LHC III

INDUSTRIAL HYGIENE

1984

JERRY E. STEWARD

The Role of Industrial Hygiene at LHC #3

The most important function for industrial hygiene is the protection of the workers. The first step in plant protection is recognition of potential problems. At LHC #3 several problems areas are defined. The hazards of benzene and toluene are well documented. There are questions concerning the safety of exposure to butadiene, fuel oil, and dicyclopentadiene. LHC #3 has areas of high noise and there is a potential for heat stress in the furance areas.

LHC #3 is designed to operate under a guideline of one part per million benzene on a time weighted average. The plant design greatly aids in keeping the exposure limits, however engineering is not the only means of achieving low exposures. LHC #3 has a continuing educational program to train personnel in the hazards and methods of handling the chemicals found in the block.

A key part of the role of the industrial hygienist is to provide a data base of worker exposures. Baseline date is collected by monitoring normal day to day operations. Jobs that have a high probability of exposure are defined and monitored. At LHC #3, sampling, barge loading, and pump repair are jobs that need specific job monitoring. Monitoring during a spill cleanup is considered as the worst case monitoring.

ACCOMPLISHMENTS LHC #3 1984

1. Tank farm, LHC #3 operations and maintenance personnel were trained on the consequences of overexposure to the block's hazardous chemicals. Hearing protection requirements and the monitoring program were also reviewed. Eighty five per cent of the employees received the training program.

2. Personnel were monitored for exposure to benzene and toluene during the clean-up of spills. Base line monitoring data was obtained by monitoring two operating shifts and a maintenance shift.

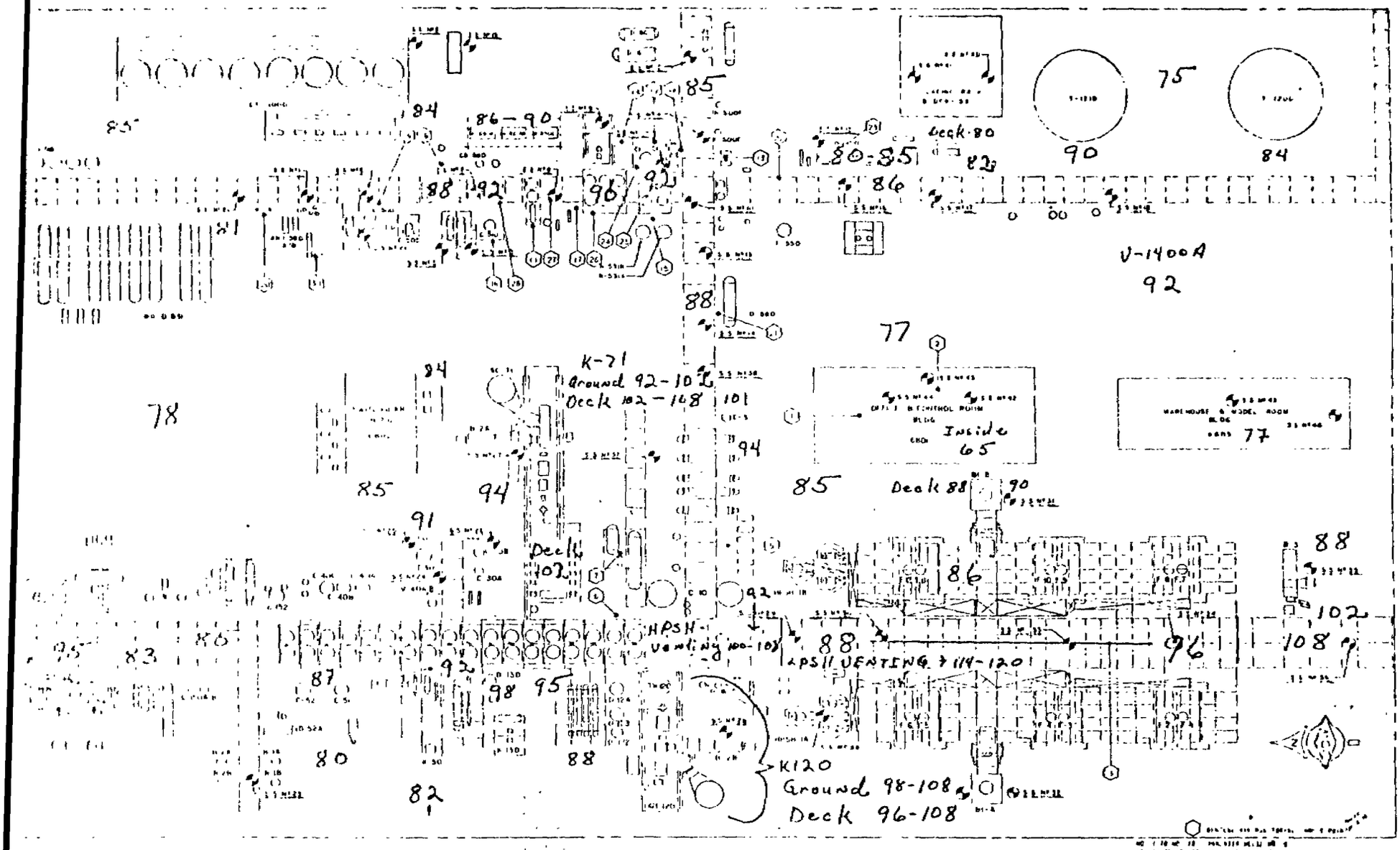
3. A noise level survey of LHC #3 was taken. The noise levels were checked during the venting of the superheaters. The low pressure superheater exceeded the recommended levels. Capital has been requested to install larger mufflers on the unit.

4. Development work on the methods of analysis for butadiene and dicyclopentadiene was continued.

UHI #3 NOISE SURVEY

DATE	9-16-83	12-20-84
Inside Control Room	65	65
East of Control Room	83	77
N.E. of Control Room	83	85
Warehouse	80	80
West V-1400A	91	92
West T-1200	85	84
West T-1210	81	90
Between T-1200 and T-1210	74	75
D-531 Deck	78	80
West E-531	82	82
Bz Reactor Deck	79	80-85
Bz Reactors-ground level	85	86
North R-500F	--	85
North D-580	87	88
Fin Fan Deck	88-96	88-96
Cooper Deck	90	86-90
S.W. Cooling Tower	86	84
N.W. Cooling Tower	83	85
South Propylene Storage	82	81
Spare Parts Yard	76	78
S.E. Motor Control Center	86	84
East C-55	82	95
S.E. C-54	97	83
S.E. C-150	80	85
S.E. C-52	--	87
South R-1A	77	80
S.W. D-130	92	98
K-71 Ground Level	96-112	92-102
K-71 Deck	99-103	96-108
K-120 Ground Level	96-108	96-108
K-120 Deck	98-104	96-108
South E-9's	96	94
East C-3	102	101
Deck with superheater vents	91	92
HPSH venting	--	100-108
LPSH venting	--	114-120
Furance walkway	90-96	88-96
West B-3	104	102
S.E. B-3	84	88
S.E. B1-B	88	90

All noise levels are given in decibles.



NOISE SURVEY
December 30, 1984
Rev III

All Noise Levels
Are Given IN
Decibels

DOW CHEMICAL U.S.A.
LOUISIANA DIVISION

AIR MONITORING SYSTEM

Rev 86 314-NSO 001

EHS #3 INDUSTRIAL HYGIENE
SUMMARY OF MONITORING DATA

1.	03-09-94	Working around slab water pit after dumping an emulsion from C-20.
2.	04-03-94	Block 58 cleanup after P-1601C blew a seal.
3.	05-15-94	Baseline monitoring data - "B" shift days
4.	05-17-94	Baseline monitoring data - "D" shift dogs
5.	05-22-94	Baseline monitoring data - Day Maintence
6.	07-17-94	R-501 catalyst exchange
7.	10-08-94	Block 58 sump cleanup
8.	10-09-94	Block 58 sump cleanup

PARTS PER MILLION
TIME WEIGHTED AVERAGE

NAME S.S.	M.S. CLASS	ST EX	TIME WK	BEN	TOL	ST SEC	XYL	ETY	TIME E	TIME A	DATE
WORKING AROUND SLAG WATER PIT AFTER DUMPING EMULSION FROM C-20.											
BILL, J.T.	433892	3	7	<.01	<.01	<.01	-	<.01	1.0	2.0	2/9/84
433049730	SOT										
FIBERH,M.	433828	3	7	<.01	<.01	<.01	-	<.01	2.0	4.0	2/9/84
433182105	SOT										
BLOCK 58 CLEANUP AFTER P-1601C BLEW A SEAL.											
COCK, R.J.	206866	0	3.5	.41	.62	.08	.20	.56	15	26	4/3/84
429945691	OT										
HESSE, P.W.	280799	0	3.5	.72	.62	.05	.18	.54	1.0	6.0	4/3/84
465068633	OT										
HILLS, J.E.	434294	0	1.3	.42	.48	.09	.12	<.01	6.0	7.0	4/3/84
434935810	OT										
JOHNSON, L.G.	433826	0	6.5	.68	.55	.15	<.01	.16	6.0	6.0	4/3/84
437762620	OT										
KARIN,B.J.	278012	0	3.5	.79	.99	.06	.13	.81	20	51	4/3/84
448461855	OT										
CHIBOUDEAUX,K.	433821	0	4.0	.31	.32	<.01	.13	.34	6.0	6.0	4/3/84
437021429	OT										
MARTIN, L.M.	434264	0	3.3	.05	.17	<.01	.10	.19	-	-	4/3/84
436288318	OT										

DO 105203
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TIME WEIGHTED AVERAGE (PPM)

NAME S.S.	MASTER CLASS	ST EQ	TWA (HR)	BEN	TOL	EQ BEN	MTL	ETY
"D" SHIFT MONITORING; NIGHTS; MAY 17,1984								
L. NERO	432277	0	12.0	0.04	0.09	0.03	0.03	0.01
438824884	S.S.							
D. WALLACE	070742	0	12.0	0.04	0.07	<0.01	<0.01	<0.01
377627188	ROV OS							
S.J. COLLETTI	433750	0	12.0	0.04	0.08	<0.01	0.02	0.01
435864490	BOARD							
G. POWELL	432313	0	11.5	0.04	0.10	<0.01	0.01	<0.01
428903361	BOARD							
C.M. CARLIN	433255	0	11.5	0.04	0.09	<0.01	0.04	<0.01
434830500	BOARD							
M. PERCLE	433905	0	12.0	0.06	0.05	<0.01	<0.01	<0.01
436042818	ETH SOT							
F.G. GAY	433028	0	12.0	0.06	0.05	0.01	<0.01	0.02
434993985	MECH SOT							
A. HERBERT	433049	0	12.0	0.04	0.07	0.03	<0.01	<0.01
436743680	BZ SOT							
T.B. PITRE	433851	0	12.0	0.04	0.07	0.01	0.04	0.01
435449940	SOT							
T. HUNT	434036	0	12.0	0.04	0.07	<0.01	0.01	0.01
433215597	PUR SOT							
L. JOHNSON	433926	0	12.0	0.10	0.24	0.01	0.02	<0.01
437762620	ULT OT							
J.E. HILLS	434294	0	12.0	0.09	0.17	<0.01	0.01	0.01
434999810	EC OT							
R.J. COOK	206966	0	12.0	0.07	0.29	0.01	<0.01	0.02
429945691	PUR OT							
B. MARTIN	278012	0	12.0	0.04	0.09	<0.01	0.01	<0.01
445461655	OT							
S. BRAY	433952	0	11.5	0.04	0.09	0.02	<0.01	0.03
26213240	ENG							
MAINTENANCE MONITORING; DAYS; APRIL 22,1984								
J. SIBLEY	432527	0	7.0	0.03	0.04	<0.01	<0.01	<0.01
434022070	OS BEN AREA							
A. LEE	433197	0	7.0	0.03	0.03	<0.01	<0.01	<0.01
437889253	OS BEN AREA							
B. MCCOY	432636	0	7.0	0.03	0.03	<0.01	0.01	<0.01
264212151	OS LOAD DRUMS							
H FREDRICK	220998	0	7.0	0.04	0.04	<0.01	<0.01	0.01
435686790	OS							
J. STEWARD	434371	0	7.0	0.14	0.21	<0.01	<0.01	<0.01
433046296	CHEMIST							

Worksheet: 1 IH Monitoring of VCP Report: Print

MONITORING OF THE CATALYST EXCHANGE IN R-521

VESSEL ENTRY CREW

Name	Time	Benzene	Toluene	PPM (TWA) Ethyl Ben	Xylene	Styrene
Ray Pourian	180 min	0.46	0.14	<0.01	0.11	0.06
E. J. Landry	180 min	0.48	0.17	<0.01	<0.01	0.11
Jim Marino	180 min	0.04	<0.01	<0.01	<0.01	<0.01
D. R. Kelly	180 min	0.18	0.30	<0.01	<0.01	<0.01
Joe Landry	180 min	0.40	0.13	<0.01	<0.01	0.03
Randry Pitre	180 min	0.54	0.24	<0.01	<0.01	<0.01

FOAM LOADING CREW

Randry Pitre	480 min	0.17	0.08	<0.01	0.01	0.18
E. J. Landry	480 min	0.13	0.06	<0.01	<0.01	0.02
Joe Landry	480 min	0.12	0.02	<0.01	0.01	0.06
D. R. Kelly	480 min	0.17	0.03	<0.01	<0.01	0.02
Ray Pourian	480 min	0.10	0.02	<0.01	<0.01	0.02
Pat Decote	480 min	<0.01	0.02	<0.01	<0.01	0.08

DOW PERSONNEL

D. Wallace	420 min	0.44	0.07	<0.01	<0.01	0.02
R. D. Sproles	630 min	0.07	0.03	<0.01	<0.01	<0.01
R. W. Lacombe	645 min	0.95	0.11	<0.01	<0.01	0.01
J. R. Bordenlon	180 min	1.72	0.15	<0.01	<0.01	<0.01

Worksheet: "4" DM-BLOCK 88 BUMPS Region: Initial

DM MONITORING

DOW-UP OF BLOCK 88 BUMPS

Monitored 10/8 94
Block contract personnel

Name	Time	Benzene	Toluene	PPM (TWA) Ethyl BZ	Xylene	Styrene
Bull Buhler	510 min	0.23	0.03	<0.01	<0.01	<0.01
John Morris	510 min	0.08	1.90	0.29	0.53	0.23
Oliver Talyor	510 min	0.05	0.16	0.05	0.01	0.05
James Lewis	510 min	0.10	2.85	0.40	0.70	0.30
Pat Decote	510 min	0.11	0.36	0.06	0.03	0.05
A. Shultz	510 min	0.08	0.07	<0.01	0.01	0.02
Dow Personnel (fire watch)						
Mike Miller	510 min	0.14	0.06	0.02	<0.01	<0.01

Monitored 10/9'94
Block contract personnel

Pat Decote	420 min	0.05	0.10	<0.01	<0.01	<0.01
A. Shultz	420 min	0.06	0.14	<0.01	0.01	<0.01
James Lewis	420 min	0.73	7.85	0.43	0.26	0.08
Bull Buhler	420 min	0.06	0.59	0.03	<0.01	0.03
Oliver Talyor	420 min	0.77	8.13	0.40	0.31	0.09

INDUSTRIAL HYGIENE PLANS FOR LHC #3

1. Continue to inform plant personnel on the consequence of exposure to chemicals in the block. Emphasis will be placed on benzene and butadiene.

2. Continue to monitor personnel for potential exposure to benzene and toluene when cleaning up spills. Obtain job specific monitoring date for sampling and pump repair.

3. Reduce employee exposure during sampling handling through the installation of new benzene sampling systems and through the purchase of a specific gravity meter.

4. Set up a monitoring program for butadiene and dicyclopentadiene.

5. Check the level of radioactivity at the propane and propylene pumps to test if Radon-222 is an exposure problem in the block.

6. Run personal noise dosimeter tests and yearly noise survey.

DO 105208
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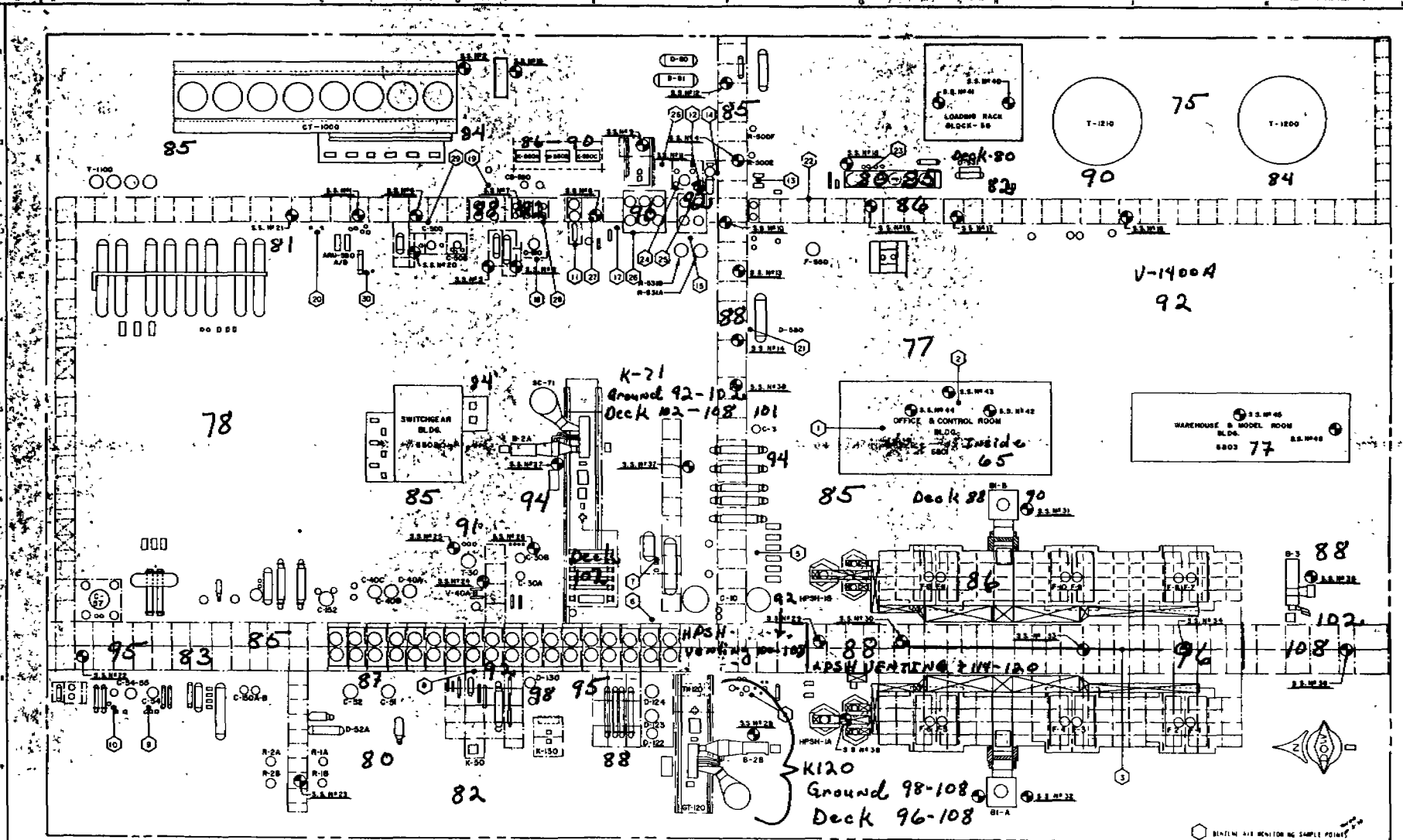


APR 8 1988

NOISE SURVEY
December 20, 1984
LHC III

All NOISE Levels Are Given IN DecIBELS

DOW CHEMICAL U.S.A
LOUISIANA DIVISION

AIR MONITORING SYSTEM

86 014-N50 001

REV 8(E)

DOW CHEMICAL U.S.A.

LOUISIANA DIVISION
P. O. BOX 150
PLAQUEMINE, LOUISIANA 70765-0150
504 389-8000

May 31, 1984

Bill Ledford
3502E

xc: J. T. Holloway
R. S. Touchet
J. D. Weldon

INDUSTRIAL HYGIENE MONITORING

As requested normal shift activities were monitored for aromatic compounds. A complete day shift, night shift, and part of a maintenance shift were monitored for Benzene, Toluene, Ethyl Benzene, Xylene, Styrene, and ≪ -Methyl Styrene using 3M diffusion badges. The data indicated extremely low levels of exposure for all personnel during normal shift activities.

To date, LHC III had two spills in 1984 that required cleanup activity. In February personnel were monitored during a cleanup of the slab water pit after an emulsion from C-20 was dumped. Very low exposures were seen. A cleanup of Block 58 was required after a fuel oil pump seal blew in March. Exposure levels were below 1 ppm on a time weighted average for all personnel. All monitoring data collected thus far this year is enclosed for your records.

Jerry E Steward

J. E. Steward
Light Hydrocarbon III - Benzene

Enclosures

jys

PARTS PER MILLION
TIME WEIGHTED AVERAGE

NAME/S.S.	M.S CLASS	[illegible]	TWA (HR)	BEZ	TOL	ET BEZ	XYL	STY	MET STY	URINE B	URINE A	DATE
WORKING AROUND SLAB WATER PIT AFTER DUMPING EMULSION FROM C-20.												
GILL, J.T 433049730	430892 SOT	5	7	<.01	<.01	<.01	-	<.01	-	1.0	2.0	2/9/84
JOSEPH, K. 433032135	430823 SOT	3	7	<.01	<.01	<.01	-	<.01	-	2.0	4.0	2/9/84
[illegible] BS CLEANUP AFTER [illegible] BLEW A SEAL												
[illegible]	[illegible] OT	1	3.5	41	82	[illegible]	20	[illegible]	08	15	26	4/3/84
[illegible], F.W. [illegible]	290799 OT	4	3.5	73	62	05	19	54	09	1.0	6.0	4/3/84
[illegible], J.E. [illegible]	434294 OT	1	1.7	42	49	05	12	<.01	19	5.0	7.0	4/2/84
JOHNSON, L.G. [illegible]	433816 OT	1	4.5	63	55	15	<.01	16	04	5.0	6.0	4/3/84
MARTIN, B.J. [illegible]	278012 OT	1	1.5	75	.99	.06	.13	81	11	20	51	4/3/84
THIBODEAUX, K 437021029	433821 OT	1	4.0	31	32	<.01	02	34	<.01	5.0	6.0	4/3/84
[illegible], L.M. [illegible]55318	434264 OT	[illegible]	3.0	25	.27	<.01	10	19	<.01	-	-	4/3/84

B, 0002-5058
Tol 0002-5070
E B [illegible]
X, 0002-5071
ST, [illegible]
M. [illegible]

DO 105210
CONFIDENTIAL

PARTS PER MILLION
TIME WEIGHTED AVERAGE

NAME S S	MASTER CLASS	ST EQ	TWA (HR)	BEN	TOL	ET BEN	XYL	STY	MET STY
(2) SHIFT MONITORING, DAYS, MAY 15,1984									
[illegible] ENKINS 436[illegible]927	432041 S.E	0	10.0	0.05	0.04	<0.01	<0.01	0.02	0.01
T. VERMILLION [illegible]37749914	432044 LEAD OS	0	10.0	0.06	0.03	<0.01	<0.01	<0.01	<0.01
C. RICHARDSON 365[illegible]0063	070991 FUR OS	0	10.5	0.01	0.05	<0.01	<0.01	<0.01	<0.01
C.L. BOLEN 436[illegible]5812	431042 OS	0	10.7	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
M. CROWNING 437[illegible]7067	433043 BOARD OS	0	11.0	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
M. [illegible]LFORD, JR [illegible]	432[illegible] BOARD [illegible]	[illegible]	11.0	[illegible]	0.01	[illegible]	<0.01	<0.01	[illegible] 01
A. [illegible] ABBOTT [illegible]	43[illegible] BEN [illegible]	0	10.[illegible]	[illegible]	0.0[illegible]	[illegible]	[illegible] 01	0.02	[illegible] 01
[illegible] DAVIS [illegible]7843	[illegible]	[illegible]	[illegible]	[illegible]	0.02	[illegible]	[illegible]	[illegible]	[illegible] 01
[illegible] RAYMOND [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible] 01	[illegible]	<0.01	<0.01	[illegible] 01
A. [illegible] [illegible]	[illegible]	0	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible] [illegible]	43[illegible] [illegible]	0	[illegible]	[illegible]	[illegible]	[illegible]	0.02	[illegible]	[illegible] 01
[illegible] EARLES [illegible]	[illegible] BEN [illegible]	0	[illegible]	[illegible]	[illegible]	<0.01	<0.01	[illegible]	0.02
[illegible] LOONEY [illegible]	[illegible] FUR [illegible]	0	[illegible]	[illegible]	[illegible]	<0.01	<0.01	[illegible]	0.08
R. [illegible]UFFLEBEAM 44[illegible]049	[illegible] [illegible]	0	10.5	[illegible]	0.21	<0.01	<0.01	<0.01	0.02

DO 105211
CONFIDENTIAL

TIME WEIGHTED AVERAGE (PPM)

NAME/S S.	MASTER CLASS	PT EQ	TWA (HR)	BEN	TOL	ET BEN	XYL	STY	MET STY
"D" SHIFT MONITORING, NIGHTS, MAY 17 1984									
L. NEFD 435424484	432271 5 3	0	12.0	0.04	0.09	0.03	0.02	0.01	0.03
D. WALLACE 277327198	270744 POV 35	0	12.0	0.04	0.07	<0.01	<0.01	<0.01	0.03
S. J. COLLETTI 435864490	433750 BOARD	0	12.0	0.04	0.08	<0.01	0.02	0.01	<0.01
C. POWELL 429703361	433311 BOARD	0	11.5	0.04	0.10	<0.01	0.01	<0.01	0.02
C. M. CARLIN 434850500	433254 BOARD	0	11.5	0.04	0.09	<0.01	0.04	<0.01	<0.01
M. FERCLE 436042818	433903 ETH SOT	0	12.0	0.06	0.05	<0.01	<0.01	<0.01	0.03
R. G. GAY 434932955	433028 MECH SOT	0	12.0	0.06	0.05	0.01	<0.01	0.02	<0.01
A. HERBERT [illegible]	433644 3X SOT	0	12.0	0.04	0.07	0.03	<0.01	<0.01	0.05
[illegible] PITRE [illegible]	[illegible] SOT	0	12.0	0.04	0.07	0.01	0.04	0.01	0.04
[illegible] HUNT [illegible]	434256 [illegible]	0	12.0	0.04	0.07	<0.01	0.01	0.01	0.01
[illegible] JOHNSON [illegible]	[illegible]	0	12.0	[illegible]	0.24	0.01	0.02	<0.01	0.01
[illegible] HILLS [illegible]	[illegible]	0	12.0	[illegible]	0.17	<0.01	0.01	[illegible]	0.01
[illegible] COOK [illegible]	[illegible]	0	12.0	0.07	0.29	0.01	<0.01	0.02	<0.01
[illegible] MARTIN [illegible]	[illegible]	0	12.0	0.04	0.07	<0.01	0.01	<0.01	0.01
[illegible] GRAY [illegible]	432952 ENG	0	11.5	0.04	0.09	0.02	<0.01	0.02	<0.01
MAINTENANCE MONITORING, DAYS, APRIL 22, 1984									
J. SIBLEY 434022070	432527 OS BEN AREA	0	7.0	0.03	0.04	<0.01	<0.01	<0.01	<0.01
A. LEE 437889253	433197 OS BEN AREA	0	7.0	0.03	0.03	<0.01	<0.01	<0.01	<0.01
B. MCCOY 264012151	432626 OS LOAD DRUMS	0	7.0	0.03	0.03	<0.01	0.01	<0.01	<0.01
H. FREDRICK 435666790	220996 OS	0	7.0	0.04	0.04	<0.01	<0.01	0.01	<0.01
J. STEWARD [illegible]	434371 CHEMIST	0	7.0	0.14	0.21	<0.01	<0.01	<0.01	<0.01

REV 8(6)

DOW CHEMICAL U.S.A.

LOUISIANA DIVISION
P. O. BOX 150
PLAQUEMINE, LOUISIANA 70765-0150
504 389-8000

August 3, 1984

Bill Ledford
3502 E

xc: R. S. Touchet
John Massey

AROMATIC MONITORING DURING CATALYST EXCHANGE

On July 17, 1984, VIP exchanged catalyst in R-521 at the benzene plant. The procedure involved vessel entry under an inert atmosphere with supplied breathing air. While VIP personnel were not monitored due to the use of supplied air, contractor and Dow personnel working in the area were monitored for benzene exposure. The crew that prepared the vessel for entry showed benzene exposure levels in the range of 0.5 ppm over a time weighted average. The personnel that loaded the spent catalyst into drums showed even lower levels of exposure. The personnel on top of the reactor around the open manway showed exposure levels in the range of 1-2 ppm benzene. All personnel were well under the current TLV limit of 10 ppm. A summary of the exposure data is included for your inspection.

Jerry E. Steward

J. E. Steward
Light Hydrocarbon III

Attachment

jys

Worksheet: (1) IH Monitoring of VIP Region: 1:1..7:31

IH MONITORING

VESSEL SETUP CREW

Name	Time	PPM (TWA) Benzene	Toluene	Ethyl Ben	Xylene	Styrene
Ray Pourian	180 min	0.46	0.14	<0.01	0.11	0.06
E. J. Landry	180 min	0.48	0.17	<0.01	<0.01	0.11
Jim Marino	180 min	0.04	<0.01	<0.01	<0.01	<0.01
D. R. Kelly	180 min	0.18	0.30	<0.01	<0.01	<0.01
Joe Landry	180 min	0.40	0.13	<0.01	<0.01	0.03
Randry Pitre	180 min	0.54	0.24	<0.01	<0.01	<0.01

DRUM LOADING CREW

Randry Pitre	480 min	0.17	0.08	<0.01	0.01	0.18
E. J. Landry	480 min	0.13	0.06	<0.01	<0.01	0.02
Joe Landry	480 min	0.11	0.02	<0.01	0.01	0.06
D. R. Kelly	480 min	0.17	0.03	<0.01	<0.01	0.02
Ray Pourian	480 min	0.10	0.02	<0.01	<0.01	0.02
Pat Decote	480 min	<0.01	0.02	<0.01	<0.01	0.09

DOW PERSONNEL

T. Wallace	420 min	0.44	0.07	<0.01	<0.01	0.01
R. D. Sproles	630 min	0.07	0.03	<0.01	<0.01	<0.01
R. N. Lacombe	645 min	0.95	0.11	<0.01	<0.01	0.01
J. R. Bordenion	180 min	1.72	0.15	<0.01	<0.01	<0.01

Done

APR 18 1986

LHC III

NOISE ABATEMENT PROGRAM

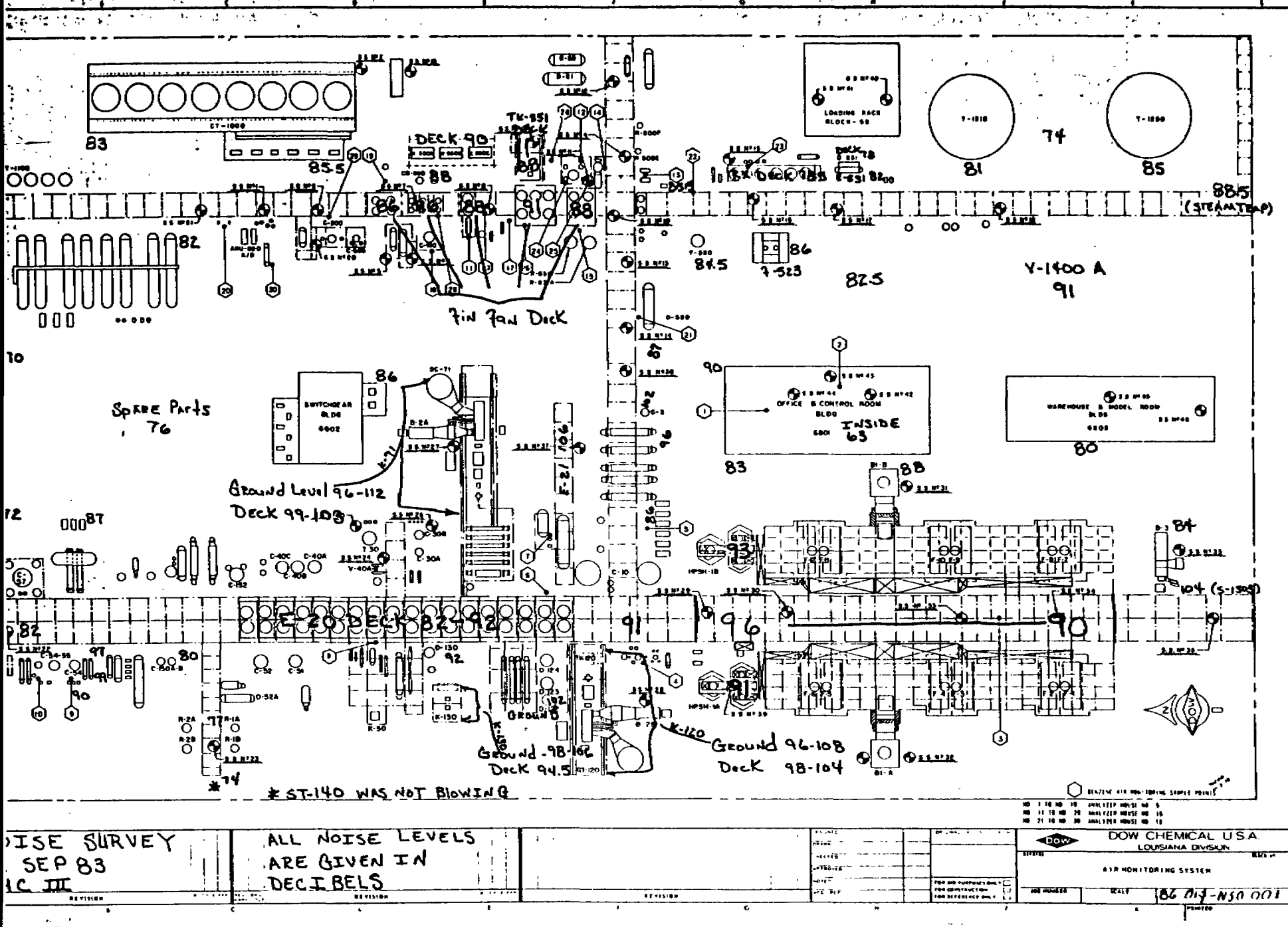
At time of designing and constructing LHC III, the latest technology in noise reduction was used where feasible. It was recognized that the area around the furnaces, boilers, and compressors would be high noise areas and that those areas would need to have signs posted warning personnel that ear protection was required.

The noise abatement program at LHC III shall consist of the following:

1. An annual noise survey will be made in all areas.
2. Personnel monitoring will be conducted on persons working in high noise areas.
3. Each person will have an audiogram run each year during their annual physical exam.
4. Engineering controls will be implemented to reduce personnel exposure to noise above 85 dBA where feasible.
5. Each employee will be informed annually of the consequences of overexposure to noise and the precautions required to protect their hearing.

R. S. Touchet
2/23/84

jys



DOW CHEMICAL U.S.A.
LOUISIANA DIVISION

AIR MONITORING SYSTEM

86 AIR-NSO 001

NOISE SURVEY
SEP 83
IC III

ALL NOISE LEVELS
ARE GIVEN IN
DECIBELS

CKE / W. Aemick

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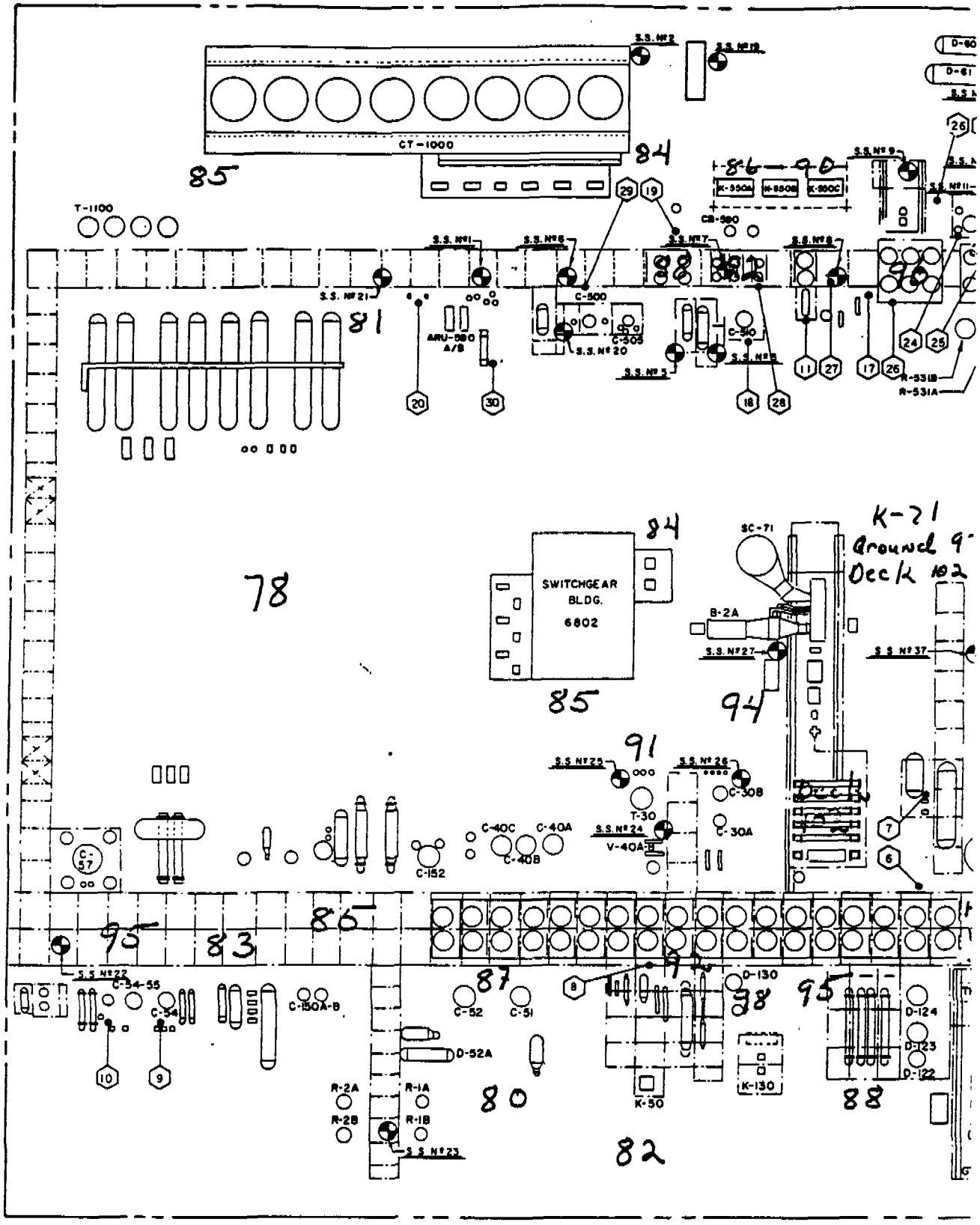

NOISE SURVEY
December 20, 1984
L HC III

All NOISE Levels Are Given IN DecIBELS

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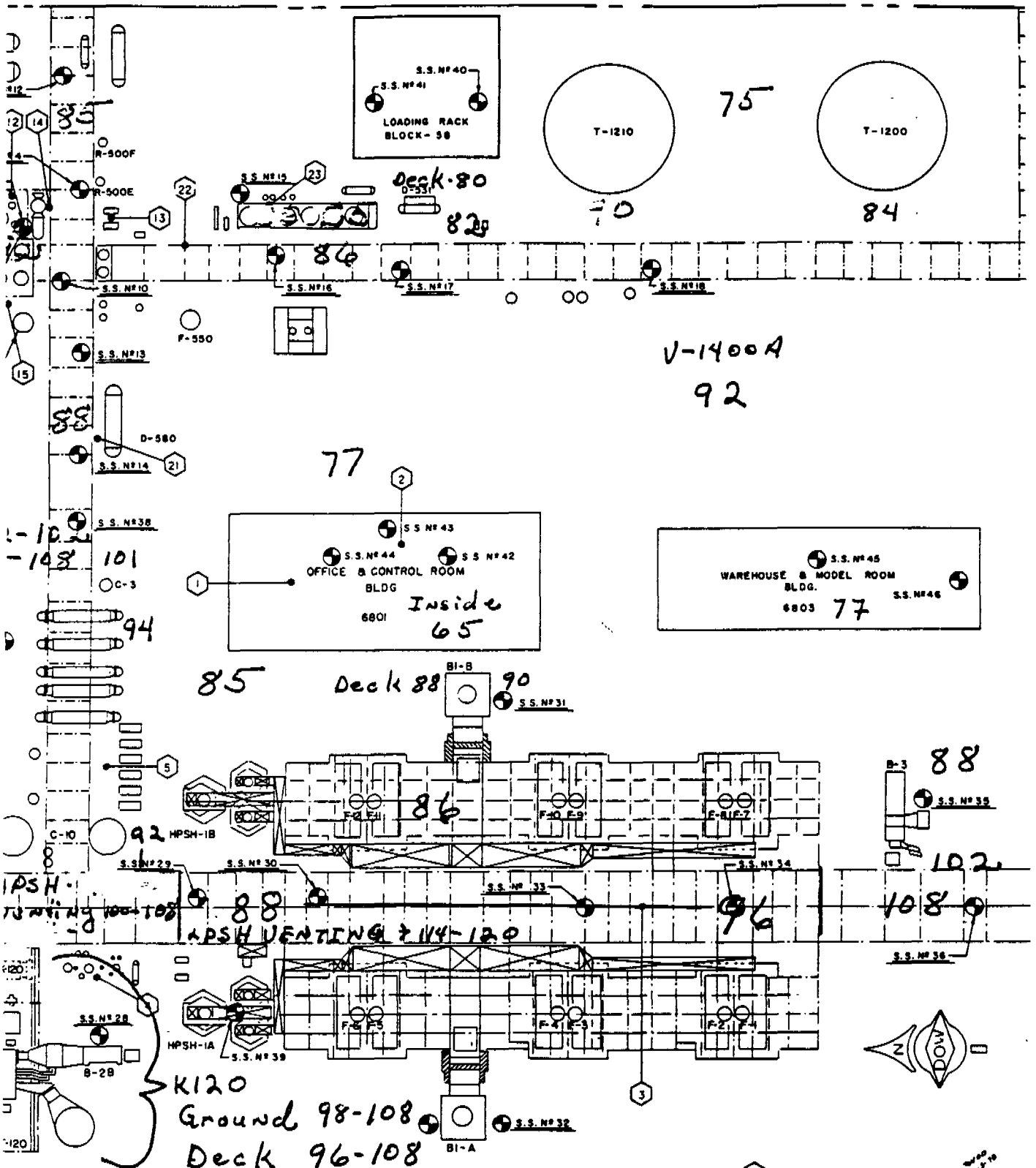

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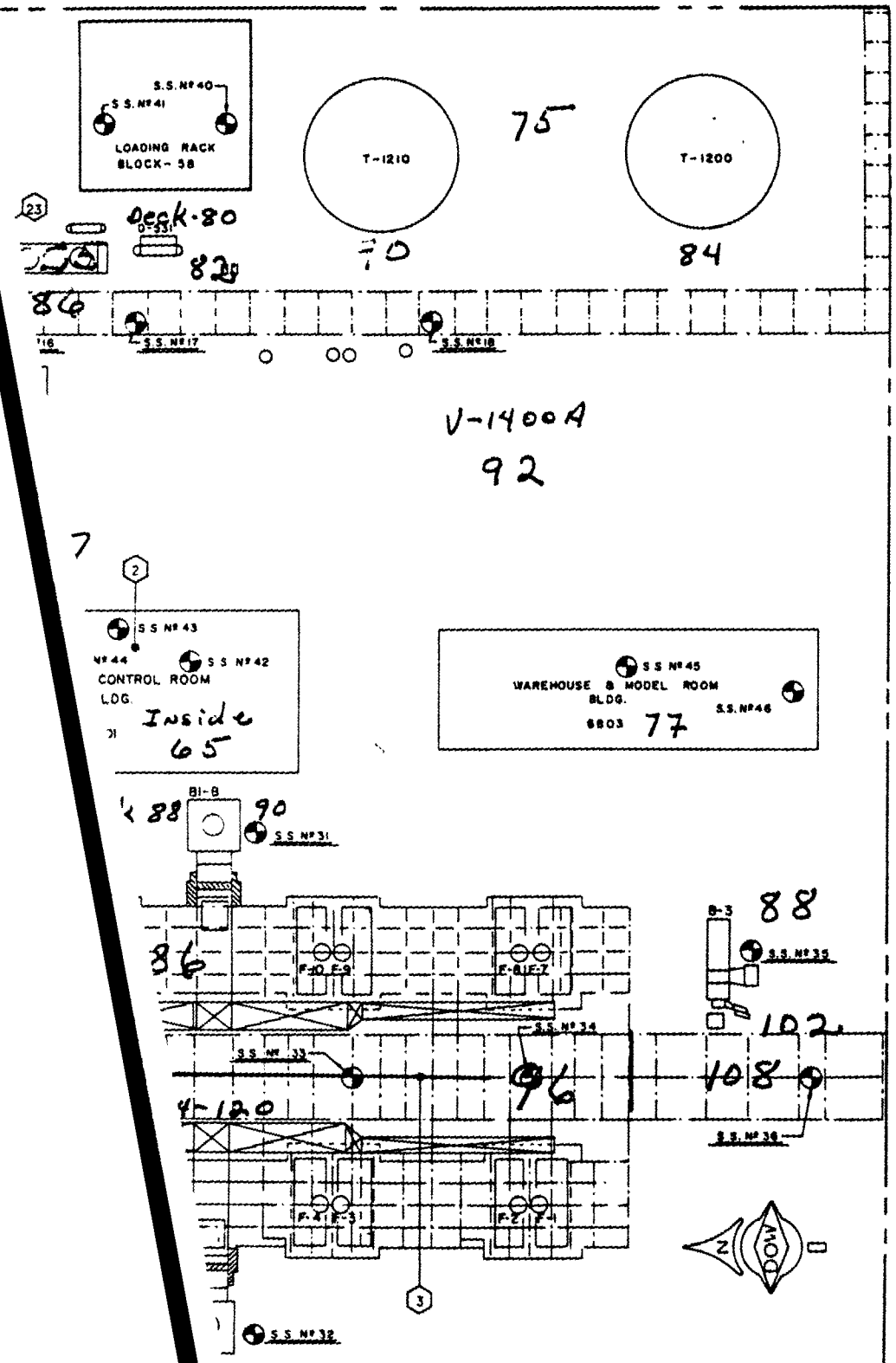

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