

14 pgs.

**Masters, Anthony**

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**From:** Lake, Louis  
**Sent:** Friday, December 04, 2009 12:37 PM  
**To:** Dan naus; Masters, Anthony; Carrion, Robert; Thomas, George  
**Cc:** Chou, Rich  
**Subject:** FW: Requested Information  
**Attachments:** Request for Information - Core #54 Attachments.pdf; Request for Information - Core #54.docx  
**Categories:** Perform Review

Here is some early info on the crack below the equipment hatch. More complete engineering evaluation will be conducted.

Lou

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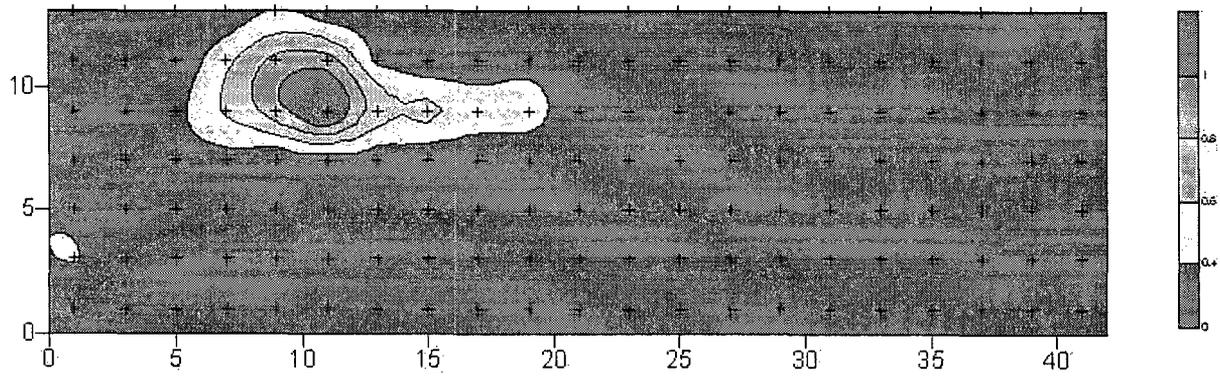
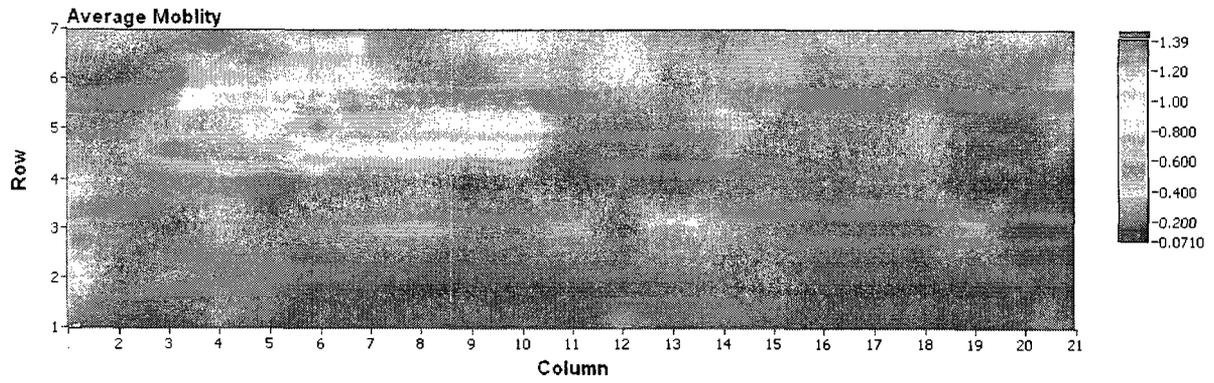
**From:** Souther, Martin [mailto:martin.souther@pgnmail.com]  
**Sent:** Friday, December 04, 2009 12:25 PM  
**To:** Lake, Louis  
**Cc:** Fagan, Paul  
**Subject:** Requested Information

The attached files reflect the current information available on core bore #54 located below the equipment hatch.

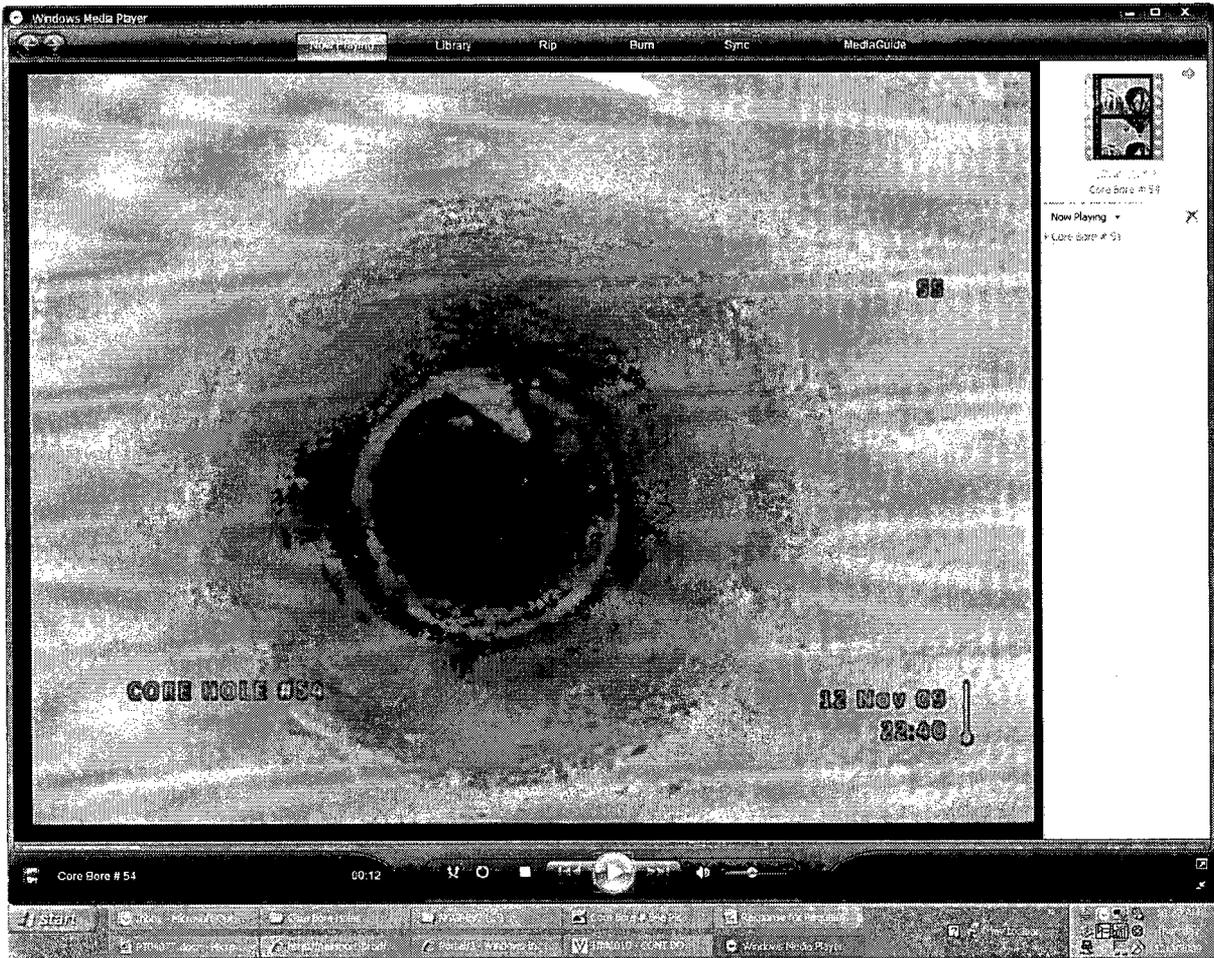
Martin E. Souther  
CR3 Containment Root Cause Team  
240-1009  
352-795-6486, ext. 1009

P/174

Attachment 1

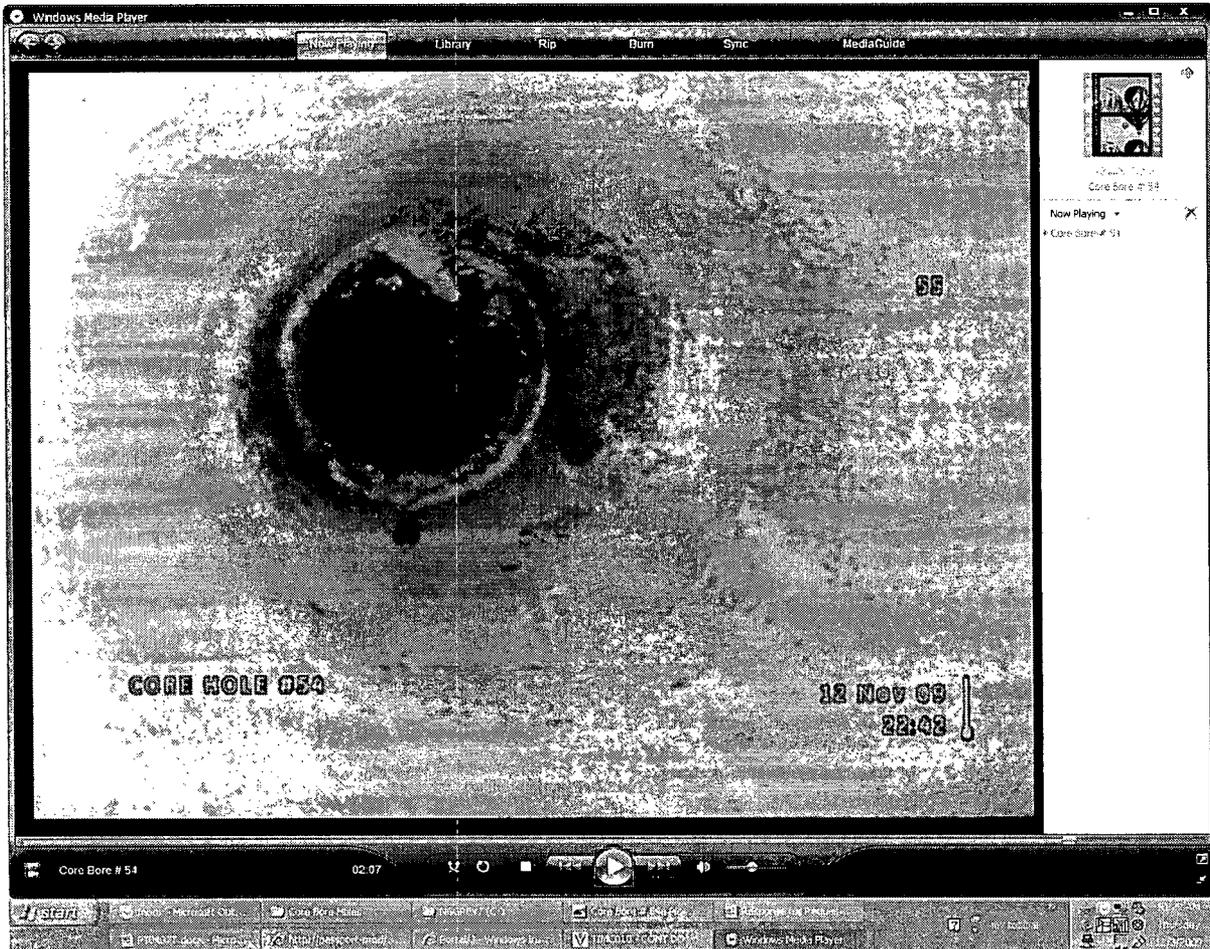


Attachment 2



Video image of 2" diameter core

Attachment 2



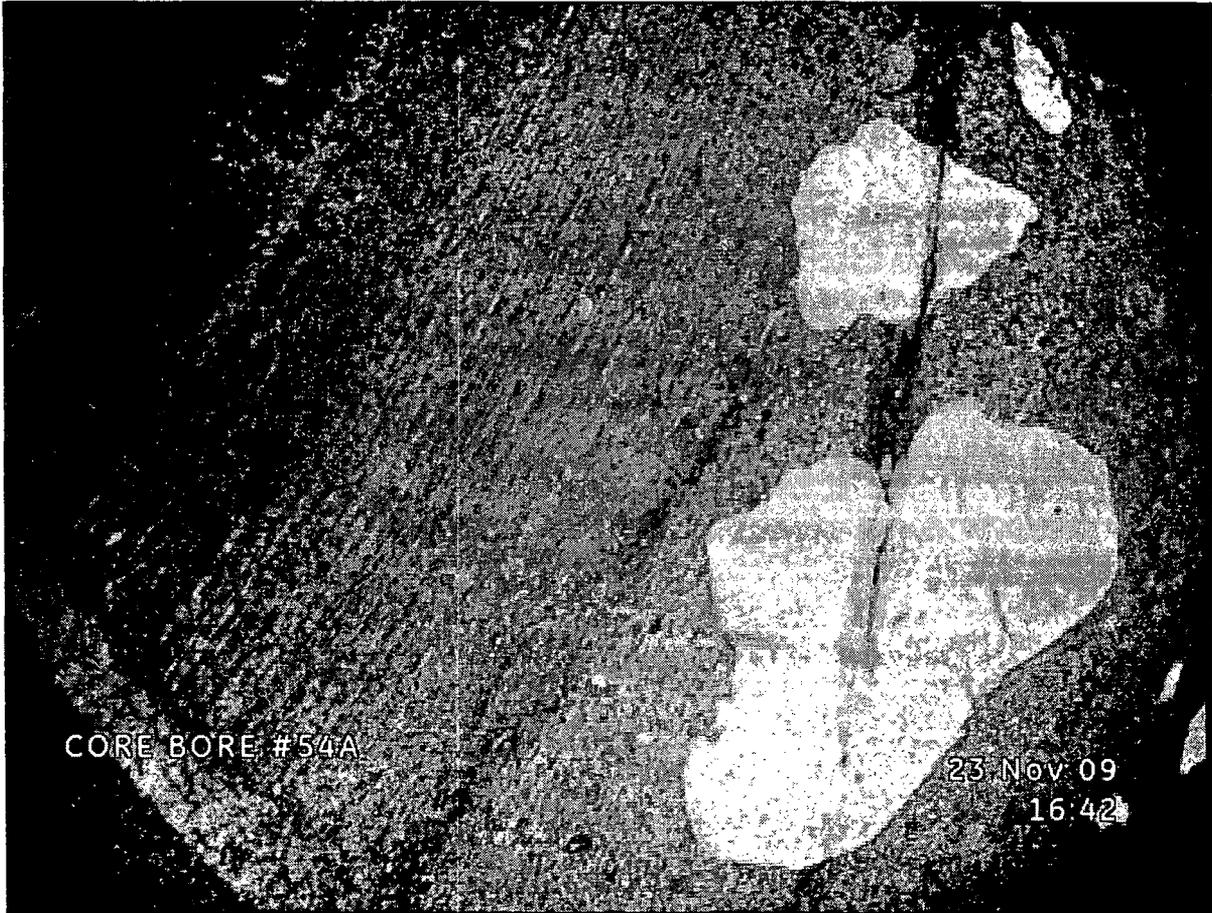
Video image of 2" diameter core

Attachment 2



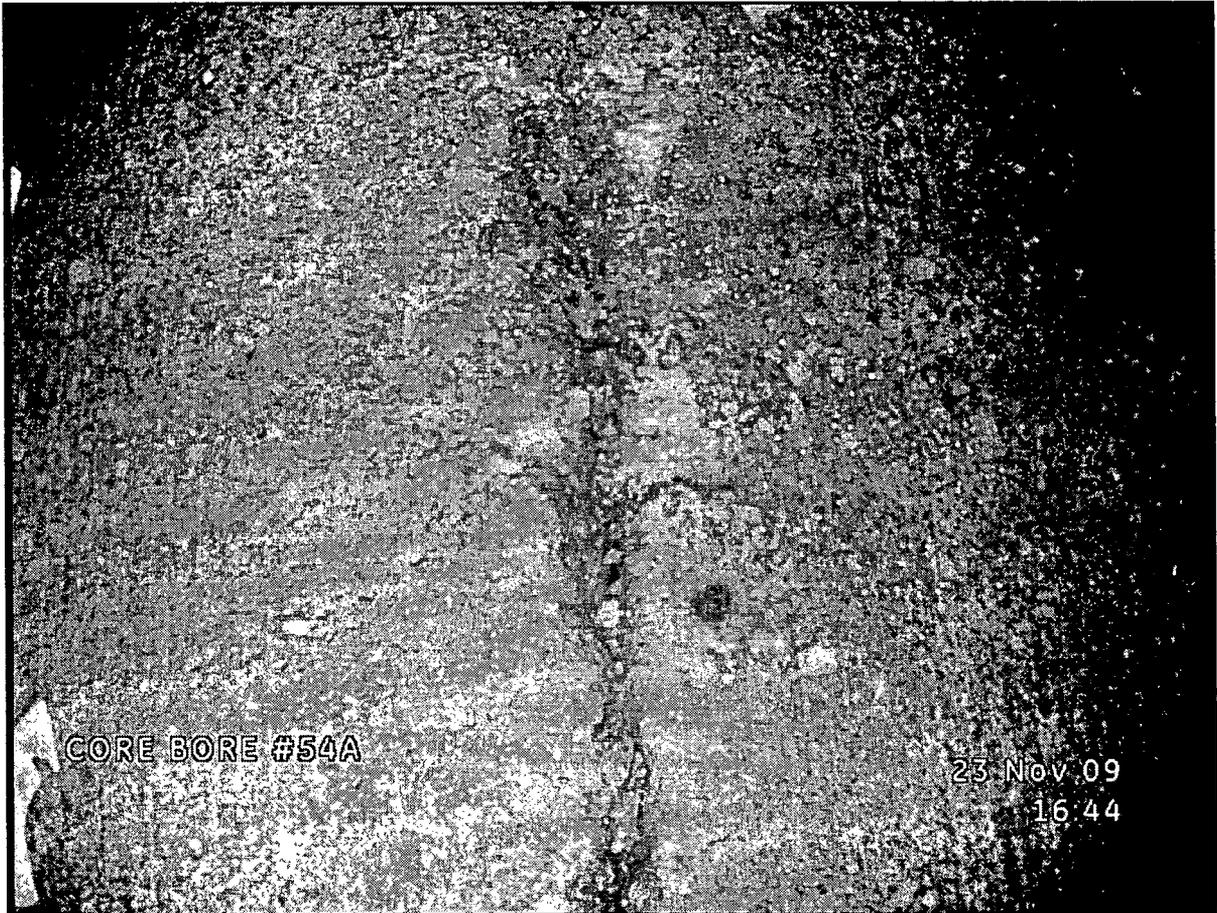
Video image of 4" diameter core

Attachment 2



Video image of 4" diameter core

Attachment 2



Video image of 4" diameter core

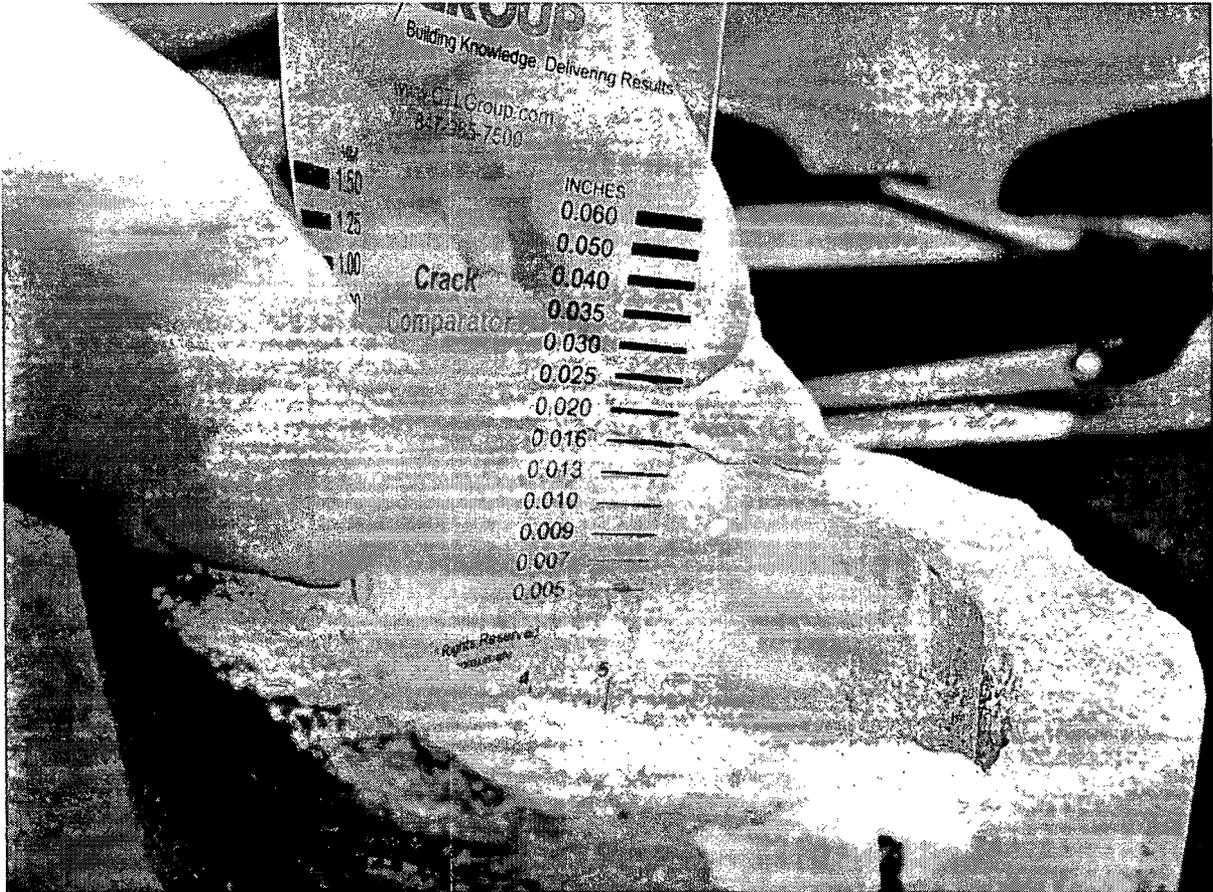
Attachment 3

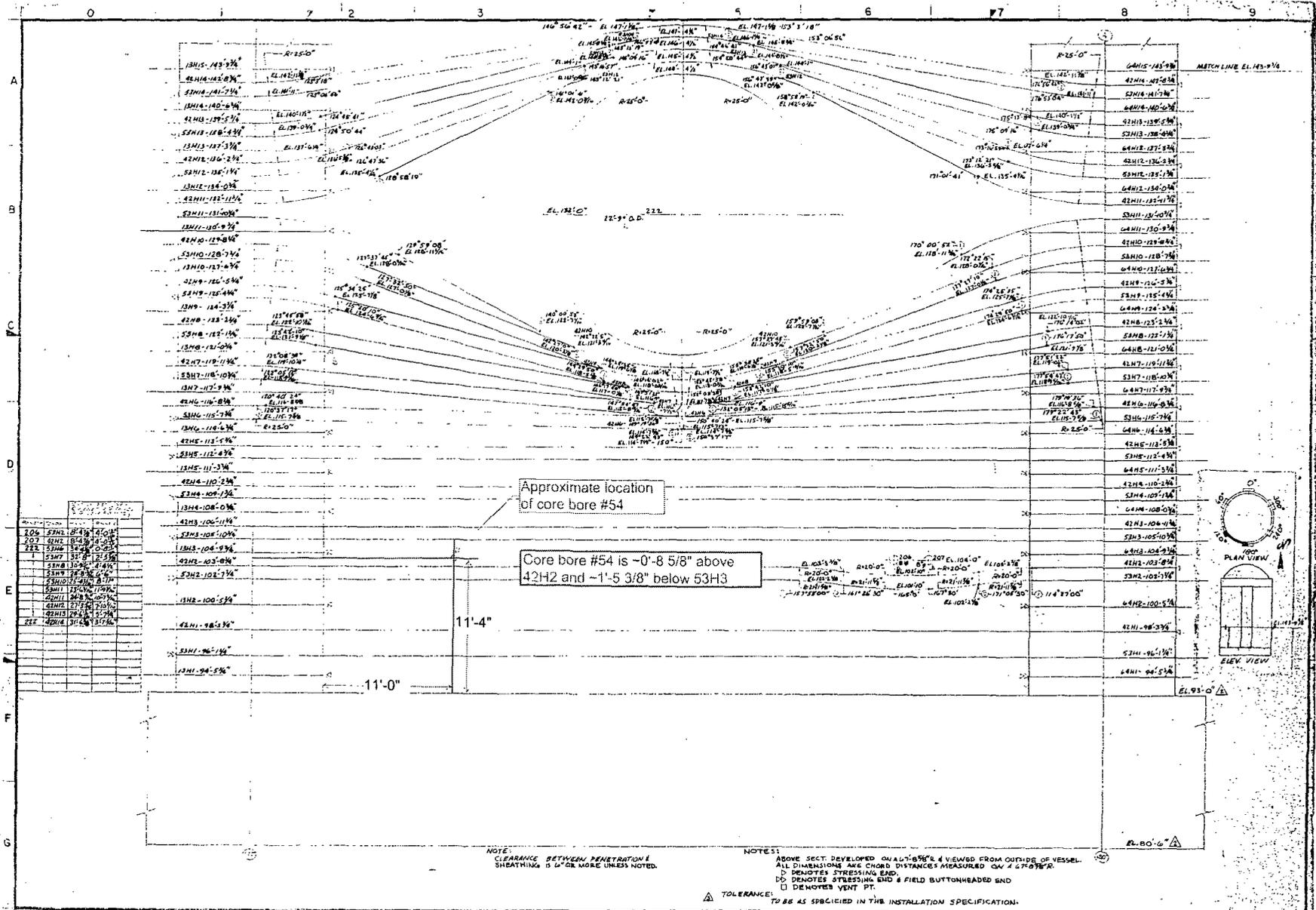


Attachment 3



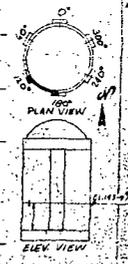
Attachment 3





Approximate location of core bore #54

Core bore #54 is -0'-8 5/8" above 42H2 and -1'-5 3/8" below 53H3



NOTE: CLEARANCE BETWEEN PENETRATION & SHEATHING IS 1/4" OR MORE UNLESS NOTED.

NOTE: ABOVE SECT. DEVELOPED ON A 1/4" SCALE & VIEWED FROM OUTSIDE OF VESSEL. ALL DIMENSIONS AND CHORD DISTANCES MEASURED ON A 1/4" SCALE.

NOTE: D DENOTES STRESSING END. DS DENOTES STRESSING END & FIELD BUTTONEDED END. □ DENOTES VENT PIT.

△ TOLERANCE: TP BB AS SPECIFIED IN THE INSTALLATION SPECIFICATION.

**The Procon Corporation**  
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**CRYSTAL RIVER PLANT UNIT 3**  
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**HOOP TENDON PLACEMENT**  
 120° IBC  
 EL. 94'-5 1/2" - EL. 143'-9 1/2"

REVISIONS

NO.	DATE	DESCRIPTION	BY	CHKD.
1	05/14/87	ISSUED FOR CONSTRUCTION	J. GILBERT	J. GILBERT
2	05/14/87	REVISED TO SHOW TENDON PLACEMENT	J. GILBERT	J. GILBERT

PROCON CORPORATION

NO.	DATE	DESCRIPTION	BY	CHKD.
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PIC



## Core Bore #54 Information

The following information has been gathered based on NDT, boroscope inspections, and core bore sample inspections. Information related to the adjacent tendons is also provided.

### NDT

PT-407T, Enclosure 8, for bay designation RBCN-003B, documents an IR mobility range of 0.071 to 1.391. Core bore #54 was made near the scan grid point with the highest IR mobility value. Attachment 1 shows the graphical image of the IR data showing the anomaly area. The first image is the smoothed and the second shows the 0.20 increments. The outer boundary of the anomaly is shown in yellow and graduated by 0.20 increments to 1.0. PT-407T includes the following threshold values:

The recorded average mobility values shall be compared to the following threshold values, defining the existence of potential anomalies in the concrete conditions in the test area as follows:

$M \leq 0.4$ :	solid concrete
$0.4 < M < 1.0$ :	“gray” area, further test or coring is needed
$M \geq 1.0$ :	potential “delaminated” concrete or other type of anomaly may exist, coring to be performed

The area with an IR mobility value above 1.0 is approximately 4 sq. ft. The area within the “grey” range is approximately 48 sq. ft.

### Boroscope

A 2” diameter core bore was first drilled at the anomaly. The boroscope video revealed an area that appeared to be a crack or damage caused during the drilling process. A 4” diameter core bore was made over the 2” hole in an effort to better characterize the anomaly. The boroscope video clearly showed a crack that was mostly in the plane of the wall but did have ligaments that changed direction. The crack was shown to propagate through aggregate. (See Attachment 2)

### Core Bore Sample Inspection

The core bore sample was removed in three pieces. The piece closest to the surface, #1, was broke where a metallic interference was encountered. The core location was shifted slightly and the remaining two pieces were removed. The interface between

piece #2 and #3 separated at the crack. The far end of piece #3 was broke at the back of the hole where the drilling stopped due to contact with a metallic object.

The inspection of the sample confirmed the boroscope inspection. The crack is mostly in the plane of the wall but did have ligaments that changed direction. A portion of the sample where the change in direction was seen was detached from the sample. The crack at this interface was measured to be ~0.016" with smaller measurements seen near 0.009". Piece #2 and #3 interface showed aggregate that the crack passed through as well as the small portion that was detached. The difference in hardness of the paste and aggregate was investigated by performing a scratch test. This is a test used by geologists to identify minerals based on Mohs scale of hardness. A pointed metal awl was used to scratch a piece of aggregate as well as the paste in the sample. Four similar scratches, one directly over the other, of similar force were made. The scratches in the aggregate produced a noticeable groove with powder residue. The scratches in the paste produced a barely noticeable groove with little or no residue. This simple test would indicate that the paste is harder than the aggregate. (See Attachment 3)

#### Adjacent Tendons

Core #54 is located at approximately 134.5 degrees at 104' 5 3/8". This location is between vertical tendons 34V18 (136° 15'), 34V19 (133° 45') and horizontal tendons 42H02 (103' 8 3/4"), 35H03 (105' 10 3/4"). No tendons in this general area have been detensioned in prior surveillances. (See Attachment 4)

History of tendon surveillance testing in this general area (within 5 tendons):

34V19 – Tested satisfactorily in Surveillance 3.

34V17 - Tested satisfactorily in Surveillance 8. (Currently removed in R16)

35H01 - Tested satisfactorily in Surveillance 5.

35H02 - Tested satisfactorily in Surveillance 6.

42H01 - Tested satisfactorily in Surveillance 5.