



wwPDB EM Validation Summary Report ⓘ

Jul 6, 2026 – 01:14 PM EDT

PDB ID : 10MI / pdb_000010mi
EMDB ID : EMD-75286
Title : Closed Mtb-EC: Cryo-EM structure of Mtb RNAP elongation complex (substrate loading mimic) with a closed active site (closed TL and RH-FL)
Authors : Dhingra, Y.; Darst, S.A.
Deposited on : 2026-01-27
Resolution : 3.00 Å(reported)

This is a wwPDB EM Validation Summary 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/EMValidationReportHelp>
with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

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

EMDB validation analysis : 0.0.1.dev133
Mogul : 2022.3.0, CSD as543be (2022)
MolProbity : 4-5-2 with Phenix2.0
Buster-report : wwPDB partial adaption of 1.1.7 (2018)
Percentile statistics : 20250101.v01 (using entries in the PDB archive January 1st 2025)
EM percentile statistics : 202505.v01 (Using data in the EMDB archive up until May 2025)
MapQ : 1.9.13
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.50

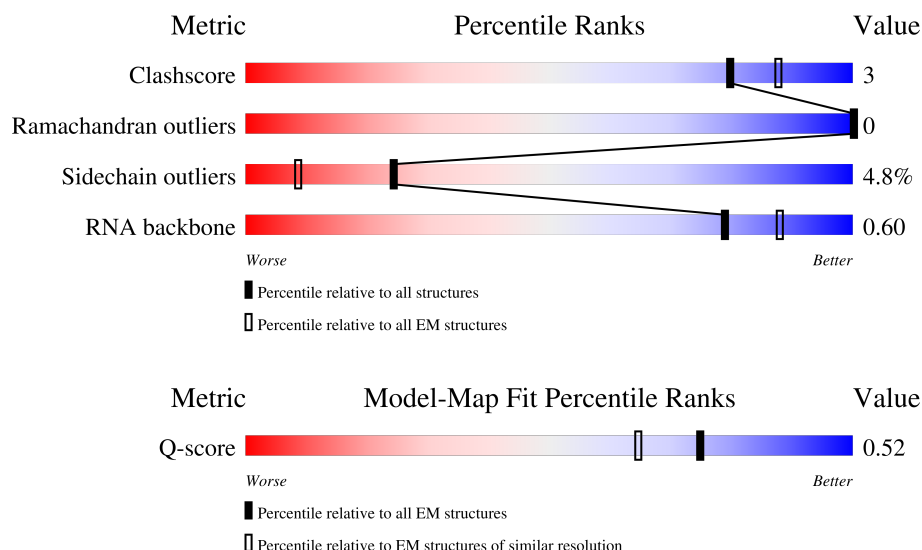
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

ELECTRON MICROSCOPY

The reported resolution of this entry is 3.00 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)	EM structures (#Entries)	Similar EM resolution (#Entries, resolution range(Å))
Clashscore	229148	23984	-
Ramachandran outliers	224038	23583	-
Sidechain outliers	223484	23102	-
RNA backbone	8273	3508	-
Q-score	-	25397	14081 (2.50 - 3.50)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the 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 $\leq 5\%$. The upper red bar (where present) indicates the fraction of residues that have poor fit to the EM map (all-atom inclusion $< 40\%$). The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	347	
1	B	347	
2	E	110	

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Mol	Chain	Length	Quality of chain
3	P	54	37%24%39%
4	R	20	40%10%50%
5	C	1178	83%10%7%
6	D	1318	88%8% . .
7	Q	54	37%13%50%

2 Entry composition

There are 11 unique types of molecules in this entry. The entry contains 24981 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, 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 DNA-directed RNA polymerase subunit alpha.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	226	Total	C	N	O	S	0	0
			1720	1083	297	337	3		
1	B	237	Total	C	N	O	S	0	0
			1769	1117	301	348	3		

- Molecule 2 is a protein called DNA-directed RNA polymerase subunit omega.

Mol	Chain	Residues	Atoms				AltConf	Trace
2	E	82	Total	C	N	O	0	0
			645	412	107	126		

- Molecule 3 is a DNA chain called Template DNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	P	33	Total	C	N	O	P	0	0
			665	315	117	200	33		

- Molecule 4 is a RNA chain called RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
4	R	10	Total	C	N	O	P	0	0
			221	98	45	68	10		

- Molecule 5 is a protein called DNA-directed RNA polymerase subunit beta.

Mol	Chain	Residues	Atoms					AltConf	Trace
5	C	1095	Total	C	N	O	S	0	0
			8485	5310	1490	1646	39		

- Molecule 6 is a protein called DNA-directed RNA polymerase subunit beta'.

Mol	Chain	Residues	Atoms					AltConf	Trace
6	D	1278	Total	C	N	O	S	0	0
			9981	6252	1814	1873	42		

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
D	-1	GLY	-	expression tag	UNP P9WGY7
D	0	ALA	-	expression tag	UNP P9WGY7

- Molecule 7 is a DNA chain called Non-template DNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	Q	27	Total	C	N	O	P	0	0
			555	261	105	162	27		

- Molecule 8 is ZINC ION (CCD ID: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		AltConf
8	D	2	Total	Zn	0
			2	2	

- Molecule 9 is MAGNESIUM ION (CCD ID: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		AltConf
9	D	2	Total	Mg	0
			2	2	

- Molecule 10 is GUANOSINE-5'-TRIPHOSPHATE (CCD ID: GTP) (formula: C₁₀H₁₆N₅O₁₄P₃).



Mol	Chain	Residues	Atoms					AltConf
10	D	1	Total	C	N	O	P	0
			32	10	5	14	3	

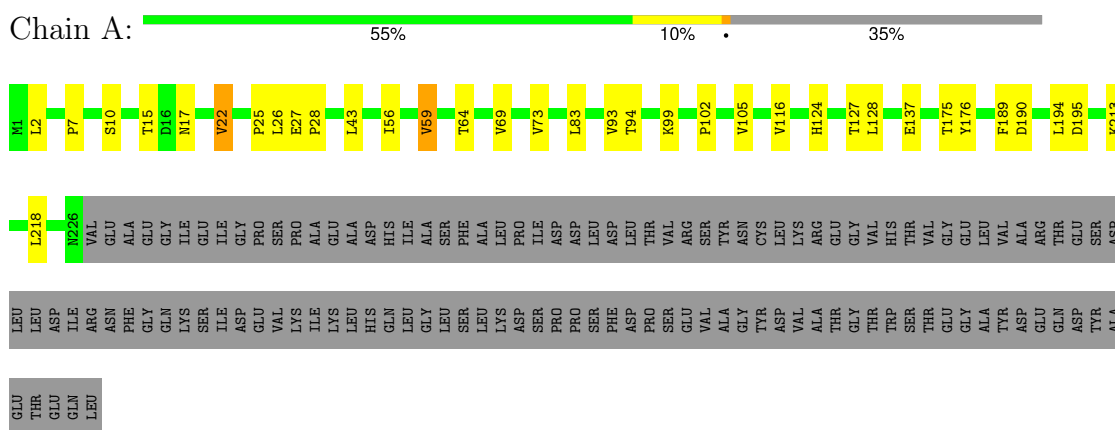
- Molecule 11 is water.

Mol	Chain	Residues	Atoms		AltConf
11	A	76	Total	O	0
			76	76	
11	B	60	Total	O	0
			60	60	
11	E	32	Total	O	0
			32	32	
11	P	24	Total	O	0
			24	24	
11	R	11	Total	O	0
			11	11	
11	C	308	Total	O	0
			308	308	
11	D	367	Total	O	0
			367	367	
11	Q	26	Total	O	0
			26	26	

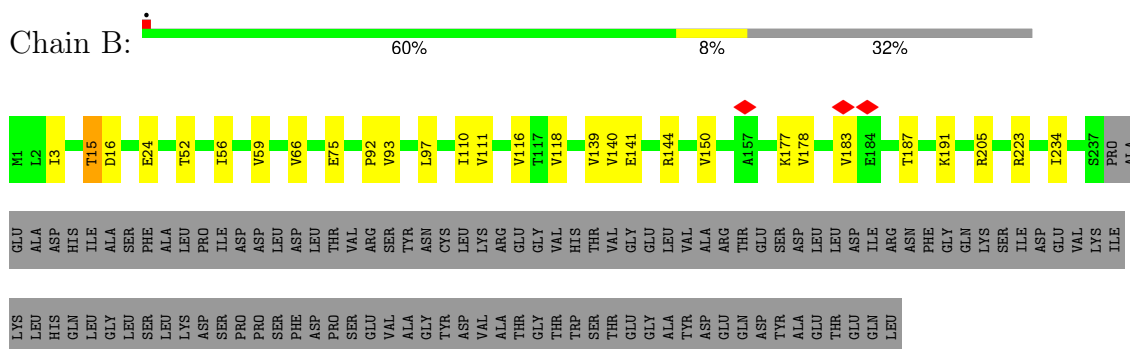
3 Residue-property plots

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 atom inclusion in map 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 diamond above a residue indicates a poor fit to the EM map for this residue (all-atom inclusion < 40%). 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.

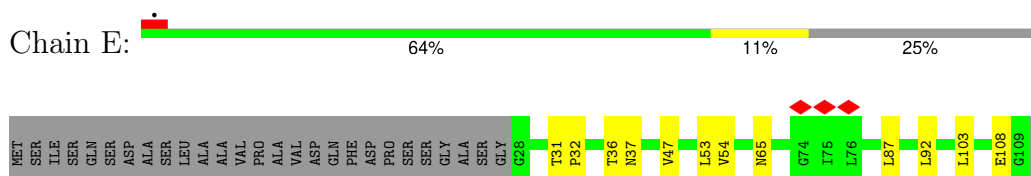
- Molecule 1: DNA-directed RNA polymerase subunit alpha



- Molecule 1: DNA-directed RNA polymerase subunit alpha



- Molecule 2: DNA-directed RNA polymerase subunit omega



- Molecule 3: Template DNA

DC	DC	DC	DG	DG	DG	DC	DA	DT	DG	DG	DA	G9	Tt4	A15	T16	T17	C18	G19	C20	C21	C22	C23		C30	T31		T34	A35		C41	DA	DA	DG	DG	DT	DA	DT	DC	DC	DG	DA	DA	DC	DG	DC
----	----	----	----	----	----	----	----	----	----	----	----	----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	--	-----	-----	--	-----	-----	--	-----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

Chain R:

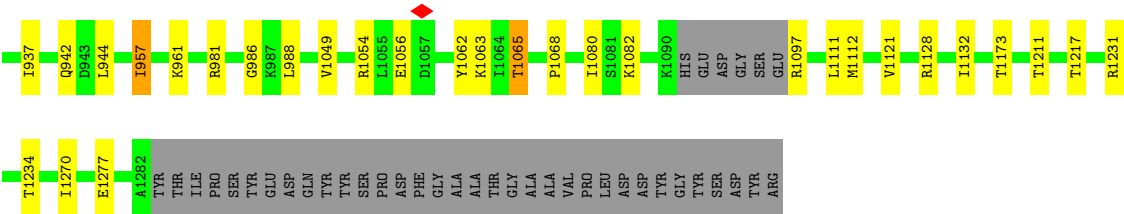
G C A U U C A A A G C11 G18 U19 G20

Chain C: 83% 10% 7%

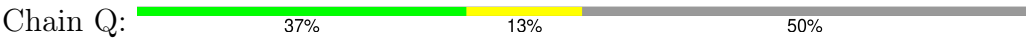
ALA	Q930	V721	P445	V152	MET
ALA				F153	LEU
ASN	T934	M739	K452		GLU
GLY	L959	E756	L455	T165	GLY
ILE				T167	CYS
ASN	L964	R760	L458	V174	ILE
LEU					LEU
SER	P975	K763	V472	V185	ASP
ARG		L764			SER
ASN	L985		I486	K193	ARG
GLU					GLN
SER	V1023	L789	S499	K218	SER
ALA		V803	R505	V224	LYS
VAL	G1026		V506	V234	THR
GLU	M1027	G810	P515		ALA
GLU	M1028	GLU			SER
ASP	M1029	THR	V519	M258	PRO
LEU	I1030	LEU			PRO
ALA		THR		V269	SER
	L1033	PRO	I528		ARG
	A1043	GLU	V541	L275	PRO
	L1057	GLU	I548	R279	PRO
	Q1066	ARG	R563	K280	GLN
	D1095	ARG		L295	
		ALA		L44	
	R1099	ILE	V688	R313	
	V1102	PHE	V571	I328	
	I1112	GLY	Y578	E336	
		LYS		I65	
	K1126	ALA	L606	V339	
		R830		D79	
	L1131	L837	E622	L345	
			V626	F373	
	G1139	E843	E631	L90	
SER					
ASP		V852		I389	
GLY			V642	S94	
ALA		R865	V653	E397	
ALA		R866		P95	
ILE				V400	
GLU		V869		M103	
LEU		R870	I658	T413	
ARG			T666	P414	
GLU		M904		V119	
GLY				Q415	
GLU		L915	P658	T416	
ASP				E121	
GLU		T919	A703	L417	
ASP			M713	K123	
ASP		R924		T433	
LEU			K717	L436	
GLU		N927			
ARG				P132	
ALA					

Chain D: 88% 8% .

L650	R209	G-1
W656	W223	T16
E665	L244	I20
T666	E259	V28
L668	P318	L46
D714	V319	V80
R726	I320	
	P321	
W729	L406	W87
T730	L418	V101
W731	M447	V110
D747	K463	P111
E751	V461	L117
K755	I469	L148
K758	V476	M155
E769	Q482	K160
E772	V496	E163
K779	A501	L170
W793	P502	L177
1800	H505	E178
P827	M515	A179
F831	H525	D180
P833	P526	L181
K837	L527	A182
L847	E554	E183
E848	M576	L184
Y849	D580	E185
F850	V592	A186
1851	V611	G187
N852	R624	G188
T853	G625	A189
H854	V626	K190
	V629	A191
	V635	D192
		A193
		R194
		R195
A922		K196
R923		R198
T924		D199
T927		E202
		R203
		Q207
		T208



● Molecule 7: Non-template DNA



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	274167	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	TFS KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	50.7	Depositor
Minimum defocus (nm)	500	Depositor
Maximum defocus (nm)	2500	Depositor
Magnification	Not provided	
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	0.224	Depositor
Minimum map value	-0.080	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.006	Depositor
Recommended contour level	0.025	Depositor
Map size (Å)	325.248, 325.248, 325.248	wwPDB
Map dimensions	384, 384, 384	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.84699994, 0.84699994, 0.84699994	Depositor

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: MG, GTP, ZN

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	0.14	0/1746	0.33	0/2375
1	B	0.13	0/1796	0.33	0/2447
2	E	0.13	0/658	0.36	0/896
3	P	0.22	0/742	0.40	0/1140
4	R	0.20	0/248	0.34	0/386
5	C	0.15	0/8641	0.35	0/11716
6	D	0.15	0/10148	0.34	0/13718
7	Q	0.18	0/621	0.31	0/954
All	All	0.15	0/24600	0.34	0/33632

There are no bond length outliers.

There are no bond angle outliers.

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	1720	0	1764	19	0
1	B	1769	0	1798	14	0
2	E	645	0	642	4	0
3	P	665	0	370	8	0
4	R	221	0	108	1	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
5	C	8485	0	8415	45	0
6	D	9981	0	10062	43	0
7	Q	555	0	303	4	0
8	D	2	0	0	0	0
9	D	2	0	0	0	0
10	D	32	0	12	1	0
11	A	76	0	0	0	0
11	B	60	0	0	0	0
11	C	308	0	0	0	0
11	D	367	0	0	0	0
11	E	32	0	0	0	0
11	P	24	0	0	0	0
11	Q	26	0	0	0	0
11	R	11	0	0	0	0
All	All	24981	0	23474	130	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 3.

The worst 5 of 130 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:B:92:PRO:HB3	1:B:141:GLU:HG2	1.67	0.77
1:B:183:VAL:HA	1:B:187:THR:HG22	1.69	0.74
3:P:14:DT:H2'	3:P:15:DA:C8	2.27	0.70
5:C:165:THR:HG21	5:C:440:MET:HE2	1.72	0.69
6:D:170:LEU:HD21	6:D:209:ARG:HE	1.58	0.69

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 PDB entries followed by that with respect to all EM entries.

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	224/347 (65%)	215 (96%)	9 (4%)	0	100	100
1	B	235/347 (68%)	227 (97%)	8 (3%)	0	100	100
2	E	80/110 (73%)	79 (99%)	1 (1%)	0	100	100
5	C	1091/1178 (93%)	1072 (98%)	19 (2%)	0	100	100
6	D	1274/1318 (97%)	1252 (98%)	22 (2%)	0	100	100
All	All	2904/3300 (88%)	2845 (98%)	59 (2%)	0	100	100

There are no Ramachandran outliers to report.

5.3.2 Protein sidechains ⓘ

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all PDB entries followed by that with respect to all EM entries.

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	194/297 (65%)	189 (97%)	5 (3%)	40	72
1	B	196/297 (66%)	189 (96%)	7 (4%)	31	65
2	E	69/90 (77%)	63 (91%)	6 (9%)	9	35
5	C	928/998 (93%)	880 (95%)	48 (5%)	21	55
6	D	1056/1095 (96%)	1005 (95%)	51 (5%)	23	57
All	All	2443/2777 (88%)	2326 (95%)	117 (5%)	24	57

5 of 117 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
5	C	870	ARG
6	D	1065	THR
6	D	148	LEU
6	D	988	LEU
6	D	729	VAL

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 21 such sidechains are listed below:

Mol	Chain	Res	Type
6	D	439	HIS
6	D	792	HIS
6	D	1016	HIS
6	D	797	ASN
6	D	766	ASN

5.3.3 RNA ⓘ

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
4	R	8/20 (40%)	1 (12%)	0

All (1) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
4	R	18	G

There are no RNA pucker outliers to report.

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 oligosaccharides in this entry.

5.6 Ligand geometry ⓘ

Of 5 ligands modelled in this entry, 4 are 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	$\# Z > 2$
10	GTP	D	1405	9	33,34,34	0.93	0	50,54,54	1.61	9 (18%)

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
10	GTP	D	1405	9	-	4/22/38/38	0/3/3/3

There are no bond length outliers.

The worst 5 of 9 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
10	D	1405	GTP	C5-C4-N3	-4.88	120.62	128.39
10	D	1405	GTP	C2-N3-C4	4.84	120.63	112.30
10	D	1405	GTP	N9-C4-N3	2.97	131.89	125.95
10	D	1405	GTP	C2-N1-C6	-2.75	120.12	125.11
10	D	1405	GTP	N9-C8-N7	-2.62	108.54	113.40

There are no chirality outliers.

All (4) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
10	D	1405	GTP	PB-O3B-PG-O2G
10	D	1405	GTP	PB-O3B-PG-O3G
10	D	1405	GTP	C5'-O5'-PA-O3A
10	D	1405	GTP	C5'-O5'-PA-O1A

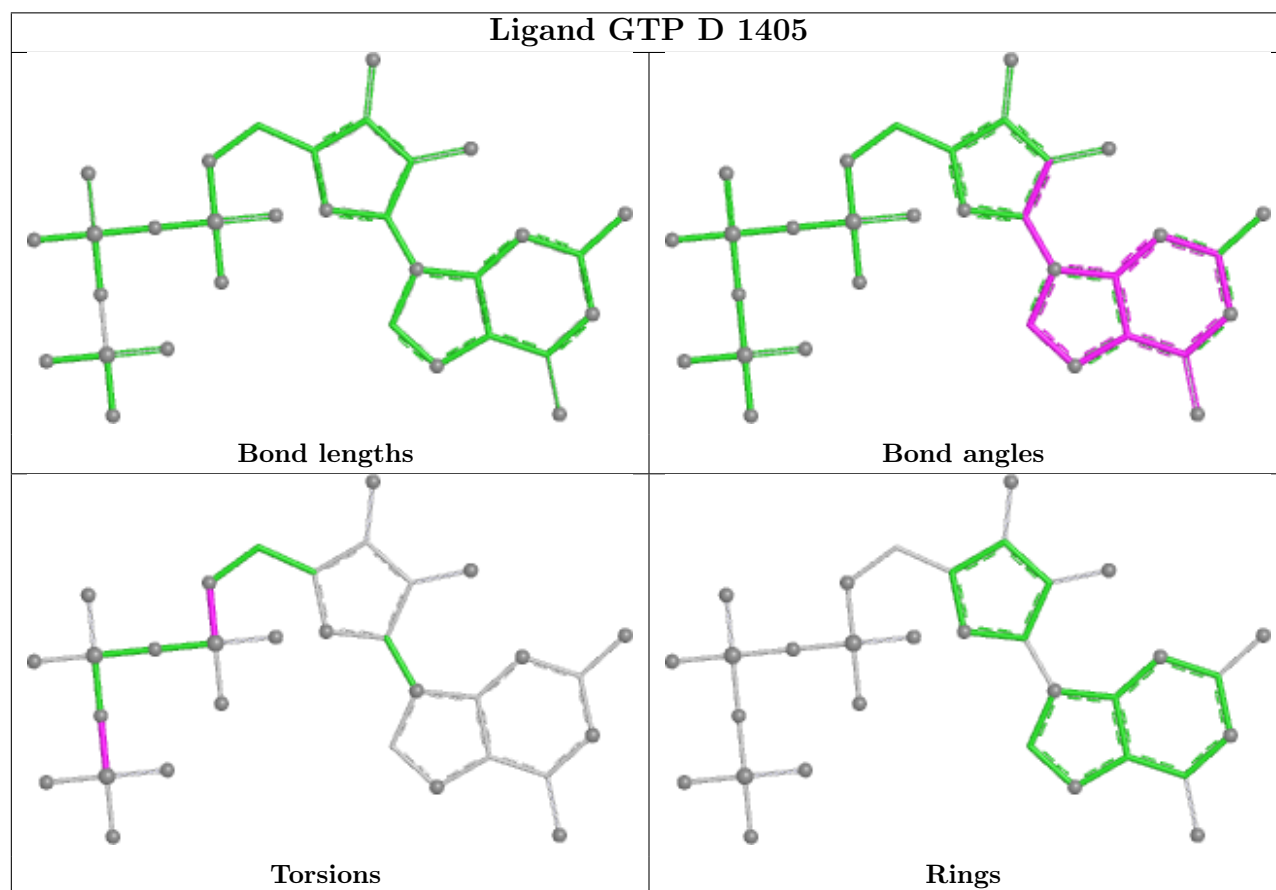
There are no ring outliers.

1 monomer is involved in 1 short contact:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
10	D	1405	GTP	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.

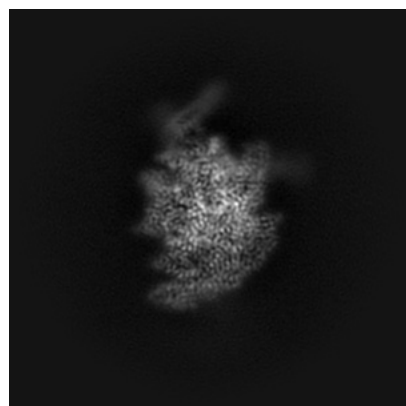
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-75286. These allow visual inspection of the internal detail of the map and identification of artifacts.

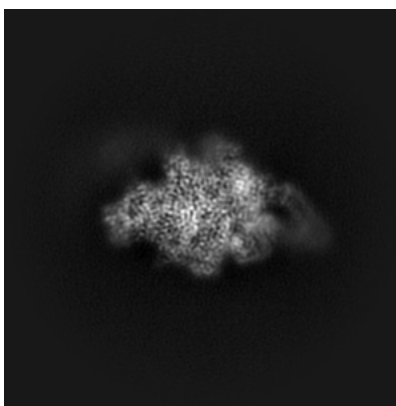
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections [i](#)

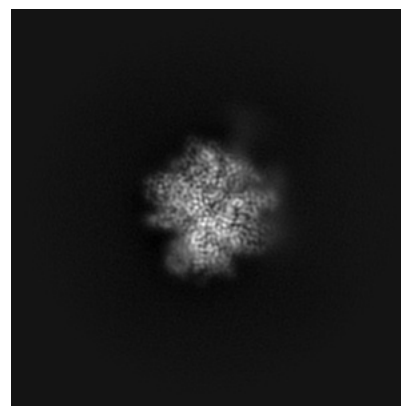
6.1.1 Primary map



X

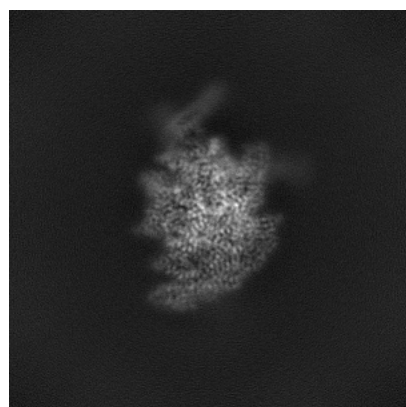


Y

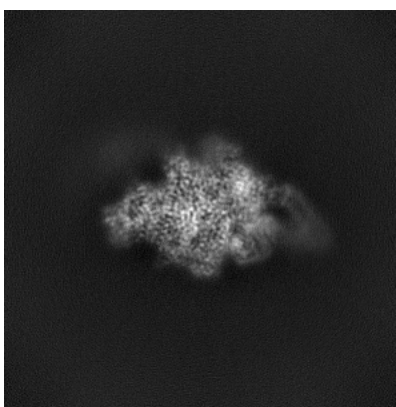


Z

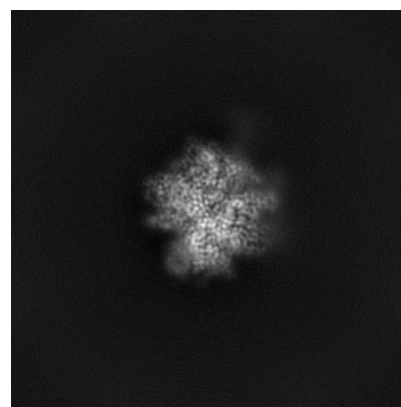
6.1.2 Raw map



X



Y

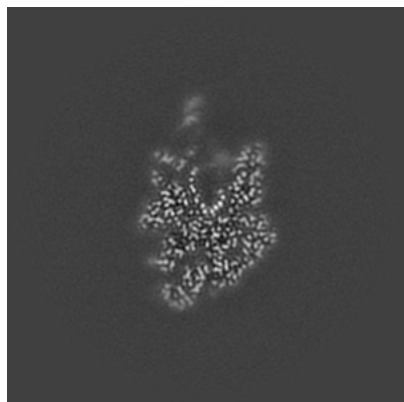


Z

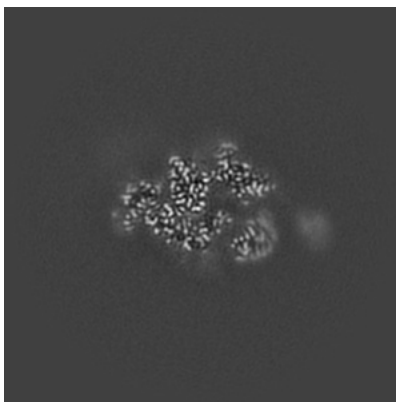
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

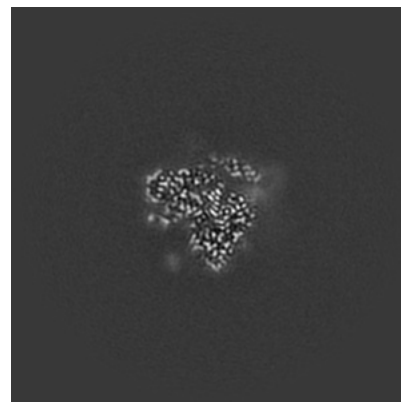
6.2.1 Primary map



X Index: 192

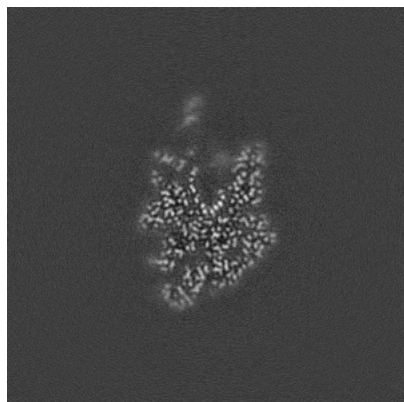


Y Index: 192

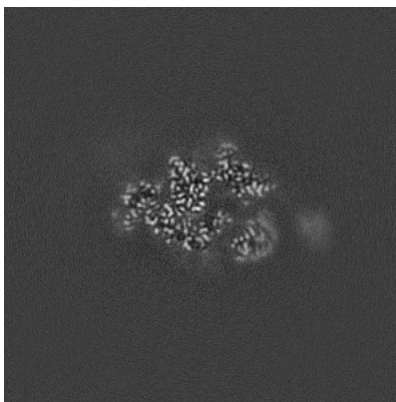


Z Index: 192

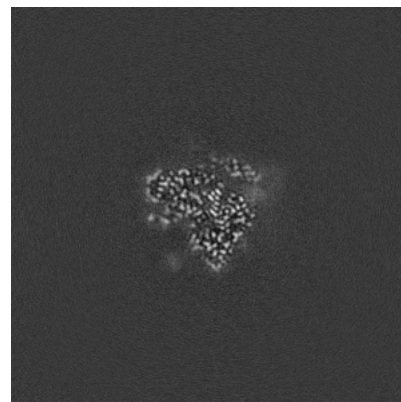
6.2.2 Raw map



X Index: 192



Y Index: 192

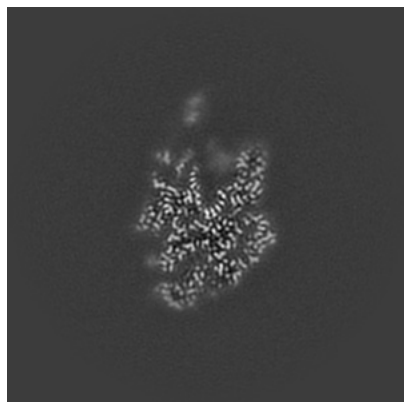


Z Index: 192

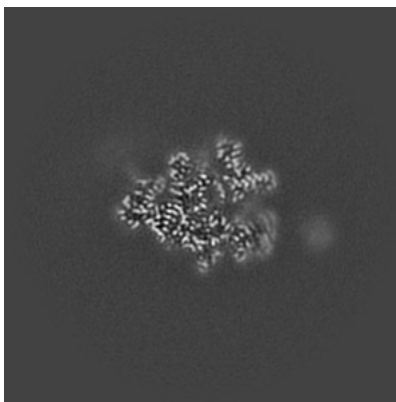
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

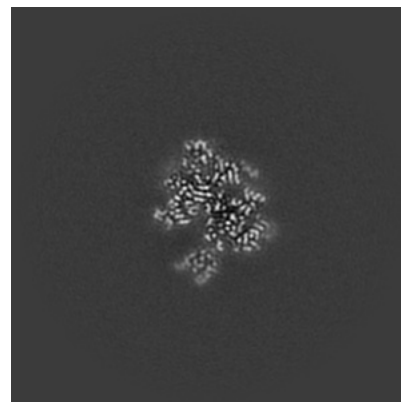
6.3.1 Primary map



X Index: 190

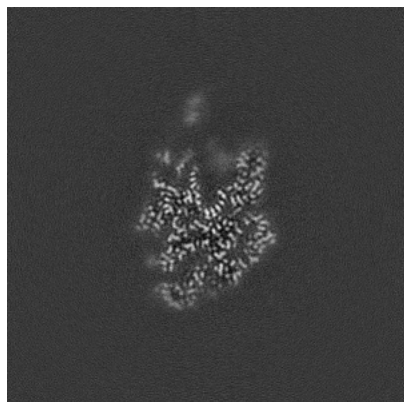


Y Index: 199

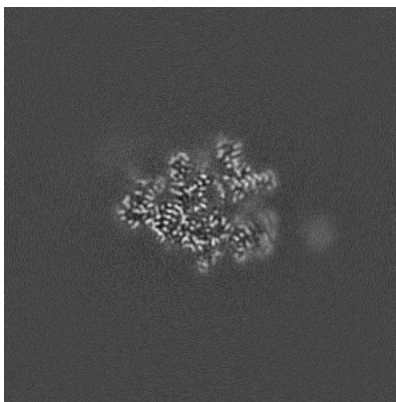


Z Index: 172

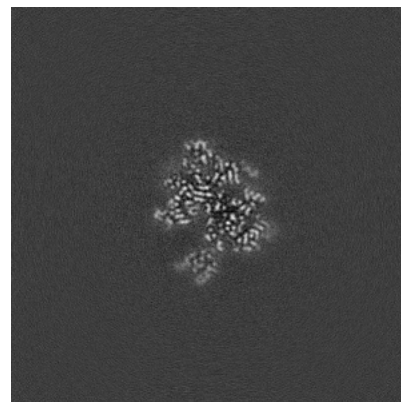
6.3.2 Raw map



X Index: 190



Y Index: 199

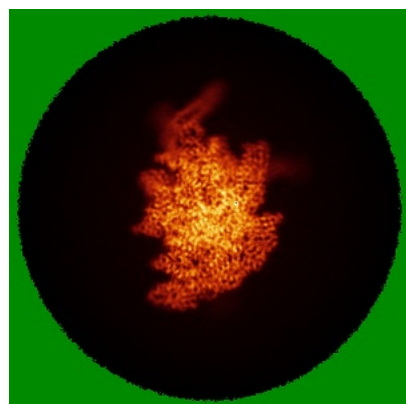


Z Index: 172

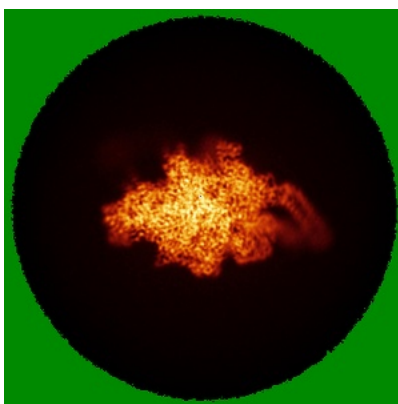
The images above show the largest variance slices of the map in three orthogonal directions.

6.4 Orthogonal standard-deviation projections (False-color) [i](#)

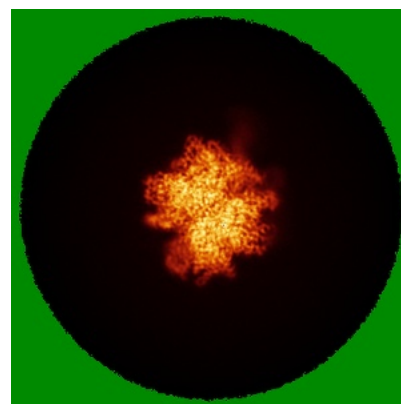
6.4.1 Primary map



X

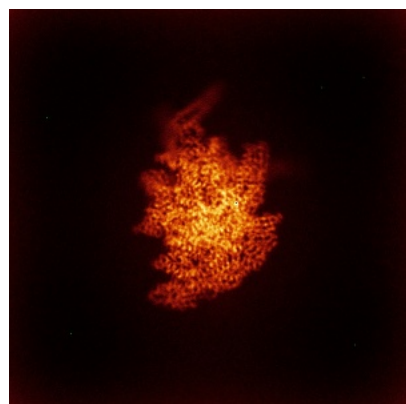


Y

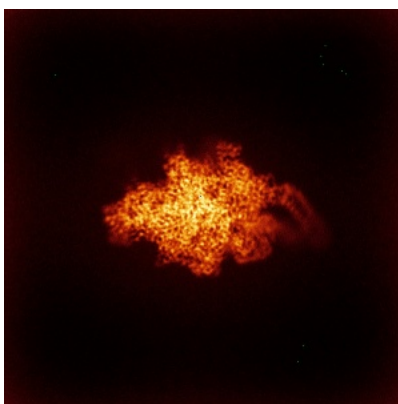


Z

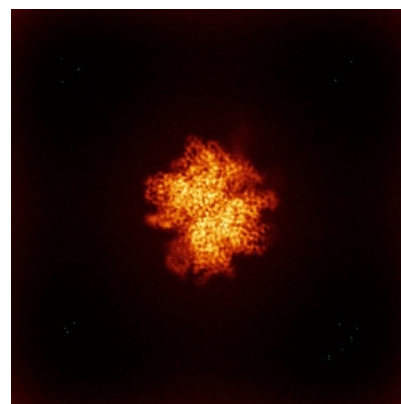
6.4.2 Raw map



X



Y

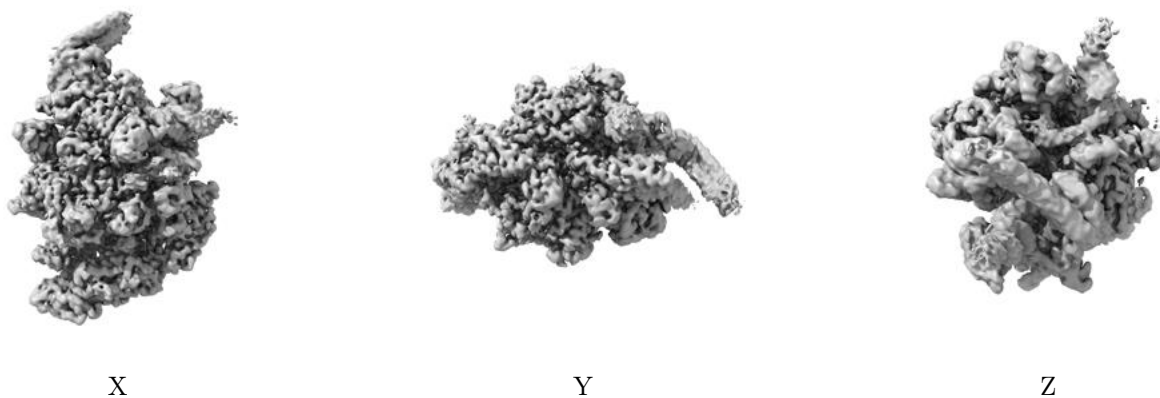


Z

The images above show the map standard deviation projections with false color in three orthogonal directions. Minimum values are shown in green, max in blue, and dark to light orange shades represent small to large values respectively.

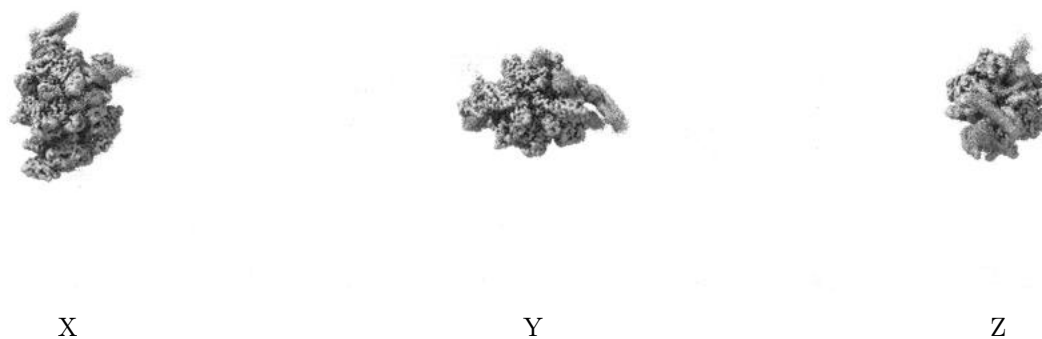
6.5 Orthogonal surface views [i](#)

6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.025. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2 Raw map



These images show the 3D surface of the raw map. The raw map's contour level was selected so that its surface encloses the same volume as the primary map does at its recommended contour level.

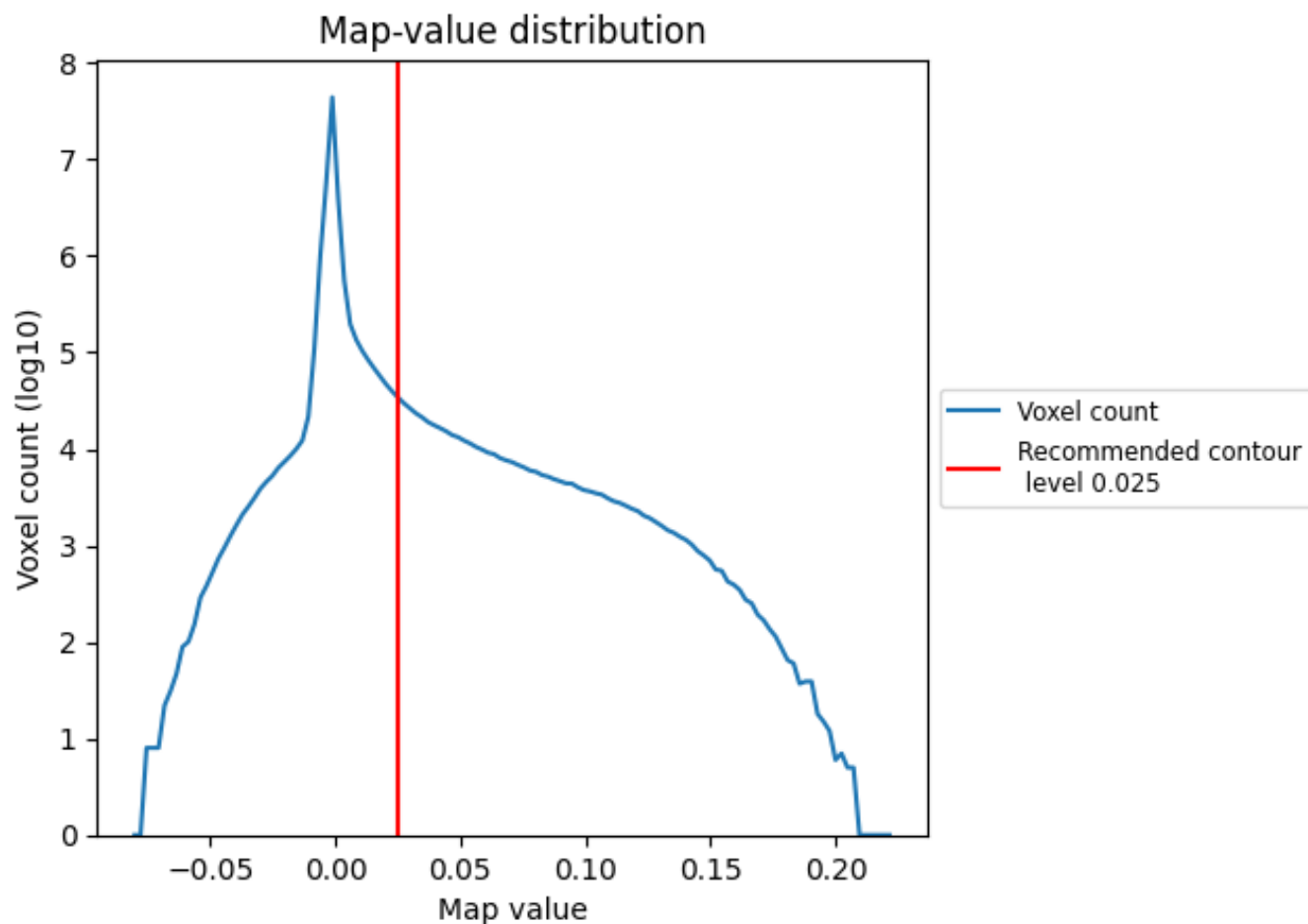
6.6 Mask visualisation [i](#)

This section was not generated. No masks/segmentation were deposited.

7 Map analysis [i](#)

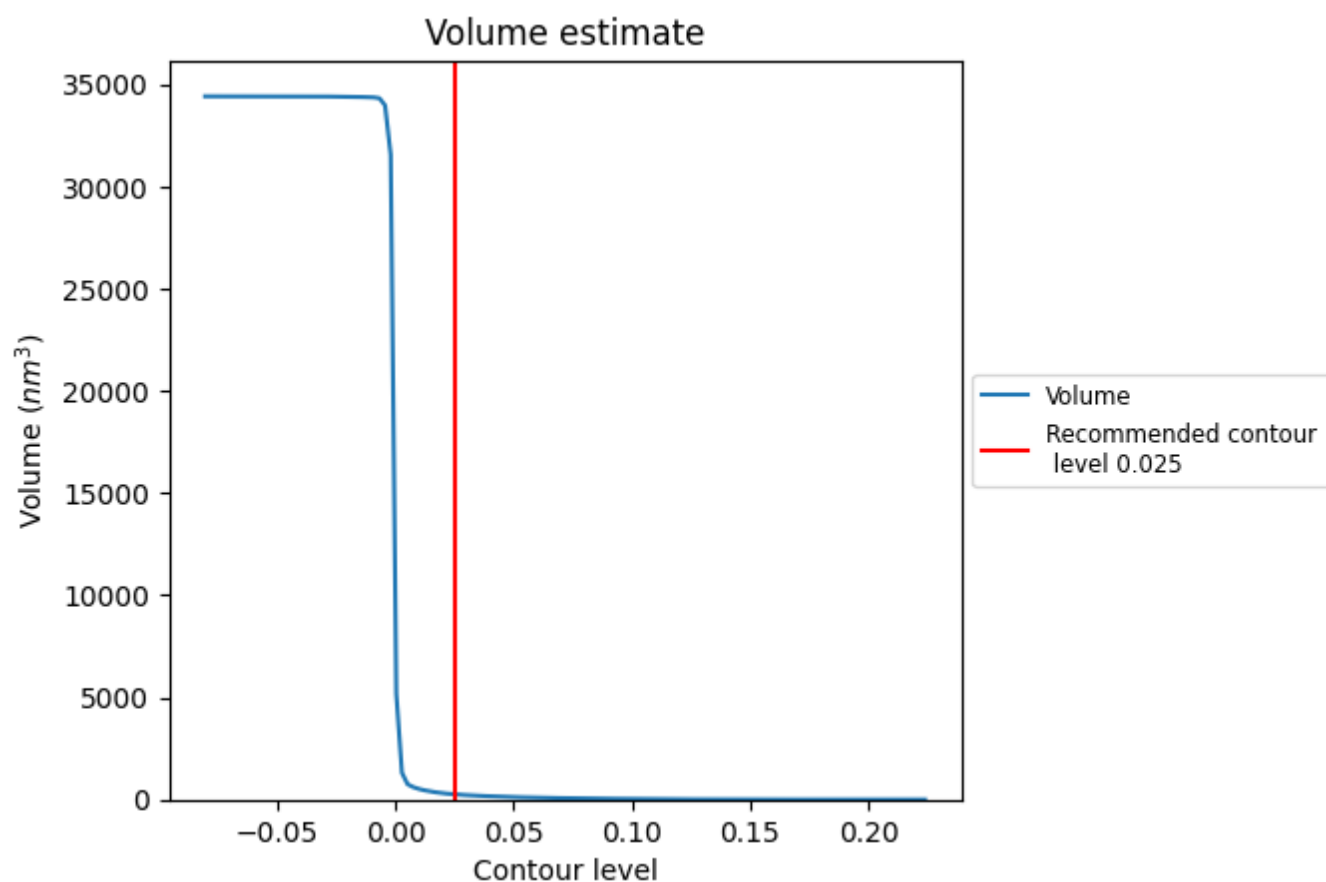
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution [i](#)



The map-value distribution is plotted in 128 intervals along the x-axis. The y-axis is logarithmic. A spike in this graph at zero usually indicates that the volume has been masked.

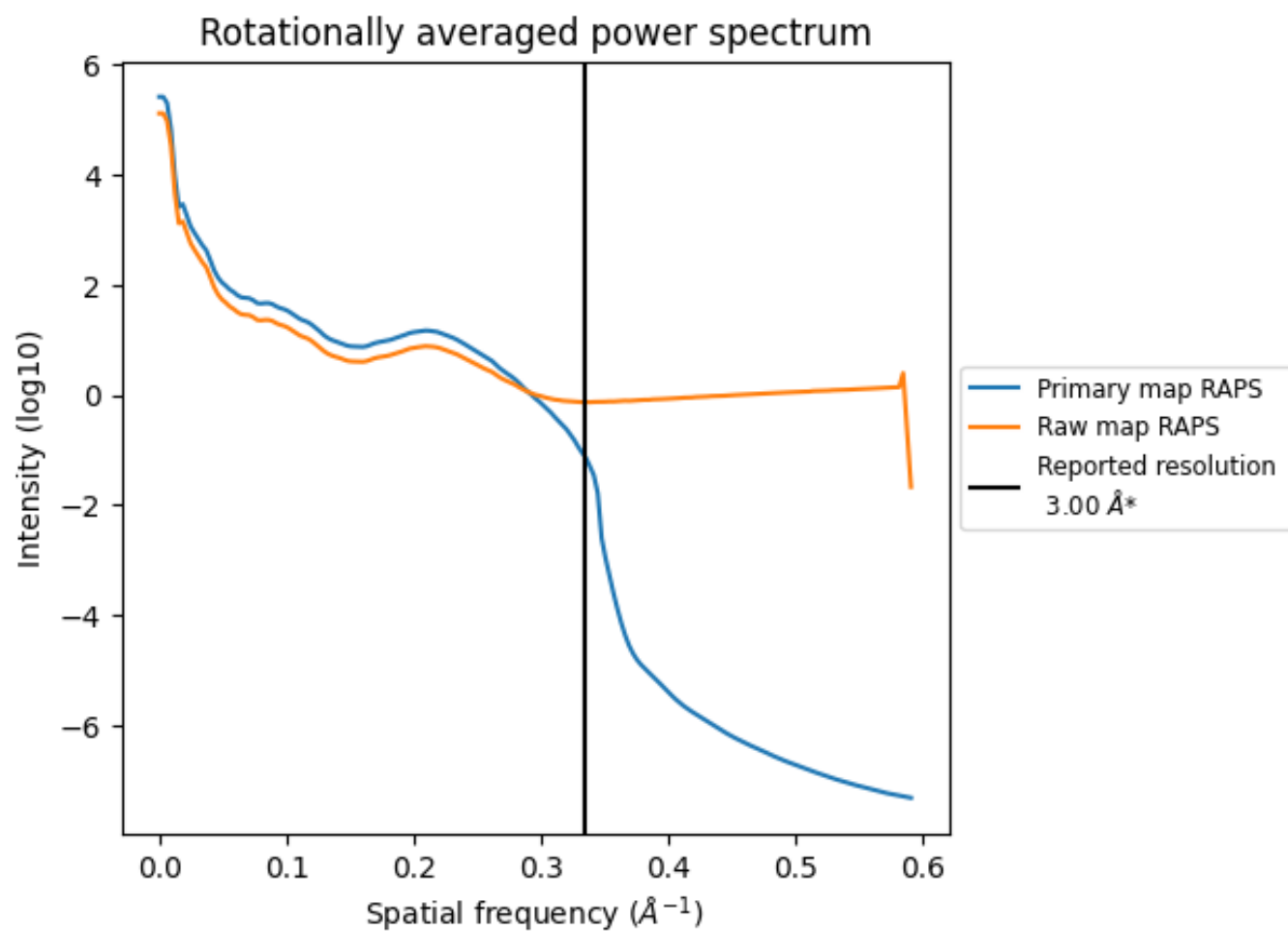
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 258 nm^3 ; this corresponds to an approximate mass of 233 kDa.

The volume estimate graph shows how the enclosed volume varies with the contour level. The recommended contour level is shown as a vertical line and the intersection between the line and the curve gives the volume of the enclosed surface at the given level.

7.3 Rotationally averaged power spectrum ⓘ

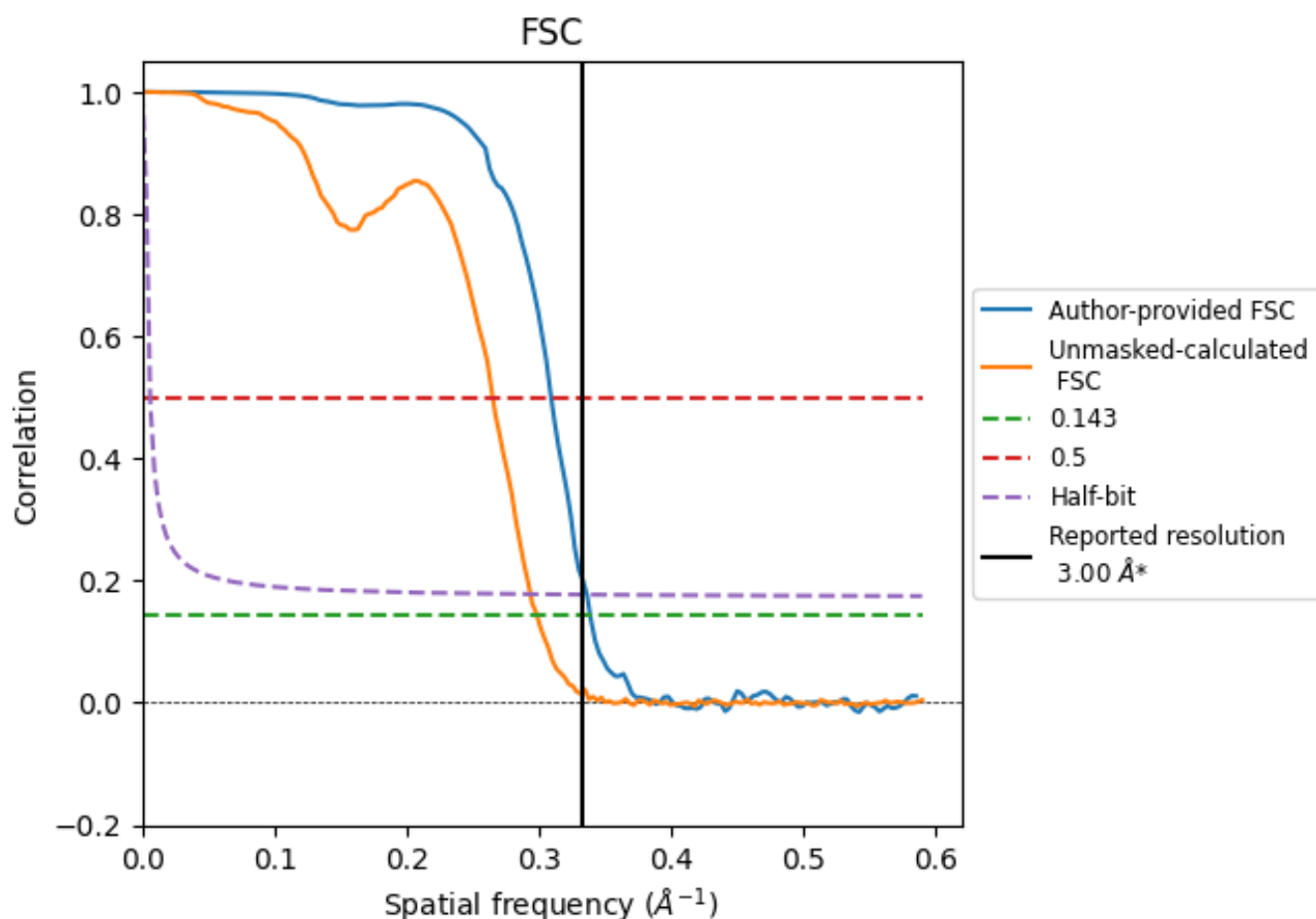


*Reported resolution corresponds to spatial frequency of 0.333 Å⁻¹

8 Fourier-Shell correlation [i](#)

Fourier-Shell Correlation (FSC) is the most commonly used method to estimate the resolution of single-particle and subtomogram-averaged maps. The shape of the curve depends on the imposed symmetry, mask and whether or not the two 3D reconstructions used were processed from a common reference. The reported resolution is shown as a black line. A curve is displayed for the half-bit criterion in addition to lines showing the 0.143 gold standard cut-off and 0.5 cut-off.

8.1 FSC [i](#)



*Reported resolution corresponds to spatial frequency of 0.333 $\text{\AA}^{-1}$

8.2 Resolution estimates [i](#)

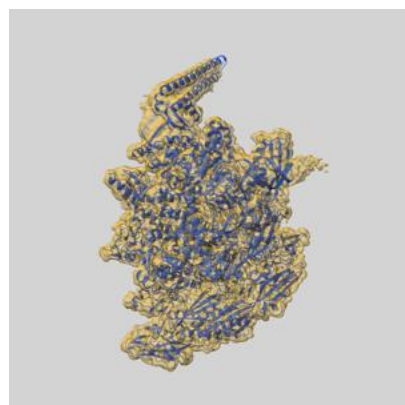
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.00	-	-
Author-provided FSC curve	2.95	3.23	2.97
Unmasked-calculated*	3.35	3.77	3.40

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 3.35 differs from the reported value 3.0 by more than 10 %

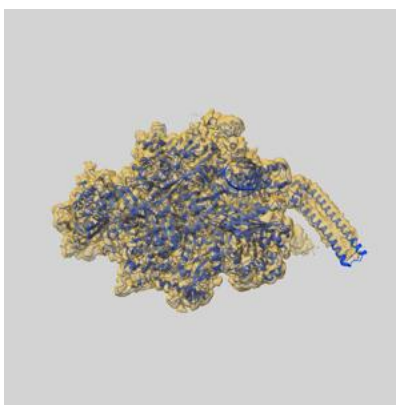
9 Map-model fit [i](#)

This section contains information regarding the fit between EMDB map EMD-75286 and PDB model 10MI. Per-residue inclusion information can be found in section [3](#) on page [7](#).

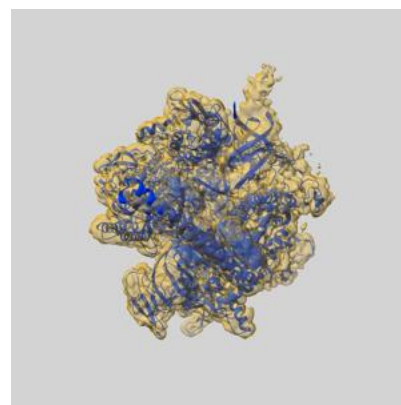
9.1 Map-model overlay [i](#)



X



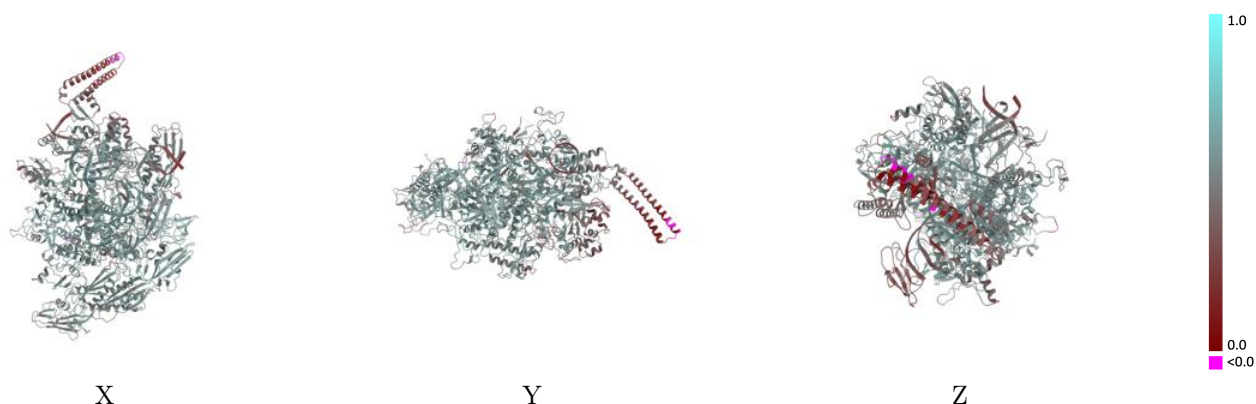
Y



Z

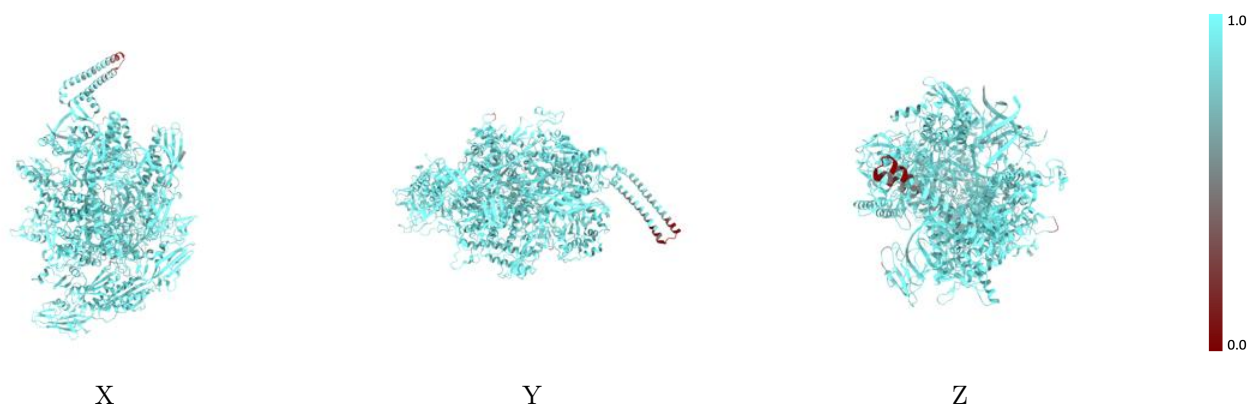
The images above show the 3D surface view of the map at the recommended contour level 0.025 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

9.2 Q-score mapped to coordinate model [i](#)



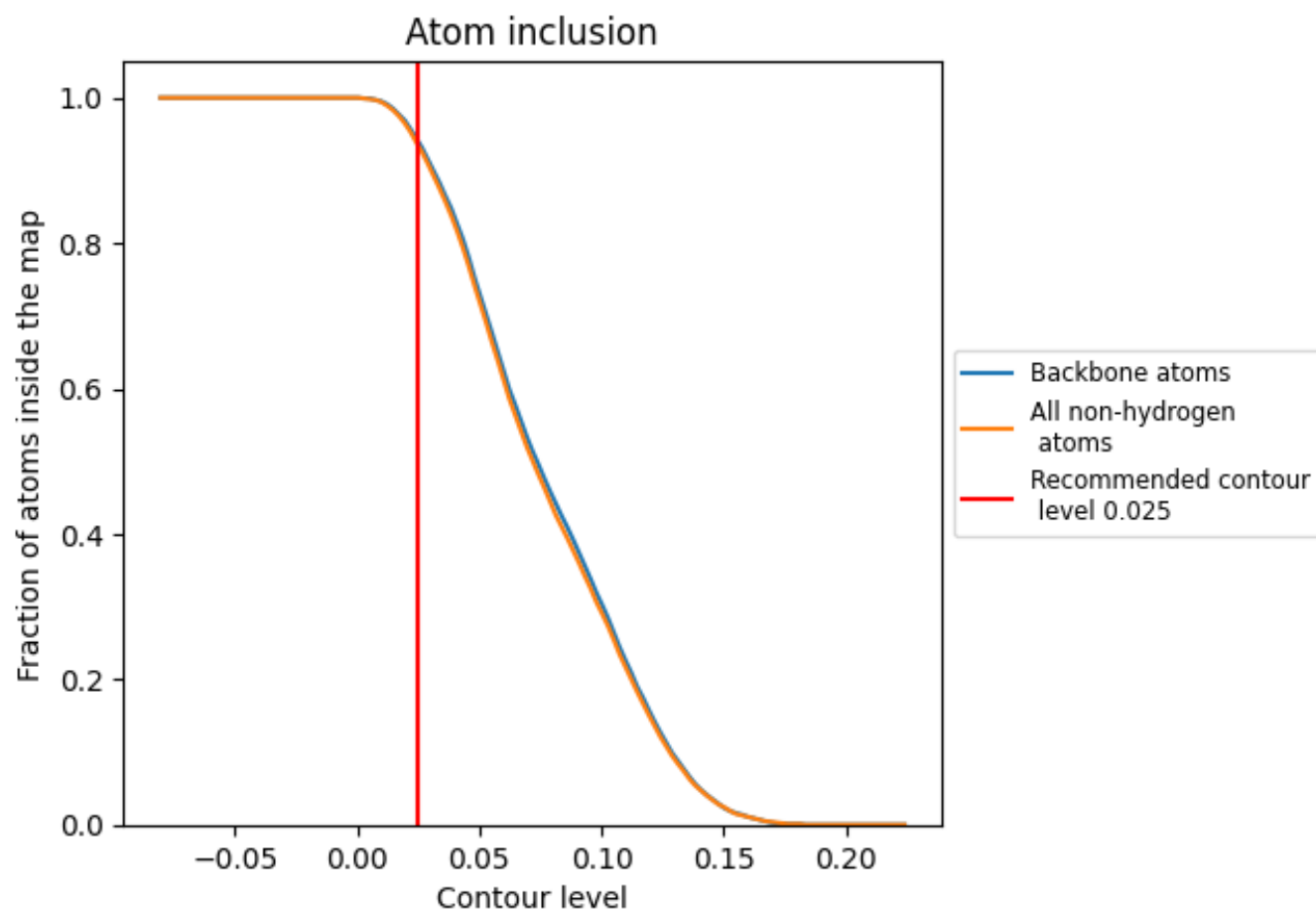
The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions at which atoms can be resolved. Low Q-score values may therefore be expected for many entries.

9.3 Atom inclusion mapped to coordinate model [i](#)



The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.025).

9.4 Atom inclusion ⓘ



At the recommended contour level, 94% of all backbone atoms, 93% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary ⓘ

The table lists the average atom inclusion at the recommended contour level (0.025) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.9340	0.5200
A	0.9460	0.5460
B	0.9300	0.5090
C	0.9430	0.5340
D	0.9300	0.5100
E	0.9240	0.5290
P	0.9880	0.4840
Q	0.9170	0.4560
R	0.9860	0.5810

1.0

0.0

<0.0