713:ARG:NH2	2.26	0.61
1:D:314:LEU:HD21	1:D:350:VAL:HG12	1.81	0.61
1:E:406:ILE:HG12	1:E:580:ILE:HG12	1.81	0.61
1:F:610:LYS:O	1:F:614:VAL:HG23	2.00	0.61
1:A:518:GLU:O	1:A:534:ASN:N	2.33	0.60
1:B:551:GLU:OE2	1:C:449:GLN:NE2	2.33	0.60
1:B:509:ASN:CG	1:C:495:GLU:HG3	2.22	0.60
1:C:413:ASN:OD1	1:C:564:ASN:HB2	2.00	0.60
1:E:453:LYS:NZ	1:E:543:ASN:OD1	2.35	0.60
1:D:632:ASP:OD1	1:D:635:TRP:N	2.33	0.60
1:B:672:LEU:HD22	1:B:689:ILE:HG21	1.83	0.60
1:B:713:ARG:NH2	1:C:634:GLU:OE1	2.34	0.60
1:C:311:TYR:OH	1:C:377:LYS:NZ	2.35	0.60
1:D:651:ASN:HD22	1:D:653:PHE:HB3	1.67	0.60
1:F:461:LYS:HD3	1:F:470:SER:HB2	1.83	0.60
1:D:668:PRO:HG2	1:D:671:TYR:CD2	2.36	0.59
1:D:453:LYS:NZ	1:D:543:ASN:HD21	2.01	0.59
1:C:387:ASN:OD1	1:C:389:PHE:N	2.33	0.59
1:B:556:ARG:NH1	1:C:449:GLN:OE1	2.36	0.58
1:E:494:ASN:O	1:E:495:GLU:HB2	2.04	0.58
1:C:660:GLU:O	1:C:664:THR:HB	2.03	0.58
1:A:349:ILE:CD1	1:F:325:ILE:CD1	2.78	0.57
1:C:555:ARG:NH2	2:C:802:PO4:O3	2.37	0.57
1:C:599:SER:HA	1:D:574:THR:HG21	1.86	0.57
1:C:567:LYS:H	1:C:567:LYS:HD2	1.70	0.57
1:B:403:MET:HE2	1:B:590:TYR:CE2	2.39	0.57
1:C:309:TRP:O	1:C:313:VAL:HG23	2.05	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:690:LYS:HA	1:F:694:ILE:HB	1.86	0.56
1:A:413:ASN:OD1	1:A:564:ASN:HB2	2.05	0.56
1:B:472:ILE:HB	1:B:493:LEU:HD23	1.86	0.56
1:B:690:LYS:HA	1:B:694:ILE:HB	1.87	0.56
1:D:690:LYS:HA	1:D:694:ILE:HB	1.86	0.56
1:A:650:VAL:HG22	1:A:654:GLN:HG3	1.87	0.56
1:C:311:TYR:HE1	1:C:320:GLU:HG3	1.70	0.56
1:B:509:ASN:CG	1:C:495:GLU:CG	2.74	0.56
1:D:406:ILE:HG12	1:D:580:ILE:HG12	1.87	0.55
1:B:672:LEU:HD22	1:B:689:ILE:HD13	1.89	0.55
1:F:337:ARG:HH12	1:F:339:ASP:CG	2.08	0.55
1:A:311:TYR:OH	1:A:377:LYS:NZ	2.37	0.55
1:D:655:TRP:O	1:D:659:GLN:HG3	2.07	0.55
1:A:590:TYR:CZ	1:A:594:ILE:HD11	2.42	0.55
1:F:326:LYS:HE2	1:F:530:VAL:HG13	1.89	0.55
1:F:406:ILE:HG12	1:F:580:ILE:HG12	1.89	0.55
1:C:642:GLU:O	1:C:645:VAL:HG12	2.07	0.55
1:B:371:GLU:OE2	1:B:533:LYS:NZ	2.35	0.55
1:B:397:VAL:HG13	1:B:589:LYS:HG2	1.89	0.55
1:A:555:ARG:NH2	2:B:801:PO4:O1	2.40	0.55
1:B:585:GLU:OE1	1:B:589:LYS:NZ	2.40	0.54
1:A:525:LYS:NZ	1:F:523:ASN:OD1	2.33	0.54
1:B:328:GLU:OE2	1:B:528:LYS:NZ	2.40	0.54
1:A:655:TRP:O	1:A:659:GLN:HG3	2.08	0.54
1:E:655:TRP:O	1:E:659:GLN:HG2	2.07	0.54
1:A:387:ASN:OD1	1:A:389:PHE:N	2.35	0.54
1:A:576:SER:O	1:A:580:ILE:HG13	2.08	0.54
1:A:325:ILE:HD13	1:B:349:ILE:HD11	1.89	0.54
1:F:509:ASN:O	1:F:513:THR:OG1	2.25	0.54
1:D:555:ARG:HH21	2:D:801:PO4:P	2.30	0.53
1:E:590:TYR:CZ	1:E:594:ILE:HD11	2.43	0.53
1:C:590:TYR:CZ	1:C:594:ILE:HD11	2.43	0.53
1:E:518:GLU:O	1:E:534:ASN:N	2.39	0.53
1:C:690:LYS:HA	1:C:694:ILE:HB	1.89	0.53
1:D:343:LYS:O	1:D:347:GLN:HG3	2.09	0.53
1:E:690:LYS:HA	1:E:694:ILE:HB	1.91	0.53
1:F:321:VAL:HG12	1:F:332:ILE:HG13	1.90	0.53
1:A:494:ASN:O	1:A:495:GLU:HB2	2.08	0.53
1:A:326:LYS:HG3	1:B:337:ARG:HH22	1.74	0.52
1:B:443:TRP:CZ3	1:B:560:ILE:HD11	2.44	0.52
1:C:655:TRP:O	1:C:659:GLN:HG3	2.10	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:378:TRP:HZ3	1:F:387:ASN:HB2	1.75	0.52
1:F:443:TRP:CZ3	1:F:560:ILE:HD11	2.45	0.52
1:A:660:GLU:O	1:A:664:THR:HB	2.10	0.52
1:D:326:LYS:HE2	1:D:530:VAL:HG13	1.91	0.52
1:A:455:LEU:HD11	1:A:580:ILE:HD12	1.92	0.52
1:D:309:TRP:O	1:D:313:VAL:HG23	2.10	0.52
1:E:691:ARG:NH1	1:F:618:GLU:O	2.43	0.52
1:F:685:THR:O	1:F:689:ILE:HG12	2.10	0.52
1:A:370:TYR:O	1:A:535:PHE:HE2	1.92	0.51
1:F:507:VAL:HA	1:F:510:ARG:HB3	1.92	0.51
1:D:382:GLY:HA3	1:E:335:ASN:ND2	2.26	0.51
1:D:650:VAL:HG12	1:D:651:ASN:O	2.10	0.51
1:D:405:GLU:O	1:D:409:ASN:ND2	2.43	0.51
1:C:446:MET:SD	1:C:609:LYS:HE2	2.51	0.51
1:E:311:TYR:HE1	1:E:320:GLU:HG3	1.75	0.51
1:E:703:THR:HG23	1:E:705:VAL:HG23	1.92	0.51
1:F:403:MET:HE2	1:F:590:TYR:CE2	2.46	0.51
1:B:361:ILE:HB	1:C:348:GLN:NE2	2.26	0.50
1:B:548:VAL:HG23	1:B:550:ILE:HG13	1.93	0.50
1:A:495:GLU:OE2	1:F:509:ASN:HB2	2.11	0.50
1:E:311:TYR:OH	1:E:377:LYS:NZ	2.39	0.50
1:B:509:ASN:HB3	1:C:495:GLU:CG	2.27	0.50
1:C:496:VAL:HG21	1:C:540:ILE:HG23	1.93	0.50
1:A:485:LEU:HD13	1:A:520:LEU:HD13	1.92	0.49
1:E:446:MET:SD	1:E:609:LYS:HE2	2.52	0.49
1:A:451:THR:O	1:A:566:LEU:HD21	2.11	0.49
1:B:621:LEU:HD13	1:B:692:ASN:HB3	1.95	0.49
1:B:668:PRO:HB3	1:B:712:ILE:HD12	1.94	0.49
1:A:330:TYR:OH	1:B:348:GLN:HG3	2.13	0.49
1:B:378:TRP:HZ3	1:B:387:ASN:HB2	1.76	0.49
1:D:472:ILE:HB	1:D:493:LEU:HD23	1.94	0.49
1:D:585:GLU:O	1:D:589:LYS:HG3	2.12	0.49
1:D:668:PRO:HG2	1:D:671:TYR:HD2	1.76	0.49
1:B:485:LEU:HD13	1:B:520:LEU:HD13	1.95	0.49
1:A:543:ASN:OD1	1:F:512:LYS:NZ	2.41	0.49
1:D:598:ARG:HA	1:D:601:VAL:HG13	1.95	0.49
1:D:378:TRP:HZ3	1:D:387:ASN:HB2	1.78	0.49
1:E:576:SER:O	1:E:580:ILE:HG13	2.12	0.48
1:E:305:LYS:HD2	1:E:305:LYS:N	2.28	0.48
1:F:694:ILE:HD12	1:F:699:VAL:HG21	1.95	0.48
1:A:328:GLU:OE1	1:A:528:LYS:NZ	2.38	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:410:LEU:HD13	1:E:455:LEU:HD23	1.94	0.48
1:C:600:LYS:HD2	1:C:603:GLU:OE1	2.13	0.48
1:D:523:ASN:OD1	1:E:525:LYS:NZ	2.41	0.48
1:B:660:GLU:O	1:B:664:THR:OG1	2.22	0.48
1:C:310:LEU:HD11	1:C:314:LEU:HD11	1.96	0.48
1:D:406:ILE:HA	1:D:409:ASN:ND2	2.29	0.48
1:B:343:LYS:O	1:B:347:GLN:HG3	2.13	0.48
1:B:383:ILE:HG23	1:C:334:ARG:HH21	1.79	0.48
1:B:446:MET:SD	1:B:547:PRO:HG3	2.54	0.48
1:C:471:ASN:H	1:C:492:HIS:HD2	1.61	0.48
1:E:612:ALA:O	1:E:616:THR:HG23	2.12	0.48
1:A:325:ILE:CD1	1:B:349:ILE:HD11	2.44	0.48
1:A:651:ASN:HB2	1:A:654:GLN:CG	2.42	0.48
1:C:455:LEU:HD21	1:C:580:ILE:HD12	1.96	0.48
1:F:400:VAL:HG12	1:F:402:GLU:H	1.79	0.48
1:B:361:ILE:HG22	1:B:363:VAL:HG13	1.96	0.47
1:C:310:LEU:CD1	1:C:314:LEU:HD11	2.43	0.47
1:E:600:LYS:HD2	1:E:603:GLU:OE2	2.14	0.47
1:E:370:TYR:CD2	1:E:487:ASN:HB3	2.49	0.47
1:E:343:LYS:O	1:E:347:GLN:HG3	2.14	0.47
1:E:661:ALA:HB1	1:E:667:ILE:HA	1.96	0.47
1:F:702:THR:HA	1:F:715:ILE:HA	1.96	0.47
1:A:446:MET:HE2	1:A:446:MET:HB2	1.73	0.47
1:B:509:ASN:CB	1:C:495:GLU:CG	2.91	0.47
1:C:325:ILE:HD11	1:D:332:ILE:HG21	1.97	0.47
1:D:453:LYS:NZ	1:D:543:ASN:ND2	2.62	0.47
1:B:598:ARG:HA	1:B:601:VAL:HG23	1.96	0.47
1:C:343:LYS:O	1:C:347:GLN:HG3	2.14	0.47
1:D:576:SER:O	1:D:580:ILE:HG13	2.14	0.47
1:F:485:LEU:HD13	1:F:520:LEU:HD13	1.96	0.47
1:A:450:GLY:O	1:A:566:LEU:HG	2.14	0.47
1:A:549:ASP:HB3	1:A:617:THR:CG2	2.44	0.47
1:E:310:LEU:O	1:E:314:LEU:HG	2.14	0.46
1:E:378:TRP:HZ3	1:E:387:ASN:HB2	1.79	0.46
1:B:310:LEU:O	1:B:313:VAL:HG22	2.15	0.46
1:B:350:VAL:O	1:B:354:ILE:HG12	2.14	0.46
1:F:492:HIS:NE2	1:F:541:ASN:OD1	2.46	0.46
1:A:392:THR:HG21	1:A:463:ILE:O	2.15	0.46
1:A:495:GLU:OE1	1:F:512:LYS:HE2	2.16	0.46
1:B:326:LYS:HE2	1:B:530:VAL:CG2	2.45	0.46
1:A:390:LYS:HB2	1:A:390:LYS:NZ	2.28	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:394:LEU:HD23	1:D:585:GLU:HA	1.98	0.46
1:E:642:GLU:O	1:E:645:VAL:HG12	2.16	0.46
1:B:330:TYR:HH	1:C:348:GLN:HG3	1.80	0.46
1:B:655:TRP:O	1:B:659:GLN:HG3	2.16	0.46
1:D:696:PRO:HB3	1:E:616:THR:HG21	1.98	0.46
1:A:349:ILE:O	1:A:353:ILE:HG13	2.16	0.45
1:F:343:LYS:O	1:F:347:GLN:HG3	2.16	0.45
1:D:485:LEU:HD13	1:D:520:LEU:HD13	1.98	0.45
1:E:495:GLU:N	1:E:541:ASN:O	2.39	0.45
1:F:559:VAL:HG22	1:F:610:LYS:HB2	1.98	0.45
1:A:444:ILE:HG22	1:A:446:MET:HG3	1.98	0.45
1:A:554:ASP:OD1	1:A:556:ARG:N	2.36	0.45
1:A:659:GLN:O	1:A:663:THR:HG23	2.17	0.45
1:C:330:TYR:CE1	1:C:343:LYS:HB2	2.52	0.45
1:E:334:ARG:O	1:E:337:ARG:HB3	2.17	0.45
1:F:453:LYS:HZ1	1:F:543:ASN:HD21	1.63	0.45
1:C:471:ASN:H	1:C:492:HIS:CD2	2.35	0.45
1:F:585:GLU:O	1:F:589:LYS:HG3	2.16	0.45
1:C:392:THR:HG21	1:C:463:ILE:O	2.16	0.45
1:D:453:LYS:HZ1	1:D:543:ASN:HD21	1.65	0.45
1:E:659:GLN:O	1:E:663:THR:HG23	2.17	0.45
1:F:631:ARG:NH1	1:F:665:GLY:HA3	2.31	0.45
1:D:446:MET:HE1	1:D:613:ILE:HD11	1.99	0.45
1:D:651:ASN:ND2	1:D:653:PHE:HB3	2.31	0.45
1:C:576:SER:O	1:C:580:ILE:HG13	2.17	0.44
1:D:668:PRO:HB3	1:D:712:ILE:HG21	1.99	0.44
1:F:350:VAL:O	1:F:354:ILE:HG12	2.17	0.44
1:F:453:LYS:NZ	1:F:543:ASN:ND2	2.60	0.44
1:F:659:GLN:O	1:F:663:THR:HG23	2.17	0.44
1:B:612:ALA:O	1:B:616:THR:HG22	2.17	0.44
1:C:413:ASN:HD22	1:C:566:LEU:HD23	1.83	0.44
1:E:650:VAL:HG22	1:E:654:GLN:CB	2.45	0.44
1:B:457:VAL:HG11	1:B:492:HIS:CD2	2.53	0.44
1:D:624:ILE:HD11	1:D:679:ILE:HG21	1.99	0.44
1:E:334:ARG:O	1:E:337:ARG:N	2.51	0.44
1:A:453:LYS:NZ	1:A:543:ASN:HD21	2.15	0.44
1:C:619:SER:O	1:C:623:GLN:HG3	2.18	0.44
1:D:328:GLU:OE2	1:D:528:LYS:NZ	2.51	0.44
1:A:533:LYS:HB3	1:A:533:LYS:HE2	1.67	0.44
1:B:466:GLU:H	1:B:466:GLU:HG3	1.46	0.44
1:C:413:ASN:HD22	1:C:566:LEU:CD2	2.30	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:598:ARG:O	1:A:601:VAL:HG22	2.18	0.44
1:C:566:LEU:HD13	1:C:572:TRP:CH2	2.53	0.44
1:D:315:LEU:HD23	1:D:315:LEU:HA	1.81	0.44
1:F:415:PHE:CE2	1:F:560:ILE:HD13	2.53	0.44
1:A:330:TYR:CE1	1:A:343:LYS:HB2	2.53	0.43
1:B:414:LEU:HD12	1:B:414:LEU:HA	1.80	0.43
1:B:624:ILE:HD11	1:B:679:ILE:HG21	2.00	0.43
1:B:406:ILE:HG12	1:B:580:ILE:CG1	2.47	0.43
1:E:325:ILE:HD11	1:F:332:ILE:HG21	1.99	0.43
1:B:361:ILE:HB	1:C:348:GLN:HE21	1.83	0.43
1:D:350:VAL:O	1:D:354:ILE:HG12	2.19	0.43
1:F:314:LEU:HD21	1:F:350:VAL:HG12	2.00	0.43
1:F:631:ARG:HB3	1:F:663:THR:HA	2.00	0.43
1:A:336:ASN:HA	1:A:390:LYS:CD	2.45	0.43
1:A:347:GLN:HB3	1:A:357:THR:HG23	1.98	0.43
1:D:397:VAL:HG22	1:D:589:LYS:HD3	1.99	0.43
1:E:311:TYR:HB2	1:E:363:VAL:HA	1.99	0.43
1:E:410:LEU:HD22	1:E:580:ILE:HG21	2.00	0.43
1:E:442:ALA:HB2	1:E:515:ILE:HD12	2.00	0.43
1:B:446:MET:CE	1:B:609:LYS:HE2	2.48	0.43
1:F:576:SER:O	1:F:580:ILE:HG13	2.18	0.43
1:B:455:LEU:HD21	1:B:580:ILE:HD12	2.01	0.43
1:D:371:GLU:OE2	1:D:533:LYS:NZ	2.39	0.43
1:A:619:SER:O	1:A:623:GLN:HG3	2.17	0.43
1:B:311:TYR:HE1	1:B:320:GLU:HG3	1.82	0.43
1:E:387:ASN:OD1	1:E:389:PHE:N	2.39	0.43
1:E:581:LEU:HD23	1:E:581:LEU:HA	1.90	0.43
1:B:576:SER:O	1:B:580:ILE:HG13	2.19	0.43
1:B:631:ARG:HB3	1:B:663:THR:HA	2.00	0.43
1:F:532:ILE:HD12	1:F:533:LYS:O	2.19	0.43
1:A:387:ASN:OD1	1:A:388:LEU:N	2.52	0.42
1:A:518:GLU:O	1:A:533:LYS:HA	2.18	0.42
1:B:518:GLU:O	1:B:534:ASN:N	2.52	0.42
1:D:631:ARG:HG2	1:D:631:ARG:HH11	1.84	0.42
1:F:628:LEU:HD13	1:F:636:PHE:HZ	1.84	0.42
1:A:325:ILE:O	1:A:325:ILE:HG13	2.20	0.42
1:E:387:ASN:OD1	1:E:388:LEU:N	2.52	0.42
1:F:361:ILE:HG22	1:F:363:VAL:HG13	2.01	0.42
1:F:481:PHE:CE1	1:F:525:LYS:HA	2.54	0.42
1:B:415:PHE:CE2	1:B:560:ILE:HD13	2.54	0.42
1:E:515:ILE:HD13	1:E:538:PHE:CD1	2.54	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:311:TYR:HB2	1:A:363:VAL:HA	2.02	0.42
1:A:631:ARG:NH1	1:A:665:GLY:HA3	2.34	0.42
1:C:311:TYR:HB2	1:C:363:VAL:HA	2.00	0.42
1:E:431:PHE:HB2	1:E:596:VAL:HG11	2.02	0.42
1:E:554:ASP:OD1	1:E:556:ARG:N	2.42	0.42
1:A:410:LEU:HD22	1:A:455:LEU:HD22	2.02	0.42
1:A:446:MET:HE1	1:A:609:LYS:CE	2.45	0.42
1:A:628:LEU:HB3	1:A:699:VAL:HG11	2.01	0.42
1:A:686:ILE:O	1:A:690:LYS:HG3	2.20	0.42
1:C:628:LEU:HD12	1:C:628:LEU:HA	1.86	0.42
1:F:411:LEU:O	1:F:415:PHE:HD1	2.03	0.42
1:B:524:ARG:HH21	1:B:524:ARG:HG3	1.85	0.42
1:C:445:PHE:O	1:C:541:ASN:HA	2.20	0.42
1:C:453:LYS:O	1:C:457:VAL:HG13	2.20	0.42
1:C:529:GLU:OE2	1:D:483:PRO:HG3	2.20	0.42
1:C:553:SER:OG	1:D:448:LYS:HB2	2.20	0.42
1:D:403:MET:HE3	1:D:403:MET:HB3	1.91	0.42
1:A:395:MET:HG2	1:A:436:LYS:NZ	2.35	0.42
1:B:438:ARG:HD2	1:B:515:ILE:O	2.19	0.42
1:C:387:ASN:OD1	1:C:388:LEU:N	2.53	0.42
1:F:507:VAL:HG23	1:F:510:ARG:HD2	2.01	0.42
1:B:481:PHE:CE1	1:B:525:LYS:HA	2.55	0.41
1:E:410:LEU:HB2	1:E:580:ILE:HD13	2.02	0.41
1:A:334:ARG:O	1:A:337:ARG:HB3	2.20	0.41
1:B:309:TRP:O	1:B:313:VAL:HG13	2.20	0.41
1:B:509:ASN:CG	1:C:495:GLU:HG2	2.38	0.41
1:D:637:LEU:HD23	1:D:641:LEU:HB3	2.02	0.41
1:C:468:MET:HA	1:C:490:ILE:O	2.21	0.41
1:C:310:LEU:HD13	1:C:314:LEU:CD1	2.51	0.41
1:F:309:TRP:O	1:F:313:VAL:HG13	2.20	0.41
1:F:314:LEU:O	1:F:319:ILE:HG22	2.21	0.41
1:B:321:VAL:HG12	1:B:332:ILE:HG13	2.01	0.41
1:F:651:ASN:H	1:F:651:ASN:ND2	2.18	0.41
1:A:549:ASP:HB3	1:A:617:THR:HG21	2.01	0.41
1:C:325:ILE:HD12	1:D:349:ILE:CD1	2.51	0.41
1:F:453:LYS:HE3	1:F:453:LYS:HB2	1.68	0.41
1:A:453:LYS:HZ1	1:A:543:ASN:HD21	1.69	0.41
1:F:636:PHE:HB3	1:F:641:LEU:HD22	2.03	0.41
1:A:661:ALA:HB1	1:A:667:ILE:HA	2.02	0.41
1:B:337:ARG:NH1	1:B:339:ASP:OD1	2.53	0.41
1:E:553:SER:OG	1:F:448:LYS:HB2	2.20	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:628:LEU:HD13	1:E:636:PHE:HZ	1.86	0.41
1:A:654:GLN:HG2	1:A:654:GLN:H	1.63	0.41
1:B:471:ASN:H	1:B:492:HIS:HD2	1.69	0.41
1:B:581:LEU:HD23	1:B:581:LEU:HA	1.89	0.41
1:E:610:LYS:O	1:E:614:VAL:HG13	2.21	0.41
1:E:666:VAL:HG22	1:E:716:VAL:HG12	2.03	0.41
1:C:378:TRP:HZ3	1:C:387:ASN:HB2	1.86	0.41
1:B:347:GLN:HB3	1:B:357:THR:HG23	2.02	0.40
1:C:691:ARG:CD	1:D:620:VAL:HG22	2.51	0.40
1:C:430:ALA:O	1:C:434:GLN:HG3	2.21	0.40
1:F:391:PRO:HG2	1:F:396:LYS:HD3	2.02	0.40
1:A:471:ASN:HB2	1:F:517:ASP:OD2	2.22	0.40
1:B:566:LEU:HD13	1:B:572:TRP:CH2	2.56	0.40
1:D:651:ASN:ND2	1:D:654:GLN:H	2.19	0.40
1:D:691:ARG:NH2	1:E:616:THR:O	2.54	0.40
1:E:628:LEU:HD12	1:E:628:LEU:HA	1.91	0.40
1:F:443:TRP:HZ3	1:F:560:ILE:HD11	1.85	0.40
1:A:430:ALA:O	1:A:434:GLN:HG3	2.21	0.40
1:E:414:LEU:HD12	1:E:414:LEU:HA	1.83	0.40
1:E:545:THR:O	1:E:546:ILE:HD13	2.22	0.40
1:E:434:GLN:HB2	1:E:435:TYR:CD1	2.56	0.40
1:E:518:GLU:O	1:E:533:LYS:HA	2.21	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	396/415 (95%)	386 (98%)	10 (2%)	0	<b>100</b> <b>100</b>
1	B	400/415 (96%)	387 (97%)	12 (3%)	1 (0%)	41 71
1	C	395/415 (95%)	384 (97%)	11 (3%)	0	<b>100</b> <b>100</b>

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	D	400/415 (96%)	388 (97%)	12 (3%)	0	100	100
1	E	396/415 (95%)	385 (97%)	11 (3%)	0	100	100
1	F	400/415 (96%)	389 (97%)	11 (3%)	0	100	100
All	All	2387/2490 (96%)	2319 (97%)	67 (3%)	1 (0%)	100	100

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	651	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	349/378 (92%)	339 (97%)	10 (3%)	42	76
1	B	355/378 (94%)	347 (98%)	8 (2%)	50	80
1	C	346/378 (92%)	338 (98%)	8 (2%)	50	80
1	D	348/378 (92%)	341 (98%)	7 (2%)	55	82
1	E	345/378 (91%)	339 (98%)	6 (2%)	60	86
1	F	349/378 (92%)	342 (98%)	7 (2%)	55	82
All	All	2092/2268 (92%)	2046 (98%)	46 (2%)	52	81

All (46) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	337	ARG
1	A	395	MET
1	A	527	MET
1	A	549	ASP
1	A	555	ARG
1	A	598	ARG
1	A	611	LYS

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	A	628	LEU
1	A	654	GLN
1	A	664	THR
1	B	344	SER
1	B	380	GLU
1	B	397	VAL
1	B	466	GLU
1	B	494	ASN
1	B	519	THR
1	B	647	LYS
1	B	710	LYS
1	C	334	ARG
1	C	461	LYS
1	C	495	GLU
1	C	555	ARG
1	C	567	LYS
1	C	570	GLU
1	C	628	LEU
1	C	664	THR
1	D	412	LEU
1	D	413	ASN
1	D	494	ASN
1	D	549	ASP
1	D	607	SER
1	D	631	ARG
1	D	672	LEU
1	E	555	ARG
1	E	611	LYS
1	E	628	LEU
1	E	672	LEU
1	E	683	SER
1	E	715	ILE
1	F	466	GLU
1	F	494	ASN
1	F	513	THR
1	F	628	LEU
1	F	672	LEU
1	F	705	VAL
1	F	715	ILE

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (16) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	335	ASN
1	A	541	ASN
1	A	692	ASN
1	B	492	HIS
1	B	648	ASN
1	C	360	ASN
1	C	492	HIS
1	D	360	ASN
1	D	409	ASN
1	D	413	ASN
1	D	543	ASN
1	E	623	GLN
1	F	360	ASN
1	F	471	ASN
1	F	494	ASN
1	F	543	ASN

### 5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

### 5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

### 5.6 Ligand geometry [i](#)

6 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	PO4	A	801	-	4,4,4	1.05	0	6,6,6	0.57	0
2	PO4	C	801	-	4,4,4	1.05	0	6,6,6	0.42	0
2	PO4	D	801	-	4,4,4	1.00	0	6,6,6	0.50	0
2	PO4	B	801	-	4,4,4	0.99	0	6,6,6	0.49	0
2	PO4	C	802	-	4,4,4	0.97	0	6,6,6	0.46	0
2	PO4	E	801	-	4,4,4	1.01	0	6,6,6	0.49	0

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

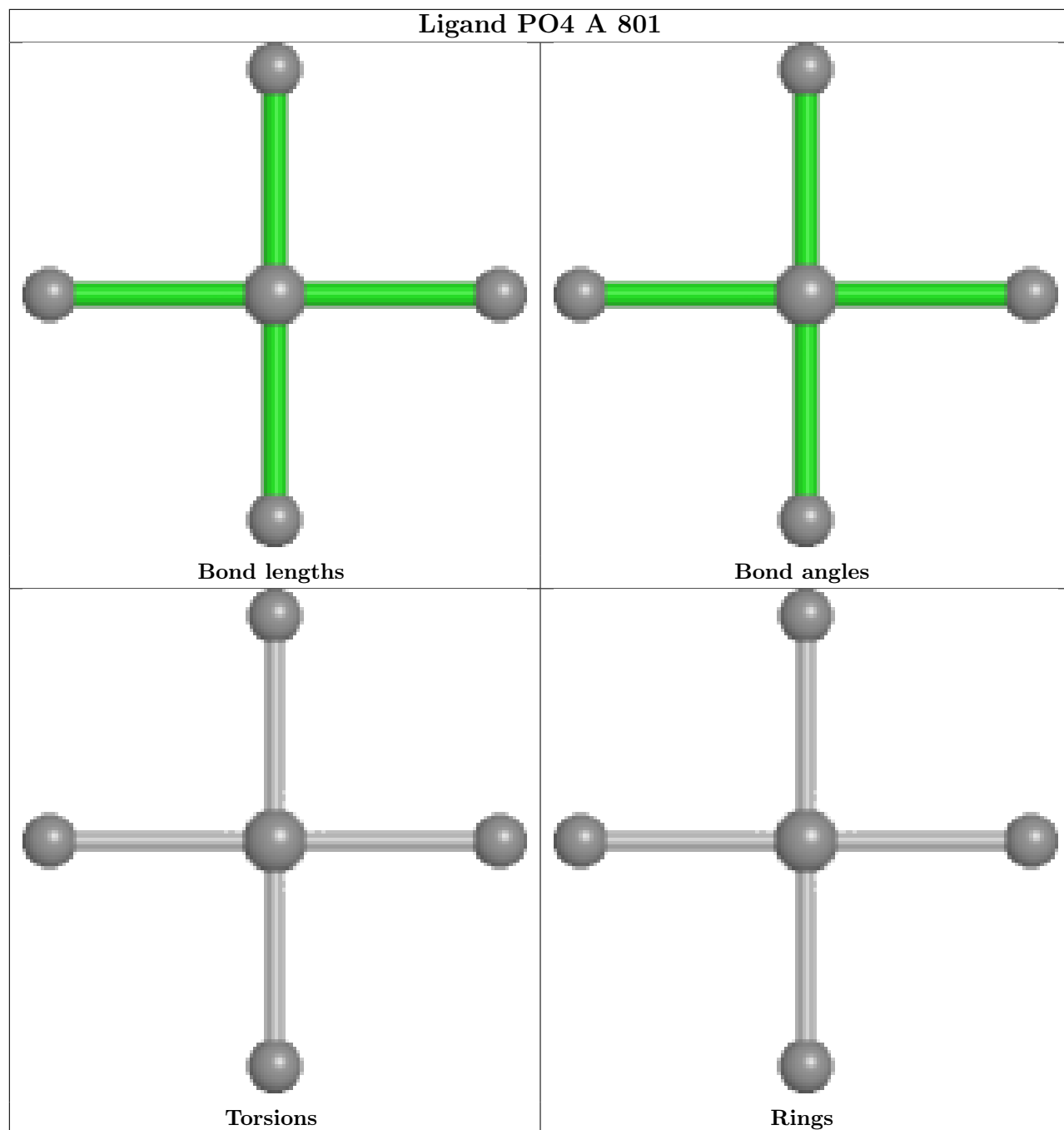
There are no ring outliers.

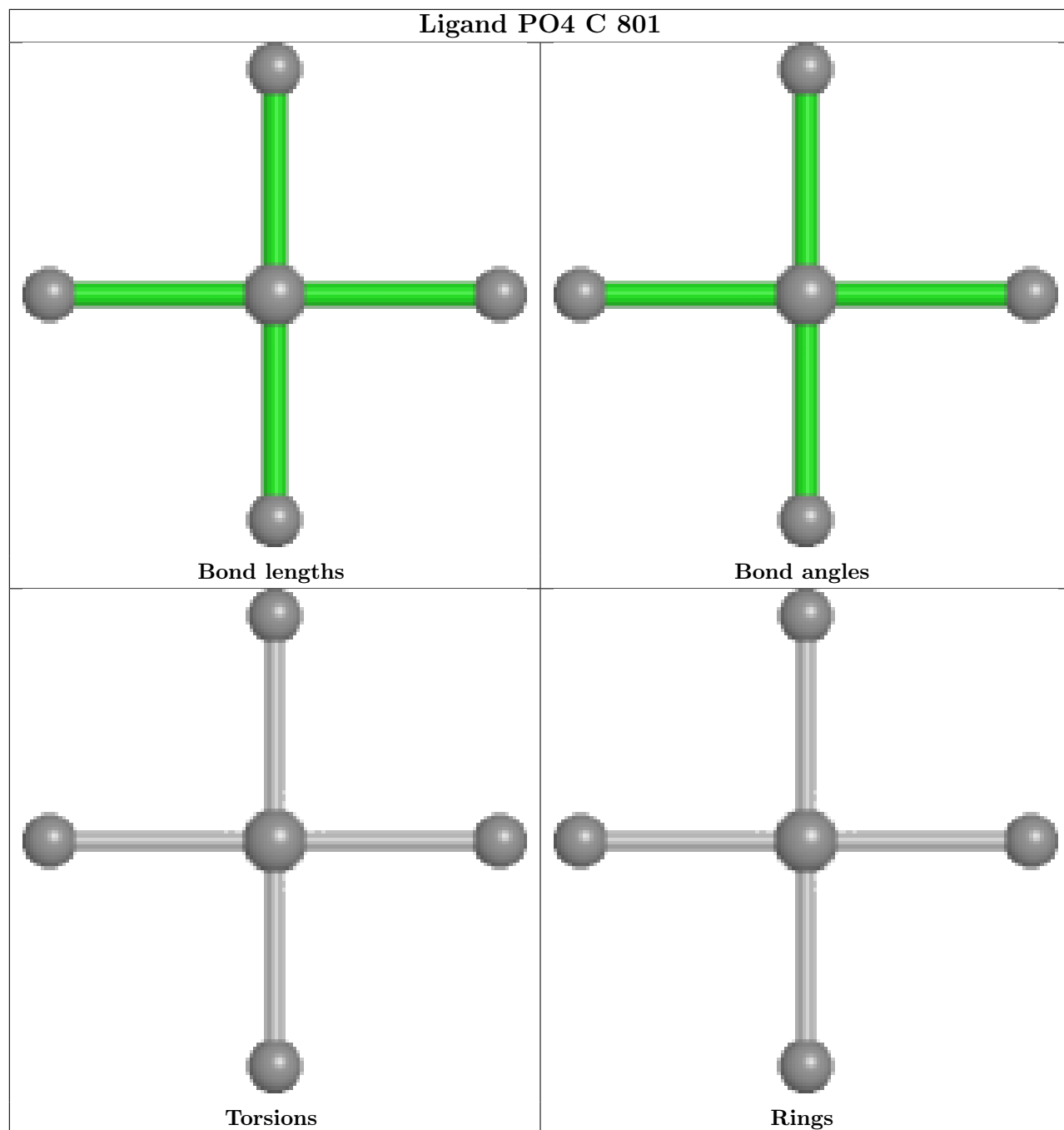
5 monomers are involved in 6 short contacts:

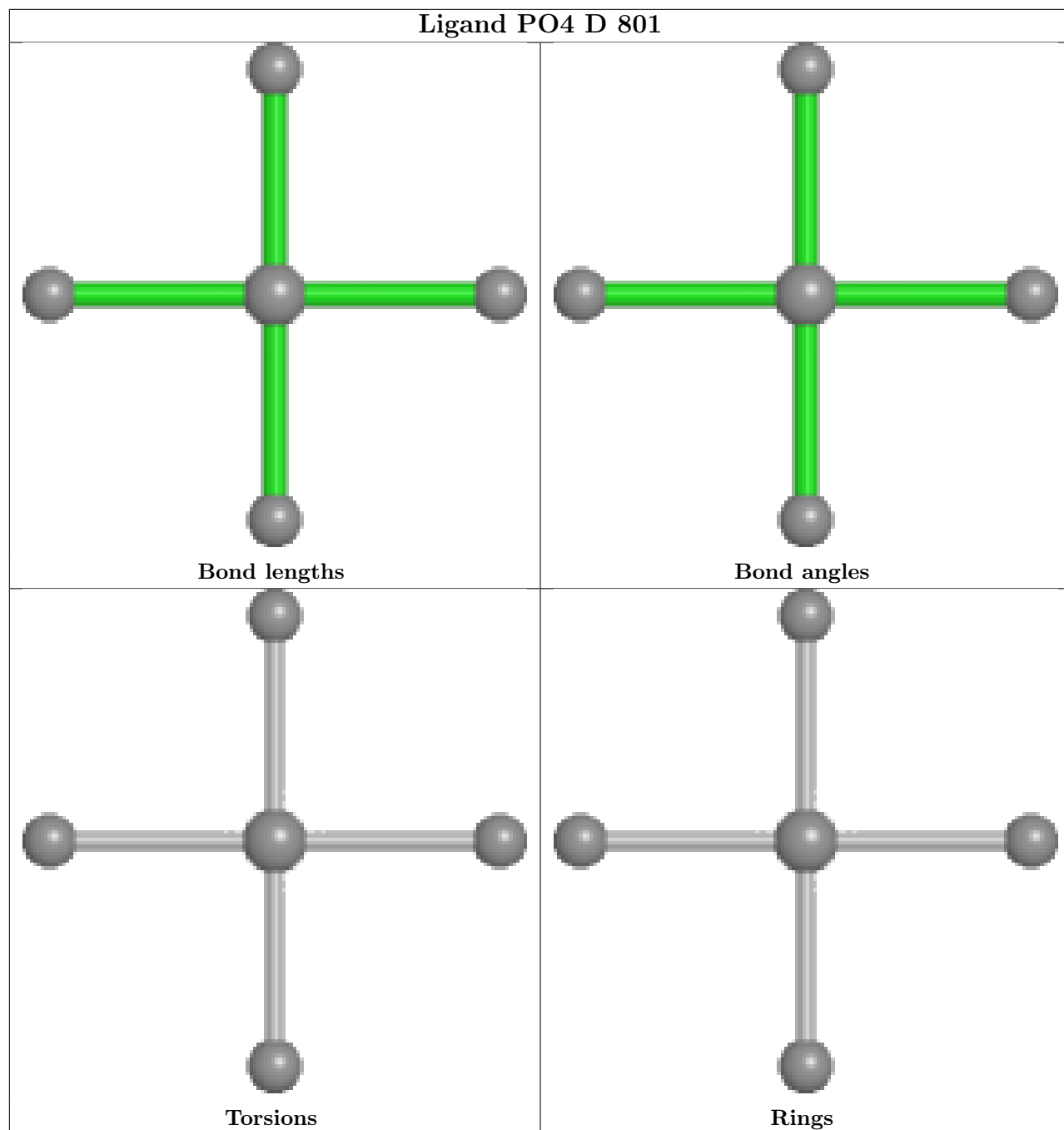
Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	A	801	PO4	2	0
2	D	801	PO4	1	0
2	B	801	PO4	1	0
2	C	802	PO4	1	0
2	E	801	PO4	1	0

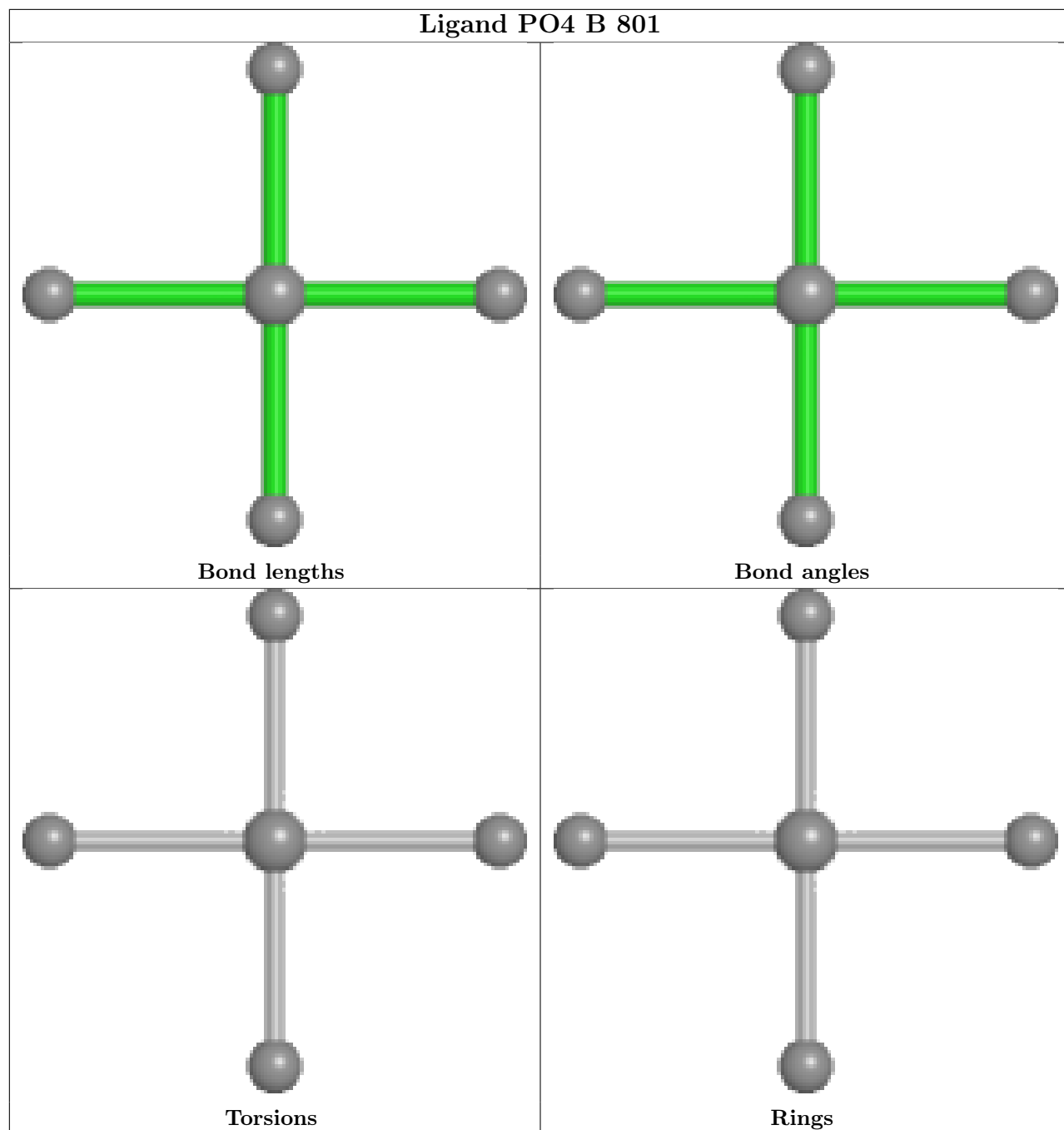
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less than 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.

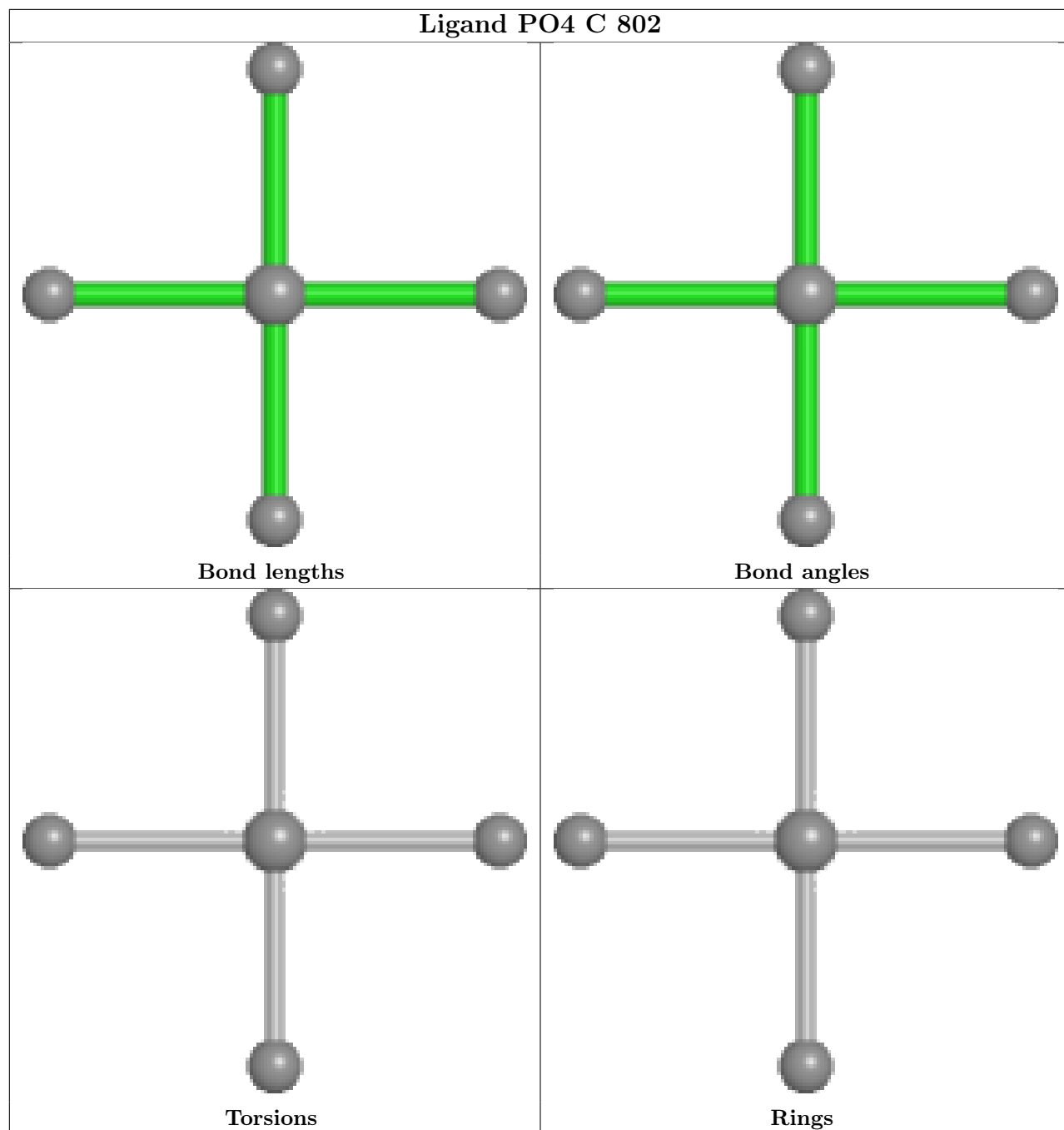


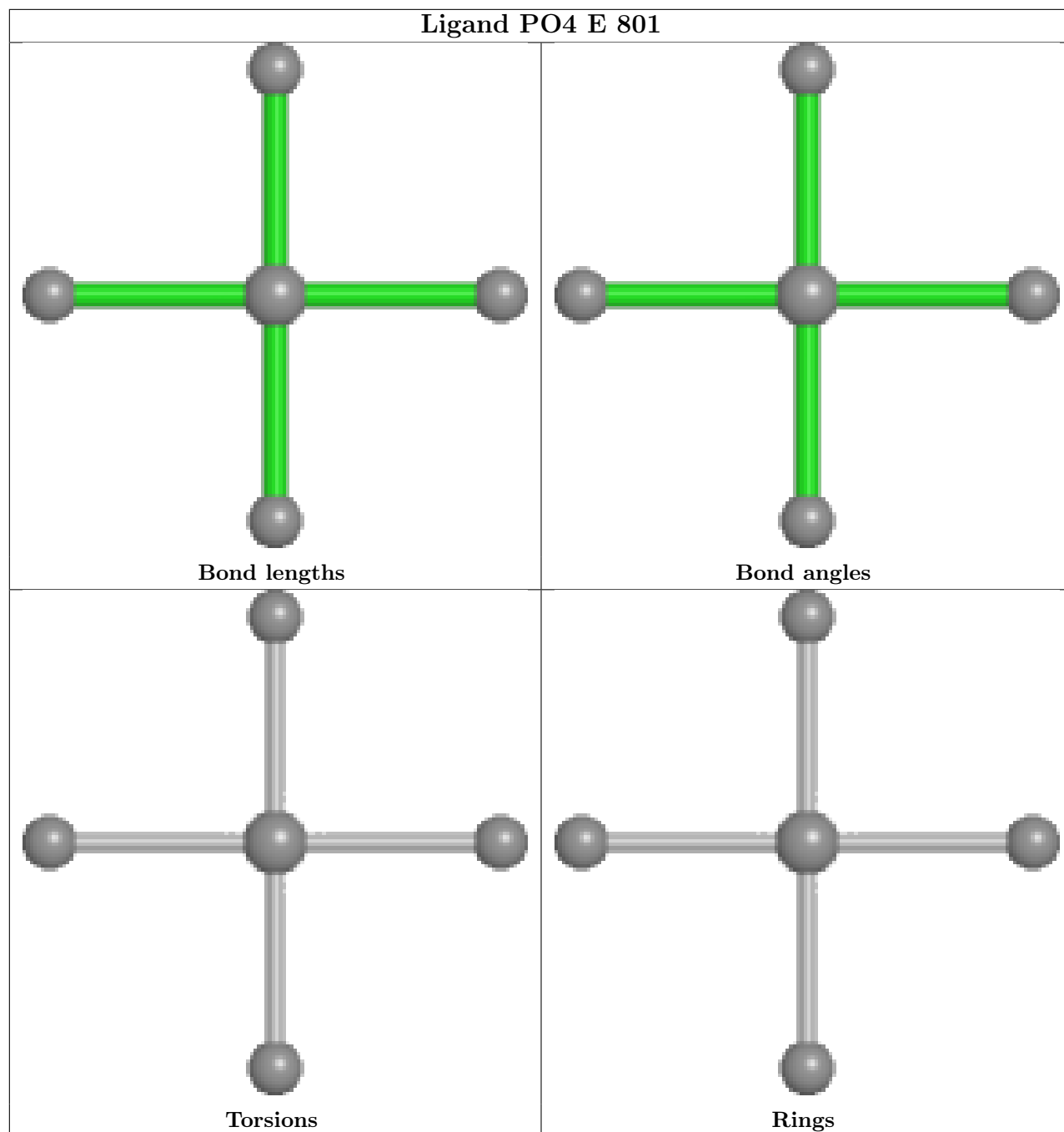












## 5.7 Other polymers [i](#)

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	402/415 (96%)	0.67	28 (6%) 16 12	32, 40, 49, 80	0
1	B	404/415 (97%)	0.63	21 (5%) 27 23	32, 40, 48, 61	0
1	C	401/415 (96%)	0.65	24 (5%) 21 18	33, 40, 48, 71	0
1	D	404/415 (97%)	0.65	18 (4%) 33 29	32, 40, 48, 70	0
1	E	402/415 (96%)	0.69	31 (7%) 13 10	32, 40, 48, 71	0
1	F	404/415 (97%)	0.66	20 (4%) 28 25	33, 40, 48, 64	0
All	All	2417/2490 (97%)	0.66	142 (5%) 22 18	32, 40, 49, 80	0

All (142) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	570	GLU	7.3
1	E	496	VAL	5.7
1	F	718	GLY	5.4
1	C	361	ILE	4.9
1	E	361	ILE	4.4
1	E	570	GLU	4.4
1	B	370	TYR	4.1
1	A	375	PRO	4.1
1	C	570	GLU	3.9
1	C	571	TRP	3.8
1	E	462	LYS	3.8
1	B	358	PRO	3.8
1	C	718	GLY	3.7
1	A	552	ASP	3.6
1	A	419	ALA	3.5
1	B	357	THR	3.5
1	E	707	MET	3.4
1	F	649	ILE	3.4
1	D	597	ASP	3.4

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>	<b>RSRZ</b>
1	E	334	ARG	3.3
1	C	563	ASN	3.3
1	A	361	ILE	3.3
1	C	490	ILE	3.2
1	C	526	ASN	3.1
1	C	520	LEU	3.1
1	C	651	ASN	3.1
1	A	399	PRO	3.0
1	B	305	LYS	3.0
1	A	417	TYR	3.0
1	E	386	ILE	3.0
1	E	317	LYS	3.0
1	F	388	LEU	3.0
1	D	569	GLN	3.0
1	D	570	GLU	2.9
1	E	335	ASN	2.9
1	B	641	LEU	2.9
1	C	350	VAL	2.8
1	A	665	GLY	2.8
1	A	459	LEU	2.8
1	C	413	ASN	2.8
1	E	703	THR	2.8
1	A	649	ILE	2.7
1	F	401	LYS	2.7
1	C	539	ILE	2.7
1	D	649	ILE	2.7
1	A	394	LEU	2.7
1	E	512	LYS	2.7
1	D	489	LEU	2.7
1	B	318	GLY	2.6
1	F	340	TYR	2.6
1	C	512	LYS	2.6
1	C	694	ILE	2.6
1	E	548	VAL	2.6
1	D	701	GLU	2.5
1	D	596	VAL	2.5
1	E	374	LYS	2.5
1	F	650	VAL	2.5
1	E	490	ILE	2.5
1	D	628	LEU	2.5
1	E	563	ASN	2.5
1	D	679	ILE	2.5

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>	<b>RSRZ</b>
1	F	454	GLY	2.5
1	A	705	VAL	2.5
1	E	596	VAL	2.5
1	D	700	GLY	2.5
1	A	532	ILE	2.5
1	D	459	LEU	2.5
1	F	400	VAL	2.4
1	F	507	VAL	2.4
1	F	313	VAL	2.4
1	B	718	GLY	2.4
1	A	563	ASN	2.4
1	A	448	LYS	2.4
1	F	603	GLU	2.4
1	A	598	ARG	2.4
1	B	548	VAL	2.4
1	B	646	GLU	2.3
1	F	538	PHE	2.3
1	B	435	TYR	2.3
1	E	480	GLN	2.3
1	E	417	TYR	2.3
1	B	325	ILE	2.3
1	B	571	TRP	2.3
1	B	652	ASP	2.3
1	F	709	GLY	2.3
1	E	649	ILE	2.3
1	F	358	PRO	2.3
1	F	571	TRP	2.3
1	C	662	ILE	2.3
1	C	334	ARG	2.2
1	A	462	LYS	2.2
1	C	489	LEU	2.2
1	E	375	PRO	2.2
1	C	650	VAL	2.2
1	E	571	TRP	2.2
1	F	435	TYR	2.2
1	E	650	VAL	2.2
1	D	647	LYS	2.2
1	C	411	LEU	2.2
1	C	622	LYS	2.2
1	B	535	PHE	2.2
1	C	406	ILE	2.2
1	E	313	VAL	2.2

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>	<b>RSRZ</b>
1	C	530	VAL	2.2
1	F	548	VAL	2.2
1	D	432	ILE	2.2
1	B	632	ASP	2.2
1	A	550	ILE	2.2
1	B	345	SER	2.2
1	E	358	PRO	2.2
1	A	646	GLU	2.2
1	A	310	LEU	2.2
1	A	571	TRP	2.2
1	B	511	LEU	2.2
1	E	557	PHE	2.2
1	E	383	ILE	2.2
1	D	520	LEU	2.1
1	F	628	LEU	2.1
1	E	333	LYS	2.1
1	E	558	ASN	2.1
1	A	323	PHE	2.1
1	F	587	PHE	2.1
1	B	605	VAL	2.1
1	B	304	GLU	2.1
1	E	655	TRP	2.1
1	A	691	ARG	2.1
1	A	581	LEU	2.1
1	D	325	ILE	2.1
1	D	349	ILE	2.1
1	B	352	GLU	2.1
1	C	310	LEU	2.0
1	E	532	ILE	2.0
1	D	304	GLU	2.0
1	B	407	VAL	2.0
1	F	658	LEU	2.0
1	E	442	ALA	2.0
1	A	312	LYS	2.0
1	A	511	LEU	2.0
1	D	591	LEU	2.0
1	A	667	ILE	2.0
1	C	319	ILE	2.0
1	A	647	LYS	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 monosaccharides in this entry.

## 6.4 Ligands [i](#)

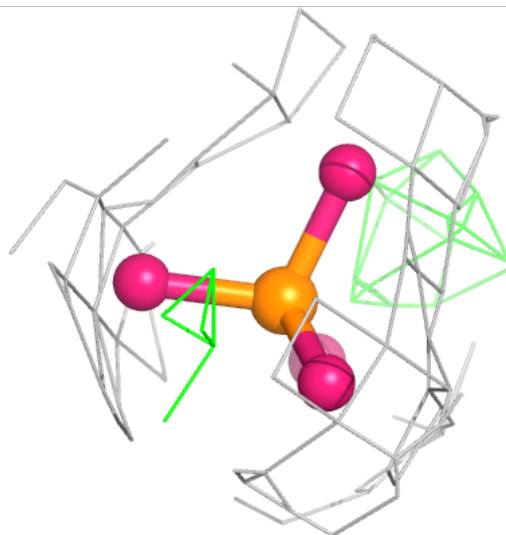
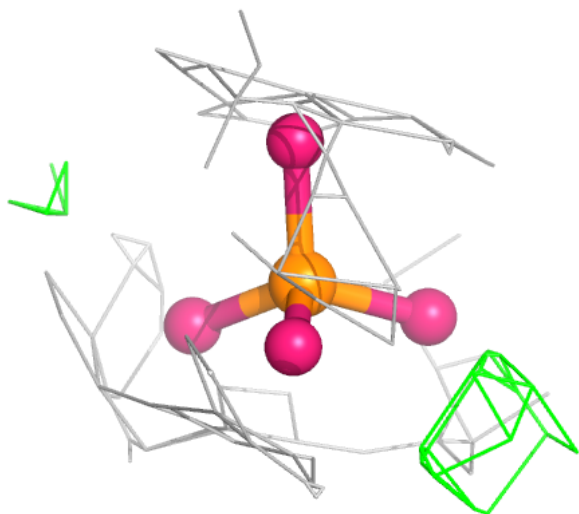
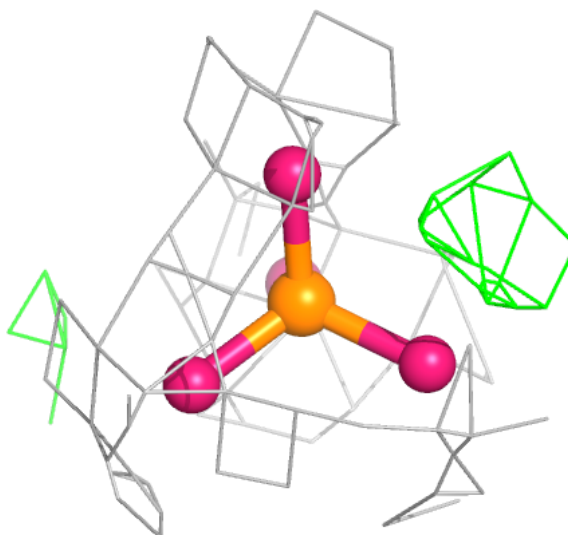
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95<sup>th</sup> percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å <sup>2</sup> )	Q<0.9
2	PO4	A	801	5/5	0.91	0.19	35,36,65,65	0
2	PO4	B	801	5/5	0.92	0.18	35,35,36,42	0
2	PO4	C	801	5/5	0.92	0.21	35,36,88,88	0
2	PO4	D	801	5/5	0.92	0.20	35,36,91,98	0
2	PO4	E	801	5/5	0.92	0.15	35,36,45,105	0
2	PO4	C	802	5/5	0.96	0.14	35,36,39,42	0

The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation to approximate a three-dimensional view.

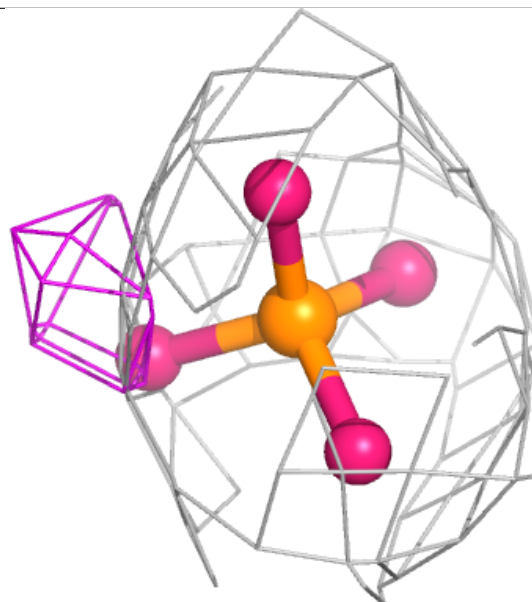
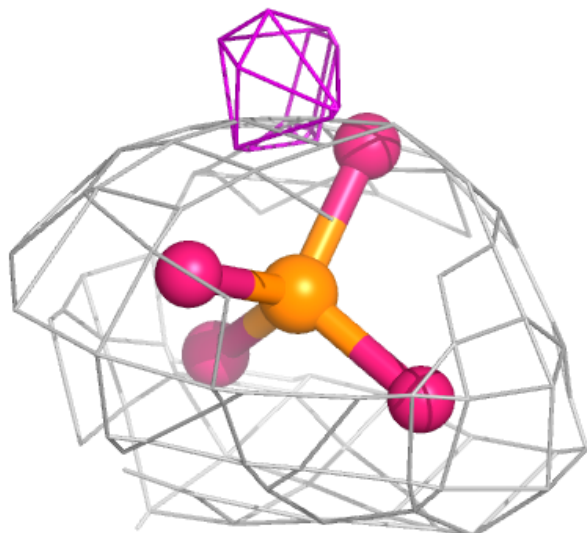
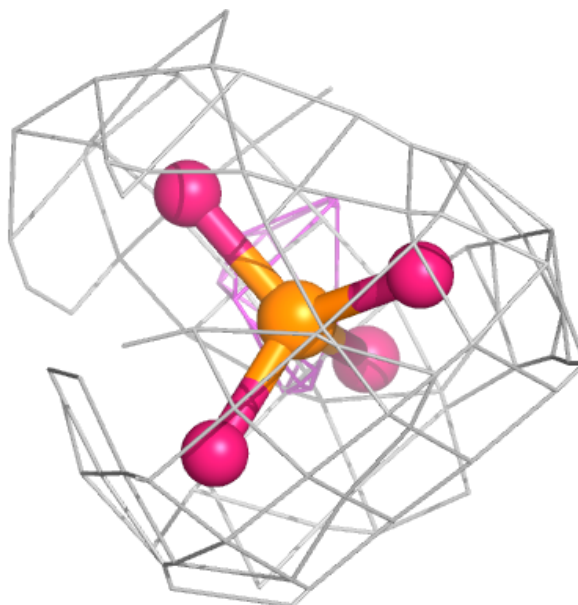
**Electron density around PO4 A 801:**

$2mF_o-DF_c$  (at 0.7 rmsd) in gray  
 $mF_o-DF_c$  (at 3 rmsd) in purple (negative)  
and green (positive)



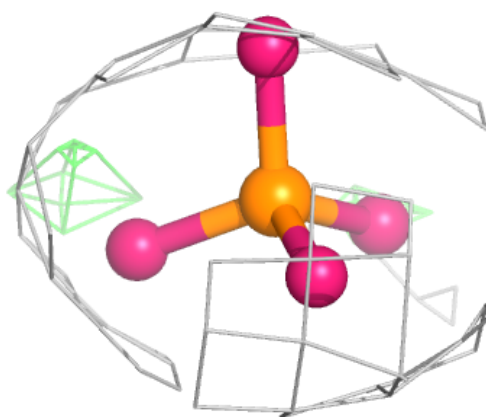
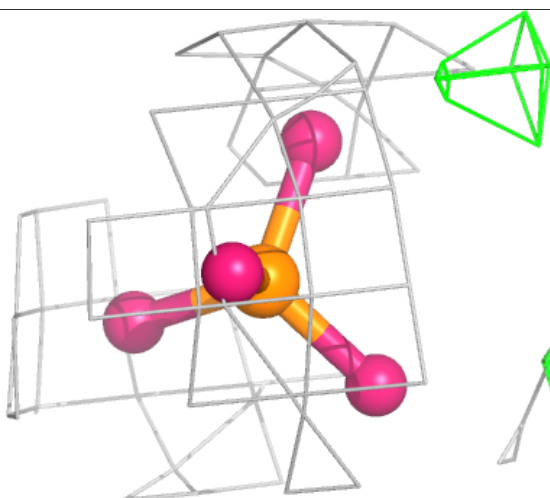
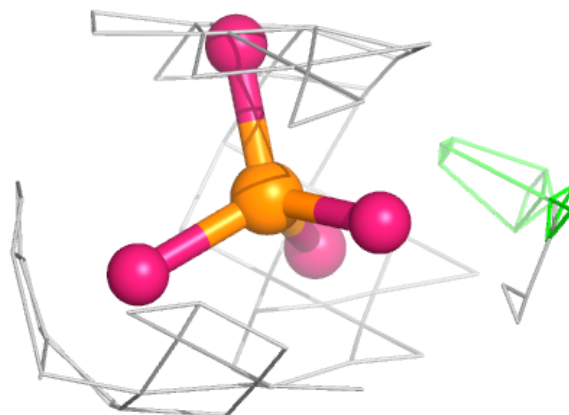
**Electron density around PO4 B 801:**

$2mF_o-DF_c$  (at 0.7 rmsd) in gray  
 $mF_o-DF_c$  (at 3 rmsd) in purple (negative)  
and green (positive)



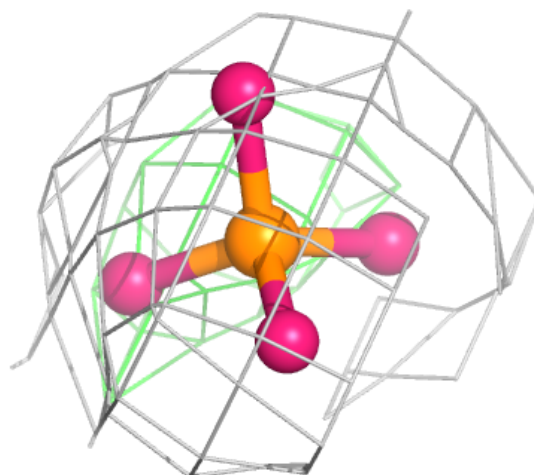
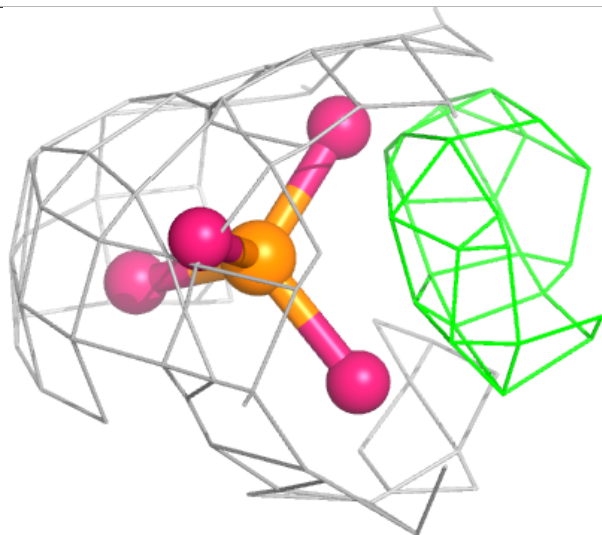
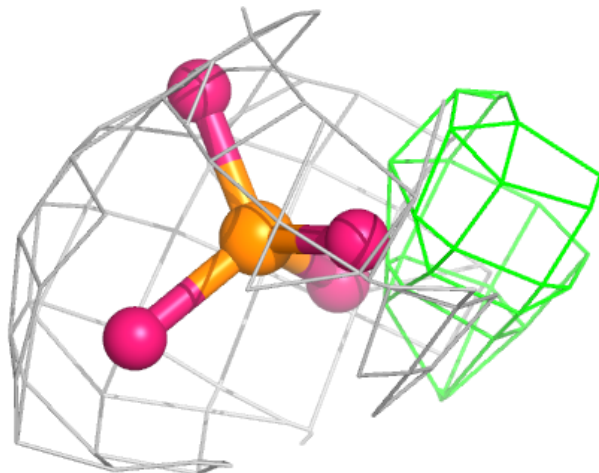
**Electron density around PO4 C 801:**

$2mF_o-DF_c$  (at 0.7 rmsd) in gray  
 $mF_o-DF_c$  (at 3 rmsd) in purple (negative)  
and green (positive)



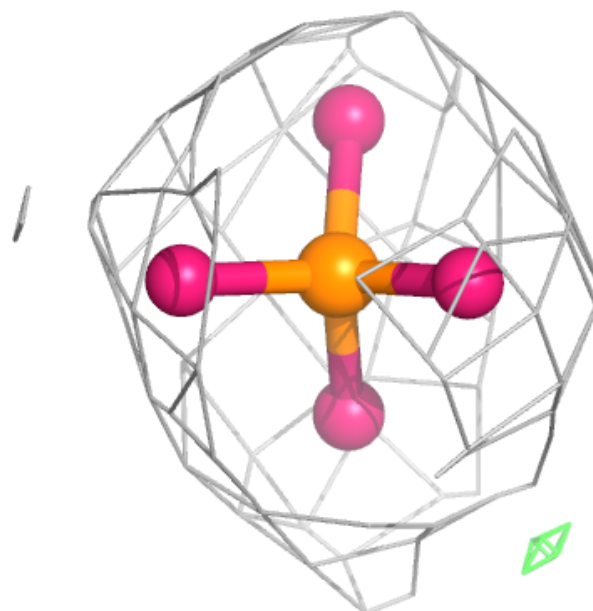
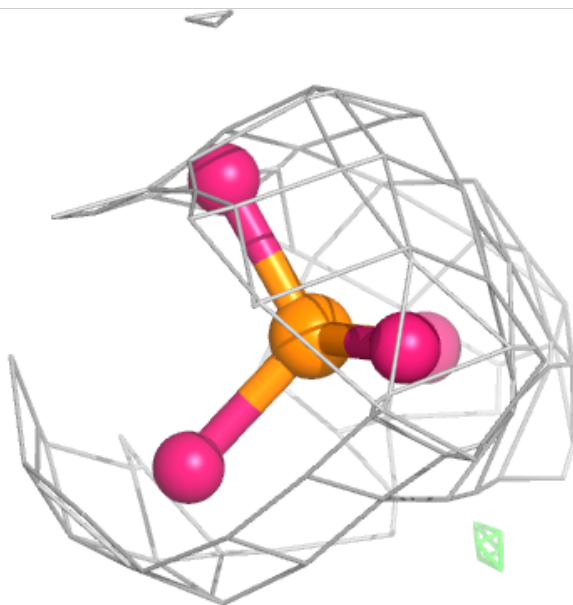
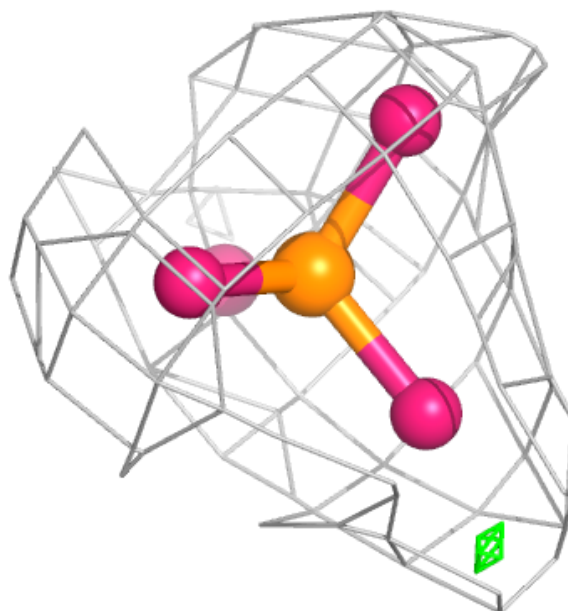
**Electron density around PO4 D 801:**

$2mF_o-DF_c$  (at 0.7 rmsd) in gray  
 $mF_o-DF_c$  (at 3 rmsd) in purple (negative)  
and green (positive)

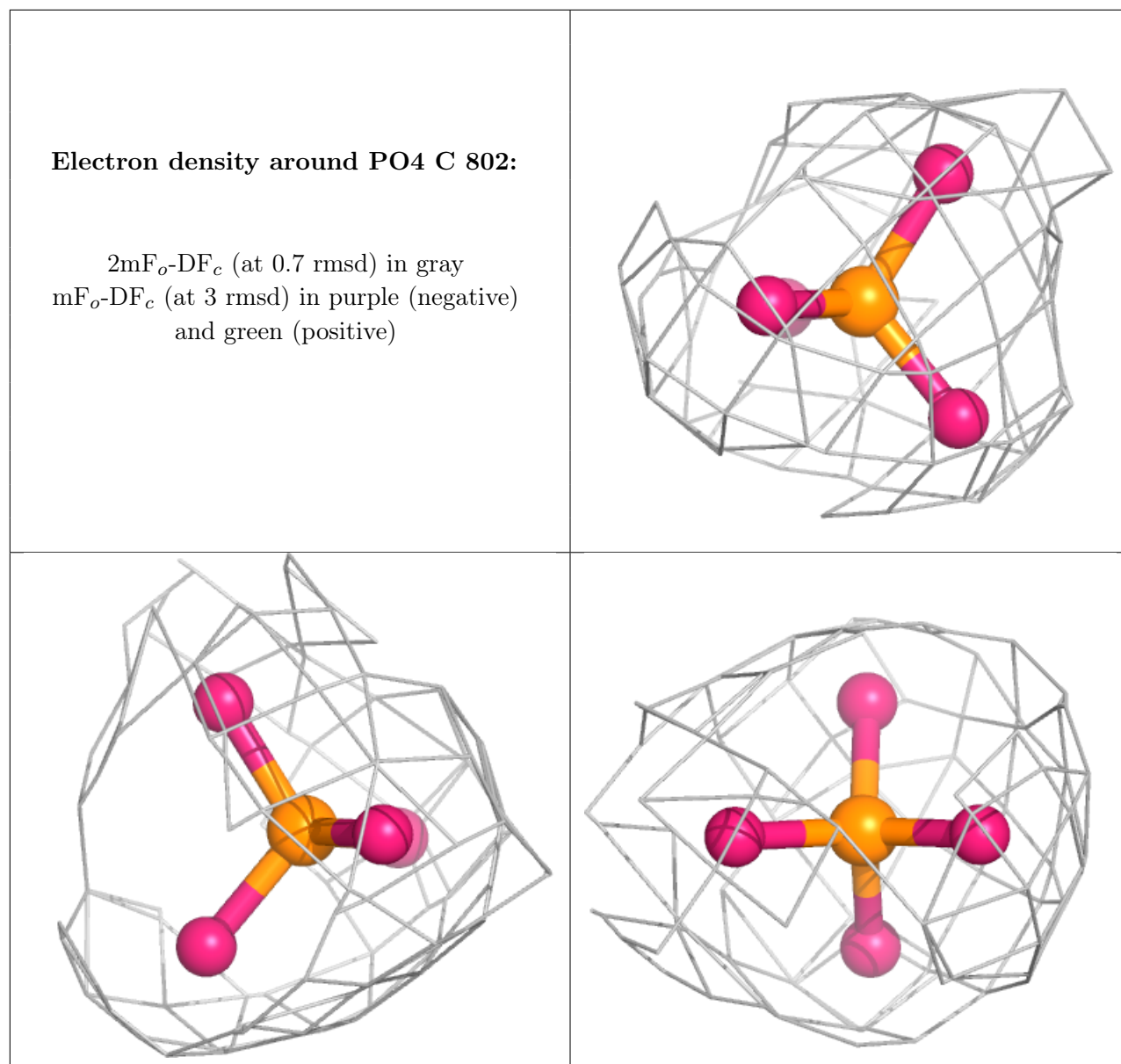


**Electron density around PO4 E 801:**

$2mF_o-DF_c$  (at 0.7 rmsd) in gray  
 $mF_o-DF_c$  (at 3 rmsd) in purple (negative)  
and green (positive)







## 6.5 Other polymers [i](#)

There are no such residues in this entry.