Lampiran

Lampiran A

Tabulasi Basis Data Assay

1. CDR00503

Hole_id	depth_from	depth_to	Ni
CDR00503	0	1	0.62
CDR00503	1	2	0.68
CDR00503	2	3	0.63
CDR00503	3	4	0.7
CDR00503	4	5	0.76
CDR00503	5	6	0.81
CDR00503	6	7	0.75
CDR00503	7	8	0.81
CDR00503	8	9	0.64
CDR00503	9	10	0.96
CDR00503	10	11	1.15
CDR00503	11	12	1.42
CDR00503	12	13	1.23
CDR00503	13	14	1.45
CDR00503	14	15	1.46
CDR00503	15	16	1.53
CDR00503	16	17	1.91
CDR00503	17	18	1.91
CDR00503	18	19	2.2

Hole_id	depth_from	depth_to	Ni
CDR00504	0	1	0.75
CDR00504	1	2	0.81
CDR00504	2	3	0.78
CDR00504	3	4	0.76
CDR00504	4	5	0.76
CDR00504	5	6	0.89
CDR00504	6	7	0.82
CDR00504	7	8	0.93
CDR00504	8	9	0.91
CDR00504	9	10	0.97
CDR00504	10	11	1.17
CDR00504	11	12	1.01
CDR00504	12	13	1.11

CDR00504	13	14	1.22
CDR00504	14	15	1.25
CDR00504	15	16	1.33
CDR00504	16	17	1.25
CDR00504	17	18	1.35
CDR00504	18	19	1.51
CDR00504	19	20	1.73
CDR00504	20	21	1.74
CDR00504	21	22	0.43
CDR00504	22	23	0.37
CDR00504	23	24	0.33
CDR00504	24	25	0.29

Hole_id	depth_from	depth_to	Ni
CDR00505	0	1	0.67
CDR00505	1	2	0.78
CDR00505	2	3	0.69
CDR00505	3	4	0.68
CDR00505	4	5	0.86
CDR00505	5	6	0.83
CDR00505	6	7	0.68
CDR00505	7	8	0.85
CDR00505	8	9	0.91
CDR00505	9	10	0.99
CDR00505	10	11	1.15
CDR00505	11	12	0.93
CDR00505	12	13	1.07
CDR00505	13	14	1.12
CDR00505	14	15	1.24
CDR00505	15	16	1.21
CDR00505	16	17	1.25
CDR00505	17	18	1.33
CDR00505	18	19	1.3
CDR00505	19	20	1.35
CDR00505	20	21	1.49
CDR00505	21	22	1.55
CDR00505	22	23	1.59
CDR00505	23	24	1.71

Hole_id	depth_from	depth_to	Ni
CDR00506	0	1	0.67
CDR00506	1	2	0.85
CDR00506	2	3	0.65
CDR00506	3	4	0.77
CDR00506	4	5	0.95
CDR00506	5	6	1.18

5. CDR00510

Hole_id	depth_from	depth_to	Ni
CDR00510	0	1	0.67
CDR00510	1	2	0.78
CDR00510	2	3	0.7
CDR00510	3	4	0.77
CDR00510	4	5	0.89
CDR00510	5	6	0.91
CDR00510	6	7	1.07
CDR00510	7	8	1.17
CDR00510	8	9	1.15
CDR00510	9	10	0.9
CDR00510	10	11	1.29
CDR00510	11	12	1.57

Hole_id	depth_from	depth_to	Ni
CDR00153	0	1	0.62
CDR00153	1	2	0.68
CDR00153	2	3	0.76
CDR00153	3	4	0.84
CDR00153	4	5	0.83
CDR00153	5	6	0.86
CDR00153	6	7	0.82
CDR00153	7	8	0.89
CDR00153	8	9	1.01
CDR00153	9	10	0.89
CDR00153	10	11	1.04
CDR00153	11	12	1.37
CDR00153	12	13	1.28
CDR00153	13	14	1.56

CDR00153	14	15	1.63
CDR00153	15	16	1.83
CDR00153	16	17	0.38

Hole_id	depth_from	depth_to	Ni
CDR00511	0	1	0.81
CDR00511	1	2	0.78
CDR00511	2	3	0.81
CDR00511	3	4	1.03
CDR00511	4	5	1.09
CDR00511	5	6	0.99
CDR00511	6	7	1.17
CDR00511	7	8	1.61
CDR00511	8	9	1.72
CDR00511	9	10	1.97
CDR00511	10	11	2.18
CDR00511	11	12	2.29
CDR00511	12	13	2.19
CDR00511	13	14	2.13
CDR00511	14	15	2.44

8. CDR0008

Hole_id	depth_from	depth_to	Ni
CDR0008	0	1	1.04
CDR0008	1	2	1.1
CDR0008	2	3	1.15
CDR0008	3	4	1.58
CDR0008	4	5	1.76
CDR0008	5	6	1.88
CDR0008	6	7	2.32

Hole_id	depth_from	depth_to	Ni
CDR00518	0	1	0.67
CDR00518	1	2	0.78
CDR00518	2	3	0.69
CDR00518	3	4	0.74
CDR00518	4	5	0.81
CDR00518	5	6	0.61
CDR00518	6	7	0.99

CDR00518	7	8	0.92
CDR00518	8	9	1.34
CDR00518	9	10	1.67
CDR00518	10	11	2.13
CDR00518	11	12	3.04
CDR00518	12	13	0.39

Hole_id	depth_from	depth_to	Ni
CDR00519	0	1	0.75
CDR00519	1	2	0.81
CDR00519	2	3	0.84
CDR00519	3	4	1.04
CDR00519	4	5	0.93
CDR00519	5	6	0.92
CDR00519	6	7	0.96
CDR00519	7	8	0.95
CDR00519	8	9	1.02
CDR00519	9	10	1.59
CDR00519	10	11	1.59
CDR00519	11	12	1.52
CDR00519	12	13	1.61
CDR00519	13	14	1.84
CDR00519	14	15	1.83
CDR00519	15	16	1.93
CDR00519	16	17	1.92
CDR00519	17	18	1.62
CDR00519	18	19	1.86
CDR00519	19	20	1.97
CDR00519	20	21	1.99
CDR00519	21	22	2.1
CDR00519	22	23	2.05
CDR00519	23	24	2.39
CDR00519	24	25	2.5

Hole_id	depth_from	depth_to	Ni
CDR00520	0	1	0.75
CDR00520	1	2	0.81
CDR00520	2	3	0.78
CDR00520	3	4	0.83

CDR00520	4	5	1.03
CDR00520	5	6	1.04
CDR00520	6	7	1.06
CDR00520	7	8	1.1
CDR00520	8	9	1.17
CDR00520	9	10	1.29
CDR00520	10	11	1.37
CDR00520	11	12	1.31
CDR00520	12	13	1.27
CDR00520	13	14	1.56
CDR00520	14	15	1.51
CDR00520	15	16	1.98
CDR00520	16	17	1.73
CDR00520	17	18	1.66
CDR00520	18	19	2.23
CDR00520	19	20	2.35
CDR00520	20	21	2.66
CDR00520	21	22	2.36
CDR00520	22	23	2.84
CDR00520	23	24	2.76
CDR00520	24	25	0.34

Hole_id	depth_from	depth_to	Ni
CDR524	0	1	0.73
CDR524	1	2	0.64
CDR524	2	3	1.51
CDR524	3	4	1.89
CDR524	4	5	2.53
CDR524	5	6	0.38

Hole_id	depth_from	depth_to	Ni
CDR472	0	1	0.69
CDR472	1	2	0.66
CDR472	2	3	0.62
CDR472	3	4	0.68
CDR472	4	5	0.63
CDR472	5	6	1.09
CDR472	6	7	1
CDR472	7	8	1.38

CDR472	8	9	1.37
CDR472	9	10	1.37
CDR472	10	11	1.4
CDR472	11	12	1.4
CDR472	12	13	1.2
CDR472	13	14	1.48
CDR472	14	15	1.23
CDR472	15	16	1.54
CDR472	16	17	1.53
CDR472	17	18	1.52
CDR472	18	19	1.57
CDR472	19	20	1.79
CDR472	20	21	1.67
CDR472	21	22	1.66
CDR472	22	23	1.84
CDR472	23	24	1.84
CDR472	24	25	2.18

Hole_id	depth_from	depth_to	Ni
CDR00525	0	1	0.75
CDR00525	1	2	0.81
CDR00525	2	3	0.91
CDR00525	3	4	1.02
CDR00525	4	5	1.16
CDR00525	5	6	1.05
CDR00525	6	7	1.45
CDR00525	7	8	1.57
CDR00525	8	9	1.93
CDR00525	9	10	1.68
CDR00525	10	11	1.94
CDR00525	11	12	1.99
CDR00525	12	13	2.1
CDR00525	13	14	2.22
CDR00525	14	15	2.28
CDR00525	15	16	2.44
CDR00525	16	17	2.43
CDR00525	17	18	2.93
CDR00525	18	19	3
CDR00525	19	20	0.55

Hole_id	depth_from	depth_to	Ni
CDR00373	0	1	0.76
CDR00373	1	2	0.84
CDR00373	2	3	0.63
CDR00373	3	4	1.08
CDR00373	4	5	1.01
CDR00373	5	6	1.27
CDR00373	6	7	1.25
CDR00373	7	8	1.26
CDR00373	8	9	1.62
CDR00373	9	10	2.06
CDR00373	10	11	2.27
CDR00373	11	12	2.54
CDR00373	12	13	3.77
CDR00373	13	14	2.73
CDR00373	14	15	3.07
CDR00373	15	16	3.05

Lampiran B

Tabulasi Basis Data Litologi

1. CDR00504

Hole_id	Depth_from	Depth_to	Zona	Location
CDR00503	0	1	VLGL	Bukit Cinta
CDR00503	1	2	VLGL	Bukit Cinta
CDR00503	2	3	VLGL	Bukit Cinta
CDR00503	3	4	VLGL	Bukit Cinta
CDR00503	4	5	VLGL	Bukit Cinta
CDR00503	5	6	VLGL	Bukit Cinta
CDR00503	6	7	VLGL	Bukit Cinta
CDR00503	7	8	VLGL	Bukit Cinta
CDR00503	8	9	VLGL	Bukit Cinta
CDR00503	9	10	VLGL	Bukit Cinta
CDR00503	10	11	VLGL	Bukit Cinta
CDR00503	11	12	LGL	Bukit Cinta
CDR00503	12	13	LGL	Bukit Cinta
CDR00503	13	14	LGL	Bukit Cinta
CDR00503	14	15	LGL	Bukit Cinta
CDR00503	15	16	HGL	Bukit Cinta
CDR00503	16	17	LGS	Bukit Cinta
CDR00503	17	18	LGS	Bukit Cinta
CDR00503	18	19	HGS	Bukit Cinta

Hole_id	Depth_from	Depth_to	Zona	Location
CDR00504	0	1	VLGL	Bukit Cinta
CDR00504	1	2	VLGL	Bukit Cinta
CDR00504	2	3	VLGL	Bukit Cinta
CDR00504	3	4	VLGL	Bukit Cinta
CDR00504	4	5	VLGL	Bukit Cinta
CDR00504	5	6	VLGL	Bukit Cinta
CDR00504	6	7	VLGL	Bukit Cinta
CDR00504	7	8	VLGL	Bukit Cinta
CDR00504	8	9	VLGL	Bukit Cinta
CDR00504	9	10	VLGL	Bukit Cinta
CDR00504	10	11	VLGL	Bukit Cinta
CDR00504	11	12	VLGL	Bukit Cinta
CDR00504	12	13	VLGL	Bukit Cinta
CDR00504	13	14	VLGL	Bukit Cinta

CDR00504	14	15	LGL	Bukit Cinta
CDR00504	15	16	LGL	Bukit Cinta
CDR00504	16	17	LGL	Bukit Cinta
CDR00504	17	18	LGL	Bukit Cinta
CDR00504	18	19	HGL	Bukit Cinta
CDR00504	19	20	LGS	Bukit Cinta
CDR00504	20	21	LGS	Bukit Cinta
CDR00504	21	22	WASTE	Bukit Cinta
CDR00504	22	23	WASTE	Bukit Cinta
CDR00504	23	24	WASTE	Bukit Cinta
CDR00504	24	25	WASTE	Bukit Cinta

Hole_id	Depth_from	Depth_to	Zona	Location
CDR00505	0	1	VLGL	Bukit Cinta
CDR00505	1	2	VLGL	Bukit Cinta
CDR00505	2	3	VLGL	Bukit Cinta
CDR00505	3	4	VLGL	Bukit Cinta
CDR00505	4	5	VLGL	Bukit Cinta
CDR00505	5	6	VLGL	Bukit Cinta
CDR00505	6	7	VLGL	Bukit Cinta
CDR00505	7	8	VLGL	Bukit Cinta
CDR00505	8	9	VLGL	Bukit Cinta
CDR00505	9	10	VLGL	Bukit Cinta
CDR00505	10	11	VLGL	Bukit Cinta
CDR00505	11	12	VLGL	Bukit Cinta
CDR00505	12	13	VLGL	Bukit Cinta
CDR00505	13	14	VLGL	Bukit Cinta
CDR00505	14	15	LGL	Bukit Cinta
CDR00505	15	16	LGL	Bukit Cinta
CDR00505	16	17	LGL	Bukit Cinta
CDR00505	17	18	LGL	Bukit Cinta
CDR00505	18	19	LGL	Bukit Cinta
CDR00505	19	20	LGL	Bukit Cinta
CDR00505	20	21	LGL	Bukit Cinta
CDR00505	21	22	HGL	Bukit Cinta
CDR00505	22	23	HGL	Bukit Cinta
CDR00505	23	24	LGS	Bukit Cinta

Hole_id	Depth_from	Depth_to	Zona	Location
CDR00506	0	1	VLGL	Bukit Cinta
CDR00506	1	2	VLGL	Bukit Cinta
CDR00506	2	3	VLGL	Bukit Cinta
CDR00506	3	4	VLGL	Bukit Cinta
CDR00506	4	5	VLGL	Bukit Cinta
CDR00506	5	6	VLGL	Bukit Cinta

5. CDR00510

Hole_id	Depth_from	Depth_to	Zona	Location
CDR00510	1	2	VLGL	Bukit Cinta
CDR00510	2	3	VLGL	Bukit Cinta
CDR00510	3	4	VLGL	Bukit Cinta
CDR00510	4	5	VLGL	Bukit Cinta
CDR00510	5	6	VLGL	Bukit Cinta
CDR00510	6	7	VLGL	Bukit Cinta
CDR00510	7	8	VLGL	Bukit Cinta
CDR00510	8	9	VLGL	Bukit Cinta
CDR00510	9	10	VLGL	Bukit Cinta
CDR00510	10	11	LGL	Bukit Cinta
CDR00510	11	12	HGL	Bukit Cinta

Hole_id	Depth_from	Depth_to	Zona	Location
CDR00153	0	1	VLGL	Bukit Cinta
CDR00153	1	2	VLGL	Bukit Cinta
CDR00153	2	3	VLGL	Bukit Cinta
CDR00153	3	4	VLGL	Bukit Cinta
CDR00153	4	5	VLGL	Bukit Cinta
CDR00153	5	6	VLGL	Bukit Cinta
CDR00153	6	7	VLGL	Bukit Cinta
CDR00153	7	8	VLGL	Bukit Cinta
CDR00153	8	9	VLGL	Bukit Cinta
CDR00153	9	10	VLGL	Bukit Cinta
CDR00153	10	11	VLGL	Bukit Cinta
CDR00153	11	12	LGL	Bukit Cinta
CDR00153	12	13	LGL	Bukit Cinta
CDR00153	13	14	HGL	Bukit Cinta
CDR00153	14	15	LGS	Bukit Cinta

CDR00153	15	16	LGS	Bukit Cinta
CDR00153	16	17	WASTE	Bukit Cinta

Hole_id	Depth_from	Depth_to	Zona	Location
CDR00511	0	1	VLGL	Bukit Cinta
CDR00511	1	2	VLGL	Bukit Cinta
CDR00511	2	3	VLGL	Bukit Cinta
CDR00511	3	4	VLGL	Bukit Cinta
CDR00511	4	5	VLGL	Bukit Cinta
CDR00511	5	6	VLGL	Bukit Cinta
CDR00511	6	7	VLGL	Bukit Cinta
CDR00511	7	8	LGS	Bukit Cinta
CDR00511	8	9	LGS	Bukit Cinta
CDR00511	9	10	LGS	Bukit Cinta
CDR00511	10	11	HGS	Bukit Cinta
CDR00511	11	12	HGS	Bukit Cinta
CDR00511	12	13	HGS	Bukit Cinta
CDR00511	13	14	HGS	Bukit Cinta
CDR00511	14	15	SHGS	Bukit Cinta

8. CDR0008

Hole_id	Depth_from	Depth_to	Zona	Location
CDR0008	0	1	VLGL	Bukit Cinta
CDR0008	1	2	VLGL	Bukit Cinta
CDR0008	2	3	VLGL	Bukit Cinta
CDR0008	3	4	HGL	Bukit Cinta
CDR0008	4	5	LGS	Bukit Cinta
CDR0008	5	6	LGS	Bukit Cinta
CDR0008	6	7	SHGS	Bukit Cinta

Hole_id	Depth_from	Depth_to	Zona	Location
CDR00518	0	1	VLGL	Bukit Cinta
CDR00518	1	2	VLGL	Bukit Cinta
CDR00518	2	3	VLGL	Bukit Cinta
CDR00518	3	4	VLGL	Bukit Cinta
CDR00518	4	5	VLGL	Bukit Cinta
CDR00518	5	6	VLGL	Bukit Cinta
CDR00518	6	7	VLGL	Bukit Cinta
CDR00518	7	8	VLGL	Bukit Cinta

CDR00518	8	9	LGL	Bukit Cinta
CDR00518	9	10	LGS	Bukit Cinta
CDR00518	10	11	HGS	Bukit Cinta
CDR00518	11	12	SHGS	Bukit Cinta
CDR00518	12	13	WASTE	Bukit Cinta

Hole id	Depth from	Depth to	Zona	Location
CDR00519	0	1	VLGL	Bukit Cinta
CDR00519	1	2	VLGL	Bukit Cinta
CDR00519	2	3	VLGL	Bukit Cinta
CDR00519	3	4	VLGL	Bukit Cinta
CDR00519	4	5	VLGL	Bukit Cinta
CDR00519	5	6	VLGL	Bukit Cinta
CDR00519	6	7	VLGL	Bukit Cinta
CDR00519	7	8	VLGL	Bukit Cinta
CDR00519	8	9	VLGL	Bukit Cinta
CDR00519	9	10	HGL	Bukit Cinta
CDR00519	10	11	HGL	Bukit Cinta
CDR00519	11	12	HGL	Bukit Cinta
CDR00519	12	13	LGS	Bukit Cinta
CDR00519	13	14	LGS	Bukit Cinta
CDR00519	14	15	LGS	Bukit Cinta
CDR00519	15	16	LGS	Bukit Cinta
CDR00519	16	17	LGS	Bukit Cinta
CDR00519	17	18	LGS	Bukit Cinta
CDR00519	18	19	LGS	Bukit Cinta
CDR00519	19	20	LGS	Bukit Cinta
CDR00519	20	21	LGS	Bukit Cinta
CDR00519	21	22	HGS	Bukit Cinta
CDR00519	22	23	HGS	Bukit Cinta
CDR00519	23	24	SHGS	Bukit Cinta
CDR00519	24	25	SHGS	Bukit Cinta

Hole_id	Depth_from	Depth_to	Zona	Location
CDR00520	0	1	VLGL	Bukit Cinta
CDR00520	1	2	VLGL	Bukit Cinta
CDR00520	2	3	VLGL	Bukit Cinta
CDR00520	3	4	VLGL	Bukit Cinta
CDR00520	4	5	VLGL	Bukit Cinta

CDR00520	5	6	VLGL	Bukit Cinta
CDR00520	6	7	VLGL	Bukit Cinta
CDR00520	7	8	VLGL	Bukit Cinta
CDR00520	8	9	VLGL	Bukit Cinta
CDR00520	9	10	LGL	Bukit Cinta
CDR00520	10	11	LGL	Bukit Cinta
CDR00520	11	12	LGL	Bukit Cinta
CDR00520	12	13	LGL	Bukit Cinta
CDR00520	13	14	HGL	Bukit Cinta
CDR00520	14	15	HGL	Bukit Cinta
CDR00520	15	16	LGS	Bukit Cinta
CDR00520	16	17	LGS	Bukit Cinta
CDR00520	17	18	LGS	Bukit Cinta
CDR00520	18	19	HGS	Bukit Cinta
CDR00520	19	20	SHGS	Bukit Cinta
CDR00520	20	21	SHGS	Bukit Cinta
CDR00520	21	22	SHGS	Bukit Cinta
CDR00520	22	23	SHGS	Bukit Cinta
CDR00520	23	24	SHGS	Bukit Cinta
CDR00520	24	25	WASTE	Bukit Cinta

Hole_id	Depth_from	Depth_to	Zona	Location
CDR524	0	1	VLGL	Bukit Cinta
CDR524	1	2	VLGL	Bukit Cinta
CDR524	2	3	HGL	Bukit Cinta
CDR524	3	4	LGS	Bukit Cinta
CDR524	4	5	SHGS	Bukit Cinta
CDR524	5	6	WASTE	Bukit Cinta

Hole_id	Depth_from	Depth_to	Zona	Location
CDR472	0	1	VLGL	Bukit Cinta
CDR472	1	2	VLGL	Bukit Cinta
CDR472	2	3	VLGL	Bukit Cinta
CDR472	3	4	VLGL	Bukit Cinta
CDR472	4	5	VLGL	Bukit Cinta
CDR472	5	6	VLGL	Bukit Cinta
CDR472	6	7	VLGL	Bukit Cinta
CDR472	7	8	LGL	Bukit Cinta
CDR472	8	9	LGL	Bukit Cinta

CDR472	9	10	LGL	Bukit Cinta
CDR472	10	11	LGL	Bukit Cinta
CDR472	11	12	LGL	Bukit Cinta
CDR472	12	13	LGL	Bukit Cinta
CDR472	13	14	LGL	Bukit Cinta
CDR472	14	15	LGL	Bukit Cinta
CDR472	15	16	HGL	Bukit Cinta
CDR472	16	17	HGL	Bukit Cinta
CDR472	17	18	HGL	Bukit Cinta
CDR472	18	19	HGL	Bukit Cinta
CDR472	19	20	LGS	Bukit Cinta
CDR472	20	21	LGS	Bukit Cinta
CDR472	21	22	LGS	Bukit Cinta
CDR472	22	23	LGS	Bukit Cinta
CDR472	23	24	LGS	Bukit Cinta
CDR472	24	25	HGS	Bukit Cinta

Hole_id	Depth_from	Depth_to	Zona	Location
CDR00525	0	1	VLGL	Bukit Cinta
CDR00525	1	2	VLGL	Bukit Cinta
CDR00525	2	3	VLGL	Bukit Cinta
CDR00525	3	4	VLGL	Bukit Cinta
CDR00525	4	5	VLGL	Bukit Cinta
CDR00525	5	6	VLGL	Bukit Cinta
CDR00525	6	7	LGL	Bukit Cinta
CDR00525	7	8	HGL	Bukit Cinta
CDR00525	8	9	LGS	Bukit Cinta
CDR00525	9	10	LGS	Bukit Cinta
CDR00525	10	11	LGS	Bukit Cinta
CDR00525	11	12	LGS	Bukit Cinta
CDR00525	12	13	HGS	Bukit Cinta
CDR00525	13	14	HGS	Bukit Cinta
CDR00525	14	15	HGS	Bukit Cinta
CDR00525	15	16	SHGS	Bukit Cinta
CDR00525	16	17	SHGS	Bukit Cinta
CDR00525	17	18	SHGS	Bukit Cinta
CDR00525	18	19	SHGS	Bukit Cinta
CDR00525	19	20	WASTE	Bukit Cinta

Hole_id	Depth_from	Depth_to	Zona	Location
CDR00373	0	1	VLGL	Bukit Cinta
CDR00373	1	2	VLGL	Bukit Cinta
CDR00373	2	3	VLGL	Bukit Cinta
CDR00373	3	4	VLGL	Bukit Cinta
CDR00373	4	5	VLGL	Bukit Cinta
CDR00373	5	6	LGL	Bukit Cinta
CDR00373	6	7	LGL	Bukit Cinta
CDR00373	7	8	LGL	Bukit Cinta
CDR00373	8	9	LGS	Bukit Cinta
CDR00373	9	10	HGS	Bukit Cinta
CDR00373	10	11	HGS	Bukit Cinta
CDR00373	11	12	SHGS	Bukit Cinta
CDR00373	12	13	SHGS	Bukit Cinta
CDR00373	13	14	SHGS	Bukit Cinta
CDR00373	14	15	SHGS	Bukit Cinta
CDR00373	15	16	SHGS	Bukit Cinta

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010011000	<i>(</i>)
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Lamphan	\sim
1	

Tabulasi Basis Data Collar

Hole_id	Y	Х	Z	Max_depth	Hole_path
CDR00503	62599.1	403959	455.543	19	linear
CDR00504	62602	404002	454.479	25	linear
CDR00505	62595.2	404051	447.441	24	linear
CDR00506	62602.3	404104	439.886	6	linear
CDR00510	62556.3	403951	442.979	12	linear
CDR00153	62555	404005	446.825	17	linear
CDR00511	62550.8	404052	444.383	15	linear
CDR0008	62552.1	404102	435.809	7	linear
CDR00518	62499.6	404008	436.086	13	linear
CDR00519	62499.2	404050	436.352	25	linear
CDR00520	62500	404098	431.233	25	linear
CDR524	62445.9	403966	420.935	6	linear
CDR472	62456	404013	430.994	25	linear
CDR00525	62454	404052	429.604	20	linear
CDR00373	62454	404101	425.389	16	linear

Lampiran D

Tabulasi Basis Data Komposit

Hole_Id	Komposit Saprolite	Komposit Limonite
CDR00503	2.006667	0.963571
CDR00504	1.735	0.876471
CDR00505	1.71	1.105
CDR00506	0	0.845
CDR00510	0	0.952857
CDR00153	1.673333	0.906154
CDR00511	2.165862	0.8
CDR0008	1.986667	1.58
CDR00518	2.28	0.75375
CDR00519	1.97	1.183333
CDR00520	2.285556	1.074545
CDR524	2.21	0.815
CDR472	1.83	1.192353
CDR00525	2.267273	1.026
CDR00373	2.63875	1.001667

Lampiran E

Langkah Penggunaan Software Surpac 6.3 Untuk Penaksiran Sumberdaya Nikel Laterit Menggunakan Metode IDC Dan NNP

 Membuat *database* yang akan digunakan sebagai patokan dalam pengolahan data, dimulai dari *database assay, database collar, database* litologi dan *database survey*. Pembuatan *database* ini menggunakan *software microsoft excel* 2019 yang *file* nya akan disimpan dalam *format* csv (*comma delimeted*). *Database* dibuat dari laporan dokumen yang diberikan perusahaan setelah selesai kegiatan eksplorasi dimana dalam dokumen tersebut berisikan data titik bor, koordinat titik bor, kadar material pada setiap 1 meter, spasi titik bor, total kedalaman masing-masing titik bor serta massa jenis material dan kemiringan lubang bor dimana *database* akan disimpan dalam 1 *folder*.



2. Pindahkan data-data yang akan digunakan dalam melakukan penaksiran seperti *database assay, database collar, database* litologi, *database survey, string* dan dtm topografi pada satu *folder*.

Image: Image					
Pin to Quick Copy Paste Paste sho	ntcut Move Copy De to + to + Organize	k intername New folde	Thew item •	Properties • Open	 Select all Select non Invert sele Select
\leftarrow \rightarrow \checkmark \uparrow \square \Rightarrow This PC \Rightarrow Data	a (D:) > data fix > Estimas	i Sumberdaya			
🗊 3D Objects 🖈 ^ Name	^	Date mod	ified Ty	pe Si	ze
📰 Pictures 💉 🖬 Assay		7/26/2021	7:57 PM Mi	icrosoft Excel C	11 KB
Saprolit 🖬 collar		3/12/2021	2:11 PM Mi	icrosoft Excel C	1 KB
📙 skripsi simbolon 🛛 📋 iup60	_kontur.dtm	1/23/2021	6:56 PM DT	M File	6,219 KB
TA 2 iup60	0_kontur.str	1/23/2021	6:56 PM ST	R File	2,765 KB
tata cara	pi	2/4/2021 1	0:08 AM Mi	icrosoft Excel C	9 KB
 OneDrive 		1/25/2021	2:05 PM Mi	icrosoft Excel C	1 KB
💻 This PC					
3D Objects					
Desktop					

3. Buka perangkat lunak *surpac 6.3* lalu klik kanan pada folder yang telah berisikan basis data assay, collar, litologi, dan survey kemudian klik *set as work directory* supaya menjadikan folder tersebut sebagai lembar kerja dan menyimpan hasil-hasil kegiatan estimasi pada *file* tersebut.



4. Kemudian klik database pada menu bar, lalu database » open/new



5. Selanjutnya masukkan nama database, kemudian klik apply lalu apply lagi.

Select databas	e		×
Database Name 12			~
		Appl	y 🛛 🔀 Cancel
Choose databa	ase type		×
Database Name	12		
Database Type	access	~	
ODBC connect string			
		TED Y X Z survey an	d sample co-ordinates
0		🛛 🗹 Appl	y 🔀 Cancel

6. Akan muncul tabel kemudian klik kanan pada nomor 1 lalu pilih *add*, kemudian isi tabel dengan nama *assay* dan litologi,

Table name Table type Time de 1 assay interval 2 litologi interval	
1 assay interval 2 litologi interval	pendent
2 litologi interval	

7. Selanjut nya pada pada tabel *field assay* ketik ni dengan *type real*.

1	Jerine all field:	s for all table	es									
colla	ar survey t	ranslation	styles	assay	litolog	ji						
1anda	atory Fields											
	Field	Туре	•	Nulls	Index	Ler	ngth I	No. Dec	Low Bound	High Bound		
1	hole_id	char	acter		none	12	1)	-9999999	99999999	^	
2	samp_id	char	acter		none	10	1)	-9999999	99999999		
3	depth_from	real] none	7	2	2	0	9999		
4	y_from	real		L] none	11		3	-9999999	99999999		
5	x_from	real] none	11		3	-999999	9999999		
6	la 6				1		ŀ		000000		Ň	
ptior	nal Fields	1/221					_					
	Field	Туре	5	Nulls	Length	No. Dec	Case		Low Bound	High Bound	Phys, Virt or E	Exp Reference field or Expression
1	ni	real	~		10	2	mixed	1	0	999	physical	
		house and a		_			1000000000					
2												🚽 Apply 🛛 💥 Cance

8. Pada tabel *field* litologi ketik zona dengan *type character*.

oll	ar survey tran	slation styles	assay	litolog	1							
Ind	Field	Type	Nulls	Index	i	enath	No. Dec	Low Bound	High Bound			
	1 Iolu	Type	radiis	INCO		engen	NO. DOC	cow boaria	nigh boand			
1	hole_id	character		none	1	2	0	-9999999	9999999		^	
2	samp_id	character		none	1	.0	0	-9999999	9999999			
3	depth_from	real		none	7	,	2	0	9999			
4	y_from	real		none	1	1	3	-9999999	99999999			
5	x_from	real		none	1	1	3	-9999999	9999999			
6	- 6	had			4		2	000000	0000000		~	
tio	nal Fields	- 1.										and a second of the second of the
	Field	Туре	Nulls	Length	No. Dec	: Case	e	Low Bound	High Bound	Phys,	Virt or Exp	Reference field or Expression
1	zona	character		10	2	mixe	d	0	999	physic	al	

9. Lalu klik lagi menu database dan pilih importdata.

File	Edit	Creat	te Displa	ay ∨iew	Inquire	
Data	abase	Edit	Analysis	Display	Sections	
P	Open	New				
-	Map t	he data	abase			
	Edit d	atabas	e definitio	n		
16×	Impor	t drillho	les from a	cQuire		
	Import discrete samples from acQuire					
P	Impor	t data				
1	Expor	t data	2			
1	Audit					
	Displa	ay data	base defir	nition		
	Admir	nistratio	on		•	
1	Close	3				

10. Kemudian akan muncul kolom *select fotmat file for load/unload*. Kemudian pada *format file name* dan nama *database* disamakan selanjutnya pilih *format* pelaporan *not* selanjutnya klik *apply* dan *apply* lagi.

Select form	at file for load / unload	×
Database Name	12	
Format File Name	12	~
Report file name	12	~
Format	.not - Surpac Note File	~
0	Apply	Cancel

Confirm Creation	of New Format File	×
Press APPLY to create new	w format file: 12.dsc	
2	🖌 Apply	🔀 Cancel

11. Kemudian akan muncul tabel *select database to include in format*. Lalu hanya ceklis pada *include* dibagian assay, *collar*, litologi dan *survey*. Lalu klik *apply* dan *apply* lagi.

	Table Name	Include	Format	Delimiter	Space Fill	Text Qual.	
1	translation		FREE	,		None	
2	collar		FREE	,		None	
3	survey		FREE	,		None	
4	assay		FREE	,		None	
5	litologi		FREE	6 3		None	
6	styles		FREE			None	

	Table Name	Field Name	Include	Column	Length	Format	
1	collar	hole_id		1	0	FREE	1
2		У		2	0	FREE	
3		x	\checkmark	3	0	FREE	1
4		z		4	0	FREE	
5		max_depth		5	0	FREE	
6		hole_path		6	0	FREE	1
7	survey	hole_id		1	0	FREE	
8		depth		2	0	FREE	1
9		У		0	0	FREE	1
10		x		0	0	FREE	

12. Kemudian akan muncul *load database tables from text file*, lalu klik pada *text file name kemudian akan muncul seperti pada gambar dibawah ini, lalu pilih file .csv* sesuai dengan *tabel name* klik *apply* nanti akan muncul hasil *report* dalam bentuk *note*.

Per laxir	form overlapping mum errors allow	sample check 🔽 ed during load 50		
_	Table Name	Text File Name	Load Type	
1	collar	collar.csv	Insert	1-
2	survey	survey.csv	Insert	
3	assay	Assay.csv	Insert	
4	litologi	litologi.csv	Insert	
				~

2 12 - Notepad		69	×
File Edit Format View Help			
Database Management - Database Load Report Aug 05, 2021			
ate : 05-Aug-21			
Jatabase : 12			
ormat_file : 12.05c			

oading Table : collar from file collar.csv			
uning Value Can Giald bala id anthring illeril langers abaarter			
aning: value for field hole_id contains filegal four-case characters			
arring, y is not numeric			
arging: "z" is not numeric			
arning: "max depth" is not numeric			
arning: Value for field hole path not in allowed set			
ole_id,Y,X,Z,max_depth,hole_path			
15 records were inserted.			
e records were updated.			
1 Pecords were rejected.			

oading Table : survey from file survey.csv			

arning: Value for field hole_id contains illegal lowercase characters			
arning: "depth" is not numeric			
arning: "dip" is not numeric			
arning: azimuth is not numeric			
ole_id,max_depth,dip,azimuth,,			
15 records were inserted.			
0 records were updated.			
	1-1-5-11 000 00-1-5-0000 000		

13. Klik database pada bagian bawah surpac 6.3, lalu klik drillhole display styles.



14. Kemudian akan muncul *tabel edit database display styles*, kemudian klik *folder assay*, lalu klik kanan pada ni selanjutnya pilih *get min – max range* kemudian atur *value* dan *to value* berdasarkan klasifikasi kadar yang ingin dimasukkan.



Kadar %	Klasifikasi	Warna
0.6 - 1.19	VLGL	DARK ORANGE
0-0.6	WASTE	GRAY
1.2 - 1.49	LOW GRADE LIMONITE	ORANGE
1.5 - 1.59	HIGH GRADE LIMONITE	YELLOW
1.6 - 1.99	LOW GRADE SAPROLITE	GREENISH YELLOW
2 - 2.29	HIGH GRADE SAPROLITE	GREEN
2.3 - 9	SUPER HIGH GRADE SAPROLITE	BLUE

15. Selanjutnya klik *folder* litologi, lalu klik kanan pada zona dan klik kanan kemudian klik *get field codes* setelah itu dilanjutkan pemberian pewarnaan sesuai dengan pewarnaan pada batas zona litologi lalu klik *apply*.





Zona	Warna
VERY LOW GRADE LIMONITE	DARK ORANGE
WASTE	GRAY
LOW GRADE LIMONITE	ORANGE
HIGH GRADE LIMONITE	YELLOW
LOW GRADE SAPROLITE	GREENISH YELLOW
HIGH GRADE SAPROLITE	GREEN
SUPER HIGH GRADE SAPROLITE	BLUE

16. Lalu klik *database* pada bawah layar kemudian klik *display drillholes*.

× ×			
Ising local licence	11	Display drillholes	
Changed working directory to d:\dat Definition file 12.ddb opened. Database 12 connected.		Drillhole display styles Identify drillhole Hide drillhole	
Str = 1 0.000%	1	Close	

17. Kemudian klik *Trace styles*, lalu pada *tabel* pilih litologi dan *field* pilih zona.

Draw Hole	s									×
Rescale view to s	show all	holes in p	lan view?							
	Add	constraint	to holes?							
Trace styles	Colla	r styles	Geology	y patterns	Labels	Graphs	Depth markers	Apparent dip indicator:	s	
Colour trac	es by:									
	Table	litologi	~	1						
	Field	zonal	~							
Default trace	colour	forest gr	een		~					
Default trace thi	ckness	1								
Tick line	weight	1								
Cylinde	r <mark>styl</mark> e	no cyline	lers 🗸							
Lengt	th/Unit	1.000								
Ma	ximum	50.0								
									🖌 Apply	Cancel

18. Selanjutnya klik *collar styles*, pada *field* pilih *hole_id font* pilih *arial* dan ganti *label orientation* ke *centered*.

Resca	le view to s	how a Add	ill holes in p constraint	lan view? 🗹 to holes? 🗹					
Tra	ce styles	Coll	ar styles	Geology patterns	Labels	Graph	Depth markers	Apparent dip indicators	
Displa C	ay collar mai Collar ma ollar marker abel orient Label o	rkers arker size ation ffset	(+) v 0.5 centered 0.0	v					
	Field		Decimals	Font	Size	Units F	osition		
1	hole_id		1	Arial	1.000	oru k	ollar	1	
0									Apply X Cancel

19. Kemudian klik lagi *labels*, pada *tabel* pilih *assay*, pada *field* pilih ni, *font* ganti ke *arial* dan *size* ubah ke 0,4 lalu klik *apply*.

esca	le view to s	show all holes in p Add constraint	olan view? 🔽 to holes? 🔽									
Tra	ce styles	Collar styles	Geology patte	erns Labels	5 Grap	hs Dept	h marker	s Apparei	nt <mark>d</mark> ip indi	cators		
ick le	ength 1.0											
	Table	Field	Position	Alignment	Offset	Combine	Decimals	Use styles	Colour	Font	Size	L
1	assay	ni	right	left	1.0		þ			Arial	0.4	d
			12		10							
	<											>

20. Kemudian sebaran titik bor akan muncul beserta dengan kadar ni setiap meter dan pewarnaanya.

Surpac 6.3 - d:\data fix\12 (Profile:geology_d	latabase)					- 0 ×
File Edit Create Display View Inquire	File tools Surfaces Volumes Plotting Cu	stomise Help				
Database Edit Analysis Display Sections	Composite Extract Report					
		· · · · ·	OXL1C	" unumunu	🔍 📑 • 🕊 • 🥢 •	i 📫 🛟 🛞 i 🚥 🚥
Pf 1/ - * mm mm 3	Y 🖣 🖓 I I "M"I I 🕯 I º I' 🔢	₽₽ ●●● 中掛 ₽ ₽ 5		1		
Navigator Preview 🗗 🖗 ×	1		_		-	
All Files (.*.*) 🗸		-				
e data fix						
⊕ 1 gaga ⊕ 10						
· III · · · · · · · · · · · · · · · · ·						
		-	-			
12.mdb					-	
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Assay.rej						
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Properties 🗗 🖓 🗙						
	• ×		-			
(Name)		-				
(Description)						0
Contraction of the second	Using local licence					
Layers New Dr 4 X	Changed working directory to d:\data fix\12 Definition file 12.ddb opened.					
Main graphics layer	Database 12 connected.					
	DISPLAY DRILLHOLES (DH)					
¥ 62557,198 ¥ 403952,287 7 43	30.768 Str = 10.000% 12 •					

\

21. Selanjutnya membuat *solid modeling* dari pada setiap zona, pertama-tama *extract* lalu klik *sampel data*.



22. Lalu akan muncul *tabel extract sampel data* pada *location* beri penamaan sesuai *solid modeling* yang akan kita buat untuk *id number* 1, *string* 1 lalu pada *sampel coordinate point* pilih *midel* dan klik *apply*.

	12121111111111111111111111111111111111					
	Extract sample data					×
	Define the string file to cre	ste				
	Location ID number	limonite_sectio	n			~
	String	1				
	Extract negative samples					
	Sample coordinate point) bottom 🔘 d	collar 💿 mi	ddle 🔿 top		
	0			🖌 🖌 Apply	/ 🔀 Can	cel
> X						

23. Akan muncul lagi tabel *select the assay tabel to process* pada *tabel name* pilih *assay*, lalu klik *apply*.

Select	the assay table to process	×
Table name	assay	~
	assay	
	collar litologi styles	
	survey translation	

24. Selanjutnya klik *display* pilih *point* lalu *attribute*, lalu tekan *apply* untuk menampilak titik yang akan dibuat *solid modeling*.

File Edit Create Di	splay Viev	w inquire			£.			odotonnoo	1 ICI
Database Edit Ar	Strings			•	Rep	port			
i la 🖵 🚔 🔛 📙	Point			•	*	Markers			1 0
	Display p	properties		•	+12	Numbers	s		N.I
	String pr	operties			+ 01	Attribute	es		13 4
	14 H H I								
	▝▋Ħ₿▌▛		2 2 3						
	थ∰₽₽₽		7° 17° 13° 11						
▓▐▝▓▌▓▌▛▐▖ <mark>▎▌▓▌▓</mark>	▝▋Ħ₽₽₽₽		, 1 , 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,						
	▝▋Ħ▌₽		7 0 2 0 3 00 3 1						
	≦¶##₽ 503		, 11						
CDROO	™∰ ₽		, 1 , 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,	+ [] 3⊞+ []3] []] ¹					
CDR00	™∰ ™ 503 1.62		, 12. 12. 11 91	+ [] 3), []3) , []					
CDROO	≝¶### ₩ 503 1.62		, 12 (1 . 11)	+ ₩ 3@+₩31 ₩					
CDR00	503 1.62 1.63		, 1 2 1 3 (1						
CDR00	503 1.62 1.63 1.70								
CDR00	503 1.62 1.63 1.70		9°°°°°°°°°°°°°°°°°°°°°°°°°°°°°°°°°°°°°						
CDR00	503 1.62 1.63 1.70 1.76 1.76		,						
	503 1.62 1.65 1.70 1.76 1.76 1.76		,						
	503 162 1.63 1.76 1.76 1.75 1.81		,						
	0 3 1.62 1.63 1.70 1.75 1.81 1.75 1.81		,				\rightarrow		
	503 1,62 1,62 1,63 1,76 1,76 1,76 1,81 1,81 1,81 1,81 1,81 1,81		,						

Selanjutnya klik *section*, lalu pilih *define* pada tabel *define slicing planes width* atur *section definition method* ke *graphically select section line*, untuk *distance forward of plane 25* dan untuk *distance backward of plane 25* lalu *apply*. Kemudian tarik garis mulai dari CDR00503 – CDR00506 yang mau dibuat *solid modeling*, terus lakukan sampai pada baris terakhir.



Define slicing	planes	width				×
Zoom to section plan	e to sho Show s Intera	w all drillholes section planes active Methoo	s? 🔽 s? 🔲 d? 🗌			
Section Method	Off Se	ction Holes	;			
Section definition r	method	Graphically	select section line		~	
Distance forward o	f plane	25				
Distance backward o	f plane	25				
Sec	tion by	Interval	Range			
Step d	istance					
Section	range	0				
Confirm selected end Confirm section	dpoints details					
0				A	pply	🔀 Cancel

25. Selanjutnya buat string dengan cara klik icon "enter / change digitizer point attribute" lalu ganti string # ke-2 lalu klik apply, selanjut nya klik icon "snap mode" pilih plane kemudian ketik "D" lalu enter. Kembali klik icon "snap mode" pilih point kemudian klik titik batas akhir zona top soil lalu klik icon "snap mode" pilih plane tarik garis lurus sejauh 25 meter, dimana jarak nya bisa dilihat melalu icon ruller pada tampilan bawah. Selanjutnya sesuaikan tebal solid modeling dengan titik awal yang dibuat string, ganti lagi snap mode plane ke point untuk menandai titik selanjutnya, lalu tutup string dengan menekan icon "close the current segment being section" lalu akhiri pembuatan string pada baris pertama dengan klik icon "save the active layer to a string or dtm layer". Keluar dari pembuatan section pertama klik section kemudian klik end section mode.

📕 Surpa	c 6.3 - d:\	data fix\12 (Profile:geology	_database)							
: File E	dit Creat	e Display	View Inquire	File tools	Surfaces	Volumes	Plotting	Customise	Help	л	
Databas	se Edit	Analysis	Display Sectio	ns Composi	te Extract	Report				V	
	1			20°Ľ×	× ×	Ø. B	• 🗟		•	· M · [] / / / / / /	s, indig (d)
	*] * -			X 1 - O		1 88 8	° [″]		引井		

Digi	tiser stri	ing attributes	×
String #	2		
Z	0		
Desc			
Use Use Use	Desc of	selected point	Project selections to the current plane
0			Apply X Cancel







Sur	pac 6.	3 - <mark>d:\</mark> dat	a fix\12 (Profile:	jeology_d	atabase)		
: File	Edit	Create	Display	View	Inquire	File tools	Surfaces	Volumes
Data	base	Edit A	nalysis	Display	Sections	Composi	te Extract	Report
	Sa	ve the ac	tive layer	to a stri	ing or DTI			





26. Selanjutnya pembuatan .*dtm solid modeling*, pertama-tama aktifkan *menu solids* dengan cara klik kanan ruang kosong pada bagian atas lalu pilih *menus* lalu pilih *solid*.



27. Selanjutnya klik *menu triangulate*, lalu *klik between segment*. Lalu masukan nilai *object* untuk pewarnan sesuai *solid modeling*, untuk *very low grade limonite* masukkan nilai *object* 1 untuk *trisolation 1*.

8	Su	rpac 6.	3 - d:\da	ta fix\12	(Profile:g	eology_d	atabase)
1	File	Edit	Create	Display	View	Inquire	File tool	ls Su
1	Data	base	Edit A	nalysis	Display	Sections	Comp	osite
:	Triar	ngulate	Edit ob	ject Edi	t trisolation	e Edit tri	angle I	Display
1	P	Betwe	en segm	ients			PI	× Z
-	-	Inside	a segme	nt				
1	P	Segme	ent to a p	oint			UI V	
1	1	Many	segment	s				
:	F	Using	control s	trings				
•	5						- 1	20

Define	e the tris	olation to be created X
Function	TRIANG	ULATE AUTOMATIC
Layer name	top_soi	_inside.str
Object	1	
Trisolation	1	
		Apply 🔀 Cancel

28. Selanjutnya klik *string* pada baris pertama sampai pada baris terakhir, setelah itu tekan tombol *escape* pada *keyboard* kemudian klik lagi *triangulate* pilih *inside segment* untuk menutup ruang kosong pada .dtm string yang belum dibuat *solid modeling* lalu atur nilai *object* 1 *trisolation* 1 lalu klik *apply*.

	· · · · · · · · · · · · · · · · · · ·
Database Edit	Analysis Display Sections
Triangulate Edit of	bject Edit trisolation Edit trian
🥵 Between seg	ments
Inside a segm	ent i
Segment to a	point .
Many segmer	nts
🚰 Using control	strings
🔛 By manually s	selecting points
One triangle	
Define the trisolation to be	created ×
Function TRIANGULATE AUTOM	ATIC
Layer name top_soil_inside.str	
Object	
Trisolation 1	

sebelum



sesudah


29. Kemudian simpan dtm *solid modeling* dengan cara klik *icon "save the active layer to a string or dtm layer"* lalu klik *apply*.



30. Ulangi langkah-langkah mulai dari nomor 21 sampai dengan nomor 30 untuk membuat *solid modeling* sesuai dengan zona yang mau dibuat. Perbedaan hanya ada pada kadar ni yang mau dimasukkan dan nilai *object* sesuai dengan pewarnaan nya.







Field Name	Operand	Constraint Value		Load
• 1.	1	1	1.	Save
1				

Zona Bedrock

able	Name sampel				
	Field Name	Operand	Constraint Value		Load
	1.2	2123	12.2		Save
1	n	>=	0.9	^	
2	ni	<	1.2		

31. Selanjutnya pembuatan *blockmodel*. Klik *blockmodel* » *blockmodel* » *new/open*.

File	Edit Create Display Vie
Data	ibase Edit Analysis Displa
Bloc	k model Attributes Constrair
1	New / Open
6	Display
P	Save
1	Save as
Ť	Delete
	Merge
-	Reblock

32. Kemudian ketik nama *file blockmodel* yang akan dibuat pada *model name*, lalu klik *apply*.

Select model			×
Model name	blockmodel_12		~
Load with constraints Constrained model name			
	1	Apply	💢 Cancel

33. Selanjutnya ceklis pada get *extents from string file?*, untuk membuat dimensi *blockmodel* berdasarkan data *string komposit*. Kemudian klik *location* dan *open data string composite*.

Creating new block model definition	×
Model name blockmodel_12.mdl	📺 🔍 🖃 • 🖉 • 🖉 • 🧑 📇 📖 📖
Description	
Define model using (@) ManjMax coords Origin coords/extents Extents Rotation	Open a File X Lookin: 12 betoml.str
Get extents from string file ? Extents string Location ID X 0	archedy.str arche
Z 0 Sub blocking None	File name: orecomp0.str Open Files of type: Surpac files (.str) Cancel
Maintain audit trail	

34. Kemudian mengatur dimensi dari *blockmodel* yang akan dibuat dengan panjang 25, lebar 25 dan tabal 1 sedang kan untuk sub *blockmodel* 12,5 lebar 12,5 dan tebal 1 meter lalu klik *apply*.

	Creatin	ng new b	olock mo	del d	efinition			×
Mode	el name	blockmod	del_12.md	I				
Desc	ription						Ĵ	
Defir	ne model	using (● Min/Ma) Origin d	x coc	rds s/extents			
Ext	tents	Rotatio	n					
Coc	Get ex ordinate Minimur 62445	extents froi extents n coordin .918	m string fil iates	le ? Y	Maximum coordinates 62601.978	Us	er block size	
×	40395	0.647		×	404102.360	×	25	
z	408.49	94		z	446.043	Z	1	
Sub I	blocking	Variable			~			
Minin	num bloc	k size y	12.5		~			
		×	12.5		~			
		z	1		\sim			
N	Maintai	n audit tr	al					
-								

35. Akan muncul model confirmation, lalu klik create model.

	rmation	1					×
Model name block	model	12.mdl					
Description							`
						8	•
This model extends	from	62445.918 403950.647 408.494	to Y to X to Z	62620.918 404125.647 446.494	The b	lock model extents h its fail on a boundary	ave been adjusted so that the of a block of user block size
Block Model Geome	try —						
Block Model Geome User block Size	stry Y	25	×	25	z	1	
Block Model Geome User block Size Min. block Size	stry Y Y	25	x	25	2	1	
Block Model Geome User block Size Min. block Size Rotation E	stry Y Y Searing	25 12.5 0	X X Dip	25 12.5 0	Z Z Plunge	1	
Block Model Geome User block Size Min. block Size Rotation E	stry Y Y Bearing	25 12.5 0	X X Dip	25 12.5 0	Z Z Plunge	1 1 0	
Block Model Geome User block Size Min. block Size Rotation E Possible extents ad	try Y Searing Justmen	25 12.5 0	X X Dip	25 12.5 0	Z Z Plunge	1 1 0	
Block Model Geome User block Size Rotation E Possible extents ad 62620.918,404125	y Y Searing Justmen	25 12.5 0 ts : 66.494 - 602 blocks	X X Dip	25 12.5 0	Z Z Plunge	1 1 0	
Block Model Geome User block Size Min. block Size Rotation E Possible extents ad 62620.918,404125	try Y Bearing Justmen 5.647,44	25 12.5 0 ts : 16.494 - 602 blocks	X X Dip	25 12.5 0	Z Z Plunge	1 1 0	

- 36. Klik *attribute* » *new* untuk membuat *attribute* apa yang akan dimasukkan dalam estimasi.
 - Surpac 6.3 d:\data fix\12 (Profile:geology_database) File Edit Create Display View Inquire File tools ase Edit Analysis Display Sections Composit odel Attributes Constraints Display Sections New Edit / Rename de 💰 Delete Vavigato Clear / Reset to background value All Files (Al Reorder Attributes data 2 View attributes for one block +---G Edit attributes for one block ÷---÷... Maths Basic statistics
- 37. Tambahkan *attribute* yang akan dimasukkan seperti gambar dibawah ini, untuk *type* buat dalam *real* dan *decimal* buat 2 lalu klik *apply*.

	Add attributes					×	<
	Attribute Name	Туре	Decimals	Background Value	Description / Expression		
1	ni	real	þ	1		1	~
2	sg	real	2		2		
							~
0						Apply 🔀 Cancel	Ī

38. Selanjutnya untuk membuat *blockmodel* sesuai dengan zona litologi dengan cara klik *constraint* lalu pilih *new constraints file*.



39. Selanjutya ganti *conctraint type* ke *dtm* lalu yang pertama dimasukkan *dtm top* klik *open* hilangkan centang *above* lalu klik *add*. Setelah itu masukkan *dtm*

orebody klik *open* dan untuk *orebody* centang *above* (untuk pembuatan *constraint* bisa disesuaikan dengan zona yang akan mau di estimasi) lalu buat nama *constraint* yang akan dimasukkan pada *save constraint to* lalu klik *apply*.



40. Untuk menampilkan *constraint* yang baru dibuat bisa dilakukan dengan cara klik *file constraint* yang telah dibuat lalu tarik kehalaman kerja maka *constraint* akan tampil.

Surpac 6.3 - d:\data fix\12 (Profile:geology_database)	
File Edit Create Display View Inquire File tools Surfaces Volumes Plotting	Customise Help
Database Edit Analysis Display Sections Composite Extract Report	
Block model Attributes Constraints Display Sections Column processing Estimation	Indicator Irriging Interpolator
PF	●●● ## P F F F F F F F F F F F F F F F F F
Navigator Preview 27 + X	
Al Hes (.*.*)	
12.dsc ^	
12.mdb	
12.700	
Access and	
Assay.rej	
hm blok2 id out	
bottomi.str	
- Collar.csv	
collar.rej	
- Lup600 kontur.str	
Imo top1.str	
Navigator E Legend	
Properties d' 4 ×	
🖻 Details 🔥 🔺	
Path D:\data fix\12\blockm	
Filename blockmodel_ore.con	
Extension con	
Size 589 V	
(Name)	

41. Selanjutnta untuk melakukan pewarnaan klik *blockmodel*, lalu pilih *colour by attribute*.



42. Pada *block colours* atur *range for colour selection* sesuai dengan batas kadar yang ingin dilakukan pewarnaan. Pewarnaan pada zona *limonite* dimulai dari *dark orange* ke *yellow*, sedangkan pada zona *saprolite* dimulai dari *greenish yellow* ke *blue* lalu klik *apply*.





Selanjutnya untuk melihat kadar pada setiap titik bor untuk perhitungan RMSE, yang pertama klik *snap mode*, pilih *snap point* lalu klik *create new point using the mouse* lalu klik titik koordinat yang ingin di lihat kadar ni untuk mendigitasi atur ulang *snap mode*, *dan pilih drafting* lalu mulai digitasi titik koordinat.

No. CO	-11/07.6.
+0	No Snap
*	Point
*	Snap to the nearest point
*	Triangle
24	Drafting





43. Setelah membuat *string* yang telah didigitasi selanjutnya save *string* tersebut dengan cara klik *save the active layer to string or dtm file*. Lalu beri nama sesuai dengan kode lubang bor yang didigitasi dan tekan *apply*.

Save File			000	×
Layer N	Vame	main grap diaitasi s	hics layer	
Output Format	Туре	Surpac S	tring Files	×
Exte	nsion	.str	~	
Options Purpose File format	● te	ext inary		DTM/3DM Options Force solid validation on save 💟 Force rigid backwards compatibility 💟
String Range Save styles		CTVIEC	ndes esi	
	- psi	DITLES(SI	yies.ssi	Apply X Cancel

44. Untuk membuat *solid dtm*, dengan cara klik *surfaces* lalu pilih *create dtm from layer*.



45. Pada *create a dtm layer* atur *object id* dengan no1 lalu klik *apply*, dan simpan *solid modeling* dengan klik *save the active layer to string or dtm file* lalu klik *apply*.

Object ID	0	
Object name		
Creating a DTN	1 using breakline test	
Perform	brea <mark>k line tes</mark> t	
	ate additional points	
	Las Las	

46. Untuk menampilkan kadar ni pada setiap titik bor dilakukan dengan cara, klik *constraint* lalu pilih *edit grapichal constraints*.

File Edit Create Database <mark>Edit An</mark>	Display ∨iew alysis Display	Inquire Sections	File tools Composit	Surfaces te Extract	Volumes Report
Block model Attribut	es Constraints	Display	Sections	Column pr	ocessing
Navigator	New c	onstraint fi Instraint file Constraint f	ile e file onstraint		
All Files (.*.*)	🔣 Edit gra	aphical cor	nstraints		
sapr	olite 🎉 Remov	ve last grap	hical constr	aint	
sapr	olite 🙀 Remov	ve all graph	iical constra	ints	
	otor 🚑 Save o	current viev	w as graphi	cal constrair	nt

47. Selanjutnya klik ubah *constrain type* ked tm lalu masukkan *file solid* lubang bor yang sudah dibuat, untuk bagian *top* hapus centang *above*. Selanjutnya masukkan *file orebody* zona yang akan dilihat kadar ni untuk *above* dicentang lalu klik *apply*, lakukan langkah-langkah dari nomor 44 – 49 pada setiap titik bor.

TM V V V V V V V V V V V V V V V V V V V	without a share of the control of the form will clear all of the form.	Add Clear Start Agan Start Agan	a b c d f f f h i j k l I ND) to	the st values DMP Constructs: Not above sagradou _s80008.dbm CBytel (Dr. 1 Trustation (Dr. 1 DMP Constructs: above sagnality_section_new.dbm CBytel (Dr. 2 Tristation (Dr. 1 DMP Constructs: above sagnality_section_new.dbm CBytel (Dr. 2 Tristation (Dr. 1 DMP Constructs: above sagnality_section_new.dbm CBytel (Dr. 2 Tristation (Dr. 1 C C C C C C C C C C C C C C C C C C C
section, rem, dm aprolet, pection, rem, dm aprolet, pection, rem, dm z worked, all summer appleing to de concrease) after appleing to de concrease) after appleing to at concrease) after appleing to m the constraint to	>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>	Add Clear Start Agan Start Agan	a b c d f f h i j k l I this	DIM Constraint: Not allows seprote _16000. dm (Oper ID) 1 Trinslation ID: 1 DIM Constraint: allows seprote _sectors_new.dm Object ID: 2 Trinslation ID: 1 DIM Constraint: allows seprote _sectors_new.dm Object ID: 2 Trinslation ID: 1
aprole_section_rene_dm aprole_section_rene_dm Above 2 2 4 4 4 4 4 4 4 4 4 4	vitatats all be con	Add Clear Start Again Start Again binned (joined using Al	a b c d e f f h i j k l I f this	DPT constraint: Hot was servicecd0000.dm (depet ID: 1 Treadeon ID: 1 DPT constraint: shows search_section_mex.dm (depet ID: 2 Treadeon ID: 1 DPT constraint: shows search_section_mex.dm (depet ID: 2 Treadeon ID: 1 Constraint: shows search_mex.dm (depet ID: 2 Treadeon ID: 1 Constraint:
aprole_pection_renu dom applied, all current graphical of all constraints) after applying to all constraints) after applying to all constraints of the applying to all constraints of the applying to the constraints to the constraints to the constraints to	onstraints will be com his form will clear all o r applying this form.	Clear Start Again birred (joined using Al graphical constraints.)	b c d e f f h i i k l I t this	OTH Constraint: skove spiralit_section_new.dem Object ID: 2 Treadeton ID: 1
Apple Annuel Ann	anstraints will be com	Clear Start Again Start Again binned (joined using Al	c d e f f g h i j k l l ND) to	Contraction of the second s
appled, all current graphical of appled, all current graphical or all constraint) after applying to all constraint of the constraint of in the constraint to mate combrank to	pristraints will be com his form will clear all o ir applying this form.	Start Agan	d e f h i j k l l ND) to t i t this	<
2 v v v v v v v v v v v v v v v v v v v	snitraints will be com his form will clear all or e applying this form.	Start Agen	e f l h i k l l t this	Gunner of the served plane use BM GRAPHICS CONSTRAIN Served plane use BM GRAPHICS CONSTRAIN
2 w appled, al current graphical of cal constrant) after applicing to sat constraint expression after in the constraint of after constraint on we constraint to	pristraints will be com his form will dear all g er applying this form.	bined (joined using Al	f g h i j k l	 c operations constraints partout a not devined parameters constraints partout a not devined parameters and GRAPHICS CONSTRAIN
appled, al current graphical c cal constraint) after applying cal constraint excession after in the constraint c raint combination we constraint to	snistraints will be com his form will clear all g r applying this form.	birned (joined using Al	g h i k l ND) to If this	Served place use BM GRAPHICS CONSTRAIN REMOVE is not desired places use BM GRAPHICS CONSTRAIN
applied, all current graphical o call constraint yafform applying b call constraints curreation affe in the constraint rant combination we constraint to	onstraints will be com his form will dear all g ir applying this form.	bined (joined using Al	h i j k l ND) to If this	egelfer - Lang BH GRAPHICS CONSTRAIN REPORT a not deend please sus BH GRAPHICS CONSTRAIN
appied, al current graphical ic cal constraint) after applying t ast constraint expression after in the constraint arrit combination ave constraint to	onstraints will be cont his form will clear all g r applying this form.	bined (joined using Al graphical constraints.)	i j k l I If this	Gardenecs constraint ennote in not desired planes use BM GRAPHICS CONSTRAIN
appled, all current graphical c cal constraint) after applying t last constraint expression after in the constraint rant combination ave constraint to	onstraints will be com his form will clear all o ri applying this form.	ibined (joined using Al graphical constraints.)	j k l ND) to If this	control of the second sec
applied, all current graphical o cal constraint) after applying to sist constraint expression after in the constraint arist combination aree constraint to	onstraints will be com his form will clear all g er applying this form.	bined (joined using Al graphical constraints.)	k I ND) to If this	Garanics constrain parox and developments Bit Garanics constrain parox a not development use Bit Garanics Collision
applied, all current graphical c cal constraint) after applying t sat constraint expression after in the constraint raint combination ave constraint to	onstraints will be com his form will clear all g er applying this form.	bined (joined using A) graphical constraints.)	I ND) to If this	Control of
applied, all current graphical c cal constraint) after applying t last constraint expression after in the constraint raint combination ave constraint to	onstraints will be com his form will clear all g er applying this form.	ibined (joined using Al graphical constraints.)	ND) to	 Using BH (GRAPHICS CONSTRUE) 82HOVE is not detend please use BH (GRAPHICS CONSTRUE)
applied, all current graphical co call constraint) after applying t last constraint expression after in the constraint in raint combination ave constraint to	onstraints will be com this form will clear all g er applying this form.	ibined (joined using A graphical constraints.)	ND) to If this	ogether. Using IM GRAPHOS CONSTRAIN ROMONE is not desired please use BM GRAPHOS CONSTRAIN
				and Apply 🔀
-16/6/ -16/6/ -				₩₩ @ :=? • ₹ • ⁄ • : ◊ & ⊗ : P
				•

48. Selanjutnya memasukkan nilai densitas dengan cara klik *estimation* lalu pilih *assign value*.



49. Selanjutnya memasukkan nilai densitas dengan cara pada *attribute name* pilih sg dan untuk *value* disesuikan dengan zona yang akan diestimasi. Zona *saprolite* nilai sg 1.6 dan untuk zona *limonite* nilai sg 1.5 kemudian klik *apply*.

Attribute Name	Value	
1 sg	↓ 1.5	^
Constrain interpolation 🔽		

50. Selanjutnya *import file constraint* dengan cara klik *constraint file* dan *constraint* kemudian *open*, lalu klik *add* dan terakhir klik *apply*.

			Constrain	it values				
istraint name b 🗸			Constraint					
nstraint type CONSTRAINT	0	1-				×		
	Openar	inc.				^		
nstraints file BM_SAPRO_NEW.CON	Look in:	Saprolit		~				
noce M	and bm_sapr	o_new.con		Management	analabla			
				INC DEGREEN	avalable			
	File name:	bm_sapro_new.con			Open			
	Files of type:	Files (.con)		~	Cancel			
							🖌 Apply	💥 Ca
Enter constraints			Constrain	t values			Apply	X Ca
Enter constraints			Constrain	t values			Apply	X Ca
Enter constraints Constraint name b v Constraint type CONSTRAINT	×	Add	Constrain a Co	t values	NEW.CON		Apply	X Ca
Enter constraints Constraint name b v Constraint type CONSTRAINT Constraints file BM SAPRO NEW CO	N	Add	Constrain a Co b	t values nstraint File: inside BM_SAPRO	NEW.CON		Apply	> Ca
Enter constraints Constraint name b CONSTRAINT Constraint type CONSTRAINT Constraints file Biol_SAPRO_JIEW.COD Inside C	N V	Add	Constrain a Co b c	e values ristraint File: inside BM_SAPRO,	.NEW.CON		Apply	> Ca
Enter constraints Constraint name Constraint type CONSTRAINT Constraints file [bw_SAPRO_JIEW.CO Inside	v N v	Add Clear	Constrain a Co b c	R values nstraint File: inside BM_SAPRO.	NEW.CON		Apply	> <mark>> </mark> (a
Enter constraints Constraint name b v Constraint hype CONSTRAINT Constraints file (IM-SAPRO_JEW.CO Inside v	▼ N ▼]	Add Clear Start Again	Constrain a Co b c d f	r values	NEW.CON		Apply	XCa
Enter constraints Constraint sname b v Constraint type CONSTRAINT Constraints file <u>Bin_Saveo_stew CO</u> Inside v	v N v]	Add Clear Start Again	Constrain a Co b c d d e f	, è values mstraint Pile: inside BM_SAPRO,	NEW.CON		Apply	> X Ca
Enter condiziants Constraint name b Constraint page (CONSTRAINT Constraints file (m_same) yew co binde	• N •	Add Clear Start Agan	Constrain a Co b c d e f f g h	R values nistraint Pile: inside BM_SAPRO,	New.con		Apply	>
Enter constraints Constraint name b v Constraint hype CONSTRAINT Constraints file (IMILSAPIC) JEW COL Jande V	v N v	Add Clear Start Agan	Constrain a Co b c d e f f g h h i	é values é values nstraint Pile: inside BM_SAPRO,	NEW.CON		Apply	>
Enter constraints Constraint name b constraint have (COGTIANIT Constraints file (In-SARRO JEW CO braide)	∨ N ∨]	Add Clear Start Agan	Constrain a Co b c d e f h i j	t values	JIEW.CON		Apply	> X Ca
Enter constraints Constraint name b Constraint spe (CONSTRAINT Constraint spe (CONSTRAINT Constraints file (pm Suppo Jecwi CO Jimsde)	N V	Add Clear Start Agan	Constrain s Co b c d e f h h i i j k	k values nutrank Pile: Inside BM_SAPRO,	JRW-CON		🖉 Apply	> × Ca
Enter conditiants Constraint name (b) C Constraint type (CONSTRAINT Constraints file (IPL-SAPRO JECW CO Invide C	v N v	Add Clear Start Agan	Constrain a Co b c d f f g h i j k l <	k values	JIEW-CON		🖉 Apply	> Ca
Enter condiziants Constraint name b S Constraint have (CONSTRAINT Constraints file (Inc. SARRO JEW CO Inside C	v N v	Add Clear Start Agan	Constrain a Co b c d e f n i j k l <	é values notrant Pile: Inside EM_SAPRO,	JIEW.CON		🖉 Apply	× Ca
Enter constraints Constraint name Constraint type CONSTRAINT Constraints file (ms_ARPO_JEW CO Inside Inside Keep blods partially in the constraint	v N v	Add Gear Start Agan	Constrain a Co b c d d e f h h i j k i i c	é values notrant File: inside tec_SAPRO,	JRW-CON		Apply 4	× Ca
Enter constraints Constraint name b Constraint name b Constraint spee (COCITABUT Constraints file (IM-SAPEO_JEW CO Divide)	▼ N ▼	Add Clear Start Agan	Constrain a Co b c d e f f g h i i j k l <	et values	JEW.CON		Apply	>

1. Kemudian klik yes pada verify creation of file.

Verify creation of	file	×
You are about	t to overwrite the file:	
d:/data fix/s	aprolit/saprolie_bm.mdl	
Select YES to overwrite	the file or NO to cancel this o	peration.
D	Ves	🔀 No

2. Selanjutnya mulai untuk mengestimasi sumberdaya nikel laterit dengan menggunakan metode *inverse distance cube* pertama klik *estimation* kemudian pilih *inverse distance*.



3. Pada *data source specification* masukkan *file string* dengan cara klik *location* kemudian pilih *file* zona litologi yang telah di *composite* dan klik *open*.

50	Data source specification	Hos Has I	Open a Fi	le		ta sinsk		×
Data STRI Li	source type O BLOCK STRING NG FILE scation Irange 0	MODEL FILE	Look in:	Saprolit ontur.str section1.str section_new.str comp11.str	aprotop_cdr00505.str aprotop_cdr00511.str aprotop_cdr00513.str aprotop_cdr00520.str	~		
song Save	Constrain data constrained sample points? Output location Output id number	1	Saprotop	str _cd0008.str _cdr00503.str _cdr00504.str _saprolite_comp11.s	tr			Open
1	Attribute to Fill	Description Fie	Files of type:	Surpac files (.str)		i.	~	Cancel
	¢							
0							Apply	Cancel

4. Selanjutnya masukkan *attribute to fill* ni kemudian klik *apply*.

	Data source sp	ecifications	£				×
Data	source type		IODEL FILE				
STR	NGFILE	0					
L	ocation saprolite	e_comp	-				
Ie	trange 11						
2 rine	range 1						
Save	Con constrained sam	strain data ple points?					
	Dutput	t id number	1				
	Attribute to Fil		Description Field	Attribute Name	Anisotropic dist to nearest sample	Average anisotropic dist to samples	
1	n	10	1				^
							~
						2	20

5. Pada search parameters atur minimum number of samples to select 2 untuk maximum number of samples to select 20. Untuk maximum search radius 100 dan untuk maximum vertical search radius 2. Untuk bearing 0 dip 0 dan plunge 0 pada anisotropy ratios untuk major / semi major 1 dan untuk major / minor 1 lalu klik apply.



6. Selanjutnya pada *inverse distance parameters* atur *inverse distance power* ke nomor 3 lalu atur *number of descretsitation points* x:3 y:3 dan z:3 lalu klik *apply* lalu tekan *apply* sekali lagi.

Inverse distance parame	×	
Inverse Distance Power	3	
Number of descretisation points	X: 3 Y: 3 Z: 3	
Include debug output?		L.
Constrain interpolation?		
Report file name	saprolie_bm_id	~
Format	.not - Surpac Note File	~
0	Apply	🔀 Cancel

7. Selanjutnya untuk *report* hasil perhitungan dengan cara klik *blockmodel* lalu pilih *report*.

Bloc	k model	Attributes	Constraints
1	New / C	Open	
	Display		
1	Save		
1	Save as	5	
Ť	Delete		
	Merge		
-	Reblock	c .	
	Import		•
	Export		•
足	Record	ing Audit	
Ě	Flush A	udit Trail	
P	Display	Model Audit	Trail
03	Mine blo	ocks graphica	ally
2	Summa	ry	
6	Report		
1	Close		

8. Pada *blockmodel report format file* atur nama berkas untuk hasil *report* dengan cara ketik nama *file report* pada kolom *format file name* dan sama kan dengan kolom *output report file name* kemudian atur *output report file format* ke *note*.

Format File Name	id3 sapro	~	
Output Report File Name	id3_sapro	~	
Output Report File Format	.not - Surpac Note File	~	
Report Type	Standard Report		
	O Multiple Percent Report		
Indicator Kriged Model			
Modify Format			
Constrain ?			
(a)			
0		Apply	🔀 Can

9. Pada blockmodel report atur report volume and tonnes to 2 decimal places, untuk report attributes masukkan ni. Pada density adjustment klik attribute dan pilih sg pada grouping attributes masukkan pilih ni dan pada numeric range masukkan batas kadar sesuai litologi zona saprolite dari yang low grade sampai super high grade lalu klik apply.

	Block model report							×
Repo	rt description							
								0
	Format headers?							
	Remove lines with zero vol	lume?						
Repo	ort volume and tonnes to	2 decimal plac	es v					
	Report attributes	Display?	Low cut	Upper cut	Weight by	Report	Expression	
a	n		1	1	Mass	Average		-
								*
Volur	me adjustment			Density adj	ustment			
	Use volume adjustment?			None				
	Accoduce		v	Value	ke sg	v		
Geor	metric grouping			O value				
Grou	up geometrically None		~	Grou	uping attribute		Numeric range	
				1 1			1.6:2:2.3:9	1.
							1	
				🗌 Fil al	cells for the gr	oup attribute?		
				Pivot	compatible?			
	Use partial percentages?							
Prec	cision	3	~					
Attri	bute to store partial perce	ntage values						
0							Apply	X Cancel

10. Selanjutnya masukkan *constraint* dengan cara klik *constraints file* kemudian pilih *file* dan klik *open*, dilanjutkan dengan klik *add* dan klik *apply* dan hasil *report* akan keluar.

Enter constraints				×
Constraint name		Constr	aint values	
Constraint type CONSTRAINT				
Conditional Conditional I	Add	a	Constraint File: inside BM_SAPRO_NEW.CON	^
Constraints file EM SAPRO NEW COL	N	b		
Inside 🖂	Clear	c		
		d		
	Start Agair	n e		
		F		
		9		
		n		
		-		
		1		
		-		~
			<	>
Keep blocks partially in the constraint				
Constraint combination				
Save constraint to			×	
0				Apply 🔀 Cancel
	Constraints used a. INSIDE CONSTRAINT B Keep blocks partially i	Blc M_SAPRO_N n the con	ck model report EW straint : False	
	Ni Volume	Tonnes	Ni	
	1.6 -> 2.0 39531.25 6	3250.00	1.85	
	2.0 -> 2.3 23437.50 3	7500.00	2.15	
	2.5 -> 9.0 12012.50 2	00.00	2.55	
	Grand Total 75781.25 12	1250.00	2.06	

11. Kemudian dilanjutkan dengan metode *nearest neighbourhood point*. Pertama klik *estimation* lalu pilih *nearest neigbour*.



12. Pada *data source specification* pada *location* masukkan *file string composite* zona yang akan diestimasi kemudian klik *open*.

Data source type OBLOCK MODEL STRING FILE STRING FILE	L Open a Fi	le Saprolit	×
Location saprolite_comp Id range 11 String range 2 Constrained sample points? Output location Output id number 1	U iup600_k saprolit_s saprolit_s saprolit_s saprotop saprotop saprotop saprotop	ontur.str saprotop_cdr00505.str ecction.ltr saprotop_cdr00511.str comp114d saprotop_cdr00513.str comp114d saprotop_cdr00520.str str cdr00504.str cdr00504.str	Z
Attribute to Fill Desc	cription Field File name:	saprolite_comp11.str	Open
		2004ac (uas (201)	

13. Kemudian masukkan attribute fill ni dan description field 1 lalu klik apply.

Dat	a source specifications				×
Data sou	Irce type O BLOCK N STRING	10DEL FILE			
Locati	on saprolite comp	~			
Id ran	ge 11				
String ran	ge 1				
Att	Output location Output id number	1 Description Field	Attribute Name	Anisotropic dist to neares	
1 ni	~	1			~
<		-		>	~
0				Apply	🔀 Cancel

14. Pada nearest neighbor search parameters atur search radius 100 dan maximum vertical search radius 2. Pada ellipsoid orientation dip 0, bearing 0, dan plunge 0 untuk anisotropy ratios major / semi-major 1 dan untuk major / minor 1 kemudian klik apply lalu yes sekali lagi.

rpolator	_
Nevrent neighbour cearch parameterr	0
A Realest neighbour search parameters	
Maximum search radius 100	
Maximum vertical search distance 2	
Search Ellipsoid Specifications	
Ellipsoid Orientation Anisotropy Ratios	
Bearing 0 major / semi-major 1	
Plunge 0 major / minor 1	
Dip 0	
Rotation Convention Surpac ZXY LRL v	
Constrain interpolation?	
Report file name	
Format .not - Surpac Note File 🗸 🗸	
Elipsoid Visualiser	
Apply X Cancel	

15. Selanjutnya untuk *report* hasil perhitungan dengan cara klik *blockmodel* lalu pilih *report*.

Bloc	k model	Attributes	Constraints
1	New / C	Dpen	
.	Display		
1	Save		
1	Save as	5	
Ť	Delete		
	Merge		
-	Reblock	c .	
	Import		•
	Export		•
是	Record	ing Audit	
Ě	Flush A	udit Trail	
P	Display	Model Audit	Trail
	Mine blo	ocks graphica	ally
2	Summa	ry	
(Report		
1	Close		

16. Pada *blockmodel report format file* atur nama berkas untuk hasil *report* dengan cara ketik nama *file report* pada kolom *format file name* dan sama kan dengan kolom *output report file name* kemudian atur *output report file format* ke *note*.

Format File Name	nnp_sapro	~	
Output Report File Name	nnp_sapro	~	
Output Report File Format	.not - Surpac Note File	~	
Report Type	Standard Report		
	O Multiple Percent Report		
Indicator Kriged Model			
Modify Format			
Constrain ?			
			0.0 -

17. Pada *blockmodel report* atur *report volume and tonnes to 2 decimal places,* untuk *report attributes* masukkan ni. Pada *density adjustment* klik *attribute* dan pilih sg pada *grouping attributes* masukkan pilih ni dan pada *numeric range* masukkan batas kadar sesuai litologi zona *saprolite* dari yang *low grade* sampai *super high grade* lalu klik *apply*.

	Block model report							×
Repo	rt description							^
								~
	Format headers? Remove lines with zero voli	ume?						
Repo	ort volume and tonnes to	2 decimal place	es 🗸					
	Report attributes	Display?	Low cut	Upper cut	Weight by	Report	Expression	
8	ni				Mass	Average		^
								~
Volu	me adjustment			Density adju	ustment			
ш	Use volume adjustment?		1000	Attribut		100		
	Accribuce ni		~	O Value	e sy	~		
Geor	metric grouping			0				
Grou	up geometrically None		~	Grou	ping attributes		Numeric range	
				I la			1 6-2-2 3-0	10
								~
				🗌 Fill all	cells for the gr	oup attribute?		
				Pivot	compatible?			
	Use partial percentages?							
Prec	cision	3	~					
MCON	iouce co score partial percer	nage values						
0							Apply	🔀 Cancel

18. Selanjutnya masukkan *constraint* dengan cara klik *constraints file* kemudian pilih *file* dan klik *open*, dilanjutkan dengan klik *add* dan klik *apply* dan hasil *report* akan keluar.

onstraint name b	~		Constraint values					
CON	NSTRAINT 🗸		1		10000			
		Add	a Constraint Fi	le: inside BM_SAPRO	NEW.CON			
onstraints file BM_SA	APRO_NEW.CON ~		0					_
Inside 🗹		Clear	d					-
			e					-
		Start Again	F					-
			g					
			h					
			i					
			1					_
			K					-
			<					
p blocks partially in t	the constraint							
Constrain	t combination							
Save	e constraint to		~					
							Apply	×
							7	
	nnp - Notepa	ud.					-	
				_		×		
	File Edit Form	nat View Helm		_		×		
	File Edit Form	nat View Help)			×		
	File Edit Form	nat View Help)			×		
	File Edit Form	nat View Help	•	_		×		
	File Edit Form	nat View Help)			×		
	File Edit Form	nat View Help Volume	Tonnes	Ni		×		
	File Edit Form	nat View Help Volume	Tonnes	Ni		×		
	File Edit Form	Nat View Help Volume 40156.25	Tonnes	Ni		×		
	File Edit Form N1 1.6 -> 2.0 2.0 > 2.2	volume 40156.25	Tonnes	Ni 1.80		×		
	File Edit Form 1.6 -> 2.0 2.0 -> 2.3	Volume 40156.25 12968.75	Tonnes 64250.00 20750.00	Ni 1.80 2.14		×		
	File Edit Form 1.6 -> 2.0 2.0 -> 2.3 2.3 -> 9.0	Volume 40156.25 12968.75 22656.25	Tonnes 64250.00 20750.00 36250.00	Ni 1.80 2.14 2.58		×		
	File Edit Form 1.6 -> 2.0 2.0 -> 2.3 2.3 -> 9.0	Volume 40156.25 12968.75 22656.25	Tonnes 64250.00 20750.00 36250.00	Ni 1.80 2.14 2.58		×		
	File Edit Form 1.6 -> 2.0 2.0 -> 2.3 2.3 -> 9.0 Grand Total	Volume 40156.25 12968.75 22656.25 75781.25	Tonnes 64250.00 20750.00 36250.00 121250.00	Ni 1.80 2.14 2.58 2.09		×		
	File Edit Form N1 1.6 -> 2.0 2.0 -> 2.3 2.3 -> 9.0 Grand Total	Volume 40156.25 12968.75 22656.25 75781.25	Tonnes 64250.00 20750.00 36250.00 121250.00	Ni 1.80 2.14 2.58 2.09		×		
	File Edit Form 1.6 -> 2.0 2.0 -> 2.3 2.3 -> 9.0 Grand Total	Volume 40156.25 12968.75 22656.25 75781.25	Tonnes 64250.00 20750.00 36250.00 121250.00	Ni 1.80 2.14 2.58 2.09		×		
	File Edit Form 1.6 -> 2.0 2.0 -> 2.3 2.3 -> 9.0 Grand Total	Volume 40156.25 12968.75 22656.25 75781.25	Tonnes 64250.00 20750.00 36250.00 121250.00	Ni 1.80 2.14 2.58 2.09		×		
	File Edit Form N1 1.6 -> 2.0 2.0 -> 2.3 2.3 -> 9.0 Grand Total <	Volume 40156.25 12968.75 22656.25 75781.25	Tonnes 64250.00 20750.00 36250.00 121250.00	Ni 1.80 2.14 2.58 2.09		×		

Lampiran F

Tabulasi Data Kadar Limonit RMSE Titik Bor

➤ CDR00503

IDC Limonit					
TEBAL	KADAR	GT			
1	1.25	1.25			
1	1.4	1.4			
1	1.35	1.35			
1	1.26	1.26			
1	0.9	0.9			
1	0.9	0.9			
1	1.01	1.01			
1	1.17	1.17			
1	1.43	1.43			
1	1.57	1.57			
10		12.24			
	1.224				

Kadar Komposit					
TEBAL	KADAR	GT			
1	0.62	0.62			
1	0.68	0.68			
1	0.63	0.63			
1	0.7	0.7			
1	0.76	0.76			
1	0.81	0.81			
1	0.75	0.75			
1	0.81	0.81			
1	0.64	0.64			
1	1.42	1.42			
1	1.23	1.23			
1	1.45	1.45			
1	1.46	1.46			
1	1.53	1.53			
14		13.49			
	0.963571				

NNP Limonit					
TEBAL	KADAR	GT			
1	1.45	1.45			
1	1.46	1.46			
1	1.53	1.53			
1	1.53	1.53			
1	0.7	0.7			
1	0.77	0.77			
1	0.89	0.89			
1	1.29	1.29			
1	1.57	1.57			
1	1.57	1.57			
10		12.76			
	1.276				

➤ CDR00504

L	Limonit IDC					
TEBAL	KADAR	GT				
1	1.2	1.2				
1	1.24	1.24				
1	1.24	1.24				
1	1.28	1.28				
1	1.41	1.41				
1	1.47	1.47				
1	1.29	1.29				
1	1.32	1.32				
1	1.32	1.32				
1	1.42	1.42				
1	1.52	1.52				
1	1.57	1.57				
1	1.59	1.59				
13		17.87				
	1.374615					

Limonit NNP					
TEBAL	KADAR	GT			
1	1.22	1.22			
1	1.25	1.25			
1	1.33	1.33			
1	1.25	1.25			
1	1.35	1.35			
1	1.51	1.51			
1	1.37	1.37			
1	1.28	1.28			
1	1.56	1.56			
1	1.56	1.56			
1	1.49	1.49			
1	1.55	1.55			
1	1.59	1.59			
13		18.31			
	1.408462				

Limonit Komposit				
TEBAL	KADAR	GT		
1	0.75	0.75		
1	0.81	0.81		
1	0.78	0.78		
1	0.76	0.76		
1	0.76	0.76		
1	0.89	0.89		
1	0.82	0.82		
1	0.43	0.43		
1	0.37	0.37		
1	0.33	0.33		
1	0.29	0.29		
1	1.22	1.22		
1	1.25	1.25		
1	1.33	1.33		
1	1.25	1.25		
1	1.35	1.35		
1	1.51	1.51		
17		14.9		
	0.876471			

Li	imonit IDC				
TEBAL	KADAR	GT			
1	1.21	1.21			
1	1.21	1.21			
1	1.25	1.25			
1	1.29	1.29			
1	1.32	1.32			
1	1.42	1.42			
1	1.52	1.52			
1	1.57	1.57			
1	1.59	1.59			
9		12.38			
	1.375556				

Limonit Komposit				
TEBAL	KADAR	GT		
1	0.78	0.78		
1	0.69	0.69		
1	0.68	0.68		
1	0.86	0.86		
1	0.83	0.83		
1	0.68	0.68		
1	0.85	0.85		
1	1.24	1.24		
1	1.21	1.21		
1	1.25	1.25		
1	1.33	1.33		
1	1.3	1.3		
1	1.35	1.35		
1	1.49	1.49		
1	1.55	1.55		
1	1.59	1.59		
16		17.68		
	1.105			

Limonit NNP				
TEBAL	KADAR	GT		
1	1.24	1.24		
1	1.21	1.21		
1	1.25	1.25		
1	1.33	1.33		
1	1.3	1.3		
1	1.35	1.35		
1	1.49	1.49		
1	1.55	1.55		
1	1.59	1.59		
9		12.31		
	1 367778			

ID	C Limonit		NNP Limonit		
TEBAL	KADAR	GT	TEBAL	KADAR	GT
1	0.77	0.77	1	0.67	0.67
1	0.76	0.76	1	0.85	0.85
1	0.82	0.82	1	0.65	0.65
1	0.82	0.82	1	0.77	0.77
1	0.88	0.88	1	0.77	0.77
1	0.88	0.88	1	1.58	1.58
1	0.86	0.86	1	0.83	0.83
1	1.11	1.11	1	0.68	0.68
8		6.9	8		6.8
	0.8625			0.85	

Kadar Komposit				
TEBAL	KADAR	GT		
1	0.67	0.67		
1	0.85	0.85		
1	0.65	0.65		
1	0.77 0.95	0.77		
1		0.95		
1	1.18	1.18		
6		5.07		
	0.845			

Kadar Komposit							
TEBAL	KADAR	GT					
1	0.67	0.67					
1	0.78	0.78					
1	0.7	0.7					
1	0.77	0.77					
1	0.89	0.89					
1	1.29	1.29					
1	1.57	1.57					
7		6.67					
	0.952857						

Kadar IDC					
TEBAL	GT				
1	1.08	1.08			
1	1.41	1.41			
1	1.54	1.54			
1	1.42	1.42			
1	1.56	1.56			
5		7.01			
	1.402				

Kadar NNP				
TEBAL	KADAR	GT		
1	1.29	1.29		
1	1.57	1.57		
1	1.57	1.57		
1	1.56	1.56		
1	1.56	1.56		
5		7.55		
	1.51			

Kadar IDC		NNP Limonit			
TEBAL	KADAR	GT	TEBAL	KADAR	GT
1	0.63	0.63	1	0.82	0.82
1	0.38	0.38	1	0.38	0.38
1	0.5	0.5	1	0.62	0.62
1	0.64	0.64	1	0.68	0.68
1	0.73	0.73	1	0.76	0.76
1	0.81	0.81	1	0.84	0.84
1	0.85	0.85	1	0.83	0.83
1	0.86	0.86	1	0.86	0.86
1	0.85	0.85	1	0.82	0.82
1	0.87	0.87	1	0.89	0.89
1	0.9	0.9	1	0.89	0.89
1	1.13	1.13	1	1.37	1.37
1	1.32	1.32	1	1.28	1.28
1	1.42	1.42	1	1.56	1.56
1	1.56	1.56	1	1.56	1.56
15		13.45	15		14.16
	0.896667			0.944	

Kadar Komposit				
TEBAL	KADAR	GT		
1	0.38	0.38		
1	0.62	0.62		
1	0.68	0.68		
1	0.76	0.76		
1	0.84	0.84		
1	0.83	0.83		
1	0.86	0.86		
1	0.82	0.82		
1	0.89	0.89		
1	0.89	0.89		
1	1.37	1.37		
1	1.28	1.28		
1	1.56	1.56		
13		11.78		
	0.906154			

k	Kadar IDC		Kadar NNP			
TEBAL	KADAR	GT	TEBAL	KADAR	GT	
1	0.79	0.79	1	0.81	0.81	
1	0.8	0.8	1	0.78	0.78	
1	0.8	0.8	1	0.81	0.81	
1	0.76	0.76	1	0.86	0.86	
1	1.04	1.04	1	1.5	1.5	
1	1.23	1.23	1	1.5	1.5	
1	1.23	1.23	1	1.5	1.5	
1	1.29	1.29	1	0.75	0.75	
1	1.4	1.4	1	0.75	0.75	
1	1.41	1.41	1	0.81	0.81	
1	1.42	1.42	1	0.84	0.84	
1	1.52	1.52	1	1.59	1.59	
1	1.57	1.57	1	1.59	1.59	
1	1.59	1.59	1	1.52	1.52	
1	0.78	0.78	1	0.75	0.75	
1	0.8	0.8	1	0.81	0.81	
1	0.8	0.8	1	0.78	0.78	
1	1.06	1.06	1	0.83	0.83	
1	1.33	1.33	1	1.29	1.29	
1	1.34	1.34	1	1.37	1.37	
1	1.29	1.29	1	1.31	1.31	
1	1.41	1.41	1	1.27	1.27	
1	1.54	1.54	1	1.56	1.56	
1	1.51	1.51	1	1.51	1.51	
24		28.71	24		27.09	
	1.19625			1.12875		

Kadar Komposit					
TEBAL	KADAR	GT			
1	0.81	0.81			
1	0.78	0.78			
1	0.81	0.81			
3		2.4			
	0.8				

➤ CDR0008

K	adar IDC		K	adar NNP	
TEBAL	KADAR	GT	TEBAL	KADAR	GT
1	0.76	0.76	1	0.67	0.67
1	0.75	0.75	1	0.85	0.85
1	0.71	0.71	1	0.65	0.65
1	1.58	1.58	1	0.77	0.77
1	1.58	1.58	1	1.58	1.58
1	1.5	1.5	1	1.58	1.58
1	1.5	1.5	1	1.5	1.5
7		8.38	7		7.6
	1.197143			1.085714	

Kadar Komposit					
TEBAL	KADAR	GT			
1	1.58	1.58			
1		1.58			
	1.58				

Kadar IDC		K	adar NNP		
TEBAL	KADAR	GT	TEBAL	KADAR	GT
1	0.46	0.46	1	0.39	0.39
1	0.57	0.57	1	0.39	0.39
1	0.76	0.76	1	0.67	0.67
1	0.78	0.78	1	0.78	0.78
1	0.77	0.77	1	0.69	0.69
1	0.83	0.83	1	0.74	0.74
1	0.97	0.97	1	0.81	0.81
1	1.34	1.34	1	0.61	0.61
1	0.65	0.65	1	1.34	1.34
1	0.91	0.91	1	0.68	0.68
1	1.17	1.17	1	0.63	0.63
11		9.21	1	1.38	1.38
	0.837273		12		9.11
				0.759167	

Kadar Komposit				
TEBAL	KADAR	GT		
1	0.39	0.39		
1	0.67	0.67		
1	0.78	0.78		
1	0.69	0.69		
1	0.74	0.74		
1	0.81	0.81		
1	0.61	0.61		
1	1.34	1.34		
8		6.03		
	0.75375			

K	ladar IDC		K	Kadar NNP	
TEBAL	KADAR	GT	TEBAL	KADAR	GT
1	1.39	1.39	1	1.59	1.59
1	1.32	1.32	1	1.59	1.59
1	1.14	1.14	1	1.52	1.52
1	0.8	0.8	1	0.75	0.75
1	0.85	0.85	1	0.81	0.81
1	0.66	0.66	1	0.55	0.55
1	0.95	0.95	1	1.45	1.45
1	1.32	1.32	1	1.57	1.57
1	1.44	1.44	1	1.57	1.57
1	1.38	1.38	1	1.37	1.37
1	1.39	1.39	1	1.4	1.4
1	1.33	1.33	1	1.4	1.4
1	1.36	1.36	1	1.2	1.2
1	1.3	1.3	1	1.48	1.48
1	1.42	1.42	1	1.23	1.23
1	1.43	1.43	1	1.54	1.54
1	1.53	1.53	1	1.53	1.53
1	1.54	1.54	1	1.52	1.52
1	1.55	1.55	1	1.57	1.57
19		24.1	19		25.64
	1.268421			1.349474	

-					
Kadar Komposit					
TEBAL	KADAR	GT			
1	0.75	0.75			
1	0.81	0.81			
1	0.84	0.84			
1	1.59	1.59			
1	1.59	1.59			
1	1.52	1.52			
6		7.1			
	1.183333				

K	ladar IDC		K	adar NNP	
TEBAL	KADAR	GT	TEBAL	KADAR	GT
1	1.2	1.2	1	1.29	1.29
1	1.16	1.16	1	1.37	1.37
1	1.11	1.11	1	1.31	1.31
1	1.26	1.26	1	1.27	1.27
1	1.44	1.44	1	1.56	1.56
1	1.4	1.4	1	1.51	1.51
1	1.26	1.26	1	1.26	1.26
7		8.83	7		9.57
	1.261429			1.367143	

Kadar Komposit					
TEBAL	KADAR	GT			
1	0.34	0.34			
1	0.75	0.75			
1	0.81	0.81			
1	0.78	0.78			
1	0.83	0.83			
1	1.29	1.29			
1	1.37	1.37			
1	1.31	1.31			
1	1.27	1.27			
1	1.56	1.56			
1	1.51	1.51			
11		11.82			
	1.074545				

17	1 100				
K	adar IDC		Kadar NNP		
TEBAL	KADAR	GT	TEBAL	KADAR	GT
1	1.37	1.37	1	1.37	1.37
1	1.38	1.38	1	1.37	1.37
1	1.39	1.39	1	1.4	1.4
1	1.33	1.33	1	1.4	1.4
1	1.16	1.16	1	1.2	1.2
1	1.04	1.04	1	1.48	1.48
1	1.03	1.03	1	1.23	1.23
1	1.23	1.23	1	1.54	1.54
8		9.93	8		10.99
	1.24125			1.37375	

Kadar Komposit					
TEBAL	TEBAL KADAR				
1	0.73	0.73			
1	0.64	0.64			
1	0.38	0.38			
1	1.51	1.51			
4		3.26			
	0.815				

➤ CDR472

Kadar IDC					
TEBAL	KADAR	GT			
1	1.14	1.14			
1	1.37	1.37			
1	1.38	1.38			
1	1.39	1.39			
1	1.33	1.33			
1	1.36	1.36			
1	1.3	1.3			
1	1.41	1.41			
1	1.43	1.43			
1	1.53	1.53			
1	1.54	1.54			
1	1.55	1.55			
12		16.73			
	1.394167				

Kadar NNP		
TEBAL	KADAR	GT
1	1.38	1.38
1	1.37	1.37
1	1.37	1.37
1	1.4	1.4
1	1.4	1.4
1	1.2	1.2
1	1.48	1.48
1	1.23	1.23
1	1.54	1.54
9		12.37
	1.374444	

Kadar Komposit		
TEBAL	KADAR	GT
1	0.69	0.69
1	0.66	0.66
1	0.62	0.62
1	0.68	0.68
1	0.63	0.63
1	1.38	1.38
1	1.37	1.37
1	1.37	1.37
1	1.4	1.4
1	1.4	1.4
1	1.2	1.2
1	1.48	1.48
1	1.23	1.23
1	1.54	1.54
1	1.53	1.53
1	1.52	1.52
1	1.57	1.57
17		20.27
	1.192353	

Kadar IDC		
TEBAL	KADAR	GT
1	0.79	0.79
1	0.71	0.71
1	0.74	0.74
1	0.67	0.67
1	0.96	0.96
1	1.38	1.38
1	1.48	1.48
7		6.73
	0.961429	

Kadar NNP		
TEBAL	KADAR	GT
1	1.52	1.52
1	0.75	0.75
1	0.81	0.81
1	0.55	0.55
1	1.45	1.45
1	1.57	1.57
1	1.57	1.57
7		8.22
	1.174286	

Kadar Komposit		
TEBAL	KADAR	GT
1	0.75	0.75
1	0.81	0.81
1	0.55	0.55
1	1.45	1.45
1	1.57	1.57
5		5.13
	1.026	

➤ CDR00373

Kadar IDC		
TEBAL	KADAR	GT
1	1.02	1.02
1	0.95	0.95
1	0.89	0.89
1	0.78	0.78
1	1.28	1.28
1	1.27	1.27
6		6.19
	1.031667	

Kadar NNP		
TEBAL	KADAR	GT
1	1.45	1.45
1	0.76	0.76
1	0.76	0.76
1	0.84	0.84
1	0.63	0.63
1	1.27	1.27
1	1.25	1.25
7		6.96
	0.994286	

Kadar Komposit		
TEBAL	KADAR	GT
1	0.76	0.76
1	0.84	0.84
1	0.63	0.63
1	1.27	1.27
1	1.25	1.25
1	1.26	1.26
6		6.01
	1.001667	

Lampiran G

Tabulasi Data Kadar Saprolit RMSE Titik Bor

➤ CDR00503

Saprolit Komposit		
TEBAL	KADAR	GT
1	1.91	1.91
1	1.91	1.91
1	2.2	2.2
3		6.02
	2.006667	

Saprolit IDC		
TEBAL	KADAR	GT
1	2.05	2.05
1	2.2	2.2
1	1.73	1.73
3		5.98
	1.993333	

NNP Saprolit		
TEBAL	KADAR	GT
1	1.91	1.91
1	2.2	2.2
1	1.5	1.5
1	1.73	1.73
4		7.34
	1.835	

TEBAL	KADAR	GT
1	1.73	1.73
1	1.74	1.74
2		3.47
	1.735	

Saprolit IDC			
TEBAL	KADAR	GT	
1	1.73	1.73	
1	1.74	1.74	
2		3.47	
	1 735		

Saprolit NNP			
TEBAL	KADAR	GT	
1	1.73	1.73	
1	1.74	1.74	
2		3.47	
	1.735		
Saprolit Komposit			
-------------------	------	------	--
TEBAL KADAR G			
1	1.71	1.71	
	1.71		

Saprolit IDC			
TEBAL KADAR GT			
1	2.32	2.32	
	2.32		

Saprolit NNP			
TEBAL KADAR GT			
1	2.32	2.32	
	2.32		

Kadar IDC			
TEBAL	GT		
1	1.63	1.63	
1	1.83	1.83	
2		3.46	
	1.73		

Kadar Komposit			
TEBAL KADAR GT			
1	1.56	1.56	
1	1.63	1.63	
1	1.83	1.83	
3		5.02	
	1.673333		

Kadar NNP			
TEBAL	GT		
1	1.63	1.63	
1	1.83	1.83	
2		3.46	
	1.73		

K	Kadar NNP		H	Kadar IDC	
TEBAL	KADAR	GT	TEBAL	KADAR	GT
1	1.61	1.61	1	1.61	1.61
1	1.61	1.61	1	1.66	1.66
1	1.72	1.72	1	1.77	1.77
1	1.97	1.97	1	1.87	1.87
1	2.18	2.18	1	2.04	2.04
1	2.29	2.29	1	2.16	2.16
1	2.19	2.19	1	2.19	2.19
1	2.13	2.13	1	2.24	2.24
1	2.44	2.44	1	2.23	2.23
1	2.44	2.44	1	2.26	2.26
1	2.44	2.44	1	2.37	2.37
1	1.71	1.71	1	1.82	1.82
1	1.71	1.71	1	1.97	1.97
1	1.71	1.71	1	2.01	2.01
1	1.71	1.71	1	2	2
1	1.93	1.93	1	1.86	1.86
1	1.92	1.92	1	1.98	1.98
1	1.62	1.62	1	2.02	2.02
1	1.86	1.86	1	2.08	2.08
1	1.97	1.97	1	2.14	2.14
1	1.99	1.99	1	2.16	2.16
1	2.1	2.1	1	2.23	2.23
1	2.05	2.05	1	2.33	2.33
1	2.39	2.39	1	2.4	2.4
1	2.5	2.5	1	2.55	2.55
1	2.5	2.5	1	2.65	2.65
1	2.5	2.5	1	2.65	2.65
1	2.66	2.66	1	2.8	2.8
1	2.36	2.36	1	2.76	2.76
29		60.21	29		62.81
	2.076207			2.165862	

Kadar Komposit			
TEBAL	KADAR	GT	
1	1.72	1.72	
1	1.97	1.97	
1	2.18	2.18	
1	2.29	2.29	
1	2.19	2.19	
1	2.13	2.13	
1	2.44	2.44	
7		14.92	
	2.131429		

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Kadar Komposit			
TEBAL	TEBAL KADAR		
1	1.76	1.76	
1	1.88	1.88	
1	2.32	2.32	
3		5.96	
	1.986667		

Kadar IDC			
TEBAL KADAR GT			
1	1.84	1.84	
1	2.1	2.1	
1	2.32	2.32	
3		6.26	
	2.086667		

Kadar NNP			
TEBAL KADAR GT			
1	1.88	1.88	
1 2.32 2.32			
2 4.2			
	2.1		

Kadar Komposit			
TEBAL	TEBAL KADAR		
1	1.67	1.67	
1	2.13	2.13	
1	3.04	3.04	
3		6.84	
	2.28		

Kadar IDC			
TEBAL	KADAR	GT	
1	1.72	1.72	
1	1.9	1.9	
1	2.4	2.4	
1	2.62	2.62	
4		8.64	
	2.16		

Kadar NNP			
TEBAL	KADAR	GT	
1	1.67	1.67	
1	2.13	2.13	
1	3.04	3.04	
1	3.04	3.04	
4		9.88	
	2.47		

Kad	lar Kompos	sit	ŀ	Kadar IDC
TEBAL	KADAR	GT	TEBAL	KADAR
1	1.61	1.61	1	1.61
1	1.84	1.84	1	1.73
1	1.83	1.83	1	1.83
1	1.93	1.93	1	1.88
1	1.92	1.92	1	1.99
1	1.62	1.62	1	1.85
1	1.86	1.86	1	1.76
1	1.97	1.97	1	1.88
1	1.99	1.99	1	1.98
1	2.1	2.1	1	2.05
1	2.05	2.05	1	2.1
1	2.39	2.39	1	2.23
1	2.5	2.5	1	2.42
13		25.61	1	2.47
	1.97		1	2.68
			15	

GT

1.61

1.73

1.83

1.88

1.99

1.85

1.76

1.88

1.98

2.05

2.1

2.23

2.42

2.47

2.68 30.46

2.030667

Kadar NNP			
TEBAL	KADAR	GT	
1	1.61	1.61	
1	1.84	1.84	
1	1.83	1.83	
1	1.93	1.93	
1	1.92	1.92	
1	1.62	1.62	
1	1.86	1.86	
1	1.97	1.97	
1	1.99	1.99	
1	2.1	2.1	
1	2.05	2.05	
1	2.39	2.39	
1	2.5	2.5	
1	2.5	2.5	
1	2.43	2.43	
15		30.54	
	2.036		

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Kadar Komposit			
TEBAL	KADAR	GT	
1	0.34	0.34	
1	0.75	0.75	
1	0.81	0.81	
1	0.78	0.78	
1	0.83	0.83	
1	1.29	1.29	
1	1.37	1.37	
1	1.31	1.31	
1	1.27	1.27	
1	1.56	1.56	
1	1.51	1.51	
11		11.82	
	1.074545		

Kadar IDC			
TEBAL	KADAR	GT	
1	1.2	1.2	
1	1.16	1.16	
1	1.11	1.11	
1	1.26	1.26	
1	1.44	1.44	
1	1.4	1.4	
1	1.26	1.26	
7		8.83	
	1.261429		

Kadar NNP			
TEBAL	TEBAL KADAR		
1	1.29	1.29	
1	1.37	1.37	
1	1.31	1.31	
1	1.27	1.27	
1	1.56	1.56	
1	1.51	1.51	
1	1.26	1.26	
7		9.57	
	1.367143		

Kadar Komposit				
TEBAL	KADAR	GT		
1	1.89	1.89		
1	2.53	2.53		
2		4.42		
	2.21			

Kadar IDC			
TEBAL	GT		
1	1.89	1.89	
1	2.21	2.21	
1	2.53	2.53	
3		6.63	
	2.21		

Kadar NNP			
TEBAL	KADAR	GT	
1	1.89	1.89	
1	1.89	1.89	
1	2.53	2.53	
3		6.31	
	2.103333		

Kad	lar Kompos	it	k	Kad
TEBAL	KADAR	GT	TEBAL	K
1	1.79	1.79	1	
1	1.67	1.67	1	
1	1.66	1.66	1	
1	1.84	1.84	1	
1	1.84	1.84	1	
1	2.18	2.18	1	
6		10.98	6	
	1.83			2.

Kadar IDC				
TEBAL	KADAR	GT		
1	2.44	2.44		
1	2.68	2.68		
1	2.96	2.96		
1	1.94	1.94		
1	1.73	1.73		
1	1.67	1.67		
6		13.42		
	2.236667			

Kadar NNP				
TEBAL	KADAR	GT		
1	2.44	2.44		
1	2.43	2.43		
1	2.93	2.93		
1	1.79	1.79		
1	1.79	1.79		
1	1.67	1.67		
6		13.05		
	2.175			

Kadar Komposit			
TEBAL	KADAR	GT	
1	1.93	1.93	
1	1.68	1.68	
1	1.94	1.94	
1	1.99	1.99	
1	2.1	2.1	
1	2.22	2.22	
1	2.28	2.28	
1	2.44	2.44	
1	2.43	2.43	
1	2.93	2.93	
1	3	3	
11		24.94	
	2.267273		

Kadar IDC			
TEBAL	KADAR	GT	
1	1.8	1.8	
1	1.81	1.81	
1	1.97	1.97	
1	2.04	2.04	
1	2.16	2.16	
1	2.25	2.25	
1	2.36	2.36	
1	2.44	2.44	
1	2.68	2.68	
1	2.96	2.96	
1	2.92	2.92	
1	1.73	1.73	
12		27.12	
	2.26		

Kadar NNP			
TEBAL	KADAR	GT	
1	1.93	1.93	
1	1.68	1.68	
1	1.94	1.94	
1	1.99	1.99	
1	2.1	2.1	
1	2.22	2.22	
1	2.28	2.28	
1	2.44	2.44	
1	2.43	2.43	
1	2.93	2.93	
1	3	3	
1	1.79	1.79	
12		26.73	
	2.2275		

➤ CDR00373

Kadar Komposit				
TEBAL	KADAR	GT		
1	1.62	1.62		
1	2.06	2.06		
1	2.27	2.27		
1	2.54	2.54		
1	3.77	3.77		
1	2.73	2.73		
1	3.07	3.07		
1	3.05	3.05		
8		21.11		
	2.63875			

Kadar IDC			
TEBAL	KADAR	GT	
1	2.09	2.09	
1	1.66	1.66	
1	1.85	1.85	
1	2.17	2.17	
1	2.41	2.41	
1	3.14	3.14	
1	3.22	3.22	
1	2.89	2.89	
1	3.05	3.05	
9		22.48	
	2.497778		

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K	Kadar NNP				
TEBAL	KADAR	GT			
1	1.98	1.98			
1	1.62	1.62			
1	2.06	2.06			
1	2.27	2.27			
1	2.54	2.54			
1	3.77	3.77			
1	2.73	2.73			
1	3.07	3.07			
1	3.05	3.05			
9		23.09			
	2.565556				

Lampiran H

Material Hasil Pengeboran.

Laporan titk pengeboran yang telah selesai.

No	Hole ID	Deposit	Tanggal Start	Tanggal Finish	Depth (M)
1	CDR	Blok 2	1-12-2020	13-12-	22
	00503			2020	











No	Hole ID	Deposit	Tanggal Start	Tanggal Finish	Depth (M)
2	CDR 00504	Blok 2	1-12-2020	5 -12-2020	24









No	Hole ID	Deposit	Tanggal Start	Tanggal Finish	Depth (M)
3	CDR 00505	Blok 2	1-12-2020	6-12-2020	23











No	Hole ID	Deposit	Tanggal Start	Tanggal Finish	Depth (M)
4	CDR	$D_{1a} = 0$	12-12-	12-12-	6
4	00506	BIOK 2	2020	2020	0



No	Hole ID	Deposit	Tanggal Start	Tanggal Finish	Depth (M)
5	CDR 00510	Blok 2	13-12-2020	14-12-2020	12



No	Hole ID	Deposit	Tanggal Start	Tanggal Finish	Depth (M)
6	CDR 00153	Blok 2	6-12-2020	14-12-2020	17



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T'sal

No	Hole ID	Deposit	Tanggal Start	Tanggal Finish	Depth (M)
7	CDR 00511	Blok 2	14-12-2020	15-12-2020	15







No	Hole ID	Deposit	Tanggal Start	Tanggal Finish	Depth (M)
0	CDR	Dlalr 2	13-12-	13-12-	7
8	0008	BIOK 2	2020	2020	







No	Hole ID	Deposit	Tanggal Start	Tanggal Finish	Depth (M)
9	CDR 00518	Blok 2	14-12-2020	17-12-2020	13



No	Hole	Depos	Tanggal	Tanggal	Dept
	ID	it	Start	Finish	h (M)
10	CDR 00519	Blok 2	18-12-2020	19-12-2020	25











No	Hole ID	Deposit	Tanggal Start	Tanggal Finish	Depth (M)
11	CDR	Dlalr 2	03-01-	05-01-	25
11	00520	D10K 2	2021	2021	23











No	Hole ID	Deposit	Tanggal Start	Tanggal Finish	Depth (M)
12	CDR 524	Blok 2	17-12-2020	18-12-2020	7





No	Hole ID	Deposit	Tanggal Start	Tanggal Finish	Depth (M)
13	CDR 472	Blok 2	19-12-2020	23-12-2020	25



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No	Hole ID	Deposit	Tanggal Start	Tanggal Finish	Depth (M)
14	CDR 00525	Blok 2	08-01-2021	11-01-2021	20









No	Hole ID	Deposit	Tanggal Start	Tanggal Finish	Depth (M)
15	CDR 00373	Blok 2	06-01-2021	07-01-2021	16









Lampiran I

Contoh Perhitungan Manual Penaksiran Zona

Limonit Dengan Metode Inverse Distance Cube





Penaksiran kadar ni pada zona limonit

Diketahui:

Jarak dari A0 ke A1= D1= 45,188 meter

Jarak dari A0 ke A2= D2= 65,386 meter

Jarak dari A0 ke A3= D3= 49,880 meter

Kadar:

Z1: 1.57% Ni

Z2: 1,36% Ni

Power = *Inverse Distance Cube* (*Power* 3)

1. Mencari nilai bobot (W1) terhadap titik taksir.

$$w_{i} = \frac{\frac{1}{(d_{i})^{3}}}{\sum \frac{1}{(d_{i})^{3}}}$$
$$W_{1} = \frac{\frac{1}{di^{3}}}{\sum_{i=1}^{n} \frac{1}{di^{3}}} = \frac{\frac{1}{di^{3}}}{\frac{1}{d1^{3}} + \frac{1}{d2^{3}} + \frac{1}{d3^{3}}}$$
$$W_{1} = \frac{\frac{1}{2042}}{\frac{1}{2042} + \frac{1}{4275.3} + \frac{1}{2488}}$$
$$W1 = \frac{0.00049}{0.00049 + 0.000234 + 0.000402}$$
$$W1 = \frac{0.00049}{0.001126}$$
$$W1 = 0.435196$$

2. Mencari nilai bobot (W2) terhadap titik taksir.

$$w_{i} = \frac{\frac{1}{(d_{i})^{3}}}{\sum \frac{1}{(d_{i})^{3}}}$$

$$W_{2} = \frac{\frac{1}{di^{3}}}{\sum_{i=1}^{n} \frac{1}{di^{3}}} = \frac{\frac{1}{di^{3}}}{\frac{1}{d1^{3}} + \frac{1}{d2^{3}} + \frac{1}{d3^{3}}}$$

$$W_{2} = \frac{\frac{1}{2042} + \frac{1}{4275.3}}{\frac{1}{2042} + \frac{1}{4275.3} + \frac{1}{2488}}$$

$$W_{2} = \frac{0.000234}{0.00049 + 0.000234 + 0.000402}$$

$$W_{2} = \frac{0.000234}{0.001126}$$

$$W_{2} = 0.207828$$

3. Mencari nilai bobot (W3) terhadap titik taksir.

$$W_{i} = \frac{\frac{1}{(d_{i})^{3}}}{\sum \frac{1}{(d_{i})^{3}}}$$

$$W_{3} = \frac{\frac{1}{di^{3}}}{\sum_{i=1}^{n} \frac{1}{di^{3}}} = \frac{\frac{1}{di^{3}}}{\frac{1}{d1^{3}} + \frac{1}{d2^{3}} + \frac{1}{d3^{3}}}$$

$$W_{3} = \frac{\frac{1}{2488}}{\frac{1}{2042} + \frac{1}{4275.3} + \frac{1}{2488}}$$

$$W_{3} = \frac{0.000402}{0.00049 + 0.000234 + 0.000402}$$

$$W_{3} = \frac{0.000402}{0.001126}$$

$$W_{3} = 0.356976$$

Sehingga dari hasil subsitusi diperoleh:

W1	: 0.435196		
W2	: 0.207828		
W3	: 0.356976		
Z1	: 1.57% Ni		
Z2	: 1,36% Ni		
Z3	: 1.28% Ni		
Ža=(₩	(1.Z1) + (W2.Z2) + (W3.Z3)		
$\check{Z}_{a} = ((0.435196) (1.57)) + ((0.207828) (1,36)) + ((0.356976) (1.28))$			
$\check{Z}_{a} = (0,683) + (0.282) + (0.456)$			
$\check{Z}_{a} = 1.421$			

Jadi, kadar hasil penaksrian adalah 1.42%Ni.

Berdasarkan hasil penaksrian menggunakan *software surpac 6.3* dengan metode *inverse distance cube* pada titik bor CDR00525 zona limonit, didapatkan sebesar 1.54 %.

Lampiran J

Contoh Perhitungan Manual Penaksiran Zona

Saprolit Dengan Metode Inverse Distance Cube



Penaksiran kadar ni pada zona saprolit

Diketahui:

Jarak dari A0 ke A1= D1= 45,188 meter

Jarak dari A0 ke A2= D2= 65,386 meter

Jarak dari A0 ke A3= D3= 49,880 meter

Kadar:

Z1: 2.03% Ni

Z2: 2.21% Ni

Power = *Inverse Distance Cube* (*Power* 3)

1. Mencari nilai bobot (W1) terhadap titik taksir.

$$W_{i} = \frac{\frac{1}{(d_{i})^{3}}}{\sum \frac{1}{(d_{i})^{3}}}$$
$$W_{1} = \frac{\frac{1}{di^{3}}}{\sum_{i=1}^{n} \frac{1}{di^{3}}} = \frac{\frac{1}{di^{3}}}{\frac{1}{d1^{3}} + \frac{1}{d2^{3}} + \frac{1}{d3^{3}}}$$
$$W_{1} = \frac{\frac{1}{2042}}{\frac{1}{2042} + \frac{1}{4275.3} + \frac{1}{2488}}$$

$$W1 = \frac{0.00049}{0.00049 + 0.000234 + 0.000402}$$
$$W1 = \frac{0.00049}{0.001126}$$
$$W1 = 0.435196$$

2. Mencari nilai bobot (W2) terhadap titik taksir.

$$W_{i} = \frac{\frac{1}{(d_{i})^{3}}}{\sum \frac{1}{(d_{i})^{3}}}$$

$$W_{2} = \frac{\frac{1}{di^{3}}}{\sum_{i=1}^{n} \frac{1}{di^{3}}} = \frac{\frac{1}{di^{3}}}{\frac{1}{d1^{3}} + \frac{1}{d2^{3}} + \frac{1}{d3^{3}}}$$

$$W_{2} = \frac{\frac{1}{2042} + \frac{1}{4275.3}}{\frac{1}{2042} + \frac{1}{4275.3} + \frac{1}{2488}}$$

$$W_{2} = \frac{0.000234}{0.00049 + 0.000234 + 0.000402}$$

$$W_{2} = \frac{0.000234}{0.001126}$$

$$W_{2} = 0.207828$$

3. Mencari nilai bobot (W3) terhadap titik taksir.

$$W_{i} = \frac{\frac{1}{(d_{i})^{3}}}{\sum \frac{1}{(d_{i})^{3}}}$$

$$W_{3} = \frac{\frac{1}{di^{3}}}{\sum_{i=1}^{n} \frac{1}{di^{3}}} = \frac{\frac{1}{di^{3}}}{\frac{1}{d1^{3}} + \frac{1}{d2^{3}} + \frac{1}{d3^{3}}}$$

$$W_{3} = \frac{\frac{1}{2488}}{\frac{1}{2042} + \frac{1}{4275.3} + \frac{1}{2488}}$$

$$W_{3} = \frac{0.000402}{0.00049 + 0.000234 + 0.000402}$$

$$W_{3} = 0.000402/0.001126$$

$$W_{3} = 0.356976$$

Sehingga dari hasil subsitusi diperoleh:

W1	: 0.435196		
W2	: 0.207828		
W3	: 0.356976		
Z1	: 2.03% Ni		
Z2	: 2.21% Ni		
Z3	: 2.49% Ni		
\check{Z}_{a} = (W1.Z1) + (W2.Z2) + (W3.Z3)			
\check{Z}_{a} = ((0.435196) (2.03)) + ((0.207828) (2.21)) + ((0.356976) (2.49))			
$\check{Z}_a = (0,883) + (0.459) + (0.888)$			
$\check{Z}_{a} = 2.23$			

Jadi, kadar hasil penaksrian adalah 2.23%Ni.

Berdasarkan hasil penaksrian menggunakan *software surpac 6.3* dengan metode *inverse distance cube* pada titik bor CDR00525 zona saprolit, didapatkan sebesar 2.26%.

Lampiran K

Contoh Perhitungan Manual Penaksiran Zona

Limonit Dengan Metode Nearest Neighbourhood Point





Penaksiran kadar ni pada zona limonit

Diketahui:

Kadar:

Jarak dari A0 ke A1= D1= 45,188 meter	Z1: 1.57% Ni
Jarak dari A0 ke A2= D2= 65,386 meter	Z2: 1,36% Ni
Jarak dari A0 ke A3= D3= 49,880 meter	Z3: 1.28% Ni

Untuk penaksiran pada titik Z0 dengan menggunakan metode *nearest neighbourhood point* untuk jarak terdekat dengan titik taksir diberikan bobot (w)=1, sedangkan untuk titik lain nya diberikan bobot (w)=0. Sehingga untuk nilai W1 diberikan bobot (w)=1, untuk nilai W2 diberikan bobot (w)=0, dan untuk nilai W3 diberikan bobot (w)=0.

$$\overline{Z_0} = (W1.Z1) + (W2.Z2) + (W3.Z3)$$

= ((1) (1.57)) + ((0) (1.36)) + ((0) (1.28))
= (1.57) + (0) + (0)
= 1.57%

Jadi, kadar hasil penaksrian adalah 1.57% Ni.

Berdasarkan hasil penaksrian menggunakan *software surpac 6.3* dengan metode *inverse distance cube* pada titik bor CDR00525 zona limonit, didapatkan sebesar 1.17%.

Lampiran L

Contoh Perhitungan Manual Penaksiran Zona

Limonit Dengan Metode Nearest Neighbourhood Point

519 CDR0<u>0</u>520





Penaksiran kadar ni pada zona limonit

Diketahui:

Kadar:

Jarak dari A0 ke A1= D1= 45,188 meter	Z1: 2.03% Ni
Jarak dari A0 ke A2= D2= 65,386 meter	Z2: 2.21% Ni
Jarak dari A0 ke A3= D3= 49,880 meter	Z3: 2.49% Ni

Untuk penaksiran pada titik Z0 dengan menggunakan metode *nearest neighbourhood point* untuk jarak terdekat dengan titik taksir diberikan bobot (w)=1, sedangkan untuk titik lain nya diberikan bobot (w)=0. Sehingga untuk nilai W1 diberikan bobot (w)=1, untuk nilai W2 diberikan bobot (w)=0, dan untuk nilai W3 diberikan bobot (w)=0.

$$\overline{Z_0} = (W1.Z1) + (W2.Z2) + (W3.Z3)$$
$$= ((1) (2.03)) + ((0) (2.21) + ((0) (2.49))$$
$$= (2.03) + (0) + (0)$$
$$= 2.03\%$$

Jadi, kadar hasil penaksrian adalah 2.03% Ni.

Berdasarkan hasil penaksrian menggunakan *software surpac 6.3* dengan metode *inverse distance cube* pada titik bor CDR00525 zona limonit, didapatkan sebesar 2.23%.