

## Project Information

 Site Name: O-Pitquarry  
 Country: Portugal

 Date: 08/01/2017  
 Location: Porto

 Shotfirer: John Smith  
 D&B Resp.: Carl Jonhson

## Explosive Ordering

Explosive Product	Density	Type	Quantity
Anfo 0,8	0,80 g/cm <sup>3</sup>	Bulk	7 547,2 Kg
Total			7 547,2 Kg

## Accessories Ordering

Product	Type	Quantity
Surface Connector 25	SurfaceConnector	59
Surface Connector 67	SurfaceConnector	11
In-hole Detonator 500	InHoleDelay	71

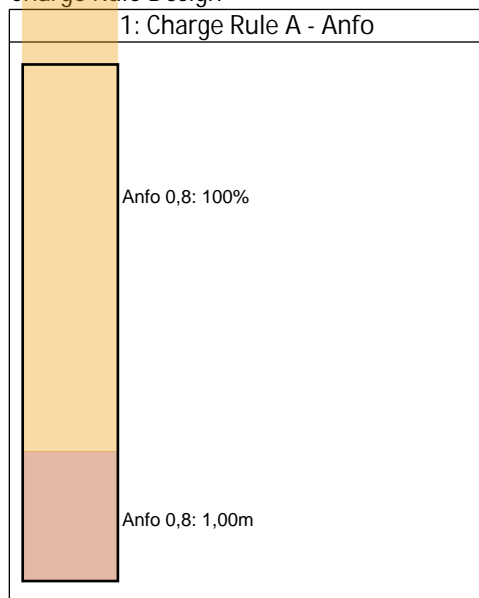
## Blast Resume

Bench Height	17,52 m	Volume	10 274,4 m <sup>3</sup>	Powder Factor	0,735 Kg/m <sup>3</sup>
Total of Holes	72	Tonnes	25 686,0 t	Powder Factor	0,294 Kg/t
Drilled Meters	1 370,53 m	Specific Drilling	0,133 m/m <sup>3</sup>	Rock Density	2,500 g/cm <sup>3</sup>

## Comments

The block must be blasted before 14:00Hole 3, 4, 8 with water - Risk of block.

## Charge Rule Design



Borehole Information

Nr.	X	Y	Depth (m)	Stemming (m)	Subdrilling (m)	Angle (°)	Azimuth (°)	Diameter (mm)	Bulk Exp. (Kg)	Cartridge Exp. (Kg)	Total Exp. (Kg)	Charge Design
1	-56,50	121,43	18,653	3,000	1,500	5,1	182,7	102	102,3	0,0	102,3	1
2	-54,47	118,23	18,498	3,000	1,500	5,0	183,2	102	101,3	0,0	101,3	1
3	-51,10	117,96	18,385	3,000	1,500	5,1	183,2	102	100,6	0,0	100,6	1
4	-47,65	118,26	18,707	3,000	1,500	5,1	182,4	102	102,7	0,0	102,7	1
5	-44,19	119,13	18,343	3,000	1,500	5,2	182,5	102	100,3	0,0	100,3	1
6	-40,72	120,14	18,695	3,000	1,500	5,1	181,0	102	102,6	0,0	102,6	1
7	-37,33	121,23	18,671	3,000	1,500	5,6	177,0	102	102,4	0,0	102,4	1
8	-33,88	121,60	18,784	3,000	1,500	5,0	181,3	102	103,2	0,0	103,2	1
9	-30,52	120,89	18,677	3,000	1,500	4,9	181,5	102	102,5	0,0	102,5	1
10	-27,15	120,61	18,617	3,000	1,500	5,0	181,5	102	102,1	0,0	102,1	1
11	-23,69	121,13	18,921	3,000	1,500	5,0	181,8	102	104,1	0,0	104,1	1
12	-20,32	120,78	19,481	3,000	1,500	4,8	181,6	102	107,7	0,0	107,7	1
13	-57,59	124,11	18,713	3,000	1,500	0,0	0,0	102	102,7	0,0	102,7	1
14	-54,34	121,18	18,659	3,000	1,500	0,0	0,0	102	102,4	0,0	102,4	1
15	-50,90	120,97	18,599	3,000	1,500	0,0	0,0	102	102,0	0,0	102,0	1
16	-47,52	121,12	18,885	3,000	1,500	0,0	0,0	102	103,8	0,0	103,8	1
17	-44,07	121,78	18,522	3,000	1,500	0,0	0,0	102	101,5	0,0	101,5	1
18	-40,68	122,58	18,736	3,000	1,500	0,0	0,0	102	102,9	0,0	102,9	1
19	-37,22	123,38	18,796	3,000	1,500	0,0	0,0	102	103,3	0,0	103,3	1
20	-33,77	123,68	18,945	3,000	1,500	0,0	0,0	102	104,2	0,0	104,2	1
21	-30,40	123,04	18,820	3,000	1,500	0,0	0,0	102	103,4	0,0	103,4	1
22	-27,03	122,84	18,957	3,000	1,500	0,0	0,0	102	104,3	0,0	104,3	1
23	-23,58	123,21	19,178	3,000	1,500	0,0	0,0	102	105,8	0,0	105,8	1
24	-20,21	122,93	19,780	3,000	1,500	0,0	0,0	102	109,7	0,0	109,7	1
25	-57,48	126,33	18,766	3,000	1,500	0,0	0,0	102	103,1	0,0	103,1	1
26	-54,22	124,19	18,695	3,000	1,500	0,0	0,0	102	102,6	0,0	102,6	1
27	-50,78	123,91	18,713	3,000	1,500	0,0	0,0	102	102,7	0,0	102,7	1
28	-47,40	124,07	19,028	3,000	1,500	0,0	0,0	102	104,8	0,0	104,8	1
29	-43,95	124,51	18,719	3,000	1,500	0,0	0,0	102	102,8	0,0	102,8	1
30	-40,56	125,02	18,784	3,000	1,500	0,0	0,0	102	103,2	0,0	103,2	1
31	-37,11	125,60	18,915	3,000	1,500	0,0	0,0	102	104,0	0,0	104,0	1
32	-33,73	125,76	19,070	3,000	1,500	0,0	0,0	102	105,1	0,0	105,1	1
33	-30,29	125,27	18,933	3,000	1,500	0,0	0,0	102	104,2	0,0	104,2	1
34	-26,92	125,06	19,017	3,000	1,500	0,0	0,0	102	104,7	0,0	104,7	1
35	-23,55	125,29	19,565	3,000	1,500	0,0	0,0	102	108,3	0,0	108,3	1

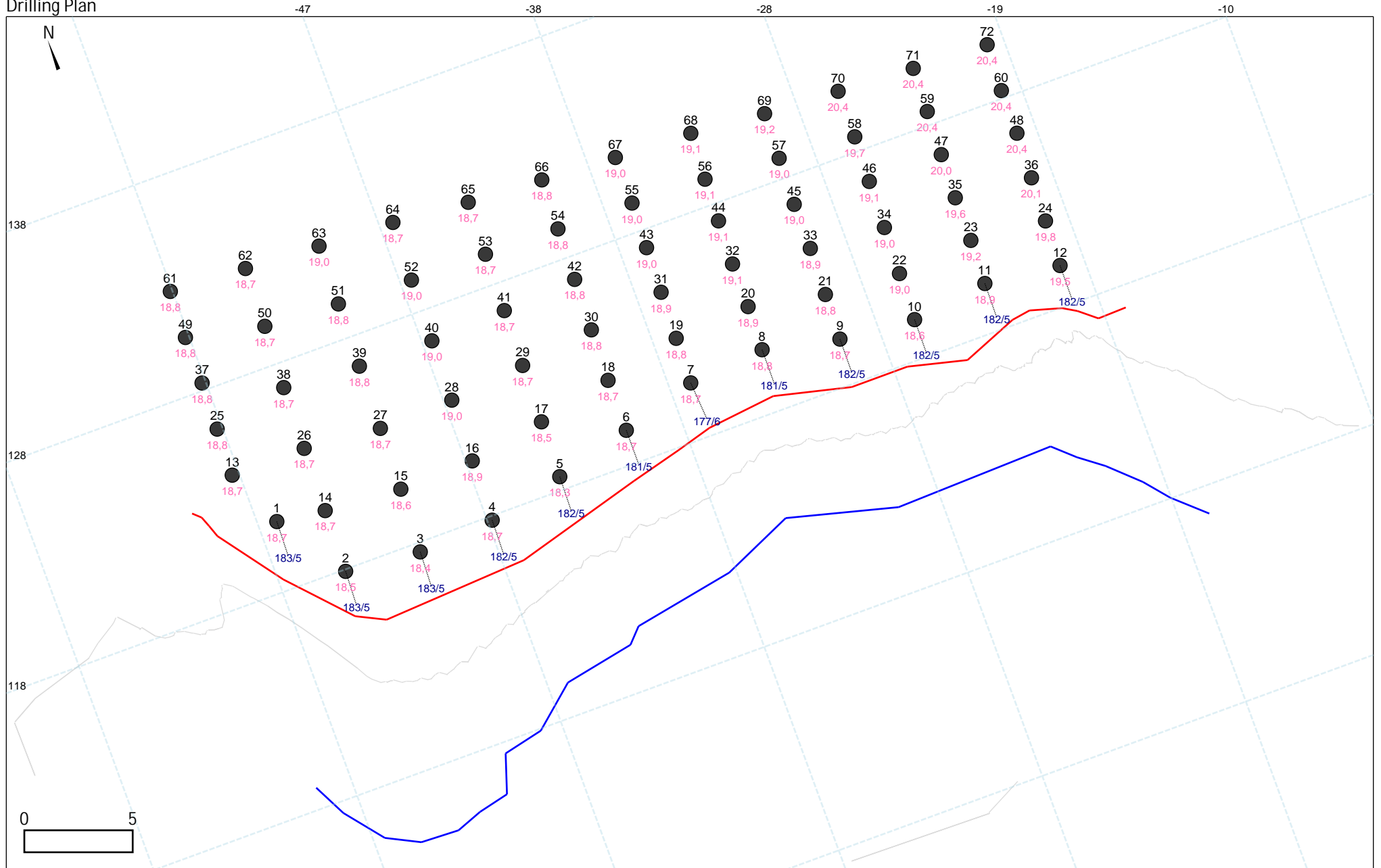
Borehole Information

Nr.	X	Y	Depth (m)	Stemming (m)	Subdrilling (m)	Angle (°)	Azimuth (°)	Diameter (mm)	Bulk Exp. (Kg)	Cartridge Exp. (Kg)	Total Exp. (Kg)	Charge Design
36	-20,10	125,01	20,066	3,000	1,500	0,0	0,0	102	111,6	0,0	111,6	1
37	-57,37	128,55	18,784	3,000	1,500	0,0	0,0	102	103,2	0,0	103,2	1
38	-54,09	127,13	18,695	3,000	1,500	0,0	0,0	102	102,6	0,0	102,6	1
39	-50,65	126,92	18,760	3,000	1,500	0,0	0,0	102	103,0	0,0	103,0	1
40	-47,28	126,93	18,969	3,000	1,500	0,0	0,0	102	104,4	0,0	104,4	1
41	-43,83	127,16	18,730	3,000	1,500	0,0	0,0	102	102,8	0,0	102,8	1
42	-40,45	127,46	18,808	3,000	1,500	0,0	0,0	102	103,3	0,0	103,3	1
43	-37,00	127,75	18,951	3,000	1,500	0,0	0,0	102	104,3	0,0	104,3	1
44	-33,62	127,84	19,100	3,000	1,500	0,0	0,0	102	105,2	0,0	105,2	1
45	-30,25	127,42	19,028	3,000	1,500	0,0	0,0	102	104,8	0,0	104,8	1
46	-26,81	127,28	19,070	3,000	1,500	0,0	0,0	102	105,1	0,0	105,1	1
47	-23,44	127,37	20,006	3,000	1,500	0,0	0,0	102	111,2	0,0	111,2	1
48	-19,99	127,16	20,364	3,000	1,500	0,0	0,0	102	113,5	0,0	113,5	1
49	-57,33	130,78	18,802	3,000	1,500	0,0	0,0	102	103,3	0,0	103,3	1
50	-53,89	130,07	18,713	3,000	1,500	0,0	0,0	102	102,7	0,0	102,7	1
51	-50,52	129,94	18,772	3,000	1,500	0,0	0,0	102	103,1	0,0	103,1	1
52	-47,15	129,88	18,957	3,000	1,500	0,0	0,0	102	104,3	0,0	104,3	1
53	-43,70	129,89	18,742	3,000	1,500	0,0	0,0	102	102,9	0,0	102,9	1
54	-40,33	129,90	18,838	3,000	1,500	0,0	0,0	102	103,5	0,0	103,5	1
55	-36,89	129,91	18,999	3,000	1,500	0,0	0,0	102	104,6	0,0	104,6	1
56	-33,51	129,85	19,100	3,000	1,500	0,0	0,0	102	105,2	0,0	105,2	1
57	-30,14	129,64	19,040	3,000	1,500	0,0	0,0	102	104,9	0,0	104,9	1
58	-26,70	129,44	19,690	3,000	1,500	0,0	0,0	102	109,1	0,0	109,1	1
59	-23,33	129,45	20,435	3,000	1,500	0,0	0,0	102	114,0	0,0	114,0	1
60	-19,96	129,24	20,435	3,000	1,500	0,0	0,0	102	114,0	0,0	114,0	1
61	-57,22	133,00	18,832	3,000	1,500	0,0	0,0	102	103,5	0,0	103,5	1
62	-53,77	132,87	18,719	3,000	1,500	0,0	0,0	102	102,8	0,0	102,8	1
63	-50,40	132,73	19,023	3,000	1,500	0,0	0,0	102	104,7	0,0	104,7	1
64	-47,00	132,65	18,718	3,000	1,500	0,0	0,0	102	102,7	0,0	102,7	1
65	-43,59	132,40	18,742	3,000	1,500	0,0	0,0	102	102,9	0,0	102,9	1
66	-40,22	132,26	18,844	3,000	1,500	0,0	0,0	102	103,6	0,0	103,6	1
67	-36,85	132,13	19,005	3,000	1,500	0,0	0,0	102	104,6	0,0	104,6	1
68	-33,37	132,05	19,100	3,000	1,500	0,0	0,0	102	105,2	0,0	105,2	1
69	-30,03	131,79	19,166	3,000	1,500	0,0	0,0	102	105,7	0,0	105,7	1
70	-26,66	131,66	20,423	3,000	1,500	0,0	0,0	102	113,9	0,0	113,9	1

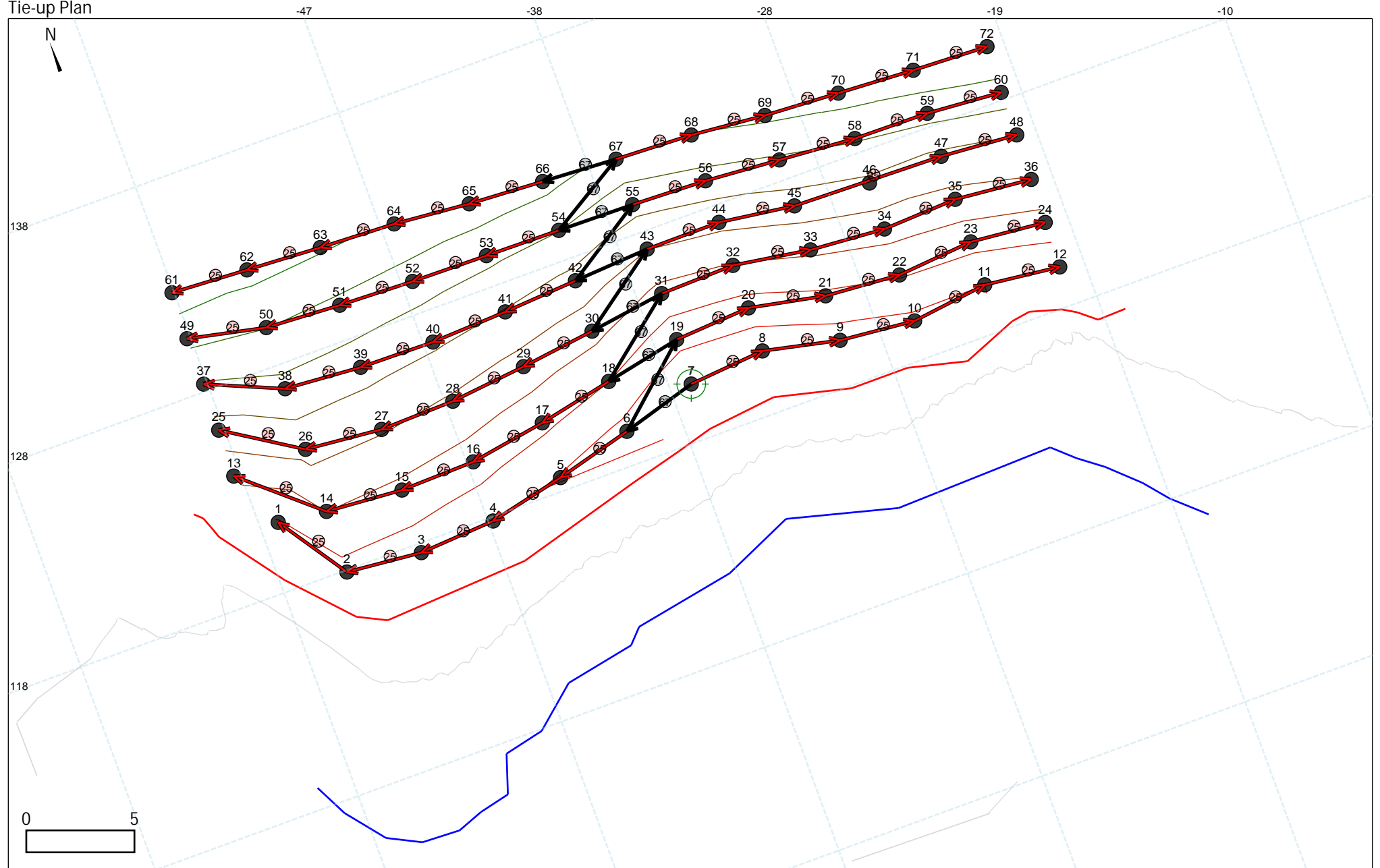
Borehole Information

Nr.	X	Y	Depth (m)	Stemming (m)	Subdrilling (m)	Angle (°)	Azimuth (°)	Diameter (mm)	Bulk Exp. (Kg)	Cartridge Exp. (Kg)	Total Exp. (Kg)	Charge Design
71	-23,22	131,53	20,447	3,000	1,500	0,0	0,0	102	114,1	0,0	114,1	1
72	-19,81	131,44	20,432	3,000	1,500	0,0	0,0	102	114,0	0,0	114,0	1

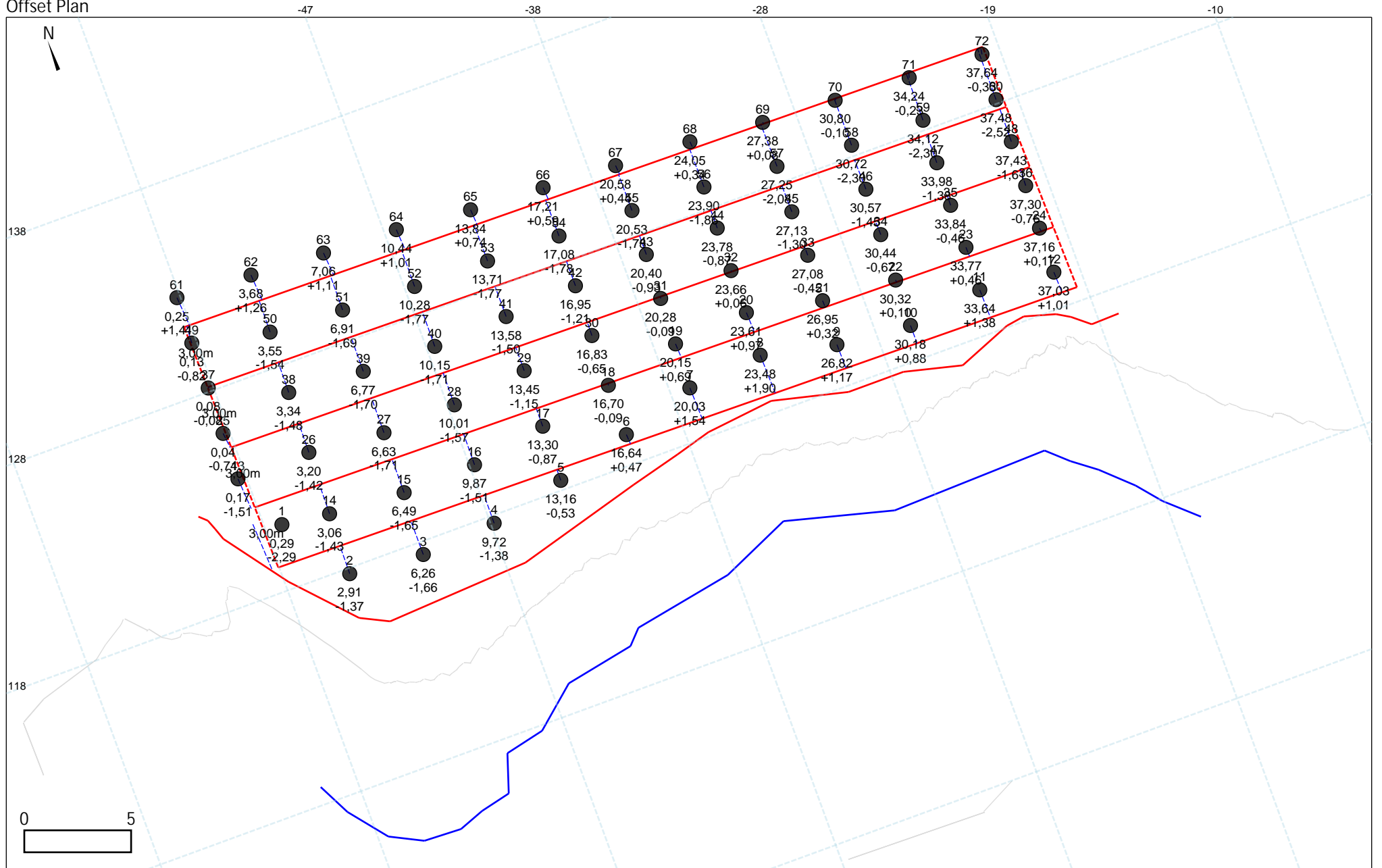
Drilling Plan



Tie-up Plan



Offset Plan

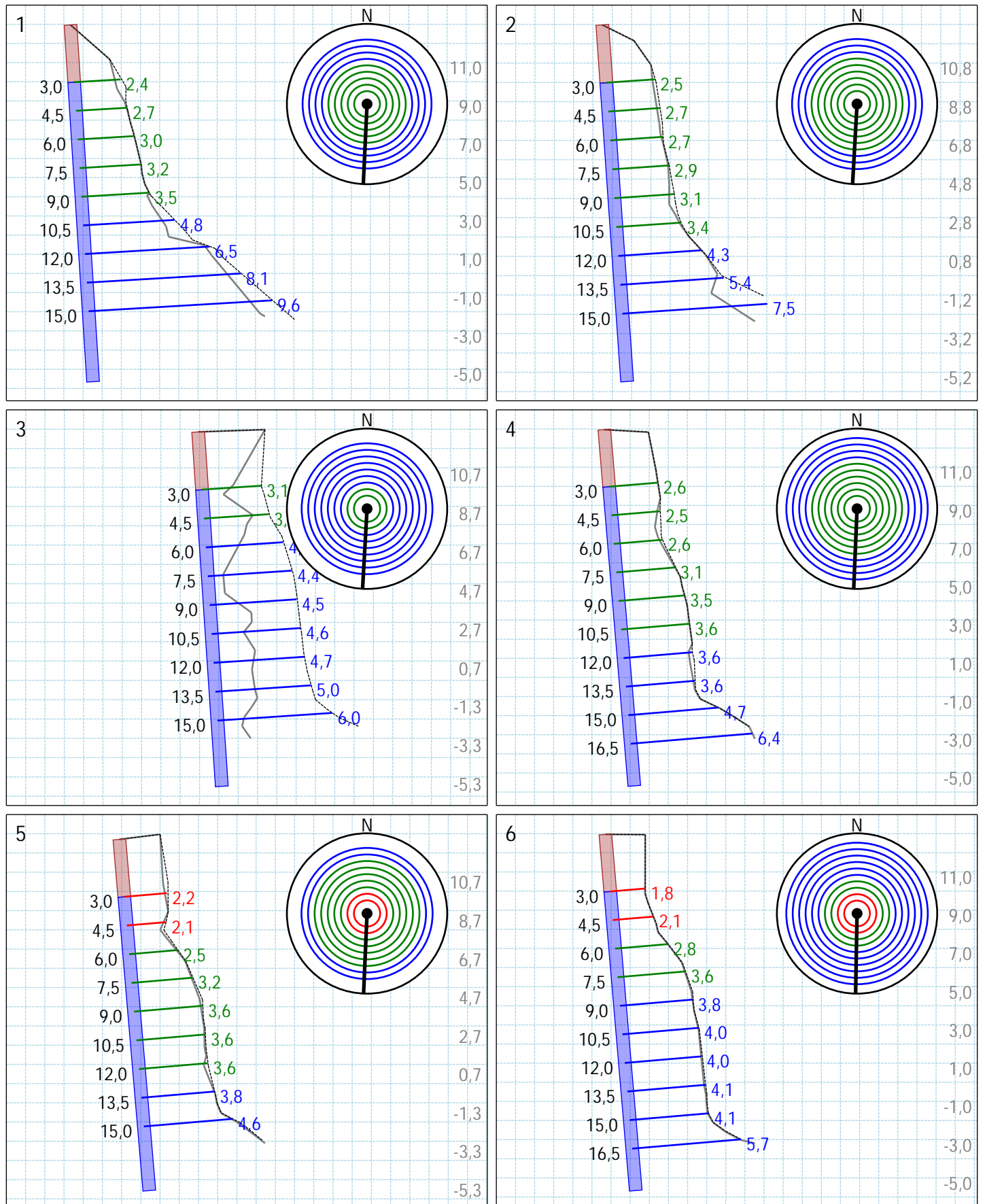


Project Information

Site Name: O-Pitquarry  
Country: Portugal

Date: 08/01/2017  
Location: Porto

Shotfirer: John Smith  
D&B Resp.: Carl Jonhson

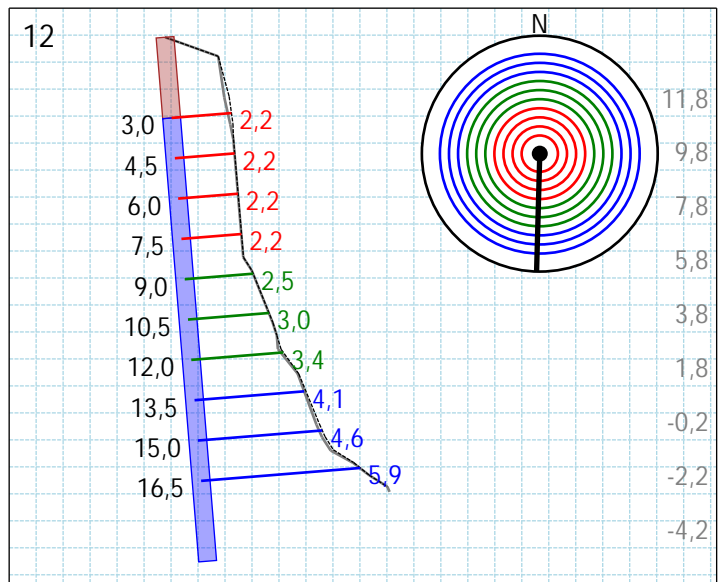
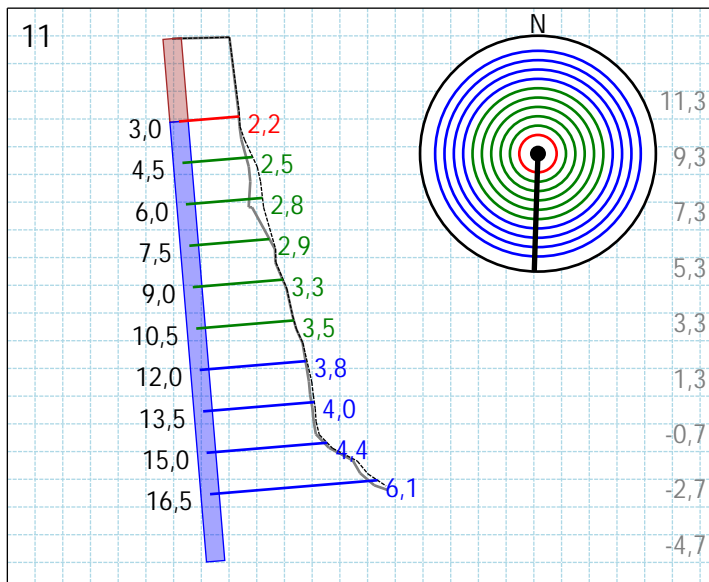
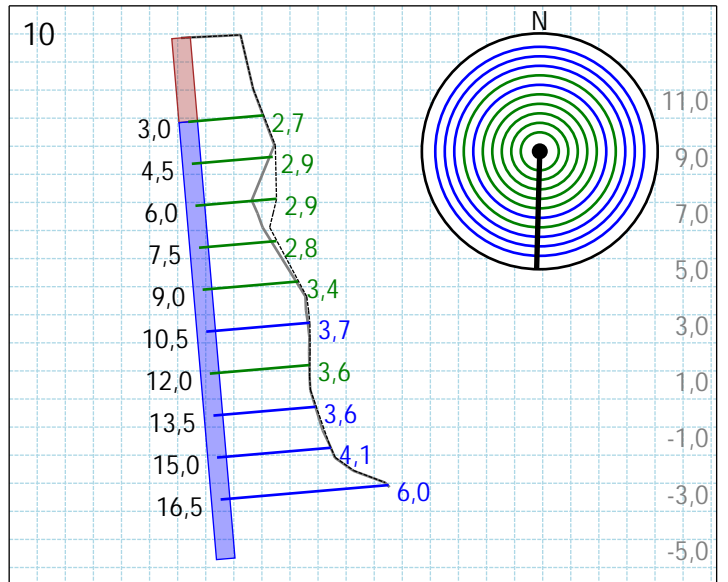
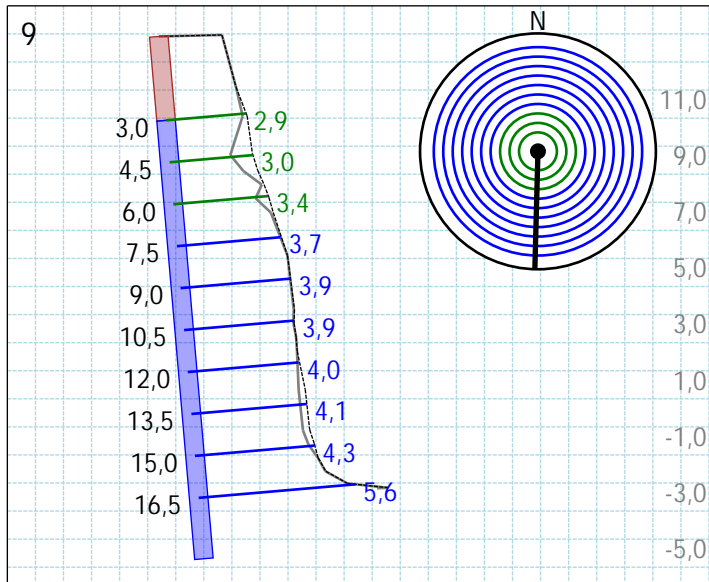
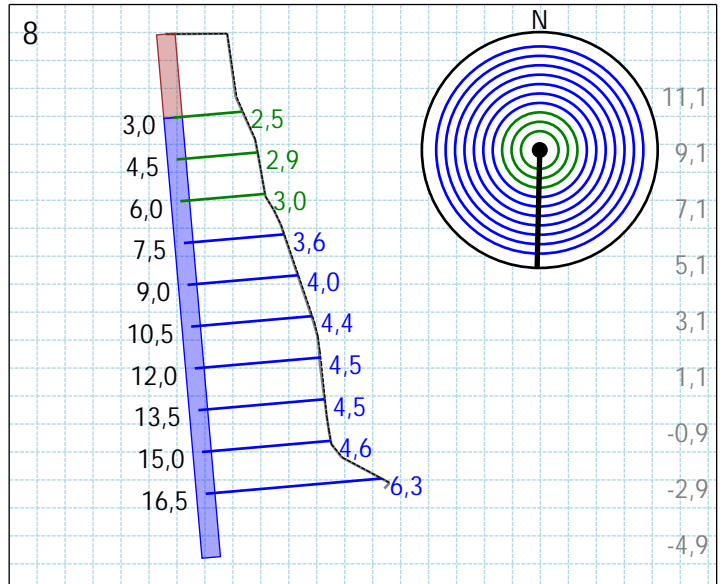
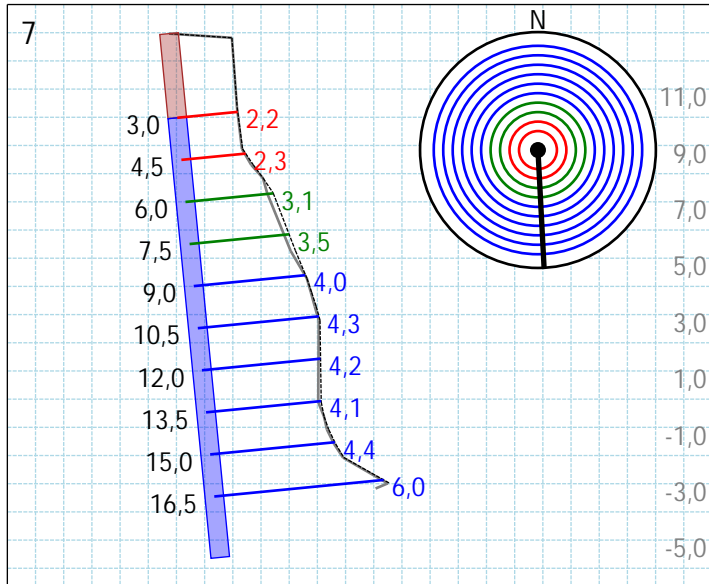


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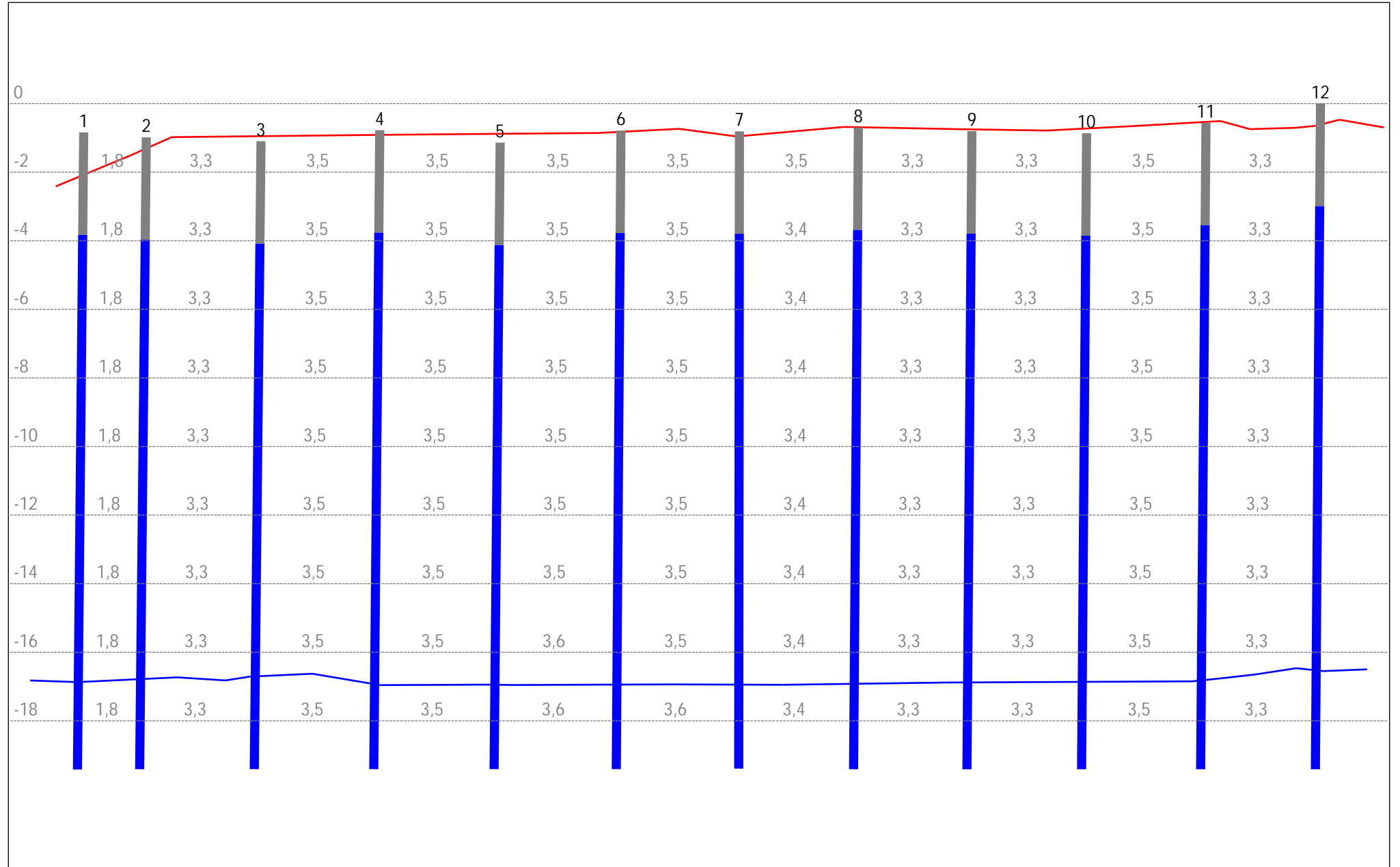
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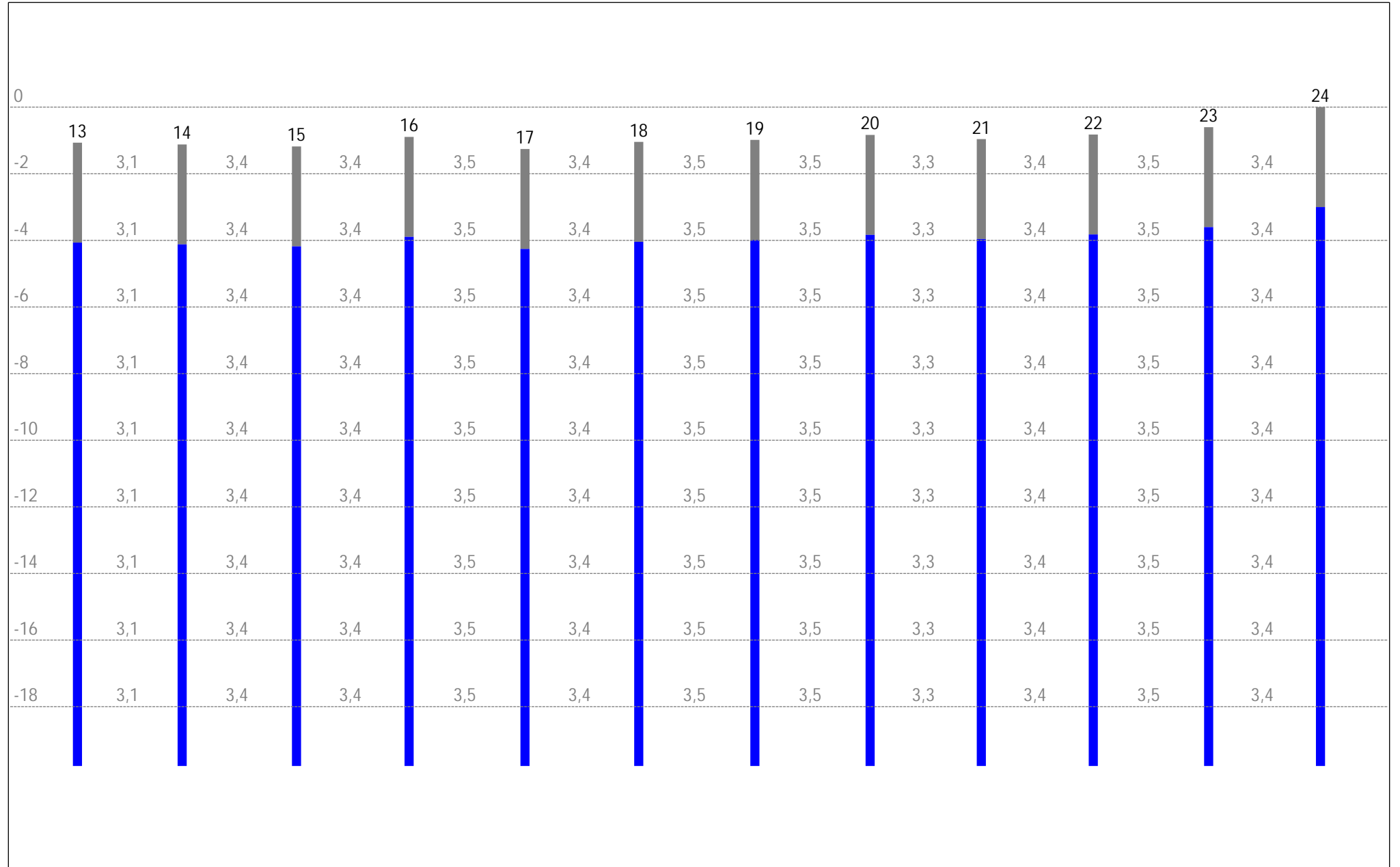
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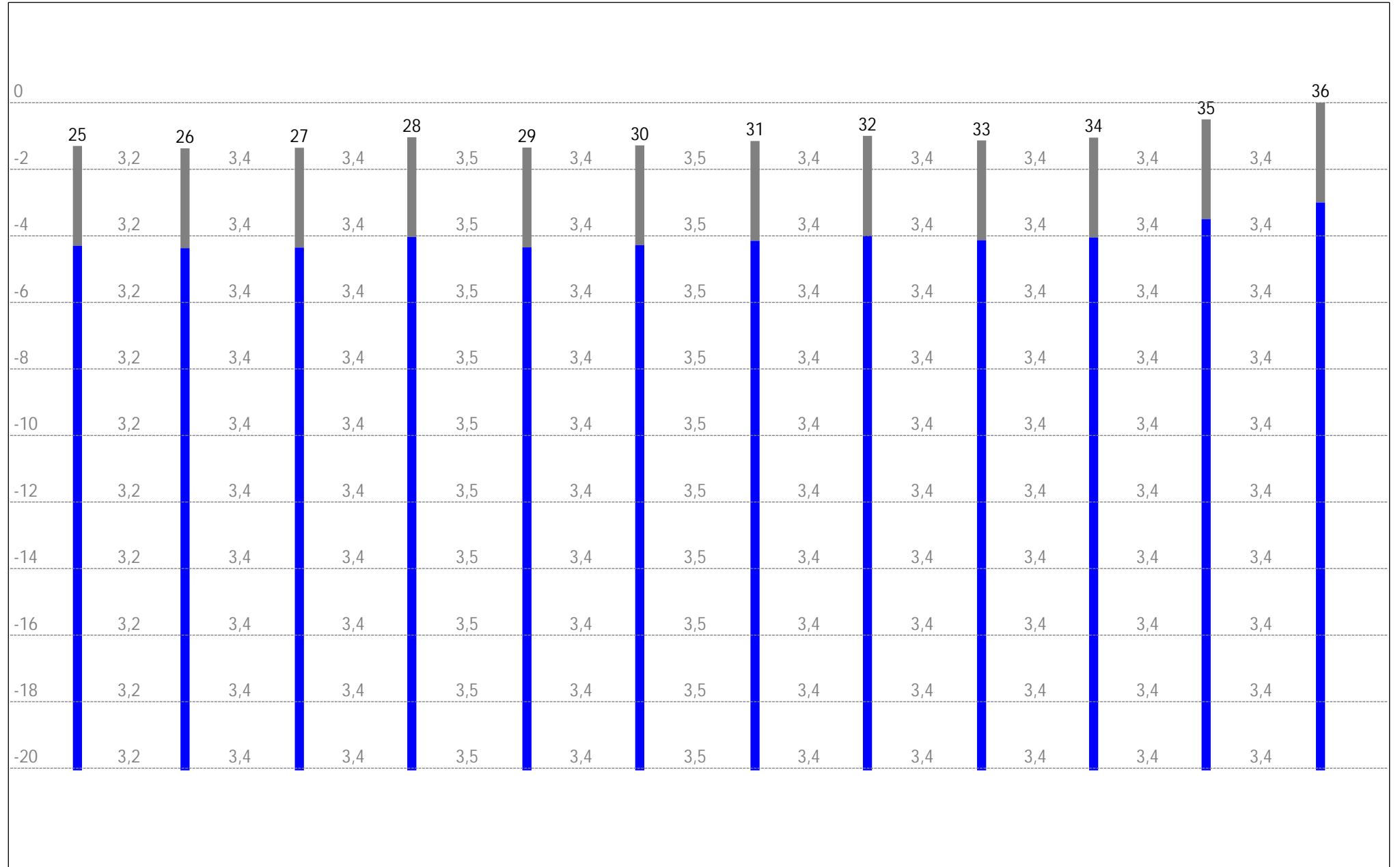
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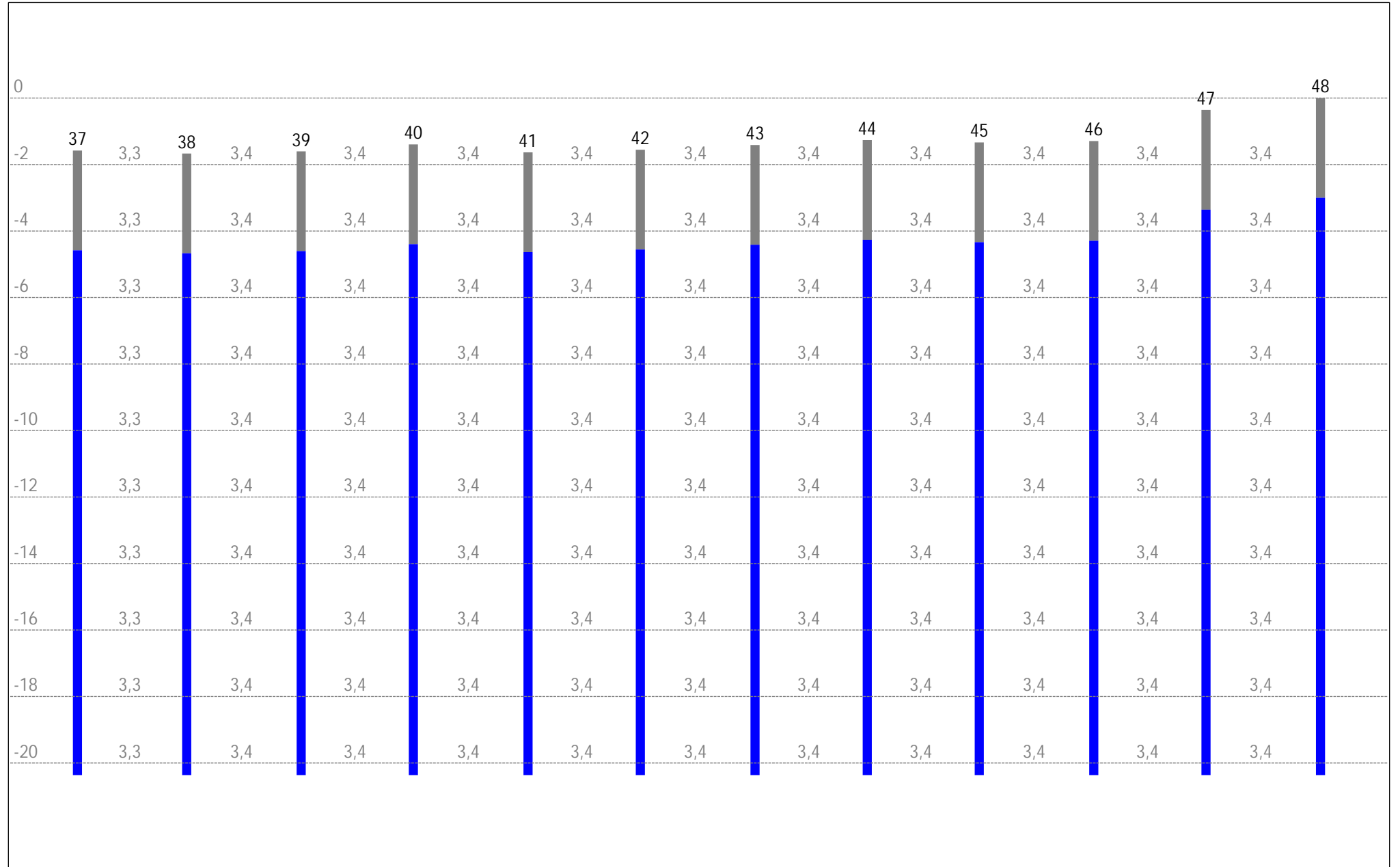
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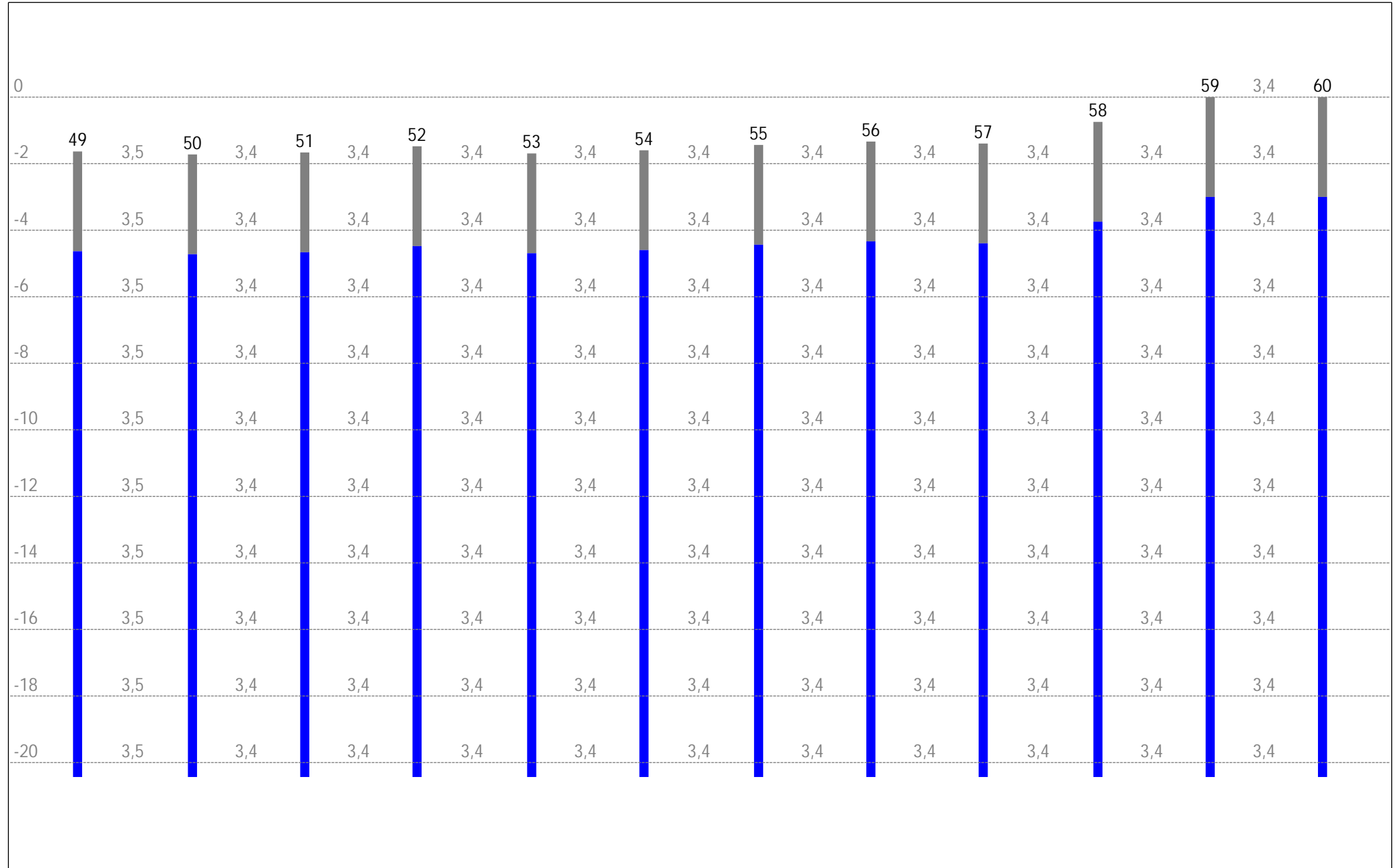
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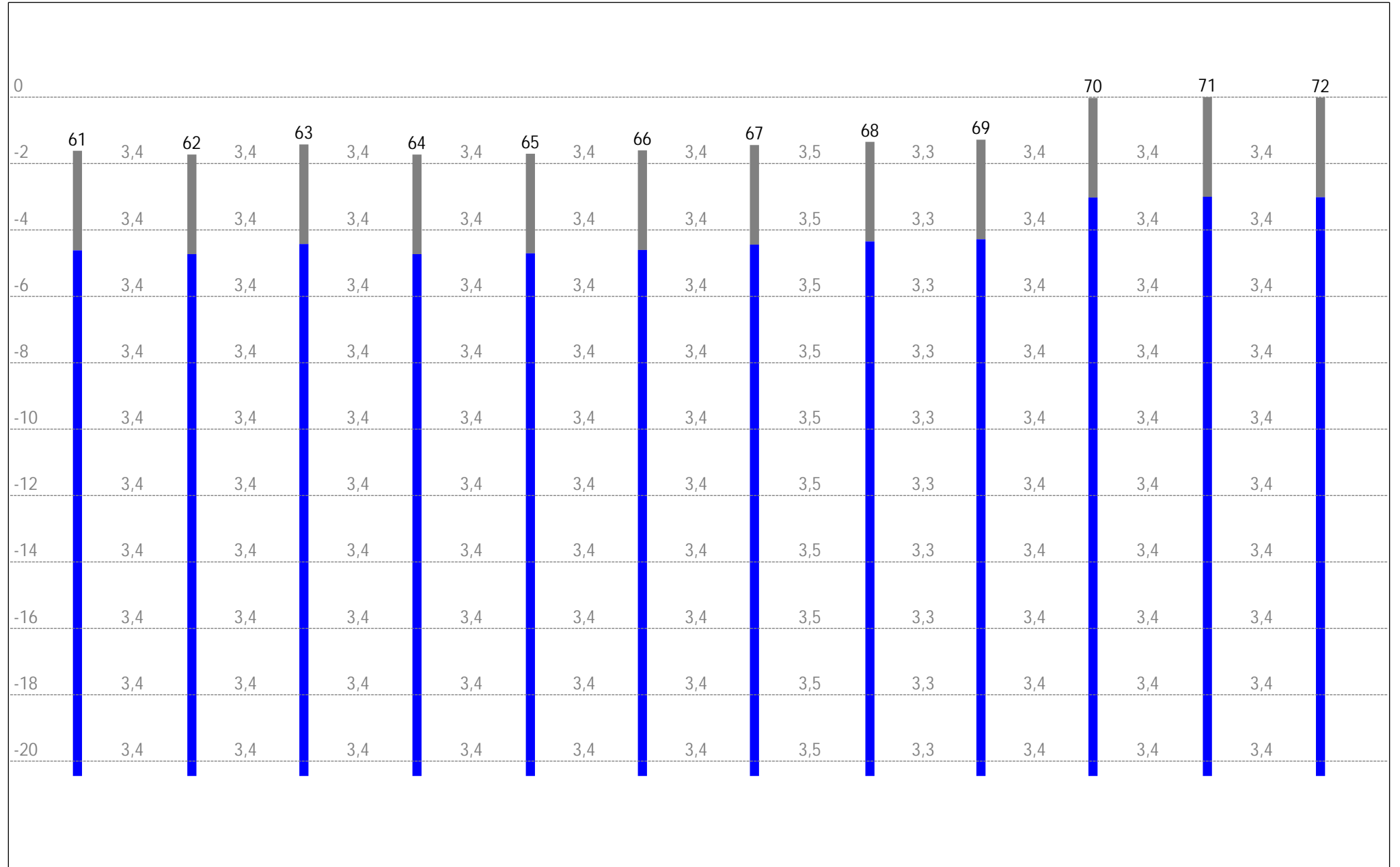
Row 4



Row 5



Row 6



**Explosive Cost**

Explosive Product	Quantity	Unit Price	Total
Anfo 0,8	7 547,2 Kg	0,93 €	7 018,89 €
<b>Total</b>			<b>7 018,89 €</b>

**Accessories Cost**

Accessories Product	Quantity	Unit Price	Total
Surface Connector 25	59	4,00 €	236,00 €
Surface Connector 67	11	0,00 €	0,00 €
In-hole Detonator 500	71	0,00 €	0,00 €
<b>Total</b>			<b>236,00 €</b>

**Drilling Cost**

Diameter (mm)	Meters	Unit Price	Total
102	1370,53	7,00 €	9 593,71 €
<b>Total</b>			<b>9 593,71 €</b>

**Global Cost**
**16 848,61 €**
**Cost Resume**

Per hole	234,01 €	Per m <sup>3</sup>	1,64 €	Per tons	0,66 €
Explosive %	41,66%	Accessories %	1,40%	Drilling %	56,94%