DØ SOLENOID UPGRADE PROJECT

DØ Solenoid Chimney Routing Clearances

D-ZERO ENGINEERING NOTE # 3823.111 EN-356

Feb. 23, 1994
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INTRODUCTION

This engineering note contains information about the measured clearances along the chimney route from the solenoid to the control dewar. This type of information is best conveyed by sketches and a few photos.

I would strongly suggest looking at D-Zero drawing 3823.111-ME-317048, "Solenoid package nominal placement" first as an overview of the routing and placement. This drawing was generated based on the measurements contained in the sketches of this EN and of course, existing D-Zero drawings.

CONTENT

PHOTOS: Twelve photos taken on 2/17/94 are included which give perspective views along the path. The detector was parked in the collision hall on this date. The CF iron was split open to the east and the South EF iron was rolled back. Also the South EndCap Calorimeter was rolled to the south on this day. This allowed personnel access and the photographic opportunity.

DIMENSIONAL SKETCHES: A full set of raw dimensional sketches are included. These sketches were generated by me using a 25 foot tape measure and a note pad. The sketches are in chronological order with the most recent on top. The first sketch, 5/18/94, describes the "tightest" location for the upward incline portion of the chimney. The sketches on 2/14/94 thru 2/16/94 are refinements of the early 1992 and 1993 sketches. They pick out quite a bit more detail of specific detector components along the path. The dimensional sketches of 1992 and 1993 gave information in not as much detail and therefore gave a more constrained clearance description. Most of the information of the early sketches was jotted down on the plan view dated 10-29-92. This sketch also had some information lifted from prints which later was superseded by the 1994 sketches.

I tried to label components and give views either titled "Elevation" or "Plan" which refers to a top view looking down. Also where I could I jotted down direction, ie. South, East etc. Hopefully with a little effort one can decipher it.

CC CURVE MEASUREMENTS: The curvature of the CC was determined from a three dimensional topographical survey. This survey information is stored in an electronic drawing file 3823.111-ME-317165, " Solenoid-CC south face 3D shape survey". The "z" dimensions for the radial chimney path were picked off this drawing. A curvature was then generated knowing many points by radial and z coordinates. This curve is stored in drawing file 3823.111-ME-317164, " Solenoid-CC south face-chimney contour layout".

CLOSING REMARKS

All drawings mentioned above are kept in hard copy form in the D-Zero drawing files. The electronic "master" copy is kept in the XDCS drawing control system, d0ms vault. The information contained in this engineering note could be very useful for those who are interested in the clearances and shape of the solenoid chimney path. It could even be of use to future designers and engineers involved with the VLPC project which is planned.

2-16-94
RAR

↑ UP

ECS V-Q PIPE

↑ UP

CC SO. FACE
→ 15.142°

↑ UP

3rd FLOOR EAST
CF TRUSS
LOOKING SOUTH

↑ UP

4th FLOOR SE SIDE

2-16-94

RAR

↑
UP

LOOKING UP & WEST
FROM SE A/C PLATFORM

↑
UP

LOOKING UP & NW FROM
SE A/C PLATFORM

↑
UP

2nd FLOOR EAST
CP TRUSS

LOC 16
SOUTH

LOOKING DOWN
A/C PLATFORM SE

↑
UP

Z-16-94
RAR

LOOKING UP & EAST
FROM SE PRE-AMP
PLATFORM

LOOKING UP & EAST FROM
SE PRE-AMP PLATFORM

LOOKING UP FROM
SE PIGTROUGH

LOOKING DOWN FROM
4th FLOOR THRU CRACK
SOUTH EAST SIDE

2/16/94 RAR

$$\frac{68\frac{1}{2}}{13\frac{1}{2}} \\ \frac{53\frac{1}{2}}{53\frac{1}{2}}$$

* ECS MOVED OUT 40"

SO. END IRON MOVED $4\frac{1}{2}"$

$$\begin{array}{r} 5\frac{1}{2} \\ - 1\frac{1}{2} \\ \hline 4" \text{ CLEAR} \\ \text{WHEN} \\ \text{CLOSED.} \end{array}$$

$$\begin{array}{r} 53\frac{1}{2}" \\ - 41\frac{1}{2}" \\ \hline 12" \text{ CLEAR. WHEN CLOSED.} \end{array}$$

135/2

ELEVATION

$4\frac{1}{2}$ $44\frac{3}{4}$ "

← CLOSED
POSITION

$44\frac{3}{4}$ "

RAR 2/14/94

1/A BACKUP TRAILER

10-87

Fermi x 192

Other trailers have 5 yrs. Between test and due date.

+82?

Pig Trough - ONLY.
 Disconnect chutes FROM PIG TROUGH.
 moves back 39" to South

RAR 2/14/94

COUNTER MEASUREMENTS

→ E

ELEVATION

ECS EAST PIG TROUGH

4 5/16
1 1/2
5 13/16

$$\begin{array}{r} 10 \frac{1}{2} \\ - 1 \frac{1}{2} \\ \hline 9 \\ - 4 \frac{5}{16} \\ \hline 4 \frac{11}{16} \end{array}$$

~~4 11/16~~
Lower
trans
originally
shown

ECS PIG TROUGH MEASUREMENTS

MEASUREMENTS TAKEN 1/27/93

ALLEVIATES THE INTERFERENCE FOR NOW AND STILL 177
 SHOWS THE MOON CHAMBERS TO ROLL IN & OUT. A PERMANENT
 FIX NEEDS TO BE DONE BEFORE CLOSING THE IRON. BAR

ENDING RUPTURE DISC HOLDERS TO FIKE FOR INSPECTION OF
 SEALING PROBLEM: HOOVER / WORSTER HANDLING.

WELDED HEAD CLAMP BARS ('BAB'S) ON ECS VACUUM VESSEL
 HEAD.

CRYO PIPES FOR ECN SET IN PLACE. PRELIMINARILY LOOKS
 GOOD. WILL FINE TUNE POSITION TOMMORROW. CLEANING
 UP FOR THE DAY.

3/9

CRYO PIPES ALIGNED AND SET IN. LEVELED ON HORIZONTAL
 AND VERTICAL. THERE IS A MISALIGNMENT ~~FROM~~ MATCHING
 UP TO CC PIPING. WE WILL HAVE TO MAKE A JOG
 IN THE SPLICE SECTIONS.

IN Z DIRECTION, THE ϕ OF PIPES (REFERENCED FROM MOON CHAMBER
 BOX SECTION) IS:

PDT CLEARANCES TO IRON FIGURE TO BE:

CLEARANCE UNKNOWN UNTIL MOON
 CHAMBER RAIL REMOVED AND
 PERMANENT HANGING CLAMPS PUT IN PLACE
 SEE 7/9 NOTE.

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NO. 1011

8/31/91 ECS EXcluder

- Leak checked EXcluder in MANUAL
- High VACUUM pressure due to ~~leak~~
- Leaks found.
- Hi VAC - 9×10^{-5}
- Leak Rate - 5×10^{-9}
- Manifold press - 3 microns

9/3/91 C.R.

0945 EXcluder VAC 12 microns

INSTALLED PIPE ROLLER SUPPORT CHANNELS ON ECN.

* PER PLATFORM ORG 3740.510-MD-294577 REV. A 4 LEGS MOUNTED 6

+ FIELD MEASURED

[20] DIMENSION GIVEN BY R. RYANSEI THINKING TOP OF PLATFORM WAS 66".

SWAPPED SIGNAL BOX SIDE PLATE (OUTER) ON ECN SOUTH E

BOX WITH ONE WITHOUT PUMPING PORT.

* NEEDS TO BE LEAK CHECKED.

9/4/91

9:00 ECS DOUBLE DISH PRESSURE VESSEL SANDBLASTED AND SHIPPED TO D-ZERO ASSEMBLY BUILDING.

(* EXcluder WAS LET UP TO ONE ATM GN₂ ON 9/3)

INSTALLED RELIEF VALVE ON ECN-NEEDS SEAL LEAKCHECKED

FIELD MEASURED 'Z' DIMENSION ON IRON

INTERFERENCE W/ MUON CHAMBER RAIL AND CRYO PIPES FOUND.

T. LYONS NOTICED THE MUON CHAMBER RAIL

1" x 3". (CONT. NEXT PAGE)

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MIDLAND PIPE & SUPPLY CO.

2829 S. 61ST COURT
CICERO, IL 60650

708/656-4200
FAX 708/652-0739

cf
closed?

PLAN

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ELEVATION

PIPE, VALVES, FITTINGS & ACCESSORIES
ELECTRIC and PNEUMATIC VALVE ACTUATORS
PIPE BENDING and FABRICATION

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TURBO
LOCATION

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