PLAINTIFF'S EXHIBIT
UC-1306

MAINTENANCE FACILITIES

BROWNSVILLE PLANT

November, 1975

MAINTENANCE FACILITIES TEAM
J. David McMahon

DE 005127

MAINTENANCE FACILITIES

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J. David McMahon

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MAINTENANCE FACILITIES SURVEY RESULTS

BROWNSVILLE PLANT

The METT Facilities Project Team conducted a Maintenance Facilities Survey of the Brownsville Plant in conjunction with the MOT Maintenance Survey. It was generally found that many improvements had been made in the shops since the last survey. The Central Shops are well equipped, have improved lighting throughout, and are constructed with adequate height and material handling capability. The Field Shops for maintenance crews with plantwide responsibilities are scattered in the plant and their quality range from more than adequate for those in the Old Machine Shop to inadequate for the 930 Field Shop. The three zone shops are very beneficial to the maintenance effort due to their location, size, equipment, and ease of control. In continuing the improvement program for the maintenance shops, it is recommended that:

(1) Better utilization of the Old Machine Shop should be investigated. This is a very sturdy building with more than adequate space, height, and materials handling capabilities than the present shops require. Consideration should be given to moving the Welding/Sheet Metal Shop to this location and constructing smaller shops for the present tenants in location better suited to their needs. Another possibility would be to build a facility with 8 to 10 feet ceiling height to house many of the shops that require low ceilings (process mechanics, carpenter, insulation, glass fitters, etc.).

(2) A general improvement program for personnel facilities should be developed. In numerous shops it was found that the personnel ate at their work benches. This can become an extremely critical problem at some shops such as the Glass Fitters. The guardhouse lunch room and cafeteria are too small or too distant to handle the plant needs. More shop lunchrooms should be considered or possibly an extra shift should be considered

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for the cafeteria. Most shops lacked enough lockers for their personal effects (slicker suits, coveralls, lunches, etc.). Most restrooms were clean and well ventilated but lacked a sufficient number of toilets, urinals, and lavatories. The plant should also start making plans for the installation of female personnel facilities in the maintenance shops. Many of the Kanawha Valley and Gulf Coast plants are already seeing an influx of female maintenance employees in both central shop and field maintenance capacities.

(3) The plant should continue with its present plans for the Fire Station/Safety Equipment Shop and the Mezzanine Feasibility Study for the warehouse. The proposed Fire Station/Safety Equipment Shop would place emphasis on the plant's commitment to individual safety in the plant and would help to insure that adequate and timely safety inspections are made. The warehouse has adequate height to allow a mezzanine and the economic justification of this possibility needs to be investigated.

(4) Portable buildings should be considered to reduce the Maintenance Department's office space problems. The use of portable buildings could reduce some of the crowded office space conditions that exist in the machine shop and 930 field shop. This would also allow the centralization of the planning group and RM-1 Group.

(5) A "house cleaning" program needs to be implemented to improve the storage and safety in the shops. Although it is wise for the shops to maintain a limited amount of spare parts in the shops, this practice is being exceeded. Some shops were found to have so much being kept that the shop personnel really didn't know what they had, work space was being lost, and hazards existed from having to crawl over equipment or tools to retrieve items on shelves.

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MAINTENANCE FACILITIES

BROWNSVILLE PLANT

In November, 1975, a survey of the Brownsville Plant's maintenance facilities was made by the METT-Facilities Project Team in conjunction with the Maintenance Operations Team Maintenance Survey. The attached is a compilation of information regarding these facilities. Included are:

1. Maintenance Facilities - Brownsville Plant.....Page 1

   (A short summary of features, strong and weak points and opinions as to the adequacy of present facilities.)

2. Major Maintenance Shops - Brownsville Plant.....Page 3

   (Charts showing use, size, conditions and features of the larger maintenance buildings and shops.)

3. Maintenance Facilities Description.....Page 7

   (A report provided by maintenance personnel giving a description of maintenance shops, storage areas, office and other facilities.)

4. Maintenance Shop Details.....Page 24

   (Charts showing heating, ventilation, lighting, insulation, utilities and material handling equipment of each shop.)

5. Maintenance Survey Questionnaire-Summary.....Page 29

   (Facilities section of an eleven-part questionnaire completed by maintenance supervisors and engineers.)

6. Maintenance Facilities Location Plan--.....Page 35
   Brownsville Plant

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MAINTENANCE FACILITIES

BROWNSVILLE PLANT

It was generally found that the Maintenance Shops are progressing toward improved, more efficient, less hazardous work places. Although Shop Personnel are pleased with the changes that have been made in the last two years, there is still room for improvement. Most shops were found to be adequate in work area and equipment but were lacking in the areas of storage space and personnel facilities.

CENTRAL SHOPS

The Central Shops are well equipped but the Machine Shop equipment is in need of repair. The improvements that have been made in the Process Mechanics Shop are very beneficial for the plant and the personnel who work in the shop. The recent painting of the Central Shops has improved the lighting throughout. The shops are adequate in height and material handling capability with the possible exception of the Welding/Sheet Metal Shop. The installation of small, specialty shops (corrosion lab, T&I, blacklight room, safety) have disrupted the layout of the shops. This has resulted in crowded conditions in the specialty shops and major shops.

FIELD SHOPS

Most of the Field Shops were found to be adequate in size, equipment, height, and material handling needs except for the 930 Field Shop. Although the 930 Shop is used by approximately 45 personnel who work throughout the plant, the present facilities lack adequate office space for the foremen, utilities to meet their needs, materials handling equipment, and covered work area. The Old Machine Shop (Building 164) is an excellent building that is being under-utilized. The Insulation Shop personnel do most of their work in the Recovery/Reaction Area of the plant (90% according to the foreman) and are located in the opposite end of the plant.

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Field Shops (Cont'd)

The Glass Fitters Shop is located in the Southeast corner of the building and the fiber-glass is drifting to all of the other shops due to the prevailing wind. The black-light room in the building is actively used for 30 to 45 days every 18 months for the "thaw" and essentially idle the rest of the time. The riggers' chokers and equipment is also stored in the Old Machine Shop. One end of the Quonset Hut serves as the Plant Garage and this shop has adequate work and storage space, equipment, and wash facilities. The Sand-blast Yard is in a good location with adequate equipment and outside work area. The Paint Storage Building is well ventilated and the shop building provides very adequate restrooms, lunch room, and Shop Office.

ZONE SHOPS

The three Zone Shops (Reaction, Recovery, and Oxygen/Energy) are all well located in relation to the units that the zone personnel service. All are well equipped with tools and the satellite stores provide much needed assistance. The Recovery Zone Shop would be rated the best of the Zone Shops. The Recovery and Reaction Foremen's Offices are not located at the shops but within the unit boundary. This facilitates their control of their personnel working in the shop and the unit. Unlike the other zone shops, the Oxygen/ Energy Shop does not have a lunch room. The personnel are supposed to eat at the Guardhouse lunch room but most eat in the shop.

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MAJOR MAINTENANCE SHOPS - BROWNSVILLE PLANT

Building No.	Use	Size (Sq.Ft.)	Age In Years	Construction	General Condition	Number Of People	Remarks
163	Rigging Loft -- Construction Shop	5000	26	Floor - Cement Wall - Asbestos Ceiling - Asbestos	Good		Now used by Construction for fabrication
164	Old Machine Shop	6600	25	Floor - Cement Wall - Asbestos Ceiling - Asbestos	Good	31	
	-Zone Shop(Oxygen/Energy)	(1320)				(7)	
	-Glass/Tubing Filters Shop	(770)				(13)	
	-Riggers Loft	(1210)					
	-Insulation Shop	(660)				(11)	
	-Black Room & Field Mech.	(660)					
	-Main Aisle	(1760)					
	-Personnel Facilities	(220)					
166	Old Cafeteria-Dry Room, Critical Spare Parts Storage, O_2 Clean Room	2800	27	Floor - Concrete Wall - Brick Ceiling-Acoustical Tile	Fair	None	Remote Storage Area
166	B&R Training	5341	28	Floor - Concrete Wall - Brick Ceiling-Acoustical Tile	Good		

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MAJOR MAINTENANCE SHOPS - BROWNSVILLE PLANT (Cont'd)

Building No.	Use	Size (Sq.Ft.)	Age In Years	Construction	General Condition	Number Of People	Remarks
424	Central Shops	10,780	20	Floor - Concrete Wall - Corr.Asbestos Ceiling-Corr.Asbestos	Fair	63	
	-Machine Shop	(3080)				(14)	
	-Welding Shop	(2520)				(15)	
	-Electrical Shop	(900)				(8)	
	-Process Mechanics/ Instrument Shop	(770)				(11)	
	-Carpenter Shop	(1500)				(13)	
	-Fire Station/Safety Equipment Service Center	(969)				(2)	New shop in preliminary construction
	-Personnel Facilities	(1040)					
425	Maintenance Office	3180	27&1	Floor - Concrete Wall-Asbestos & Sheet Rock Ceiling-Celotex Tile	Excellent	25	
461	Garage	14,480		Floor - Concrete Wall - Steel Ceiling - Steel	Good	4-Shop 12-Field	Quonset Hut: size includes outside storage and work area

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MAJOR MAINTENANCE SHOPS - BROWNSVILLE PLANT (Cont'd)

Building No.	Use	Size (Sq.Ft.)	Age In Years	Construction	General Condition	Number Of People	Remarks
489	Sand Blast Yard	30,000	27	Floor - Concrete Wall - Transite Ceiling-Corr.Steel	Good	7	Size includes outside work area
--	Recovery Zone Shop (S-3 Field Shop)	2000	1	Floor - Concrete Wall-Corr.Asbestos Ceiling-Corr.Asbestos	Good	12	
--	930 Field Shop	30,940	2	Floor - Wooden Wall-Corr.Steel Ceiling-Corr.Steel	Good	30	Size includes outside work area
--	Reaction Zone Shop	1000		Floor - Cement Wall-Corr.Asbestos Ceiling-Corr.Asbestos	Fair	7	

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MAINTENANCE FACILITIES DESCRIPTION

MAINTENANCE AREA

BUILDING NO: 163 BUILDING NAME: Riggers Loft

1. CONSTRUCTION: Permanent - Cement floor; Asbestos wall and ceiling

2. AGE: 26 Years

3. GENERAL CONDITION: Good

4. EXPANDABLE: Yes

5. MAINTENANCE FUNCTION:

FUNCTION	FLOOR SPACE (Sq.Ft.)	NO. OF PERSONNEL
Boilermaker Shop (Now used by Construction)	5000	

6. PERSONNEL FACILITIES:

Lunch Room:	None
Rest Room:	1 toilet; 1 lavoratory
Lockers:	None
Female Facilities:	Not required

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MAINTENANCE AREA

BUILDING NO: 164 BUILDING NAME: Old Machine Shop

1. CONSTRUCTION: Permanent - Cement floor; Asbestos wall and ceiling

2. AGE: 25 Years

3. GENERAL CONDITION: Good

4. EXPANDABLE: Yes: East, North and South

5. MAINTENANCE FUNCTION:

FUNCTION	FLOOR SPACE (Sq.Ft.)	NO. OF PERSONNEL
Zone Shop (Oxygen/Energy)	1320	7
Glass/Tubing fitters	770	13
Riggers Loft	1210	
Insulation Shop	660	11
Black Room & Field Mechanics	660	
Main Aisle (Shared by all shops)	1760	
Personnel Facilities	220	
	6600	31

6. PERSONNEL FACILITIES:

Lunch Room: ~~None~~ yes

Rest Room: 2 toilets; 2 urinals; 2 lavoratories; 220 Sq. Ft. needs up grading

Lockers: 20 lockers: 1 assigned per man

Female Facilities: Not Required

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BUILDING NO: 164 (Cont'd) BUILDING NAME: Old Machine Shop

	ZONE SHOP-OXYGEN/ENERGY	FLOOR SPACE (Sq.Ft.)	NO. OF PERSONNEL
7a	Shop Office	220	1
	Work Area	880	6
	Inside Storage	220	
		1320	7

7b PERSONNEL:
1 - Foreman
4 - Pipe Fitters
2 - Riggers
7 - Total

7c INADEQUACIES: Storage area in need of housecleaning. Potential hazard from having to crawl over equipment on floor to reach items on storage shelves.

	GLASS/TUBING FITTERS SHOP	FLOOR SPACE (Sq.Ft.)	NO. OF PERSONNEL
8a	Shop Office	110	1
	Work Area	484	12
	Storage Inside	176	
		770	13

8b PERSONNEL:
1 - Foreman
12 - Glass Fitters
13 - Total

8c INADEQUACIES: Due to prevailing wind through shop, fiber glass from this shop drifts down to the insulators and zone shops at the other end of the building.

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BUILDING NO: 164 (Cont'd) BUILDING NAME: Old Machine Shop

9a	INSULATION SHOP	FLOOR SPACE (Sq.Ft.)	NO. OF PERSONNEL
	Office (Shared)	110	1
	Work Area	550	10
	Outside Storage	1000	
		1660	11

9b PERSONNEL:

1 - Foreman
10 - Insulators

11 - Total

9c INADEQUACIES:

Vacuum barrel for insulation bond saw should be located on outside of building in water tight enclosure. 90 percent of work in Recovery/ Reaction area but shop is located at opposite end of plant.

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MAINTENANCE AREA

BUILDING NO: 166 BUILDING NAME: B&R Training Room

1. CONSTRUCTION: Permanent - Tile floor; Brick wall; Acoustical ceiling

2. AGE: 28 Years

3. GENERAL CONDITION: Good

4. EXPANDABLE: Yes: East, South, or West side

5. MAINTENANCE FUNCTION:

FUNCTION	FLOOR SPACE (Sq.Ft.)	NO. OF PERSONNEL
Training Area	5340	N/A
Dry Room	2800	
	8140	

6. PERSONNEL FACILITIES:

Lunch Room: Personnel eat in training room

Rest Room: 2 toilets; 2 urinals; 2 lavoratories 120 Sq. Ft.

Lockers: None

Female Facilities: Required but not separate

7. PERSONNEL: N/A

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MAINTENANCE AREA

BUILDING NO: 424 BUILDING NAME: Central Shops

1. CONSTRUCTION: Permanent - Concrete floor; Corrugated asbestos wall and ceiling

2. AGE: 20 Years

3. GENERAL CONDITION: Good

4. EXPANDABLE: Yes

5. MAINTENANCE FUNCTION:

FUNCTION	FLOOR SPACE (Sq.Ft.)	NO. OF PERSONNEL
Machine Shop	3080	14
Welding Shop	2520	15
Electric Shop	900	8
Process Mechanics Shops	770	11
Carpenter Shop	1500	13
Safety Equipment Service Center	970	2
Personnel Facilities	1040	
	10,780	63

6. PERSONNEL FACILITIES:

Lunch Room: None - Personnel eat at cafeteria or work benches

Rest Room:

Machine Shop: 5 toilets; 2 urinals; 2 lavoratories; 600 Sq. Ft.

Electrical/Instrument Shop: 1 toilet; 3 urinals; 1 lavoratory; 200 Sq. Ft.

Welding Shop: 3 toilets; 1 urinal; 1 lavoratory; 240 Sq. Ft.

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BUILDING NO: 424 (Cont'd) BUILDING NAME: Central Shops

6. PERSONNEL FACILITIES: (Cont'd)

Lockers: None

Female Facilities: Not required

7a	MACHINE SHOP	FLOOR SPACE (Sq.Ft.)	NO. OF PERSONNEL
	Office	80	2
	Work Area	3000	12
		3080	14

7b PERSONNEL:

1 - Foreman
1 - Working Foreman
6 - Inside Machinists
6 - Field Machinists

14 - Total

7c INADEQUACIES:

Heat circulation poor
Work benches with storage space poor
Lockers for machinists' slicker suits lacking
Noise and smoke problems from Welding Shop
Shop office too small for 2 foremen
Floor space lost due to specialty shops - metalurgical lab, valve shop, etc.

8a	WELDING SHOP	FLOOR SPACE (Sq.Ft.)	NO. OF PERSONNEL
	Shop Office	120	1
	Work Area	2400	14
		2520	15

8b PERSONNEL:

1 - Foreman
14 - Welders and Fabricators

15 - Total

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BUILDING NO: 424 (Cont'd) BUILDING NAME: Central Shops

8c INADEQUACIES:
People eat on fabrication tables or floor
Need lockers for personnel
Need improved ventilation to remove smoke — installed
Need another overhead crane

8d DEFICIENCY: Need sheet metal roll, shear and saw

9a	ELECTRICAL SHOP	FLOOR SPACE (Sq.Ft.)	NO. OF PERSONNEL
	Shop Office	140	1
	Work Area (14' height)	660	7
	Storage Inside	100	
		900	8

9b PERSONNEL:
1 - Foreman
7 - Electricians
8 - Total

9c INADEQUACIES:
Housekeeping a problem due to limited size
Work bench areas lacking
Motors larger than 50HP are worked on in Machine Shop where they have the needed lift capacity
Wooden step ladders stored outside in the open where they get wet--electricians working on hot lines might get shocked
Pipe cutter and threading machine in poor locations due to limited space

10a	PROCESS MECHANICS SHOP	FLOOR SPACE (Sq.Ft.)	NO. OF PERSONNEL
	Office	150	1
	Instrument Shop	450	9
	Electronics Shop	170	1
		770	11

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BUILDING NO: 424 (Cont'd) BUILDING NAME: Central Shops

10b PERSONNEL:
1 - Foreman
10 - Instrument Mechanics
11 - Total

11a	CARPENTER SHOP	FLOOR SPACE (Sq.Ft.)	NO. OF PERSONNEL
	Office	100	1
	Work Area	1400	12
		1500	13

11b PERSONNEL:
1 - Foreman
3 - Carpenters
1 - Painter
1 - Sheet Metal Worker
7 - Helpers
13 - Total

11c INADEQUACIES:
Radial and band saws are too close to each other
No phone for the foreman--he must use weld shop office

12a	SAFETY EQUIPMENT SERVICE CENTER	FLOOR SPACE (Sq.Ft.)	NO. OF PERSONNEL
	Work Area	252	2
	Fire Station	525	
	Foam Trailer Storage	192	
		969	2

12b PERSONNEL:
2 - Fire Station Attendants

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MAINTENANCE AREA

BUILDING NO: 424 (Cont'd) BUILDING NAME: Central Shops

12c INADEQUACIES:

Ventilation and insulation poor
Rest rooms and water fountain 150 feet away--
200 feet allowable maximum
Need plant air
Facilities for cleaning safety equipment is
lacking
Storage space cramped

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MAINTENANCE AREA

BUILDING NO: 425 BUILDING NAME: Maintenance Office

1. CONSTRUCTION: Permanent - Concrete; Tile floor; Asbestos & Sheet-rock

2. AGE: 27 Years; Addition is one year old

3. GENERAL CONDITION: Excellent

4. EXPANDABLE: Yes: on South side

5. MAINTENANCE FUNCTION:

FUNCTION	FLOOR SPACE (Sq.Ft.)	NO. OF PERSONNEL
Technical Staff Offices	3180	25

6. PERSONNEL FACILITIES:

Lunch Room:	None - Personnel eat in cafeteria or lunch room
Rest Room:	2 toilets; 2 urinals; 2 lavoratories; 100 Sq. Ft.
Lockers:	None
Female Facilities:	2 toilets; 2 lavoratories; 100 Sq. Ft.

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MAINTENANCE AREA

BUILDING NO: 461 BUILDING NAME: Garage

1. CONSTRUCTION: Permanent - Concrete floor; Steel wall and ceiling (Quonset Hut)

2. AGE:

3. GENERAL CONDITION: Good

4. EXPANDABLE: No

5. MAINTENANCE FUNCTION:

FUNCTION	FLOOR SPACE (Sq.Ft.)	NO. OF PERSONNEL
Shop Office	36	1
Work Area (25' height)	2124	3
Inside Storage	300	
Outside Storage	12,000	
Personnel Facilities	30	
	14,480	4

6. PERSONNEL FACILITIES:

Lunch Room: None

Rest Room: 1 toilet; 1 lavoratory; 30 Sq. Ft.

Lockers: None

Female Facilities: Not required

7. PERSONNEL:

1 - Foreman	3 - Drivers
2 - Mechanics	1 - Utility (Dumpster)
1 - Helper	8 - Rigger/Cr. Operators
4 - Shop Personnel	12 - Field Personnel

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MAINTENANCE AREA

BUILDING NO: 461 (Cont'd) BUILDING NAME: Garage

8. INADEQUACIES: Rigging equipment is stored in Old Machine Shop instead of quonset hut.

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MAINTENANCE AREA

BUILDING NO: 489 BUILDING NAME: Sandblast Yard

1. CONSTRUCTION: Permanent - Concrete floor; Transite wall; Corrugated steel ceiling

2. AGE: 27 Years

3. GENERAL CONDITION: Good

4. EXPANDABLE: Yes

5. MAINTENANCE FUNCTION:

FUNCTION	FLOOR SPACE (Sq.Ft.)	NO. OF PERSONNEL
Office	168	1
Work Area (Covered) (10' height)	1200	
Work Area (Outside) Storage	28,120	
Personnel Facilities	512	6
	30,000	7

6. PERSONNEL FACILITIES:

Lunch Room:	Seating for 14 people; 280 Sq. Ft.
Rest Room:	2 toilets; 2 urinals; 2 lavoratories; 32 Sq. Ft.
Lockers:	8 available; 1 assigned per person 32 Sq. Ft.
Female Facilities:	Not required

7. PERSONNEL:

1 - Foreman
6 - Painters
7 - Total

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MAINTENANCE AREA

BUILDING NO:

BUILDING NAME: Recovery Zone Shop (S-3 Field Shop)

1. CONSTRUCTION: Permanent - Concrete floor; Corrugated asbestos wall and ceiling

2. AGE: 1 Year

3. GENERAL CONDITION: Good

4. EXPANDABLE: Yes; to the South or West ?

5. MAINTENANCE FUNCTION:

FUNCTION	FLOOR SPACE (Sq.Ft.)	NO. OF PERSONNEL
Office (Portable Building)	200	4
Work Area	1500	8
Personnel Facilities	300	
	2000	12

6. PERSONNEL FACILITIES:

Lunch Room: Seating capacity for 10 people; 300 Sq. Ft.

Rest Room: Personnel use area rest room in unit

Lockers: Assigned per man

Female Facilities: Not required

7. PERSONNEL:

1 - Foreman
1 - Working Foreman
2 - Planners
8 - Craftsmen

12 - Total

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MAINTENANCE AREA

BUILDING NO:

BUILDING NAME: 930 Field Shop

1. CONSTRUCTION: Permanent - Wooden floor; Corrugated steel wall and ceiling

2. AGE: 2 Years

3. GENERAL CONDITION: Good

4. EXPANDABLE:

5. MAINTENANCE FUNCTION:

FUNCTION	FLOOR SPACE (Sq.Ft.)	NO. OF PERSONNEL
Offices	340	6
Work Area (Covered)	600	24
Work Area (Outside)	30,000	
	30,940	30

6. PERSONNEL FACILITIES:

Lunch Room: None - Personnel eat in main cafeteria

Rest Room: None - Personnel use central shop rest room across the street

Lockers: 25 available

Female Facilities: Not required

7. PERSONNEL:

4 - Foremen
1 - Scheduler
1 - Mat'l Expediter
24 - Craftsmen

30 - Total

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MAINTENANCE AREA

BUILDING NO: BUILDING NAME: Reaction Zone Shop

1. CONSTRUCTION: Permanent - Cement floor; Corrugated asbestos walls and ceiling

2. AGE:

3. GENERAL CONDITION: Fair

4. EXPANDABLE: Yes; all except North

5. MAINTENANCE FUNCTION:

FUNCTION	FLOOR SPACE (Sq.Ft.)	NO. OF PERSONNEL
Work Area	700	6
Personnel Facilities	300	
	1000	6

6. PERSONNEL FACILITIES:

Lunch Room:	Seating capacity for 8 people; 300 Sq. Ft.
Rest Room:	Portable unit; also Reaction II Control building
Lockers:	10 lockers
Female Facilities:	Not required

7. PERSONNEL:

1 - Foreman (office in unit)
3 - Pipefitters
3 - Riggers

7 - Total

8. INADEQUACIES: No heat in shop - open sides

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MAINTENANCE SHOP DETAILS

BROWNSVILLE PLANT

BLDG. NO.	SHOPS	HEATING	VENTILATION -Shop-	VENTILATION -Spec. Exhaust	LIGHTING (Foot Candles)	INSULATION	UTILITIES	Mat'l Hand'l EQUIPMENT	REMARKS
163	Rigging Loft-Construction Shop	Steam	2 Vents	None	Incandescent OFF-75 Ft.Can. SHOP-55 Ft.Can.	None	Plant Air(90#) 230, 460 VAC	None	
164	Old Machine Shop (Glass Fitters) (Oxygen/Energy Zone Shop)	Steam & Electric Unit	4 Vents		Incandescent OFF-55 Ft.Can. SHOP-45 Ft.Can.	None	Plant Air(90#) Steam(30#) Drinking Water Acetylene Oxygen 115, 230 VAC	Bridge Crane-15-Ton	
164	Old Machine Shop (Insulation Shop)	Steam	Roof Vents	Fan	Incandescent OFF-55 Ft.Can. SHOP-45 Ft.Can.	None	Plant Air(85#) Steam (40#) Drinking Water Fire Water 115, 230 VAC	Bridge Crane-15-Ton	
166	B&R Training Room	Electric-Central & 2 Unit	A/C and Draft Fan	A/C and Draft Fan	Fluorescent	Thick Walls	Drinking Water		
166	Old Cafeteria-Dry Room	Electric-Unit	A/C		Fluorescent Incandescent	Thermal	115 VAC		
424	Central Service Center	Steam-Unit	A/C	None	Fluorescent 45 Ft.Candles	None	Plant Air(90#) 115 VAC		

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MAINTENANCE SHOP DETAILS (Cont'd)

BROWNSVILLE PLANT

BLDG. NO.	SHOPS (Cont'd)	HEATING	VENTILATION -Shop-	VENTILATION -Spec. Exhaust	LIGHTING (Foot Candles)	INSULATION	UTILITIES	Mat'l Hand'l EQUIPMENT	REMARKS
424	Electric Shop	Steam	Window Fan	None	Fluorescent OFF-50 Ft.Can. SHOP-70 Ft.Can.	None	Plant Air(80#) Drinking Water 115,230,460 VAC	Monorail-1½-Ton Chair hoist	
424	Machine Shop	Steam & Electric Unit	Fans	None	Mercury Vapor OFF-25 Ft.Can. SHOP-50 Ft.Can.	None	Plant Air(74#) Instrument Air Steam (20#) Drinking Water Cooling Water Fire Water Acetylene Oxygen Other Fuel Gas Storm Sewer 115,230,460 VAC	1-Bridge Crane-5-Ton	
424	Process Mech./ Instrument Shop	Electric-Unit	A/C	A/C	Fluorescent OFF-75 Ft.Can. SHOP-75 Ft.Can.	Thermal & Sound	Plant Air(80#) Instrument Air Drinking Water Fire Water Vacuum 115, 230 VAC		
424	Welding Shop	Gas	None	Fans to be Installed	Fluorescent OFF-75 Ft.Can. SHOP-55 Ft.Can.	None	Plant Air(70#) Drinking Water Fire Water Acetylene Oxygen Other Fuel Gas Storm Sewer Sanitary Sewer 115,230,460 VAC	1-Overhead Crane-2-Ton	

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MAINTENANCE SHOP DETAILS (Cont'd)

BROWNSVILLE PLANT

BLDG. NO.	SHOPS (Cont'd)	HEATING	VENTILATION -Shop-	VENTILATION -Spec. Exhaust	LIGHTING (Foot Candles)	INSULATION	UTILITIES	Mat'l Hand'l EQUIPMENT	REMARKS
425	Maintenance Office								
461	Garage	None	Fans		Mercury Vapor 35 Ft.Candles	Thermal	Plant Air Drinking Water Cooling Water Fire Water Acetylene Oxygen Storm Sewer Sanitary Sewer 115, 230 VAC	1-Fork Trk. 1-Winch Trk. 14-Pickups	
489	Sand Blast Yard	Electric-Unit	A/C	None	Fluorescent	Thermal	Plant Air Breathing Air Drinking Water Fire Water Storm Sewer Sanitary Sewer 115,230,460 VAC	None	
--	Reaction Zone Shop	None-Open-sided	Open-sided		Incandescent Mercury Vapor 65 Ft.Candles	None	Plant Air(80#) Steam (40#) Drinking Water Cooling Water Acetylene Oxygen CO_2 Process Sewer 115 VAC	Monorail	

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MAINTENANCE SHOP DETAILS (Cont'd)

BROWNSVILLE PLANT

BLDG. NO.	SHOPS (Cont'd)	HEATING	VENTILATION -Shop-	VENTILATION -Spec. Exhaust	LIGHTING (Foot Candles)	INSULATION	UTILITIES	Mat'l Hand'l EQUIPMENT	REMARKS
--	S-3 Field Shop	Electric-Unit	None		Mercury Vapor	None	Plant Air Steam Drinking Water Acetylene Oxygen Nitrogen 115, 400 VAC	1-Monorail(1 Ton) 1-Monorail(3 Ton) 1-Monorail(4 Ton)	
--	930 Field Shop	Steam	A/C	None	Fluorescent	Thermal	Plant Air Drinking Water Fire Water Acetylene Oxygen Storm Sewer 115,230,460 VAC	None	

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MAINTENANCE SURVEY QUESTIONNAIRE SUMMARY

11. Maintenance Facilities

a) Do the maintenance people in your area have adequate personnel facilities in?

- Offices?

PERSONNEL	YES		NO		DID NOT ANSWER	
	NO.	%	NO.	%	NO.	%
UCC	8	57.2	5	35.7	1	7.1
Brown & Root	5	55.6	4	44.4	0	0.0
TOTAL RESPONSE	13	56.5	9	39.1	1	4.4

- Lunch Rooms?

PERSONNEL	YES		NO		DID NOT ANSWER	
	NO.	%	NO.	%	NO.	%
UCC	9	64.3	4	28.5	1	7.2
Brown & Root	5	55.6	3	33.3	1	11.1
TOTAL RESPONSE	14	60.9	7	30.4	7	8.7

- Locker Rooms?

PERSONNEL	YES		NO		DID NOT ANSWER	
	NO.	%	NO.	%	NO.	%
UCC	6	42.8	6	42.8	2	14.4
Brown & Root	4	44.4	5	55.6	0	0.0
TOTAL RESPONSE	10	43.5	11	47.8	2	8.7

b) In your area are the following aspects of the facilities located, designed, and/or equipped to handle work efficiently?

- Heating?

PERSONNEL	YES		NO		DID NOT ANSWER	
	NO.	%	NO.	%	NO	%
UCC	11	78.5	2	14.3	1	7.2
Brown & Root	7	77.8	2	22.2	0	0.0
TOTAL RESPONSE	18	78.3	4	17.4	1	4.3

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- Ventilation?

PERSONNEL	YES		NO		DID NOT ANSWER	
	NO.	%	NO.	%	NO.	%
UCC	12	85.7	2	14.3	0	0.0
Brown & Root	7	77.8	2	22.2	0	0.0
TOTAL RESPONSE	19	82.6	4	17.4	0	0.0

- Lighting?

PERSONNEL	YES		NO		DID NOT ANSWER	
	NO.	%	NO.	%	NO.	%
UCC	13	92.8	0	0.0	1	7.2
Brown & Root	7	77.8	2	22.2	0	0.0
TOTAL RESPONSE	20	87.0	2	8.7	1	4.3

- Insulation?

PERSONNEL	YES		NO		DID NOT ANSWER	
	NO.	%	NO.	%	NO.	%
UCC	9	68.3	3	21.4	2	14.3
Brown & Root	5	55.6	3	33.3	1	11.1
TOTAL RESPONSE	14	60.9	6	26.1	3	13.0

- Material Handling Equipment?

PERSONNEL	YES		NO		DID NOT ANSWER	
	NO.	%	NO.	%	NO.	%
UCC	8	57.2	4	28.5	2	14.3
Brown & Root	6	66.7	3	33.3	0	0.0
TOTAL RESPONSE	14	60.9	7	30.4	2	8.7

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- Utilities ?

PERSONNEL	YES		NO		DID NOT ANSWER	
	NO.	%	NO.	%	NO.	%
UCC	10	71.4	0	0.0	4	28.6
Brown & Root	5	55.6	3	33.3	1	11.1
TOTAL RESPONSE	15	65.3	3	13.0	5	21.7

- Shop Equipment?

PERSONNEL	YES		NO		DID NOT ANSWER	
	NO.	%	NO.	%	NO.	%
UCC	8	57.2	4	28.5	2	14.3
Brown & Root	5	55.6	3	33.3	1	11.1
TOTAL RESPONSE	13	56.5	7	30.4	3	13.1

- Storage Area?

PERSONNEL	YES		NO		DID NOT ANSWER	
	NO.	%	NO.	%	NO.	%
UCC	6	42.8	6	42.8	2	14.3
Brown & Root	3	33.3	5	55.6	1	11.1
TOTAL RESPONSE	9	39.1	11	47.8	3	13.1

- Transportation Support?

PERSONNEL	YES		NO.		DID NOT ANSWER	
	NO.	%	NO.	%	NO.	%
UCC	7	50.0	6	42.8	1	7.2
Brown & Root	4	44.4	4	44.4	1	11.1
TOTAL RESPONSE	11	47.8	10	43.5	2	8.7

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¤ Layout?

PERSONNEL	YES		NO		DID NOT ANSWER	
	NO.	%	NO.	%	NO.	%
UCC	10	71.4	3	21.4	1	7.2
Brown & Root	7	77.8	2	22.2	0	0.0
TOTAL RESPONSE	17	74.0	5	21.7	1	4.3

c) Do you consider the central shops to be located, designed, and equipped to handle work efficiently?

PERSONNEL	YES		NO		DID NOT ANSWER	
	NO	%	NO.	%	NO.	%
UCC	7	50.0	6	42.7	1	14.3
Brown & Root	7	77.8	2	22.2	0	0.0
TOTAL RESPONSE	14	60.9	8	34.8	1	4.3

d) Are sufficient mobile and portable materials handling and hoisting equipment available to operate effectively?

PERSONNEL	YES		NO.		DID NOT ANSWER	
	NO.	%	NO.	%	NO.	%
UCC	10	71.4	2	14.3	2	14.3
Brown & Root	7	77.8	2	22.2	0	0.0
TOTAL RESPONSE	17	74.0	4	17.4	2	8.6

e) On what basis are tools and equipment replaced, modernized or increased in number?

1. UCC
   a. "Need." (Two responses.)
   b. "Demonstrated need or justification."
   c. "When they break or zone foreman requests repair."
   d. "By attention."
   e. "Yearly."
   f. "When a tool is broken, someone complains about not having a tool."
   g. "At request of Maintenance Supervision."

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e) Continued

2. Brown & Root

a. "Through Area Engineer."
b. "As needed." (Two responses)
c. "When it wears out."
d. "Age, excessive repairs."

f) Have the production units with which you are involved been equipped with sufficient permanent maintenance facilities, and equipment to optimize maintenance effectiveness?

PERSONNEL	YES		NO		DID NOT ANSWER	
	NO.	%	NO.	%	NO.	%
UCC	7	50.0	6	42.8	1	7.2
Brown & Root	7	77.8	1	11.1	1	11.1
TOTAL RESPONSE	14	60.9	7	30.4	2	8.7

g) If a worker in your area had to drill a 1/4 inch hole in a piece of metal he could carry, how far would he have to walk?

PERSONNEL	NUMBER OF RESPONSES	ESTIMATES (YARDS)		
		HIGH	LOW	AVERAGE
UCC	10 of 14	400	5	110
Brown & Root	6 of 9	200	2	85
TOTAL RESPONSE	16 of 23	400	2	100

h) Remarks

1. UCC

a. "Improvement needed."
b. "Basically, maintenance facilities are good, but I feel the shops (central) could be better equipped. We need a heavy duty roll for rolling 1/2 inch thick metal plate, a larger lathe, a good flaring machine, a more effective safety room, a more effective toolroom."
c. "Need expanded facilities - particularly a safety service center for cleaning, repair, storage, and issuing of Maintenance Department personnel safety equipment."

Included in new "fire truck garage"

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