

sioned for positioning an aperture similar to hole 179 vertically along fill pipe 176 for breaking the efflux of sample from chamber 39 during the pressure or purge phase which determines the sample volume.

Reference is now made to FIG. 5 for the description of circuit elements which provide an additional embodiment of the sample disclosed herein responsive to overflow level. A connection exists between the output of clock 51 and the input of power switch 54. A float switch (not shown) of conventional design is provided for actuation by the surface level of the flow in an overflow channel. When switch 53 is selected to the "flow" position the float switch is connected between terminals 182 and 183. Float switch provides closure for overflow channel flow surface levels above a predetermined level. In this manner an input is provided to power switch 54 when terminal 182 is connected to ground potential. Repeated cycling is provided for repeated sampling as the input terminal on clock 51 is also connected to ground potential. In this fashion fluid samples are drawn from an overflow channel for the period during which the overflow channel exceeds a predetermined flow level. It has proven to be of interest to monitor the sample content during such high overflow periods.

A functionally diversified flow meter and sampler combination has been disclosed which provides sampling as a function of time, as a function of flow volume, as manually selected, or as a function of high flow level in an overflow channel. Accurate sample sizes are provided which are adjustable through desired ranges, and reliability of sample size and content is assured by features reducing sample characteristic change and sample size variation during sample taking periods.

We claim:

1. In a system of the type described for communication with a fluid means for measuring a predetermined volume of fluid, said means for measuring including a sample chamber, a level sensor for determining a predetermined fill level in said chamber and mounted outside said chamber, a fill tube member projecting into said chamber having an open end in communication with said chamber in fixed position closely spaced to the lower boundary of said chamber whereby influx and efflux through said open end is unimpeded by suspended solids in the fluid, said fill tube member having an opening in the side thereof spaced above said open end, and means for adjusting said opening in vertical position, means cooperating between said measuring means and said fluid to provide for transfer of fluid therebetween, and means for selectively operating said measuring means to purge said measuring means, fill said measuring means, measure said predetermined volume, transfer said predetermined volume, and final purge said measuring means thereby providing sampling of the fluid.
2. A system as in claim 1 together with a positive and negative pressure source and a pressure control valve connected thereto, and wherein said measuring means is connected to said pressure control valve, said means cooperating between said measuring means and said fluid including an intake tube connected to said fill tube member, and wherein said means for selectively operating said measuring means includes timing means programmable to connect said positive and negative

pressure source alternately through said pressure control valve to said sample chamber.

3. A system as in claim 1 together with means for providing positive and negative pressure, a pressure control valve in communication with said means for providing pressure and with said measuring means, a sample control valve in communication with said measuring means, means for adjusting the vertical position of said level sensor to assume a position immediately above said opening said fill tube member, and storage means in communication with said sample control valve.

4. A system as in claim 3 wherein said means for selectively operating said measuring means is actuated by an electrical input signal and includes timing means for actuating said pressure control valve for alternately connecting said positive and negative pressure to said means for measuring so that said transfer of said predetermined volume is made to said storage means.

5. A system as in claim 4 together with a flow meter for providing said electrical input signal at predetermined flow volume intervals.

6. A system as in claim 4 together with a clock for providing said electrical input signal and means for selecting said electrical input signal to appear at predetermined intervals of time.

7. A system as in claim 4 together with float actuated switch means for providing said electrical input signal at predetermined flow levels.

8. A system as in claim 5 wherein said flow meter includes means for measuring head in a flow channel, and a mechanical head to flow converter connected to said means for measuring head.

9. A system as in claim 5 together with means for selecting said predetermined flow volumes.

10. A system of the type described in claim 1 together with means mounted in said measuring means for contacting said predetermined volume of fluid and measuring a predetermined degradable characteristic therein, and means for recording said degradable characteristic.

11. A system as in claim 10 wherein said means for selectively operating said measuring means to transfer said predetermined volume includes means for delaying said transfer whereby said means for measuring a degradable characteristic is in contact with said volume of fluid for an extended time period so that said degradable characteristic may be accurately measured.

12. A system of the type described in claim 1 together with means mounted in said measuring means for contacting said predetermined volume of fluid and measuring a predetermined transient characteristic in the fluid.

13. A system of the type described in claim 12 together with single storage means, means for recording said transient characteristic, and means for communicating said predetermined volume of fluid with said single storage means.

14. A system as in claim 12 wherein said means for selectively operating said measuring means to transfer said predetermined volume includes means for delaying said transfer, whereby said means for measuring a transient characteristic is in contact with said volume