

DATE November 13, 1975

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Att: R. M. Huff

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INDUSTRIAL HYGIENE SURVEY
EH #92-75
Mobil Chemical Company
Petrochemical Division
Ethylene-Aromatics Plant
Beaumont, Texas
13 to 29 October 1975

Attached please find the report of the Industrial Hygiene Survey of the Beaumont Ethylene-Aromatics Plant performed by Russel L. Witzke, Industrial Hygienist, during the period of October 13-29, 1975.

Specific recommendations are contained in the report covering noise control and audiometric testing of noise-exposed employees, improvements in house-keeping, environmental sanitation and safe work practices or procedures, e.g., corrosive materials, asbestos, and protection against ultraviolet radiation from the welding operations.

After you have had an opportunity to review this report, please feel free to contact Mr. Witzke at the Beaumont Refinery (Ext. 712) for any additional information or assistance you may require to implement these recommendations.

Lester Levin
Lester Levin
Chief Industrial Hygienist

LL:bh

Attachment

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I. INTRODUCTION

An industrial hygiene survey was performed by Russel L. Witzke, Industrial Hygienist, between the 13th and 29th of October 1975 at the Mobil Chemical Company, Ethylene-Aromatic Plant, Beaumont, Texas. The primary purpose of this survey was to evaluate employee exposure to noise, benzene, toluene, environmental sanitation, and housekeeping conditions.

II. SUMMARY

1. Noise

A. Findings

1. Based on personal noise monitoring, employees assigned to the Ethylene Unit were found exposed in excess of their permissible limits (OSHA Regulation 1910.95d).

2. Noise levels are 90 dBA and above in all process areas of the Ethylene Unit, which is an increase above the December 3, 1973 noise level survey made before the plant was expanded.

3. Noise levels inside some operator's sheds and the compressor control room, although below the OSHA limits, are judged high for an efficient and comfortable work environment.

B. Recommendations

1. Signs should be posted at all entrance ways, or no further than 75 feet apart, encircling noisy areas stating, "Caution - Hearing Protection Required in This Area".

2. Noise levels inside certain area operator sheds and the compressor control room should be reduced to below 80 dBA, which is considered safe from an exposure duration standpoint.

3. Personnel working inside posted areas must be required by their supervisors to wear hearing protection throughout their work duration and enforcement is emphasized.

4. Employees should have annual audiometric examinations scheduled by Employee Relations/Medical as required by Mobil Hearing Conservation Policy and OSHA Regulations.

5. Specific noise reductions through acoustical engineering treatment of equipment is found in Section III 2.B.

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2. Aromatic Vapors

A. Findings

The benzene unit operator, railcar, and barge loading personnel are exposed to concentrations well below the action level, which is one-half of the respective TLV limit for benzene and toluene.

B. Recommendations

1. Our industrial hygiene survey of August 1974 (WR-59-74), recommended improved drainage and collection in the benzene truck loading area. This should also be provided at the rerun tower bottom truck loading station. Spilled materials should be cleaned up immediately after they occur.

2. An NIOSH approved organic vapor respirator should be kept in a sealed cabinet at all loading facilities. When the seal is broken, a replacement should be made and the old unit discarded.

3. Environmental Sanitation

A. Findings

All toilet and shower facilities were found in generally good repair and kept in a clean sanitary condition. There is a lack of toilet and handwashing facilities in the maintenance and lunch room area (OSHA Regulation 1910.141 C and D).

B. Recommendations

A toilet room with two water closets and four handwashing lavatories with hot and cold water would be adequate in the maintenance area, if used by both Mobil and Rosendahl employees.

4. Housekeeping

A. Findings

General housekeeping within the unit battery limits was found good. The instrument and fabrication shops are kept in a disorganized and filthy condition.

B. Recommendations

Attention should be given to reorganizing stocked materials and cleaning neglected areas. The maintenance area, instrument shop, and warehouse also require specific attention.

5. Hazardous Process Chemicals

A. Findings

Information on the safe handling of locally purchased yard chemicals is not

available. Some of the employee work stations were not constructed with stairs making it difficult to handle potentially hazardous chemicals. Drum storage areas and some chemical mixing tanks were not properly identified.

3. Recommendations

1. Material Safety Data sheets must be obtained on all hazardous materials from the suppliers, preferably by the Purchasing Department or Safety Advisors.
2. Wooden decking at mixing tanks should be replaced with metal decking and stairs.
3. Mixing and injection tanks should be identified for hazardous material contents, ie., "Caution - Corrosive Material", etc.

6. Asbestos

A. Findings

No asbestos-bearing insulation is being used. Even though new insulation is asbestos free, removal of old materials requires written handling procedures and use of respirators as indicated in Mobil Policy, Guide 03-1308.

B. Recommendations

A written asbestos removal procedure must be provided and employees trained in its provisions. An example of minimum requirements is shown in Appendix I.

7. Ultra-Violet Radiation

A. Findings

Workers have adequate eye protection, but workers in adjacent areas are not protected from ultra-violet radiation produced by welding in the fabrication shops of Mobil or Rosendahl.

B. Recommendations

Portable curtains would reduce adjacent area worker exposure from ultra-violet radiation produced during welding operations.

III. INDUSTRIAL HYGIENE SURVEY

1. Noise Exposure

Noise Dosimeters - Daily sound exposure was calculated and registered by a calibrated General Radio Personnel Noise Dosimeter, Type 1944. A registering monitor is fastened to the shirt pocket and a microphone is clipped to the worker's ear or the closest approximation to his ear. The dBA weighted network sound levels are read on a General Radio 1944 Readout Unit; as the percentage of the allowable OSHA exposure.

The monitor has a low cut off point of 89.5 dBA which prevents error due to sound levels below 90 dBA. Sound levels exceeding the maximum 115 dBA permissible noise exposure level limit are also registered. All readings in Table I are corrected for an 8-hour work shift.

B. Results and Discussion

Employees working in the Ethylene Unit were exposed to between 50 and greater than 1,000% of their permissible time weighted exposure limits. Consequently, none of the Ethylene Unit operators are exempt from audiometric testing, based on normal day-shift sampling. Operators working in areas #1, #3, #4, & #6 were subjected to noise levels where over exposures occurred as presented by data summarized in Table I.

About 60% of the workers sampled used hearing protection, this represents a marked improvement, but still relatively no discipline by enforcement has taken place.

Maintenance and instrument personnel are exposed to different noise levels because of their job assignments, which change frequently. Significantly, personal evaluations of noise exposure cannot effectively be made by the worker. This is evident from the data gathered. Maintenance personnel working inside the Ethylene and Benzene Units must be encouraged to use hearing protection.

2. Ambient Noise Levels

A. Method

Noise Level - Measurements in decibels (dB) were obtained by using a calibrated General Radio Sound Level Meter, Type 1565-B using the A and C weighting network with the slow meter response. The A network simulates the speech frequencies and is the scale on which the OSHA standard is based. The C network gives a more equal weighing to all frequencies, thus giving a flatter response to the overall noise frequencies.

B. Results and Discussion

Noise levels in the Ethylene Unit have increased after the plant expansion from an average of 94 dBA to 97 dBA. Figures 1 to 5 show noise levels by location on a unit plot plan.

Our industrial hygiene report of December 1973 recommended certain engineering controls which, unfortunately have not been implemented. We reiterate the following acoustical treatment measures.

Area #1 and #6

An acoustical engineering consultant of the burner manufacturer should be contacted to design an effective noise reduction program. Mufflers can be installed on electric motor air intake cooling fans to reduce high noise levels by unit pumps. Vented steam should be muffled especially where deaerator drum discharge lines are near furnace decking or ground levels.

Area #2

An acoustical plenum chamber should be installed under the base of the Rerun Tower Reboiler to reduce burner air intake noise. Air intake mufflers should be installed on electric motors for pumps G-419 and G-2427-A and alike pump motors.

Area #3

Gear box and compressor heads should be enclosed on compressors G-251, G-351/751, and G-651. The windows should be removed from the compressor deck control room because they offer no protection from an explosion and leak noise into the control room. Noise levels are just under 90 dBA, much too high for a control room area.

Area #4

Suction piping from compressor G-651, located in the understructure, should be enclosed with an acoustical barrier. The noise levels produced here carry into the adjacent areas. Air intake mufflers should be installed on pump motors located by the Low Pressure Condensate Tank. Other pumps to be considered are G-302, G-2303-A, and alike. Acoustical lagging is suggested for noisy turbines like T-116 and T-117. Noise levels need to be reduced in the operator's shed to below 80 dBA.

Area #5 and #7

No acoustical treatment of equipment is suggested until Areas #3 and #4 noise levels are reduced.

Area #8

The cold train expander valve should be enclosed with an acoustical material.

Hot Train

Furnace burner noise could be reduced with the instillation of quiet-type air intake mufflers and orifices. An acoustical plenum chamber is suggested for the air intakes on heaters B-2102-A and B. The valves for venting to the atmosphere should be enclosed because they are leaking noise.

Suction piping to compressors #1, #2, #3, & #4 and the piping on the west end of exchanger 2106-A need acoustical lagging.

Benzene Unit

Air intake mufflers should be installed on noisy pump motors like M-216 along the main row.

Boiler House

The deaerator drum air discharge pipe should have a muffler installed to reduce the continuous 118 noise level. An acoustical block barrier should be installed around the blower intake for the boilers.

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3. Aromatic Vapor Sampling

A. Method

Breathing zone and work room area air samples were collected by drawing air through a charcoal tube with a calibrated Sipin sampling pump about 50 cubic centimeters per minute. Breathing zone samples were collected by placing the pump on the worker's belt and clipping the charcoal tube to his chest. The collected samples were sent to our Paulsboro R & D Laboratory where benzene, toluene, butylene, propylene, and total aromatics were extracted with carbon disulfide and analyzed by gas chromatography and reported in milligrams total weight.

B. Results and Discussion

The results of the air samples are summarized in Table II. This data indicates that the employees are well within the TLV for each individual aromatic vapor sampled during the survey. However, if the effects of the aromatic vapor mixture is considered as additive, then each employee exposure is evaluated by the following formula: $C/T + C_1/T_1 + C_2/T_3 \dots$ equaling a mixture unity limit value of (1).

C = Concentration of contaminant sampled.

T = TLV of contaminant, ppm or mg/M³.

The samples taken in the breathing zone of men filling rail tank cars, trucks or barges, and unit operators were well within the limits for an aromatic vapor mixture. The only sample which can be regarded significant, was the general area down wind from the product shut-off valves on the wharf, which was 0.76 of the mixture unity limit value of (1).

Organic vapor NIOSH approved cartridge respirators have been issued to loading rack operators. They were located in employee lockers and were of no benefit to a worker when a spill occurs. It would be better to install a window cabinet with loading facilities that could be sealed. When the seal is broken, the respirator must be cleaned and have new cartridges and the old ones discarded.

A permanent drainage system needs to be installed at the rerun tower bottom truck loading facility. Spilled materials have soiled the surrounding area from the excess material leaked from the loading hose.

4. Environmental Sanitation

Toilet and handwashing facilities were inspected for their repair and sanitation, and were found to be in good condition. The kitchen facilities and change rooms were adequately lighted, kept clean, and free of toxic chemical storage.

The maintenance area is over 200 feet from a permanent toilet facility. The employee lunch room is also located in this area which has an insufficient amount of handwashing space. Rosendahl employees are provided with only cold water for washing. There are two portable non-water toilets in the area, for 80 maintenance employees, with about 10 workers usually working full time in this location.

5. Housekeeping

A. Results and Discussion

Except for chemical drum storage in the process units, housekeeping was very good inside the unit battery limits. The instrument and maintenance shops were found dirty with unorganized storage of spare parts. Garbage has accumulated behind the fabrication shop at the part storage area.

6. Hazardous Process Chemicals

A. Results and Discussion

Work stations in the water treatment section of New Hot Train in the Ethylene Unit were found unsafe for handling corrosive materials e.g., hydrazine. A wooden platform three feet in height without stairs located at a mixing tank was so situated that an employee would have to lift a five gallon bucket to this height before climbing on top the platform.

Chemicals in fifty gallon drums were scattered throughout the units which did not match their specific injection station. Most of the new slurry injection tanks were not identified for their contents and specifically, handling precautions of hazardous materials were not stated.

In another area, a pump was leaking 7% NaOH solution which was not restricted by a barrier. This area should have been restricted to authorized personnel only.

7. Asbestos

A. Results and Discussion

Warehouse storage was checked for asbestos-bearing insulation and found free of this material. The asbestos wicking stored in the warehouse is not asbestos free and should be stored in plastic bags. Even though worker exposures are considered nill, a respirator should be used when handling this material.

There is no general written policy for removal of old asbestos-bearing insulation, which includes handling and disposal.

8. Ultra-violet Radiation

A. Results and Discussion

Workers in adjacent areas to the welding operations in Mobil and Rosendahl fabrication shops are not protected from ultra-violet radiation produced from welding arcs.



Russel L. Witzke
Industrial Hygienist

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MOBIL OIL CORPORATION

INDUSTRIAL HYGIENE NOISE EXPOSURE SHEET

Plant: Mobil Chemical Company, Petrochemical
Division
Process or Unit: Ethylene Unit

By: R. L. Witzke
Instrument: General Radio 1944

Sample No.	Date	Job Description	Time Start	Time Stop	Noise Exposure in % (8hr)	Using* Hearing Protection
1	10-13-75	Area #1, Operator (JN)	9:27	14:30	117%	No
5	10-14-75	Area #1, Operator (JAB)	9:04	13:55	78%	Yes
2	10-13-75	Area #2, Operator (WS)	9:32	14:30	93%	X
6	10-14-75	Area #2, Operator (WS)	8:43	14:30	58%	X
3	10-13-75	Area #3, Compressor Operator (DAW)	9:18	14:30	138%	X
7	10-14-75	Area #3, Compressor Operator (DAW)	9:02	13:24	190%	X
4	10-13-75	Area #4, Operator (DMR)	9:24	14:30	74%	Yes
8	10-14-75	Area #4, Operator (WR)	8:51	13:55	88%	Yes
9	10-15-75	Area #4, Operator (WR)	8:55	14:20	210%	X
13	10-17-75	Area #4, Operator (WR)	9:27	14:36	116%	Yes
10	10-15-75	Area #6, Operator (JFG)	8:58	14:20	133%	X
14	10-17-75	Area #6, Operator (ERB)	9:25	14:30	68%	X
11	10-15-75	Area #1, Operator (FG)	9:02	14:20	50%	Yes
Acceptable permissible exposure limit (O.S.H.A.) + 5%.						95 - 105%

* Yes = Using protection; No = not using protection.
X Monitor registered sound level greater than 115.

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MOBIL OIL CORPORATION
INDUSTRIAL HYGIENE NOISE EXPOSURE SHEET

Plant: Mobil Chemical Company, Petrochemical
Division
Process or Unit: Ethylene Unit

By: R. L. Witzke
Instrument: General Radio 19114

Sample No.	Date	Job Description	Time Start	Time Stop	Noise Exposure in % (8 hr)	Using* Hearing Protection
12	10-15-75	Area #8, Operator (WGS)	8:45	14:20	83%	Yes
18	10-28-75	New Hot Train, Operator (GCC)	10:00	14:30	104%	No
21	10-29-75	New Hot Train, Operator (MRY)	9:51	14:30	67%	No
22	10-29-75	New Hot Train, Operator (RP)	9:51	14:30	25%	No
15	10-17-75	Pipefitter (JW) Area #8	9:40	14:45	1,444%	Yes
16	10-17-75	Welder (DW) Area #2 & #8	9:40	15:45	123%	Yes
19	10-28-75	Pipefitter (New Hot Train) (JLH)	9:50	15:45	54%	No
20	10-28-75	Pipefitter (New Hot Train) (JLD)	9:50	15:40	63%	Yes
23	10-29-75	Machinist (Area #5 Cooling Tower) (DC)	9:40	15:45	124%	No
24	10-29-75	Millwright (Area #4) (JRS)	9:40	15:45	34%	Yes
Acceptable permissible exposure limit (O.S.H.A.) <u>+ 5%</u> .					95 - 105%	

* Yes = Using protection; No = not using protection.
x Monitor registered sound level greater than 115.

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TABLE II

MOBIL OIL CORPORATION

Noise Survey Data SheetPlant: Mobil Chemical Company, Petro-
chemical Division

Date: 13 October 1975

Area or Unit: Ethylene Unit

Study By: R. L. Witkze

Operating Conditions: Normal

Instrument: General Radio 1565-B

Time	Location of Microphone	Weighting*		Remarks
		A	C	
	NEW HOT TRAIN			
11:30	Under furnace 2301-E	93	94	
11:33	Motor for pump #G-2103-A	89	91	
11:34	East side of drum 2101	95	95	
11:35	East side of filter L-2106-C	91	91	
11:36	East side of drum 2120	91	91	
11:38	Fuel gas valve PCV 2201-D	97	97	
11:40	Burners on furnace 2301-E	95	95	
11:42	Burners of furnace 2301-D	97	97	
11:44	Ground level between furnaces 2301 B & C	92	92	
11:45	Fuel gas valve PCV 2201-B	98	98	
11:46	Ground level between furnace 2301 A & B	97	97	
12:52	Under heater B-2102-B	101	104	
12:53	Under heater B-2102-A	107	109	
12:54	Steam valve PCV 2434	95	95	
12:56	Turbine for boiler feed pump G-2107-B	96	90	
13:15	East side of drum 2201	91	91	
13:16	Valve PCV 2423, vent to atmosphere	99	99	
13:18	Under east side of compressor deck	99	99	
13:20	East side of drum F-2203	97	97	
13:22	Under center of compressor deck	102	102	
13:23	Under west side of compressor deck	95	95	
13:24	Turbine for compressor	97	97	
13:25	Compressor #1	97	97	
13:26	Compressor #2	97	97	
13:27	Compressor #3	96	96	
13:28	Compressor #4	96	96	
13:29	East side of drum F-2104	92	92	
13:30	West end of exchanger 2106-A (piping)	106	106	

* Sound Level Meters response at dBA-Slow and dBC-Slow.

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TABLE II (Continued)

MOBIL OIL CORPORATION

Noise Survey Data Sheet

Plant: Mobil Chemical Company, Petro-chemical Division

Date: 13 October 1975

Area or Unit: Ethylene Unit

Study By: R. L. Witzke

Operating Conditions: Normal

Instrument: General Radio 1565-B

Time	Location of Microphone	Weighting*		Remarks
		A	C	
	AREA #8, COLD TRAIN			
13:50	Control panel for gas expander G-2357	103	103	
13:52	Expander valve	111	111	
13:53	Pump G-2302-A	91	91	
13:54	Control valve TRC 5289	102	102	
13:56	Exchanger 2301	95	95	
	AREA #4			
13:59	Pump G-2428	90	90	
14:00	East end of exchanger 321	92	92	
14:01	Pump G401	95	95	
14:02	Pump G-2303-A	96	96	
14:03	Between turbines 116 & 117	99	99	
14:04	Area #4 operator's shed	93	93	Windows open
14:05	Drum 401	92	92	
14:06	Pump motor G-302	97	97	
14:08	L. P. condensate drum	98	98	Pumps
14:09	Pump G-2301-A	93	93	
14:10	Pump G-2306-A	94	94	
14:12	West side of drum F-601	93	93	
14:13	Between drums F-808 & F-304	98	98	
14:15	Between drums F-704 and 703	102	102	
14:16	Control valve PRC-306, west side under compressor deck	107	107	
14:17	1st stage suction, compressor G-651	114	114	Under structure
14:18	3rd stage suction, compressor G-651	111	111	Under structure
14:19	Compressor 451-A	108	108	Under structure
14:20	Compressor 451-B	106	106	Under structure
14:21	Compressor 451-C	104	104	Under structure
14:23	Between F-604 & F-605	105	105	
14:25	West side of F-603	103	103	
14:26	Inside analytical shed	86	86	Doors open
14:50	Air compressor station	97	97	

* Sound Level Meters response at dBA-Slow and dBC-Slow

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TABLE II (Continued)

MOBIL OIL CORPORATION

Noise Survey Data Sheet

Plant: Mobil Chemical Company, Petro-chemical Division

Date: 14 October 1975

Area or Unit: Ethylene Unit

Study By: R. L. Witzke

Operating Conditions: Normal

Instrument: General Radio 1565-B

Time	Location of Microphone	Weighting*		Remarks
		A	C	
	AREA #1 & #6			
9:10	Areas #1 operator's shed	91	91	Inside, window open.
9:11	Between furnaces A & B	110	110	
9:13	Feed piping to furnace B	102	102	D not in operation.
9:14	Between furnace C & D	106	107	
9:15	Furnace C stack, ground level	102	102	
9:17	Furnace G stack, ground level	108	108	
9:18	Between furnace F & G	110	110	
9:19	Between furnaces K & L	108	108	
9:21	Between furnaces R & S	107	107	
9:23	Area #6, operator's station	85	85	
9:27	Between furnace B-102 C & D	105	105	
9:28	Between pumps G-404 & turbine 118	96	96	
9:29	West side of drum D-403	94	94	
9:30	Pump G-805	99	99	
9:31	North side of drum F-209	99	100	
9:32	Pump 106-B	96	99	
9:33	Gas oil filters, west bank	94	96	
9:34	West end of exchanger 107-C2	97	97	
9:35	Pump G-414	95	98	
9:37	West end of exchanger E-107- A2	94	95	
9:39	West side of tower D-101	88	93	
9:42	Quench boiler deck, furnace B-101-A	104	104	Steam discharge
9:44	Furnace B-101-F, quench boiler deck	97	97	
	AREA #2			
11:11	Drum F-2491	85	87	
11:13	Rerun tower reboiler	104	104	
11:14	Between heater B-401 & B-201	96	96	
11:15	Between drum D-409-B & D-303-A	90	91	

* Sound Level Meters response at dBA-Slow and dBC-Slow.

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TABLE II (Continued)

MOBIL OIL CORPORATION

Noise Survey Data Sheet

Plant: Mobil Chemical Company, Petro-chemical Division

Date: 14 October 1975

Area or Unit: Ethylene Unit

Study By: R. L. Witzke

Operating Conditions: Normal

Instrument: General Radio 1565-B

Time	Location of Microphone	Weighting*		Remarks
		A	C	
11:17	West of drum D-450-B	89	89	
11:18	Carbon disulfide tank	87	89	
11:19	Drum F-2204	89	91	
11:20	East side of drum F-208	92	92	
11:20	West side of pump 2407	94	95	
11:21	West side of pump 102	94	94	
11:22	East side of tower D-406	93	93	
11:23	East end of exchanger 415-B	95	95	
11:24	West side of tower D-405-A	90	91	
11:25	East end of exchanger 2415	96	96	
11:26	Pump G-419	95	95	
11:27	Pump G-2427-A	96	96	
	AREA #7			
11:35	Aisle N, drum F-806	93	93	
11:36	South side tower D-202	90	92	
11:37	South side tower 201	90	92	
11:38	South end of exchanger 208 or Pump G-2424-B	90	93	
11:39	North side of tower 404	90	93	
11:40	Aisle between G-405-B, pump 421	94	96	
11:41	Drum 601	96	96	
11:42	South side of exchanger 201	95	96	
11:43	Aisle east of drum F-202	94	95	
11:44	Between lube oil pumps G-251 & G-351/751	102	102	Under compressor structure
13:45	Under compressor structure sour oil drain	106	106	
	AREA #3			
13:48	Gear box for compressor G-251	111	111	
13:49	Gear box for compressor G-351/751	103	103	
13:50	Compressor head G/351-751	106	106	

* Sound Level Meters response at dBA-Slow and dBC-Slow.

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TABLE II (Continued)

MOBIL OIL CORPORATION

Noise Survey Data Sheet

Plant: Mobil Chemical Company, Petro-chemical Division

Date: 14 October 1975

Area or Unit: Ethylene Unit

Study By: R. L. Witzke

Operating Conditions: Normal

Instrument: General Radio 1565-B

Time	Location of Microphone	Weighting* Network		Remarks
		A	C	
13:52	Compressor head G-651	107	107	
13:53	Gear box for compressor G-651	103	104	
13:54	Compressor control room	87	90	
	AREA #5			
14:10	Aisle west of exchanger 412-C	90	91	
14:12	Aisle west of exchanger 412-A	91	91	
14:13	Aisle between pumps G-515 & G-501	92	93	
14:14	Between G-502-A & G-505	90	92	
14:15	Aisle east of G-511	90	92	
14:16	Area #5, operator's shed	82	87	
14:18	Cooling tower	95	95	

* Sound Level Meters response at dBA-Slow and dBC-Slow.

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TABLE III

MOBIL OIL CORPORATION

Noise Survey Data SheetPlant: Mobil Chemical Company, Petro-
chemical Division

Date: 17 October 1975

Area or Unit: Benzene Unit

Study By: R. L. Witzke

Operating Conditions: Normal

Instrument: General Radio 1565-B

Time	Location of Microphone	Weighting*		Remarks
		A	C	
11:13	Center of control room	60	62	
11:15	North side of control room	89	90	
11:16	Between Q. C. Lab and trans- formers	90	91	
11:17	South end of pump aisle	90	91	
11:18	Between motor 432 and turbine G-2	90	91	
11:19	West end between exchangers 3 & 4	90	90	
11:20	Control valves west and between Towers D-102 & D-105	91	91	
11:21	Between Tower D-101 & Control valve FRC-114	92	94	
11:23	East end of exchangers 106-A	93	95	
11:24	East end of exchanger 117	94	94	
11:25	East end of exchanger 122	92	94	
11:26	Aisle center, between motors 241, 229, & 228	94	96	
11:28	Aisle center, between motors 246, 245, 225, and 227	91	92	
11:30	Aisle center, between turbine 103 & motor 484	96	97	
11:31	Motor 216	102	103	Air intake
11:31	Center aisle, east of motor 216	95	97	
11:33	Center aisle, between motors 256 & 434	92	93	
11:35	West end of exchanger 308	93	95	
11:36	West aisle of tower 305	95	96	
11:37	West side of tower 302	89	90	
11:38	Under benzene heater	89	90	
11:40	North side of compressor G-305	96	97	
11:41	North side of compressor 305-A	96	98	
11:43	North side of compressor motor 302	96	98	
11:45	Air compressor	91	92	

* Sound Level Meters response at dBA-Slow and dBC-Slow.

183917

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TABLE IV

MOBIL OIL CORPORATION

Noise Survey Data SheetPlant: Mobil Chemical Company , Petro-
chemical Division

Date: 17 October 1975

Area or Unit: Boiler House

Study By: R. L. Witzke

Operating Conditions: Normal

Instrument: General Radio 1565-B

Time	Location of Microphone	Weighting*		Remarks
		A	C	
10:55	Control valves southwest of boiler	93	94	
10:56	South side, motor for air blower for boiler	102	107	
10:58	Turbine for air blower for boiler	112	113	
11:00	North side of air preheater	95	102	
11:02	Boiler feed pumps	94	95	
11:03	Control panel, 1st level	94	95	
11:04	Bottom of deaerator drum	95	95	
11:06	Top of deaerator drum	118	118	
11:10	Inside control room	65	78	

* Sound Level Meters response at dBA-Slow and dBC-Slow.

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Industrial Hydrocarbon Sample Summary Sheet

Plant: Mobil Chemical Company, Petrochemical Division
Process or Department: Ethylene-Aromatics Plant
Materials: Benzene, Toluene, other hydrocarbons

By: R. L. Witzke
Date: 13 to 18 October 1975

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Sample No.	Time	Description	Sample Volume liters	Concentration		
				Benzene mg/M3	Toluene mg/M3	
101	9:47-14:33	Movements, Pumper (10-13-75)	13.7	<0.1	<0.1	---
103	8:35-13:25	Movements, Pumper (10-14-75)	13.7	<0.1	<0.1	---
102	9:56-14:33	Movements, Assistant Pumper (10-13-75)	15.1	<0.1	<0.1	---
104	8:37-14:35	Movements, Assistant Pumper (10-14-75)	18.7	<0.1	<0.1	---
107	10:56-14:40	Movements, Assistant Pumper (10-17-75)	14.2	<0.1	<0.1	---
106	9:10-13:52	Movements, Rail Loading Operator (10-15-75)	14.5	2.8	3.5	0.10
112	18:00-19:00	Movements, Barge loading Operator (10-17-75)	1.8	<0.1	<0.1	---
110	15:40-19:00	Movements, Barge loading Operator (10-17-75)	10.2	8.8	0.5	0.31
111	15:18-15:40	Wharf, center of dock/wind from N/W, 8mph (10-17-75)	26.4	25.4	2.3	0.76
109	10:46-14:27	Center of Benzene Unit, aisle east of pump G-301-A (10-17-75)	261.6	3.0	2.1	0.10
105	9:18-13:55	Benzene Unit Operator (10-15-75)	13.8	<0.1	<0.1	---
108	10:49-	Benzene Unit Operator (10-17-75)	12.3	4.1	1.6	0.14
Acceptable eight hour time-weighted average exposure (O.S.H.A.)				30	375	1.0

* Total Hydrocarbons, Xylene, Butylene, Propylene were not detected by analysis.

FIGURE 1

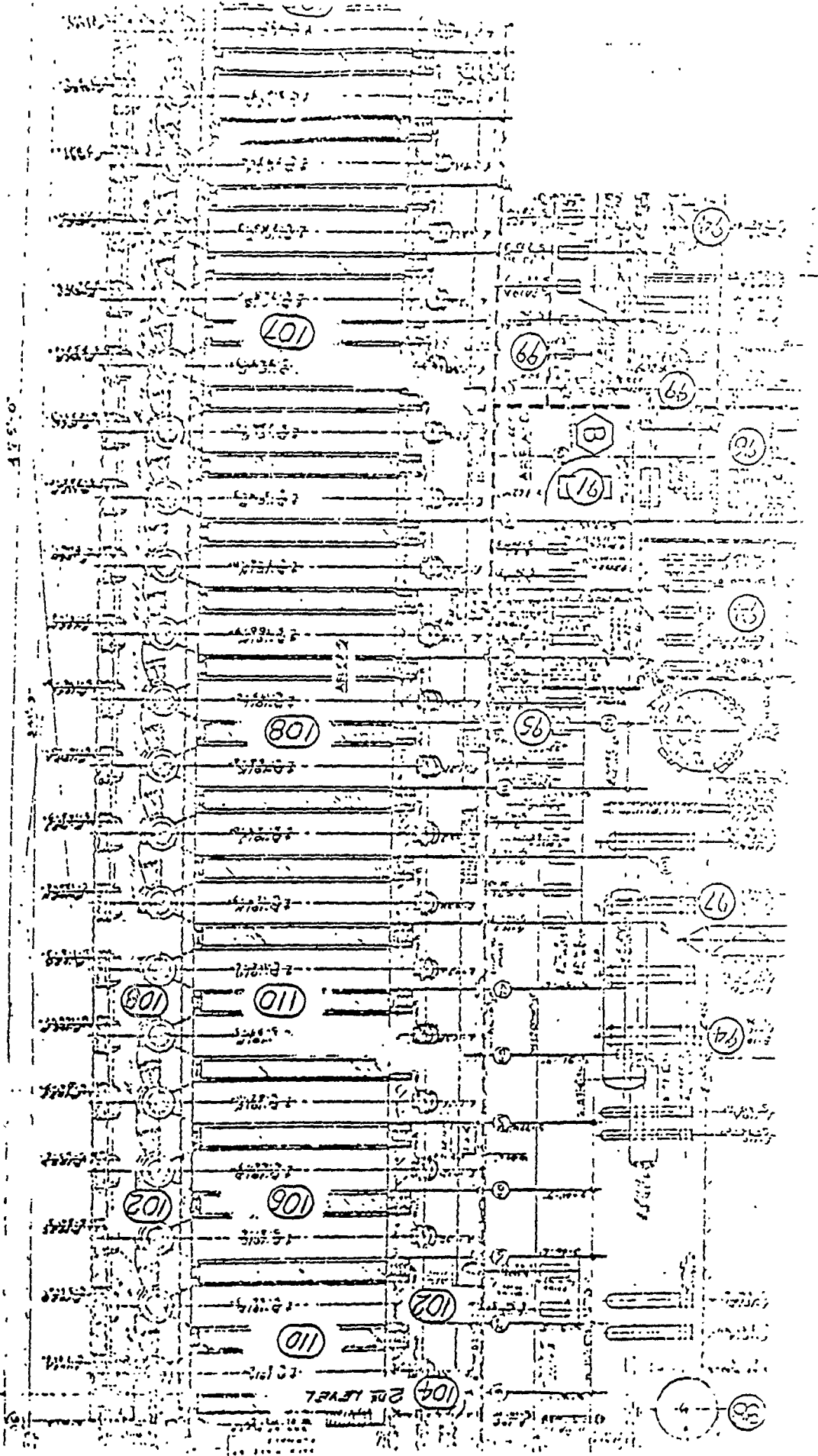
AREAS 1 & 6

AREA 2103



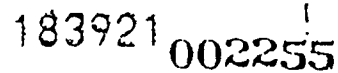
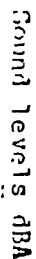
ETHYLENE UNIT

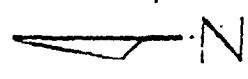
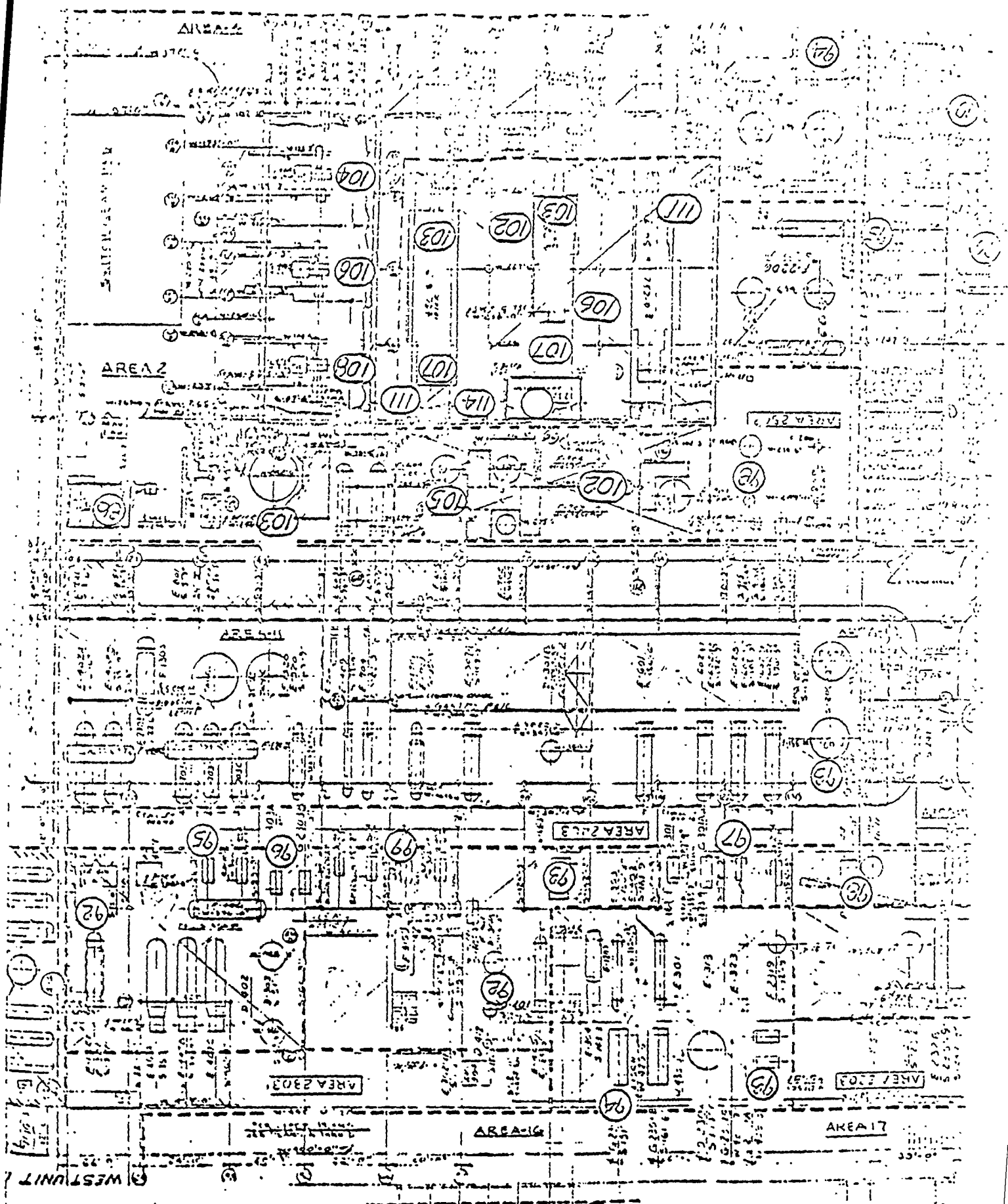
Sound Levels dBA



100000

002254





AREAS 3, 4, 7

AIR CONDITIONING

952206 22681

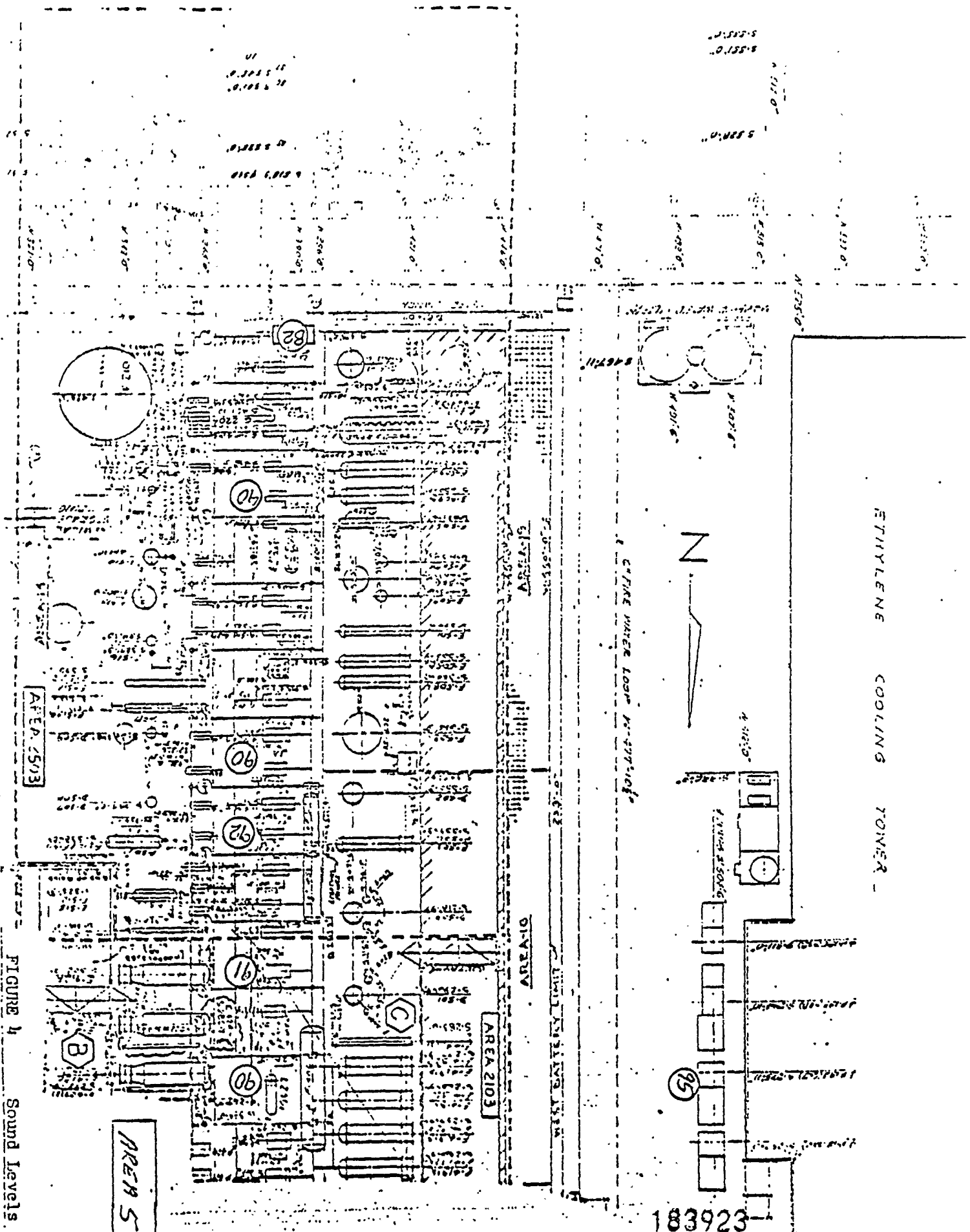


FIGURE 1 Sound Levels

APPENDIX I

PERSONNEL PROTECTIVE MEASURES TO BE FOLLOWED DURING ASBESTOS REMOVAL OPERATIONS

1. All asbestos containing insulation must be thoroughly wetted with water before removal.

Wetting can be accomplished by any practical means such as hose lines or water spray from self-contained pails or cans.

Wet steam is another possible means of saturation of asbestos if feasible and conducted safely.

Five minutes of water application for 25 square feet of asbestos surface insulation area should suffice.

When asbestos is being removed, a suitable means of containment must be used to catch chunks of asbestos to prevent dispersion of asbestos fibers.

2. Employees involved in the removal operation must be equipped with a NIOSH-approved, single-use, disposable respirator; 3-M, Model 8710 respirator meets this standard.

Employees also must wear gloves, coveralls and shoe covers. Gloves, coveralls and shoe covers, wherever possible, should be of the single-use, disposable type.

Employees must not continue to wear this protective clothing if they leave the job site for another activity and specifically when eating.

If non-disposable protective clothing is used, the collection and laundering procedures outlined in the Federal Register and Mobil Medical Guide No.03-1308 must be followed.

3. Asbestos-insulation waste, debris and used disposable clothing must immediately be packed in impervious bags and affixed with cautionary tags. The tag shall state:

*

CAUTION
CONTAINS ASBESTOS FIBERS
AVOID CREATING DUST
BREATHING ASBESTOS DUST MAY CAUSE SERIOUS BODILY HARM

**

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4. The bagged waste material should be disposed and covered daily in the Refinery landfill. If disposal at the Refinery becomes impractical due to space limitations, a qualified local contractor should be used.
5. Proper cautionary signs must be displayed at each asbestos removal or demolition site. The signs shall state:

*
ASBESTOS
DUST HAZARD
Avoid Breathing Dust
Wear Assigned Protective Equipment
Do Not Remain in Area Unless
Your Work Requires It
Breathing Asbestos Dust May Be
Hazardous To Your Health
**

Cautionary signs should be placed at a suitable distance (Suggest a minimum of fifty feet) around the removal site, demolition site, and collection point.

Any employee entering these areas not immediately involved in the removal of asbestos must wear a minimum of a NIOSH-approved, single-use, disposable respirator, 3-M, Model 8710 for protection.

6. It is also recommended that area monitoring be conducted during any large-sized asbestos removal project to determine the extent of possible drift of asbestos fibers.