

# ORKA FY2013 Budget Request Planning



(*Orcinus orca*), Life ofSea blogspot

# What we told OHEP in May 2012: Near Term Technical Priorities for ORKA

- Continued focused effort on developing an integrated conceptual design for the kaon production target, separated kaon beamline and beam dump that fits within the constraints of existing best candidate sites at Fermilab (CDF/B0 and SeaQuest/NM4).
- **Develop a siting plan:**

We maintain that the best siting for ORKA at Fermilab is in the B0 collision hall driven with a high intensity beamline built from legacy Main Ring magnets. This beamline would be a new and unique asset for Fermilab, the US user community, and particle physics world-wide.

If a programmatic decision is made to not preserve an option for ORKA at B0/IARC, then a suitable solenoid will need to be acquired. Best existing match is the CLEO magnet. The ORKA collaboration has expressed interest in the CLEO solenoid.

# What we told OHEP in May 2012: Near Term Strategic Priorities for ORKA

- Achieve Critical Decision Zero in the fall of 2012.
- Continue to build the collaboration. Interest is high in the US and international community. Collaborating institutions need a signal from the agencies that ORKA is in the US particle physics portfolio.
- Identify and cultivate resource partners:
  - International collaborators
  - Resources from strategic partners e.g., SLAC on data acquisition, BNL and KEK on kaon separators & beamline elements.

# Estimated Cost



**TPC: \$53M (FY-2010, original estimate), \$63M then-year**

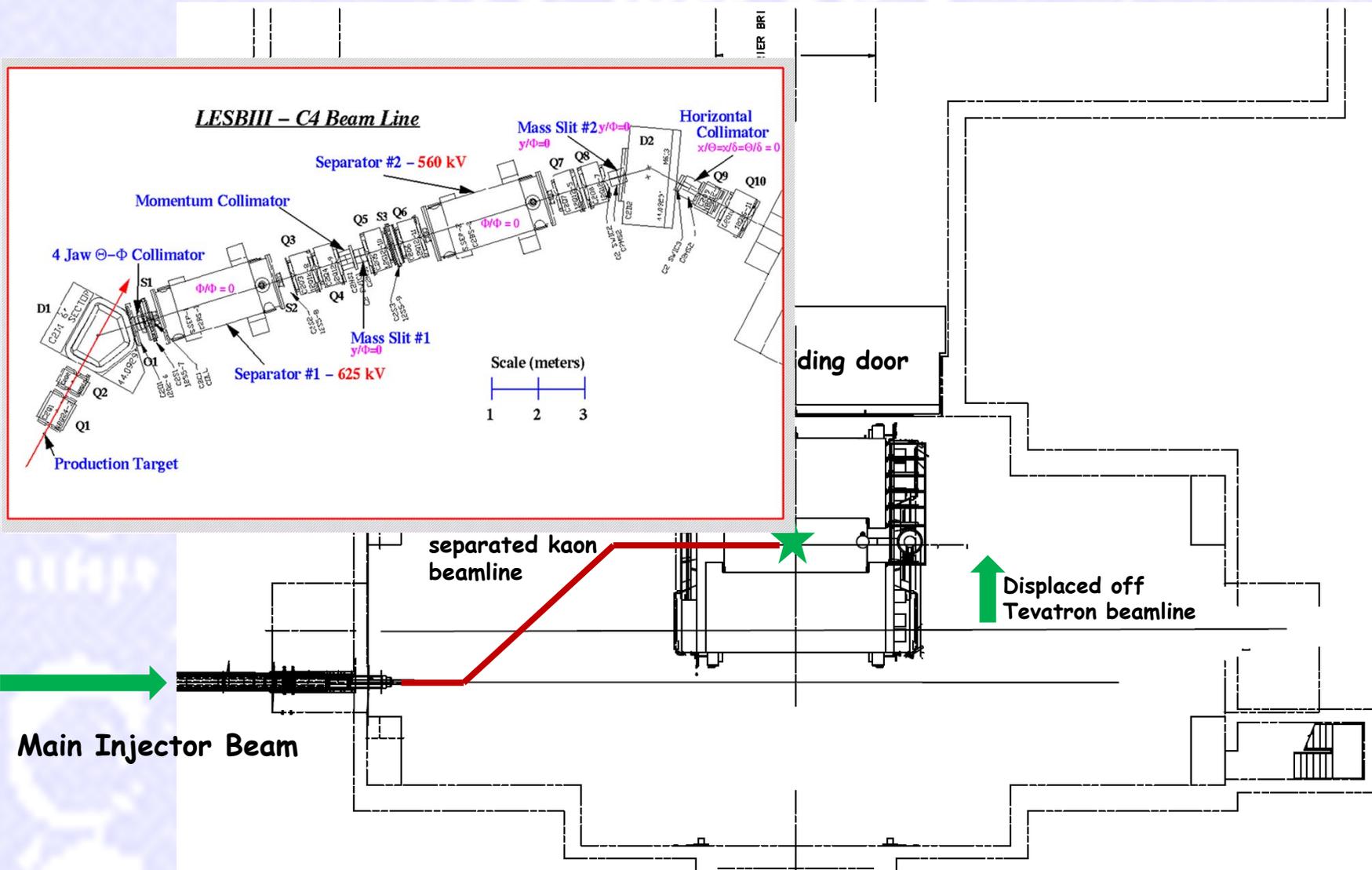
Table 10.2: Estimated project cost. All costs in FY10 \$k.

WBS element	Description	Total Cost	60% conting.	Total w/cont.
<b>1.0</b>	<b>TPC</b>	<b>\$33M</b>	<b>\$20M</b>	<b>\$53M</b>
<b>1.1</b>	<b>Accelerator and Beams</b>	<b>7,510</b>	<b>4,490</b>	<b>12,000</b>
	1.1.1 A0 to B0 transport*	2,200	1,300	3,500
	1.1.2 Target and Dump	940	560	1,500
	1.1.3 Kaon Beam	4,370	2,630	7,000
<b>1.2</b>	<b>Detector</b>	<b>22,390</b>	<b>13,430</b>	<b>35,820</b>
	1.2.1 Spectrometer Magnet	500	300	800
	1.2.2 Beam and Target	600	360	960
	1.2.3 Drift Chamber	1,900	1,140	3,040
	1.2.4 Range Stack	2,500	1,500	4,000
	1.2.5 Photon Veto	3,000	1,800	4,800
	1.2.6 Electronics	4,000	2,400	6,400
	1.2.7 Trigger and DAQ	2,000	1,200	3,200
	1.2.8 Software and Computing <sup>†</sup>	2,000	1,200	3,200
	1.2.9 Installation and Integration	5,890	3,530	9,420
<b>1.3</b>	<b>Project Management</b>	<b>2,740</b>	<b>1,640</b>	<b>4,380</b>
<b>1.4</b>	<b>OPC</b>	<b>700</b>	<b>420</b>	<b>1,120</b>
	1.4.1 R&D	300	180	480
	1.4.2 Commissioning	400	240	640

\* Candidate for off-project Accelerator Improvement Project (AIP) funding.

<sup>†</sup> Included here although there is no uniform practice to do so.

# ORKA in the former CDF Collision Hall



# Analysis of Effort Required to Strip Down and Prepare the CDF Detector to receive the ORKA Payload

Labor Type	Cost (\$/hr)	Time (hr)	Burdened FY2013 Cost	Contingency	Total
Engineer - Mech	145	750	108,560	50%	162839
Scientist	170	1,556	265,268	30%	344848
Technician - Mech-Monthly	131	3,000	393,214	30%	511179
Technician - Elec-Wkly	92	12,176	1,119,921	50%	1679882
Technician - Mech-Wkly	90	12,329	1,114,782	50%	1672173
Technician - ES&H	105	48	5,025	50%	7537
Electrician-Foreman	115	16	1,842	50%	2763
Machine Shop	136	264	35,800	50%	53700
FESS Engineering	108	0	0	50%	0
Iron Worker-Foreman	161	6,848	1,100,043	100%	2200087
Subtotal		36,987	4,144,455		6635008
Other M&S			144,587	100%	289174
Total			4,289,042		6924182

15 FTE-years + 1.2M M&S = \$6.9M (FY13)



# Collecting Requests for FY-2013: ORKA-centric



Effort to improve the cost estimate and  
strategies to  
*minimize the total cost*  
including contingency.



# Collecting Requests for FY-2013: Fermi-centric



- Effort and M&S to preserve the ORKA siting option at the Illinois Accelerator Research Center (IARC). Student effort in the Spring & Summer of 2013? This model was successfully pursued with the disassembly and re-purposing of BNL-E821 equipment for the g-2 experiment at Fermilab.
- Effort and M&S to complete the conceptual design of the proton and kaon beamlines.
- Effort and M&S to develop a plan to identify and re-purpose existing magnets into a primary proton beamline.
- Effort to understand the requirements and prepare for high-power resonant beam extraction from the Main Injector.



# Collecting Requests for FY-2013: Collaboration-centric



- Execute Requirements Workshop.
- Effort to better understand the cost estimate and reduce contingency.
- Develop a simulation environment for the experiment.
- Develop platforms for critical candidate technology development.
- Effort to improve and develop the ORKA website and Outreach environment.



# Collecting Requests for FY-2013: Project-centric



Effort to start developing a Project Office.

# Summary

- Budget requests will be sent to Fermilab Division Heads next week, Bob Tschirhart will coordinate.
- We need to coordinate our communication with funding agencies from our collaborating institutions. A summit meeting to coordinate this communication should follow shortly after the requirements workshop.