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MLM-396

December 15, 1949

ASR 151  
OSTI

Mr. K. A. Dumber  
Area Manager, Dayton Area  
United States Atomic Energy Commission  
Mound Laboratory  
Miamisburg, Ohio

Dear Mr. Dumber:

Subject: "Outline for 'Cold Stand-by' Operation of Mound Laboratory."

In accordance with your request, I am pleased to file with you six copies of the above-named manual. The others are in preparation and will follow as rapidly as we can complete them.

Very truly yours,

M. M. Haring,  
Laboratory Director.

MMH:jdh

Distribution:

- Copies 1 and 2 - Mr. K. A. Dumber
- Copy 3 - Dr. M. M. Haring
- Copies 4 and 5 - Central Files

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*James Kane (OSTI)*  
Authorizing Official  
Date: 6-30-09

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Classification: *unclassified* by  
author: *Paul B. Dowd*  
by: *Paul B. Dowd 3-5-71*

The Scioto Laboratory is comprised of buildings of varied construction. Some of the buildings are of frame construction with asbestos cement siding and roofing while others are of metal framing with metal siding and cement roofing covered with asphalt and gravel. Still others are of wood framing, wood siding and tar paper roofing. These buildings house a steam power plant, laundry, garage, maintenance shop, fire department, storage and warehouse facilities with wooden bins, paint shop, waste disposal, offices of various departments, trooper stations, and a building for operations.

Since this plant is to be kept in a standby condition the hazards of fire will not be as great as when the plant is in full operations. Still the chances for accidents (fire and personal injury) are always present unless precautions and prevention are practiced rigidly and regulations are enforced.

To protect this area and to handle situations, where protection of property and personnel are concerned, a man has been selected to police the area. In addition to the man mentioned above, there will be available during the second shift, 8:00 A.M.-4:30 P.M., a group of six men who will assist the one man on duty in combating any fire which may occur during those hours. These men will be maintenance men, and will be trained to carry on any fire fighting duty assigned to them by the Safety and Fire Inspector. These men will be under the supervision of the Business Manager.

The Business Manager has asked the Safety Department at Mound Laboratory, for, and will receive from them, all the necessary help and cooperation to make this group of men into an efficient fire brigade.

Should a fire start during the hours of 4:00 P.M.-8:00 A.M., it will be necessary to enlist the aid of the Trooper organization to determine the extent of the hazard and what steps should be taken to further control or eliminate all elements of danger to personnel and property. The Troopers will receive training from their Supervisors and the Safety Department from Mound Laboratory.

Inspections will be made by Safety and Fire Inspector in cooperation with the Troopers to eliminate any fire hazards that might exist.

Should a fire occur or grow in size to a magnitude beyond the abilities of the Fire Brigade, assistance can be gotten from the Fire Department at the Marion Engineer Depot, (about six miles distance); also from the Fire Department in the city of Marion, (about four miles distance).

To fight a fire there is available for use a fire truck, 1942, 1½ Ton, Ford with a 275 gallon tank and a 500 gallon per minute pump. This truck is equipped with 1050 feet of 2½" rubber line hose, 1000 feet 1½" rubber lined hose, 150 feet of 1" rubber hose, all with the necessary appurtenances. To supplement this, there is a 1942, 1½ Ton, Ford truck with a 1000 gallon tank and a 250 gallon per minute pump, which can be used should the fire be beyond reach of the hose from a fire hydrant.

There are fire hydrants throughout most of the project, especially around all buildings. These hydrants are connected to a water system fed by a 16" asbestos cement water main. The water supply at the present time comes from the city of Marion. Should the supply from Marion be interrupted, there is available a short distance from the project a two million gallon reservoir. This water can be fed into the main by means of electric or gasoline engine driven pumps; also there is an 8" emergency supply well located in the inert storage area which will supply 500 gallons per minute thru a 250 gallon pump now installed. The water mains are in the form of loops. In other words the water can be fed to the project from the two million gallon reservoir in a loop properly valved. Inside the enclosed area there are two loops supplying the inert storage area and the operating or general area. The pressure maintained on these loops is 55 pounds per square inch static pressure.

Nine of the ten buildings in the inert storage area have sprinkler systems (dry type) attached to the above mentioned loops. Each building protected by sprinklers has a post indicator valve, by means of which the systems can be turned off from outside the building. These post indicator valves will be locked open; key to be left on fire truck. The PR Building has ten areas protected by sprinklers (wet type). Following is the code for sprinklers in both inert storage and PR Building and General Area:

INERT STORAGE	PR BUILDING	GENERAL AREA
11 Buildings #2	21 Rooms 275 & 276	41 "W" Building
12 " #3 & #5	22 " 272 & 273	42 "G" Building
13 " #7 & #9	23 " 223 & 224	43 "M" Building
14 " #4 & #6	24 " 360 & 363	44 "H" Building
15 " #8 & #10	25 " 302 & 309	45 "G2" Building

One building of the inert storage area has a stand pipe or hose system within the building. The PR Building has eight hose stations. While the PR Building does not have a separate fire loop, the members of the fire brigade will keep constant vigilance to see that all sprinkler systems and all hose stations have water available at all times. The PR Building has in addition to the automatic sprinklers and hose stations a number of the rooms protected by automatic CO2 systems. These rooms are divided into ten zones.

- 31 Zones #6 & #9 for Rooms 315, 316, 317, 318, 319, 320, 321, & 323
- 32 Zones #1, #2, & #7 for Rooms 335, 336, 337, 338, 339, 340, 341, 342, 325.
- 33 Zones #3, #4, & #5 for Rooms 343, 344, 345, 346, 347, 348, 349, 360, 351, 352, 353.
- 34 Zones #8, for Rooms 283, 284, 285, 286.
- 35 Zones #10 for Room 393.

The automatic sprinklers and CO2 systems are attached to the building ventilating systems so that ventilation will be controlled should a (CO2)-1 only system be discharged. This building being of the windowless type presents a problem of proper ventilation in case of fire.

The sprinkler systems in the inert storage area, as well as the sprinkler systems and CO2 systems in the PR Building are attached to the ADT system. Should a sprinkler head be actuated by heat or should a rate of rise heat actuating device in the PR Building be actuated by heat an alarm would be sounded. At the same time, a record would be made on a recording tape, located in the fire department. Bells electrically operated are attached to the sprinkler systems and the automatic CO2 systems in the PR Building, which sound whenever any of the systems are discharged.

Automatic sprinkler systems will be installed in the warehouse, garage, maintenance, general storage area and change house buildings. These sprinklers will have a flow-alarm which will be assigned a number and attached to the ADT alarm system, similar to the inert storage area and the PR Building.

The ADT (American District Telegraph) has attached to it the fire alarm pull boxes throughout the area; twelve boxes in the inert storage area; eight in the general area and fifteen in the PR Building. The following are the codes and locations of these alarm boxes.

## INERT STORAGE AREA

111 Building #1 West end  
 112 Building #1 East end  
 113 Building #2 West end  
 114 Building #2 East end  
 115 Building #6 East end  
 121 Building #10 East end  
 122 Building #8 East end  
 123 Building #4 West end  
 124 Building #5 East end  
 125 Building #9 East end  
 131 Building #7 West end  
 132 Building #3 East end

## GENERAL AREA

211 Gate House #1  
 212 TR Building  
 213 WB Building  
 214 G Building  
 221 W Building  
 222 M Building  
 223 OS Building  
 224 PR Building

## PR BUILDING

311 Corridor #1 Room 213  
 312 Room 279 at stairs #1  
 313 Room 279 at door to outside  
 314 Room 354, Corridor #5  
 315 Corridor #5, opposite Corridor #9  
 321 Corridor #6, at Corridor #11  
 322 Room 392 at entrance to Room 393  
 323 Corridor #3 at Corridor #5  
 324 Corridor #3 at Room 301  
 325 Corridor #3 at Room 287  
 411 Trooper Desk - Entrance Lobby  
 412 Room 337  
 413 Room 452 (second floor)  
 414 Room 487 (second floor)  
 415 Corridor #15 (basement)

Should a fire be discovered by one of the personnel, an alarm box should be pulled immediately so that help can be summoned. When an alarm box is pulled or a sprinkler system be discharged; or the heat actuating device of the automatic CO2 system be actuated, the above alarms would be recorded on the recorder in the fire department.

At the same time a number of horns located in various parts of the PR Building and a horn installed on top of the PR Building would be sounded with the same code as that which is being recorded on the recorder. These horns would serve the purpose of calling the fire brigade or the Troopers to the scene of the alarm. The Safety and Fire Inspectors and all members of the fire brigade will exercise caution at all times to protect personnel from becoming involved in fire, smoke, or fumes.

There are available and located throughout the project, first aid fire fighting equipment consisting of soda and acid, foam, dry chemical, CO2, JT, and plain water.

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Should occasion arise where the air around a fire area should be filled with smoke or noxious fumes, there is equipment available for the fire fighting personnel to wear. This equipment consists of "all purpose" gas masks and one hour breathing apparatus. The one hour breathing apparatus is especially useful should the oxygen content of the air get below 18%.

It will be necessary that a fire drill be held at least once a month with the alarm coming from a different area each time. The members of the fire brigade will practice putting out practice fires with first aid fire extinguishers, as well as with hose streams. Every member of the fire brigade will become thoroughly acquainted with all equipment and operations of the pumps on the fire trucks. Fire Inspector, Maintenance Supervisor and Business Manager will make themselves thoroughly familiar with the methods necessary to put the automatic CO2 system back into operation, should the system be discharged for any reason whatsoever. They will also be responsible for familiarizing themselves with the location of all sprinkler risers.

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This Document Consists of 57 Pages  
This is Copy 1 of 23A

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DATE 12/16/49 INITIALS M.M.H.

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Contract Number AT-33-1-GEN-53

SCIOTO LABORATORY  
Operated By  
MONSANTO CHEMICAL COMPANY  
MARION, OHIO

This document is  
**PUBLICLY RELEASABLE**

M. M. Haring  
Laboratory Director

James Kern (OSTE)  
Authorizing Official

Date: 6-30-89

OUTLINE FOR "COLD STAND-BY" OPERATION OF SCIOTO LABORATORY

(Limited Operation and Maintenance)

**CAUTION**  
This document contains information of  
value to the National Defense of  
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**RESTRICTED DATA**  
This document contains information as  
defined in Executive Order 11652.

Date: November 23, 1949

Assembled By: Joseph J. Burbage (by M.M.H.)  
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Assistant Laboratory Director

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Malcolm M. Haring  
Laboratory Director

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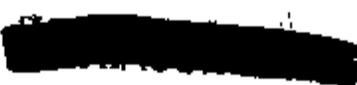
TABLE OF CONTENTS

	<u>Page</u>
A. PURPOSE	11
B. ADMINISTRATION	12
1. General Organization	12
2. Responsibilities of the Business Manager	12
3. Responsibilities of Mound Laboratory Personnel	15
C. MAINTENANCE DEPARTMENT	16
1. Organization	16
2. Maintenance for Stand-by Operation	17
3. General Care of Buildings	18
4. General Care of Equipment	18
5. Inspection by Mound Laboratory Personnel	18
6. Area Maintenance	19
7. Maintenance Records	19
D. SECURITY	20
1. Organization	20
2. Definition of Objectives	20
3. Identification Procedures, Employees	21
4. Identification Procedures, Visitors	22
5. Security Classification of Various Areas	23
6. Classification of Documents	24
7. Custody Procedures for Keys and Combinations	25
8. Records to be Maintained	26
9. Operation of Patrol Section	27

	<u>Page</u>
E. PURCHASING AND WAREHOUSING	28
1. Organization	28
2. Purchasing Procedure	28
3. Handling of Material Received	30
4. Warehousing of Material	31
5. Storerooms	31
6. Inventory Policy	32
7. Care of Precious and Critical Metals	33
F. TRANSPORTATION	33
1. Organization and Duties of Personnel	33
2. Assignment of Equipment	34
3. Maintenance and Servicing Procedure	34
4. Reports	35
G. HEALTH AND MEDICAL	35
1. Organization	35
2. Functions of the Medical Section	36
3. Health Physics	39
H. SAFETY AND FIRE FIGHTING	40
1. Organization and Function	40
2. Description of Equipment	43

	<u>Page</u>
I. UTILITIES	48
1. Electric Power	48
2. Water Supply	50
3. Telephone System	52
4. Sewage Disposal	54
5. Fuel	55

None of the provisions of this manual or outline shall be considered as being of a contractual nature and shall not effect the provisions of Contract Number AT-33-1-GEN-53 as amended, or any documents issued pursuant thereto.

  
**UNCLASSIFIED**A. PURPOSE

This outline has been prepared to establish the general method of operation of Scioto Laboratory in a cold stand-by condition and to aid in the administration of Scioto Laboratory under these conditions. It is fully realized that this outline does not cover in minute detail all policies for Scioto operation, but it is hoped that enough detail is included to establish the "tone" for the complete operation in the defined condition.

Cold stand-by operation is defined as limited operation and maintenance of this facility. Limited operation does not include any processing of radioactive materials.

The plant is built in every detail, including (as far as feasible) complete installation of apparatus and equipment. A partial stock of supplies, sufficient to begin expanded operations, is on hand. The plant is maintained in good condition. Some equipment is canned, but none covered with heavy grease. All machines, motors, etc. are turned over at regular intervals. Delicate instruments are inspected and repaired regularly. The power plant is run at a level to prevent freezing and permit comfortable working. The chemical equipment itself will not be used in this cold stand-by operation because this would necessitate the institution of extensive health measures and the presence of a technical staff.

Expansion, with transition to more extensive operations, is covered in the "Outline for Hot Stand-by Operation of Scioto Laboratory."

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B. ADMINISTRATION1. General Organization

The general organization of Scioto Laboratory is given in the accompanying organization chart. This chart will be revised under the dates of January and July of each year and more often if major changes require a separate issuance.

All personnel and wage policies in effect at Mound Laboratory will be followed at Scioto Laboratory.

All duties not necessary to be done at Scioto Laboratory, such as Accounting, will be carried on by the staff departments at Mound Laboratory.

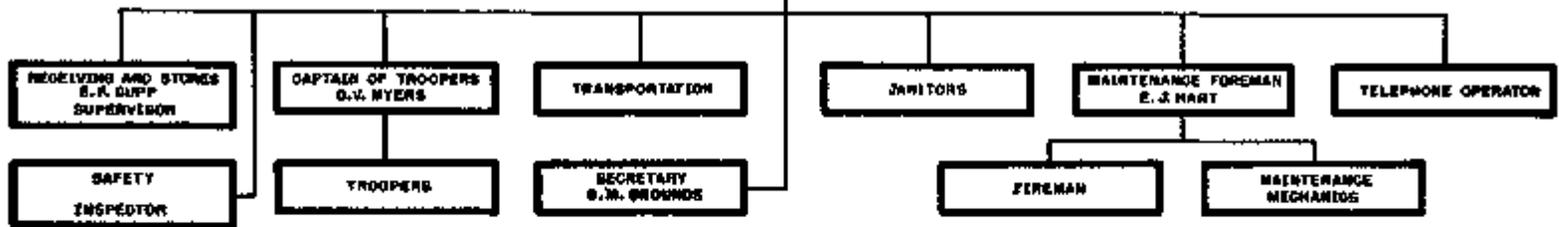
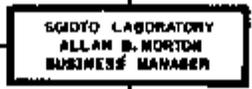
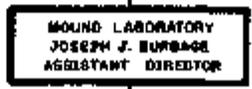
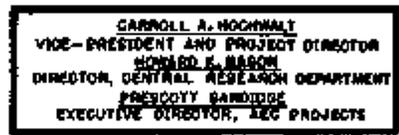
Receiving and Stores will handle laundry and mail services. The Janitors will also serve as general utility men.

2. Responsibilities of the Business Manager

The Business Manager will be the resident directing officer of Scioto Laboratory as long as it remains in a cold stand-by condition. He will personally handle all functions not specifically assigned to other members of his staff, such as classified documents, payroll, personnel, industrial relations, miscellaneous accounting, property records, purchasing, etc. He shall carry out established Mound Laboratory practices in his function as administrator of Scioto Laboratory and deliver a monthly status report in narrative form to the Laboratory Director and Assistant Laboratory Director. As indicated by the "straight-line" organization, the Business Manager will be responsible for the issuance of all order to Scioto personnel.

He will be assisted in his direction of Scioto Cold Stand-by Operations by an Advisory Staff from Mound Laboratory who will periodically visit Scioto.

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**MONSANTO CHEMICAL COMPANY**  
**CENTRAL RESEARCH DEPARTMENT**  
**SGOTO LABORATORY, MARION, OHIO.**

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The Advisory Staff will consist of the respective Directors of the Mound Laboratory Staff Divisions, or their designated representatives. Recommendations will be discussed with the Scioto Business Manager and will be put into effect upon his agreement. In the event a difference of opinion exists regarding a recommendation, the matter will be referred to the Laboratory Director, by the members of the Advisory Staff.

### 3. Responsibilities of Mound Laboratory Personnel

The Advisory Staff as described above will serve to minimize the staff at Scioto Laboratory and, yet, keep the plant under close supervision. Following inspection by a representative of the Advisory Staff, he shall file a formal, written summary of his comments with the Laboratory Director, Assistant Laboratory Director, and Scioto Business Manager. Over-all responsibility for these inspection trips and their frequency will be vested in the Assistant Laboratory Director. After the inspection visits repairs and replacements will be made as indicated. The Scioto Business Manager should request of the Assistant Laboratory Director any additional inspections at any time that he deems this desirable.

Detailed, technical (classified, when necessary), operating manuals will be prepared to cover all proposed processing operations. Copies of these manuals will be filed with all appropriate individuals at Mound Laboratory, Scioto Laboratory, and the Atomic Energy Commission. Responsibility for these manuals will be vested in the Operations Manager at Mound Laboratory.

A detailed listing of all materials and supplies that will be required to permit full operation at Scioto Laboratory will be prepared

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MLM-396

and filed with the Scioto Business Manager. This list will include the detailed specification of each item, the number of items, the estimated price, the most probable suppliers, and the location in which the item will be needed. The responsibility for the preparation and any necessary revision of this list will be vested in the Business Manager of Mound Laboratory.

A committee, whose chairman will be the Operations Manager at Mound Laboratory, shall periodically review all processing changes that are in Mound operations in order to recommend possible installation changes at Scioto to keep it up-to-date.

#### G. MAINTENANCE DEPARTMENT

##### 1. Organization

The present plans for personnel include one maintenance supervisor, who will be in full charge of maintenance at Scioto Laboratory. He will in turn supervise six to eight maintenance mechanics who will cover the various craft requirements at the plant such as electrician, pipefitter, refrigeration mechanic, air conditioning mechanic, carpenter, painter, crane and heavy equipment operator for handling of coal, ashes and other need for heavy equipment. Also, five firemen will be used around the clock during the period from approximately October 1 to May 1 to keep the Power Plant in operation. During the period from approximately May 1 to October 1 these firemen will be assigned to other duties such as cutting grass, grading, and maintenance of the general area which can more readily be accomplished during the summer months. In addition, they will be substituted for other personnel during vacation periods.

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2. Maintenance for Stand-by Operation

All buildings in active use such as General Office and Trooper Headquarters, Change Houses and Fire Station, Warehouse and Storeroom, Garage, Power Plant, Maintenance Shop, and Paint Shop will be heated and maintained in a suitable operating condition at all times. The "PR" and "WD" Buildings will be heated only sufficiently to keep the various lines from freezing and to make it reasonably comfortable for inspection purposes by the Troopers and maintenance personnel. The equipment in these buildings will be inspected and run or turned-over approximately every 30 days to insure that it remains in first class condition. These buildings will be kept at approximately 60°F. during cold weather by the following methods. The "WD" Building will be heated by the use of the unit heaters. In the "PR" Building special arrangements have been devised whereby sufficient heating can be obtained by operating five or six fans continuously in the entire building. All equipment subject to rapid deterioration and corrosion, due to temperature or humidity changes, will be adequately covered and sealed to insure against such damage. The necessary services and utilities such as sewers, water, power, etc. will be maintained on a continuous basis with periodic inspections as required. Such facilities as roads and railroad tracks in active use will be maintained on a continuous basis.

The various warehouses, pumping stations, farmhouses, barns, etc. within the plant area which will not be used during stand-by

operations, will receive periodic inspections but will not be heated or kept in service for general use.

### 3. General Care of Buildings

It is our understanding at the present time that some of the present buildings designated as farmhouses and barns have been sold for dismantling purposes by the Atomic Energy Commission. The balance of the buildings will be maintained in stand-by condition that is, necessary repairs and painting will be done to keep these buildings in operating condition. Such buildings in continual use for the operations will, of necessity, be kept in slightly better condition on the interior for the comfort and morale of plant personnel.

### 4. General Care of Equipment

As previously mentioned in Section 2, all equipment required for daily use in the stand-by operations will be maintained on the basis of its being operated continuously. Other equipment to be used in possible future operations will be inspected approximately once a month. This inspection will include turning-over or running, cleaning, and lubricating as required.

### 5. Inspection by Mound Laboratory Personnel

Engineering personnel from Mound Laboratory will visit Scioto Laboratory periodically (at least once a month) to aid in the maintenance of Scioto Laboratory during which time the premises will be inspected and recommendations made for improving conditions and methods of operation. The number and type of personnel used may vary.

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6. Area Maintenance

The area maintenance on fences, established roads, and used roads will be done on a continuous basis. It is our understanding that it will be necessary to maintain the appearance of the present cemetery within the fence boundary. When deep snows occur, it will be necessary to keep the roads within the area opened by use of a snow plow attached to a bulldozer, and during the summer the grass and weeds within the operations area are to be cut periodically to maintain a reasonable appearance for the project. It is expected that a certain number of wash-outs and subsequent fill-ins of certain areas will also be required.

7. Maintenance Records

No personnel has been provided to do any extensive alteration or construction work. A certain amount of this might be accomplished during the periods when maintenance work does not require full use of the personnel on hand. This practice will be put into effect and the backlog of such work that cannot be completed will be reviewed in case we should put the plant in full operation, so that sufficient personnel can be placed at the time to complete all necessary work of this nature. In addition, we will keep an account of all work that will be required if the plant is to go into full operation, so that no delay will incur in starting this work immediately upon such notice. A record will be kept on each piece of equipment in the "WD" and "FR" Buildings with a record of the inspections and conditions found during that time. Such a record will also be kept on all of the buildings.

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D. SECURITY1. Organization

The plans for security for Scioto Laboratory will be basic in principal, in that the same system or frame work set up for stand-by conditions will also function under an operational status by a simple program of expansion of personnel. The present plans for personnel include: First, Business Manager, representing the over-all security program and operation under the guidance of the Security Division, Mound Laboratory; second, one captain of the Patrol Unit; and third, 27 Troopers, some of which will be promoted to Sergeants on completion of a Trooper Training Program to preserve 24-hour supervision.

The "Visitor Control," "Supply," "Lock and Key," "Photographic and Identification," and "Central Files" section will be set up as complete units to function under all conditions. The first four sections will be operated by the Troopers but the Central Files Section, by the Business Manager and his secretary. The entire Security Unit will operate under the administrative direction of the Business Manager and under procedures, programs, and practices as promulgated by the Director, Mound Laboratory Security Division and approved by the Laboratory Director and concurred in by the Atomic Energy Commission. This unit will be inspected and re-evaluated at frequent intervals by the Director, Mound Laboratory Security Division or a designated member of his staff.

2. Definition of Objectives

The above personnel is based on the understanding that the security objectives at Scioto Laboratory under cold stand-by status are generally as

follows: First, the initiation of a Plant Protection Program designated to afford the highest practicable security of restricted data and other classified matter; second, to provide protection for Government property involving vital equipment and material against fire, theft, damage, and sabotage.

### 3. Identification Procedure for Employees

The procedure for employee personnel identification at Scioto Laboratory is that section of the Procedure Manual entitled "Badge and Pass Procedure," which is detailed in instruction and in conformity with the Atomic Energy Commission Policy governing this phase of security.

Generally, the control or admittance of employees to the Plant Area will be exercised by means of tamper-proof, laminated photo badges, and passes. The freedom of movement within the area and access to exclusion areas will be controlled by contrasting colors and exchange badges.

All "Q" cleared employees at Scioto Laboratory will be issued the laminated Identification Pass and a Blue Photo Pass. Such employees will retain their pass and badge and will be admitted into the general area upon presentation of the badge at the entrance portal. Any employee entering an exclusion area will exchange the blue photo badge for a yellow photo badge at the entrance to such an area (except where entrance is permitted under emergency conditions). A reverse procedure will be followed upon their departure. Employees assigned to the general area who may be required to enter an exclusion area for any reason will be permitted to enter upon the presentation of a properly authorized Special Pass and given a yellow Temporary Exchange Badge. Personnel

with "Q" clearance from Mound Laboratory going to Scioto Laboratory will be permitted to enter the area by means of their Mound Laboratory Identification Pass if their names appear on a list previously approved by the Laboratory Director or by means of a Special Pass approved by the Security Division, Mound Laboratory. Photo badges will be made up and issued to those persons appearing on the approved list, and those entering by means of a Special Pass will be given an employee's Temporary Badge of a color appropriate for their needs. Atomic Energy Commission personnel entering the Laboratory area in line of duty will enter under the same conditions as explained above, except that their Scioto Badge will be green in color.

#### 4. Identification Procedures for Visitors

Identification procedure for visits to Scioto Laboratory and the degree of access to restricted data, which may be granted them, will be handled according to the regulations and instructions as set out in the section of the Standard Procedure Manual entitled, "Authority and Controlled Visits."

In general, the admission of visitors to the Plant Site will be handled as follows:

Visitors will be divided, for the most part, into two classifications: First, Casual Visitors, and second, Classified Visitors.

Casual Visitors may be permitted to enter the general area provided there is legitimate reason for such visits, and after they have submitted adequate proof to the Visitor Control Clerk as to their identity, the company or firm they represent, the purpose of their visit, and upon the approval of the Business Manager. Such visitors will wear red visitor badges and will not

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have access to restricted data and/or restricted areas. The visitors will be under escort at all times.

Classified Visitors will be admitted only when approved by the Atomic Energy Commission Security Office or the Atomic Energy Commission Area Manager's Office. Such visitors may be granted access to restricted data and exclusion areas, but may be limited in discussing classified matters and/or restricted data to such subjects as permitted by the Atomic Energy Commission, as shown under "Purpose and Scope" on the copy of the visitor pass. After evaluating the above information, the visitors will be given yellow visitor badges with a diagonal red slash indicating that the visitors are limited in their discussions and must be escorted, yellow visitor badges with a diagonal red slash and red star indicating that the visitors are limited in their discussion but do not require an escort; or plain yellow visitor badges with a red star indicating the visitors are not limited in their subjects to be discussed nor requiring an escort. The visitor pass, when returned to the Visitor Control Desk, will constitute a permanent record of the visit, persons contacted, subject matter discussed, highest category of discussion, and time of entry and departure.

5. Security Classification of Various Areas

With the present fencing arrangement, only the General or Limited Area is enclosed. Within this General Area, the "PR" Building will be enclosed and designated as an Exclusion Area and will be governed by such security regulations as may be consistent with operational necessity and the Atomic Energy Commission's Policy covering such facilities.

6. Classification of Documents

A central Classified File Section will be set up for Scioto Laboratory under the custodianship of the Business Manager. The Unit will be complete within itself, and all classified material originating at Scioto Laboratory or received from other sites will be identified, labeled, recorded, stored, and transmitted by this section in line with instructions contained in GM-37. Detailed handling of such material will be, generally - as follows:

a. Marking of Classification

Documents will be plainly and conspicuously marked with the classification in accordance with instructions contained in GM-37 and practices adopted by Monsanto, as illustrated in the Scioto Document Control Manual.

b. Document Control - (Records)

A record will be maintained of all documents classified Confidential, or higher, prepared, reproduced, or received by Scioto Laboratory. The following information will be recorded:

A register of incoming and locally produced documents and a record card recording the following: First, date of the document; second, title or description of the contents of the document; third, author or originator; fourth, classification; fifth, number of copies produced on locally originating documents or the number received on incoming documents; and sixth, distribution made.

A file, by sender or recipient, on incoming and outgoing documents and a record of classified documents destroyed that will show the following information on each item destroyed: First, date of document; second, register number of document; and third, copy number destroyed.

UNCLASSIFIED

c. Storage

Documents classified Confidential or higher will be stored in locked, fireproof, three-combination safes or cabinets when not in use; documents classified Restricted will be stored in locked cabinets or desks when not in use; and cabinets containing Classified material will be classified according to the highest classification stored therein.

7. Custody Procedures for Keys and Combinations

All requests for the issuance of keys and combinations will be made to the Security Section at Scioto Laboratory. If any unusual security interest is involved in such request the matter will be referred to the Security Division, Mound Laboratory, who will concur with the Operating Division concerned and honor the request, except in certain instances which may require the approval of the Laboratory Director. Key and lock cores will be procured at Mound Laboratory and forwarded to Scioto Laboratory for distribution and use. A complete list of all particular rooms, or a series of rooms, for keys in any exclusion area must be on file in the Lock and Key Section at Scioto Laboratory and a memorandum copy forwarded to Security Division, Mound Laboratory. A complete record of all locks and keys in use at Scioto Laboratory will be maintained at Trooper Headquarters and no series master or sub-master key will be issued during the period of installation without the approval of E. C. McCarthy and the concurrence of the Business Manager. On completion of the installation work, the normal issuance of keys will be the responsibility of the Business Manager through the Lock and Key Section.

Requests for combination cabinets and safes will be made to the office of the Business Manager, Scioto Laboratory, and cleared through the Security Division, Mound Laboratory. Records of the combinations will be placed in sealed envelopes by the Security Inspector making the change. These envelopes will be filed in looseleaf book form and classified as a Secret Document at Scioto Laboratory. A duplicate of these records will be forwarded to the Security Division, Mound Laboratory. All combination changes will be accomplished by the Security Division, Mound Laboratory, in compliance with GM-37. Requests for changes, other than regular periodic changes, will be made in memorandum form to the Security Division, Mound Laboratory.

#### 8. Records to be Maintained

In addition to the records mentioned in Section 6 and 7 above, and the normal files for correspondence, Information Bulletins, Letters of Instruction and Interpretation, the following detailed records will be kept by the Security Section at Scioto Laboratory: First, clearance status and work assignment of all employees; second, clearance status and work assignment of Mound Laboratory employees furnished photo badges; third, clearance status and work assignment of Mound Laboratory employees admitted on Special Pass, and a log of all visits; fourth, numerical and alphabetical file on all visitor passes issued, fifth, violation of Security Procedures, recommendations and action taken, sixth; assignment and Duty Roster for Patrol Personnel; and seventh, "Unusual Incident" report made by Troopers, and action taken.

UNCLASSIFIED

~~SECRET~~9. Operation of Patrol Section

The Scioto Patrol will consist of the following personnel by grades:  
One Captain of Troopers, one Supply Sergeant, five Duty Sergeants, 23 Troopers, and 30 Total Patrol Strength.

The Posts and Tours to be operated, and the distribution of Patrol manpower are shown below:

<u>Post Number</u>	<u>Location</u>	<u>11-7</u>	<u>7-3</u>	<u>3-11</u>	<u>Headquarters</u>	<u>Total</u>
Supervisory	Captain				1	1
	Supply Sergeant				1	1
	Duty Sergeant				5	5
Post No. 1	Main Gate	0	0	0	0	0
Post No. 2	General Area Gate	0	0	0	0	0
Post No. 3	General Area Gate	0	1	0	0	1
Post No. 4	East Gate	0	0	0	0	0
Post No. 5	"PR" Lobby	0	1	0	0	1
Post No. 6	"PR" Tour No. 1	1	1	1	0	3
Post No. 7	"PR" Tour No. 2	0	0	0	0	0
Post No. 8	Outside Tour-Foot Patrol	1	1	1	0	3
Post No. 9	Motor Patrol	0	0	0	0	0
Post No. 10	Headquarters Desk	1	0	1	1	3
Post No. 11	Visitor Control	0	0	0	1	1
	Personnel Relief	1	1	1	0	3
	Rest Day Relief	2	2	2	0	6
	Vacation and Sick Leave	1	0	1	0	2
<b>TOTAL</b>		<b>7</b>	<b>7</b>	<b>7</b>	<b>9</b>	<b>30</b>

NOTE:

1. Main Gate closed and locked 5:00 P.M. to 7:00 A.M.
2. Main Gate open and unmanned 7:00 A.M. to 5:00 P.M.
3. Post No. 3 closed and locked 5:00 P.M. to 7:00 A.M. (Except at Service Area shift change, Trooper on Post No. 8 will open gate, check service area employees in and out, secure gate and return to Post No. 8.)

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4. Post No. 3 unlocked and manned 7:00 A.M. to 5:00 P.M.
5. Post No. 5 will be manned by regularly assigned Trooper 7:00 A.M. to 3:00 P.M.
6. Post No. 5 - Hours 3:00 P.M. to 7:00 A.M. will be manned by Troopers assigned to Vacation and Sick Leave.
7. If Troopers assigned to Vacation and Sick Leave are utilized for that purpose Post No. 5 will be secured by locking the front doors.

## E. PURCHASING AND WAREHOUSING

### 1. Organization

#### a. Purchasing Department

- (1). Business Manager (part time)
- (2). Stenographer (part time)

#### b. Warehouse and Stores

- (1). Stores Supervisor
- (2). Storeroom Clerk

### 2. Purchasing Procedure

Equipment and supplies needed to conduct operations at Scioto Laboratory are to be secured through the Purchasing Department at Mound Laboratory only after it has been determined that the desired item or a reasonable substitute is not available at either plant. Commitments in the name of Monsanto Chemical Company will be made only by authorized buyers of the Purchasing Department or the Scioto Business Manager on an official purchase order.

Requests for material, equipment, or services are to be initiated on a form designated as "Purchase Requisition." A separate requisition

for each type of material will be prepared and the forms completed with the exception of approvals and the lower section, which is reserved for the use of the Purchasing Department. All requisitions originating at Scioto Laboratory will be approved by the Business Manager and forwarded to Mound Laboratory for further approvals of the Laboratory Director, the Executive Director, and the Area Manager in accordance with the existing policy. After approvals have been obtained, the requisitions will be passed on to the Purchasing Department. If it has been determined by the Business Manager that the purchase should be made from Marion vendors for the sake of promoting good public relations, the requisition will be returned to the Business Manager for completion of the purchase. If, however, the material is to be purchased through regular channels, the Purchasing Department at Mound Laboratory will handle it in the usual manner.

For local purchases, in accordance with established practices, the Business Manager will secure competitive prices, upon receipt of which the order will be placed with the vendor, selected on the basis of lowest price, early delivery, price agreement, etc. Information pertinent to the order will be noted on the lower portion of the Purchase Requisition and Copy No. 2 will be returned to the requisitioner. The original, Copy No. 1, will remain in the purchasing files.

The purchase order consists of ten copies of which the following distribution is made:

Original mailed to vendor, receiving copy sent to the Receiving Department, follow-up copy placed in Purchasing Agent's file by purchase

order number, and one extra white copy placed in alphabetical file.

The balance (six copies) will be forwarded to the Purchasing Department at Mound Laboratory with first shipment, together with the receiving report and invoice.

The invoice, the purchase order, and the receiving report properly assembled and checked, will be passed to the Mound Laboratory Accounting Department for payment. Paid and completed records will be maintained in a separate file in the Purchasing Department at Mound Laboratory. One file copy of each requisition and purchase order will be retained at Scioto Laboratory.

### 3. Handling of Material Received

When the material is received, it will be inspected for quantity, quality, and condition. The packing slip will be checked with the purchase order to verify receipt of material as ordered. A tally-in form will be prepared by the receiving clerk. The material will be either placed in stock at the Warehouse or delivered to the requisitioner as indicated on the requisition. A copy of the tally-in form will be signed by the requisitioner at time of delivery to indicate receipt. The tally-in will then be forwarded to the Warehouse office for preparation of the receiving report. If an exception is made on the quantity, quality, or condition of the material, a material-exception report will be made in triplicate by the receiving clerk. Distribution will be made to Purchasing, Accounting, and Receiving Departments and disposition of material will be determined by correspondence between the Purchasing Department and the vendor.

The receiving report form will be typed in seven copies and distribution made as follows:

One copy to Warehouse file, two copies with packing slip to Purchasing Department (further distributed by Purchasing Department - one copy each to Accounting Department and Atomic Energy Commission accounting file), one copy to Stores Accounting, one copy to Property Department, one copy to storeroom with material, and one extra copy - no distribution.

Above distribution on Accounting, Atomic Energy Commission, Stores Accounting, and Property Departments will be accomplished by the Mound Laboratory Purchasing Department.

#### 4. Warehousing of Material

Material to be stored in the Warehouse will be delivered by the Receiving Department and receipted by signature on the tally-in form. The Warehouse clerk will then check the stock control record for location of proper bins for storage.

For issuance of material from Warehouse to the various storerooms, a Warehouse withdrawal requisition will be prepared by the storeroom clerk and forwarded to the Warehouse Office. A Warehouse requisition will be typed in duplicate, listing material to be transferred. The material and requisition will be delivered to the storeroom and a receipted copy of the requisition returned to the Warehouse Office.

#### 5. Storerooms

Storerooms are located at the following points:

- a. Laboratory equipment storeroom, "PR" Building, Room-272.

- b. Maintenance storeroom, "PR" Building, Room-365.
- c. Chemical storeroom, "PR" Building, Room-360.
- d. Maintenance storeroom, "M" Building.
- e. Automotive storeroom, "G" Building.

At present, approximately a 30-day supply of material is carried in the individual storerooms, which supply will vary from time to time depending on economic conditions and availability of material. All items issued from the storerooms are recorded on a storeroom requisition. A perpetual inventory control for all items will be maintained.

All material stored and issued will be charged to the Scioto Laboratory cost center number. When it will be desirable to break down costs further, the same system, now used at Mound Laboratory, will be instituted to record costs at the time of issuance rather than at the time of receipt.

#### 6. Inventory Policy

Purchase of items normally carried in stock and currently used during cold stand-by operation, will be based on a 90-day usage. The minimum and maximum levels of stock will be individually determined by the type of material, the critical need, and the ability to obtain replacement stocks, and will generally be guided by economic and business conditions.

It is intended, as a plan for potential full operation or hot stand-by, that duplicate bills of materials will be prepared and approved well in advance of such operation and one copy filed in the Business Manager's Office at Mound Laboratory and the duplicate filed in the Business Manager's Office at Scioto Laboratory. When either of these operations is imminent, the bills

of material will be reviewed and placed in two groups. Group 1 would contain such material as could be supplied from existing stocks at Mound Laboratory and arrangements for transfer to Scioto Laboratory would be made. Group 2 would contain material which would be purchased and the Purchasing Department would immediately place on order such material, equipment, and services.

#### 7. Care of Precious and Critical Metals

Responsibility for the inventory and safe storage of precious and critical metals will be assigned to the Stores Supervisor.

### F. TRANSPORTATION

#### 1. Organization and Duties of Personnel

The following personnel will be assigned to the Transportation Department: Business Manager (part time), one garage mechanic (full time), and one driver (full time). The duties of the personnel will be as follows:

The Business Manager will be responsible for the operation of the garage, dispatching of motor vehicles, and for preventive maintenance and service on all motor vehicles assigned to the plant. He will directly supervise the garage mechanic and the driver and will work in close conjunction with the Transportation Supervisor at Mound Laboratory on matters of regulations and policy.

The garage mechanic will be responsible for maintenance and repairs of the vehicles, for dispensing gasoline, and for ordering parts.

The driver will be responsible for transporting personnel and mail as dispatched by the Business Manager.

## 2. Assignment of Equipment

The motor vehicles required will be as follows:

- a. One power wagon assigned to the Security Patrol.
- b. One staff car assigned to the driver.
- c. One staff car assigned to the Motor Pool.
- d. One staff car assigned to the Business Manager.
- e. One 1-1/2 ton stake truck assigned to the Warehouse.
- f. One 1/2 ton pickup truck assigned to the Warehouse.
- g. One 2-1/2 ton dump truck assigned to the Maintenance Department.
- h. One 1/2 ton pickup truck assigned to the Maintenance Department.
- i. One 4 ton dump truck assigned to the Maintenance Department with snow plow attachment.
- j. Two fire trucks.
- k. One ambulance.

Other vehicles, as needed from time to time, will be temporarily transferred from the Motor Pool at Mound Laboratory.

## 3. Maintenance and Servicing Procedure

The motor vehicles will be serviced at the garage daily and lubricated at the established intervals. Minor repairs will be made at the garage as required. Major overhauls and six-month preventive maintenance inspection will be performed at the Mound Laboratory garage whenever it will be practical to transport the vehicles from Scioto Laboratory to Mound Laboratory.

4. Reports

Such records as are necessary for trip tickets, servicing of cars, and the like will be maintained at Scioto Laboratory. Information necessary for the preparation of other prescribed reports will be forwarded to the Transportation Supervisor at Mound Laboratory for completion and submission. For report purposes, the fleets at Scioto Laboratory and Mound Laboratory will be consolidated.

G. HEALTH AND MEDICAL1. Organization

The physician for Scioto Laboratory is Dr. Daniel Murphy, whose office is located at 132 E. Church Street, Marion, Ohio. Employees will generally be sent to his office, but, in case of emergency due to serious illness or injury, he will report to the Laboratory at the earliest possible moment. There is no nurse at Scioto Laboratory but several employees have been trained to apply first-aid care. A first-aid room has been set up in the "TH" Building under the direction of a Trooper Sergeant.

Since no individuals of the Health or Medical Sections are in residence at Scioto Laboratory, the Business Manager must coordinate the program. The Division Director and Section Chiefs of the Health Division of Mound Laboratory will be called upon for advice and service when necessary.

First-aid kits have been distributed to the various buildings. The necessary equipment for the First-Aid Room in the "PR" Building is stored in the Warehouse. There is an ambulance available at the site.

Instructions for the care of injuries will be posted at appropriate places near first-aid kits throughout the plant.

## 2. Functions of the Medical Section

The Medical Section is responsible for the health program of each employee, the treatment of industrial injuries, and for bacteriological monitoring of water. This latter task will be accomplished by the routine submission of samples to Mound Laboratory for analysis.

### PHYSICAL EXAMINATIONS

#### Purpose of Examination

These examinations sometimes disclose conditions entirely unsuspected by the employee and gives him a chance to correct them before his health is seriously endangered. Results of these examinations are kept confidential but will be given to the employee on request. This service is in no way intended to replace an employee's personal physician.

#### Pre-employment Examinations

Every new, permanent employee, both hourly and salaried, receives a complete physical examination by the company physician before starting employment. This examination includes, among other things, a serology, complete blood count, urinalysis, and chest X-ray.

Many physical defects are in themselves not bars to employment. The judgement as to whether an individual is qualified for a particular job is to be exercised by the examining physician after consultation with the Business Manager as to the type of employment contemplated. Hernia is one disqualifying condition, unless arrangements for the repair are completed within a time specified by the company physician.

Annual Physical Examinations

An annual physical examination comparable to the pre-employment physical examination, except for serology, will be given to all employees.

Termination Physical Examination

The judgement of the company physician will determine whether or not a termination physical examination or interview is required of the employee on the last day of employment.

Special Examination

Employees, both hourly and salaried, may be called in for a complete or partial physical examination at any time at the discretion of the Business Manager.

MEDICAL ATTENTIONOccupational Disability

The company physician is responsible for the initial treatment of all occupational injuries. According to his judgement, he may delegate such treatment or refer the patient for special consultation. All occupational injuries must be reported to the Business Manager by the employee before leaving the plant.

Interdepartment Transfers

Inter or intradepartment transfers which involve a substantial change in the type of work must be reviewed and approved by the company physician.

Nonoccupational Disability

It is not the function of the plant's Medical Section to treat nonoccupational disabilities. This should be accomplished by some private

physician, but an employee may, if he so desires, employ the company physician on a private basis.

Any cut or abrasion injury of a nonoccupational nature must be reported to the Business Manager in order that proper treatment can be given before the employee reports to his working area.

Employees who have been advised by the Business Manager that they have a condition which might be detrimental to their own health, or that of other employees, will be requested to go home by the Business Manager.

An employee absent from work because of illness will report to the Business Manager before returning to his working area. After an extended illness of more than four days, the employee should bring with him a note from his physician, stating that he is now able to return to his duties. At this time, employees having Group Insurance may secure the application forms.

Leave of Absence

Applications for leave of absence for medical reasons will be reviewed by the Business Manager.

Report of Absences

Reporting of the absences due to illness will be made directly to the employee's Supervisor. This should be done the first day of the absence and the nature of the illness should be specified. Illnesses which are of a confidential nature may be reported directly to the physician who will notify the Supervisor.

Hazardous Chemicals

It will be the responsibility of each Supervisor to report in advance to the Business Manager the plans for the use of any new unusual chemicals

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not used in daily routine work. This is necessary in order that proper preparations can be made for the prevention of any toxic effects and the emergency treatment in case of an accident.

#### Blood Donors

Before donating blood, all employees should consult the company physician.

#### Accidents

Transportation for employees sent home will be arranged by the Business Manager. During off-duty hours, if the doctor is not available, the Troopers in charge will apply first-aid treatment, and, in case of a serious accident, the patient will be taken directly to a hospital for the necessary treatment.

#### 3. Health Physics

In the event of extended operations at Scioto Laboratory, it will be necessary to utilize the personnel monitoring facilities at Mound Laboratory until the "I" Building can be constructed. Facilities for the rest of the Health Physics Program have been provided.

All instruments required for carrying out the Health Physics Program will have been purchased and properly installed, with the exception of "I" Building equipment, before December 31, 1949. All instruments that operate from a normal, electric, wall outlet will be ready for immediate use; all battery-operated instruments will require the installation of batteries. It will be necessary to obtain these batteries from Mound Laboratory or by purchase.

For stand-by operations, it will be necessary for one member of the Health Instrument Section to spend approximately one day per month checking instruments to insure that they are in operating condition. A member of the Health Survey Section will be required to inspect laboratory facilities once every three months.

## H. SAFETY AND FIRE FIGHTING

### 1. Organization and Function

Since it is the responsibility of Management that all work will be carried on in a safe manner at all times, it will be the duty of each Supervisor to see that each job is performed in a safe way; to make inspections and give suggestions or recommendations. One man will be on duty as a Safety and Fire Inspector. It will be the duty of this inspector to make inspections; to see that safety equipment is provided, used properly, and kept in good condition. The Safety Inspector will make constant inspections of all areas and will note any items relative to poor housekeeping, unsafe acts, unsafe practices, or unsafe equipment. He will report all such items found to the Business Manager, so that the items can be corrected. In addition to the inspections made by this Inspector, there will be inspections made by members of Supervision. Any items which are turned in to the Business Manager as recommendations should be answered as to whether the recommendations will be accepted or rejected. In addition, the members of the Safety Department from Mound Laboratory will make periodic inspections.

The same procedures and safe practices used throughout all the Atomic Energy Commission installations will be in vogue at Scioto Laboratory. All

members of the Scioto Laboratory organization will receive an indoctrination from a safety viewpoint.

It will be necessary that a fire drill be held at least once a month. The members of the Fire Brigade will practice putting out fires with First-Aid fire extinguishers, as well as with hose streams. Each member of the Fire Brigade will become thoroughly acquainted with all equipment and operations of the pumps on the fire trucks. The Fire Inspector, Maintenance Supervisor, and Business Manager will make themselves thoroughly familiar with the methods necessary to put the automatic CO<sub>2</sub> system back into operation, should the system be discharged for any reason, whatsoever. They will also be responsible for familiarizing themselves with the location of all sprinkler risers.

The Scioto Laboratory is comprised of buildings of varied construction. Some of the buildings are of frame construction with asbestos cement siding and roofing, while others are of metal framing with metal siding and cement roofing covered with asphalt and gravel. Still others are of wood framing, wood siding, and tar paper roofing. These buildings house a Steam Power Plant, Laundry, Garage, Maintenance Shop, Fire Department, Storage, and Warehouse facilities with wooden bins, Paint Shop, Waste Disposal, offices of various departments, Trooper Stations, and a building for operations. Since this plant is to be kept in a stand-by condition, the hazards of fire will not be as great as when the plant is in full operations. Still, the chances for accidents (fire and personal injury) are always present unless precautions and prevention are practiced rigidly and regulations are enforced.

To protect this area and to handle situations where protection of property and personnel are concerned, a man has been selected to police the area. In addition to the man mentioned above, there will be available during the second shift (8:00 A.M. to 4:30 P.M.) a group of six men who will assist the one man on duty in combating any fire which may occur during those hours. These men will be maintenance men and will be trained to carry on any fire fighting duty assigned to them by the Safety and Fire Inspector. These men will be under the supervision of the Business Manager. The Business Manager will receive from the Safety Department at Mound Laboratory all the necessary help and cooperation to make this group of men into an efficient Fire Brigade.

Should a fire start during the hours of 4:00 P.M. to 8:00 A.M., it will be necessary to enlist the aid of the Trooper Organization to determine the extent of the hazard and what steps should be taken to further control and eliminate all elements of danger to personnel and property. The Troopers will receive training from their Supervisors and the Safety Department from Mound Laboratory.

Inspections will be made by Safety and Fire Inspector in cooperation with the Troopers to eliminate any fire hazards that may exist.

Should a fire occur or grow in size to a magnitude beyond the abilities of the Fire Brigade, assistance can be obtained from the Fire Department at the Marion Engineer Depot (about six miles distant); also from the Fire Department in the city of Marion (about four miles distant). Direct alarm connections will be established to both the Marion Engineer Depot and the city of Marion.

2. Description of Safety and Fire Fighting Equipment

To fight a fire there is available for use a fire truck, 1942, 1-1/2 ton, Ford with a 275-gallon tank, and a 500-gallon-per-minute pump. This truck is equipped with 1050 feet of 2-1/2 inch rubber-lined hose, 1000 feet of 1-1/2-inch rubber-lined hose, 150 feet of 1-inch rubber hose, and all with the necessary appurtenances. To supplement this, there is a 1942, 1-1/2 ton Ford truck with a 1000-gallon tank and a 250-gallon-per-minute pump, which can be used should the fire be beyond reach of the hose from a fire hydrant.

There are fire hydrants located throughout most of the project, especially around all buildings. These hydrants are connected to a water system fed by a 16-inch asbestos-cement water main. The water supply at the present time comes from the city of Marion. Should the supply from Marion be interrupted, there is available a short distance from the project a two-million-gallon reservoir. This water can be fed into the main by means of electric or gasoline engine driven pumps; also, there is an 8-inch emergency supply well located in the Inert Storage Area which will supply 500 gallons per minute through a 250-gallon pump now installed. The water mains are in the forms of loops. In other words, the water can be fed to the project from the two-million-gallon reservoir in a loop properly valved. Inside the enclosed area there are two loops supplying the Inert Storage Area and the operating or general area. The pressure maintained on these loops is 56 pounds per square inch static pressure.

Nine of the ten buildings in the Inert Storage Area have sprinkler systems (dry-type) attached to the above mentioned loops. Each building

protected by sprinklers has a post indicator valve by means of which the systems can be turned off from outside the building. These post indicator valves will be locked open; key to be left on fire truck. The "PR" Building has ten areas protected by sprinklers (wet-type). Following is the code for sprinklers in the Inert Storage Area; "PR" Building and General Area:

<u>INERT STORAGE</u>	<u>"PR" BUILDING</u>	<u>GENERAL AREA</u>
11-Building No. 2	21-Rooms 279 and 276	41-"W" Building
12-Building Nos. 3 and 5	22-Rooms 272 and 273	42-"G" Building
13-Building Nos. 7 and 9	23-Rooms 223 and 224	43-"M" Building
14-Building Nos. 4 and 6	24-Rooms 360 and 363	44-"H" Building
15-Building Nos. 9 and 10	25-Rooms 302 and 309	45-"GS" Building

One building of the Inert Storage Area has a stand pipe or hose system within the building. The "PR" Building has eight hose stations. While the "PR" Building does not have a separate fire loop, the members of the Fire Brigade will keep constant vigilance to see that all sprinkler systems and all hose stations have water available at all times. The "PR" Building has, in addition to the automatic sprinklers and hose stations, a number of the rooms protected by automatic CO<sub>2</sub> systems. These rooms are divided into ten zones.

31-Zones Nos. 8 and 9 for Rooms 315, 316, 317, 318, 319, 320, 321, and 333.

32-Zones Nos. 1, 2, and 7 for Rooms 335, 336, 337, 338, 339, 340, 341, 342, and 325.

33-Zones Nos. 3, 4, and 5 for Rooms 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, and 353.

34-Zone No. 6 for Rooms 283, 284, 285, and 286.

35-Zone No. 10 for Room 393.

The automatic sprinklers and CO<sub>2</sub> systems are attached to the building ventilating system so that ventilation will be controlled should a carbon dioxide system be discharged. This building, being of the windowless type, presents a problem of proper ventilation in case of fire.

The sprinkler systems in the Inert Storage Area, as well as the sprinkler system and CO<sub>2</sub> systems in the "PR" Building, are attached to the American District Telegraph system. Should a sprinkler head be actuated by heat or should an actuating device in the "PR" Building be actuated by heat an alarm would be sounded. At the same time, a record would be made on a recording tape located in the Fire Department. Bells, electrically operated, are attached to the sprinkler systems and the automatic CO<sub>2</sub> systems in the "PR" Building. These bells sound whenever any of the systems are discharged.

Automatic sprinkler systems will be installed in the Warehouse, the Garage, and Maintenance, General Storage Area, and Change House buildings. These sprinklers will have a flow-alarm which will be assigned a number and attached to the American District Telegraph alarm system, similar to the Inert Storage Area and the "PR" Building.

The American District Telegraph system has attached to it the fire alarm pull boxes throughout the area: 12 boxes in the Inert Storage Area, 8 in the General Area, and 15 in the "PR" Building. The following

are the codes and locations of these alarm boxes:

INERT STORAGE AREA

111-Building No. 1 West End  
112-Building No. 1 East End  
113-Building No. 2 West End  
114-Building No. 2 East End  
115-Building No. 6 East End  
121-Building No. 10 East End  
122-Building No. 8 East End  
123-Building No. 4 West End  
124-Building No. 5 East End  
125-Building No. 9 East End  
131-Building No. 7 West End  
132-Building No. 3 East End

GENERAL AREA

211-Gate House No. 1  
212-"TH" Building  
213-"WD" Building  
214-"G" Building  
221-"W" Building  
222-"M" Building  
223-"CS" Building  
224-"PH" Building

"PR" BUILDING

- 311-Corridor No. 1 Room 213
- 312-Room 279 at Stairs No. 1
- 313-Room 279 at Door to Outside
- 314-Room 354, Corridor No. 5
- 315-Corridor No. 5, Opposite Corridor No. 9
- 321-Corridor No. 5, at Corridor No. 11
- 322-Room 392 at Entrance to Room 393
- 323-Corridor No. 3 at Corridor No. 5
- 324-Corridor No. 3 and Room 301
- 325-Corridor No. 3 at Room 287
- 411-Trooper Desk - Entrance Lobby
- 412-Room 327
- 413-Room 452 (Second Floor)
- 414-Room 457 (Second Floor)
- 415-Corridor No. 15 (Basement)

Should a fire be discovered by one of the employees, an alarm box should be pulled immediately so that help can be summoned. When an alarm box is pulled, or a sprinkler system is discharged or the heat actuating device of the automatic CO<sub>2</sub> system is actuated, the above alarms would be recorded on the recorder in the Fire Department.

At the same time, a number of horns located in various parts of the "PR" Building and a horn installed on top of the "PR" Building would be sounded with the same code as that which is being recorded on the recorder.

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These horns would serve the purpose of calling the Fire Brigade or the Troopers to the scene of the alarm. The Safety and Fire Inspectors and all members of the Fire Brigade will exercise caution at all times to protect personnel from becoming involved in fire, smoke, or fumes.

There are available and located throughout the project First-Aid fire fighting equipment consisting of: soda and acid, foam, dry chemical, CO<sub>2</sub>, carbon tetrachloride, and plain water extinguishers.

Should occasion arise when the air around a fire area should become filled with smoke or noxious fumes, there is equipment available for the fire fighting personnel to wear. This equipment consists of "all purpose" gas masks and one-hour breathing apparatus. The one-hour breathing apparatus is especially useful should the oxygen content of the air go below 16 per cent.

## I. UTILITIES

A more complete description of the utility systems at Scioto Laboratory will be found in the "Construction Completion Report" prepared by the Monsanto General Engineering Department. However, to make easy reference possible, a summary of the utilities are given below.

### 1. Electric Power

Electric power is supplied to Scioto Laboratory by the Ohio Public Service Company. All of the power and lighting installation inside the laboratory area are the property of the Atomic Energy Commission. Two 13,200-volt three-phase delta-connected overhead pole lines enter the reservation, one from the west along the Likens Road and the other from the east, and terminate at a metering station at the southeast corner of

Likens and Pole Lane Roads. From the metering station, two three-phase 13,200-volt lines installed along Likens Road supply power to the Laboratory. One of these two three-conductor lines supplies power to the "PR" Building only, through the transformer and switchgear room at the northeast corner of the building. The other line supplies power to all other buildings on the Laboratory Site through transformers located at various points throughout the area. All of these buildings are supplied with 120/208-volt, three-phase current except "W" Building which receives 220/110-volt single-phase power. A layout of the electrical distribution system described above is shown on Giffels and Vallet's Drawing No. EL-1.

The electrical switchgear in the "PR" Building consists of three 13,200-volt oil circuit breakers, one of which is installed in the incoming line with a capacity of 300 amperes. This breaker in turn feeds two adjacent breakers, one rated at 150 amperes and the other at 50 amperes. The larger of these two breakers feeds one 2000 kilovolt-amperes, 13,200/2200-volt, three-phase transformer and one 1000 kilovolt-amperes, 13,200/440-volt, three-phase transformer. The 50 ampere breaker feeds a second 1000 kilovolt-amperes, 13,200/400-volt, three-phase transformer. The 2000 kilovolt-amperes transformer feeds four cubicle-enclosed-type, oil circuit breaker, starter units which serve the synchronous motors driving the ammonia compressors of the refrigeration system. The two 100 kilovolt-amperes transformers each feed through a 1600-ampere transformer breaker and a 440-volt bus to six circuit breaker positions of various ratings from 100 to 400 amperes. The 440-volt feeders originating at these breakers supply current to various power, lighting,

and equipment transformers located in various parts of the building. For the designation and location of these transformers, refer to Giffels and Vallet's "One Line Diagram," Drawing No. EL-131.

Protective and road lighting for Scioto Laboratory is provided by pole mounted lighting fixtures which are served by two separate series circuits, so that every other light is on one circuit. Each circuit is supplied with current from one of the two constant current transformers located in the electrical switchgear room of the "PR" Building.

In order to provide the necessary maintenance on the high voltage equipment, Subcontract No. 7 between Monsanto Chemical Company and the Ohio Public Service Company provides for repairs of equipment from the incoming lines through the 13,200-volt transformers. The Power Company also undertakes to replace any utility poles on the area which require replacement. Payments for maintenance will be made on a man-hour basis and replacement of poles on a cost basis as stipulated in the Subcontract. A part of the consideration for this Subcontract is the use by the Utility Company of one circuit crossing the Laboratory Site so that they may serve certain outside customers east of the Atomic Energy Commission property. Specific payments for such use are provided for in the agreement.

## 2. Water Supply

The normal source of water for this site is the regular water supply of the City of Marion and is purchased from the Marion Water Company by Monsanto Chemical Company as an ordinary consumer. No special subcontracts have been made. The water distributed by this company is obtained from deep wells located two miles west of the city. The water is subjected to a lime

soda treatment to reduce the carbonate hardness to a maximum of eight grains per gallon. A complete analysis of the water supplied to this site appears in Volume I of the Engineering Manual for Scioto Laboratory, pp. I-3.

The system of city water distribution consists of a loop with an elevated storage tank 125 feet high with a capacity of 300,000 gallons. An 18-inch asbestos-cement pipe runs from the city loop and serves the entire original Scioto Ordnance Plant. The distribution system for the ordnance plant consisted of a 16-inch asbestos-cement pipe loop with various branches. The north side of this rectangular loop provides the main supply to Scioto Laboratory. To supply all buildings and fire hydrants there are 12 connections to the 16-inch main with a shut-off valve in each case. For the details of the water distribution system inside the area, refer to Monsanto Drawing No. CR-105.

All water to the ordnance area is metered at an emergency pumping station described below. The meters are owned and maintained by the Marion Water Company and record the flow not only to the Scioto Laboratory, but also to the adjacent State of Ohio property, the Marion Engineer Depot, and certain other rural customers. Water used by the latter installations is at present charged to them on a prorated basis.

There are two emergency sources of water supply, i.e., from a deep well in the Laboratory Area, and from a 2,000,000-gallon reservoir which is filled from the normal supply. The well is eight inches in diameter, is located 50 feet north of Building STG-2, and is served by a 250 gallons per minute pump driven by a 25 horsepower electric motor. In case of failure of all other water supplies this pump will be started and valved into the regular distribution system.

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The 2,000,000-gallon reservoir is owned at present by the Corps of Engineers, U.S. Army, and is located at the southwest corner of the 16-inch loop previously described. A pumping station located just south of the reservoir contains four electrically driven pumps with a total rated capacity of 3750 gallons per minute, and one gasoline engine driven pump with a capacity of 1750 gallons per minute. These pumps are all manually controlled and are maintained at present by personnel from the Marion Engineer Depot. The water in the reservoir is chlorinated and recirculated periodically to maintain it in a potable condition. It furnishes a 2,000,000-gallon emergency supply available in case of failure of the normal supply from the Marion Water Company.

Soft water for use as make-up boiler-feed water, as well as use in the laundries in the "H" Building and "PR" Building if they are operated, is supplied by the Worthington ion-exchange water-softening system installed in the "P" Building. Water from the plant city water supply is softened in two sodium zeolite exchangers equipped with automatic back-wash controls and valves. Each exchanger can be operated at a maximum rate of flow of 200 gallons per minute and is capable of softening 50,000 gallons of raw water having a hardness of nine grains per gallon before requiring regeneration.

### 3. Telephone System

The telephone system serving Scioto Laboratory is a Class B manual-type system with a cord-type switchboard located in the "TH" Building. This switchboard has a capacity of 13 trunks, 80 stations and 15-cord circuits. Three trunks from the Marion, Ohio office of the Ohio Associated Telephone Company serve the switchboard, and a fourth trunk is a direct line

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to Mound Laboratory at Miamisburg, Ohio. All telegraph messages will be forwarded to this laboratory by telephone.

The terminal board for the telephone system in the "PR" Building is located in Room 462 in the duct space at the head of Stair No. 10.

The initial telephone installation includes hand or desk-type instruments in the following locations:

"TH" Building	Twelve Telephones
"P" Building	One Telephone
"G" Building	One Telephone
"H" Building	Two Telephones
"M" Building	One Telephone
"W" Building	One Telephone
"WD" Building	Two Telephones
STG-9	One Telephone
Reservoir Pump House	One Telephone
Gate House No. 1	One Telephone
Gate House No. 2	One Telephone
"PR" Building	Fourteen Telephones (conduits have been installed for a total of 74 telephones to take care of future requirements.)
<hr/>	
Total	Thirty-eight Telephones

For a location of all telephone outlets in the "PR" Building refer to Giffels and Vallet's Drawing No. EL-116. For location on all telephone lines on the site, refer to Giffels and Vallet's Drawing No. EL-4.

The telephone system installations inside Scioto Laboratory are the property of the Atomic Energy Commission with the exception of the actual instruments, switchboard, battery, and generator system. Subcontract No. 5 between Monsanto Chemical Company and the Ohio Associated Telephone Company provides for maintenance of such equipment with charges based on a fixed figure per man-hour and reimbursement for certain material costs. Since most of the telephone cables are supported on poles that also carry high voltage power lines, pole replacements will be accomplished by the Ohio Public Service Company in accordance with Subcontract No. 7, described under the heading "Electric Power." The Telephone Company however, will furnish men to handle the telephone lines during any replacement of poles by the Power Company. Part of the consideration for this Subcontract No. 5 is the use by the Telephone Company of certain Government-owned facilities on a specified payment basis.

4. Sewage Disposal

All sanitary sewage from this site leaves the area through two sewage lift stations. Lift Station "B" is located 450 feet south of the "P" Building and handles all sanitary wastes from the Shop Area, "WD" Building, "PR" Building and Inert Storage Area. Lift Station "P" is located at the southeast corner of the "TH" Building and handles the sewage from this building.

Lift Station "B" consists of two circular, reinforced, concrete pits 16 feet in diameter and 20 feet deep. The north pit has a wooden cover and serves as a collecting basin, while the south pit has a concrete cover and is surmounted by a small concrete-block pump house. Pumping from

the south pit are two 500 gallons per minute vertical sewage ejectors driven by seven 1/2 horsepower electric motors. The pumps are controlled by suspended electrodes and operate alternately. If the flow of sewage exceeds the capacity of the operating pump, the other pump will be started.

Lift Station "P" is a circular concrete pit seven feet in diameter and 20 feet deep. A concrete floor ten feet below the top divides the pit into a pumping reservoir below and a mechanical and electrical equipment room above. The pumps are similar to those at Lift Station "B" but are driven by ten horsepower motors. The pumps are controlled by a float switch and are alternated in the same manner as those at Lift Station "B".

The discharge from both lift stations flows into a 12-inch cast-iron pressure main which runs to the State of Ohio property where additional sewage is introduced. A metering station at this point measures the total flow of sanitary wastes from Scioto Laboratory and the State property. Charges are apportioned on a pro rata basis. From the metering station pressure mains continue underground into the City of Marion to a stilling basin at East Center and Jefferson Streets. A gravity line continues from this point to the Marion Sewage Treatment Plant.

#### 5. Fuel

Stoker coal for use in the boilers is brought to the plant in flat-bottom gondola cars and spotted on a siding northwest of the Power

House. At the present time, a Pawling and Harnischfeger mobile truck-crane with a one-half cubic yard clamshell bucket is used to unload the coal from the cars for storage on the ground near the track and into a concrete-block silo built off the west wall of the Power House. This silo has an effective storage capacity of approximately 20 tons of coal.

The storage yard has an effective capacity of approximately 1200 tons. Additional amounts can be stored, but present handling methods would be inadequate for an additional amount. Until firm requirements are established by actual operating experience, purchases will be made on a three-month estimated-requirement basis. The estimate for operating cold stand-by is approximately 350 tons a month, yearly average, and orders are placed for 1000 to 1200 tons. When more accurate figures are available, purchases will be made on a yearly contract basis with scheduled deliveries based on seasonal usage. Purchases will be made directly from the mines and deliveries will be scheduled to keep a reasonable stock level at all times. The probability of increasing requirements is conditioned by coal stocks above ground and general economic conditions, but foresight in planning and ordering, and good relations with suppliers would preclude the possibility of a shortage of coal necessitating a shutdown of the plant.

The gaseous fuel used in the "PR" and "WD" Buildings is commercially compressed gas of the propane type. The cylinders supplying the "PR" Building are attached to manifolds in a storage room adjacent to the north side of the building. Other compressed process gases are supplied from the same area. A similar, though much smaller installation, supplies the "WD" Building.

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Propane is supplied from the general gas storage at Mound Laboratory and is delivered to Scioto Laboratory by plant trucks. The empty cylinders are returned to Mound Laboratory in exchange for full cylinders.

In the event the propane manifold is maintained at full capacity, it will require a total of 40 cylinders, 20 to be in use, and 20 in stand-by service to be switched in when the original 20 become empty.

These stocks will vary from time to time depending upon demand, and inasmuch as Dayton suppliers of propane gas indicate that Mound requirements will always be adequately taken care of, it is not felt necessary, either now or in the foreseeable future, to increase the amount carried in reserve stock.

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