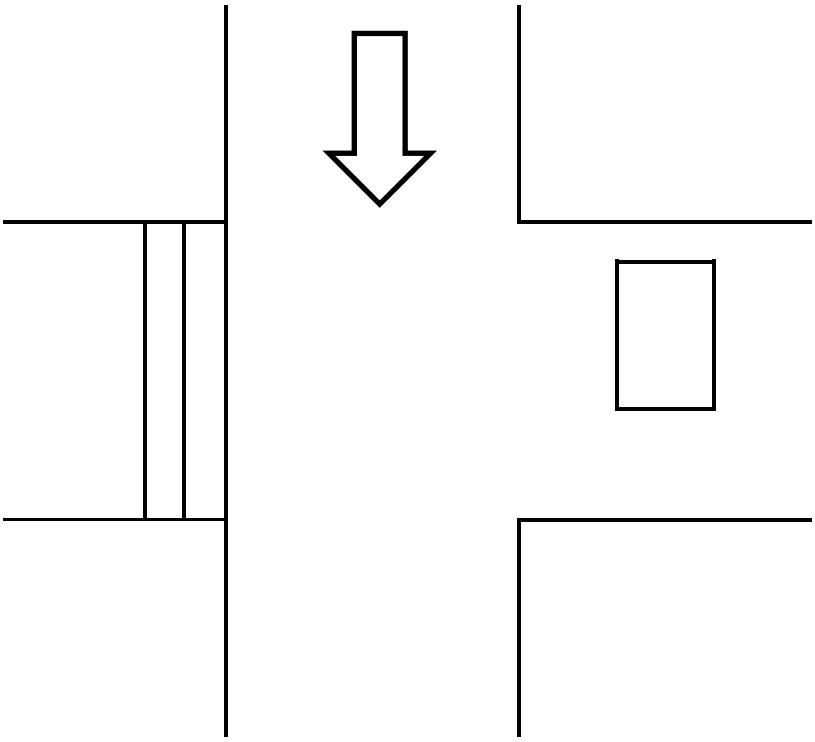
Tech Problem

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 ft^2
Airflow is 140 x 1308 ft^2 =183,120 CFM

Smoke Tube

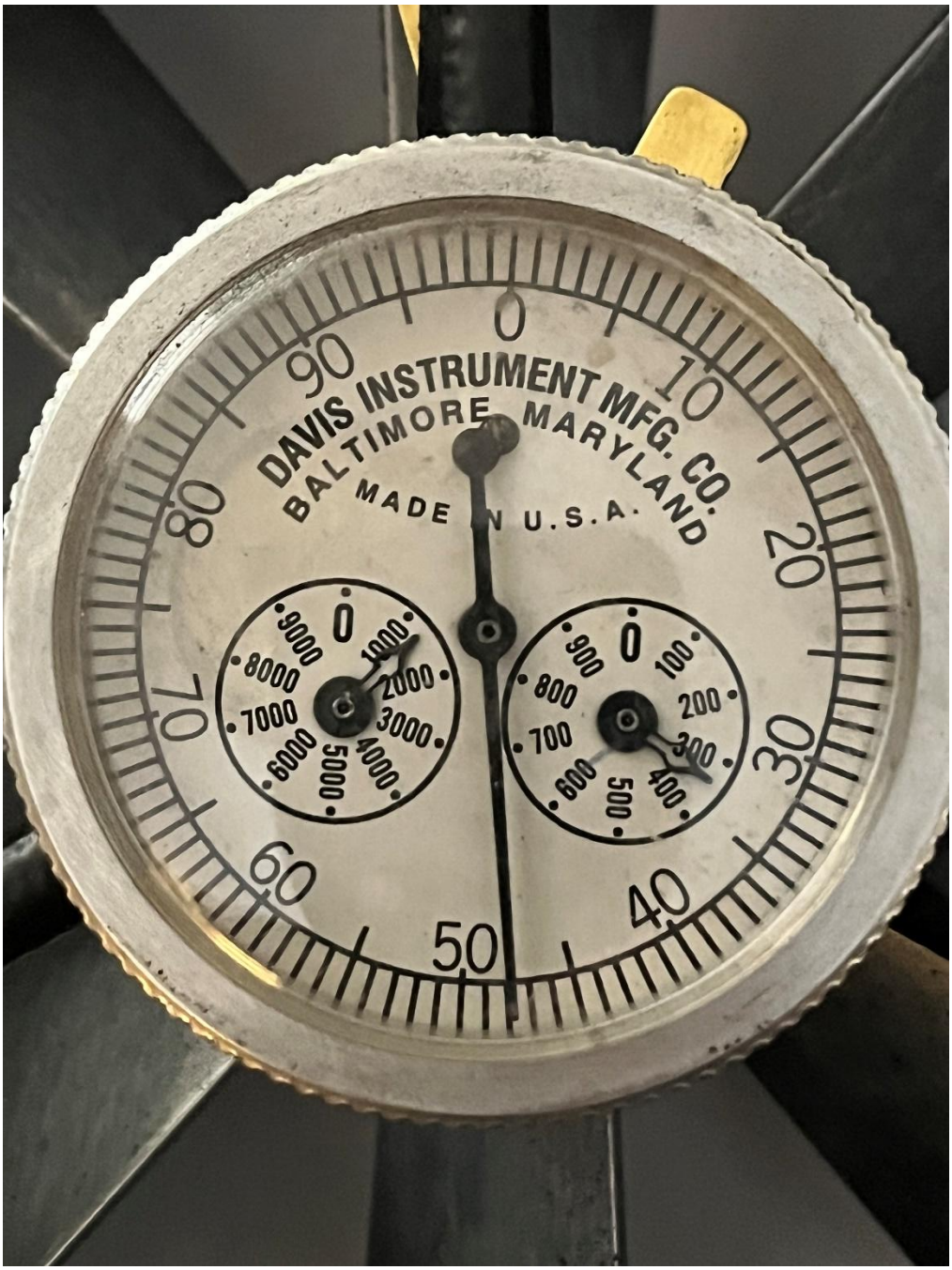
Width 19.5 feet
Height 5 feet
Smoke Tube – measure off 10 feet

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 ft^2
Air Flow = 97.5 X 44.4 ft/min = 4,329CFM

Magnehelic

Magnehelic Reading – “See Magnehelic Picture”
Magnehelic Reading is in -.01 H_2O
Reflected as “Negavtive” [should use low pressure hose]


DAVIS INSTRUMENT MFG. CO.
BALTIMORE, MARYLAND
MADE IN U.S.A.
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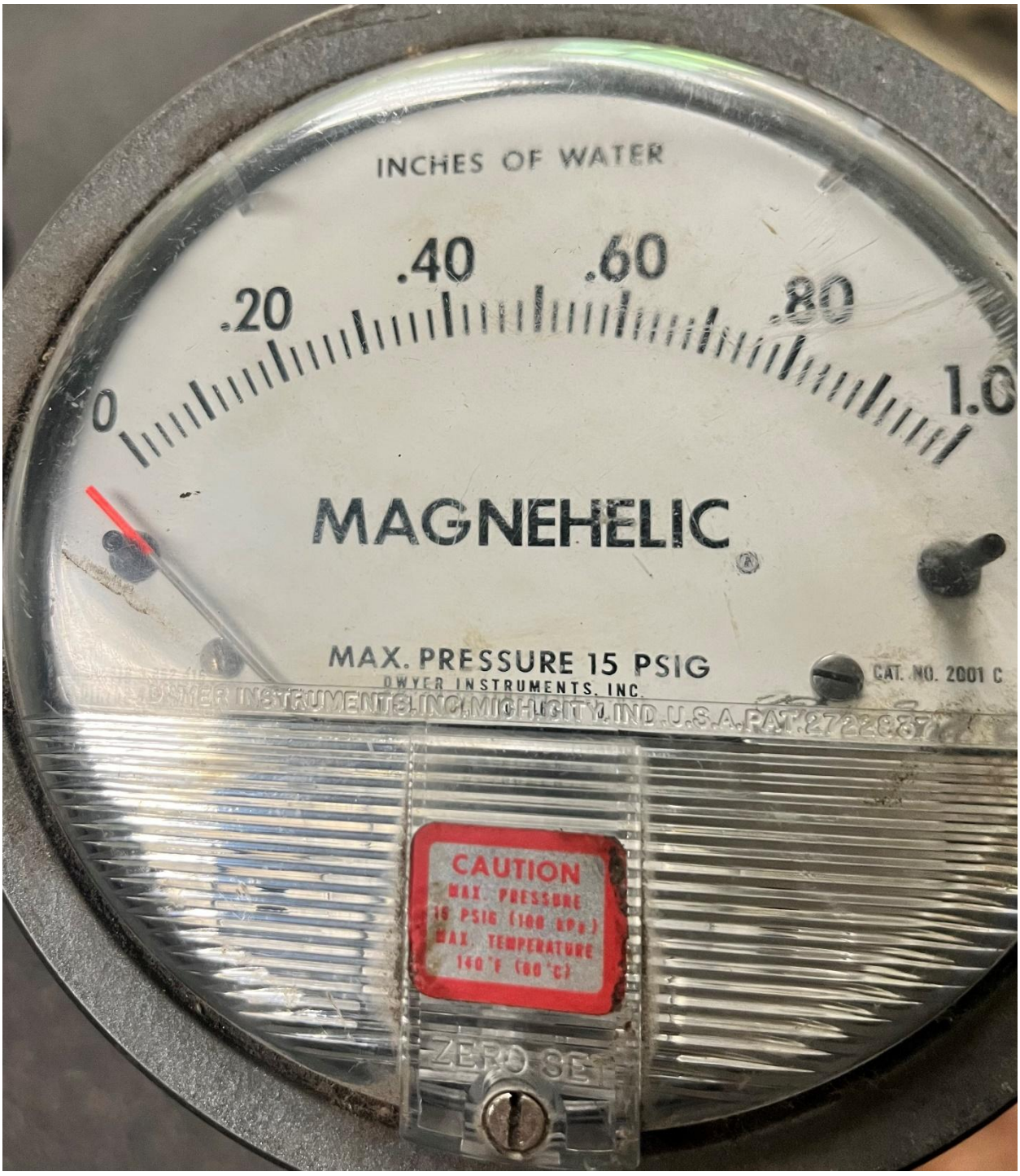
INCHES OF WATER
0
.20
.40
.60
.80
1.0
MAGNEHELIC
MAX. PRESSURE 15 PSIG
DWYER INSTRUMENTS, INC.
CAT. NO. 2001 C
CAUTION
MAX. PRESSURE
15 PSIG (100 kPa)
MAX. TEMPERATURE
140°F (60°C)
ZERO SE