

Minutes of
Control & Instrumentation Subcommittee

Date: Nov. 26, 1958

Present: Olson, Conner, Debs and Mallory

1) This subcommittee has in the past concerned itself with r.f. drive of klystrons, tune-up schemes, the accelerator vacuum system and tunnel layout, in addition to problems related more directly to monitoring, control and servicing of the equipment upon which accelerator operation depends. It was suggested at this meeting that the present primary objectives should be defined as follows:

- a) To determine what signals and controls are required for operation and for servicing of the accelerator.
- b) To consider what instrumentation best provides the necessary signals and controls.
- c) To provide data allowing a reliable cost comparison to be made of various instrumentation schemes.

2) The Brobeck Review pertaining to control and instrumentations were examined. It was concluded that the estimates of individual items were actually in better agreement than the figures suggested. A somewhat more detailed analysis is appended.

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APPENDIX

According to schedule A-7, page III-5 of the Brobeck Review, there are significant discrepancies between the Stanford and Brobeck breakdowns of control and instrumentation costs. The major difference is caused by the inclusion of most of the vacuum system of the accelerator under "Auxiliary Systems" in the Stanford estimate. A slightly more detailed breakdown shows that, except for vacuum, the two estimates are in general agreement.

The "R.F. System" in the Stanford estimate includes about \$1250 K for the r-f drive to the klystrons but also includes instrumentation at the klystron modulators (such as ion gauges, vacuum-controlled trigger shut-off, r.f power meters, generation of trouble signals, etc.). The Brobeck number of \$1,059 for the r-f drive system appears somewhat low.

The trigger system is built in duplicate in the Brobeck estimate.

The inflection and deflection system estimates agree rather by accident, since entirely different systems were considered.

The Stanford estimate for "Auxiliary Systems" included about \$1500 K for vacuum, \$140 K for gap blowers, and amounts for radiation monitors, fire detectors, alignment of accelerator.

All other controls were lumped into the item for "consoles and wiring" in the Stanford estimate.

A gross discrepancy exists in the estimates of the total cost of the vacuum system for the accelerator. This deserves more consideration.

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VACUUM SYSTEM

	<u>Stanford</u> <u>(O.H. Prorated)</u>	<u>Brobeck</u>
Diffusion pumps	\$108 x 1000	\$239 x 1000
Mechanical pumps	71	335
Valves, traps, bellows	657	1,181
Manifolds and supports	876	1,595
Gauges	386	594
Valve indicators and controls	<u>312</u>	<u>86</u>
	\$2,410 x 1000	\$4,330 x 1000

K. B. Mallory