Scottish & Southern Electricity Networks

TRANSMISSION

Kintore to Tealing 400 kV OHL Connection

Electric and Magnetic Field (EMF) Study Report

August 2025

EMF-OHL-001

Transmission - Engineering

Scottish & Southern Electricity Networks

Electric & Magnetic Field Study Report

for

Kintore Tealing 400kV Overhead Lines

Revision	Overview of Amendment & Text Affected	Previous Document	Revision Author	Date
1.0	N/A	-	-	-

	Name	Title
Author	Askar Ali Khan	OHL Engineer
Checked by	Ahsan Mahmood	Assistant Engineering Manager
Approved by	Stuart Flint	Principal Engineer

Summary

This report summarises the assessments of Electric and Magnetic Fields (EMF) associated with the proposed Kintore Tealing 400kV Overhead line project, focusing on the project's compliance with the exposure limits in the UK's Code of Practice 'Power Lines: Demonstrating compliance with EMF public exposure guidelines (DECC: 2012)', validation process and assessment of the more complex arrangements. The project uses an AAAC Araucaria conductor in triple-bundled configuration per phase supported by lattice steel AS4 tower structures. SSEN undertook a comprehensive assessment of the EMF levels using PLS CADD software for two levels of current, 3370A and 5000A, for both transposed (optimal) and untransposed phasing scenarios. PLS CADD is the industry standard for overhead line design. To validate the results, an independent consultant, WSP, was engaged, using an alternative software package for the assessment, SES CDEGS. Both analyses produced consistent results, ensuring the accuracy and reliability of the findings.

The assessed EMF levels comply fully with the exposure limits set out in the UK's Code of Practice. These guidelines are based on internationally recognised limits and form the basis of the framework for EMF safety in the UK. The results confirm that EMF levels remain within the permissible thresholds, demonstrating the projects' compliance with the Code of Practice.

Table of Contents

1 Introduction

This document presents an assessment, results and compliance statement of the proposed Kintore Tealing 400kV overhead line in terms of Electric and Magnetic Fields (EMF). This report is applicable to the new build overhead line and the specific arrangements in section 5 only.

1.1 Objective of EMF Study

The goal of this study is to assess the Electric and Magnetic Field (EMF) levels generated by the new 400kV overhead line and to determine compliance with the UK's Code of Practice 'Power Lines: Demonstrating compliance with EMF public exposure guidelines (DECC: 2012)[1]'. This report summarises the studies carried out on EMF levels from the proposed overhead lines to demonstrate a compliant design. The in-house design calculations were done using PLS CADD software with the results being independently validated by Consultants using SES CDGES software.

1.2 Project Background

Scottish and Southern Electricity Networks/ SSEN Transmission plc ("SSEN") is proposing to construct and operate approximately 105.2 kilometres (km) of new double circuit 400 kilovolts (kV) overhead transmission line (OHL) between Kintore and Tealing.

In July 2022, National Grid ESO (as of 1 October 2024 now known as the National Energy System Operator (NESO)) published the Pathway to 2030 Holistic Network Design (Pathway to 2023 HND), setting out the electricity transmission network infrastructure required to enable the forecasted growth in renewable electricity across Great Britain, in light of the UK and Scottish Government's 2030 offshore wind allocations of 50 gigawatt (GW) and 11 GW (through the Crown Estate and ScotWind leasing rounds) which are the main driver for these upgrades.

The proposed 400 kV overhead line (OHL) will consist of steel lattice towers using a new tower series known as the ASTI SSE400 or AS4 for short. These towers are expected to average 57 m in height across the routes. The conductor system is proposed to be 3 x 700 mm^2 AAAC Araucaria with 500 mm bundle spacing. The circuit is designed to function up to 90°C while maintaining a minimum ground clearance of 9 m under normal conditions. Although it is capable of operating at to 90°C, it is not currently intended to be used at this maximum rating.

[1] Power Lines: Demonstrating compliance with EMF public exposure guidelines (DECC: 2012)

2 Electric and Magnetic Field

2.1 Introduction to Electric and Magnetic Field Study

Overhead Lines (OHLs) are used to carry high voltage electricity across long distances and are a source of electric and magnetic fields. There are long established concerns around the potential health effects of exposure of these fields. As a result, OHL have been subject to a large body of scientific research and regulatory initiatives. A summary of the known potential impacts is provided in this section.

2.2 Electric Fields

Electric fields are found wherever there is electricity. Electric fields are created by the presence of electric charges and are measured in volts per meter (V/m). An electric field is associated with any device or wire that is connected to a source of electricity, even when a current is not flowing. Electric fields are easily shielded by common objects such as trees, fences, and walls. It has been determined there is no body of evidence indicating a relationship between exposure to electric fields and human disease. However, strong electric fields can lead to micro-shocks from poorly earthed objects and sensory impacts (reversible on removal from the field and temporary in duration). As such it essential the electric field strength is controlled.

2.3 Magnetic Fields

Magnetic fields are created by charges (electrons) moving in a conductor, such as a wire. The number of electrons moving through a conductor at any given time is called the current (measured in amperes). As the powerflow increases, so does the magnetic field. The magnetic field decreases as the distance from the source increases. Scientific studies have identified that there is a statistical association between magnetic fields and childhood leukaemia however the evidence of the association has weakened in recent years. No biological mechanism has been found for this relationship and since this potential relationship was identified in the 1960’s, subsequent studies have shown a steady decline in the potentially elevated risk. This is despite powerflows, and thus the magnetic field strength from OHLs, increasing over the same period. There is insufficient evidence of magnetic fields being linked to other diseases or cancers. As the statistical association with childhood leukaemia remains it is acknowledged as a potential impact and thus it is considered necessary to control the magnetic field strength to reduce the potential risk.

2.4 EMF Exposure limits

To ensure the safety of the public due to EMF emissions from OHLs, the UK Government issued, following consultation, a Code of Practice for the industry 'Power Lines: Demonstrating compliance with EMF public exposure guidelines' issued via the Department of Energy & Climate Change in 2011 and updated in 2012. This was based on levels set by 1998 guidelines published by the International Commission on Non-Ionizing Radiation Protection (ICNIRP). These levels are set to minimise any health risk posed by the OHL. Additionally, whilst being low risk, the statistical association with childhood leukaemia was recognised and UK further introduced a precautionary measure requiring optimal phasing, where reasonably possible, in the Code of Practice.

The Code of Practice sets the maximum levels for long term public exposure as 360 µT for magnetic fields and 9 kV/m for electric fields. Long term exposure relates to places of residence or similar where people regularly spend extended periods of time. The SSEN OHL design standard TG-NET-OHL-506 Rev 2.0 defines the exposure limits in accordance with the Code of Practice.

The following characteristics are defined by TG-NET-OHL-506 Rev 2.0 for calculation the EMF fields from overhead lines

- Fields shall be measured directly below the line
- Fields shall be calculated with maximum continuous current and voltage
- The conductors shall be modelled at the design minimum clearance
- Double circuit vertical transmission lines shall have optimum phase arrangement to reduce imbalance EMF and induced ground currents.

The UK Government have reconfirmed the principles and limits set out in the Code of Practice with their latest policy on EMF. National Policy Statement EN-5[2], (NPS EN-5) which was reissued in November 2023 and came into force on 17 January 2024. This policy confirmed the current UK Government guidance, informed by relevant international guidance, is therefore still considered appropriate.

[2] National Policy Statement EN-5

3 EMF Calculations

This section summarises the SSEN Transmission calculations of EMF for the proposed OHLs.

3.1 Line Modelling Parameters

The Kintore Tealing overhead line is being designed with a triple bundled AAAC Araucaria conductor per phase on AS4 Towers (a modified version of the SSE400). The phase configurations are considered as optimal phasing i.e. a fully transposed phase arrangement.

The following conductor system design is proposed for this project as shown in the table 3.1 below.

Table 3.1 – Conductor System

Conductor	Construction	Diameter (mm)	Resistivity (nΩm)	No. of Sub conductors	Bundle Distance (mm)	Max. Operating Temperature (°C)
Araucaria	AAAC 700mm^2	37.26	30.5	3	500	90

Two power flow scenarios were considered:

1. Intended maximum power flow; 3370 Amps (winter pre-fault continuous based on a summer pre-fault continuous power flow of 2090MVA),

- Maximum possible power flow; 5000A (maximum winter pre-fault continuous considering substation limitations)

It should be noted that although analysis has been carried out up to a maximum current of 5000A the line is only intended to operate up to 3370A but the full capability has been considered to be conservative.

The proposed structure design for the Kintore Tealing scheme is the AS4 series of lattice steel towers, specifically designed for the project. Proposed tower outline drawing for the standard suspension tower (AS4-AD) is attached in Appendix-A.

3.2 Design Calculations

The EMF calculations were performed in-house by SSEN Transmission's Onshore Capital Delivery Project Engineering team using PLS-CADD Software, an internationally recognised tool by the transmission industry. The line was modelled on the basis of the parameters defined in section 3.1 of this report. The calculations were performed for both transposed and untransposed (for reference only) phase arrangement and calculated at middle of the span where the conductor is nearest to the ground level; the worst-case scenario. These calculations were made for a range of different ground clearance options in order to determine the minimum ground clearance needed to ensure compliance with the Code of Practice. The smallest, minimum ground clearance which was found to be compliant is shown in green for each of the following scenarios:

- Transposed: Maximum possible power flow,

- Transposed: Required maximum power flow,
- Untransposed: Maximum possible power flow,
- Untransposed: Required maximum power flow,

The below tables summarise the EMF level for the range of heights checked. The EMF reports, generated by the PLS-CADD software, used to populate these tables are enclosed in Appendix-B.

Table 3.2 - Transposed Phase Arrangement

Current: 5000 A			Current: 3370 A		
TRANSPOSED (RYB-BYR)					
Clearance (m)	**Electric Field (kV/m)**	**Magnetic Field (uT)**	**Clearance (m)**	**Electric Field (kV/m)**	**Magnetic Field (uT)**
7.3	11.20	111.20	**7.3**	11.20	74.90
7.6	10.6	108.30	7.6	10.60	72.96
8.0	9.86	104.36	8.0	9.86	70.34
8.5	9.05	96.47	8.5	9.05	65.02
8.7	8.63	93.12	**8.7**	8.63	62.76
9.0	8.30	89.36	9.0	8.30	60.22
9.5	7.54	83.24	9.5	7.54	44.65

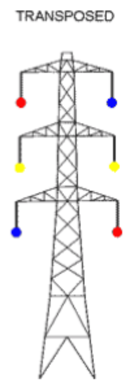
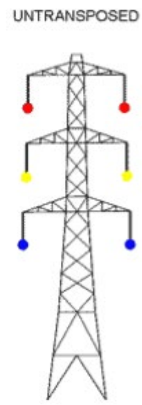


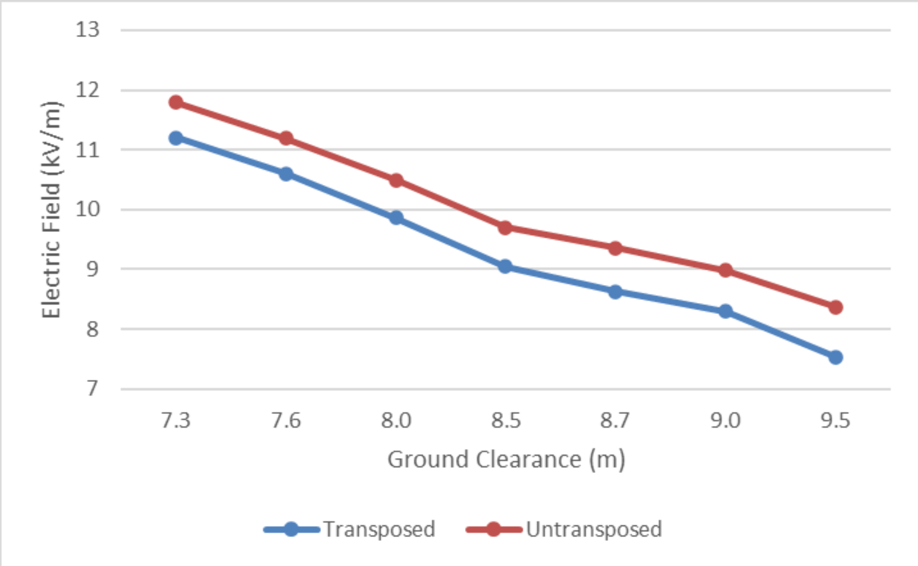
Table 3.3 - Un-Transposed Phase Arrangement

Current: 5000 A			Current: 3370 A		
UNTRANSPOSED (RYB-RYB)					
Clearance (m)	**Electric Field (kV/m)**	**Magnetic Field (uT)**	**Clearance (m)**	**Electric Field (kV/m)**	**Magnetic Field (uT)**
7.3	11.79	92.50	**7.3**	11.79	67.80
7.6	11.19	91.66	7.6	11.19	64.90
8.0	10.49	90.55	8.0	10.50	61.03
8.5	9.70	83.91	8.5	9.70	56.56
8.7	9.36	81.11	8.7	9.36	54.67
9.0	8.98	77.90	**9.0**	8.98	52.51
9.5	8.37	72.85	9.5	8.37	49.10



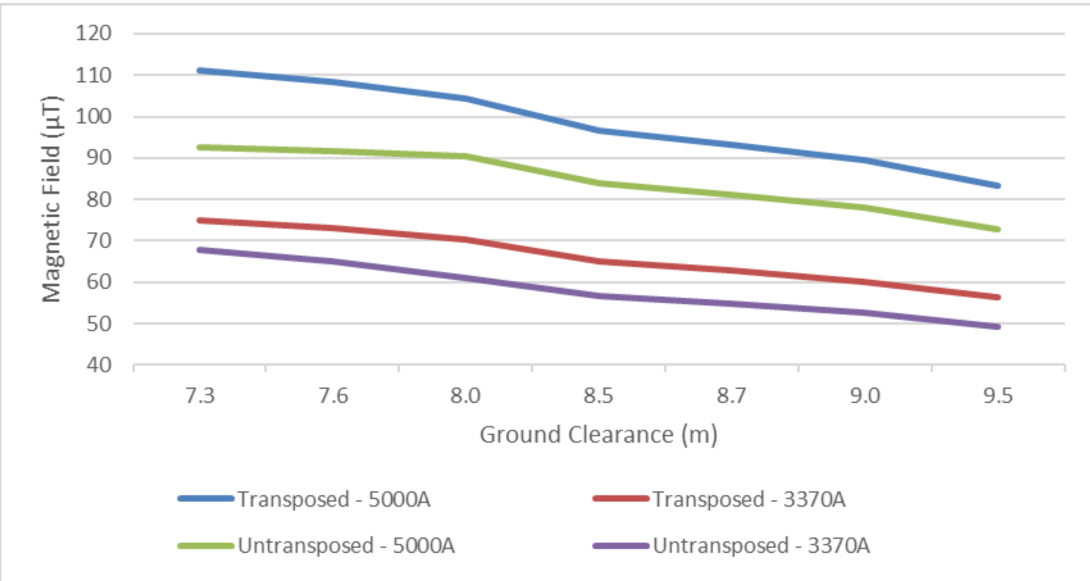
The calculated values for Electric field at the minimum statutory ground clearance (7.3m) are 11.20 kV/m and 11.79 kV/m for the transposed and untransposed scenarios respectively. These values are not within the acceptable limits (i.e. 9kV/m). The acceptable electric field exposure levels are not achieved until a ground clearance of 8.7m and 9.0m is achieved for the transposed and untransposed scenarios respectively. The following figure shows a graphical representation of the electric field in transposed and untransposed phasing scenarios.

Figure 3.1 - Electric Field Arrangement



The calculated values for the magnetic field varies with the increase in the current/load. However, the statutory limit for the magnetic field is 360 uT which is achieved at the 7.3m ground clearance for all scenarios. The following figure shows the graphical representation of the Magnetic Field at transposed and untransposed phasing scenarios and with two different power flows:

Figure 3.2 - Magnetic Field Arrangements



It was concluded from the above tables that the minimum compliant clearance to ground, 8.7m-9.0m, was relatively consistent for the four scenarios considered, including the conservative untransposed values. The overall tower height would not change whether an 8.7m or 9.0m clearance to ground was adopted. As such, there would be no change to the landscape & visual, or other environmental impacts and therefore the more conservative value of 9.0m clearance was adopted.

3.3 Summary of Assessment and Further Precautions

The Assessment of Electric and Magnetic Field levels for the proposed overhead line project confirms that with a minimum ground clearance of 9.0m, all calculated values are within the statutory exposure limits. It should be noted that these values are for a 1m height above ground, directly beneath the line and assume long term exposure that would be typical for a residence or similar. The routeing of the Kintore Tealing project has avoided the oversail of residential (or similar) properties and looked to site the OHL away from the properties. Whilst this is not necessary under the Code of Practice, nor was the EMF levels the sole factor in these routing decisions, in practice this substantially reduces the EMF exposure levels compared to the values given in this report. This is visualised in the figures 3.3 and 3.4, shared at the projects' public consultations in the Pathway to 2030 EMF leaflet.

Figure 3.3 - Magnetic Field Strength as per Pathway to 2030 EMF leaflet

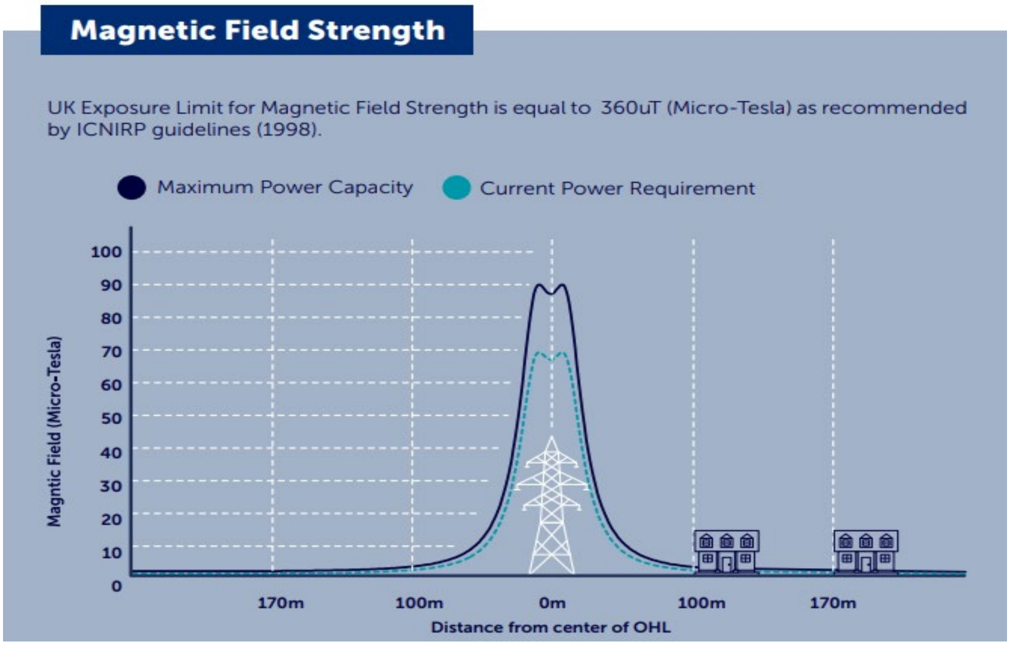
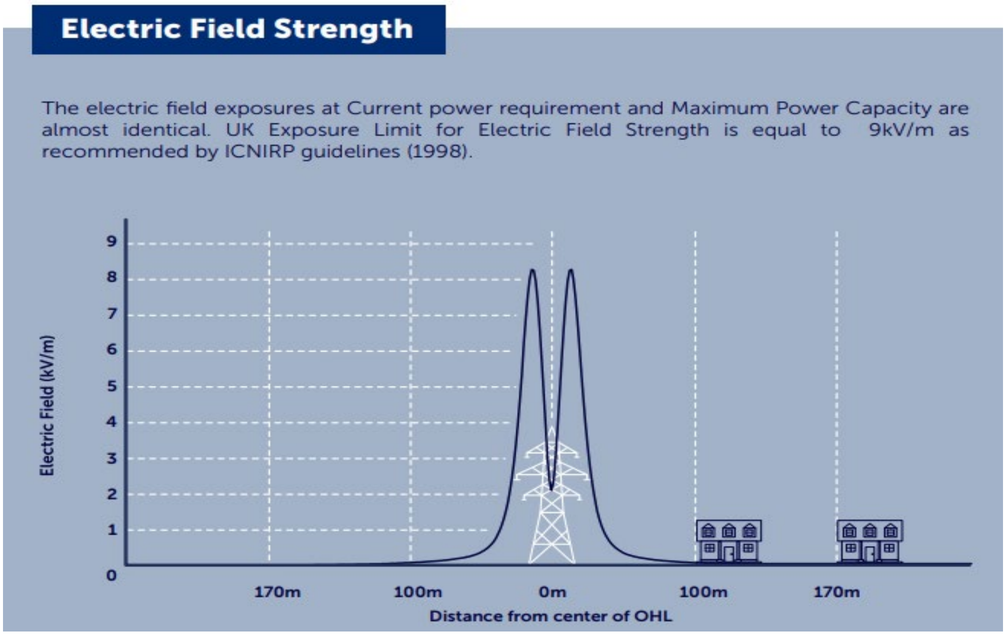


Figure 3.4 - Electric Field Strength as per Pathway to 2030 EMF leaflet



4 Validation of EMF Result

SSEN Transmission commissioned the consultancy group WSP to provide an independent validation of the EMF levels generated by the proposed OHL. WSP utilised another industry standard tool, SES CDEGS software, for this work. The EMF reports generated by WSP by using CDEGS software are enclosed in Appendix-C. The results from WSP's analysis were consistent with those calculated in Section 3, see table 4.1, and confirmed that the EMF levels are well within the acceptable exposure limits set by the Code of Practice.

Table 4.1 - Comparison of WSP and SSEN-T EMF analysis

Power flow/ Current (3x Araucaria on AS4)	Clearance	Magnetic Field (under the line at mid span)		Electric Field (under the line at mid span)	
		SSEN-T (PLS-CADD)	WSP (CDEGS)	SSEN-T (PLS-CADD)	WSP (CDEGS)
5000 A	9.00 M	89.3 µT	92 µT	8.3 kV/m	7.9 kV/m
3370 A	9.00 M	60.2 µT	62 µT	8.3 kV/m	7.9 kV/m

5 Complex OHL Arrangements

5.1 Cumulative Assessment

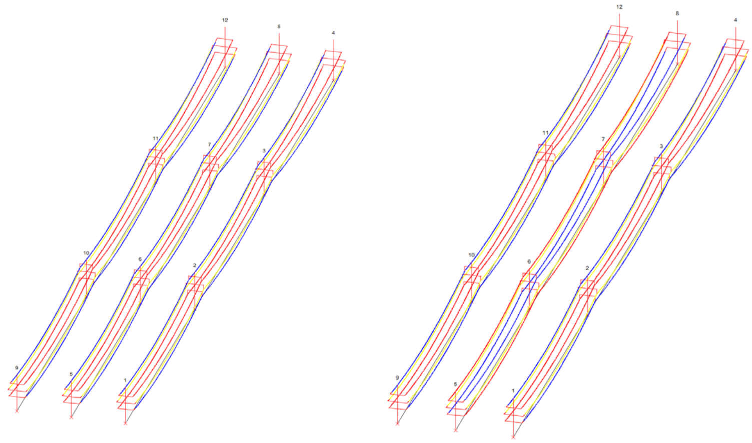
Where overhead lines come into close proximity to each other, their electric and magnetic fields can interact with one another and therefore a cumulative assessment is required to demonstrate compliance. Due to the fact that Electric and Magnetic fields are vector quantities and have both magnitude and direction, the way in which they combine is complex and the values cannot simply be added together. Although combining the EMFs from different sources is complex, generally when the field from one source is larger than the other, the larger field dominates, with the smaller field making a minor impact to the overall field. This is why at substations the largest fields typically come from the overhead lines entering the substation and the impact of the plant within the substation itself is considered to have minimal impact to the overall fields.

To demonstrate compliance a conservative assessment has been carried out within PLS-CADD considering three 400kV overhead lines, in parallel, all operating at 5000A using the parameters from section 3. The three lines have been spaced at 72m centre to centre which has been selected based off an 18m substation bay spacing and is considered to be the closest the lines will operate at this voltage on approach to a substation.

The exact field that is produced by the lines in parallel depends on specifics of relative phasing and loads however this assessment considers a number of scenarios that are considered to be representative of the cumulative effect.

Two phasing scenarios have been modelled. The first scenario (Case 1) considers all lines being optimally phased and the circuits between adjacent lines also being optimally phased. This is an ideal scenario as when circuits have optimal phasing the electric and magnetic fields can partially cancel each other out reducing the resultant fields. However, while the proposed development is to be optimally phased, as phasing of future developments is not yet confirmed a precautionary assessment was undertaken, therefore a second case (Case 2) was considered where the three individual lines were still optimally phased but the circuits between the adjacent lines were not optimally phased. This second arrangement has the potential to increase the magnitude of the resultant fields. Figure 5.1 below depicts the two cases described above.

Figure 5.1 – Case 1 on left, Case 2 on right



The maximum fields for each scenario are presented in table 5.1 below. The full PLS-CADD report can be seen in Appendix-D. Figures 5.2 and 5.3 show the two cases for both the cumulative electric field and magnetic field extracted from the PLS Report.

Table 5.1 - Summary of Electric and Magnetic Field Values for Cumulative Assessment

Cumulative Assessment Case	Maximum Magnetic Field (µT)	Maximum Electric Field (kV/m)
Case 1 – Optimal phasing of adjacent circuits	92.71	8.69
Case 2 – Non-Optimal phasing of adjacent circuits	94.71	8.67

Figure 5.2 - Cumulative Electric Field Results

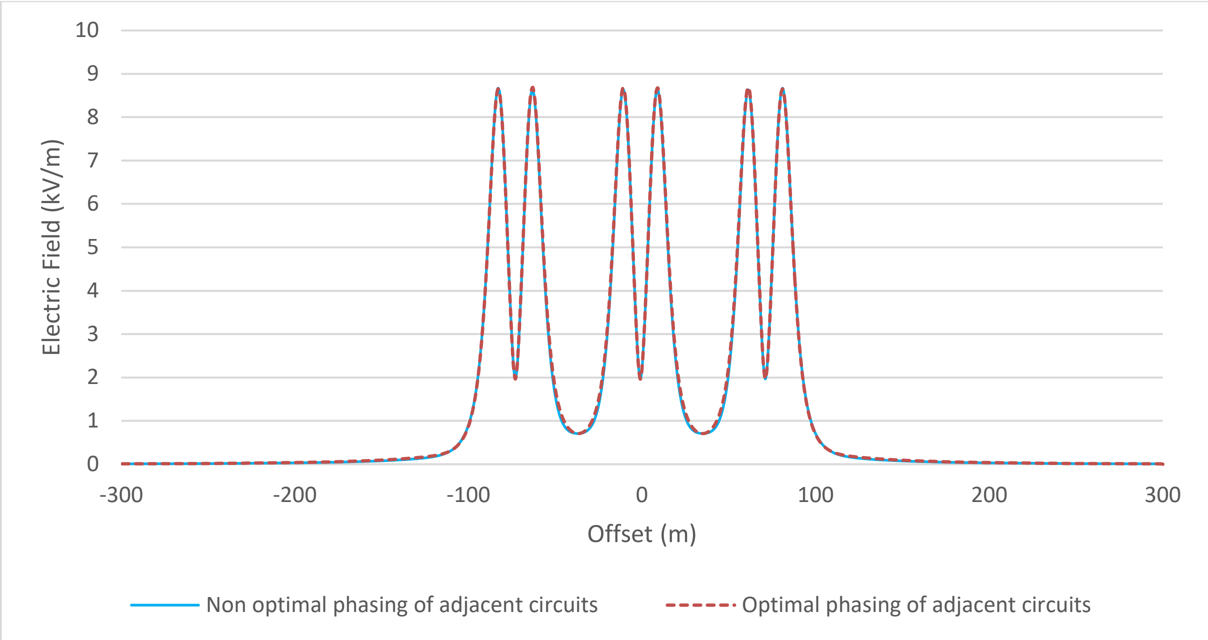
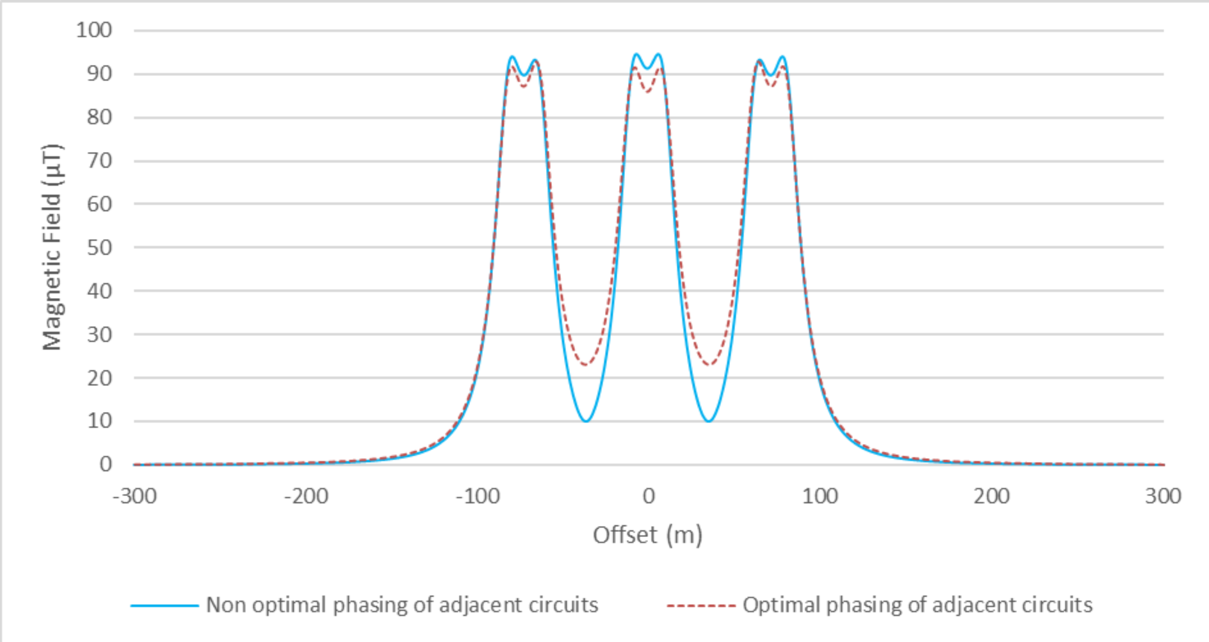


Figure 5.3 - Cumulative Magnetic Field Results



As stated above, this analysis depends on numerous factors such as phasing and load however the cases carried out demonstrate the mechanisms in which fields combine and are considered representative for the proposed development. This assessment demonstrates that the combined impact of electric and magnetic fields from parallel overhead lines does not affect the assessment of compliance for the proposed new overhead line with the maximum fields remaining within the acceptable exposure limits set by the Code of Practice.

5.2 Complex Crossings

Across the Kintore Tealing 400kV OHL there is a certain complex OHL arrangement that required further detailed analysis. This arrangement is a result of the proposed OHL crossing an existing OHL. Where this crossing occurs, the electric and magnetic fields of the respective OHL's can interact with one another and therefore the combined effects must be considered.

This analysis cannot be carried out in the same method as discussed in the previous section and requires specialist software, SES CDEGS, due to the complexity of these crossings involving multiple circuits directly crossing each other. This type of analysis is best suited to the specialist software to accurately model the resultant electric and magnetic fields. A specialist consultant, Arcadis Consulting (UK) Limited, was commissioned to carry out this detailed analysis and the full study is appended to this report.

An overview of the results for the proposed crossing is provided within 2 below.

Table 5.2 - Summary of Electric and Magnetic Field Values for Complex Arrangements

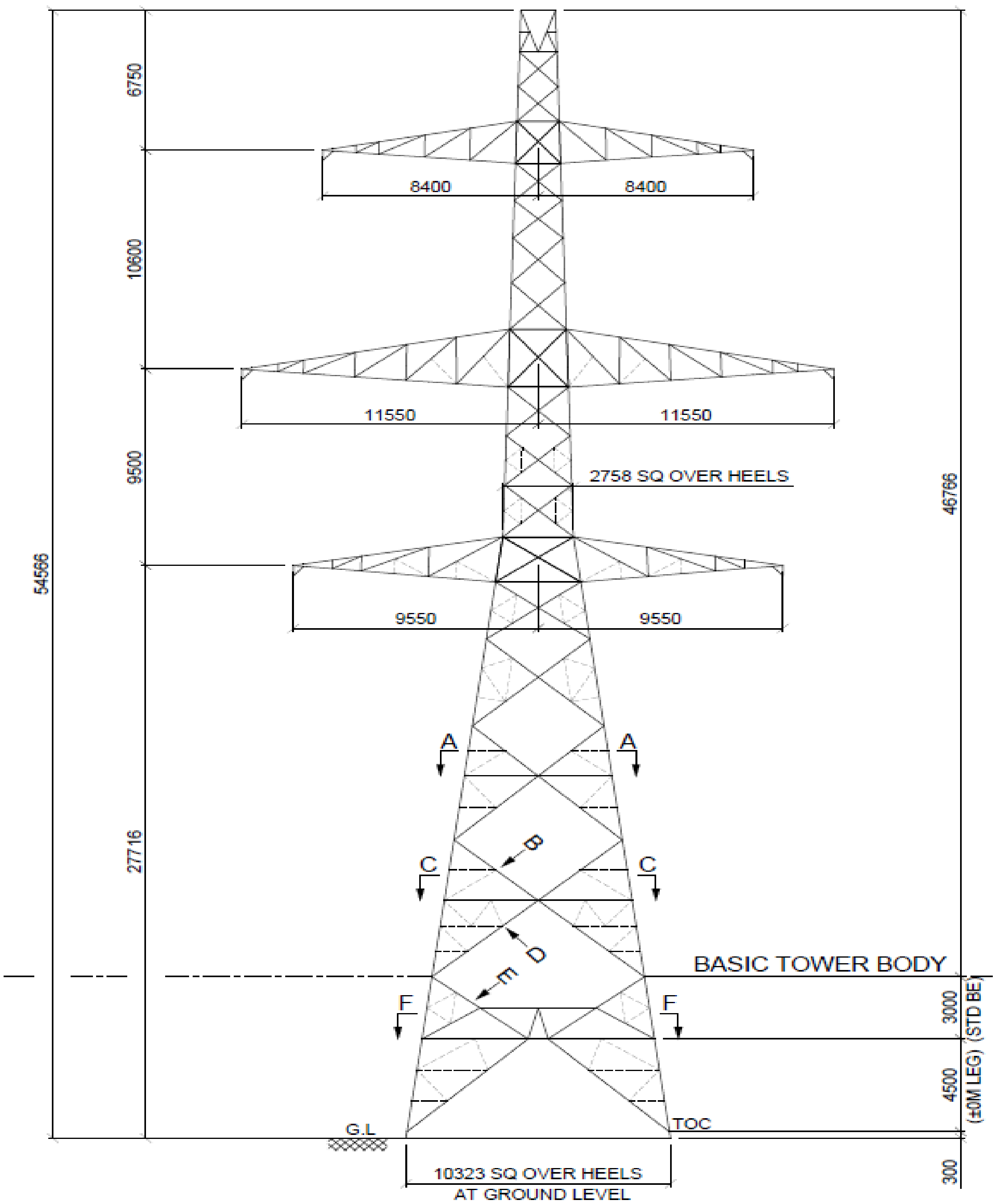
Description of Crossing	Maximum Magnetic Field (µT)	Maximum Electric Field (kV/m)
Craigiebuckler to Tarland 132kV OHL Crossing	98.81	8.44

Based on the results in the table above it can be observed that both the maximum magnetic and electric fields observed at the crossing remain below the acceptable exposure limits set by the Code of Practice. The full details of this analysis can be seen in Appendix-E.

6 Conclusion

In conclusion, as demonstrated by this report and its supporting documents, the proposed OHLs are compliant with the industry's current Code of Practice 'Power Lines: Demonstrating compliance with EMF public exposure guidelines' developed by the Department of Energy & Climate Change.

Appendix A Tower Geometry



Appendix B PLS CADD Electric and Magnetic Field Calculations

TRIPLE Araucaria (7.6m ground clearance)

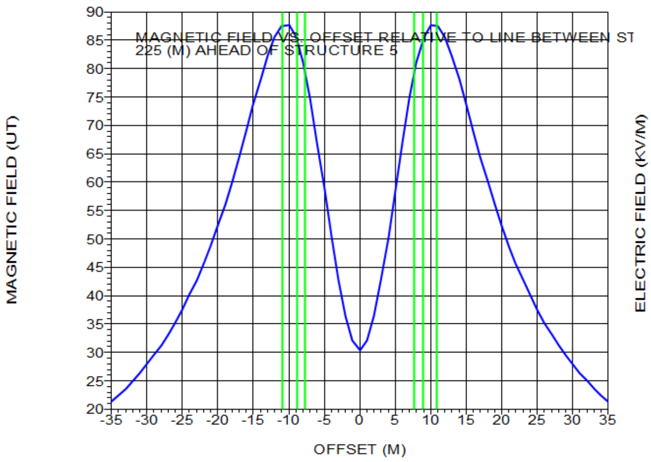
```
PLS-CADD Version 18.00x64    11:51:13 AM 06 July 2023
Scottish and Southern Energy
Project Name: 'C:\Users\AM25305\Desktop\CSR ASTI-\PLS Model ASTI\profile 637.don'
```

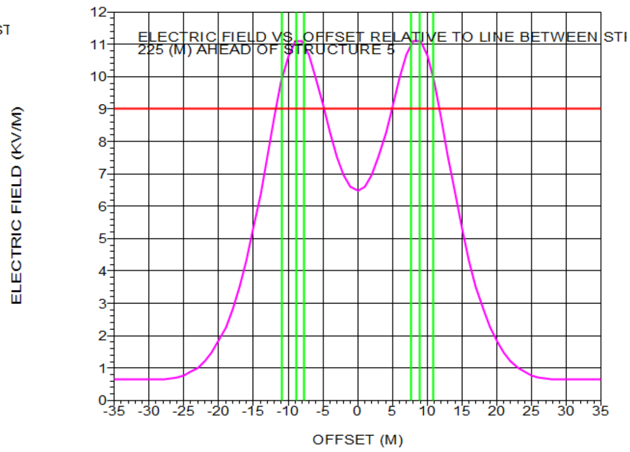
Criteria Notes:

```
  Design criteria developed for SSE Beauly Blackhillock Line reconductoring
  Global wind notes: wind directions are annotated NNW-330, E-90, etc as `wind from` - angles in GLB wind are `wind to` or wind azumuth
  delete - survey and maps confirm angle as per XYZ 19/08/08.Terrain 289: angle has been corrected in pfl. CHECK xyz
  delete?20/08/08.PFL 180 and 181 points edited
  tower 229 is a D10 with extended crossarms. It should be modeled???Erection loads??CHECK.


3D EMF Calculation Notes:
  1) Calculations based on the EPRI Red Book methods (3rd Edition, 2005 - 7.4 Calculation of Magnetic Fields and Appendices 7.1 Calculation
of Field Ellipse Parameters and 7.6 Electric Field Calculations for 3D Geometry).
  2) All wire positions are modeled at the specified weather case and wind direction. Height above ground determined by the modeled ground
TIN.
  3) Only the effects of wires are being analyzed. The effects of structures are not included unless enabled as noted below.
  4) Ground return is being ignored for magnetic field calculations.


Meter height above ground:                1.00 (m)
Maximum wire distance:                  150.00 (m)
Maximum cable segment size:               3.00 (m)
Cross section offset +/-:                35.00 (m)
Result interval:                          1.00 (m)
Electric field limit:                     9.00 (kV/m)
Magnetic field limit:                   360.00 (uT)
Space potential limit:                    0.00 (kV)
Contour Map Spacing:                         3 (m)
Analyzing spans between these structures:  1 - 6


One or more sections have wind from both directions which is not supported. A wind direction of left is being used for those sections.
```

Section Data for 3D EMF Results:

Section Number	Section Note	Voltage Ph-Ph (kV)	Current (Amps)	Cable Filename	Cable Description	Conductors Per Phase	Bundle Diameter (cm)	Cable Radius (cm)	Weather Case	Condition	Wind Dir.	WC Temperature (deg C)	Effective Radius (cm)
1		400.0	4570.0	araucaria lumpi - 30.5.wir	700mm² AAAC - Araucaria	3	57.735	1.863	90°C	Creep RS	Left	90.000	16.700
2		400.0	4570.0	araucaria lumpi - 30.5.wir	700mm² AAAC - Araucaria	3	57.735	1.863	90°C	Creep RS	Left	90.000	16.700





TRIPLE Araucaria (7.6m ground clearance)

3D EMF Point Results Span from 5 to 6:

Measurement X (m)	Measurement Y (m)	Measurement Z (m)	B Real (uT)	B Imaginary (uT)	B Angle (deg)	B Magnitude (uT)	B Polarization Axial Ratio %	H Magnitude (A/m)	EF Real (kV/m)	EF Imaginary (kV/m)	EF Angle (deg)	EF Magnitude (kV/m)	EF Polarization Axial Ratio %	Space Potential Real (kV)	Space Potential Imaginary (kV)	Space Potential Angle (deg)	Space Potential Magnitude (kV)
275807.9	3098063.4	1.9	17.279	12.506	35.9	21.330	20.2	16.974	0.273	0.582	64.8	0.643	6.0	0.269	0.581	65.1	0.640
275808.2	3098064.4	1.9	18.101	13.284	36.3	22.452	20.4	17.867	0.238	0.599	68.3	0.645	6.9	0.232	0.599	68.8	0.642
275808.5	3098065.3	1.9	18.975	14.132	36.7	23.659	20.7	18.827	0.197	0.616	72.3	0.646	7.9	0.188	0.615	73.0	0.643
275808.8	3098066.3	1.9	19.906	15.057	37.1	24.960	21.0	19.862	0.151	0.629	76.5	0.647	9.1	0.136	0.628	77.8	0.643
275809.1	3098067.2	1.9	20.898	16.069	37.6	26.362	21.2	20.978	0.103	0.640	80.8	0.648	10.5	0.075	0.638	83.3	0.642
275809.4	3098068.2	1.9	21.955	17.178	38.0	27.877	21.4	22.184	0.079	0.645	83.0	0.650	12.2	0.003	0.642	89.7	0.642
275809.7	3098069.1	1.9	23.083	18.393	38.5	29.515	21.5	23.487	0.119	0.643	79.5	0.654	14.2	-0.081	0.640	-82.8	0.645
275810.1	3098070.1	1.9	24.286	19.729	39.1	31.290	21.7	24.899	0.203	0.633	72.2	0.665	16.4	-0.178	0.628	-74.2	0.653
275810.4	3098071.0	1.9	25.571	21.197	39.7	33.214	21.7	26.431	0.311	0.610	63.0	0.685	18.6	-0.291	0.604	-64.3	0.671
275810.7	3098072.0	1.9	26.943	22.814	40.3	35.304	21.7	28.094	0.440	0.573	52.5	0.722	20.5	-0.422	0.564	-53.2	0.704
275811.0	3098072.9	1.9	28.409	24.595	40.9	37.576	21.6	29.902	0.590	0.517	41.2	0.784	21.6	-0.574	0.502	-41.2	0.762
275811.3	3098073.9	1.9	29.978	26.557	41.5	40.049	21.4	31.870	0.763	0.438	29.8	0.880	21.5	-0.748	0.413	-28.9	0.854
275811.6	3098074.8	1.9	31.655	28.718	42.2	42.741	21.2	34.012	0.964	0.338	19.3	1.021	20.4	-0.948	0.290	-17.0	0.991
275811.9	3098075.8	1.9	33.450	31.098	42.9	45.673	20.8	36.345	1.193	0.242	11.4	1.218	18.5	-1.177	0.122	-5.9	1.183
275812.3	3098076.7	1.9	35.371	33.712	43.6	48.863	20.2	38.884	1.456	0.272	10.6	1.482	16.3	-1.439	-0.102	4.0	1.443
275812.6	3098077.7	1.9	37.425	36.574	44.3	52.329	19.6	41.642	1.757	0.500	15.9	1.827	14.2	-1.739	-0.394	12.8	1.783
275812.9	3098078.6	1.9	39.617	39.693	45.1	56.081	18.7	44.628	2.099	0.857	22.2	2.267	12.3	-2.079	-0.770	20.3	2.217
275813.2	3098079.6	1.9	41.947	43.066	45.8	60.119	17.7	47.841	2.486	1.328	28.1	2.819	10.6	-2.464	-1.246	26.8	2.761
275813.5	3098080.5	1.9	44.408	46.673	46.4	64.424	16.6	51.267	2.923	1.923	33.3	3.498	9.1	-2.897	-1.837	32.4	3.430
275813.8	3098081.5	1.9	46.972	50.461	47.1	68.940	15.3	54.861	3.409	2.650	37.9	4.318	7.8	-3.378	-2.557	37.1	4.237
275814.1	3098082.4	1.9	49.585	54.336	47.6	73.560	13.8	58.537	3.944	3.514	41.7	5.282	6.6	-3.906	-3.407	41.1	5.183
275814.5	3098083.4	1.9	52.147	58.133	48.1	78.095	12.2	62.146	4.516	4.502	44.9	6.377	5.5	-4.469	-4.377	44.4	6.256
275814.8	3098084.3	1.9	54.492	61.603	48.5	82.246	10.5	65.449	5.106	5.576	47.5	7.560	4.6	-5.047	-5.429	47.1	7.412
275815.1	3098085.3	1.9	56.380	64.393	48.8	85.587	8.7	68.108	5.675	6.664	49.6	8.753	3.7	-5.602	-6.490	49.2	8.573
275815.4	3098086.2	1.9	57.501	66.075	49.0	87.591	6.9	69.703	6.173	7.655	51.1	9.834	3.0	-6.084	-7.455	50.8	9.623
275815.7	3098087.2	1.9	57.534	66.217	49.0	87.720	4.9	69.806	6.537	8.417	52.2	10.657	2.4	-6.436	-8.199	51.9	10.424
275816.0	3098088.1	1.9	56.246	64.522	48.9	85.596	3.0	68.115	6.713	8.834	52.8	11.095	2.0	-6.609	-8.612	52.5	10.855
275816.3	3098089.1	1.9	53.598	60.960	48.7	81.172	1.0	64.594	6.679	8.848	53.0	11.086	1.8	-6.582	-8.641	52.7	10.862
275816.7	3098090.0	1.9	49.784	55.810	48.3	74.788	1.0	59.514	6.456	8.492	52.8	10.668	1.8	-6.375	-8.317	52.5	10.479
275817.0	3098090.9	1.9	45.180	49.566	47.7	67.067	3.0	53.370	6.098	7.871	52.2	9.957	2.0	-6.039	-7.738	52.0	9.816
275817.3	3098091.9	1.9	40.224	42.787	46.8	58.726	4.9	46.732	5.677	7.122	51.4	9.107	2.1	-5.641	-7.034	51.3	9.017
275817.6	3098092.8	1.9	35.337	35.982	45.5	50.432	6.7	40.133	5.258	6.370	50.5	8.260	2.2	-5.244	-6.326	50.3	8.217
275817.9	3098093.8	1.9	30.904	29.595	43.8	42.789	7.9	34.051	4.891	5.711	49.4	7.519	2.1	-4.895	-5.705	49.4	7.517
275818.2	3098094.7	1.9	27.294	24.103	41.4	36.413	7.9	28.976	4.610	5.206	48.5	6.954	1.8	-4.628	-5.230	48.5	6.983
275818.5	3098095.7	1.9	24.892	20.176	39.0	32.042	5.2	25.498	4.435	4.892	47.8	6.603	1.4	-4.461	-4.934	47.9	6.652
275818.9	3098096.6	1.9	24.043	18.702	37.9	30.460	0.0	24.240	4.376	4.785	47.6	6.484	1.1	-4.405	-4.834	47.7	6.540
275819.2	3098097.6	1.9	24.892	20.176	39.0	32.042	5.2	25.498	4.435	4.892	47.8	6.603	1.4	-4.461	-4.934	47.9	6.652
275819.5	3098098.5	1.9	27.294	24.103	41.4	36.413	7.9	28.976	4.610	5.206	48.5	6.954	1.8	-4.628	-5.230	48.5	6.983
275819.8	3098099.5	1.9	30.904	29.595	43.8	42.789	7.9	34.051	4.891	5.711	49.4	7.519	2.1	-4.895	-5.705	49.4	7.517
275820.1	3098100.4	1.9	35.337	35.982	45.5	50.432	6.7	40.133	5.258	6.370	50.5	8.260	2.2	-5.244	-6.326	50.3	8.217
275820.4	3098101.4	1.9	40.224	42.787	46.8	58.726	4.9	46.732	5.677	7.122	51.4	9.107	2.1	-5.641	-7.034	51.3	9.017
275820.8	3098102.3	1.9	45.180	49.566	47.7	67.067	3.0	53.370	6.098	7.871	52.2	9.957	2.0	-6.039	-7.738	52.0	9.816
275821.1	3098103.3	1.9	49.784	55.810	48.3	74.788	1.0	59.514	6.456	8.492	52.8	10.668	1.8	-6.375	-8.317	52.5	10.479
275821.4	3098104.2	1.9	53.598	60.960	48.7	81.172	1.0	64.594	6.679	8.848	53.0	11.086	1.8	-6.582	-8.641	52.7	10.862
275821.7	3098105.2	1.9	56.246	64.522	48.9	85.596	3.0	68.115	6.713	8.834	52.8	11.095	2.0	-6.609	-8.612	52.5	10.855
275822.0	3098106.1	1.9	57.534	66.217	49.0	87.720	4.9	69.806	6.537	8.417	52.2	10.657	2.4	-6.436	-8.199	51.9	10.424
275822.3	3098107.1	1.9	57.501	66.075	49.0	87.591	6.9	69.703	6.173	7.655	51.1	9.834	3.0	-6.084	-7.455	50.8	9.623
275822.6	3098108.0	1.9	56.380	64.393	48.8	85.587	8.7	68.108	5.675	6.664	49.6	8.753	3.7	-5.602	-6.490	49.2	8.573
275823.0	3098109.0	1.9	54.492	61.603	48.5	82.246	10.5	65.449	5.106	5.576	47.5	7.560	4.6	-5.047	-5.429	47.1	7.412
275823.3	3098109.9	1.9	52.147	58.133	48.1	78.095	12.2	62.146	4.516	4.502	44.9	6.377	5.5	-4.469	-4.377	44.4	6.256
275823.6	3098110.9	1.9	49.585	54.336	47.6	73.560	13.8	58.537	3.944	3.514	41.7	5.282	6.6	-3.906	-3.407	41.1	5.183
275823.9	3098111.8	1.9	46.972	50.461	47.1	68.940	15.3	54.861	3.409	2.650	37.9	4.318	7.8	-3.378	-2.557	37.1	4.237
275824.2	3098112.8	1.9	44.408	46.673	46.4	64.424	16.6	51.267	2.923	1.923	33.3	3.498	9.1	-2.897	-1.837	32.4	3.430
275824.5	3098113.7	1.9	41.947	43.066	45.8	60.119	17.7	47.841	2.486	1.328	28.1	2.819	10.6	-2.464	-1.246	26.8	2.761
275824.8	3098114.7	1.9	39.617	39.693	45.1	56.081	18.7	44.628	2.099	0.857	22.2	2.267	12.3	-2.079	-0.770	20.3	2.217
275825.2	3098115.6	1.9	37.425	36.574	44.3	52.329	19.6	41.642	1.757	0.500	15.9	1.827	14.2	-1.739	-0.394	12.8	1.783
275825.5	3098116.6	1.9	35.371	33.712	43.6	48.863	20.2	38.884	1.456	0.272	10.6	1.482	16.3	-1.439	-0.102	4.0	1.443
275825.8	3098117.5	1.9	33.450	31.098	42.9	45.673	20.8	36.345	1.193	0.242	11.4	1.218	18.5	-1.177	0.122	-5.9	1.183
275826.1	3098118.5	1.9	31.655	28.718	42.2	42.741	21.2	34.012	0.964	0.338	19.3	1.021	20.4	-0.948	0.290	-17.0	0.991
275826.4	3098119.4	1.9	29.978	26.557	41.5	40.049	21.4	31.870	0.763	0.438	29.8	0.880	21.5	-0.748	0.413	-28.9	0.854
275826.7	3098120.4	1.9	28.409	24.595	40.9	37.576	21.6	29.902	0.590	0.517	41.2	0.784	21.6	-0.574	0.502	-41.2	0.762
275827.0	3098121.3	1.9	26.943	22.814	40.3	35.304	21.7	28.094	0.440	0.573	52.5	0.722	20.5	-0.422	0.564	-53.2	0.704
275827.4	3098122.3	1.9	25.571	21.197	39.7	33.214	21.7	26.431	0.311	0.610	63.0	0.685	18.6	-0.291	0.604	-64.3	0.671
275827.7	3098123.2	1.9	24.286	19.729	39.1	31.290	21.7	24.899	0.203	0.633	72.2	0.665	16.4	-0.178	0.628	-74.2	0.653
275828.0	3098124.2	1.9	23.083	18.393	38.5	29.515	21.5	23.487	0.119	0.643	79.5	0.654	14.2	-0.081	0.640	-82.8	0.645
275828.3	3098125.1	1.9	21.955	17.178	38.0	27.877	21.4	22.184	0.079	0.645	83.0	0.650	12.2	0.003	0.642	89.7	0.642
275828.6	3098126.1	1.9	20.898	16.069	37.6	26.362	21.2	20.978	0.103	0.640	80.8	0.648	10.5	0.075	0.638	83.3	0.642
275828.9	3098127.0	1.9	19.906	15.057	37.1	24.960	21.0	19.862	0.151	0.629	76.5	0.647	9.1	0.136	0.628	77.8	0.643
275829.2	3098128.0	1.9	18.975	14.132	36.7	23.659	20.7	18.827	0.197	0.616	72.3	0.646	7.9	0.188	0.615	73.0	0.643
275829.6	3098128.9	1.9	18.101	13.284	36.3	22.452	20.4	17.867	0.238	0.599	68.3	0.645	6.9	0.232	0.599	68.8	0.642
275829.9	3098129.9	1.9	17.279	12.506	35.9	21.330	20.2	16.974	0.273	0.582	64.8	0.643	6.0	0.269	0.581	65.1	0.640

TRIPLE Araucaria (9.0m ground clearance to achieve 9kV/m Electric Field)

```
PLS-CADD Version 18.00x64    2:28:01 PM 06 July 2023
Scottish and Southern Energy
Project Name: 'C:\Users\AM25305\Desktop\CSR ASTI-\PLS Model ASTI\profile 637.don'
```

Criteria Notes:

```
  Design criteria developed for SSE Beauly Blackhillock Line reconductoring
  Global wind notes: wind directions are annotated NNW-330, E-90, etc as `wind from` - angles in GLB wind are `wind to` or wind azumuth
  delete - survey and maps confirm angle as per XYZ 19/08/08.Terrain 289: angle has been corrected in pfl. CHECK xyz
  delete?20/08/08.PFL 180 and 181 points edited
  tower 229 is a D10 with extended crossarms. It should be modeled???Erection loads??CHECK.
```

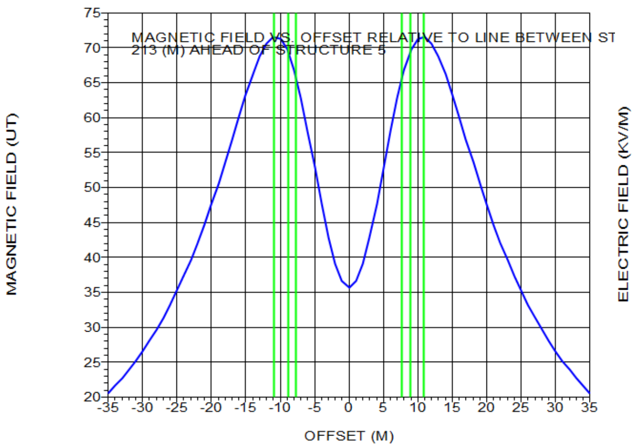
```
3D EMF Calculation Notes:
  1) Calculations based on the EPRI Red Book methods (3rd Edition, 2005 - 7.4 Calculation of Magnetic Fields and Appendices 7.1 Calculation
of Field Ellipse Parameters and 7.6 Electric Field Calculations for 3D Geometry).
  2) All wire positions are modeled at the specified weather case and wind direction. Height above ground determined by the modeled ground
TIN.
  3) Only the effects of wires are being analyzed. The effects of structures are not included unless enabled as noted below.
  4) Ground return is being ignored for magnetic field calculations.
```

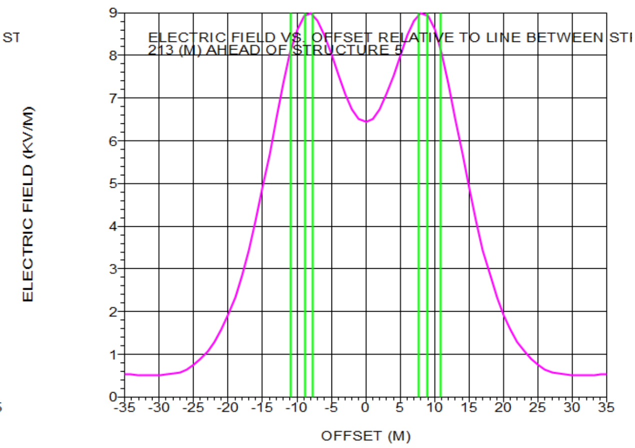
```
Meter height above ground:                  1.00  (m)
Maximum wire distance:                    150.00  (m)
Maximum cable segment size:                 3.00  (m)
Cross section offset +/-:                  35.00  (m)
Result interval:                            1.00  (m)
Electric field limit:                       9.00  (kV/m)
Magnetic field limit:                     360.00  (uT)
Space potential limit:                      0.00  (kV)
Contour Map Spacing:                           3  (m)
Analyzing spans between these structures:  1 - 6
```

One or more sections have wind from both directions which is not supported. A wind direction of left is being used for those sections.

Section Data for 3D EMF Results:

Section Number	Section Note	Voltage Ph-Ph (kV)	Current (Amps)	Cable Filename	Cable Description	Conductors Per Phase	Bundle Diameter (cm)	Cable Radius (cm)	Weather Case	Condition	Wind Dir.	WC Temperature (deg C)	Effective Radius (cm)
1		400.0	4570.0	araucaria lumpi - 30.5.wir	700mm² AAAC - Araucaria	3	57.735	1.863	90°C	Creep RS	Left	90.000	16.700
2		400.0	4570.0	araucaria lumpi - 30.5.wir	700mm² AAAC - Araucaria	3	57.735	1.863	90°C	Creep RS	Left	90.000	16.700





TRIPLE Araucaria (9.0m ground clearance to achieve 9kV/m Electric Field)

3D EMF Point Results Span from 5 to 6:

Measurement			B					H	EF					Space Potential			
X (m)	Y (m)	Z (m)	Real (uT)	Imaginary (uT)	Angle (deg)	Magnitude (uT)	Polarization Axial Ratio %	Magnitude (A/m)	Real (kV/m)	Imaginary (kV/m)	Angle (deg)	Magnitude (kV/m)	Polarization Axial Ratio %	Real (kV)	Imaginary (kV)	Angle (deg)	Magnitude (kV)
275818.8	3098059.8	1.9	16.631	12.096	36.0	20.564	19.3	16.364	0.185	0.497	69.6	0.530	7.4	0.179	0.496	70.2	0.527
275819.1	3098060.8	1.9	17.391	12.820	36.4	21.605	19.6	17.193	0.147	0.505	73.8	0.526	8.6	0.137	0.504	74.7	0.522
275819.4	3098061.7	1.9	18.197	13.605	36.8	22.720	19.8	18.080	0.106	0.510	78.3	0.521	10.1	0.089	0.508	80.1	0.516
275819.7	3098062.7	1.9	19.052	14.457	37.2	23.916	19.9	19.032	0.071	0.511	82.1	0.516	11.9	0.033	0.509	86.3	0.510
275820.0	3098063.6	1.9	19.958	15.383	37.6	25.198	20.1	20.052	0.076	0.507	81.5	0.513	13.9	-0.032	0.505	-86.4	0.506
275820.3	3098064.5	1.9	20.919	16.391	38.1	26.575	20.2	21.148	0.131	0.497	75.2	0.514	16.3	-0.107	0.494	-77.8	0.505
275820.7	3098065.5	1.9	21.939	17.488	38.6	28.056	20.3	22.326	0.211	0.479	66.3	0.523	18.7	-0.193	0.475	-67.9	0.512
275821.0	3098066.4	1.9	23.020	18.683	39.1	29.648	20.4	23.593	0.307	0.450	55.8	0.545	20.6	-0.292	0.444	-56.7	0.532
275821.3	3098067.4	1.9	24.168	19.986	39.6	31.361	20.3	24.956	0.418	0.409	44.4	0.585	21.7	-0.405	0.400	-44.6	0.569
275821.6	3098068.3	1.9	25.385	21.406	40.1	33.206	20.3	26.424	0.547	0.353	32.9	0.651	21.4	-0.534	0.338	-32.3	0.633
275821.9	3098069.3	1.9	26.676	22.953	40.7	35.191	20.1	28.004	0.694	0.281	22.1	0.748	19.9	-0.682	0.255	-20.5	0.728
275822.2	3098070.2	1.9	28.043	24.637	41.3	37.328	19.9	29.705	0.861	0.201	13.2	0.884	17.9	-0.848	0.145	-9.7	0.861
275822.5	3098071.2	1.9	29.491	26.466	41.9	39.626	19.6	31.533	1.050	0.165	8.9	1.063	15.6	-1.038	0.002	-0.1	1.038
275822.9	3098072.1	1.9	31.021	28.449	42.5	42.091	19.1	33.495	1.264	0.267	11.9	1.292	13.5	-1.251	-0.181	8.2	1.264
275823.2	3098073.1	1.9	32.635	30.589	43.1	44.729	18.6	35.594	1.504	0.474	17.5	1.577	11.7	-1.491	-0.413	15.5	1.547
275823.5	3098074.0	1.9	34.331	32.885	43.8	47.540	17.9	37.831	1.774	0.755	23.0	1.928	10.2	-1.759	-0.701	21.7	1.894
275823.8	3098075.0	1.9	36.103	35.331	44.4	50.515	17.1	40.198	2.074	1.107	28.1	2.351	8.9	-2.058	-1.056	27.2	2.313
275824.1	3098075.9	1.9	37.941	37.905	45.0	53.631	16.2	42.679	2.406	1.537	32.6	2.855	7.7	-2.388	-1.484	31.9	2.811
275824.4	3098076.9	1.9	39.821	40.573	45.5	56.850	15.2	45.240	2.769	2.049	36.5	3.445	6.7	-2.749	-1.993	35.9	3.395
275824.7	3098077.8	1.9	41.708	43.275	46.1	60.102	14.0	47.828	3.162	2.645	39.9	4.122	5.8	-3.138	-2.583	39.5	4.064
275825.1	3098078.8	1.9	43.544	45.920	46.5	63.283	12.7	50.359	3.577	3.318	42.8	4.879	5.0	-3.550	-3.248	42.5	4.811
275825.4	3098079.7	1.9	45.244	48.383	46.9	66.241	11.3	52.713	4.005	4.051	45.3	5.697	4.3	-3.972	-3.971	45.0	5.617
275825.7	3098080.7	1.9	46.694	50.492	47.2	68.774	9.9	54.728	4.428	4.811	47.4	6.538	3.6	-4.388	-4.720	47.1	6.445
275826.0	3098081.6	1.9	47.750	52.046	47.5	70.632	8.3	56.207	4.821	5.548	49.0	7.350	2.9	-4.774	-5.446	48.8	7.243
275826.3	3098082.6	1.9	48.253	52.827	47.6	71.548	6.7	56.936	5.154	6.201	50.3	8.064	2.4	-5.102	-6.089	50.0	7.944
275826.6	3098083.5	1.9	48.062	52.646	47.6	71.285	5.0	56.727	5.399	6.703	51.1	8.608	1.9	-5.343	-6.586	50.9	8.481
275827.0	3098084.5	1.9	47.091	51.392	47.5	69.704	3.4	55.469	5.532	7.003	51.7	8.925	1.6	-5.476	-6.886	51.5	8.798
275827.3	3098085.4	1.9	45.345	49.078	47.3	66.819	1.8	53.173	5.545	7.076	51.9	8.990	1.4	-5.493	-6.967	51.7	8.872
275827.6	3098086.4	1.9	42.933	45.847	46.9	62.811	0.2	49.984	5.448	6.937	51.9	8.821	1.4	-5.404	-6.844	51.7	8.720
275827.9	3098087.3	1.9	40.052	41.955	46.3	58.004	1.3	46.158	5.268	6.633	51.5	8.471	1.4	-5.235	-6.561	51.4	8.394
275828.2	3098088.3	1.9	36.949	37.715	45.6	52.798	2.6	42.016	5.039	6.233	51.0	8.016	1.5	-5.019	-6.185	50.9	7.965
275828.5	3098089.2	1.9	33.889	33.461	44.6	47.624	3.6	37.898	4.800	5.807	50.4	7.534	1.5	-4.792	-5.783	50.4	7.510
275828.8	3098090.2	1.9	31.134	29.533	43.5	42.913	4.1	34.149	4.582	5.415	49.8	7.093	1.4	-4.584	-5.413	49.7	7.093
275829.2	3098091.1	1.9	28.930	26.293	42.3	39.093	3.7	31.109	4.409	5.105	49.2	6.745	1.2	-4.420	-5.119	49.2	6.763
275829.5	3098092.1	1.9	27.498	24.120	41.3	36.578	2.2	29.108	4.300	4.907	48.8	6.524	1.0	-4.315	-4.933	48.8	6.554
275829.8	3098093.0	1.9	27.001	23.348	40.9	35.696	0.0	28.406	4.262	4.839	48.6	6.448	0.9	-4.280	-4.869	48.7	6.482
275830.1	3098094.0	1.9	27.498	24.120	41.3	36.578	2.2	29.108	4.300	4.907	48.8	6.524	1.0	-4.315	-4.933	48.8	6.554
275830.4	3098094.9	1.9	28.930	26.293	42.3	39.093	3.7	31.109	4.409	5.105	49.2	6.745	1.2	-4.420	-5.119	49.2	6.763
275830.7	3098095.9	1.9	31.134	29.533	43.5	42.913	4.1	34.149	4.582	5.415	49.8	7.093	1.4	-4.584	-5.413	49.7	7.093
275831.0	3098096.8	1.9	33.889	33.461	44.6	47.624	3.6	37.898	4.800	5.807	50.4	7.534	1.5	-4.792	-5.783	50.4	7.510
275831.4	3098097.8	1.9	36.949	37.715	45.6	52.798	2.6	42.016	5.039	6.233	51.0	8.016	1.5	-5.019	-6.185	50.9	7.965
275831.7	3098098.7	1.9	40.052	41.955	46.3	58.004	1.3	46.158	5.268	6.633	51.5	8.471	1.4	-5.235	-6.561	51.4	8.394
275832.0	3098099.7	1.9	42.933	45.847	46.9	62.811	0.2	49.984	5.448	6.937	51.9	8.821	1.4	-5.404	-6.844	51.7	8.720
275832.3	3098100.6	1.9	45.345	49.078	47.3	66.819	1.8	53.173	5.545	7.076	51.9	8.990	1.4	-5.493	-6.967	51.7	8.872
275832.6	3098101.6	1.9	47.091	51.392	47.5	69.704	3.4	55.469	5.532	7.003	51.7	8.925	1.6	-5.476	-6.886	51.5	8.798
275832.9	3098102.5	1.9	48.062	52.646	47.6	71.285	5.0	56.727	5.399	6.703	51.1	8.608	1.9	-5.343	-6.586	50.9	8.481
275833.2	3098103.5	1.9	48.253	52.827	47.6	71.548	6.7	56.936	5.154	6.201	50.3	8.064	2.4	-5.102	-6.089	50.0	7.944
275833.6	3098104.4	1.9	47.750	52.046	47.5	70.632	8.3	56.207	4.821	5.548	49.0	7.350	2.9	-4.774	-5.446	48.8	7.243
275833.9	3098105.4	1.9	46.694	50.492	47.2	68.774	9.9	54.728	4.428	4.811	47.4	6.538	3.6	-4.388	-4.720	47.1	6.445
275834.2	3098106.3	1.9	45.244	48.383	46.9	66.241	11.3	52.713	4.005	4.051	45.3	5.697	4.3	-3.972	-3.971	45.0	5.617
275834.5	3098107.3	1.9	43.544	45.920	46.5	63.283	12.7	50.359	3.577	3.318	42.8	4.879	5.0	-3.550	-3.248	42.5	4.811
275834.8	3098108.2	1.9	41.708	43.275	46.1	60.102	14.0	47.828	3.162	2.645	39.9	4.122	5.8	-3.138	-2.583	39.5	4.064
275835.1	3098109.2	1.9	39.821	40.573	45.5	56.850	15.2	45.240	2.769	2.049	36.5	3.445	6.7	-2.749	-1.993	35.9	3.395
275835.4	3098110.1	1.9	37.941	37.905	45.0	53.631	16.2	42.679	2.406	1.537	32.6	2.855	7.7	-2.388	-1.484	31.9	2.811
275835.8	3098111.1	1.9	36.103	35.331	44.4	50.515	17.1	40.198	2.074	1.107	28.1	2.351	8.9	-2.058	-1.056	27.2	2.313
275836.1	3098112.0	1.9	34.331	32.885	43.8	47.540	17.9	37.831	1.774	0.755	23.0	1.928	10.2	-1.759	-0.701	21.7	1.894
275836.4	3098113.0	1.9	32.635	30.589	43.1	44.729	18.6	35.594	1.504	0.474	17.5	1.577	11.7	-1.491	-0.413	15.5	1.547
275836.7	3098113.9	1.9	31.021	28.449	42.5	42.091	19.1	33.495	1.264	0.267	11.9	1.292	13.5	-1.251	-0.181	8.2	1.264
275837.0	3098114.9	1.9	29.491	26.466	41.9	39.626	19.6	31.533	1.050	0.165	8.9	1.063	15.6	-1.038	0.002	-0.1	1.038
275837.3	3098115.8	1.9	28.043	24.637	41.3	37.328	19.9	29.705	0.861	0.201	13.2	0.884	17.9	-0.848	0.145	-9.7	0.861
275837.6	3098116.8	1.9	26.676	22.953	40.7	35.191	20.1	28.004	0.694	0.281	22.1	0.748	19.9	-0.682	0.255	-20.5	0.728
275838.0	3098117.7	1.9	25.385	21.406	40.1	33.206	20.3	26.424	0.547	0.353	32.9	0.651	21.4	-0.534	0.338	-32.3	0.633
275838.3	3098118.7	1.9	24.168	19.986	39.6	31.361	20.3	24.956	0.418	0.409	44.4	0.585	21.7	-0.405	0.400	-44.6	0.569
275838.6	3098119.6	1.9	23.020	18.683	39.1	29.648	20.4	23.593	0.307	0.450	55.8	0.545	20.6	-0.292	0.444	-56.7	0.532
275838.9	3098120.6	1.9	21.939	17.488	38.6	28.056	20.3	22.326	0.211	0.479	66.3	0.523	18.7	-0.193	0.475	-67.9	0.512
275839.2	3098121.5	1.9	20.919	16.391	38.1	26.575	20.2	21.148	0.131	0.497	75.2	0.514	16.3	-0.107	0.494	-77.8	0.505
275839.5	3098122.5	1.9	19.958	15.383	37.6	25.198	20.1	20.052	0.076	0.507	81.5	0.513	13.9	-0.032	0.505	-86.4	0.506
275839.8	3098123.4	1.9	19.052	14.457	37.2	23.916	19.9	19.032	0.071	0.511	82.1	0.516	11.9	0.033	0.509	86.3	0.510
275840.2	3098124.4	1.9	18.197	13.605	36.8	22.720	19.8	18.080	0.106	0.510	78.3	0.521	10.1	0.089	0.508	80.1	0.516
275840.5	3098125.3	1.9	17.391	12.820	36.4	21.605	19.6	17.193	0.147	0.505	73.8	0.526	8.6	0.137	0.504	74.7	0.522
275840.8	3098126.2	1.9	16.631	12.096	36.0	20.564	19.3	16.364	0.185	0.497	69.6	0.530	7.4	0.179	0.496	70.2	0.527

Appendix C WSP Assessment

SCOTTISH & SOUTHERN ELECTRICITY NETWORK (SSEN)

EMF ASSESSMENT STUDY FOR 400kV OHTL

SCOTTISH & SOUTHERN ELECTRICITY NETWORK (SSEN)

EMF ASSESSMENT STUDY FOR 400KV OHTL

REPORT

TYPE OF DOCUMENT (THIRD ISSUE)

PROJECT NO. 70111023

OUR REF. NO. 70111023-509

DATE: JULY 2025

SCOTTISH & SOUTHERN ELECTRICITY NETWORK (SSEN)

EMF ASSESSMENT STUDY FOR 400KV OHTL

REPORT

WSP

8 First Street
Manchester
M15 4RP

Phone: +44 161 200 5000

WSP.com

QUALITY CONTROL

Issue/revision	First issue	Second issue	Third issue
Remarks	Draft Report	Final Report	Final Report
Date	July 2024	August 2024	July 2025
Prepared by	Arunpandian B	Arunpandian B	Arunpandian B
Checked by	R Gopinath	R Gopinath	R Gopinath
Authorised by	Abdullah Emhmed	Abdullah Emhmed	Abdullah Emhmed
Project number	70111023	70111023	70111023
Report number	70111023-509	70111023-509	70111023-509

.

CONTENTS

TERMINOLOGY

Term	Definition
ENA	*Energy Network Association*
EMF	*Electro Magnetic Fields*
ELF	*Extremely Low Frequency*
ICNIRP	*International Commission on Non-Ionizing Radiation Protection*
INIRC	*International Non-Ionizing Radiation Committee*
IARC	*International Agency for Research on Cancer*
NPS	*National Policy Statement*
OHTL	*Overhead Transmission Line*
SCENIHR	*Scientific Committee on Emerging and Newly Identified Health Risks*
SSEN	*Scottish and Southern Electricity Network*
WHO	*World Health Organisation*

1 BACKGROUND AND SCOPE OF WORK

WSP is assigned as the consultant to perform a 400kV Substation and 400kV OHL EMF Assessment Study Report for Scottish & Southern Electricity Networks (SSEN). The EMF Assessment Study is essential to ensure that personnel available in Substations or nearby to the OHTL are not exposed to a harmful level of Electromagnetic Field (EMF).

As per our proposal (70111023) to undertake the EMF studies, the following report is

issued by WSP.

- **EMF assessment Study Report for 400kV OHTL of SSEN – Transmission**

  This report covers the EMF assessment study for the 400kV OHTL of SSEN Transmission. The proposed tower cross-section diagram considered for the entire study is shown below.

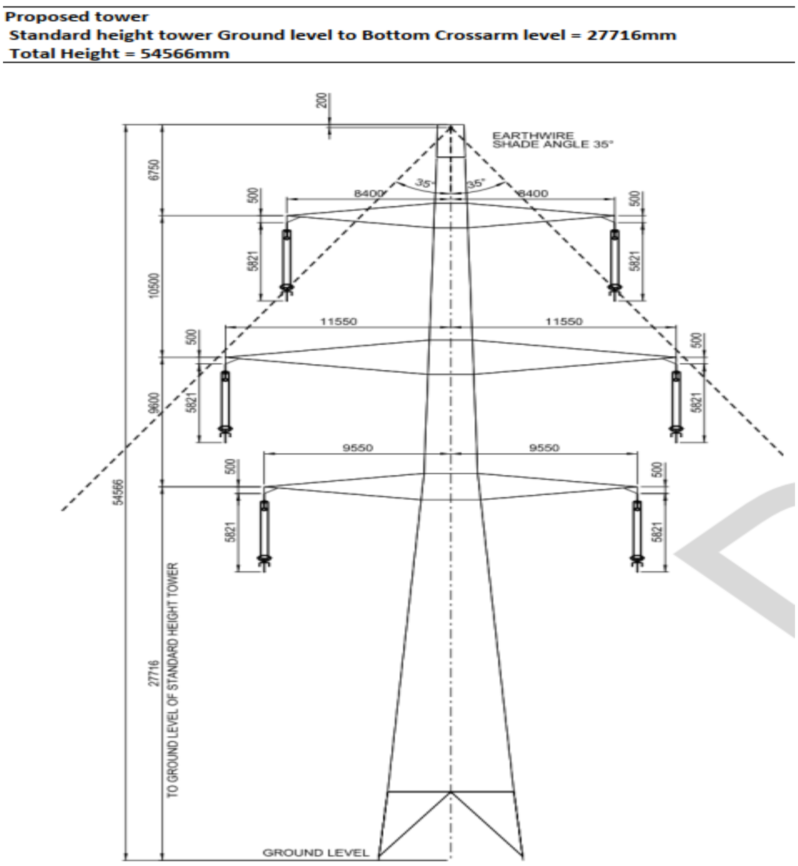


Figure 1- Proposed Suspension Tower AD & BD Diagram

2 INPUT DATA

The following are the input data received from SSEN for the undertaking the EMF studies.

Sl. No.	DESCRIPTION	VALUES	UNIT
A	**Source Fault Level of 400kV OHTL**		
	Phase Fault	45	kA
	Earth Fault	-	-
B	**X/R Ratio of 400kV OHTL**		
	Phase Fault	19.95	
	Earth Fault	6.7	
C	**Length of the Overhead Transmission Line**		
	Minimum	76	km
	Maximum	115	km
D	**400kV Tension Insulator Details**		
	Creepage Distance	10500	mm
	String Length	7.6	m
	Mechanical Strength	300	kN
	No. of Discs	22	-
	Disc Type	Glass	-
	Arc Horn Distance	2800	mm
E	**400kV Suspension Insulator Details**		
	Creepage Distance	4290	mm
	String Length	6	m
	Mechanical Strength	300	kN
	No. of Discs	24	-
	Disc Type	Glass	-
	Arc Horn Distance	2683	mm

F	**400kV OHTL Conductors Details**		
	Number of Conductor per phase	3	-
	Bundle Spacing	500	mm
	Maximum Continuous Current Rating of each circuit	5000	A
	Minimum Continuous Current Rating of each circuit	3370	A
	Soil Resistivity	100	ohm-m
	400kV Tower Footing Resistance	5	ohm
	400kV Transmission Line Minimum Ground Clearance	9	m

3 SIMULATION MODEL DEVELOPMENT

3.1 SIMULATION TOOL

CDEGS (**C**urrent **D**istribution, **E**lectromagnetic Fields, **G**rounding and **S**oil Structure Analysis) tool was used to perform the EMF voltage assessment study for 400kV Overhead Transmission Line Tower.

CDEGS is a powerful set of integrated software tools designed to accurately analyse a variety of electromagnetic related problems encountered in all industries involving electric networks.

The use of CDEGS for EMF analysis is recognised within the industry as standard practice.

3.2 CONSIDERATIONS FOR THE STUDY

The following are the data considered as per the confirmation provided by SSEN

- 400kV Span Length is considered to be 350m.
- Ground Clearence of 400kV OHTL is considered as 9m.
- Optimum phasing is also included in the 400kV OHTL model.
- Maximum 400kV Overhead Transmission Line Length (i.e. 115km) is considered for the entire study.
- EMF observation points is extended up to 170m on cross section side of the tower.

3.3 MODEL DEVELOPMENT

The following are the models that have been developed in CDEGS simulation tool to carry out the required EMF assessment study. The insulator lengths provided within the inputs table in section 2 are approximate lengths and final lengths will be confirmed by SSEN during their detailed design. Slight variation in these lengths will have negligible impact on the EMF assessment as the conductor has been sagged to have a minimum clearance to ground of 9m and the EMF values are taken at this closest point to ground where fields are at their maximum.

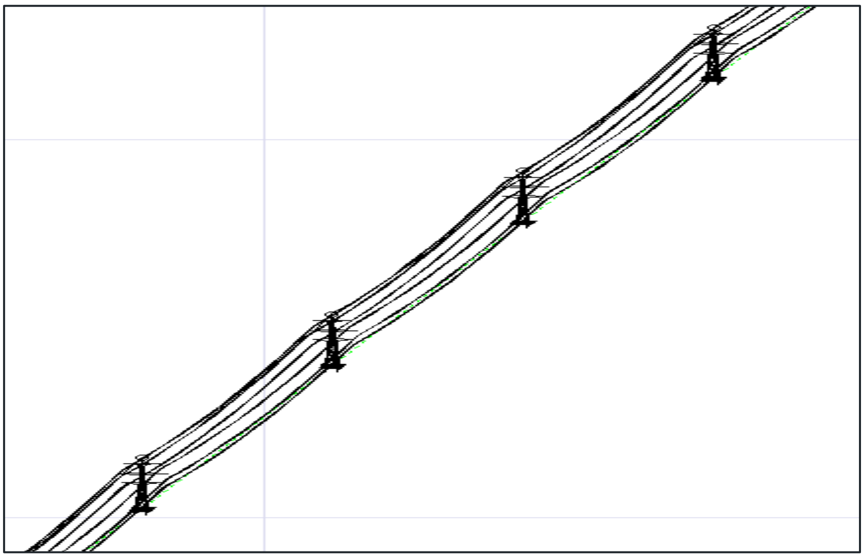


Figure 2 400kV OHTL Model

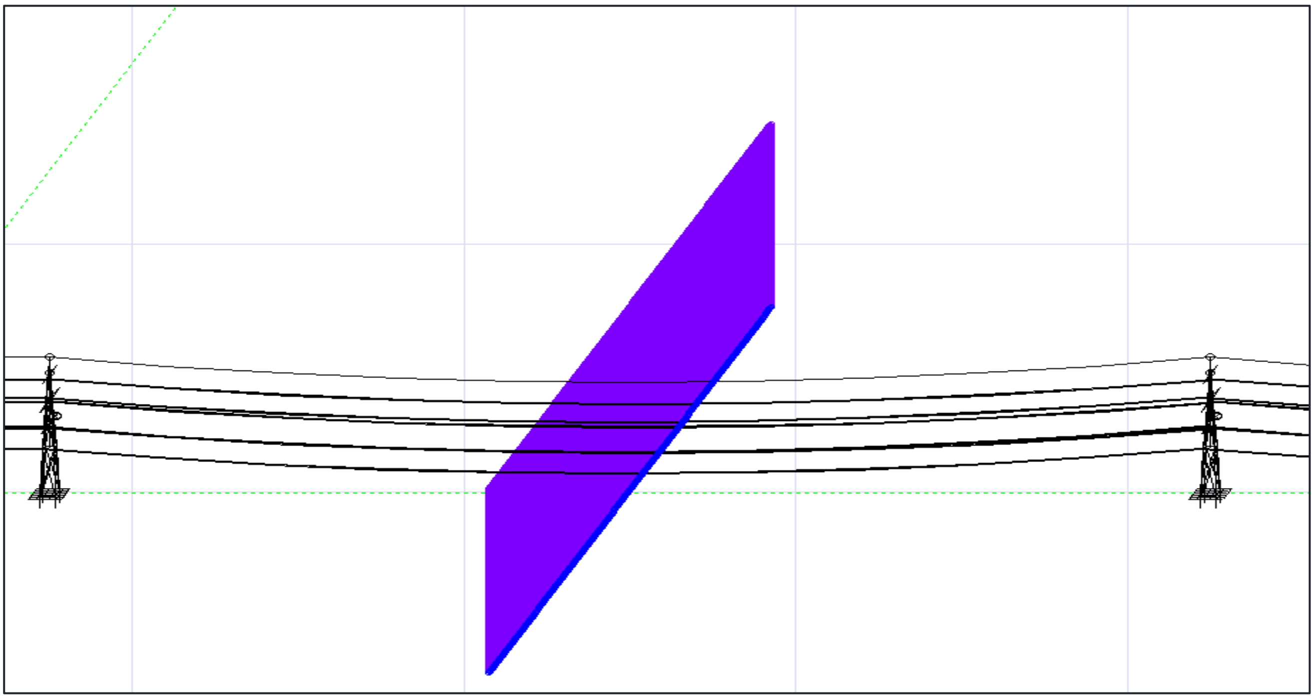


Figure 3 EMF Measuring points in YZ Plane in the mid of span

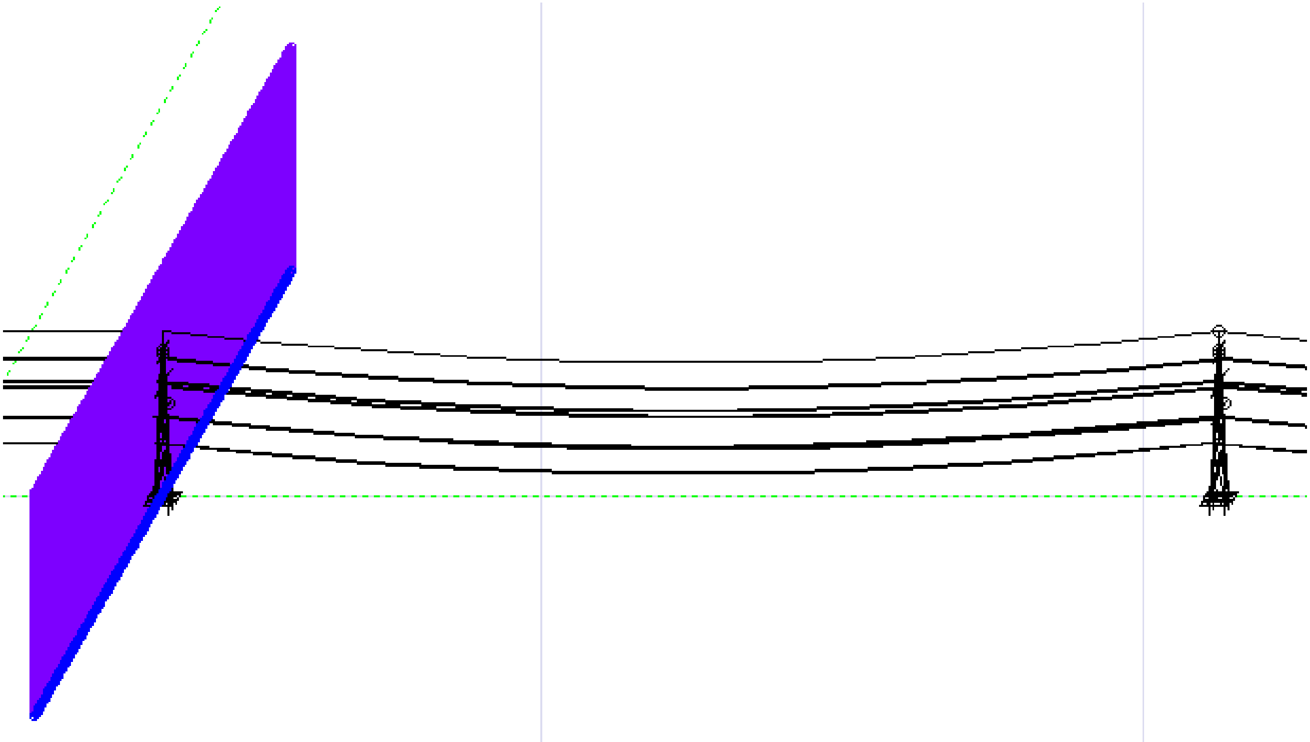


Figure 4 EMF Measuring points in YZ Plane in the mid of tower

4 STANDARD EXPOSURE LIMITS

4.1 PUBLIC EXPOSURE LIMITS

In March 2004, the UK adopted the 1998 guidelines published by ICNIRP. These guidelines (See Table 1) are designed to set conservative exposure levels for the general public to electric and magnetic fields, and they are endorsed by the UK's Health Protection Agency, the World Health Organisation and the UK Government.

It is the policy of the electricity industry to follow these independent guidelines. A Code of Practice CoP, published jointly in 2012 by industry and the Department for Energy and Climate Change (now part of the Department for Business, Energy and Industrial Strategy). This CoP sets out all the practical details needed to apply the exposure limits for transmission lines. All exposures in homes already comply with the ICNIRP guidelines. The electricity industry designs all new equipment to comply with the Government guidelines as set out in the Code of Practice. This includes measures such as adhering to statutory ground clearance requirements and ensuring optimum phasing of high voltage double-circuit overhead lines.

The CoP sets the maximum levels for long term public exposure as 360 µT for magnetic fields and 9 kV/m for electric fields. Long term exposure relates to places of residence or similar where people regularly spend extended periods of time. In other environments, where exposure can be deemed not to be for a significant period of time, the ICNIRP occupational guidelines, rather that the ICNIRP general public guidelines, shall be deemed to apply.

Table 1 – Public Exposure Limits for Power Frequency EMFs

Sl. No.	Public Exposure Levels	Electric Fields	Magnetic Fields
1	*Reference level* *(external unperturbed field)*	*5kV/m*	*100 µT*
2	*Field corresponding to the basic restriction* *(external unperturbed field)*	*9kV/m*	*360 µT*

4.2 OCCUPATIONAL EXPOSURE LIMITS

Occupational exposure (see Table 2) is defined as any exposure experienced by an individual during work related activities. The limits for occupational exposure are stated in the Control of Electromagnetic Fields at Work Regulations 2016. These limits are enforceable and should not be exceeded.

Table 2– Occupational Exposure Limits for Power Frequency EMFs

Sl. No.	Occupational Exposure Levels	Electric Fields	Magnetic Fields
1	*Reference level* *(external unperturbed field)*	*10kV/m*	*1000 µT*
2	*Field corresponding to the basic restriction* *(external unperturbed field)*	*20kV/m*	*6000 µT*

5 CASE SCENARIO

Based on the measuring profile and OHTL loading conditions, the following are the cases considered as discussed with SSEN.

Case A considers the expected continuous operating current for the proposed OHTL.

Case B considers the maximum possible current for the OHTL based on the substation equipment ratings being capped at 5000A. It should however be noted that some substation plant is limited at 4000A so although this assessment has been carried out, it is presented to consider the worst case load conditions however case A is representative of the actual operational values.

5.1 CASE - A

With partial loading of the OHTL (i.e. 3375A), the magnitudes of Electric and Magnetic Fields are measured at the mid of span.

5.2 CASE - B

With full loading of the OHTL (i.e. 5000A), the magnitudes of Electric and Magnetic Fields are measured at the mid of span.

6 STUDY RESULTS

This section presents the simulation results of the EMF assessment study for the Partial and full loading of the 400kV OHTL Circuit and results are tabulated in the Table 3 and Table 4.

6.1 SIMULATED GRAPH FOR ELECTRIC FIELD

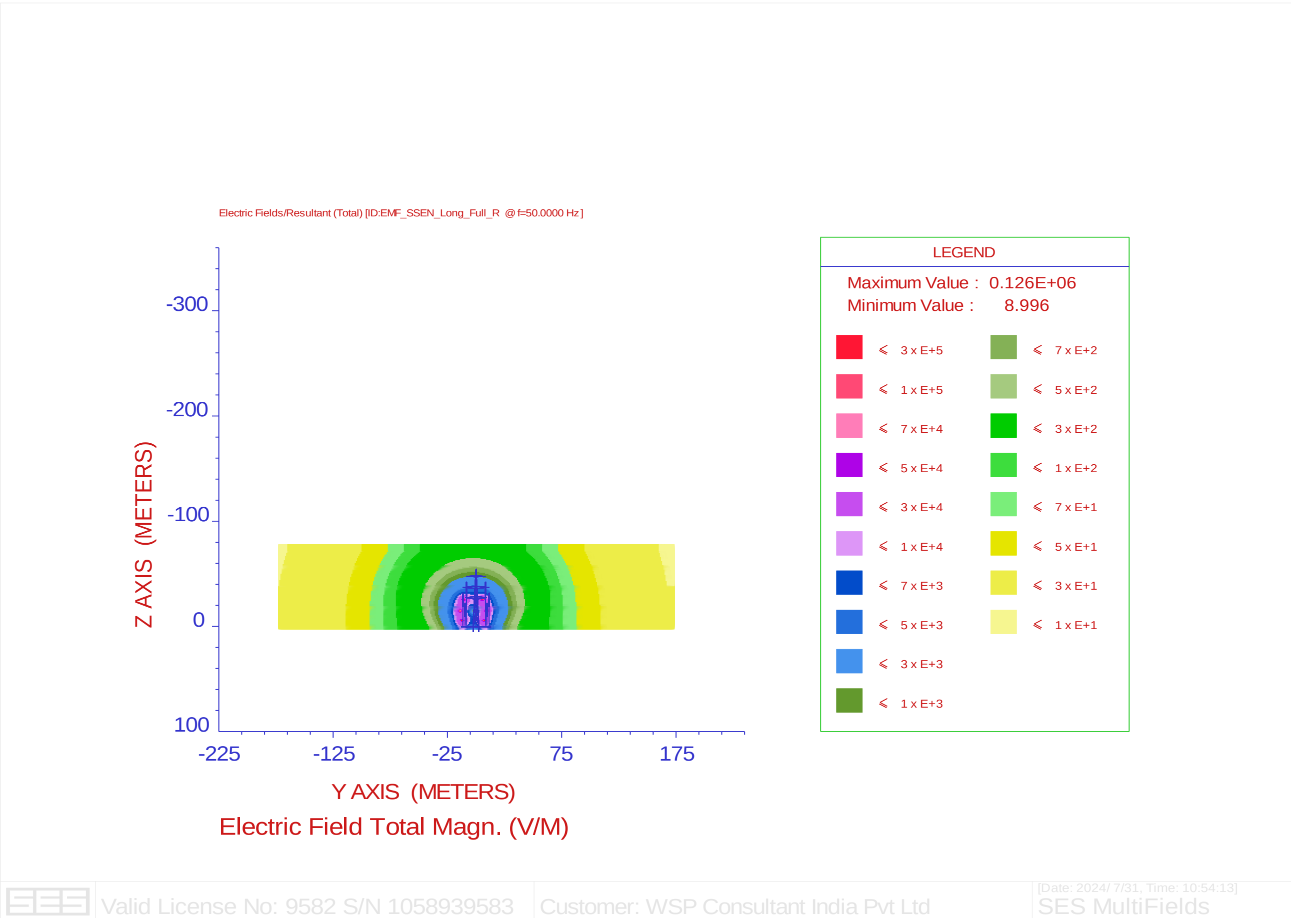


Figure 5 Electric Field Graph for Case A

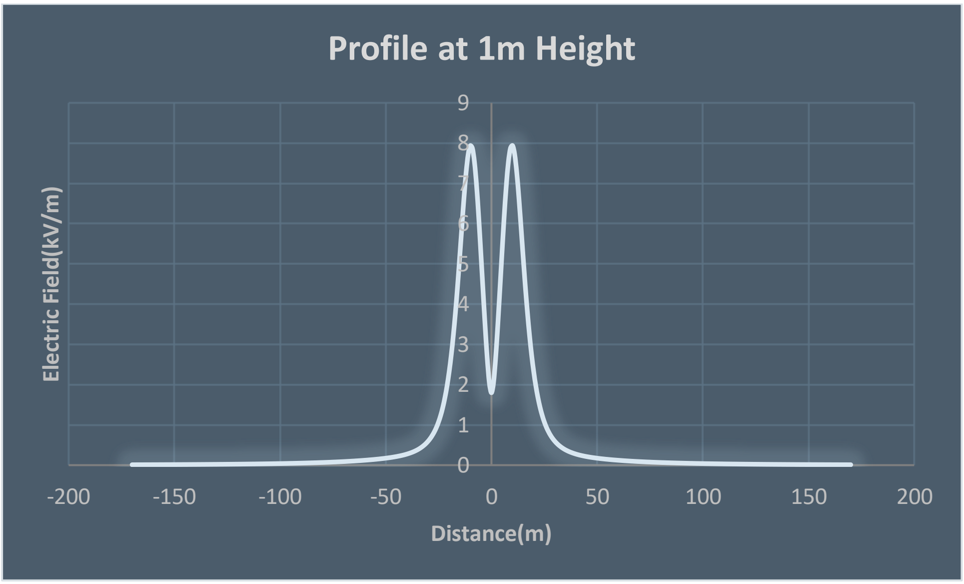


Figure 6 Electric Field Profile at 1m Height for Case A

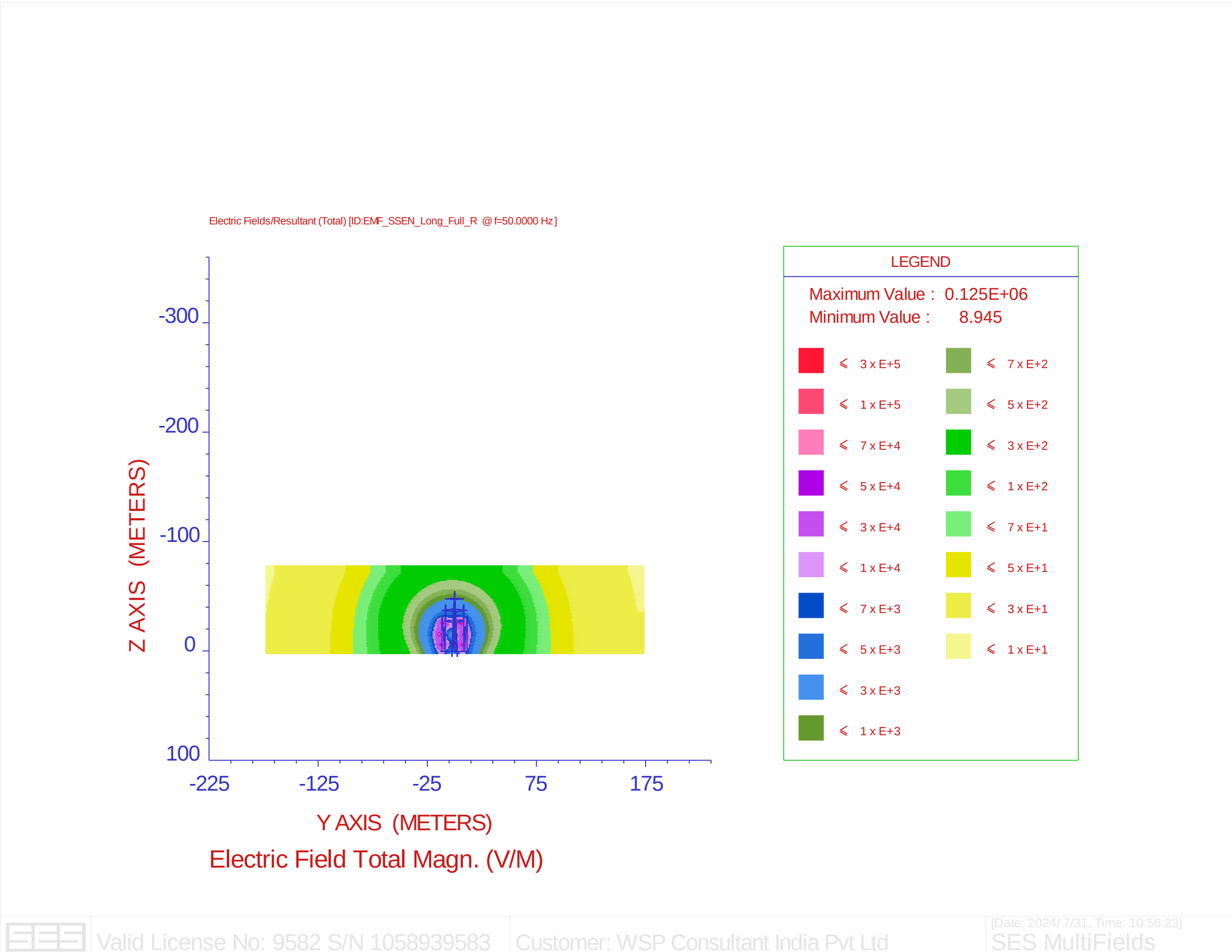


Figure 7 Electric Field Graph for Case B

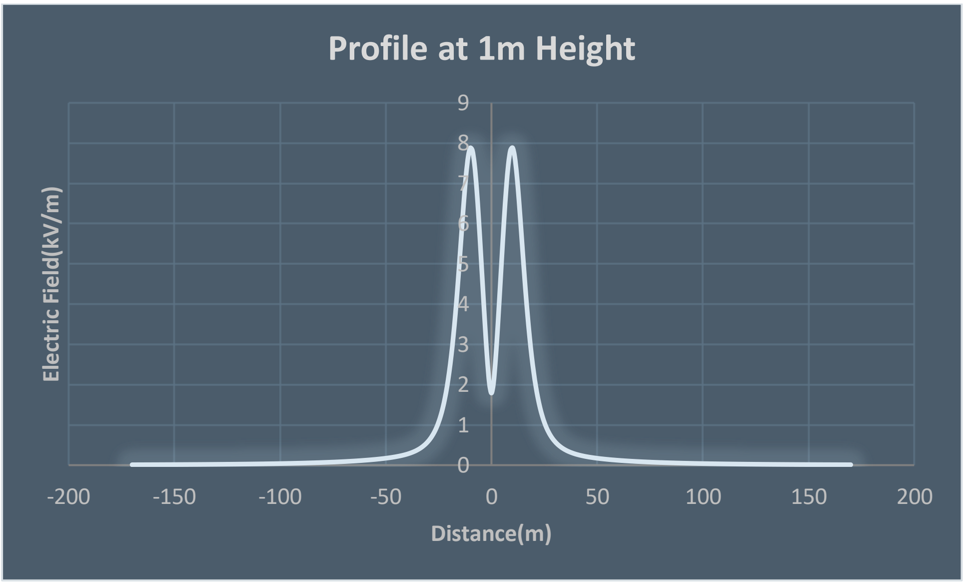


Figure 8 Electric Field Profile at 1m Height for Case B

6.2 TABULATED CASE RESULTS FOR ELECTRIC FIELD

Table 3 Electric Field result with change in OHTL loading and profile location

CASES	MAGNITUDE OF ELECTRIC FIELD FOR VARIOUS CASES					
	PROFILE LOCATION	400kV OHTL LOADING	SIMULATED VALUE AT 1m HEIGHT FROM GROUND: ±9 m from Centre (Lowest Conductor Below)	SIMULATED VALUE AT 1m HEIGHT FROM GROUND: ±170m from Centre	UK PUBLIC EXPOSURE LIMIT	SAFE/ UNSAFE
	TOWER/MID OF SPAN	A	kV/m		kV/m	
A	MID OF SPAN	3375 A	7.936394	0.010479	9.0	**SAFE**
B	MID OF SPAN	5000 A	7.881355	0.01043		**SAFE**

6.3 SIMULATED GRAPH FOR MAGNETIC FIELD

Figure 9 Magnetic Field Graph for Case A

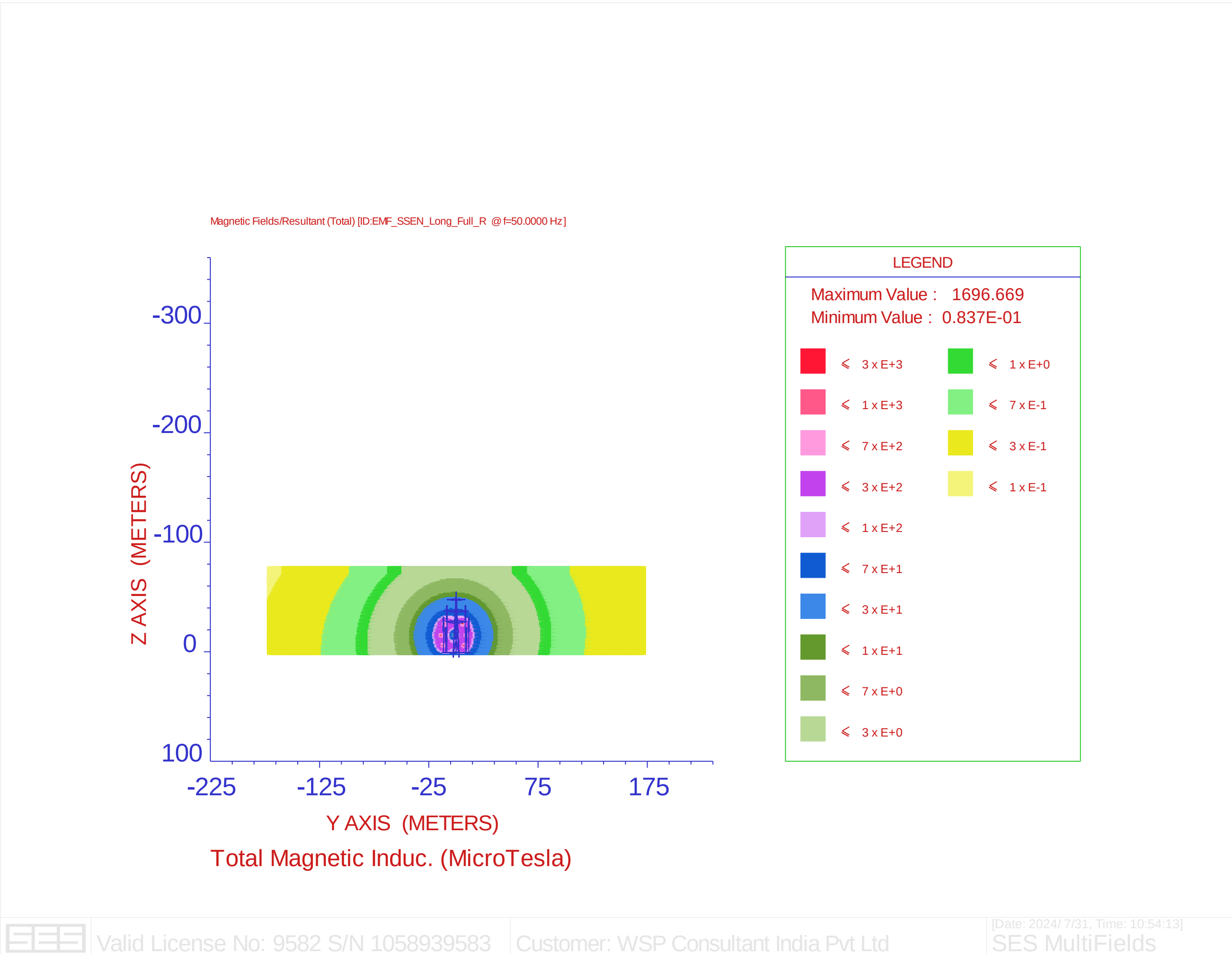


Figure 10 Magnetic Field Graph for Case A

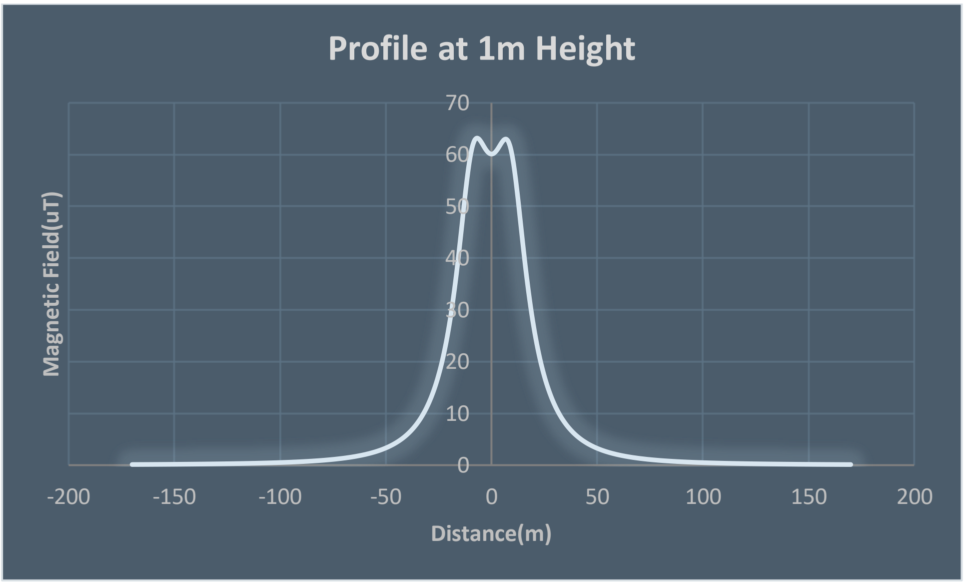


Figure 11 Magnetic Field Profile at 1m Height for Case A

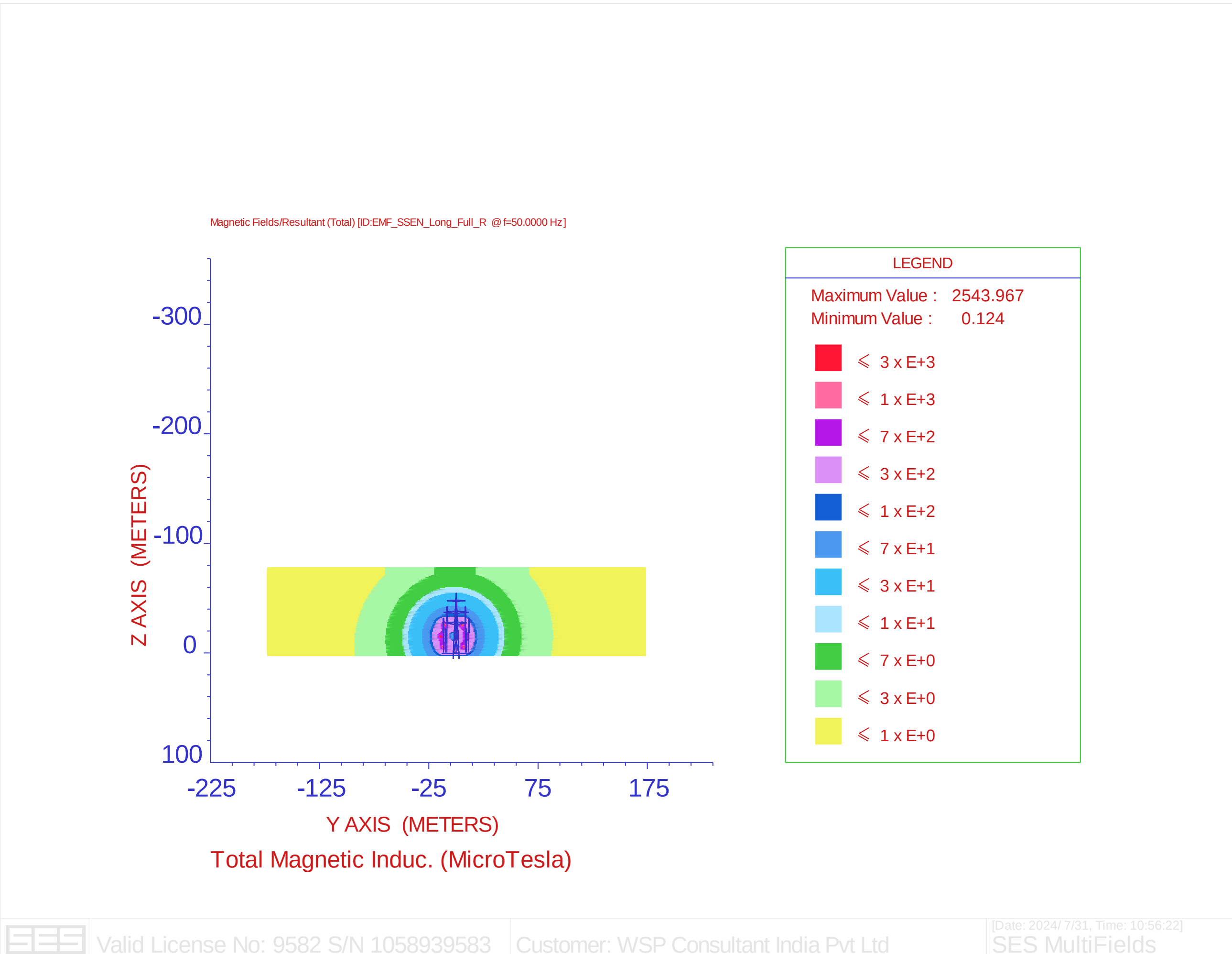


Figure 12 Magnetic Field Graph for Case B

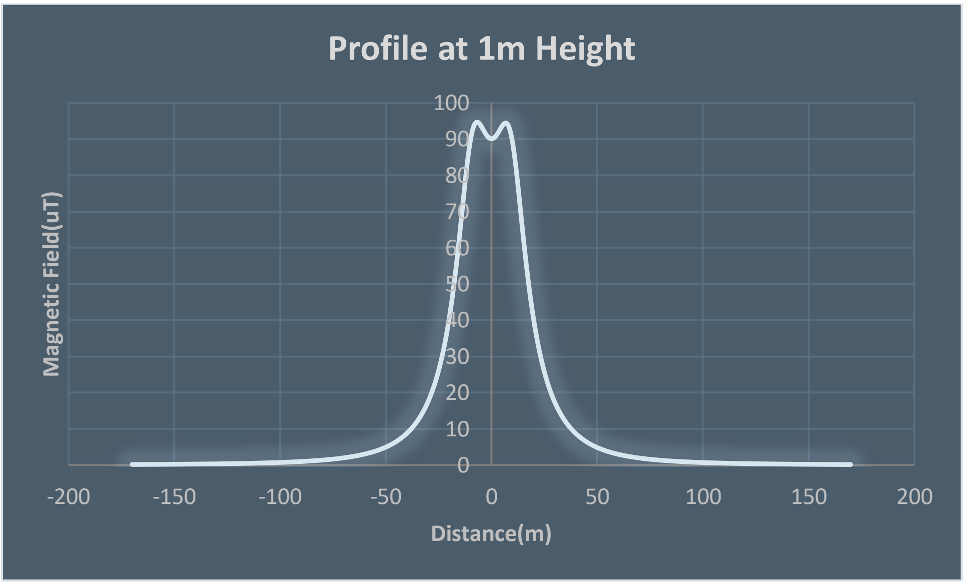


Figure 13 Magnetic Field Profile at 1m Height for Case B

6.4 TABULATED CASE RESULTS FOR MAGNETIC FIELD

Table 4 Magnetic Field result with change in OHTL loading and profile location

CASES	MAGNITUDE OF MAGNETIC FIELD FOR VARIOUS CASES					
	PROFILE LOCATION	400kV OHTL LOADING	SIMULATED VALUE AT 1m HEIGHT FROM GROUND		UK PUBLIC EXPOSURE LIMIT	SAFE/ UNSAFE
			±9 m from Centre (Lowest Conductor Below)	±170m from Centre		
	TOWER/MID OF SPAN	A	Micro Tesla		Micro Tesla	
A	MID OF SPAN	3375 A	62.74127	0.123508	360	**SAFE**
B	MID OF SPAN	5000 A	92.30611	0.182544		**SAFE**

7 CONCLUSION

- In all the simulated test cases, the results have shown that the simulated values of Electric Field are well within the UK Exposure Limit.
- Similarly, the simulated value of the Magnetic Field is well within the UK Exposure Limit.

8 REFERENCES

- ICNIRP- Guidelines for Limiting Exposure to time varying Electric, Magnetic and EMF (Up to 300GHz)
- Electric and Magnetic Fields the facts – Produced by ENA - September 2017
- Working Group C4.208, "EMC within Power Plants and Substations," CIGRE2013
- IEEE Reference paper - Magnetic field calculations within substation environment for EMC studies
- National Policy Statement for Electricity Networks Infrastructure (EN-5)

Appendix D PLS CADD Report for Cumulative Assessment

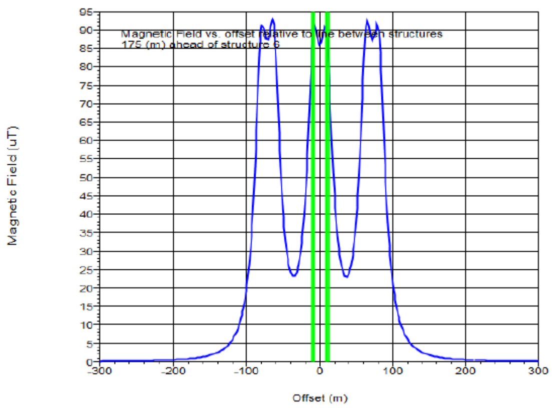
Optimal Phasing of Adjacent Circuits

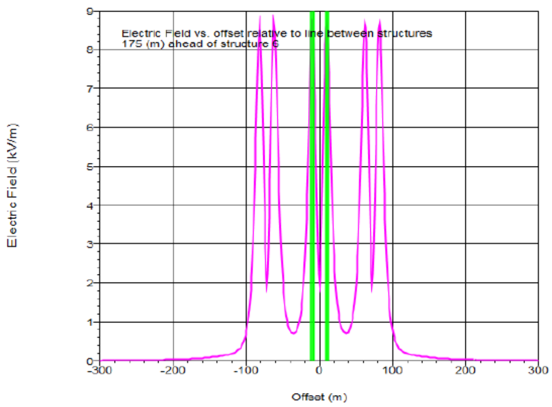
```
PLS-CADD Version 20.01x64    14:23:43 02 July 2025
Scottish and Southern Energy
Project Name: 'C:\PLS\Combined_EMF_Check Temp\Combined_EMF_Check.don'
Line Title: 'Max Op'

3D EMF Calculation Notes:
  1) Calculations based on the EPRI Red Book methods (3rd Edition, 2005 - 7.4 Calculation of Magnetic Fields and Appendices 7.1 Calculation of Field Ellipse Parameters and 7.6 Electric Field Calculations for 3D Geometry).
  2) All wire positions are modeled at the specified weather case and wind direction. Height above ground determined by the modeled ground TIN.
  3) Only the effects of wires are being analyzed. The effects of structures are not included unless enabled as noted below.
  4) Ground return is being ignored for magnetic field calculations.


Meter height above ground:                1.00 (m)
Maximum wire distance:                  300.00 (m)
Maximum cable segment size:               3.00 (m)
Cross section offset +/-:               300.00 (m)
Result interval:                          1.00 (m)
Electric field limit:                     9.00 (kV/m)
Magnetic field limit:                   360.00 (uT)
Space potential limit:                    0.00 (kV)
Contour Map Spacing:                         3 (m)
Analyzing spans between these structures:  6 - 7


One or more sections have wind from both directions which is not supported. A wind direction of left is being used for those sections.
```

Section Data for 3D EMF Results:

Section Number	Section Note	Voltage Ph-Ph (kV)	Current (Amps)	Cable Filename	Cable Description	Conductors Per Phase	Bundle Diameter (cm)	Cable Radius (cm)	Weather Case	Condition	Wind Dir.	WC Temperature (deg C)	Effective Radius (cm)
1		400.0	5000.0	700mm aaac araucaria.wir	700mm² AAAC - Araucaria (H)	3	57.735	1.863	Max Op	Creep FE	Left	90.000	16.700
2		400.0	5000.0	700mm aaac araucaria.wir	700mm² AAAC - Araucaria (H)	3	57.735	1.863	Max Op	Creep FE	Left	90.000	16.700
3		400.0	5000.0	700mm aaac araucaria.wir	700mm² AAAC - Araucaria (H)	3	57.735	1.863	Max Op	Creep FE	Left	90.000	16.700
4		400.0	5000.0	700mm aaac araucaria.wir	700mm² AAAC - Araucaria (H)	3	57.735	1.863	Max Op	Creep FE	Left	90.000	16.700
5		400.0	5000.0	700mm aaac araucaria.wir	700mm² AAAC - Araucaria (H)	3	57.735	1.863	Max Op	Creep FE	Left	90.000	16.700
6		400.0	5000.0	700mm aaac araucaria.wir	700mm² AAAC - Araucaria (H)	3	57.735	1.863	Max Op	Creep FE	Left	90.000	16.700
7		400.0	5000.0	700mm aaac araucaria.wir	700mm² AAAC - Araucaria (H)	3	57.735	1.863	Max Op	Creep FE	Left	90.000	16.700
8		400.0	5000.0	700mm aaac araucaria.wir	700mm² AAAC - Araucaria (H)	3	57.735	1.863	Max Op	Creep FE	Left	90.000	16.700
9		400.0	5000.0	700mm aaac araucaria.wir	700mm² AAAC - Araucaria (H)	3	57.735	1.863	Max Op	Creep FE	Left	90.000	16.700
10		400.0	5000.0	700mm aaac araucaria.wir	700mm² AAAC - Araucaria (H)	3	57.735	1.863	Max Op	Creep FE	Left	90.000	16.700
11		400.0	5000.0	700mm aaac araucaria.wir	700mm² AAAC - Araucaria (H)	3	57.735	1.863	Max Op	Creep FE	Left	90.000	16.700
12		400.0	5000.0	700mm aaac araucaria.wir	700mm² AAAC - Araucaria (H)	3	57.735	1.863	Max Op	Creep FE	Left	90.000	16.700
13		400.0	5000.0	700mm aaac araucaria.wir	700mm² AAAC - Araucaria (H)	3	57.735	1.863	Max Op	Creep FE	Left	90.000	16.700
14		400.0	5000.0	700mm aaac araucaria.wir	700mm² AAAC - Araucaria (H)	3	57.735	1.863	Max Op	Creep FE	Left	90.000	16.700
15		400.0	5000.0	700mm aaac araucaria.wir	700mm² AAAC - Araucaria (H)	3	57.735	1.863	Max Op	Creep FE	Left	90.000	16.700
16		400.0	5000.0	700mm aaac araucaria.wir	700mm² AAAC - Araucaria (H)	3	57.735	1.863	Max Op	Creep FE	Left	90.000	16.700
17		400.0	5000.0	700mm aaac araucaria.wir	700mm² AAAC - Araucaria (H)	3	57.735	1.863	Max Op	Creep FE	Left	90.000	16.700
18		400.0	5000.0	700mm aaac araucaria.wir	700mm² AAAC - Araucaria (H)	3	57.735	1.863	Max Op	Creep FE	Left	90.000	16.700

Wire low point cross section results between structures 6 and 7





3D EMF Point Results Span from 6 to 7:

Measurement			B					H	EF					Space Potential			
X (m)	Y (m)	Z (m)	Real (uT)	Imaginary (uT)	Angle (deg)	Magnitude (uT)	Polarization Axial Ratio %	Magnitude (A/m)	Real (kV/m)	Imaginary (kV/m)	Angle (deg)	Magnitude (kV/m)	Polarization Axial Ratio %	Real (kV)	Imaginary (kV)	Angle (deg)	Magnitude (kV)
372.0	525.0	1.0	0.052	0.066	51.7	0.084	7.5	0.067	0.000	0.007	89.1	0.007	0.2	-0.000	-0.007	89.1	0.007
371.0	525.0	1.0	0.071	0.090	51.8	0.115	6.8	0.092	0.000	0.009	87.5	0.009	0.2	-0.000	-0.009	87.5	0.009
370.0	525.0	1.0	0.072	0.091	51.8	0.116	6.9	0.093	0.000	0.009	87.3	0.009	0.2	-0.000	-0.009	87.3	0.009
369.0	525.0	1.0	0.073	0.092	51.8	0.118	7.1	0.094	0.000	0.009	87.2	0.009	0.2	-0.000	-0.009	87.2	0.009
368.0	525.0	1.0	0.073	0.093	51.8	0.119	7.2	0.095	0.000	0.009	87.1	0.009	0.2	-0.000	-0.009	87.1	0.009
367.0	525.0	1.0	0.074	0.094	51.8	0.120	7.3	0.096	0.001	0.010	86.9	0.010	0.2	-0.001	-0.010	86.9	0.010
366.0	525.0	1.0	0.075	0.095	51.8	0.121	7.5	0.097	0.001	0.010	86.8	0.010	0.2	-0.001	-0.010	86.8	0.010
365.0	525.0	1.0	0.076	0.096	51.8	0.123	7.6	0.098	0.001	0.010	86.7	0.010	0.2	-0.001	-0.010	86.7	0.010
364.0	525.0	1.0	0.077	0.098	51.8	0.124	7.8	0.099	0.001	0.010	86.5	0.010	0.2	-0.001	-0.010	86.5	0.010
363.0	525.0	1.0	0.078	0.099	51.8	0.125	7.9	0.100	0.001	0.010	86.4	0.010	0.2	-0.001	-0.010	86.4	0.010
362.0	525.0	1.0	0.078	0.100	51.8	0.127	8.0	0.101	0.001	0.010	86.3	0.010	0.2	-0.001	-0.010	86.3	0.010
361.0	525.0	1.0	0.079	0.101	51.8	0.128	8.2	0.102	0.001	0.010	86.1	0.010	0.2	-0.001	-0.010	86.1	0.010
360.0	525.0	1.0	0.080	0.102	51.8	0.130	8.3	0.103	0.001	0.010	86.0	0.010	0.2	-0.001	-0.010	86.0	0.010
359.0	525.0	1.0	0.081	0.103	51.8	0.131	8.5	0.104	0.001	0.010	85.8	0.010	0.2	-0.001	-0.010	85.8	0.010
358.0	525.0	1.0	0.082	0.104	51.8	0.133	8.6	0.106	0.001	0.010	85.7	0.010	0.3	-0.001	-0.010	85.7	0.010
357.0	525.0	1.0	0.083	0.106	51.8	0.134	8.8	0.107	0.001	0.011	85.5	0.011	0.3	-0.001	-0.011	85.6	0.011
356.0	525.0	1.0	0.084	0.107	51.8	0.136	8.9	0.108	0.001	0.011	85.4	0.011	0.3	-0.001	-0.011	85.4	0.011
355.0	525.0	1.0	0.085	0.108	51.8	0.137	9.1	0.109	0.001	0.011	85.3	0.011	0.3	-0.001	-0.011	85.3	0.011
354.0	525.0	1.0	0.086	0.109	51.8	0.139	9.2	0.111	0.001	0.011	85.1	0.011	0.3	-0.001	-0.011	85.1	0.011
353.0	525.0	1.0	0.087	0.110	51.8	0.141	9.4	0.112	0.001	0.011	85.0	0.011	0.3	-0.001	-0.011	85.0	0.011
352.0	525.0	1.0	0.088	0.112	51.8	0.142	9.5	0.113	0.001	0.011	84.8	0.011	0.3	-0.001	-0.011	84.8	0.011
351.0	525.0	1.0	0.089	0.113	51.8	0.144	9.7	0.114	0.001	0.011	84.7	0.011	0.3	-0.001	-0.011	84.7	0.011
350.0	525.0	1.0	0.090	0.114	51.8	0.146	9.8	0.116	0.001	0.011	84.5	0.011	0.3	-0.001	-0.011	84.5	0.011
349.0	525.0	1.0	0.091	0.116	51.8	0.147	10.0	0.117	0.001	0.011	84.4	0.012	0.3	-0.001	-0.011	84.4	0.012
348.0	525.0	1.0	0.092	0.117	51.8	0.149	10.1	0.119	0.001	0.012	84.2	0.012	0.3	-0.001	-0.012	84.2	0.012
347.0	525.0	1.0	0.093	0.119	51.8	0.151	10.3	0.120	0.001	0.012	84.0	0.012	0.3	-0.001	-0.012	84.0	0.012
346.0	525.0	1.0	0.094	0.120	51.8	0.153	10.5	0.122	0.001	0.012	83.9	0.012	0.3	-0.001	-0.012	83.9	0.012
345.0	525.0	1.0	0.096	0.121	51.8	0.155	10.6	0.123	0.001	0.012	83.7	0.012	0.3	-0.001	-0.012	83.7	0.012
344.0	525.0	1.0	0.097	0.123	51.8	0.156	10.8	0.125	0.001	0.012	83.6	0.012	0.3	-0.001	-0.012	83.6	0.012
343.0	525.0	1.0	0.098	0.124	51.8	0.158	10.9	0.126	0.001	0.012	83.4	0.012	0.3	-0.001	-0.012	83.4	0.012
342.0	525.0	1.0	0.099	0.126	51.7	0.160	11.1	0.128	0.001	0.012	83.2	0.012	0.3	-0.001	-0.012	83.2	0.012
341.0	525.0	1.0	0.101	0.128	51.7	0.162	11.2	0.129	0.002	0.012	83.1	0.013	0.3	-0.002	-0.012	83.1	0.013
340.0	525.0	1.0	0.102	0.129	51.7	0.164	11.4	0.131	0.002	0.013	82.9	0.013	0.3	-0.002	-0.013	82.9	0.013
339.0	525.0	1.0	0.103	0.131	51.7	0.167	11.6	0.132	0.002	0.013	82.7	0.013	0.3	-0.002	-0.013	82.7	0.013
338.0	525.0	1.0	0.104	0.132	51.7	0.169	11.7	0.134	0.002	0.013	82.6	0.013	0.3	-0.002	-0.013	82.6	0.013
337.0	525.0	1.0	0.106	0.134	51.7	0.171	11.9	0.136	0.002	0.013	82.4	0.013	0.3	-0.002	-0.013	82.4	0.013
336.0	525.0	1.0	0.107	0.136	51.7	0.173	12.1	0.138	0.002	0.013	82.2	0.013	0.3	-0.002	-0.013	82.2	0.013
335.0	525.0	1.0	0.109	0.137	51.7	0.175	12.2	0.139	0.002	0.013	82.1	0.013	0.3	-0.002	-0.013	82.1	0.013
334.0	525.0	1.0	0.110	0.139	51.7	0.177	12.4	0.141	0.002	0.013	81.9	0.014	0.3	-0.002	-0.013	81.9	0.014
333.0	525.0	1.0	0.112	0.141	51.6	0.180	12.6	0.143	0.002	0.014	81.7	0.014	0.3	-0.002	-0.014	81.7	0.014
332.0	525.0	1.0	0.113	0.143	51.6	0.182	12.7	0.145	0.002	0.014	81.5	0.014	0.3	-0.002	-0.014	81.5	0.014
331.0	525.0	1.0	0.115	0.145	51.6	0.185	12.9	0.147	0.002	0.014	81.4	0.014	0.3	-0.002	-0.014	81.4	0.014
330.0	525.0	1.0	0.116	0.147	51.6	0.187	13.1	0.149	0.002	0.014	81.2	0.014	0.3	-0.002	-0.014	81.2	0.014
329.0	525.0	1.0	0.118	0.148	51.6	0.190	13.2	0.151	0.002	0.014	81.0	0.014	0.3	-0.002	-0.014	81.0	0.014
328.0	525.0	1.0	0.119	0.150	51.6	0.192	13.4	0.153	0.002	0.014	80.8	0.015	0.3	-0.002	-0.014	80.8	0.015
327.0	525.0	1.0	0.121	0.152	51.5	0.195	13.6	0.155	0.002	0.015	80.6	0.015	0.3	-0.002	-0.015	80.6	0.015
326.0	525.0	1.0	0.123	0.155	51.5	0.197	13.7	0.157	0.002	0.015	80.4	0.015	0.3	-0.002	-0.015	80.4	0.015
325.0	525.0	1.0	0.125	0.157	51.5	0.200	13.9	0.159	0.003	0.015	80.2	0.015	0.3	-0.003	-0.015	80.2	0.015
324.0	525.0	1.0	0.126	0.159	51.5	0.203	14.1	0.161	0.003	0.015	80.1	0.015	0.3	-0.003	-0.015	80.1	0.015
323.0	525.0	1.0	0.128	0.161	51.5	0.206	14.3	0.164	0.003	0.015	79.9	0.015	0.3	-0.003	-0.015	79.9	0.015
322.0	525.0	1.0	0.130	0.163	51.4	0.209	14.4	0.166	0.003	0.015	79.7	0.016	0.3	-0.003	-0.015	79.7	0.016
321.0	525.0	1.0	0.132	0.165	51.4	0.211	14.6	0.168	0.003	0.016	79.5	0.016	0.3	-0.003	-0.016	79.5	0.016
320.0	525.0	1.0	0.134	0.168	51.4	0.214	14.8	0.171	0.003	0.016	79.3	0.016	0.3	-0.003	-0.016	79.3	0.016
319.0	525.0	1.0	0.136	0.170	51.4	0.218	15.0	0.173	0.003	0.016	79.1	0.016	0.4	-0.003	-0.016	79.1	0.016
318.0	525.0	1.0	0.138	0.172	51.3	0.221	15.1	0.176	0.003	0.016	78.9	0.016	0.4	-0.003	-0.016	78.9	0.016
317.0	525.0	1.0	0.140	0.175	51.3	0.224	15.3	0.178	0.003	0.016	78.7	0.017	0.4	-0.003	-0.016	78.7	0.017
316.0	525.0	1.0	0.142	0.177	51.3	0.227	15.5	0.181	0.003	0.017	78.5	0.017	0.4	-0.003	-0.017	78.5	0.017
315.0	525.0	1.0	0.153	0.191	51.2	0.245	13.8	0.195	0.003	0.019	80.3	0.019	0.4	-0.003	-0.019	80.3	0.019
314.0	525.0	1.0	0.156	0.193	51.2	0.248	14.0	0.198	0.003	0.019	80.1	0.019	0.4	-0.003	-0.019	80.1	0.019
313.0	525.0	1.0	0.158	0.196	51.1	0.252	14.2	0.200	0.003	0.019	79.9	0.020	0.4	-0.003	-0.019	79.9	0.020
312.0	525.0	1.0	0.160	0.199	51.1	0.255	14.4	0.203	0.004	0.019	79.7	0.020	0.4	-0.004	-0.019	79.7	0.020
311.0	525.0	1.0	0.163	0.201	51.1	0.259	14.6	0.206	0.004	0.020	79.5	0.020	0.4	-0.004	-0.020	79.5	0.020
310.0	525.0	1.0	0.165	0.204	51.1	0.263	14.8	0.209	0.004	0.020	79.3	0.020	0.4	-0.004	-0.020	79.3	0.020
309.0	525.0	1.0	0.167	0.207	51.0	0.266	15.0	0.212	0.004	0.020	79.0	0.021	0.4	-0.004	-0.020	79.0	0.021
308.0	525.0	1.0	0.170	0.210	51.0	0.270	15.2	0.215	0.004	0.020	78.8	0.021	0.4	-0.004	-0.020	78.8	0.021
307.0	525.0	1.0	0.173	0.213	51.0	0.274	15.4	0.218	0.004	0.021	78.6	0.021	0.4	-0.004	-0.021	78.6	0.021
306.0	525.0	1.0	0.175	0.216	51.0	0.278	15.6	0.221	0.004	0.021	78.4	0.021	0.4	-0.004	-0.021	78.4	0.021
305.0	525.0	1.0	0.178	0.219	50.9	0.282	15.8	0.225	0.004	0.021	78.2	0.022	0.4	-0.004	-0.021	78.2	0.022
304.0	525.0	1.0	0.181	0.222	50.9	0.287	16.0	0.228	0.005	0.021	77.9	0.022	0.4	-0.005	-0.021	77.9	0.022
303.0	525.0	1.0	0.184	0.226	50.9	0.291	16.2	0.231	0.005	0.022	77.7	0.022	0.4	-0.005	-0.022	77.7	0.022
302.0	525.0	1.0	0.187	0.229	50.8	0.295	16.4	0.235	0.005	0.022	77.5	0.022	0.4	-0.005	-0.022	77.5	0.022
301.0	525.0	1.0	0.190	0.232	50.8	0.300	16.6	0.239	0.005	0.022	77.2	0.023	0.4	-0.005	-0.022	77.3	0.023
300.0	525.0	1.0	0.193	0.236	50.8	0.304	16.8	0.242	0.005	0.022	77.0	0.023	0.4	-0.005	-0.022	77.0	0.023
299.0	525.0	1.0	0.214	0.263	50.9	0.339	15.9	0.270	0.006	0.025	76.8	0.026	0.4	-0.006	-0.025	76.8	0.026
298.0	525.0	1.0	0.217	0.267	50.9	0.344	16.1	0.274	0.006	0.025	76.6	0.026	0.4	-0.006	-0.026	76.6	0.026
297.0	525.0	1.0	0.221	0.271	50.8	0.350	16.3	0.278	0.006	0.026	76.4	0.027	0.4	-0.006	-0.026	76.4	0.027
296.0	525.0	1.0	0.224	0.275	50.8	0.355	16.5	0.283	0.006	0.026	76.1	0.027	0.4	-0.006	-0.026	76.1	0.027
295.0	525.0	1.0	0.228	0.279	50.8	0.361	16.7	0.287	0.007	0.026	75.9	0.027	0.4	-0.007	-0.026	75.9	0.027
294.0	525.0	1.0	0.232	0.284	50.7	0.366	16.9	0.291	0.007	0.027	75.7	0.028	0.4	-0.007	-0.027	75.7	0.028
293.0	525.0	1.0	0.236	0.288	50.7	0.372	17.1	0.296	0.007	0.027	75.4	0.028	0.4	-0.007	-0.027	75.4	0.028
292.0	525.0	1.0	0.240	0.292	50.7	0.378	17.3	0.301	0.007	0.027	75.2	0.028	0.4	-0.007	-0.027	75.2	0.028
291.0	525.0	1.0	0.244	0.297	50.6	0.384	17.5	0.306	0.007	0.028	74.9	0.029	0.4	-0.007	-0.028	75.0	0.029
290.0	525.0	1.0	0.248	0.301	50.6	0.390	17.7	0.310	0.008	0.028	74.7	0.029	0.4	-0.008	-0.028	74.7	0.029
289.0	525.0	1.0	0.252	0.306	50.5	0.396	18.0	0.315	0.008	0.028	74.4	0.029	0.4	-0.008	-0.028	74.5	0.029
288.0	525.0	1.0	0.256	0.311	50.5	0.403	18.2	0.321	0.008	0.029	74.2	0.030	0.4	-0.008	-0.029	74.2	0.030
287.0	525.0	1.0	0.261	0.316	50.4	0.410	18.4	0.326	0.008	0.029	73.9	0.030	0.5	-0.008	-0.029	73.9	0.030
286.0	525.0	1.0	0.265	0.321	50.4	0.416	18.6	0.331	0.009	0.029	73.7	0.031	0.5	-0.009	-0.029	73.7	0.031
285.0	525.0	1.0	0.270	0.326	50.4	0.423	18.8	0.337	0.009	0.030	73.4	0.031	0.5	-0.009	-0.030	73.4	0.031
284.0	525.0	1.0	0.275	0.331	50.3	0.431	19.0	0.343	0.009	0.030	73.1	0.031	0.5	-0.009	-0.030	73.2	0.031
283.0	525.0	1.0	0.280	0.337	50.3	0.438	19.2	0.348	0.009	0.031	72.9	0.032	0.5	-0.009	-0.031	72.9	0.032
282.0	525.0	1.0	0.285	0.342	50.2	0.445	19.5	0.354	0.010	0.031	72.6	0.032	0.5	-0.010	-0.031	72.6	0.032
281.0	525.0	1.0	0.290	0.348	50.2	0.453	19.7	0.361	0.010	0.031	72.3	0.033	0.5	-0.010	-0.031	72.3	0.033
280.0	525.0	1.0	0.296	0.354	50.1	0.461	19.9	0.367	0.010	0.032	72.0	0.033	0.5	-0.010	-0.032	72.0	0.033
279.0	525.0	1.0	0.301	0.360	50.0	0.469	20.1	0.373	0.011	0.032	71.8	0.034	0.5	-0.011	-0.032	71.8	0.034
278.0	525.0	1.0	0.307	0.366	50.0	0.478	20.3	0.380	0.011	0.032	71.5	0.034	0.5	-0.011	-0.032	71.5	0.034
277.0	525.0	1.0	0.313	0.372	49.9	0.486	20.6	0.387	0.011	0.033	71.2	0.035	0.5	-0.011	-0.033	71.2	0.035
276.0	525.0	1.0	0.319	0.379	49.9	0.495	20.8	0.394	0.012	0.033	70.9	0.035	0.5	-0.012	-0.033	70.9	0.035
275.0	525.0	1.0	0.325	0.385	49.8	0.504	21.0	0.401	0.012	0.034	70.6	0.036	0.5	-0.012	-0.034	70.6	0.036
274.0	525.0	1.0	0.332	0.392	49.8	0.513	21.2	0.409	0.012	0.034	70.3	0.036	0.5	-0.012	-0.034	70.3	0.036
273.0	525.0	1.0	0.338	0.399	49.7	0.523	21.5	0.416	0.013	0.035	70.0	0.037	0.5	-0.013	-0.035	70.0	0.037
272.0	525.0	1.0	0.345	0.406	49.6	0.533	21.7	0.424	0.013	0.035	69.6	0.037	0.6	-0.013	-0.035	69.7	0.037
271.0	525.0	1.0	0.352	0.413	49.6	0.543	21.9	0.432	0.013	0.035	69.3	0.038	0.6	-0.013	-0.035	69.3	0.038
270.0	525.0	1.0	0.359	0.421	49.5	0.553	22.2	0.440	0.014	0.036	69.0	0.038	0.6	-0.014	-0.036	69.0	0.039
269.0	525.0	1.0	0.367	0.428	49.5	0.564	22.4	0.449	0.014	0.036	68.7	0.039	0.6	-0.014	-0.036	68.7	0.039
268.0	525.0	1.0	0.374	0.436	49.4	0.575	22.6	0.457	0.015	0.037	68.3	0.040	0.6	-0.015	-0.037	68.4	0.040
267.0	525.0	1.0	0.382	0.445	49.3	0.586	22.8	0.466	0.015	0.037	68.0	0.040	0.6	-0.015	-0.037	68.0	0.040
266.0	525.0	1.0	0.390	0.453	49.3	0.598	23.1	0.476	0.016	0.038	67.7	0.041	0.6	-0.016	-0.038	67.7	0.041
265.0	525.0	1.0	0.399	0.461	49.2	0.610	23.3	0.485	0.016	0.038	67.3	0.042	0.6	-0.016	-0.038	67.3	0.042
264.0	525.0	1.0	0.407	0.470	49.1	0.622	23.5	0.495	0.017	0.039	67.0	0.042	0.6	-0.017	-0.039	67.0	0.042
263.0	525.0	1.0	0.416	0.479	49.0	0.635	23.8	0.505	0.017	0.039	66.6	0.043	0.6	-0.017	-0.039	66.6	0.043
262.0	525.0	1.0	0.425	0.489	49.0	0.648	24.0	0.515	0.018	0.040	66.2	0.044	0.6	-0.018	-0.040	66.2	0.044
261.0	525.0	1.0	0.435	0.498	48.9	0.661	24.3	0.526	0.018	0.040	65.9	0.044	0.7	-0.018	-0.040	65.9	0.044
260.0	525.0	1.0	0.444	0.508	48.8	0.675	24.5	0.537	0.019	0.041	65.5	0.045	0.7	-0.019	-0.041	65.5	0.045
259.0	525.0	1.0	0.455	0.518	48.7	0.689	24.7	0.549	0.019	0.041	65.1	0.046	0.7	-0.019	-0.041	65.1	0.046
258.0	525.0	1.0	0.465	0.529	48.7	0.704	25.0	0.560	0.020	0.042	64.7	0.046	0.7	-0.020	-0.042	64.7	0.046
257.0	525.0	1.0	0.476	0.540	48.6	0.719	25.2	0.572	0.020	0.043	64.3	0.047	0.7	-0.020	-0.043	64.3	0.047
256.0	525.0	1.0	0.487	0.551	48.5	0.735	25.5	0.585	0.021	0.043	63.9	0.048	0.7	-0.021	-0.043	63.9	0.048
255.0	525.0	1.0	0.499	0.562	48.4	0.751	25.7	0.598	0.022	0.044	63.5	0.049	0.7	-0.022	-0.044	63.5	0.049
254.0	525.0	1.0	0.510	0.574	48.3	0.768	25.9	0.611	0.022	0.044	63.1	0.050	0.7	-0.022	-0.044	63.1	0.050
253.0	525.0	1.0	0.523	0.586	48.3	0.785	26.2	0.625	0.023	0.045	62.7	0.051	0.7	-0.023	-0.045	62.7	0.051
252.0	525.0	1.0	0.536	0.599	48.2	0.803	26.4	0.639	0.024	0.045	62.3	0.051	0.8	-0.024	-0.045	62.3	0.051
251.0	525.0	1.0	0.549	0.612	48.1	0.822	26.7	0.654	0.025	0.046	61.8	0.052	0.8	-0.025	-0.046	61.8	0.052
250.0	525.0	1.0	0.563	0.625	48.0	0.841	26.9	0.669	0.025	0.047	61.4	0.053	0.8	-0.025	-0.047	61.4	0.053
249.0	525.0	1.0	0.577	0.639	47.9	0.861	27.2	0.685	0.026	0.047	60.9	0.054	0.8	-0.026	-0.047	60.9	0.054
248.0	525.0	1.0	0.591	0.653	47.8	0.881	27.4	0.701	0.027	0.048	60.5	0.055	0.8	-0.027	-0.048	60.5	0.055
247.0	525.0	1.0	0.607	0.668	47.7	0.902	27.7	0.718	0.028	0.049	60.0	0.056	0.8	-0.028	-0.049	60.0	0.056
246.0	525.0	1.0	0.623	0.683	47.6	0.924	27.9	0.735	0.029	0.049	59.5	0.057	0.8	-0.029	-0.049	59.5	0.057
245.0	525.0	1.0	0.639	0.698	47.5	0.947	28.2	0.753	0.030	0.050	59.0	0.058	0.9	-0.030	-0.050	59.0	0.058
244.0	525.0	1.0	0.656	0.715	47.4	0.970	28.4	0.772	0.031	0.050	58.5	0.059	0.9	-0.031	-0.050	58.5	0.059
243.0	525.0	1.0	0.682	0.742	47.4	1.008	28.0	0.802	0.032	0.053	59.1	0.062	0.9	-0.032	-0.053	59.1	0.062
242.0	525.0	1.0	0.701	0.759	47.3	1.033	28.3	0.822	0.033	0.054	58.6	0.063	0.9	-0.033	-0.054	58.6	0.063
241.0	525.0	1.0	0.720	0.777	47.2	1.059	28.5	0.843	0.034	0.055	58.0	0.065	0.9	-0.034	-0.055	58.1	0.065
240.0	525.0	1.0	0.740	0.796	47.1	1.086	28.8	0.865	0.035	0.055	57.5	0.066	0.9	-0.035	-0.055	57.5	0.066
239.0	525.0	1.0	0.760	0.815	47.0	1.114	29.1	0.887	0.036	0.056	57.0	0.067	1.0	-0.036	-0.056	57.0	0.067
238.0	525.0	1.0	0.782	0.835	46.9	1.144	29.3	0.910	0.038	0.057	56.4	0.068	1.0	-0.038	-0.057	56.4	0.068
237.0	525.0	1.0	0.804	0.856	46.8	1.174	29.6	0.934	0.039	0.057	55.8	0.069	1.0	-0.039	-0.057	55.8	0.069
236.0	525.0	1.0	0.827	0.877	46.7	1.205	29.9	0.959	0.040	0.058	55.3	0.071	1.0	-0.040	-0.058	55.3	0.071
235.0	525.0	1.0	0.851	0.899	46.6	1.238	30.1	0.985	0.042	0.059	54.7	0.072	1.1	-0.042	-0.059	54.7	0.072
234.0	525.0	1.0	0.876	0.922	46.5	1.272	30.4	1.012	0.043	0.059	54.0	0.073	1.1	-0.043	-0.059	54.1	0.073
233.0	525.0	1.0	0.903	0.946	46.3	1.307	30.7	1.040	0.045	0.060	53.4	0.075	1.1	-0.045	-0.060	53.4	0.075
232.0	525.0	1.0	0.930	0.971	46.2	1.344	30.9	1.070	0.046	0.061	52.8	0.076	1.1	-0.046	-0.061	52.8	0.076
231.0	525.0	1.0	0.958	0.997	46.1	1.383	31.2	1.100	0.048	0.061	52.1	0.078	1.2	-0.048	-0.061	52.1	0.078
230.0	525.0	1.0	0.988	1.023	46.0	1.423	31.5	1.132	0.049	0.062	51.5	0.079	1.2	-0.049	-0.062	51.5	0.079
229.0	525.0	1.0	1.019	1.051	45.9	1.464	31.8	1.165	0.051	0.063	50.8	0.081	1.2	-0.051	-0.063	50.8	0.081
228.0	525.0	1.0	1.052	1.080	45.8	1.508	32.0	1.200	0.053	0.063	50.1	0.083	1.3	-0.053	-0.063	50.1	0.083
227.0	525.0	1.0	1.086	1.110	45.6	1.553	32.3	1.236	0.055	0.064	49.3	0.084	1.3	-0.055	-0.064	49.3	0.084
226.0	525.0	1.0	1.121	1.142	45.5	1.600	32.6	1.273	0.057	0.064	48.6	0.086	1.3	-0.057	-0.064	48.6	0.086
225.0	525.0	1.0	1.158	1.174	45.4	1.649	32.9	1.312	0.059	0.065	47.8	0.088	1.4	-0.059	-0.065	47.8	0.088
224.0	525.0	1.0	1.197	1.208	45.3	1.701	33.2	1.353	0.061	0.066	47.0	0.090	1.4	-0.061	-0.066	47.0	0.090
223.0	525.0	1.0	1.238	1.244	45.1	1.755	33.4	1.396	0.063	0.066	46.2	0.091	1.4	-0.063	-0.066	46.2	0.091
222.0	525.0	1.0	1.280	1.281	45.0	1.811	33.7	1.441	0.066	0.066	45.4	0.093	1.5	-0.066	-0.066	45.4	0.093
221.0	525.0	1.0	1.325	1.319	44.9	1.870	34.0	1.488	0.068	0.067	44.5	0.095	1.5	-0.068	-0.067	44.6	0.095
220.0	525.0	1.0	1.372	1.360	44.7	1.931	34.3	1.537	0.070	0.067	43.7	0.097	1.6	-0.070	-0.067	43.7	0.097
219.0	525.0	1.0	1.421	1.402	44.6	1.996	34.6	1.588	0.073	0.067	42.8	0.099	1.6	-0.073	-0.067	42.8	0.099
218.0	525.0	1.0	1.473	1.446	44.5	2.064	34.9	1.642	0.076	0.068	41.8	0.102	1.7	-0.076	-0.068	41.8	0.102

217.0	525.0	1.0	1.527	1.492	44.3	2.135	35.2	1.699	0.078	0.068	40.8	0.104	1.7	-0.078	-0.068	40.8	0.104
216.0	525.0	1.0	1.584	1.540	44.2	2.209	35.5	1.758	0.081	0.068	39.8	0.106	1.8	-0.081	-0.068	39.8	0.106
215.0	525.0	1.0	1.644	1.590	44.0	2.287	35.7	1.820	0.084	0.068	38.8	0.108	1.9	-0.084	-0.068	38.8	0.108
214.0	525.0	1.0	1.707	1.643	43.9	2.369	36.0	1.885	0.088	0.068	37.7	0.111	1.9	-0.088	-0.068	37.7	0.111
213.0	525.0	1.0	1.774	1.698	43.8	2.456	36.3	1.954	0.091	0.068	36.6	0.113	2.0	-0.091	-0.067	36.6	0.113
212.0	525.0	1.0	1.844	1.756	43.6	2.547	36.6	2.026	0.094	0.067	35.5	0.116	2.1	-0.094	-0.067	35.4	0.116
211.0	525.0	1.0	1.918	1.817	43.5	2.642	36.9	2.103	0.098	0.067	34.2	0.118	2.2	-0.098	-0.067	34.2	0.118
210.0	525.0	1.0	1.996	1.881	43.3	2.743	37.2	2.183	0.101	0.066	33.0	0.121	2.2	-0.101	-0.066	33.0	0.121
209.0	525.0	1.0	2.079	1.948	43.1	2.849	37.5	2.267	0.105	0.065	31.7	0.124	2.3	-0.105	-0.065	31.7	0.124
208.0	525.0	1.0	2.166	2.019	43.0	2.961	37.8	2.356	0.109	0.064	30.3	0.127	2.4	-0.109	-0.064	30.3	0.127
207.0	525.0	1.0	2.259	2.093	42.8	3.080	38.1	2.451	0.113	0.063	28.9	0.130	2.5	-0.113	-0.063	28.9	0.129
206.0	525.0	1.0	2.357	2.171	42.7	3.205	38.5	2.550	0.118	0.061	27.4	0.133	2.7	-0.118	-0.061	27.4	0.132
205.0	525.0	1.0	2.460	2.254	42.5	3.337	38.8	2.655	0.122	0.059	25.9	0.136	2.8	-0.122	-0.059	25.9	0.136
204.0	525.0	1.0	2.571	2.341	42.3	3.477	39.1	2.767	0.127	0.057	24.3	0.139	2.9	-0.126	-0.057	24.2	0.139
203.0	525.0	1.0	2.688	2.432	42.1	3.625	39.4	2.884	0.131	0.055	22.6	0.142	3.1	-0.131	-0.054	22.5	0.142
202.0	525.0	1.0	2.812	2.529	42.0	3.782	39.7	3.009	0.136	0.052	20.8	0.146	3.2	-0.136	-0.051	20.7	0.145
201.0	525.0	1.0	2.944	2.631	41.8	3.948	40.0	3.142	0.141	0.048	18.9	0.149	3.4	-0.141	-0.048	18.8	0.149
200.0	525.0	1.0	3.085	2.739	41.6	4.125	40.3	3.283	0.146	0.045	17.0	0.153	3.6	-0.146	-0.044	16.8	0.153
199.0	525.0	1.0	3.235	2.853	41.4	4.313	40.7	3.432	0.151	0.040	14.9	0.157	3.8	-0.151	-0.040	14.7	0.156
198.0	525.0	1.0	3.395	2.974	41.2	4.513	41.0	3.592	0.157	0.035	12.7	0.160	4.0	-0.156	-0.035	12.5	0.160
197.0	525.0	1.0	3.566	3.102	41.0	4.726	41.3	3.761	0.162	0.030	10.5	0.165	4.2	-0.162	-0.029	10.2	0.164
196.0	525.0	1.0	3.749	3.238	40.8	4.953	41.6	3.942	0.167	0.024	8.1	0.169	4.5	-0.167	-0.023	7.7	0.169
195.0	525.0	1.0	3.944	3.382	40.6	5.196	42.0	4.134	0.173	0.017	5.8	0.174	4.7	-0.173	-0.015	5.1	0.173
194.0	525.0	1.0	4.154	3.534	40.4	5.454	42.3	4.340	0.178	0.011	3.7	0.178	5.0	-0.178	-0.007	2.3	0.178
193.0	525.0	1.0	4.379	3.697	40.2	5.731	42.6	4.560	0.183	0.010	3.1	0.184	5.3	-0.183	0.002	-0.7	0.183
192.0	525.0	1.0	4.620	3.869	39.9	6.027	42.9	4.796	0.189	0.016	5.0	0.189	5.7	-0.189	0.012	-3.8	0.189
191.0	525.0	1.0	4.880	4.053	39.7	6.344	43.3	5.048	0.194	0.027	7.9	0.195	6.0	-0.193	0.024	-7.1	0.195
190.0	525.0	1.0	5.160	4.248	39.5	6.684	43.6	5.319	0.198	0.039	11.2	0.202	6.4	-0.198	0.037	-10.6	0.202
189.0	525.0	1.0	5.462	4.457	39.2	7.049	43.9	5.610	0.203	0.054	14.8	0.209	6.7	-0.202	0.052	-14.4	0.209
188.0	525.0	1.0	5.787	4.679	39.0	7.442	44.2	5.922	0.206	0.070	18.7	0.218	7.1	-0.206	0.068	-18.3	0.217
187.0	525.0	1.0	6.139	4.916	38.7	7.865	44.5	6.259	0.209	0.088	22.8	0.227	7.5	-0.209	0.086	-22.5	0.226
186.0	525.0	1.0	6.521	5.168	38.4	8.321	44.9	6.621	0.211	0.108	27.1	0.237	7.9	-0.211	0.107	-26.9	0.236
185.0	525.0	1.0	6.934	5.439	38.1	8.812	45.2	7.013	0.212	0.131	31.7	0.249	8.3	-0.211	0.129	-31.5	0.248
184.0	525.0	1.0	7.383	5.727	37.8	9.344	45.4	7.436	0.211	0.156	36.4	0.263	8.6	-0.211	0.155	-36.3	0.261
183.0	525.0	1.0	7.872	6.036	37.5	9.919	45.7	7.894	0.209	0.184	41.4	0.278	8.9	-0.208	0.182	-41.3	0.277
182.0	525.0	1.0	8.404	6.366	37.1	10.543	46.0	8.390	0.204	0.215	46.5	0.296	9.3	-0.203	0.213	-46.5	0.295
181.0	525.0	1.0	8.985	6.719	36.8	11.219	46.2	8.928	0.196	0.249	51.8	0.317	9.5	-0.195	0.248	-51.8	0.315
180.0	525.0	1.0	9.620	7.097	36.4	11.955	46.4	9.513	0.185	0.287	57.2	0.342	9.8	-0.183	0.286	-57.3	0.339
179.0	525.0	1.0	10.316	7.502	36.0	12.755	46.6	10.150	0.170	0.329	62.7	0.370	9.9	-0.167	0.327	-62.9	0.368
178.0	525.0	1.0	11.079	7.936	35.6	13.628	46.7	10.845	0.150	0.375	68.2	0.404	10.1	-0.146	0.373	-68.6	0.401
177.0	525.0	1.0	11.918	8.400	35.2	14.581	46.8	11.603	0.125	0.425	73.6	0.443	10.2	-0.118	0.423	-74.4	0.439
176.0	525.0	1.0	12.843	8.896	34.7	15.623	46.8	12.432	0.094	0.480	78.9	0.489	10.3	-0.082	0.478	-80.3	0.485
175.0	525.0	1.0	13.863	9.427	34.2	16.765	46.8	13.341	0.065	0.539	83.1	0.543	10.4	-0.036	0.537	-86.2	0.538
174.0	525.0	1.0	14.991	9.995	33.7	18.017	46.7	14.338	0.067	0.603	83.6	0.607	10.4	0.022	0.601	87.9	0.601
173.0	525.0	1.0	16.240	10.601	33.1	19.394	46.5	15.434	0.120	0.672	79.9	0.683	10.4	0.094	0.670	82.0	0.676
172.0	525.0	1.0	17.627	11.248	32.5	20.910	46.2	16.640	0.204	0.745	74.7	0.773	10.4	0.184	0.743	76.1	0.765
171.0	525.0	1.0	19.169	11.937	31.9	22.582	45.7	17.970	0.313	0.823	69.2	0.880	10.3	0.296	0.820	70.2	0.872
170.0	525.0	1.0	20.886	12.669	31.2	24.428	45.2	19.439	0.450	0.904	63.5	1.009	10.2	0.433	0.900	64.3	0.999
169.0	525.0	1.0	22.801	13.446	30.5	26.470	44.5	21.064	0.618	0.987	57.9	1.165	10.0	0.601	0.983	58.6	1.153
168.0	525.0	1.0	24.939	14.267	29.8	28.732	43.7	22.864	0.825	1.071	52.4	1.352	9.8	0.807	1.067	52.9	1.338
167.0	525.0	1.0	27.329	15.133	29.0	31.239	42.7	24.859	1.076	1.155	47.0	1.579	9.5	1.056	1.151	47.4	1.562
166.0	525.0	1.0	30.000	16.042	28.1	34.020	41.5	27.072	1.381	1.236	41.8	1.853	9.1	1.358	1.231	42.2	1.833
165.0	525.0	1.0	32.986	16.993	27.3	37.105	40.2	29.528	1.747	1.311	36.9	2.184	8.6	1.721	1.306	37.2	2.160
164.0	525.0	1.0	36.316	17.982	26.3	40.524	38.7	32.248	2.183	1.378	32.3	2.581	8.0	2.153	1.372	32.5	2.553
163.0	525.0	1.0	40.020	19.005	25.4	44.304	37.0	35.256	2.697	1.432	28.0	3.054	7.4	2.662	1.426	28.2	3.020
162.0	525.0	1.0	44.118	20.059	24.4	48.464	35.1	38.567	3.296	1.471	24.1	3.610	6.7	3.254	1.464	24.2	3.568
161.0	525.0	1.0	48.614	21.136	23.5	53.010	33.2	42.184	3.980	1.490	20.5	4.250	6.0	3.930	1.482	20.7	4.200
160.0	525.0	1.0	53.483	22.231	22.6	57.919	31.0	46.090	4.743	1.487	17.4	4.970	5.3	4.681	1.478	17.5	4.909
159.0	525.0	1.0	58.658	23.337	21.7	63.130	28.8	50.237	5.562	1.459	14.7	5.750	4.6	5.487	1.450	14.8	5.675
158.0	525.0	1.0	64.011	24.450	20.9	68.522	26.5	54.528	6.402	1.406	12.4	6.554	4.0	6.311	1.396	12.5	6.463
157.0	525.0	1.0	69.340	25.563	20.2	73.902	24.2	58.809	7.203	1.329	10.5	7.325	3.4	7.095	1.320	10.5	7.216
156.0	525.0	1.0	74.367	26.674	19.7	79.006	21.8	62.871	7.890	1.233	8.9	7.986	2.9	7.764	1.224	9.0	7.860
155.0	525.0	1.0	78.771	27.784	19.4	83.527	19.4	66.469	8.378	1.123	7.6	8.452	2.4	8.237	1.113	7.7	8.312
154.0	525.0	1.0	82.246	28.894	19.4	87.173	17.2	69.370	8.593	1.003	6.7	8.652	2.1	8.445	0.992	6.7	8.503
153.0	525.0	1.0	84.579	30.010	19.5	89.746	15.0	71.417	8.498	0.876	5.9	8.543	1.8	8.348	0.862	5.9	8.392
152.0	525.0	1.0	85.716	31.144	20.0	91.199	12.9	72.574	8.096	0.743	5.2	8.130	1.7	7.951	0.724	5.2	7.984
151.0	525.0	1.0	85.765	32.308	20.6	91.649	11.1	72.932	7.437	0.601	4.6	7.462	1.8	7.301	0.571	4.5	7.323
150.0	525.0	1.0	84.958	33.519	21.5	91.331	9.4	72.679	6.596	0.449	3.9	6.612	2.2	6.469	0.398	3.5	6.481
149.0	525.0	1.0	83.575	34.798	22.6	90.530	7.9	72.041	5.652	0.304	3.1	5.660	3.3	5.530	0.196	2.0	5.533
148.0	525.0	1.0	81.887	36.168	23.8	89.519	6.7	71.237	4.670	0.265	3.2	4.677	5.6	4.547	-0.043	-0.5	4.548
147.0	525.0	1.0	80.119	37.651	25.2	88.524	5.8	70.445	3.700	0.439	6.8	3.726	10.2	3.568	-0.326	-5.2	3.583
146.0	525.0	1.0	78.433	39.271	26.6	87.715	5.1	69.802	2.774	0.739	14.9	2.871	19.5	2.618	-0.660	-14.1	2.700
145.0	525.0	1.0	76.938	41.051	28.1	87.205	4.7	69.395	1.918	1.117	30.2	2.220	37.9	1.709	-1.051	-31.6	2.006
144.0	525.0	1.0	75.694	43.004	29.6	87.057	4.6	69.278	1.187	1.566	52.8	1.965	57.2	0.844	-1.505	-60.7	1.725
143.0	525.0	1.0	74.720	45.138	31.1	87.296	4.8	69.468	0.809	2.086	68.8	2.238	37.0	0.017	-2.026	-89.5	2.026
142.0	525.0	1.0	74.003	47.445	32.7	87.906	5.2	69.953	1.107	2.678	67.5	2.898	19.0	-0.776	-2.617	73.5	2.729
141.0	525.0	1.0	73.497	49.890	34.2	88.830	6.0	70.689	1.725	3.338	62.7	3.757	10.0	-1.540	-3.271	64.8	3.616
140.0	525.0	1.0	73.121	52.409	35.6	89.963	7.0	71.590	2.404	4.051	59.3	4.710	5.5	-2.276	-3.977	60.2	4.582
139.0	525.0	1.0	72.760	54.892	37.0	91.144	8.3	72.530	3.075	4.791	57.3	5.693	3.3	-2.974	-4.706	57.7	5.567
138.0	525.0	1.0	72.265	57.179	38.4	92.150	9.8	73.331	3.708	5.514	56.1	6.645	2.2	-3.620	-5.417	56.2	6.515
137.0	525.0	1.0	71.462	59.065	39.6	92.712	11.6	73.778	4.269	6.160	55.3	7.495	1.8	-4.188	-6.050	55.3	7.357
136.0	525.0	1.0	70.180	60.322	40.7	92.542	13.6	73.643	4.725	6.657	54.6	8.164	1.8	-4.647	-6.534	54.6	8.018
135.0	525.0	1.0	68.290	60.746	41.7	91.398	15.7	72.732	5.044	6.937	54.0	8.577	1.9	-4.968	-6.807	53.9	8.427
134.0	525.0	1.0	65.749	60.210	42.5	89.153	18.0	70.945	5.204	6.957	53.2	8.688	2.2	-5.133	-6.825	53.1	8.540
133.0	525.0	1.0	62.619	58.711	43.2	85.838	20.4	68.307	5.204	6.710	52.2	8.492	2.5	-5.140	-6.583	52.0	8.352
132.0	525.0	1.0	59.052	56.373	43.7	81.640	22.8	64.967	5.061	6.233	50.9	8.029	3.0	-5.006	-6.116	50.7	7.904
131.0	525.0	1.0	55.249	53.407	44.0	76.843	25.3	61.149	4.808	5.590	49.3	7.373	3.6	-4.762	-5.487	49.0	7.266
130.0	525.0	1.0	51.407	50.052	44.2	71.749	27.7	57.096	4.481	4.857	47.3	6.609	4.2	-4.445	-4.768	47.0	6.519
129.0	525.0	1.0	47.682	46.530	44.3	66.623	30.1	53.017	4.117	4.103	44.9	5.812	4.9	-4.089	-4.026	44.6	5.738
128.0	525.0	1.0	44.177	43.015	44.2	61.659	32.3	49.067	3.742	3.377	42.1	5.040	5.6	-3.720	-3.311	41.7	4.980
127.0	525.0	1.0	40.947	39.629	44.1	56.984	34.5	45.346	3.375	2.713	38.8	4.330	6.4	-3.357	-2.656	38.3	4.281
126.0	525.0	1.0	38.012	36.447	43.8	52.662	36.5	41.907	3.027	2.127	35.1	3.699	7.1	-3.013	-2.076	34.6	3.660
125.0	525.0	1.0	35.370	33.507	43.5	48.721	38.4	38.771	2.705	1.624	31.0	3.155	7.8	-2.694	-1.579	30.4	3.123
124.0	525.0	1.0	33.003	30.826	43.0	45.160	40.0	35.937	2.412	1.202	26.5	2.694	8.5	-2.403	-1.160	25.8	2.668
123.0	525.0	1.0	30.891	28.403	42.6	41.964	41.5	33.394	2.146	0.854	21.7	2.310	9.0	-2.139	-0.813	20.8	2.288
122.0	525.0	1.0	29.010	26.228	42.1	39.109	42.8	31.122	1.908	0.574	16.7	1.993	9.5	-1.902	-0.529	15.6	1.975
121.0	525.0	1.0	27.339	24.287	41.6	36.569	43.9	29.101	1.696	0.353	11.8	1.732	9.8	-1.691	-0.301	10.1	1.718
120.0	525.0	1.0	25.857	22.563	41.1	34.317	44.9	27.309	1.507	0.196	7.4	1.520	10.0	-1.503	-0.117	4.5	1.508
119.0	525.0	1.0	24.548	21.038	40.6	32.330	45.6	25.727	1.340	0.136	5.8	1.347	10.0	-1.336	0.029	-1.2	1.337
118.0	525.0	1.0	23.397	19.697	40.1	30.584	46.2	24.338	1.191	0.184	8.8	1.206	10.0	-1.188	0.145	-6.9	1.197
117.0	525.0	1.0	22.390	18.522	39.6	29.058	46.7	23.124	1.060	0.256	13.6	1.091	9.9	-1.058	0.236	-12.6	1.084
116.0	525.0	1.0	21.518	17.500	39.1	27.736	47.0	22.072	0.944	0.320	18.7	0.997	9.7	-0.942	0.309	-18.2	0.992
115.0	525.0	1.0	20.772	16.619	38.7	26.602	47.3	21.169	0.842	0.374	24.0	0.921	9.4	-0.840	0.367	-23.6	0.917
114.0	525.0	1.0	20.146	15.865	38.2	25.643	47.4	20.406	0.751	0.419	29.2	0.860	9.2	-0.749	0.414	-28.9	0.856
113.0	525.0	1.0	19.635	15.230	37.8	24.849	47.5	19.774	0.670	0.457	34.3	0.811	9.0	-0.669	0.454	-34.1	0.808
112.0	525.0	1.0	19.234	14.705	37.4	24.211	47.6	19.267	0.598	0.489	39.3	0.773	8.8	-0.597	0.487	-39.2	0.770
111.0	525.0	1.0	18.942	14.281	37.0	23.722	47.6	18.877	0.533	0.519	44.2	0.744	8.7	-0.531	0.518	-44.2	0.742
110.0	525.0	1.0	18.756	13.952	36.6	23.376	47.6	18.602	0.474	0.547	49.1	0.724	8.6	-0.472	0.546	-49.2	0.722
109.0	525.0	1.0	18.677	13.713	36.3	23.171	47.6	18.439	0.419	0.575	53.9	0.711	8.5	-0.416	0.575	-54.1	0.710
108.0	525.0	1.0	18.706	13.558	35.9	23.103	47.5	18.385	0.367	0.604	58.7	0.707	8.6	-0.363	0.604	-59.0	0.705
107.0	525.0	1.0	18.845	13.482	35.6	23.171	47.5	18.439	0.316	0.635	63.6	0.709	8.6	-0.311	0.635	-63.9	0.707
106.0	525.0	1.0	19.097	13.483	35.2	23.377	47.5	18.603	0.265	0.669	68.4	0.719	8.7	-0.259	0.669	-68.8	0.717
105.0	525.0	1.0	19.466	13.557	34.9	23.722	47.4	18.877	0.213	0.706	73.2	0.738	8.9	-0.204	0.706	-73.9	0.735
104.0	525.0	1.0	19.958	13.702	34.5	24.208	47.3	19.264	0.160	0.747	77.9	0.764	9.1	-0.145	0.748	-79.0	0.762
103.0	525.0	1.0	20.580	13.914	34.1	24.843	47.2	19.769	0.108	0.793	82.2	0.801	9.3	-0.080	0.793	-84.3	0.797
102.0	525.0	1.0	21.342	14.192	33.6	25.630	47.1	20.396	0.081	0.844	84.5	0.848	9.6	-0.005	0.843	-89.7	0.844
101.0	525.0	1.0	22.254	14.535	33.2	26.580	46.9	21.152	0.121	0.899	82.3	0.907	9.8	0.081	0.898	84.8	0.902
100.0	525.0	1.0	23.327	14.941	32.6	27.702	46.6	22.044	0.209	0.959	77.7	0.981	10.0	0.183	0.958	79.2	0.975
99.0	525.0	1.0	24.578	15.408	32.1	29.008	46.2	23.084	0.325	1.023	72.4	1.073	10.2	0.304	1.022	73.4	1.066
98.0	525.0	1.0	26.023	15.935	31.5	30.514	45.7	24.282	0.468	1.091	66.8	1.187	10.3	0.449	1.089	67.6	1.179
97.0	525.0	1.0	27.681	16.521	30.8	32.236	45.1	25.653	0.642	1.162	61.1	1.327	10.3	0.624	1.160	61.7	1.317
96.0	525.0	1.0	29.575	17.163	30.1	34.195	44.3	27.211	0.853	1.234	55.3	1.500	10.2	0.834	1.232	55.9	1.488
95.0	525.0	1.0	31.730	17.860	29.4	36.412	43.3	28.975	1.108	1.306	49.7	1.713	10.0	1.088	1.303	50.1	1.697
94.0	525.0	1.0	34.173	18.608	28.6	38.911	42.2	30.965	1.414	1.376	44.2	1.973	9.6	1.392	1.372	44.6	1.955
93.0	525.0	1.0	36.932	19.405	27.7	41.720	40.9	33.200	1.782	1.440	38.9	2.291	9.1	1.756	1.436	39.3	2.268
92.0	525.0	1.0	40.035	20.245	26.8	44.863	39.4	35.700	2.218	1.496	34.0	2.676	8.5	2.189	1.491	34.3	2.649
91.0	525.0	1.0	43.506	21.123	25.9	48.362	37.7	38.486	2.733	1.540	29.4	3.137	7.9	2.699	1.534	29.6	3.104
90.0	525.0	1.0	47.360	22.035	25.0	52.235	35.8	41.567	3.331	1.569	25.2	3.682	7.1	3.290	1.562	25.4	3.642
89.0	525.0	1.0	51.596	22.974	24.0	56.480	33.8	44.945	4.014	1.579	21.5	4.313	6.4	3.964	1.571	21.6	4.264
88.0	525.0	1.0	56.187	23.933	23.1	61.072	31.6	48.599	4.775	1.566	18.2	5.025	5.6	4.714	1.557	18.3	4.964
87.0	525.0	1.0	61.060	24.905	22.2	65.944	29.4	52.477	5.593	1.529	15.3	5.798	4.9	5.518	1.520	15.4	5.724
86.0	525.0	1.0	66.085	25.886	21.4	70.974	27.0	56.479	6.430	1.468	12.9	6.596	4.2	6.340	1.458	13.0	6.505
85.0	525.0	1.0	71.058	26.870	20.7	75.969	24.6	60.454	7.229	1.383	10.8	7.361	3.6	7.121	1.374	10.9	7.253
84.0	525.0	1.0	75.706	27.855	20.2	80.668	22.1	64.193	7.914	1.280	9.2	8.017	3.0	7.789	1.271	9.3	7.892
83.0	525.0	1.0	79.716	28.842	19.9	84.773	19.7	67.460	8.400	1.163	7.9	8.480	2.5	8.260	1.153	7.9	8.340
82.0	525.0	1.0	82.795	29.833	19.8	88.006	17.4	70.033	8.614	1.038	6.9	8.676	2.1	8.466	1.027	6.9	8.528
81.0	525.0	1.0	84.749	30.835	20.0	90.184	15.1	71.766	8.517	0.907	6.1	8.565	1.9	8.367	0.893	6.1	8.415
80.0	525.0	1.0	85.537	31.858	20.4	91.278	13.0	72.636	8.114	0.770	5.4	8.151	1.8	7.970	0.751	5.4	8.005
79.0	525.0	1.0	85.282	32.917	21.1	91.414	11.0	72.745	7.455	0.625	4.8	7.481	1.8	7.320	0.595	4.7	7.344
78.0	525.0	1.0	84.218	34.028	22.0	90.833	9.3	72.283	6.614	0.470	4.1	6.631	2.2	6.487	0.420	3.7	6.501
77.0	525.0	1.0	82.630	35.211	23.1	89.819	7.8	71.476	5.669	0.319	3.2	5.678	3.3	5.548	0.216	2.2	5.552
76.0	525.0	1.0	80.783	36.489	24.3	88.642	6.5	70.539	4.687	0.265	3.2	4.695	5.6	4.565	-0.025	-0.3	4.565
75.0	525.0	1.0	78.895	37.885	25.6	87.520	5.5	69.646	3.717	0.428	6.6	3.741	10.1	3.585	-0.309	-4.9	3.599
74.0	525.0	1.0	77.124	39.421	27.1	86.615	4.8	68.926	2.790	0.726	14.6	2.883	19.2	2.635	-0.644	-13.7	2.713
73.0	525.0	1.0	75.571	41.118	28.6	86.033	4.3	68.463	1.934	1.104	29.7	2.226	37.5	1.726	-1.036	-31.0	2.013
72.0	525.0	1.0	74.290	42.991	30.1	85.832	4.2	68.303	1.200	1.553	52.3	1.962	57.3	0.861	-1.491	-60.0	1.721
71.0	525.0	1.0	73.297	45.046	31.6	86.033	4.3	68.463	0.810	2.074	68.7	2.226	37.5	0.034	-2.013	-89.0	2.013

70.0	525.0	1.0	72.576	47.274	33.1	86.615	4.8	68.926	1.096	2.667	67.7	2.883	19.2	-0.760	-2.604	73.7	2.713
69.0	525.0	1.0	72.079	49.641	34.6	87.520	5.5	69.646	1.712	3.327	62.8	3.741	10.1	-1.525	-3.259	64.9	3.599
68.0	525.0	1.0	71.726	52.084	36.0	88.642	6.5	70.539	2.390	4.041	59.4	4.695	5.6	-2.261	-3.966	60.3	4.565
67.0	525.0	1.0	71.401	54.492	37.4	89.819	7.8	71.476	3.062	4.781	57.4	5.678	3.3	-2.961	-4.696	57.8	5.552
66.0	525.0	1.0	70.956	56.709	38.6	90.833	9.3	72.283	3.695	5.506	56.1	6.631	2.2	-3.607	-5.408	56.3	6.501
65.0	525.0	1.0	70.218	58.532	39.8	91.414	11.0	72.745	4.257	6.152	55.3	7.481	1.8	-4.175	-6.041	55.3	7.344
64.0	525.0	1.0	69.016	59.737	40.9	91.278	13.0	72.636	4.714	6.650	54.7	8.151	1.8	-4.635	-6.527	54.6	8.005
63.0	525.0	1.0	67.220	60.122	41.8	90.184	15.1	71.766	5.033	6.930	54.0	8.565	1.9	-4.957	-6.800	53.9	8.415
62.0	525.0	1.0	64.785	59.565	42.6	88.006	17.4	70.033	5.193	6.950	53.2	8.676	2.1	-5.122	-6.818	53.1	8.528
61.0	525.0	1.0	61.767	58.063	43.2	84.773	19.7	67.460	5.193	6.704	52.2	8.480	2.5	-5.129	-6.577	52.1	8.340
60.0	525.0	1.0	58.315	55.738	43.7	80.668	22.1	64.193	5.050	6.226	51.0	8.017	3.0	-4.995	-6.110	50.7	7.892
59.0	525.0	1.0	54.623	52.797	44.0	75.969	24.6	60.454	4.796	5.584	49.3	7.361	3.6	-4.750	-5.480	49.1	7.253
58.0	525.0	1.0	50.884	49.478	44.2	70.974	27.0	56.479	4.469	4.851	47.3	6.596	4.2	-4.433	-4.761	47.0	6.505
57.0	525.0	1.0	47.253	45.998	44.2	65.944	29.4	52.477	4.104	4.096	44.9	5.798	4.9	-4.075	-4.019	44.6	5.724
56.0	525.0	1.0	43.831	42.528	44.1	61.072	31.6	48.599	3.728	3.369	42.1	5.025	5.6	-3.706	-3.304	41.7	4.964
55.0	525.0	1.0	40.674	39.187	43.9	56.480	33.8	44.945	3.360	2.705	38.8	4.313	6.4	-3.343	-2.648	38.4	4.264
54.0	525.0	1.0	37.803	36.048	43.6	52.235	35.8	41.567	3.012	2.119	35.1	3.682	7.1	-2.998	-2.068	34.6	3.642
53.0	525.0	1.0	35.214	33.149	43.3	48.362	37.7	38.486	2.689	1.616	31.0	3.137	7.9	-2.678	-1.570	30.4	3.104
52.0	525.0	1.0	32.894	30.506	42.8	44.863	39.4	35.700	2.395	1.194	26.5	2.676	8.5	-2.386	-1.151	25.7	2.649
51.0	525.0	1.0	30.821	28.118	42.4	41.720	40.9	33.200	2.129	0.846	21.7	2.291	9.1	-2.121	-0.803	20.7	2.268
50.0	525.0	1.0	28.973	25.974	41.9	38.911	42.2	30.965	1.890	0.565	16.6	1.973	9.6	-1.884	-0.520	15.4	1.955
49.0	525.0	1.0	27.330	24.060	41.4	36.412	43.3	28.975	1.677	0.345	11.6	1.713	10.0	-1.672	-0.291	9.9	1.697
48.0	525.0	1.0	25.871	22.360	40.8	34.195	44.3	27.211	1.488	0.191	7.3	1.500	10.2	-1.484	-0.107	4.1	1.488
47.0	525.0	1.0	24.580	20.856	40.3	32.236	45.1	25.653	1.320	0.140	6.1	1.327	10.3	-1.316	0.040	-1.7	1.317
46.0	525.0	1.0	23.443	19.532	39.8	30.514	45.7	24.282	1.171	0.194	9.4	1.187	10.3	-1.168	0.156	-7.6	1.179
45.0	525.0	1.0	22.448	18.373	39.3	29.008	46.2	23.084	1.040	0.267	14.4	1.073	10.2	-1.037	0.248	-13.4	1.066
44.0	525.0	1.0	21.584	17.364	38.8	27.702	46.6	22.044	0.924	0.332	19.8	0.981	10.0	-0.921	0.320	-19.2	0.975
43.0	525.0	1.0	20.844	16.493	38.4	26.580	46.9	21.152	0.821	0.386	25.2	0.907	9.8	-0.819	0.379	-24.8	0.902
42.0	525.0	1.0	20.221	15.749	37.9	25.630	47.1	20.396	0.730	0.431	30.6	0.848	9.6	-0.728	0.426	-30.3	0.844
41.0	525.0	1.0	19.711	15.121	37.5	24.843	47.2	19.769	0.649	0.469	35.8	0.801	9.3	-0.647	0.466	-35.7	0.797
40.0	525.0	1.0	19.310	14.601	37.1	24.208	47.3	19.264	0.577	0.502	41.0	0.764	9.1	-0.575	0.499	-41.0	0.762
39.0	525.0	1.0	19.015	14.182	36.7	23.722	47.4	18.877	0.512	0.531	46.1	0.738	8.9	-0.510	0.530	-46.1	0.735
38.0	525.0	1.0	18.827	13.857	36.4	23.377	47.5	18.603	0.452	0.560	51.1	0.719	8.7	-0.450	0.559	-51.2	0.717
37.0	525.0	1.0	18.745	13.622	36.0	23.171	47.5	18.439	0.397	0.588	55.9	0.709	8.6	-0.394	0.587	-56.1	0.707
36.0	525.0	1.0	18.769	13.470	35.7	23.103	47.5	18.385	0.345	0.617	60.8	0.707	8.6	-0.341	0.617	-61.0	0.705
35.0	525.0	1.0	18.904	13.399	35.3	23.171	47.6	18.439	0.294	0.648	65.6	0.711	8.5	-0.289	0.648	-65.9	0.710
34.0	525.0	1.0	19.152	13.404	35.0	23.376	47.6	18.602	0.244	0.682	70.3	0.724	8.6	-0.237	0.682	-70.8	0.722
33.0	525.0	1.0	19.518	13.483	34.6	23.722	47.6	18.877	0.192	0.719	75.0	0.744	8.7	-0.183	0.719	-75.8	0.742
32.0	525.0	1.0	20.007	13.634	34.3	24.211	47.6	19.267	0.140	0.760	79.6	0.773	8.8	-0.124	0.760	-80.8	0.770
31.0	525.0	1.0	20.629	13.854	33.9	24.849	47.5	19.774	0.093	0.806	83.4	0.811	9.0	-0.058	0.806	-85.9	0.808
30.0	525.0	1.0	21.391	14.143	33.5	25.643	47.4	20.406	0.081	0.856	84.6	0.860	9.2	0.016	0.856	88.9	0.856
29.0	525.0	1.0	22.304	14.498	33.0	26.602	47.3	21.169	0.135	0.911	81.6	0.921	9.4	0.102	0.911	83.6	0.917
28.0	525.0	1.0	23.383	14.918	32.5	27.736	47.0	22.072	0.226	0.971	76.9	0.997	9.7	0.203	0.971	78.2	0.992
27.0	525.0	1.0	24.640	15.402	32.0	29.058	46.7	23.124	0.343	1.035	71.7	1.091	9.9	0.324	1.034	72.6	1.084
26.0	525.0	1.0	26.096	15.949	31.4	30.584	46.2	24.338	0.486	1.103	66.2	1.206	10.0	0.469	1.102	66.9	1.197
25.0	525.0	1.0	27.768	16.558	30.8	32.330	45.6	25.727	0.660	1.174	60.6	1.347	10.0	0.643	1.172	61.2	1.337
24.0	525.0	1.0	29.680	17.227	30.1	34.317	44.9	27.309	0.871	1.246	55.0	1.520	10.0	0.853	1.243	55.5	1.508
23.0	525.0	1.0	31.858	17.954	29.4	36.569	43.9	29.101	1.125	1.317	49.5	1.732	9.8	1.106	1.314	49.9	1.718
22.0	525.0	1.0	34.328	18.736	28.6	39.109	42.8	31.122	1.431	1.387	44.1	1.993	9.5	1.410	1.383	44.4	1.975
21.0	525.0	1.0	37.121	19.571	27.8	41.964	41.5	33.394	1.798	1.451	38.9	2.310	9.0	1.773	1.446	39.2	2.288
20.0	525.0	1.0	40.264	20.452	26.9	45.160	40.0	35.937	2.234	1.506	34.0	2.694	8.5	2.206	1.501	34.2	2.668
19.0	525.0	1.0	43.781	21.377	26.0	48.721	38.4	38.771	2.748	1.550	29.4	3.155	7.8	2.714	1.544	29.6	3.123
18.0	525.0	1.0	47.690	22.338	25.1	52.662	36.5	41.907	3.346	1.578	25.3	3.699	7.1	3.305	1.572	25.4	3.660
17.0	525.0	1.0	51.989	23.329	24.2	56.984	34.5	45.346	4.028	1.588	21.5	4.330	6.4	3.979	1.580	21.7	4.281
16.0	525.0	1.0	56.650	24.344	23.3	61.659	32.3	49.067	4.788	1.574	18.2	5.040	5.6	4.727	1.566	18.3	4.980
15.0	525.0	1.0	61.601	25.375	22.4	66.623	30.1	53.017	5.605	1.537	15.3	5.812	4.9	5.531	1.528	15.4	5.738
14.0	525.0	1.0	66.709	26.416	21.6	71.749	27.7	57.096	6.442	1.475	12.9	6.609	4.2	6.352	1.466	13.0	6.519
13.0	525.0	1.0	71.768	27.462	20.9	76.843	25.3	61.149	7.241	1.390	10.9	7.373	3.6	7.133	1.381	11.0	7.266
12.0	525.0	1.0	76.500	28.511	20.4	81.640	22.8	64.967	7.925	1.287	9.2	8.029	3.0	7.800	1.277	9.3	7.904
11.0	525.0	1.0	80.587	29.561	20.1	85.838	20.4	68.307	8.411	1.170	7.9	8.492	2.5	8.271	1.160	8.0	8.352
10.0	525.0	1.0	83.731	30.614	20.1	89.153	18.0	70.945	8.625	1.044	6.9	8.688	2.2	8.477	1.033	6.9	8.540
9.0	525.0	1.0	85.733	31.678	20.3	91.398	15.7	72.732	8.529	0.913	6.1	8.577	1.9	8.379	0.899	6.1	8.427
8.0	525.0	1.0	86.549	32.761	20.7	92.542	13.6	73.643	8.127	0.776	5.5	8.164	1.8	7.982	0.757	5.4	8.018
7.0	525.0	1.0	86.301	33.878	21.4	92.712	11.6	73.778	7.468	0.631	4.8	7.495	1.8	7.333	0.602	4.7	7.357
6.0	525.0	1.0	85.227	35.043	22.4	92.150	9.8	73.331	6.628	0.476	4.1	6.645	2.2	6.501	0.426	3.8	6.515
5.0	525.0	1.0	83.613	36.278	23.5	91.144	8.3	72.530	5.684	0.324	3.3	5.693	3.3	5.563	0.223	2.3	5.567
4.0	525.0	1.0	81.727	37.603	24.7	89.963	7.0	71.590	4.703	0.265	3.2	4.710	5.5	4.582	-0.017	-0.2	4.582
3.0	525.0	1.0	79.791	39.041	26.1	88.830	6.0	70.689	3.733	0.423	6.5	3.757	10.0	3.603	-0.301	-4.8	3.616
2.0	525.0	1.0	77.961	40.614	27.5	87.906	5.2	69.953	2.807	0.719	14.4	2.898	19.0	2.654	-0.636	-13.5	2.729
1.0	525.0	1.0	76.341	42.340	29.0	87.296	4.8	69.468	1.951	1.097	29.3	2.238	37.0	1.746	-1.028	-30.5	2.026
0.0	525.0	1.0	74.983	44.232	30.5	87.057	4.6	69.278	1.214	1.546	51.9	1.965	57.2	0.882	-1.483	-59.3	1.725
-1.0	525.0	1.0	73.902	46.294	32.1	87.205	4.7	69.395	0.810	2.067	68.6	2.220	37.9	0.056	-2.006	-88.4	2.006
-2.0	525.0	1.0	73.079	48.512	33.6	87.715	5.1	69.802	1.079	2.660	67.9	2.871	19.5	-0.737	-2.597	74.1	2.700
-3.0	525.0	1.0	72.464	50.849	35.1	88.524	5.8	70.445	1.690	3.320	63.0	3.726	10.2	-1.501	-3.253	65.2	3.583
-4.0	525.0	1.0	71.971	53.232	36.5	89.519	6.7	71.237	2.366	4.035	59.6	4.677	5.6	-2.236	-3.960	60.5	4.548
-5.0	525.0	1.0	71.484	55.548	37.8	90.530	7.9	72.041	3.037	4.776	57.6	5.660	3.3	-2.934	-4.691	58.0	5.533
-6.0	525.0	1.0	70.851	57.632	39.1	91.331	9.4	72.679	3.668	5.501	56.3	6.612	2.2	-3.579	-5.403	56.5	6.481
-7.0	525.0	1.0	69.898	59.277	40.3	91.649	11.1	72.932	4.228	6.148	55.5	7.462	1.8	-4.145	-6.037	55.5	7.323
-8.0	525.0	1.0	68.458	60.256	41.4	91.199	12.9	72.574	4.682	6.647	54.8	8.130	1.7	-4.602	-6.524	54.8	7.984
-9.0	525.0	1.0	66.406	60.370	42.3	89.746	15.0	71.417	4.997	6.929	54.2	8.543	1.8	-4.921	-6.798	54.1	8.392
-10.0	525.0	1.0	63.703	59.507	43.0	87.173	17.2	69.370	5.153	6.950	53.4	8.652	2.1	-5.081	-6.818	53.3	8.503
-11.0	525.0	1.0	60.416	57.678	43.7	83.527	19.4	66.469	5.147	6.704	52.5	8.452	2.4	-5.083	-6.577	52.3	8.312
-12.0	525.0	1.0	56.701	55.018	44.1	79.006	21.8	62.871	4.998	6.228	51.3	7.986	2.9	-4.942	-6.112	51.0	7.860
-13.0	525.0	1.0	52.759	51.749	44.4	73.902	24.2	58.809	4.737	5.587	49.7	7.325	3.4	-4.690	-5.484	49.5	7.216
-14.0	525.0	1.0	48.784	48.118	44.6	68.522	26.5	54.528	4.402	4.856	47.8	6.554	4.0	-4.365	-4.767	47.5	6.463
-15.0	525.0	1.0	44.929	44.348	44.6	63.130	28.8	50.237	4.029	4.103	45.5	5.750	4.6	-3.999	-4.027	45.2	5.675
-16.0	525.0	1.0	41.295	40.612	44.5	57.919	31.0	46.090	3.644	3.380	42.8	4.970	5.3	-3.621	-3.315	42.5	4.909
-17.0	525.0	1.0	37.935	37.027	44.3	53.010	33.2	42.184	3.268	2.718	39.8	4.250	6.0	-3.249	-2.662	39.3	4.200
-18.0	525.0	1.0	34.864	33.664	44.0	48.464	35.1	38.567	2.911	2.135	36.3	3.610	6.7	-2.895	-2.086	35.8	3.568
-19.0	525.0	1.0	32.079	30.558	43.6	44.304	37.0	35.256	2.579	1.636	32.4	3.054	7.4	-2.566	-1.593	31.8	3.020
-20.0	525.0	1.0	29.560	27.721	43.2	40.524	38.7	32.248	2.276	1.218	28.2	2.581	8.0	-2.265	-1.179	27.5	2.553
-21.0	525.0	1.0	27.284	25.147	42.7	37.105	40.2	29.528	2.001	0.875	23.6	2.184	8.6	-1.992	-0.837	22.8	2.160
-22.0	525.0	1.0	25.228	22.824	42.1	34.020	41.5	27.072	1.754	0.599	18.8	1.853	9.1	-1.745	-0.561	17.8	1.833
-23.0	525.0	1.0	23.366	20.734	41.6	31.239	42.7	24.859	1.532	0.381	14.0	1.579	9.5	-1.525	-0.340	12.6	1.562
-24.0	525.0	1.0	21.678	18.857	41.0	28.732	43.7	22.864	1.334	0.218	9.3	1.352	9.8	-1.328	-0.165	7.1	1.338
-25.0	525.0	1.0	20.144	17.172	40.4	26.470	44.5	21.064	1.158	0.122	6.0	1.165	10.0	-1.152	-0.029	1.4	1.153
-26.0	525.0	1.0	18.747	15.661	39.9	24.428	45.2	19.439	1.002	0.124	7.1	1.009	10.2	-0.996	0.075	-4.3	0.999
-27.0	525.0	1.0	17.473	14.305	39.3	22.582	45.7	17.970	0.863	0.174	11.4	0.880	10.3	-0.858	0.154	-10.2	0.872
-28.0	525.0	1.0	16.308	13.088	38.7	20.910	46.2	16.640	0.740	0.223	16.8	0.773	10.4	-0.735	0.212	-16.1	0.765
-29.0	525.0	1.0	15.241	11.994	38.2	19.394	46.5	15.434	0.631	0.260	22.4	0.683	10.4	-0.627	0.253	-22.0	0.676
-30.0	525.0	1.0	14.263	11.009	37.7	18.017	46.7	14.338	0.535	0.286	28.1	0.607	10.4	-0.531	0.282	-27.9	0.601
-31.0	525.0	1.0	13.364	10.123	37.1	16.765	46.8	13.341	0.451	0.303	33.9	0.543	10.4	-0.447	0.300	-33.8	0.538
-32.0	525.0	1.0	12.537	9.323	36.6	15.623	46.8	12.432	0.376	0.312	39.6	0.489	10.3	-0.373	0.310	-39.7	0.485
-33.0	525.0	1.0	11.774	8.600	36.1	14.581	46.8	11.603	0.311	0.315	45.4	0.443	10.2	-0.307	0.314	-45.6	0.439
-34.0	525.0	1.0	11.071	7.946	35.7	13.628	46.7	10.845	0.254	0.314	51.1	0.404	10.1	-0.250	0.313	-51.4	0.401
-35.0	525.0	1.0	10.422	7.354	35.2	12.755	46.6	10.150	0.203	0.309	56.7	0.370	9.9	-0.200	0.309	-57.1	0.368
-36.0	525.0	1.0	9.821	6.816	34.8	11.955	46.4	9.513	0.159	0.302	62.2	0.342	9.8	-0.156	0.302	-62.7	0.339
-37.0	525.0	1.0	9.265	6.327	34.3	11.219	46.2	8.928	0.121	0.293	67.6	0.317	9.5	-0.117	0.293	-68.2	0.315
-38.0	525.0	1.0	8.749	5.882	33.9	10.543	46.0	8.390	0.088	0.283	72.7	0.296	9.3	-0.083	0.282	-73.5	0.295
-39.0	525.0	1.0	8.271	5.476	33.5	9.919	45.7	7.894	0.060	0.272	77.6	0.278	8.9	-0.054	0.271	-78.7	0.277
-40.0	525.0	1.0	7.826	5.105	33.1	9.344	45.4	7.436	0.036	0.260	82.0	0.263	8.6	-0.028	0.260	-83.7	0.261
-41.0	525.0	1.0	7.413	4.765	32.7	8.812	45.2	7.013	0.021	0.248	85.1	0.249	8.3	-0.006	0.248	-88.5	0.248
-42.0	525.0	1.0	7.028	4.454	32.4	8.321	44.9	6.621	0.023	0.236	84.5	0.237	7.9	0.013	0.236	86.9	0.236
-43.0	525.0	1.0	6.669	4.169	32.0	7.865	44.5	6.259	0.034	0.224	81.4	0.227	7.5	0.030	0.224	82.5	0.226
-44.0	525.0	1.0	6.334	3.906	31.7	7.442	44.2	5.922	0.047	0.213	77.6	0.218	7.1	0.044	0.212	78.3	0.217
-45.0	525.0	1.0	6.022	3.665	31.3	7.049	43.9	5.610	0.058	0.201	73.9	0.209	6.7	0.056	0.201	74.4	0.209
-46.0	525.0	1.0	5.729	3.442	31.0	6.684	43.6	5.319	0.068	0.190	70.3	0.202	6.4	0.067	0.190	70.6	0.202
-47.0	525.0	1.0	5.456	3.237	30.7	6.344	43.3	5.048	0.077	0.180	66.9	0.195	6.0	0.076	0.180	67.1	0.195
-48.0	525.0	1.0	5.200	3.047	30.4	6.027	42.9	4.796	0.084	0.170	63.6	0.189	5.7	0.083	0.170	63.8	0.189
-49.0	525.0	1.0	4.960	2.871	30.1	5.731	42.6	4.560	0.090	0.160	60.5	0.184	5.3	0.090	0.160	60.7	0.183
-50.0	525.0	1.0	4.735	2.708	29.8	5.454	42.3	4.340	0.096	0.151	57.6	0.178	5.0	0.095	0.151	57.7	0.178
-51.0	525.0	1.0	4.523	2.556	29.5	5.196	42.0	4.134	0.100	0.142	54.9	0.174	4.7	0.100	0.142	54.9	0.173
-52.0	525.0	1.0	4.324	2.416	29.2	4.953	41.6	3.942	0.103	0.134	52.2	0.169	4.5	0.103	0.134	52.3	0.169
-53.0	525.0	1.0	4.137	2.285	28.9	4.726	41.3	3.761	0.106	0.126	49.8	0.165	4.2	0.106	0.126	49.8	0.164
-54.0	525.0	1.0	3.961	2.163	28.6	4.513	41.0	3.592	0.109	0.118	47.4	0.160	4.0	0.108	0.118	47.5	0.160
-55.0	525.0	1.0	3.795	2.050	28.4	4.313	40.7	3.432	0.110	0.111	45.2	0.157	3.8	0.110	0.111	45.3	0.156
-56.0	525.0	1.0	3.639	1.944	28.1	4.125	40.3	3.283	0.111	0.104	43.2	0.153	3.6	0.111	0.104	43.2	0.153
-57.0	525.0	1.0	3.491	1.845	27.9	3.948	40.0	3.142	0.112	0.098	41.2	0.149	3.4	0.112	0.098	41.2	0.149
-58.0	525.0	1.0	3.351	1.752	27.6	3.782	39.7	3.009	0.113	0.092	39.3	0.146	3.2	0.113	0.092	39.3	0.145
-59.0	525.0	1.0	3.220	1.665	27.4	3.625	39.4	2.884	0.113	0.086	37.5	0.142	3.1	0.113	0.086	37.5	0.142
-60.0	525.0	1.0	3.095	1.584	27.1	3.477	39.1	2.767	0.113	0.081	35.8	0.139	2.9	0.113	0.081	35.8	0.139
-61.0	525.0	1.0	2.977	1.508	26.9	3.337	38.8	2.655	0.112	0.076	34.2	0.136	2.8	0.112	0.076	34.1	0.136
-62.0	525.0	1.0	2.865	1.436	26.6	3.205	38.5	2.550	0.112	0.071	32.6	0.133	2.7	0.112	0.071	32.6	0.132
-63.0	525.0	1.0	2.758	1.369	26.4	3.080	38.1	2.451	0.111	0.067	31.1	0.130	2.5	0.111	0.067	31.1	0.129
-64.0	525.0	1.0	2.658	1.306	26.2	2.961	37.8	2.356	0.110	0.063	29.7	0.127	2.4	0.110	0.063	29.7	0.127
-65.0	525.0	1.0	2.562	1.246	25.9	2.849	37.5	2.267	0.109	0.059	28.3	0.124	2.3	0.109	0.059	28.3	0.124
-66.0	525.0	1.0	2.471	1.190	25.7	2.743	37.2	2.183	0.108	0.055	27.0	0.121	2.2	0.108	0.055	27.0	0.121
-67.0	525.0	1.0	2.385	1.137	25.5	2.642	36.9	2.103	0.107	0.051	25.8	0.118	2.2	0.107	0.051	25.8	0.118
-68.0	525.0	1.0	2.303	1.087	25.3	2.547	36.6	2.026	0.105	0.048	24.6	0.116	2.1	0.105	0.048	24.6	0.116
-69.0	525.0	1.0	2.225	1.040	25.1	2.456	36.3	1.954	0.104	0.045	23.4	0.113	2.0	0.104	0.045	23.4	0.113
-70.0	525.0	1.0	2.150	0.995	24.8	2.369	36.0	1.885	0.102	0.042	22.3	0.111	1.9	0.102	0.042	22.3	0.111
-71.0	525.0	1.0	2.079	0.953	24.6	2.287	35.7	1.820	0.101	0.039	21.2	0.108	1.9	0.101	0.039	21.2	0.108
-72.0	525.0	1.0	2.011	0.913	24.4	2.209	35.5	1.758	0.100	0.037	20.2	0.106	1.8	0.099	0.037	20.2	0.106
-73.0	525.0	1.0	1.947	0.876	24.2	2.135	35.2	1.699	0.098	0.034	19.2	0.104	1.7	0.098	0.034	19.2	0.104
-74.0	525.0	1.0	1.885	0.840	24.0	2.064	34.9	1.642	0.096	0.032	18.2	0.102	1.7	0.096	0.032	18.2	0.102
-75.0	525.0	1.0	1.826	0.806	23.8	1.996	34.6	1.588	0.095	0.030	17.3	0.099	1.6	0.095	0.029	17.2	0.099
-76.0	525.0	1.0	1.770	0.774	23.6	1.931	34.3	1.537	0.093	0.027	16.4	0.097	1.6	0.093	0.027	16.3	0.097

-77.0	525.0	1.0	1.716	0.743	23.4	1.870	34.0	1.488	0.092	0.025	15.5	0.095	1.5	0.092	0.025	15.4	0.095
-78.0	525.0	1.0	1.664	0.714	23.2	1.811	33.7	1.441	0.090	0.024	14.6	0.093	1.5	0.090	0.024	14.6	0.093
-79.0	525.0	1.0	1.615	0.686	23.0	1.755	33.4	1.396	0.089	0.022	13.8	0.091	1.4	0.089	0.022	13.8	0.091
-80.0	525.0	1.0	1.568	0.660	22.8	1.701	33.2	1.353	0.087	0.020	13.0	0.090	1.4	0.087	0.020	13.0	0.090
-81.0	525.0	1.0	1.522	0.635	22.6	1.649	32.9	1.312	0.086	0.019	12.2	0.088	1.4	0.086	0.018	12.2	0.088
-82.0	525.0	1.0	1.479	0.611	22.4	1.600	32.6	1.273	0.084	0.017	11.4	0.086	1.3	0.084	0.017	11.4	0.086
-83.0	525.0	1.0	1.437	0.588	22.3	1.553	32.3	1.236	0.083	0.016	10.7	0.084	1.3	0.083	0.016	10.7	0.084
-84.0	525.0	1.0	1.397	0.566	22.1	1.508	32.0	1.200	0.081	0.014	10.0	0.083	1.3	0.081	0.014	9.9	0.083
-85.0	525.0	1.0	1.359	0.546	21.9	1.464	31.8	1.165	0.080	0.013	9.3	0.081	1.2	0.080	0.013	9.2	0.081
-86.0	525.0	1.0	1.322	0.526	21.7	1.423	31.5	1.132	0.078	0.012	8.6	0.079	1.2	0.078	0.012	8.5	0.079
-87.0	525.0	1.0	1.286	0.507	21.5	1.383	31.2	1.100	0.077	0.011	7.9	0.078	1.2	0.077	0.011	7.9	0.078
-88.0	525.0	1.0	1.252	0.489	21.3	1.344	30.9	1.070	0.076	0.010	7.2	0.076	1.1	0.076	0.010	7.2	0.076
-89.0	525.0	1.0	1.219	0.472	21.2	1.307	30.7	1.040	0.074	0.009	6.6	0.075	1.1	0.074	0.009	6.6	0.075
-90.0	525.0	1.0	1.188	0.456	21.0	1.272	30.4	1.012	0.073	0.008	6.0	0.073	1.1	0.073	0.008	5.9	0.073
-91.0	525.0	1.0	1.157	0.440	20.8	1.238	30.1	0.985	0.072	0.007	5.4	0.072	1.1	0.072	0.007	5.3	0.072
-92.0	525.0	1.0	1.128	0.425	20.6	1.205	29.9	0.959	0.070	0.006	4.8	0.071	1.0	0.070	0.006	4.7	0.071
-93.0	525.0	1.0	1.100	0.410	20.5	1.174	29.6	0.934	0.069	0.005	4.2	0.069	1.0	0.069	0.005	4.2	0.069
-94.0	525.0	1.0	1.073	0.396	20.3	1.144	29.3	0.910	0.068	0.004	3.6	0.068	1.0	0.068	0.004	3.6	0.068
-95.0	525.0	1.0	1.046	0.383	20.1	1.114	29.1	0.887	0.067	0.004	3.1	0.067	1.0	0.067	0.004	3.0	0.067
-96.0	525.0	1.0	1.021	0.371	19.9	1.086	28.8	0.865	0.066	0.003	2.5	0.066	0.9	0.066	0.003	2.5	0.066
-97.0	525.0	1.0	0.997	0.358	19.8	1.059	28.5	0.843	0.064	0.002	2.0	0.065	0.9	0.064	0.002	1.9	0.065
-98.0	525.0	1.0	0.973	0.347	19.6	1.033	28.3	0.822	0.063	0.002	1.5	0.063	0.9	0.063	0.002	1.4	0.063
-99.0	525.0	1.0	0.951	0.336	19.4	1.008	28.0	0.802	0.062	0.001	1.0	0.062	0.9	0.062	0.001	0.9	0.062
-100.0	525.0	1.0	0.914	0.325	19.6	0.970	28.4	0.772	0.059	0.002	1.5	0.059	0.9	0.059	0.002	1.5	0.059
-101.0	525.0	1.0	0.893	0.315	19.4	0.947	28.2	0.753	0.058	0.001	1.1	0.058	0.9	0.058	0.001	1.0	0.058
-102.0	525.0	1.0	0.872	0.305	19.3	0.924	27.9	0.735	0.057	0.001	0.7	0.057	0.8	0.057	0.000	0.5	0.057
-103.0	525.0	1.0	0.852	0.295	19.1	0.902	27.7	0.718	0.056	0.000	0.5	0.056	0.8	0.056	-0.000	-0.0	0.056
-104.0	525.0	1.0	0.833	0.286	18.9	0.881	27.4	0.701	0.055	0.001	0.7	0.055	0.8	0.055	-0.000	-0.5	0.055
-105.0	525.0	1.0	0.815	0.277	18.8	0.861	27.2	0.685	0.054	0.001	1.0	0.054	0.8	0.054	-0.001	-0.9	0.054
-106.0	525.0	1.0	0.797	0.269	18.6	0.841	26.9	0.669	0.053	0.001	1.5	0.053	0.8	0.053	-0.001	-1.4	0.053
-107.0	525.0	1.0	0.779	0.260	18.5	0.822	26.7	0.654	0.052	0.002	1.9	0.052	0.8	0.052	-0.002	-1.8	0.052
-108.0	525.0	1.0	0.762	0.253	18.3	0.803	26.4	0.639	0.051	0.002	2.3	0.051	0.8	0.051	-0.002	-2.3	0.051
-109.0	525.0	1.0	0.746	0.245	18.2	0.785	26.2	0.625	0.050	0.002	2.7	0.051	0.7	0.050	-0.002	-2.7	0.051
-110.0	525.0	1.0	0.730	0.238	18.0	0.768	25.9	0.611	0.050	0.003	3.1	0.050	0.7	0.050	-0.003	-3.1	0.050
-111.0	525.0	1.0	0.715	0.231	17.9	0.751	25.7	0.598	0.049	0.003	3.5	0.049	0.7	0.049	-0.003	-3.5	0.049
-112.0	525.0	1.0	0.700	0.224	17.7	0.735	25.5	0.585	0.048	0.003	4.0	0.048	0.7	0.048	-0.003	-3.9	0.048
-113.0	525.0	1.0	0.686	0.217	17.6	0.719	25.2	0.572	0.047	0.004	4.4	0.047	0.7	0.047	-0.004	-4.3	0.047
-114.0	525.0	1.0	0.672	0.211	17.4	0.704	25.0	0.560	0.046	0.004	4.7	0.046	0.7	0.046	-0.004	-4.7	0.046
-115.0	525.0	1.0	0.658	0.205	17.3	0.689	24.7	0.549	0.046	0.004	5.1	0.046	0.7	0.046	-0.004	-5.1	0.046
-116.0	525.0	1.0	0.645	0.199	17.2	0.675	24.5	0.537	0.045	0.004	5.5	0.045	0.7	0.045	-0.004	-5.5	0.045
-117.0	525.0	1.0	0.632	0.194	17.0	0.661	24.3	0.526	0.044	0.005	5.9	0.044	0.7	0.044	-0.005	-5.9	0.044
-118.0	525.0	1.0	0.620	0.188	16.9	0.648	24.0	0.515	0.043	0.005	6.3	0.044	0.6	0.043	-0.005	-6.2	0.044
-119.0	525.0	1.0	0.608	0.183	16.7	0.635	23.8	0.505	0.043	0.005	6.6	0.043	0.6	0.043	-0.005	-6.6	0.043
-120.0	525.0	1.0	0.596	0.178	16.6	0.622	23.5	0.495	0.042	0.005	7.0	0.042	0.6	0.042	-0.005	-7.0	0.042
-121.0	525.0	1.0	0.585	0.173	16.5	0.610	23.3	0.485	0.041	0.005	7.3	0.042	0.6	0.041	-0.005	-7.3	0.042
-122.0	525.0	1.0	0.574	0.168	16.3	0.598	23.1	0.476	0.041	0.005	7.7	0.041	0.6	0.041	-0.005	-7.7	0.041
-123.0	525.0	1.0	0.563	0.164	16.2	0.586	22.8	0.466	0.040	0.006	8.0	0.040	0.6	0.040	-0.006	-8.0	0.040
-124.0	525.0	1.0	0.552	0.159	16.1	0.575	22.6	0.457	0.039	0.006	8.4	0.040	0.6	0.039	-0.006	-8.4	0.040
-125.0	525.0	1.0	0.542	0.155	15.9	0.564	22.4	0.449	0.039	0.006	8.7	0.039	0.6	0.039	-0.006	-8.7	0.039
-126.0	525.0	1.0	0.532	0.151	15.8	0.553	22.2	0.440	0.038	0.006	9.0	0.038	0.6	0.038	-0.006	-9.0	0.039
-127.0	525.0	1.0	0.523	0.147	15.7	0.543	21.9	0.432	0.037	0.006	9.3	0.038	0.6	0.037	-0.006	-9.3	0.038
-128.0	525.0	1.0	0.513	0.143	15.5	0.533	21.7	0.424	0.037	0.006	9.7	0.037	0.6	0.037	-0.006	-9.7	0.037
-129.0	525.0	1.0	0.504	0.139	15.4	0.523	21.5	0.416	0.036	0.006	10.0	0.037	0.5	0.036	-0.006	-10.0	0.037
-130.0	525.0	1.0	0.495	0.135	15.3	0.513	21.2	0.409	0.036	0.006	10.3	0.036	0.5	0.036	-0.006	-10.3	0.036
-131.0	525.0	1.0	0.487	0.132	15.2	0.504	21.0	0.401	0.035	0.007	10.6	0.036	0.5	0.035	-0.007	-10.6	0.036
-132.0	525.0	1.0	0.478	0.128	15.0	0.495	20.8	0.394	0.035	0.007	10.9	0.035	0.5	0.035	-0.007	-10.9	0.035
-133.0	525.0	1.0	0.470	0.125	14.9	0.486	20.6	0.387	0.034	0.007	11.2	0.035	0.5	0.034	-0.007	-11.2	0.035
-134.0	525.0	1.0	0.462	0.122	14.8	0.478	20.3	0.380	0.034	0.007	11.5	0.034	0.5	0.034	-0.007	-11.5	0.034
-135.0	525.0	1.0	0.454	0.119	14.7	0.469	20.1	0.373	0.033	0.007	11.8	0.034	0.5	0.033	-0.007	-11.8	0.034
-136.0	525.0	1.0	0.446	0.116	14.6	0.461	19.9	0.367	0.033	0.007	12.0	0.033	0.5	0.033	-0.007	-12.0	0.033
-137.0	525.0	1.0	0.439	0.113	14.4	0.453	19.7	0.361	0.032	0.007	12.3	0.033	0.5	0.032	-0.007	-12.3	0.033
-138.0	525.0	1.0	0.432	0.110	14.3	0.445	19.5	0.354	0.032	0.007	12.6	0.032	0.5	0.032	-0.007	-12.6	0.032
-139.0	525.0	1.0	0.425	0.107	14.2	0.438	19.2	0.348	0.031	0.007	12.9	0.032	0.5	0.031	-0.007	-12.9	0.032
-140.0	525.0	1.0	0.418	0.105	14.1	0.431	19.0	0.343	0.031	0.007	13.1	0.031	0.5	0.031	-0.007	-13.2	0.031
-141.0	525.0	1.0	0.411	0.102	14.0	0.423	18.8	0.337	0.030	0.007	13.4	0.031	0.5	0.030	-0.007	-13.4	0.031
-142.0	525.0	1.0	0.404	0.100	13.9	0.416	18.6	0.331	0.030	0.007	13.7	0.031	0.5	0.030	-0.007	-13.7	0.031
-143.0	525.0	1.0	0.398	0.097	13.7	0.410	18.4	0.326	0.029	0.007	13.9	0.030	0.5	0.029	-0.007	-13.9	0.030
-144.0	525.0	1.0	0.392	0.095	13.6	0.403	18.2	0.321	0.029	0.007	14.2	0.030	0.4	0.029	-0.007	-14.2	0.030
-145.0	525.0	1.0	0.385	0.093	13.5	0.396	18.0	0.315	0.029	0.007	14.4	0.029	0.4	0.029	-0.007	-14.5	0.029
-146.0	525.0	1.0	0.379	0.090	13.4	0.390	17.7	0.310	0.028	0.007	14.7	0.029	0.4	0.028	-0.007	-14.7	0.029
-147.0	525.0	1.0	0.374	0.088	13.3	0.384	17.5	0.306	0.028	0.007	14.9	0.029	0.4	0.028	-0.007	-15.0	0.029
-148.0	525.0	1.0	0.368	0.086	13.2	0.378	17.3	0.301	0.027	0.007	15.2	0.028	0.4	0.027	-0.007	-15.2	0.028
-149.0	525.0	1.0	0.362	0.084	13.1	0.372	17.1	0.296	0.027	0.007	15.4	0.028	0.4	0.027	-0.007	-15.4	0.028
-150.0	525.0	1.0	0.357	0.082	13.0	0.366	16.9	0.291	0.027	0.007	15.7	0.028	0.4	0.027	-0.007	-15.7	0.028
-151.0	525.0	1.0	0.351	0.080	12.9	0.361	16.7	0.287	0.026	0.007	15.9	0.027	0.4	0.026	-0.007	-15.9	0.027
-152.0	525.0	1.0	0.346	0.079	12.8	0.355	16.5	0.283	0.026	0.007	16.1	0.027	0.4	0.026	-0.007	-16.1	0.027
-153.0	525.0	1.0	0.341	0.077	12.7	0.350	16.3	0.278	0.025	0.007	16.4	0.027	0.4	0.025	-0.007	-16.4	0.027
-154.0	525.0	1.0	0.336	0.075	12.6	0.344	16.1	0.274	0.025	0.007	16.6	0.026	0.4	0.025	-0.007	-16.6	0.026
-155.0	525.0	1.0	0.331	0.073	12.5	0.339	15.9	0.270	0.025	0.007	16.8	0.026	0.4	0.025	-0.007	-16.8	0.026
-156.0	525.0	1.0	0.297	0.068	12.9	0.304	16.8	0.242	0.022	0.007	17.0	0.023	0.4	0.022	-0.007	-17.0	0.023
-157.0	525.0	1.0	0.292	0.067	12.8	0.300	16.6	0.239	0.022	0.007	17.3	0.023	0.4	0.022	-0.007	-17.3	0.023
-158.0	525.0	1.0	0.288	0.065	12.7	0.295	16.4	0.235	0.021	0.007	17.5	0.022	0.4	0.021	-0.007	-17.5	0.022
-159.0	525.0	1.0	0.284	0.064	12.6	0.291	16.2	0.231	0.021	0.007	17.7	0.022	0.4	0.021	-0.007	-17.7	0.022
-160.0	525.0	1.0	0.280	0.062	12.5	0.287	16.0	0.228	0.021	0.007	17.9	0.022	0.4	0.021	-0.007	-17.9	0.022
-161.0	525.0	1.0	0.276	0.061	12.4	0.282	15.8	0.225	0.020	0.007	18.2	0.022	0.4	0.020	-0.007	-18.2	0.022
-162.0	525.0	1.0	0.272	0.059	12.3	0.278	15.6	0.221	0.020	0.007	18.4	0.021	0.4	0.020	-0.007	-18.4	0.021
-163.0	525.0	1.0	0.268	0.058	12.3	0.274	15.4	0.218	0.020	0.007	18.6	0.021	0.4	0.020	-0.007	-18.6	0.021
-164.0	525.0	1.0	0.264	0.057	12.2	0.270	15.2	0.215	0.020	0.007	18.8	0.021	0.4	0.020	-0.007	-18.8	0.021
-165.0	525.0	1.0	0.260	0.056	12.1	0.266	15.0	0.212	0.019	0.007	19.0	0.021	0.4	0.019	-0.007	-19.0	0.021
-166.0	525.0	1.0	0.257	0.054	12.0	0.263	14.8	0.209	0.019	0.007	19.3	0.020	0.4	0.019	-0.007	-19.3	0.020
-167.0	525.0	1.0	0.253	0.053	11.9	0.259	14.6	0.206	0.019	0.007	19.5	0.020	0.4	0.019	-0.007	-19.5	0.020
-168.0	525.0	1.0	0.250	0.052	11.8	0.255	14.4	0.203	0.019	0.007	19.7	0.020	0.4	0.019	-0.007	-19.7	0.020
-169.0	525.0	1.0	0.246	0.051	11.7	0.252	14.2	0.200	0.018	0.007	19.9	0.020	0.4	0.018	-0.007	-19.9	0.020
-170.0	525.0	1.0	0.243	0.050	11.6	0.248	14.0	0.198	0.018	0.007	20.1	0.019	0.4	0.018	-0.007	-20.1	0.019
-171.0	525.0	1.0	0.240	0.049	11.5	0.245	13.8	0.195	0.018	0.007	20.3	0.019	0.4	0.018	-0.007	-20.3	0.019
-172.0	525.0	1.0	0.222	0.048	12.1	0.227	15.5	0.181	0.016	0.005	18.5	0.017	0.4	0.016	-0.005	-18.5	0.017
-173.0	525.0	1.0	0.219	0.047	12.0	0.224	15.3	0.178	0.016	0.005	18.7	0.017	0.4	0.016	-0.005	-18.7	0.017
-174.0	525.0	1.0	0.216	0.046	11.9	0.221	15.1	0.176	0.016	0.005	18.9	0.016	0.4	0.016	-0.005	-18.9	0.016
-175.0	525.0	1.0	0.213	0.045	11.8	0.218	15.0	0.173	0.015	0.005	19.1	0.016	0.4	0.015	-0.005	-19.1	0.016
-176.0	525.0	1.0	0.210	0.044	11.7	0.214	14.8	0.171	0.015	0.005	19.3	0.016	0.3	0.015	-0.005	-19.3	0.016
-177.0	525.0	1.0	0.207	0.043	11.7	0.211	14.6	0.168	0.015	0.005	19.5	0.016	0.3	0.015	-0.005	-19.5	0.016
-178.0	525.0	1.0	0.204	0.042	11.6	0.209	14.4	0.166	0.015	0.005	19.7	0.016	0.3	0.015	-0.005	-19.7	0.016
-179.0	525.0	1.0	0.202	0.041	11.5	0.206	14.3	0.164	0.015	0.005	19.9	0.015	0.3	0.015	-0.005	-19.9	0.015
-180.0	525.0	1.0	0.199	0.040	11.4	0.203	14.1	0.161	0.014	0.005	20.1	0.015	0.3	0.014	-0.005	-20.1	0.015
-181.0	525.0	1.0	0.196	0.039	11.4	0.200	13.9	0.159	0.014	0.005	20.2	0.015	0.3	0.014	-0.005	-20.2	0.015
-182.0	525.0	1.0	0.194	0.039	11.3	0.197	13.7	0.157	0.014	0.005	20.4	0.015	0.3	0.014	-0.005	-20.4	0.015
-183.0	525.0	1.0	0.191	0.038	11.2	0.195	13.6	0.155	0.014	0.005	20.6	0.015	0.3	0.014	-0.005	-20.6	0.015
-184.0	525.0	1.0	0.189	0.037	11.1	0.192	13.4	0.153	0.014	0.005	20.8	0.015	0.3	0.014	-0.005	-20.8	0.015
-185.0	525.0	1.0	0.186	0.036	11.1	0.190	13.2	0.151	0.013	0.005	21.0	0.014	0.3	0.013	-0.005	-21.0	0.014
-186.0	525.0	1.0	0.184	0.036	11.0	0.187	13.1	0.149	0.013	0.005	21.2	0.014	0.3	0.013	-0.005	-21.2	0.014
-187.0	525.0	1.0	0.181	0.035	10.9	0.185	12.9	0.147	0.013	0.005	21.4	0.014	0.3	0.013	-0.005	-21.4	0.014
-188.0	525.0	1.0	0.179	0.034	10.8	0.182	12.7	0.145	0.013	0.005	21.5	0.014	0.3	0.013	-0.005	-21.5	0.014
-189.0	525.0	1.0	0.177	0.034	10.8	0.180	12.6	0.143	0.013	0.005	21.7	0.014	0.3	0.013	-0.005	-21.7	0.014
-190.0	525.0	1.0	0.174	0.033	10.7	0.177	12.4	0.141	0.013	0.005	21.9	0.014	0.3	0.013	-0.005	-21.9	0.014
-191.0	525.0	1.0	0.172	0.032	10.6	0.175	12.2	0.139	0.012	0.005	22.1	0.013	0.3	0.012	-0.005	-22.1	0.013
-192.0	525.0	1.0	0.170	0.032	10.6	0.173	12.1	0.138	0.012	0.005	22.2	0.013	0.3	0.012	-0.005	-22.2	0.013
-193.0	525.0	1.0	0.168	0.031	10.5	0.171	11.9	0.136	0.012	0.005	22.4	0.013	0.3	0.012	-0.005	-22.4	0.013
-194.0	525.0	1.0	0.166	0.031	10.5	0.169	11.7	0.134	0.012	0.005	22.6	0.013	0.3	0.012	-0.005	-22.6	0.013
-195.0	525.0	1.0	0.164	0.030	10.4	0.167	11.6	0.132	0.012	0.005	22.7	0.013	0.3	0.012	-0.005	-22.7	0.013
-196.0	525.0	1.0	0.162	0.029	10.3	0.164	11.4	0.131	0.012	0.005	22.9	0.013	0.3	0.012	-0.005	-22.9	0.013
-197.0	525.0	1.0	0.160	0.029	10.3	0.162	11.2	0.129	0.012	0.005	23.1	0.013	0.3	0.012	-0.005	-23.1	0.013
-198.0	525.0	1.0	0.158	0.028	10.2	0.160	11.1	0.128	0.011	0.005	23.2	0.012	0.3	0.011	-0.005	-23.2	0.012
-199.0	525.0	1.0	0.156	0.028	10.2	0.158	10.9	0.126	0.011	0.005	23.4	0.012	0.3	0.011	-0.005	-23.4	0.012
-200.0	525.0	1.0	0.154	0.027	10.1	0.156	10.8	0.125	0.011	0.005	23.6	0.012	0.3	0.011	-0.005	-23.6	0.012
-201.0	525.0	1.0	0.152	0.027	10.0	0.155	10.6	0.123	0.011	0.005	23.7	0.012	0.3	0.011	-0.005	-23.7	0.012
-202.0	525.0	1.0	0.150	0.026	10.0	0.153	10.5	0.122	0.011	0.005	23.9	0.012	0.3	0.011	-0.005	-23.9	0.012
-203.0	525.0	1.0	0.149	0.026	9.9	0.151	10.3	0.120	0.011	0.005	24.0	0.012	0.3	0.011	-0.005	-24.0	0.012
-204.0	525.0	1.0	0.147	0.026	9.9	0.149	10.1	0.119	0.011	0.005	24.2	0.012	0.3	0.011	-0.005	-24.2	0.012
-205.0	525.0	1.0	0.145	0.025	9.8	0.147	10.0	0.117	0.011	0.005	24.4	0.012	0.3	0.011	-0.005	-24.4	0.012
-206.0	525.0	1.0	0.143	0.025	9.8	0.146	9.8	0.116	0.010	0.005	24.5	0.011	0.3	0.010	-0.005	-24.5	0.011
-207.0	525.0	1.0	0.142	0.024	9.7	0.144	9.7	0.114	0.010	0.005	24.7	0.011	0.3	0.010	-0.005	-24.7	0.011
-208.0	525.0	1.0	0.140	0.024	9.7	0.142	9.5	0.113	0.010	0.005	24.8	0.011	0.3	0.010	-0.005	-24.8	0.011
-209.0	525.0	1.0	0.139	0.024	9.6	0.141	9.4	0.112	0.010	0.005	25.0	0.011	0.3	0.010	-0.005	-25.0	0.011
-210.0	525.0	1.0	0.137	0.023	9.6	0.139	9.2	0.111	0.010	0.005	25.1	0.011	0.3	0.010	-0.005	-25.1	0.011
-211.0	525.0	1.0	0.135	0.023	9.5	0.137	9.1	0.109	0.010	0.005	25.3	0.011	0.3	0.010	-0.005	-25.3	0.011
-212.0	525.0	1.0	0.134	0.022	9.5	0.136	8.9	0.108	0.010	0.005	25.4	0.011	0.3	0.010	-0.005	-25.4	0.011
-213.0	525.0	1.0	0.132	0.022	9.5	0.134	8.8	0.107	0.010	0.005	25.5	0.011	0.3	0.010	-0.005	-25.6	0.011
-214.0	525.0	1.0	0.131	0.022	9.4	0.133	8.6	0.106	0.009	0.005	25.7	0.010	0.3	0.009	-0.005	-25.7	0.010
-215.0	525.0	1.0	0.129	0.021	9.4	0.131	8.5	0.104	0.009	0.005	25.8	0.010	0.2	0.009	-0.005	-25.8	0.010
-216.0	525.0	1.0	0.128	0.021	9.3	0.130	8.3	0.103	0.009	0.005	26.0	0.010	0.2	0.009	-0.005	-26.0	0.010
-217.0	525.0	1.0	0.127	0.021	9.3	0.128	8.2	0.102	0.009	0.004	26.1	0.010	0.2	0.009	-0.004	-26.1	0.010
-218.0	525.0	1.0	0.125	0.020	9.3	0.127	8.0	0.101	0.009	0.004	26.3	0.010	0.2	0.009	-0.004	-26.3	0.010
-219.0	525.0	1.0	0.124	0.020	9.2	0.125	7.9	0.100	0.009	0.004	26.4	0.010	0.2	0.009	-0.004	-26.4	0.010
-220.0	525.0	1.0	0.122	0.020	9.2	0.124	7.8	0.099	0.009	0.004	26.5	0.010	0.2	0.009	-0.004	-26.5	0.010
-221.0	525.0	1.0	0.121	0.020	9.2	0.123	7.6	0.098	0.009	0.004	26.7	0.010	0.2	0.009	-0.004	-26.7	0.010
-222.0	525.0	1.0	0.120	0.019	9.1	0.121	7.5	0.097	0.009	0.004	26.8	0.010	0.2	0.009	-0.004	-26.8	0.010
-223.0	525.0	1.0	0.119	0.019	9.1	0.120	7.3	0.096	0.009	0.004	26.9	0.010	0.2	0.009	-0.004	-26.9	0.010
-224.0	525.0	1.0	0.117	0.019	9.1	0.119	7.2	0.095	0.008	0.004	27.1	0.009	0.2	0.008	-0.004	-27.1	0.009
-225.0	525.0	1.0	0.116	0.018	9.0	0.118	7.1	0.094	0.008	0.004	27.2	0.009	0.2	0.008	-0.004	-27.2	0.009
-226.0	525.0	1.0	0.115	0.018	9.0	0.116	6.9	0.093	0.008	0.004	27.3	0.009	0.2	0.008	-0.004	-27.3	0.009
-227.0	525.0	1.0	0.114	0.018	9.0	0.115	6.8	0.092	0.008	0.004	27.5	0.009	0.2	0.008	-0.004	-27.5	0.009
-228.0	525.0	1.0	0.083	0.013	9.3	0.084	7.5	0.067	0.006	0.003	29.1	0.007	0.2	0.006	-0.003	-29.1	0.007

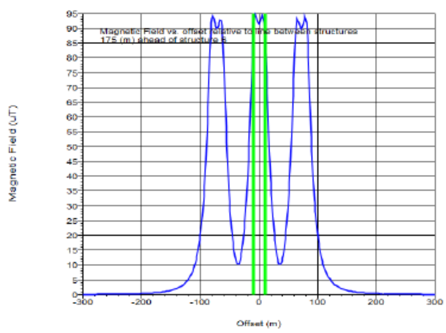
Optimal Phasing of Adjacent Circuits

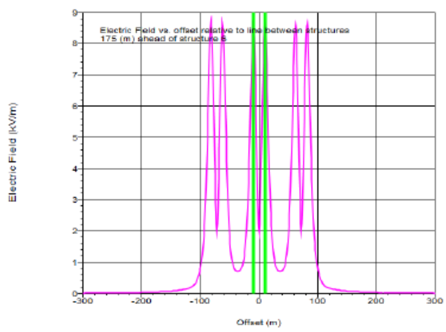
```
PLS-CADD Version 20.01x64    13:59:08 02 July 2025
Scottish and Southern Energy
Project Name: 'C:\PLS\Combined_EMF_Check Temp\Combined_EMF_Check.don'
Line Title: 'Max Op'

3D EMF Calculation Notes:
  1) Calculations based on the EPRI Red Book methods (3rd Edition, 2005 - 7.4 Calculation of Magnetic Fields and Appendices 7.1 Calculation of Field Ellipse Parameters and 7.6 Electric Field Calculations for 3D Geometry).
  2) All wire positions are modeled at the specified weather case and wind direction. Height above ground determined by the modeled ground TIN.
  3) Only the effects of wires are being analyzed. The effects of structures are not included unless enabled as noted below.
  4) Ground return is being ignored for magnetic field calculations.


Meter height above ground:                 1.00 (m)
Maximum wire distance:                   300.00 (m)
Maximum cable segment size:                3.00 (m)
Cross section offset +/-:                300.00 (m)
Result interval:                           1.00 (m)
Electric field limit:                      9.00 (kV/m)
Magnetic field limit:                    360.00 (uT)
Space potential limit:                     0.00 (kV)
Contour Map Spacing:                          3 (m)
Analyzing spans between these structures:  6 - 7

One or more sections have wind from both directions which is not supported. A wind direction of left is being used for those sections.
```

Section Data for 3D EMF Results:

Section Number	Section Note	Voltage Ph-Ph (kV)	Current (Amps)	Cable Filename	Cable Description	Conductors Per Phase	Bundle Diameter (cm)	Cable Radius (cm)	Weather Case	Condition	Wind Dir.	WC Temperature (deg C)	Effective Radius (cm)
1		400.0	5000.0	700mm aaac araucaria.wir	700mm² AAAC - Araucaria (H)	3	57.735	1.863	Max Op	Creep FE	Left	90.000	16.700
2		400.0	5000.0	700mm aaac araucaria.wir	700mm² AAAC - Araucaria (H)	3	57.735	1.863	Max Op	Creep FE	Left	90.000	16.700
3		400.0	5000.0	700mm aaac araucaria.wir	700mm² AAAC - Araucaria (H)	3	57.735	1.863	Max Op	Creep FE	Left	90.000	16.700
4		400.0	5000.0	700mm aaac araucaria.wir	700mm² AAAC - Araucaria (H)	3	57.735	1.863	Max Op	Creep FE	Left	90.000	16.700
5		400.0	5000.0	700mm aaac araucaria.wir	700mm² AAAC - Araucaria (H)	3	57.735	1.863	Max Op	Creep FE	Left	90.000	16.700
6		400.0	5000.0	700mm aaac araucaria.wir	700mm² AAAC - Araucaria (H)	3	57.735	1.863	Max Op	Creep FE	Left	90.000	16.700
7		400.0	5000.0	700mm aaac araucaria.wir	700mm² AAAC - Araucaria (H)	3	57.735	1.863	Max Op	Creep FE	Left	90.000	16.700
8		400.0	5000.0	700mm aaac araucaria.wir	700mm² AAAC - Araucaria (H)	3	57.735	1.863	Max Op	Creep FE	Left	90.000	16.700
9		400.0	5000.0	700mm aaac araucaria.wir	700mm² AAAC - Araucaria (H)	3	57.735	1.863	Max Op	Creep FE	Left	90.000	16.700
10		400.0	5000.0	700mm aaac araucaria.wir	700mm² AAAC - Araucaria (H)	3	57.735	1.863	Max Op	Creep FE	Left	90.000	16.700
11		400.0	5000.0	700mm aaac araucaria.wir	700mm² AAAC - Araucaria (H)	3	57.735	1.863	Max Op	Creep FE	Left	90.000	16.700
12		400.0	5000.0	700mm aaac araucaria.wir	700mm² AAAC - Araucaria (H)	3	57.735	1.863	Max Op	Creep FE	Left	90.000	16.700
13		400.0	5000.0	700mm aaac araucaria.wir	700mm² AAAC - Araucaria (H)	3	57.735	1.863	Max Op	Creep FE	Left	90.000	16.700
14		400.0	5000.0	700mm aaac araucaria.wir	700mm² AAAC - Araucaria (H)	3	57.735	1.863	Max Op	Creep FE	Left	90.000	16.700
15		400.0	5000.0	700mm aaac araucaria.wir	700mm² AAAC - Araucaria (H)	3	57.735	1.863	Max Op	Creep FE	Left	90.000	16.700
16		400.0	5000.0	700mm aaac araucaria.wir	700mm² AAAC - Araucaria (H)	3	57.735	1.863	Max Op	Creep FE	Left	90.000	16.700
17		400.0	5000.0	700mm aaac araucaria.wir	700mm² AAAC - Araucaria (H)	3	57.735	1.863	Max Op	Creep FE	Left	90.000	16.700
18		400.0	5000.0	700mm aaac araucaria.wir	700mm² AAAC - Araucaria (H)	3	57.735	1.863	Max Op	Creep FE	Left	90.000	16.700

Wire low point cross section results between structures 6 and 7





Scottish & Southern Electricity Networks

3D EMF Point Results Span from 6 to 7:

Measurement			B					H	EF					Space Potential			
X (m)	Y (m)	Z (m)	Real (uT)	Imaginary (uT)	Angle (deg)	Magnitude (uT)	Polarization Axial Ratio %	Magnitude (A/m)	Real (kV/m)	Imaginary (kV/m)	Angle (deg)	Magnitude (kV/m)	Polarization Axial Ratio %	Real (kV)	Imaginary (kV)	Angle (deg)	Magnitude (kV)
372.0	525.0	1.0	0.052	0.066	51.7	0.084	7.5	0.067	0.002	0.008	78.2	0.008	0.2	-0.002	-0.008	78.2	0.008
371.0	525.0	1.0	0.023	0.062	69.6	0.066	12.7	0.053	0.001	0.009	86.2	0.009	0.2	0.001	-0.009	-86.2	0.009
370.0	525.0	1.0	0.023	0.063	69.5	0.067	12.9	0.053	0.001	0.009	86.3	0.009	0.2	0.001	-0.009	-86.3	0.009
369.0	525.0	1.0	0.024	0.064	69.5	0.068	13.1	0.054	0.001	0.009	86.4	0.009	0.2	0.001	-0.009	-86.4	0.009
368.0	525.0	1.0	0.024	0.064	69.5	0.069	13.3	0.055	0.001	0.009	86.5	0.009	0.2	0.001	-0.009	-86.5	0.009
367.0	525.0	1.0	0.024	0.065	69.4	0.069	13.5	0.055	0.001	0.009	86.6	0.009	0.2	0.001	-0.009	-86.6	0.009
366.0	525.0	1.0	0.025	0.066	69.4	0.070	13.8	0.056	0.001	0.009	86.7	0.009	0.2	0.001	-0.009	-86.7	0.009
365.0	525.0	1.0	0.025	0.066	69.4	0.071	14.0	0.057	0.001	0.009	86.8	0.009	0.2	0.001	-0.009	-86.8	0.009
364.0	525.0	1.0	0.025	0.067	69.3	0.072	14.2	0.057	0.000	0.009	86.9	0.009	0.2	0.000	-0.009	-86.9	0.009
363.0	525.0	1.0	0.026	0.068	69.3	0.073	14.4	0.058	0.000	0.009	87.0	0.009	0.2	0.000	-0.009	-87.0	0.009
362.0	525.0	1.0	0.026	0.069	69.2	0.074	14.6	0.059	0.000	0.009	87.1	0.009	0.2	0.000	-0.009	-87.1	0.009
361.0	525.0	1.0	0.026	0.070	69.2	0.074	14.9	0.059	0.000	0.009	87.2	0.010	0.2	0.000	-0.009	-87.2	0.010
360.0	525.0	1.0	0.027	0.070	69.1	0.075	15.1	0.060	0.000	0.010	87.3	0.010	0.2	0.000	-0.010	-87.3	0.010
359.0	525.0	1.0	0.027	0.071	69.1	0.076	15.3	0.061	0.000	0.010	87.5	0.010	0.2	0.000	-0.010	-87.5	0.010
358.0	525.0	1.0	0.028	0.072	69.0	0.077	15.5	0.061	0.000	0.010	87.6	0.010	0.2	0.000	-0.010	-87.6	0.010
357.0	525.0	1.0	0.028	0.073	69.0	0.078	15.7	0.062	0.000	0.010	87.7	0.010	0.2	0.000	-0.010	-87.7	0.010
356.0	525.0	1.0	0.028	0.074	68.9	0.079	16.0	0.063	0.000	0.010	87.8	0.010	0.2	0.000	-0.010	-87.8	0.010
355.0	525.0	1.0	0.029	0.075	68.9	0.080	16.2	0.064	0.000	0.010	87.9	0.010	0.2	0.000	-0.010	-87.9	0.010
354.0	525.0	1.0	0.029	0.076	68.8	0.081	16.4	0.065	0.000	0.010	88.0	0.010	0.2	0.000	-0.010	-88.0	0.010
353.0	525.0	1.0	0.030	0.076	68.8	0.082	16.7	0.065	0.000	0.010	88.2	0.010	0.2	0.000	-0.010	-88.2	0.010
352.0	525.0	1.0	0.030	0.077	68.7	0.083	16.9	0.066	0.000	0.010	88.3	0.010	0.2	0.000	-0.010	-88.3	0.010
351.0	525.0	1.0	0.031	0.078	68.6	0.084	17.1	0.067	0.000	0.010	88.4	0.010	0.2	0.000	-0.010	-88.4	0.010
350.0	525.0	1.0	0.031	0.079	68.6	0.085	17.3	0.068	0.000	0.011	88.5	0.011	0.2	0.000	-0.011	-88.5	0.011
349.0	525.0	1.0	0.032	0.080	68.5	0.086	17.6	0.069	0.000	0.011	88.6	0.011	0.2	0.000	-0.011	-88.6	0.011
348.0	525.0	1.0	0.032	0.081	68.5	0.087	17.8	0.070	0.000	0.011	88.8	0.011	0.2	0.000	-0.011	-88.8	0.011
347.0	525.0	1.0	0.033	0.082	68.4	0.089	18.0	0.070	0.000	0.011	88.9	0.011	0.2	0.000	-0.011	-88.9	0.011
346.0	525.0	1.0	0.033	0.083	68.3	0.090	18.3	0.071	0.000	0.011	89.0	0.011	0.2	0.000	-0.011	-89.0	0.011
345.0	525.0	1.0	0.034	0.084	68.2	0.091	18.5	0.072	0.000	0.011	89.2	0.011	0.2	0.000	-0.011	-89.2	0.011
344.0	525.0	1.0	0.034	0.086	68.2	0.092	18.7	0.073	0.000	0.011	89.3	0.011	0.2	0.000	-0.011	-89.3	0.011
343.0	525.0	1.0	0.035	0.087	68.1	0.093	18.9	0.074	0.000	0.011	89.4	0.011	0.2	0.000	-0.011	-89.4	0.011
342.0	525.0	1.0	0.035	0.088	68.0	0.095	19.2	0.075	0.000	0.011	89.5	0.011	0.2	0.000	-0.011	-89.6	0.011
341.0	525.0	1.0	0.036	0.089	68.0	0.096	19.4	0.076	0.000	0.012	89.7	0.012	0.2	0.000	-0.012	-89.7	0.012
340.0	525.0	1.0	0.037	0.090	67.9	0.097	19.6	0.077	0.000	0.012	89.8	0.012	0.2	0.000	-0.012	-89.8	0.012
339.0	525.0	1.0	0.037	0.091	67.8	0.099	19.9	0.078	0.000	0.012	89.9	0.012	0.2	0.000	-0.012	-90.0	0.012
338.0	525.0	1.0	0.038	0.092	67.7	0.100	20.1	0.079	0.000	0.012	89.8	0.012	0.3	-0.000	-0.012	89.9	0.012
337.0	525.0	1.0	0.039	0.094	67.6	0.101	20.4	0.081	0.000	0.012	89.7	0.012	0.3	-0.000	-0.012	89.7	0.012
336.0	525.0	1.0	0.039	0.095	67.5	0.103	20.6	0.082	0.000	0.012	89.5	0.012	0.3	-0.000	-0.012	89.6	0.012
335.0	525.0	1.0	0.040	0.096	67.5	0.104	20.8	0.083	0.000	0.012	89.4	0.012	0.3	-0.000	-0.012	89.4	0.012
334.0	525.0	1.0	0.041	0.097	67.4	0.106	21.1	0.084	0.000	0.012	89.3	0.012	0.3	-0.000	-0.012	89.3	0.012
333.0	525.0	1.0	0.041	0.099	67.3	0.107	21.3	0.085	0.000	0.013	89.1	0.013	0.3	-0.000	-0.013	89.1	0.013
332.0	525.0	1.0	0.042	0.100	67.2	0.109	21.5	0.086	0.000	0.013	89.0	0.013	0.3	-0.000	-0.013	89.0	0.013
331.0	525.0	1.0	0.043	0.101	67.1	0.110	21.8	0.088	0.000	0.013	88.8	0.013	0.3	-0.000	-0.013	88.8	0.013
330.0	525.0	1.0	0.044	0.103	67.0	0.112	22.0	0.089	0.000	0.013	88.6	0.013	0.3	-0.000	-0.013	88.6	0.013
329.0	525.0	1.0	0.044	0.104	66.9	0.113	22.2	0.090	0.000	0.013	88.5	0.013	0.3	-0.000	-0.013	88.5	0.013
328.0	525.0	1.0	0.045	0.106	66.8	0.115	22.5	0.092	0.000	0.013	88.3	0.013	0.3	-0.000	-0.013	88.3	0.013
327.0	525.0	1.0	0.046	0.107	66.7	0.117	22.7	0.093	0.000	0.013	88.1	0.013	0.3	-0.000	-0.013	88.2	0.013
326.0	525.0	1.0	0.047	0.109	66.6	0.119	23.0	0.094	0.000	0.014	88.0	0.014	0.3	-0.000	-0.014	88.0	0.014
325.0	525.0	1.0	0.048	0.110	66.5	0.120	23.2	0.096	0.001	0.014	87.8	0.014	0.3	-0.001	-0.014	87.8	0.014
324.0	525.0	1.0	0.049	0.112	66.4	0.122	23.4	0.097	0.001	0.014	87.6	0.014	0.3	-0.001	-0.014	87.6	0.014
323.0	525.0	1.0	0.050	0.114	66.3	0.124	23.7	0.099	0.001	0.014	87.5	0.014	0.3	-0.001	-0.014	87.5	0.014
322.0	525.0	1.0	0.051	0.115	66.2	0.126	23.9	0.100	0.001	0.014	87.3	0.014	0.3	-0.001	-0.014	87.3	0.014
321.0	525.0	1.0	0.052	0.117	66.1	0.128	24.2	0.102	0.001	0.014	87.1	0.014	0.3	-0.001	-0.014	87.1	0.014
320.0	525.0	1.0	0.053	0.119	66.0	0.130	24.4	0.103	0.001	0.015	86.9	0.015	0.3	-0.001	-0.015	86.9	0.015
319.0	525.0	1.0	0.054	0.120	65.9	0.132	24.6	0.105	0.001	0.015	86.7	0.015	0.3	-0.001	-0.015	86.7	0.015
318.0	525.0	1.0	0.055	0.122	65.8	0.134	24.9	0.107	0.001	0.015	86.6	0.015	0.3	-0.001	-0.015	86.6	0.015
317.0	525.0	1.0	0.056	0.124	65.7	0.136	25.1	0.108	0.001	0.015	86.4	0.015	0.3	-0.001	-0.015	86.4	0.015
316.0	525.0	1.0	0.057	0.126	65.6	0.138	25.4	0.110	0.001	0.015	86.2	0.015	0.3	-0.001	-0.015	86.2	0.015
315.0	525.0	1.0	0.046	0.125	69.6	0.133	25.8	0.106	0.001	0.017	88.0	0.017	0.4	0.001	-0.017	-88.0	0.017
314.0	525.0	1.0	0.047	0.127	69.4	0.135	26.0	0.108	0.001	0.017	88.2	0.017	0.4	0.001	-0.017	-88.2	0.017
313.0	525.0	1.0	0.049	0.129	69.3	0.137	26.3	0.109	0.000	0.017	88.4	0.017	0.4	0.000	-0.017	-88.4	0.017
312.0	525.0	1.0	0.050	0.131	69.1	0.140	26.5	0.111	0.000	0.017	88.6	0.017	0.4	0.000	-0.017	-88.6	0.017
311.0	525.0	1.0	0.051	0.133	68.9	0.142	26.7	0.113	0.000	0.017	88.8	0.017	0.4	0.000	-0.017	-88.9	0.017
310.0	525.0	1.0	0.053	0.135	68.7	0.145	26.9	0.115	0.000	0.018	89.1	0.018	0.4	0.000	-0.018	-89.1	0.018
309.0	525.0	1.0	0.054	0.137	68.5	0.147	27.2	0.117	0.000	0.018	89.3	0.018	0.4	0.000	-0.018	-89.3	0.018
308.0	525.0	1.0	0.055	0.139	68.3	0.150	27.4	0.119	0.000	0.018	89.5	0.018	0.4	0.000	-0.018	-89.6	0.018
307.0	525.0	1.0	0.057	0.142	68.2	0.152	27.6	0.121	0.000	0.018	89.7	0.018	0.4	0.000	-0.018	-89.8	0.018
306.0	525.0	1.0	0.058	0.144	68.0	0.155	27.8	0.124	0.000	0.018	89.7	0.018	0.4	-0.000	-0.018	90.0	0.018
305.0	525.0	1.0	0.060	0.146	67.8	0.158	28.1	0.126	0.000	0.019	89.6	0.019	0.4	-0.000	-0.019	89.7	0.019
304.0	525.0	1.0	0.061	0.149	67.6	0.161	28.3	0.128	0.000	0.019	89.4	0.019	0.4	-0.000	-0.019	89.5	0.019
303.0	525.0	1.0	0.063	0.151	67.4	0.164	28.5	0.130	0.000	0.019	89.2	0.019	0.4	-0.000	-0.019	89.2	0.019
302.0	525.0	1.0	0.065	0.154	67.2	0.167	28.8	0.133	0.000	0.019	88.9	0.019	0.5	-0.000	-0.019	88.9	0.019
301.0	525.0	1.0	0.066	0.156	67.0	0.170	29.0	0.135	0.000	0.019	88.7	0.019	0.5	-0.000	-0.019	88.7	0.019
300.0	525.0	1.0	0.068	0.159	66.9	0.173	29.2	0.138	0.001	0.020	88.4	0.020	0.5	-0.001	-0.020	88.4	0.020
299.0	525.0	1.0	0.085	0.186	65.4	0.204	25.8	0.163	0.001	0.022	88.1	0.022	0.4	-0.001	-0.022	88.2	0.022
298.0	525.0	1.0	0.087	0.189	65.2	0.208	26.0	0.166	0.001	0.022	87.9	0.022	0.5	-0.001	-0.022	87.9	0.022
297.0	525.0	1.0	0.089	0.192	65.1	0.212	26.2	0.169	0.001	0.023	87.6	0.023	0.5	-0.001	-0.023	87.6	0.023
296.0	525.0	1.0	0.091	0.195	64.9	0.216	26.5	0.172	0.001	0.023	87.4	0.023	0.5	-0.001	-0.023	87.4	0.023
295.0	525.0	1.0	0.094	0.199	64.7	0.220	26.7	0.175	0.001	0.023	87.1	0.023	0.5	-0.001	-0.023	87.1	0.023
294.0	525.0	1.0	0.096	0.202	64.6	0.224	26.9	0.178	0.001	0.024	86.8	0.024	0.5	-0.001	-0.024	86.8	0.024
293.0	525.0	1.0	0.098	0.205	64.4	0.228	27.2	0.181	0.001	0.024	86.5	0.024	0.5	-0.001	-0.024	86.6	0.024
292.0	525.0	1.0	0.101	0.209	64.2	0.232	27.4	0.185	0.002	0.024	86.3	0.024	0.5	-0.002	-0.024	86.3	0.024
291.0	525.0	1.0	0.103	0.213	64.1	0.236	27.7	0.188	0.002	0.024	86.0	0.024	0.5	-0.002	-0.024	86.0	0.024
290.0	525.0	1.0	0.106	0.216	63.9	0.241	27.9	0.192	0.002	0.025	85.7	0.025	0.5	-0.002	-0.025	85.7	0.025
289.0	525.0	1.0	0.109	0.220	63.7	0.245	28.1	0.195	0.002	0.025	85.4	0.025	0.5	-0.002	-0.025	85.4	0.025
288.0	525.0	1.0	0.111	0.224	63.6	0.250	28.4	0.199	0.002	0.025	85.1	0.025	0.5	-0.002	-0.025	85.1	0.025
287.0	525.0	1.0	0.114	0.228	63.4	0.255	28.6	0.203	0.002	0.026	84.8	0.026	0.5	-0.002	-0.026	84.8	0.026
286.0	525.0	1.0	0.117	0.232	63.2	0.260	28.9	0.207	0.002	0.026	84.5	0.026	0.5	-0.002	-0.026	84.5	0.026
285.0	525.0	1.0	0.120	0.236	63.1	0.265	29.1	0.211	0.003	0.026	84.2	0.026	0.5	-0.003	-0.026	84.2	0.026
284.0	525.0	1.0	0.123	0.241	62.9	0.270	29.3	0.215	0.003	0.027	83.9	0.027	0.6	-0.003	-0.027	83.9	0.027
283.0	525.0	1.0	0.126	0.245	62.7	0.276	29.6	0.219	0.003	0.027	83.6	0.027	0.6	-0.003	-0.027	83.6	0.027
282.0	525.0	1.0	0.130	0.249	62.5	0.281	29.8	0.224	0.003	0.027	83.2	0.027	0.6	-0.003	-0.027	83.2	0.027
281.0	525.0	1.0	0.133	0.254	62.4	0.287	30.1	0.228	0.003	0.027	82.9	0.028	0.6	-0.003	-0.028	82.9	0.028
280.0	525.0	1.0	0.137	0.259	62.2	0.293	30.3	0.233	0.004	0.028	82.6	0.028	0.6	-0.004	-0.028	82.6	0.028
279.0	525.0	1.0	0.140	0.264	62.0	0.299	30.5	0.238	0.004	0.028	82.2	0.028	0.6	-0.004	-0.028	82.2	0.028
278.0	525.0	1.0	0.144	0.269	61.8	0.305	30.8	0.243	0.004	0.029	81.9	0.029	0.6	-0.004	-0.029	81.9	0.029
277.0	525.0	1.0	0.148	0.274	61.6	0.311	31.0	0.248	0.004	0.029	81.5	0.029	0.6	-0.004	-0.029	81.5	0.029
276.0	525.0	1.0	0.152	0.279	61.5	0.318	31.2	0.253	0.005	0.029	81.2	0.030	0.6	-0.005	-0.029	81.2	0.030
275.0	525.0	1.0	0.156	0.285	61.3	0.325	31.5	0.258	0.005	0.030	80.8	0.030	0.6	-0.005	-0.030	80.8	0.030
274.0	525.0	1.0	0.160	0.290	61.1	0.332	31.7	0.264	0.005	0.030	80.4	0.030	0.7	-0.005	-0.030	80.4	0.030
273.0	525.0	1.0	0.165	0.296	60.9	0.339	32.0	0.270	0.005	0.030	80.0	0.031	0.7	-0.005	-0.030	80.1	0.031
272.0	525.0	1.0	0.169	0.302	60.7	0.346	32.2	0.276	0.006	0.031	79.7	0.031	0.7	-0.006	-0.031	79.7	0.031
271.0	525.0	1.0	0.174	0.308	60.5	0.354	32.4	0.282	0.006	0.031	79.3	0.032	0.7	-0.006	-0.031	79.3	0.032
270.0	525.0	1.0	0.179	0.314	60.4	0.362	32.7	0.288	0.006	0.032	78.9	0.032	0.7	-0.006	-0.032	78.9	0.032
269.0	525.0	1.0	0.184	0.321	60.2	0.370	32.9	0.294	0.007	0.032	78.5	0.033	0.7	-0.007	-0.032	78.5	0.033
268.0	525.0	1.0	0.189	0.327	60.0	0.378	33.2	0.301	0.007	0.032	78.1	0.033	0.7	-0.007	-0.032	78.1	0.033
267.0	525.0	1.0	0.195	0.334	59.8	0.387	33.4	0.308	0.007	0.033	77.7	0.034	0.7	-0.007	-0.033	77.7	0.034
266.0	525.0	1.0	0.200	0.341	59.6	0.396	33.6	0.315	0.008	0.033	77.2	0.034	0.7	-0.008	-0.033	77.2	0.034
265.0	525.0	1.0	0.206	0.349	59.4	0.405	33.9	0.322	0.008	0.034	76.8	0.035	0.8	-0.008	-0.034	76.8	0.035
264.0	525.0	1.0	0.212	0.356	59.2	0.414	34.1	0.330	0.008	0.034	76.4	0.035	0.8	-0.008	-0.034	76.4	0.035
263.0	525.0	1.0	0.218	0.364	59.0	0.424	34.3	0.338	0.009	0.035	75.9	0.036	0.8	-0.009	-0.035	75.9	0.036
262.0	525.0	1.0	0.225	0.372	58.8	0.434	34.6	0.346	0.009	0.035	75.5	0.036	0.8	-0.009	-0.035	75.5	0.036
261.0	525.0	1.0	0.232	0.380	58.6	0.445	34.8	0.354	0.009	0.035	75.0	0.037	0.8	-0.009	-0.035	75.0	0.037
260.0	525.0	1.0	0.238	0.388	58.4	0.456	35.0	0.363	0.010	0.036	74.5	0.037	0.8	-0.010	-0.036	74.5	0.037
259.0	525.0	1.0	0.246	0.397	58.3	0.467	35.3	0.372	0.010	0.036	74.1	0.038	0.8	-0.010	-0.036	74.1	0.038
258.0	525.0	1.0	0.253	0.406	58.1	0.478	35.5	0.381	0.011	0.037	73.6	0.038	0.9	-0.011	-0.037	73.6	0.038
257.0	525.0	1.0	0.261	0.415	57.9	0.490	35.7	0.390	0.011	0.037	73.1	0.039	0.9	-0.011	-0.037	73.1	0.039
256.0	525.0	1.0	0.269	0.425	57.7	0.503	35.9	0.400	0.012	0.038	72.6	0.040	0.9	-0.012	-0.038	72.6	0.040
255.0	525.0	1.0	0.277	0.435	57.5	0.516	36.2	0.410	0.012	0.038	72.1	0.040	0.9	-0.012	-0.038	72.1	0.040
254.0	525.0	1.0	0.286	0.445	57.3	0.529	36.4	0.421	0.013	0.039	71.5	0.041	0.9	-0.013	-0.039	71.5	0.041
253.0	525.0	1.0	0.295	0.455	57.1	0.543	36.6	0.432	0.014	0.039	71.0	0.042	0.9	-0.014	-0.039	71.0	0.042
252.0	525.0	1.0	0.304	0.466	56.9	0.557	36.8	0.443	0.014	0.040	70.5	0.042	1.0	-0.014	-0.040	70.5	0.042
251.0	525.0	1.0	0.314	0.478	56.7	0.572	37.1	0.455	0.015	0.040	69.9	0.043	1.0	-0.015	-0.040	69.9	0.043
250.0	525.0	1.0	0.324	0.489	56.5	0.587	37.3	0.467	0.015	0.041	69.3	0.044	1.0	-0.015	-0.041	69.4	0.044
249.0	525.0	1.0	0.335	0.501	56.3	0.603	37.5	0.480	0.016	0.041	68.8	0.044	1.0	-0.016	-0.041	68.8	0.044
248.0	525.0	1.0	0.346	0.514	56.0	0.619	37.7	0.493	0.017	0.042	68.2	0.045	1.0	-0.017	-0.042	68.2	0.045
247.0	525.0	1.0	0.357	0.527	55.8	0.636	38.0	0.506	0.018	0.042	67.6	0.046	1.1	-0.018	-0.043	67.6	0.046
246.0	525.0	1.0	0.369	0.540	55.6	0.654	38.2	0.521	0.018	0.043	67.0	0.047	1.1	-0.018	-0.043	67.0	0.047
245.0	525.0	1.0	0.382	0.554	55.4	0.673	38.4	0.535	0.019	0.044	66.4	0.048	1.1	-0.019	-0.044	66.4	0.048
244.0	525.0	1.0	0.395	0.568	55.2	0.692	38.6	0.550	0.020	0.044	65.7	0.048	1.1	-0.020	-0.044	65.7	0.048
243.0	525.0	1.0	0.416	0.593	55.0	0.725	37.7	0.577	0.020	0.047	66.5	0.051	1.1	-0.020	-0.047	66.5	0.051
242.0	525.0	1.0	0.430	0.609	54.8	0.745	37.9	0.593	0.021	0.047	65.8	0.052	1.2	-0.021	-0.047	65.8	0.052
241.0	525.0	1.0	0.445	0.625	54.6	0.767	38.2	0.610	0.022	0.048	65.1	0.053	1.2	-0.022	-0.048	65.1	0.053
240.0	525.0	1.0	0.460	0.641	54.3	0.789	38.4	0.628	0.023	0.048	64.5	0.054	1.2	-0.023	-0.048	64.5	0.054
239.0	525.0	1.0	0.476	0.658	54.1	0.812	38.6	0.647	0.024	0.049	63.8	0.055	1.2	-0.024	-0.049	63.8	0.055
238.0	525.0	1.0	0.493	0.676	53.9	0.837	38.9	0.666	0.025	0.050	63.0	0.056	1.3	-0.025	-0.050	63.1	0.056
237.0	525.0	1.0	0.510	0.695	53.7	0.862	39.1	0.686	0.026	0.050	62.3	0.057	1.3	-0.026	-0.050	62.3	0.057
236.0	525.0	1.0	0.528	0.714	53.5	0.888	39.3	0.707	0.027	0.051	61.6	0.058	1.3	-0.027	-0.051	61.6	0.058
235.0	525.0	1.0	0.547	0.734	53.3	0.916	39.5	0.729	0.029	0.051	60.8	0.059	1.3	-0.029	-0.051	60.8	0.059
234.0	525.0	1.0	0.567	0.755	53.1	0.944	39.8	0.752	0.030	0.052	60.0	0.060	1.4	-0.030	-0.052	60.0	0.060
233.0	525.0	1.0	0.588	0.777	52.9	0.974	40.0	0.775	0.031	0.052	59.2	0.061	1.4	-0.031	-0.052	59.2	0.061
232.0	525.0	1.0	0.610	0.799	52.6	1.006	40.2	0.800	0.033	0.053	58.4	0.062	1.4	-0.033	-0.053	58.4	0.062
231.0	525.0	1.0	0.633	0.823	52.4	1.038	40.4	0.826	0.034	0.053	57.6	0.063	1.5	-0.034	-0.053	57.6	0.063
230.0	525.0	1.0	0.657	0.847	52.2	1.072	40.7	0.853	0.035	0.054	56.7	0.065	1.5	-0.035	-0.054	56.7	0.065
229.0	525.0	1.0	0.682	0.873	52.0	1.108	40.9	0.882	0.037	0.054	55.9	0.066	1.6	-0.037	-0.054	55.9	0.066
228.0	525.0	1.0	0.709	0.899	51.8	1.145	41.1	0.911	0.039	0.055	55.0	0.067	1.6	-0.039	-0.055	55.0	0.067
227.0	525.0	1.0	0.736	0.927	51.6	1.184	41.3	0.942	0.040	0.055	54.0	0.069	1.6	-0.040	-0.055	54.0	0.068
226.0	525.0	1.0	0.765	0.956	51.3	1.225	41.5	0.975	0.042	0.056	53.1	0.070	1.7	-0.042	-0.056	53.1	0.070
225.0	525.0	1.0	0.796	0.986	51.1	1.267	41.7	1.009	0.044	0.056	52.1	0.071	1.7	-0.044	-0.056	52.1	0.071
224.0	525.0	1.0	0.828	1.018	50.9	1.312	41.9	1.044	0.046	0.057	51.1	0.073	1.8	-0.046	-0.057	51.1	0.073
223.0	525.0	1.0	0.861	1.051	50.7	1.359	42.2	1.081	0.048	0.057	50.1	0.074	1.8	-0.048	-0.057	50.1	0.074
222.0	525.0	1.0	0.897	1.086	50.4	1.408	42.4	1.121	0.050	0.057	49.1	0.076	1.9	-0.050	-0.057	49.1	0.076
221.0	525.0	1.0	0.934	1.122	50.2	1.460	42.6	1.162	0.052	0.058	48.0	0.078	1.9	-0.052	-0.058	48.0	0.078
220.0	525.0	1.0	0.974	1.160	50.0	1.514	42.8	1.205	0.054	0.058	46.9	0.079	2.0	-0.054	-0.058	46.9	0.079
219.0	525.0	1.0	1.015	1.199	49.8	1.571	43.0	1.250	0.057	0.058	45.7	0.081	2.0	-0.057	-0.058	45.7	0.081
218.0	525.0	1.0	1.059	1.241	49.5	1.631	43.2	1.298	0.059	0.058	44.6	0.083	2.1	-0.059	-0.058	44.6	0.083

217.0	525.0	1.0	1.105	1.284	49.3	1.694	43.4	1.348	0.062	0.058	43.3	0.085	2.2	-0.062	-0.058	43.3	0.085
216.0	525.0	1.0	1.154	1.330	49.1	1.761	43.6	1.401	0.064	0.058	42.1	0.087	2.2	-0.064	-0.058	42.1	0.086
215.0	525.0	1.0	1.205	1.378	48.8	1.830	43.8	1.457	0.067	0.058	40.8	0.088	2.3	-0.067	-0.058	40.8	0.088
214.0	525.0	1.0	1.259	1.428	48.6	1.904	44.0	1.515	0.070	0.058	39.5	0.091	2.4	-0.070	-0.058	39.5	0.090
213.0	525.0	1.0	1.317	1.481	48.4	1.982	44.2	1.577	0.073	0.057	38.1	0.093	2.5	-0.073	-0.057	38.1	0.093
212.0	525.0	1.0	1.378	1.537	48.1	2.064	44.4	1.642	0.076	0.057	36.7	0.095	2.5	-0.076	-0.057	36.6	0.095
211.0	525.0	1.0	1.442	1.595	47.9	2.151	44.6	1.711	0.079	0.056	35.2	0.097	2.6	-0.079	-0.056	35.2	0.097
210.0	525.0	1.0	1.511	1.657	47.6	2.242	44.8	1.784	0.083	0.055	33.6	0.099	2.7	-0.083	-0.055	33.6	0.099
209.0	525.0	1.0	1.583	1.722	47.4	2.339	45.0	1.861	0.086	0.054	32.1	0.102	2.8	-0.086	-0.054	32.0	0.102
208.0	525.0	1.0	1.660	1.790	47.2	2.442	45.1	1.943	0.090	0.053	30.4	0.104	3.0	-0.090	-0.053	30.4	0.104
207.0	525.0	1.0	1.742	1.863	46.9	2.550	45.3	2.029	0.094	0.051	28.7	0.107	3.1	-0.094	-0.051	28.7	0.107
206.0	525.0	1.0	1.829	1.939	46.7	2.665	45.5	2.121	0.098	0.050	26.9	0.110	3.2	-0.098	-0.050	26.9	0.110
205.0	525.0	1.0	1.921	2.019	46.4	2.787	45.7	2.218	0.102	0.048	25.1	0.113	3.3	-0.102	-0.048	25.0	0.112
204.0	525.0	1.0	2.020	2.104	46.2	2.917	45.9	2.321	0.106	0.045	23.1	0.116	3.5	-0.106	-0.045	23.0	0.115
203.0	525.0	1.0	2.125	2.194	45.9	3.054	46.1	2.431	0.111	0.043	21.1	0.119	3.6	-0.111	-0.042	21.0	0.118
202.0	525.0	1.0	2.237	2.289	45.7	3.201	46.3	2.547	0.115	0.040	19.0	0.122	3.8	-0.115	-0.039	18.9	0.122
201.0	525.0	1.0	2.357	2.390	45.4	3.357	46.5	2.671	0.120	0.036	16.8	0.125	4.0	-0.120	-0.036	16.7	0.125
200.0	525.0	1.0	2.485	2.497	45.1	3.523	46.7	2.803	0.125	0.032	14.5	0.129	4.2	-0.125	-0.032	14.3	0.129
199.0	525.0	1.0	2.622	2.610	44.9	3.699	46.9	2.944	0.130	0.028	12.2	0.133	4.4	-0.130	-0.027	11.9	0.132
198.0	525.0	1.0	2.769	2.730	44.6	3.888	47.1	3.094	0.135	0.023	9.7	0.137	4.6	-0.135	-0.022	9.3	0.136
197.0	525.0	1.0	2.926	2.858	44.3	4.090	47.3	3.255	0.140	0.018	7.2	0.141	4.8	-0.140	-0.016	6.6	0.141
196.0	525.0	1.0	3.095	2.993	44.0	4.305	47.5	3.426	0.145	0.012	4.8	0.145	5.1	-0.145	-0.010	3.8	0.145
195.0	525.0	1.0	3.276	3.138	43.8	4.536	47.7	3.610	0.150	0.008	3.2	0.150	5.3	-0.150	-0.002	0.9	0.150
194.0	525.0	1.0	3.471	3.291	43.5	4.783	47.9	3.806	0.155	0.011	3.9	0.156	5.6	-0.155	0.006	-2.2	0.155
193.0	525.0	1.0	3.681	3.455	43.2	5.048	48.1	4.017	0.160	0.018	6.4	0.161	5.9	-0.160	0.015	-5.5	0.161
192.0	525.0	1.0	3.907	3.629	42.9	5.332	48.3	4.243	0.165	0.028	9.6	0.168	6.1	-0.165	0.026	-8.9	0.167
191.0	525.0	1.0	4.151	3.815	42.6	5.638	48.5	4.487	0.170	0.039	13.0	0.175	6.4	-0.170	0.038	-12.5	0.174
190.0	525.0	1.0	4.416	4.013	42.3	5.967	48.7	4.748	0.175	0.052	16.7	0.182	6.7	-0.174	0.051	-16.3	0.182
189.0	525.0	1.0	4.701	4.225	41.9	6.321	48.9	5.030	0.179	0.067	20.6	0.191	7.0	-0.178	0.066	-20.2	0.190
188.0	525.0	1.0	5.011	4.451	41.6	6.702	49.1	5.334	0.182	0.083	24.6	0.200	7.3	-0.182	0.082	-24.3	0.199
187.0	525.0	1.0	5.347	4.693	41.3	7.114	49.3	5.661	0.185	0.102	28.8	0.211	7.6	-0.184	0.100	-28.6	0.210
186.0	525.0	1.0	5.712	4.952	40.9	7.560	49.4	6.016	0.187	0.122	33.2	0.223	7.9	-0.186	0.121	-33.0	0.222
185.0	525.0	1.0	6.109	5.229	40.6	8.042	49.6	6.399	0.187	0.145	37.7	0.237	8.1	-0.187	0.144	-37.6	0.236
184.0	525.0	1.0	6.543	5.526	40.2	8.564	49.8	6.815	0.186	0.170	42.4	0.252	8.4	-0.186	0.169	-42.3	0.251
183.0	525.0	1.0	7.015	5.844	39.8	9.131	49.9	7.266	0.184	0.198	47.1	0.270	8.6	-0.183	0.197	-47.1	0.269
182.0	525.0	1.0	7.532	6.185	39.4	9.746	50.0	7.756	0.179	0.229	52.0	0.291	8.8	-0.178	0.228	-52.0	0.289
181.0	525.0	1.0	8.098	6.551	39.0	10.416	50.1	8.289	0.171	0.264	57.0	0.314	8.9	-0.170	0.262	-57.1	0.312
180.0	525.0	1.0	8.719	6.944	38.5	11.146	50.2	8.870	0.160	0.302	62.0	0.341	9.1	-0.158	0.300	-62.2	0.339
179.0	525.0	1.0	9.401	7.365	38.1	11.942	50.3	9.503	0.145	0.343	67.1	0.373	9.2	-0.142	0.342	-67.4	0.370
178.0	525.0	1.0	10.152	7.816	37.6	12.813	50.3	10.196	0.125	0.389	72.2	0.409	9.3	-0.121	0.388	-72.7	0.406
177.0	525.0	1.0	10.981	8.300	37.1	13.765	50.2	10.954	0.101	0.439	77.1	0.451	9.4	-0.093	0.438	-78.0	0.447
176.0	525.0	1.0	11.896	8.820	36.6	14.809	50.1	11.785	0.073	0.494	81.6	0.499	9.5	-0.057	0.492	-83.4	0.495
175.0	525.0	1.0	12.909	9.376	36.0	15.955	49.9	12.697	0.054	0.553	84.5	0.556	9.6	-0.011	0.551	-88.9	0.552
174.0	525.0	1.0	14.033	9.973	35.4	17.216	49.7	13.700	0.077	0.617	82.9	0.622	9.7	0.047	0.615	85.7	0.617
173.0	525.0	1.0	15.281	10.610	34.8	18.604	49.3	14.804	0.139	0.686	78.5	0.700	9.7	0.119	0.684	80.1	0.694
172.0	525.0	1.0	16.671	11.292	34.1	20.135	48.9	16.023	0.225	0.759	73.5	0.792	9.8	0.209	0.757	74.6	0.785
171.0	525.0	1.0	18.220	12.019	33.4	21.828	48.3	17.370	0.335	0.837	68.2	0.901	9.8	0.320	0.834	69.0	0.893
170.0	525.0	1.0	19.951	12.793	32.7	23.700	47.6	18.860	0.472	0.917	62.8	1.032	9.8	0.457	0.914	63.5	1.022
169.0	525.0	1.0	21.886	13.616	31.9	25.776	46.8	20.512	0.641	1.000	57.4	1.188	9.7	0.625	0.997	57.9	1.176
168.0	525.0	1.0	24.053	14.486	31.1	28.079	45.8	22.344	0.847	1.084	52.0	1.376	9.5	0.830	1.081	52.5	1.362
167.0	525.0	1.0	26.482	15.406	30.2	30.637	44.7	24.380	1.098	1.168	46.8	1.603	9.2	1.079	1.164	47.2	1.587
166.0	525.0	1.0	29.204	16.372	29.3	33.480	43.3	26.643	1.402	1.249	41.7	1.877	8.9	1.380	1.244	42.0	1.858
165.0	525.0	1.0	32.255	17.384	28.3	36.641	41.8	29.158	1.767	1.324	36.8	2.208	8.4	1.743	1.318	37.1	2.185
164.0	525.0	1.0	35.667	18.438	27.3	40.151	40.1	31.951	2.203	1.390	32.3	2.605	7.9	2.174	1.384	32.5	2.577
163.0	525.0	1.0	39.472	19.529	26.3	44.039	38.3	35.045	2.717	1.444	28.0	3.077	7.3	2.683	1.438	28.2	3.044
162.0	525.0	1.0	43.694	20.653	25.3	48.329	36.3	38.459	3.315	1.482	24.1	3.632	6.7	3.274	1.475	24.3	3.591
161.0	525.0	1.0	48.339	21.803	24.3	53.029	34.1	42.199	3.999	1.501	20.6	4.271	6.0	3.949	1.493	20.7	4.222
160.0	525.0	1.0	53.386	22.972	23.3	58.119	31.9	46.249	4.760	1.497	17.5	4.990	5.3	4.699	1.489	17.6	4.929
159.0	525.0	1.0	58.770	24.152	22.3	63.540	29.5	50.563	5.580	1.469	14.8	5.770	4.6	5.505	1.460	14.9	5.695
158.0	525.0	1.0	64.362	25.338	21.5	69.170	27.0	55.044	6.419	1.416	12.4	6.573	4.0	6.328	1.406	12.5	6.482
157.0	525.0	1.0	69.957	26.524	20.8	74.816	24.5	59.537	7.220	1.339	10.5	7.343	3.4	7.111	1.329	10.6	7.234
156.0	525.0	1.0	75.271	27.705	20.2	80.208	22.0	63.827	7.906	1.242	8.9	8.003	2.9	7.780	1.233	9.0	7.877
155.0	525.0	1.0	79.971	28.881	19.9	85.026	19.6	67.661	8.394	1.132	7.7	8.470	2.4	8.254	1.122	7.7	8.330
154.0	525.0	1.0	83.735	30.052	19.7	88.965	17.2	70.796	8.610	1.012	6.7	8.669	2.1	8.462	1.001	6.7	8.521
153.0	525.0	1.0	86.338	31.225	19.9	91.811	14.9	73.061	8.515	0.886	5.9	8.561	1.8	8.365	0.873	6.0	8.411
152.0	525.0	1.0	87.709	32.408	20.3	93.505	12.8	74.409	8.114	0.754	5.3	8.149	1.7	7.970	0.735	5.3	8.003
151.0	525.0	1.0	87.950	33.615	20.9	94.155	10.9	74.926	7.457	0.612	4.7	7.482	1.8	7.321	0.583	4.6	7.344
150.0	525.0	1.0	87.288	34.861	21.8	93.992	9.2	74.797	6.617	0.460	4.0	6.633	2.2	6.490	0.410	3.6	6.503
149.0	525.0	1.0	86.008	36.165	22.8	93.302	7.7	74.248	5.674	0.313	3.2	5.683	3.3	5.553	0.209	2.2	5.557
148.0	525.0	1.0	84.385	37.550	24.0	92.362	6.5	73.499	4.694	0.263	3.2	4.701	5.5	4.572	-0.029	-0.4	4.572
147.0	525.0	1.0	82.646	39.037	25.3	91.402	5.5	72.735	3.725	0.428	6.6	3.750	10.0	3.594	-0.311	-4.9	3.608
146.0	525.0	1.0	80.960	40.648	26.7	90.591	4.9	72.090	2.800	0.725	14.5	2.892	19.0	2.646	-0.644	-13.7	2.723
145.0	525.0	1.0	79.437	42.401	28.1	90.045	4.5	71.655	1.944	1.101	29.5	2.234	37.1	1.739	-1.034	-30.7	2.023
144.0	525.0	1.0	78.136	44.309	29.6	89.825	4.4	71.480	1.209	1.549	52.0	1.964	57.1	0.875	-1.487	-59.5	1.725
143.0	525.0	1.0	77.076	46.373	31.0	89.951	4.7	71.581	0.809	2.068	68.6	2.221	37.8	0.050	-2.008	-88.6	2.008
142.0	525.0	1.0	76.239	48.579	32.5	90.401	5.2	71.939	1.082	2.659	67.9	2.871	19.4	-0.742	-2.597	74.1	2.701
141.0	525.0	1.0	75.573	50.889	34.0	91.109	6.1	72.502	1.693	3.318	63.0	3.725	10.2	-1.505	-3.251	65.2	3.582
140.0	525.0	1.0	74.990	53.229	35.4	91.961	7.2	73.180	2.369	4.030	59.6	4.675	5.6	-2.239	-3.956	60.5	4.546
139.0	525.0	1.0	74.366	55.483	36.7	92.783	8.6	73.834	3.039	4.770	57.5	5.655	3.3	-2.937	-4.685	57.9	5.529
138.0	525.0	1.0	73.543	57.488	38.0	93.346	10.3	74.283	3.669	5.492	56.3	6.605	2.2	-3.581	-5.394	56.4	6.475
137.0	525.0	1.0	72.344	59.037	39.2	93.376	12.3	74.306	4.228	6.137	55.4	7.452	1.8	-4.146	-6.026	55.5	7.314
136.0	525.0	1.0	70.597	59.908	40.3	92.590	14.5	73.680	4.682	6.632	54.8	8.118	1.7	-4.603	-6.509	54.7	7.972
135.0	525.0	1.0	68.181	59.907	41.3	90.761	16.9	72.225	4.996	6.910	54.1	8.527	1.9	-4.920	-6.779	54.0	8.376
134.0	525.0	1.0	65.067	58.930	42.2	87.786	19.5	69.858	5.152	6.927	53.4	8.633	2.1	-5.080	-6.794	53.2	8.483
133.0	525.0	1.0	61.337	56.995	42.9	83.730	22.3	66.630	5.146	6.677	52.4	8.429	2.5	-5.081	-6.549	52.2	8.289
132.0	525.0	1.0	57.165	54.247	43.5	78.807	25.1	62.713	4.996	6.195	51.1	7.959	2.9	-4.939	-6.078	50.9	7.832
131.0	525.0	1.0	52.769	50.909	44.0	73.324	28.1	58.349	4.734	5.548	49.5	7.294	3.5	-4.688	-5.444	49.3	7.184
130.0	525.0	1.0	48.354	47.233	44.3	67.595	31.1	53.790	4.399	4.811	47.6	6.519	4.1	-4.362	-4.720	47.3	6.427
129.0	525.0	1.0	44.080	43.439	44.6	61.887	34.2	49.248	4.026	4.051	45.2	5.712	4.9	-3.996	-3.973	44.8	5.635
128.0	525.0	1.0	40.050	39.701	44.7	56.393	37.3	44.876	3.642	3.321	42.4	4.929	5.6	-3.618	-3.253	42.0	4.865
127.0	525.0	1.0	36.315	36.133	44.9	51.229	40.4	40.767	3.266	2.652	39.1	4.207	6.4	-3.247	-2.592	38.6	4.155
126.0	525.0	1.0	32.890	32.805	44.9	46.453	43.5	36.966	2.910	2.062	35.3	3.566	7.3	-2.895	-2.008	34.7	3.523
125.0	525.0	1.0	29.765	29.749	45.0	42.082	46.7	33.488	2.580	1.555	31.1	3.013	8.2	-2.568	-1.505	30.4	2.977
124.0	525.0	1.0	26.919	26.975	45.1	38.108	49.9	30.326	2.279	1.131	26.4	2.544	9.1	-2.269	-1.082	25.5	2.514
123.0	525.0	1.0	24.325	24.477	45.2	34.509	53.2	27.461	2.008	0.781	21.3	2.154	9.9	-1.999	-0.732	20.1	2.129
122.0	525.0	1.0	21.957	22.242	45.4	31.254	56.7	24.871	1.764	0.501	15.9	1.834	10.8	-1.757	-0.445	14.2	1.812
121.0	525.0	1.0	19.787	20.252	45.7	28.313	60.3	22.531	1.547	0.289	10.6	1.574	11.5	-1.541	-0.214	7.9	1.556
120.0	525.0	1.0	17.792	18.486	46.1	25.657	64.1	20.417	1.355	0.167	7.0	1.366	12.0	-1.350	-0.029	1.2	1.350
119.0	525.0	1.0	15.951	16.925	46.7	23.257	68.2	18.507	1.186	0.183	8.8	1.200	12.3	-1.182	0.118	-5.7	1.188
118.0	525.0	1.0	14.246	15.551	47.5	21.090	72.5	16.783	1.038	0.263	14.2	1.071	12.3	-1.035	0.233	-12.7	1.061
117.0	525.0	1.0	12.662	14.347	48.6	19.135	76.6	15.227	0.909	0.340	20.5	0.970	12.0	-0.907	0.324	-19.6	0.963
116.0	525.0	1.0	11.185	13.298	49.9	17.376	79.3	13.828	0.798	0.403	26.8	0.894	11.4	-0.796	0.393	-26.3	0.888
115.0	525.0	1.0	9.807	12.392	51.6	15.803	78.5	12.575	0.703	0.453	32.8	0.836	10.4	-0.702	0.447	-32.5	0.832
114.0	525.0	1.0	8.521	11.618	53.7	14.407	73.1	11.465	0.623	0.492	38.3	0.794	9.2	-0.623	0.487	-38.0	0.791
113.0	525.0	1.0	7.326	10.967	56.3	13.189	64.5	10.495	0.557	0.521	43.1	0.762	7.8	-0.558	0.518	-42.9	0.761
112.0	525.0	1.0	6.229	10.433	59.2	12.151	53.9	9.670	0.504	0.542	47.1	0.740	6.4	-0.506	0.540	-46.9	0.740
111.0	525.0	1.0	5.250	10.011	62.3	11.304	42.2	8.996	0.463	0.557	50.3	0.725	4.8	-0.466	0.556	-50.0	0.725
110.0	525.0	1.0	4.431	9.698	65.4	10.662	29.8	8.485	0.435	0.567	52.5	0.715	3.3	-0.438	0.566	-52.3	0.715
109.0	525.0	1.0	3.845	9.491	67.9	10.241	16.9	8.149	0.418	0.573	53.9	0.709	1.8	-0.421	0.572	-53.6	0.710
108.0	525.0	1.0	3.591	9.391	69.1	10.054	3.7	8.001	0.412	0.575	54.3	0.707	0.8	-0.416	0.574	-54.1	0.708
107.0	525.0	1.0	3.731	9.396	68.3	10.110	9.6	8.045	0.418	0.573	53.9	0.709	1.8	-0.421	0.571	-53.6	0.710
106.0	525.0	1.0	4.233	9.510	66.0	10.409	22.9	8.283	0.435	0.567	52.5	0.715	3.3	-0.438	0.565	-52.2	0.715
105.0	525.0	1.0	5.001	9.733	62.8	10.942	35.9	8.708	0.464	0.557	50.2	0.725	4.9	-0.467	0.555	-49.9	0.725
104.0	525.0	1.0	5.953	10.068	59.4	11.697	48.5	9.308	0.505	0.541	47.0	0.740	6.4	-0.506	0.539	-46.8	0.740
103.0	525.0	1.0	7.038	10.521	56.2	12.658	60.5	10.073	0.558	0.520	43.0	0.763	7.9	-0.559	0.517	-42.7	0.761
102.0	525.0	1.0	8.231	11.096	53.4	13.816	71.6	10.994	0.624	0.491	38.2	0.794	9.2	-0.624	0.486	-37.9	0.791
101.0	525.0	1.0	9.522	11.800	51.1	15.163	80.5	12.067	0.704	0.452	32.7	0.837	10.4	-0.704	0.445	-32.3	0.833
100.0	525.0	1.0	10.911	12.643	49.2	16.700	84.9	13.290	0.800	0.402	26.7	0.895	11.4	-0.798	0.392	-26.1	0.889
99.0	525.0	1.0	12.403	13.634	47.7	18.431	82.8	14.667	0.911	0.338	20.4	0.972	12.0	-0.909	0.322	-19.5	0.964
98.0	525.0	1.0	14.007	14.787	46.6	20.367	77.8	16.208	1.040	0.261	14.1	1.072	12.3	-1.037	0.231	-12.6	1.062
97.0	525.0	1.0	15.735	16.116	45.7	22.523	72.4	17.924	1.188	0.182	8.7	1.202	12.3	-1.184	0.116	-5.6	1.190
96.0	525.0	1.0	17.603	17.638	45.1	24.919	67.4	19.830	1.358	0.168	7.0	1.368	12.0	-1.353	-0.031	1.3	1.353
95.0	525.0	1.0	19.630	19.372	44.6	27.580	62.8	21.947	1.550	0.291	10.6	1.577	11.4	-1.544	-0.216	8.0	1.559
94.0	525.0	1.0	21.837	21.340	44.3	30.532	58.6	24.297	1.767	0.504	15.9	1.837	10.7	-1.760	-0.448	14.3	1.816
93.0	525.0	1.0	24.247	23.560	44.2	33.808	54.7	26.904	2.011	0.784	21.3	2.158	9.9	-2.002	-0.734	20.1	2.132
92.0	525.0	1.0	26.888	26.054	44.1	37.440	51.0	29.794	2.282	1.133	26.4	2.548	9.1	-2.272	-1.085	25.5	2.518
91.0	525.0	1.0	29.787	28.836	44.1	41.458	47.5	32.991	2.584	1.558	31.1	3.017	8.2	-2.571	-1.508	30.4	2.981
90.0	525.0	1.0	32.972	31.916	44.1	45.889	44.0	36.517	2.913	2.064	35.3	3.571	7.3	-2.898	-2.011	34.8	3.527
89.0	525.0	1.0	36.464	35.286	44.1	50.742	40.7	40.379	3.269	2.655	39.1	4.211	6.4	-3.251	-2.595	38.6	4.159
88.0	525.0	1.0	40.274	38.916	44.0	56.004	37.3	44.567	3.646	3.323	42.4	4.933	5.6	-3.622	-3.255	41.9	4.870
87.0	525.0	1.0	44.387	42.740	43.9	61.619	34.1	49.035	4.030	4.054	45.2	5.716	4.9	-4.000	-3.975	44.8	5.639
86.0	525.0	1.0	48.751	46.646	43.7	67.472	30.8	53.693	4.403	4.814	47.5	6.524	4.1	-4.366	-4.723	47.2	6.431
85.0	525.0	1.0	53.262	50.463	43.5	73.371	27.7	58.387	4.738	5.551	49.5	7.298	3.5	-4.692	-5.446	49.3	7.189
84.0	525.0	1.0	57.758	53.967	43.1	79.047	24.6	62.904	5.000	6.198	51.1	7.963	2.9	-4.944	-6.080	50.9	7.837
83.0	525.0	1.0	62.029	56.906	42.5	84.177	21.7	66.986	5.150	6.679	52.4	8.434	2.5	-5.085	-6.552	52.2	8.294
82.0	525.0	1.0	65.853	59.045	41.9	88.447	18.8	70.384	5.157	6.930	53.3	8.638	2.1	-5.085	-6.797	53.2	8.489
81.0	525.0	1.0	69.052	60.231	41.1	91.629	16.2	72.916	5.002	6.913	54.1	8.533	1.9	-4.926	-6.782	54.0	8.382
80.0	525.0	1.0	71.539	60.435	40.2	93.649	13.8	74.524	4.688	6.635	54.8	8.124	1.7	-4.609	-6.512	54.7	7.978
79.0	525.0	1.0	73.341	59.753	39.2	94.601	11.5	75.281	4.236	6.140	55.4	7.459	1.8	-4.154	-6.029	55.4	7.321
78.0	525.0	1.0	74.579	58.371	38.0	94.706	9.6	75.365	3.677	5.495	56.2	6.612	2.2	-3.589	-5.398	56.4	6.482
77.0	525.0	1.0	75.424	56.511	36.8	94.246	7.9	74.998	3.048	4.773	57.4	5.663	3.3	-2.946	-4.688	57.9	5.537
76.0	525.0	1.0	76.056	54.378	35.6	93.496	6.5	74.401	2.379	4.034	59.5	4.683	5.6	-2.250	-3.959	60.4	4.554
75.0	525.0	1.0	76.633	52.138	34.2	92.687	5.4	73.758	1.703	3.322	62.9	3.733	10.1	-1.517	-3.255	65.0	3.591
74.0	525.0	1.0	77.280	49.910	32.9	91.996	4.6	73.208	1.090	2.663	67.7	2.878	19.2	-0.755	-2.601	73.8	2.708
73.0	525.0	1.0	78.083	47.770	31.5	91.537	4.1	72.842	0.807	2.072	68.7	2.223	37.5	0.036	-2.011	-89.0	2.012
72.0	525.0	1.0	79.094	45.759	30.1	91.376	3.9	72.715	1.198	1.552	52.3	1.961	57.2	0.861	-1.491	-60.0	1.721
71.0	525.0	1.0	80.327	43.892	28.7	91.537	4.1	72.842	1.930	1.104	29.8	2.223	37.5	1.724	-1.037	-31.0	2.012

70.0	525.0	1.0	81.761	42.170	27.3	91.996	4.6	73.208	2.784	0.728	14.6	2.878	19.2	2.630	-0.647	-13.8	2.708
69.0	525.0	1.0	83.332	40.581	26.0	92.687	5.4	73.758	3.708	0.430	6.6	3.733	10.1	3.577	-0.314	-5.0	3.591
68.0	525.0	1.0	84.924	39.106	24.7	93.496	6.5	74.401	4.676	0.263	3.2	4.683	5.6	4.554	-0.031	-0.4	4.554
67.0	525.0	1.0	86.366	37.724	23.6	94.246	7.9	74.998	5.655	0.312	3.2	5.663	3.3	5.533	0.207	2.1	5.537
66.0	525.0	1.0	87.426	36.413	22.6	94.706	9.6	75.365	6.596	0.460	4.0	6.612	2.2	6.469	0.409	3.6	6.482
65.0	525.0	1.0	87.828	35.150	21.8	94.601	11.5	75.281	7.434	0.612	4.7	7.459	1.8	7.298	0.583	4.6	7.321
64.0	525.0	1.0	87.292	33.917	21.2	93.649	13.8	74.524	8.089	0.755	5.3	8.124	1.7	7.944	0.736	5.3	7.978
63.0	525.0	1.0	85.598	32.696	20.9	91.629	16.2	72.916	8.487	0.889	6.0	8.533	1.9	8.337	0.875	6.0	8.382
62.0	525.0	1.0	82.658	31.474	20.8	88.447	18.8	70.384	8.578	1.016	6.8	8.638	2.1	8.429	1.006	6.8	8.489
61.0	525.0	1.0	78.557	30.242	21.1	84.177	21.7	66.986	8.357	1.138	7.8	8.434	2.5	8.217	1.128	7.8	8.294
60.0	525.0	1.0	73.537	28.996	21.5	79.047	24.6	62.904	7.864	1.251	9.0	7.963	2.9	7.738	1.241	9.1	7.837
59.0	525.0	1.0	67.928	27.733	22.2	73.371	27.7	58.387	7.172	1.349	10.7	7.298	3.5	7.063	1.340	10.7	7.189
58.0	525.0	1.0	62.069	26.456	23.1	67.472	30.8	53.693	6.365	1.429	12.7	6.524	4.1	6.273	1.420	12.8	6.431
57.0	525.0	1.0	56.244	25.169	24.1	61.619	34.1	49.035	5.520	1.486	15.1	5.716	4.9	5.443	1.477	15.2	5.639
56.0	525.0	1.0	50.657	23.881	25.2	56.004	37.3	44.567	4.694	1.518	17.9	4.933	5.6	4.630	1.509	18.1	4.870
55.0	525.0	1.0	45.432	22.599	26.4	50.742	40.7	40.379	3.925	1.526	21.2	4.211	6.4	3.872	1.518	21.4	4.159
54.0	525.0	1.0	40.629	21.331	27.7	45.889	44.0	36.517	3.235	1.512	25.0	3.571	7.3	3.190	1.505	25.2	3.527
53.0	525.0	1.0	36.267	20.087	29.0	41.458	47.5	32.991	2.630	1.479	29.3	3.017	8.2	2.592	1.473	29.6	2.981
52.0	525.0	1.0	32.334	18.874	30.3	37.440	51.0	29.794	2.109	1.430	34.2	2.548	9.1	2.076	1.425	34.5	2.518
51.0	525.0	1.0	28.805	17.700	31.6	33.808	54.7	26.904	1.666	1.371	39.4	2.158	9.9	1.637	1.366	39.9	2.132
50.0	525.0	1.0	25.644	16.570	32.9	30.532	58.6	24.297	1.295	1.304	45.2	1.837	10.7	1.268	1.300	45.7	1.816
49.0	525.0	1.0	22.818	15.491	34.2	27.580	62.8	21.947	0.985	1.232	51.4	1.577	11.4	0.959	1.229	52.0	1.559
48.0	525.0	1.0	20.290	14.467	35.5	24.919	67.4	19.830	0.728	1.158	57.8	1.368	12.0	0.703	1.156	58.7	1.353
47.0	525.0	1.0	18.029	13.501	36.8	22.523	72.4	17.924	0.517	1.085	64.5	1.202	12.3	0.492	1.084	65.6	1.190
46.0	525.0	1.0	16.005	12.596	38.2	20.367	77.8	16.208	0.346	1.015	71.2	1.072	12.3	0.318	1.014	72.6	1.062
45.0	525.0	1.0	14.195	11.756	39.6	18.431	82.8	14.667	0.211	0.948	77.4	0.972	12.0	0.176	0.948	79.5	0.964
44.0	525.0	1.0	12.579	10.985	41.1	16.700	84.9	13.290	0.117	0.887	82.5	0.895	11.4	0.060	0.887	86.1	0.889
43.0	525.0	1.0	11.143	10.284	42.7	15.163	80.5	12.067	0.093	0.832	83.6	0.837	10.4	-0.034	0.832	-87.7	0.833
42.0	525.0	1.0	9.878	9.659	44.4	13.816	71.6	10.994	0.132	0.783	80.4	0.794	9.2	-0.109	0.784	-82.1	0.791
41.0	525.0	1.0	8.783	9.115	46.1	12.658	60.5	10.073	0.180	0.741	76.3	0.763	7.9	-0.168	0.742	-77.3	0.761
40.0	525.0	1.0	7.866	8.656	47.7	11.697	48.5	9.308	0.221	0.706	72.6	0.740	6.4	-0.213	0.708	-73.2	0.740
39.0	525.0	1.0	7.143	8.290	49.3	10.942	35.9	8.708	0.252	0.679	69.6	0.725	4.9	-0.247	0.681	-70.1	0.725
38.0	525.0	1.0	6.635	8.021	50.4	10.409	22.9	8.283	0.274	0.660	67.4	0.715	3.3	-0.271	0.662	-67.8	0.715
37.0	525.0	1.0	6.366	7.854	51.0	10.110	9.6	8.045	0.287	0.648	66.1	0.709	1.8	-0.284	0.651	-66.4	0.710
36.0	525.0	1.0	6.351	7.794	50.8	10.054	3.7	8.001	0.292	0.644	65.6	0.707	0.8	-0.289	0.647	-65.9	0.708
35.0	525.0	1.0	6.588	7.840	50.0	10.241	16.9	8.149	0.288	0.648	66.1	0.709	1.8	-0.284	0.651	-66.4	0.710
34.0	525.0	1.0	7.056	7.993	48.6	10.662	29.8	8.485	0.275	0.660	67.4	0.715	3.3	-0.271	0.662	-67.7	0.715
33.0	525.0	1.0	7.729	8.249	46.9	11.304	42.2	8.996	0.253	0.679	69.6	0.725	4.8	-0.248	0.681	-70.0	0.725
32.0	525.0	1.0	8.582	8.602	45.1	12.151	53.9	9.670	0.222	0.706	72.5	0.740	6.4	-0.215	0.708	-73.1	0.740
31.0	525.0	1.0	9.596	9.047	43.3	13.189	64.5	10.495	0.181	0.741	76.2	0.762	7.8	-0.169	0.742	-77.1	0.761
30.0	525.0	1.0	10.762	9.578	41.7	14.407	73.1	11.465	0.134	0.782	80.3	0.794	9.2	-0.111	0.783	-82.0	0.791
29.0	525.0	1.0	12.079	10.190	40.2	15.803	78.5	12.575	0.094	0.831	83.5	0.836	10.4	-0.036	0.831	-87.5	0.832
28.0	525.0	1.0	13.552	10.876	38.7	17.376	79.3	13.828	0.116	0.886	82.5	0.894	11.4	0.057	0.886	86.3	0.888
27.0	525.0	1.0	15.192	11.634	37.4	19.135	76.6	15.227	0.209	0.948	77.6	0.970	12.0	0.173	0.947	79.6	0.963
26.0	525.0	1.0	17.017	12.459	36.2	21.090	72.5	16.783	0.344	1.014	71.3	1.071	12.3	0.315	1.013	72.7	1.061
25.0	525.0	1.0	19.046	13.348	35.0	23.257	68.2	18.507	0.514	1.084	64.6	1.200	12.3	0.489	1.083	65.7	1.188
24.0	525.0	1.0	21.304	14.298	33.9	25.657	64.1	20.417	0.725	1.157	57.9	1.366	12.0	0.700	1.155	58.8	1.350
23.0	525.0	1.0	23.820	15.306	32.7	28.313	60.3	22.531	0.981	1.231	51.4	1.574	11.5	0.956	1.228	52.1	1.556
22.0	525.0	1.0	26.625	16.368	31.6	31.254	56.7	24.871	1.291	1.303	45.3	1.834	10.8	1.264	1.299	45.8	1.812
21.0	525.0	1.0	29.754	17.480	30.4	34.509	53.2	27.461	1.663	1.370	39.5	2.154	9.9	1.633	1.365	39.9	2.129
20.0	525.0	1.0	33.241	18.636	29.3	38.108	49.9	30.326	2.105	1.429	34.2	2.544	9.1	2.072	1.424	34.5	2.514
19.0	525.0	1.0	37.116	19.832	28.1	42.082	46.7	33.488	2.626	1.477	29.4	3.013	8.2	2.588	1.471	29.6	2.977
18.0	525.0	1.0	41.405	21.059	27.0	46.453	43.5	36.966	3.231	1.510	25.0	3.566	7.3	3.186	1.503	25.3	3.523
17.0	525.0	1.0	46.115	22.311	25.8	51.229	40.4	40.767	3.921	1.524	21.2	4.207	6.4	3.868	1.516	21.4	4.155
16.0	525.0	1.0	51.228	23.578	24.7	56.393	37.3	44.876	4.690	1.516	17.9	4.929	5.6	4.626	1.507	18.0	4.865
15.0	525.0	1.0	56.678	24.853	23.7	61.887	34.2	49.248	5.516	1.484	15.1	5.712	4.9	5.439	1.475	15.2	5.635
14.0	525.0	1.0	62.341	26.127	22.7	67.595	31.1	53.790	6.361	1.427	12.6	6.519	4.1	6.269	1.417	12.7	6.427
13.0	525.0	1.0	68.014	27.395	21.9	73.324	28.1	58.349	7.168	1.347	10.6	7.294	3.5	7.058	1.338	10.7	7.184
12.0	525.0	1.0	73.415	28.651	21.3	78.807	25.1	62.713	7.860	1.248	9.0	7.959	2.9	7.733	1.239	9.1	7.832
11.0	525.0	1.0	78.211	29.894	20.9	83.730	22.3	66.630	8.353	1.135	7.7	8.429	2.5	8.212	1.125	7.8	8.289
10.0	525.0	1.0	82.083	31.126	20.8	87.786	19.5	69.858	8.573	1.013	6.7	8.633	2.1	8.424	1.002	6.8	8.483
9.0	525.0	1.0	84.799	32.351	20.9	90.761	16.9	72.225	8.481	0.885	6.0	8.527	1.9	8.331	0.871	6.0	8.376
8.0	525.0	1.0	86.286	33.580	21.3	92.590	14.5	73.680	8.083	0.751	5.3	8.118	1.7	7.938	0.731	5.3	7.972
7.0	525.0	1.0	86.639	34.825	21.9	93.376	12.3	74.306	7.428	0.608	4.7	7.452	1.8	7.291	0.578	4.5	7.314
6.0	525.0	1.0	86.081	36.104	22.8	93.346	10.3	74.283	6.589	0.455	3.9	6.605	2.2	6.462	0.404	3.6	6.475
5.0	525.0	1.0	84.895	37.438	23.8	92.783	8.6	73.834	5.647	0.308	3.1	5.655	3.3	5.525	0.201	2.1	5.529
4.0	525.0	1.0	83.353	38.847	25.0	91.961	7.2	73.180	4.668	0.265	3.2	4.675	5.6	4.545	-0.038	-0.5	4.546
3.0	525.0	1.0	81.684	40.357	26.3	91.109	6.1	72.502	3.700	0.436	6.7	3.725	10.2	3.568	-0.322	-5.2	3.582
2.0	525.0	1.0	80.058	41.988	27.7	90.401	5.2	71.939	2.775	0.736	14.9	2.871	19.4	2.620	-0.656	-14.1	2.701
1.0	525.0	1.0	78.588	43.761	29.1	89.951	4.7	71.581	1.921	1.114	30.1	2.221	37.8	1.714	-1.047	-31.4	2.008
0.0	525.0	1.0	77.338	45.688	30.6	89.825	4.4	71.480	1.190	1.563	52.7	1.964	57.1	0.850	-1.501	-60.5	1.725
-1.0	525.0	1.0	76.328	47.772	32.0	90.045	4.5	71.655	0.807	2.083	68.8	2.234	37.1	0.026	-2.023	-89.3	2.023
-2.0	525.0	1.0	75.545	49.998	33.5	90.591	4.9	72.090	1.098	2.676	67.7	2.892	19.0	-0.766	-2.613	73.7	2.723
-3.0	525.0	1.0	74.941	52.327	34.9	91.402	5.5	72.735	1.713	3.335	62.8	3.750	10.0	-1.528	-3.268	64.9	3.608
-4.0	525.0	1.0	74.434	54.684	36.3	92.362	6.5	73.499	2.389	4.049	59.5	4.701	5.5	-2.261	-3.974	60.4	4.572
-5.0	525.0	1.0	73.905	56.951	37.6	93.302	7.7	74.248	3.059	4.789	57.4	5.683	3.3	-2.958	-4.704	57.8	5.557
-6.0	525.0	1.0	73.199	58.961	38.9	93.992	9.2	74.797	3.689	5.513	56.2	6.633	2.2	-3.601	-5.416	56.4	6.503
-7.0	525.0	1.0	72.144	60.501	40.0	94.155	10.9	74.926	4.247	6.159	55.4	7.482	1.8	-4.165	-6.049	55.4	7.344
-8.0	525.0	1.0	70.568	61.346	41.0	93.505	12.8	74.409	4.700	6.657	54.8	8.149	1.7	-4.621	-6.535	54.7	8.003
-9.0	525.0	1.0	68.349	61.300	41.9	91.811	14.9	73.061	5.014	6.938	54.1	8.561	1.8	-4.938	-6.808	54.0	8.411
-10.0	525.0	1.0	65.453	60.254	42.6	88.965	17.2	70.796	5.170	6.959	53.4	8.669	2.1	-5.098	-6.827	53.3	8.521
-11.0	525.0	1.0	61.956	58.231	43.2	85.026	19.6	67.661	5.164	6.714	52.4	8.470	2.4	-5.099	-6.587	52.3	8.330
-12.0	525.0	1.0	58.024	55.376	43.7	80.208	22.0	63.827	5.014	6.238	51.2	8.003	2.9	-4.958	-6.121	51.0	7.877
-13.0	525.0	1.0	53.866	51.922	43.9	74.816	24.5	59.537	4.753	5.597	49.7	7.343	3.4	-4.707	-5.494	49.4	7.234
-14.0	525.0	1.0	49.687	48.122	44.1	69.170	27.0	55.044	4.419	4.866	47.8	6.573	4.0	-4.382	-4.777	47.5	6.482
-15.0	525.0	1.0	45.643	44.204	44.1	63.540	29.5	50.563	4.046	4.113	45.5	5.770	4.6	-4.017	-4.037	45.1	5.695
-16.0	525.0	1.0	41.838	40.341	44.0	58.119	31.9	46.249	3.662	3.390	42.8	4.990	5.3	-3.639	-3.325	42.4	4.929
-17.0	525.0	1.0	38.324	36.652	43.7	53.029	34.1	42.199	3.286	2.728	39.7	4.271	6.0	-3.268	-2.673	39.3	4.222
-18.0	525.0	1.0	35.117	33.204	43.4	48.329	36.3	38.459	2.930	2.146	36.2	3.632	6.7	-2.915	-2.098	35.7	3.591
-19.0	525.0	1.0	32.211	30.032	43.0	44.039	38.3	35.045	2.599	1.647	32.4	3.077	7.3	-2.586	-1.604	31.8	3.044
-20.0	525.0	1.0	29.586	27.143	42.5	40.151	40.1	31.951	2.297	1.230	28.2	2.605	7.9	-2.286	-1.191	27.5	2.577
-21.0	525.0	1.0	27.217	24.532	42.0	36.641	41.8	29.158	2.022	0.887	23.7	2.208	8.4	-2.013	-0.850	22.9	2.185
-22.0	525.0	1.0	25.078	22.182	41.5	33.480	43.3	26.643	1.776	0.610	19.0	1.877	8.9	-1.767	-0.574	18.0	1.858
-23.0	525.0	1.0	23.145	20.074	40.9	30.637	44.7	24.380	1.555	0.392	14.1	1.603	9.2	-1.547	-0.353	12.8	1.587
-24.0	525.0	1.0	21.394	18.186	40.4	28.079	45.8	22.344	1.357	0.227	9.5	1.376	9.5	-1.351	-0.178	7.5	1.362
-25.0	525.0	1.0	19.805	16.497	39.8	25.776	46.8	20.512	1.181	0.124	6.0	1.188	9.7	-1.176	-0.043	2.1	1.176
-26.0	525.0	1.0	18.360	14.987	39.2	23.700	47.6	18.860	1.025	0.115	6.4	1.032	9.8	-1.020	0.062	-3.5	1.022
-27.0	525.0	1.0	17.045	13.635	38.7	21.828	48.3	17.370	0.887	0.162	10.3	0.901	9.8	-0.882	0.140	-9.0	0.893
-28.0	525.0	1.0	15.844	12.425	38.1	20.135	48.9	16.023	0.764	0.209	15.3	0.792	9.8	-0.760	0.198	-14.6	0.785
-29.0	525.0	1.0	14.747	11.342	37.6	18.604	49.3	14.804	0.656	0.246	20.5	0.700	9.7	-0.652	0.239	-20.1	0.694
-30.0	525.0	1.0	13.742	10.369	37.0	17.216	49.7	13.700	0.560	0.272	25.9	0.622	9.7	-0.556	0.267	-25.7	0.617
-31.0	525.0	1.0	12.822	9.496	36.5	15.955	49.9	12.697	0.475	0.288	31.2	0.556	9.6	-0.472	0.285	-31.1	0.552
-32.0	525.0	1.0	11.976	8.711	36.0	14.809	50.1	11.785	0.401	0.297	36.6	0.499	9.5	-0.398	0.295	-36.6	0.495
-33.0	525.0	1.0	11.199	8.003	35.6	13.765	50.2	10.954	0.336	0.301	41.9	0.451	9.4	-0.333	0.299	-42.0	0.447
-34.0	525.0	1.0	10.484	7.365	35.1	12.813	50.3	10.196	0.278	0.300	47.1	0.409	9.3	-0.275	0.298	-47.3	0.406
-35.0	525.0	1.0	9.825	6.789	34.6	11.942	50.3	9.503	0.228	0.295	52.3	0.373	9.2	-0.225	0.294	-52.6	0.370
-36.0	525.0	1.0	9.217	6.267	34.2	11.146	50.2	8.870	0.184	0.288	57.4	0.341	9.1	-0.181	0.287	-57.8	0.339
-37.0	525.0	1.0	8.656	5.795	33.8	10.416	50.1	8.289	0.145	0.279	62.5	0.314	8.9	-0.142	0.278	-62.9	0.312
-38.0	525.0	1.0	8.137	5.365	33.4	9.746	50.0	7.756	0.112	0.268	67.4	0.291	8.8	-0.108	0.268	-68.0	0.289
-39.0	525.0	1.0	7.656	4.975	33.0	9.131	49.9	7.266	0.083	0.257	72.2	0.270	8.6	-0.079	0.257	-72.9	0.269
-40.0	525.0	1.0	7.211	4.620	32.6	8.564	49.8	6.815	0.058	0.246	76.8	0.252	8.4	-0.053	0.245	-77.7	0.251
-41.0	525.0	1.0	6.799	4.295	32.3	8.042	49.6	6.399	0.037	0.234	81.1	0.237	8.1	-0.031	0.234	-82.4	0.236
-42.0	525.0	1.0	6.415	3.999	31.9	7.560	49.4	6.016	0.021	0.222	84.6	0.223	7.9	-0.012	0.222	-87.0	0.222
-43.0	525.0	1.0	6.059	3.728	31.6	7.114	49.3	5.661	0.017	0.210	85.4	0.211	7.6	0.005	0.210	88.6	0.210
-44.0	525.0	1.0	5.728	3.480	31.3	6.702	49.1	5.334	0.025	0.199	83.0	0.200	7.3	0.020	0.198	84.3	0.199
-45.0	525.0	1.0	5.420	3.252	31.0	6.321	48.9	5.030	0.035	0.187	79.5	0.191	7.0	0.032	0.187	80.2	0.190
-46.0	525.0	1.0	5.133	3.043	30.7	5.967	48.7	4.748	0.045	0.177	75.8	0.182	6.7	0.043	0.176	76.3	0.182
-47.0	525.0	1.0	4.865	2.850	30.4	5.638	48.5	4.487	0.053	0.166	72.2	0.175	6.4	0.052	0.166	72.5	0.174
-48.0	525.0	1.0	4.614	2.672	30.1	5.332	48.3	4.243	0.061	0.156	68.7	0.168	6.1	0.060	0.156	68.9	0.167
-49.0	525.0	1.0	4.381	2.509	29.8	5.048	48.1	4.017	0.067	0.147	65.3	0.161	5.9	0.067	0.146	65.5	0.161
-50.0	525.0	1.0	4.162	2.357	29.5	4.783	47.9	3.806	0.073	0.138	62.1	0.156	5.6	0.072	0.137	62.2	0.155
-51.0	525.0	1.0	3.957	2.217	29.3	4.536	47.7	3.610	0.077	0.129	59.0	0.150	5.3	0.077	0.129	59.1	0.150
-52.0	525.0	1.0	3.765	2.088	29.0	4.305	47.5	3.426	0.081	0.121	56.1	0.145	5.1	0.081	0.121	56.2	0.145
-53.0	525.0	1.0	3.586	1.967	28.8	4.090	47.3	3.255	0.084	0.113	53.3	0.141	4.8	0.084	0.113	53.4	0.141
-54.0	525.0	1.0	3.417	1.856	28.5	3.888	47.1	3.094	0.087	0.106	50.6	0.137	4.6	0.086	0.105	50.7	0.136
-55.0	525.0	1.0	3.258	1.752	28.3	3.699	46.9	2.944	0.089	0.099	48.1	0.133	4.4	0.088	0.099	48.1	0.132
-56.0	525.0	1.0	3.109	1.656	28.0	3.523	46.7	2.803	0.090	0.092	45.7	0.129	4.2	0.090	0.092	45.7	0.129
-57.0	525.0	1.0	2.969	1.566	27.8	3.357	46.5	2.671	0.091	0.086	43.3	0.125	4.0	0.091	0.086	43.3	0.125
-58.0	525.0	1.0	2.837	1.482	27.6	3.201	46.3	2.547	0.092	0.080	41.1	0.122	3.8	0.092	0.080	41.1	0.122
-59.0	525.0	1.0	2.713	1.404	27.4	3.054	46.1	2.431	0.092	0.075	39.0	0.119	3.6	0.092	0.075	39.0	0.118
-60.0	525.0	1.0	2.596	1.331	27.1	2.917	45.9	2.321	0.092	0.069	37.0	0.116	3.5	0.092	0.069	37.0	0.115
-61.0	525.0	1.0	2.485	1.263	26.9	2.787	45.7	2.218	0.092	0.065	35.0	0.113	3.3	0.092	0.065	35.0	0.112
-62.0	525.0	1.0	2.380	1.199	26.7	2.665	45.5	2.121	0.092	0.060	33.2	0.110	3.2	0.092	0.060	33.1	0.110
-63.0	525.0	1.0	2.282	1.139	26.5	2.550	45.3	2.029	0.091	0.056	31.4	0.107	3.1	0.091	0.056	31.3	0.107
-64.0	525.0	1.0	2.188	1.083	26.3	2.442	45.1	1.943	0.091	0.052	29.6	0.104	3.0	0.091	0.052	29.6	0.104
-65.0	525.0	1.0	2.100	1.030	26.1	2.339	45.0	1.861	0.090	0.048	28.0	0.102	2.8	0.090	0.048	28.0	0.102
-66.0	525.0	1.0	2.016	0.980	25.9	2.242	44.8	1.784	0.089	0.044	26.4	0.099	2.7	0.089	0.044	26.4	0.099
-67.0	525.0	1.0	1.937	0.934	25.7	2.151	44.6	1.711	0.088	0.041	24.9	0.097	2.6	0.088	0.041	24.8	0.097
-68.0	525.0	1.0	1.862	0.890	25.6	2.064	44.4	1.642	0.087	0.038	23.4	0.095	2.5	0.087	0.038	23.4	0.095
-69.0	525.0	1.0	1.791	0.849	25.4	1.982	44.2	1.577	0.086	0.035	22.0	0.093	2.5	0.086	0.035	21.9	0.093
-70.0	525.0	1.0	1.723	0.810	25.2	1.904	44.0	1.515	0.085	0.032	20.6	0.091	2.4	0.085	0.032	20.5	0.090
-71.0	525.0	1.0	1.659	0.774	25.0	1.830	43.8	1.457	0.084	0.029	19.2	0.088	2.3	0.084	0.029	19.2	0.088
-72.0	525.0	1.0	1.598	0.739	24.8	1.761	43.6	1.401	0.082	0.027	18.0	0.087	2.2	0.082	0.027	17.9	0.086
-73.0	525.0	1.0	1.540	0.707	24.6	1.694	43.4	1.348	0.081	0.024	16.7	0.085	2.2	0.081	0.024	16.7	0.085
-74.0	525.0	1.0	1.485	0.676	24.5	1.631	43.2	1.298	0.080	0.022	15.5	0.083	2.1	0.080	0.022	15.4	0.083
-75.0	525.0	1.0	1.432	0.647	24.3	1.571	43.0	1.250	0.078	0.020	14.3	0.081	2.0	0.078	0.020	14.3	0.081
-76.0	525.0	1.0	1.382	0.619	24.1	1.514	42.8	1.205	0.077	0.018	13.2	0.079	2.0	0.077	0.018	13.1	0.079

-77.0	525.0	1.0	1.334	0.593	24.0	1.460	42.6	1.162	0.076	0.016	12.1	0.078	1.9	0.076	0.016	12.0	0.078
-78.0	525.0	1.0	1.288	0.568	23.8	1.408	42.4	1.121	0.075	0.014	11.0	0.076	1.9	0.075	0.014	10.9	0.076
-79.0	525.0	1.0	1.245	0.545	23.6	1.359	42.2	1.081	0.073	0.013	9.9	0.074	1.8	0.073	0.013	9.9	0.074
-80.0	525.0	1.0	1.204	0.523	23.5	1.312	41.9	1.044	0.072	0.011	8.9	0.073	1.8	0.072	0.011	8.9	0.073
-81.0	525.0	1.0	1.164	0.502	23.3	1.267	41.7	1.009	0.071	0.010	7.9	0.071	1.7	0.071	0.010	7.9	0.071
-82.0	525.0	1.0	1.126	0.482	23.2	1.225	41.5	0.975	0.069	0.008	7.0	0.070	1.7	0.069	0.008	6.9	0.070
-83.0	525.0	1.0	1.090	0.463	23.0	1.184	41.3	0.942	0.068	0.007	6.0	0.069	1.6	0.068	0.007	6.0	0.068
-84.0	525.0	1.0	1.055	0.445	22.8	1.145	41.1	0.911	0.067	0.006	5.1	0.067	1.6	0.067	0.006	5.0	0.067
-85.0	525.0	1.0	1.022	0.427	22.7	1.108	40.9	0.882	0.066	0.005	4.2	0.066	1.6	0.066	0.005	4.1	0.066
-86.0	525.0	1.0	0.990	0.411	22.5	1.072	40.7	0.853	0.064	0.004	3.4	0.065	1.5	0.064	0.004	3.3	0.065
-87.0	525.0	1.0	0.960	0.395	22.4	1.038	40.4	0.826	0.063	0.003	2.6	0.063	1.5	0.063	0.003	2.4	0.063
-88.0	525.0	1.0	0.931	0.381	22.2	1.006	40.2	0.800	0.062	0.002	1.8	0.062	1.4	0.062	0.002	1.6	0.062
-89.0	525.0	1.0	0.903	0.366	22.1	0.974	40.0	0.775	0.061	0.001	1.1	0.061	1.4	0.061	0.001	0.8	0.061
-90.0	525.0	1.0	0.876	0.353	21.9	0.944	39.8	0.752	0.060	0.001	0.8	0.060	1.4	0.060	-0.000	-0.0	0.060
-91.0	525.0	1.0	0.850	0.340	21.8	0.916	39.5	0.729	0.059	0.001	1.1	0.059	1.3	0.059	-0.001	-0.8	0.059
-92.0	525.0	1.0	0.826	0.328	21.7	0.888	39.3	0.707	0.058	0.002	1.7	0.058	1.3	0.058	-0.002	-1.6	0.058
-93.0	525.0	1.0	0.802	0.316	21.5	0.862	39.1	0.686	0.057	0.002	2.4	0.057	1.3	0.057	-0.002	-2.3	0.057
-94.0	525.0	1.0	0.779	0.305	21.4	0.837	38.9	0.666	0.055	0.003	3.1	0.056	1.3	0.055	-0.003	-3.1	0.056
-95.0	525.0	1.0	0.757	0.294	21.2	0.812	38.6	0.647	0.054	0.004	3.8	0.055	1.2	0.054	-0.004	-3.8	0.055
-96.0	525.0	1.0	0.736	0.284	21.1	0.789	38.4	0.628	0.053	0.004	4.5	0.054	1.2	0.053	-0.004	-4.5	0.054
-97.0	525.0	1.0	0.716	0.274	21.0	0.767	38.2	0.610	0.052	0.005	5.2	0.053	1.2	0.052	-0.005	-5.1	0.053
-98.0	525.0	1.0	0.697	0.265	20.8	0.745	37.9	0.593	0.052	0.005	5.8	0.052	1.2	0.052	-0.005	-5.8	0.052
-99.0	525.0	1.0	0.678	0.256	20.7	0.725	37.7	0.577	0.051	0.006	6.5	0.051	1.1	0.051	-0.006	-6.5	0.051
-100.0	525.0	1.0	0.645	0.249	21.1	0.692	38.6	0.550	0.048	0.005	5.8	0.048	1.1	0.048	-0.005	-5.7	0.048
-101.0	525.0	1.0	0.628	0.241	21.0	0.673	38.4	0.535	0.047	0.005	6.4	0.048	1.1	0.047	-0.005	-6.4	0.048
-102.0	525.0	1.0	0.611	0.233	20.9	0.654	38.2	0.521	0.046	0.006	7.0	0.047	1.1	0.046	-0.006	-7.0	0.047
-103.0	525.0	1.0	0.595	0.226	20.8	0.636	38.0	0.506	0.046	0.006	7.6	0.046	1.1	0.046	-0.006	-7.6	0.046
-104.0	525.0	1.0	0.579	0.219	20.7	0.619	37.7	0.493	0.045	0.006	8.2	0.045	1.0	0.045	-0.006	-8.2	0.045
-105.0	525.0	1.0	0.564	0.212	20.6	0.603	37.5	0.480	0.044	0.007	8.8	0.044	1.0	0.044	-0.007	-8.8	0.044
-106.0	525.0	1.0	0.550	0.205	20.5	0.587	37.3	0.467	0.043	0.007	9.4	0.044	1.0	0.043	-0.007	-9.4	0.044
-107.0	525.0	1.0	0.536	0.199	20.4	0.572	37.1	0.455	0.042	0.007	9.9	0.043	1.0	0.042	-0.007	-9.9	0.043
-108.0	525.0	1.0	0.522	0.193	20.2	0.557	36.8	0.443	0.042	0.008	10.5	0.042	1.0	0.042	-0.008	-10.5	0.042
-109.0	525.0	1.0	0.509	0.187	20.1	0.543	36.6	0.432	0.041	0.008	11.0	0.042	0.9	0.041	-0.008	-11.0	0.042
-110.0	525.0	1.0	0.497	0.181	20.0	0.529	36.4	0.421	0.040	0.008	11.5	0.041	0.9	0.040	-0.008	-11.5	0.041
-111.0	525.0	1.0	0.485	0.176	19.9	0.516	36.2	0.410	0.039	0.008	12.1	0.040	0.9	0.039	-0.008	-12.1	0.040
-112.0	525.0	1.0	0.473	0.171	19.8	0.503	35.9	0.400	0.039	0.009	12.6	0.040	0.9	0.039	-0.009	-12.6	0.040
-113.0	525.0	1.0	0.462	0.166	19.7	0.490	35.7	0.390	0.038	0.009	13.1	0.039	0.9	0.038	-0.009	-13.1	0.039
-114.0	525.0	1.0	0.451	0.161	19.6	0.478	35.5	0.381	0.037	0.009	13.6	0.038	0.9	0.037	-0.009	-13.6	0.038
-115.0	525.0	1.0	0.440	0.156	19.6	0.467	35.3	0.372	0.037	0.009	14.1	0.038	0.8	0.037	-0.009	-14.1	0.038
-116.0	525.0	1.0	0.430	0.152	19.5	0.456	35.0	0.363	0.036	0.009	14.5	0.037	0.8	0.036	-0.009	-14.5	0.037
-117.0	525.0	1.0	0.420	0.148	19.4	0.445	34.8	0.354	0.035	0.010	15.0	0.037	0.8	0.035	-0.010	-15.0	0.037
-118.0	525.0	1.0	0.410	0.143	19.3	0.434	34.6	0.346	0.035	0.010	15.5	0.036	0.8	0.035	-0.010	-15.5	0.036
-119.0	525.0	1.0	0.401	0.139	19.2	0.424	34.3	0.338	0.034	0.010	15.9	0.036	0.8	0.034	-0.010	-15.9	0.036
-120.0	525.0	1.0	0.392	0.136	19.1	0.414	34.1	0.330	0.034	0.010	16.4	0.035	0.8	0.034	-0.010	-16.4	0.035
-121.0	525.0	1.0	0.383	0.132	19.0	0.405	33.9	0.322	0.033	0.010	16.8	0.035	0.8	0.033	-0.010	-16.8	0.035
-122.0	525.0	1.0	0.374	0.128	18.9	0.396	33.6	0.315	0.033	0.010	17.2	0.034	0.7	0.033	-0.010	-17.2	0.034
-123.0	525.0	1.0	0.366	0.125	18.8	0.387	33.4	0.308	0.032	0.010	17.7	0.034	0.7	0.032	-0.010	-17.7	0.034
-124.0	525.0	1.0	0.358	0.122	18.8	0.378	33.2	0.301	0.031	0.010	18.1	0.033	0.7	0.031	-0.010	-18.1	0.033
-125.0	525.0	1.0	0.350	0.118	18.7	0.370	32.9	0.294	0.031	0.010	18.5	0.033	0.7	0.031	-0.010	-18.5	0.033
-126.0	525.0	1.0	0.343	0.115	18.6	0.362	32.7	0.288	0.030	0.010	18.9	0.032	0.7	0.030	-0.010	-18.9	0.032
-127.0	525.0	1.0	0.336	0.112	18.5	0.354	32.4	0.282	0.030	0.010	19.3	0.032	0.7	0.030	-0.010	-19.3	0.032
-128.0	525.0	1.0	0.328	0.110	18.4	0.346	32.2	0.276	0.029	0.011	19.7	0.031	0.7	0.029	-0.011	-19.7	0.031
-129.0	525.0	1.0	0.322	0.107	18.4	0.339	32.0	0.270	0.029	0.011	20.1	0.031	0.7	0.029	-0.011	-20.1	0.031
-130.0	525.0	1.0	0.315	0.104	18.3	0.332	31.7	0.264	0.029	0.011	20.4	0.030	0.7	0.029	-0.011	-20.4	0.030
-131.0	525.0	1.0	0.308	0.102	18.2	0.325	31.5	0.258	0.028	0.011	20.8	0.030	0.6	0.028	-0.011	-20.8	0.030
-132.0	525.0	1.0	0.302	0.099	18.2	0.318	31.2	0.253	0.028	0.011	21.2	0.030	0.6	0.028	-0.011	-21.2	0.030
-133.0	525.0	1.0	0.296	0.097	18.1	0.311	31.0	0.248	0.027	0.011	21.5	0.029	0.6	0.027	-0.011	-21.5	0.029
-134.0	525.0	1.0	0.290	0.094	18.0	0.305	30.8	0.243	0.027	0.011	21.9	0.029	0.6	0.027	-0.011	-21.9	0.029
-135.0	525.0	1.0	0.284	0.092	17.9	0.299	30.5	0.238	0.026	0.011	22.2	0.028	0.6	0.026	-0.011	-22.2	0.028
-136.0	525.0	1.0	0.279	0.090	17.9	0.293	30.3	0.233	0.026	0.011	22.6	0.028	0.6	0.026	-0.011	-22.6	0.028
-137.0	525.0	1.0	0.273	0.088	17.8	0.287	30.1	0.228	0.026	0.011	22.9	0.028	0.6	0.026	-0.011	-22.9	0.028
-138.0	525.0	1.0	0.268	0.086	17.8	0.281	29.8	0.224	0.025	0.011	23.2	0.027	0.6	0.025	-0.011	-23.2	0.027
-139.0	525.0	1.0	0.263	0.084	17.7	0.276	29.6	0.219	0.025	0.011	23.6	0.027	0.6	0.025	-0.011	-23.6	0.027
-140.0	525.0	1.0	0.258	0.082	17.6	0.270	29.3	0.215	0.024	0.011	23.9	0.027	0.6	0.024	-0.011	-23.9	0.027
-141.0	525.0	1.0	0.253	0.080	17.6	0.265	29.1	0.211	0.024	0.011	24.2	0.026	0.5	0.024	-0.011	-24.2	0.026
-142.0	525.0	1.0	0.248	0.078	17.5	0.260	28.9	0.207	0.024	0.011	24.5	0.026	0.5	0.024	-0.011	-24.5	0.026
-143.0	525.0	1.0	0.243	0.076	17.5	0.255	28.6	0.203	0.023	0.011	24.8	0.026	0.5	0.023	-0.011	-24.8	0.026
-144.0	525.0	1.0	0.239	0.075	17.4	0.250	28.4	0.199	0.023	0.011	25.1	0.025	0.5	0.023	-0.011	-25.1	0.025
-145.0	525.0	1.0	0.234	0.073	17.3	0.245	28.1	0.195	0.023	0.011	25.4	0.025	0.5	0.023	-0.011	-25.4	0.025
-146.0	525.0	1.0	0.230	0.072	17.3	0.241	27.9	0.192	0.022	0.011	25.7	0.025	0.5	0.022	-0.011	-25.7	0.025
-147.0	525.0	1.0	0.226	0.070	17.2	0.236	27.7	0.188	0.022	0.011	26.0	0.024	0.5	0.022	-0.011	-26.0	0.024
-148.0	525.0	1.0	0.222	0.069	17.2	0.232	27.4	0.185	0.022	0.011	26.3	0.024	0.5	0.022	-0.011	-26.3	0.024
-149.0	525.0	1.0	0.218	0.067	17.1	0.228	27.2	0.181	0.021	0.011	26.6	0.024	0.5	0.021	-0.011	-26.6	0.024
-150.0	525.0	1.0	0.214	0.066	17.1	0.224	26.9	0.178	0.021	0.011	26.8	0.024	0.5	0.021	-0.011	-26.8	0.024
-151.0	525.0	1.0	0.210	0.064	17.0	0.220	26.7	0.175	0.021	0.011	27.1	0.023	0.5	0.021	-0.011	-27.1	0.023
-152.0	525.0	1.0	0.206	0.063	17.0	0.216	26.5	0.172	0.020	0.011	27.4	0.023	0.5	0.020	-0.011	-27.4	0.023
-153.0	525.0	1.0	0.203	0.062	17.0	0.212	26.2	0.169	0.020	0.011	27.6	0.023	0.5	0.020	-0.011	-27.6	0.023
-154.0	525.0	1.0	0.199	0.061	16.9	0.208	26.0	0.166	0.020	0.011	27.9	0.022	0.5	0.020	-0.011	-27.9	0.022
-155.0	525.0	1.0	0.196	0.059	16.9	0.204	25.8	0.163	0.020	0.010	28.2	0.022	0.4	0.020	-0.010	-28.2	0.022
-156.0	525.0	1.0	0.162	0.060	20.1	0.173	29.2	0.138	0.017	0.009	28.4	0.020	0.5	0.017	-0.009	-28.4	0.020
-157.0	525.0	1.0	0.159	0.058	20.1	0.170	29.0	0.135	0.017	0.009	28.7	0.019	0.5	0.017	-0.009	-28.7	0.019
-158.0	525.0	1.0	0.157	0.057	20.1	0.167	28.8	0.133	0.017	0.009	28.9	0.019	0.5	0.017	-0.009	-28.9	0.019
-159.0	525.0	1.0	0.154	0.056	20.1	0.164	28.5	0.130	0.017	0.009	29.2	0.019	0.4	0.017	-0.009	-29.2	0.019
-160.0	525.0	1.0	0.151	0.055	20.2	0.161	28.3	0.128	0.016	0.009	29.5	0.019	0.4	0.016	-0.009	-29.5	0.019
-161.0	525.0	1.0	0.148	0.054	20.2	0.158	28.1	0.126	0.016	0.009	29.7	0.019	0.4	0.016	-0.009	-29.7	0.019
-162.0	525.0	1.0	0.146	0.054	20.2	0.155	27.8	0.124	0.016	0.009	30.0	0.018	0.4	0.016	-0.009	-30.0	0.018
-163.0	525.0	1.0	0.143	0.053	20.2	0.152	27.6	0.121	0.016	0.009	30.2	0.018	0.4	0.016	-0.009	-30.2	0.018
-164.0	525.0	1.0	0.141	0.052	20.2	0.150	27.4	0.119	0.016	0.009	30.4	0.018	0.4	0.016	-0.009	-30.4	0.018
-165.0	525.0	1.0	0.138	0.051	20.2	0.147	27.2	0.117	0.015	0.009	30.7	0.018	0.4	0.015	-0.009	-30.7	0.018
-166.0	525.0	1.0	0.136	0.050	20.2	0.145	26.9	0.115	0.015	0.009	30.9	0.018	0.4	0.015	-0.009	-30.9	0.018
-167.0	525.0	1.0	0.133	0.049	20.3	0.142	26.7	0.113	0.015	0.009	31.1	0.017	0.4	0.015	-0.009	-31.1	0.017
-168.0	525.0	1.0	0.131	0.048	20.3	0.140	26.5	0.111	0.015	0.009	31.4	0.017	0.4	0.015	-0.009	-31.4	0.017
-169.0	525.0	1.0	0.129	0.048	20.3	0.137	26.3	0.109	0.014	0.009	31.6	0.017	0.4	0.014	-0.009	-31.6	0.017
-170.0	525.0	1.0	0.127	0.047	20.3	0.135	26.0	0.108	0.014	0.009	31.8	0.017	0.4	0.014	-0.009	-31.8	0.017
-171.0	525.0	1.0	0.125	0.046	20.3	0.133	25.8	0.106	0.014	0.009	32.0	0.017	0.4	0.014	-0.009	-32.0	0.017
-172.0	525.0	1.0	0.132	0.040	16.7	0.138	25.4	0.110	0.014	0.007	26.2	0.015	0.3	0.014	-0.007	-26.2	0.015
-173.0	525.0	1.0	0.130	0.039	16.7	0.136	25.1	0.108	0.013	0.007	26.4	0.015	0.3	0.013	-0.007	-26.4	0.015
-174.0	525.0	1.0	0.128	0.038	16.6	0.134	24.9	0.107	0.013	0.007	26.6	0.015	0.3	0.013	-0.007	-26.6	0.015
-175.0	525.0	1.0	0.126	0.038	16.5	0.132	24.6	0.105	0.013	0.007	26.7	0.015	0.3	0.013	-0.007	-26.7	0.015
-176.0	525.0	1.0	0.124	0.037	16.5	0.130	24.4	0.103	0.013	0.007	26.9	0.015	0.3	0.013	-0.007	-26.9	0.015
-177.0	525.0	1.0	0.123	0.036	16.4	0.128	24.2	0.102	0.013	0.007	27.1	0.014	0.3	0.013	-0.007	-27.1	0.014
-178.0	525.0	1.0	0.121	0.035	16.3	0.126	23.9	0.100	0.013	0.007	27.3	0.014	0.3	0.013	-0.007	-27.3	0.014
-179.0	525.0	1.0	0.119	0.035	16.2	0.124	23.7	0.099	0.012	0.006	27.5	0.014	0.3	0.012	-0.006	-27.5	0.014
-180.0	525.0	1.0	0.117	0.034	16.2	0.122	23.4	0.097	0.012	0.006	27.6	0.014	0.3	0.012	-0.006	-27.6	0.014
-181.0	525.0	1.0	0.116	0.033	16.1	0.120	23.2	0.096	0.012	0.006	27.8	0.014	0.3	0.012	-0.006	-27.8	0.014
-182.0	525.0	1.0	0.114	0.033	16.0	0.119	23.0	0.094	0.012	0.006	28.0	0.014	0.3	0.012	-0.006	-28.0	0.014
-183.0	525.0	1.0	0.112	0.032	15.9	0.117	22.7	0.093	0.012	0.006	28.2	0.013	0.3	0.012	-0.006	-28.2	0.013
-184.0	525.0	1.0	0.111	0.031	15.9	0.115	22.5	0.092	0.012	0.006	28.3	0.013	0.3	0.012	-0.006	-28.3	0.013
-185.0	525.0	1.0	0.109	0.031	15.8	0.113	22.2	0.090	0.012	0.006	28.5	0.013	0.3	0.012	-0.006	-28.5	0.013
-186.0	525.0	1.0	0.108	0.030	15.7	0.112	22.0	0.089	0.011	0.006	28.6	0.013	0.3	0.011	-0.006	-28.6	0.013
-187.0	525.0	1.0	0.106	0.030	15.7	0.110	21.8	0.088	0.011	0.006	28.8	0.013	0.3	0.011	-0.006	-28.8	0.013
-188.0	525.0	1.0	0.105	0.029	15.6	0.109	21.5	0.086	0.011	0.006	29.0	0.013	0.3	0.011	-0.006	-29.0	0.013
-189.0	525.0	1.0	0.103	0.029	15.5	0.107	21.3	0.085	0.011	0.006	29.1	0.013	0.3	0.011	-0.006	-29.1	0.013
-190.0	525.0	1.0	0.102	0.028	15.4	0.106	21.1	0.084	0.011	0.006	29.3	0.012	0.3	0.011	-0.006	-29.3	0.012
-191.0	525.0	1.0	0.100	0.028	15.4	0.104	20.8	0.083	0.011	0.006	29.4	0.012	0.3	0.011	-0.006	-29.4	0.012
-192.0	525.0	1.0	0.099	0.027	15.3	0.103	20.6	0.082	0.011	0.006	29.6	0.012	0.3	0.011	-0.006	-29.6	0.012
-193.0	525.0	1.0	0.098	0.027	15.2	0.101	20.4	0.081	0.010	0.006	29.7	0.012	0.3	0.010	-0.006	-29.7	0.012
-194.0	525.0	1.0	0.096	0.026	15.1	0.100	20.1	0.079	0.010	0.006	29.9	0.012	0.3	0.010	-0.006	-29.9	0.012
-195.0	525.0	1.0	0.095	0.026	15.1	0.099	19.9	0.078	0.010	0.006	30.0	0.012	0.2	0.010	-0.006	-30.0	0.012
-196.0	525.0	1.0	0.094	0.025	15.0	0.097	19.6	0.077	0.010	0.006	30.2	0.012	0.2	0.010	-0.006	-30.2	0.012
-197.0	525.0	1.0	0.093	0.025	14.9	0.096	19.4	0.076	0.010	0.006	30.3	0.012	0.2	0.010	-0.006	-30.3	0.012
-198.0	525.0	1.0	0.091	0.024	14.9	0.095	19.2	0.075	0.010	0.006	30.4	0.011	0.2	0.010	-0.006	-30.4	0.011
-199.0	525.0	1.0	0.090	0.024	14.8	0.093	18.9	0.074	0.010	0.006	30.6	0.011	0.2	0.010	-0.006	-30.6	0.011
-200.0	525.0	1.0	0.089	0.023	14.7	0.092	18.7	0.073	0.010	0.006	30.7	0.011	0.2	0.010	-0.006	-30.7	0.011
-201.0	525.0	1.0	0.088	0.023	14.6	0.091	18.5	0.072	0.010	0.006	30.8	0.011	0.2	0.010	-0.006	-30.8	0.011
-202.0	525.0	1.0	0.087	0.023	14.6	0.090	18.3	0.071	0.009	0.006	31.0	0.011	0.2	0.009	-0.006	-31.0	0.011
-203.0	525.0	1.0	0.086	0.022	14.5	0.089	18.0	0.070	0.009	0.006	31.1	0.011	0.2	0.009	-0.006	-31.1	0.011
-204.0	525.0	1.0	0.085	0.022	14.4	0.087	17.8	0.070	0.009	0.006	31.2	0.011	0.2	0.009	-0.006	-31.2	0.011
-205.0	525.0	1.0	0.084	0.021	14.4	0.086	17.6	0.069	0.009	0.006	31.4	0.011	0.2	0.009	-0.006	-31.4	0.011
-206.0	525.0	1.0	0.083	0.021	14.3	0.085	17.3	0.068	0.009	0.006	31.5	0.011	0.2	0.009	-0.006	-31.5	0.011
-207.0	525.0	1.0	0.082	0.021	14.2	0.084	17.1	0.067	0.009	0.005	31.6	0.010	0.2	0.009	-0.005	-31.6	0.010
-208.0	525.0	1.0	0.081	0.020	14.1	0.083	16.9	0.066	0.009	0.005	31.7	0.010	0.2	0.009	-0.005	-31.7	0.010
-209.0	525.0	1.0	0.080	0.020	14.1	0.082	16.7	0.065	0.009	0.005	31.8	0.010	0.2	0.009	-0.005	-31.8	0.010
-210.0	525.0	1.0	0.079	0.020	14.0	0.081	16.4	0.065	0.009	0.005	32.0	0.010	0.2	0.009	-0.005	-32.0	0.010
-211.0	525.0	1.0	0.078	0.019	13.9	0.080	16.2	0.064	0.009	0.005	32.1	0.010	0.2	0.009	-0.005	-32.1	0.010
-212.0	525.0	1.0	0.077	0.019	13.9	0.079	16.0	0.063	0.008	0.005	32.2	0.010	0.2	0.008	-0.005	-32.2	0.010
-213.0	525.0	1.0	0.076	0.019	13.8	0.078	15.7	0.062	0.008	0.005	32.3	0.010	0.2	0.008	-0.005	-32.3	0.010
-214.0	525.0	1.0	0.075	0.018	13.7	0.077	15.5	0.061	0.008	0.005	32.4	0.010	0.2	0.008	-0.005	-32.4	0.010
-215.0	525.0	1.0	0.074	0.018	13.6	0.076	15.3	0.061	0.008	0.005	32.5	0.010	0.2	0.008	-0.005	-32.5	0.010
-216.0	525.0	1.0	0.073	0.018	13.6	0.075	15.1	0.060	0.008	0.005	32.6	0.010	0.2	0.008	-0.005	-32.7	0.010
-217.0	525.0	1.0	0.072	0.017	13.5	0.074	14.9	0.059	0.008	0.005	32.8	0.010	0.2	0.008	-0.005	-32.8	0.010
-218.0	525.0	1.0	0.072	0.017	13.4	0.074	14.6	0.059	0.008	0.005	32.9	0.009	0.2	0.008	-0.005	-32.9	0.009
-219.0	525.0	1.0	0.071	0.017	13.4	0.073	14.4	0.058	0.008	0.005	33.0	0.009	0.2	0.008	-0.005	-33.0	0.009
-220.0	525.0	1.0	0.070	0.017	13.3	0.072	14.2	0.057	0.008	0.005	33.1	0.009	0.2	0.008	-0.005	-33.1	0.009
-221.0	525.0	1.0	0.069	0.016	13.2	0.071	14.0	0.057	0.008	0.005	33.2	0.009	0.2	0.008	-0.005	-33.2	0.009
-222.0	525.0	1.0	0.068	0.016	13.2	0.070	13.8	0.056	0.008	0.005	33.3	0.009	0.2	0.008	-0.005	-33.3	0.009
-223.0	525.0	1.0	0.068	0.016	13.1	0.069	13.5	0.055	0.007	0.005	33.4	0.009	0.2	0.007	-0.005	-33.4	0.009
-224.0	525.0	1.0	0.067	0.015	13.0	0.069	13.3	0.055	0.007	0.005	33.5	0.009	0.2	0.007	-0.005	-33.5	0.009
-225.0	525.0	1.0	0.066	0.015	12.9	0.068	13.1	0.054	0.007	0.005	33.6	0.009	0.2	0.007	-0.005	-33.6	0.009
-226.0	525.0	1.0	0.065	0.015	12.9	0.067	12.9	0.053	0.007	0.005	33.7	0.009	0.2	0.007	-0.005	-33.7	0.009
-227.0	525.0	1.0	0.065	0.015	12.8	0.066	12.7	0.053	0.007	0.005	33.8	0.009	0.2	0.007	-0.005	-33.8	0.009
-228.0	525.0	1.0	0.083	0.013	9.3	0.084	7.5	0.067	0.007	0.002	18.2	0.008	0.2	0.007	-0.002	-18.2	0.008

Appendix E Arcadis Complex EMF Assessment Report

SSEN KINTORE TEALING PROJECT

Electric and Magnetic Fields in Overhead Line Duck-Under Scenarios

6096/134/R/HN/03

AUGUST 2025

ARCADIS CONTACT

HIMANSHU NEGI
Associate Technical Director

Arcadis

3rd Floor, Aurora Building
120 Bothwell Street
Glasgow, G2 7JS
United Kingdom

CLIENT CONTACT

COLIN THOMPSON
OHL Project Engineer

Scottish and Southern Electricity Networks/ SSEN Transmission plc

Prime View, Unit 11,
Prime Four Business Park,
Kingswells, AB15 8PU,
United Kingdom

SSEN KINTORE TEALING PROJECT

Electric and Magnetic Fields in Overhead line Duck-Under Scenarios

Author	Himanshu Negi
Checker	Krishna Ale
Approver	Himanshu Negi
Report No	6096/134/R/HN/03
Date	AUGUST 2025

VERSION CONTROL

Version	Date	Author	Changes
A	02/07/25	H. Negi	First Issue – Project specific report produced based on 6096/134/R/HN/02B as per Clients request.
B	16/07/25	H. Negi	First Issue Updated with Client Comments
C	01/08/25	H. Negi	Second Issue Updated with Client Comments

CONTENTS

APPENDICES

APPENDIX A

ASTI 400 kV OHL Tower (Information Only)

ASTI 400 kV OHL Phase and Earth Wire

Duck-under Parameters and Phasing

APPENDIX B

CDEGS (HIFREQ) Results – Craigiebuckler to Tarland 132 kV OHL

Executive Summary

Scottish and Southern Electricity Networks/ SSEN Transmission plc ("SSEN") is proposing to construct and operate approximately 105.2 kilometres (km) of new double circuit 400 kilovolts (kV) overhead transmission line (OHL) between Kintore and Tealing.

In July 2022, National Grid ESO (as of 1 October 2024 now known as the National Energy System Operator (NESO)) published the Pathway to 2030 Holistic Network Design (Pathway to 2023 HND), setting out the electricity transmission network infrastructure required to enable the forecasted growth in renewable electricity across Great Britain, in light of the UK and Scottish Government's 2030 offshore wind allocations of 50 gigawatt (GW) and 11 GW (through the Crown Estate and ScotWind leasing rounds) which are the main driver for these upgrades.

The proposed 400 kV overhead line (OHL) will consist of steel lattice towers using a new tower series known as the ASTI SSE400 or AS4 for short. These towers are expected to average 57 m in height across the routes. The conductor system is proposed to be 3 x 700 mm^2 AAAC Araucaria with 500 mm bundle spacing. The circuit is designed to function up to 90°C while maintaining a minimum ground clearance of 9 m under normal conditions. Although it is capable of operating at to 90°C, it is not currently intended to be used at this maximum rating.

This report details the EMF assessment in OHL duck-under scenarios (see Section 4). In the context of OHL, a duck-under describes a configuration where one transmission line passes beneath another, typically to prevent routing conflicts or ensure adequate clearances in constrained spaces. The primary objective of this report is to provide an EMF assessment for the general public exposure at a height of 1 m above ground at the crossing of the proposed Kintore Tealing and other SSEN overhead lines. This report details the input data, EMF limits, and EMF calculations conducted using the CDEGS software package, alongside a risk assessment based on industry guideline.

Main Results

Arcadis carried out an EMF assessment of the proposed 400 kV OHL duck under scenario with the existing Craigiebuckler - Tarland 132 kV OHL using CDEGS (HIFREQ). The calculation profile was placed at the OHL duck-under 1 m above ground. The power flow on both circuit was considered in same direction. The study acknowledges the limitation in accurately modelling insulator end fittings and conductor assembly hardware in HIFREQ; however, this does not impact EMF calculation at ground level itself.

To ensure public exposure remains within safe limits, set exposure thresholds at 9 kV/m for electric fields and 360 μT for magnetic fields were used.

<u>The calculation considers that the duck-under configuration for the 132 kV OHL is sagged to maintain statutory clearance to ground of 6.7 m which is considered conservative for the purpose of this assessment. Due to limitations within the CDEGS software package all towers are modelled on a uniform plane. The model however considers the lowest point between the conductor and ground and therefore can be considered conservative.</u>

The EMF was assessed using CDEGS (HIFREQ), with all calculated values for the Craigiebuckler - Tarland 132 kV OHL duck-under scenario remaining within the safe threshold. The corresponding graphs are shown in Appendix B.

Recommendations

It is advisable for SSEN to review all input data and assumptions outlined in the report during the detailed design stage to ensure compliance with public EMF exposure limits.

1. Introduction

Scottish and Southern Electricity Networks/ SSEN Transmission plc ("SSEN") is proposing to build a number of projects including new high-voltage electricity 400 kV transmission lines, 400 kV Substations and HVDC (high voltage direct current) link to deliver the UK Government's 50 GW offshore wind by 2030 target. This has been set out as part of the Pathway to 2030 Holistic Network Design. Figure 1 illustrates the SSEN Pathway to 2030 projects.

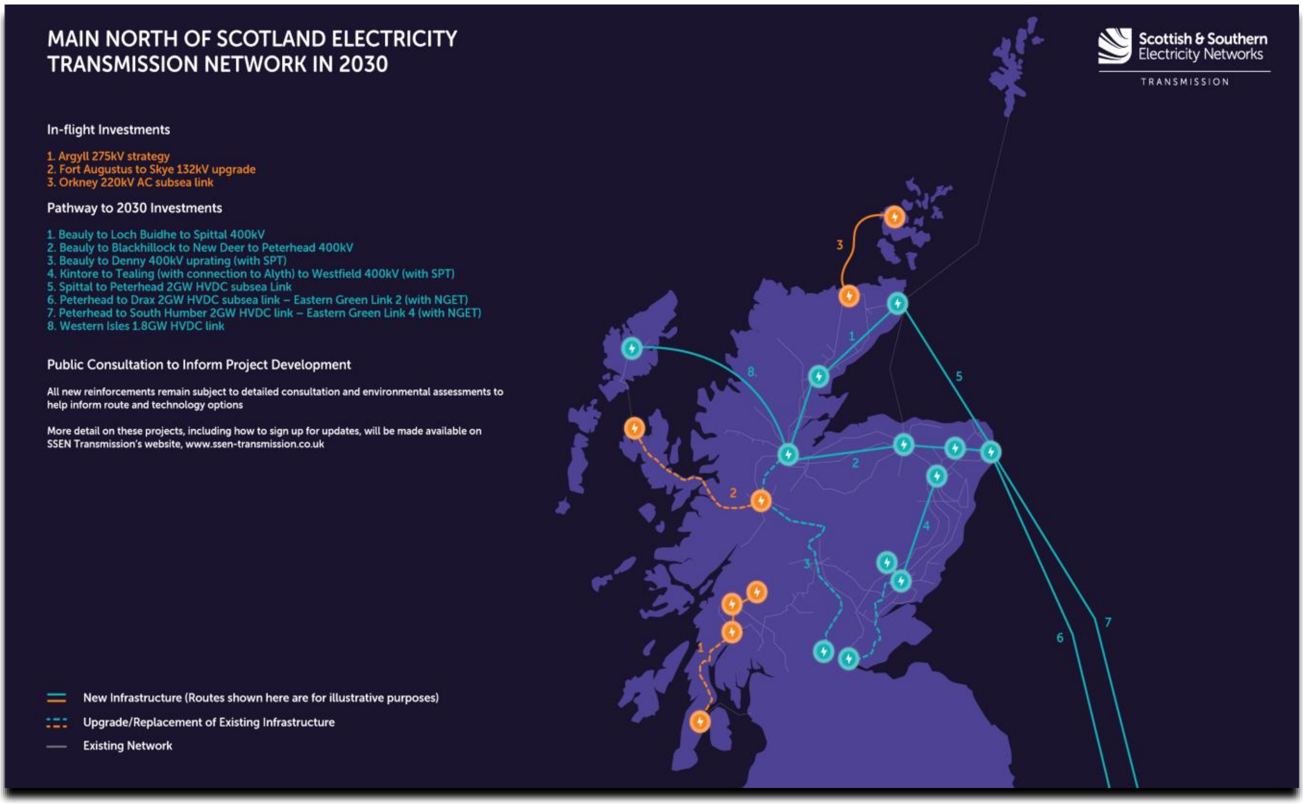


Figure 1. SSEN Pathway to 2030 Transmission Network

The Kintore to Tealing 400 kV overhead line (OHL) will consist of steel lattice towers using a new tower series known as the ASTI SSE400 or AS4 for short. These towers are expected to average 57 m in height across the routes. The conductor system is proposed to be 3x700 mm^2 AAAC Araucaria with 500 mm bundle spacing. The circuit is designed to function up to 90°C while maintaining a minimum ground clearance of 9 m under normal conditions. Although it is capable of operating at 90°C, it is not currently intended to be used at this maximum rating.

Arcadis Consulting (UK) Ltd ("Arcadis") has been commissioned by SSEN to conduct an electric and magnetic fields (EMFs) assessment for the ASTI 400 kV OHL tower. Arcadis completed a report summarising the EMF calculations for AS4 tower [1].

This report details the EMF assessment in OHL duck-under scenarios (see Section 4). In the context of OHL, a duck-under describes a configuration where one transmission line passes beneath another, typically to prevent routing conflicts or ensure adequate clearances in constrained spaces. The primary objective of this report is to provide an EMF assessment for the general public exposure at a height of 1 m above ground at the crossing of the proposed Kintore Tealing and other SSEN existing overhead lines. This report details the input data, EMF limits, and EMF calculations conducted using the CDEGS software package, alongside a risk assessment based on industry guideline. Sections 2 of the report remain unchanged from previous Arcadis report 6096/134/R/HN/01B [1].

[1] Arcadis Report 6096/134/R/HN/01B- SSE ASTI Project - 400 kV Overhead Line Tower Electric and Magnetic Fields, 18th February 2025

2. Electric & Magnetic Field (EMF) Risks

The electromagnetic field (EMF) from power lines consist of electric field and magnetic field. The electric fields are produced by voltage. Electric fields are measured in volts per metre (v/m). Magnetic fields are produced by current, which is the flow of electricity. Generally, the higher the current, the higher the magnetic field. Magnetic fields are measured in microtesla (μT).

Alternating magnetic fields induces electric fields which will produce currents in a conductive medium. The human body is conductive and hence alternative magnetic fields will induce very weak voltages and currents in the human body. If these voltages and currents are high enough, it is possible to result in physiological effects on excitable tissues of the body, mainly nerve and muscle cells. Similar, direct exposure of alternating electric fields can induce very weak voltages and currents in the human body. Again, if these voltages and currents are high enough, it is possible to result in physiological effects on excitable tissues of the body, mainly nerve and muscle cells.

An active implantable medical device (AIMD) is any medical device which is intended to be totally or partially introduced, surgically or medically, into the human body, and which is intended to remain after the procedure. The commonest are pacemakers and defibrillators (together described as "implanted heart devices"). The electronic medical implants use electrical component in their construction. Under certain circumstances some implants may be susceptible to interference from electromagnetic field. This situation could lead to improper function of medical implants e.g.; a heart pacemaker disturbance can pose a health & safety threat. It should be noted that the Medicines and Healthcare products Regulatory Agency (MHRA) are aware of no instance of a patient having their implanted heart device interfered with by a high-voltage power line [2].

The two internationally recognised exposure guidelines are established by the Institute of Electrical and Electronics Engineers (IEEE) [3] and International Commission on Non-Ionising Radiation Protection (ICNIRP) and [4].

2.1 How EMF Strengths Decrease with Distance

EMF decreases with distance from the source. Generally, at a distance from the source d, the fields will decrease as follows [5]:

- Single-phase current – 1/d,
- Single circuit or double circuit un-transposed – $1/d^2$, and
- Double circuit transposed (assuming symmetrical geometry) or coil – $1/d^3$.

Figure 2 shows this rate of decrease from different sources. In practice, factors such as unequal currents, zero sequence currents, tapered towers, geometrical deviations on the structure, and very close proximity to sources will result in rates of decrease which are less than the above. Furthermore, magnetic field profiles are typically shown horizontally along the ground (at one metre above ground), perpendicular to the conductor and typically at midspan where the conductors are closest to the ground.

[2] https://www.emfs.info/

[3] IEEE (2019) Standard for Safety Levels with Respect to Human Exposure to Electric, Magnetic, and Electromagnetic Fields, 0 Hz to 300 GHz. IEEE Std C95.1, New York

[4] International Commission on Non-ionizing Radiation Protection (2010): Guidelines for limiting exposure to time-varying electric and magnetic fields (1 Hz to 100 kHz). Health Phys 99 (6), pp.818- 836. Erratum in Health Phys 100 (1), p.112 (2011). https://www.icnirp.org/cms/upload/publications/ICNIRPLFgdl.pdf and International Commission on Non-ionizing Radiation Protection (1998): Guidelines for Limiting Exposure to Time-Varying Electric, Magnetic Fields and Electromagnetic Fields (up to 300 GHz). Health Phys 74 (4), pp.494-522. https://www.icnirp.org/cms/upload/publications/ICNIRPemfgdl.pdf

[5] CIGRE TB 806, Responsible management of electric and magnetic fields (EMF) – 2020.

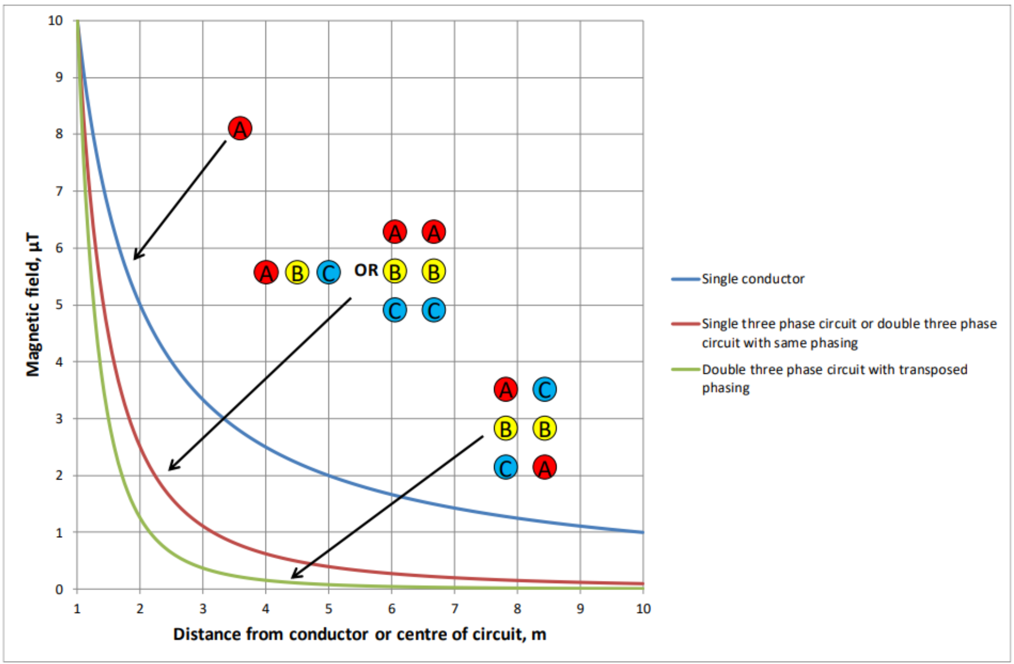


Figure 2: General Rate of Decrease of Magnetic Fields from Different Sources

2.2 EMF Limits

The EMF limits within the regulations [6], are the exposure limits values (ELVs), and there are two levels: the Sensory ELVs and Health ELVs. The Sensory ELVs can be exceeded if are range of conditions are met, but the health ELVs must not be exceeded. For occupational exposure the first level of exposure limits for the unperturbed fields are the Sensory Action Levels which are.

- Magnetic field: 1 mT or 1000 µT (18 mT for exposure only to limbs)
- Electric field: 10 kV/m

The regulations allow for the sensory effects ELVs to be exceeded under the following conditions: i) They are only exceeded temporarily. ii) Hazardous spark discharges and contact currents in excess of 1 mA are prevented through the provision of information and training and the use of suitable technical and personal protection measures. iii) Adequate information is provided to the employee on the possibility of sensory effects related to time varying magnetic fields, including retinal phosphenes. iv) Where any of those sensory effects are reported to the employer, the risk assessment is updated where necessary. Providing the above conditions are complied with, the Regulations allow exposure up to a High Action Levels (which ensure the health ELV are not exceed), which are:

- Magnetic field: 6 mT or 6000 µT (18 mT for exposure only to limbs)
- Electric field: 20 kV/m

To ensure public exposure remains within safe limits, general public exposures in the UK should adhere to the ICNIRP 1998 guidelines, as outlined in the voluntary Code of Practice [7]. In practical terms, this mean:

- An electric field of 9 kV/m.
- A magnetic field of 360 µT.

[6] The Control of Electromagnetic Fields at Work Regulations 2016, see https://www.legislation.gov.uk/uksi/2016/588/contents

[7] Power Lines: Demonstrating compliance with EMF public exposure guidelines – A voluntary Code of Practice, published by DECC in February 2011.

3. Computation Software

The EMF was calculated using **HIFREQ (Electromagnetic Fields Analysis) module of the SES CDEGS software suite.** HIFREQ is an optimal computation tool for tackling complex electromagnetic problems involving any system of conductors, which can be comprised of various materials and assembled in various configurations, and which may include metallic plates, coaxial or multi-core cables, GIS/GIL, transformers, and assorted lumped components (e.g. resistors, inductors, and capacitors, etc.). HIFREQ is the only computation module that can provide accurate solutions to transient and steady state problems in the frequency range of zero to hundreds of megahertz, for the analysis of buried and aboveground conductors. It computes electric and magnetic fields in the air and soil, as well as conductor and soil potentials, and the current distribution in the soil and in the conductors.

More information on HIFREQ module https://sestech.com/en/Product/Module/HIFREQ

Limitations: This study acknowledges the limitation in accurately modelling insulator end fittings and conductor assembly hardware in CDEGS. Accurate modelling can be attained by applying 3D electric field design and analysis software featuring Boundary Element Method (BEM) technology.

Electric fields near the surface of a conductor are very sensitive to the shape of the conductor. HIFREQ can be used to compute electric fields by modelling the OHL tower and phase conductors, however, the conductors are represented as wire filaments and the exact shape of a conductor (for example the steel members of a tower), and insulators cannot be modelled. It is important to note that electric fields computed with HIFREQ at points located far away (i.e., several conductor radii away) from the conductors should nonetheless be accurate.

4. OHL Duck-Under Scenarios

The proposed Kintore to Tealing OHL involves the construction of approximately 105.2 km of new 400 kV double circuit OHL between the existing Kintore Substation and new substation sites proposed at Fetteresso Forest (Hurlie 400 kV substation) and Tealing (Emmock 400 kV substation).

The existing Craigiebuckler to Tarland 132 kV OHL requires modification to achieve the required crossing arrangement to ensure safe operation of the 132 kV and 400 kV OHL. The works comprise constructing two new L4m SF60 (low profile) support structures and two new L4m DT support structures in a diamond formation. The new support structures will be strung with a single conductor on each phase, one circuit will be on the northern part of the diamond, and the other circuit will be on the southern part of the diamond.

The EMF assessment was carried out at the following location. The circuit data for new 400 kV and crossing arrangement is shown in Section 5 and 6.

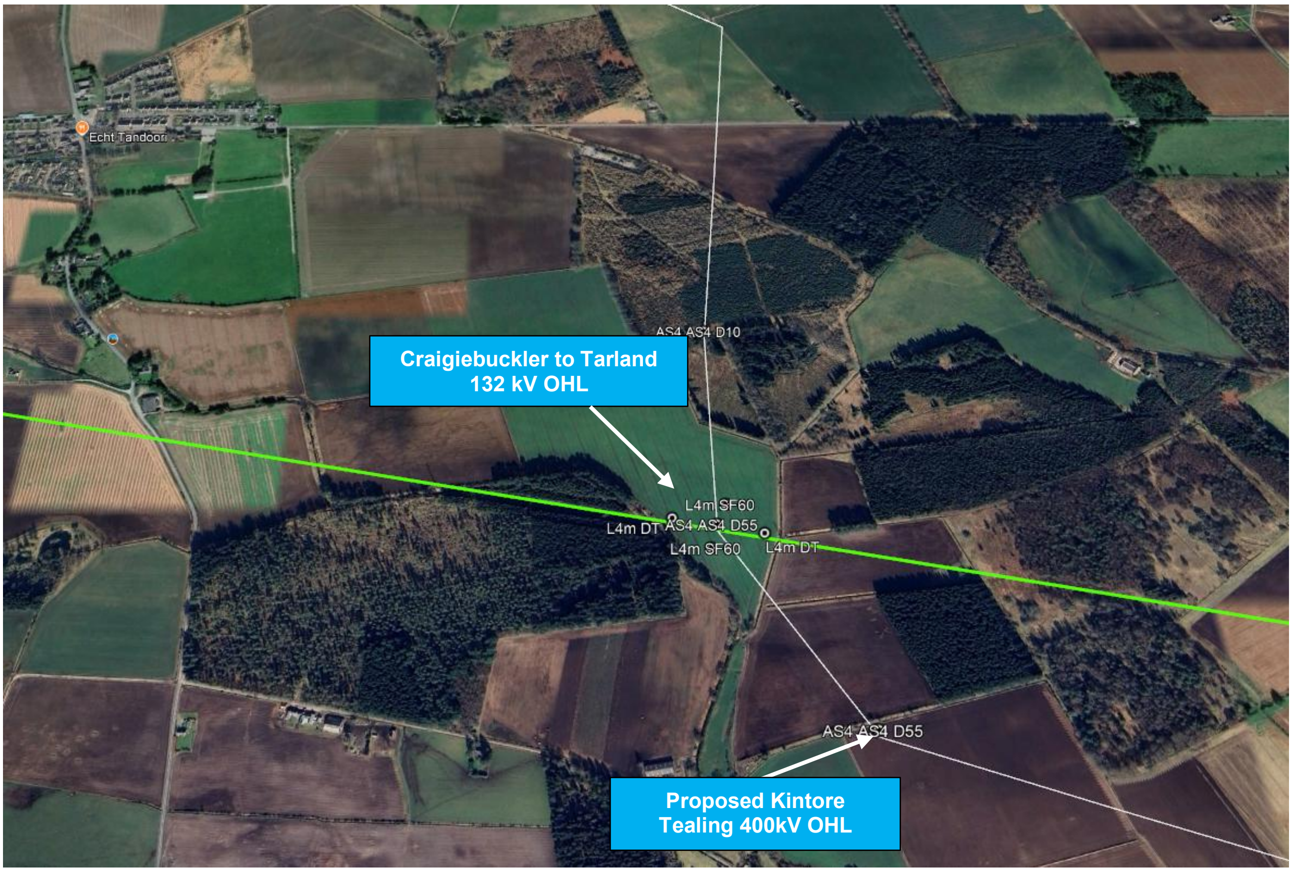


Figure 3: Craigiebuckler to Tarland 132 kV OHL Crossing

5. Data for CDEGS Model

This section details the input data for the proposed Kintore to Tealing 400 kV circuits that was used to develop a computer model to calculate EMF as requested by SSEN.

5.1 Soil Resistivity

The soil resistivity along the OHL route was considered 500 Ωm. The magnitude was chosen based on the Arcadis engineering experience within SSEN network area. The above soil model will be used in all future subsequent analysis to represent the soil conditions.

5.2 Conductor Data

The Kintore to Tealing 400 kV OHL route will consist of steel lattice towers using a new tower series known as the ASTI SSE400 or AS4 for short. A 400 kV tower drawing is detailed within the Appendix A of this report. For each crossing the tower type, span length and sag was designed in a PLSCAD model and information shared by SSEN [8]. The conductor system is proposed to be 3 x 700 mm^2 AAAC Araucaria with 500 mm bundle spacing. The phase and earth wire data sheets are attached in Appendix A.

At OHL duck-under scenarios, the existing OHL phase and earth wire data for the 132kV Craigiebuckler to Tarland OHL was based on the information attached in Appendix A of this report.

5.3 OHL Voltage Levels and Load Current

The steady state coupling in this report considers the proposed Kintore to Tealing 400 kV OHLs operating at maximum pre fault continuous winter rating of 5000 A and maximum 400 kV voltage.

At OHL duck-under scenarios, the duck under OHL rating was based on the information attached in Appendix A of this report. At the crossing location, the ground clearance of the oversailing ASTI 400 kV overhead lines was modelled using a conservative approach, bounded between a minimum clearance of 9 meters and the conductor sag profile derived from PLS-CADD simulations. The sag of the duck under OHL was modelled such that the phase conductor was approaching statutory clearance 6.7 m for 132 kV given in the Electricity Safety, Quality and Continuity Regulations 2002 (see https://www.legislation.gov.uk/uksi/2002/2665/contents).

The report does not consider fault conditions. As per CIGRE guidelines, in extreme cases, lightning and electrical faults can create very brief, large, fault currents in equipment and conductors/cables, and consequently elevated magnetic fields in the vicinity. Fault current events are of very short duration (typically a few cycles), rare (typically a few times per year or less) and have a low probability of coincidence with someone being in very close proximity at the time. This is a somewhat similar scenario to lightning strikes. ICNIRP 2010 does not provide specific guidance on fault currents. IEEE [3] states that the averaging time for assessing exposures is 200 ms or ten cycles. Faults currents that exceed ten cycles are typically on low-voltage distribution systems or remote from the protection. In these cases, the current is typically lower. In any case where such faults occur the electricity system is designed to immediately isolate the fault and thereby eliminate any exposure. Therefore, electrical networks are compliant with the general principle that when a danger is identified it is eliminated as soon as possible, and all reasonable attempts are made to avoid its occurrence.

[8] Email from SSEN, "RE: Special Arrangement Models - SF60s for EMFs" 20th February 2025.

5.4 OHL Phasing

Similar to the phase and earth wire, the phase arrangement of the OHL on a double circuit tower can impact EMF. SSEN have provided data on the proposed phasing for both the existing and proposed OHL which is shown within Appendix A. The Kintore Tealing OHL will have optimal phasing with a "centre points symmetrical" phase arrangement, as illustrated in Figure 4. This is the phasing arrangement used in the analysis. The existing OHL phasing has been modelled as per the information provided in Appendix A.

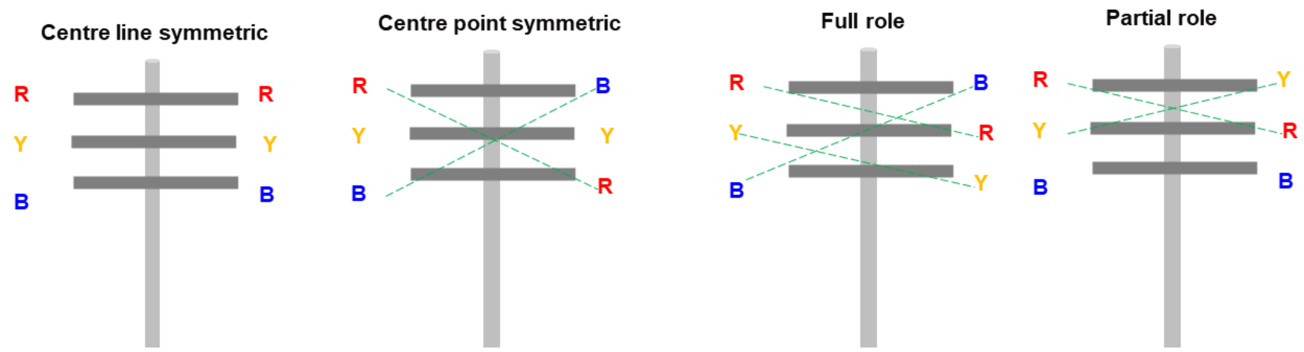


Figure 4: Possible Phase Arrangements -Double Circuit OHL

6. EMF Calculations

This section details the calculations and interpretations of EMF using HIFREQ along the CDEGS model at the proposed crossing. The OHL tower, phase, and earth wires were modelled using the data, in Section 4. Two spans were modelled, and calculation profile were placed at OHL duck-under 1 m above ground. The power flow on both circuit was considered in same direction. As stated before, this study acknowledges the limitation in accurately modelling insulator end fittings and conductor assembly hardware in HIFREQ. The insulators were omitted, and conductors were modelled at respective locations at the tower crossarm, it should be noted however that as the conductor is sagged to achieve 9m clearance to ground the insulator length has negligible impact.

According to the CDEGS model of the 132kV Craigiebuckler to Tarland OHL crossing, the maximum electric and magnetic field values are presented below, with the corresponding CDEGS plot provided in Appendix B.

- An electric field 8.44 kV < safe threshold of 9 kV/m
- A magnetic field 98.81 μT < safe threshold 360 μT

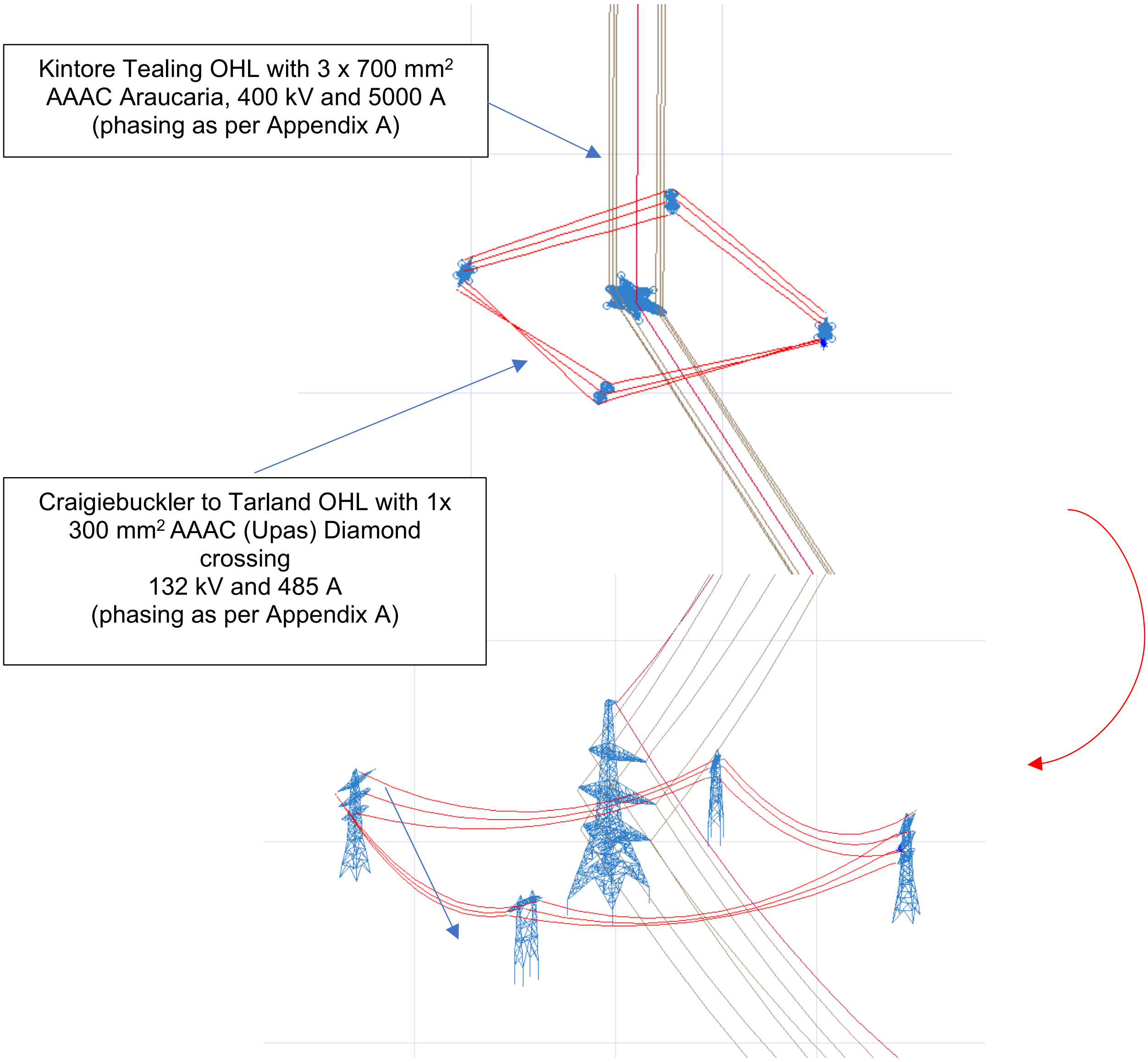


Figure 5: 132 kV Craigiebuckler to Tarland OHL Crossing

7. Conclusions

a) Arcadis carried out an EMF assessment of the proposed Kintore Tealing 400kV OHL duck under scenario with existing SSEN Craigiebuckler to Tarland 132 kV OHL using CDEGS (HIFREQ). The calculation profile was placed at the OHL duck-under 1 m above ground. The power flow on both circuit was considered in same direction. The study acknowledges the limitation in accurately modelling insulator end fittings and conductor assembly hardware in HIFREQ however this does not impact EMF calculation at ground level itself.

b) To ensure public exposure remains within safe limits, set exposure thresholds at 9 kV/m for electric fields and 360 μT for magnetic fields were used.

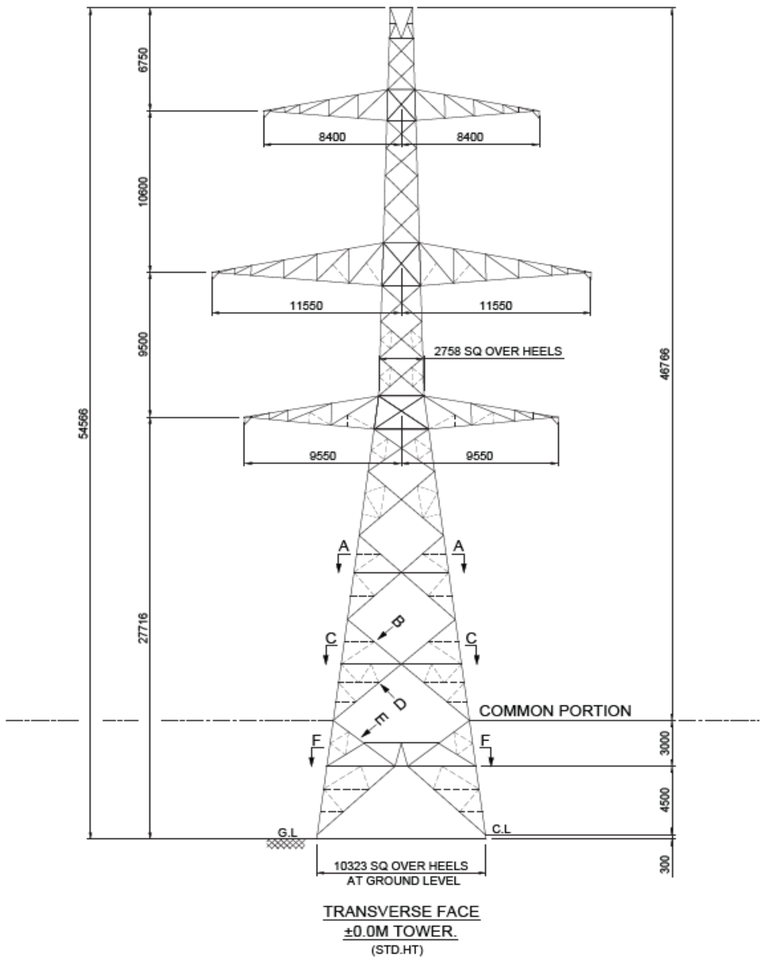
c) The EMF was assessed using CDEGS (HIFREQ), with all calculated values for the Craigiebuckler to Tarland 132 kV OHL duck-under scenario remaining within the safe threshold. The corresponding graphs are shown in Appendix B.

8. Recommendations

a) It is advisable for SSEN to review all input data and assumptions outlined in the report during the detailed design stage to ensure compliance with public EMF exposure limits.

Appendix A

ASTI 400 kV OHL Tower (Information Only)



ASTI 400 kV OHL Phase and Earth Wire

data sheet

LF AAAC Araucaria EHC

LAMIFIL

Version 1, 23-02-2008

Conductor	AAAC 820mm²
Code name	LF AAAC Araucaria EHC

Mechanical specifications	Metric (SI)					Imperial				
Nominal aluminium equivalent area	mm²	761				in²	1,179			
Nominal cross sectional area of aluminium alloy	mm²	821,1				in²	1,273			
Number, diameter and type of central wire	#, mm	1	4,14	R	Alloy	#, in	1	0,163	R	Alloy
Number, (eq.) diameter and type of wire in layer	#, mm	6	4,14	R	Alloy	#, in	6	0,163	R	Alloy
Number, (eq.) diameter and type of wire in layer	#, mm	12	4,14	R	Alloy	#, in	12	0,163	R	Alloy
Number, (eq.) diameter and type of wire in layer	#, mm	18	4,14	R	Alloy	#, in	18	0,163	R	Alloy
Number, (eq.) diameter and type of wire in layer	#, mm	24	4,14	R	Alloy	#, in	24	0,163	R	Alloy
Diameter tolerance of aluminium wires (Al or Alloy)	mm	± 0,03				in	± 0,001			
Lay ratio of inner layer(s)		10-16					10-16			
Lay ratio of outer layer		10-14					10-14			
Overall diameter	mm	37,26				in	1,467			
Rated tensile strength of conductor (RTS)	kN	242,2				klbf	54,5			
Nominal mass per unit length - total	kg/km	2350,5				lb/kft	1579,5			
Nominal mass per unit length - total bare	kg/km	2271,5				lb/kft	1526,4			
Nominal mass per unit length - grease	kg/km	79,0				lb/kft	53,1			
Coefficient of linear expansion below thermal kneepoint	/ K	0,00002300				/ °F	0,00001278			
Modulus of elasticity below thermal kneepoint	GPa	56,6				Msi	8,20			
Geometric mean radius	mm	14,5				ft	0,0476			

Electrical specifications	Metric (SI)		Imperial	
Nominal DC resistance at 20 °C (tolerance ± 2%)	Ohm/km	0,0381	Ohm/mile	0,0612
Temperature coefficient		0,00403		0,00403
Frequency	Hz	50	Hz	60
Nominal AC resistance at 20 °C (tolerance ± 2%)	Ohm/km	0,0401	Ohm/mile	0,0659
Nominal AC resistance at 25 °C (tolerance ± 2%)	Ohm/km	0,0408	Ohm/mile	0,0671
Nominal AC resistance at 50 °C (tolerance ± 2%)	Ohm/km	0,0445	Ohm/mile	0,0729
Nominal AC resistance at 75 °C (tolerance ± 2%)	Ohm/km	0,0482	Ohm/mile	0,0787
Nominal AC resistance at 100 °C (tolerance ± 2%)	Ohm/km	0,0519	Ohm/mile	0,0846
Maximum allowable continuous operating temperature (surface)	°C	90	°F	194
Inductive reactance: Xa (conductor part)	Ohm/km	0,1914	Ohm/mile	0,3696
Shunt capacitive reactance: X'a (conductor part)	MOhmkm	0,1204	MOhmmile	0,1003

Individual wires	Metric (SI)			Imperial		
Maximum resistivity of aluminium alloy at 20 °C, minimum IACS	nOhmm, %	30,50	57%	nOhmft, %	100,07	57%
Minimum tensile strength, aluminium alloy wire	MPa	295		psi	42786	
Minimum elongation for aluminium alloy wire.	%	3,5		%	3,5	

Standard applied for conductor manufacturer: TS 3.4.2 - Issue 5 - juni 2004

Page 1

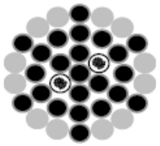
AFL

08.04.2024, Ja
TK 14986-10 Rev. 00

ASLH-V(2S)bbb 96 SMF (AL3/A20SA 109/209]

Optical Ground Wire (OPGW)

according to IEC 60794-4-10



- Stranding direction of outer layer: right hand (Z-stranding)
- Greasing acc. to EN 50182 A.2 / Grease acc. to EN 50326, type A
- Entire conductor greased except outer layer
- Wires acc. to EN 50183 / EN 61232
- Maximum fibre capacity per steel tube: 48 x 250µm Ø / 66 x 200µm Ø
- Fibres coloured acc. to colour code 048 F TIA-598-D
- Fibres acc. to G.652.D
- Tube marking: #1: none #2: ▌▌ 2 2 ▌▌

Configuration

Center		1 A20SA - Wire	3,50 mm
Layer 1		4 A20SA - Wires	3,40 mm
	+	2 Stainless Steel Tubes with 48 SMF	3,00 / 3,40 mm
Layer 2			
		12 A20SA - Wires	3,40 mm
Layer 3		12 AL3 - Wires	3,40 mm
		6 A20SA - Wires	3,40 mm

Mechanical Data

Cable Diameter	23,9 mm
Cable Weight	1798 kg/km
Supporting Cross Section	318,3 mm²
Rated Tensile Strength (RTS)	278,6 kN
Modulus of Elasticity	126,1 kN/mm²
Thermal Elongation Coefficient	14,5 10^{-6}/K
Permissible Maximum Working Stress (50% RTS)	437,7 N/mm² (139,3kN)
Recommended Everyday Stress (20% RTS)	175,1 N/mm² (55,7kN)
Ultimate Exceptional Stress (80% RTS)	700,3 N/mm² (222,9kN)

Electrical Data

DC Resistance (20°C)		0,176 Ω/km
Conductivity		30,8% IACS
Short Time Current	(1,0s; 20-200°C)	25,8 kA
Short Time Current	(0,5s; 20-200°C)	36,5 kA
Short Time Current Capacity I²t	(20-200°C)	665,4 kA²s

Application

Maximum Permissible Installation Force		83,6 kN
Minimum Bending Radius	static	299 mm
	dynamic	359 mm
Normal Delivery Length		3000 m
Temperature Range	Installation	-10 to +50°C
	Transportation and Operation	-40 to +85°C

All Sizes and Values are Nominal Values. The latest edition of referenced documents applies. opgw_pro8.xlsm, Ver. 23.02

www.AFLglobal.com AFL Telecommunications GmbH

Duck-under Parameters and Phasing

LT455 – TKUP

Special Arrangement 1

Conductor type:

- Existing conductor: 1x Lynx
- New conductor (for diamond only): 1 x AAAC Upas

Circuit rating:

- Voltage: 132kV
- For Lynx @ 50°C: Winter Pre Fault =485A

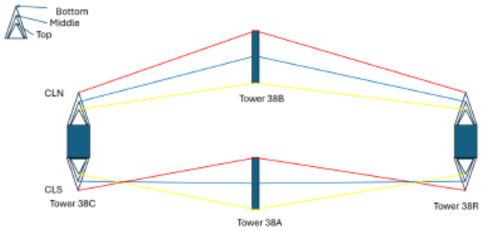
Circuit Thermal Overload Ratings for 132kV, 1 x 175 mm² Lynx ACSR

O/H Circuit ID – CLN (Foggieton (T)-Tarland)

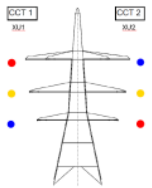
Rated Temperature: 50°C

ALL RATINGS ARE PER CIRCUIT	Winter		Spring / Autumn		Summer	
	Amps	MVA	Amps	MVA	Amps	MVA
Pre-Fault Continuous	485	111	450	103	390	89
Post-Fault Continuous	580	132	540	123	465	106

Phasing: CLN/CLS



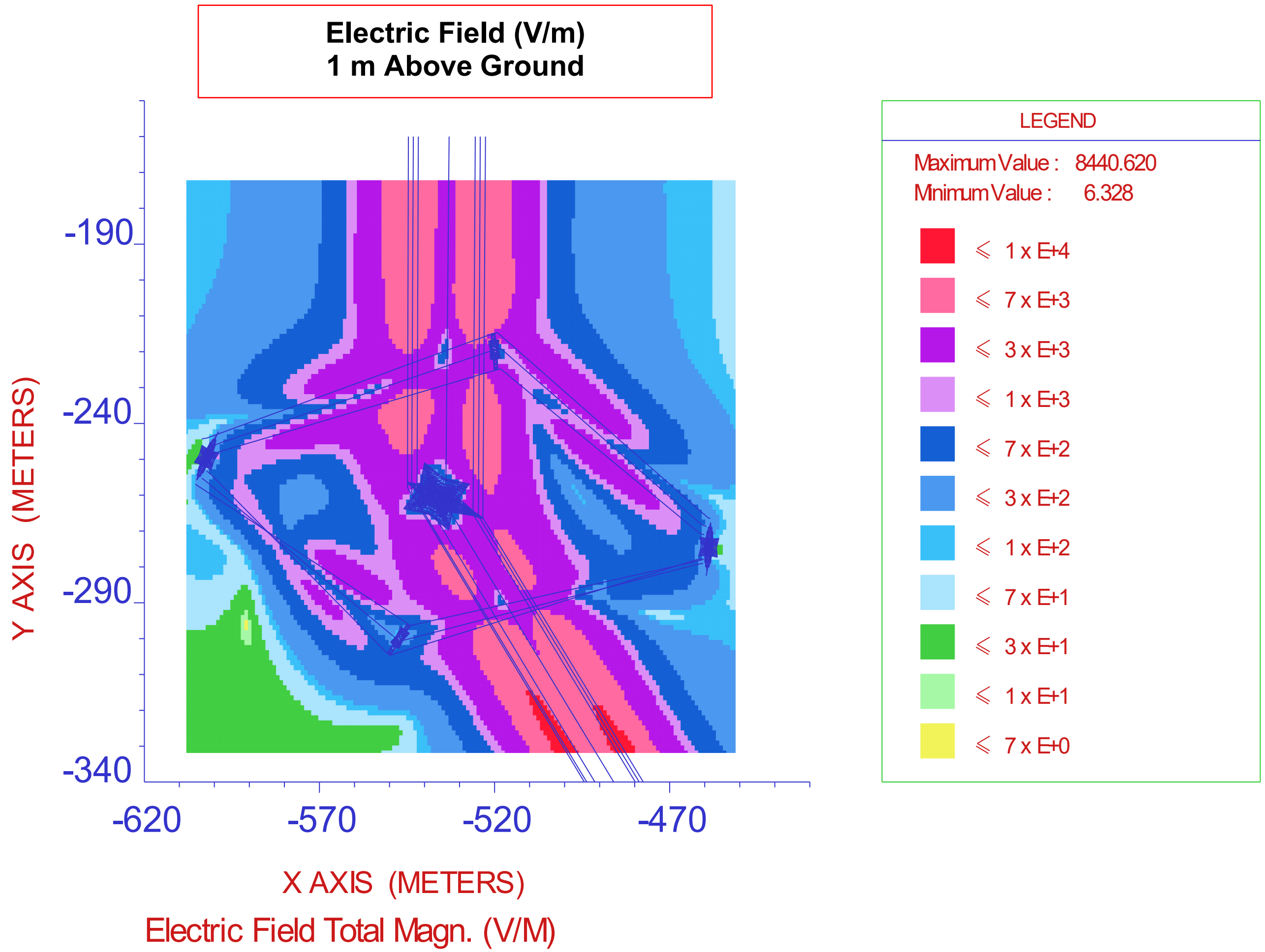
ASTI Phasing:

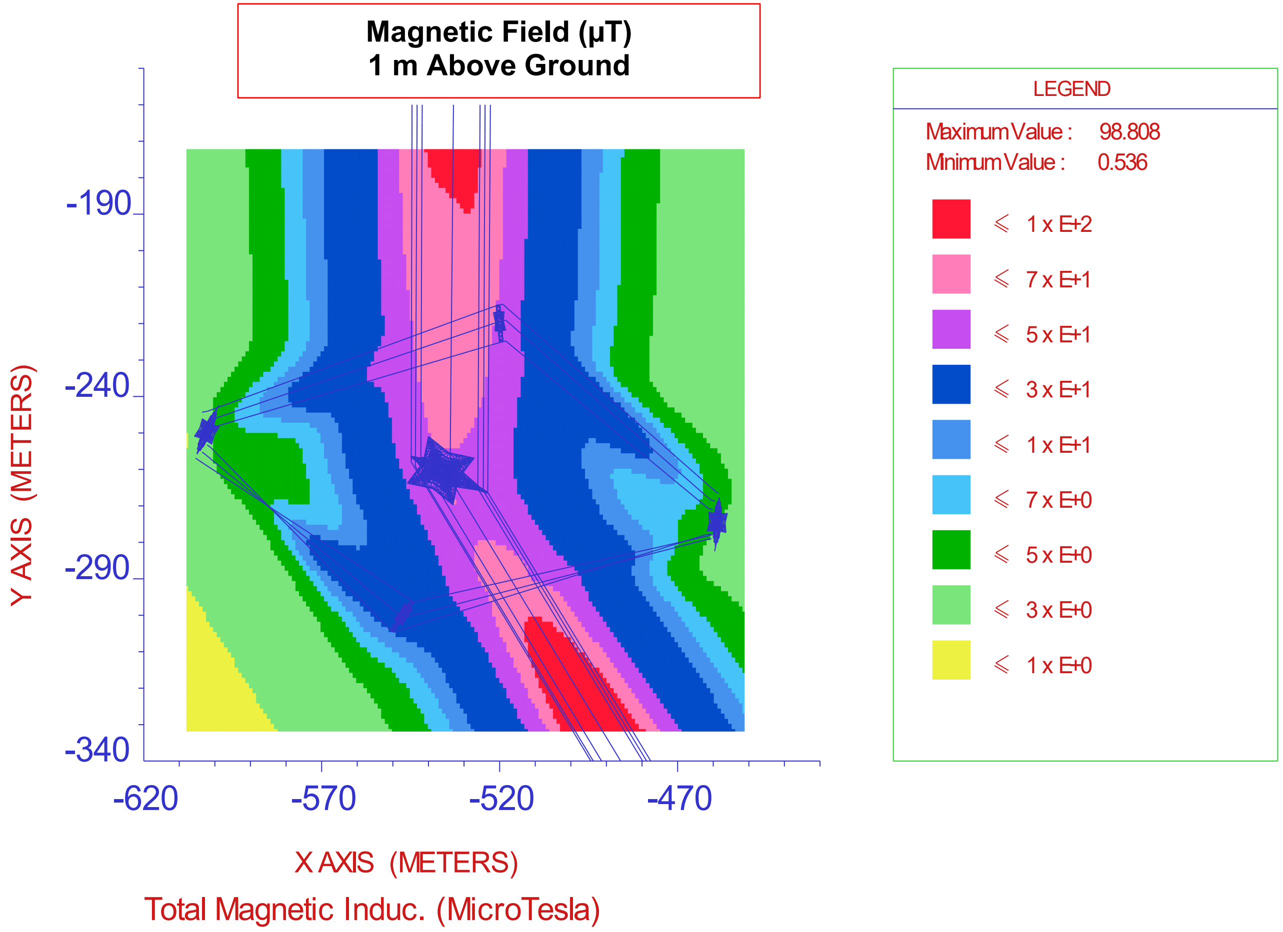


Appendix B

CDEGS (HIFREQ) Results – Craigiebuckler to Tarland 132 kV OHL

Craigiebuckler to Tarland 132 kV Crossing




Magnetic Field (μT)
1 m Above Ground
-190
-240
-290
-340
Y AXIS (METERS)
-620
-570
-520
-470
X AXIS (METERS)
Total Magnetic Induc. (MicroTesla)
LEGEND
Maximum Value : 98.808
Minimum Value : 0.536
⩽ 1 x E+2
⩽ 7 x E+1
⩽ 5 x E+1
⩽ 3 x E+1
⩽ 1 x E+1
⩽ 7 x E+0
⩽ 5 x E+0
⩽ 3 x E+0
⩽ 1 x E+0

Arcadis Consulting (UK) Limited

3rd Floor, Aurora Building
120 Bothwell Street
Glasgow, G2 7JS
United Kingdom

T: +44 (0) 141 343 9000

arcadis.com