



Monster Wall

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“The Coal Mining World is a fast-paced, cutthroat, heavily regulated industry. In order for companies to survive, they must continue to reinvent themselves.”

Andrew Yackuboskey

Section Foreman, Enlow Fork Mine



Longwall U.S. Production

- Longwall production today accounts for 50% of underground coal mined.



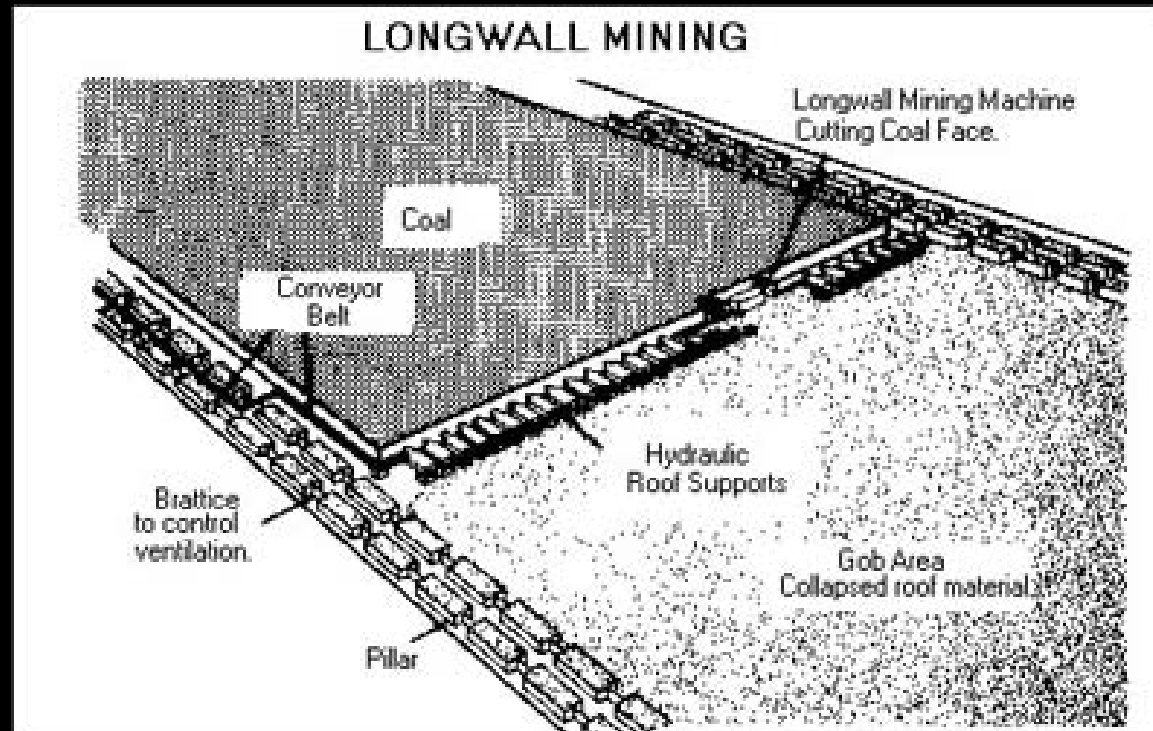
Longwall, the Underground Way to Go

- Highly productive
- High Return on Investment
- High Recovery Rates (80%-90%)



Evolution of Bailey Longwall: Width of Faces

- The first Bailey Complex Longwall was 600' wide
- Then widened to 750' and eventually to 1,100' wide
- Today Bailey's World premier Longwalls run 1500-1600' wide faces.





Pennsylvania

- Enlow Fork
- Harvey
- Bailey

Unveiling the Monster 2000' 2M Shield Face

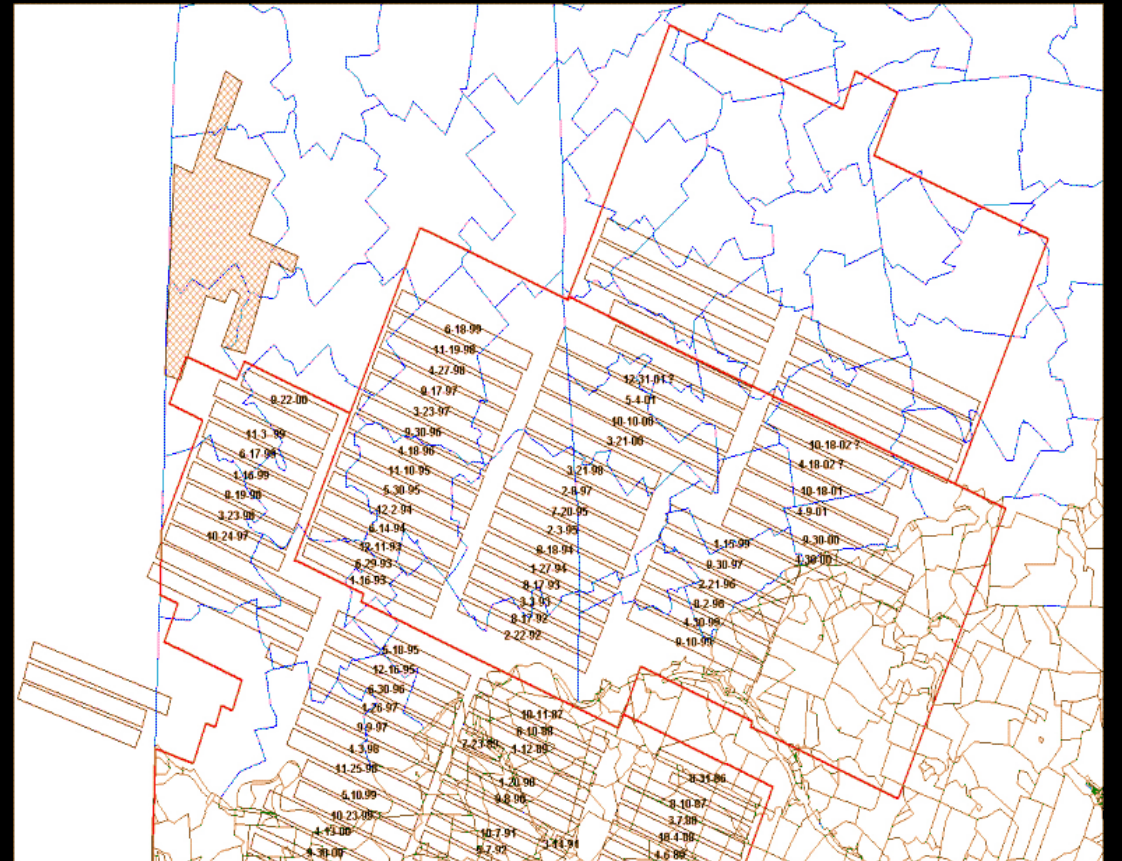




GAT ROOF SUPPORTS
FAST CYCLE TIMES

The “Why?”

- Eliminate 1 entire gate section to develop
- Eliminate 1 longwall move
- Every 3 panels



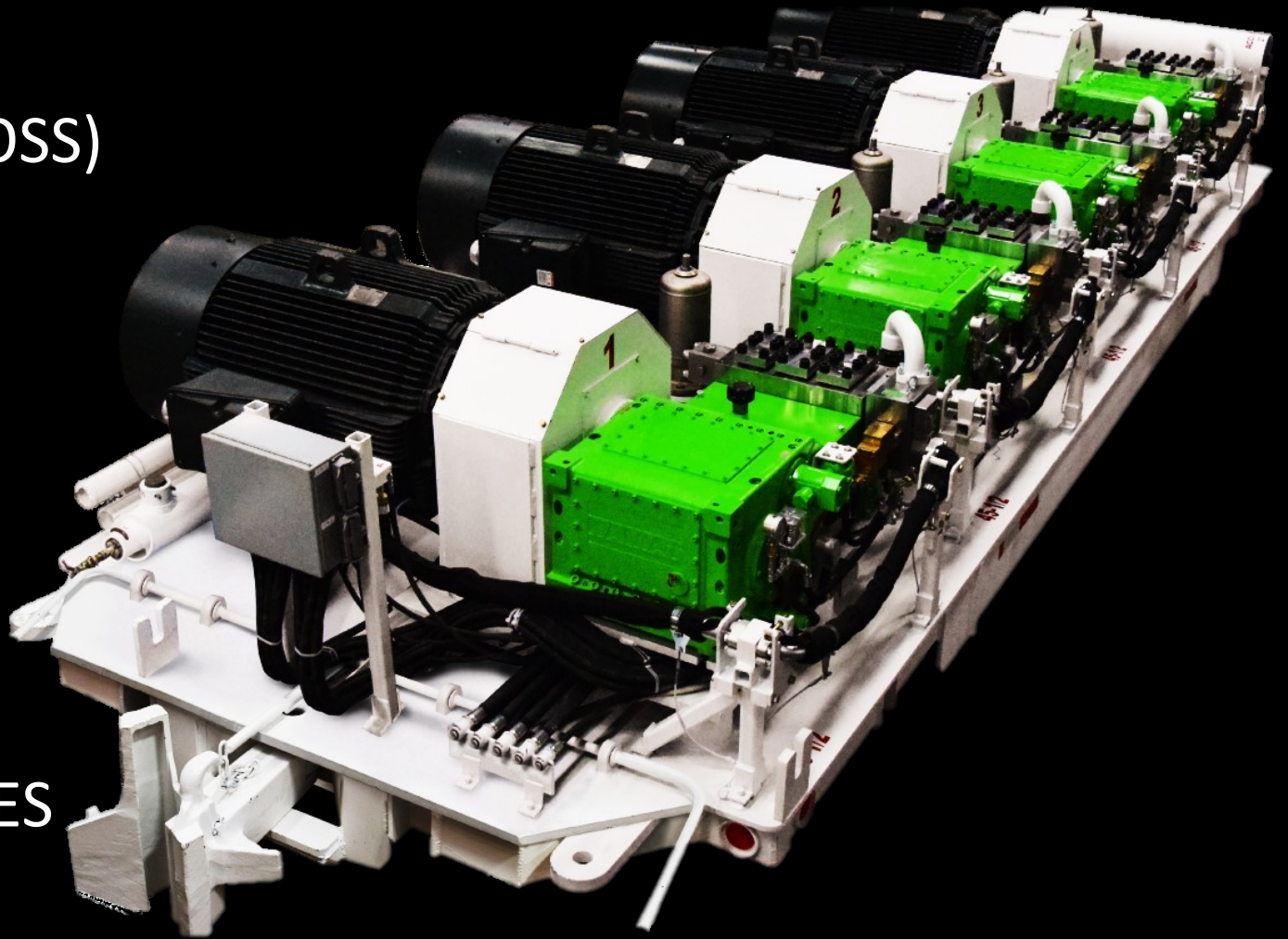
Develop a 2,000' Longwall Face

- Extra 500' per setup/bleeder entry
- 3 entry setup/bleeder take 8 days of mining @ 70FT/Shift
- Small cost for the extra mining



KAMAT PUMP STATION

- PRESSURE LOSS(150 PSI LOSS)
- RING MAINS (2 OR 3)
- RUN ALL FOUR PUMPS
- SHIELD MOVEMENT
- NO CHANGES TO HOSE SIZES



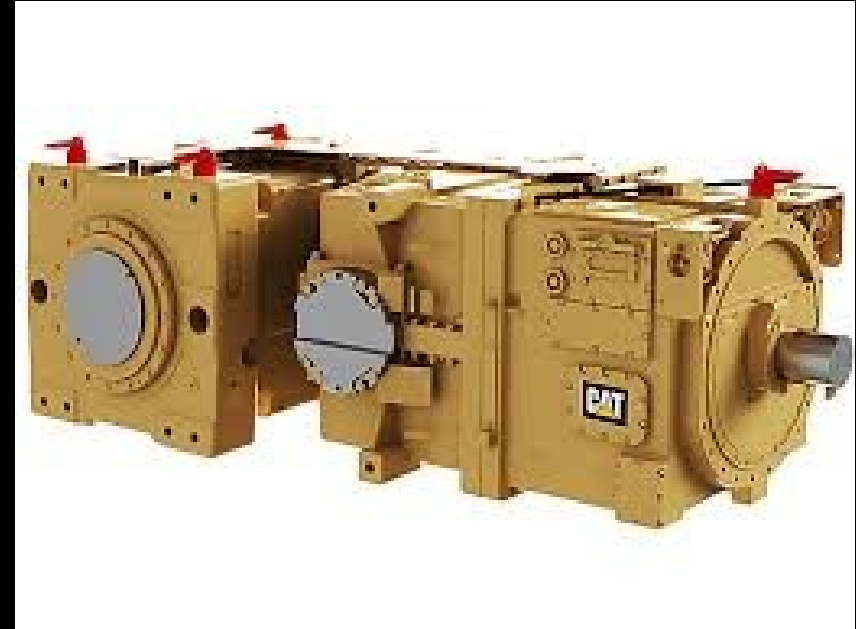
ARMORED FACE CHAIN

ARMORED FACE CHAIN		
SIZE	WEIGHT	WEIGHT @ 2,000'
48 MM	31 LBS/FT	136 TONS
52 MM	36 LBS/FT	144 TONS
56 MM	40 LBS/FT	160 TONS
60 MM	44 LBS/FT	176 TONS



- **1,650 FLIGHTS**
- **ADDED 22 TONS**
- **HEAVIER CHAIN**
- **AT ONE TIME 48MM CHAIN SEEMED TOO BIG**

CAT DRIVES(CST 65/CST 115)



CAT DRIVE SPECIFICATIONS

CST65	HEIGHT	WIDTH	WEIGHT W/O OIL
P BOX	41.7"	44.1"	16,094 LBS
KP BOX	41.7"	60.2"	23,980 LBS
CST115	HEIGHT	WIDTH	WEIGHT W/O OIL
P BOX	51.1"	55.1"	36,145 LBS
KP BOX	51.1"	79.8"	52,851 LBS

HORSEPOWER CALCULATIONS

CAT HORSEPOWER CALCULATIONS - 2,000' FACE				
3 MOTORS X 2600 HP				
0 DEGREE GRADE				
CHAIN: 2 x 56 X 187MM CHAIN				
CUTTING SEQUENCE	BI-DI	BI-DI	BI-DI	BI-DI
DIRECTION OF CUTTING	HG-TG	TG-HG	HG-TG	TG-HG
SHEARER SPEED(FPM)	39	33	47	38
FACE LENGTH	2,000	2,000	2,000	2,000
TOTAL MINING HEIGHT	108	108	108	108
BASE WEB DEPTH	42	42	42	42
COAL BLOCK DENSITY(LB/FT ³)	89	89	89	89
COAL BROKEN DENSITY(LB/FT ³)	57	57	57	57
FACE CONVEYOR DISCHARGE RATE(TPH)	3,000	3,000	3,000	3,000
REQUIRED CROSS SECTIONAL AREA	4.43	4.43	5.17	5.17
CONVEYOR SPEED(FPM)	394	394	394	394
TOTAL APPLIED POWER	7,800	7,800	7,800	7,800
FULL LENGTH LOAD FOR RUNNING HP	7,593	7,181	9,152	8,529

2-METER CAT SHIELDS



- PROVEN IN PITTSBURGH 8 SEAM
- LESS SHIELDS IN 2,000' FACE
- QUOTED AT 299 SHIELDS
- LOWER CAPITAL COST



POWER

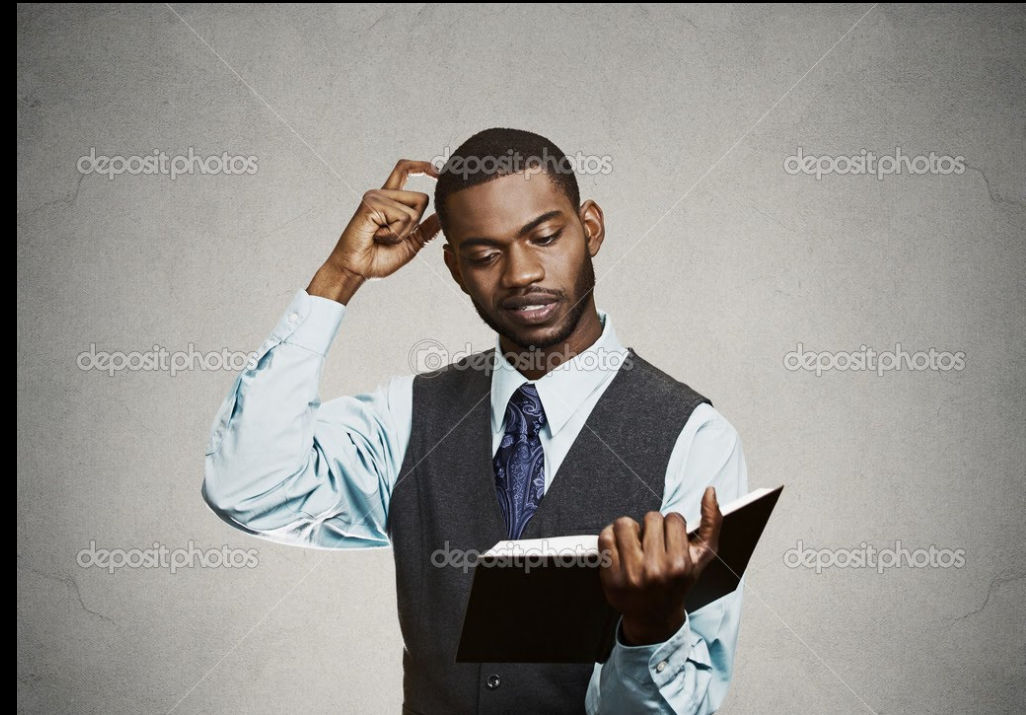
12,470 LONGWALL POWER CALCULATIONS		
3 FACE MOTORS	2600 HP	5820 KW
SHEARER	222 AMPS	1,865 KW
4 KAMAT PUMPS	300 HP	896KW
STAGELoader	460 HP	343 KW
CRUSHER	460 HP	343 KW
ISE PUMPS	150 HP	112 KW
	TOTAL KW	9379 KW

12,470 AMPERAGE CALCULATIONS		
350 MCM	500 AMPS	
500 MCM	630 AMPS	
FACE WIDTH		TOTAL AMPS
1,500 FOOT		463 A
2,000 FOOT		544 A

- LARGER CABLES
- DUAL FEED POWER
- ADVANCED PLANNING FOR CABLE LAY OUT

In conclusion

- 33% More coal per LW panel
- Fewer Longwall moves
- Less Tailgate sections
- VFD's becoming more relevant
- Feasibility



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