Radiolo

GENERAL (T. N. White) Group Annual

document consists of _ L_ copies.

(NB. It is assumed that t H-1, H-6 reorganization the annual report. Perh there too.)

and mechanics of the d in the H-DO part of e following should go

Within the scope of operations H-6 is to provide specialized Group in the fields of radiolo for Health Division support of Advisory Panel, advice on radand dosimetry services), and He site field test work, have come Group H-6.

. , the general purpose of Group ort for the H-1 Monitoring and meteorology. Responsibility membership in the Test Director's Little cortain specialized meteorological support of miscellaneous offto a considerable extent in

In terms of man-hours expended, e to be all J-Division activities repre-

sents a greater fraction of the 1 to 1 to 6 Group than might appear from a reading of the following report to the other hand, the report does not make apparent the very consider- a extent to which this work has been facilitated by a military assignment of Major John D. Servis (Army Chemical Corps) to Los Alastes (April 1952) where he has been able to work closely with this Group on satisface planning for Operations Ivy and Castle (and has assisted with some mobilers of Tumbler-Snapper and Upshot-Knothole) has been very beneficial and all dincerned.

The Special Problems Section (as was the preceding Biophysics Section of H-1) has been occupied most of the time with pressing programmatic problems, with little opportunity for the stimulas of research. The situation has improved somewhat over 1951 in this respect, newever, and it is hoped that it can be improved further by the addition of monther member during the coming year.

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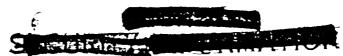
It became evident during Operation Imp that a two-man Field Test Section is Inct large enough to cover all the problems that may arise at one time. however, the necessary work was done satisfactorily with aid from elsewhere So in the Division, and no effort will be made to augment the Section unless it is found that this method of solving such problems is unsuccessful.

In the Meteorology Section, the high quality of the support, in personnel Massignments from the Air Weather Service, has continued to be apparent. As one example, notable contributions were made by the officer in charge at a recent conference with representatives from the Savannah River Project concerning radiological hazards that might follow the explosion of a pile.

Of particular interest to the Group Office has been an effort to improve the criteria for airways closure prior to detonations at Nevada Proving Ground. Although some improvements have been made, lack of data on eddy diffusion remains the chief obstacle. The problem of the spectral distribution in an atomic cloud continues to be of interest, and although little progress has been made here, a possible source of information has been found.

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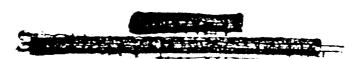
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Toward the end of the year, re-investigation of the wave-length response of the LASL film badge was undertaken, using the theory of Greening (Proc. Phys. Soc. LXIV, 11-B, p. 977) as a guide. Results to date indicate the possibility of considerable improvement in the badge.

The Group Office has been considerably overcrowded during much of the year. The pending move to H-Building should relieve this situation.





SPECIAL PROBLEMS SECTION (8. lae * H srael)

A. PERSONNEL

With its inception (in fact a former H-1) at the start of th members (B. Schnap, A. Dodd) w of the Section but had other di transferred to H-6 Field Test : the complement of the Section & was added in February. At the six, with one member (G. Anglet September on for the purpose of

Unitation of the "Biophysics Section" of only, the laction acquired, on paper, two dic act actively participate in the work is. I mit; the year, these two were tion Fur other individuals formed ts create n, and a new member (I. Israel) ess of the year, the Section consisted of the ; naving then on leave of absence from minum , raduate study.

B. ACTIVITIES

order to give some idea of the notices and was letty of the work done.

As the name implies, there is we yelitable at it is routine in the work of the Special Problems Section. It section's services to other Groups have ranged from consultation and adv is, through information and education, to investigation and research. : the following paragraphs, some of the problems handled by the Section will be note and briefly described in

- 1. Perhaps the hearest to by source shielding problem:
- satine were the problems that arose in connection with the monitor a activities of H-1 and other Groups. These problems involved chissip instrumentation, and entailed the calibration, evaluation and confination of monitoring materials. In addition, many calculations were done, for example, those required
- 2. In the field of information and edication, the Section was responsible during the year for a mamber of lectures delivered before several different groups. Radiation hazards and radiologic safety procedures were the principal subjects of the lectures. The nature of the material covered varied with the type of group. The groups ranged from civil defense personnel to new staff members attending the orientation course.
- 3. The Section participated in weapons test programs, cooperating with J-13 in making film measurements of gamma-radiation exposure as a function of distance. The measurements were made both at Nevada and at Eniwetok. The Section designed and tested the stations that were used, and had members at both test sites to see to the installation of stations and the recovery of film. The results obtained have been analyzed, and the analysis will appear in a forthcoming report. The results of like measurements made by the fection at Operation Buster were published in March as report WT 408.
- 4. Post-shot measurements were made in October at tower shot sites in Nevada are covered in the report of the Field Test Section.
- Investigations of a research nature concerning properties of plutonium and thorium were rade. The plutenium investigation was an inquiry into the energy and intensity of the x- and gamma-rays from plutonium metal. The results of the inquiry, combined with results obtained by other Sections of H-6 in studies of plutonium retal, were presented in October at an AEC Health Physics Conference in Idaho Falls. In addition, a part of the results obtained in the Section were published in The Physical Review.



6. The thorium investigation development of a more sensiti thoron concentration in air. inadequacy was presented at t Cincinnati in April. Subseque for monitoring thoron was devethe work was forwarded to the in August.

n we main was concerned with the all more a surate method of monitoring per on the existing methods and their All Meetings on Industrial Health at to the meeting, a more sensitive method jet, and it completed description of to Public I alth Service at Cincinnati

METEORCLOGY SECTION (It. Col. Cli : A. Spoh:)

A. PERSONNEL AND ADVINISTRATION

Military administration underwent i that changes during the year, the under the command of Colonel George

detachment being assigned successive to the 2009th Air Weather Wing, the 6th Weather Squadron and the 4th We let Group. It is now stabilized as Detachment 22, 4th Weather Group, vor tendquarters in Bultimore, Maryland, aylor.

Two personnel changes took place du in the year. CWO Blair M. Younkin leaving in July and Major George J. sayunden III arriving in December.

B. OPERATIONS

1. Scheduled

- a.) Preparation and dissemi stich of a fifty-four hour forecast on all regular work days.
- b.) Maintenance and servicing of meteorological instruments at various points throughout the project.
- c.) Accumulation and process west climatic data for the project.

2. Non-scheduled

- a.) Meteorological advisory service to the Test Director during Operation Tumbler-Snapper, mair elements being fall-out forecasts, cloud height forecasts, CAA warning service, and post-shot trajectories.
- b.) Preparation and dissemination of climatic studies relative to atomic test activities.
- c.) Preparation of modal climatic statistics for the support of miscellaneous laboratory operations throughout the year.
- d.) Preparation of reports to the Test Director of the Section's activities in support of Operations Suster-Jangle and Tumbler-Snapper.

C. RESEARCH ACTIVITIES

Major activity was directed at the problem of forecasting atomic cloud heights and a study of the accuracy of the fall-out forecasting techniques in use at Nevada Proving Grounds.

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FIELD TEST ABOTH N (w. B. Konnedy, 1 1) Schiavone)

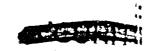
The Field Test Section was created January 1, 1952 to assist in the handling of problems arising as a result of the increased frequency of, and duration of, and Health Division participation in atomic tests.

Activities of the Section were divided into two main categories: test operations and laboratory operations, laboratory operations were conducted during times not taken up with field test work, or preparations for same (which usually consumes more time that actually sport on field tests). An outline of the work performed in with rategories is as follows:

A. TEST OPERATIONS

- 1. Buster-Jacgle
 - 2.) Prepared data for the final Buster-Jangle report.
- 2. Kark 8 Operational Solitability Tests
 - a.) Provided complete Rad-Safr coverage for the operations at Sglir Field, Florida and New Mexico.
 - b.) Theoret standing a sine med corponents.
- 3. Tumbler-Snapper
 - a.) Provided advisory service
 - b.) Investigated high film-badge readings of cloud sampling personnel. It was shown by film comparisons and Victoreen R chamber experiments that high film readings were due to interpretation of film badges under a portion of the film which had a lead filter on one side only. This investigation led to a conference in Washington later in the year (at which we were represented) called by the AEC for the purpose of specifying a standard film hadge and film processing method for use at atomic tests. As a result of this conference and additional work by the Bureau of Standards, AEC Division of Biology and Redicine and the Test Section, design for a test badge has been completed and standard income ing techniques accommended.
 - c.) Investigated the problem of the average photon energy of radiation encountered by cloud sempling personnel. This study revealed the importance of probatic lifections in the losage indications by film badges and verified the connections of the decision to apply no energy connection factors to film exposure readings of cloud sampling tersoured funding Poster Jacques
 - c.) Additional desiretry problems arese during the decontamination of the tower-shot areas at Hevada soving Ground, which occurred during the Iny Operation. Yeakers of original Problems Section (H. Israel) and the H-1 Poritoring Group carried out this work for the Field Test leitton (on duty at Ivy). The relative importance of test and gas: he weeker in the contaminated areas







was given special attenti. indicated that the bota do badges) may be about a hun Under actual working condibeta dose is approximately permissible skin dose is a: dose, it was concluded that serious over-exposure could ray badges.

heoretical calculations have sasured by the refsonnel film I see larger than the gamma dose. was found experimentally that the . . the gamma dose. Since the realy twice the permissible depth er the conditions investigated) no 1 controlling exposures by gamma

4. Ivy

- a.) Provided advisory serve to clanning stages.
- b.) Assisted in the decisi lead-impregnated suits manu minimize radiation exposure: of about 13r were reduced to of three or sore were expericases averaged reductions of
 - conference in Washington to have and differ cloud sampling personnel to two cases on Mike shot exposures than 3.5r. Reductions by a factor in two other cases. The remaining 、 t 40%。
- c.) Conducted studies on the for the test.
- retries of the film packet proposed
- d.) Became was ing members duration of the operation. Information Center and P. R. (loaned by EML) responsibil Section .
- . a Rad-Safe organization for the R. Fennedy was in charge of the t woone shared with Harold Abes operation of the Dosimetry

5. Upshot-Mnothole

- a.) Provided advisory service
- b.) Assisted in the procurers of file badges.

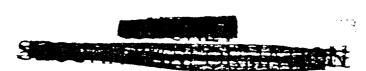
6. Castle

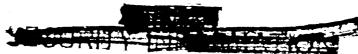
a.) Provider advisory service.

B. LABCEATORY (PERATIOLS

- 1. Made extrapolation chamber measurements on bulk plutonium and analyzed the results in the light of spectrometer measurements made by other investigators. A report is currently being prepared on this work.
- 2. Extrapolation chamber measurements were made on several samples of natural uranium in LASL stock. Surface dose rates about 15% lower than the generally accepted value of 240 mrsp/hr were determined. Our measurements were confirmed by an independent surface dose estimation of one specimen by the New York Operations Office. Analysis of the samples used is being made to account for the discrepancy.
- 3. A formal report was written on the decontamination of platinum containing alpha-active material,

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- 4. In informal report on considerations of health hazards and precautions incidental to the casting of ton quantities of normal uranium was prepared for a consultent agency to CMS Fivi-ion
- 5. A stack was designed for CMR-2 for work with large quantities of tritium.
- 6. Assistance was given in the instrume tation and administration of radioiodine treatment for two patients at the Fedical Center.
- 7. Supervision of circulating and drinking water contamination analyses (B. Schnap), and certain aspects of a however environmental survey program, were undertaken
- 8. A chart of true mass absorption curves for X & Fradiations between 10 and 100 KeV was prepared from N.B.S. . 23, "X-Ray Attenuation Coefficients from 1: FeV to 300 FeV"; Class H. White.



