Conventional Facilities & Siting- Update

(October 31, 2005)

Conventional Facilities & Siting Global Group Activities

- Established bi-weekly video conference with Asian,
 European and Fermilab (CFS) colleagues
 - Coordinated a uniform sample site assessment process for each region
 - Prepared a common list of comments to the "Tom Himel's list of Questions"
 - Prepared a draft outline for the CFS-BCD
 - Work in progress to draft CFS-BCD for each region

"DRAFT" CFS General Reference Parameter

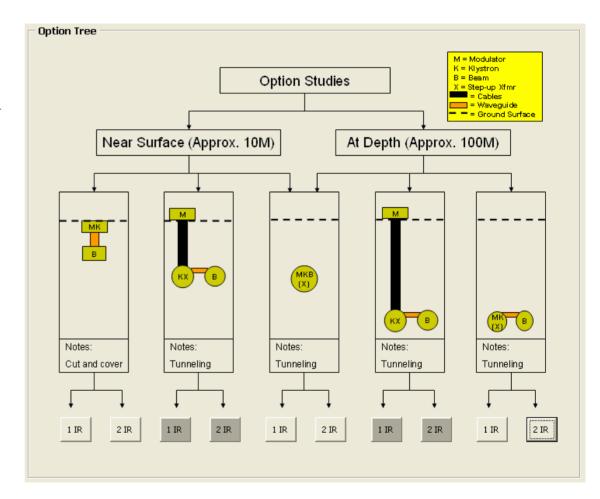
- 1. Main Accelerator energy: 0.5 TeV cm Initial, 1 TeV cm Final
- 2. Main Accelerator gradient: 31.5 MV/m Initial, 35 MV/m Final
- 3. Main Accelerator Length: 23.6 km Initial, 44.8 km Final
- 4. Damping ring length: 2 @ 6.12 km circumference each, racetrack or round
- 5. Number of tunnels: 2 deep or, 1 near surface, with segmented surface support buildings
- 6. Beam line alignment: segmented straight sections to follow earth's curvature or laser straight
- 7. Crossing angles: 20 mrad and 2 mrad
- 8. Number of IRs: 1 or 2 Initial, 2 Final
- 9. Vibration criteria: TBD

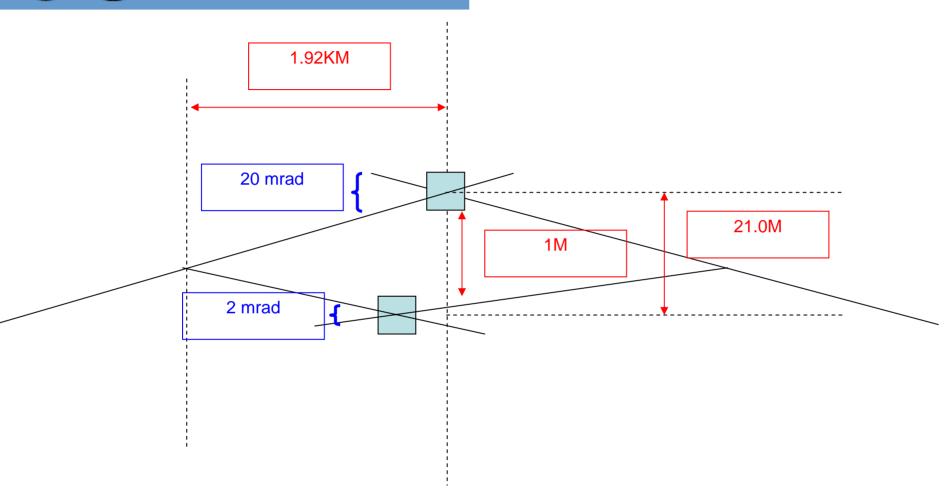
- Partnering with engineers at Fermilab, developed methods and compared several potential locations for a sample site in Northern Illinois
- Compared the salient features of each location in the site assessment matrix
- Following is a top level list of criteria that have been considered:
 - Site Impacts on critical Science Parameters
 - Scientific/Institutional Support Base
 - Land Acquisition
 - Environmental Impacts
 - Construction Cost Impacts
 - Operation Cost Impacts
 - Environmental, Safety & Health
 - Regional Infrastructure Support
 - Risk Factors

America's Region Siting Activities

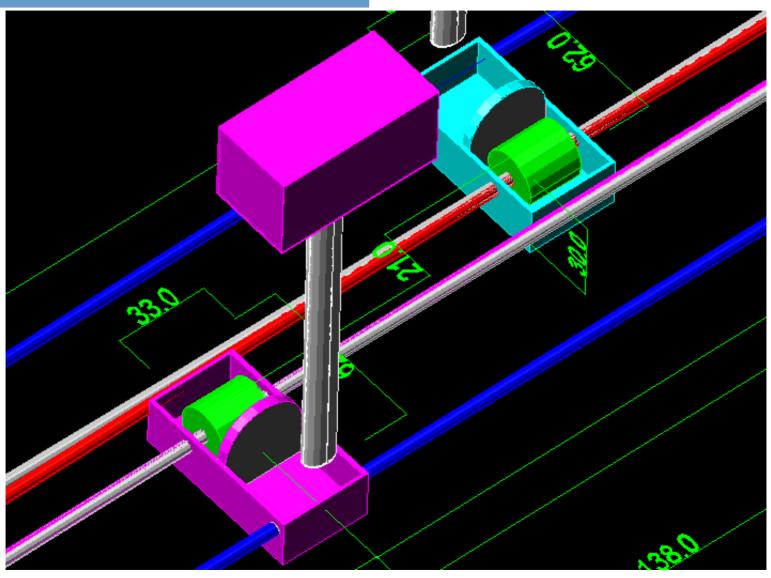
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	П	П	Sile A	Г	Sile B		Site C		Site D	П	Site E
Site Impacts on Critical Science Parameters	\neg	┪		г				$\overline{}$		${}^{-}$	
1A Configuration (Physical Dimensions and Layout)	\vdash	\neg		-				-		_	
.1 Usable length and width	+	0	48 km	0	48 km	0	48 km	0	48 km	10	48 km
.2 Rexbelly for Adjustment of Alignment	\vdash	~	49 80	ř		-	40 811	ř	70.00	ř	40 1211
a Adaptable to Laser Straight	\vdash	-1	YES	١,	YES	_	YES	-	VEX	٠.	но
	\vdash	-11		1		1		1	YES	1.1	
b Adaptable to Earth Curvature	\vdash	1	YES	1	YES	-1		-1	NO	1	YES
.3 Depth of Tunnel	Щ	1	77m (250ll)	1		-1		-1	23m (75ff)	-1	
.4 Depth of Interaction Halls		1	106m (350ff)	1	152m (500f)	-1	9m (30ft)	-1	18m (60ff)	-1	85m (280ft)
	П	П		Г						П	
.5 Accessibility to Tunnels		0	Vertical shafts	lο	Vertical shafts	0	Vert. Shafts and drop hatches	0	Vert. Shafts and drop halches	10	Vert Shalts and drop hatches
1B Performance (Vibration and Stability	\Box	\neg		г				$\overline{}$	•	$\overline{}$	
.1 Hatural Vibration/Noise Sources	\vdash	\neg		$\overline{}$		-		-		_	
a Geologic Dynamic Properties	+	-1	3 distint rock layers	1	3 distint rock layers	0	#II only	0	tillonly	0	one layer of various rock
b Seismic	+	- 1	Zone 'O'	Ħ		Ť		Ť	Zone '0'	Ť	
	\vdash	-11	None	╁		_		_	None		
	\vdash	1				1		1		1	
.d Rivers	щ	-1	0 rtvers/9 streams	1		0		-1	3 rivers/7 streams	-1	1 rtvers/7 streams
.e Water Falls	ш	1	None	1	None	1	Hone	1	None	1	None
.2 Cultural Vibration/Noise Sources											
.a Active Ratiway	П	0	4	-1	6 perp.4 parallel	0	4	1	2	11	3
b Main Highway	\vdash	0	5	0	6	-1	6	1	4	11	3
a Active Quarries	\vdash	0	se veral	0	law	0	few	0	low	0	
d Other Major Man Made Activities	_	ō	unlikely	-1		0		ō	unikely	ő	unitkely
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	\vdash	-		-				- 4		1 4	
2 Scientific Anstitutional Support Base	\vdash	ᅰ	31km/10 miles	 		_	76km/47 miles	-	55 km /34 miles	٠.	Silve NS - Lee
2A Proximity to a High Energy Physics Laboratory	щ	0		1	0	-1		-1		-1	
2B Proximity to a Major Related Federal Research Labora	lon	0	80km/90 miles	1		-1		0	71km/44 miles		92km/57 miles
2C Proximity to Major Educational or Science Institution		1	15km/9 miles	0	48km/30 miles	-1		-1	82km/51 miles	1	27km/17 miles
		1		2		-3		-2		0	
3 Land Acquisition	П	\neg		Г						Т	
		\neg		$\overline{}$	suburban-light commercial,			$\overline{}$		$\overline{}$	
1 1											
	П	- 1		ı	cotential to locate in					ı	
					potential to locate in undeveloped greas and utility						
			mostly nursi - property acquistion		undéveloped areas and utility		mostly rural, requires acquisition		nurel, requires provisition along		mostly nurel, requires
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3A Land Availability Along the Alignment		1	mostly rural - property acquistion concentrated at sharts	1	undeveloped great and utility ROW, property acquisition concentrated at shafts	-1	mostly rural, requires acquisition along entire length	-1	rural, requires acquisition along entire length	-1	acquisition along entire length
		1	concentrated at sharts	1	undeveloped areas and utility ROW, property acquisition concentrated at sharts population: 1000-3000 per sqmi	-1	along entire length	$\overline{}$	entire length	-1	acquisition along entire length population: < 100 per square
3A Land Availability Along the Alignment 3B Estimate ≠ of Land Ownership Along the Alignment		1	mostly rural - property acquisition concentrated at sharts population: < 100 per square mile	1 0	undeveloped areas and utility ROW, property acquisition concentrated at shalls population: 1000-3000 per sqml outside of ROW	-1		$\overline{}$		-1 1	acquisition along entire length
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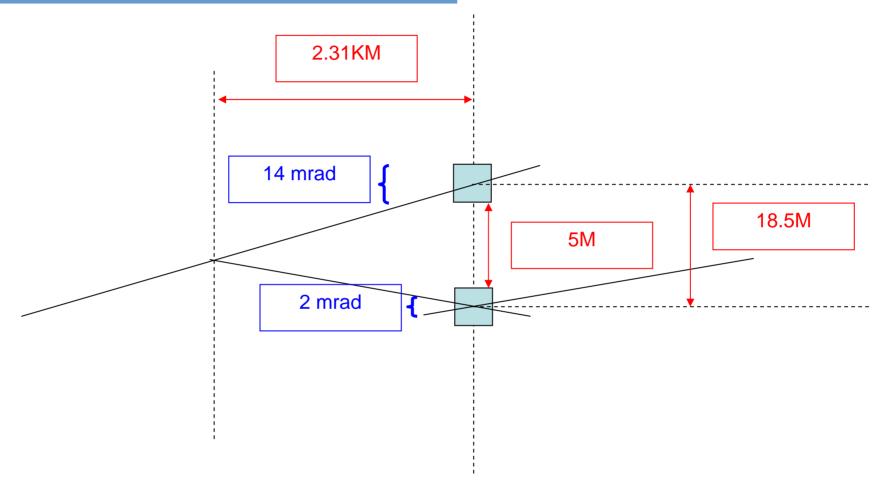
- Following is a list of the option studies under consideration:
 - 1. Crossing angles and dumps arrangement
 - 2. Number of IR's (one vs. two)
 - 3. Single IR with two push-pull detectors
 - 4. Linac tunnel depth and methods of construction
 - 5. Linac tunnel and service tunnel arrangement





Baseline: 20 mrad and 2 mrad
With two IRs each with detector Ø=~20m





BDS & IR Option: 14 mrad and 2 mrad
With one IR and two detectors (Ø=14m & Ø=13m)

