

DESIGN PRACTICE FOR NUCLEAR WASTE CLEANUP

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A THEORY OF NUCLEAR RADIATION AND POSSIBLE SOULTION TO BOTH ALPHA AND GAMMA RADIATION, DESERNED BY A PRINCIPLE HVAC DESIGNER.

1) DEFINITION OF NUCLEAR ENERGY

I overheard an explanation of nuclear energy from the nuclear physicist as he was talking to another individual. I can't remember the explicit definition that he gave about alpha particles, but I believe he said something along the lines that gamma rays were nuclear energy radiating from a source hitting a dense object and disappearing. When he spoke, I thought I could not believe that something could turn into nothing.

In pharmaceutical cleanroom design a HEPA filter will remove 99.97% of all particulate of 0.03microns and larger in the supply system. These systems are design to achieve a laminar flow in order to remove air born particles. With this in mind I have determined that alpha particles are a resultant of nuclear energy radiating from the tank source attaching itself to the elements in the air current which are 0.03 microns and larger there by contaminating the surrounding air. These elements are common in air

If the use of HEPA filters in the supply system is used then the operator thus cleanses the air to a point where the particles are reduced to only those that reside in the room either prior to startup or by entrance to the room when the room is occupied. Those elements that are present in the sir are removed in the exhaust system by dilution. IF the room is unoccupied without an outside source being induced to the room, the room settles to state that becomes void of alpha particles. One can see that if the theory mentioned here is upheld in a test then the alpha particles will be contained in the highest level of radiological confinement. The tank, as discussed in the tank and setup section.

Finally for this practice I determined gamma rays would be nuclear energy radiating out from the tank walls and attaching itself to water vapor found in humidity, then accelerated to a dense object and turning into oxygen or hydrogen on impact. One of them gets used.

2) TANK DESIGN AND SETUP

A new design concept for a waste tank would be to add a lining or tank Shell to act as a barrier. This concept for test purposes would be to use a ¼ inch thick tank wall with another ¼ inch thick shell used

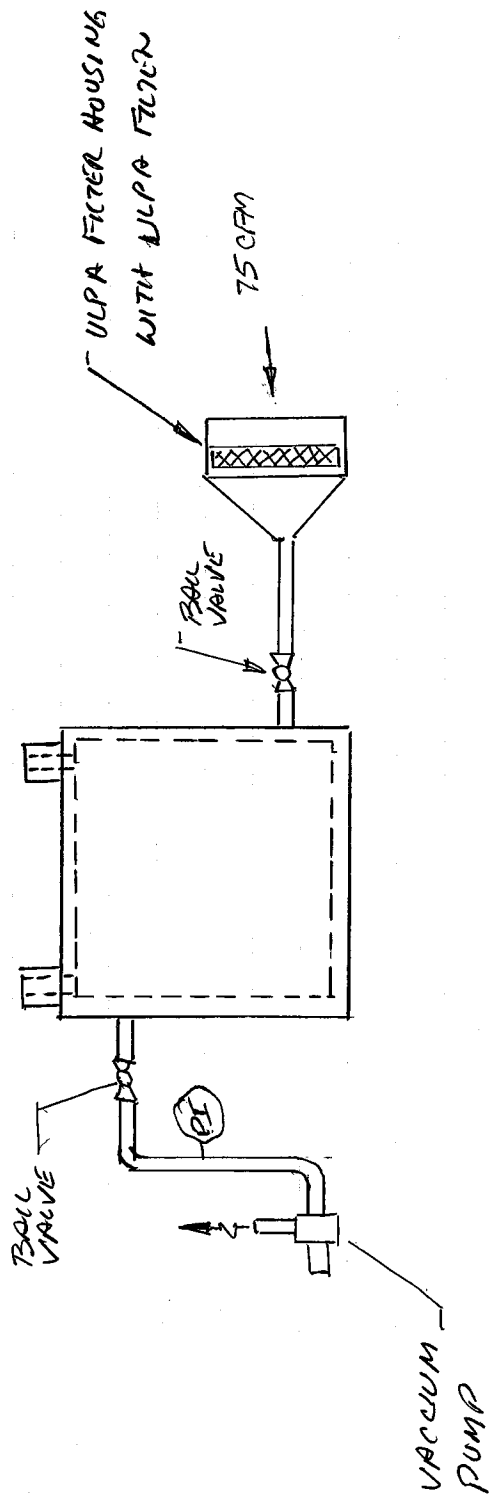
as a secondary tank shell creating a 3 inch tank cavity. This tank cavity can be used as a barrier by creating a vacuum on the tank shell and evacuating the elements and humidity from the cavity thus creating a dead space. Once the vacuum barrier is achieved then the alpha particles will be contained. Note: in this concept the alpha particles do not pass thru the tank wall as currently thought. It would be the nuclear energy radiating from the source and attaching to the elements in the surrounding environment in which the tank is placed.

To create the vacuum locked barrier weld a 2 " pipe with a ball valve to the middle of one side of the welded tank shell, then attach the pipe to a HEPA housing with a ULPA HEPA filter(99.99% efficiency) used as an intake to the tank shell. Attach a second 2" pipe to the middle of the opposing side of the tank shell also with a 2 ball valve. Run the second pipe to a vacuum pump. After letting the pump run a while, then close the intake ball valve and let the vacuum pump pull a vacuum on the tank shell to -10" of pressure. Then close the ball valve to the vacuum pump. All components made of stainless steel construction. It is believed that the dead space created by the tank cavity will prevent the transfer of nuclear radiation from the inner tank wall to the outer tank shell thus isolating the tank contents of nuclear waste to the surrounding environment. See the drawings attached the tank and the vacuum system arrangement and tank fabrication drawing.

4) FURTHER USE OF THE VACUUM LOCKED BARRIER.

In nuclear radiological confinement 2.5 to 3 feet of concrete is used as containment barriers in the Zone 1 and Zone 2 confinement zones. The cost of the confinement barrier becomes costly trying to form and pour the massive concrete structure, especially for elevated walls to second and third story floors. One way to offset the costs would be to create vacuum barrier panels and attach them to a standard steel structure to form the walls. The benefit of barrier panels as containment barriers is the ability to modify the structure from an oversight, like adding new or forgotten lines.

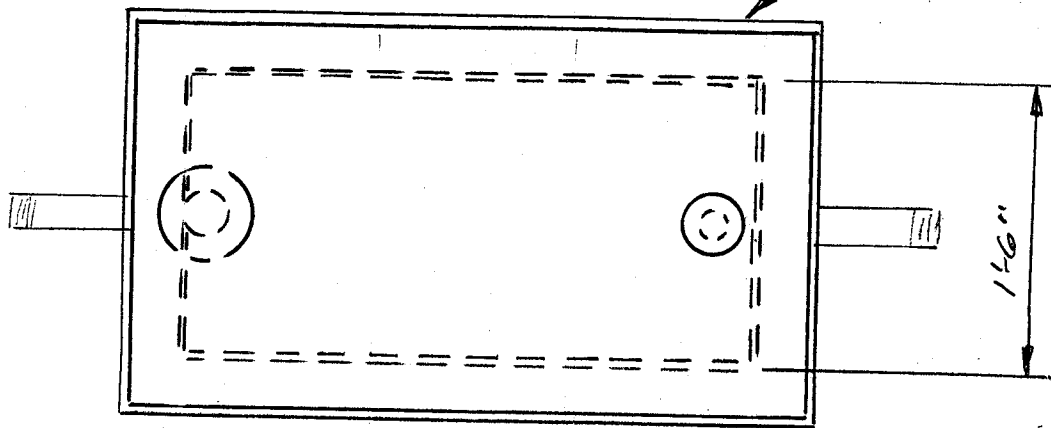
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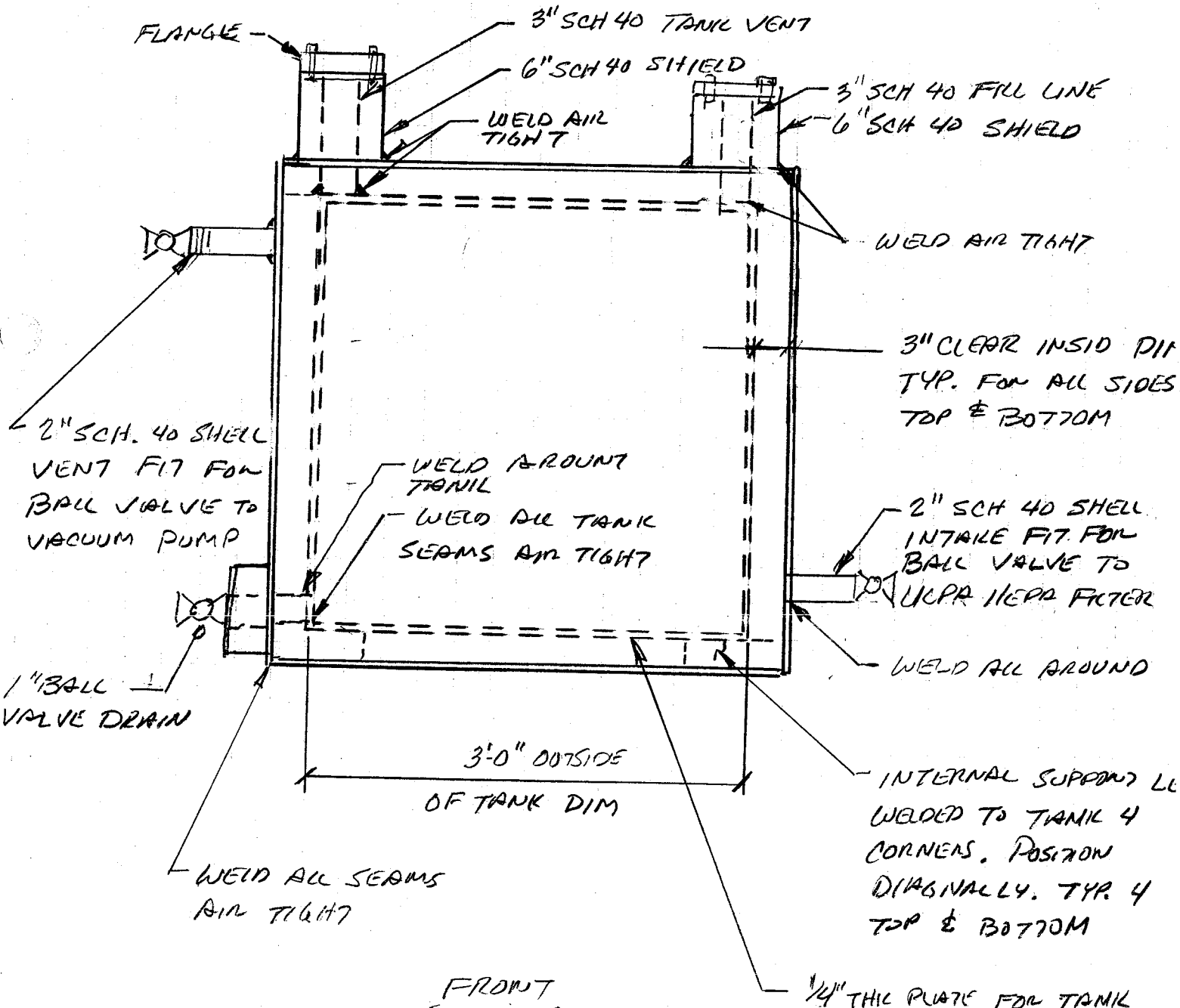
ARRANGEMENT TO
DRAW VACUUM

TEST TANK w/ SHELL

1/4" THICK PLATE FOR SHELL WALLS, BOTTOM & TOP



TOP



FRONT

* ALL MATERIAL 307 SS

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