Dr. Taiji Yamanouchi
Fermilab, MS-105
Batavia, IL 60510

March 29, 1991

Dear Dr. Yamanouchi,

I am writing as a representative of a collaboration which is working on a calorimetry technique utilizing noble gases at high pressures as a sampling medium. A list of the collaborators is attached to this letter.

High pressure gas calorimetry is one of the four calorimetry techniques to be considered for the forward region of the SDC (Solenoid Detector Collaboration) detector. It has unity gain, is fast compared to some other techniques and radiation damage is not a concern. It is relatively inexpensive and easy to operate. Our goal is to demonstrate to the SDC that this calorimetry works.

We will be funded by TNRLC (Texas National Research Laboratory Commission) which recently approved our R&D proposal. We will build a prototype by September 1, 1991. It will consist of fifteen cells with steel walls. The cells will be fourteen inches in diameter and two inches thick. Each cell will contain an anode board with transverse segmentation. We would like to test it in a Fermilab beamline which would provide electrons and preferably hadrons, too. We would like to be able to measure the beam momentum within 5%. We need more than 100 electrons per second and electron identification is desirable.

We plan to test the calorimeter at three values of pressure and four values of energy up to 300 GeV. We will use argon and xenon, pure and doped with methane. We estimate that we will need twelve shifts, assuming the data acquisition system is available and functional.

We appriciate it if we were given the opportunity to do the test I outlined above. Thank you for your consideration.

Sincerely,

Nikos Giokaris

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# HIGH PRESSURE SAMPLING GAS CALORIMETRY FOR THE SDC CALORIMETER

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