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THREE MILE ISLAND NUCLEAR STATION STATION CHEMISTRY PROCEDURE #1953 DETERMINATION OF UNDISSOLVED SOLIDS (CRUD)

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THRE: MILE ISLAND NUCLEAR STATION STATIO: CHEMISTRY PROCEDURE NO. 1953 Determination of Undissolved Solids (Crud)

1.0 SUMMARY

The determination of undissolved solids (crud) by filtration at very low levels is difficult due to gains or losses of weight in the filter itself. Loss of weight can be due to loss of material from the bottom of the filter. A gain could occur if the solvent contained non-volatile components which are not driven from the filter by drying at 110°C. A tared "control" filter is series with the filter which is to collect the undissolved solids provides a means of compensating for such gains or losses of weight.

2.0 AFPARATUS

- 2.1 Vacuum Pump
- 2.2 Vacuum Flask
- 2.3 Millipore Filter Holder (or equivalent)
- 2.4 Millipore Filters, 0.45 micron (or equivalent)
- 2.5 Drying Oven
- 2.6 Analytical Balance
- 3.0 | EAGENTS
- 3.1 None Required
- 4.0 PLOCEDURE
- 4.1 Dry two marked (top, bottom) new millipore filters to a constant weight in drying oven, then cool in dessicator.
- 4.2 Weigh out the filters to the nearest 0.1 mg.
- 4.3 Clean filter assembly and assemble to the vacuum flask and place the two pre-weighed filters, smooth face up, on top of each other on the filter assembly. Moistening the assembly may facilitate the 178 355

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- 4.4 Place the top of the filter assembly over the filters and clamp it in place.
- 4.5 Filter an appropriate volume of sample (up to three gallons if needed) through the double filter. Use vacuum.
- 4.6 Remove the filters after washing with demineralized water and dry to a constant weight at 110°C. Cool in a dessicator. Make sure that the top and bottom filters can be identified.
- 4.7 Weight the filters to the nearest 0.1 mg.
- 4.8 Calculate the amount of solids collected as follows:
 - a. If the bottom filter shows a loss in weight, add this loss to the change in weight of the top filter.
 - b. If the bottom filter shows a gain in weight, subtract this gain from the change in weight of the top filter.
 - NOTE: In either case assign a positive sign to a gain in weight of the top filter and a negative sign to a loss. The combination of the changes of weight represents the amount of solids collected from the filtered volume.
- 4.9 Calculate the ppm of undissolved solids by the following formula:

PPM solids = wt. solids (in grams X 10⁶ volume liquid filtered (in ml)

- 5.0 REFERENCE
- 5.1 1973 Annual Book of ASTM Standards, Part 23, D 1888-67, 10.3.1-10.3.1.4.

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