ARTIFACTS INVENTORY

Name of Object: Mounted bison head **Location:** User's Center **Date:** 1/16/02

Object Obtained For: Fermilab

X **Artifact** ___ **Replica** ___ **Can Be Touched** X **Cannot Be Touched**

Object Obtained From: _____

Contact Person for Further Info: Public Affairs **Phone:** x3351

_____ **Permanent Display** _____ **Loan/Length of Time**

Detailed Object Description: Mounted bison head in User's Center

Dimensions: _____ **Color:** brown

Time Period: ____ **1960's** ___X_ **1970's** _____ **1980's** _____ **1990's** _____ **2000's**

Needed Care & Maintenance: None.

Notes: The bison are a symbol of Fermilab's prairie heritage. This bison was most likely one of the herd in the late 70's or early 80's that was slaughtered for buffalo meat. This is not done anymore though. We would have to do some negotiating to have the bison head moved out of the User's center.

Picture:

ARTIFACTS INVENTORY

Name of Object: 15' Bubble Chamber **Location:** Lab A **Date:** 8/13/02

Object Obtained For: Original Detector at Fermilab

x **Artifact** ___ **Replica** x **Can Be Touched** ___ **Cannot Be Touched**

Object Obtained From: Fermilab

Contact Person for Further Info: John Cooper 8W **Phone:** x2235

X **Permanent Display** _____ **Loan/Length of Time**

Detailed Object Description: Large bubble chamber used to detect particles

Weight: 330 tons **Dimensions:** 15' inside, 20' sphere **Color:** Transparent

Time Period: X **1960's** _____ **1970's** _____ **1980's** _____ **1990's** _____ **2000's**
Originally built in late 60's, early 70's. It has not been used since the 1980's.

Needed Care & Maintenance: Needs to be moved to outside ares to be put on display. Committee about the moving of this object has already been formed by John Cooper. It will cost $150,000.00 to move the bubble chamber.

Notes: Bubble chamber technology led to the discovery of many new elementary particles. Filled with superheated liquid, the bubble chamber creates a track of small bubbles when a charged particle crosses the chamber, locally bringing the liquid to a boil. Because data acquisition and analysis is very slow, bubble chambers are no longer used for research purposes. (http://www.fnal.gov/pub/inquiring/matter/smallest/detection.html)

Picture:

ARTIFACTS INVENTORY

Name of Object: Calorimeter Module **Location:** CMS **Date:** 8/15/02

Object Obtained For: Replica can be built for us.

___ **Artifact** _X_ **Replica**___ **Can Be Touched** _X_ **Cannot Be Touched**

Object Obtained From: CMS can build a module for the 15th floor.

Contact Person for Further Info: Muzaffer Atac **Phone:** x3960

_X_ **Permanent Display** _____ **Loan/Length of Time**

Detailed Object Description: Module with scintillators between absorber plates with LEDs to show real operation of a calorimeter

Dimensions: Size can vary – no more than 2'x 2'x 2' **Color:** Color may vary

Time Period: _____ **1960's** _____ **1970's** _____ **1980's** _____ **1990's** ___ **X** __ **2000's**

Needed Care & Maintenance: May cost in between $2,000 - $3,000 to build. Will most likely be encased. Need more information about general maintenance.

Notes: Muzaffer is discussing this with his colleauges to finalize details, cost, etc. He can provide us with a graphic of the module.

Picture:

ARTIFACTS INVENTORY

Name of Object: Chicago Cyclotron Magnet **Location:** New Muon lab **Date:** 8/13/02

Object Obtained For: Separating particles of differing charges and measuring momentum for other experiments

X Artifact ___ **Replica** **X** **Can Be Touched** ___ **Cannot Be Touched**

Object Obtained From: University of Chicago

Contact Person for Further Info: John Cooper **Phone:** x2235

X **Permanent Display** _____ **Loan/Length of Time**

Detailed Object Description: Largest analysis dipole magnet ever used at Fermilab

Weight: 1000+ tons **Dimenions:** _____ **Color:** Orange and Blue

Time Period: ____ **1960's** ____ **1970's** ____ **1980's** ____ **1990's** ____ **2000's**
Enrico Fermi used it in the 1950's.

Needed Care & Maintenance: This is an enormous object. The New Muon lab was actually constructed around it because was so difficuly to move. It would be a very expensive project to move the cyclotron magnet.

Notes: This magnet is the larger version of the Harkins Cyclotron Magnet.

Picture:

ARTIFACTS INVENTORY

Name of Object: Silicon Detector - CDF **Location:** 15th Floor **Date:** 1/15/03

Object Obtained For: 15th Floor Self-guided tour

X **Artifact** ___ **Replica** ___ **Can Be Touched** X **Cannot Be Touched**

Object Obtained From: Fermilab

Contact Person for Further Info: Kurt Riesselmann **Phone:** x5681

X **Permanent Display** _____ **Loan/Length of Time**

Detailed Object Description: CDF Run I Silicon Detector

Weight: ____ **Dimensions:** 2.5' x 2.5' in case **Color:** gold, silver

Time Period: _____ **1960's** _____ **1970's** _____ **1980's** X **1990's** _____ **2000's**

Needed Care & Maintenance: Very little maintenance because it is in a display case.

Notes: Determines tracks of particles. It was used by CDF from 1992-1996. It is an important artifact because it helped discover the top quark in 1995.

Picture:

ARTIFACTS INVENTORY

Name of Object: Cerenkov Mirrors **Location:** 8W PPD **Date:** 1/16/02

Object Obtained For: Particle Physics Division

X **Artifact** ___ **Replica** X **Can Be Touched** ___ **Cannot Be Touched**

Object Obtained From: Particle Physics Division

Contact Person for Further Info: John Cooper **Phone:** x2235

X **Permanent Display** _____ **Loan/Length of Time**

Detailed Object Description: Hexagonal mirrors

Dimensions: Approximately 1.5' x1.5' **Color:** silver mirrors

Time Period: ____ **1960's** _____ **1970's** _____ **1980's** _____ **1990's** X **2000's**

Needed Care & Maintenance: Regular dusting.

Notes: There are enough Cerenkov mirrors available to make a 15' x 30' wall.

Picture:

ARTIFACTS INVENTORY

Name of Object: CMS Virtual Display **Location:** Wilson – 6W **Date:** 8/15/02

Object Obtained For: To explain how the Compact Muon Sulenoid Detector is being built

___ **Artifact** _X_ **Replica** _X_ **Can Be Touched**___ **Cannot Be Touched**

Object Obtained From: CMS can make another computer simulation to be put on display

Contact Person for Further Info: Muzaffer Atac **Phone:** x3960

_X_ **Permanent Display** _____ **Loan/Length of Time**

Detailed Object Description: Computer simulation program to describe how the detector is being built.

Dimensions: Size of a computer monitor on a stand **Color:** Gray

Time Period: ____ **1960's** _____ **1970's** _____ **1980's** _____ **1990's** ___ **X** ___ **2000's**

Needed Care & Maintenance: No real maintenance required. Somebody will need to check on it every once in a while to make sure that it is running. A button needs to be pressed to reload it. A sign can be made for visitors to do this themselves.

Notes: CMS has offered to make a duplicate simulator for us. We need to make sure that the content applies to all levels though.

Picture:

ARTIFACTS INVENTORY

Name of Object: Harkins Cyclotron **Location:** Black Hawk Blvd., off Batavia Rd.

Date: 8/1/02 **Object Obtained For:** Outdoor display in Southeast side of Village

~~X~~ **Artifact** ___ **Replica** ~~X~~ **Can Be Touched** ___ **Cannot Be Touched**

Object Obtained From: Manhatten Project at the University of Chicago

Contact Person for Further Info: tbd **Phone:** _____

X **Permanent Display** _____ **Loan/Length of Time**

Detailed Object Description: Large electromagnet on display outside.

Weight: 55 tons **Height:** **?** **Width:** **?** **Length** **?** **Color** Orange and Blue

Time Period: ____**1960's**_____**1970's**_____**1980's** _____**1990's** _____**2000's**
Built in **1936** by William D. Harkins with the help of students.

Needed Care & Maintenance: The cyclotron is currently in disrepair. The "pie-shaped" cover pieces have come off, exposing the deteriorating plywood underneath. The plywood has also started to come off, exposing the cavity inside. It also needs to be painted. Once it has been repaired though, it will only require routine maintenance such as cleaning and fresh paint every other year or so.

Notes: Enrico Fermi and other physicists used the Cyclotron to study neutron diffusion. It was also used in the Manhatten Project at the University of Chicago. A nameplate may have been made through the History Committee, but its whereabouts are unknown.

Picture:

ARTIFACTS INVENTORY

Name of Object: Drift Chamber **Location:** DZero **Date:** 8/21/02

Object Obtained For: DZero – Run I

X **Artifact** ___ **Replica** ___ **Can Be Touched** X **Cannot Be Touched**

Object Obtained From: DZero

Contact Person for Further Info: John Womersley **Phone:** x4618

X **Permanent Display** _____ **Loan/Length of Time**

Detailed Object Description: Drift Chamber is used to measure charged particles produced in proton-antiproton collisions at DZero. The chamber was the inner tracking detector in Run I before they added the silicon detector.

Dimensions: 6 ft. long, 5 ft. diameter **Color:** _____

Time Period: _____ **1960's** _____ **1970's** _____ **1980's** X **1990's** _____ **2000's**

Needed Care & Maintenance: It is actually all right to touch the Drift Chamber, but it may need a plastic cover to avoid damage to the fine wires.

Notes: The object is a large cylindrical wire chamber. Smaller pieces may be extracted from it. The drift chamber was used in Run I (1992-95) and will never be used again.

Picture:

ARTIFACTS INVENTORY

Name of Object: DZero Muon Chamber **Location:** DZero **Date:** 1/16/02

Object Obtained For: DZero – Run II

X **Artifact** ___ **Replica** ___ **Can Be Touched** X **Cannot Be Touched**

Object Obtained From: DZero

Contact Person for Further Info: John Womersley **Phone:** x4618

X **Permanent Display** _____ **Loan/Length of Time**

Detailed Object Description: The Muon Chambers are used on the outside of the detector to identify and measure muons. Muons are pentrating particles that can traverse the rest of the detector without interacting. They are a signal for W's, Z's, top quarks, etc.

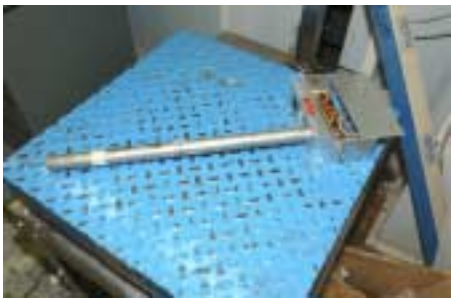
Dimensions: ~ 3'x 3' **Color:** blue

Time Period: ____ **1960's** ____ **1970's** ____ **1980's** X **1990's** X **2000's**

Needed Care & Maintenance: It is actually all right to touch the Muon Chamber, but it may need a plastic cover to avoid damage to the fine wires.

Notes: The muon chambers are spares/demonstrators, but chambers like them are used in DZero now in Run II. They are extras from the production line.

Picture:



ARTIFACTS INVENTORY

Name of Object: Forward Preshower Module **Location:** DZero – Abid's Office

Date: 8/15/02 **Object Obtained For:** DZero

___ Artifact _X_ Replica ___ Can Be Touched _X_ Cannot Be Touched

Object Obtained From: Abid Patwa - DZero

Contact Person for Further Info: Abid Patwa **Phone:** x5636

_X_ Permanent Display _____ Loan/Length of Time

Detailed Object Description: Please see attached.

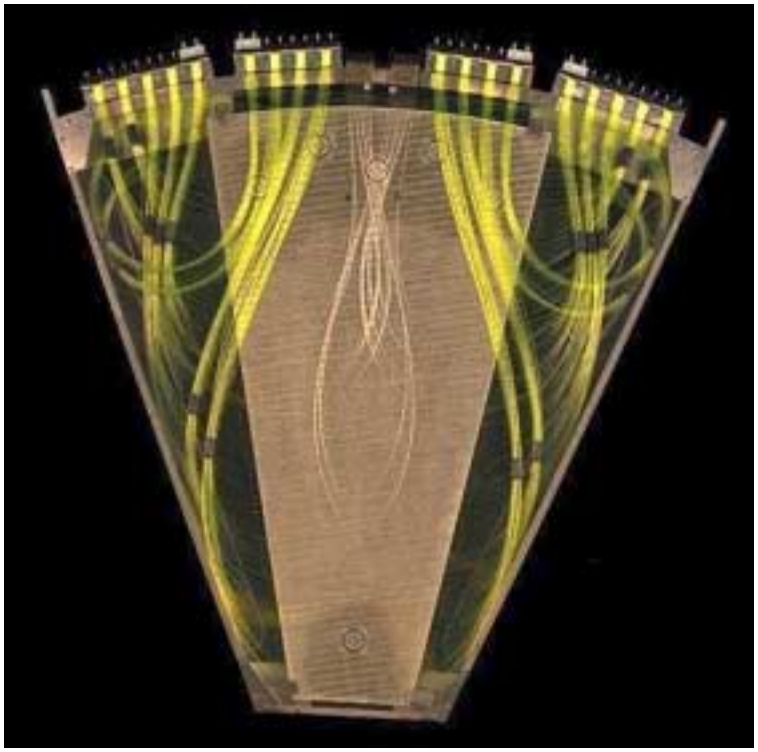
Dimensions: Trapezoid type shape – hang on wall **Color:** black, yellow, brown

Time Period: _____ 1960's _____ 1970's _____ 1980's _____ 1990's _X_ 2000's

Needed Care & Maintenance: No real maintenance. It can be hung on a wall.

Notes: Please see attached.

Picture:



FPS Module

FPS Module installed into a larger detector unit.

Forward Preshower Module

Physical Description

The Forward Preshower (FPS) module consists of plastic triangular scintillator strips that were extruded by a private company near Chicag, but was done through R&D pioneered here at Fermilab in addition to some DZero personnel help. These strips are then embedded with about 1-mm-diameter wavelength-shifting (WLS) fibers. The strips/WLS-fiber array are assembled into trapezoidal shapes to make the final “modular” unit. They are also bent and epoxied so that the entire surfact of the module is curved to follow and conform to the surface of a large (100 inch radius) sphere – a major technological challenge. The module needs to be curved for each unit to fit into the space restrictions that exist within the DZero Detector.

Purpose

The scintillator strips are made small enough to serve as a tracking device for electrons, muons, and photons, which are particles that are produced and reconstructed within the DZero detector from proton-antiproton collisions with the Tevatron in Run II. For this reason, the FPS modules sit inside the DZero detector’s tracking volume. They are also located directly in front of the DZero detector’s Calorimeter. Because of this location, the modules sample a fraction of the energy of the electrons and photons prior to the particle entering the calorimeter and therefore help determine the energy measurement capability for the overall DZero detector. For these reasons, the FPS serves as a tracking and energy measuring device in DZero for events from Tevatron collisions in Run II.

Display Module

The DZero detector currently has a FPS detector, which is comprised of 64 modules. The FPS Module that is available to be put on display was built as a spare, but will not be needed. It is an exact representation of the FPS modules in the detector and is fully functional.

ARTIFACTS INVENTORY

Name of Object: Lead Glass **Location:** 8W PPD **Date:** 1/16/02

Object Obtained For: Particle Physics Division

X **Artifact** ___ **Replica** ___ **Can Be Touched** X **Cannot Be Touched**

Object Obtained From:

Contact Person for Further Info: John Cooper **Phone:** x2235

X **Permanent Display** ___ **Loan/Length of Time**

Detailed Object Description: Many different sizes and shapes of lead glass.

Dimensions: Ranging from 1' to 3' **Color:** transparent

Time Period: ____ **1960's** _____ **1970's** _____ **1980's** ___X__ **1990's** ___X__ **2000's**

Needed Care & Maintenance: None.

Notes: John Cooper has a lot of great ideas for lead glass displays. Many different experiments such as CMS and BTeV use this lead glass material to detect photons. The size and specific type of lead glass can vary, but the all do the same job with different materials.

Picture:

ARTIFACTS INVENTORY

Name of Object: Prototype LHC Quads **Location:** Industrial Center Building

Date: 8-20-02 **Object Obtained For:** LHC - Cern

___ **Artifact** _X_ **Replica** _X_ **Can Be Touched** ___ **Cannot Be Touched**

Object Obtained From: **Fermilab – Jim Kerby**

Contact Person for Further Info: **Jim Kerby** **Phone:** x3595

_X_ **Permanent Display** _____ **Loan/Length of Time**

Detailed Object Description: Prototye Quadrupole magnet used to focus particle beam

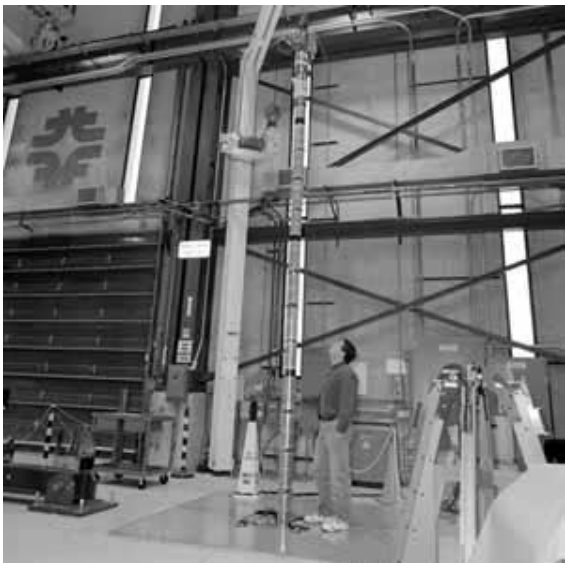
Weight: 20,000 lbs. **Dimensions:** 22 ft. long, 40''x40'' square **Color:** Orange

Time Period: ____ **1960's** _____ **1970's** _____ **1980's** _____ **1990's** _X_ **2000's**

Needed Care & Maintenance: _____

Notes: Because the magnet weighs 20,000 lbs., it would be very difficult to put it on the 15th floor. We would need to check the load ratings on the floor first. This object would be better as an entry way exhibit on a slab on the first floor of a building. It cannot be put outside. It is a state of the art magnet and would be wonderful to display as a picture on the 15th floor.

Picture:



ARTIFACTS INVENTORY

Name of Object: NuTev Experiment **Location:** Railhead **Date:** 8/13/02

Object Obtained For: Experiment 1A – One of the Original Detectors

X Artifact ___ **Replica** **X** **Can Be Touched** ___ **Cannot Be Touched**

Object Obtained From: Fermilab – Experiment 1A

Contact Person for Further Info: John Cooper **Phone:** x2235

X **Permanent Display** _____ **Loan/Length of Time**

Detailed Object Description: Neutrino Detector – 700 tons of steel, scintillator and drift chambers. Half of it was recycled for Miniboone, the remaining parts are in storage in the Railhead

Weight: 490 tons **Dimensions:** _____ **Color:** _____

Time Period: **1960's** **X** **1970's** **1980's** **1990's** **2000's**

Needed Care & Maintenance: The parts need to be moved to a prairie field to be put on display.

Notes: John Cooper would like to have the remaining NuTev parts moved to a prairie field to be put on display with the bubble chamber. This would be an outside exhibit dedicated to showing the history of Fermilab experiments. Plans have started to be made to create this area.

Picture:

ARTIFACTS INVENTORY

Name of Object: PC Farm **Location:** CD **Date:** 1/21/03

Object Obtained For: Computing Division

X **Artifact** ___ **Replica** X **Can Be Touched** ___ **Cannot Be Touched**

Object Obtained From: Computing Division

Contact Person for Further Info: SteveWolbers **Phone:** x3950

X **Permanent Display** _____ **Loan/Length of Time**

Detailed Object Description: Rack of PCs

Dimensions: _____ **Color:** gray

Time Period: ____ **1960's** _____ **1970's** _____ **1980's** _____ **1990's** X **2000's**

Needed Care & Maintenance: None.

Notes: The rack of PC's is currently being used by the Computing Division, but it is about to be decommissioned.

Picture:

ARTIFACTS INVENTORY

Name of Object: Radio Frequency Cavity **Location:** 15th Floor **Date:** 1/15/03

Object Obtained For: 15th Floor Self-guided tour

X **Artifact** ___ **Replica** ___ **Can Be Touched** X **Cannot Be Touched**

Object Obtained From: Fermilab

Contact Person for Further Info: Kurt Riesselmann **Phone:** x5681

X **Permanent Display** _____ **Loan/Length of Time**

Detailed Object Description: Device that accelerates particles using electric fields

Weight: ____ **Dimensions:** 2' x 6' in case **Color:** gold and blue

Time Period: _____ **1960's** _____ **1970's** _____ **1980's** _____ **1990's** _____ **2000's**

Needed Care & Maintenance: Very little maintenance because it is in a display case.

Notes: The radio frequency cavity used to be part of Fermilab's 400 MeV linac. It accelerates particles using electronic fields that oscillate at the same rate as radio waves.

Picture:

ARTIFACTS INVENTORY

Name of Object: Rock and Mineral Collection **Location:** 15th floor **Date:** 1/16/02

Object Obtained For: Fermilab – 15th floor

X **Artifact** ___ **Replica** ___ **Can Be Touched** X **Cannot Be Touched**

Object Obtained From: _____

Contact Person for Further Info: Public Affairs **Phone:** x3351

X **Permanent Display** _____ **Loan/Length of Time**

Detailed Object Description: Display of various types of rocks and minerals from local area

Dimensions: 1.5' x 5' in glass cases **Color:** black, brown,gray

Time Period: ____ **1960's** _____ **1970's** _____ **1980's** _____ **1990's** _____ **2000's**

Needed Care & Maintenance: None.

Notes: Each rock and mineral has a description and a location.

Picture:

ARTIFACTS INVENTORY

Name of Object: Scintillating Tile **Location:** CMS **Date:** 8/15/02

Object Obtained For: CMS can provide a sample for us.

___ **Artifact** _X_ **Replica**___ **Can Be Touched** _X_ **Cannot Be Touched**

Object Obtained From: CMS can provide a sample for the 15th floor.

Contact Person for Further Info: Muzaffer Atac **Phone:** x3960

_X_ **Permanent Display** _____ **Loan/Length of Time**

Detailed Object Description: Visually pleasing, fibers can be made into different shapes like a flower to demonstrate scintillating fibers.

Dimensions: Small table top display likely **Color:** Color may vary

Time Period: ____ **1960's** _____ **1970's** _____ **1980's** _____ **1990's** ___X___ **2000's**

Needed Care & Maintenance:

Notes: Muzaffer is discussing this with his colleauges to finalize details, cost, etc.

Picture:

ARTIFACTS INVENTORY

Name of Object: Silicon Detector from SiDet **Location:** SiDet **Date:** 8/22/02

Object Obtained For: DZero RunIIa detector

X Artifact ___ **Replica** ___ **Can Be Touched** **X** **Cannot Be Touched**

Object Obtained From: DZero - SiDet

Contact Person for Further Info: Marcel Demarteau **Phone:** x2840

X **Permanent Display** _____ **Loan/Length of Time**

Detailed Object Description: Wedge Silicon detector assembly – prototype for Run II a detector

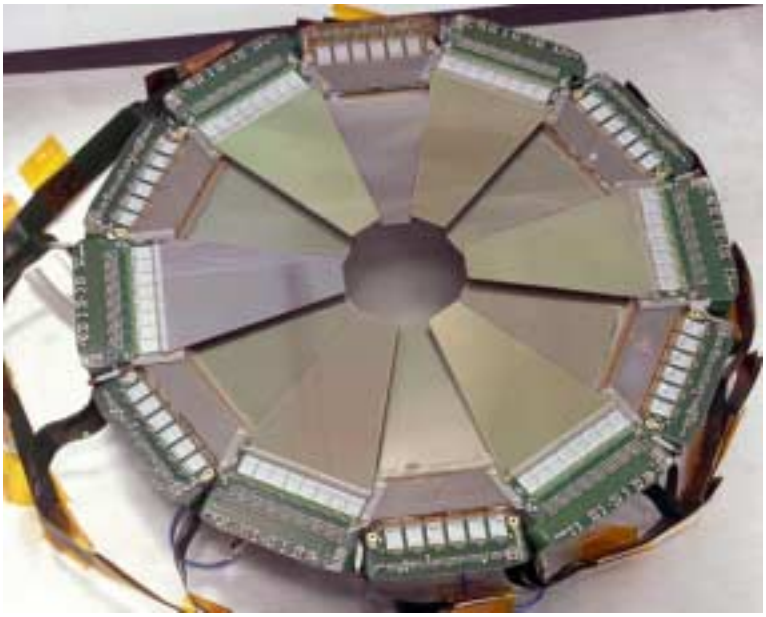
Dimensions: circle – 1.5' diameter **Color:** silver, green, bronze

Time Period: **1960's** **1970's** **1980's** **1990's** **X** **2000's**

Needed Care & Maintenance: The detector contains Beryllium, which is poisonous. It would need to be encased. It is too fragile to be touched.

Notes: This is a solid state detector. It is composed of double sided silicon strip wedges with a pitch of 50 – 67 microns. The detector measure the trajectory of particles at small angles very accurately.

Picture:



ARTIFACTS INVENTORY

Name of Object: Tevatron Model **Location:** 15th Floor **Date:** 1/15/03

Object Obtained For: 15th Floor Self-guided tour

___ **Artifact** _X_ **Replica** _x_ **Can Be Touched** ___ **Cannot Be Touched**

Object Obtained From: Fermilab

Contact Person for Further Info: Kurt Riesselmann **Phone:** x5681

_X_ **Permanent Display** _____ **Loan/Length of Time**

Detailed Object Description: Full-size reproduction of the Tevatron model

Weight: ____ **Dimensions:** 20' long hallway **Color:** orange, blue, red, silver

Time Period: _____ **1960's** _X_ **1970's** _____ **1980's** _X_ **1990's** _____ **2000's**

The model was originally built in the 1970's and was renovated in the mid 1990's.

Needed Care & Maintenance: Very little maintenance needed other than regular cleaning, especially when it is fly season!

Notes: This full-size reproduction of the Tevatron tunnel allows visitors to experience the subterranean world of high-energy physics. Inside the models, visitors can examine the two different types of magnets: dipole magnets to bend the beams around the ring and quadrupole magnets to focus the beams. The mirrors on either end of the model give the visitors a sense of what it feels like to stand inside the Tevatron.

Picture:


0201

ARTIFACTS INVENTORY

Name of Object: Virtu Exhibit **Location:** WH16? **Date:** 1/21/03

Object Obtained For: Fermilab – Used to be on display

X **Artifact** ___ **Replica** ___ **Can Be Touched** X **Cannot Be Touched**

Object Obtained From: Angela Gonzalez built the display

Contact Person for Further Info: Hans Jostlein **Phone: x**4546

X **Permanent Display** _____ **Loan/Length of Time**

Detailed Object Description: Sculpture made out of particle physics artifacts

Dimensions: _____ **Color:** silver

Time Period: ____ **1960's** _____ **1970's** _____ **1980's** _____ **1990's** _____ **2000's**

Needed Care & Maintenance: None.

Notes: I have been able to find out very little about this item. According to Hans Jostlein, it tells the history of the lab and has visual appeal. Hans Kautsky and Ray Fonseca may be used as additional contacts for the item.

Picture:

ARTIFACTS INVENTORY

Name of Object: DZero VLPC **Location:** 15th Floor **Date:** 1/15/03

Object Obtained For: 15th Floor Self-guided tour

X **Artifact** ___ **Replica** ___ **Can Be Touched** X **Cannot Be Touched**

Object Obtained From: Fermilab

Contact Person for Further Info: _____ **Phone:** _____

X **Permanent Display** _____ **Loan/Length of Time**

Detailed Object Description: _____

Weight: ____ **Dimensions:** _____ **Color:**

Time Period: ____ **1960's** _____ **1970's** _____ **1980's** X **1990's** _____ **2000's**

Needed Care & Maintenance: Very little maintenance because it is in a display case.

Notes:

Picture: