Megaton Modular Multi-Purpose Neutrino Detector

- ✓ Education / Experience
- ✓ Chamber Design
- ✓ Modular Configuration
- ✓ Chamber Time Line Estimate
- ✓ Chamber Cost Estimate

Mark Laurenti

Education

- BS Mine Engineering (SDSM&T 1983)
- MBA (University of SD 2001)

Homestake (1983 – 2001)

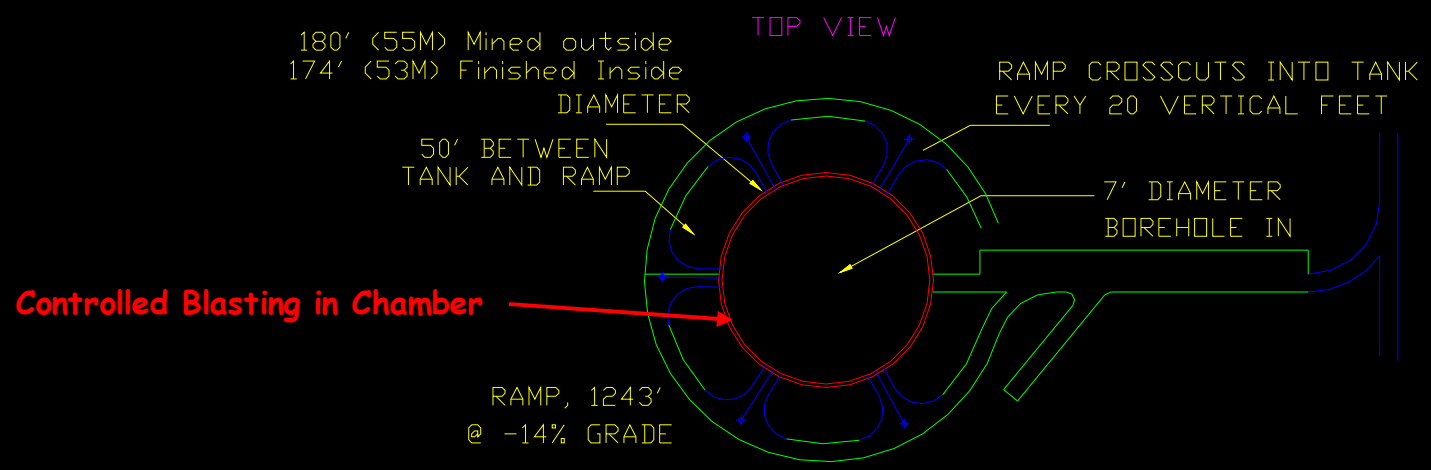
- Shaftman
- Contract Miner
- Mine Engineer Underground
- Mine Foreman Underground
- Chief Engineer Underground
- Chief Engineer Surface
- Technical Services Superintendent

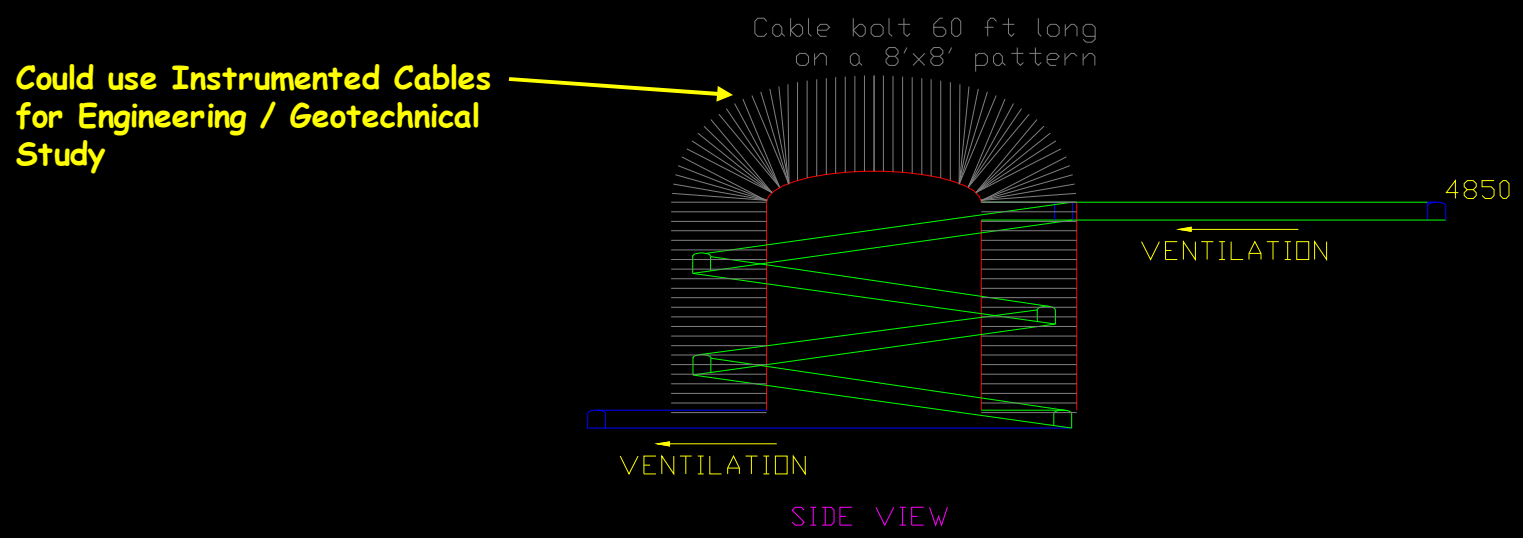
Vulcan Materials (2001 – Present)

- Underground Project Design & Construction Manager
- Underground Plant Manager
- McCook Reservoir (TARP) Project Manager

Megaton Modular Multi-Purpose Neutrino Detector

✓ Chamber Design





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✓ Chamber Design

Note ! 3 Chambers Drilled in Costing

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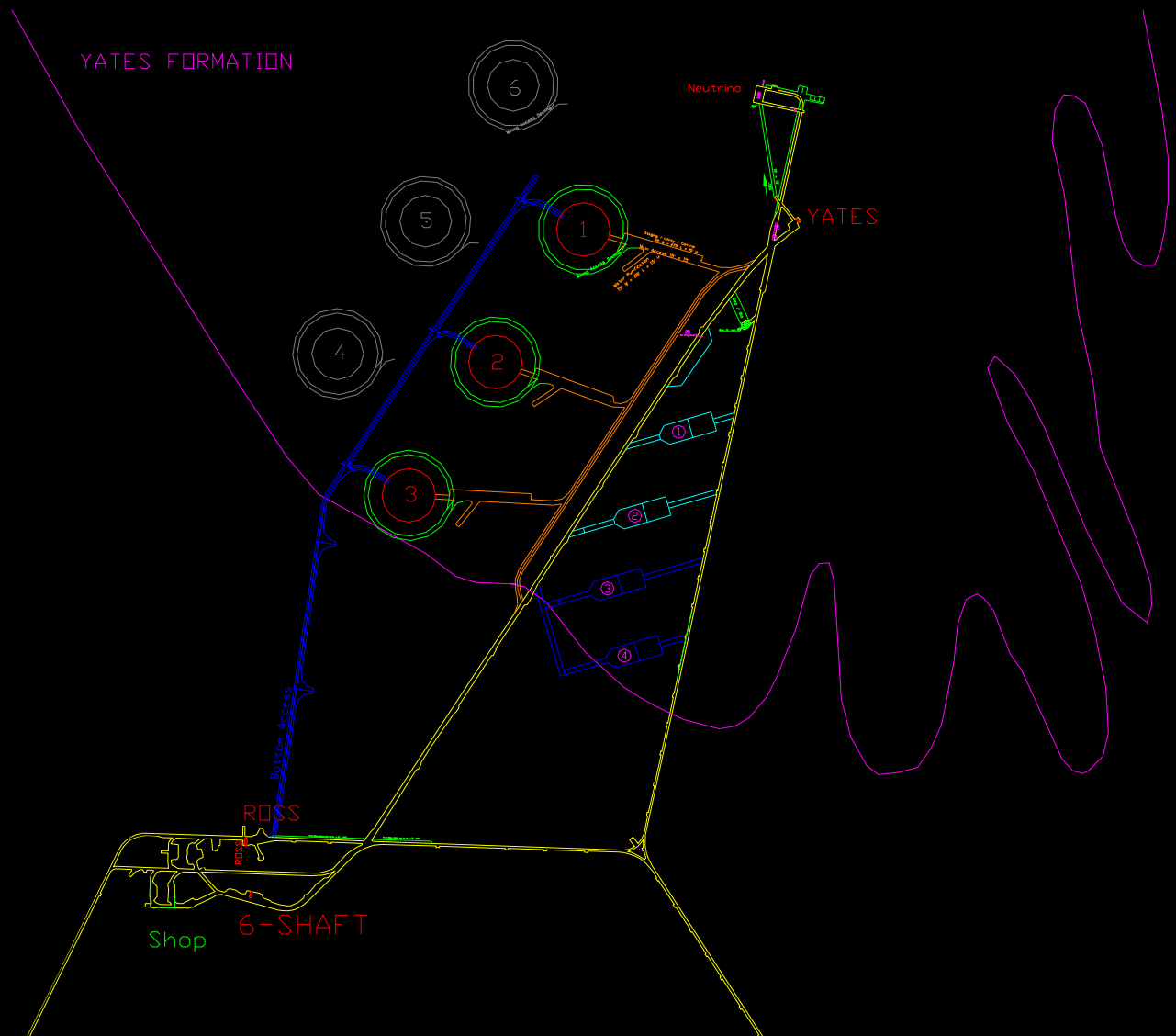
✓ Modular Configuration



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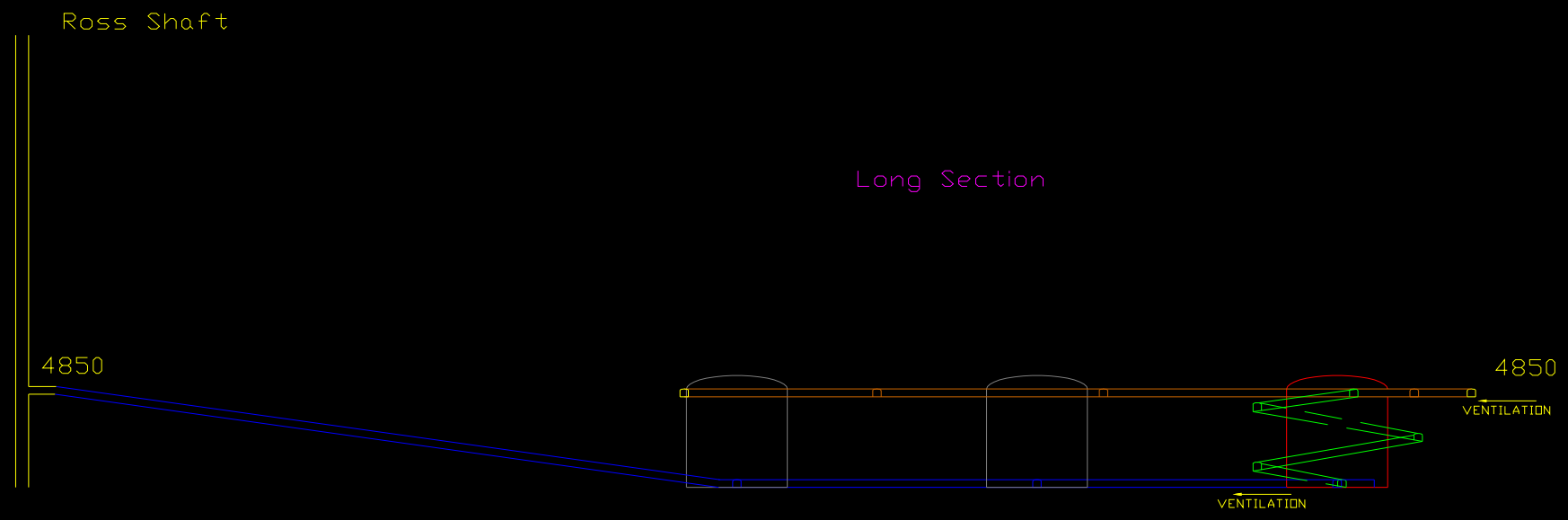
✓ **Modular Configuration**



Megaton Modular Multi-Purpose Neutrino Detector

✓ Chamber Time Line Estimate

General Parameters

☆ **Work Schedule**

2 – 10 Hr Shifts / Day

5 Day / Week

☆ **Manpower**

20 Hourly Employees

4 Supervisors

☆ **Material Handling**

Material delivered to Ross Shaft

☆ **Costing**

Zero Base Costing by Month

Current Pricing of Vendors for supplies

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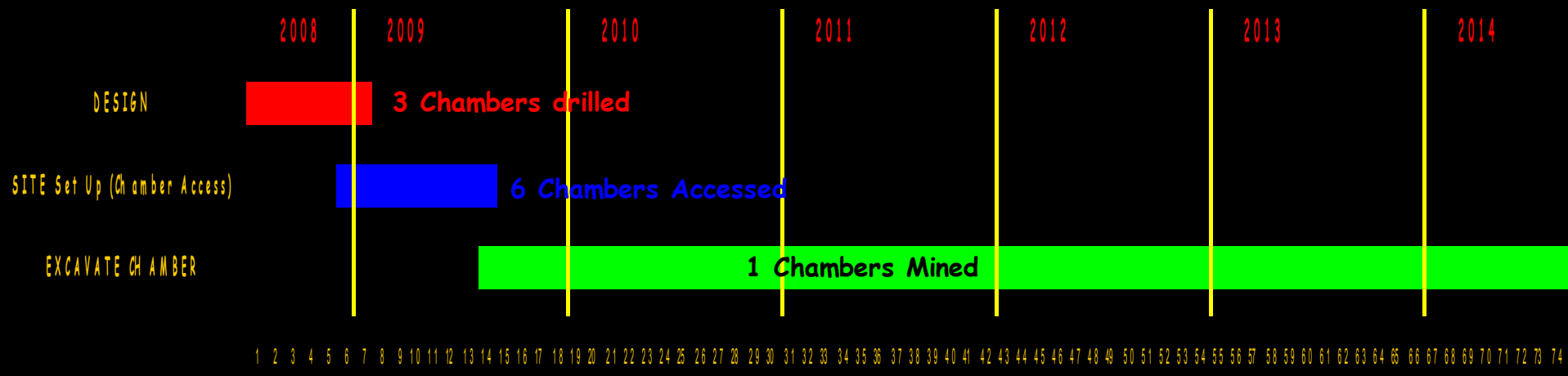
✓ Chamber Time Line Estimate



Design (3)	7 Months
Site Set up (6)	9 Months
Excavate Chamber (1)	61 months

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Summary Of Chamber Excavation

	TOTAL	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
TOTAL COSTS	**$ 33,886,224**	**$ 4,129,694**	**$ 6,715,723**	**$ 5,575,330**	**$ 5,535,670**	**$ 5,528,100**	**$ 5,444,946**	**$ 956,762**
Design (3 Chambers)								
Cost / Chamber	**$ 253,867**							
	$ 761,600	**$ 761,600**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Months	**7**	7	-	-	-	-	-	-
Diamond Drilling ft	**10,932 ft**	10,932 ft	0	0	0	0	0	0
Diamond Drill Costs	**$ 546,600**	$ 546,600	$ -	$ -	$ -	$ -	$ -	$ -
Geotechnical Over site	**$ 90,000**	$ 90,000	$ -	$ -	$ -	$ -	$ -	$ -
Geotechnical Modeling & Recommendations	**$ 125,000**	$ 125,000	$ -	$ -	$ -	$ -	$ -	$ -
Site Set Up (6 Chamber Access)								
Cost / Chamber	**$ 721,842**							
	$ 4,331,054	**$ 3,368,094**	**$ 962,961**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Drift Footage	4,667 ft	3,704 ft	963 ft	0 ft	0 ft	0 ft	0 ft	0 ft
Months	**9**	7	2	-	-	-	-	-
Labor	**$ 2,058,596**	$ 1,637,468	$ 421,128	$ -	$ -	-	$ -	0
Equipment Operating	**$ 1,073,520**	$ 793,800	$ 279,720	$ -	$ -	-	$ -	0
Supplies	**$ 1,198,938**	$ 936,826	$ 262,113	$ -	$ -	-	$ -	0
Other	**$ -**	$ -	$ -	$ -	$ -	-	$ -	0
Chamber (1)								
Cost / Chamber	**$ 28,793,569**							
	$ 28,793,569	**$ -**	**$ 5,752,762**	**$ 5,575,330**	**$ 5,535,670**	**$ 5,528,100**	**$ 5,444,946**	**$ 956,762**
Top Cut (40 ft high)	**84,820 Tons**	-	65,020	19,800	-	-	-	-
Ramp Top to Bottom	**1,737 ft**	-	1,737	-	-	-	-	-
Bench Tons	**381,510 Tons**	-	-	63,780	105,780	85,170	126,780	-
Cable Bolt Feet	**233,280 ft**	-	36,080	26,960	62,160	44,240	49,560	14,280
Shot Crete	**1,800cuYd**	-	-	1,800	-	-	-	-
Concrete Panels	**1,944**	-	-	216	459	621	432	216
Bore Hole Feet	**174 ft**	-	-	174	-	-	-	-
Months	**61**	-	11	12	12	12	12	2
Labor	**$ 14,002,126**	$ -	$ 2,423,660	$ 2,807,088	$ 2,807,088	$ 2,807,088	$ 2,807,088	$ 350,114
Equipment Operating	**$ 7,064,820**	$ -	$ 1,701,000	$ 1,401,540	$ 1,262,100	$ 1,243,200	$ 1,298,220	$ 158,760
Supplies	**$ 7,639,624**	$ -	$ 1,628,102	$ 1,279,702	$ 1,466,482	$ 1,477,812	$ 1,339,638	$ 447,888
Other	**$ 87,000**	$ -	$ -	$ 87,000	$ -	$ -	$ -	$ -

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Capital Investment For Chamber Excuvation

			TOTAL	$	7,105,000
MINING EQUIPMNET					
	Units		Price Ea		Total $
			Sub Total	$	6,125,000
Face Drill	2	$	600,000	$	1,200,000
Bench Drill	2	$	300,000	$	600,000
Bolter	1	$	400,000	$	400,000
Cable Bolter	1	$	1,000,000	$	1,000,000
Load Haul Dump	4	$	425,000	$	1,700,000
Haul Truck				$	-
Explosive Truck	1	$	300,000	$	300,000
Sissor Lift	2	$	250,000	$	500,000
Utility Lift	1	$	200,000	$	200,000
Transport	3	$	75,000	$	225,000
Jacklegs	6	$	6,000	$	36,000
OTHER EQUIPMENT					
			Sub Total	$	980,000
Explosive Mag	2	$	100,000	$	200,000
Vent Fan	6	$	30,000	$	180,000
Shop Equipment	1	$	500,000	$	500,000
Fuel Tanks	1	$	100,000	$	100,000

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