JONAS, Inc.
CONSULTANTS

Steam Cycle, Corrosion, Water and Steam Chemistry, Failure Analysis,
Boilers, Turbines, Life Extension, Instrumentation

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PROCEDURE FOR INSTALLATION AND COLLECTION OF DEPOSITS USING JONAS, INC. STEAM TURBINE DEPOSIT COLLECTOR/SIMULATOR

1. The installation, testing, and operation of the Deposit Collector/Simulator is the responsibility of the user, and should be done in accordance with all applicable Codes and Procedures. The mechanics and welders installing the Collector should be qualified. The Deposit Collector/Simulator is supplied with Swagelok fittings or socket welds ends for 1/2-inch or 3/8-inch tubing, as selected by the user.
2. Install the Steam Turbine Deposit Collector/Simulator as shown in Figure 1. The steam can be exhausted to a condenser or safely to a drain. The assembly should be installed with the arrow on the Collector body oriented in the direction of steam flow. A flow meter to measure the total amount of steam passed through the Deposit Collector is desirable.

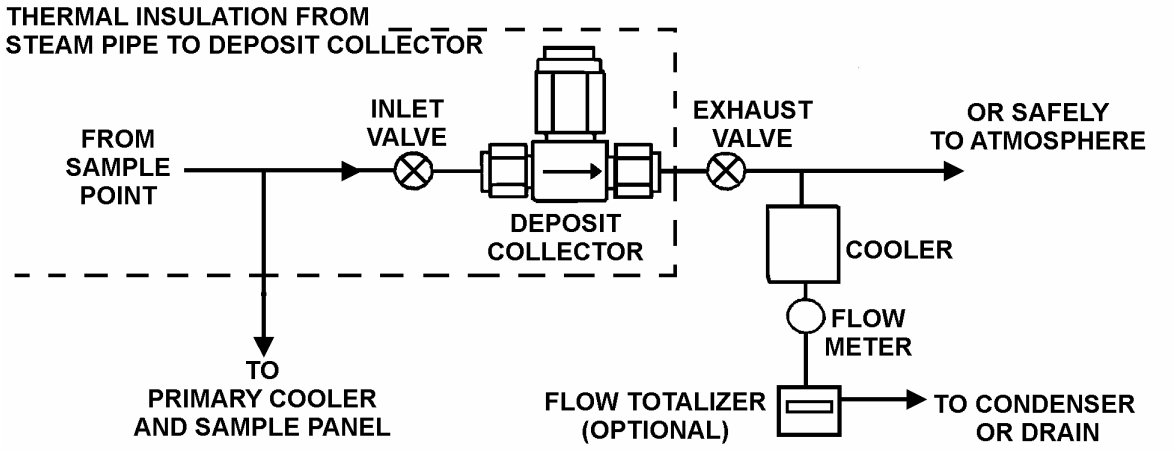

Figure 1
Installation of Deposit Collector/Simulator

3. **System Flush:** Tighten the bonnet nut to close the filter body without inserting a set of filter elements. Install the metal shield cover. Open downstream (exhaust) then upstream (inlet) isolation valves and allow steam to flush the Deposit Collector and piping of accumulated impurities for approximately 15 minutes.
4. Close the upstream isolation valve, allow the Deposit Collector to cool to ambient temperature, and then close the downstream valve.
5. Before installing a new set of filter elements, weigh both the small and large filter and record the initial weights on the provided data sheet.
6. Remove the metal shield cover. Unscrew the bonnet nut and place the small filter element inside the large filter element in the Deposit Collector as shown in Figure 2. The open ends of both filter elements face the seat. It is important that the filter elements are seated properly in the Deposit Collector.

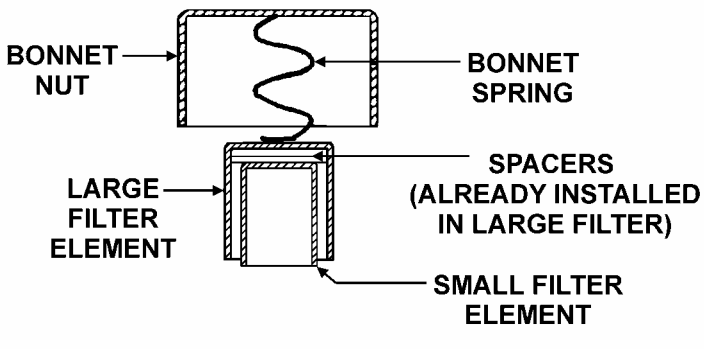

Figure 2
Filter Element Placement

7. Replace the bonnet nut, making sure the gasket is seated properly. Torque the nut to 600 in-lbs (6.9 kg-m).
8. INSTALL THE METAL SHIELD COVER, WHICH WAS PROVIDED, OVER THE DEPOSIT COLLECTOR TO PREVENT POSSIBLE STEAM LEAK CONTACT WITH PERSONNEL.
9. Open the downstream isolation valve and then the upstream isolation valve to begin sampling. Record the location of the test (unit number and steam line), test conditions (including sample flow), boiler information, time and date of the start of the test, and the condensate sample flow rate on the data sheet provided.
10. The test period may be between one (1) and fourteen (14) days (depending on the concentrations of impurities in steam). One-hour exposures can be useful in determination of effects of boiler pressure and load. For better interpretation of the test results, boiler pressure and Unit MW load information for the test period should be collected. Graphs are preferred.
11. At the end of the test period, record the condensate sample flow rate on the data sheet provided. Close the upstream isolation valve, allow the Deposit Collector to cool to ambient temperature, and then close the downstream isolation valve. This is to ensure that there is no condensation in the Deposit Collector.
12. Unscrew the bonnet nut and remove the filter elements using new vinyl gloves to avoid contamination of the elements. A clean flat screwdriver may be used to dislodge the elements from the seat. Record the test end time and date on the data sheet.
13. Dry the filter elements, if wet, by placing them in a desiccator for 24 hours or until no further weight loss due to moisture evaporation is noticed. Weigh each filter, recording the final weight on the data sheet, and place **EACH** filter element in a separate plastic bag and label with test date(s) and location.
14. For new test, repeat steps 3 to 13.
15. Exposed filters can be sent to Jonas, Inc., 1113 Faun Road, Wilmington, DE 19803 USA for analysis.
16. Deposit Collector tests can be repeated as often as needed. Typical operating conditions for which tests are run include: startup (cold and warm), normal operation, MCR, after chemical upsets, and commissioning.