

# FERMINEWS

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## FIRST SEGMENT OF HELIUM TRANSFER LINE COMPLETED AND RUN SUCCESSFULLY

The first segment of the helium transfer line that eventually will run around the Main Ring on top of the berm has been completed and successfully tested.

It was a major accomplishment and quite a milestone for the Energy Saver Cryogenics Group. The transfer line is 900 feet long--the second longest helium transfer line in the world--and runs from the refrigerator in the A-1 service building to the refrigerator in the A-2 service building. (The longest helium transfer line in the world is also at Fermilab. It is in the Proton Area and was described in the April 10 issue of FERMINEWS.)

The present Energy Saver transfer line is only 1/25 of the distance around the Main Ring. When completed, the full transfer line will be supplied from the Central Helium Liquefier Facility, which recently came on line as the world's largest producer of liquid helium. The A-1 refrigerator is operating at this time as a miniature CHLF, making liquid helium. The helium is then moved through the transfer line as supercritical helium (liquid helium under high pressure) to the A-2 refrigerator that is operating as a normal satellite refrigerator.

This whole cryogenic complex is part of the superconducting accelerator now under construction.

The value of the A-1 to A-2 transfer line to high energy physics and to energy conservation in general is essentially three-fold:

--It represents another step toward the completion of the superconducting accelerator.

--It established some basic design criteria that others at Fermilab can use, such as heat loss, calculations, fabrication techniques, cost and many others.



(L-R) Claus Rode, Mark Leininger and Don Richied with cross-section of transfer line.

--It will provide experts in the power transmission field with important data they can use for their own purposes.

The transfer line is co-axial and carries more than one fluid. The supercritical helium is carried in a stainless steel pipe that is 1.77 inches inside diameter. This tube is surrounded by a vacuum. Next comes a subcooled liquid nitrogen shield (at minus 315°F). Then comes another vacuum space, and finally the outer vacuum shell. The total outside diameter of the line is 6-5/8 inches.

The temperature of the helium in the line is minus 450°F. During the recent test of the line, droplets took 12 hours to move from the A-1 building to the A-2 building. This is known as time-of-flight. A droplet of helium warmed up 2°F and a nitrogen droplet warmed up 10°F.

The next projected steps for the transfer line are to run it to the A-3 building, then to the nearby CHLF, and back to the A-4 service building. The system has been designed so that "if we have a failure in the line anywhere, that is,

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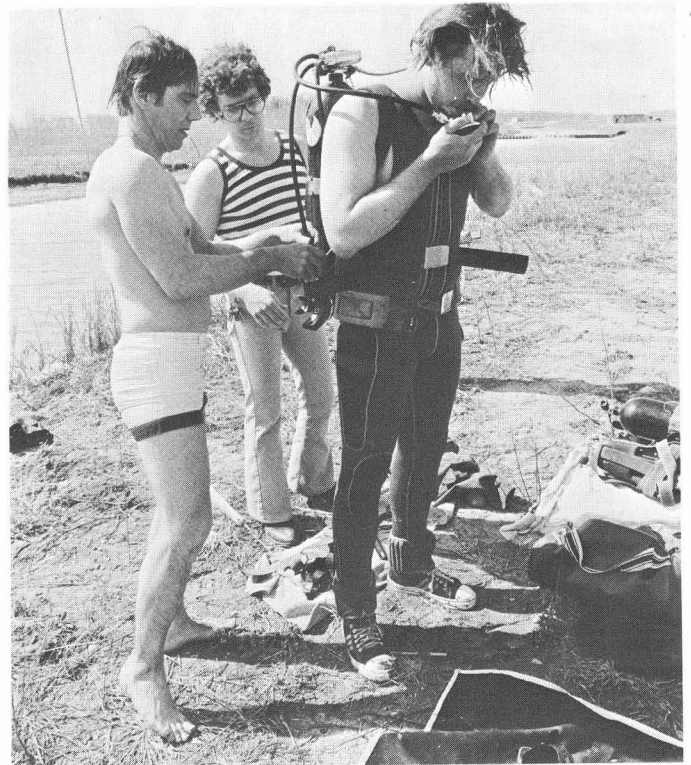


Helium transfer line running from A-1 service building (bottom of photo) to A-2 service building.

(Continued from Page 1)

lose a segment in the Ring, the system will continue to operate unaffected," said Don Richied, associate group leader.

At the present time, three refrigerators are now running in buildings A-1, A-2 and B-1. Compressors are operational in buildings A-0 and B-0. The A-1 refrigerator cooled the string of 25 superconducting magnets (in the A-1 tunnel) that were used successfully in an early test of the superconducting system. The A-2 refrigerator is being used to cool a string of 40 superconducting magnets in the A-2 tunnel. These magnets and their associated cryogenic system are now undergoing tests. The B-1 refrigerator provides the liquid helium that cools the string of 20 magnets in the B-12 test facility.



Preparing to work under water are (L-R) Dick Brazzale, Mark Leininger and Brian Murphy, all with the Energy Saver Division. They were at the A-0 segment of the Main Ring cooling pond removing caps on recently installed water lines and replacing them with spray nozzles. These are the nozzles that spray cooling water up into familiar arcs. Brazzale is in charge of compressor systems; Leininger is an engineer; and Murphy is a welder. They are certified divers. The work is associated with the A-0 compressor complex.

Claus Rode, group leader, had considerable praise for the cooperation and determination that all of the people in his group gave.

"This transfer line was built by everybody in the group," he said. "Every person was involved in some aspect of the line." Mark Leininger is the project engineer.

In addition to his own team, Rode also had praise for the people who assisted from I.E., riggers, material management, machine shop and fabrication procurement, as well as from the many other groups at Fermilab who contributed to this milestone.

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A SIMPLE TEST ON THE  
PRACTICE OF PHYSICS

Lewis M. Branscomb, president of the American Physical Society in 1979, calls it "a simple test one can apply to scientific activities to determine whether or not they can constitute the practice of physics."

He wrote it up in the April 1980 issue of Physics Today, and five salient points he gave are:

--"Is what you are doing beautiful? Many beautiful things are created without the use of physical knowledge, but I know of no really worthwhile physics that isn't beautiful."

--Is what you are doing useful? Physics is also almost certainly useful." He admitted this is a hard test to apply because so much of what is being done today may not be applied until years in the future. He also noted, "Physics is also useful as a tool for creating other disciplines of science, spinning off fields of great scientific excitement and practical importance. Indeed, one of the burdens of physics financing follows from the fact that fields created by physics research tend to have greater political appeal than does physics itself."

--"Is what you are doing expensive? Unavoidably, physics is usually expensive, and too many physicists find themselves with outdated or incomplete apparatus." Branscomb writes how the rapid scientific progress of the 1960s and generous funding helped create "a very advanced instrumentation industry. This industry not only provided economic benefits but also in turn accelerated the progress of science."

--"Is what you are doing hard? Physics is also hard, and good physics problems have very uncertain outcomes." He urged physicists not to "propose only that which they have, in effect, already accomplished or at least have proved can be done. If this is to be the wave of the future, then we should support physics research not with grants but with prizes."

--"Is what you are doing fun? Of course, physics is also fun--indeed it is an enjoyable way of life." One reason, he said, is that it "transforms an area of ignorance into knowledge."

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NALREC PLANS INCLUDE  
TCHAIKOVSKY AND POLKAS

The weekend of June 27 will be a musical one for those participating in NALREC activities.

A Hard Times party featuring polka music and disc jockey is scheduled for Friday, June 27, between 5:15 and 10:30 p.m.

Free food and free admission will ease everyone's "hard times." A cash bar will be available.

A very different kind of music, Tchaikovsky will be featured on Sunday, June 29, when NALREC offers an outing to the Ravinia Festival in suburban Highland Park.

The Chicago Symphony Orchestra, under the direction of James Levine, will perform Pathetique and Piano Concerto No.1 in B Flat Minor.

Abus will leave the Hi-Rise at 5 p.m. and refreshments will be served during the trip. Tickets are \$9 per person for lawn admission. Picnic baskets and blankets are recommended for this outdoor concert.

Tickets are available from Ginny Ritchie, Ext. 4201 or Ext. 3690, and Pat Yost, Ext. 4365.

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CHEZ LEON MENUS

Tuesday, June 24 - 7:00 p.m. - \$8.00

Stuffed artichoke hearts  
Bifteck marchand de vins  
Haricots verts tourangelle (green beans touraine way)  
Carottes au lard - Carrots glazed w/bacon  
Fresh escarole salad  
Black forest cherry cake

Wednesday, June 25 - 12:30 p.m. - \$4.50

Potage crecy (puree of carrot soup)  
Roast loin of pork w/applesauce glaze  
Pickled plums  
Buttered steamed new potatoes  
Orange-lemon ice

Thursday, June 26 - 7:00 p.m. - \$8.00

Cold cucumber and yoghurt soup w/walnuts  
Shish-kebabs (broiled skewered lamb)  
Rice w/almonds and sesame seeds  
Lentil salad  
Baklava-Greek pastry w/walnuts and honey syrup

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FERMILAB SOFTBALL LEAGUE STANDINGS AS OF  
June 13, 1980

	WON	LOST
POWER (Team #3)	4	0
D V 8s (#5)	3	1
BUSHWACKERS (#4)	3	1
DOWNTIME 95 (#8)	2	2
BUBBLE CHAMBER (#2)	1	3
SATELLITES (#1)	1	3
GAMBLERS (#6)	1	3
ICE MEN (#7)	1	3

In games played this week results are as follows:

	TEAM	SCORE
Tuesday, June 10:	#8	14
	#2	12
	#3	12
	#7	3
Thursday, June 12:	#5	16
	#1	0
	#4	11
	#6	0

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REMINDER ABOUT BASEBALL TRIP

Interested in watching the Chicago Cubs and the St. Louis Cardinals go at it on June 27?

Then join other fans for a NALREC-sponsored trip. The bus will load at 11:45 a.m. and leave at noon from the north side of the Central Laboratory. Because this trip is on a Friday, supervisors must give their approval for employees to take the afternoon off.

Tickets cost \$9 for women and \$12 for men. They may be obtained from Nelson Sample, Ext. 3719, and Ed. Justice, Ext.4553.

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ARGONNE PLANS OPEN HOUSE

Argonne National Laboratory will hold an open house on Saturday, June 21, between 9:30 a.m. and 4:30 p.m. Films will be available and a noontime band concert is scheduled.

There is no age restriction, but pets are not allowed. Cameras may be brought into the lab.

Tickets are required and may be obtained at the Fermilab Public Information Office, CL1-W. \* \* \* \* \*

GERMAN FILM SERIES OPENS TONIGHT

Five of the best New German Cinema releases will be presented by the International Film Society beginning with Land of Silence and Darkness which is being shown free of charge at 8 p.m. tonight, June 19.

Most of the films are in German with English subtitles.

On Friday two films, Coup de Grace and The American Friend, will be shown at 7 and 9 p.m. with an admission charge of \$2 per person.

Discussion with Romona Curry of the Goethe Institute of Chicago will follow one of Friday's films Aguirre-Wrath of God. The film will be shown at 7 p.m. and costs \$3 per person.

Another free film will conclude the series. Malatesta will be shown at 9 p.m. on Saturday.

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THEATRE DISCOUNT AVAILABLE

Ain't Misbehavin' is a "foot stompin'" musical review of Fats Waller jazz hits. The two hour show includes his famous "Honeysuckle Rose."

Discount coupons are available at the Recreation Office, CL1-W. With this coupon, tickets are 1/2 of regular cost plus \$1.00. Discounts will be honored Sunday through Friday evening performances and Wednesday, Saturday and Sunday matinees.

For information contact Helen McCulloch, Ext. 3126.

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ANNUAL REPORT AVAILABLE

"Where We Are in Physics" and "Accelerator Activities" are two of the many subjects covered in the 1979 Fermilab Annual Report published by Universities Research Association.

Photos, diagrams, and graphs help make the report interesting.

Copies are available free of charge in the Public Information Office, CL1-W.

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