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Manpower Requirements for Field Work of X and G Divisions

I. STATEMENT OF PROBLEM

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According to decision of Capt. Parsons, the responsibility for the correct handling and assembly in the field of the tamper, explosive charge, inner shell of the outer case and initiating system rests with the X Division, while the G Division is responsible for the nuclear aspects of the tamper assembly.

Most of the actual work of assembly in the field (exclusive of Trinity tests) will be done by the Air Forces staff, but it is the responsibility of this Project to insure proper training of their men and to perform those parts of the actual work of assembly for which the Air Forces personnel is not adequately trained. This applies both to inactive experimental units and to the real gadgets. More important even than the work of assembly is the other role which the field staff from this Project must assume: The evaluation of the technical aspects of various tests with experimental units, the inspection of all components of the gadgets, critical observation of the operations during the assembly and the formulation of a technically sound opinion as to whether the assembly had been done in accordance with the best practices of this Project or, if not, whether the gadget has still a good chance to function. Finally, there is the responsibility for the correlation between the perfection of the assembly and the functioning of the gadgets dropped over the enemy territory.

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In the case of the Trinity tests four major jobs face this Project: (a) The 100 ton TNT test, which involves mainly the laying out and the servicing of the blast measuring and related equipment; (b) the assembly of the special Trinity gadget (in the Jumbo or in open air); (c) the servicing of the field observation equipment, more extensive than under (a) and (d), the evaluation of the performance of the gadget. Since discussions are already underway concerning the staffs needed for items (a), (c) and (d) above, the following will not include these matters, but it must be borne in mind that they will demand the attention of at least some of the present staff of Group X-2 and consequently reduce the manpower available for other jobs here considered.

II. QUALITATIVE PERSONNEL REQUIREMENTS

In analyzing the qualitative implications of the field program outlined above, one comes to the conclusion that the field crews dispatched from this Project to Kingman and to

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Alberta must contain men who are not only familiar with the mechanical process of assembly, but who are real scientific experts, understanding the whole background of research on implosion and thus able to form critical judgment of the field operations undertaken in their presence and to report it to the Military authorities and back to this Project.

It seems to the writer that to succeed in this most important phase of the field responsibilities now assigned to X and G Divisions, it will be necessary to provide each Alberta crew with a minimum of two senior men (one, at least, on the level of a Group Leader) and to have at least one of them in the crew operating at Kingman, where no provision must be made for all sorts of casualties to personnel.

These senior men, unless already well familiar with the implosion research in its many aspects, must be put through a process of training at this Project. This may well consist of reading pertinent reports, attending all relevant discussions and participating, at least on a modest part-time basis, in some of the research work, as well as taking part in the experimental assemblies of the inactive gadgets at Y.

The junior members of the field crews need not receive training in all aspects of the implosion project, but they must become thoroughly familiar not only with the proper manner of performing a certain phase of the assembly operation, but also with the many sources of trouble that may be, or have been, encountered.

Bainbridge informed the writer that in his opinion an Alberta field crew should consist of eight men (this, of course, does not include any men of Brode's and Ramsey's Groups, whose field crews will be more numerous presumably). The men are classified as follows: 2 men for the nuclear aspects of the tamper assembly; 2 men for the explosive charge and the mechanical aspects of the assembly; four men (two of them technicians for manual work) for the initiating system. This makes provision for loss of personnel due to illness and enemy action, but, being a conservative figure, means that all men must be well trained and experienced, if the crew is to be successful in its mission.

It is highly desirable that all men going to Alberta first serve some time at Kingman, thus becoming familiar with field work and passing the "personality" test in the ability to deal with Military personnel. During this time they must not lose touch with work at Y, to remain familiar with the latest in techniques, etc.

Personnel requirements for Kingman are different from these of Alberta. Men can be dispatched from this Project for brief intervals to supervise special jobs; the crew need not contain men concerned with the tamper assembly; no provision for casualties need be made; however more difficulties with the

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four at least must be senior men, two of the group leader type. Four must be good technicians for electrical assembly work, four must be familiar with the H.E. side of the assembly and eight must be physicists. To which of these technical categories the leaders of the crews belong does not seem to be important.

The writer believes that as presently constituted, Group X-2 does not have anyone who could act as the senior of the two H.E. experts in the Alberta crews; unless Bainbridge wishes to go overseas, there is nobody who could and would act as the leaders of these crews; there are no men for the nuclear aspects of implosion. However the group can provide the other staff of the first field crew and part of the second, if replacements for their work here are found.

IV. RECOMMENDATIONS

It is believed that only part of the additional personnel needed for the activities of Group X-2 can be provided from the rest of the X-Division and therefore the remainder must be recruited from the other parts of the Project. To accomplish this in a most effective manner, the following proposals are made:

(a) A committee be set up, including Bainbridge and a representative of the G Division (as the most likely source of additional manpower).

(b) The committee survey the qualifications of all personnel suggested for the field crews and approach those whom it considers suitable, to enquire whether they wish to go overseas.

(c) Each Alberta crew be set up as an autonomous administrative unit under the leadership of the person selected by the committee. The chain of authority while the crew is at this Project is to be decided by the committee. Overseas, of course, the crew, as a unit, is responsible to the senior technical man overseas, i.e. probably Hansey.

(d) The committee is to agree on additional (implosion research) training needed by the members of the crews while at this Project, aiming at part-time training schedules where possible, to limit interference with the present occupations of the members.

(e) The responsibility for satisfactory training of the members of the crews to be the joint responsibility of Bainbridge and the crew leader. In this respect they are to be answerable to the committee.

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