HEALTH DIVISION PROGRESS REPORT

July 20 - August 20, 1953

I. ADMINISTRATION (Thomas L. Shipman, M. D., Leader):

A. General Remarks:

H-Division's new building, which is to be designated Health Research Laboratory, is now occupied. This new structure, which is situated adjacent to the Los Alamos Medical Center, provides space for the Biomedical Research Group, H-4, the Industrial Hygiene Group, H-5, and the Health Division's Property Section. The industrial hygienists, concerned more with routine programmatic work, completed their move with no significant interruption of their work. The members of H-4 were more fortunate in that many of their programs could be discontinued temporarily until they could be re-established in the new building.

The new building does not provide opportunity for significant expansion of either Group. The additional floor space does allow the installation not of luxuries but of many necessities which were previously out of the question because of cramped conditions in temporary structures.

It is expected that there will be some sort of official opening ceremony early in October.

B. Personnel (Aug. 1 - Aug. 31):

1. New Hires:

8/10	RIEBE, Bruce B.	H-1	General Monitoring
8/10	VANDERVOORT, Raymond C. (Return from military leave)	H-1	Special Assignments
8/19	JACKSON, Virginia	H-1	General Monitoring
8/20	BLANCHARD, Barbara	H-DO	Division Office

2. Terminations:

8/7	LAVADIE, Cristobal J.	H-2	Hematology
8/7	STANHOPE, Chester M.	H-1	DP East Monitoring
8/14	FOREMAN, W. Wayne	H-5	Laboratory (Summer)
8/28	WEBBER, Patricia W.	H-DO	Division Office
8/31	WOODRUFF, Philip H.	H-DO	Property (Summer)
8/31	BLANCHARD, Barbara	H-DO	Division Office

3. Total Personnel:

SM	38
Military	3
RA	14
SCP	79
Military	1
ASC	27
TOTAL	162

II. GROUP H-1, MONITORING (Dean Mayer, Leo Chelius):

A. Personnel:

1. Charles Blackwell was on offsite monitoring at Aberdeen, Maryland, from Aug. 5 to Aug. 11.

2. Antonio J. Montoya was transferred from the Tech Area Section to the DP East Section on Aug. 3. He replaces Chester Stanhope as DP East Section Leader. Chester Stanhope terminated on Aug. 7.

3. Bruce Riebe started to work in the General Monitoring Section on Aug. 10.

4. Raymond C. Vandervoort returned from extended military leave on Aug. 10. He will be assigned to the Group Office as a special monitor replacing Joe Bill Webber who is terminating.

5. Virginia Jackson started to work in the Photodosimetry Subsection on Aug. 19,

B. General:

1. Work is continuing on the measurement of the gamma radiation dose from plutonium.

2. The monkey exposure experiments were completed during the month. Highest accumulative exposure to any personnel was 1.99 r gamma.

3. A Rala shot was completed during this period. Although the east project access road was contaminated, the levels were low enough that they did not constitute a health hazard.

C. Contaminated Accidents and/or Incidents:

1. An accident at the Omega Water Boiler on Aug. 3 caused a temporary rise in the background to 100 r/hr in the Reactor Room. The emergency instrumentation recently installed worked satisfactorily and the situation was corrected without excessive radiation to personnel.

2. On Aug. 10, a dissolver in M-3, M Building, exploded spraying the entire room and one operator with an acid solution of U^{235}. No significant exposure was received by any personnel.

3. During a tritium recovery operation in D Building on Aug. 11, the equipment developed a leak permitting tritium to escape into the hood and out the stack on the D Building roof. Some of this material was fed back into the building through the building inlet. Although the health instruments indicated an air concentration far in excess of tolerance, urine assays failed to show any significant tritium exposure for the personnel involved.

III. GROUP H-3, SAFETY (Roy Reider):

A. Accident Record:

	Jan. 1 to Aug. 1, 1953	1952
Man-hours Worked	3,079,153	5,985,003
Number of Disabling Injuries	9	18
Number of Days Lost	129	199
Frequency (Accidents per 1,000,000 Man-hours)	2.9	3.0
Severity (Days lost per 1,000 Man-hours)	0.04	0.03

B. Industrial Accident Experience:

1. On June 30, [redacted], GMX-3 X-ray technician injured his left foot while operating an electric cart in a rest house at S Site. All such carts have since been modified by installing a pipe bumper around the front of the cart and by attaching protected foot rests to the front of the battery box. [redacted] suffered a contusion of the left foot and was admitted to the Los Alamos Medical Center overnight. Lost time: 5 days.

Classification changed to Unclassified by authority of the U.S.E.R.D.A.,
Per [signature] (Person authorizing change in classification) (Date) 6/30/75
By [signature] (Signature of person making the change, and date)

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C. Fires:

1. On July 29, an incident occurred in which the Fire Department made a run but in which no fire was involved. One type of glue used at S Site heats spontaneously on mixing. The glue is mixed in paper cups and normally the unused part dropped in a can of water outside the building. On this occasion a new employee, thinking the glue he held was nonhazardous, dropped the glue and cup in a standard drop-lid trash container inside the building at the end of the work shift. After working hours, a security inspector discovered the trash container smoking and called the Fire Department. Standard operating procedures have since been established to place all glue containers in a G. I. can containing water.

2. On Aug. 6, a minor fire occurred in Room 121 of the main building at Omega Site. Zia tinners were soldering a ventilator vent when the heat caused insulation to ignite. The fire was extinguished by Zia and operating personnel before the arrival of Fire Department equipment. No damage resulted.

D. Motor Vehicle Accidents:

	Jan. 1 to Aug. 1, 1953	1952
Miles Driven	1,002,115	1,820,000
Number of Accidents	22	49
Rate (Accidents per 100,000 Miles)	2.2	2.7
Total Cost	$ 691.00	$ 1,900.00
Accident Cost per 100,000 Miles	$ 69.00	$ 105.00

1. One vehicle was struck by a following vehicle when the Laboratory driver made a left turn in open, unmarked area.

2. A Laboratory driver struck a parked car while parking the car he was driving.

E. General Remarks:

1. The Safety Director acted as a technical consultant on a film being prepared by the Air Force Lookout Mountain Laboratory on the subject of "Safe Handling of Liquefied Hydrogen."

2. The Safety Office worked with the AEC in having red lights and sirens

removed from nonemergency vehicles. Vehicles used for transporting explosives will have their lens changed to blue.

3. Following an incident at S Site in which a vehicle was damaged due to a short in the electrical system, the Safety Office requested the Zia Company to raise certain standards of maintenance and inspection with respect to vehicles used for transporting explosives.

4. The Engineering Department was requested to require all structural drawings issued as work orders to be checked by a registered structural engineer.

IV. GROUP H-4, BIOMEDICAL RESEARCH GROUP (W. H. Langham):

A. General Remarks:

1. John Storer is on extended military leave.

2. Because of the necessity of moving into the new building, there is no progress to report this month from Group H-4.

V. INDUSTRIAL HYGIENE GROUP (H. F. Schulte):

A. General Remarks:

During this period the larger portion of the Group's time was devoted to moving all laboratory and office equipment from Q- and M-Buildings to the new HRL Building. The move was started on July 28. The three Sections worked together as a group. An attempt was made to continue work only with long-range programs and to answer only requests for information and surveys needed during this period. Considerable time was devoted to completing the Buster-Jangle report by the Group Leader.

B. Incinerator:

A member of the Field Section visited Argonne National Laboratory with an ENG-4 representative to inspect the Argonne incinerator used for radioactive combustible waste. The LASL incinerator is now being modified to improve charging and clean out operations. The only air-cleaning equipment

change recommended is the addition of spray nozzles in the cyclone collector to improve the efficiency.

C. Plutonium:

The comprehensive study on the air cleaning system at DP West was continued on a daily basis throughout this period. On the basis of results obtained to date, three fiber glass filters have been ordered to replace the CWS-6 type filters.

The continuous-counter-alarm unit was successfully operated during a duct change at DP West. The results obtained correlated closely with the Filter Queen samples collected during the same period of sampling.

D. Beryllium:

The work with beryllium in the CMR-2 Group continued on a large scale, but will be greatly curtailed around the first of September when nine summer employees will terminate. The continuous air-sampling program is still being carried out with daily samples being collected.

The survey of beryllium alloy operations in CMR-5 was completed and the operations are proceeding without any beryllium contamination outside of the hoods under normal conditions. Continuous air-sampling is being carried on during this work. The moving of the Beryllium Shop machinery and furniture requiring daily supervision has been completed. The equipment has been set up and installed at the new shop building at TA-3. During the period of the move, it was necessary to machine small beryllium parts in Building 96 where adequate ventilation was available. Air samples were collected during this work.

A survey of the S Site Laundry was made to check any possible beryllium contamination of the washing machine and of the room itself from the handling of beryllium contaminated clothing. The results show only trace quantities of beryllium in the washing machine and none about the room, indicating the dust has not been dispersed from the clothing.

E. TNT:

Routine air sampling for TNT was continued in addition to the collection of duplicate samples in an effort to evaluate the new method of analysis of air samples for TNT.

F. Lithium:

During this period the Shop Department has started machining lithium hydride pieces and a continuous air-sampling program was started. Both the Field and Laboratory Sections have been co-operating with CMR-11 during the testing of various absorbing agents and tower designs for the collection of arsine liberated from lithium arsenide.

G. Normal Uranium:

A survey was made at S-143 in regard to the handling of tuballoy in the assembly room. The potential hazard arises from the highly oxidized tuballoy; air samples will be collected during the future operations.

A survey was started in the Foundry Room of Sigma Building to determine the efficiency of new ventilation equipment installed.

H. Lead:

Air samples were collected during the pouring of lead bricks in GMX-1 and the results indicated there was no hazard to the operator. The lead contained 6% antimony but the conditions did not exist to produce stibine.

I. Cadmium:

An inspection was made of a proposed setup for casting cadmium. The setup was found to be completely inadequate and arrangements were made to supervise the pouring of one experimental casting under improved conditions. This work will be continued.

J. Ventilation Studies:

At the request of J-11, all laboratory hoods in the J-2 Building were surveyed. It was found that the hoods were badly out of balance and needed

immediate correction. Several of the worst hoods were corrected and all will be checked as soon as J-11's work load permits.

We have co-operated with ENG-4 in checking the ventilation system at the new HRL Building and will make a complete study of all hoods during the next period.

K. Test Operations:

All counters have been moved and set up in the new laboratory and all counting on samples remaining from the past test series was concluded. The present set of counting standards was enlarged to be of more general use for routine group procedures. Also, air samples collected by Group H-1 during the recent monkey tests at the NP Annex were counted.

The map of the NPG survey area which has been in general use for various purposes has been revised to include more towns and roads, particularly in the sectors of importance during the past test series. With this map as a background, 70-year isodose patterns were prepared on overlays for the seven tests of Upshot-Knothole which produced detectable fall-out. The Test Section conducted successful surveys in the Bayo Canyon experiment of Aug. 14. Sufficient data were collected to determine the pattern of fall-out as well as other information on the characteristics of the fall-out material.

L. Miscellaneous:

Dr. Frank Princi of the Kettering Laboratory spent two days with the Group reviewing our activities.

Mr. William Baumann and Mr. Robert Bernard of the Y-12 Plant at Oak Ridge spent two days with the Group. They were primarily interested in reviewing Group activities relating to their work on lithium and uranium.

Mr. John Donnelly of Westinghouse Electric Corporation of Arco, Idaho Falls, Idaho, spent three days with the Group as a trainee.

Three additional members attended the brief courses in Fundamentals of Nuclear Physics by Dr. Glasstone.

The Laboratory Section is preparing to do graphite dust turbidimetrically. Experimental work is also being carried out on alpha tract radioautographs.

The current phase of the work on the investigation of the isolation of curium has terminated, but will be further investigated when time permits. It was found that curium could be extracted under certain conditions from aqueous solutions with diethyl ether. The work on the determination of radium in urine and other previously mentioned projects will be continued.

M. Statistical Summary:

1. Air samples collected or field tests made for:

Arsine	4
Beryllium	112
Lead	2
Lithium hydride	7
Mercury (rooms surveyed)	3
Plutonium	181
Plutonium (cascade impactor)	17
Rolla	18
TNT	16

2. Plans approved: 1

3. Sanitation:

Water samples collected	47

4. Analyses completed:

Air

Arsenic	16
Beryllium	112
Lead	2
TNT	18
Uranium	19

Biological (urine)

Plutonium	79
Polonium	35
Tritium	208
Uranium	110

Miscellaneous

Beryllium swipes	5
Tritium in water	1

VI. GROUP H-6, RADIOLOGICAL PHYSICS (T. N. White):

A. General:

On July 29 a hearing on the William Dove, Jr., vs Holmes and Narver compensation case was held by Deputy Commissioner Pillsbury of the U. S. Employee's Compensation Commission in Los Angeles. At the request of SFOO, T. N. White testified as to radiological conditions on the island of Engebi prior to the alleged radiation injury. At the termination of the hearing Commissioner Pillsbury stated that he was satisfied that the claimant's disability was not caused by radiation injury.

On Aug. 6 a committee was convened by SFOO to consider further the future of NPG. T. N. White attended as a member of a panel of committee advisors.

B. Special Problems Section (S. Shlaer and M. I. Israel):

1. Work in Progress:

a. Densitometer. A variable cam system has been designed to translate densities automatically to roentgens. Selection of an appropriate pair of selsyn motors is being made and one of them will be permanently mounted on the densitometer to rotate with the wedge shaft.

b. The study of the effect of thermal neutrons on our present film badge continues.

c. Further study of the effect of high intensity thermal radiation on soil samples is being carried on. The sources studied so far include the carbon electrode flame arc, exploding fuses, exploding wires and iron arc. The current work involves the introduction of sodium 24 into the arc carbons as a tracer.

d. Some work has been done to check a variety of neutron detecting monitoring instruments to monoenergetic neutrons in a gamma ray field. Complications introduced by the gamma rays are multiple and the data are being evaluated.

More work in this field is certainly indicated.

e. A free air ionization chamber is being designed for accurate determination of the intensity of the monochromatic X rays derived from the fluorescence sensitometer. It is also planned to design an equilibrium wall parallel plate ion chamber to extend these measurements.

f. Work is progressing on the chapter on survey instruments and pocket dosimeters for the forthcoming book "Handbook of Radiation Dosimetry."

2. Work Completed:

a. A Monitor's Handbook has been printed and copies have been given to Group H-1.

b. The first draft of a paper on the development of a portable neutron dosimeter has been submitted to the University of Rochester by Robert Barker in partial fulfillment of requirements toward an M. S. degree.

c. The radiation from our fluorescence sensitometer has been analyzed by means of an Argon filled proportional counter. The band covered energies from 5 Kev to 35 Kev. Adequate monochromaticity was found for all the fluorescent radiators with perhaps the exception of barium. The radiators used were copper, bromine, strontium, molybdenum, silver, antimony and barium.

d. Weather instruments which had been moved from B-Building to H-Building were recalibrated and put in operation.

e. Cards listing the types of radiation likely to be found throughout the project, together with the appropriate monitoring service pertaining to these areas, have been distributed to supervisors of Zia maintenance personnel on a trial basis. If these prove satisfactory the cards will be laminated and distributed to all Zia maintenance personnel.

C. Meteorology Section (Maj. George J. Newsarden, 3rd, OIC):

1. Personnel:

a. Col. J. J. Jones, new Deputy Commander of the 4th Weather Group,

and Lt. Col. Wm. Wyatt, Western Coordinator, 4th Weather Group, visited the Section on 12 August.

b. Maj. G. J. Newgarden departed 14 August for Maxwell Air Force Base to attend the Air Force Weapons Orientation Course and will return in approximately 10 days.

2. Operations:

a. The Upshot-Knothole report " Special Activities of the Meteorological Section" was completed the end of July and submitted to D-Division.

b. Maj. Newgarden returned 24 July from the Rand Corporation, Santa Monica, California, where he attended a symposium on radioactive fall-out.

c. The Section participated in a Bayo shot fired on 14 August.

D. Nuclear Field Test Section (Wm. R. Kennedy and P. R. Schiavone):

1. Buster-Jangle:

a. Fall-out plots and integrated dose values were forwarded to the Division of Biology and Medicine.

2. Tumbler-Snapper:

a. No change on air crew exposure report.

b. Successive etching and radiographs on pieces of tower iron have been continued. Particulate contamination has been largely removed from one piece, but uniform activity can still be detected by a 24-hour radioautograph. Intensity of the piece is now a few hundredths of a milliroentgen above background. Cursory inspection of the results leads to the conclusion that most of the activity is due to particulate contamination and some due to activation.

3. General:

a. Two pieces of plutonium metal, one coated and one bare, were measured in the extrapolation ionization chamber. Results agree within 20% of those previously measured. These two pieces are used by H-1 for calibration of personnel film badges.

b. Coding of the bomb gamma spectra problem for calculation on the 701 calculator was started. Several periods of machine operation were used to answer questions on what the machine would do with certain operation sequences.

4. Laboratory Activities (A. O. Dodd and B. F. Schnap):

a. Routine analyses of CMR Building waste retention tanks showed insignificant amounts of activity.

b. Drinking water and circulating water from the CMR sites were assayed for the radioactive materials used at the sites. Circulating water at DP West assayed approximately one tenth of the plutonium drinking water MPC. Results of all other assays were insignificant.

c. Three samples of mercury from CMR-2 were assayed for plutonium. All results were negative.

d. A sample of water from the exhaust air washer in one wing of the CMR Building was assayed for plutonium. An incident occurring in the laboratory had discharged considerable material into the exhaust system. No plutonium was detected in the wash water.

e. Samples of soil from Tank Mesa and from near the Sportsman's Club House were assayed. Results were normal background.

f. Repeat assays of soil from Pueblo Canyon, mentioned last month, gave comparable values of activities. Ten soil samples were taken from the Pueblo Canyon stream bed starting at the point where outfall from the old Tech Area acid sewer joined the canyon, and extending downstream to where the project access road crosses the stream bed. Assays of these samples for plutonium gave results varying from 9 to 20 d/m/gm. The maximum value found outside the project fence was 19 d/m/gm.

A tentative MPC value of 22 d/m/gm has been advanced by the AEC Division of Biology and Medicine for soil in dry stream beds beyond the area controlled by the contractor for radioisotopes of which the radioactive half-lives are greater than one year.

Stream bed samples are doubtless subject to seasonal conditions of rainfall and local conditions of deposition. Samples taken in 1947 from approximately the same locations gave values of 0.14 to 2 d/m/gm.

The sampling and analyses will be repeated in the near future, and also at periodic intervals during different seasons.

September 1, 1953

T. L. SHIPMAN, M. D.
Health Division Leader

Orig. in H-Div. Files following circulation to H-Div. Group Leaders.

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