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The compensated system also includes a unit referred to as "Calculator Box" which contains some circuit calibration components, providing proper signal proportions and interconnections between various transmitters and receivers.

In addition to the three receivers, Recorder WM55A also contains Class Y flow integrator which provides totalized compensated flow. The integrator is similar to the one described in Circular SD-GA.28 of December 12, 1952, but the escapement wheel has 300 teeth instead of 250 and the gear ratio between the cam and the wheel is such that for each revolution of the cam the escapement wheel completes only two-thirds of a revolution when rotating continuously so that for the recording pen positioned at zero on chart, 200 teeth pass the pawl during each cam revolution. For other pen positions, the wheel would advance proportionally less so that at 90% chart reading only 20 teeth would pass the pawl. The integrator has a linear scale cam and standard counter gearing, for which counter advances 100 units per hour for 100% pen position. To obtain totalized flow in units of cubic feet the counter readings must be multiplied by the integrator factor equal to the flow corresponding to 100% chart divided by 100. The maximum range of the measuring system expressed as compensated flow in Standard Cubic Feet per hour at specified base conditions will vary with range of various flow parameters and size of primary orifice elements, but shall be entered on a card located inside the Recorder case.

In operation the compensated flow measuring system functions to continuously solve the general flow equation

$$\text{Flow} = C'' F_{tf} \sqrt{h_w P_f}$$

Where  $C''$  is a flow coefficient,  $F_{tf}$  is the flowing temperature compensating factor,  $h_w$  is the differential pressure across the orifice and  $P_f$  is the static pressure in the line.

Approval is granted for three variants of the measuring systems designated by:-

Style 1 - with temperature and pressure compensation, described above.

Style 2 - with pressure compensation only. This system would include an approved flowing temperature recorder, but it would not be interconnected with the system to effect automatic temperature compensation.

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