

Deionized Chilled Water (DCW)

Component Flow

versus

Pressure differential

D-ZERO ENGINEERING NOTE # 3823.115-EN-571

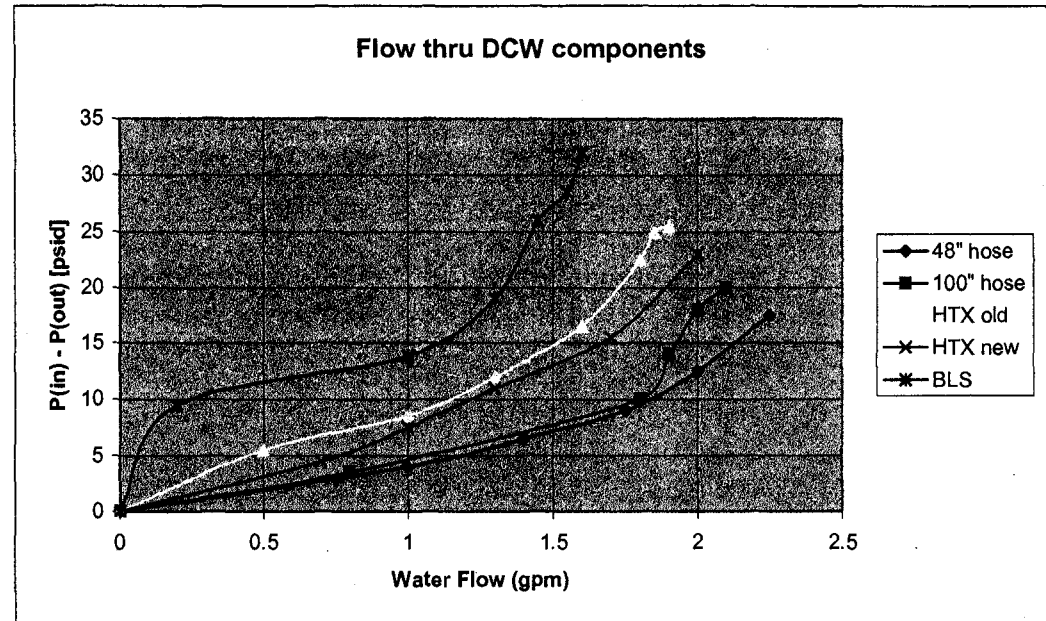
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Project Engineer

PPD/MSD/D0 Operations

Item	Delta P	Flow
48" hose, 2 x 1/4" quick disconnects	17.5	2.25
	12.5	2
	9	1.75
	6.5	1.4
	4	1
	0	0
100" hose, 2 x 1/4" quick disconnects	20	2.1
	18	2
	14	1.9
	10	1.8
	3.5	0.8
	0	0
HTX with 48" hose & disconnects	25.5	1.9
	25	1.85
	22.5	1.8
	16.5	1.6
	12	1.3
	8.5	1
	5.5	0.5
	0	0
Modified HTX with 48" hose & disconnects	23	2
	15.5	1.7
	11	1.3
	7.5	1
	4.5	0.7
	0	0
BLS power power supply, hose, reducers to 1/8"	32	1.6
	28.5	1.55
	26	1.45
	19	1.3
	13.8	1
	9.5	0.2
	0	0

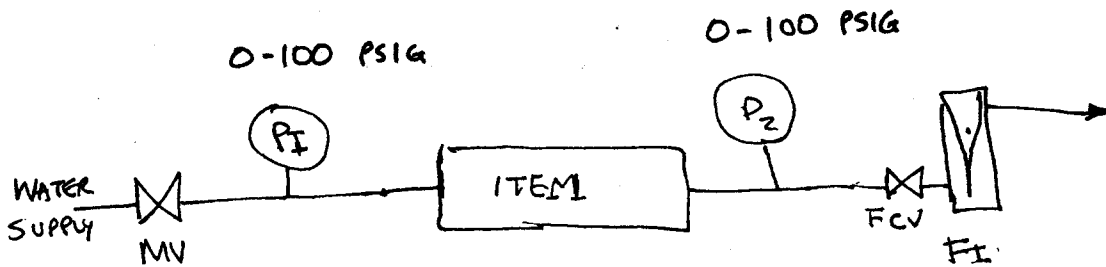
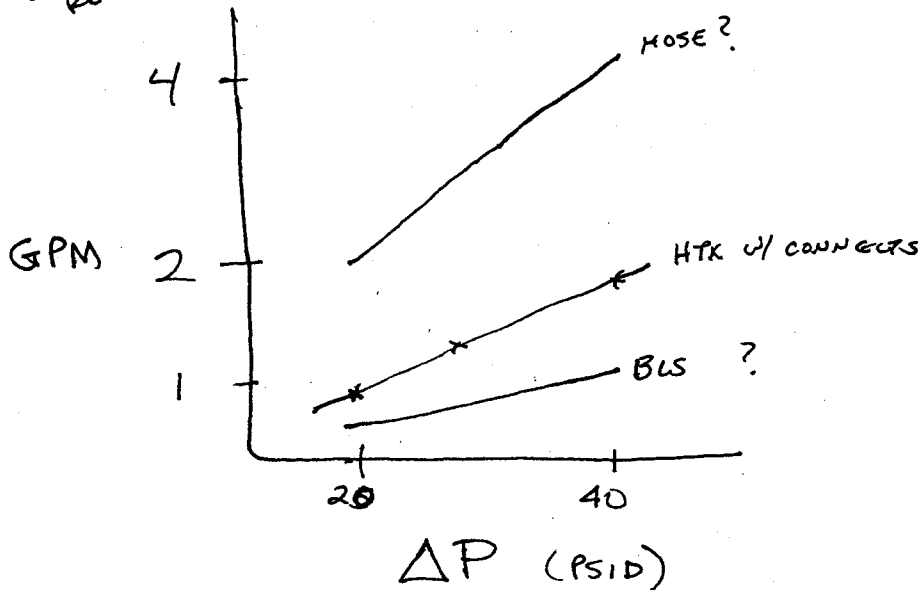


Test equipment assembled by Bryan Johnson
Data collection performed by Bob Barger 2/20/2004 and Jim Fagan 2/24/2004

WATER FLOW TEST:

<u>ITEM</u>	<u>P_{IN}</u>	<u>P_{OUT}</u>	<u>Flow (gpm)</u>
HTX w/ QUICK CONNECTS			
HTX w/o QUICK CONNECTS			
RUBBER HOSE JUMPER w/ QUICK CONNECTS			
BLS POWERSUPPLY w/ QUICK CONNECTS			

SAMPLE RESULT



TEST SCHEMATIC

0-5 gpm

1. GATHER EQUIPMENT, GAGES, FLOWMETER, ITEMS TO TEST.
2. CHECK FI BY FLOWING WATER INTO KNOWN SIZE BUCKET / WATER BOTTLE
3. SET UP TEST AREA a.) MIKE CHERRY AREA? b.) ROOM 503?
4. MEASURE. THROTTLE INLET & REDUCE GPM & ΔP. GET 2-3 PPS./ITEM.

3439

2/20/04 RRB

HOSE Test:

Hose length 47 1/2" 1/4" I.D.

Fittings = (2) 1/4" Female Parker BH2-60
(2) 1/4" barb x 1/4" MPT Adapter

INITIAL Gauge Readings (Dead headed)

IN = 68.5 } offset out + 1/4
OUT = 69.5 }
FLOW = 0

	DP	Position of Throttle Ball Valve	P _{in}	P _{out}	Flow	
11:17 OPEN RETURN	17.5	Full open	54.5	37.0	2.25 GPM	
11:22	12.5	~45°	46.5	34.0	2.0	(Bottom Mark,
11:30	9.0	~30°	40.0	31.0	1.75 est.	
11:35	6.5	~27°	35.5	29.0	1.80 est.	
11:37	4.0	25°	31.0	27.0	1.0 est	
11:40	-1.0	off 90°	22.0 22.0	23.0	0.0	

HOSES: (2) @ 23 1/4" LG 1/4" ID.
FITTINGS SAME AS ABOVE

	DP	Modified HX valve	P _{in}	P _{out}	GPM	
1332:	23.0	Full open	57.5	34.5	2.0	
	15.5	~45°	46.5	31.0	1.7	
	11.0	~30°	40.0	29.0	1.3 est	
1338	7.5	~27°	35.0	27.5	1.0 est	
	4.5	~25°	31.0	26.5	0.7 est	
	-1.0	Full closed 90°	22.0	23.0	0.0	

68.5
21.0
47.5

BLS PS

HOSES: (2) 15" LG 1/4" I.D.
FITTINGS (2) 1/4" PARKER BH2-60 FEMALE
(2) 1/8" PARKER BH1-60 FEMALE
(2) 1/8" MPT x 1/4" MPT ADAPTER.
(2) 1/8" PARKER BH1-61 MALE
(2) 1/8" MPT x 1/4" Hose Barb.

	DP	Valve	P _{in}	P _{out}	Flow	
1404	32.0	Full OPEN	61.5	29.5	1.6 est.	
	28.5		57.5	29.0	1.55 est	
	26.0		54.5	28.5	1.45 est	
	19.0		46.5	27.5	1.3 est	
	13.8		40.0	26.2	1.0 est	
	9.5		35.0	25.5	0.2 est	
	-1.0	Full Closed	21.5	22.5	0.0	

OLD STYLE #X

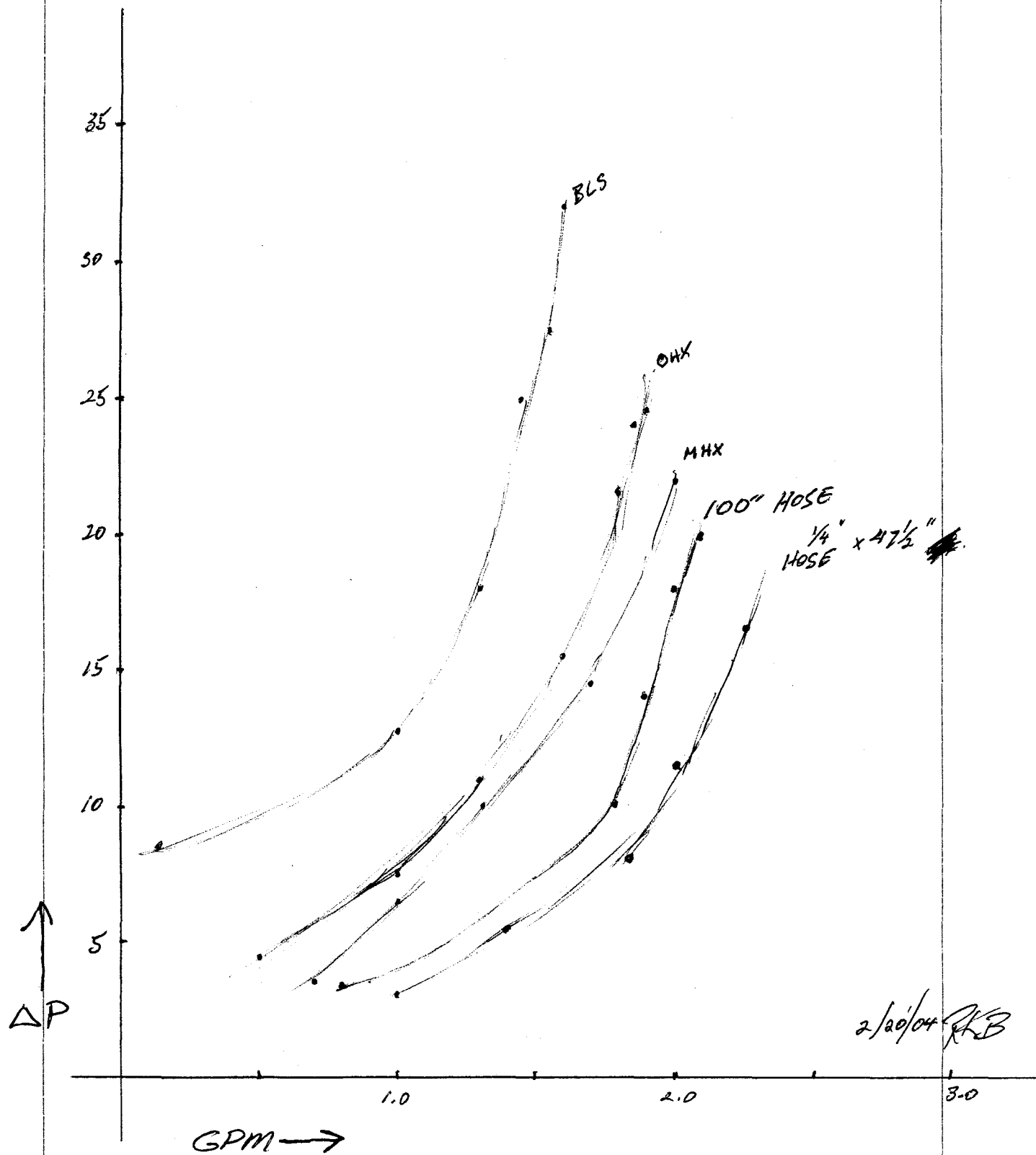
2/20/04 RKB

Hoses (2) 23 1/4" Lg x 1/4" I.D.
 Fittings (2) Parker BH2-60 Female 1/4"
 (2) 1/4" MPT x 1/4" Hose Barb.

	<u>ΔP</u>	<u>Valve Pos.</u>	<u>P_{in}</u>	<u>P_{out}</u>	<u>Flow</u>	
1/4"22	25.5	Full open	58.5	33.0	1.9	est.
	25.0	60°	57.5	32.5	1.85	est
	22.5	50°	54.5	32.0	1.8	est
	16.5	40°	46.5	30.0	1.6	est
	12.0	25°	40.0	28.0	1.3	est
	8.5	20°	35.0	26.5	1.0	est
	5.5	15°	31.0	25.5	0.5	est
offset =	-1.0	Full closed	21.5	22.5	0.0	

100" HOSE WITH QUICK DISCONNECT FITTINGS

FULL OPEN	<u>P_{in}</u>	<u>P_{out}</u>	<u>ΔP</u>	<u>FLOW</u>
45°	56	36	20	2.1
30°	52	34	18	2.0
27°	46	32	14	1.9
25°	40	30	10	1.8
0°	30	26.5	3.5	.8



2/20/04 RLB