

V. L. L.

File

TASK CLOSE OUT DOCUMENT

Task Scope Review of Sandia WRC
Emergency Containment Vent
Design Package

To: M. Levenson
S. Levy
E. Zebroski

Task No. _____ Date Complete 7-16-79

Reason felt task is complete:

Review complete, to the extent consistent
with lack of design detail. Comments
attached.

Members of Committee

James W. Thiesing

James W. Thiesing
Signed
Committee Leader

To: Milt Levenson
Subject: Emergency Containment
Venting Package

Date: April 16, 1979
From: J. W. Thiesing

Comments on emergency containment venting package received from Sandia/NRC follow:

- (1) Page 1 - 10^6 Ci I release represents about 10% of current total activity of I-131 (core & RCS) seems reasonable - given core melt (no containment or vessel cooling) and containment failure above grade.
- (2) Page 2 - "Steam-condense" and "steam-no condense" labels appear to be interchanged.
- (3) Page 3 - Containment pressure - Spike up to 70 psig at 574 hours is too fast. Would expect only about a 12 psig per hour (superheat from core heat) at today's decay heat level. I do not understand rapid drop in containment pressure after vessel failure (no cooling of containment was assumed). Pressure would remain constant at 70 psig until debris heated water pool in containment and began steaming. End result is the same, however, failure above grade.
- (4) Page 4 - Appears to postulate 20% Core I-131 becomes airborne.
- (5) Page 5 - System Design
 1. All air handling systems should be designed for 150 psig if maximum utility is to be gained (150 is probable containment failure pressure).
 2. What is purpose of N₂ system - I presume it is inerting for H₂ but the utility of this is questionable. (Prevent H₂ burn in exhaust line, I suppose).
 3. 3×10^6 Btu/hr cooling on diffuser tanks will not keep up with decay heat until about July 1, 1979.
 4. Why install return line to containment. The presumption of containment overpressure mitigates against its use except as a routine cleanup tool! If there is urgency to install this system, it can probably not be well-enough thought out to serve as the ultimate clean up mechanism.
 5. Diffuser tanks should be buried in yard outside aux building. Line from containment to diffuser tanks should also be buried. Cooling system must also be shielded.
 6. Need valves in filter bypass.
- (6) Page 6 - Options
 1. Backup filters (Option 2) will require demisters, and could defeat system by becoming clogged - Recommend HEPA only, with bypass capability. *and perhaps coolers* 162 299
 2. Option #3 - There is not a recombiner in the world that will handle the flow rates that will be required.

Milt Levenson
Page 2
April 16, 1979

3. Option #4 - Should not put tanks in fuel pool - it's being used for tank farm. Also, violates last constraint on page 7.
4. Option #6 - What is a "Hydrogen combustion mechanism."

162 300

4/15/79

J. Theising

These are calculations on
Certainty and safety in the hunting
of small game.

Please review and give
comments to M Levinson to present
to R Arnold.

162 301

RADIOLOGICAL CONSIDERATIONS

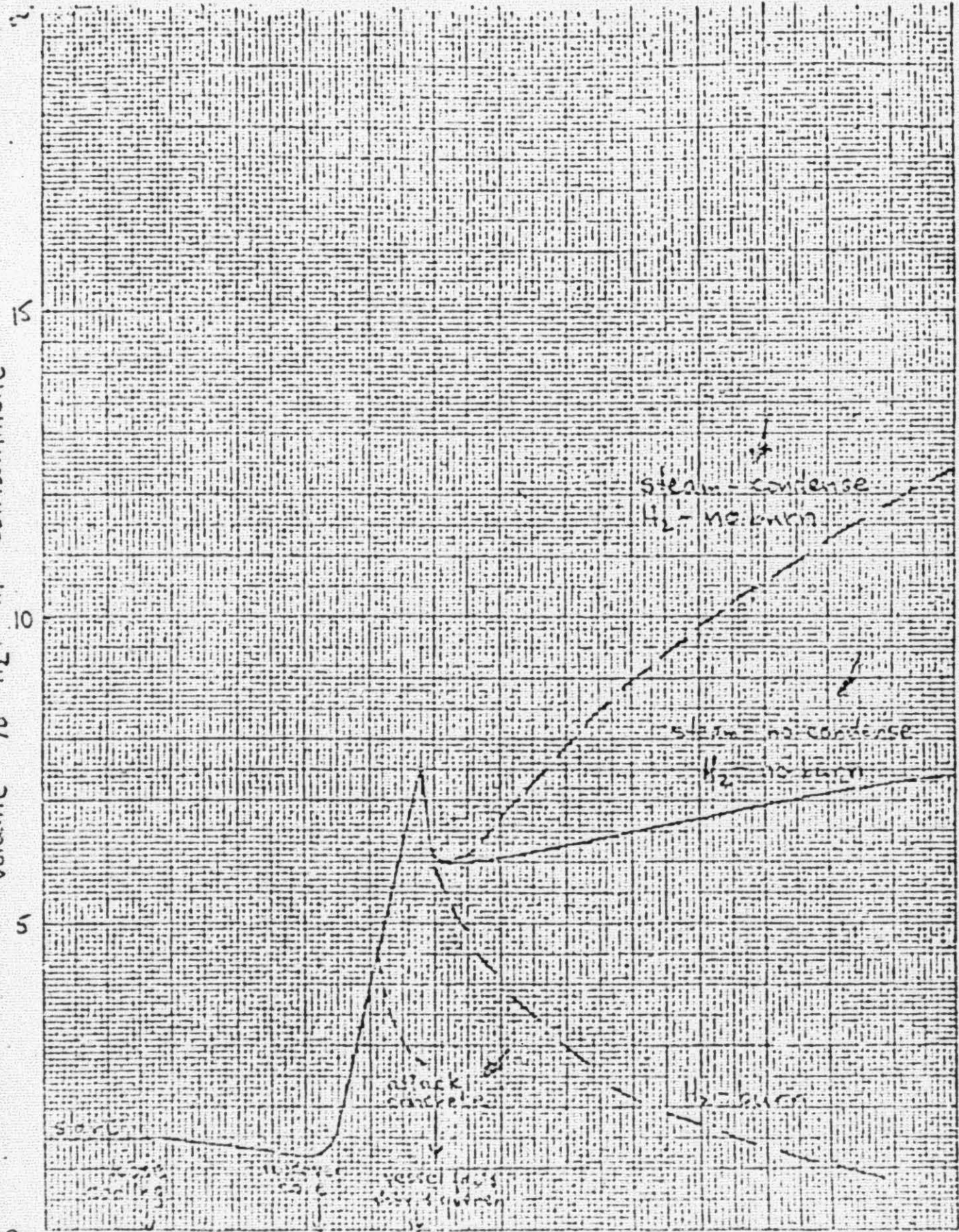
<u>PUFF RELEASE</u>	<u>DISTANCE</u>	<u>DOSE</u>
10^7 Ci ^{135}Xe	0.5 m	0.5 rem whole body
	5 m	0.01 rem
	10 m	0.01 rem
10^6 Ci I	0.5	550 rem μCi^{-1}
	5	27 rem
	10	8 rem
10^7 Ci I	0.5	55 m μCi^{-1}
	5	3 rem
	10	0.6 rem

ASSUMPTIONS

1. GASE VELOCITY AT 10 MPS
2. CREDIT GIVEN FOR URINE DEPOSITION IN COMPARTMENT
3. ADVERSE DISPERSION CONDITIONS
4. NO EVALUATION

12/20/67

Volume % H₂ in containment



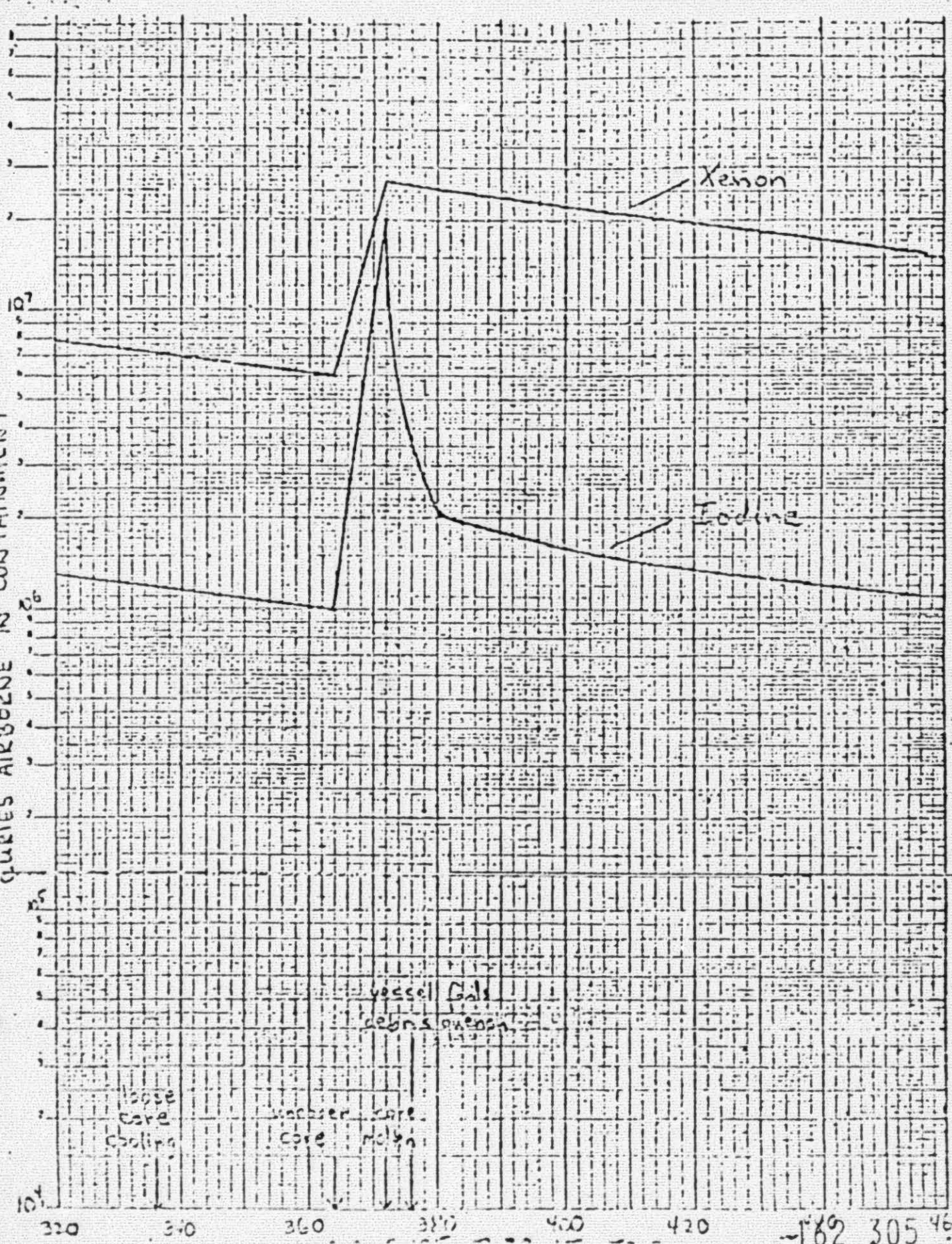
370 340 360 380 400 420 440 460

MINUTES AFTER TABLETED

162-303

U

QUERIES AIRBORNE IN CONTAINMENT



Xenon

Iodine

vessel Gals

vessel core melt

vessel core cooling

vessel core melt

320

340

360

380

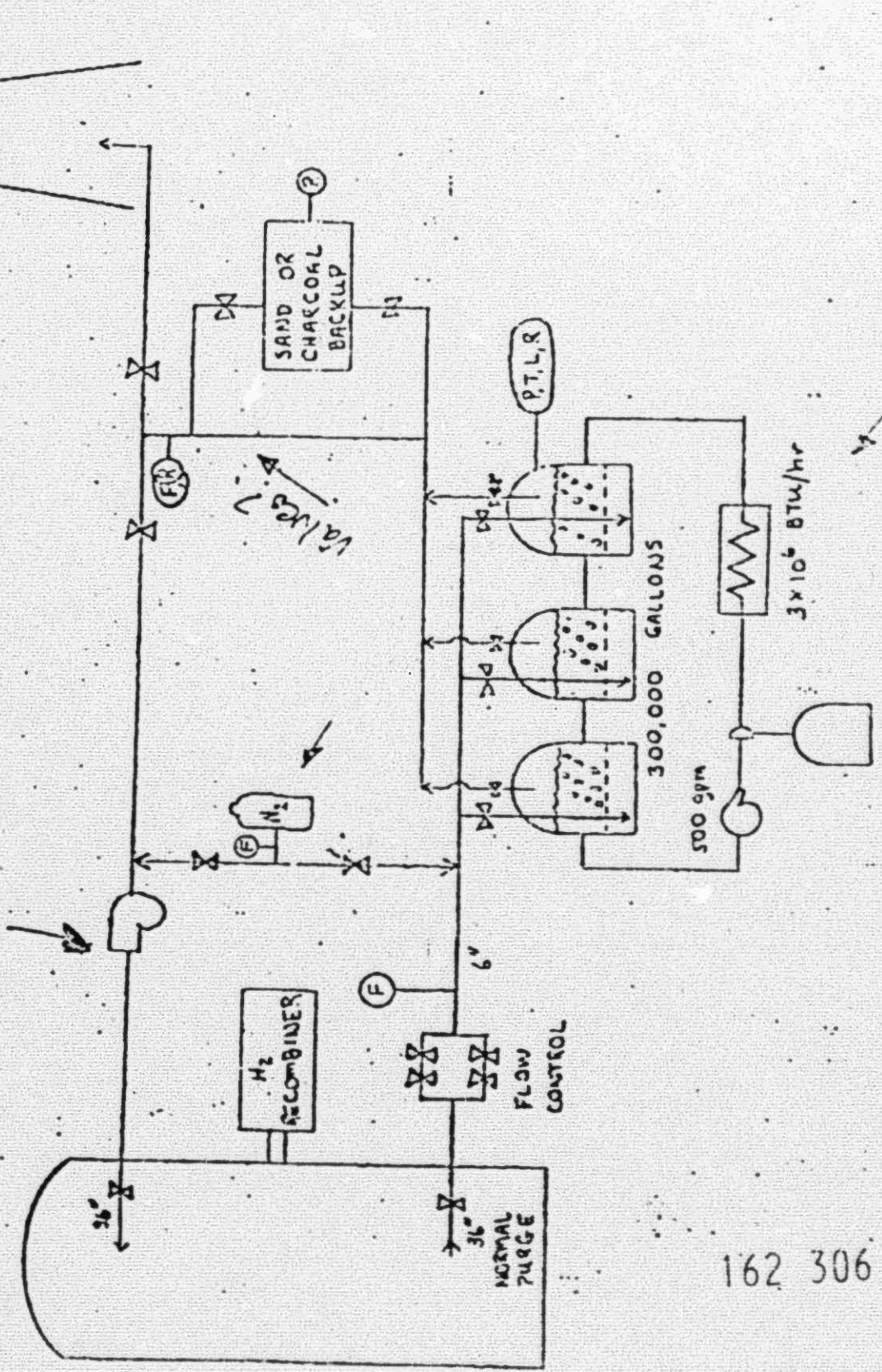
400

420

440

460

✓



162 306

CONSTRUCTION OPTIONS

- OPTION 1: AS SHOWN
- OPTION 2: DELETE BACKUP FILTERS
- OPTION 3: INSTALL ADDITIONAL H₂ RECOMBINERS DOWNSTREAM OF SCRUBBERS
- OPTION 4: PUT SCRUBBING TANKS IN SPENT FUEL POOL #2
- OPTION 5: DELETE RECIRCULATION LINE TO CONTAINMENT
- OPTION 6: ADD HYDROGEN COMBUSTION MECHANISM

Fig 6

TASK: CONCEPTUAL DESIGN OPTIONS FOR TMI-2 CONTAINMENT VENTING

ASSUMPTIONS: CORE MELT INITIATED AT T+ 14 DAYS
NO CONTAINMENT COOLING OR SPRAYS

FUNCTIONAL
REQUIREMENTS: MAINTAIN CONTAINMENT INTEGRITY
MINIMIZE RELEASE OF RADIOACTIVITY

CONSTRAINTS: TIME TO CONSTRUCT (DAYS)
OCCUPATIONAL EXPOSURE
MINIMIZE AUXILIARY BUILDING CONTAMINATION

CALL BACK ON #12-8377
WITH COMMENTS BY 4/14 3pm.

TO: TOM TELFORD
#12-8976

FROM: R. DISALVO

4/14/79 12:30 PM

OFFICE: 492-8377
HONG

162 308