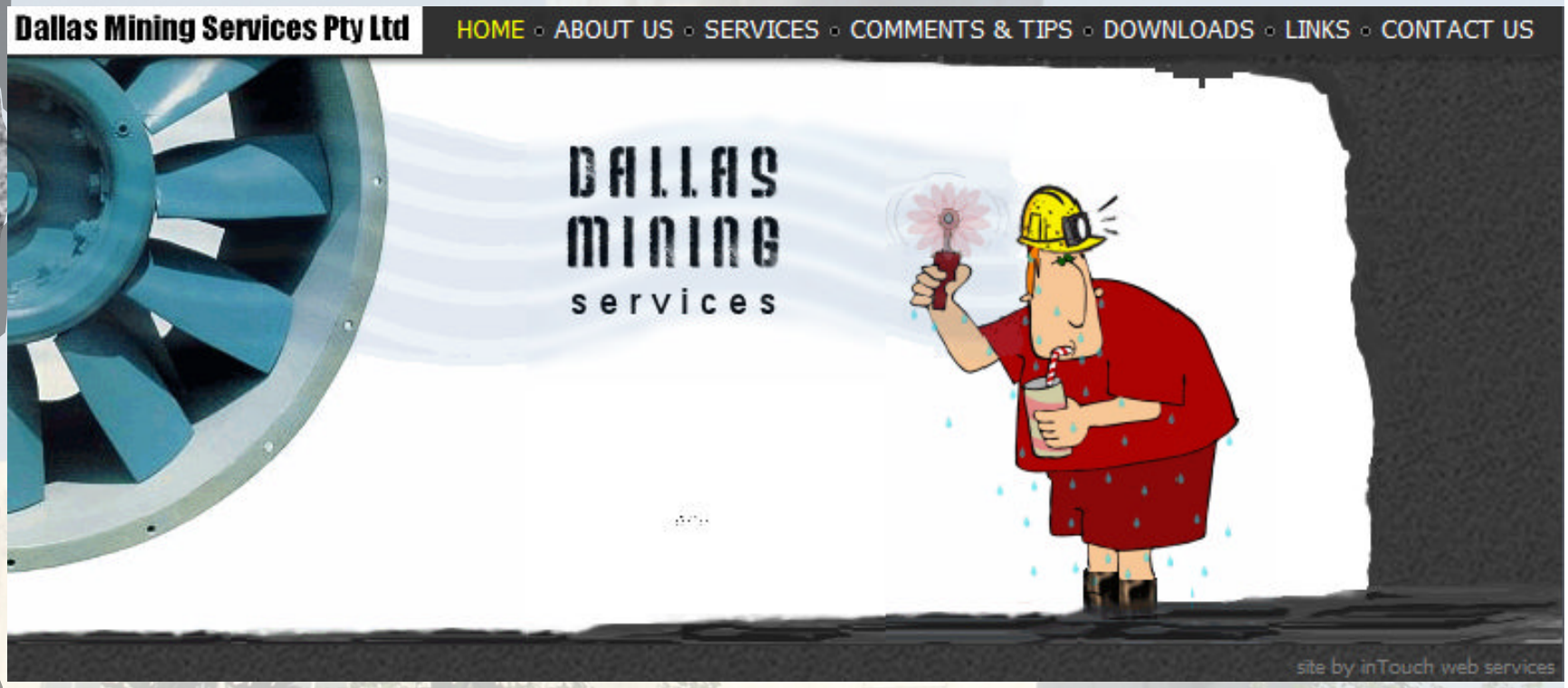
"Circuit Evaluation to bring the Ventilation Report into the 21st Century"



Presented by John Rowland
Dallas Mining Services Pty Ltd

dallasmining.com

or "moving from this

TILTON COLLIERY

VENT REPORT AUGUST 1985

MAIN INTAKES

Location	Area(m2)	Vel(m/s)	Quan(m3/s)	%CH4
Belt Drift	16.64	3.68	61.2	
Transport Drift	15.50	6.40	99.2	
Total Intakes			160.4	

PANELS

Location	Area(m2)	Vel(m/s)		%CH4
Mains Development				
Hazardous Zone A hdg	16.17	0.60	9.7	0.0
Hazardous Zone B Hdg	15.2	0.50	7.6	0.0
Hazardous Zone C Hdg	15.8	0.48	7.6	0.0
		Total Flow	**24.9**	
Face Area (Coaling in A hdg)	14.4	0.45	**6.5**	
Return Methane reading				0.2
Maingate Panel				
Hazardous Zone (A Hdg)	16.17	2.15	**34.8**	0.1
Face Area (Coaling in A hdg)	15	0.40	**6.0**	
Return Methane reading				0.2
Longwall				
Hazardous Zone A hdg	16.17	1.66	26.8	0.0
Hazardous Zone B Hdg	15.2	1.20	18.2	0.0
		Total Flow	**45.1**	
Face Area (Shearing)	15.4	2.98	**45.9**	
Return Methane reading				0.8

Readings taken by **Fred Nerk**

Ventilation Officer's Signature *Fred*

Countersigned

1958 Ford Edsel

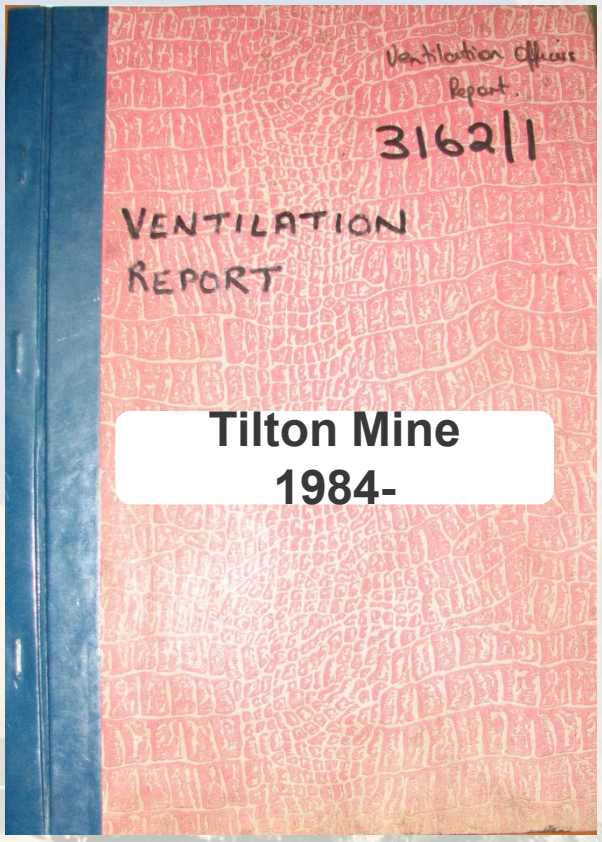
to this"


New Bugatti Veyron

The way it was last century

Doing the Ventilation Report to satisfy statutory needs

You remember the Ventilation Book in the Report Room



And the report looked like this!!

TILTON COLLIERY

VENT REPORT AUGUST 1985

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Return Methane reading				0.8
Readings taken by	**Fred Nerk**			
Ventilation Officer's Signature	Fred			
Countersigned				

and just managed to comply with the regs

Why was it this way?

The VO was normally the UMIC

And the L/W U/M

And the development guru……

And got involved in

Laying track

Fire gear

Belt installs and extensions

Dust sampling

Hanging pipes

Recovering falls

Keeping barriers full

Safety Issues

Organising back shifts

Industrial Issues

You remember the deal: In the pit every day!!

There was little time to do more than the statutory minimum.

- ***Then came the ventilation disasters of the 70's thru the 90's.***
- ***These bought about some regulatory changes***
- ***The Act in place at the time of the Appin disaster was the CMRA of 1912 and its regulations***
- ***Lets briefly look at the regulations in place at that time and the mandatory changes since***

Historical regulatory requirements

In relation to air quantities and gas determinations the 1912 (pre 1984) Act and regs required the following prescribed monthly readings to comply

Qnty in Main Intakes Q

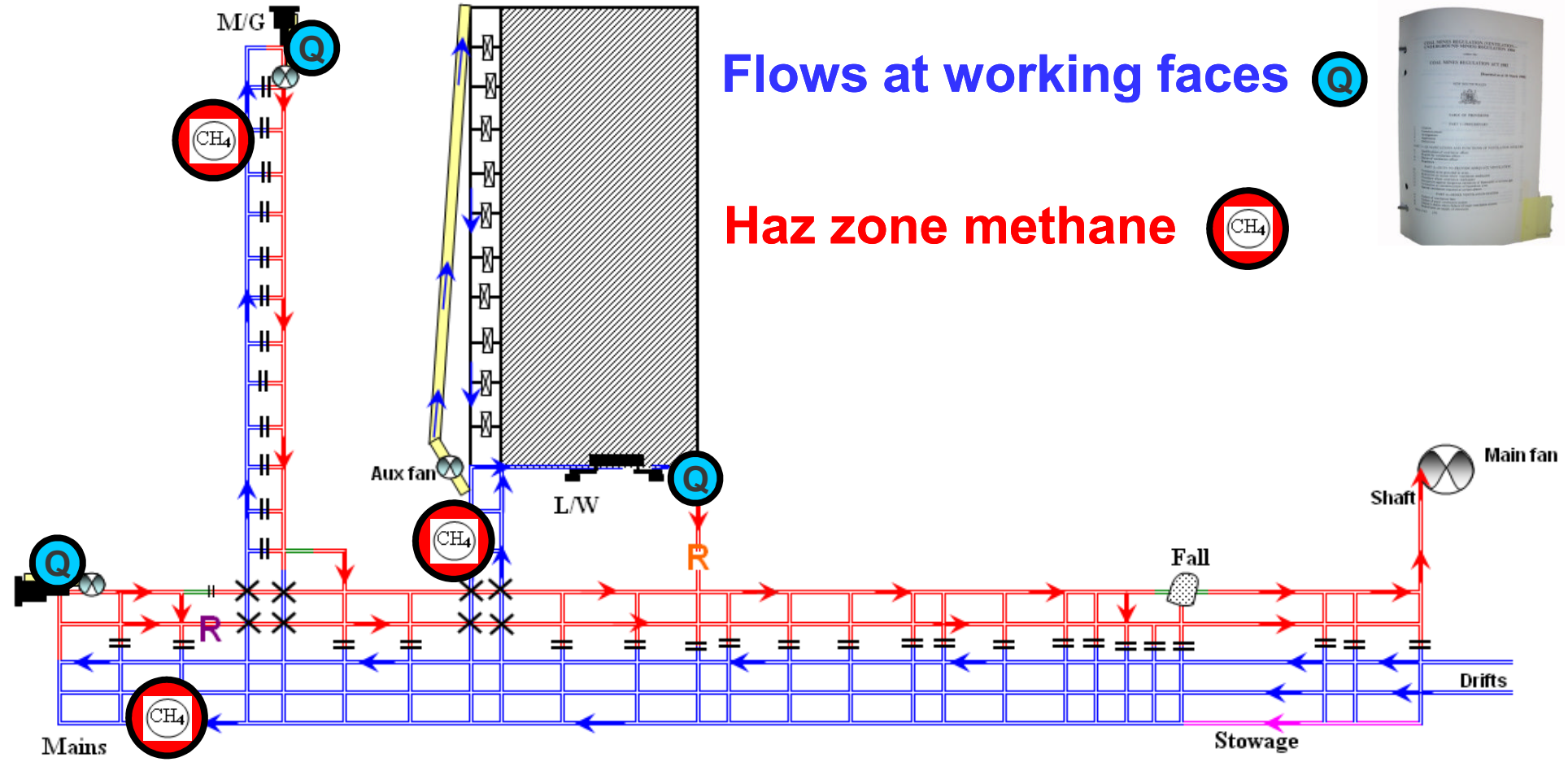
Qnty in Haz zone Intakes Q

Gas in returns CH_4


How far have we come in the three regulation changes since then??
1984
1999
2006
dallasmining.com

Historical regulatory requirements

EXTRA requirements from 1984 regs to comply

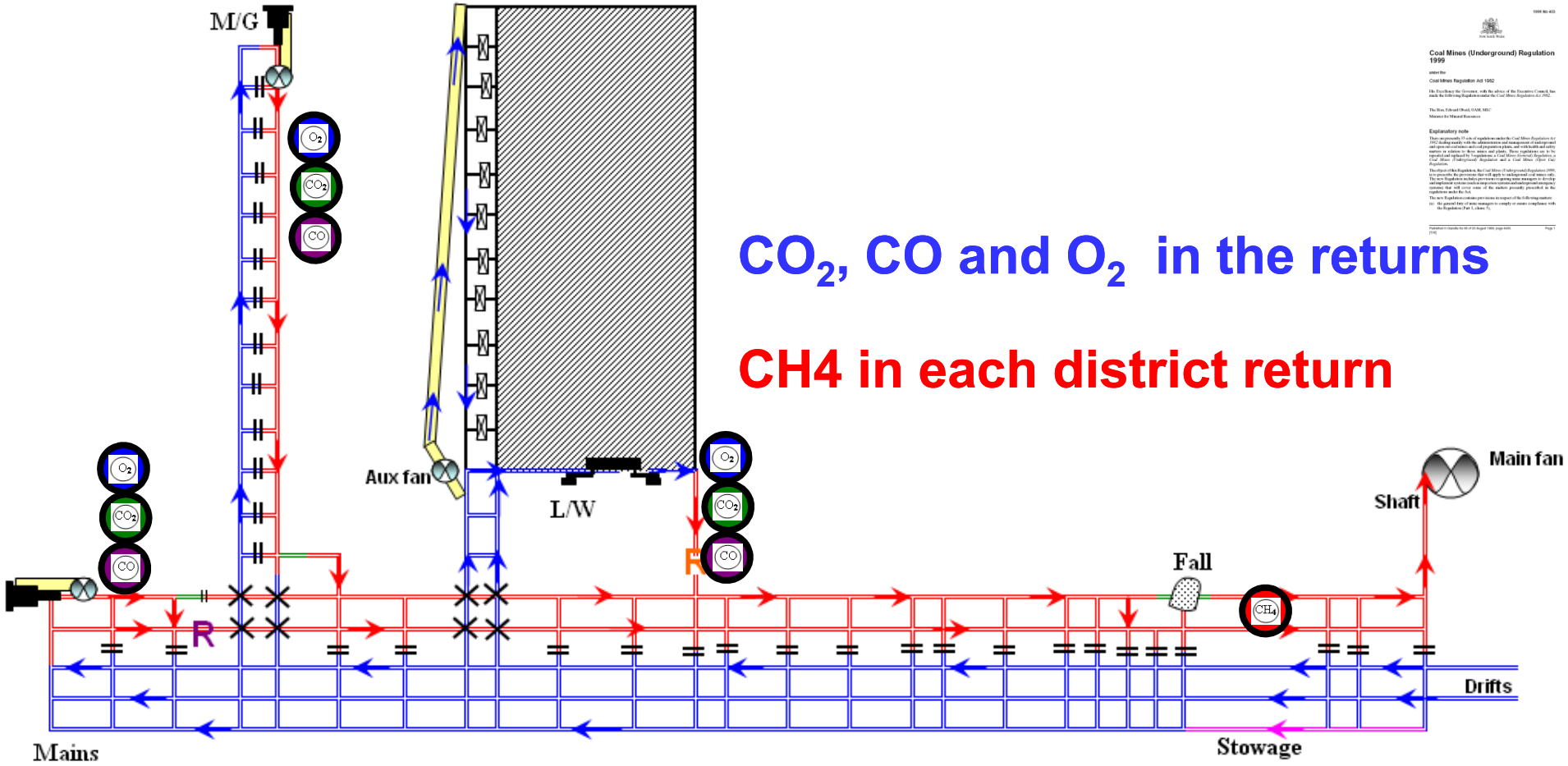


Flows at working faces Q

Haz zone methane CH4

Historical regulatory requirements

EXTRA requirements from 1999 regs to comply



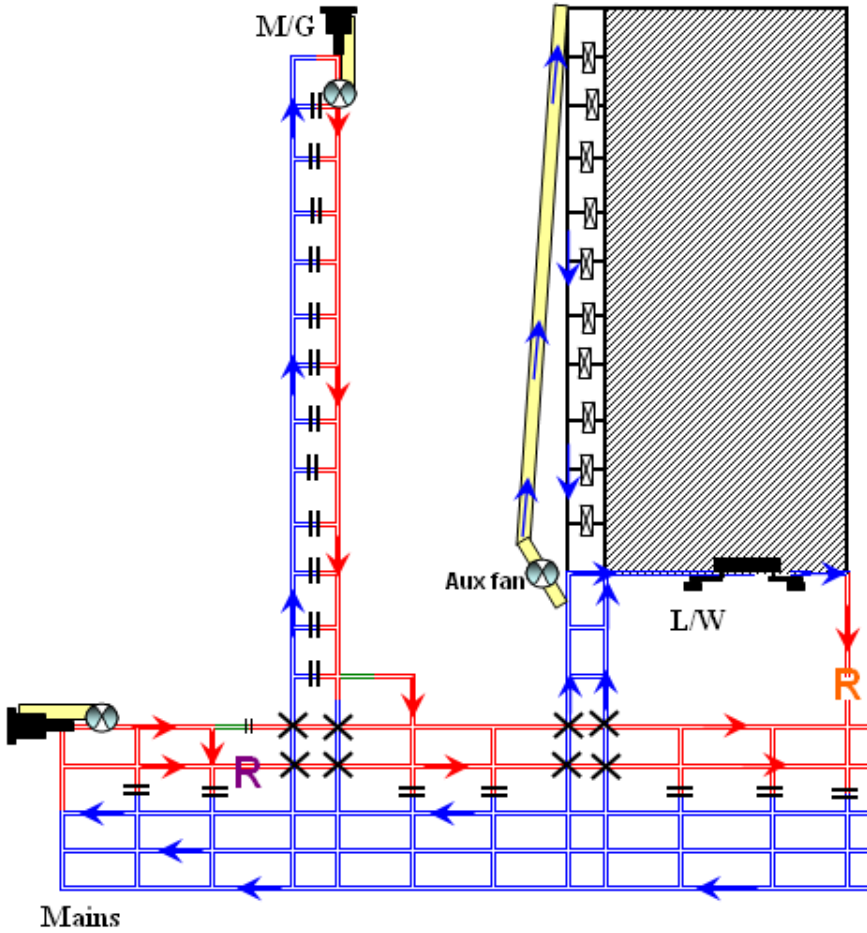
Coal Mines (Underground) Regulation 1999

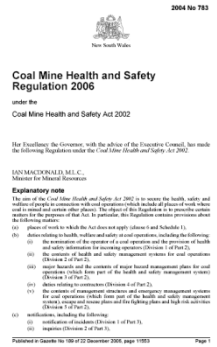
CO_2, CO and O_2 in the returns

CH4 in each district return

Historical regulatory requirements

EXTRA requirements from 2006 regs to comply




2004 No 783

New South Wales

Coal Mine Health and Safety Regulation 2006

under the

Coal Mine Health and Safety Act 2002

Her Excellency the Governor, with the advice of the Executive Council, has made the following Regulation under the *Coal Mine Health and Safety Act 2002*.

IAN MACDONALD, M.L.C.,
Minister for Mineral Resources

Explanatory note

The aim of the *Coal Mine Health and Safety Act 2002* is to secure the health, safety and welfare of people in connection with coal operations (which includes all places of work where coal is mined and certain other places). The object of this Regulation is to prescribe certain matters for the purposes of that Act. In particular, this Regulation contains provisions about the following matters:

(a) places of work to which the Act does not apply (clause 6 and Schedule 1),

(b) duties relating to health, welfare and safety at coal operations, including the following:

(i) the duties of the operator of a coal operation and the provision of health and safety information for incoming operators (Division 1 of Part 2),

(ii) the contents of health and safety management systems for coal operations (Division 2 of Part 2),

(iii) major hazards and the contents of major hazard management plans for coal operations (which form part of the health and safety management system) (Division 3 of Part 2),

(iv) duties relating to contractors (Division 4 of Part 2),

(v) the contents of management structures and emergency management systems (which form part of the health and safety management system), emergency plans and rescue plans and fire fighting plans and high risk activities (Division 5 of Part 2),

(c) notifications, including the following:

(i) notification of incidents (Division 1 of Part 3),

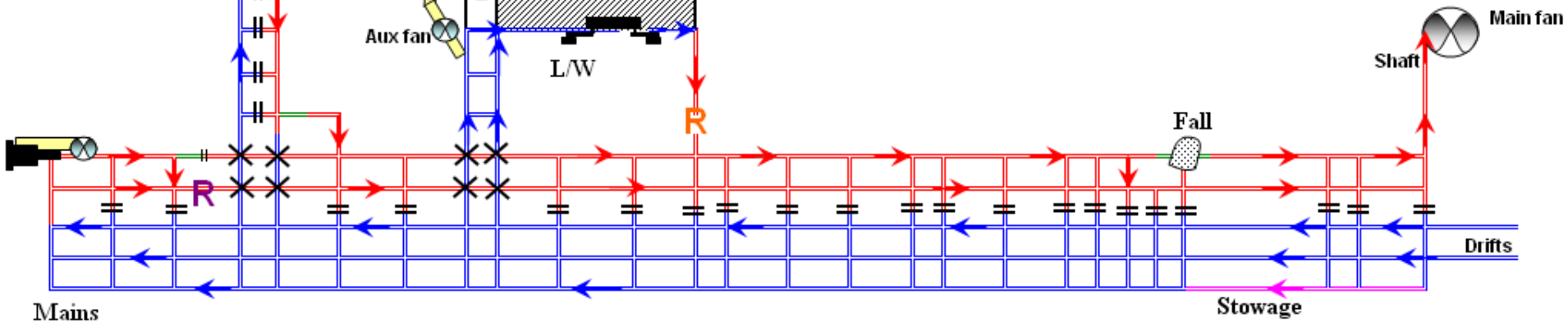
(ii) inquiries (Division 2 of Part 3),

Published in Gazette No 186 of 22 December 2006, page 11953

Page 1

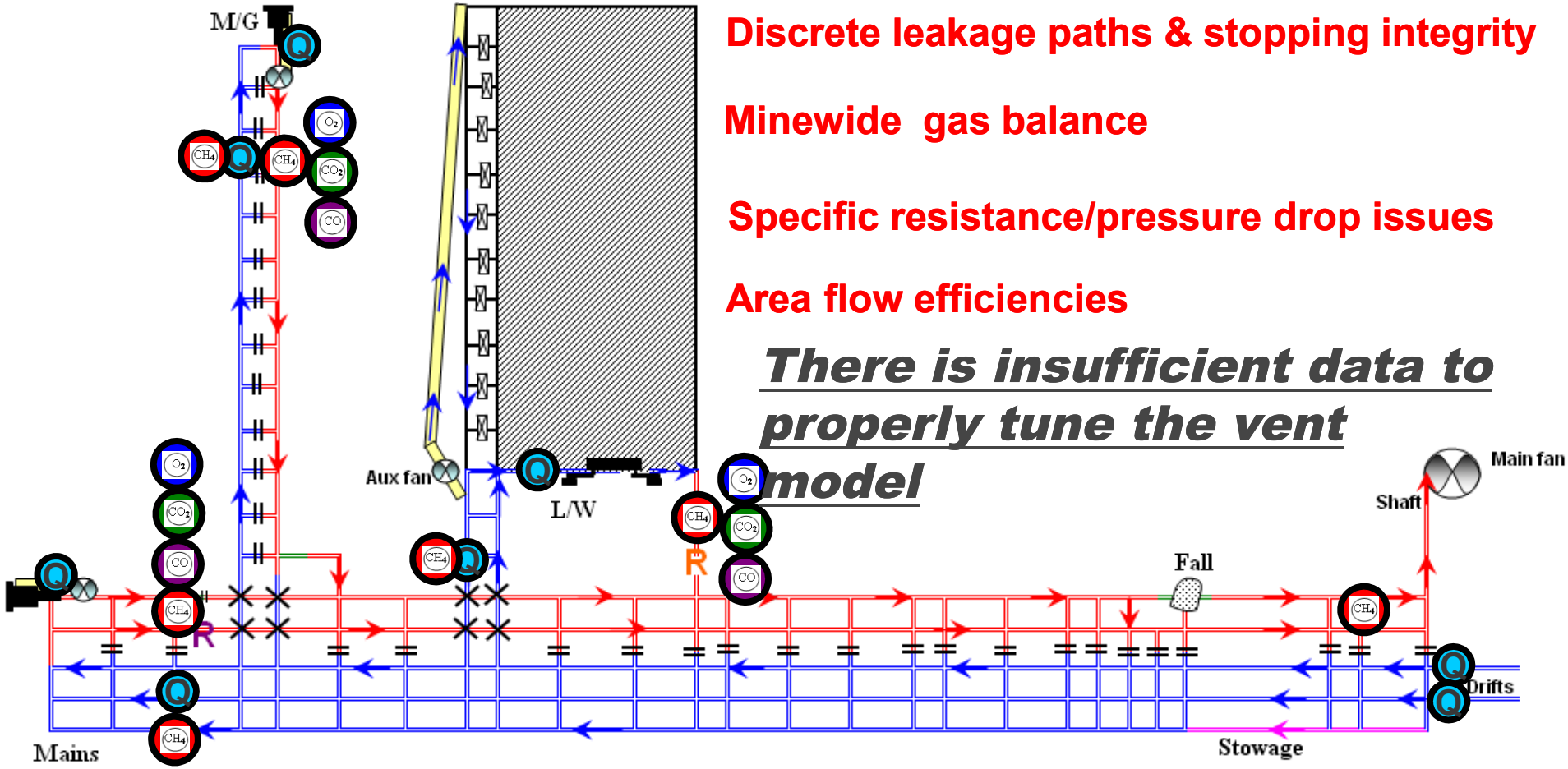
No Real Change:

The word “district” was changed to “split”



The total required data is shown below.

It is a start but will not help with properly quantifying:



Discrete leakage paths & stopping integrity

Minewide gas balance

Specific resistance/pressure drop issues

Area flow efficiencies

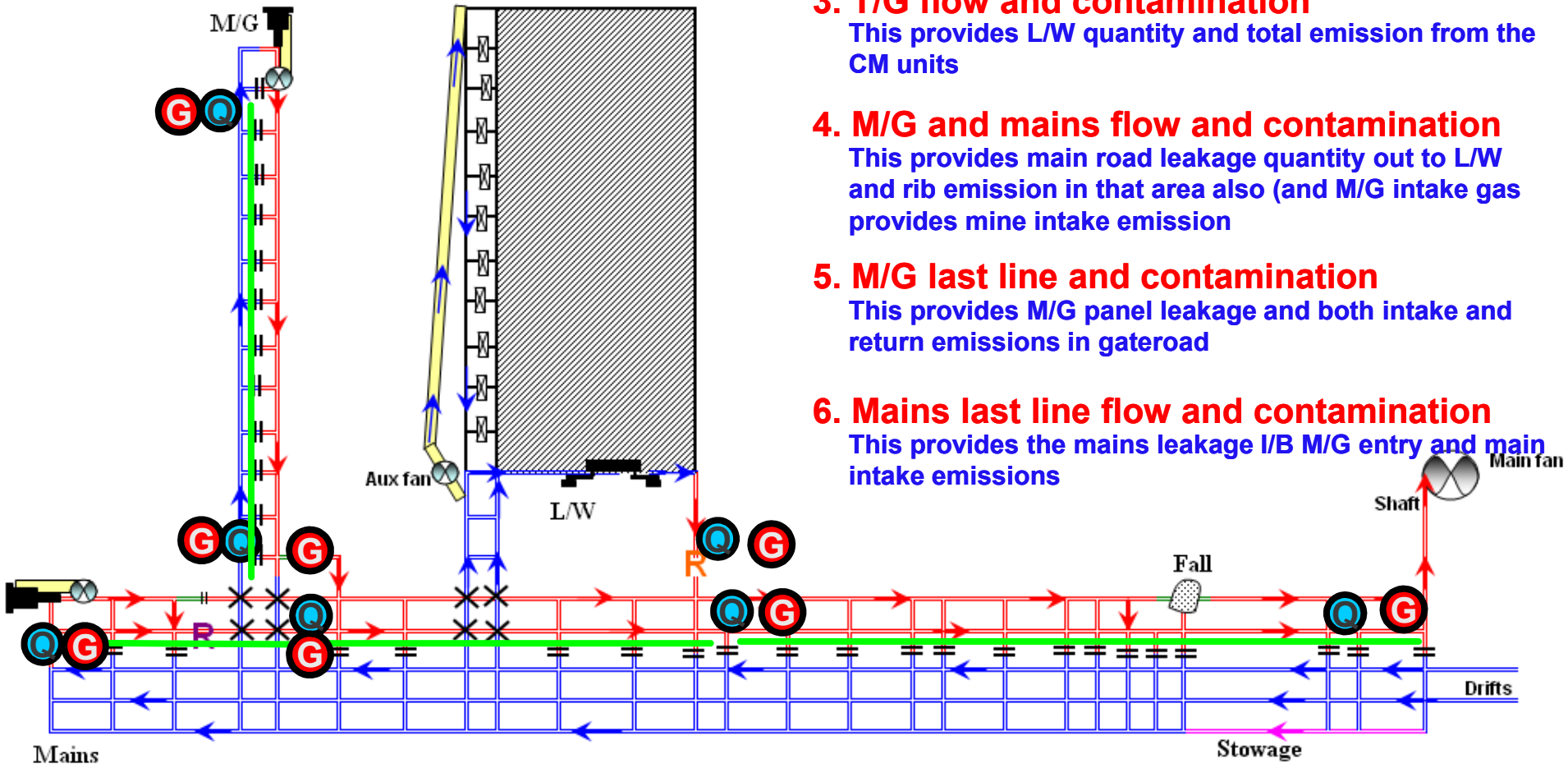
There is insufficient data to properly tune the vent model

Underground station sites need strategic planning. Individual circuit diagnosis is required.

Keep the data collection simple!!

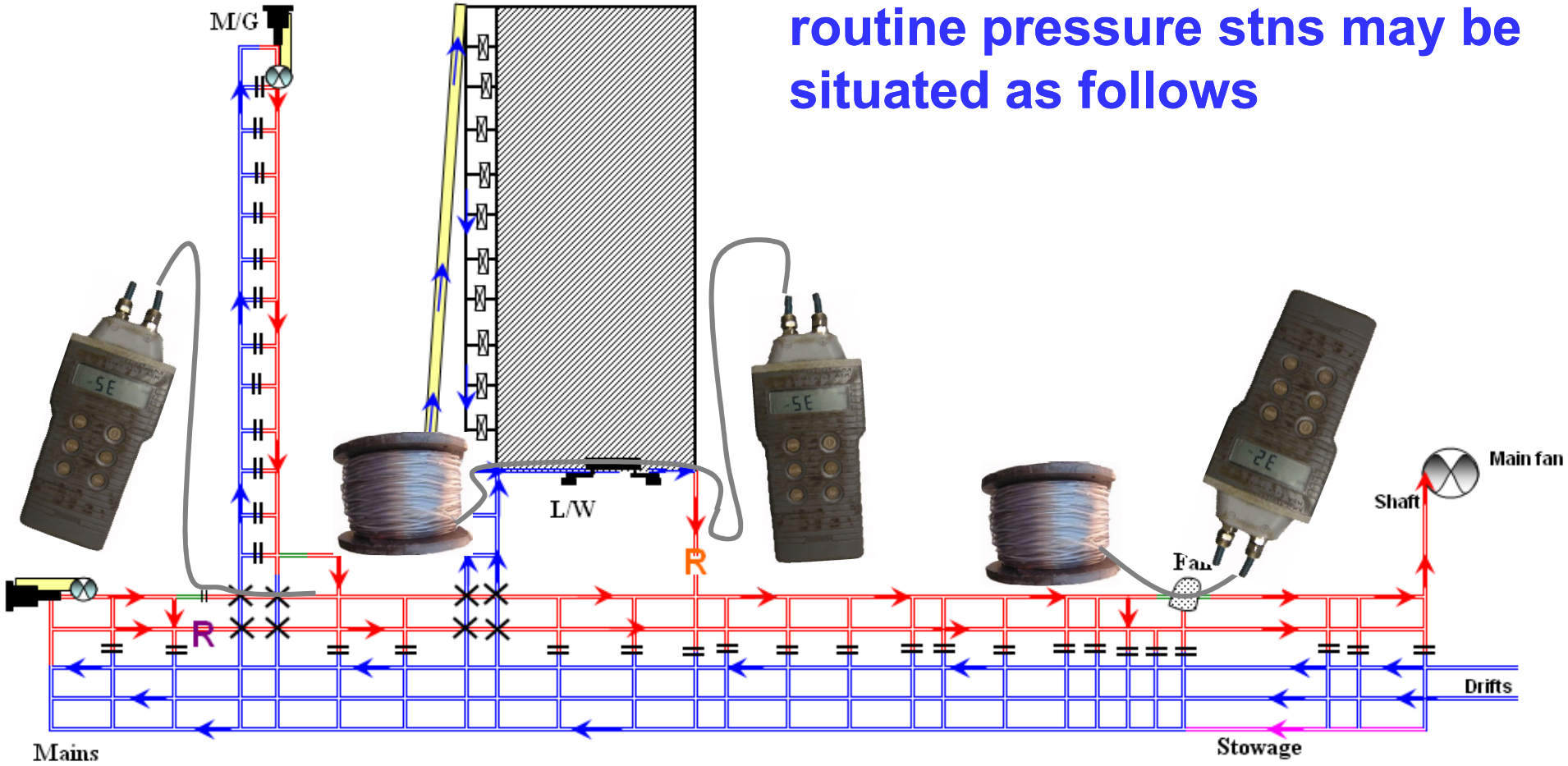
Minimise the number of stns, consider access etc

1. **Main return flow and contamination**
   This provides total gas make and mine flow
2. **O/B L/W flow and contamination**
   This provides outbye rib emission and mains leakage
3. **T/G flow and contamination**
   This provides L/W quantity and total emission from the CM units
4. **M/G and mains flow and contamination**
   This provides main road leakage quantity out to L/W and rib emission in that area also (and M/G intake gas provides mine intake emission
5. **M/G last line and contamination**
   This provides M/G panel leakage and both intake and return emissions in gateroad
6. **Mains last line flow and contamination**
   This provides the mains leakage I/B M/G entry and main intake emissions

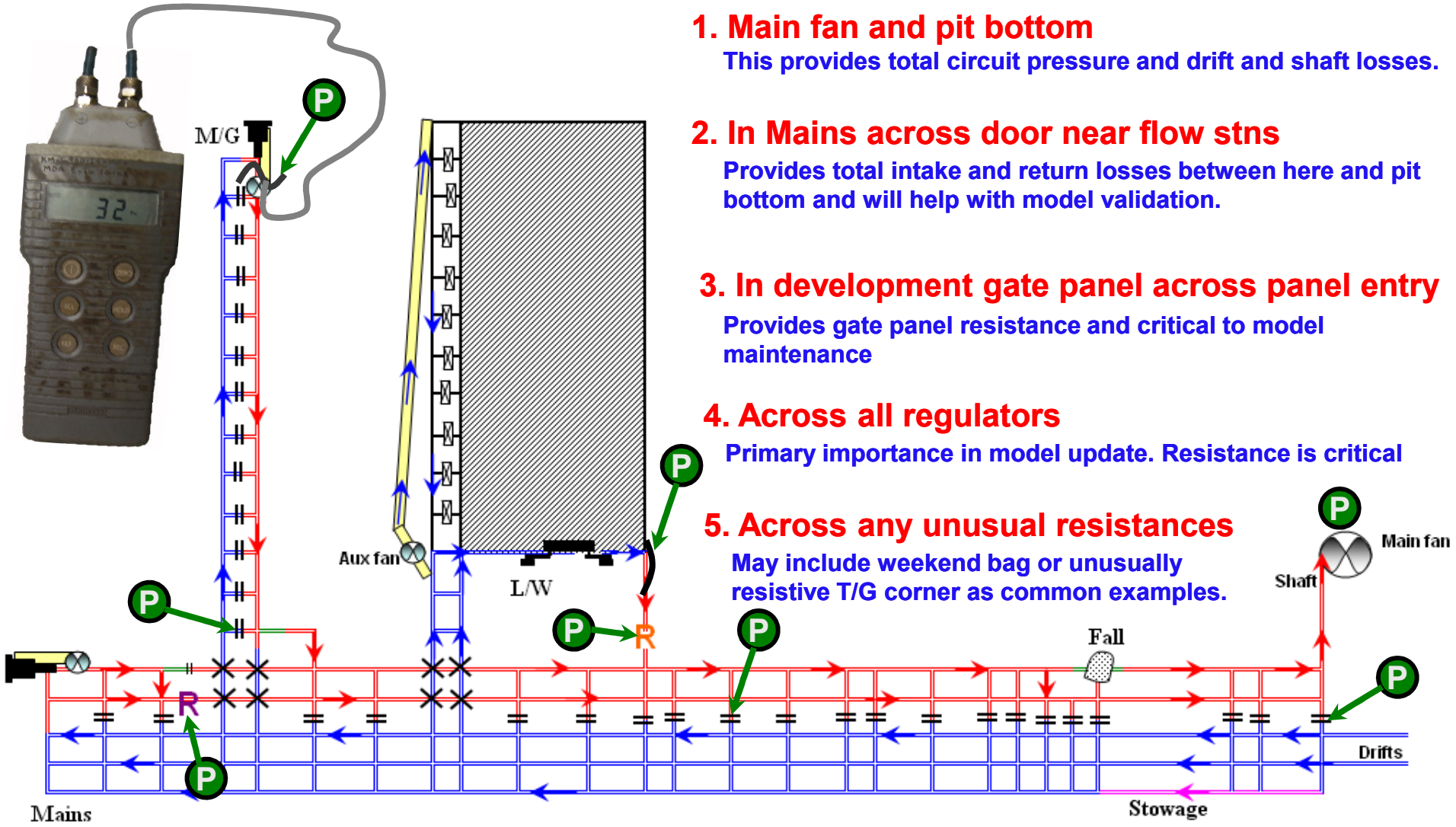


Lets assume fixed resistances have been measured such as

And you actually have a *working model* then typical routine pressure stns may be situated as follows



Routine Pressure Stations



1. Main fan and pit bottom

This provides total circuit pressure and drift and shaft losses.

2. In Mains across door near flow stns

Provides total intake and return losses between here and pit bottom and will help with model validation.

3. In development gate panel across panel entry

Provides gate panel resistance and critical to model maintenance

4. Across all regulators

Primary importance in model update. Resistance is critical

5. Across any unusual resistances

May include weekend bag or unusually resistive T/G corner as common examples.

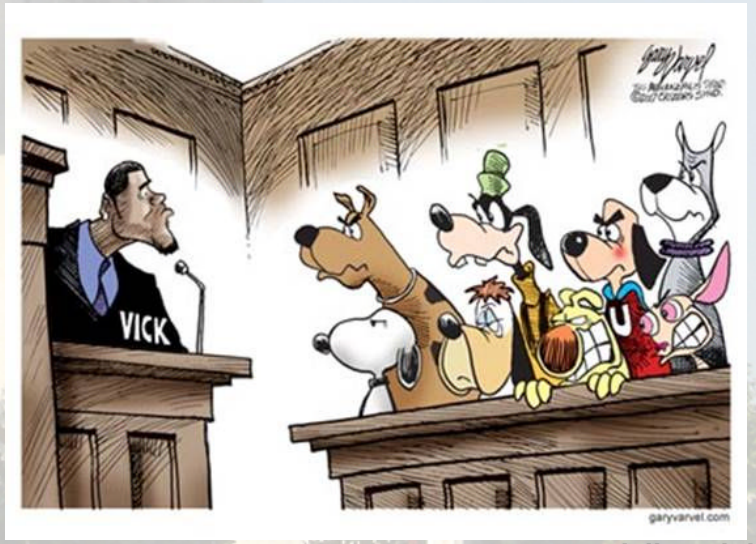

This above flow, gas, pressure and fan data will allow the generation of the whole report.
(Along with any other mandatory data to satisfy the regs of course)
Importantly it will ensure the ventilation model can be regularly tuned also.
But first the report!!!
More about the model later .
dallasmining.com

The report is both an operational and communicational/training tool.

Operationally it will enable the mine to adequately delineate the circuit on a monthly basis and maintain an accurate predictive model

As a training tool its value is unlimited if distributed to key personnel around the site over an extended period

The jury is out on which one adds the most value



Operationally the following may be included

Fan performance records

Often discounted as irrelevant but this is very narrow thinking

SOUTHFORK MINE **MARCH 2015**

MAIN FAN INFORMATION

No 1 Fan Running		
Airflow	98 m3/s	Monitoring
Fan Speed	450 rpm	Monitoring
Current	341 Amps	Monitoring
Voltage	311 Volts	Monitoring
Power	149 Kw	Monitoring

No 2 Fan Running		
Airflow	97 m3/s	Monitoring
Fan Speed	455 rpm	Monitoring
Current	300 Amps	Monitoring
Voltage	313 Volts	Monitoring
Power	138 Kw	Monitoring

Shaft Collar Pressure	1550 Pa	
Mine Resistance	0.04578	Gauls

MINE AIRFLOW SUMMARY

	m3/s	Comments
Total Airflow	195	From Monitoring
Total Intakes	184	Return flow assumed equal this month
Panel last lines	131	=Total LW, M/G and Mains last lines
and unintentional	53	= Total Intake minus total panel last line quantities

FACE AREA VENTILATION EFFICIENCY

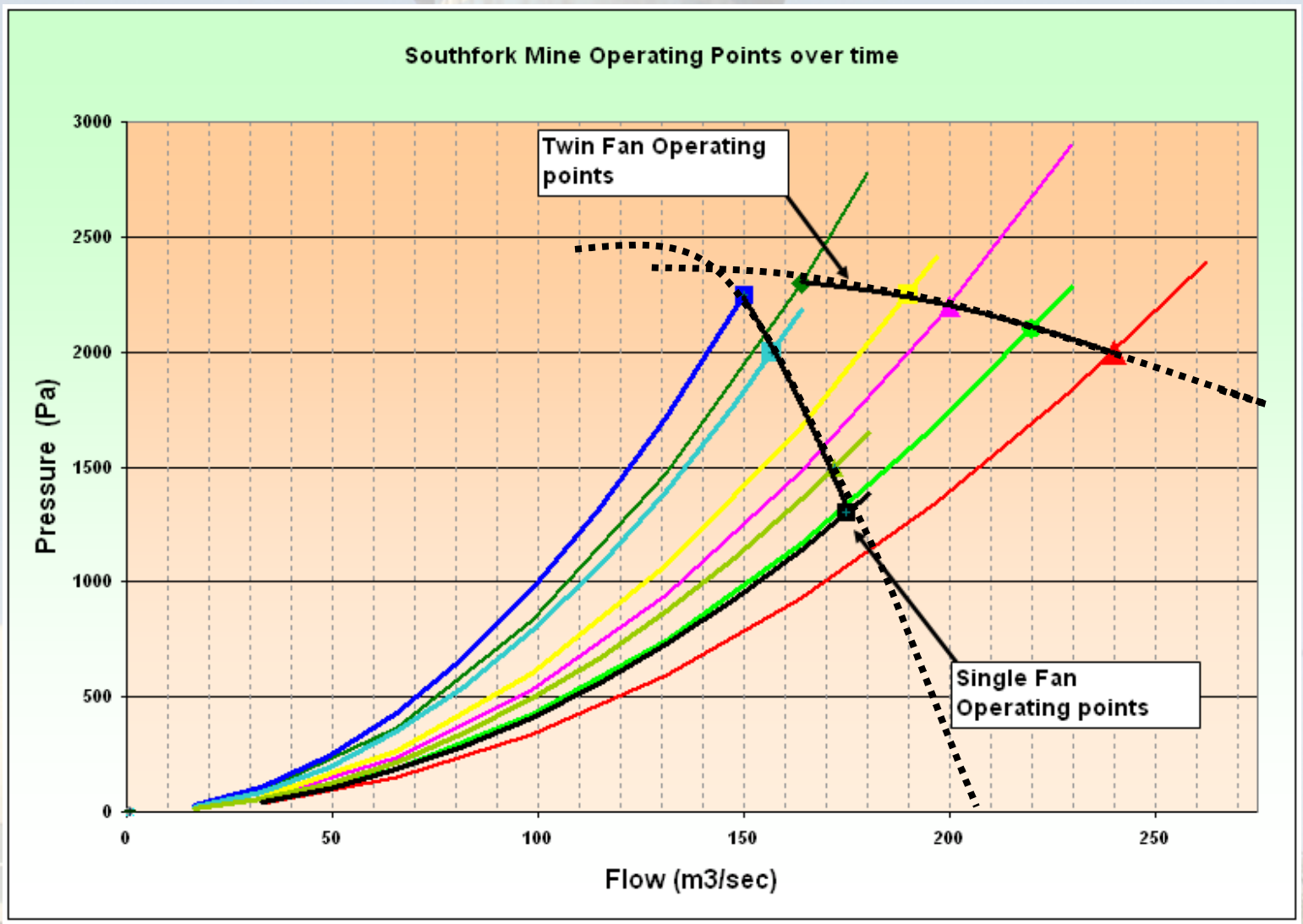
		Comments
Last line Total	71%	= (Total Panel flows)/total intakes x 100

PANEL AIRFLOW EFFICIENCYS

		Comments
M/G Efficiency from entry to last line	82%	As measured

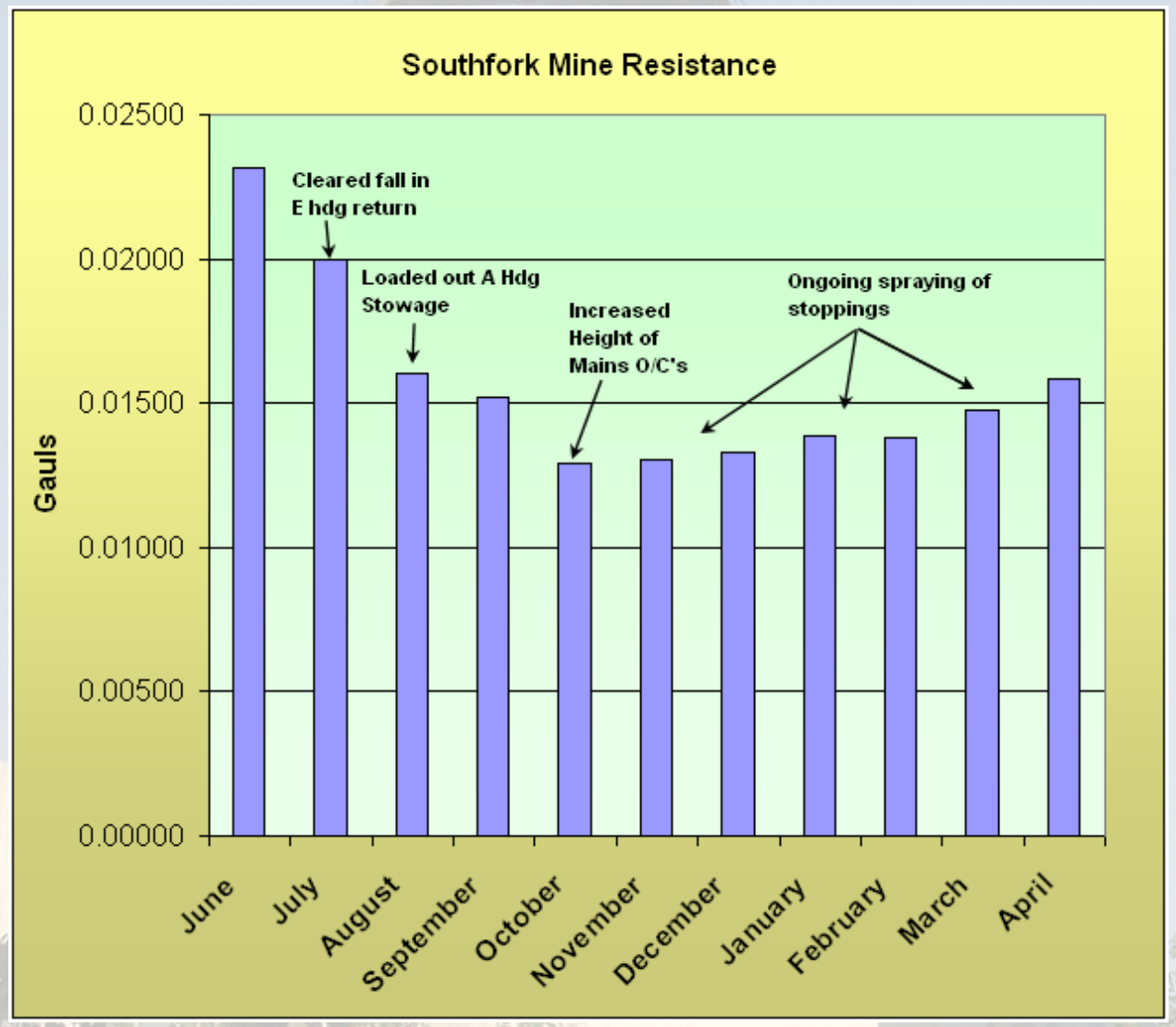
The changing mine resistance over time will help validate existing fan curve date. Not bad for 1 minutes work a month!!!

Various operating points across a range of duties will identify these portions of the curves



This data is very useful if curves are unavailable

Mine Resistance is a helpful output



It will highlight ongoing subtle changes and show trends

Raw Data Pages

This is the U/G base data for all the report outputs

SOUTHFORK COLLIERY VENTILATION REPORT — **DATA ENTRY BASE PAGES** — **JULY 2015**

DATE	LOCATION	VEL m/s	AREA m2	QUANT m3/s	PREV QUANT	Variance %	CH4 %	CH4 l/sec	CO ppm	CO l/min	TEMP °C W	TEMP °C D	COMMENT
	MAIN INTAKES										7.5	8.0	Surface temperature
24-Aug	PORTAL ENTRY A HEADING	4.02	15.60	62.7			0.0	0					Remeasured station
24-Aug	PORTAL ENTRY B HEADING	3.54	16.12	57.1			0.0	0					Remeasured station 26 m O/B 2 C/T
24-Aug	PORTAL ENTRY C HEADING	3.36	16.90	56.8			0.0	0					Remeasured station 26 m O/B 2 C/T
24-Aug	CONVEYOR DRIFT INTAKE	3.56	24.22	86.2			0.0	0					
	TOTAL MINE INTAKES		TOTAL	263	267	-2%		0					
	V5 MAINGATE INTAKES												
24-Aug	W5 M/G C Hdg 0 to 1 line	2.32	14.42	33	34	-2%					20.0	22.0	New stn under overcast at panel entry
24-Aug	**MAIN DIPS E 20 to 21 C/T Brattice**	D.P.=	76	Pa									Assists W4 panel flow
24-Aug	**Pressure on O/C at V5 M/G C0**	D.P.=	25	Pa									
	Pressure on belt flaps C 1 to 2 C/T V5 M/G	D.P.=	15	Pa									
	V7 Maingate Intakes (Panel Entry)												
24-Aug	W7 M/G B Hdg 1 to 2 C/T	2.60	18.02	47							15.5	18.0	Total flow to W7 measured O/B flaps at old station
24-Aug	W7 M/G A Hdg 1 to 2 C/T	1.90	16.92	32									Stn re-measured and marked up 28m I/B 1 line
			TOTAL	79	78	1%							Total Intake into W7 M/G
	V7 Maingate Intakes (Inbye 13 line)												
24-Aug	W7 M/G A Hdg 13 to 14 C/T (old belt)	1.38	22.77	31									Stn set up and marked up 17m I/B A13
24-Aug	W7 M/G B Hdg 13 to 14 C/T (travel rd)	2.19	18.20	40							18.0	21.0	Stn set up and marked up 17m I/B B13
			TOTAL	71									Total Flow Inbye 13 C/T
	TOTAL FLOW TO V7 T/G THRU S7A AND S7B		TOTAL	8									Total leakage from panel entry to 13 C/T Intakes
	V7 Tailgate Intakes (Panel Entry)												
24-Aug	W7 T/G B Hdg 1 to 2 C/T	2.56	17.30	44							17.5	20.0	Stn 31m I/B chute
	TOTAL V7 T/G FLOW AT ENTRY		TOTAL	44	45	-2%							
	TOTAL V7 T/G FLOW AT V7 A INSTALL		TOTAL	52									By difference
	N5 and N6 SEAL PATH AND PUMP INTAKES												
24-Aug	E7 T/G seal path flow	0.74	18.60	14			0.0	0	0	0	17.5	21.0	New stn set up 13m O/B 1 line E7 T/G A Hdg
24-Aug	A Hdg Return 32 to 33 line Main Dips	1.00	18.19	18			0.1	18					Stn 16m I/B 32 line in A Hdg Main Dips
24-Aug	**Press on A Hdg Reg 31 to 32 line**	D.P.=	65	Pa									New regulator in Eastern return

No appreciable change in the period

No appreciable change in the period

No appreciable change in the period

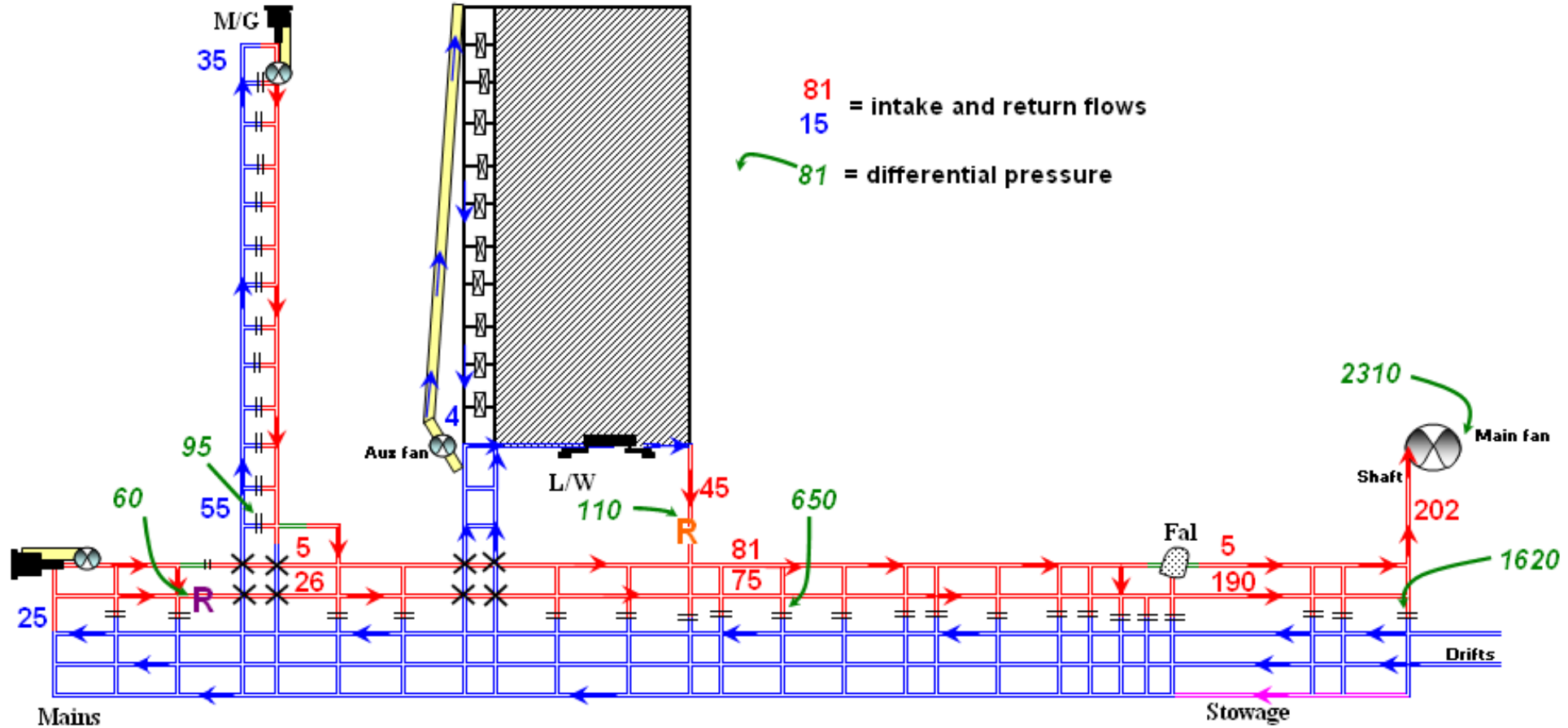
No appreciable change in the period

It Shows:

- Areas
- Velocities
- Gas readings
- Station locations
- Pressure differentials
- Temperatures etc etc

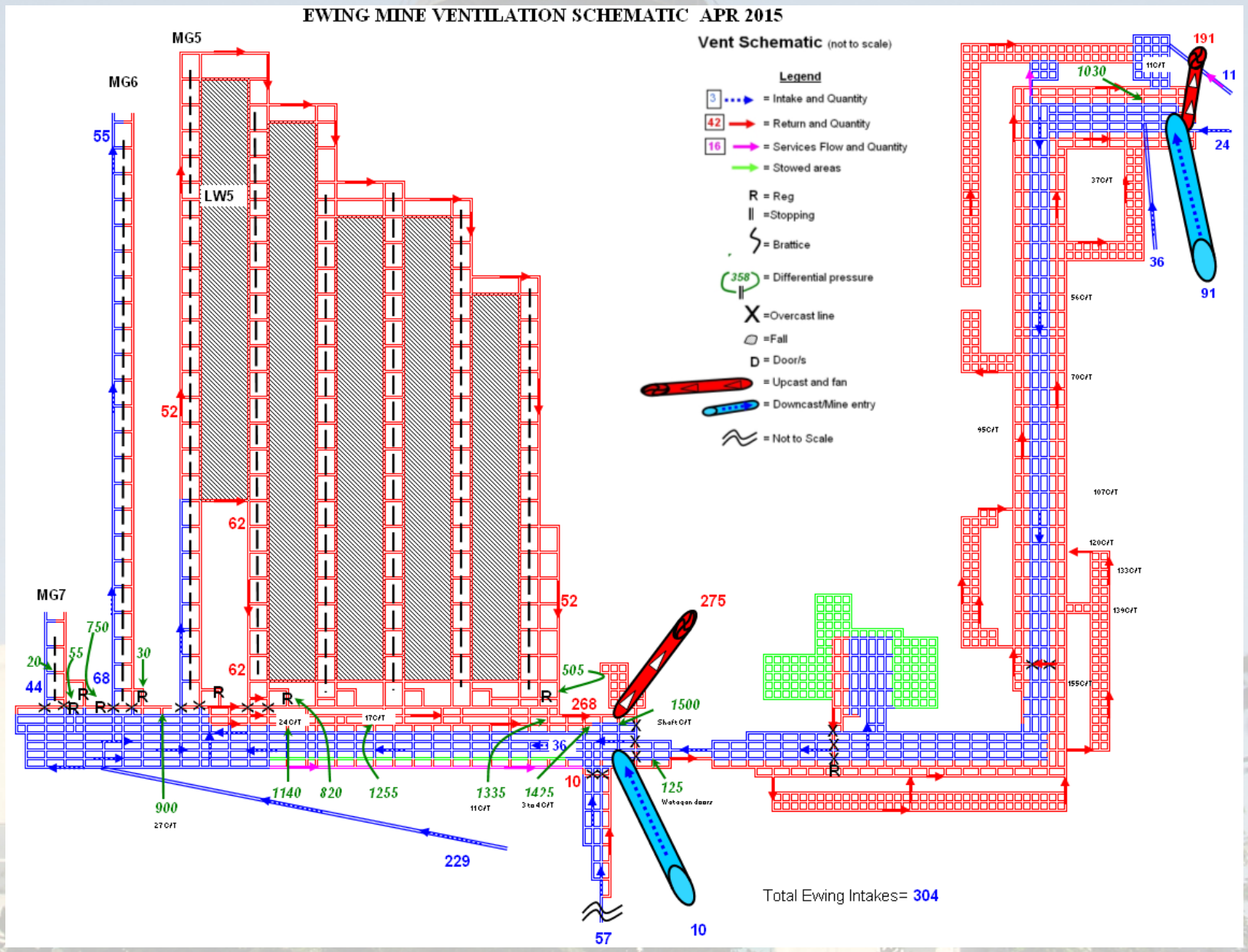
This is valuable for substantiation of readings by the Deputies or U/M's

Schematics



These can vary from simple schematics like our Southfork example

To more detailed circuits depending on the extent of the mine



But exactly the same theory applies relating to station locations

These schematics may appear to be a "nice to have"

BUT

The model cannot be properly updated without a graphical interface

There are just too many mouse clicks and repetitive adjustments to use the raw data!!

You could enter the data freehand on a plan for the same result but the schematic is a powerful circuit training tool for the ERZ controllers.

Flow Distribution

Where does all the air go to?

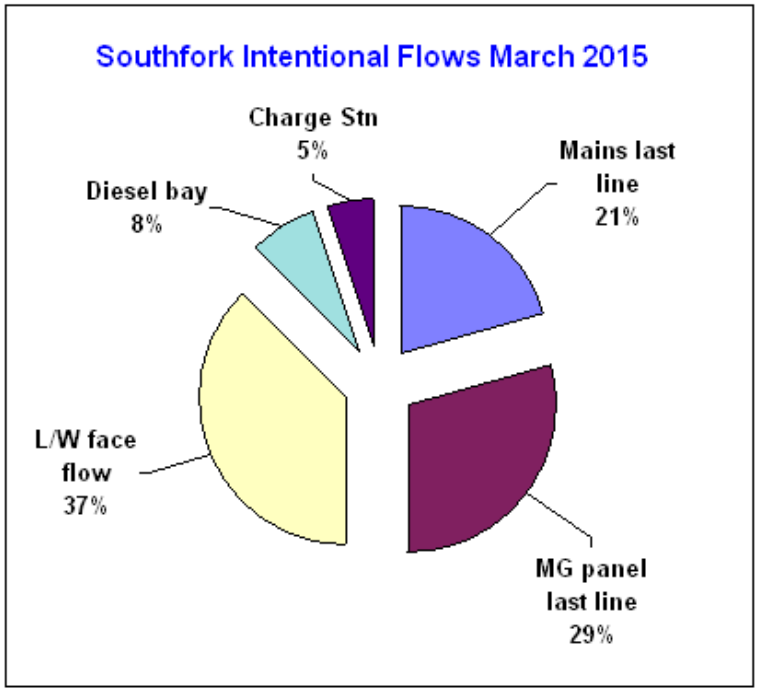
SOUTHFORK MINE MARCH 2015

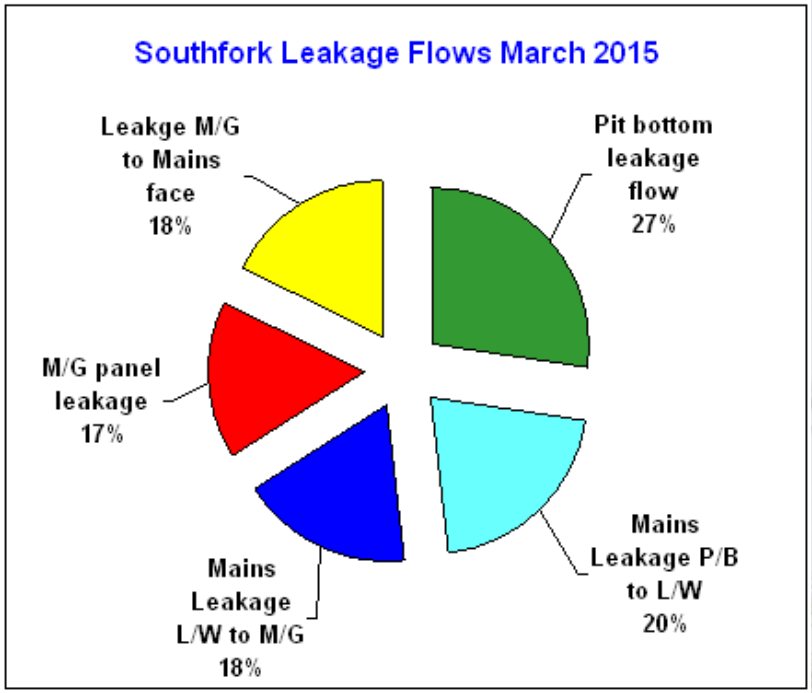
Leakage/Flow Summary

Intentional Flows	% of total flow	Quantity (m3/s)
Mains last line	21	25
MG panel last line	29	35
L/W face flow	37	45
Diesel bay	7	9
Charge Stn	5	6
Total Return from Survey = 193		120
Total Flow accounted for = 193		
Flow/Leakage as % of Total Intake = 100		

Unintentional Leakage Flows	% of total flow	Quantity (m3/s)
Pit bottom leakage flow	27	20
Mains Leakage P/B to L/W	20	15
Mains Leakage L/W to M/G	17	13
M/G panel leakage	16	12
Leakge M/G to Mains face	17	13
Leakge from M/G 3 entry to last line	1	1
		73

Intentional flow (face efficiency) = **62%**

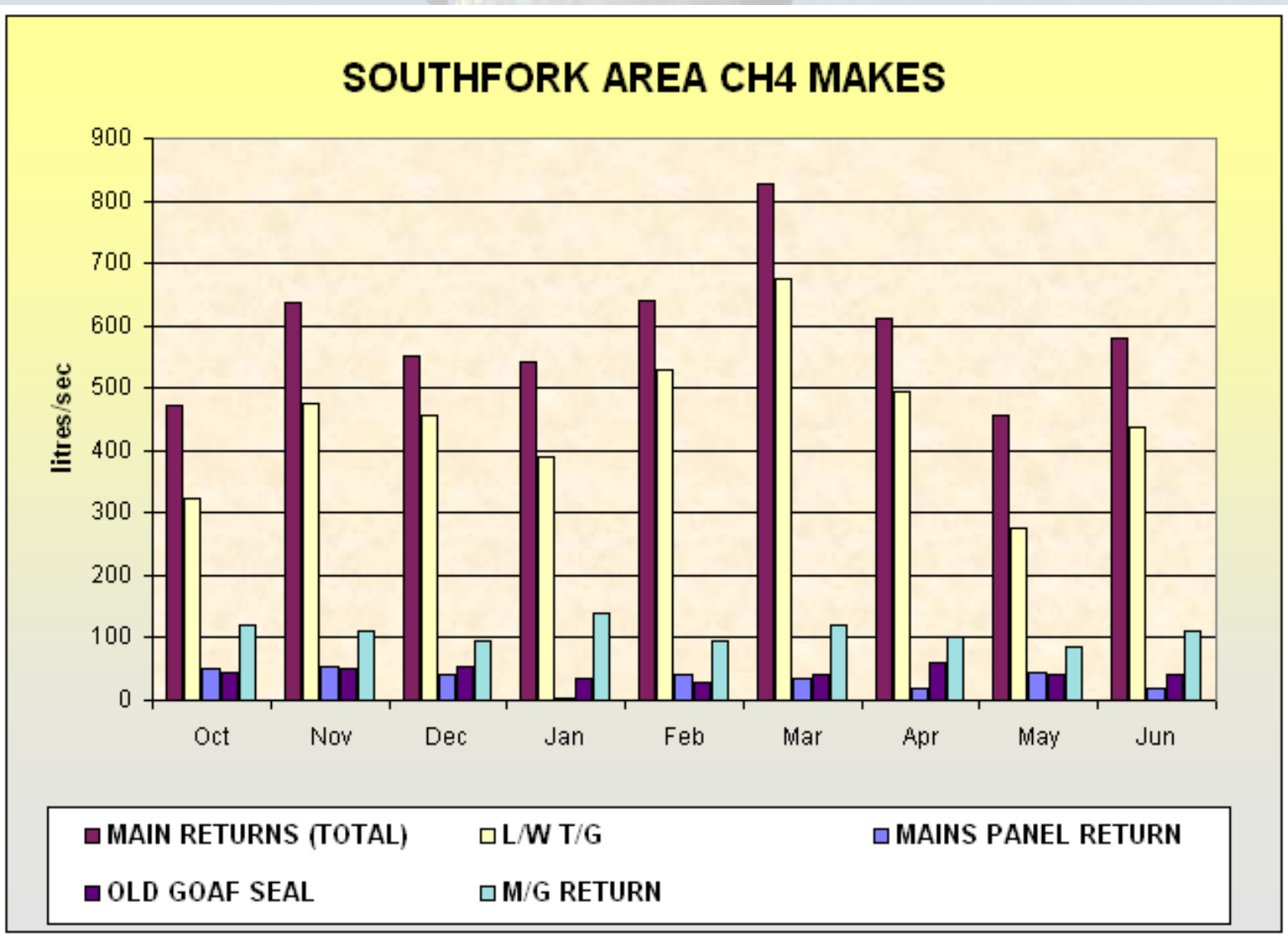




This info flushes straight out of the raw data

Gas Balance

Where is the gas made throughout the mine??



Again the graph is flushed out of the raw data

Don’t panic!!

It looks like a lot of work!!

BUT

All the above data comes from the U/G base pages!!!

Summary is:

Put the stations in the right place

Record the gas concentrations with the flows

Get the pressures as you walk around

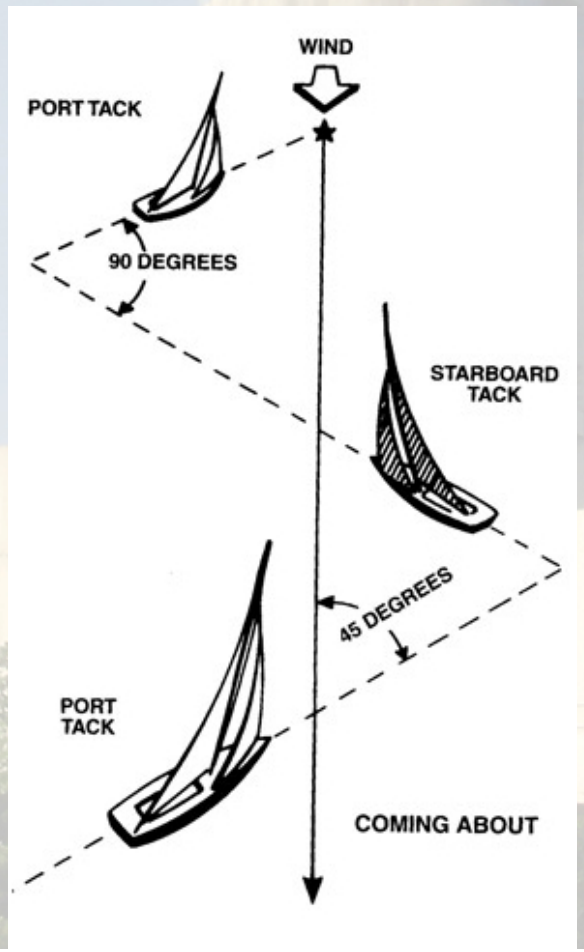
Let Excel do a lot of the work

Update and include the validated Ventsim model

The model should be validated monthly against the measured results

Depending on the U/G environment some months it will be a better replica than others

Model tuning is like sailing



If you don't do the monthly tack you may end up totally lost

Why would you want an accurate model?

Predictive analysis can be done at any time which may assist with:

Long term circuit capacity planning

Panel capacity like "will the M/G make the distance"?

Confident minor to major ventilation changes

The effect of losing a main fan at anytime

The time taken and route of flow of stonedust, smoke or other contaminants.

The ability to do complex ventilation changes utilising pressures only, and in a fraction of the traditional timeframe, *and thus far more safely.*

But remember the model is not a clone and will never be “exactly” correct

It is not a “dolly”

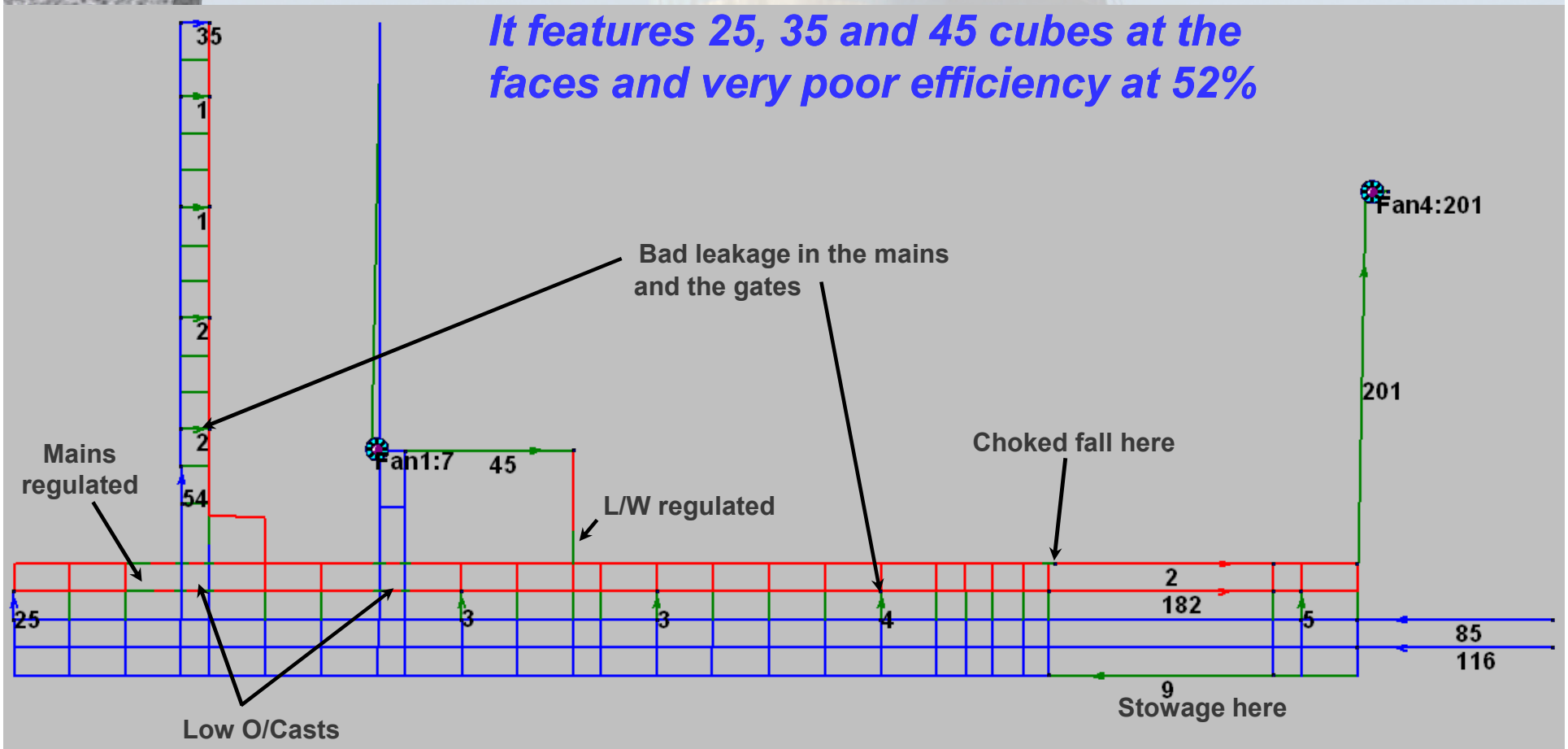
It is more of a mini-me:

Its limitations need to be understood and appreciated

The “Southfork” finished model

The Ventsim file looks like this and is then included in the report and responsible for coming circuit adjustments.

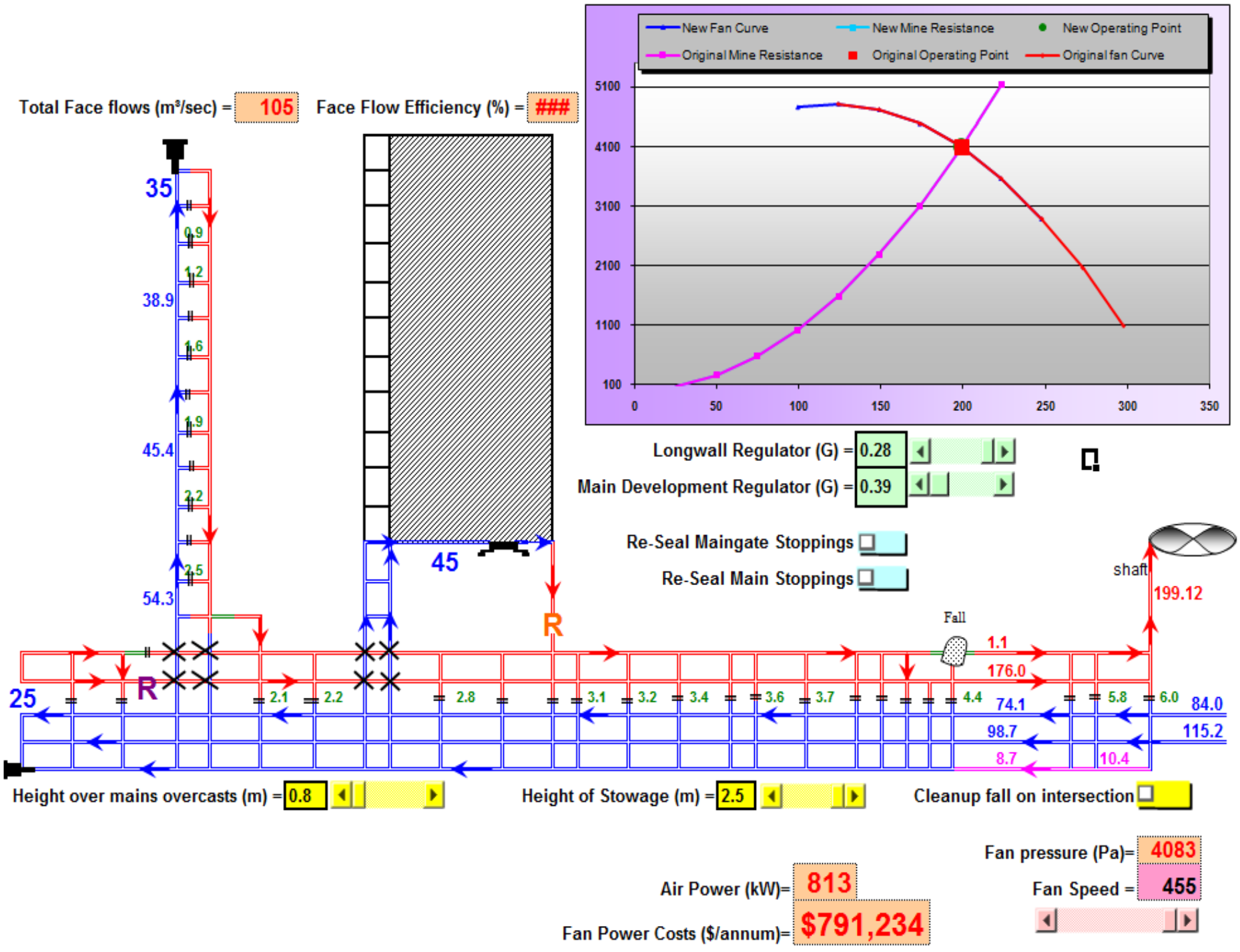
It features 25, 35 and 45 cubes at the faces and very poor efficiency at 52%



Improvement process can be demonstrated as follows:

Click for interactive excel model

dallasmining.com


Total Face flows (m³/sec) = 105
Face Flow Efficiency (%) = ###
New Fan Curve
New Mine Resistance
New Operating Point
Original Mine Resistance
Original Operating Point
Original fan Curve
5100
4100
3100
2100
1100
100
0
50
100
150
200
250
300
350
Longwall Regulator (G) = 0.28
Main Development Regulator (G) = 0.39
Re-Seal Maingate Stoppings
Re-Seal Main Stoppings
35
38.9
45.4
54.3
45
R
R
25
shaft
199.12
Fall
1.1
176.0
74.1
98.7
8.7
10.4
84.0
115.2
0.9
1.2
1.6
1.9
2.2
2.5
2.1
2.2
2.8
3.1
3.2
3.4
3.6
3.7
4.4
5.8
6.0
Height over mains overcasts (m) = 0.8
Height of Stowage (m) = 2.5
Cleanup fall on intersection
Fan pressure (Pa)= 4083
Air Power (kW)= 813
Fan Speed = 455
Fan Power Costs ($/annum)= $791,234

As a training tool the reports knows no bounds

At a Northern Bowen basin mine it has been made available to officials for just on 5 years.

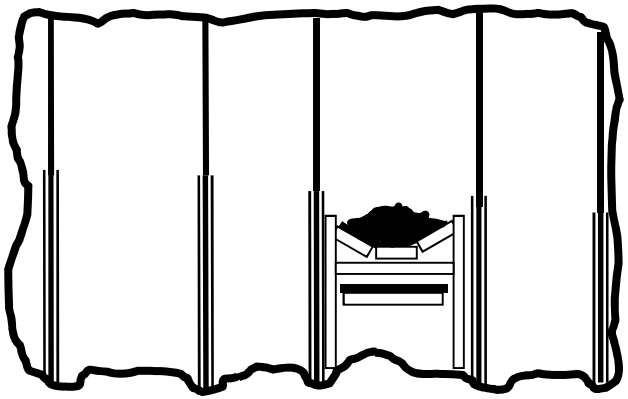
Their general knowledge of the circuit and ventilation principles is outstanding.

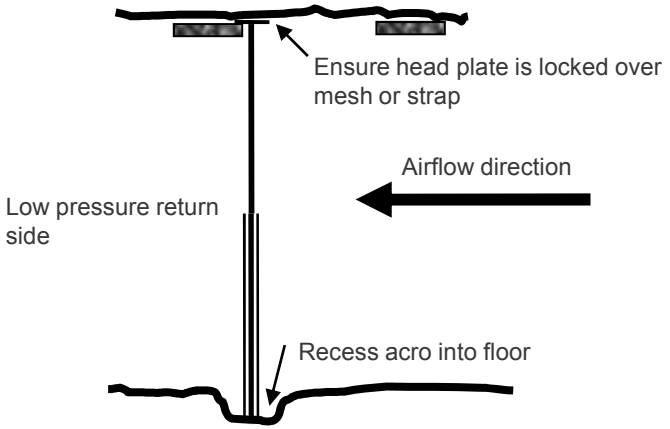
I regularly have Deputies ring me to discuss the contents.

To encourage this I insert a myriad of info to keep them informed and interested such as:

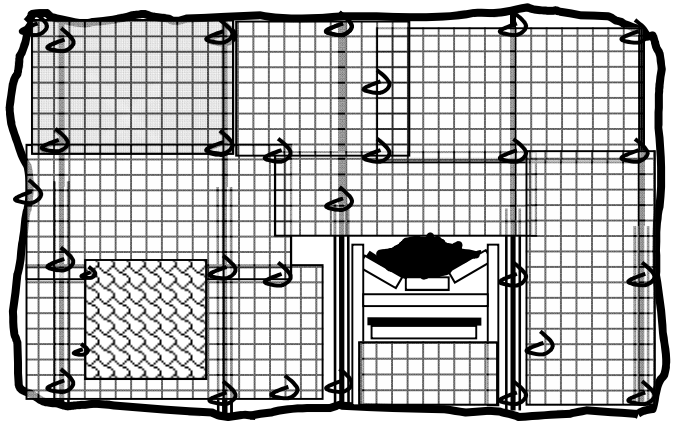
Various Appliance standards

Erect frame

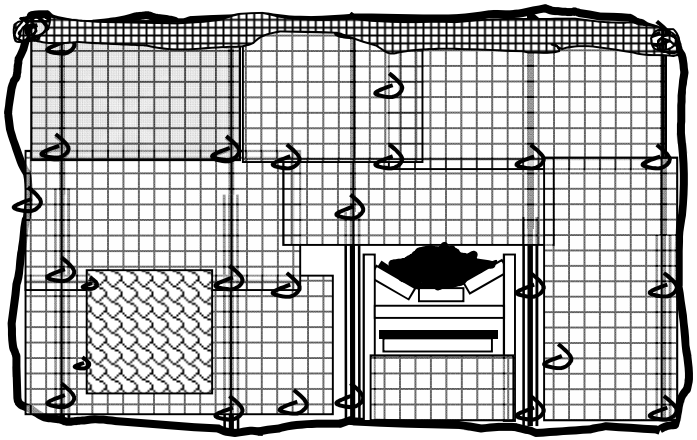




Hang Mesh



Roll up bag



Calculating Gas Makes

Gas make (litres/sec) = Airflow (m3/sec) x methane concentration (%) x 10

Example: You measure a cross-sectional roadway area of 12.6m^2 and a velocity of the air in that roadway is measured at 2.2m/sec and there is a gas concentration on the XAM 2000 of 1.6% CH4. What is the gas make?

Solution:

Quantity = V x A
= 2.2 x 12.6
= 27.7 m^3/sec airflow.

Gas make = 27.7 x 1.6 x 10
= 443 litres/sec of methane.

I have included a Methane Make calculator over for the Deputies to use.

Gas make calculator (litres/second)

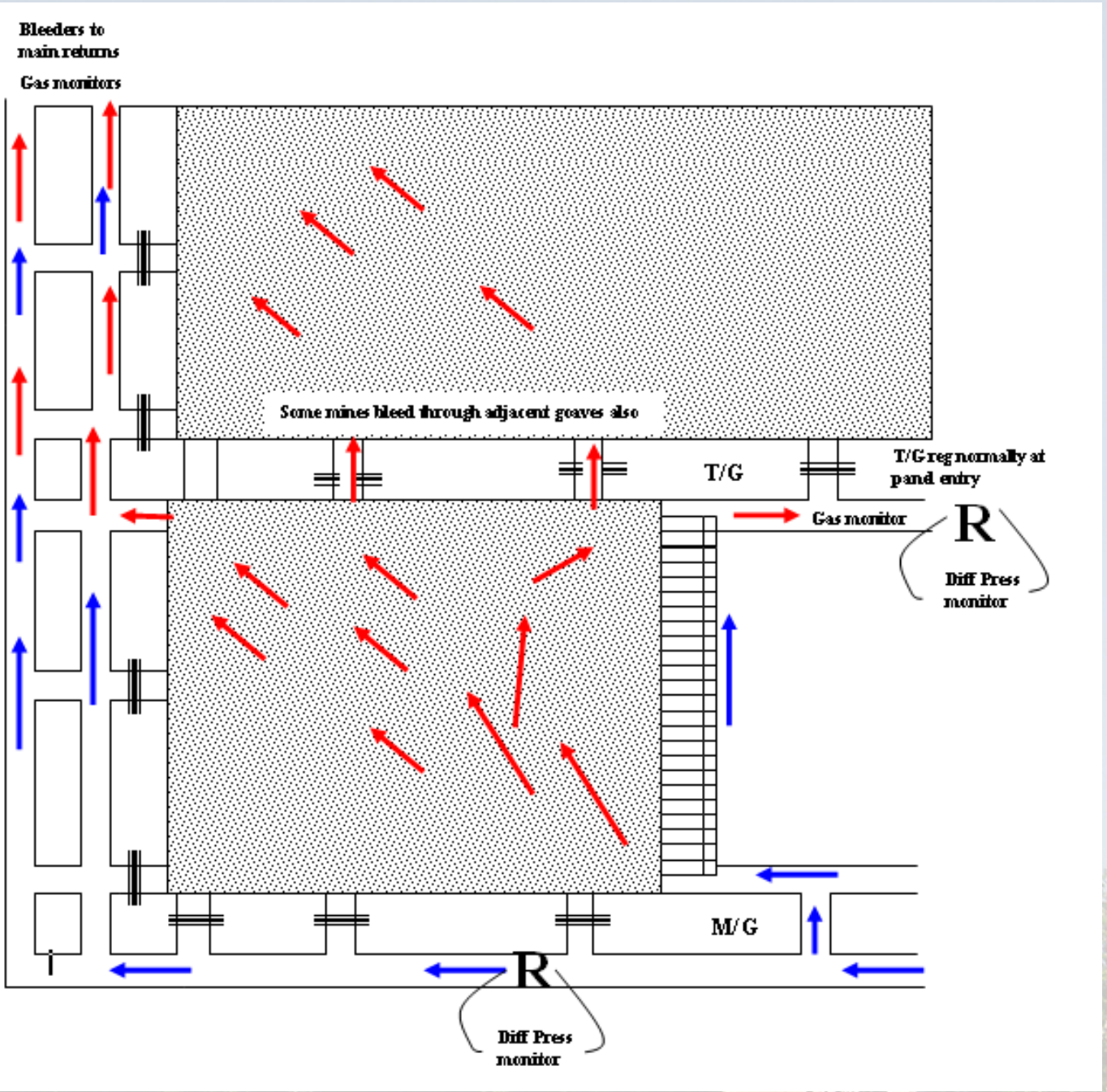
Methane Gas Percentage Detected (%)

Roadway Quantity (m3/sec)	0.20	0.40	0.60	0.80	1.00	1.20	1.40	1.60	1.80	2.00	2.20	2.40	Roadway Quantity (m3/sec)
5.0	10	20	30	40	50	60	70	80	90	100	110	120	5.0
6.0	12	24	36	48	60	72	84	96	108	120	132	144	6.0
7.0	14	28	42	56	70	84	98	112	126	140	154	168	7.0
8.0	16	32	48	64	80	96	112	128	144	160	176	192	8.0
9.0	18	36	54	72	90	108	126	144	162	180	198	216	9.0
10.0	20	40	60	80	100	120	140	160	180	200	220	240	10.0
11.0	22	44	66	88	110	132	154	176	198	220	242	264	11.0
12.0	24	48	72	96	120	144	168	192	216	240	264	288	12.0
13.0	26	52	78	104	130	156	182	208	234	260	286	312	13.0
14.0	28	56	84	112	140	168	196	224	252	280	308	336	14.0
15.0	30	60	90	120	150	180	210	240	270	300	330	360	15.0
16.0	32	64	96	128	160	192	224	256	288	320	352	384	16.0
17.0	34	68	102	136	170	204	238	272	306	340	374	408	17.0
18.0	36	72	108	144	180	216	252	288	324	360	396	432	18.0
19.0	38	76	114	152	190	228	266	304	342	380	418	456	19.0
20.0	40	80	120	160	200	240	280	320	360	400	440	480	20.0
21.0	42	84	126	168	210	252	294	336	378	420	462	504	21.0
22.0	44	88	132	176	220	264	308	352	396	440	484	528	22.0
23.0	46	92	138	184	230	276	322	368	414	460	506	552	23.0
24.0	48	96	144	192	240	288	336	384	432	480	528	576	24.0
25.0	50	100	150	200	250	300	350	400	450	500	550	600	25.0
26.0	52	104	156	208	260	312	364	416	468	520	572	624	26.0
27.0	54	108	162	216	270	324	378	432	486	540	594	648	27.0
28.0	56	112	168	224	280	336	392	448	504	560	616	672	28.0
29.0	58	116	174	232	290	348	406	464	522	580	638	696	29.0
30.0	60	120	180	240	300	360	420	480	540	600	660	720	30.0
31.0	62	124	186	248	310	372	434	496	558	620	682	744	31.0
32.0	64	128	192	256	320	384	448	512	576	640	704	768	32.0
33.0	66	132	198	264	330	396	462	528	594	660	726	792	33.0
34.0	68	136	204	272	340	408	476	544	612	680	748	816	34.0
35.0	70	140	210	280	350	420	490	560	630	700	770	840	35.0
36.0	72	144	216	288	360	432	504	576	648	720	792	864	36.0
37.0	74	148	222	296	370	444	518	592	666	740	814	888	37.0
38.0	76	152	228	304	380	456	532	608	684	760	836	912	38.0
39.0	78	156	234	312	390	468	546	624	702	780	858	936	39.0
40.0	80	160	240	320	400	480	560	640	720	800	880	960	40.0
41.0	82	164	246	328	410	492	574	656	738	820	902	984	41.0
42.0	84	168	252	336	420	504	588	672	756	840	924	1008	42.0
43.0	86	172	258	344	430	516	602	688	774	860	946	1032	43.0
44.0	88	176	264	352	440	528	616	704	792	880	968	1056	44.0
45.0	90	180	270	360	450	540	630	720	810	900	990	1080	45.0
46.0	92	184	276	368	460	552	644	736	828	920	1012	1104	46.0
47.0	94	188	282	376	470	564	658	752	846	940	1034	1128	47.0
48.0	96	192	288	384	480	576	672	768	864	960	1056	1152	48.0
49.0	98	196	294	392	490	588	686	784	882	980	1078	1176	49.0
	0.20	0.40	0.60	0.80	1.00	1.20	1.40	1.60	1.80	2.00	2.20	2.40	

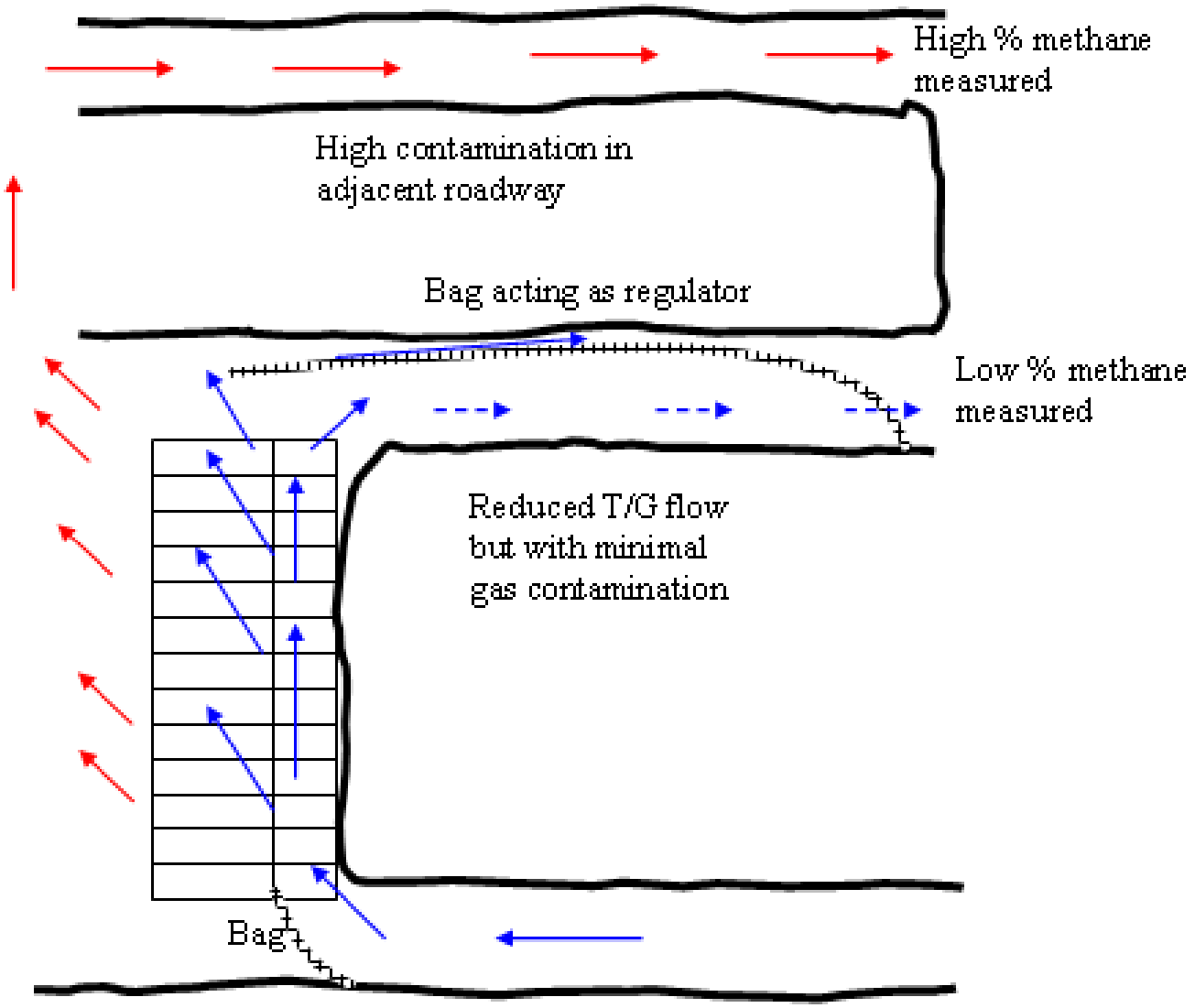
Methane Gas Percentage Detected (%)

CO Make Chart (Yellow cells are litres/min CO) Prepared by John Rowland www.dallasmining.com.au

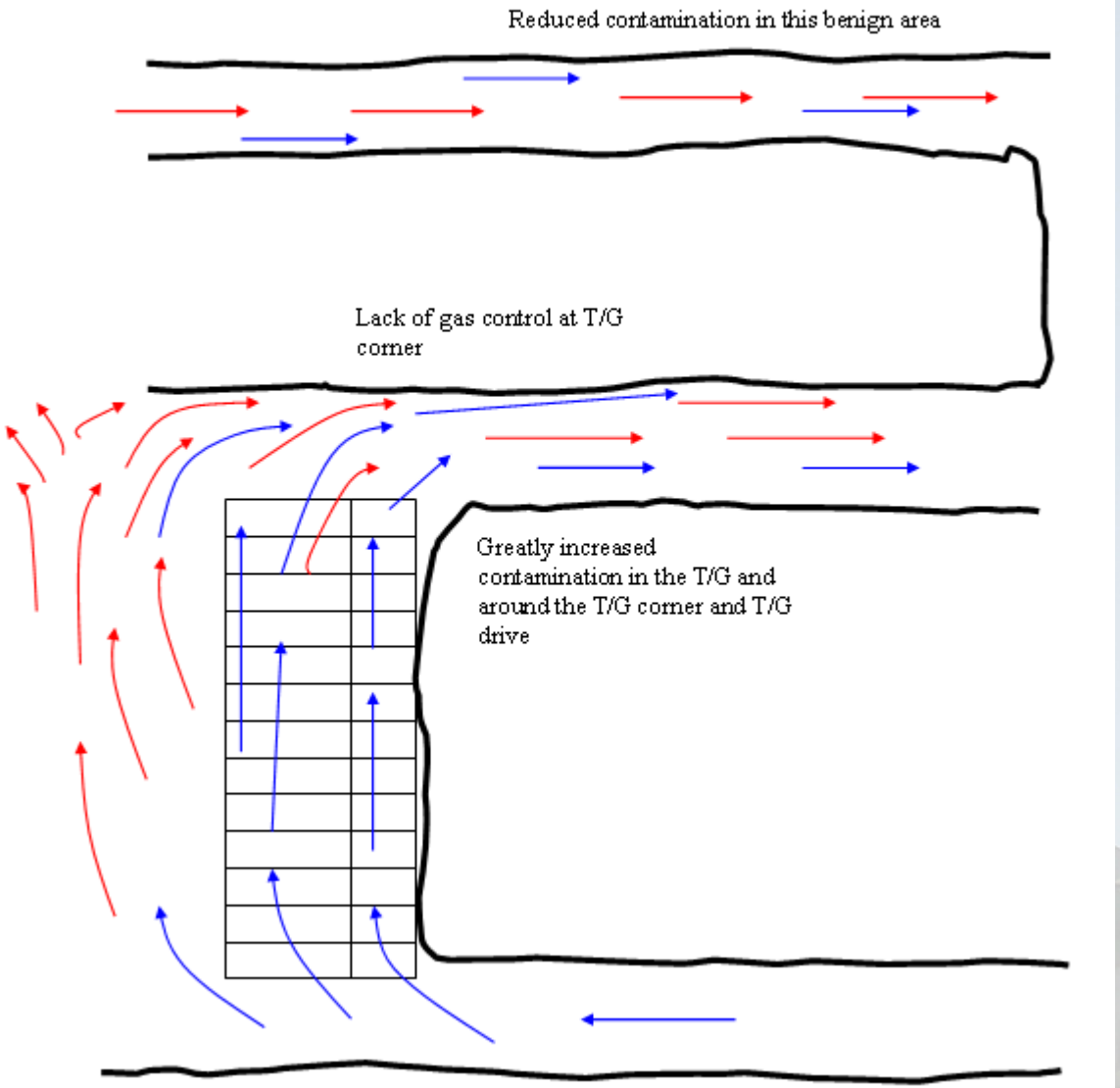
Raw CO	Air Quantity (cubic metres per second)																															
(ppm)	10	13	16	19	22	25	28	31	34	37	40	43	46	49	52	55	58	61	64	67	70	73	76	79	82	85	88	91	94	97	100	103
1	0.6	0.8	1.0	1.1	1.3	1.5	1.7	1.9	2.0	2.2	2.4	2.6	2.8	2.9	3.1	3.3	3.5	3.7	3.8	4.0	4.2	4.4	4.6	4.7	4.9	5.1	5.3	5.5	5.6	5.8	6.0	6.2
2	1.2	1.6	1.9	2.3	2.6	3.0	3.4	3.7	4.1	4.4	4.8	5.2	5.5	5.9	6.2	6.6	7.0	7.3	7.7	8.0	8.4	8.8	9.1	9.5	9.8	10	11	11	11	12	12	12
3	1.8	2.3	2.9	3.4	4.0	4.5	5.0	5.6	6.1	6.7	7.2	7.7	8.3	8.8	9.4	9.9	10	11	12	12	13	13	14	14	15	15	16	16	17	17	18	19
4	2.4	3.1	3.8	4.6	5.3	6.0	6.7	7.4	8.2	8.9	9.6	10	11	12	12	13	14	15	15	16	17	18	18	19	20	20	21	22	23	23	24	25
5	3.0	3.9	4.8	5.7	6.6	7.5	8.4	9.3	10	11	12	13	14	15	16	17	17	18	19	20	21	22	23	24	25	26	26	27	28	29	30	31
6	3.6	4.7	5.8	6.8	7.9	9.0	10	11	12	13	14	15	17	18	19	20	21	22	23	24	25	26	27	28	30	31	32	33	34	35	36	37
7	4.2	5.5	6.7	8.0	9.2	11	12	13	14	16	17	18	19	21	22	23	24	26	27	28	29	31	32	33	34	36	37	38	39	41	42	43
8	4.8	6.2	7.7	9.1	11	12	13	15	16	18	19	21	22	24	25	26	28	29	31	32	34	35	36	38	39	41	42	44	45	47	48	49
9	5.4	7.0	8.6	10	12	14	15	17	18	20	22	23	25	26	28	30	31	33	35	36	38	39	41	43	44	46	48	49	51	52	54	56
10	6.0	7.8	9.6	11	13	15	17	19	20	22	24	26	28	29	31	33	35	37	38	40	42	44	46	47	49	51	53	55	56	58	60	62



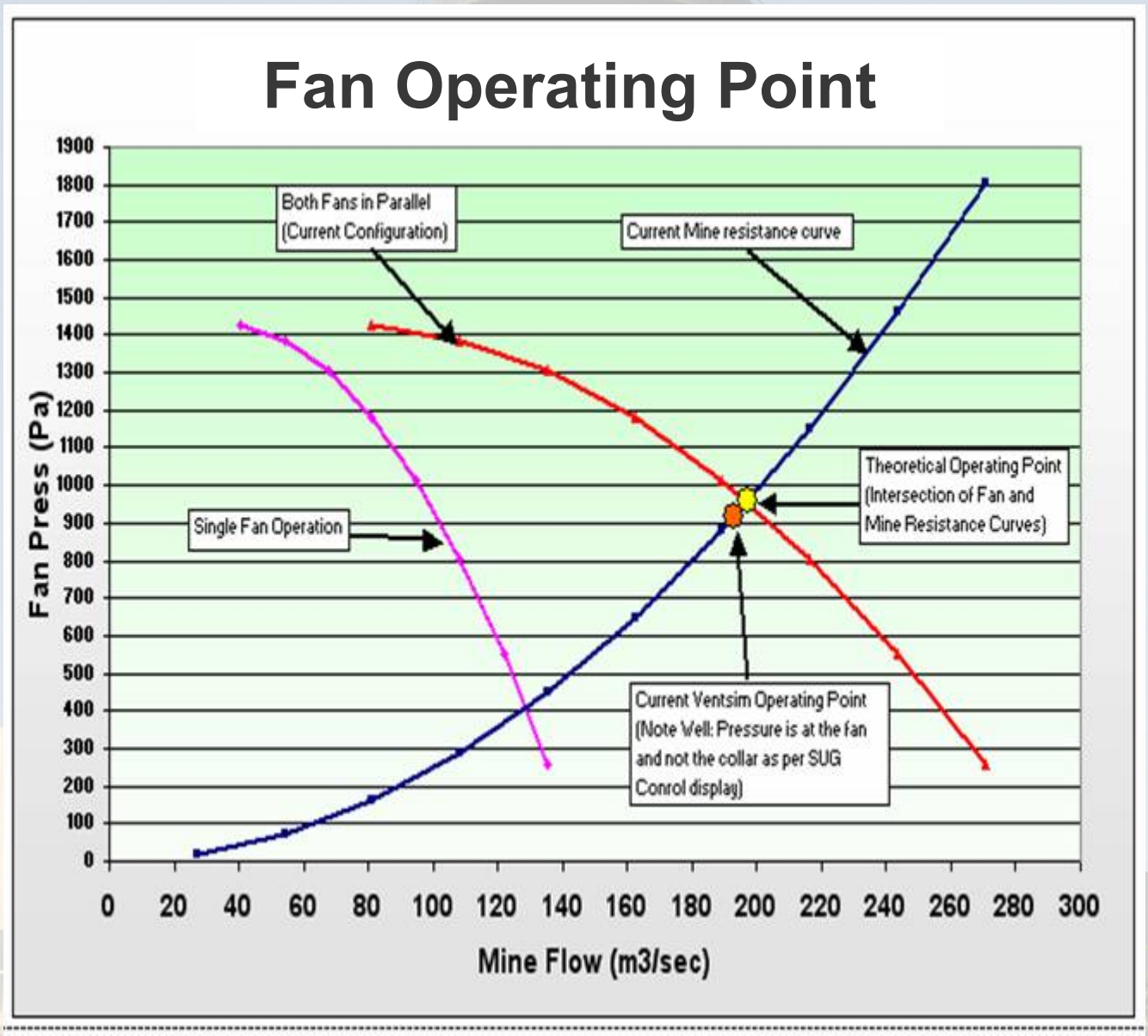
Importance of Bag Standards

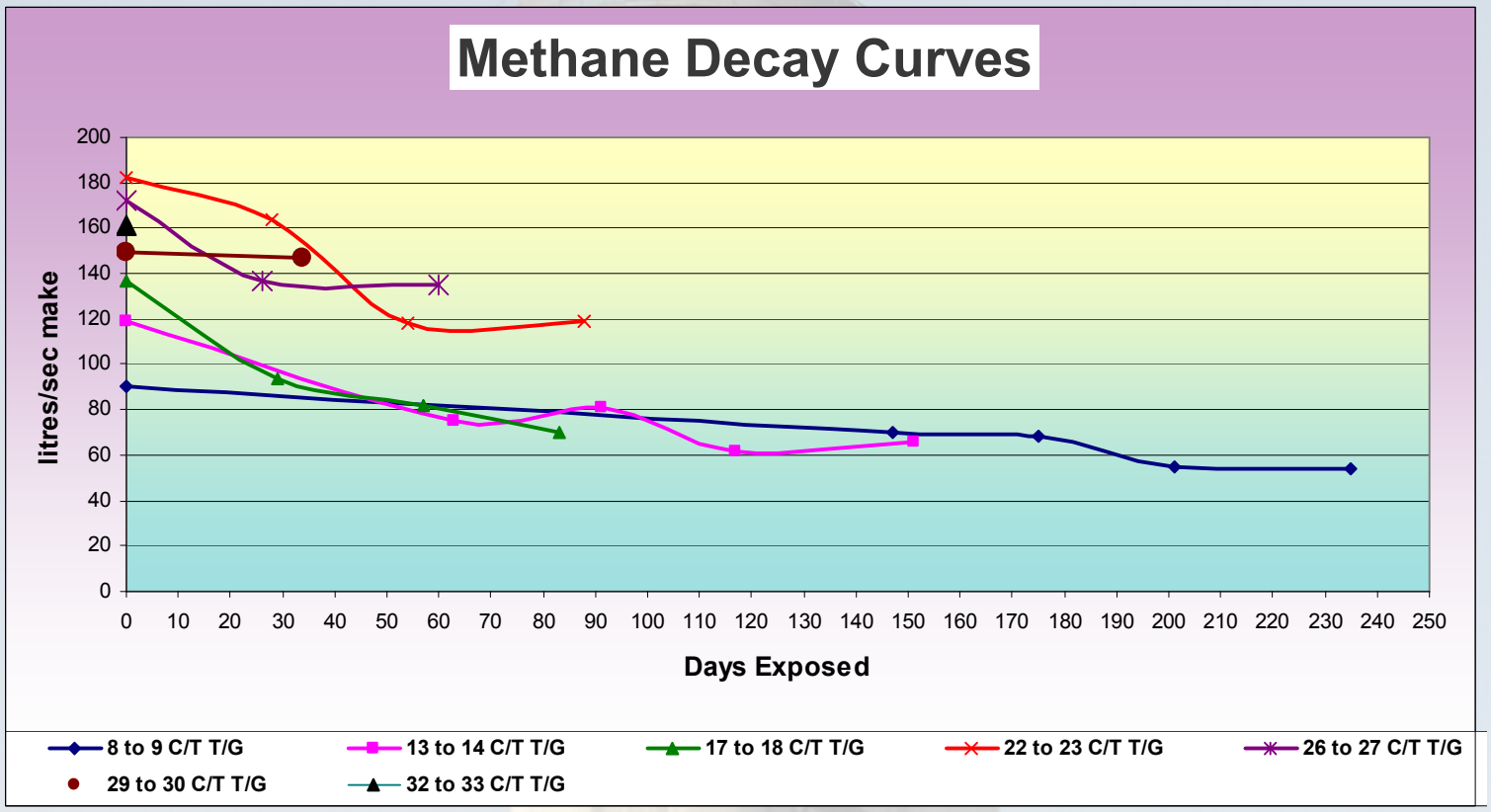


and the danger of the lack of standards



Fan Operating Point





And so it goes on!!

The variety keeps them interested and informed!

The last word should go to this factual E mail

-----Original Message-----
From: Mike Hunt
Sent: Wednesday, 16 April 2008 2:29 PM
To: All Deputies
Cc: jr@dallasmining.com.au; Ray Crebbs
Subject:

Gents,

You will find attached a copy of this months Ventilation report. Please take the time to read it and share it with your crews. As per usual a copy has been placed on the board in the lamp room.

Regards

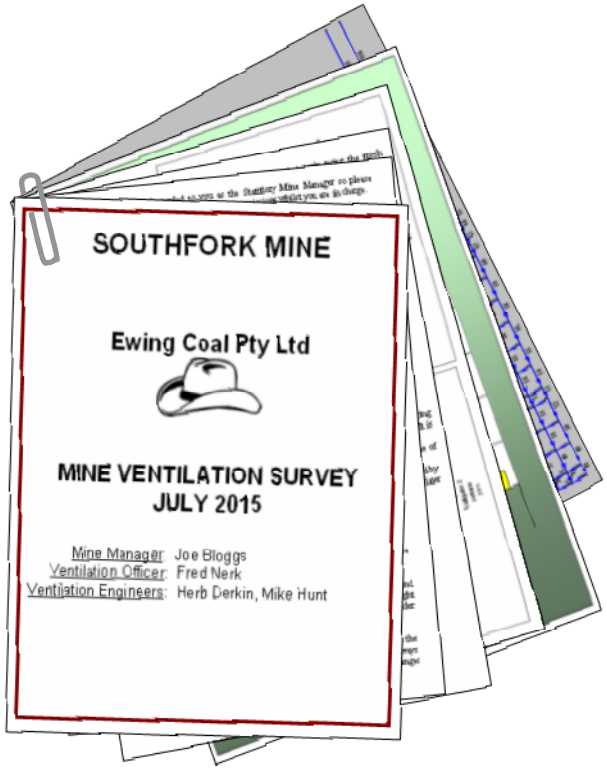
Mike Hunt
Ventilation Engineer
Southfork Mine

What you have seen is in excess of minimum standards

It could well be argued that minimum standards need further review

What cannot be argued is that spending one or 2 solid days underground a month is not worth the results

Its better to distribute this



than to hide this

TILTON COLLIERY

VENT REPORT AUGUST 1985

MAIN INTAKES

Location	Area(m2)	Vel(m/s)	Quan(m3/s)	%CH4
Belt Drift	16.64	3.68	61.2	
Transport Drift	15.50	6.40	99.2	
Total Intakes			160.4	

PANELS

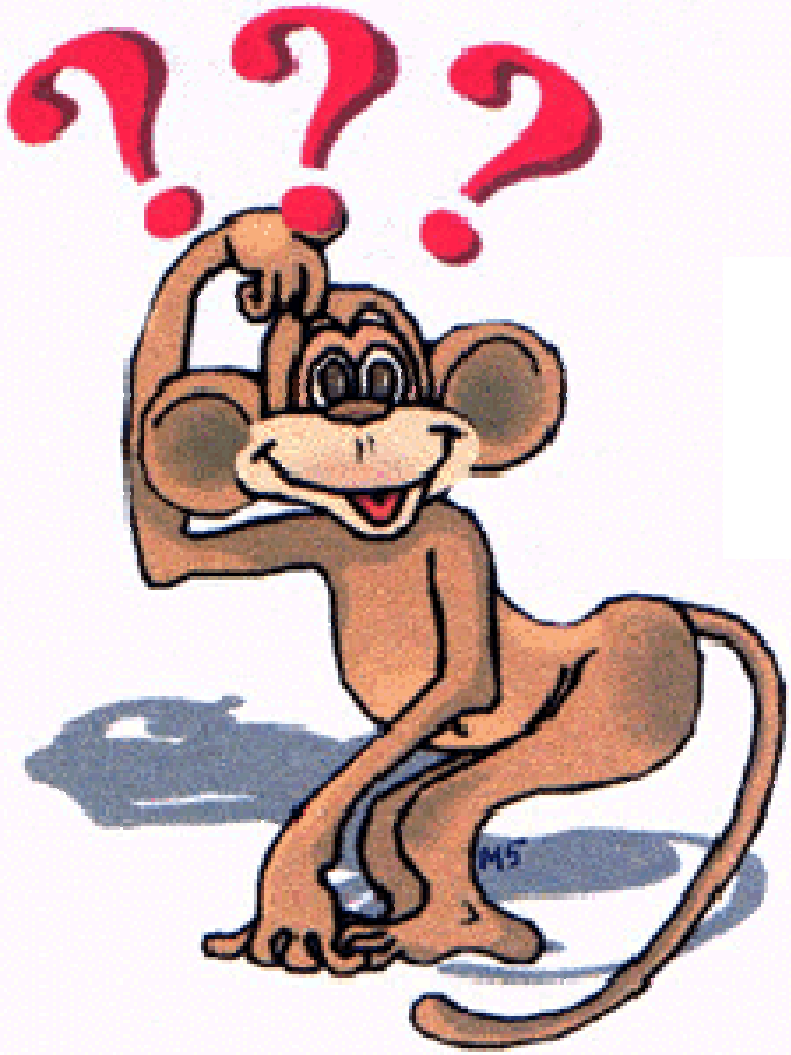
Location	Area(m2)	Vel(m/s)		%CH4
Mains Development				
Hazardous Zone A hdg	16.17	0.60	9.7	0.0
Hazardous Zone B Hdg	15.2	0.50	7.6	0.0
Hazardous Zone C Hdg	15.8	0.48	7.6	0.0
		Total Flow	**24.9**	
Face Area (Coaling in A hdg)	14.4	0.45	**6.5**	
Return Methane reading				0.2
Maingate Panel				
Hazardous Zone (A Hdg)	16.17	2.15	**34.8**	0.1
Face Area (Coaling in A hdg)	15	0.40	**6.0**	
Return Methane reading				0.2
Longwall				
Hazardous Zone A hdg	16.17	1.66	26.8	0.0
Hazardous Zone B Hdg	15.2	1.20	18.2	0.0
		Total Flow	**45.1**	
Face Area (Shearing)	15.4	2.98	**45.9**	
Return Methane reading				0.8

Readings taken by **Fred Nerk**

Ventilation Officer's Signature *Fred*

Countersigned

End



Questions