D-ZERO

COLLISION HALL

VENTILATION

MEASUREMENTS

D-ZERO ENGINEERING NOTE # 3823.115-EN-567

September 5, 2002

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Project Engineer

PPD/MSD/D0 Operations

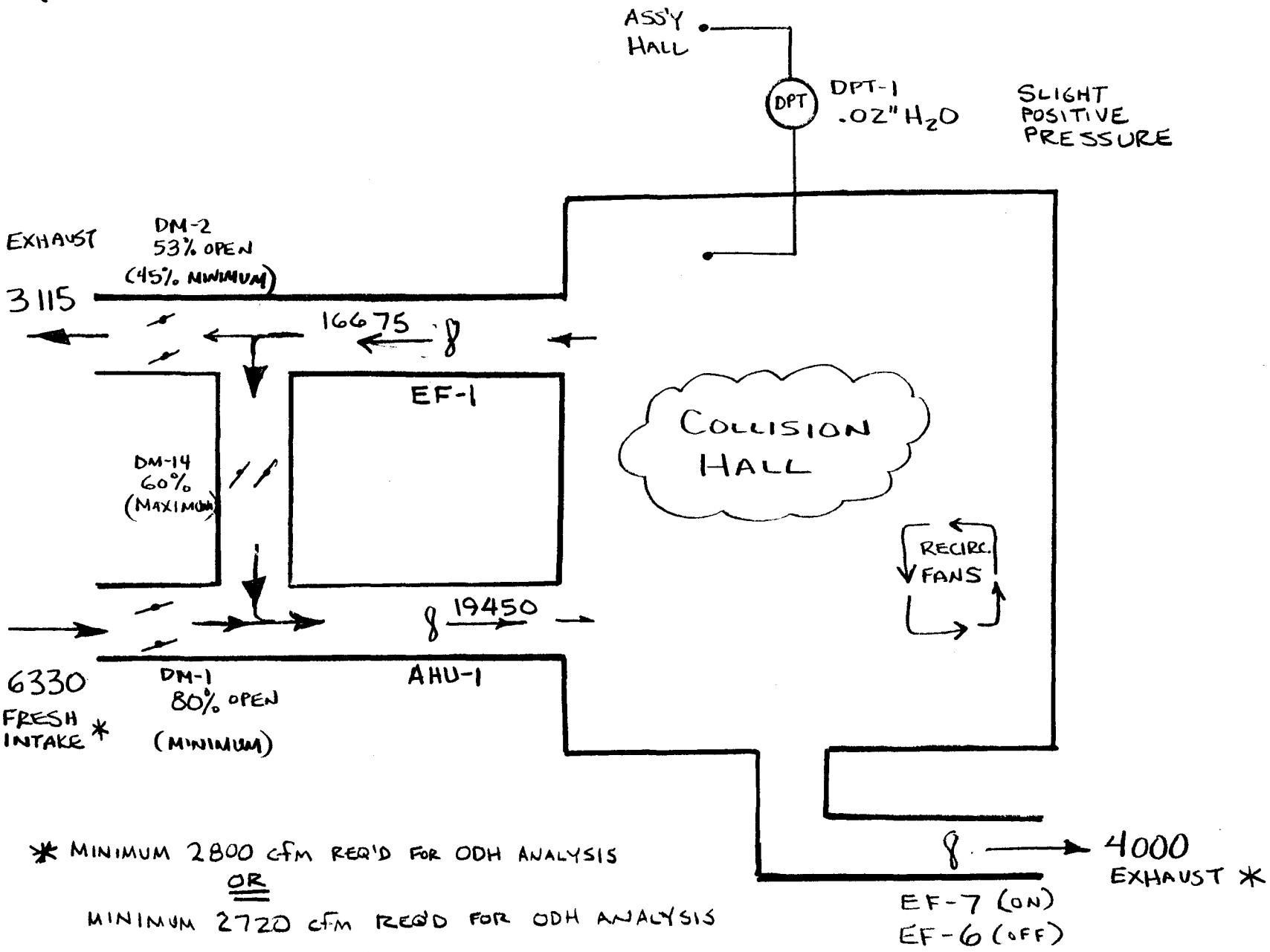
This engineering note documents air velocity measurements taken on September 5, 2002 for the D-Zero collision hall.

These measurements were done after changes were made to the building dampers, DM-1, DM-2, and DM-14 such that the collision hall would be at a slight positive pressure.

Measurements were made by Pete Simon and Mike Sarychev. They systematically took velocity measurements across the duct cross sections. Their raw measurements are included.

VENTILATION NUMBERS IN CFM (FT³/MIN)

{ACTUAL MEASUREMENTS BY M. SARYCHEV & P. SIMON 9-5-02}



* MINIMUM 2800 cfm REQ'D FOR ODH ANALYSIS

OR

MINIMUM 2720 cfm REQ'D FOR ODH ANALYSIS

REF. DØ COLL HALL ODH ANALYSIS EN-332, REV. B 2/2001

FERMILAB ENGINEERING NOTE

SUBJECT: D-ZERO COLLISION HALL VENTILATION

SECTION: PPD/MD DØ OPS

PROJECT

SERIAL-CATEGORY

PAGE

NAME: RUSS RUCINSKI

DATE: 9-5-02

REVISION DATE

Russ Rucinski

From: "Russ Rucinski" <rucinski@fnal.gov>
To: "Mike Geynisman" <hope@fnal.gov>
Cc: "Mike Sarychev" <sarychev@fnal.gov>; "Dan Markley" <dmarkley@fnal.gov>; "Jim Fagan" <jefagan@fnal.gov>; "Pete Simon" <pgs@fnal.gov>
Sent: Thursday, September 05, 2002 2:37 PM
Subject: Ventilation measured for D-Zero Collision hall

Mike,

I want to update you on our ventilation since you are the D0 cryo safety panel chair and are aware of our recent concerns of getting helium from the Tev.

You will receive a sketch via lab mail of the current ventilation measurements for the D-Zero collision hall.

The ventilation rates are about twice that required for the ODH analysis (Ref. Collision hall ODH analysis 3740.510-EN-332 rev. B dated 2/2001).

A value of 2800 cfm was used in the primary (fresh air supply only) analysis. We actually measured fresh intake at 6330 cfm.

A value of 2720 cfm was used in the secondary (forced contaminated exhaust) analysis. We measured 4000 cfm out of the cryo fan, EF-7.

We now have the collision hall well sealed from the Tev tunnel and are running at a slight, 0.02 "H2O pressure. Our collision hall helium levels are reduced to less than 50 ppm, whereas we are measure 1000 to 2000 ppm on the Tev side of our plastic barriers. We plan to keep this ventilation configuration.

There is no action required by the panel (or myself) since minimum values required by the ODH analysis are exceeded. Damper positions are limited by software such that the fresh air ventilation will stay the same or increase. There is no control on EF-7, it is just left on manually at the breaker.

Russ Rucinski, Project engineer for PPD/MD/D0 Ops

P.S. My thanks to Mike Sarychev and Pete Simon for doing the measurements.

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ENGINEERING NOTE

SECTION	PROJECT	SERIAL-CATEGORY	PAGE

SUBJECT: FRESH AIR INTAKE

NAME:

DATE: 9-5-02

REVISION DATE:

fresh air supply

$2' \times 6' = 12\ ft^2$

4"	8"	8"	4"
472	588	554	
496	709	560	
524	541	625	
426	280	330	
503	415	490	
601	567	506	
659	613	632	

VELOCITY NUMBERS ARE IN FT/MIN

527 ft/min aver.

$\times$

12

6328 ft^3/min

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ENGINEERING NOTE

SECTION	PROJECT	SERIAL-CATEGORY	PAGE

SUBJECT: COLLISION HALL RETURN

NAME:

DATE: 9-5-02

REVISION DATE:

AHU-1 CH Return from
30" x 60" = 12.5 ft²

1203	1401	1475	1253
1086	1382	1479	1543
1225	1207	1506	1522
1391	1348	1437	1157
1379	1279	1359	1233
1182	1239	1299	1419

V = 1334 ft/min
x
12.5

16675 cfm

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ENGINEERING NOTE

SECTION	PROJECT	SERIAL-CATEGORY	PAGE

SUBJECT: COLLISION HALL SUPPLY

NAME:

DATE: 9-5-02

REVISION DATE:

CH supply

$32'' \times 42'' = 9.33\ ft^2$

1635	1670	1944	1231	1367	1845
2097	2385	2452	2446	2291	2012
2158	2382	2446	2368	2191	1855
1757	1948	2293	2781	2889	2246
1378	1199	1385	2629	2656	2610

$V_{ave} = 2085$ ft/min

19450 cfm

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SECTION	PROJECT	SERIAL-CATEGORY	PAGE

SUBJECT: COLLISION HALL EXHAUST

NAME:

DATE: 9-5-02

REVISION DATE:

exhaust AHU-1

3' x 4' = 12 ft²

300	434	440	366
302	273	388	246
269	186	194	382
182	223	50	100

← FLOWS (fpm)

260 ft/min ave.

× 12

3115 ft³/min

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ENGINEERING NOTE

SECTION	PROJECT	SERIAL-CATEGORY	PAGE

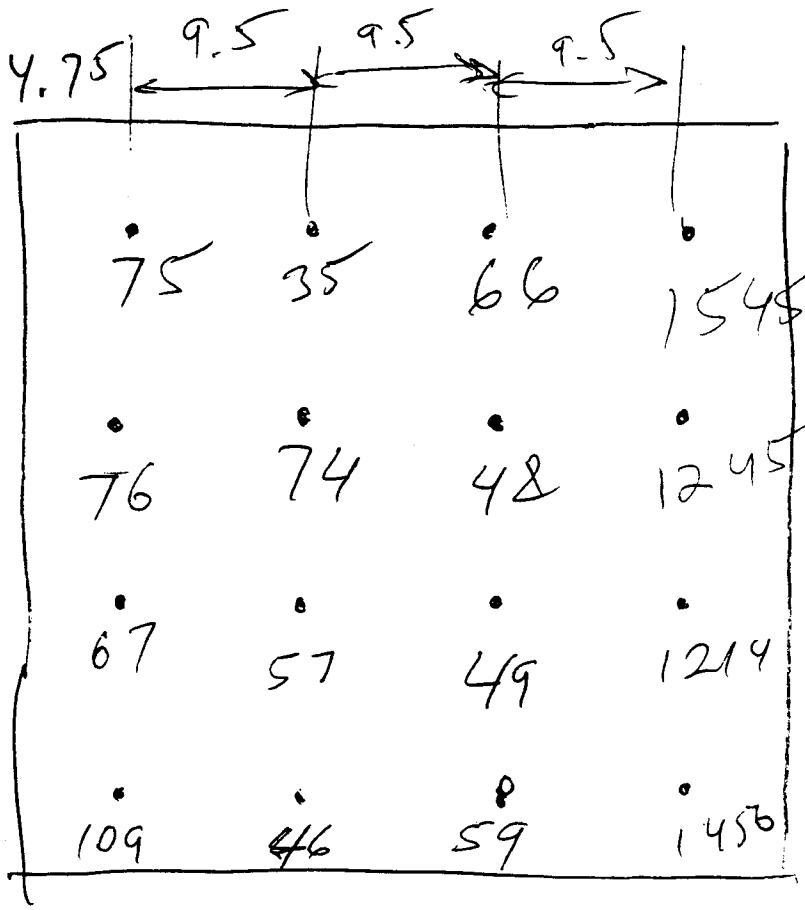
SUBJECT: EF-7 EXHAUST

NAME:

DATE: 9-5-02

REVISION DATE:

EF-7 EXHAUST fan 38" x 38" = 10.02 ft²



389 ft/min
x
10.02
3898
≈ 4000 cfm