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UNITED STATES RADIUM CORPORATION

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April 30, 1968

Director
Division of Compliance
United States Atomic Energy Commission
Washington, D.C. 20545

Gentlemen:

Subject: United States Radium Corporation Licenses #37-30-2 and #37-30-7

We wish to express our appreciation for the courtesies extended and the helpful suggestions offered on the occasion of our meeting with Commission personnel on April 11th and to acknowledge, with thanks, the extension granted for the reply to your letter of April 1, 1968. The extension has enabled us to evaluate, in part at least, some of the areas of non-compliance, or alleged non-compliance, in the light of your suggested approaches to rectification of the problem areas. In addition to submitting a specific response to each individual citation or question raised in your letter of April 1, 1968, we are also enclosing several items representing program changes which we feel are applicable to one or several of the problem areas, which are realistic and practical and which will contribute much toward correction of the cited deficiencies. In particular, we request your consideration of the following major items of general applicability:

1. (Items 1 and 2) Our evaluation of the problem of stack losses to unrestricted areas and our rectification of and realignment of restricted areas, as suggested by our Health Physics consultant. Based upon the relocation of our proposed dial painting facility and considering the measurements we have made during the past 6 to 8 months relative to the contribution to the total problem of each of the major areas of effluent release, we believe this realignment of restricted area will completely eliminate this problem of suspected non-compliance. The enclosed drawings may be of help to those of your personnel acquainted with the physical layout of our facilities. We expect to have a fence installed and the minor building modifications concluded by May 15th, 1968.

2. (Item 3) Our revision of the Standard Operating Procedures to bring in line with standard and generally accepted values the maximum permissible levels of contamination we propose to adhere to in all applicable areas and for all types of contamination. We believe these values are generally accepted and, while application of these

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values does not mean that we propose to relax control and care, adoption of same will help materially in minimizing the number of questionable and debatable areas of non-compliance. Certain of the values currently incorporated in the S.O.P. under which we have been operating are, in part, contradictary and inconsistent with higher permissible values recognized by the regulations of the A.E.C. Tritium contamination measurements will, in the future, be made by liquid scintillation counting rather than by internal gas flow counter.

In addition to the program changes mentioned above much effort has already been devoted to locating sources of trouble in equipment and correcting same, rectifying deficiencies in operational procedures, strengthening personnel qualifications, and updating equipment. This has, because of situations over which we have had no control, not always been accomplished as rapidly or as completely as we had expected and promised and has resulted in a repetition of certain prior citations. The following are some but not all of the areas to which much effort has been devoted, where success to varying degree has been attained and where effort is continuing:

1. Reorganization of management, both overall and also within the Nuclear Product Division.

2. Reassessment of areas of responsibility and reassignment of same, as well as the establishment of better and more foolproof reporting and follow up procedures.

3. Implementation of and upgrading of technical personnel. An extensive search for qualified personnel was instituted in late 1967 and the results are only now beginning to be realized. Some implementation and upgrading has been accomplished, more will be accomplished gradually over the next few months as we are able to absorb personnel within present facilities, and the program will be completed with the opening of new facilities, covered in the next item (4).

4. Finalizing of plans for the establishment of completely new, modern and properly designed R & D and production facilities, largely automatically and continuously monitored, adequately ventilated and properly staffed. These facilities will, hopefully, be ready for occupancy by late 1968, however, it is possible that, due to unavoidable delays, equipment deliveries, etc., the occupancy date may be early 1969.

5. Purchase and installation of new and updated radioactive measurement equipment: The equipment for the laboratory, which is designed to update measurement techniques, improve reliability and greatly accelerate measurements, is partially

installed and will be complete upon receipt of several additional components, expected momentarily. It will be in operation as soon after setup as it is possible to have the manufacturers of components check out the setup. We expect operation, barring unexpected problems, by June 1st to 15th.

6. Additional survey equipment has been acquired and is in regular use. Personnel have been trained in its use, routine cleanup established and conditions in work areas are greatly improved and continuing to improve.

7. Operating procedures for work areas in which there is presently production activity have been updated, reviewed and approved by the Isotopes Committee. These procedures have improved techniques and contributed to appreciable reduction in contamination levels.

8. The Health Physics section will be augmented by additional experienced personnel about June 1968.

9. The Isotopes Committee meets frequently, although not on a regular schedule, to consider routine problems and is subject to call for special meetings resulting from any unexpected emergency. Decisions of the Committee are carried out promptly.

10. We have located and rectified a number of problem areas in both equipment and procedures. We are also continuing to try to anticipate and find any possible areas of non-compliance and correct them. Continuous monitoring is being done in certain areas and intermittent in those areas where evaluations have indicated that normal operations create no excessive contamination situations.

With respect to the specific points raised in your letter of April 1 we submit the following comments and information:

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1. In retrospect it appears that the surveys conducted in the americium lab certainly were not adequate to properly evaluate employee exposure to americium-241 during decontamination operations through the period of June 1967 to October 1967.

There were a number of items which contributed to this situation, the following, however, appear to be the major contributing factors:

a. Because of the existence of some erroneous ideas of economy, there was in existence at this time an inadequate amount of equipment for either sample

collection or measurement and this was particularly true in the light of the sudden requirement for additional supplies of equipment created by the emergency which existed at the time.

There was also a deficiency in the number and quality of trained personnel available for carrying out this program.

b. As a result of (a.) above, there developed a log jam in the measurement area with delays of several weeks existing between sample collection and measurement and evaluation of samples. This certainly made it impossible to properly evaluate exposures.

c. We have also learned that there existed at the time of this difficulty a false idea that the major source of contamination was attributed to equipment contaminated with radium, which equipment had been removed from New York City to Bloomsburg, Pennsylvania, at the time of the plant move in 1949. This apparently influenced Health Physics thinking to some extent and led this group to assume that the contribution of americium to the problem was relatively minor.

d. Many breathing zone samples taken during clean up were from areas where it was assumed that contamination was primarily from radium or radium decay products and in the case of measurements obtained in these areas, many of the breathing zone samples were within permissible levels for radium. Health Physics states that it was unaware at the time that the A.E.C. required reporting of high levels for radium. Health Physics also states that it was unaware at the time that none of the above assumptions were legitimate and that the regulations required the reporting of all of these values in terms of the most hazardous isotope, americium.

e. There existed at the time some question with respect to the permissible level which was to be used for americium. Americium Oxide, which is the material used in the process, is reported in the literature to be insoluble and we did assume that the

permissible levels for insoluble americium were the levels to which we were required to work. The fact that there exists the possibility of certain soluble components was only mentioned by the A.E.C. inspection team during the inspection period and this, of course, was also an event which occurred after the fact and, therefore, contributed to our situation of non-compliance.

We realize that the above reasons for non-compliance certainly do not justify the situation, that they contain certain assumptions which certainly should not legitimately have been made, but they do represent the facts as best we have been able to determine them and corrections have now been made in all of these areas.

While we cannot at this late date make accurate determination and the following does not excuse the situation, we have found that many of the exposures reported were only partially due to americium and that they are below the permissible levels for radium, polonium and other isotopes, which did definitely contribute to the high value reported.

With respect to corrective action, starting with August 15, 1967, the MPC for soluble americium has been applied to all measurements made in the americium lab and no attempt has been made to differentiate or correct for possible contribution of less toxic isotopes.

We have been accumulating BZ samples on all operators, Health Physics supervisors and maintenance people doing any work in the americium lab since its reopening in October 1967 and we find that the clean up operation, changes in procedures and other steps taken to correct existing problems have been effective.

We have acquired additional measuring equipment for both routine inspection within the lab and also for collection of control samples by Health Physics and measurement of same. Reporting of measurement results is now prompt so that action can also be taken promptly. We enclose herewith a copy of the breathing zone samples accumulated since October 1967 and you will note that the exposures, with few exceptions, fall far below the maximum permissible levels and that the operation as such appears to be running with no problem areas. Shortly after reopening of the lab a situation did occasionally arise which required investigation and these situations were individually investigated and corrective action taken to prevent any recurrence. You will note that there appear to be no problem areas at the present time. We believe that this operation is in full compliance and has been since approximately October 20, 1967.

2. It is true that the survey for airborne concentrations of tritium gas from our tritium building, tritium resin preparation lab and tritium gas fill facility was inadequate to determine compliance with 10CFR20.106. The primary reason for this situation was, without a doubt, the lack of sufficient equipment and trained personnel, which, while numerically strong, were weak in quality, training and experience. It is unfortunate that, as operations expanded, insufficient thought was given to proper coordination of activities to minimize the number of areas which required surveillance. Tritium handling facilities were set up in too many separate locations and adequate equipment was not purchased to enable the Health Physics group to properly survey all of the scattered installations.

The situation has been under study for some time and the following steps have been taken to prevent any recurrence of the problem:

a. Additional measuring equipment has been acquired.

b. A schedule of more frequent measurements has been established, which, in general, includes continuous monitoring in the more critical areas which are in constant operation and more frequent spot checking of those areas where activities are intermittent.

c. We have also made numerous changes in techniques in certain areas and have also improved much of the processing equipment.

We feel that at the present time our tritium losses have been substantially reduced and that the frequency with which measurements are now being made also provides an accurate picture of our tritium releases. We are enclosing copies of measurement results for each of the three areas specified. In the case of the tritium gas fill facility, which is our most critical problem area, measurements have been made both by the Health Physics group and also by the operator responsible for this facility. The results of the two independent sets of measurements appear to be in very good agreement and we would particularly like to call your attention to what appears to be a decreasing trend in releases from this stack as we have been able to locate and correct potential sources of difficulty.

In view of the fact that it appears that the overall losses as represented by the total from the various tritium handling facilities still exceeds 1 MPC by a substantial margin, in spite of improvements which have been made, we are defining a restricted area, as outlined earlier in this communication, and we sincerely believe that this will completely eliminate any question or uncertainty with respect to losses to unrestricted areas. It is expected that the restricted area modification will be completed by or about May 15th and that we should be in complete compliance in these areas after that date.

3. It is true that the nickel-63 and krypton-85 operations were inadequately monitored to definitely establish compliance. The situation has been investigated thoroughly and, while the reasons for the failure to comply by no means justify the non-compliance, they include, among others, the following:

a. Neither system operated with any degree of regularity, usually not more than 1 to 3 days per month at a maximum and frequently there was no operation for a matter of weeks.

b. The operator was requested to notify Health Physics when the system was scheduled to operate but what usually happened was that, because of a change in schedule by the customer or a changed schedule within the lab, due to the pressure of more urgent projects, there was no activity on the date scheduled for production and Health Physics was not notified when and if the project or operation was later rescheduled. As a result, Health Physics was able to make measurements in only one or two instances during a period of several months.

c. Nickel-63 is a plating operation that actually involves no volatiles so that the possible release of nickel-63 seems to be only remotely possible.

d. Krypton-85 is a material of relatively low toxicity and, with the infrequency of operation, it was felt that no excessive exposure could occur in the absence of a complete breakdown of the system.

e. Under the pressure of correcting and determining exposures in areas known to be more critical, checking the nickel and krypton-85 areas was easily overlooked.

As corrective action specific orders have been issued that Health Physics is to be notified whenever operations are scheduled and in the event that a rescheduling of an operation is necessary, no work is to be performed until Health Physics has been notified of rescheduling and arrangements for monitoring of the process can be made. In view of the infrequency of both the nickel plating and also the krypton filling operations, we believe that this is about the only way that a reasonable evaluation can be obtained. In the new facility, which is being planned for occupancy possibly later this year, these, as well as other operations, will be automatically and continuously monitored.

While the tests which have been conducted do not necessarily constitute a positive and complete evaluation of the situation, it has been possible in the past several months to conduct at least two tests during the nickel-63 plating operations; one test consisting of breathing zone measurements which indicate exposures far below MPC and another test which was conducted during the firing operation of plated foils which indicated that even at 400° C., nickel was not released by the sources.

One krypton-85 run was also made during which time the stack was being sampled. Although the stack sampler is calibrated for tritium, the sampler showed no detectable concentration of gas, although the sampler should be far more sensitive to krypton than it is to tritium.

We will, in the future, be in compliance, since, as we have pointed out above, arrangements have been made to conduct tests during all of the infrequent future periods of operation.

4. It is true that reports of overexposure were not filed promptly and that those reports which were filed in many cases were not timely. This is primarily due to the fact that our Health Physics group advised that they were not certain that the values which they had were reportable incidents. This was due, essentially, to the fact that some of the values were thought to be radium-226 values, which it was felt were not reportable incidents under A.E.C. regulations. It was also

the opinion of the Health Physics group that these exposures were subject to the usual evaluation procedures and that when considered over an extended period the specific individual exposure did not constitute a reportable item.

With respect to corrective action, these misconceptions have been corrected, values are being considered as americium-241 values and are being reported, unless it is possible to establish definitely that the exposure is due to other isotopes. Equipment which will enable us to make an analysis should be installed and operating within a matter of a few weeks and we should be in a position to better identify reportable incidents. In the meantime, we will be reporting all such exposures and we believe, therefore, that we are in full compliance and have been since about October 20th, 1967.

5. This alleged violation is partially correct and partially incorrect. Certain operating instructions were in existence and personnel had been made aware of same but in certain instances apparently ignored the instructions given. In other cases it is true that suitable instructions, at least in written form, were not available. There is no good reason why certain instructions were not available, other than the fact that, as frequently happens, the need for instructions in certain areas is not recognized until a problem suddenly arises and prompt action is necessary.

As corrective action, all operating procedures within the labs have been rewritten, updated and expanded for those operations in which there is activity at the present time. Additional operating procedures will, in many cases, have to be delayed until a need arises, since the procedures will have to be developed on the basis of the end results required and the specific operations which will be involved in reaching that particular end result. With respect to procedures which apply principally to maintenance of equipment, such as those applicable to replacement of air filters, glove changes, etc., such procedures have been drafted, approved by the Isotope Committee and made available to the personnel responsible for operations in which the procedures are applicable. To the best of our knowledge we are in compliance and have been in compliance for some months.

6. It is true that surfaces in many areas of the plants were contaminated with radioactive material in excess of the contamination limits specified in our Standard Operating Procedure. A part of this difficulty is due to the fact that inadequate procedures existed for the control of spread of radioactive material and there was also a shortage of equipment and personnel for adequately maintaining control over these areas. There was also in use in various parts of the plant, office and other types of equipment which had been, over the years, moved from one area to another, including some transfers from lab areas to unrestricted areas. In addition to this we believe that the limits specified in our Standard Operating Procedure in many cases were lower than the limits which have generally been found acceptable and that on the basis of this situation the contamination problem throughout the plant was considerably magnified.

As corrective action we have disposed of a substantial quantity of badly contaminated equipment, areas known to be excessively contaminated have been cleaned and a program of locating other problem areas and studying corrective measures is continuing. While there is no way of ascertaining that all problem areas have been eliminated, we feel that the situation is greatly improved and that, in general, the areas which we have been able to locate have been cleaned and are being maintained at acceptable levels. To the best of our knowledge we are in compliance.

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7. It is, indeed, true that as of November 1967 an inadequate number of surveys were available to establish release of tritium to unrestricted areas from the tritium hand painting facility. The primary reason for this situation is the fact that as of that date it had not yet been possible to implement our inadequate supply of equipment and to train personnel in the proper use of equipment. We did, at that time, have on order certain additional devices which would enable us to expand our activities but not all of this equipment had been received and such as had been received had not as yet been calibrated and, of course, it had also not been possible to train personnel in the use of such equipment. This has subsequently been corrected and surveys in this facility were started in

December 1967. We enclose herewith a copy of the results obtained between the period December 19, 1967 and December 29, 1967, together with a second continuous series which includes the period January 29 to February 23, 1968.

We do not have an explanation for the rather substantial differences between results obtained in December versus those obtained in a later period but are inclined to believe that the results obtained in 1968 are realistic, whereas the results obtained in December 1967 are probably due to the inexperience of personnel, which may have resulted in improper sampling or in incorrect determination of results.

The average of the values obtained in 1968 indicates that the release from this stack is approximately 28 times MPC. Under the circumstances it is quite possible that we were releasing excessive quantities to unrestricted areas. We are now continuing to monitor this facility periodically during periods of continuous operation and will continue to investigate possible methods for reducing releases by this stack. By realighment of the areas defined as restricted we believe that even with the present rate of release we should be in compliance with respect to releases to unrestricted areas. The date of full compliance, as previously indicated, and based on the assumption that the approach we are using with respect to definition of restricted areas is acceptable to you, should be approximately May 15th.

8. Based upon the levels to which we had agreed to operate, as indicated in our Standard Operating Procedure #27, many areas, but by no means all areas, throughout our plant did appear to be excessively contaminated. We believe the reason for excessive contamination, in many cases, was due to the fact that the levels specified in our Operating Procedure are below those generally accepted as satisfactory. You will note that we have requested in our latest revision of the Standard Operating Procedure, enclosed herewith, somewhat liberalized limits for both restricted and also unrestricted areas. Assuming that these levels are satisfactory to you, we believe that we will be generally in compliance in most areas.

We are continuing to search out other areas which may be excessively contaminated and are cleaning up such areas as rapidly as they can be located. We are also checking other suspect areas more frequently and are instituting prompt clean up measures, whenever we find locations where excessive contamination exists. While we cannot guarantee that all previously contaminated areas have been located and cleaned up, we feel that we are, essentially, in compliance at this time or will be if granted the new levels requested and we, furthermore, believe that we can maintain this condition in the future.

9. Surveys to determine airborne concentrations of radon-222 in the radium screening room were definitely inadequate. Such samples could well have been taken, in spite of the fact that we ourselves at that time did not possess enough equipment to properly carry out such surveys. We did have an arrangement, and still have, whereby room air and radon breath sample measurements are made at Fordham University. Why this was not considered, we are unable to explain, other than the fact that apparently it was either not realized by our Health Physics personnel or perhaps overlooked, that such measurements were required under A.E.C. regulations.

With respect to corrective action, radium operations have been discontinued with respect to any areas involving radium activated luminous compound or the handling of radium in any form other than perhaps sealed sources. By discontinuing such operations no further corrective action appears to be indicated and, since there is no activity involved, which demands such future air sampling, we presume that we are now in full compliance with respect to this deficiency.

In the second paragraph of Page 4 of your letter of April 1st you mention certain items of non-compliance in which there appears to have been a recurrence of previous violations. With respect to most of these items some action had been taken at the time of your November inspection but, unfortunately, it had not been possible to correct the deficiency in the period between these two inspections. With respect to Items 2A, 2C, and 7 and 8, certain equipment had been ordered and we were at the time either awaiting delivery or, on such equipment as had been received, we were attempting to calibrate and train personnel to use same. With respect

to Item 6 regarding contamination throughout the plant, surveys had been made although not completed, certain equipment was in the process of being replaced but, again, because of the many areas which required correction, it was not possible to complete corrective measures between the two inspection periods.

During the period between the two inspections a considerable amount of time also had been devoted to attempting to locate and correct some of the problem areas which were causing the contamination. We felt that it was more important to attempt to minimize or eliminate the source of the contamination than to devote our time to the measurement of the levels of contamination which had been reported to us as perhaps excessive.

In the second paragraph on Page 4 you mention certain commitments which were made with respect to more adequate indoctrination of personnel and the improvement of management and administration of plant operations. Frankly, steps had been taken with respect to these areas and much effort was being devoted to attempting to strengthen both the safety and also the administrative phases of our operation. Unfortunately, changes in these areas are not easy to make and it was not possible to have major adjustments completed by the time of your inspection in November. Subsequently numerous changes have been made in the management level and further changes are being made as rapidly as it is possible to locate and obtain the services of experienced personnel. In the meantime, we also acquired the services of a certified health physicist, employed several search teams to locate operating personnel and, as of the first of the year, made certain major changes in overall supervision and management. In the interim routines and procedures in many operations were changed and certain of these routine operations were put under direct supervision of health physics personnel. While progress may appear to have been inadequate at the time of your November inspection, we can assure you that the commitments made in August and again in October were being carried out as rapidly as it was possible to do so under the circumstances and with the personnel available during this period.

You mention that U. S. Radium Corporation ceased operations in the radium screen application facility in October but that operation appeared to have been resumed at the time of the November inspection. At the time of the November inspection we had definitely determined to discontinue radium operations and the only activities which were in progress were what one might call clean up operations in which we were attempting to complete those jobs for which we had previously committed ourselves. To the best of our knowledge, all jobs for which we had been committed at the time have now been completed and the only possibility of future activity would appear to be the necessity of perhaps replacing any possible rejections on jobs which have been shipped within the past few months. We are not accepting new orders and for practical purposes are doing no further radium application work.

UNITED STATES RADIUM CORPORATION

To Director Sheet No. 14 Date April 30, 1968
Division of Compliance
United States Atomic Energy Commission

You advise that the A.E.C. inspector reported that the facilities used to process americium-241 are still marginal and that on September 6th we advised that the Company planned to install a new glove box system in this area. Whether or not the americium facilities are marginal is a debatable point and I believe there is a little bit of confusion with respect to exactly what promises were made on September 6th, 1967, with respect to new systems. From the standpoint of appearance, we would agree that the americium facilities appear to be quite marginal and it is possible that they could be marginal from a design standpoint, although at the present time these facilities are operating very satisfactorily and have certainly eliminated the hazard which existed. It must be borne in mind that certain improvements have been made in these facilities and that part of the difficulty reported by the inspector was due to the poor techniques used in this equipment and not so much to the functional characteristics of the equipment itself. Most of the problems which caused our difficulties last summer were definitely traced to the complete degradation of techniques which had taken place over past years and with the correction of these techniques these problem areas were also minimized. We also have corrected the filter situation on the americium-241 dry box and have also improved the glove changing capabilities.

We certainly do wish to replace this equipment and plan to do so in any new facility which we construct, but we believe that the present equipment can be satisfactorily used during the balance of our stay in the present lab. With respect to our statement of September 6th, we advised that, if the difficulty which we had encountered could be established and traced to the fact that the facility was inadequate, we would certainly install a new glove box in this area. We also advised that we would have to study the feasibility of making such an installation practical. Frankly, we have been investigating this glove box system with various people in the ventilating equipment business and have only within the past three weeks determined what type of system would seem to be most satisfactory for this type of operation. At the present time it appears that, even if we wished to install a new glove box system, delivery could not be obtained in less than about 4 months and it does not seem feasible to, therefore, consider the installation of such a new system in our present lab facilities, unless there is evidence of failure of the existing equipment.

We have previously discussed the matter of removable contamination which you state exists in restricted and unrestricted areas throughout the plant. Much effort has been devoted to removal of such contamination and, while we cannot specify that it would be impossible for an inspector to find areas which we had overlooked, we believe that excellent progress has been made in clean up and that in general we think we are now in compliance. We have also devoted effort to correcting the situation which you point out exists in the Hand Painting facility and progress has been made in correcting this situation. The operators are

taking more care with clean up and effort has also been devoted to a general clean up of the working area. While the situation is not yet perfect, we feel that the problem has been substantially reduced.

In the area of airborne concentrations of tritium to which personnel have been exposed while working in various tritium facilities, the Health Physics Department has taken numerous breathing zone samples and reports that all areas are operating below permissible levels. Since February of this year 32 breathing zone and room samples have been taken in the tritium building' 5 in the gas fill facility and 88 in the Hand Painting facility. All samples were below tolerances with the exception of a very small number in the Hand Painting facility which were reported to be borderline and in which the variation from the level of 1 MPC appears to be approximately within the limits of error of measurement.

The above presents the problem areas, the causes for same, the present philosophy relative to changes, the changes and proposed changes as accurately as they are known and can be presented without engaging in personal incriminations and recriminations. The primary cause for non-compliance - lack of equipment and adequate trained personnel - is, unfortunately, true and the primary cause of most of the problem. Many factors, some avoidable and others unavoidable or difficultly avoidable, contributed to this unfortunate situation and have been the cause of much concern for some time to most personnel either directly or indirectly involved. The present program, conceived last summer and involving a relocation of facilities, revamping of the organization at all levels from top management through supervision, to the lowest technical level and which is committed to updating and modernizing facilities and equipment, is, in spite of occasional appearances to the contrary, progressing satisfactorily and rapidly, considering the complexity of the problem. Changes of the magnitude involved cannot be effected completely or rapidly as your letter of April 1st suggests. There are, in many areas, no precedents or past experience on which to draw in design or selection of equipment, materials of construction or facilities layout. High grade, experienced personnel capable of effective supervision cannot be located without extensive and expensive searching and the matter of equipment selection, compatability and delivery involves many delays.

Aside from the extensive effort which has been devoted, successfully, we believe, to bringing our present facilities and procedures into compliance, in the interim and in the face of some rather formidable obstacles, our more permanent program is at the stage where:

a. Problems with respect to site selection are almost resolved.

b. Decisions with respect to laboratory design and materials of construction are finalized and preliminary construction drawings are completed.

c. Details of ventilation and types of hoods, dry boxes, etc. have been resolved.

d. Production, monitoring and measuring equipment has been selected. In most cases it has been ordered and in many instances has been received and is or will be in use shortly.

e. Qualified personnel for our various types of operations, supporting services and supervision have been located, are currently being interviewed and added to our staff at times consistent with the progress of the program and our ability to absorb their services.

We realize that plans for the new facilities do not specifically provide the answers to the whys and wherefores for difficulties of the past but they do represent an integral part of the corrective action and, furthermore, constitute action in an area where action is long overdue. Corrections have been made with respect to the present facility, further corrective action can be taken, if additional problem areas appear and the operations can, with the expenditure of sufficient effort and the exercise of good judgement, be conducted in compliance with regulations. The effort which is being expended in creating a new facility we trust you will accept as an indication of a sincere effort on our part to resolve, permanently, this long standing problem area.

Very truly yours,

UNITED STATES RADIUM CORPORATION

C. W. Wallhausen
Vice President - Nuclear Products

CWW:vl

Enclosures

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