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THE JOHNS HOPKINS UNIVERSITY APPLIED PHYSICS LABORATORY

8621 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

TELEPHONE 776-7100 589-7700 AREA CODE 301

July 9, 1970

Director Langley Research Center Langley Station Hampton, Virginia 23365

Attention: Technical Representative of the

Contracting Officer

Contract NASI-5700, Mail Stop 117

Dear Sir:

Enclosed please find copies of a revised accelerator use request and experiment summary sheet for our proposed calibration run at S.R.E.L. We are informed by Dr. Welsh that we will probably be scheduled for two shifts on Sunday, July 26. We will plan to begin setup on July 24 (Friday).

Thank you very much.

Sincerely,

MADDENELINE Thomas P. Armstrong

Co-Investigator CPME Experiment

TPA: jgs

Enclosures

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8621 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

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July 9, 1970

Dr. Robert Siegel, Director Space Radiation Effects Laboratory 11970 Jefferson Avenue Newport News, Virginia 23606

Dear Dr. Siegel:

Here are copies of the revised and corrected accelerator use request and summary sheet for our proposed calibration run. It is our understanding from conversations with Dr. Welsh that we will probably be scheduled for two shifts on Sunday, July 26. We will work on that assumption for the present time. We will plan to begin setup the preceeding Friday morning, July 24.

Thank you very much for all your assistance.

Sincerely,

Thomas P. Armstrong

Co-Investigator CPME Experiment

TPA: jgs

Enclosures

Space Radiation Effects Laboratory

ACCELERATOR USE REQUEST

| 1) | Title of Proposed Experiment: Calibration of CPME for IMPs H and J | | | |
|-----|--|------|--|--|
| | | | | |
| 2) | Principal Investigator: Dr. S. M. Krimigis | | | |
| | a. Affiliation: The Johns Hopkins University/Applied Physics Labora | ator | | |
| | b. Telephone Number: (301) 953-7100, Ext. 2626 | | | |
| | c. Address: 8621 Georgia Avenue, Silver Spring, Maryland 209 | 10 | | |
| 3) | Experimental Group Members and Affiliations: Dr. Thomas P. Armstrong, University | | | |
| | of Kansas, Lawrence; John W. Kohl, APL; Roy E. Cashion, APL; John H. Crawford, | APL | | |
| | Steven A. Gary, APL; Charles Cunningham, APL | 9. | | |
| 4) | Accelerator Required (Circle): Linac Dynamitron Synchrocyclotron Neutron Generator | | | |
| 5) | Time Requirements (Number 8 Hour Shifts): Prime 2 Parasite 0 | | | |
| | a. Set-Up Time in Target Area: One day | | | |
| | b. Irradiation Time: 16 hours | | | |
| ı | c. Tear-Down Time in Target Area: 1/2 day | | | |
| 6) | Desired Schedule Dates: July 26, 1970/8:00 AM to 12:00 PM | | | |
| 7) | Experiment: New XX Continuation of SREL Experiment Number | | | |
| (3 | Sponsoring Government Agency, Grant or Contract Numbers, Names of Monitors: | | | |
| • | NASA DPR S-5008A-G - B. Ferrer, Goddard Space Flight Center | | | |
| 9) | Machine Requirements: SEE ATTACHED | | | |
| | a. Type of Particles | 340 | | |
| | b. Energies (MeV) | | | |
| | c. Intensity | | | |
| | d. Beam Size | | | |
| 10) | Test Area or Cave to be Used: Proton Target Area | | | |

9) Machine Requirements - We require low intensity (10² to 10³ protons/sec) beams of stochastically dispersed protons delivered to the proton target area. Beam size is not critical - 1" to 2" diameters are satisfactory. We propose to increment downwards from maximum energy through the lowest feasible energy as follows:

| JAL | - renym | per 4 or 1 | |
|-----|---------|--------------|----|
| 1 | Beam # | Nominal Ener | gу |
| 1 | CP-9 | 576 Mev | |
| 2 | CP-10 | 520 Mev | |
| 3 | CP-11 | 470 Mev | |
| 4 | CP-12 | 418 Mev | |
| 3 | CP-13 | 364 Mev | |
| 8 | CP-14 | 312 Mev | |
| 7 | CP-15 | 256 Mev | |
| 8 | CP-16 | 208 Mev | |
| 8A | * | 180 Mev | |
| 9 | CP-17 | 142 Mev | |
| 9 A | * | 120 Mev | |
| 98 | * | 100 Mev | |
| 10 | CP-18 | 85 Mev | |
| 11 | CP-19 | 60 Mev | |
| 12 | CP-20 | 30 Mev | |
| | | | |

^{*} New Intermediate Energy Beams Desired.

11) Arrangement of Experiment (Block Diagram with Dimensions): PROTON TARGET BEAM AREA TUBE SUPPORTING BLOCKS ADJUSTABLE GROUND TABLE SUPPORT EQUIPMENT Equipment Pool Items Required: (See Attached) 12) 13) Data Acquisition System Required: (See 12) 14) Special SREL Facilities, Space Equipment or Services, Not Otherwise Listed, which you desire to use: T.V. Monitor in PTA . Special Beam Requirements or Non-Standard Operations Required: Stochastic 15) spreading of beam; Precaution against more than ~ 106 particles/sec into CPME assembly. 16) Describe Any Hazardous Materials to be Used: none

12) Equipment Required from S.R.E.L. Pool

| <u>#</u> | Description |
|----------|--|
| 2 | Ortec Model 408 Biased Amplifiers |
| 2 | Ortec Model 411 Pulse Stretchers |
| 2 | Ortec Model 417 Discriminators |
| 15 | Chronetics Nanocounter 100 Dual Scalars |
| 2 | Canberra Model 1410 Linear Amplifiers |
| 1 | Baird Atomic CS-905 Timer |
| 2 | Ortec Model 401A Powered NIMS Bins |
| 2 | Portelevator Elevating Tables |
| 1 | Nuclear Data ND-510 Pulse Height Analyzer System |
| 1 | RIDL Model 24-2 Pulse Height Analyzer System |
| 1 | T.V. Monitor |
| 1 | Tektronix Oscilloscope Model 454 |
| 120 | 50 ohm Patch Cables |

17) Scientific Justification and Description of Proposed Experiment. (Include such diagrams, references, descriptions of unusual or large-scale equipment, laboratory modifications which may be involved, discussion, etc., as may be necessary to indicate the scope of the experimental program. Use additional pages if necessary.)

SEE ATTACHED

| | 961 | | | | | |
|-----------|-----------------------------------|-------------|----------|-------------|----------|-----|
| (8) Sign | Original signed by S. M. Krimigis | , w | | Date: | 9 July 1 | 970 |
| , | | | | • | | 1 |
| Tit | le: Supervisor, Space Physi | ice Project | | | | |
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| ction By | : NASA Experiment Review Par | Lon | | | | |
| iction by | | | | | | |
| | ·SREL Users Advisory Commi | ttee | | | | |
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| | * | | 9 9 | / | | |
| Signed: | | | Date | . • | | |

- 17) The purpose of this experiment is to calibrate the Charged Particle Measurement Experiment for IMP H and J. A description of the experiment is attached. Briefly stated the specific objectives are:
 - (a) Establishing the position and relative shape of proton pass bands P9 (50 to 100 Mev), P10 (100 to 170 Mev) and P11 (170 to 500 Mev).
 - (b) Measuring the contribution of inelastic proton events to channels which are expected to respond predominantly to alpha particles and $Z \ge 3$ nuclei.
 - (c) Verify proper operation of the anticoincidence shielding of the solid state detector telescope and of the Geiger-Mueller tubes.

SREL RADIOACTIVE MATERIAL CONTROL: IMPORTATION REQUEST

| | Date: 9 July 1970 |
|----|--|
| 1) | User's Name: Dr. S. M. Krimigis |
| | Organization: The Johns Hopkins University/Applied Physics Laboratory |
| | Complete mailing address: 8621 Georgia Avenue |
| | Silver Spring, Maryland 20910 Telephone: (301) 953-7100 |
| 2) | Date of radioactive material arrival at SREL: 24 July 1970 Ext. 2626 |
| 3) | Duration radioative material will be at SREL: 3 days (1) Americium 241 and Strontium 90 Isotopic composition of radioactive material: (2) Cobalt 60 Stainless steel cylinders with sources covered by Physical state: Ni foils and epoxy sealed. |
| | Strength (state units and type of radiation precisely): (1) .0098mc α + .0098mc β |
| | (2) 0.2 mc γ / Sum \simeq 0.21mc total |
| | Dimensions: (1) .625" dia x 1" long (2) -250" dia x 0.7" long |
| 4) | Size of container: Lead cylinder (3"dia x 5"long) surrounded by wood shipping case (l'xl'xl') Weight: ~ 60 lbs. |
| 5) | Activity at container surface: 1.5 mr/hr. |
| | Activity at 6 inches from container: 0.7 mm/hr. |
| , | Comments: |
| | |
| 6) | Planned use of radioactive material: Check out of radiation experiment |
| 7) | Exactly where in SREL do you plan to store radioactive material: proton target area |
| • | Exactly what shielding will you provide in the storage area: shipping containers (see 4) |
| 8) | Do you foresee any special problems: no |
| 9) | Signature of radioactive material owner authorizing SREL health physics to have primary control of such material while at SREL: Original signed by S. M. Krimigis |

SPACE RADIATION EFFECTS LABORATORY

EXPERIMENT SUMMARY SHEET

| Date Rece | ived at SREL | 4 | * | Experiment | Runber |
|------------|-------------------|----------------------|--|-----------------------------|--|
| | | For Scheduling | g Period | | |
| EXPERIMEN | T TITLE | alibration of CP | ME for IMPs H and J | | |
| PRINCIPAL | INVESTIGATOR(s) | Dr. S. M. Krim | igis | | |
| ORGAN1 ZAT | 10N(s) | The Johns Hopk | ins University/Applied | Physics Laboratory | |
| Α | ddress | 8621 Georgia Av | venue, Silver Spring, `A | Maryland 20910 | |
| | elephone | | * | | and the second second second second second |
| CHOICE | # SHIFTS | PRIME OR PARASITE | DATES REQUESTED July 26 | ROOM OR BEAM AREA PTA | BEAM AND POLARITY Protons |
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| Special Re | equests, Hazardou | us Materials, Com | ments, etc. | | |
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| | | | Date | . 9 July 1970 | |

12) Equipment Required from S.R.E.L. Pool

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