

**STAGE ONE**  
 Incoming water is sprayed through variable orifice spray valves creating a thin walled cone for effective heat transfer. The water falls into a catch pan with a loop sealed downtake.

**STAGE TWO**  
 The water exits the loop seals and is distributed over the tray bank. Here it is mixed with the inlet steam and travels with the steam downward through the tray stack. Residual heating steam and trace noncondensable gasses then travel outside the tray enclosure to the spray area.

**NOTE:**  
 This design allows trace noncondensable gases to contact the pressure shell where they can cause corrosion.

CLIENT:	JOB #	SCALE	DESIGNED	DRAWN	CHECKED	DATE	UTD
	NTS	JK	BA	JK	JK	2-3 1998	

TITLE: VERTICAL TANK PROPOSAL

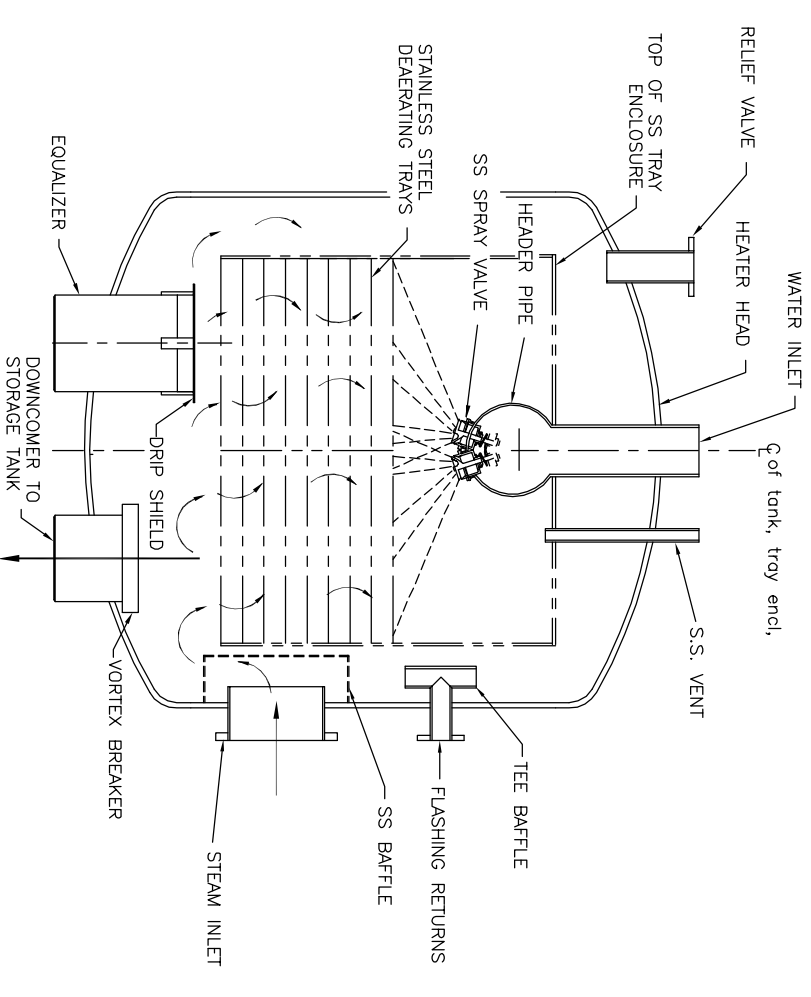
MODEL:

PARALLEL FLOW

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SKETCH #1  
 COUNTERFLOW DEAERATOR

**STAGE ONE**  
 Incoming water flows through Kansas City Deaerator's variable orifice spray valves and the steam filled vent condensing chamber as a thin-walled, hollow cone spray pattern. Latent heat transfer is instantaneous because of the intimate water to steam exposure. As the water reaches the tray stack, at which point stage one is complete, its temperature is within 2°F of the counter flowing saturated steam temperature, and most dissolved oxygen and free carbon dioxide has been removed. Nearly all of the steam has now condensed, permitting the non-condensable gasses to be carried through the by the the remaining steam.

**STAGE TWO**  
 During stage two, the preheated water flows over the tray stack and is vigorously scrubbed by the counter flowing steam. The water zigzags its way through a counter-current of pure steam and leaves the tray stack virtually free of oxygen and carbon dioxide.

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COUNTER FLOW

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