

**PROCESSING IN WATER IN STILL RETORTS  
(Retort Survey)**

**INSTRUCTIONS**

Complete the question blocks below. Narrative responses to each item can be entered in the item's "comments" area or where otherwise prompted. Draw a diagram of the retort or obtain one from the firm and attach it to the EIR as an exhibit. Report all pipe sizes as inside diameter (ID). Cross-sectional area =  $3.14r^2$  ( $r = \frac{1}{2}$  diameter).

If problems are found with the firm's retort equipment or processing system, refer the reader to the narrative Turbo EIR under "Objectionable Conditions and Management's Response," and include a narrative explanation of specific problems and evidence under the subheading "Supporting Evidence and Relevance." Submit the completed form as an EIR attachment.

**RETORT DESCRIPTION**

RETORT NO.	TYPE OF RETORT	LENGTH OR HEIGHT	DIAMETER
	Vertical <input type="checkbox"/> Horizontal <input type="checkbox"/>		

NUMBER OF BASKETS OR CRATES PER RETORT:

FOR VERTICAL RETORTS, BOTTOM CRATE SUPPORTS ARE PRESENT TO PROTECT THE STEAM SPREADER.

Yes       No

*(SHALL REQUIREMENT, 113.40(b)(6))*

COMMENTS:

ARE BAFFLE PLATES PRESENT IN THE BOTTOM OF RETORT? ..... Yes       No

*(BAFFLE PLATES SHALL NOT BE USED, 113.40(b)(6))*

COMMENTS:

ARE VERTICAL RETORTS EQUIPPED WITH CENTERING GUIDES TO PROVIDE A 1.5-INCH CLEARANCE BETWEEN THE SIDE WALLS OF THE RETORT AND THE CRATE? ..... Yes       No

*(SHOULD REQUIREMENT - 113.40(b)(6))*

COMMENTS:

ARE THERE ANY PROTRUSIONS INSIDE THE RETORT OR THE RETORT DOOR CASING WHICH COULD DAMAGE CONTAINERS DURING LOADING/UNLOADING OF CRATES? ..... Yes       No

COMMENTS:

DO THE RETORTS FOLLOW THE ARRANGEMENTS IN THE DIAGRAM FOUND IN 113.40(b)(13)? ..... Yes       No

IF NO, DOES THE FIRM HAVE ON HAND HEAT DISTRIBUTION DATA OR OTHER SUITABLE INFORMATION THAT DEMONSTRATES THAT THE HEAT DISTRIBUTION IS ADEQUATE? ..... Yes       No

*(SHALL REQUIREMENT OF 13.40(b)(13))*

EXPLAIN, IF NECESSARY:

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**COMPUTER CONTROLS**

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DOES A COMPUTER CONTROL ANY OF THE RETORT FUNCTIONS? ..... Yes  No

COMMENTS:

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DOES THE FIRM HAVE DOCUMENTATION ON HAND THAT INDICATES THAT THE COMPUTER SYSTEM HAS BEEN VALIDATED?

Yes  No

EXPLAIN:

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IS RECORD KEEPING PART OF THE COMPUTER FUNCTION? ..... Yes  No

IF YES, DOES THE RECORD KEEPING COMPLY WITH 21CFR PART 11? ..... Yes  No

EXPLAIN:

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**INDICATING MERCURY IN-GLASS THERMOMETERS (113.40(b)(1))**

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IS THE RETORT EQUIPPED WITH AT LEAST ONE MERCURY-IN-GLASS (MIG) THERMOMETER ..... Yes  No

*(SHALL REQUIREMENT)*

COMMENTS:

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IS THE RETORT EQUIPPED WITH ANOTHER TYPE OF TEMPERATURE INDICATOR? ..... Yes  No

IF YES, DESCRIBE THE TEMPERATURE INDICATOR:

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ARE SCALE DIVISIONS EASILY READABLE TO 1°F (.5°C)? ..... Yes  No

*(SHALL REQUIREMENT)*

NO. OF DEGREES F OR C/IN. OF GRADUATED SCALE: \_\_\_\_\_. *(TEMP. RANGE MUST NOT EXCEED 17°F (8°C PER INCH (4°C/ CM) OF GRADUATED SCALE – SHALL REQUIREMENT. SEE LACF GUIDE-PART 2.)*

DATE LAST TESTED FOR ACCURACY:

*(THERMOMETERS **SHALL** BE TESTED FOR ACCURACY AGAINST A KNOWN ACCURATE STANDARD THERMOMETER UPON INSTALLATION AND AT LEAST ONCE A YEAR THEREAFTER; RECORDS OF ACCURACY CHECKS THAT SPECIFY DATE, STANDARD USED, METHOD USED, AND PERSON PERFORMING THE TEST SHOULD BE MAINTAINED. EACH THERMOMETER SHOULD HAVE A TAG, SEAL, OR OTHER MEANS OF IDENTITY THAT INCLUDES THE DATE IT WAS LAST TESTED FOR ACCURACY.)*

COMMENTS:

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STANDARD USED FOR THE TEST:

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NAME AND TITLE OF PERSON WHO PERFORMED TEST:

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IS THE LAST TEST DATE IDENTIFIED ON THE THERMOMETER? ..... Yes  No

WERE CALIBRATING TEST RECORDS PREPARED/MAINTAINED? ..... Yes  No

*(SHOULD REQUIREMENT)*

COMMENTS:

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DESCRIBE THE FIRM'S ACTIONS REGARDING MIG THERMOMETERS WHICH WERE OUT OF CALIBRATION:

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IS THE MERCURY UNDIVIDED? ..... Yes  No

*(A THERMOMETER THAT HAS A DIVIDED MERCURY COLUMN OR THAT CANNOT BE ADJUSTED TO THE STANDARD SHALL BE REPAIRED OR REPLACED (113.40(b)(1).)*

COMMENTS:

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WHEN MIG THERMOMETERS ARE FOUND TO BE PROVIDING READINGS ABOVE THE ACTUAL TEMPERATURES, DOES THE FIRM EVALUATE PRODUCTS PRODUCED USING THOSE THERMOMETERS? ..... Yes  No

DESCRIBE THE FIRM'S PROCEDURES:

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IS THE THERMOMETER LOCATED WHERE IT IS EASY TO READ ACCURATELY? ..... Yes  No

*(SHALL REQUIREMENT- 113.40(b)(1))*

COMMENTS:

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IS THE SENSOR BULB POSITIONED SO THAT IT EXTENDS DIRECTLY INTO THE WATER A MINIMUM OF AT LEAST 2 INCHES WITHOUT A SEPARABLE WELL OR SLEEVE AND IS BENEATH THE SURFACE OF THE WATER DURING THE COMPLETE PROCESS? ..... Yes  No

*(SHALL REQUIREMENT)*

COMMENTS:

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ON HORIZONTAL RETORTS, IS THE MIG THERMOMETER INSERTED DIRECTLY INTO THE RETORT SHELL IN THE SIDE AT THE CENTER? ..... Yes  No

*(SHOULD REQUIREMENT)*

EXPLAIN WHERE AND HOW THE MIG IS POSITIONED:

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IS THE MERCURY THERMOMETER USED AS THE REFERENCED INSTRUMENT DURING PROCESSING? ... Yes  No

*(SHALL REQUIREMENT)*

COMMENTS:

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TEMPERATURE RECORDING DEVICE (113.40(b)(2))

IS THE RETORT EQUIPPED WITH A TEMPERATURE RECORDING DEVICE? ..... Yes  No

TYPE OF TEMPERATURE RECORDER ..... Round Circular Chart  Strip Chart  Other

IF OTHER, DESCRIBE:

DO THE CHART SPECIFICATIONS MEET THE REQUIREMENTS OF PART 113? ..... Yes  No

*(GRADUATIONS ON THE TEMPERATURE-RECORDING CHART SHALL NOT EXCEED 2°F(1°C) WITHIN A RANGE OF 10°F(5.5°C) OF THE PROCESSING TEMPERATURE. EACH CHART SHALL HAVE A WORKING SCALE OF NOT MORE THAN 55°F/IN.(12°C/CM) WITHIN A RANGE OF 20°F(10°C) OF THE PROCESSING TEMPERATURE .)*

COMMENTS:

IS THE TEMPERATURE CHART ADJUSTED TO AGREE AS NEARLY AS POSSIBLE WITH BUT NOT HIGHER THAN THE KNOWN ACCURATE MERCURY-IN-GLASS THERMOMETER DURING THE PROCESSING PERIOD? ..... Yes  No

*(SHALL REQUIREMENT – NOTE ANY DIFFERENCE BETWEEN THE RECORDING THERMOMETER AND THE MERCURY-IN-GLASS THERMOMETER AND WHICH READING IS HIGHER.)*

COMMENTS:

IS THERE A MEANS FOR PREVENTING UNAUTHORIZED ADJUSTMENTS? ..... Yes  No

*(A MEANS OF PREVENTING UNAUTHORIZED CHANGES IN ADJUSTMENTS **SHALL** BE PROVIDED. A LOCK OR NOTICE FROM MANAGEMENT STATING “ONLY AUTHORIZED PERSONS ARE PERMITTED TO MAKE ADJUSTMENTS” & POSTED AT OR NEAR THE RECORDING DEVICE IS A SATISFACTORY MEANS FOR PREVENTING UNAUTHORIZED CHANGES. )*

COMMENTS:

IS THE CHART DRIVE TIMING MECHANISM ACCURATE? ..... Yes  No

IF NO, EXPLAIN:

IS THE RECORDER COMBINED WITH A STEAM CONTROLLER TO FUNCTION AS A RECORDING/CONTROLLING INSTRUMENT? ..... Yes  No

COMMENTS:

FOR VERTICAL STILL RETORTS EQUIPPED WITH A TEMPERATURE RECORDING/CONTROLLING DEVICE, IS THE TEMPERATURE SENSOR PROBE LOCATED AT THE BOTTOM OF THE RETORT BELOW THE LOWEST CRATE SUPPORT SO STEAM DOES NOT STRIKE IT DIRECTLY? ..... Yes  No

*(SHALL REQUIREMENT)*

COMMENTS:

FOR RETORTS OTHER THAN VERTICAL STILL RETORTS EQUIPPED WITH A RECORDING/CONTROLLING INSTRUMENT, IS THE RECORDING THERMOMETER BULB LOCATED ADJACENT TO THE BULB OF THE MERCURY-IN-GLASS THERMOMETER? ..... Yes  No

*(**SHOULD** REQUIREMENT – 113.40(b)(2))*

COMMENTS:

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FOR HORIZONTAL STILL RETORTS EQUIPPED WITH A TEMPERATURE RECORDING/CONTROLLING DEVICE, IS THE TEMPERATURE RECORDING/CONTROLLING BULB LOCATED BETWEEN THE WATER SURFACE AND THE HORIZONTAL PLANE PASSING THROUGH THE CENTER OF THE RETORT SO THERE IS NO DIRECT STEAM IMPINGEMENT ON THE CONTROL BULB? ..... Yes  No

*(SHALL REQUIREMENT)*

COMMENTS:

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**PRESSURE GAGE (113.40(b)(3)(i))**

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IF A PRESSURE GAGE IS PRESENT, IS IT GRADUATED IN DIVISIONS OF 2 LBS. OR LESS? ..... Yes  No

*(SHOULD REQUIREMENT)*

COMMENTS:

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**PRESSURE RELIEF VALVE (113.40(b)(3)(ii))**

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IS THE RETORT EQUIPPED WITH AN ADJUSTABLE PRESSURE RELIEF OR CONTROL VALVE INSTALLED IN THE OVERFLOW LINE? ..... Yes  No

*(SHOULD REQUIREMENT)*

COMMENTS:

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**STEAM CONTROLLER (113.40(b)(4))**

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IS THE RETORT EQUIPPED WITH AN AUTOMATIC STEAM CONTROL VALVE? ..... Yes  No

*(EACH RETORT SHALL BE EQUIPPED WITH AN AUTOMATIC STEAM CONTROLLER TO MAINTAIN THE RETORT TEMPERATURE.)*

COMMENTS:

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IS THE CONTROLLER COMBINED WITH A TEMPERATURE RECORDER TO FUNCTION AS A RECORDING/CONTROLLING INSTRUMENT? ..... Yes  No

COMMENTS:

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IF THE TEMPERATURE (STEAM) CONTROLLER IS AIR OPERATED, DOES THE SYSTEM HAVE AN ADEQUATE FILTER TO ASSURE A SUPPLY OF CLEAN, DRY AIR? ..... Yes  No

*(AIR OPERATED TEMPERATURE CONTROLLERS SHOULD HAVE ADEQUATE FILTER SYSTEMS TO ASSURE A SUPPLY OF CLEAN, DRY AIR, 113.40(b)(2).)*

COMMENTS:

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REPORT THE **MANUFACTURER, SIZE, MODEL** AND **TYPE** OF AUTOMATIC STEAM CONTROL VALVE:

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**STEAM INTRODUCTION (113.40(b)(5))**

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IS STEAM DISTRIBUTED IN THE BOTTOM OF THE RETORT? ..... Yes  No

*(STEAM SHALL BE DISTRIBUTED IN THE BOTTOM OF THE RETORT IN A MANNER ADEQUATE TO PROVIDE UNIFORM HEAT DISTRIBUTION THROUGHOUT THE RETORT.)*

COMMENTS:

FOR HORIZONTAL STILL RETORTS, IS THERE A STEAM DISTRIBUTION PIPE THAT RUNS THE LENGTH OF THE BOTTOM OF THE RETORT WITH PERFORATIONS DISTRIBUTED UNIFORMLY ALONG THE UPPER PART OF THE PIPE? Yes  No

**(SHALL REQUIREMENT)**

DESCRIBE THE SHAPE AND DIMENSIONS OF THE STEAM SPREADER PIPE:

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**STACKING EQUIPMENT AND CONTAINER POSITION (113.40(b)(7))**

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ARE CRATES, TRAYS, ETC. FOR HOLDING CONTAINERS MADE OF STRAP IRON OR OTHER ADEQUATELY PERFORATED MATERIAL? ..... Yes  No

COMMENTS:

ARE CONTAINERS POSITIONED IN THE RETORT AS SPECIFIED IN THE SCHEDULED PROCESS? ..... Yes  No

COMMENTS:

ARE DIVIDERS, TRAYS, RACKS OR OTHER MEANS OF POSITIONING FLEXIBLE CONTAINERS DESIGNED AND EMPLOYED TO INSURE EVEN CIRCULATION OF HEATING MEDIUM AROUND ALL CONTAINERS? ..... Yes  No

COMMENTS:

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**DRAIN LINE AND VALVE (113.40(b)(8))**

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ARE SCREENS USED OVER ALL DRAIN OPENINGS TO PREVENT CLOGGING OF DRAINS? ..... Yes  No

**(SHALL REQUIREMENT)**

IS THE DRAIN LINE VALVE WATER TIGHT AND NON-CLOGGING? ..... Yes  No

COMMENTS:

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**WATER LEVEL INDICATOR (113.40(b)(9))**

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DOES WATER COVER THE TOP LAYER OF CONTAINERS IN THE RETORT BASKETS DURING THE ENTIRE COME-UP TIME AND PROCESSING PERIOD? ..... Yes  No

DOES WATER COVER THE TOP LAYERS OF CONTAINERS DURING THE COOLING PERIOD? ..... Yes  No

*(WATER **SHALL** COVER THE TOP LAYER OF CONTAINERS DURING THE ENTIRE COME-UP TIME AND PROCESSING PERIOD AND **SHOULD** COVER THE TOP LAYER DURING THE COOLING PERIODS – 113.40(b)(9).)*

COMMENTS:

IS THERE A MEANS TO DETERMINE THE WATER LEVEL IN THE RETORT DURING OPERATION? ..... Yes  No

IF YES, WHAT MONITORING DEVICES ARE USED?..... Gage  Sight-glass  Glass  Petcock  Other

IF OTHER, EXPLAIN TYPE:

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IF NO MONITORING DEVICES, EXPLAIN:

(THERE SHALL BE A MEANS OF DETERMINING THE WATER LEVEL IN THE RETORT DURING OPERATION.)

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DOES THE OPERATOR CHECK AND RECORD THE WATER LEVEL AT INTERVALS SUFFICIENT TO ENSURE ITS ADEQUACY?

Yes  No

**(SHALL REQUIREMENT)**

COMMENTS:

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**PROCESSING WATER**

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IS THE PROCESSING WATER HEATED IN A SEPARATE VESSEL AND THEN INTRODUCED INTO THE PROCESSING VESSEL?

Yes  No

COMMENTS:

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WAS THE TEMPERATURE OF THE PREHEATED WATER TAKEN INTO CONSIDERATION DURING TEMPERATURE DISTRIBUTION STUDIES? ..... Yes  No

COMMENTS:

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DOES THE FIRM CONTROL THE PREHEATING OF PROCESS WATER AS CRITICAL TO THE THERMAL PROCESS?

Yes  No

COMMENTS:

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**AIR SUPPLY AND CONTROLS (113.40(b)(10))**

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IS AIR SUPPLIED TO THE RETORTS DURING THE COME-UP, PROCESSING AND COOLING PERIODS TO PROMOTE CIRCULATION OF WATER AND TEMPERATURE DISTRIBUTION? ..... Yes  No

IF YES, IS THE AIR INTRODUCED AT THE PROPER PRESSURE AND RATE? ..... Yes  No

**(SHALL REQUIREMENT – 113.40(b)(10)(i))**

COMMENTS:

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IS THE COMPRESSED AIR SUPPLIED TO THE RETORT CONTROLLED BY AN AUTOMATIC PRESSURE CONTROL UNIT?

Yes  No

**(SHALL REQUIREMENT – 113.40(b)(10)(i))**

COMMENTS:

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IS THE AIR SUPPLY LINE EQUIPPED WITH A CHECK VALVE TO PREVENT WATER FROM ENTERING THE SYSTEM?

Yes  No

**(SHALL REQUIREMENT – 113.40(b)(10)(i))**

COMMENTS:

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HAS THE ADEQUACY OF THE AIR OR WATER CIRCULATION FOR UNIFORM HEAT DISTRIBUTION WITHIN THE RETORT BEEN ESTABLISHED IN ACCORDANCE WITH PROCEDURES RECOGNIZED BY A COMPETENT PROCESS AUTHORITY?

Yes  No

ARE RECORDS OF THE ESTABLISHMENT OF UNIFORM HEAT DISTRIBUTION KEPT ON FILE? ..... Yes  No

*(SHALL REQUIREMENT) – 113.40(b)(10)(i)*

COMMENTS:

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IF AIR IS USED TO PROMOTE WATER CIRCULATION IN THE RETORT, IS IT INTRODUCED INTO THE STEAM LINE AT A POINT BETWEEN THE RETORT AND THE STEAM CONTROL VALVE AT THE BOTTOM OF THE RETORT? ... Yes  No

*(SHALL REQUIREMENT) – 113.40(b)(10)(i)*

COMMENTS:

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WHEN A WATER CIRCULATING SYSTEM IS USED FOR HEAT DISTRIBUTION, IS IT INSTALLED IN SUCH A MANNER THAT WATER WILL BE DRAWN FROM THE BOTTOM OF THE RETORT THROUGH A SUCTION MANIFOLD AND DISCHARGED THROUGH A SPREADER WHICH EXTENDS THE LENGTH OF THE TOP OF THE RETORT? ..... Yes  No  N/A

*(SHALL REQUIREMENT) – 113.40(b)(10)(ii)*

COMMENTS:

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FOR WATER CIRCULATING SYSTEMS, ARE THE HOLES IN THE WATER SPREADER UNIFORMLY DISTRIBUTED AND DO THEY HAVE AN AGGREGATE AREA NOT GREATER THAN THE CROSS-SECTION AREA OF THE OUTLET LINE FROM THE PUMP?

Yes  No  N/A

*(SHALL/SHOULD REQUIREMENT) – 113.40(b)(10)(ii)*

COMMENTS:

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ARE SUCTION OUTLETS PROTECTED WITH NONCLOGGING SCREENS TO KEEP DEBRIS FROM ENTERING THE CIRCULATING SYSTEM? ..... Yes  No

*(SHALL REQUIREMENT) – 113.40(b)(10)(ii)*

COMMENTS:

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IS THE WATER PUMP EQUIPPED WITH A PILOT LIGHT OR OTHER SIGNALING DEVICE TO WARN THE OPERATOR WHEN IT IS NOT RUNNING? ..... Yes  No

*(SHALL REQUIREMENT) – 113.40(b)(10)(ii)*

COMMENTS:

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IS AN ALTERNATE METHOD OF WATER CIRCULATION USED? ..... Yes  No

*(113.40(b)(10)(ii))*

IF YES, HAS THE METHOD BEEN ESTABLISHED BY A COMPETENT PROCESS AUTHORITY? ..... Yes  No

DESCRIBE THE ALTERNATE METHOD:

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**COOLING WATER SUPPLY**

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FOR VERTICAL STILL RETORTS, IS THE COOLING WATER INTRODUCED AT THE TOP OF THE RETORT BETWEEN THE WATER AND CONTAINER LEVELS? ..... Yes  No  N/A

*(SHOULD REQUIREMENT - 113.40(b)(11))*

COMMENTS:

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FOR HORIZONTAL RETORTS, IS THE COOLING WATER INTRODUCED INTO THE SUCTION SIDE OF THE PUMP?

Yes  No

*(SHOULD REQUIREMENT 113.40(b)(11))*

COMMENTS:

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IS THE WATER-COOLING LINE EQUIPPED WITH A CHECK VALVE? ..... Yes  No

*(SHOULD REQUIREMENT - 113.40(b)(11))*

COMMENTS:

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**RETORT HEADSPACE**

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IS HEADSPACE, NECESSARY TO CONTROL THE AIR PRESSURE, MAINTAINED BETWEEN THE WATER LEVEL AND THE TOP OF THE RETORT SHELL? ..... Yes  No

*(SHOULD REQUIREMENT) - 113.40(b)(12)*

COMMENTS: