**Tech Problem**

You are the 2nd shift airway examiner at the Highland # 1 Mine. This mine is a 3-entry development. There have been some issues with the ventilation in the #3 entry. Air intakes up the # 1 entry and exits the mine through the #2 and #3 entries. You are the examiner and you are located in the #3 entry. You will need to determine the airflow in the #3 entry using a vane anemometer and using a smoke tube. Take a reading from the test port in the seal in the #3 entry using the magnehelic gauge.

Field Set-Up

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |

**Field Set-Up Notes**

Use 10 feet widths on the field. The pipe used for height can be anything measurable. I am providing the heights and widths for each exercise (anemometer and smoke tube). They will be different.

**Anemometer**

Width 20 feet

Height 7 feet

Anemometer Reading – “See Anemometer Picture”

Anemometer Reading is 1348 ft/min.

Correction Factor is - 40

Corrected Anemometer Reading is 1308 ft/min.

Area is 20x7=140 ft2

Airflow is 140 x 1308 ft2 =183,120 CFM

**Smoke Tube**

Width 19.5 feet

Height 5 feet

Smoke Tube – measure off 10 feet

Quadrant 1 time is 13 seconds

Quadrant 2 time is 11 seconds

Quadrant 3 time is 16 seconds

Quadrant 4 time is 14 seconds

Avg Time = 13.5 sec

Velocity = 10 ft/13.5sec = 0.74ftx 60sec = 44.4 ft/min

Area = 19.5x 5=97.5 ft2

Air Flow = 97.5 X 44.4 ft/min = 4,329CFM

**Magnehelic**

Magnehelic Reading – “See Magnehelic Picture”

Magnehelic Reading is in -.01 H2O

Reflected as “Negavtive” [should use low pressure hose]

A picture containing text, watch, device

Description automatically generated

