

ANGLOAMERICAN NEW VAAL COLLIERY



DUST SUPPRESSION



Pneumatic Accumulation Control System (PACS)



APS Projects

DUST SUPPRESSION

- 1. Background**
- 2. The installation**
- 3. Dust monitoring**
- 4. Results**
- 5. Visuals results**
- 6. Recommendations and Conclusions**



BACKGROUND

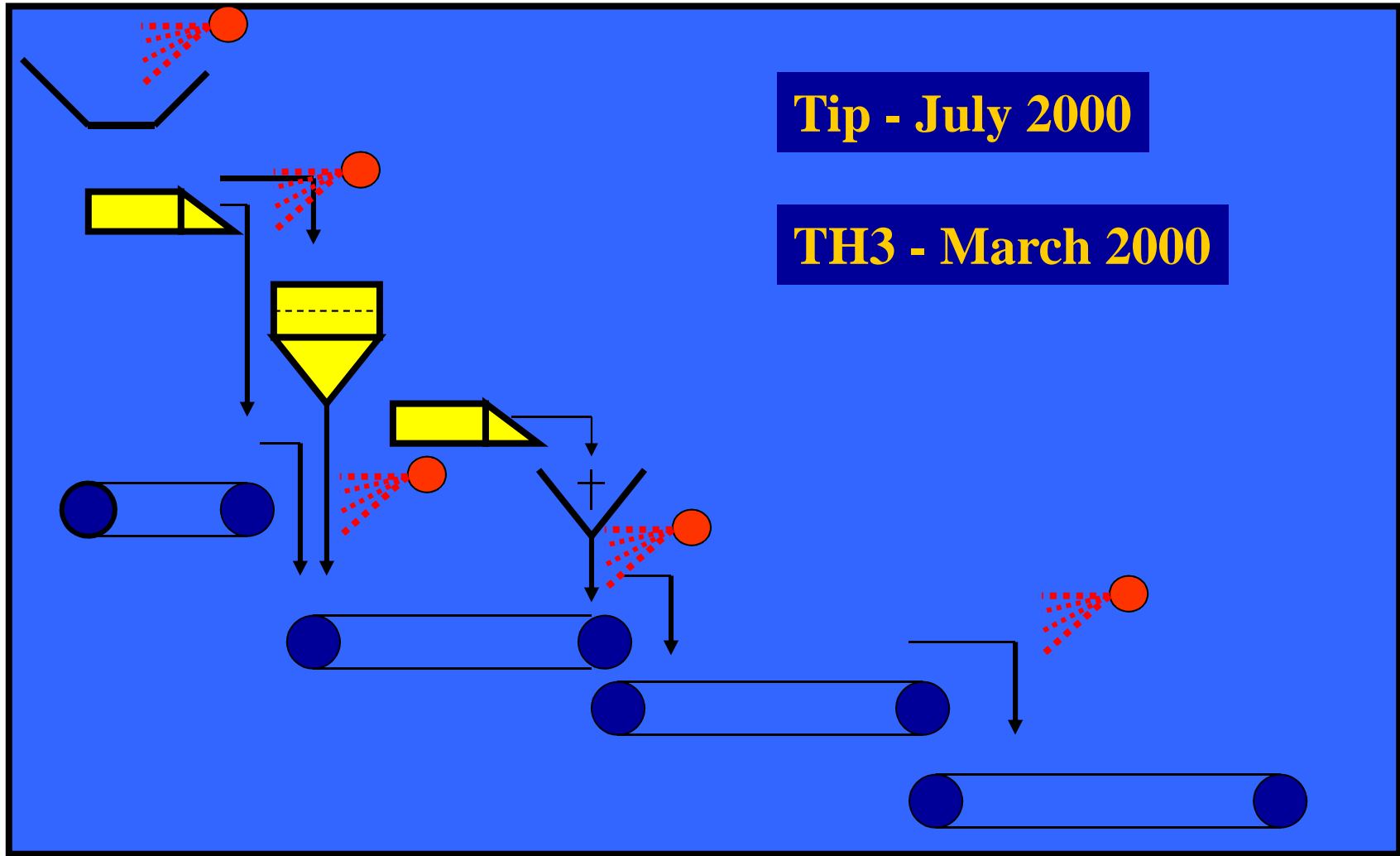
1. The influence of spontaneous combustion

2. Previous systems

3. The Benmarc Dust Suppression System



INSTALLATION



Tip - July 2000

TH3 - March 2000

DUST MONITORING

1. Three different dust monitoring test procedures (mg/m³)

- * Effectiveness of TH3 system
- * Different levels in Tip
- * Sprays on vs. sprays off



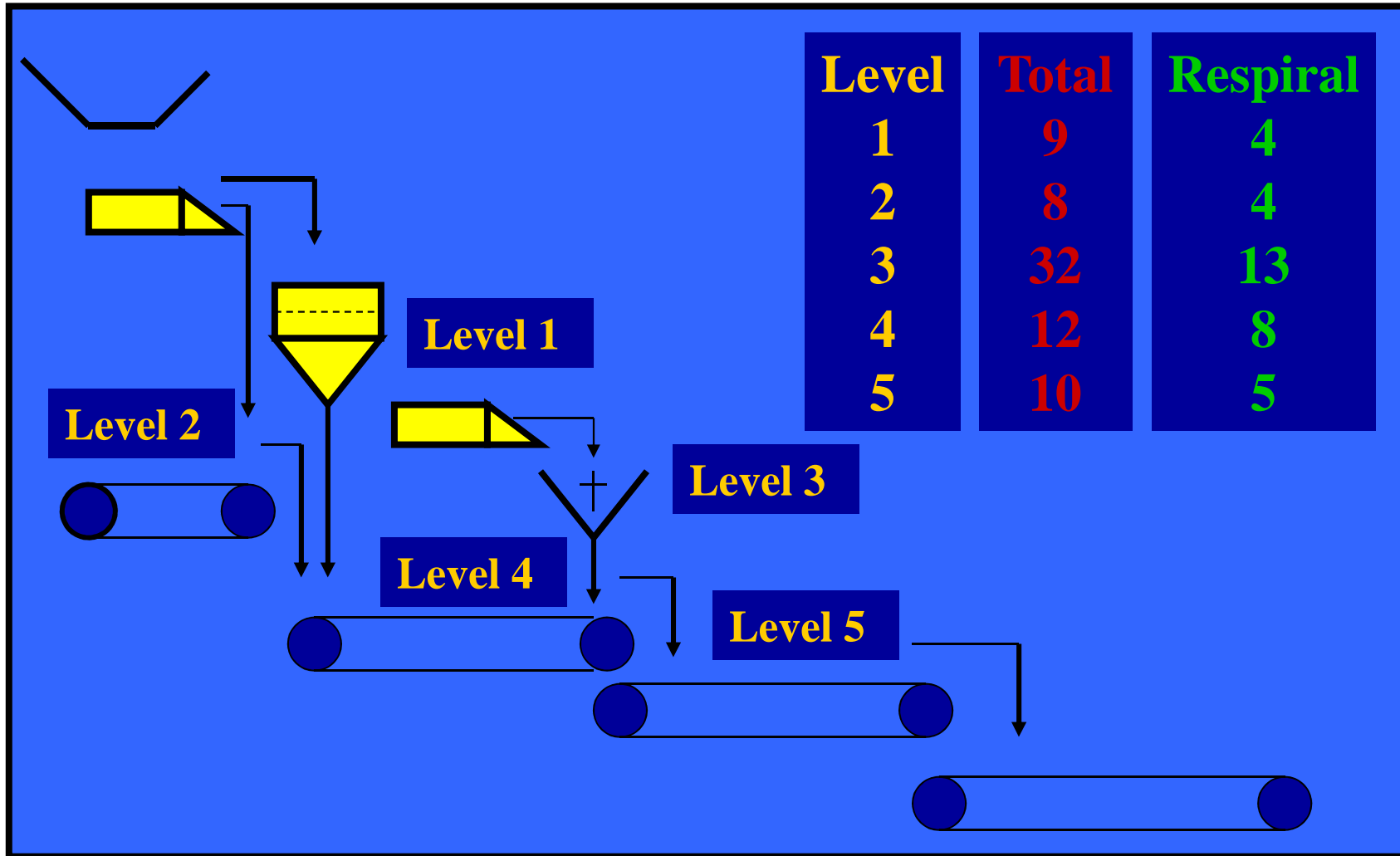
RESULTS

Effectiveness of TH3 system Pre- Tip Installation

	Tip	1°	Legal Limits
Total Dust	20.08	7.94	10 mg/m³
Respiral Dust	5.68	2.23	2 mg/m³



DIFFERENT LEVELS IN TIP



RESULTS

System on vs. System off

RAMP	OFF	ON
0 - MSC	47	18
2 - BSC	45	18
ROM	47	18



VISUALS – BEFORE (SYSTEM OFF)



VISUALS – AFTER (SYSTEM ON)



BENEFITS

Reduction of dust levels within the legal limits set by the DME

(respiral dust = $2\text{mg}/\text{m}^3$; total dust = $10\text{mg}/\text{m}^3$)

Potential elimination of future compensation claims

Healthier working and maintenance environment

Improved throughput

Improved maintenance

Improved housekeeping conditions



RECOMMENDATIONS & CONCLUSIONS

1. The Benmarc dust suppression system has been successfully installed and reduces dust levels within the tipping area.
2. Even during extreme conditions within the tip, the remaining plant areas runs dust free.
3. Future improvements should include the enclosure of the tipping area.

GOLDEN RULE:

“Persistence prevails! If you want it to work, it will work!”



Pneumatic Accumulation Control System (PACS)

- 1. Background**
- 2. Previous test work**
- 3. The installation**
- 4. Results**
- 5. Discussion**
- 6. Recommendations and Conclusions**



BACKGROUND

Large amounts of fine, wet, devolatilized coal and sludge are treated through New Vaal plant.

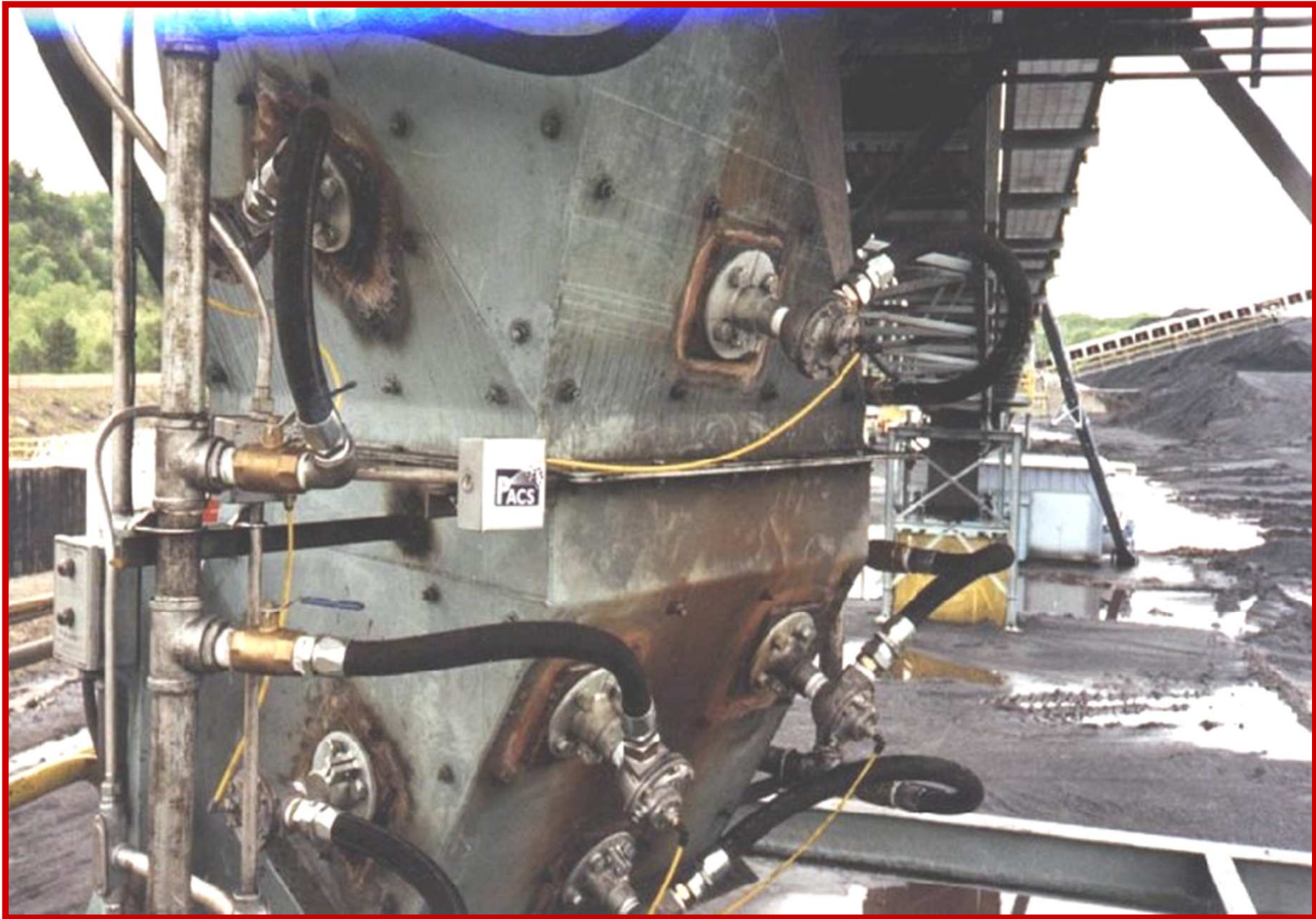
This leads to blockages and build ups within chutes causing major production losses.

Throughout New Vaal's history, both laboratory scale and extensive field testing has been done to overcome this problem.

No practical solution was found until now.....



THE BENMARC PACS SYSTEM



PREVIOUS TEST WORK

Big blaster compressed air canons from Vac Air were tested in D04 under pan in 1993. This was abandoned due to poor service from the suppliers as well as the ineffectiveness of the unit.

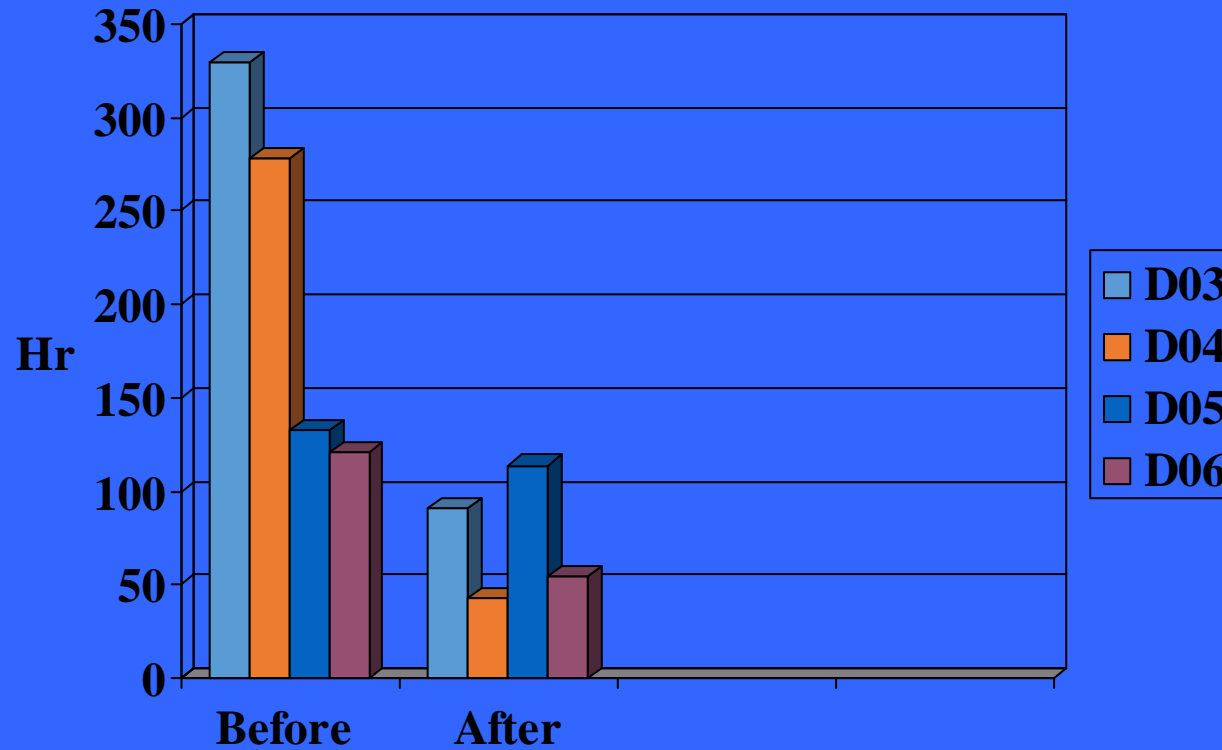
Other investigations included chute liner materials, Linatex “socks”, surfactants and chute modifications.

The first PACS was installed on D03 under pan in October 1999 followed by D04, D05 & D06 Under pans in March 2000.



RESULTS

Downtime comparisons before and after installations:



BENEFITS

Safer environment due to less spillage in the areas

Increased uptime

Improved housekeeping conditions

Healthier maintenance environment



RECOMMENDATIONS & CONCLUSIONS

The PACS system has decreased downtime on Under pan blockages in the primary screening section tremendously!

PACS can strongly be recommended for any similar installation.

Only one thing matter: Location



COSTS & FIGURES DUST SUPPRESSION

	TH3	TIP
Capital	R775 000	R380 000
Chemical	Residual	Surfactant
Cost	R3.15 / l	R7.65 / l
Rec. Dosage	0.057 l/ROM ton	0.0057 l/ROM ton
Cur. Dosage	0.008 l/ROM ton	0.005 l/ROM ton
Moist increase	0.05 - 0.1%	0.2 - 0.5%



COSTS & FIGURES PACS

Plant

One unit

4 Units

Capital

R70 500

R282 000

Maintenance

R2 600 p.m.

R10 400 p.m.

Stockyard

TH4A & B

TH6

Capital

R160 000

R295 000

Maintenance

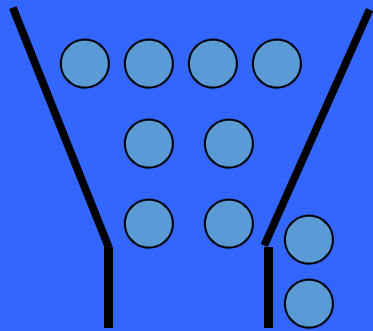
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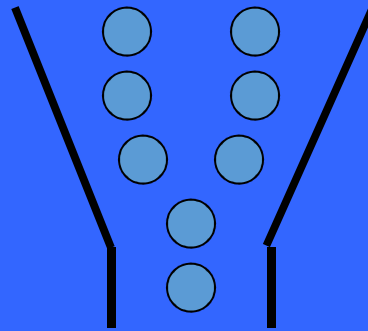


NOZZLE POSITIONS

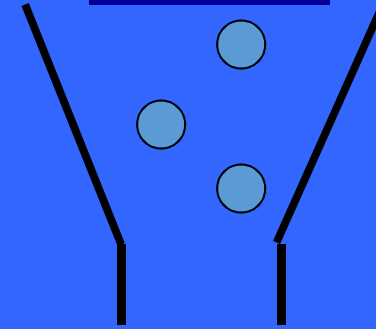
D04 / D06



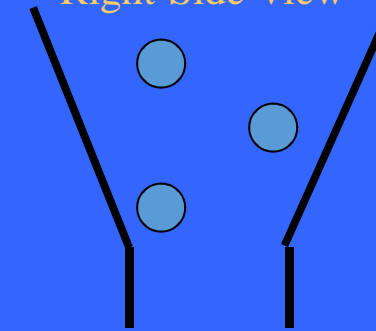
D03



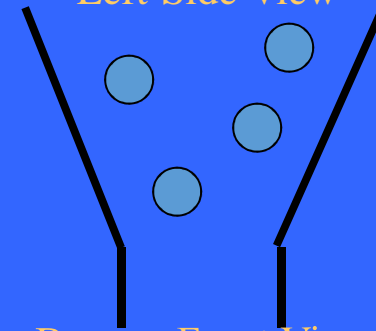
D05



Right-Side View



Left-Side View



Bottom-Front View

