

Docket Files  
(50-320)

OCT 15 1979

Docket No. 50-320

Mr. Terry Richards  
10900 Tracy Ave.  
Kansas City, MO 64131

Dear Mr. Richards:

Your letter to Mr. Denton dated August 26, 1979 has been referred to me. It is clear from your letter that you have given much thought to the accident at the Three Mile Island - Unit 2 nuclear power plant (TMI-2). Some of your ideas are similar to the ones considered by the TMI-2 Lessons Learned Task Force, which I direct. For your information I am enclosing a copy of a report by the Task Force (NUREG-0578).

We agree with your observation that vigilance in operational safety must not be relaxed for the sake of keeping a plant on-line. Several recommendations in NUREG-0578 emphasize this point.

With respect to your comments concerning preparedness to handle emergency situations, you will be interested to know that the NRC Incident Response Center is manned 24 hours per day. To assure prompt communications, dedicated telephone lines have been installed between this center and the control room of each operating nuclear power plant. NUREG-0578 recommends, among other things, that an on-site Technical Support Center be established at each plant. In connection with implementation of this recommendation, it is expected that key plant status information will be provided in that center, and ultimately the capability could be provided to transmit such information to the NRC and other locations where people would be serving in a support capacity during an emergency.

We do not agree with the note on one of your sketches which compares the containment concept to the Maginot Line. While a containment structure is not "invincible," under all conditions that can be postulated, a properly designed structure can provide reliable and very substantial protection against the release of radioactivity. Indeed, the TMI-2 containment building served that purpose quite well.

7911070224

OFFICE →						
SURNAME →						
DATE →						

Mr. Terry Richards

- 2 -

OCT 15 1979

We note that your ideas on preventing or accomodating breach of containment in the event of fuel melting reflect considerable knowledge about the "core-catcher" concept. Crucibles, ablative materials and cooling systems to arrest, cool and immobilize molten fuel have been considered over the years and some research has been done. But there are a number of technological problems to deal with before one could be assured that a particular approach would work well enough to assure its feasibility.

Thank you for your thoughtful ideas.

Sincerely,

Original signed by  
Roger J. Mattson

Roger J. Mattson, Director  
Lessons Learned Task Force

DISTRIBUTION:

✓ Docket Files  
NRR R/F  
H. Denton  
E. Case  
R. Mattson  
F. Schroeder  
H. Berkow/W. Russell  
D. Muller  
D. Vassallo  
D. Eisenhower  
R. Ireland  
M. Groff (NRR-3216)  
T. Schultze

OFFICE →	LLTF <i>[Signature]</i> LLTF				
SURNAME →	RIreland:mab RMattson				
DATE →	10/12/79	10/15/79			

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIUS)

ACCESSION NBR:7909050380

DOC.DATE: 79/08/26 NOTARIZED: NO

DOCKET #

FACIL:

AUTH.NAME  
RICHARDS,T.  
RECIP.NAME  
DENTON,H.R.

AUTHOR AFFILIATION  
Affiliation Unknown  
RECIPIENT AFFILIATION  
Office of Nuclear Reactor Regulation

*Handwritten signatures and initials*

SUBJECT: Expresses concern & conveys suggestions re radioactivity & danger of nuclear disasters. Supporting documentation encl.

DISTRIBUTION CODE: XE01S COPIES RECEIVED: LTR 1 ENCL 1 SIZE: 8  
TITLE: Exec. Correspondence (No specific Dkt. Trans. to Denton/

NOTES: -----

RECIPIENT ID CODE/NAME	COPIES LTR ENCL	RECIPIENT ID CODE/NAME	COPIES LTR ENCL
INTERNAL: <u>BRUFF, M. (ORIG)</u>	1 1	TERAVICY SUPEND	1 1

TOTAL NUMBER OF COPIES REQUIRED: LTR 2 ENCL 2

Mr Denton:

26 Aug 79

During the TMI incident I sent in some suggestions regarding the use of a large plastic covering (among other things) to help contain any radioactivity. Since that time I saw an article in a magazine where Stone & Webster had made a study on the use of a large plastic dome during construction and concluded that it was possible and perhaps even feasible. I intended to send the article with this letter, but quite frankly I can't find it so if you are interested in their study I suggest you contact them and see if what they have done has application for emergency use as well. (On the other hand I am not suggesting that you turn to S&W for your engineering needs). I just located the article so a copy is enclosed.

I also want to mention some other suggestions including one that will, I think, end the idea of the Chinese syndrome. These ideas are described below.

To eliminate, or at least significantly reduce its danger, the Chinese syndrome a very deep well should be drilled under the containment & of course before it is installed. This idea is elaborated on in the enclosed sketch, but the well, using oil well drilling techniques, should be at least 10,000 feet deep.

Operators or at least a person(s) on site should be getting paid \$50,000 per year, or an amount comparable to airline pilots or air traffic controllers, who by comparison have no responsibility at all, but only have organization or union representation so they get a better deal.

Could a "disaster" office be kept open 24 hours per day (if it is not already being done). Perhaps through the Pentagon with certain people on 'alert'. Teams could be established to play TMI games, only rotate the team members to avoid staleness and a mind set. The teams would, not only play games, but respond if needed and would consist of engineers from govt, utilities, mfr and engineering firms, but no lawyers. Also these teams might very well respond to suggestions or notices of unsafe practices that were sent in, and the people that send in those ideas could be kept anonymous so they wouldn't get fired or in hot water.

If it was really desired to get sophisticated, then a communication center, or maybe several regional ones, could be established so that if certain parameters were exceeded, this data would be automatically transmitted to the "command center" and voice communication established and the systems people brought in as advisors. They could call in to the center and be hooked up on some party line system. Or of course some IV equipment could be employed. I kinda like the idea of sharing with the military since the activation of this standby disaster team will hopefully be a very, very rare occasion, perhaps even never.

What is the historic attitude of utilities towards maintenance in their plants?? How does this attitude affect their views on high technology nuclear plants?? Also what pressures are on the utility management to recover their investment and just let the engineering or technology things slide along?? After all engineering is an overhead item once the plant gets rolling. What was the mind set of the nuclear industry before TMI?? I personally think everyone involved had kind of closed their minds, that they had all read too many of their own press releases and patted each other on the back so many times that ever one agreed that it was all screw, oh so safe! If a vote had taken place, undoubtedly the vote would have been a landslide in favor of safety. Unfortunately even voting has its limitations and one such limitation is there is no guarantee the truth will emerge from a vote.

Historically some utilities have had the attitude of run the plant until it breaks and then fix it, but I find it hard to justify such an attitude when dealing with nuclear plants and the folly of such thinking is or should be clear from the extraordinary expense needed to clean up TMI. Maybe the understanding of the need to operate nuclear plants from an engineered safety point of view instead of as just another power plant will be made clear by the expense of clean up.

Don't you think that technology has moved past historic financial arrangements in nuclear plants?? I suspect that an extraordinary pressure is placed on utility people to keep the plant running for financial reasons because of the way they are financed, because of the heavy debt load. So why not change that?? After all REA had low interest money from govt to build electrification facilities in rural areas? Even today govts operate airports so why is it sacred that nuclear power plants be "privately owned and operated"? I do not pretend to have the answer to this question but I think it should be asked, and I guess what I have in mind is some sort of quasi govt operation but not necessarily total govt. Maybe this group could own and operate the plant(say generation still has) and sell the power to the distribution utilities.

I hope these ideas may be of some use.

P.S. - the oil spill in the Gulf of Mexico points out that we are unprepared in many areas for crisis situations. Attached are a couple of sketches that I am sending to EPA and DOE to form a brainstorming team to develop new methods & equipment for oil well problems. A cross section of engineering talent should be brought to bear on this type of problem.

Yours truly,  
Terry Richards  
Terry Richards  
10900 - Hwy Ave.  
KC, MO 64131

KEO  
5/21

There are national guidelines for run away kids--any not a national not line for runaway reactors or oil wellbores  
A new of these ideas are of an idea. If they stimulate other ideas, how do.

## Think about building your next nuke inside a bubble, says S&W

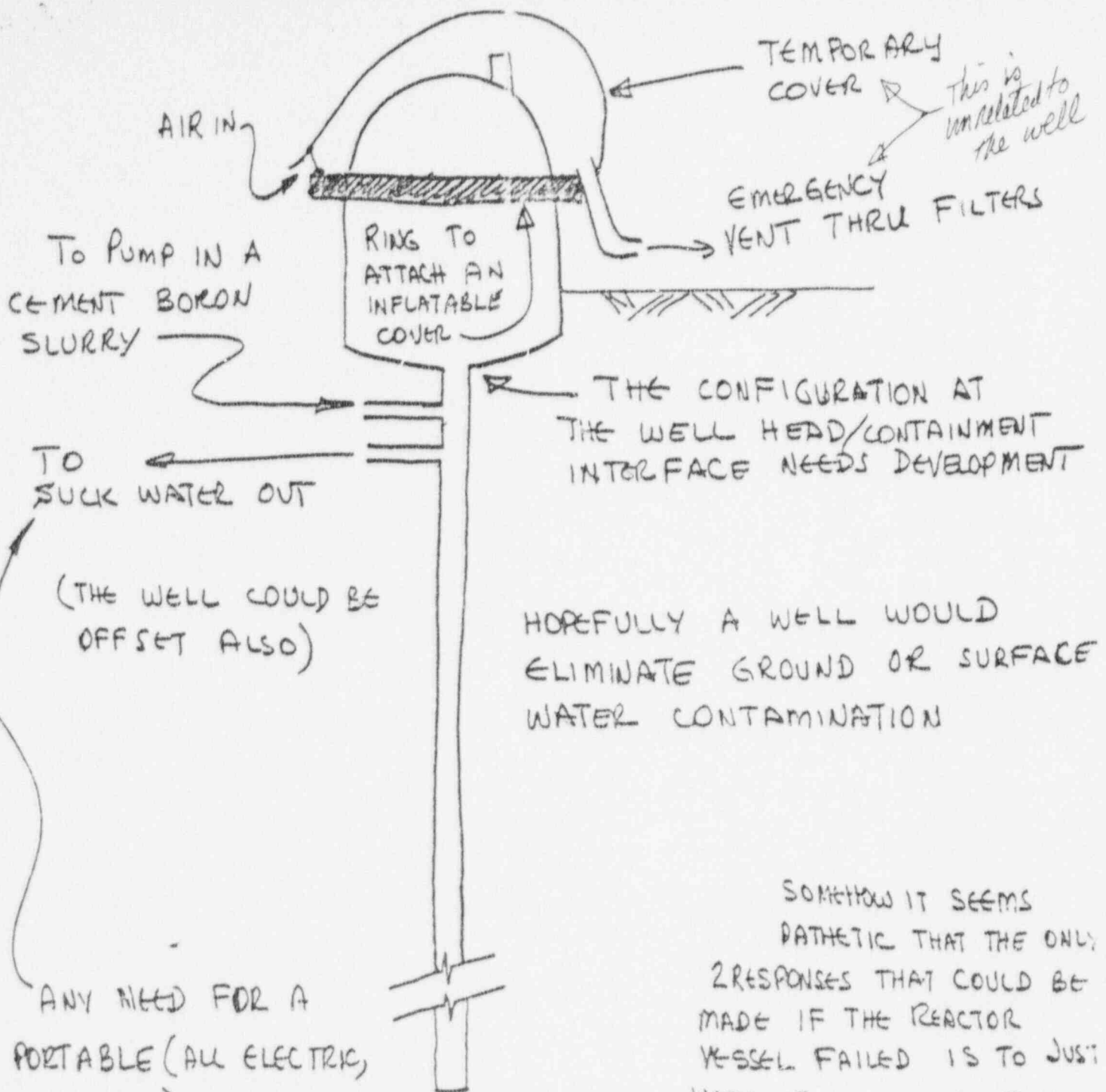
HAMBURG, GERMANY — It is technically possible and probably even cost effective, in some cases, to build nuclear power plants inside giant, air-inflated structures, according to paper presented here at the European Nuclear Conference by W.J.L. Kennedy and R. M. Campbell of Stone & Webster Engineering Corp.

The cost of the gigantic bubble would be justified by the increased labor productivity during bad weather. The engineers noted that air-inflated structures are commonly used for storing construction materials outside, but they haven't been used much in the U.S. to cover the construction activity itself.

"Some years ago," they told the conference, "we performed a feasibility study of an air-supported structure to cover the complete construction site of the nuclear power plant. Somewhat to our surprise, we concluded that it

was technically possible to do so and that the cost probably could be justified in some locations if one postulated elimination of a significant amount of lost productivity because of inclement weather."

It wouldn't be easy, however: "One many difficulty with the concept is that the plant site must be designed to accommodate a very heavy grade beam around the periphery of the air-enclosed structure and, therefore, a decision to incorporate its use must be made at the beginning of the project. Because there are unresolved questions as to insurability, acceptability by environmental authorities, etc., it is virtually impossible to reach such a decision so early in the project when so many other considerations are begging for attention. It is, however, a development which the industry should reconsider from time to time."



HOPEFULLY A WELL WOULD ELIMINATE GROUND OR SURFACE WATER CONTAMINATION

SOMETHOW IT SEEMS PATHETIC THAT THE ONLY 2 RESPONSES THAT COULD BE MADE IF THE REACTOR VESSEL FAILED IS TO JUST WATCH IT MELT THRU THE BOTTOM OF THE CONTAINMENT OR TO GET THE HELL OUT OF THERE !!

I am not a real fan of the containment concept. It reminds me too much of the Maginot Line. It too was "invincible"?? I prefer something more dynamic where people can take action & not T RICHARDS just gawk. OR HOW ABOUT THE TITANIC? SKETCH BY THE  
P-27-79

Secretary-Department of Energy  
Administrator-Environmental Protection Agency

26 August 1979

Sirs:

The run away oil well in the Gulf of Mexico points out that the oil industry alone is not prepared to cope with man made disaster of such magnitude. To be able to face the future with confidence that we are able to control our activities I suggest that a team of engineers be brought to gether to brainstorm in an attempt to develop new methods and equipment for gaining control faster any wells that might get out of control. In addition I suggest that a national or even worldwide office be established to coordinate these efforts plus to act as a center where individuals might send in suggestions they may have to be evaluated and implemented as appropriate. The development of any new methods, is I think, to a large part dependent upon keeping politicians and lawyers in particular from being members of this brainstorming team since I am addressing questions of technology, not legal problems. To this end I<sup>am</sup> enclosing sketches of several ideas that I personally have had in the area of blowout control. Whether they are of any value remains to be seen. Copies of these ideas were sent to the NRC since I sent them suggestions on disaster response efforts for nuclear plants. Besides cross fertilization of thinking from different technologies might bring new insights. This "board of directors" or brain storming team would not be a paid position, but instead the govt should pay the expenses for them to get together 3 or 4 times a year to compare ideas and discuss any ideas or events. Furthermore 'seats' on the panel should not be permanent, but should be rotated every 2, 4 or 6 years to hopefully prevent staleness and mind set.

What is advanced here is rather brief and sketchy, but we have to start somewhere. I feel sure that many good, practical ideas could be brought out of the woodwork, if we just set about looking for them.

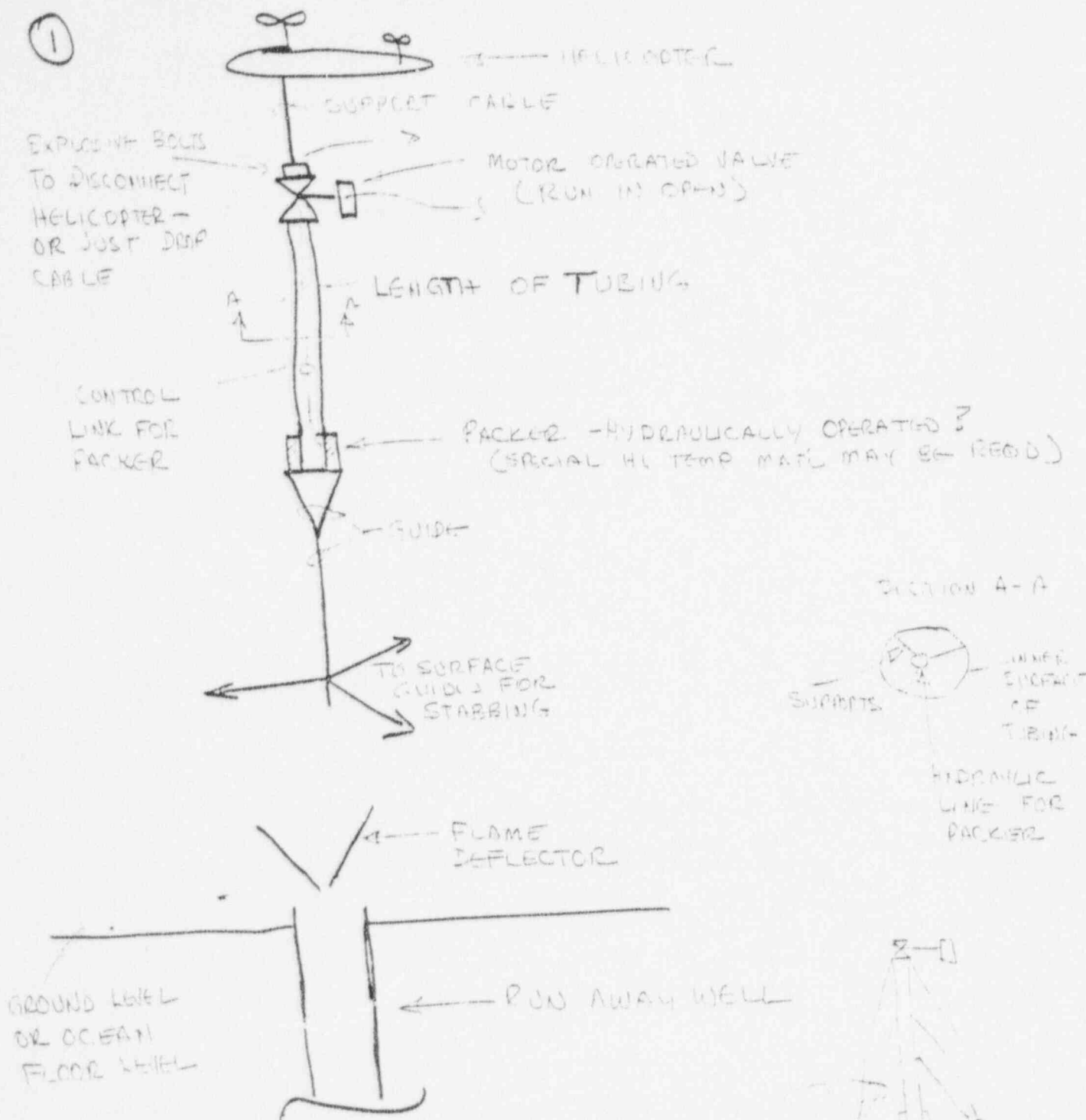
Yours very truly,

Terry Richards  
10900 Aracy Ave  
Kansas City, MO 64131

*also attached are a  
couple of ideas that I had  
a long time ago on disaster  
control.*

# POSSIBILITIES TO GAIN RE-CONTROL OF RUN AWAY OIL/GAS WELLS.

①



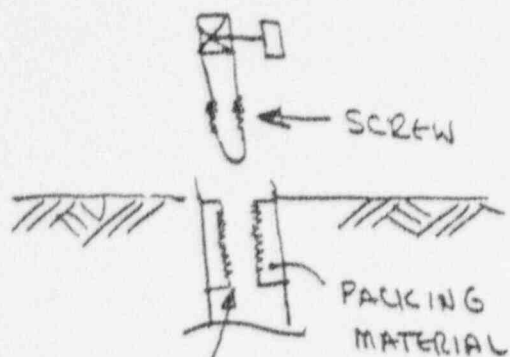
## PROCEDURE

- ① INSERT PIPE WITH PACKER
- ② SET PACKER
- ③ CLOSE VALVE

SERIES OF PULL CABLES TO OVERCOME LIFTING EFFECT OF UPWARD FLOW OF GAS/OIL/WATER.

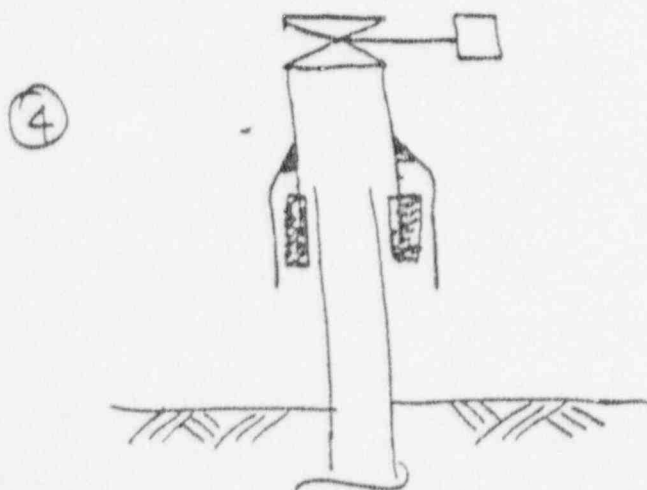
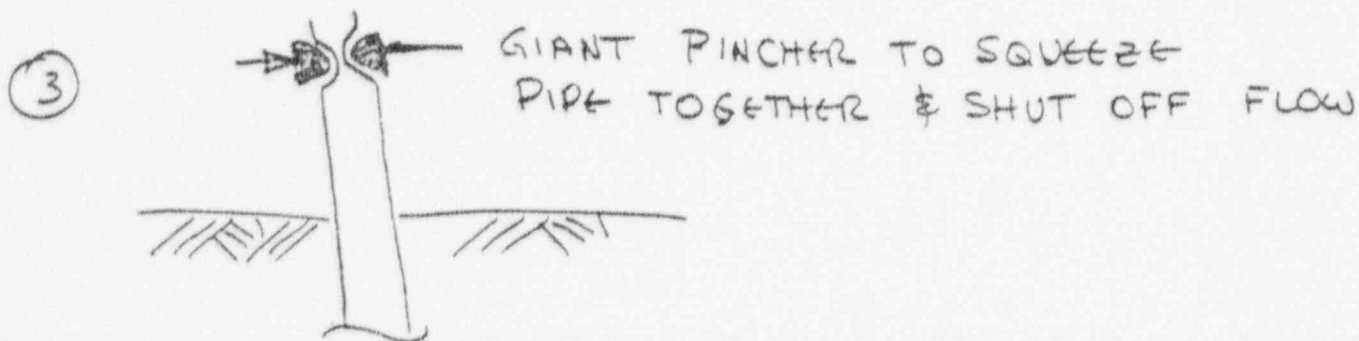
SKETCH BY  
T RICHARDS  
8-27-79

② PERHAPS A TWO STEP OPERATION WOULD BE BETTER:



- A. INSERT PACKER
- B. INSERT SCREW
- C. CLOSE VALVE

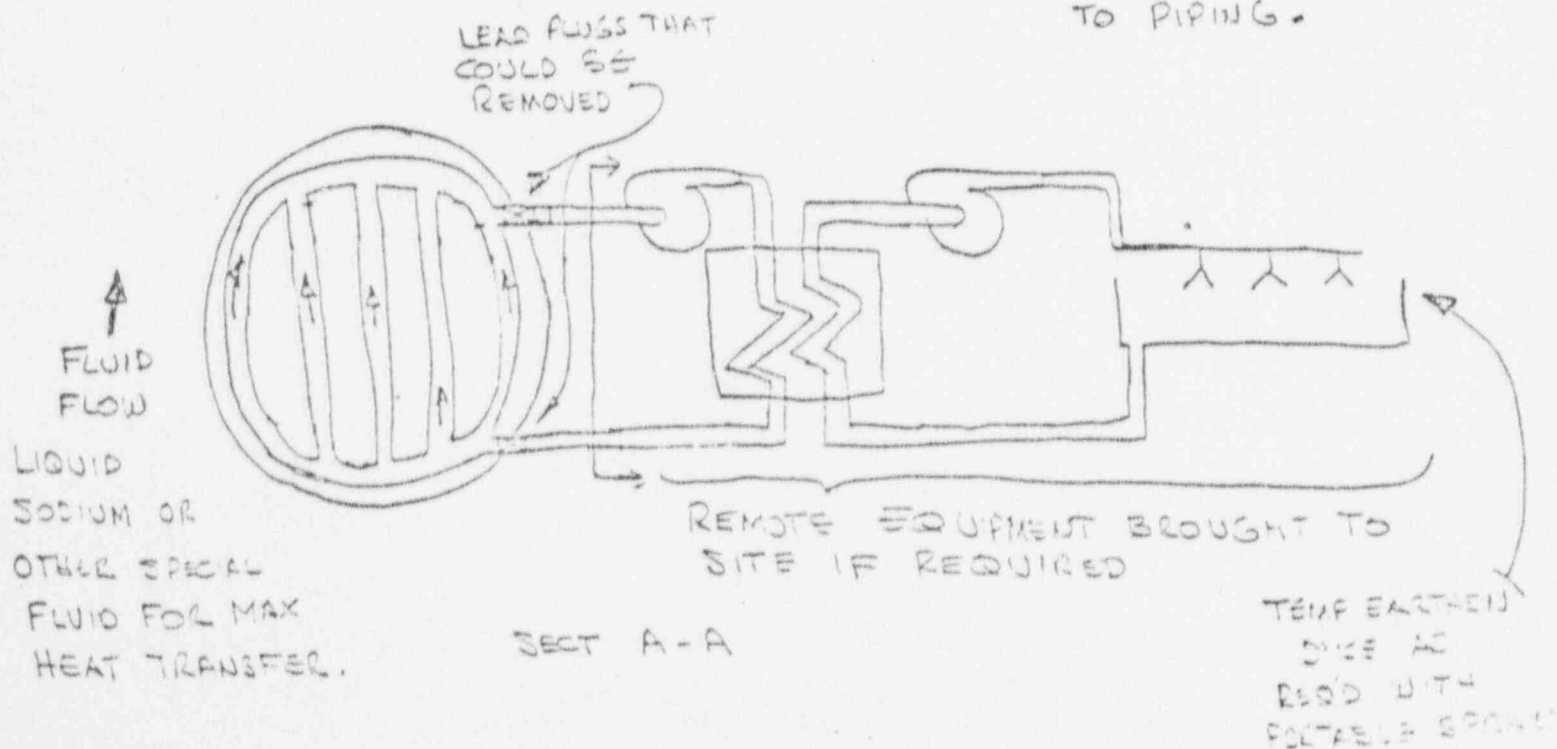
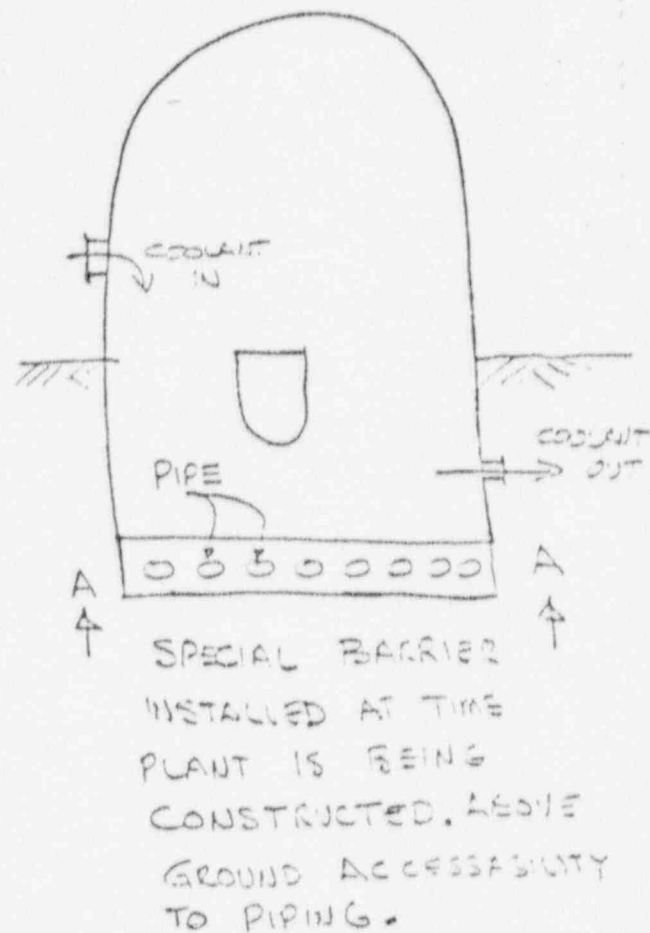
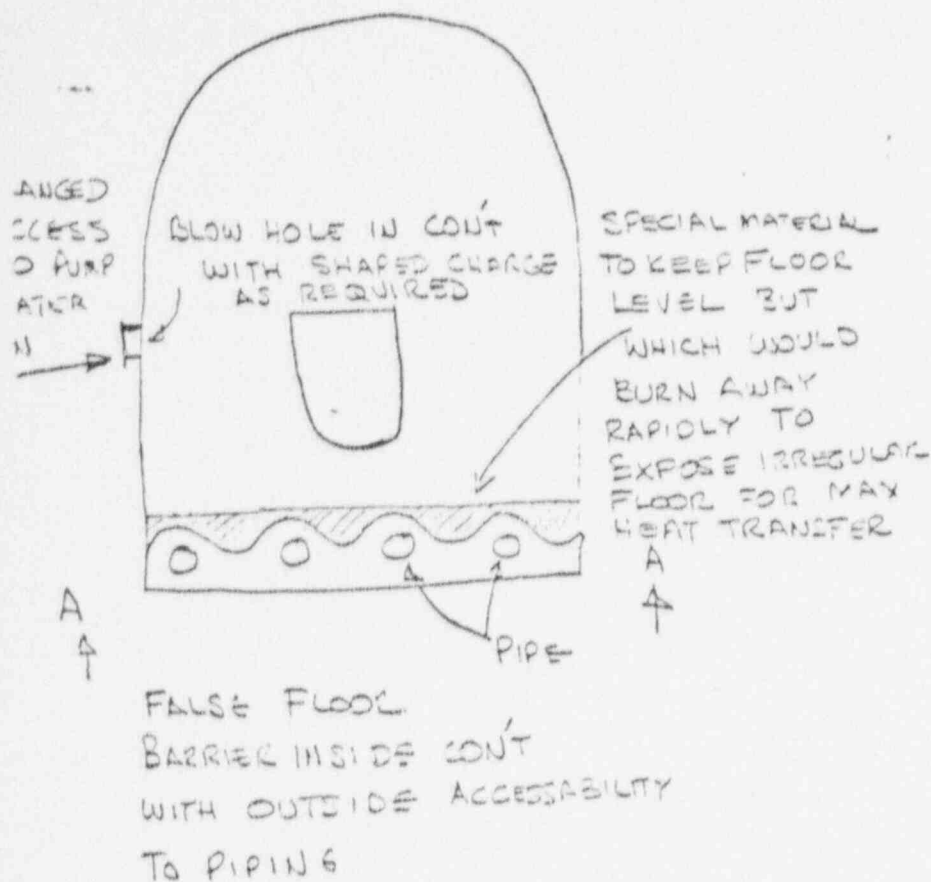
THREADED BODY FOR  
INSERT



INSTALL LARGER PIPE, COMPLETE  
WITH AN "OUTSIDE" PACKER &  
AFTER SETTING PACKER  
CLOSE VALVE

SKETCH BY  
T RICHARDS  
B-27-79

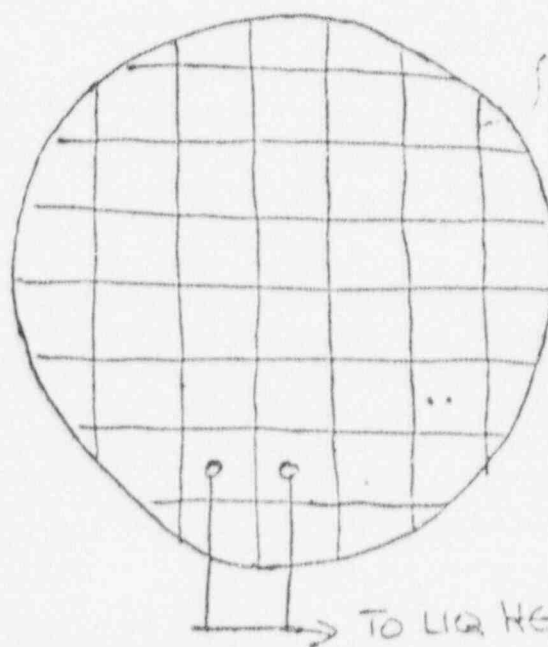
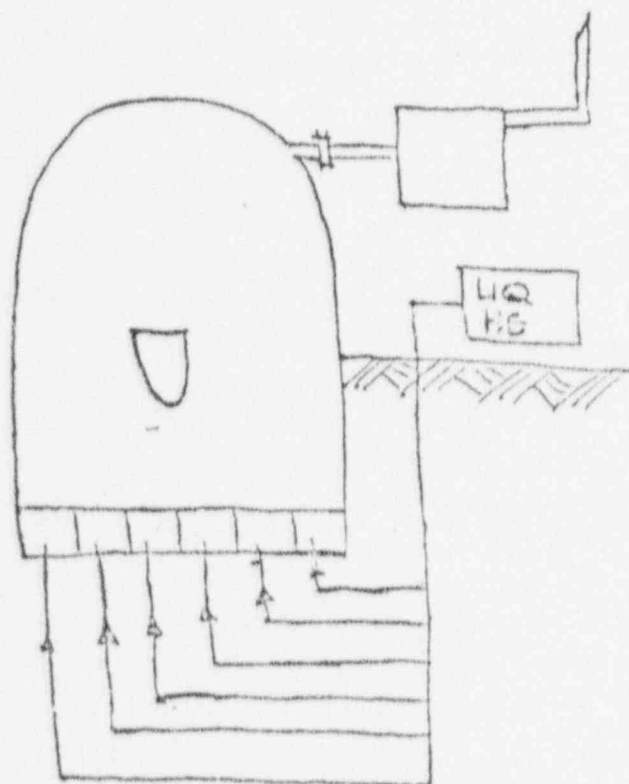
# THE CHINESE BACKSTOP TWO OPTIONS



ANOTHER OPTION WOULD BE TO  
PUMP COOLANT IN THROUGH CONT  
WALL & THEN HAVE A SUCTION AT  
A LOWER ELEVATION. (SEE SKETCH  
ON RIGHT)

SKETCH 1  
by T RICHARDS  
S-23-73

~~WESTINGHOUSE~~ <sup>HAS</sup> ~~AWAY~~ TO FREEZE THE GROUND UNDER THE REACTOR?? AN ALTERNATE IDEA WOULD BE TO USE CYROGENICS, SPECIFICALLY LIQUID HELIUM. BY HONEYCOMBING THE BOTTOM OF THE CONTAINMENT AND HAVING A WAY TO INJECT LIQUID HELIUM INTO EACH CELL TO BUBBLE UP THROUGH THE MOLTEN CORE, STEEL, ETC. SHOULD RAPIDLY REDUCE THE HEAT TO A SAFE LEVEL. IF NECESSARY A PORTABLE UNIT COULD BE BROUGHT TO THE SITE BY THE ARMED SERVICES. A WAY TO VENT THIS HELIUM THROUGH APPROPRIATE FILTERS INTO THE ATMOSPHERE MIGHT BE REQUIRED TO PREVENT OVERPRESSURE. I CAN EVEN VISUALIZE RETROFITTING A SYSTEM LIKE THIS IF REQUIRED.



1) make honey comb out of ceramic matl.  
2) put fuse plug in bottom of each cell to melt at high temp to give proof that core has collapsed & to trigger liq He injection.

SIZE CELLS TO HOLD AN AMOUNT OF MATERIAL LESS THAN ANY CONCEIVABLE CRITICAL MASS

3) Result - END OF CHINA SYNDROME?

SKETCH BY  
T RICHARDS  
6-4-73

TERRY RICHARDS  
10900 TRACY AVE.  
KANSAS CITY, MO. 64131



H. R. Denton, Director  
Office of Nuclear Reactor Regulation  
Nuclear Regulatory Commission  
Washington DC 20555