



**Fermilab**

**Particle Physics Division  
Mechanical Department Engineering Note**

Number: MD-ENG-292

Date: 10 December 2010

Project Internal Reference:

Project: NOvA FHEP Pivoter @ CDF Hydraulic Piping FESHM 5031.1 Engineering Note for Pivot Cylinders Hydraulic System.

Title: NOvA Pivoter Hydraulic Piping FESHM 5031.1 Engineering Note

Author(s): Dave Pushka

Reviewer(s): Erik Voirin ID# 15426N 

Key Words: Piping, FESHM 5031.1

Applicable Codes:

Abstract Summary:

Two of the three hydraulic systems on the FHEP Pivoter for NOvA at CDF includes Fermilab furnished and fabricated piping. The drive system uses  $\frac{3}{4}$ " nominal piping while the pivot cylinders use  $2\frac{1}{2}$ " and 2 inch piping. The third system, the kneeling jacks, only uses vendor supplied hydraulic hose.

This note specifically addresses the Pivoter pivot cylinders provided by Phelps Industries. It provides the calculations to show the chosen piping materials are suitable for the design pressure and meet the requirements of FESHM 5031.1

## FESHM 5031.1 PIPING ENGINEERING NOTE FORM

Prepared by: Dave Pushka

Preparation Date: 12-10-2010

Piping System Title: NOVA Pivoter Hydraulics – Pivot Cylinders

Lab Location: CDF

Lab Location code: B0

Purpose of system / System description: Hydraulic Piping

Piping System ID Number: not applicable

Appropriate governing piping code: ASME A17.1 Safety Code for Elevator and Escalators ✓

Fluid Contents: Mobile DTE 24 Hydraulic Fluid

Design Pressure: 2000 psig

Design Temperature: 100 F

Piping Materials: Carbon Steel

Drawing Numbers (PID's, weldments, etc.): 3929.000-MD-466019

Designer/Manufacturer: Fermilab / See Vendor Contact Information below.

Test Pressure: 450 psig

Test Fluid: Oil

Test Date: 11-18-2010

### 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: Erik Veirin #15426N

(Print Name)

Signature:  Date: Mar 11, 2011

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: 2 ½ and 2 inch ips.

Length: about 120 inches

Volume: less than 10 gallons

Relief Valve Information

Type:

Manufacturer:

Set Pressure: 105 bar (1522 psig)

Relief Capacity: 450 l/min

Relief Design Code: none identified. Relief Capacity exceeds hydraulic pump capacity.

Is the system designed to meet the identified governing code?

Yes / No

Fabrication Quality Verification: not applicable (A17.1 does not require NDE of welds).

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: none

List welder(s) for assemblies welded/brazed in-house: Bill Gatfield

Append welder qualification records for in-house welded/brazed assemblies.

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

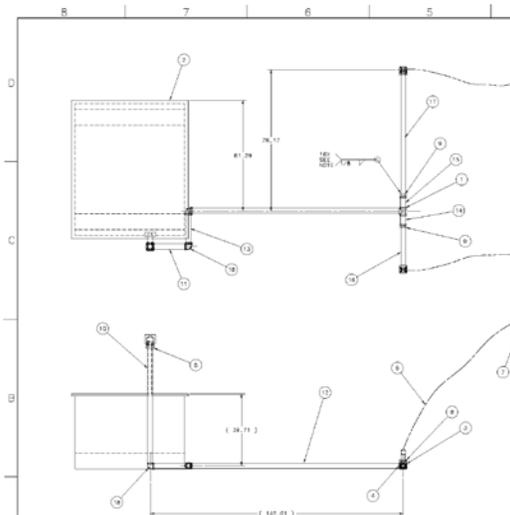
## Discussion:

Table 1 in FESHM 5031.1 does not list a piping service or application that matches this system. This system is a hydraulic system, but not intended to lift and elevator or hoist. However, this system is more like a hydraulic elevator than any other system described in FESHM 5031.1.

Searching for hydraulic piping standards from ASME or SAE (Society of Automotive Engineers) yields no standards or specifications specific to piping. ASME B31 series codes do not fully apply to the piping used for hydraulic fluid system. For example, ASME B31 codes use ANSI B16.5 flanges, not code 61 and code 62 flanges used with hydraulic fluid power systems which conform to SAE J518 or ISO 6162.

So, the decision was to apply the ASME A17.1 Safety Code for Elevator and Escalators to this system.

Drawing showing the pivot cylinder hydraulic piping:



Welder Qualifications:



Fermi National Accelerator Laboratory

Technical Division - Machine Shop

WELDER PERFORMANCE QUALIFICATION TEST REPORT

Welder's Name: William Garfield #04609 ASME No. W-12  
 Welding Process(es): ISI GTAW Manual Type \_\_\_\_\_ 2nd Type \_\_\_\_\_  
 In accordance with WPS No. FERM1028-1

Item: Fillet  Reproduction Weld  Test Coupon  
 Groove Double Welded:  Yes  No  
 Single Welded:  Metal Fused  Metal Non-Fused  Non-Metal  Open Root  Consumable Insert  
 With Solid Backing  Without Solid Backing  
 Base Metal: Spec. SA 106 in SA 106 (ASME IX) P. No. 1 to P. No. 1  
 Plate  Pipe  Tube  
 Actual Thickness \_\_\_\_\_ Nominal Diameter 4.5" Actual Diameter 4.5" IDD \_\_\_\_\_  
 Qualified Range \_\_\_\_\_ WPS No. 20 Qual. Thick Range 0.10674 Wall \_\_\_\_\_  
 Acrop Thickness 0.007 Qual. Dia Range 2.758 min Qual. Thick Range \_\_\_\_\_  
 Qual. Dia Range \_\_\_\_\_

1st Process Spec. SA 5.18 Class ECN05-2 2nd Process \_\_\_\_\_  
 Dia(s) 3/32 Dia(s) \_\_\_\_\_  
 P. No. 4 P. No. \_\_\_\_\_  
 Deposit Thickness 0.007 Range Qual 0.10674 Deposit Thickness \_\_\_\_\_ Range Qual \_\_\_\_\_

Position(s) (JFA, etc.): All  Vertical  Up  Down \_\_\_\_\_  
 Gas (Type and Composition): Fuel \_\_\_\_\_ Shielding Ar-99.9% Root Side Backing Ar 99.9%  
 Electrical Type Current  AC  DC - Reverse  DC - Straight  
 Transfer GMAW  Spray  Globular  Pulse  Short Circuit

FOR INFORMATION ONLY	MACHINE WELDING
Filler Metal Trade Name: _____	Control: <input type="checkbox"/> Visual <input type="checkbox"/> Remote Visual
E.A.W. Filler Trade Name: _____	Arc Voltage Control: <input type="checkbox"/> Amm <input type="checkbox"/> Other _____
Shielding Gas Trade Name: _____	Joint Tracking: <input type="checkbox"/> Yes <input type="checkbox"/> No

VISUAL INSPECTION  
 Appearance: Satisfactory Undercut \_\_\_\_\_ Piping porosity \_\_\_\_\_

GUIDED BEND TEST

TYPE AND FIGURE	RESULTS	TYPE AND FIGURE	RESULTS	TYPE AND FIGURE	RESULTS

Test Conducted by \_\_\_\_\_ Lab Test No. \_\_\_\_\_  
 Date \_\_\_\_\_

RADIOGRAPHIC TEST  
 Results Satisfactory Per ASME IX-2007 and ASME III.1-06  
 Radiographer Allan Weld Inspection Co., Inc Examiner Jennifer Amos, Level II Test No. 176214 Date 4/20/2009

FILLET WELD TEST RESULTS  
 Fracture Test: \_\_\_\_\_  
 Location, Nature, and Size of Crack or Tear in Specimen \_\_\_\_\_  
 Length of Weld \_\_\_\_\_ inch Length of Defect \_\_\_\_\_ inch % of Defect \_\_\_\_\_  
 Macro Test: Fusion \_\_\_\_\_  
 Appearance: Fillet size \_\_\_\_\_ inch x \_\_\_\_\_ inch  Convex  Concave  
 Test Conducted by \_\_\_\_\_ Lab Test No. \_\_\_\_\_

We certify that the statements in this record are correct and that the test welds were prepared, welded, and tested in accordance with the requirements of ASME IX-2007 and ASW D1.1-06 Fermi National Accelerator Laboratory

By Gregor Altshuler Date 5/1/2009

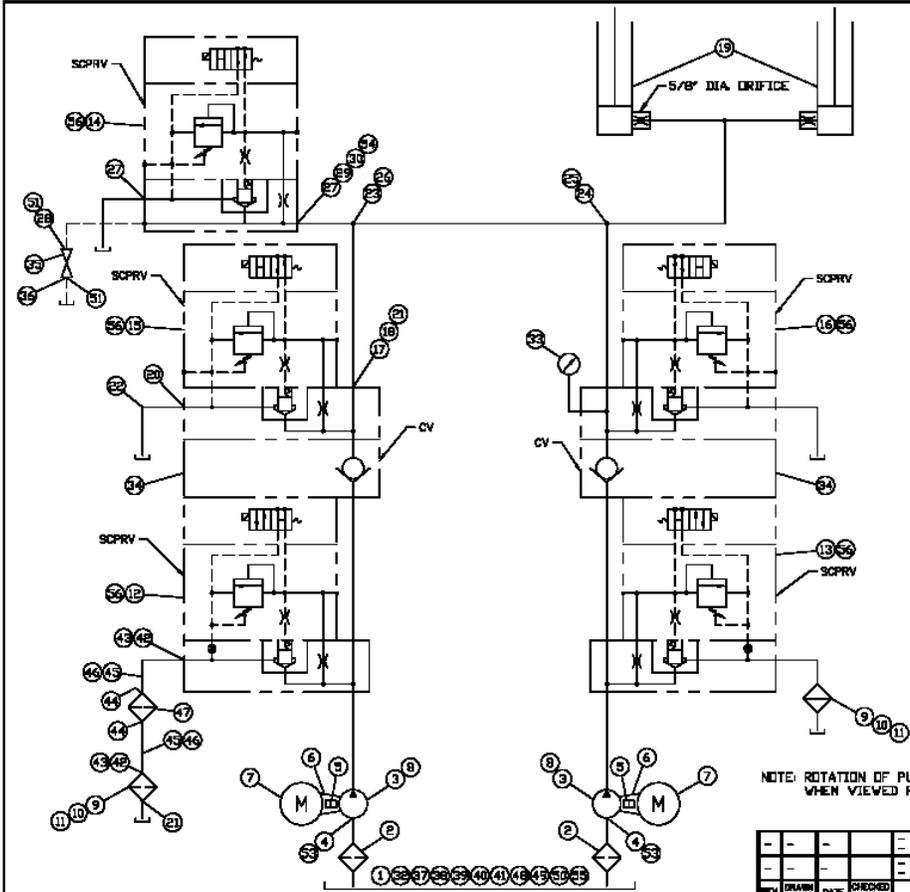
Calculations:

Pipe Material:	A106 Grade B Seamless
Maximum Operating temperature:	100 Fahrenheit
Diameters:	¾, 1½, 2, 2½
Schedule:	80
Maximum Allowable Stress per ASME B31.1-2004 Appendix A, Table A-1:	15,000 psi
Maximum Allowable Stress per ASME B31.3-2008 Appendix A, Table A-1:	20,000 psi
Outside Diameter, D:	As shown in table below
Wall thickness, t,	As shown in table below
Maximum Working Pressure, P	As calculated in table below
Corrosion allowance, C	0.0 (this piping is used indoors with non-corrosive oil on the inside and is not threaded nor has any wall thickness reductions).
Joint Efficiency, e	1.0 for seamless pipe
Percent Elongation for A106Gr B, E:	30
Min. Factor of Safety per ASME A17.1 Rule 1302.5a:	$F = (5.04/(30-2.8)) + 2.7 = 2.89$
Minimum Allowable F governs:	$F = 3.0$
Yield Point, Y.P. for A106Grade B:	35 ksi per ASME B31.1 Table A-1
Allowable Stress, S, as calculated by ASME A17.1 Rule 1302.5b:	$S = (Y.P./ F) = 35 \text{ ksi} / 3 = 11.67 \text{ ksi}$
Per ASME A17.1 Rule 1302.4:	$P = 2 * e * S * (t - C) / D$

**Result is that the ASME A17.1 Safety Code for Elevator and Escalators is more stringent for the allowable stress for A106 grade B pipe than is ASME B31.1 or ASME B31.3.**

Using the allowable stress values from ASME A17.1, calculate the allowable internal pressure for each size of schedule 80 pipe used where the outside diameter and wall thickness come from the ANSI pipe specification and the allowable internal pressure is calculated using the formula from ASME A17.1 Rule 1302.4 as written above.

Nominal Pipe Size	Pipe Outside diameter, (inches)	Wall thickness for Sch. 80, (inches)	Allowable Internal Pressure as calculated by rule 1302.4 in ASME a17.1, (psi)
1 ½	1.90	0.200	2,457
2	2.375	0.218	2,142
2 ½	2.875	0.276	2,241



NOTE: SEE SHEET 2 OF 2 FOR BILL OF MATERIAL.

SCPRV = SOLENOID-CONTROLLED PRESSURE RELIEF VALVE  
 CV = CHECK VALVE

CUSTOMER P.O. NO: SDP 10520

NOTE: ROTATION OF PUMP SHAFT IS CLOCKWISE WHEN VIEWED FROM SHAFT END OF PUMP.



TITLE: HYDRAULIC SCHEMATIC  
 A270FB63 TRUCK DUMPER

REV	DATE	BY	DESCRIPTION

CHKD	DATE	SCALE	SHT.

- 1) TANK-1200 GALLON CAPACITY
- 2) SUCTION STRAINERS-HYDRO-CRAFT HAFS-100RV3 (2 REQ'D)
- 3) PUMP-VICKERS 45V-60-A-1-C-22R (2 REQ'D)
- 4) 90° SOCKET WELD FLANGE-ANCHOR #W176-48-48-U, 3" DIA. (2 REQ'D)
- 5) COUPLINGS-FALK D40R10 WRAPFLEX, DRIVEN HUB-FALK R10, 1 1/4" DIA. BORE X 5/16" K.W. (2 REQ'D)  
DRIVER HUB-FALK R10, 2 3/8" DIA. BORE WITH 5/8" K.W. (2 REQ'D)  
NYLON COVER FOR FALK 40R10 (2 REQ'D)
- 6) FIBERGLASS COUPLING GUARDS (2 REQ'D)
- 7) MOTORS-U.S. MOTORS MODEL NO. ES70, 60 HP., 364 T-FRAME, 1750 RPM, 240/480 VOLT, 3 PH., 60 HZ., 1.15 S.F., T.E.F.C., HIGH EFFICIENCY, SEVERE DUTY (2 REQ'D)
- 8) FOOT BRACKET KITS FOR VICKERS PUMPS-VICKERS FB-C-10 (2 REQ'D)
- 9) RETURNLINE FILTER HEAD-VICKERS HS221FE31NBS30 (2 REQ'D)
- 10) RETURNLINE FILTER ELEMENTS-VICKERS V021B92820 (4 REQ'D)
- 11) RETURNLINE FILTER INDICATOR GAUGE-ZINGA CI-20 (2 REQ'D)
- 12) SOLENOID CONTROLLED RELIEF VALVE-DENISON RSV12-333-12-09-V01-A1 WITH 1/2" CONDUIT CONNECTOR, 1 1/2" (N.O.)
- 13) SOLENOID CONTROLLED RELIEF VALVE-DENISON RSV12-333-12-09-V01-A1 WITH 1/2" CONDUIT CONNECTOR, 1 1/2" (N.O.)
- 14) SOLENOID CONTROLLED RELIEF VALVE-DENISON RSV06-533-12-11-V01-A1 WITH 1/2" CONDUIT CONNECTOR, 3/4" (N.C.)
- 15) SOLENOID CONTROLLED RELIEF VALVE-DENISON RSV12-333-12-11-V01-A1 WITH 1/2" CONDUIT CONNECTOR, 1 1/2" (N.C.)
- 16) SOLENOID CONTROLLED RELIEF VALVE-DENISON RSV12-333-12-11-V01-A1 WITH 1/2" CONDUIT CONNECTOR, 1 1/2" (N.C.)
- 17) A199-B7 THREADED ROD, 1/2"-19 NC X 12 1/2" LG., CLASS 2A FIT (8 REQ'D)
- 18) 1/2"-13 NC LOCKNUTS WITH NYLON INSERT, ZINC PLATED (8 REQ'D)
- 19) DECK CYLINDERS-PHELPS MODEL 7605-500-F-C (2 REQ'D)
- 20) WELD TYPE "D" RING FLANGES-ANCHOR W4-24-24-U, 1 1/2" DIA. (4 REQ'D)
- 21) 90° SOCKET WELD TYPE "D" RING FLANGE ELBOWS-ANCHOR W176-24-24-U, 1 1/2" DIA. (4 REQ'D)
- 22) 1 1/2" X 90° BUTT WELD ELBOW, SCHEDULE 40 (2 REQ'D)
- 23) 1 1/2" SOCKET WELD TEE, F.S., BLACK, 3000# (1 REQ'D)
- 24) 2 1/2" X 1 1/2" SOCKET WELD BUSHINGS, F.S., BLACK, 3000# (2 REQ'D)
- 25) 2 1/2" SOCKET WELD TEE, F.S., BLACK, 3000# (1 REQ'D)
- 26) 1 1/2" X 3/4" SOCKET WELD BUSHING, F.S., BLACK, 3000# (1 REQ'D)
- 27) 90° SOCKET WELD ELBOWS-ANCHOR W176-12-12-U, 3/4" DIA. (2 REQ'D)
- 28) CONNECTOR PLATE - ANCHOR W12CP, 3/4" (1 REQ'D)
- 29) 3/8"-16 NC X 5" LG. HEX BOLTS, GRADE 8, ZINC PLATED (4 REQ'D)
- 30) 3/8" LOCKWASHERS, ZINC PLATED (4 REQ'D)
- 31) DELETED
- 32) PIPE CLAMP-BEHRINGER H72B75, 2 1/2" (1 REQ'D)
- 33) PRESSURE GAUGE-WIKA 213.5352.143000 (1 REQ'D)
- 34) CHECKVALVES-DENISON (SV12-310-B1, 1 1/2" (2 REQ'D)
- 35) BALL VALVE-HYCON KH20-F3-1-1-1-4, 3/4" (1 REQ'D)
- 36) WELD TYPE FLANGE-ANCHOR #W61-12-12-U, 3/4" DIA. (1 REQ'D)
- 37) MAGNET ROD-HYDRO CRAFT HC-MT-20 (1 REQ'D)
- 38) AIR FILTER-VESCOR ABE31P250 (1 REQ'D)
- 39) CLEAN OIL DRAIN-HYDRO CRAFT HC-EC-10 (2 REQ'D)
- 40) OIL LEVEL SIGHT GAUGE-HYCON FSA-127-11/12 (1 REQ'D)
- 41) DRAIN VALVE-APPOLD 70-101-01, 1/4" DIA. (1 REQ'D)
- 42) SPLIT FLANGES-ANCHOR 24-SF-D, 1 1/2" DIA. (2 REQ'D)
- 43) 90° SPLIT FLANGE/37° JIC FLARE ADAPTER-PARKER 19T3-24-24 (2 REQ'D)
- 44) STRAIGHT MALE JIC/MALE O-RING BOSS ADAPTER-PARKER 0503-20-24 (2 REQ'D)
- 45) HYDRAULIC HOSE-PARKER 301-24, 1 1/2" I.D. X 5'-0" LG. (CUT TO LENGTH) (2 REQ'D)
- 46) CRIMP-ON HOSE ENDS-PARKER 10643-24-24, FEMALE JIC 37° STRAIGHT SWIVEL (4 REQ'D)
- 47) AIR TO OIL COOLER-THERMAL TRANSFER ADR-40-1-S-60-F3 WITH 1/2 HP., 56 T-FRAME, 1140 RPM, 240/480 VOLT, 3 PH., 60 HZ., T.E.F.C. MOTOR (1 REQ'D)
- 48) TEMPERATURE SWITCH-A.B. 837-AA1 (2 REQ'D)
- 49) PACKING GLAND ASSEMBLY FOR ITEM #48-A.B. 837-N5 (2 REQ'D)
- 50) LOW OIL LEVEL SWITCH-GEMS LS-2050, P/N 30286 (1 REQ'D)
- 51) FOUR BOLT SPLIT FLANGE, CODE 61-ANCHOR 12-SF-D, 3/4" (2 REQ'D)
- 52) DELETED
- 53) 3" X 90° BUTT WELD ELBOW, SCHEDULE 40 (2 REQ'D)
- 54) 3/8"-16 NC REGULAR FULL HEX NUTS, ZINC PLATED (4 REQ'D)
- 55) OIL HEATER-PROTEC 151-9448 PSX, 9 K.W., 480 VOLT, 3 PH., 60 HZ., 11 AMPS. WITH 50" TO 250" F. THERMOSTAT (1 REQ'D)
- 56) LIGHTED DIN CONNECTORS FOR ITEMS 12 THRU 16-CANFIELD CONNECTORS 5107-1091000 (3 REQ'D)

- STR1RV301
- PUM145V14
- FLG130065
- COPI30R11
- COPI30R14
- COPI30R13
- GAR148701
- MOT360021
- PUM1FBC04
- FIL2SS016
- ELE1R2032
- FL112027
- VAL120973
- VAL120973
- VAL121177
- VAL121174
- VAL121174
- RTH15007
- NUT550006
- FLG115012
- FLG115022
- ELB315003
- TEE215004
- INS125009
- TEE225008
- INS115013
- FLG175045
- FLG191205
- BOL337519
- WAS437503
- CLAP25049
- GAG121305
- VAL205V41
- VALSK1B28
- FLG175021
- MAG172001
- FIL131P26
- DIR1C1801
- GAG2FSA01
- VAL50103
- FLG315001
- ADP69T307
- FTP315016
- HOSE15019
- END115080
- HEX140101
- TEMI1401
- TEMI5X02
- SVT605001
- FLG375005
- EL1330006
- NUT237503
- HEA1D5101
- CON9CSN32

CUSTOMER P.O. NO.: SDP 10520



**INDUSTRIES INC.**  
1700 E. 9TH STREET  
LITTLE ROCK, AR 72202

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TITLE: **BILL OF MATERIAL  
HYDRAULIC SCHEMATIC**

DRAWN BY:	DATE:	SCALE:	SHEET:
CHKD BY:	DWG: 7707-3041-C		REV.:

REV.	DRAWN BY	DATE	CHECKED BY	DESCRIPTION
-	-	-	-	-
-	-	-	-	-













Line #	Line Type	PO Line Category	Description (Start with a Noun) (240 Characters Maximum, Enter Additional Description in Cell Below Line Item)	Quantity, Unit of Measure and Price		Project Information		Split Coding Qty's	
				Quantity	Unit of Measure	Price per Unit	Extended Price		Project
4			UN Number    Hazard Class	Quantity			Project		
				Unit of Measure			Task		
				Price per Unit			Exp. Type		
				Extended Price			Exp. Org.		
5			UN Number    Hazard Class	Quantity			Project		
				Unit of Measure			Task		
				Price per Unit			Exp. Type		
				Extended Price			Exp. Org.		
6			UN Number    Hazard Class	Quantity			Project		
				Unit of Measure			Task		
				Price per Unit			Exp. Type		
				Extended Price			Exp. Org.		

**ITEMS TO BE COMPLETED BY THE REQUESTER:**

NOTE: Bolded items **must** be filled-in before requisition can be processed.

- |  |  |
|--|--|
| <ol style="list-style-type: none"> <li>1. APPROVALS</li> <li>2. REQUEST ORIGINATOR</li> <li>3. DESCRIPTION ON ENTIRE REQUISITION</li> <li>4. NOTE TO APPROVER</li> <li>5. JUSTIFICATION</li> <li><b>6. REQUESTER</b></li> <li><b>7. DELIVER TO LOCATION</b></li> <li>8. NOTE TO BUYER</li> <li>9. SUGGESTED VENDOR/SITE/CONTACT/TELEPHONE</li> <li>10. REFERENCE #</li> <li><b>11. NEED-BY-DATE</b></li> </ol> <p><b>Attachments)</b></p> <ol style="list-style-type: none"> <li><b>12. PROJECT/TASK/EXP. TYPE AND EXP. ORG.</b></li> <li><b>13. BUILDING MAINTENANCE</b></li> <li>14. NOTE TO RECEIVER</li> <li>15. TOTAL OF REQUISITION</li> <li><b>16. LINE TYPE</b></li> <li><b>17. PO LINE CATEGORY</b></li> <li><b>18. DESCRIPTION OF LINE</b></li> <li><b>19. QUANTITY</b></li> <li><b>20. UNIT OF MEASURE</b></li> <li><b>21. PRICE PER UNIT</b></li> <li>22. EXTENDED PRICE</li> <li><b>23. PROJECT/TASK/EXP. TYPE AND EXP. ORG.</b></li> <li><b>24. SPLIT CODING QUANTITIES</b></li> </ol> | <p>Area for your Division/Section, Business Office, NEPA and Directorate approvals</p> <p>Name, extension and mail station of person completing the requisition</p> <p>Short description (240 characters) identifying what is being purchased</p> <p>Short note (240 characters) to approver</p> <p>Short note (240 characters) to justify purchase of item</p> <p><b>Name of person expecting delivery of item</b></p> <p><b>Location where Fermilab's Receiving Dept. is to deliver the item once it comes in. Mail Station is not a valid location.</b></p> <p>Short note (240 characters) to buyer indicating previous P.O. number, and term of service if Line Type is SN, etc., must be placed in Attachments</p> <p>Your recommendation for selecting a vendor, including name, address, contact, telephone number</p> <p>Your internal means of identifying a requisition</p> <p><b>For Line Types, GR/GN the date is the desired day of delivery, for Line Type, SN the date is the day the service begins, (Note: for SN, place the term of the service in the "Description" of the line field or "Note to Buyer" in the</b></p> <p><b>Project/Task and Exp.Type</b> where entire requisition is charged and Exp. Org. - organization spending the money</p> <p><b>Circle Yes or No, if yes is circled FIMS number is required</b></p> <p>Short note (240 characters) to Fermilab's Receiving Dept.</p> <p>Total amount of all items listed on requisition</p> <p><b>Valid type used to determine whether item is for goods or services; example: GR (goods receipt), SN (service non-receipt)</b></p> <p><b>Valid category for item being requested; example - clothing, furniture, medical, computers/pc's, etc.</b></p> <p><b>A description for each item and term of service if Line Type is SN (240 character)</b></p> <p><b>The number of units requested per item</b></p> <p><b>Unit of measure for each item requested</b></p> <p><b>The dollar amount you have authorized the Procurement Department to spend for an item</b></p> <p>Extended price for each item requested</p> <p><b>Project/Task and Exp.Type</b> where line items are charged and Exp. Org. - organization spending the money, if different from above</p> <p><b>Quantities applied to each Project/Task/Expenditure Type and Expenditure Organization</b></p> |
|--|--|



## PURCHASE REQUISITION

### Requisition

Requisition Number (Filled in by System)	Oracle Preparer (Filled in by System)	Date <b>6-9-10</b>	Request originator: <b>Mike Zuckerbrot</b>	Extension: 4252 MS: 219
Division/Section Approval		Date	NEPA Approval	
Business Office Approval		Date		
Directorate Approval		Date		

### Requisition Header

Description (of entire requisition) <b>Pipe for FHEP cylinder and wheel drive power units</b>
Note to Approver
Justification (To Approver)

### Requisition Entry Defaults

Requester <b>Mike Zuckerbrot</b>	Deliver-To-Location (not Mail Station) <b>Lab F</b>	Buyer Note (use attachments) (i.e., Previous PO)		
Suggested Vendor <b>Best source-open for bid</b>	Suggested Vendor Site	Suggested Vendor Contact	Suggested Vendor Telephone #	
Reference #	Need-By-Date 6-17-10	Project/Task/Expenditure Type and Expenditure Organization <b>425-1.8.9.5</b>		Building Maintenance: Yes or No (Circle One)
Note to Receiver				Total of Requisition <b>\$278.94</b>

### Requisition Lines

Line #	Line Type	PO Line Category	Description (Start with a Noun) (240 Characters Maximum, Enter Additional Description in Cell Below Line Item)	Quantity, Unit of Measure and Price		Project Information		Split Coding Qty's
				Quantity	Unit of Measure	Price	Project	
1	GR	Pipe	2-1/2" diameter sch. 80 A.S.T.M. A106B seamless pipe; 12 foot random, 10 foot minimum 7.66 lbs/ft x 24 total ft = 183.84 lbs  UN Number <span style="float: right;">Hazard Class</span>	2	Per pound	\$1.00	425	
				\$183.84		1.8.9.5		
2	GR	Pipe	1-1/2" diameter sch. 80 A.S.T.M. A106B seamless pipe; 10 foot random, 8 foot minimum 3.63 lbs/ft x 10 ft = 36.30 lbs  UN Number <span style="float: right;">Hazard Class</span>	1	Per pound	\$1.00	425	
				\$36.30		1.8.9.5		
3	GR	Pipe	3/4" diameter sch. 80 A.S.T.M. A106B seamless pipe; 10 foot random, 8 foot minimum 1.47 lbs/ft x 40 ft = 58.8 lbs  UN Number <span style="float: right;">Hazard Class</span>	4	Per pound	\$1.00	425	
				\$58.80		1.8.9.5		

Line #	Line Type	PO Line Category	Description (Start with a Noun) (240 Characters Maximum, Enter Additional Description in Cell Below Line Item)	Quantity, Unit of Measure and Price		Project Information		Split Coding Qty's	
				Quantity	Unit of Measure	Price per Unit	Extended Price		Project
4			UN Number    Hazard Class	Quantity			Project		
				Unit of Measure			Task		
				Price per Unit			Exp. Type		
				Extended Price			Exp. Org.		
5			UN Number    Hazard Class	Quantity			Project		
				Unit of Measure			Task		
				Price per Unit			Exp. Type		
				Extended Price			Exp. Org.		
6			UN Number    Hazard Class	Quantity			Project		
				Unit of Measure			Task		
				Price per Unit			Exp. Type		
				Extended Price			Exp. Org.		

**ITEMS TO BE COMPLETED BY THE REQUESTER:**

NOTE: Bolded items **must** be filled-in before requisition can be processed.

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| <ol style="list-style-type: none"> <li>1. APPROVALS</li> <li>2. REQUEST ORIGINATOR</li> <li>3. DESCRIPTION ON ENTIRE REQUISITION</li> <li>4. NOTE TO APPROVER</li> <li>5. JUSTIFICATION</li> <li><b>6. REQUESTER</b></li> <li><b>7. DELIVER TO LOCATION</b></li> <li>8. NOTE TO BUYER</li> <li>9. SUGGESTED VENDOR/SITE/CONTACT/TELEPHONE</li> <li>10. REFERENCE #</li> <li><b>11. NEED-BY-DATE</b></li> </ol> <p><b>Attachments)</b></p> <ol style="list-style-type: none"> <li><b>12. PROJECT/TASK/EXP. TYPE AND EXP. ORG.</b></li> <li><b>13. BUILDING MAINTENANCE</b></li> <li>14. NOTE TO RECEIVER</li> <li>15. TOTAL OF REQUISITION</li> <li><b>16. LINE TYPE</b></li> <li><b>17. PO LINE CATEGORY</b></li> <li><b>18. DESCRIPTION OF LINE</b></li> <li><b>19. QUANTITY</b></li> <li><b>20. UNIT OF MEASURE</b></li> <li><b>21. PRICE PER UNIT</b></li> <li>22. EXTENDED PRICE</li> <li><b>23. PROJECT/TASK/EXP. TYPE AND EXP. ORG.</b></li> <li><b>24. SPLIT CODING QUANTITIES</b></li> </ol> | <p>Area for your Division/Section, Business Office, NEPA and Directorate approvals</p> <p>Name, extension and mail station of person completing the requisition</p> <p>Short description (240 characters) identifying what is being purchased</p> <p>Short note (240 characters) to approver</p> <p>Short note (240 characters) to justify purchase of item</p> <p><b>Name of person expecting delivery of item</b></p> <p><b>Location where Fermilab's Receiving Dept. is to deliver the item once it comes in. Mail Station is not a valid location.</b></p> <p>Short note (240 characters) to buyer indicating previous P.O. number, and term of service if Line Type is SN, etc., must be placed in Attachments</p> <p>Your recommendation for selecting a vendor, including name, address, contact, telephone number</p> <p>Your internal means of identifying a requisition</p> <p><b>For Line Types, GR/GN the date is the desired day of delivery, for Line Type, SN the date is the day the service begins, (Note: for SN, place the term of the service in the "Description" of the line field or "Note to Buyer" in the</b></p> <p><b>Project/Task and Exp.Type</b> where entire requisition is charged and Exp. Org. - organization spending the money</p> <p><b>Circle Yes or No, if yes is circled FIMS number is required</b></p> <p>Short note (240 characters) to Fermilab's Receiving Dept.</p> <p>Total amount of all items listed on requisition</p> <p><b>Valid type used to determine whether item is for goods or services; example: GR (goods receipt), SN (service non-receipt)</b></p> <p><b>Valid category for item being requested; example - clothing, furniture, medical, computers/pc's, etc.</b></p> <p><b>A description for each item and term of service if Line Type is SN (240 character)</b></p> <p><b>The number of units requested per item</b></p> <p><b>Unit of measure for each item requested</b></p> <p><b>The dollar amount you have authorized the Procurement Department to spend for an item</b></p> <p>Extended price for each item requested</p> <p><b>Project/Task and Exp.Type</b> where line items are charged and Exp. Org. - organization spending the money, if different from above</p> <p><b>Quantities applied to each Project/Task/Expenditure Type and Expenditure Organization</b></p> |
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