High-Energy Group
Department of Physics
State University of New York at Stony Brook
Stony Brook, New York 11794-3800
telephone: (516) 632-8095

StonyBrook

October 12, 1990

Dr Taiji Yamanouchi
Program Planning Office
FNAL
P.O. Box 500
Batavia IL, 60510

Dear Taiji,

As you know the EMPACT/TEXAS group is submitting a Letter of Intent to the SSC Laboratory for a major detector facility. As part of our EoI submission earlier this year, we generated a list of our long term requirements for test beams, which is attached to this letter. As a guideline we assume we will need at Fermilab a dedicated beam line for R&D, testing of prototypes, and initial calibration of detectors. This beamline would be fully utilized from the next fixed target run (1992-93) until facilities become available at the SSC. The needs are varied, from particle types (e, hadron to muon) to energy requirements (from 2 to 500 GeV/c), and it may make sense to share several different beams to accommodate both the diverse needs of both large experiments.

We do not expect to make a formal request or proposal to Fermilab until our project is formally approved by the SSC. We do however understand that the SSC has requested two dedicated beamlines, and with this letter we indicate our interest in one of these should we be encouraged to proceed by the SSC. We would be happy to provide you with more information if needed.

Sincerely,

Michael Marx
EMPACT/TEXAS

cc: R. Stefanski, SSC

2.4.8 Test Beam Requirements
EMPACT

Detector element	Stage	Objectives	Beam requirements	Service requirements	When (approx.)	Where (possible)
LAC	1 (R&D)	basic shower parameters, electronics prototype	500 hrs, e,π: 2-30GeV, excellent ID	mid-scale cryo, lab-supported DAQ	mid 1990	BNL
	2 (full containment module)	detailed shower tests, linearity, resolution, dynamic range, e/π separation, readout system test -	800 hrs, e,π: 2-150 GeV, excellent ID	mid-scale cryo, mid-scale robotics, EMPACT DAQ and online computing	mid- to late 1992	BNL, FNAL?
	3 (full system test)†	cracks & boundaries, simulation benchmarking, large scale electronics tests, system integration tests	continuous, e,π, tagged photons 2GeV to >500GeV	large scale cryo, large scale robotics, array ass'y clean room, EMPACT DAQ & online computing support, EMPACT online software	1994->	FNAL, MEB?
SPACAL Calorim.	1 (R&D)	see LAC Stage 1	500 hrs, e,π: 2-30GeV, excellent ID	lab-supported DAQ	mid 1990	CERN
	2 (full containment module)‡	see LAC Stage 2	800 hrs, e,π: 2-150 GeV, excellent ID	mid-scale robotics, EMPACT DAQ and online computing	late 1991-early 1992	??
	3 (full system test)†	calibration of large fraction of SPACAL wedges, cracks & boundaries, large scale electronics tests, system integration tests	continuous, e,π, tagged photons 2GeV to >500GeV	large scale robotics, array ass'y area, EMPACT DAQ & online computing support, EMPACT online software	1993->	FNAL?
SPACAL/ SiEM Calorim	1 (R&D)	see LAC Stage 1; independent tests for SPACAL and SiEM	500 hrs, e,π: 2-30GeV, excellent ID	lab-supported DAQ	mid 1990, mid 1991	??
	2 (full containment module)	see LAC Stage 2; integrated SiEM/SPACAL	800 hrs, e,π: 2-150 GeV, excellent ID	mid-scale robotics, EMPACT DAQ and online computing	late 1991-early 1992	??

	3 (full system test)†	calibration of large fraction of SPACAL wedges, cracks & boundaries, large scale electronics tests, system integration tests	continuous, e,π, tagged photons 2GeV to >500GeV	large scale robotics, array ass'y area, EMPACT DAQ & online computing support, EMPACT online software	1993->	FNAL, MEB?
Central Tracker	1 (R&D)	TR yields, straw tube resolution, electronics prototyping, pile-up	400 hrs, 1GeV e 200 hrs, neutrons	gas, lab-supported DAQ	1990-1991	MIT
			400 hrs, e,π 1-30GeV, excellent ID		1990-1991	BNL
			600 hrs, e,π, 10-150 GeV, excellent ID		1990-1991	CERN
	2 (fraction of full ass'y)	detailed detector studies, large scale electronics tests, edge-effects	300 hrs, 1 GeV e	gas, mid-sized robotics, EMPACT DAQ & online computing support, EMPACT online software	1992->	MIT
			continuous, e,π 1-30GeV, excellent ID		1992->	BNL
			600 hrs, e,π, 10-150 GeV, excellent ID		1992->	CERN, FNAL
Muon		rate studies, position resolution, electronics prototyping	continuous, π high E	gas, lab-supported DAQ	late 1990	FNAL

† Stage 3 tests come after the calorimeter technology selection. Only one of these scenarios will occur.

‡ Stage 2 tests for the SPACAL calorimeter would be combined with SiEM tests, regardless of final technology selection.