



IPND COOLING

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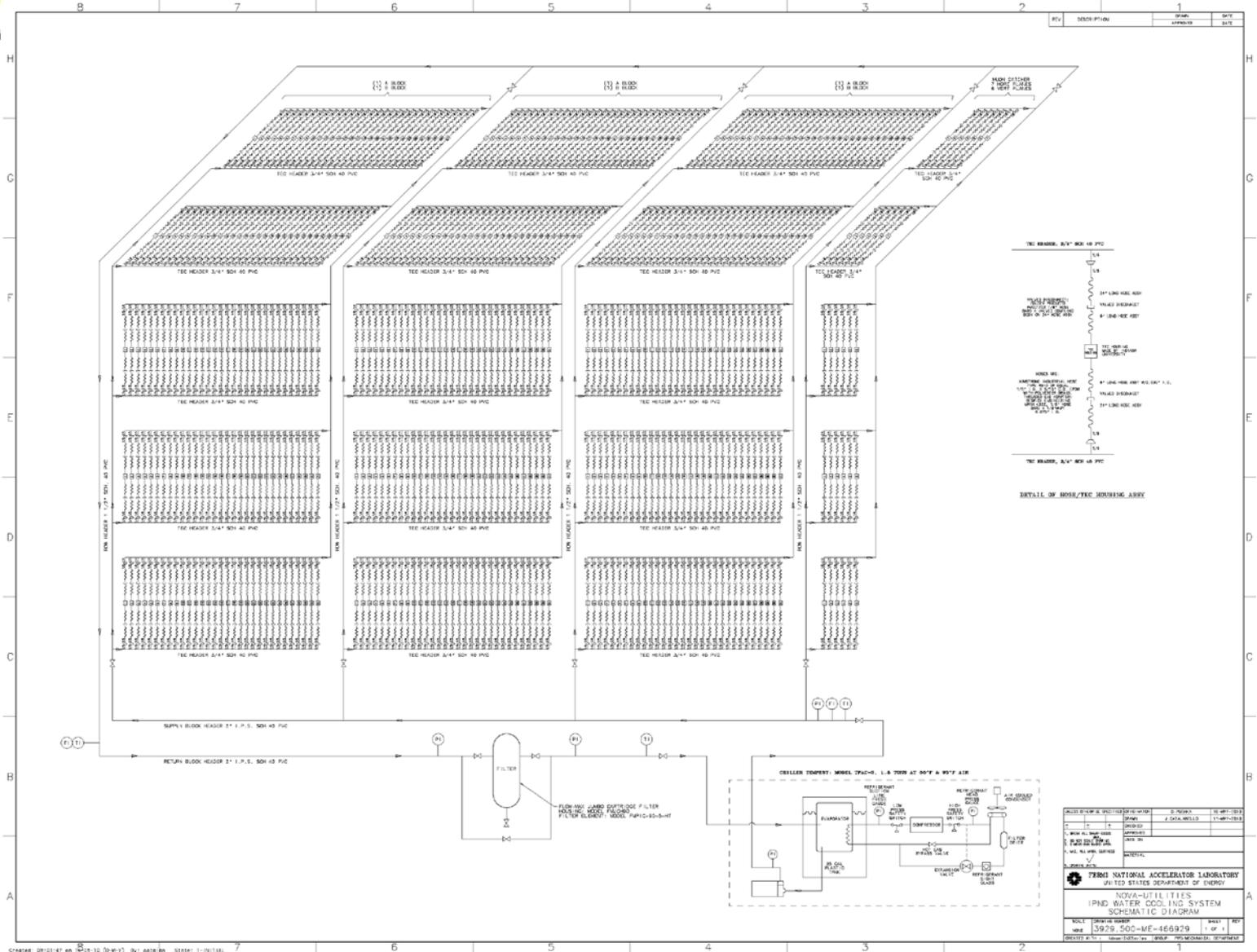
7 June 2010
NOvA Collaboration Meeting



IPND COOLING CALCULATION RESULTS:

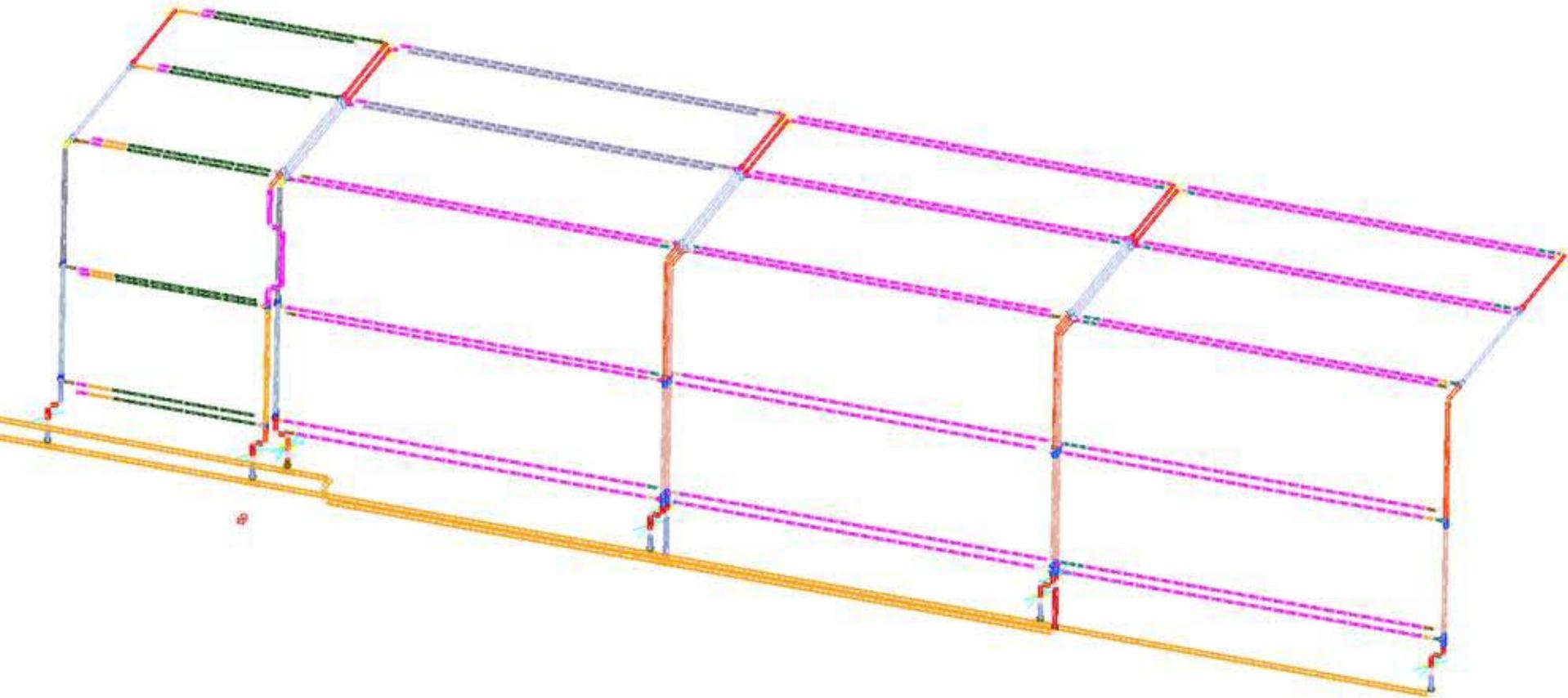
- include plumbing layout
- support structure(s?)
- cooling capacity,
- materials,
- instrumentation (flow meters?), etc.
- Would you also be prepared to comment on the similarities/differences between the near detector and Ash River systems.
- If any parts have been ordered, please let us know the status.

IPND P&ID (INCLUDES MATERIAL):





IPND SUPPORT STRUCTURE INPUT:

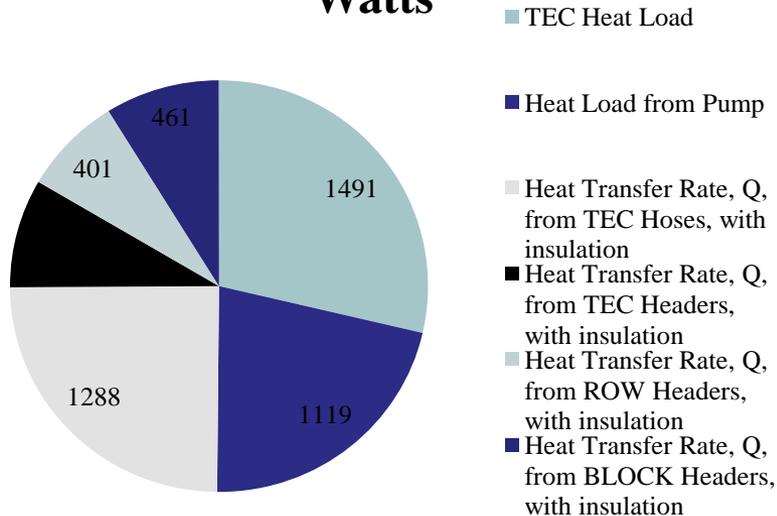




IPND COOLING LOADS

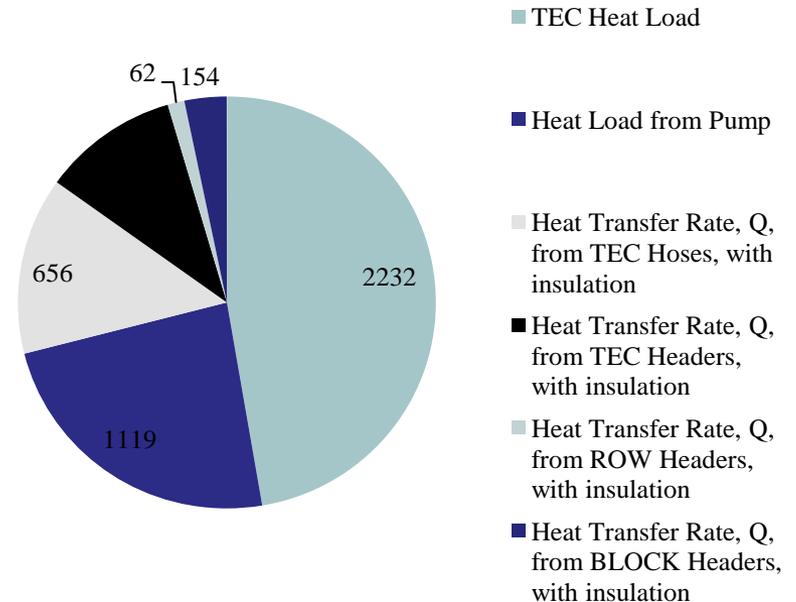
IPND Heat Load = 5203 Watts

IPND Heat Loads with Insulated Piping Watts



FD Heat LOAD = 4719 Watts

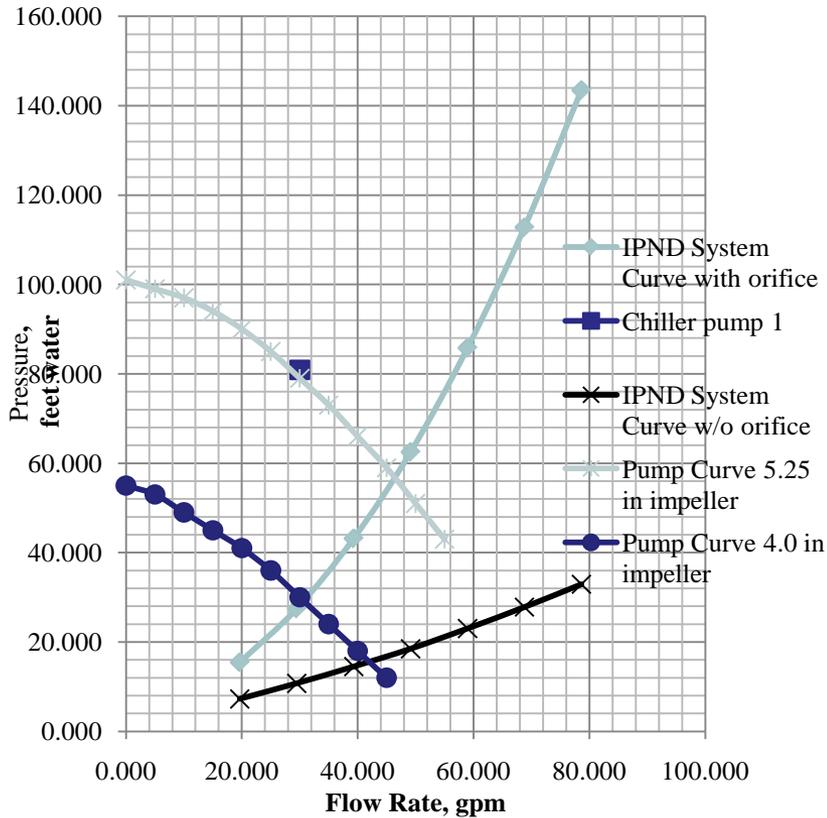
Far Detector Head Loads, Watts



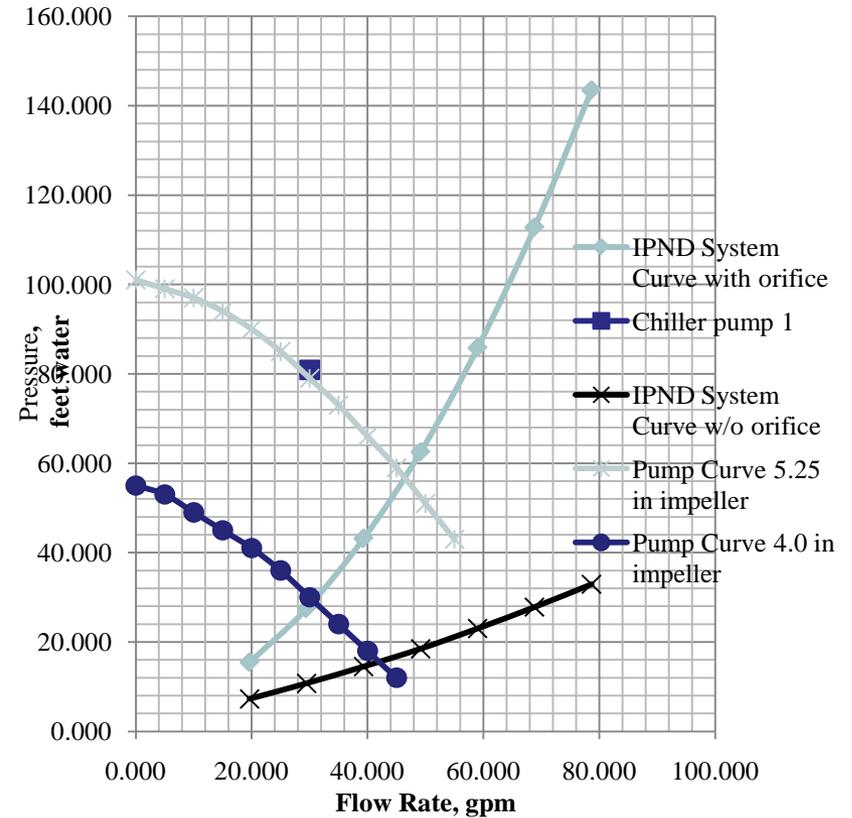


IPND COOLING CALCULATION RESULTS:

IPND System Curve



FD System Curve





IPND and FD LINE SIZE DIFFERENCES:

IPND Line Sizes:		
Hose, Pipe or Fitting I.d.	0.125	inch
Pipe Size for TEC header on block	0.75	nominal IPS
Pipe Size for ROW header on block	1.5	nominal IPS
Pipe Size for Block header on block	2	nominal IPS
Far Detector Line Sizes:		
24 inch long hose (or Pipe) I.d.	0.125	inch
Pipe Size for TEC header on block	0.75	nominal IPS
Pipe Size for ROW header on block	2	nominal IPS
Pipe Size for Block header on block	2	nominal IPS



IPND INSTRUMENTATION:

- instrumentation (flow meters?), etc

As part of the required piping engineering note, a valve and instrument list is required.

Instrumentation will use 4-20 ma outputs.

See P&ID for type and location.

- If any parts have been ordered, please let us know the status:
 - I've not ordered anything.
 - Hoses and Chiller Ordered by someone else.



IPND Engineering Note in Progress:

FESHM 5031.1 PIPING ENGINEERING NOTE FORM

Prepared by: Dave Pushka Preparation Date: 5-27-2010
Piping System Title: NOVA APD / TEC Cooling System
Lab Location: NOVA Near Detector Service Building Lab Location code: NDSB
Purpose of system / System description: Water Cooling system
Piping System ID Number: none assigned
Appropriate governing piping code: ASME B31.1 Category D
Fluid Service Category (if B31.3): Category-D / Normal / Category-M / High Pressure
(circle one)
Fluid Contents: Water
Design Pressure: 50 psig Design Temperature: 50 F
Piping Materials: PVC (ASTM D1785, type 1120)
Drawing Numbers (PID's, weldments, etc.): 3929.500-ME-466929
Designer/Manufacturer: Fermilab / Various
Test Pressure: 50 psig Test Fluid: Water Test Date: TBD

Statements of Compliance

Piping system conforms to FESHM 5031.1, installation *is not* exceptional: Yes / No
Piping system conforms to FESHM 5031.1, installation *is* exceptional and has been
designed, fabricated, inspected, and tested using sound engineering principles: Yes / No

Reviewed by: _____
(Print Name)

Signature: _____ Date: _____

D/S Head's Signature: _____ Date: _____

The following signatures are required for exceptional piping systems:

ES&H Director's Signature: _____ Date: _____

Director's Signature or Designee: _____ Date: _____

Pipe Characteristics

Size: Refer to P&ID Length: Refer to Drawings Volume: less than 100 gallons

Relief Valve Information

Type: not applicable, system open to atmosphere Manufacturer: not applicable

Set Pressure: not applicable Relief Capacity: not applicable

Relief Design Code: not applicable

Is the system designed to meet the identified governing code? Yes / No

Fabrication Quality Verification:

System Documentation

Process and Instrumentation diagram appended? Yes / No

Process and Instrumentation component list appended? Yes / No

Is an operating procedure necessary for safe operation? Yes / No
If 'yes', procedure must be appended.

Exceptional Piping System

Is the piping system or any part of it in the above category? Yes / No
If "Yes", follow the requirements for an extended engineering note for Exceptional
Piping Systems.

Quality Assurance

List vendor(s) for assemblies welded/brazed off site:
Not applicable: not brazed or welded.

List welder(s) for assemblies welded/brazed in-house:
Not Applicable

Append welder qualification records for in-house welded/brazed assemblies.
Not Applicable

Append all quality verification records required by the identified code (e.g. examiner's
certification, inspector's certification, test records, etc.)