STELCO

The Steel Company of Canada

Hamilton Works
Community Liaison Committee Meeting

June 20 2018 | Andy Sebestyen

Agenda

1. Welcome and Safety Contact
2. Review and Approval of Agenda
3. Review and Approval of Minutes of 24 January 2018
4. Performance under O.Reg 419/05 Site Specific Standard Order – Particulates
5. Monitoring Requirements under O.Reg 419/05 Site Specific Standard Order – Benzene
6. Community Concerns
7. Adjournment

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Know Your Emergency Exits

Review Evacuation Routes of the room you are located in

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Site-Specific Standard Order (Particulates): Performance Review – Daily

Date	Doors (% Leaks)	Lids (% Leaks)	Off-takes (% Leaks)
2015 Limits (July 2 start)	54%	2%	NA
2016 Limits	32%	2%	NA
2017-2019 Limits	10%	2%	5%
2020 Limits	5%	1%	4%
Jan. 1 to June 10, 2018 Range (Average)	0 – 4.23% (0.25%)	0 – 1.27% (0.10%)	0 – 5.13% (0.88%)
Pushes < 84 per day (Jan. 1 to Dec. 10, 2017	0 – 3.66% (0.11%)	0 – 1.50% (0.09%)	0 – 3.80% (0.30%)

Daily Measurements Performed YTD
- All weekdays, except for holidays
- 10 Saturdays
- 10 Sundays

Jan. 1 – June 10, 2018 Operational Adjustments
- PLO exceedances on Mar. 15 & 16, 2018 (resp. 5.13% & 5.06%)
- Standpipes of oven 681 and 688 were replaced Mar. 21, 2018
- Daily inspection, cleaning and patching of offtakes is ongoing

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Site-Specific Standard Order (Particulates): Performance Review – 30 Day Rolling Averages

Date	Doors (% Leaks)	Lids (% Leaks)	Off-takes (% Leaks)	Charging (sec) (log avg)
2015 Limits (July 2 start)	38%	0.8%	25%	12 sec
2016 Limits	22.5%	0.8%	15%	12 s
2017-2019 Limits	7%	0.8%	4.2%	12 s
2020 Limits	4%	0.4%	2.5%	12 s
Jan. 1 to June 10, 2018 Range (Average)	0.08 – 0.47% (0.25%)	0.06 – 0.15% (0.11%)	0.08 – 1.44% (0.79%)	3.02 – 6.32 s (4.14 s)
Pushes < 84 per day (Jan. 1 to Dec. 10, 2017)	0 – 0.36% (0.11%)	0.03 – 0.18% (0.09%)	0.08 – 0.63% (0.32%)	1.99 – 4.58 s (3.26 s)

Jan. 1 – June 10, 2018 Performance

- In compliance with 2018 limits

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Site-Specific Standard Order (Particulates): Performance Review – Daily Observations – Pushing Emissions

Date	Pushing Emission (opacity %)
2015 Limit (July 2 start)	⩾ 50%
2016 – 2018	⩾ 50%
2019	≥ 40%
2020	≥ 30%
Jan. 1 to June 10, 2018 Range (Average)	0 – 45 % (11.02 %)
Pushes < 84 per day (Jan. 1 to Dec. 10, 2017)	0 – 40 % (2.44 %)

Jan. 1 – June 10, 2018 Operational Adjustments

- None required – in compliance with 2016-2018 limit

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Site-Specific Standard Order (Particulates): Performance Review – Additional Items

Community complaints since the last CLC meeting:

A. Complaints registered with HIEA and MOECC; shared cleanup costs

1. Beach Blvd. - Black dust (Jan. 12, 2018) – Strong wind and coal unloading at AMD and Stelco on Dec. 7– 9, 2017
2. Beach Blvd. (2 homes) - Black dust (May 4, 2018) – No specific incident identified
3. Beach Blvd. – Dust (May 25, 2018) – No specific incident identified

B. Observations of Stelco emissions

1. Dock's coal dust on Mar. 18, 2018 (L. Lukasik) – Emission of dust when the coal scraper dug into the base of a coal pile with more fines.
2. Black Battery emissions on Apr. 7, 2018 (L. Lukasik) – Resulted upon opening the door to push oven 713.
3. Stack, Battery and quench emissions on May 13, 2018 (L. Lukasik)
4. Purplish stack emissions on May 24, 2018 – Short black emissions upon opening the door to push oven 724

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NO_X emission

Conclusion: Factors affecting the formation of NO_2 that caused the brown emissions which gradually get darker nearing the Battery reversal are: the COG composition in terms of NH_3 content, COG combustion conditions, flame temperature, O_2 content, moisture, atmospheric and photochemical conditions around the stack outlet.

How to address the issue: How to remove NO_2 by subjecting or burning it in a fuel-rich flame, e.g., heating enhancement, stack burner activation, and, maximizing By-Product recovery of ammonia.

Resolution: The stack burner has been consistently on since May 16, 2018. Battery heating is supplemented by natural gas since May 24, 2018. Since these were implemented, the occurrence of brown stack emissions at sunrise and before sunset had been significantly reduced.

Pushing Emission

Conclusion:
Inadequate temperature in the coke oven during the coking process, resulting in “green coke”.

How to address the issue:

i. Battery heating has been supplemented by natural gas since May 24, 2018.

ii. Permanent crew to clean the heating system and flues.

Resolution:
Similar cases have significantly reduced.

Quenching Emission

Conclusion:

Inefficient removal of particulates during the quenching of coke.

Probable Cause:

As designed, the quench tower has baffles that capture most coke particulates upon release by the rising steam as water gets in contact with hot coke. If these baffles are damaged or missing, particulate removal is ineffective, resulting in particulate emissions.

Resolution:

New baffles were completely installed May 2017. Review and increase the frequency of routine maintenance of the baffles, water nozzles, demister pump, dezurik valve and the water supply system.

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Benzene

Sampling Strategy – Benzene

The goal is to identify additional fugitive sources of benzene to assess the quantity and frequency to answer the question, Is the source significant and can it be reduced?

- Review the process stream to identify where benzene might report
- Monitor – Hand-held with Photoionization Detector for VOCs (specific for benzene)
- Monitor the process – upwind, downwind – fugitive and potential emission points such as valves, vents
- Monitor at various times – normal operations, maintenance activities

Stelco Hamilton Benzene Sources

Sources Identified in 2013 HW Refined ESDM

Source ID	Number Indicated on Drawings	Source Description
STCK13	1	#7 Battery Stack
STCK56a	2	Coke Shed Baghouse Stacks
STCK56b	3	Coke Shed Baghouse Stacks
STCK56c	4	Coke Shed Baghouse Stacks
STCK56d	5	Coke Shed Baghouse Stacks
STCK56e	6	Coke Shed Baghouse Stacks
STCK56f	7	Coke Shed Baghouse Stacks
COKE_1-COKE_16	8	#7 Battery Fugitives (Coke Side)
COKE_17-COKE_32	9	#7 Battery Fugitives (Pusher&Top Side)
PCST1	10	Primary Cooler Seal Pots
TARDECAN	11	Tar Decanter
TARDEHYD	12	Tar Dehydrator
FLCT	13	Flushing Liquor Circulation Tank
EXCSSLS1	14	Excess Liquor Sump
PLT	15	Pump Leaks (Tar System)
NA	16	Light Oil Scrubber
LOREC	17	Light Oil Rectifier

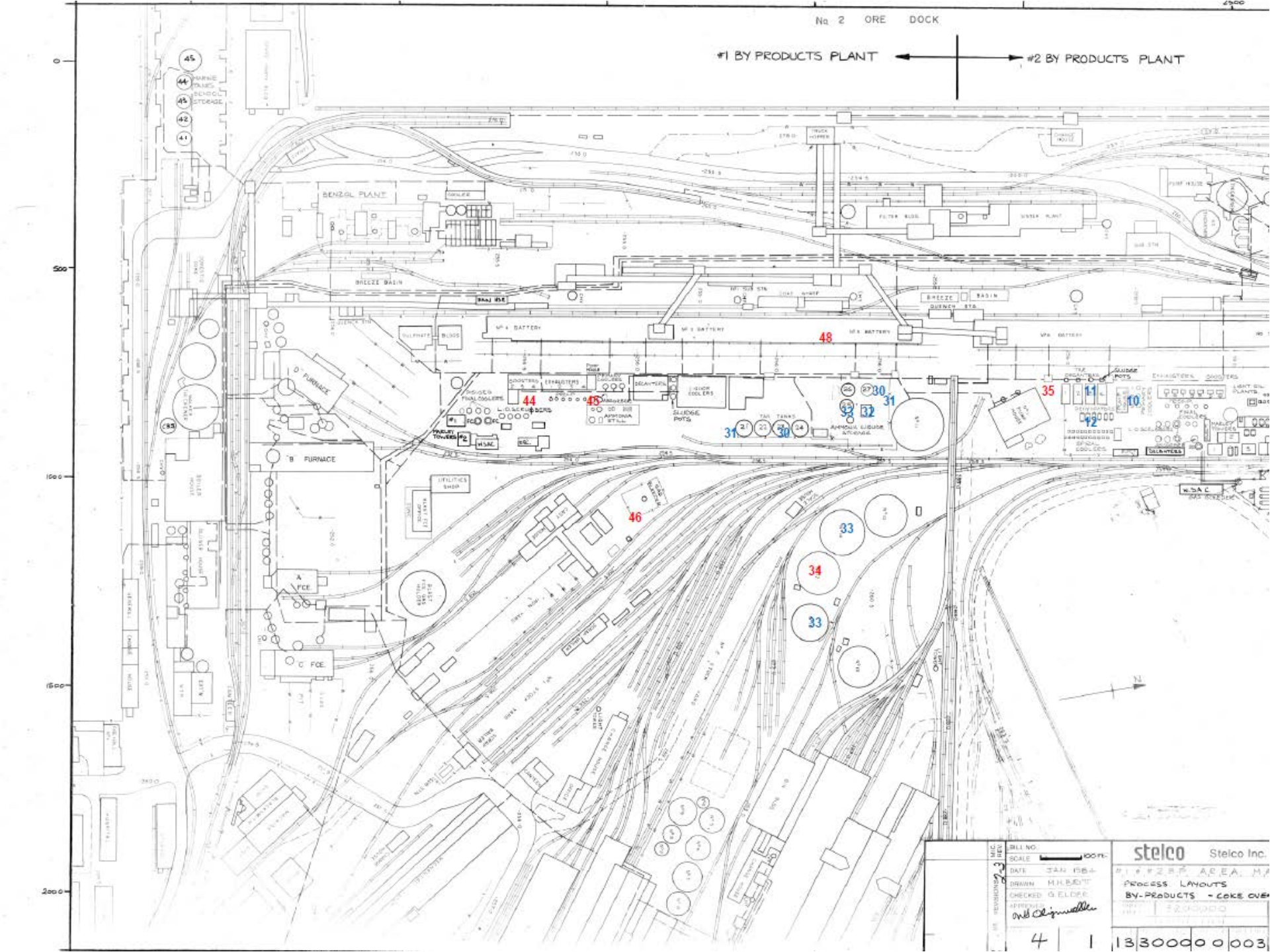
Source ID	Number Indicated on Drawings	Source Description
LIGHTCON	18	Light Oil Condenser
LODS	19	Light Oil Decanter/Separator
LIGHTOST	20	Light Oil Storage Tank
LOL	21	Light Oil Loading
INTSUMP1	22	Intercepting Sump
WASHDEC	23	Hot Wash Oil Decanter
WOCT	24	Wash Oil Circulation Tank
PLLO	25	Pump Leaks (Light Oil)
CWASHDEC	26	Cold Wash Oil Decanter
SECOILDEC	27	Secondary Oil Decanter
SECOILSTO	28	Secondary Oil Storage
TARBOTT	29	Final Cooler - Tar Bottom Decanter
TARSTOR	30	Tar Storage
TARLOAD	31	Tar Loading
DAC	32	Dissolved Air Clarifier
EALT	33	Excess Ammonia Liquor Storage Tank
LIGHTCON	18	Light Oil Condenser

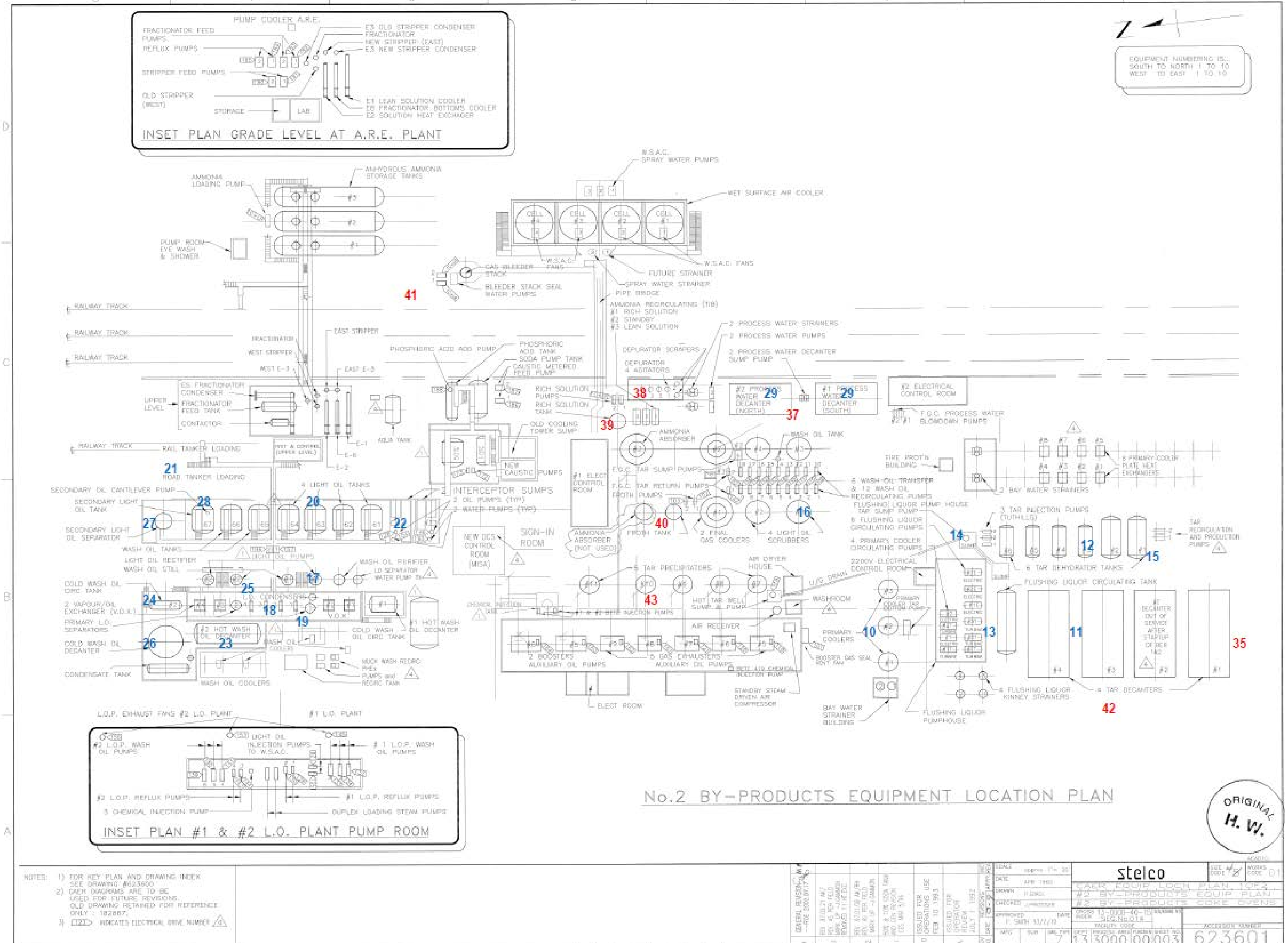
Stelco Hamilton Benzene Sources

Additional Sources

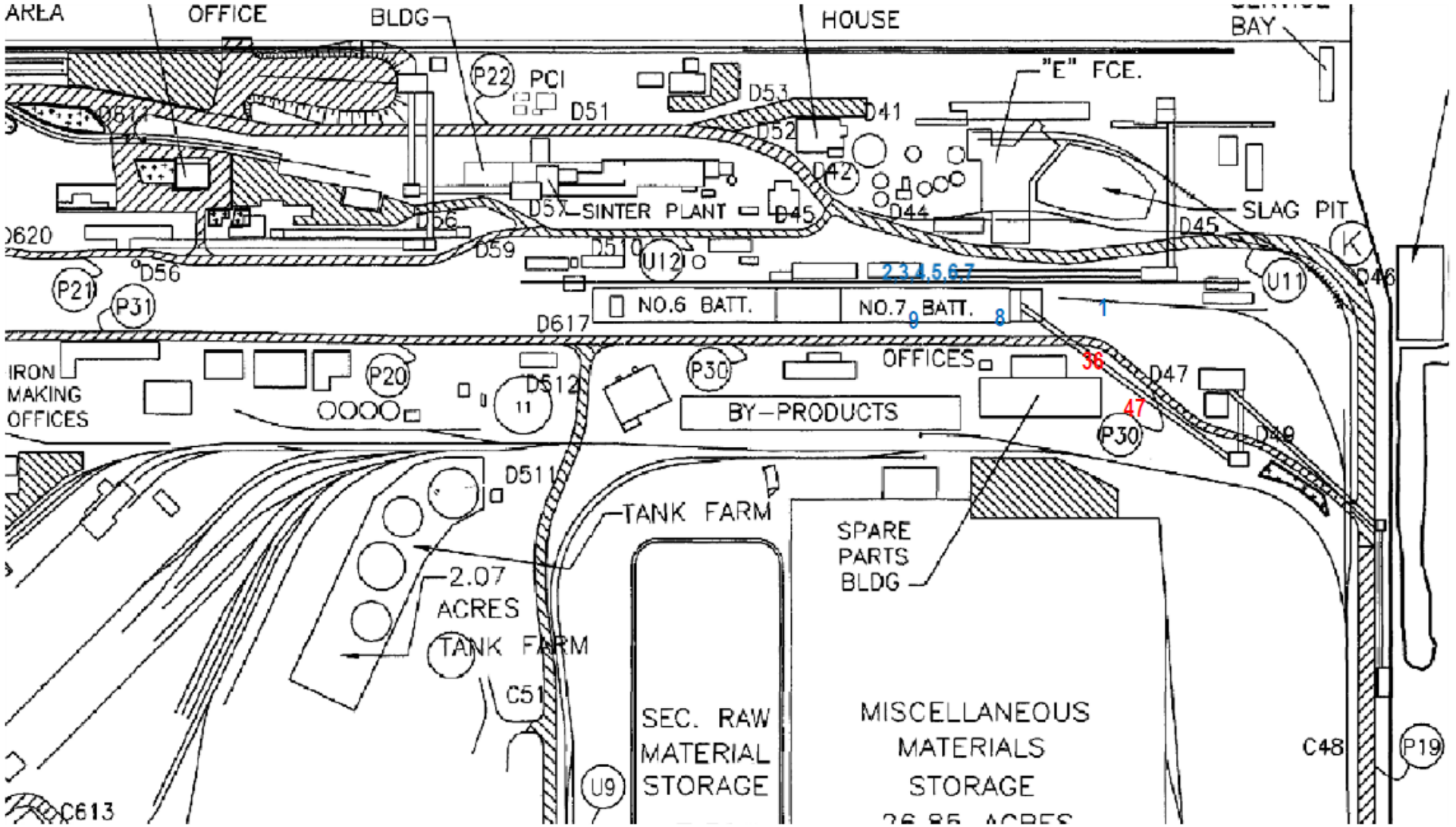
Modeled as fugitive emissions in the 2013 HW Refined ESDM (CAMM)

Source ID	Number Indicated on Drawings	Source Description
	34	Muller Mixing of Coal Fines, Tar Sludge, etc.
	35	Tar Contaminated Wastes Storage
	36	Diesel Fuel Storage Tanks
	37	Process Water Decanter Sump
	38	Ammonia Plant Depurator
	39	Ammonia Plant Rich Solution tank
	40	Ammonia Plant Froth tank
	41	Low Pressure Bleeder Sump
	42	Tar Decanter Lugger boxes 2x
	43	Exhauster or Precipitator Seal Pots 4x
	44	Booster Seal pots X2
	45	Booster seal pot sump
	46	High Pressure Bleeder sump
	47	Coal Handling Conveyor
	48	WWTP Aeration -- TBD


No. 2 ORE DOCK
#1 BY PRODUCTS PLANT
#2 BY PRODUCTS PLANT
BENZOL PLANT
BREEZE BASIN
'D' FURNACE
'B' FURNACE
'A' FCE.
'C' FCE.
UTILITIES SHOP
#1 BY-PRODUCTS PLANT
#2 BY-PRODUCTS PLANT
#1 & #2 B.P. AREA, MAP
PROCESS LAYOUTS
BY-PRODUCTS - COKE OVEN
stelco
Stelco Inc.
DRAWN M.H.BOOTH
CHECKED G.E.LOPP
SCALE 100 ft.
DATE JAN 1984
4
1
1330000 0 003



INSET PLAN GRADE LEVEL AT A.R.E. PLANT
PUMP COOLER A.R.E.
FRACTIONATOR FEED PUMPS
REFLUX PUMPS
STRIPPER FEED PUMPS
OLD STRIPPER (WEST)
STORAGE
LAB
E3 OLD STRIPPER CONDENSER
FRACTIONATOR
NEW STRIPPER (EAST)
E3 NEW STRIPPER CONDENSER
E1 LEAN SOLUTION COOLER
E6 FRACTIONATOR BOTTOMS COOLER
E2 SOLUTION HEAT EXCHANGER
EQUIPMENT NUMBERING IS:
SOUTH TO NORTH 1 TO 10
WEST TO EAST 1 TO 10
AMMONIA LOADING PUMP
ANHYDROUS AMMONIA STORAGE TANKS
PUMP ROOM EYE WASH & SHOWER
W.S.A.C. SPRAY WATER PUMPS
WET SURFACE AIR COOLER
W.S.A.C. FANS
FUTURE STRAINER
SPRAY WATER STRAINER
PIPE BRIDGE
GAS BLEEDER STACK
BLEEDER STACK SEAL WATER PUMPS
AMMONIA RECIRCULATING (TIB)
#1 RICH SOLUTION
#2 STANDBY
#3 LEAN SOLUTION
RAILWAY TRACK
FRACTIONATOR
WEST STRIPPER
EAST STRIPPER
PHOSPHORIC ACID ADD PUMP
PHOSPHORIC ACID TANK
SODA PUMP TANK
CAUSTIC METERED FEED PUMP
DEPURATOR SCRAPERS
DEPURATOR 4 AGITATORS
2 PROCESS WATER STRAINERS
2 PROCESS WATER PUMPS
2 PROCESS WATER DECANTER SUMP PUMP
#2 PROCESS WATER DECANTER (NORTH)
#1 PROCESS WATER DECANTER (SOUTH)
#2 ELECTRICAL CONTROL ROOM
F.G.C. PROCESS WATER BLOWDOWN PUMPS
ES FRACTIONATOR CONDENSER
FRACTIONATOR FEED TANK
CONTACTOR
UPPER LEVEL
AQUA TANK
RICH SOLUTION PUMPS
RICH SOLUTION TANK
OLD COOLING TOWER SUMP
AMMONIA ABSORBER
WASH OIL TANK
RAIL TANKER LOADING
ROAD TANKER LOADING
NEW CAUSTIC PUMPS
#1 ELECT CONTROL ROOM
F.G.C. TAR SUMP PUMPS
F.G.C. TAR RETURN PUMPS
FROTH PUMPS
FIRE PROT'N BUILDING
8 PRIMARY COOLER PLATE HEAT EXCHANGERS
2 BAY WATER STRAINERS
SECONDARY OIL CANTILEVER PUMP
SECONDARY LIGHT OIL TANK
SECONDARY LIGHT OIL SEPARATOR
4 LIGHT OIL TANKS
INTERCEPTOR SUMPS
2 OIL PUMPS (TYP)
2 WATER PUMPS (TYP)
6 WASH OIL TRANSFER & 12 WASH OIL RECIRCULATING PUMPS
FLUSHING LIQUOR PUMP HOUSE TAR SUMP PUMP
8 FLUSHING LIQUOR CIRCULATING PUMPS
4 PRIMARY COOLER CIRCULATING PUMPS
3 TAR INJECTION PUMPS (TUTHILLS)
TAR RECIRCULATION AND PRODUCTION PUMPS
6 TAR DEHYDRATOR TANKS
AMMONIA ABSORBER (NOT USED)
FROTH TANK
2 FINAL GAS COOLERS
4 LIGHT OIL SCRUBBERS
NEW DCS CONTROL ROOM (MISA)
SIGN-IN ROOM
WASH OIL TANKS
LIGHT OIL PUMPS
LIGHT OIL RECTIFIER
WASH OIL STILL
WASH OIL PURIFIER
LO SEPARATOR WATER PUMP
5 TAR PRECIPITATORS
AIR DRYER HOUSE
U/G DRAIN
2200V ELECTRICAL CONTROL ROOM
FLUSHING LIQUOR CIRCULATING TANK
COLD WASH OIL CIRC TANK
2 VAPOUR/OIL EXCHANGER (V.O.X.)
PRIMARY L.O. SEPARATORS
COLD WASH OIL DECANTER
CONDENSATE TANK
L.O. CONDENSERS
#2 HOT WASH OIL DECANTER
WASH OIL COOLERS
COLD WASH OIL CIRC TANK
#1 HOT WASH OIL DECANTER
MUCK WASH RECIRC PUMPS and RECIRC TANK
HOT TAR WELL SUMP & PUMP
WASHROOM
AIR RECEIVER
2 BOOSTERS AUXILIARY OIL PUMPS
6 GAS EXHAUSTERS AUXILIARY OIL PUMPS
BOOSTER GAS SEAL VENT FAN
STANDBY STEAM DRIVEN AIR COMPRESSOR
ELECT ROOM
PRIMARY COOLERS
BAY WATER STRAINER BUILDING
4 FLUSHING LIQUOR KINNEY STRAINERS
FLUSHING LIQUOR PUMPHOUSE
4 TAR DECANTERS
#3 DECANTER OUT OF SERVICE AFTER STARTUP OF NEW 1&2
L.O.P. EXHAUST FANS #2 L.O. PLANT
#1 L.O. PLANT
#2 L.O.P. WASH OIL PUMPS
LIGHT OIL INJECTION PUMPS TO W.S.A.C.
#1 L.O.P. WASH OIL PUMPS
#2 L.O.P. REFLUX PUMPS
#1 L.O.P. REFLUX PUMPS
3 CHEMICAL INJECTION PUMP
DUPLEX LOADING STEAM PUMPS
INSET PLAN #1 & #2 L.O. PLANT PUMP ROOM
No.2 BY-PRODUCTS EQUIPMENT LOCATION PLAN
ORIGINAL H. W.
NOTES: 1) FOR KEY PLAN AND DRAWING INDEX SEE DRAWING #623600
2) EACH DIAGRAMS ARE TO BE USED FOR FUTURE REVISIONS. OLD DRAWING RETAINED FOR REFERENCE ONLY : 182887.
3) INDICATES ELECTRICAL DRIVE NUMBER
stelco
#2 BY-PRODUCTS EQUIP PLAN
#2 BY-PRODUCTS COKE OVENS
13 3000 00 003
623601


AREA
OFFICE
BLDG
HOUSE
BAY
"E" FCE.
P22
PCI
D51
D53
D41
D52
D42
D44
D45
D57
SINTER PLANT
SLAG PIT
D56
D59
D510
U12
D620
P21
P31
2,3,4,5,6,7
NO.6 BATT.
NO.7 BATT.
9
8
1
U11
K
D46
D617
IRON
MAKING
OFFICES
P20
D512
11
P30
OFFICES
36
D47
47
BY-PRODUCTS
P30
D49
D511
TANK FARM
SPARE
PARTS
BLDG
2.07
ACRES
TANK FARM
C51
SEC. RAW
MATERIAL
STORAGE
U9
MISCELLANEOUS
MATERIALS
STORAGE
C48
P19
C613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