

ENCLOSURE

BELLEFONTE NUCLEAR PLANT UNIT 1
VOIDS IN UNIT 1 PRIMARY CONTAINMENT DOME
NCR'S 1061 AND 1070
10 CFR 50.55(e)
FIRST INTERIM REPORT

Description of Deficiency

This deficiency actually encompasses two separate nonconformances. These nonconformances are described below.

During rebar placement in preparation for the second concrete lift on the unit 1 primary containment dome, it was discovered that voids existed between the outer liner surface and inner surface of the nine-inch preliminary dome pour. Hammer sounding revealed suspect areas across the dome. A description of these areas in the nine-inch pour was given in Nonconformance 1061. Sounding also revealed four suspect areas in the vicinity of the primary containment ring girder. These four areas are described in Nonconformance 1070.

Interim Progress

The presence of void areas in the primary containment dome causes two structural concerns. The first concern is that the voids may impair the ability of the concrete containment to resist imposed loading. The second concern is that where a void exists, the containment liner is not backed with the concrete as assumed in the liner design. Thus, when subjected to containment pressure loading, the liner plate will span the void and resist the loading. This could result in the liner strain exceeding code allowables. The implications of these two concerns, with regard to Nonconformances 1061 and 1070, are described as follows:

Nonconformance 1061

The voids were found in areas congested by reinforcing steel and containment liner stiffeners and are apparently the result of improper consolidation of concrete in these areas of congestion. This steel congestion protrudes outward approximately five inches into the containment concrete. Thus any voids are limited to that depth. An indication of the size of the voids can be determined from the amount of grout required to repair the identified voids. Table 1 lists the 25 areas suspected of containing voids, whether voids actually existed in the areas, and the amount of grout required to repair voids which were found.

Although the voids identified in Nonconformance 1061 have been repaired, it was determined that had the voids gone uncorrected no safety concern would result. This is because the nine-inch preliminary pour serves primarily as a form for the remaining structural pours and has limited influence upon the integrity of the completed dome. Further, none of the areas described by Nonconformance 1061 were large enough to cause liner strain to exceed allowables. This nonconformance is considered closed and no further information is to be supplied. Detailed repair of Nonconformance 1061 is documented and available for review onsite.

Nonconformance 1070

A review of the concrete design in the area of the ring girder has shown that, assuming all four of the suspect areas are voids and are five inches deep, the concrete dome will not be overstressed by any load condition. With regard to the second concern, analysis has shown that suspect areas 1 and 2 will not result in liner strains exceeding allowable strains of ASME, Section III, Division 2. Suspect areas 3 and 4 would not cause tearing or failure of the liner, but the strains induced by containment test pressures would exceed allowables.

The suspect areas of Nonconformance 1070 are located in the ring girder area where dome concrete is thickest. To excavate concrete to expose and repair any voids would result in damage to tendon sheathing and reinforcing steel. Several alternatives are being investigated and a final disposition has not been chosen. The most likely disposition is that suspect areas 3 and 4 will be repaired by grouting through holes drilled in the liner plate. Suspect areas 1 and 2 are acceptable without repair. Attachments 2 and 3 provide a general description of the size and shape of suspect areas 3 and 4, respectively.

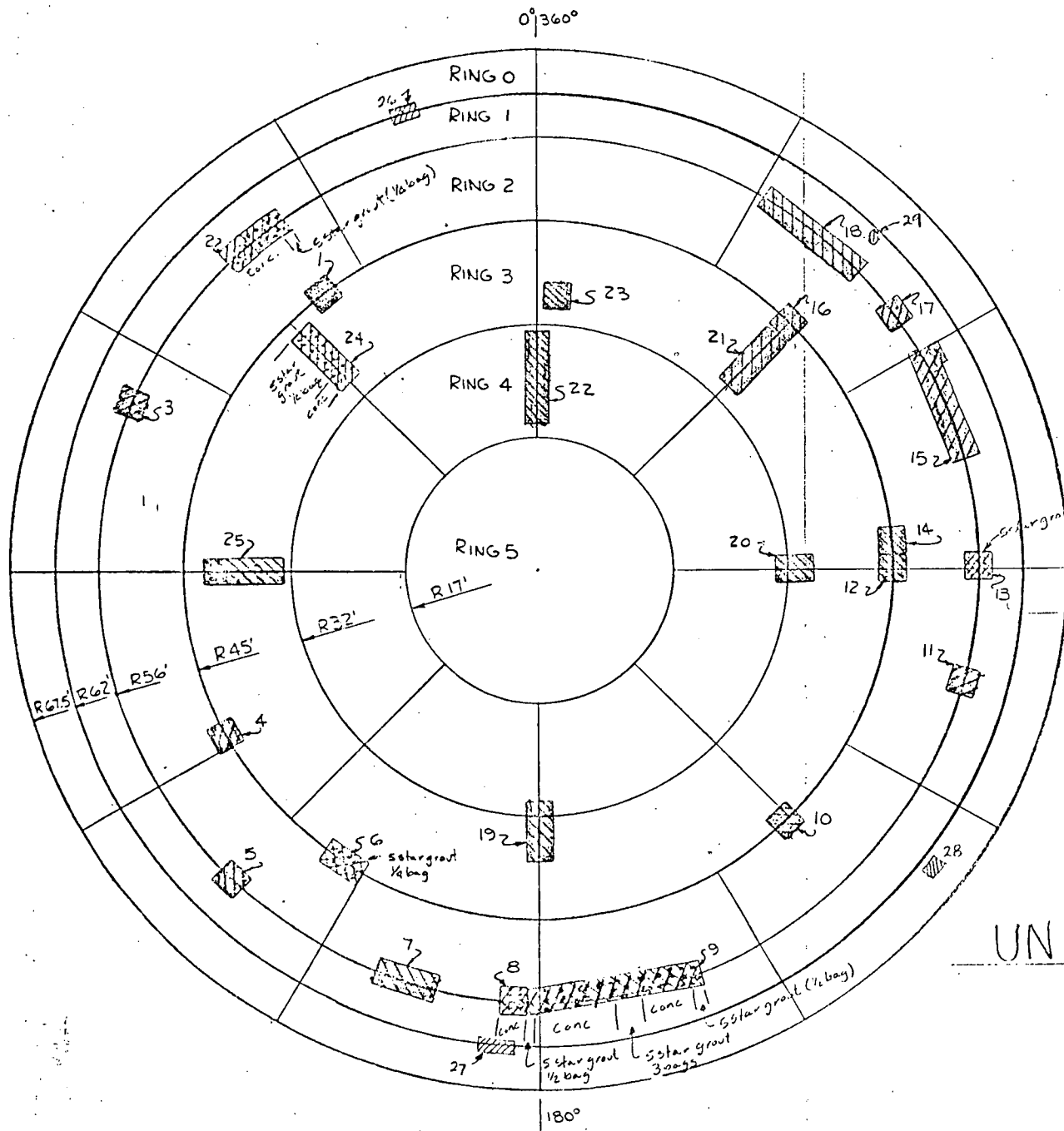
TABLE 1
RESULTS OF INSPECTION AND GROUTING
FOR NONCONFORMANCE 1061

<u>Area Number</u>	<u>No. Inspection Holes</u>	<u>Amount of Grout Used (cu ft)</u>
1	6	NVP*
2	Area Chipped	.25
3	5	NVP
4	6	NVP
5	6	NVP
6	Area Chipped	.25
7	7	NVP
8&9**	Area Chipped	3.50
10	6	NVP
11	5	NVP
12	4	NVP
13	1	.25
14	4	NVP
15	13	NVP
16	4	NVP
17	6	NVP
18	15	NVP
19	6	NVP
20	Area Chipped	NVP
21	5	NVP
22	Area Chipped	NVP
23	Area Chipped	NVP
24	Area Chipped	.25
25	Area Chipped	NVP

*NVP - No voids present. Investigation has shown that the majority of the suspect areas contained no voids and were loss of bond only.

**Areas 8 and 9 were connected.

Note: Chipped areas were repaired with job concrete.
Attachment 1 shows the general location and size of the suspected areas.
Areas 26-29 show the location for the voids described in Nonconformance 1070.



LEDGEND :

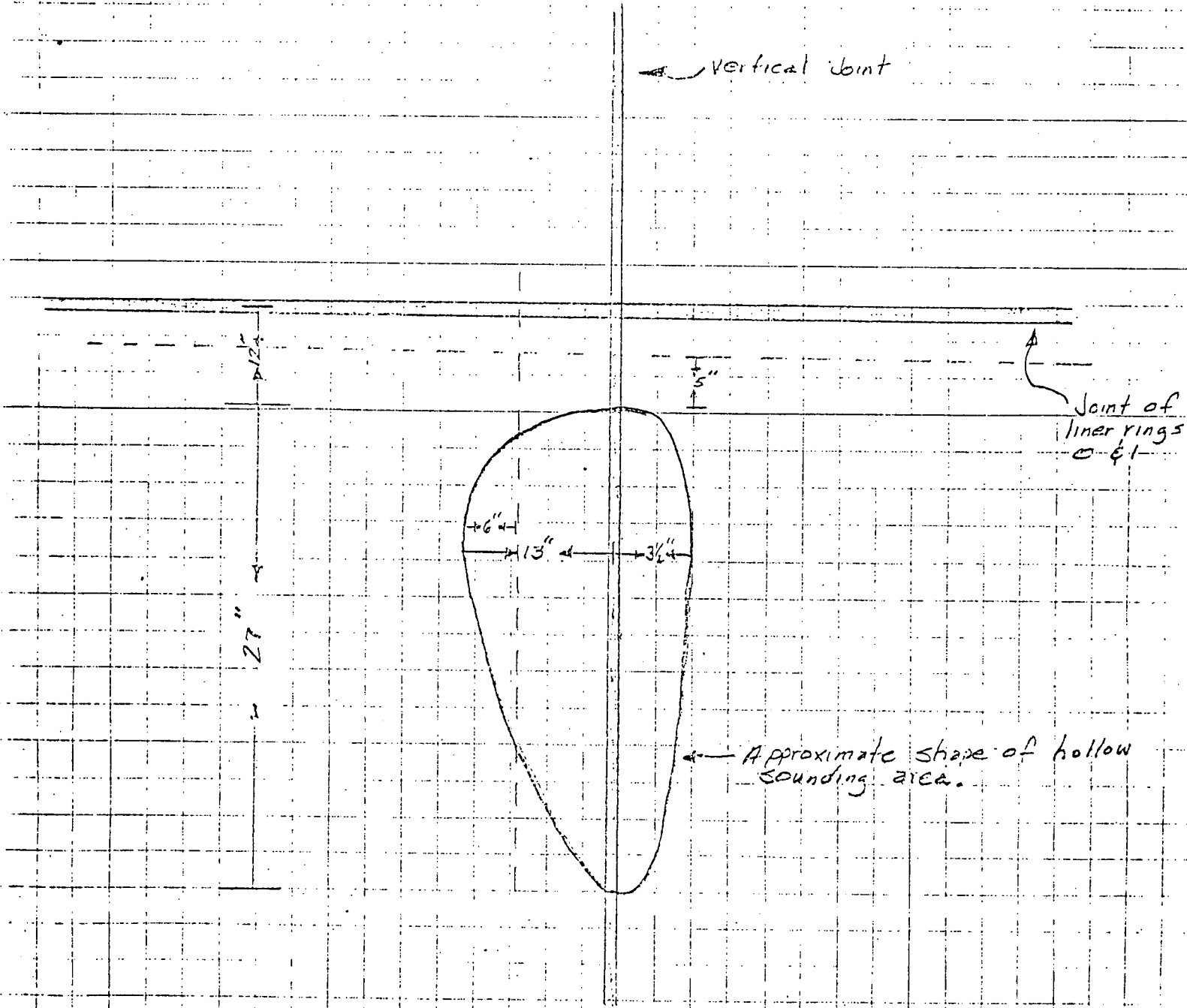
- SUSPECT AREAS
- DRILLED/CHIPPED AREAS
- VOIDS PRESENT
- NO VOID PRESENT
- REPAIRED AREAS

Nos refer to chipping permit locations.

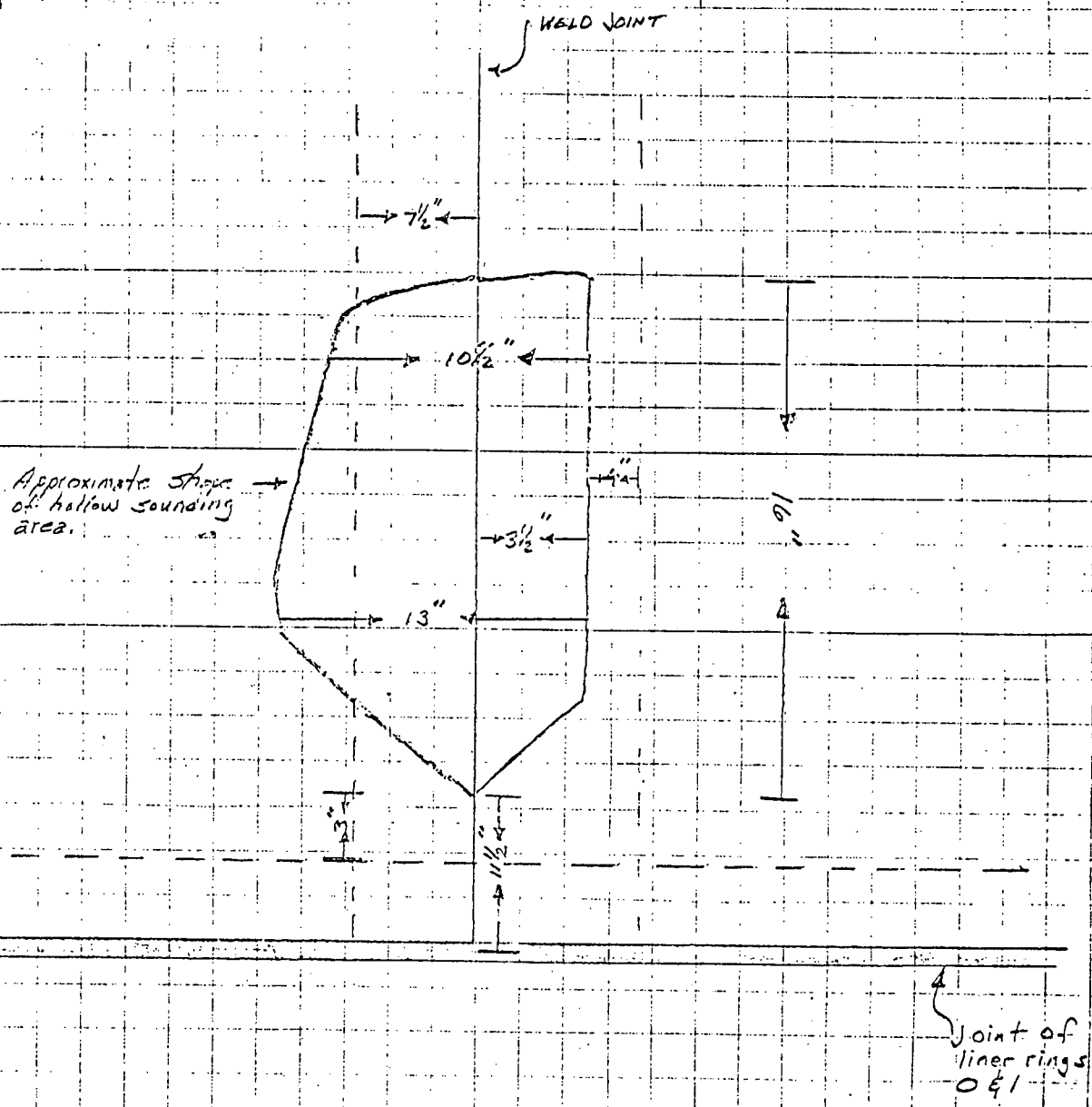
UNIT 1 DOME

Attachment 2

Area @ Azimuth $232\frac{1}{2}^{\circ}$
--- REPRESENT STIFFENERS



Void Condition 3.



Void Condition 4