

S1P-768-71  
June 24, 1971

To: Roy Cashion  
From: S. M. Krimigis  
Subject: Possible improvements of the CPME.  
Reference: S1P-750-71, dated 8 June 1971.

In the referenced memo, the current status of CPME calibrations was discussed and suggestions were made regarding changes in the experiment such as those contained in section II. 2. The present memo supplements and supplants the referenced one as follows:

- (1) It is desirable to change channel Z2 into a heavy element one, i.e., to measure nuclei in the iron group  $22 \leq Z \leq 28$ . This would necessitate setting of the A7 level at  $\sim 150$  Mev. If this requirement cannot be met because of amplifier gain and linearity considerations, the following settings may be used, listed in decreasing order of desirability:

$$\begin{array}{ll} A7 \approx 100 \text{ Mev} & Z \geq 14 \\ A7 \approx 60 \text{ Mev} & Z \geq 10 \end{array}$$

- (2) In order to maintain the spectral measurement for medium nuclei, it was decided to make A5 a Z level, sensitive to C, N, O nuclei in the range  $\sim 5.5$  to 25 Mev/nucleon. This requirement involves the setting of B7 at  $\sim 60$  Mev. The exact level will depend on the thickness of detector B.
- (3) (a) It is desirable to remove the sectoring from P11 and assign it to Z1. If this cannot be done, it may be assigned to P2.  
(b) It is also desirable to sector P8 instead of P10 for two reasons:  
(1) It is likely that a lot more events will be seen and (2) The energy/nucleon interval of P8 matches that of A7, if A7 rather than A6 were to be sectoried.  
Item 3(b) is clearly on a lower priority than 3(a).
- (4) Desired changes, most probably attainable on the IMP J payload.
- (a) Assign S1 sectors to E3 rather than E1. This change will increase the duty cycle of E3 by a factor of 2.  
(b) Move E1 to the S2 sectoring subcommutator in replacement of E3.  
(c) Change opening angle of E3 to  $22.5^\circ$ .

Changes (a) and (c) will increase the duty cycle of E3 per sector from the present 1% to  $\sim 4\%$ .

Please advise me on the feasibility of the above.

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