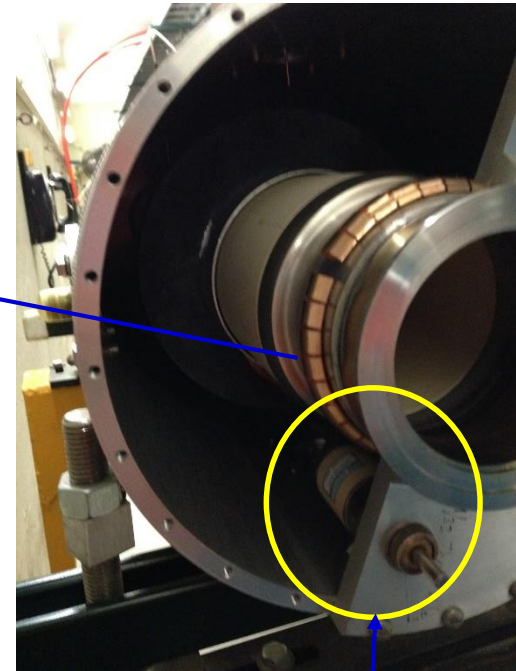
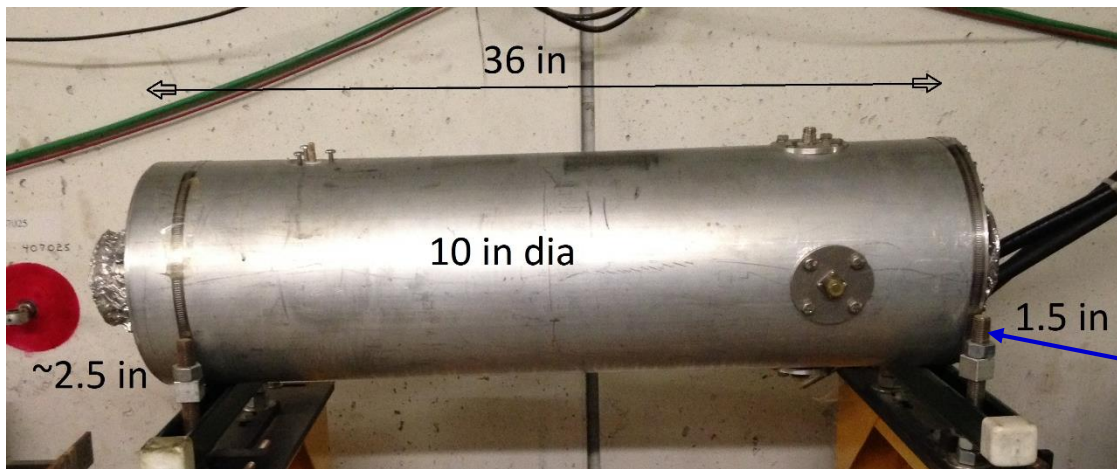




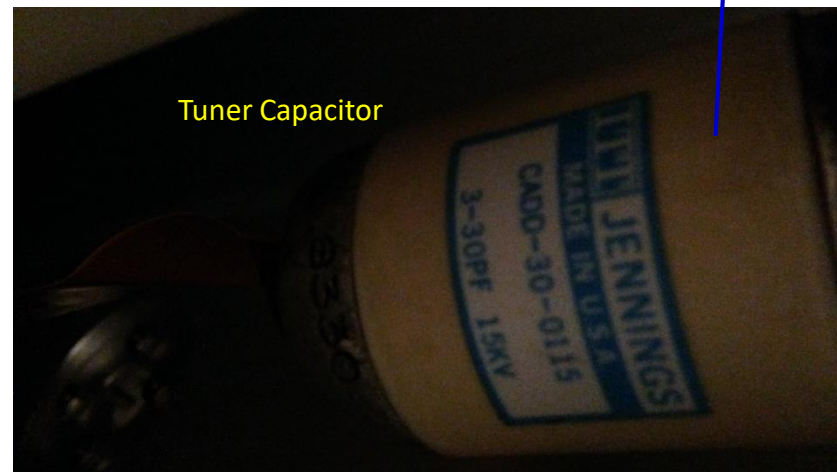
65 MHz RF Cavity

Chandra Bhat and Brian Fellenz

20180821



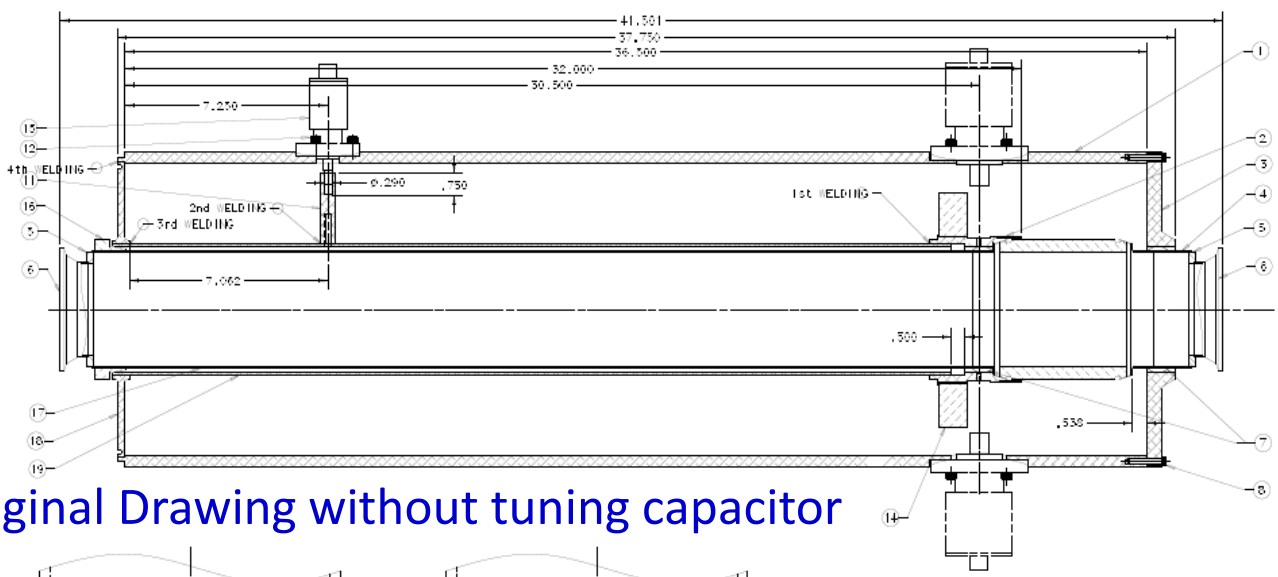
History: Dave Wildman designed the cavity around 2002 and Alex Chen was the mechanical engineer to build and assemble the cavity. Around 2007 the cavity was installed in the Booster ring to use as one of the longitudinal damper, but, never used. During 2016 or 17 shutdown cavity is removed and stored in the Booster storage area – old MR beam transport line. At the time of these measurements it was Class-I.



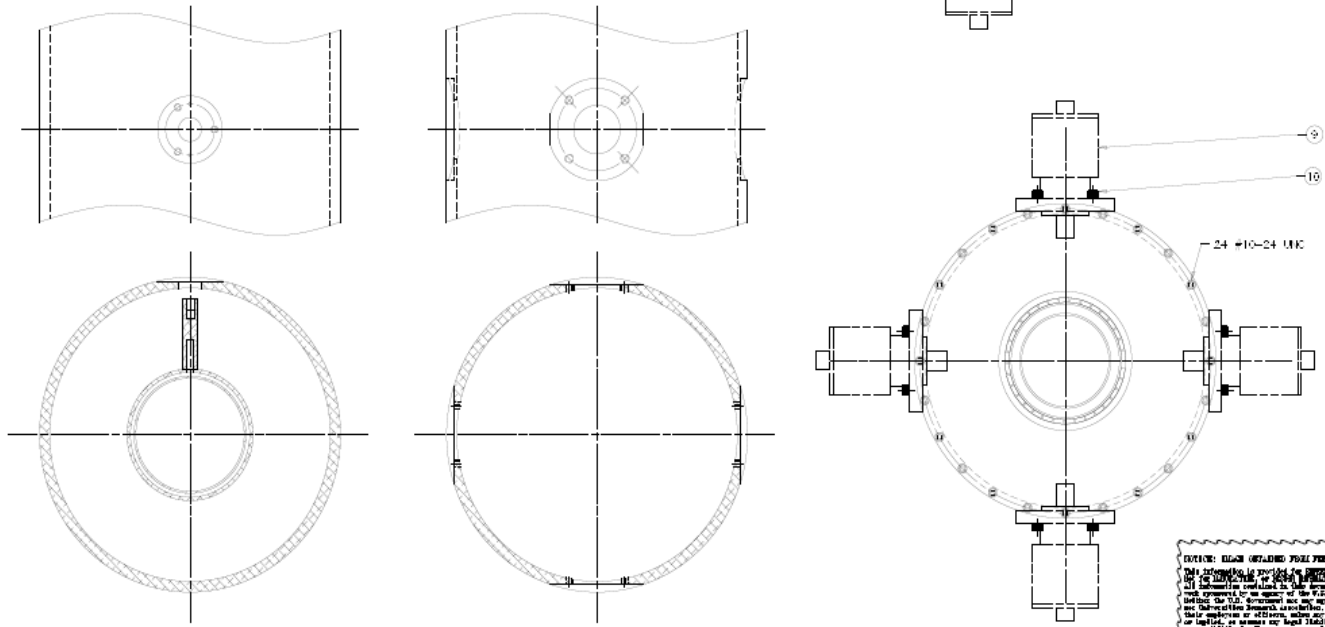
8 7 6 5 4 3 2 1

REV.	DESCRIPTION	DATE	BY
-	RELEASED FOR FABRICATION	T. P. REEP	12-10-2000
-	REV. COMPLETED BY USER	A. CHEN	12-10-2000

NOTE:
 1) WELDING WILL BE DONE AFTER RF TUNING; REMOVE THE SCREW HOLDING THE TAB
 2) $\phi .290$ ON THE TAB WILL BE DRILLED COAXIALLY WITH $\phi .820$ ON THE OUTER



Original Drawing without tuning capacitor



NO.	DESCRIPTION	QTY.
21		
20		
19	HC-394059 CAVITY INNER TUBE	1
18	IB-394058 CAVITY END-CAP WELDMENT	1
17	$\phi 4.000 \pm .005, 31.450 \pm$ Long, SS TUBE	1
16	IB-394057 SUPPORT SHIM, 610	4
15	7/8 E1+	1
14	GEF4110 PINS, 98-65-17	1
13		
12	1/4-20 x 5/8" SOCKET HEAD	3
11	IB-394056 CONNECTION TAB	1
10	5/16-18 x 5/8" SOCKET HEAD	16
9	1 5/8 E1+	4
8	10-24-17	24
7	CONTACT SPRING PINS	2
6	3 1/4" SS FLANGE	2
5	HL-394055 4"-3 1/4" FLANGE AD-PTOP	2
4	$\phi 4.000 \pm .005, 1.25 \pm$ Long, SS TUBE	1
3	IB-394054 END COVER	1
2	IB-394053 INNER TUBE -D-PTOP	1
1	HC-394052 CAVITY OUTER TUBE	1

FUNCTION	DESIGNED	APPROVED	DATE
1. DESIGN	A. CHEN	A. CHEN	05-11-2000
2. DRAWING	A. CHEN	A. CHEN	05-11-2000
3. CHECK	A. CHEN	A. CHEN	05-11-2000
4. APPROVE	A. CHEN	A. CHEN	05-11-2000

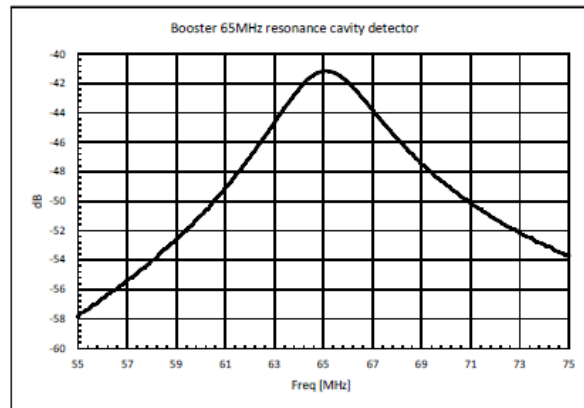
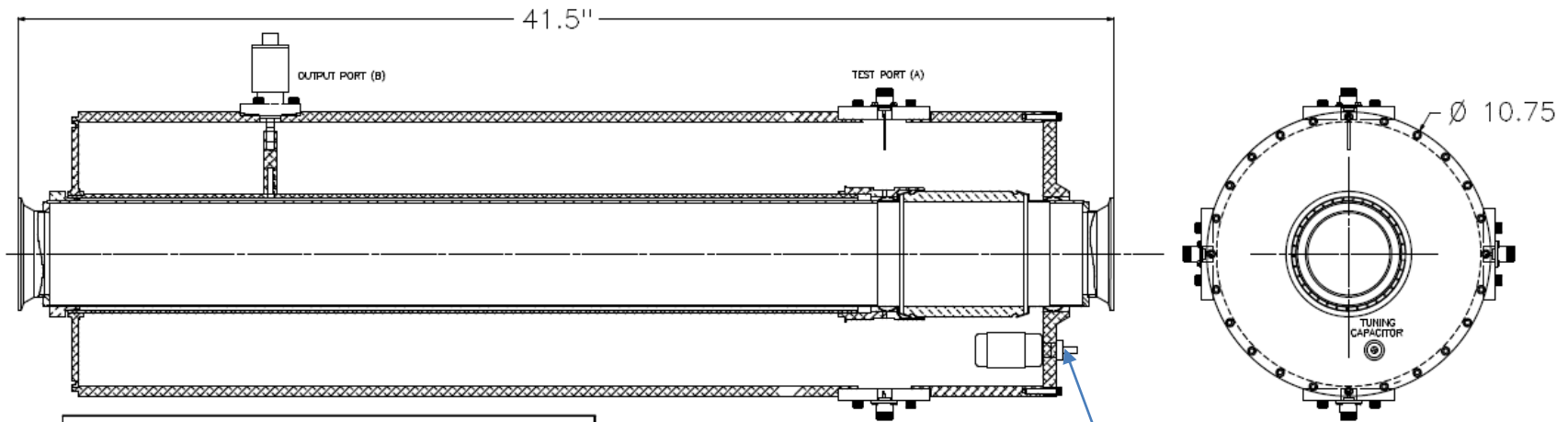
FERMILAB NATIONAL ACCELERATOR LABORATORY
 UNITED STATES DEPARTMENT OF ENERGY
BOOSTER DAMPER CAVITY ASSEMBLY
 SCALE: 1:2
 DRAWING NUMBER: 0360,000-MD-394051
 SHEET: 1 OF 1
 DESIGNED BY: T. P. REEP
 GROUP: ACCELERATOR MECH. SUPPLY

OWNER: BNL
 THIS DRAWING IS THE PROPERTY OF BNL. IT IS TO BE USED ONLY FOR THE PROJECT AND NOT TO BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM. THE USER OF THIS DRAWING IS RESPONSIBLE FOR OBTAINING NECESSARY PERMISSIONS FROM BNL FOR ANY OTHER USE.

8 7 6 5 4 3 2 1

Label: Revised Drawing with Tuner

BOOSTER 65MHz RESONANCE CAVITY DETECTOR
USED FOR LONGITUDINAL DAMPER



Tuner Capacitor
(not shown in the original drawing)

CF: 65MHz (TUNEABLE)
BW: 3.95
Q: 16.46

Q Measurements

- On 08/14/2018, cavity frequency is found to be about 62.5MHz. We tuned the cavity using the capacitor tuner (shown in the picture). By S21 Network Analyzer measurements between port A and B, we find
freq= 65.188 MHz and
 $Q = 16.46$
- The cavity has ~ 5 MHz tuning range (exact range is not measured)

