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March 24, 2016

Mr. George Davis, PE
Oregon Department of Environmental Quality
Northwest Region
700 NE Multnomah St., Suite #600
Portland, OR 97232

Subject: ESCO Title V Permit No. 26-2068, Revised Emissions for Permit Renewal Application submitted March 1, 2016

Dear Mr. Davis,

ESCO Corporation submitted a permit renewal application and supporting documentation for Title V Operating Permit No. 26-2068 on March 1, 2016. After submittal, errors were discovered in the emission factors and proposed detail sheets. These errors are corrected in this submittal. ESCO is not requesting a change to the PSELs proposed earlier. The emission summary and detail sheets for all pollutants are enclosed with this letter (marked PSEL 03/24/2016), and should replace all emission detail sheets (marked PSEL 02/29/2016) submitted previously. No other permit renewal documents are being revised.

The following Emission Units have been revised in the emission detail sheets:

- PM emissions for Emission Unit 3U-3
- Organic HAP emissions for Emission Unit 3U-3 – updated thermal sand reclaimer source testing data

The following emission factors were incorrectly changed in the February 29 permit renewal submission and are now corrected back to the currently permitted emission factors:

- CO emissions for the Emission Unit MU-2
- VOC emissions for Emission Unit MU-2 – Chain Floor Pouring and Cooling
- VOC emissions for Emission Unit MU-3
- Organic HAP emissions for Emission Unit MU-2

Please feel free to contact me at (503) 778-6493 if you have questions or require any additional information or clarification.

Respectfully,

Travis Quarles
Lead Environmental Engineer
ESCO Corporation

Enclosures

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ESCO Corp: Main Plant and Plant 3 **Compliance Dates:**
Issue Date **TBD** **TBD** **TBD**
Emission Summary **PSEL 03/24/2016**

Pollutant	Baseline/Netting Basis issued 3/1/12 tpy	PSEL from Permit issued 8/12/2004 tpy	PSEL from Permit issued 3/1/12 tpy	Proposed Emission Inventory Estimate tpy	Proposed PSEL tpy
PM10	229	214	134	64.4	**65**
PM2.5*	229		134	64.4	**65**
CO	277	312	348	343.4	**348**
NOx	71	65	65	62.7	**65**
SO2	8	39	39	4.6	**39**
VOC	122	93	93	57.8	**59**
Lead	0.10	0.10	0.10	0.05	**0.10**
CO2e	25,800		74,000	32,230.5	**74,000**
Individual HAP		9	9	4.1	**9**
Total HAPs		24.4	24	12.4	**24**

* PM2.5 is a subset of PM10. Emissions assume PM2.5 is 100% of PM10.

Hazardous Air Pollutants

Pollutant	Emission Inventory		Notes
	lb/yr	tpy	
Lead	107.1	0.05	
Mn	491.0	0.25	
Ni	154.0	0.08	
Cr	68.4	0.03	
Hg	3.5	0.00	
Cd	23.5	0.01	
Co	6.9	0.00	
As	7.8	0.00	
Sb	0.8	0.00	
Se	16.9	0.01	
Phenol	8,144.9	4.07	9 tpy major source threshold
Formaldehyde	1,724.6	0.86	
Benzene	2,505.2	1.25	
Cresols	3,674.0	1.84	
Toluene	1,258.1	0.63	
Naphthalene	934.5	0.47	
Triethylamine	107.4	0.05	
Diisocyanates	15.3	0.01	
Trimethylbenzene	70.8	0.04	
POMs*	5.3	0.00	from natural gas combustion
Hexane	687.5	0.34	
Dichlorobenzene	1.3	0.00	
Acrolein	89.4	0.04	
Ethylbenzene	143.8	0.07	
Xylenes	621.9	0.31	
Biphenyl	189.6	0.09	
Aniline	229.3	0.11	
Acetaldehyde	446.2	0.22	
Methylnaphthalen	1,189.3	0.59	
Propionaldehyde	45.9	0.02	
Cyanide compoun	860.9	0.43	
Dimethylaniline	183.1	0.09	
Tetrachloroethyle	53.1	0.03	
Trichloroethylene	546.1	0.27	
Cumene	72.8	0.04	
MIBK	49.4	0.02	
Styrene	87.7	0.04	
Total HAPs	**24,817.3**	**12.4**	24 tpy major source threshold

*POMs excluding naphthalene and methylnaphthalene

Facility name/site identifier	**ESCO Corp: Main Plant and Plant 3**				
Permit number	**26-2068**		**Compliance Dates:**		
Issue Date	**TBD**		**TBD**	**TBD**	
Production Inputs		**PSEL 03/24/2016**			
Main Plant	Location	**Tons Metal Melted (Tmm/yr)**	**Tons Metal Poured (Tmp/yr)**		
	Main Plant Total	12,341	9,256		
	EAF	12,341	9,256		
	AOD	-	11,107		
	V-Bay		3,966		
	Main Floor/Slinger Bay		4,728		
	Chain Floor		562		
	MP, 12 Month Rolling Gas Usage, mmcf:	250			
Plant 3	Location	**Tons Metal Melted (Tmm/yr)**	**Tons Metal Poured (Tmp/yr)**		
	Plant 3 Total	29,712	25,622		
	EAF/Pouring Loop	29,212	25,122		
	Research Induction	-	-		
	Research AOD	--	-		
	Induction	500	500		
	P3, 12 Month Rolling Gas Usage, mmcf:	100			
Welding rods and wire - Main Plant	41,650	lb/yr	based on 4.5 lb per tmp in MP		
Welding rods and wire - Plant 3	2,562	lb/yr	based on 0.1 lb per tmp in P3		
P3 Resin usage	1,409,222	lb/yr	based on 55 lb resin per tmp in P3		
P3 Coated Sand Throughput	18,067	tons/yr	Assumes 78 lb resin/ton sand in P3		
MP Sand Usage	5,553	tons/yr	based on 0.6 tons/tmp new sand into system		

Permit Revision Summary				
Date	**Pollutant**	**Plant**	**Source**	**Description of Change**
2/29/2016	Phenol	Plant 3	Pug Mill, PCS, Mold and Core	Changed emission factor based on Aug 2013 source test after binder substitution
2/29/2016	Formaldehyde	Plant 3	Pug Mill, PCS, Mold and Core	Changed emission factor based on Aug 2013 source test after binder substitution
2/29/2016	PM10, PM2.5, Pb, Mn, Ni, Cr, Hg, Cd, Co, As, Sb, Se	Main Plant	Electric Arc Furnace	Revised emission factors based on recent source tests (based on average results of all source testing from 2005 to most recent)
2/29/2016	PM10, PM2.5, Pb, Mn, Ni, Cr, Hg, Cd, Co, As, Sb, Se	Plant 3	Electric Arc Furnace	Revised emission factors based on recent source tests (based on average results of all source testing from 2007 to most recent)
2/29/2016	PM10, PM2.5, Pb, Mn, Ni, Cr, Hg, Cd, Co, As, Sb, Se	Main Plant	Lower Finishing	95% of source is controlled with a dust collector (it was previously permitted as uncontrolled); Assumed 97% control efficiency.
2/29/2016	PM10, PM2.5, Pb, Mn, Ni, Cr, Hg, Cd, Co, As, Sb, Se	Plant 3	Melt	Revised dumpback to 5% of tmm/yr (EAF/Pouring Loop) based on data since 2013
2/29/2016	PM10, PM2.5, Pb, Mn, Ni, Cr, Hg, Cd, Co, As, Sb, Se	Main Plant	MU-6 Hot Work: Lower Finishing Burning Stack (Controlled)	Revised emission factor to uncontrolled billet cutting, adjusted for capture (assumed 97% eff to be conservative. Engineering specs are 99.995% up to 10 micron).
2/29/2016	PM10, PM2.5, Pb, Mn, Ni, Cr, Hg, Cd, Co, As, Sb, Se	Main Plant	MU-6 Hot Work: Lower Finishing Burning Stack (Uncontrolled)	Revised emisson factor to AP42 Table 12.5.1.-1 mini mill-uncontrolled billet cutting.
2/29/2016	PM10, PM2.5	Main Plant	MU-2, MU-3	Updated Capture Efficiency Table with DC removal from doghouse, revised emission points, and the addition of the Didion rotary drum separator
2/29/2016	PM10, PM2.5	Main Plant	MU-3 - Slag Handling	Added control efficiency factor of 75% for dust collection from Didion rotary drum separator (metals reclaim from slag).
2/29/2016	PM10, PM2.5, Pb, Mn, Ni, Cr, Hg, Cd, Co, As, Sb, Se	Main Plant	MU-6 Hot Work: Misc. Shop Fabrication	Added maintenance shop metal fabrication throughputs. Used AP-42 factors for welding (Table 12.19-2). Assumed 90% of source is controlled at 98% control efficiency.
2/29/2016	PM10, PM2.5, Pb, Mn, Ni, Cr, Hg, Cd, Co, As, Sb, Se	Plant 3	3U-6 Hot Work	Revised Plant 3 Welding Rod Usage to 0.1 lbs rod per TMP, no longer tied to Main Plant production
2/29/2016	PM10, PM2.5, Pb, Mn, Ni, Cr, Hg, Cd, Co, As, Sb, Se	Main Plant	MU-1 Melting	Removed dumpback stand from Main Floor in late 2014
3/24/2016	Phenol, Formaldehyde, Benzene, Cresols, Toluene, Napthalene, Remaining HAPs	Plant 3	3U-3 MH/SR	Added emission factors for organic HAPS from 2015 source testing
3/24/2016	PM10, PM2.5	Plant 3	3U-3 MH/SR	Added emission factors to material handling and ladle knock-out

ESCO Portland Air Emissions
Capture Efficiencies
Issue Date TBD

Main Plant

Emission Unit	Equipment	Control Device	Hood Capture efficiency (as decimal)	
MU-1	EAFs	BH 301010	0.97	
MU-1	AOD	BH 301250	0.97	
MU-2	Doghouse pouring/cooling	BH 301110 Griffin	0.75	Remove
MU-2	Doghouse cooling/shakeout	BH 301150 Fuller	0.75	Remove
MU-2	Doghouse pouring	building only	0	Remove
MU-2	Main Floor, Slinger Bay, Chain Floor shakeout	BH 301040	0.5	
MU-2	Main Floor pouring/cooling	building only	0	not accounting for control by building
MU-2	V-Bay shakeout	BH 301350	0.5	
MU-2	V-Bay pouring/cooling- vacuum pumps	filters on vacuum pumps	0.9	
MU-2	Slinger Bay pouring/cooling	building only	0	not accounting for control by building
MU-2	Chain Floor pouring/cooling	building only	0	not accounting for control by building
MU-3	Doghouse cooling/shakeout	BH 301150 Fuller	0.75	Add
MU-3	Metals reclaim from slag	Didion rotary drum	0.75	Add

Plant 3

Emission Unit	Equipment	Control Device	Hood Capture efficiency (as decimal)
3U-1	EAF	BH 3-30112S & BH 3-30124N	0.95
3U-2	P3 PCS	BH 3-301160 & BH 3-301170	0.95
3U-7	Core & Mold Vent	None	0.9

ESCO Corp: Main Plant and Plant 3 **Compliance Dates:**

PM10 Emissions PSEL 03/24/2016 **TBD** **TBD**

Issue Date TBD

Emission Unit ID	Production Rate (yearly)		Emission Factors		Emission Factor Reference	Calculated Process Emissions (lbs/yr)	Calculated Process Emissions (tons/yr)	Emission Unit totals (tons/yr)
Main Plant								
MU - 1 MELT								
EAF-1 and EAF-2- stack	12341	tmm/yr	2.07E-01	lbs/tmm	Average all source tests since 2005 rebagging	2551.45	1.28	
EAF-1 and EAF-2- fugitive	12341	tmm/yr	3.90E-01	lbs/tmm	EAF factor, AP42 Table 12.13-2 adjusted for capture	4812.89	2.41	
AOD-8- stack	11107	tmp/yr	8.42E-02	lbs/tmp	Average all source tests	934.63	0.47	
AOD-8- fugitive	11107	tmp/yr	3.90E-01	lbs/tmp	EAF factor, AP42 Table 12.13-2 adjusted for capture	4331.60	2.17	
MU - 1 MELT TOTAL								6.32
MU - 2 PCS								
Main Floor and Slinger Bay P/C- Fugitive	4728	tmp/yr	4.20E+00	lbs/tmp	AP-42 Table 12.13-2, 1995	19856.50	9.93	
V-Bay P/C- vacuum pump exhaust- Stack	3966	tmp/yr	7.56E-01	lbs/tmp	AP-42 Table 12.13-2, 1995 adjusted for capture & control	2998.30	1.50	
V-Bay P/C- Fugitive	3966	tmp/yr	4.20E-01	lbs/tmp	AP-42 Table 12.13-2, 1995 adjusted for capture	1665.72	0.83	
Chain Floor P/C- Fugitive	562	tmp/yr	4.20E+00	lbs/tmp	AP-42 Table 12.13-2, 1995	2359.61	1.18	
Main Floor, Slinger, Chain Floor Shakeout-Stack	5290	tmp/yr	1.79E-02	lbs/tmp	Average all source tests	94.42	0.05	
Main Floor, Slinger, Chain Floor Shakeout-Fugitive	5290	tmp/yr	8.50E-01	lbs/tmp	AP42 Table 12.13-2 adjusted for capture	4496.12	2.25	
V-Bay Shakeout- Stack	3966	tmp/yr	4.46E-02	lbs/tmp	Main floor ST adjusted for capture and control	176.98	0.09	
V-Bay Shakeout- Fugitive	3966	tmp/yr	8.50E-01	lbs/tmp	AP42 Table 12.13-2 adjusted for capture	3371.10	1.69	
MU - 2 PCS TOTAL								17.51
MU-3-MH/SR								
Sand reclaim and material handling-stack	9256	tmp/yr	6.00E-01	lb/tmp	Fact Sheet 9841, adjusted for control	5553.33	2.78	
Ladle knockout- stack			0.00E+00			0.00	0.00	
Scrap Handling- fugitive	12341	tmm/yr	3.60E-01	lb/tmp	EPA, AP-42, Table 12.13-2 (charge handling)	4442.67	2.22	
Scrap burn booth-stack	1234	tmm/yr	3.20E-02	lbs/tm	AP42 Table 12.5.1.-1 mini mill-uncontrolled billet cutting	39.49	0.02	
Slag Handling- controlled	11107	tmm/yr	1.00E-03	lb/tmm	AP-42 Table 12.5-4, low silt slag, adjusted for capture	11.11	0.01	

ESCO Corp: Main Plant and Plant 3 **Compliance Dates:**

PM10 Emissions PSEL 03/24/2016 **TBD** **TBD**

Issue Date TBD

Emission Unit ID	Production Rate (yearly)		Emission Factors		Emission Factor Reference	Calculated Process Emissions (lbs/yr)	Calculated Process Emissions (tons/yr)	Emission Unit totals (tons/yr)
Slag Handling- fugitive	1234	tmm/yr	4.00E-03	lb/tmm	AP-42 Table 12.5-4, low silt slag	4.94	0.00	
Sand Handling: Slinger bay, lower core room, upper core room, chain floor sand bins-stacks	5553	ton sand/yr	2.00E-01	lb/ton sand	AP-42 Table 12.10-7, controlled	1110.67	0.56	
Rail car unloading			0.00E+00		Enclosed, no emission	0.00	0.00	
Lime silo bin vent to baghouse- stack			0.00E+00			0.00	0.00	
MU-3-MH/SR TOTAL								5.58
MU-4 S/SB								
Sand-Shot Blast- stacks	12341	tmm/yr	3.10E-01	lbs/tmm	Gutow, 1972 (100% CAP)	3825.63	1.91	
MU-4 S/SB TOTAL								1.91
MU-5 C/G								
Grinding- with control	11107	tmm/yr	8.50E-02	lbs/tmm	Fact Sheet 9841, adjusted for 95% control	944.07	0.47	
Grinding- no control	1234	tmm/yr	1.70E+00	lbs/tmm	Fact Sheet 9841	2097.93	1.05	
Carpentry shop			0.00E+00					
MU-5 C/G TOTAL								1.52
MU-6 HOTWORK								
Upper Finishing Chain table welding- fugitive	0	lb rod/yr	1.84E+01	lb/1000 lb	AP-42 Table 12.19-1	0.00	0.00	
Upper finishing- air arc & welding- stack	0	tmp/yr	1.00E-01	lbs/tm	AP42 Table 12.5-1, uncontrolled scarfing	0.00	0.00	
Upper finishing- burning- stack	0	tmp/yr	3.20E-02	lbs/tm	AP42 Table 12.5.1.-1 mini mill-uncontrolled billet cutting	0.00	0.00	
Lower finishing- burning- stack - 95% production controlled at source @ 97% eff	8793	tmp/yr	9.60E-04	lbs/tm	AP42 Table 12.5.1.-1 mini mill-uncontrolled billet cutting, adjusted for 95% capture and 97% efficiency	8.44	0.00	
Lower finishing-air arc-uncontrolled- stack - 5%	463	tmp/yr	3.20E-02	lbs/tm	AP42 Table 12.5.1.-1 mini mill-uncontrolled billet cutting	14.81	0.01	
Lower finishing-welding- stack	40817	lb rod/yr	9.20E+00	lb/1000 lb	AP-42 Table 12.19-1, 50% capture	375.52	0.19	
High and Low Temp Heat-Treating	9256	tmp/yr	7.00E-02	lbs/tmp	Gutow, 1972	647.89	0.32	
Shop Fabrication - 90% production controlled @ 98% eff	1080	lb rod/yr	3.68E-01	lb/1000 lb	AP-42 Table 12.19-1, adjusted for 98% control	0.40	0.00	
Shop Fabrication - uncontrolled	120	lb rod/yr	1.84E+01	lb/1000 lb	AP-42 Table 12.19-2	2.21	0.00	
MU-6 HOTWORK TOTAL								0.52
MU-7 MOLD/CORE								
Upper core room sand muller- stack	926	tmp/yr	3.10E-01	lb/tmp	Gutow, 1972	286.92	0.14	
Upper core room- core wash paint booth- stack	926	lb/yr	1.50E-02	lb/lb	PM from overspray, 15% overspray, 90% control from filters	13.88	0.01	
Green sand muller- loading hopper (Fuller)			0.00E+00		already accounted for in Doghouse shakeout	0.00	0.00	
Green sand muller- wet mixing	0	tmp/yr	1.20E-01	lb/tmp	Gutow, 1972 modified	0.00	0.00	
Slinger Bay: mobile sand mixer- fugitive	4728	tmp/yr	1.20E-01	lb/tmp	Gutow, 1972 modified	567.33	0.28	
Chain floor core making- Palmer screw mixer- stack	562	tmp/yr	1.20E-01	lb/tmp	Gutow, 1972 modified	67.42	0.03	
MU-7 MOLD/CORE TOTAL								0.47
MU-10 NG								
Facility-wide Natural Gas Usage	250	mmcf/yr	2.5	lbs/mmcf	Oregon DEQ EF	625.00	0.31	0.31

Main Plant Total	68288.95	34.14
Main Plant Stack	20269.24	10.13
Main Plant Fugitive	48019.72	24.01

ESCO Corp: Main Plant and Plant 3 **Compliance Dates:**

PM10 Emissions PSEL 03/24/2016 **TBD** **TBD**

Issue Date TBD

Emission Unit ID	Production Rate (yearly)		Emission Factors		Emission Factor Reference	Calculated Process Emissions (lbs/yr)	Calculated Process Emissions (tons/yr)	Emission Unit totals (tons/yr)
3U-1 MELT								
EAF-5- stack	29212	tmm/yr	2.46E-02	lbs/tmm	Average all source tests since 2007 new baghouse	717.64	0.36	
EAF-5- fugitive	29212	tmm/yr	6.50E-01	lbs/tmm	AP42 Table 12.13-2 adjusted for capture	18987.73	9.49	
INDF-3- stack	500	tmm/yr	9.00E-03	lbs/tmm	AP-42 Table 12.13-2 adjusted for 90% control	4.50	0.00	
INDF-4- fugitive	0	tmm/yr	9.00E-02	lbs/tmm	AP-42 Table 12.13-2	0.00	0.00	
AOD-Res- stack	0	tmp/yr	6.75E-01	lbs/tmp	EAF emission factor	0.00	0.00	
Ladle dump back- fugitive (newly added, previously not included)	1461	tmm/yr	3.37E-01	lbs/tmm	Assume 50% of AOD fugitives, 5% of tmm	492.63	0.25	
3U-1 MELT TOTAL								9.85
3U-2 PCS								
Pouring, Cooling and Shakeout-stack	25622	tmp/yr	3.12E-01	lbs/tmp	Average all source tests	7996.70	4.00	
Pouring, Cooling and Shakeout-fugitive	25622	tmp/yr	2.95E-01	lbs/tmp	AP42 Table 12.13-2 adjusted for capture	7558.56	3.78	
3U-2 PCS TOTAL								7.78
3U-3-MH/SR								
Thermal Sand Reclaim- stack	18067	tons sand/yr	3.64E-02	lbs/ton sand	Pacific Steel source test	657.64	0.33	
Scrap Handling- fugitive	25622	tmp/yr	3.60E-01	lb/tmp	EPA, AP-42, Table 12.13-2 (charge handling)	9224.00	4.61	
Slag Handling- fugitive	29712	tmm/yr	4.00E-03	lb/tmm	AP-42 Table 12.5-4, low silt slag	118.85	0.06	
Material handling- bin vent filters- stacks	18067	tons sand/yr	1.62E-02	lbs/ton sand	AP-42 Table 12.13-2 (adjusted for control)	292.68	0.15	
R&D material handling- stack	181	tons sand/yr	1.62E-02	lbs/ton sand	AP-42 Table 12.13-2 (adjusted for control)	2.93	0.00	
Ladle knockout- stack	25122	tmp/yr	5.00E-05	lbs/tmp	Process knowledge	1.26	0.00	
3U-3-MH/SR TOTAL								5.15
3U-4 S/SB								
Sand-Shot Blast- stacks	8914	tmm/yr	3.10E-01	lbs/tmm	Gutow, 1972 (100% CAP)	2763.21	1.38	
3U-4 S/SB TOTAL								1.38
3U-5 C/G								
Grinding- stack	8914	tmm/yr	8.50E-02	lbs/tmm	Fact Sheet 9841, adjusted for control	757.65	0.38	
3U-5 C/G TOTAL								0.38
3U-6 HOTWORK								
Welding- stack	2562	lb rod/yr	1.84E+01	lb/1000 lb	AP-42 Table 12.19-1	47.14	0.02	
High and Low Temp Heat-Treating- stacks	25622	tmp/yr	7.00E-02	lbs/tmp	Gutow, 1972	1793.56	0.90	
3U-6 HOTWORK TOTAL								0.92
3U-7 MOLD/CORE								
Pug mill system- stack	180670	tons sand/yr	6.00E-03	lb/ton sand	Pacific Steel source test	1084.02	0.54	
Mold & Core Making	29712	tmm/yr	1.20E-01	lbs/tmm	Gutow, 1972 modified	3565.43	1.78	
3U-7 MOLD/CORE TOTAL								2.32

ESCO Corp: Main Plant and Plant 3 **Compliance Dates:**

PM10 Emissions PSEL 03/24/2016 **TBD** **TBD**

Issue Date TBD

Emission Unit ID	Production Rate (yearly)		Emission Factors		Emission Factor Reference	Calculated Process Emissions (lbs/yr)	Calculated Process Emissions (tons/yr)	Emission Unit totals (tons/yr)
3U-9 COATING								
spray painting	8037	gal/yr	2.67E-01	lb/gal	PM from overspray, 8.9 lb/gal paint, 0.455 lb paint/tmp x 1.2. 30% overspray, 90% filter control	2145.88	1.07	
3U-9 COATING TOTAL								1.07
3U-10 NG								
Facility-wide Natural Gas Usage	100	mmcf/yr	2.50E+00	lbs/mmcf	Oregon DEQ EF	250.00	0.13	0.13

Plant 3 Total	58461.98	29.23
Plant 3 Stack	18510.29	8.18
Plant 3 Fugitive	39951.69	19.98

		Current PSEL
Main Plant + Plant 3 Total + 1 tpy aggregate insignificant	64.38	134.00
Main Plant + Plant 3 Stack	18.32	
Main Plant + Plant 3 Fugitive + 1 tpy aggregate insignificant	44.99	

NOTES:
tmm = tons of metal melted, tmp = tons of metal poured
mmcf = million cubic feet of natural gas

2. MP EAF fugitive emission factor is calculated from an AP42 uncontrolled emission factor of 13 lb/tmm and 97% capture efficiency .
3. AOD stack emision factor is average of source tests
4. AOD fugitive emission factor is calculated from an AP42 uncontrolled emission factor for EAFs of 13 lb/tmm and 97% capture efficiency

6. MP PCS (griffin and fuller) fugitive emission factor is calculated from sum of AP42 emission factors for uncontrolled cooling and shakeout and 75% capture efficiency
7. MP Pouring fugitive emission factor is from AP42 emission factor for uncontrolled pouring.
8. MP pouring and cooling fugitive emission factor is for uncontrolled pouring plus cooling emission factors from AP42.
9. MP shakeout fugitive emission factor is for uncontrolled shakeout factor from AP42 adjusted for capture
10. Emissions included in aggregate insignificant
11. Assumes 10% of tmm processed through activity
12. Assumes 2% of rod used for chain table
13. Used Iron & Steel production emission factor for uncontrolled scarfing for air arc activities
14. Used Steel minimill emission factor for uncontrolled billet cutting for burning (torch cutting) activities
15. Natural gas emission factor is Oregon DEQ emission factor
16. P3 EAF stack emission factor is average 2007-2009 test data. New baghouse built in 2007.
17. P3 EAF fugitive emission factor is calculated from an AP42 uncontrolled emission factor of 13 lb/tmm and 95% capture efficiency .
18. P3 PCS stack emission factor is average of source tests
19. P3 PCS fugitive emission factor is calculated from an AP42 uncontrolled emission factor of 5.9 lb/tmp and 95% capture efficiency .
20. Welding rod use at P3 incidental only. Assume 10% of MP usage
21. PM from spray coatings assumes 30% overspray and 90% control by paint booth filters
22. Foundries Emission Calculation Fact Sheet 9841, Michigan DEQ, Rev. 11/2005, Factor for uncontrolled sand grinding/handling of 6 lb/tm
23. Foundries Emission Calculation Fact Sheet 9841, Michigan DEQ, Rev. 11/2005, Factor for uncontrolled grinding/cleaning of 1.7 lb/tm

ESCO Corp: Main Plant and Plant 3

PM2.5 Emissions PSEL 03/24/2016

Issue Date TBD

Compliance Dates:

TBD **TBD**

(Assumes PM2.5 is 100% of PM10)

Emission Unit ID	Production Rate (yearly)		Emission Factors		Emission Factor Reference	Calculated Process Emissions (lbs/yr)	Calculated Process Emissions (tons/yr)	Emission Unit totals (tons/yr)
Main Plant								
MU - 1 MELT								
EAF-1 and EAF-2- stack	12341	tmm/yr	2.07E-01	lbs/tmm	Average all source tests since 2005 rebagging	2551.45	1.28	
EAF-1 and EAF-2- fugitive	12341	tmm/yr	3.90E-01	lbs/tmm	EAF factor, AP42 Table 12.13-2 adjusted for capture	4812.89	2.41	
AOD-8- stack	11107	tmp/yr	8.42E-02	lbs/tmp	Average all source tests	934.63	0.47	
AOD-8- fugitive	11107	tmp/yr	3.90E-01	lbs/tmp	EAF factor, AP42 Table 12.13-2 adjusted for capture	4331.60	2.17	
MU - 1 MELT TOTAL								6.32
MU - 2 PCS								
Main Floor and Slinger Bay P/C- Fugitive	4728	tmp/yr	4.20E+00	lbs/tmp	AP-42 Table 12.13-2, 1995	19856.50	9.93	
V-Bay P/C- vacuum pump exhaust- Stack	3966	tmp/yr	7.56E-01	lbs/tmp	AP-42 Table 12.13-2, 1995 adjusted for capture & control	2998.30	1.50	
V-Bay P/C- Fugitive	3966	tmp/yr	4.20E-01	lbs/tmp	AP-42 Table 12.13-2, 1995 adjusted for capture	1665.72	0.83	
Chain Floor P/C- Fugitive	562	tmp/yr	4.20E+00	lbs/tmp	AP-42 Table 12.13-2, 1995	2359.61	1.18	
Main Floor, Slinger, Chain Floor Shakeout-Stack	5290	tmp/yr	1.79E-02	lbs/tmp	Average all source tests	94.42	0.05	
Main Floor, Slinger, Chain Floor Shakeout-Fugitive	5290	tmp/yr	8.50E-01	lbs/tmp	AP42 Table 12.13-2 adjusted for capture	4496.12	2.25	
V-Bay Shakeout- Stack	3966	tmp/yr	4.46E-02	lbs/tmp	Main floor ST adjusted for capture and control	176.98	0.09	
V-Bay Shakeout- Fugitive	3966	tmp/yr	8.50E-01	lbs/tmp	AP42 Table 12.13-2 adjusted for capture	3371.10	1.69	
MU - 2 PCS TOTAL								17.51
MU-3-MH/SR								
Sand reclaim and material handling-stack	9256	tmp/yr	6.00E-01	lb/tmp	Fact Sheet 9841, adjusted for control	5553.33	2.78	
Ladle knockout- stack			0.00E+00			0.00	0.00	
Scrap Handling- fugitive	12341	tmm/yr	3.60E-01	lb/tmp	EPA, AP-42, Table 12.13-2 (charge handling)	4442.67	2.22	
Scrap burn booth-stack	1234	tmm/yr	3.20E-02	lbs/tm	AP42 Table 12.5.1.-1 mini mill-uncontrolled billet cutting	39.49	0.02	
Slag handling - controlled	11107	tmm/yr	1.00E-03	lb/tmm	AP-42 Table 12.5-4, low silt slag, adjusted for capture	11.11	0.01	
Slag Handling- fugitive	1234	tmm/yr	4.00E-03	lb/tmm	AP-42 Table 12.5-4, low silt slag	4.94	0.00	

ESCO Corp: Main Plant and Plant 3

PM2.5 Emissions PSEL 03/24/2016

Issue Date TBD

Compliance Dates:

TBD **TBD**

(Assumes PM2.5 is 100% of PM10)

Emission Unit ID	Production Rate (yearly)		Emission Factors		Emission Factor Reference	Calculated Process Emissions (lbs/yr)	Calculated Process Emissions (tons/yr)	Emission Unit totals (tons/yr)
Sand Handling: Slinger bay, lower core room, upper core room, chain floor sand bins-stacks	5553	ton sand/yr	2.00E-01	lb/ton sand	AP-42 Table 12.10-7, controlled	1110.67	0.56	
Rail car unloading			0.00E+00		Enclosed, no emission	0.00	0.00	
Lime silo bin vent to baghouse- stack			0.00E+00			0.00	0.00	
MU-3-MH/SR TOTAL								5.58
MU-4 S/SB								
Sand-Shot Blast- stacks	12341	tmm/yr	3.10E-01	lbs/tmm	Gutow, 1972 (100% CAP)	3825.63	1.91	
MU-4 S/SB TOTAL								1.91
MU-5 C/G								
Grinding- with control	11107	tmm/yr	8.50E-02	lbs/tmm	Fact Sheet 9841, adjusted for 95% control	944.07	0.47	
Grinding- no control	1234	tmm/yr	1.70E+00	lbs/tmm	Fact Sheet 9841	2097.93	1.05	
Carpentry shop			0.00E+00					
MU-5 C/G TOTAL								1.52
MU-6 HOTWORK								
Upper Finishing Chain table welding- fugitive	0	lb rod/yr	1.84E+01	lb/1000 lb	AP-42 Table 12.19-1	0.00	0.00	
Upper finishing- air arc & welding- stack	0	tmp/yr	1.00E-01	lbs/tm	AP42 Table 12.5-1, uncontrolled scarfing	0.00	0.00	
Upper finishing- burning- stack	0	tmp/yr	3.20E-02	lbs/tm	AP42 Table 12.5.1.-1 mini mill-uncontrolled billet cutting	0.00	0.00	
Lower finishing- burning- stack - 95% production controlled at source @ 97% eff	8793	tmp/yr	9.60E-04	lbs/tm	AP42 Table 12.5.1.-1 mini mill-uncontrolled billet cutting, adjusted for 95% capture and 97% efficiency	8.44	0.00	
Lower finishing-air arc-uncontrolled- stack - 5%	463	tmp/yr	3.20E-02	lbs/tm	AP42 Table 12.5.1.-1 mini mill-uncontrolled billet cutting	14.81	0.01	
Lower finishing-welding- stack	40817	lb rod/yr	9.20E+00	lb/1000 lb	AP-42 Table 12.19-1, 50% capture	375.52	0.19	
High and Low Temp Heat-Treating	9256	tmp/yr	7.00E-02	lbs/tmp	Gutow, 1972	647.89	0.32	
Shop Fabrication - 90% production controlled @ 98% eff	1080	lb rod/yr	3.68E-01	lb/1000 lb	AP-42 Table 12.19-1, adjusted for 98% control	0.40	0.00	
Shop Fabrication - uncontrolled	120	lb rod/yr	1.84E+01	lb/1000 lb	AP-42 Table 12.19-2	2.21	0.00	
MU-6 HOTWORK TOTAL								0.52
MU-7 MOLD/CORE								
Upper core room sand muller- stack	926	tmp/yr	3.10E-01	lb/tmp	Gutow, 1972	286.92	0.14	
Upper core room- core wash paint booth- stack	926	lb/yr	1.50E-02	lb/lb	PM from overspray, 15% overspray, 90% control from filters	13.88	0.01	
Green sand muller- loading hopper (Fuller)	0		0.00E+00		already accounted for in Doghouse shakeout	0.00	0.00	
Green sand muller- wet mixing	0	tmp/yr	1.20E-01	lb/tmp	Gutow, 1972 modified	0.00	0.00	
Slinger Bay: mobile sand mixer- fugitive	4728	tmp/yr	1.20E-01	lb/tmp	Gutow, 1972 modified	567.33	0.28	
Chain floor core making- Palmer screw mixer- stack	562	tmp/yr	1.20E-01	lb/tmp	Gutow, 1972 modified	67.42	0.03	
MU-7 MOLD/CORE TOTAL								0.47
MU-10 NG								
Facility-wide Natural Gas Usage	250	mmcf/yr	2.5	lbs/mmcf	Oregon DEQ EF	625.00	0.31	0.31

Main Plant Total	68288.95	34.14
Main Plant Stack	20269.24	10.13
Main Plant Fugitive	48019.72	24.01

ESCO Corp: Main Plant and Plant 3

PM2.5 Emissions PSEL 03/24/2016

Issue Date TBD

Compliance Dates:

TBD **TBD**

(Assumes PM2.5 is 100% of PM10)

Emission Unit ID	Production Rate (yearly)		Emission Factors		Emission Factor Reference	Calculated Process Emissions (lbs/yr)	Calculated Process Emissions (tons/yr)	Emission Unit totals (tons/yr)
Plant 3								
3U-1 MELT								
EAF-5- stack	29212	tmm/yr	2.46E-02	lbs/tmm	Average all source tests since 2007 new baghouse	717.64	0.36	
EAF-5- fugitive	29212	tmm/yr	6.50E-01	lbs/tmm	AP42 Table 12.13-2 adjusted for capture	18987.73	9.49	
INDF-3- stack	500	tmm/yr	9.00E-03	lbs/tmm	AP-42 Table 12.13-2 adjusted for 90% control	4.50	0.00	
INDF-4- fugitive	0	tmm/yr	9.00E-02	lbs/tmm	AP-42 Table 12.13-2	0.00	0.00	
AOD-Res- stack	0	tmp/yr	6.75E-01	lbs/tmp	EAF emission factor	0.00	0.00	
Ladle dump back- fugitive (newly added, previously not included)	1461	tmm/yr	3.37E-01	lbs/tmm	Assume 50% of AOD fugitives, 5% of tmm	492.63	0.25	
3U-1 MELT TOTAL								9.85
3U-2 PCS								
Pouring, Cooling and Shakeout-stack	25622	tmp/yr	3.12E-01	lbs/tmp	Average all source tests	7996.70	4.00	
Pouring, Cooling and Shakeout-fugitive	25622	tmp/yr	2.95E-01	lbs/tmp	AP42 Table 12.13-2 adjusted for capture	7558.56	3.78	
3U-2 PCS TOTAL								7.78
3U-3-MH/SR								
Thermal Sand Reclaim- stack	18067	tons sand/yr	3.64E-02	lb/ton sand	Pacific Steel source test,	657.64	0.33	
Scrap Handling- fugitive	25622	tmp/yr	3.60E-01	lb/tmp	EPA, AP-42, Table 12.13-2 (charge handling)	9224.00	4.61	
Slag Handling- fugitive	29712	tmm/yr	4.00E-03	lb/tmm	AP-42 Table 12.5-4, low silt slag	118.85	0.06	
Material handling- bin vent filters- stacks	18067	tons sand/yr	1.62E-02	lbs/ton sand	AP-42 Table 12.13-2 (adjusted for control)	292.68	0.15	
R&D material handling- stack	181	tons sand/yr	1.62E-02	lbs/ton sand	AP-42 Table 12.13-2 (adjusted for control)	2.93	0.00	
Ladle knockout- stack	25122	tmp/yr	5.00E-05	lbs/tmp	Process knowledge	1.26	0.00	
3U-3-MH/SR TOTAL								5.15
3U-4 S/SB								
Sand-Shot Blast- stacks	8914	tmm/yr	3.10E-01	lbs/tmm	Gutow, 1972 (100% CAP)	2763.21	1.38	
3U-4 S/SB TOTAL								1.38
3U-5 C/G								
Grinding- stack	8914	tmm/yr	8.50E-02	lbs/tmm	Fact Sheet 9841, adjusted for control	757.65	0.38	
3U-5 C/G TOTAL								0.38
3U-6 HOTWORK								
Welding- stack	2562	lb rod/yr	1.84E+01	lb/1000 lb	AP-42 Table 12.19-1	47.14	0.02	
High and Low Temp Heat-Treating- stacks	25622	tmp/yr	7.00E-02	lbs/tmp	Gutow, 1972	1793.56	0.90	
3U-6 HOTWORK TOTAL								0.92
3U-7 MOLD/CORE								
Pug mill system- stack	180670	tons sand/yr	6.00E-03	lb/ton sand	Pacific Steel source test	1084.02	0.54	
Mold & Core Making	29712	tmm/yr	1.20E-01	lbs/tmm	Gutow, 1972 modified	3565.43	1.78	
3U-7 MOLD/CORE TOTAL								2.32

ESCO Corp: Main Plant and Plant 3

PM2.5 Emissions PSEL 03/24/2016

Issue Date TBD

Compliance Dates:

TBD **TBD**

(Assumes PM2.5 is 100% of PM10)

Emission Unit ID	Production Rate (yearly)		Emission Factors		Emission Factor Reference	Calculated Process Emissions (lbs/yr)	Calculated Process Emissions (tons/yr)	Emission Unit totals (tons/yr)
3U-9 COATING								
spray painting	8037	gal/yr	2.67E-01	lb/gal	PM from overspray, 8.9 lb/gal paint, 0.455 lb paint/tmp x 1.2. 30% overspray, 90% filter control	2145.88	1.07	
3U-9 COATING TOTAL								1.07
3U-10 NG								
Facility-wide Natural Gas Usage	100	mmcf/yr	2.50E+00	lbs/mmcf	Oregon DEQ EF	250.00	0.13	0.13

Plant 3 Total	58461.98	29.23
Plant 3 Stack	18510.29	8.18
Plant 3 Fugitive	39951.69	19.98

Total Facility PM10 Emissions		Current PSEL
Main Plant + Plant 3 Total + 1 tpy aggregate insignificant	64.38	134.00
Main Plant + Plant 3 Stack	18.32	
Main Plant + Plant 3 Fugitive + 1 tpy aggregate insignificant	44.99	

NOTES:
tmm = tons of metal melted, tmp = tons of metal poured
mmcf = million cubic feet of natural gas

1. MP EAF stack emission factor is average 2005-2009 test data. Baghouse rebagged in 2005.
2. MP EAF fugitive emission factor is calculated from an AP42 uncontrolled emission factor of 13 lb/tmm and 97% capture efficiency .
3. AOD stack emision factor is average of source tests
4. AOD fugitive emission factor is calculated from an AP42 uncontrolled emission factor for EAFs of 13 lb/tmm and 97% capture efficiency
5. MP PCS (griffin and fuller) stack emission factor is average of source tests
6. MP PCS (griffin and fuller) fugitive emission factor is calculated from sum of AP42 emission factors for uncontrolled cooling and shakeout and 75% capture efficiency
7. MP Pouring fugitive emission factor is from AP42 emission factor for uncontrolled pouring.
8. MP pouring and cooling fugitive emission factor is for uncontrolled pouring plus cooling emission factors from AP42.
9. MP shakeout fugitive emission factor is for uncontrolled shakeout factor from AP42 adjusted for capture
10. Emissions included in aggregate insignificant
11. Assumes 10% of tmm processed through activity
12. Assumes 2% of rod used for chain table
13. Used Iron & Steel production emission factor for uncontrolled scarfing for air arc activities
14. Used Steel minimill emission factor for uncontrolled billet cutting for burning (torch cutting) activities
15. Natural gas emission factor is Oregon DEQ emission factor
16. P3 EAF stack emission factor is average 2007-2009 test data. New baghouse built in 2007.
17. P3 EAF fugitive emission factor is calculated from an AP42 uncontrolled emission factor of 13 lb/tmm and 95% capture efficiency .
18. P3 PCS stack emission factor is average of source tests
19. P3 PCS fugitive emission factor is calculated from an AP42 uncontrolled emission factor of 5.9 lb/tmp and 95% capture efficiency .
20. Welding rod use at P3 incidental only. Assume 10% of MP usage
21. PM from spray coatings assumes 30% overspray and 90% control by paint booth filters
22. Foundries Emission Calculation Fact Sheet 9841, Michigan DEQ, Rev. 11/2005, Factor for uncontrolled sand grinding/handling of 6 lb/tm
23. Foundries Emission Calculation Fact Sheet 9841, Michigan DEQ, Rev. 11/2005, Factor for uncontrolled grinding/cleaning of 1.7 lb/tm

ESCO Corp: Main Plant and Plant 3 **Compliance Dates:**

CO Emissions PSEL 03/24/2016 **TBD** **TBD**

Issue Date TBD

Emission Unit ID	Production Rate (yearly)		Emission Factors		Emission Factor Reference	Calculated Process Emissions (tons/yr)	Emission Unit totals (tons/yr)
Main Plant							
MU - 1 MELT							
EAF-1 and EAF-2- stack	12341	tmm/yr	4.30E+00	lbs/tmm	Average all source tests	26.53	
EAF-1 and EAF-2- fugitive	12341	tmm/yr	1.33E-01	lbs/tmm	avg. ST, adjusted for capture	0.82	
AOD-8- stack	11107	tmp/yr	2.66E+00	lbs/tmp	MetalTek International, 2.74 lb/tm source test	14.76	
AOD-8- fugitive	11107	tmp/yr	8.22E-02	lbs/tmp	MetalTek International, 2.74 lb/tm source test	0.46	
MU - 1 MELT TOTAL							42.57
MU - 2 PCS							
Main Floor and Slinger Bay P/C- Fugitive	4728	tmp/yr	1.18E+00	lbs/tmp	same as fuller	2.80	
V-Bay P/C- vacuum pump exhaust- Stack	3966	tmp/yr	1.07E+00	lbs/tmp	same as fuller adjusted for capture	2.11	
V-Bay P/C- Fugitive	3966	tmp/yr	1.18E-01	lbs/tmp	same as fuller adjusted for capture	0.23	
Chain Floor P/C- Fugitive	562	tmp/yr	1.18E+00	lbs/tmp	same as fuller	0.33	
Main Floor, Slinger, Chain Floor Shakeout-Stack	5290	tmp/yr	5.92E-01	lbs/tmp	same as fuller adjusted for capture	1.57	
Main Floor, Slinger, Chain Floor Shakeout-Fugitive	5290	tmp/yr	5.92E-01	lbs/tmp	same as fuller adjusted for capture	1.57	
V-Bay Shakeout- Stack	3966	tmp/yr	5.92E-01	lbs/tmp	same as fuller adjusted for capture	1.17	
V-Bay Shakeout- Fugitive	3966	tmp/yr	5.92E-01	lbs/tmp	same as fuller adjusted for capture	1.17	
MU - 2 PCS TOTAL							10.96
MU-3-MH/SR							
MU-3-MH/SR TOTAL							0.00
MU-4 S/SB							
Sand-Shot Blast- stacks	12341	tmm/yr		lbs/tmm		0.00	
MU-4 S/SB TOTAL							0.00

ESCO Corp: Main Plant and Plant 3 **Compliance Dates:**

CO Emissions PSEL 03/24/2016 **TBD** **TBD**

Issue Date TBD

Emission Unit ID	Production Rate (yearly)		Emission Factors		Emission Factor Reference	Calculated Process Emissions (tons/yr)	Emission Unit totals (tons/yr)
MU-5 C/G							
Grinding- with control	11107	tmm/yr		lbs/tmm		0.00	
Grinding- no control	1234	tmm/yr		lbs/tmm			
Carpentry shop							
MU-5 C/G TOTAL							0.00
MU-6 HOTWORK							
Chain table welding- fugitive	0	lb rod/yr		lb/1000 lb		0.00	
Upper finishing- air arc & welding- stack	0						
Upper finishing- burning- stack	0	tmp/yr		lbs/tmp		0.00	
Lower finishing- burning- stack	8793	tmp/yr		lbs/tmp		0.00	
Lower finishing-air arc- stack	463	tmp/yr				0.00	
Lower finishing-welding- stack	40817	lb rod/yr		lb/1000 lb		0.00	
High and Low Temp Heat-Treating	9256	tmp/yr		lbs/tmp		0.00	
MU-6 HOTWORK TOTAL							0.00
MU-7 MOLD/CORE							
Oil core oven (3% of production only)	278	tmp/yr		lb/tmp		0.00	
Upper core room sand muller- stack	0	tmp/yr		lb/tmp		0.00	
Upper core room- core wash paint booth- stack						0.00	
Green sand muller- loading hopper (Fuller)						0.00	
Green sand muller- wet mixing	0	tmp/yr		lb/tmp		0.00	
Slinger sand mixer- stack	4728	tmp/yr		lb/tmp		0.00	
Chain floor core making- screw mixer- stack	562	tmp/yr		lb/tmp		0.00	
MU-7 MOLD/CORE TOTAL							0.00
MU-10 NG							
Facility-wide Natural Gas Usage	250	mmcf/yr	84	lbs/mmcf	Oregon DEQ EF	10.50	10.50

Main Plant Total	64.03
Main Plant Stack	56.64
Main Plant Fugitive	7.38

Plant 3

3U-1 MELT							
EAF-5- stack	29212	tmm/yr	5.67E+00	lbs/tmm	Average all source tests	82.86	
EAF-5- fugitive	29212	tmm/yr	2.99E-01	lbs/tmm	avg. ST, adjusted for capture	4.36	
INDF-3- stack	500	tmm/yr	2.74E+00	lbs/tmm	MP AOD emission factor	0.69	
INDF-4- fugitive	0	tmm/yr	2.74E+00	lbs/tmm	MP AOD emission factor	0.00	
AOD-Res- stack	0	tmp/yr	2.74E+00	lbs/tmp	MP AOD emission factor	0.00	
3U-1 MELT TOTAL							87.91
3U-2 PCS							
Pouring, Cooling and Shakeout-stack	25622	tmp/yr	1.38E+01	lbs/tmp	Average all source tests	176.15	
Pouring, Cooling and Shakeout-fugitive	25622	tmp/yr	7.24E-01	lbs/tmp	avg. ST adjusted for capture	9.27	
3U-2 PCS TOTAL							185.42
3U-3-MH/SR							
Thermal Sand Reclaim- stack	18067	tons sand/yr	9.80E-02	lb/ton sand	Andritz Inc air permit emission rates	0.89	
3U-3-MH/SR TOTAL							0.89
3U-4 S/SB							
3U-4 S/SB TOTAL							0.00
3U-5 C/G							
3U-5 C/G TOTAL							0.00
3U-6 HOTWORK							

ESCO Corp: Main Plant and Plant 3

CO Emissions PSEL 03/24/2016

Issue Date TBD

Compliance Dates:

TBD **TBD**

Emission Unit ID	Production Rate (yearly)		Emission Factors		Emission Factor Reference	Calculated Process Emissions (tons/yr)	Emission Unit totals (tons/yr)
3U-6 HOTWORK TOTAL							0.00
3U-7 MOLD/CORE							
3U-7 MOLD/CORE TOTAL							0.00
3U-9 COATING							
3U-9 COATING TOTAL							0.00
3U-10 NG							
Facility-wide Natural Gas Usage	100	mmcf/yr	8.40E+01	lbs/mmcf	Oregon DEQ EF	4.20	4.20

Plant 3 Total	278.42
Plant 3 Stack	264.79
Plant 3 Fugitive	13.63

Total Facility CO Emissions		Current PSEL
Main Plant + Plant 3 Total + 1 tpy aggregate in	343.45	348
Main Plant + Plant 3 Stack	321.43	
Main Plant + Plant 3 Fugitive + 1 tpy aggregate	22.02	

NOTES:
tmm = tons of metal melted, tmp = tons of metal poured
mmcf = million cubic feet of natural gas

ESCO Corp: Main Plant and Plant 3 **Compliance Dates:**

NOx Emissions PSEL 03/24/2016 **TBD** **TBD**

Issue Date TBD

Emission Unit ID	Production Rate (yearly)		Emission Factors		Emission Factor Reference	Calculated Process Emissions (tons/yr)	Emission Unit totals (tons/yr)
Main Plant							
MU - 1 MELT							
EAF-1 and EAF-2- stack	12341	tmm/yr	8.40E-01	lbs/tmm	Average all source tests	5.18	
EAF-1 and EAF-2- fugitive	12341	tmm/yr	2.60E-02	lbs/tmm	avg. ST, adjusted for capture	0.16	
AOD-8- stack	11107	tmp/yr	8.40E-01	lbs/tmp	EAF emission factor	4.66	
AOD-8- fugitive	11107	tmp/yr	2.60E-02	lbs/tmp	EAF emission factor	0.14	
MU - 1 MELT TOTAL							10.15
MU - 2 PCS							
Main Floor and Slinger Bay P/C- Fugitive	4728	tmp/yr	1.00E-02	lbs/tmp	Fact sheet No 9841	0.02	
V-Bay P/C- vacuum pump exhaust- Stack	3966	tmp/yr	9.00E-03	lbs/tmp	Fact sheet No 9841 adjusted for capture	0.02	
V-Bay P/C- Fugitive	3966	tmp/yr	1.00E-03	lbs/tmp	Fact sheet No 9841 adjusted for capture	0.00	
Chain Floor P/C- Fugitive	562	tmp/yr	1.00E-02	lbs/tmp	Fact sheet No 9841	0.00	
Main Floor, Slinger, Chain Floor Shakeout-Stack	5290	tmp/yr	5.00E-03	lbs/tmp	Fact sheet No 9841	0.01	
Main Floor, Slinger, Chain Floor Shakeout-Fugitive	5290	tmp/yr	5.00E-03	lbs/tmp		0.01	
V-Bay Shakeout- Stack	3966	tmp/yr	5.00E-03	lbs/tmp	Fact sheet No 9841	0.01	
V-Bay Shakeout- Fugitive	3966	tmp/yr	5.00E-03	lbs/tmp		0.01	
MU - 2 PCS TOTAL							0.09
MU-3-MH/SR							
MU-3-MH/SR TOTAL							0.00
MU-4 S/SB							
MU-4 S/SB TOTAL							0.00
MU-5 C/G							
MU-5 C/G TOTAL							0.00
MU-6 HOTWORK							
MU-6 HOTWORK TOTAL							0.00
MU-7 MOLD/CORE							
MU-7 MOLD/CORE TOTAL							0.00
MU-10 NG							
Facility-wide Natural Gas Usage	250	mmcf/yr	100	lbs/mmcf	Oregon DEQ EF	12.50	12.50

Main Plant Total	22.75
Main Plant Stack	22.39
Main Plant Fugitive	0.36

ESCO Corp: Main Plant and Plant 3 **Compliance Dates:**

NOx Emissions PSEL 03/24/2016 **TBD** **TBD**

Issue Date TBD

Emission Unit ID	Production Rate (yearly)		Emission Factors		Emission Factor Reference	Calculated Process Emissions (tons/yr)	Emission Unit totals (tons/yr)
Plant 3							
3U-1 MELT							
EAF-5- stack	29212	tmm/yr	2.03E+00	lbs/tmm	Average all source tests	29.65	
EAF-5- fugitive	29212	tmm/yr	1.07E-01	lbs/tmm	avg. ST, adjusted for capture	1.56	
INDF-3- stack	500	tmm/yr	2.14E+00	lbs/tmm	EAF emission factor	0.53	
INDF-4- fugitive	0	tmm/yr	2.14E+00	lbs/tmm	EAF emission factor	0.00	
AOD-Res- stack	0	tmp/yr	2.14E+00	lbs/tmp	EAF emission factor	0.00	
3U-1 MELT TOTAL							31.74
3U-2 PCS							
Pouring, Cooling and Shakeout-stack	25622	tmp/yr	1.00E-02	lbs/tmp	Fact sheet No 9841	0.13	
Pouring, Cooling and Shakeout-fugitive	25622	tmp/yr	5.26E-04	lbs/tmp	adjusted for capture	0.01	
3U-2 PCS TOTAL							0.13
3U-3-MH/SR							
Thermal Sand Reclaim- stack	18067	tons sand/yr	3.45E-01	lb/ton sand	Andritz Inc air permit emission rates	3.12	
3U-3-MH/SR TOTAL							3.12
3U-4 S/SB							
3U-4 S/SB TOTAL							0.00
3U-5 C/G							
3U-5 C/G TOTAL							0.00
3U-6 HOTWORK							
3U-6 HOTWORK TOTAL							0.00
3U-7 MOLD/CORE							
3U-7 MOLD/CORE TOTAL							0.00
3U-9 COATING							
3U-9 COATING TOTAL							0.00
3U-10 NG							
Facility-wide Natural Gas Usage	100	mmcf/yr	1.00E+02	lbs/mmcf	Oregon DEQ EF	5.00	5.00

Plant 3 Total	40.00
Plant 3 Stack	38.43
Plant 3 Fugitive	1.57

Total Facility NOx Emissions Current PSEL

Main Plant + Plant 3 Total	62.74	65.00
Main Plant + Plant 3 Stack	60.82	
Main Plant + Plant 3 Fugitive	1.92	

NOTES:
tmm = tons of metal melted, tmp = tons of metal poured
mmcf = million cubic feet of natural gas

1. Foundries Emission Calculation Fact Sheet 9841, Michigan DEQ, Rev. 11/2005, Factors for uncontrolled emissions

ESCO Corp: Main Plant and Plant 3 **Compliance Dates:**

SO2 Emissions PSEL 03/24/2016 **TBD** **TBD**

Issue Date TBD

Emission Unit ID	Production Rate (yearly)		Emission Factors		Emission Factor Reference	Calculated Process Emissions (tons/yr)	Emission Unit totals (tons/yr)
Main Plant							
MU - 1 MELT							
EAF-1 and EAF-2- stack	12341	tmm/yr	2.56E-01	lbs/tmm	2001 ST x1.2	1.58	
EAF-1 and EAF-2- fugitive	12341	tmm/yr	7.20E-03	lbs/tmm	Fact sheet No 9841, adjusted for capture	0.04	
AOD-8- stack	11107	tmp/yr	0.00E+00	lbs/tmp	sulfur lost in EAF	0.00	
AOD-8- fugitive	11107	tmp/yr	0.00E+00	lbs/tmp	sulfur lost in EAF	0.00	
MU - 1 MELT TOTAL							1.62
MU - 2 PCS							
Main Floor and Slinger Bay P/C- Fugitive	4728	tmp/yr	2.00E-02	lbs/tmp	Fact sheet No 9841	0.05	
V-Bay P/C- vacuum pump exhaust- Stack	3966	tmp/yr	1.80E-02	lbs/tmp	Fact sheet No 9841 adjusted for capture	0.04	
V-Bay P/C- Fugitive	3966	tmp/yr	2.00E-03	lbs/tmp	Fact sheet No 9841 adjusted for capture	0.00	
Chain Floor P/C- Fugitive	562	tmp/yr	2.00E-02	lbs/tmp	Fact sheet No 9841	0.01	
Main Floor, Slinger, Chain Floor Shakeout-Stack	5290	tmp/yr	0.00E+00	lbs/tmp	Fact sheet No 9841	0.00	
Main Floor, Slinger, Chain Floor Shakeout-Fugitive	5290	tmp/yr	0.00E+00	lbs/tmp		0.00	
V-Bay Shakeout- Stack	3966	tmp/yr	0.00E+00	lbs/tmp	Fact sheet No 9841	0.00	
V-Bay Shakeout- Fugitive	3966	tmp/yr	0.00E+00	lbs/tmp		0.00	
MU - 2 PCS TOTAL							0.09
MU-3-MH/SR							
MU-3-MH/SR TOTAL							0.00
MU-4 S/SB							
MU-4 S/SB TOTAL							0.00
MU-5 C/G							
MU-5 C/G TOTAL							0.00
MU-6 HOTWORK							
MU-6 HOTWORK TOTAL							0.00
MU-7 MOLD/CORE							
MU-7 MOLD/CORE TOTAL							0.00
MU-10 NG							
Facility-wide Natural Gas Usage	250	mmcf/yr	2.6	lbs/mmcf	Oregon DEQ EF	0.33	0.33

Main Plant Total	2.04
Main Plant Stack	1.94
Main Plant Fugitive	0.10

ESCO Corp: Main Plant and Plant 3 **Compliance Dates:**

SO2 Emissions PSEL 03/24/2016 **TBD** **TBD**

Issue Date TBD

Emission Unit ID	Production Rate (yearly)		Emission Factors		Emission Factor Reference	Calculated Process Emissions (tons/yr)	Emission Unit totals (tons/yr)
Plant 3							
3U-1 MELT							
EAF-5- stack	29212	tmm/yr	3.36E-02	lbs/tmm	2002 ST x1.2	0.49	
EAF-5- fugitive	29212	tmm/yr	1.20E-02	lbs/tmm	Fact sheet No 9841, adjusted for capture	0.18	
INDF-3- stack	500	tmm/yr	4.56E-02	lbs/tmm	EAF emission factor	0.01	
INDF-4- fugitive	0	tmm/yr	4.56E-02	lbs/tmm	EAF emission factor	0.00	
AOD-Res- stack	0	tmp/yr	0.00E+00	lbs/tmp	sulfur lost in EAF	0.00	
3U-1 MELT TOTAL							0.68
3U-2 PCS							
Pouring, Cooling and Shakeout-stack	25622	tmp/yr	2.00E-02	lbs/tmp	Fact sheet No 9841	0.26	
Pouring, Cooling and Shakeout-fugitive	25622	tmp/yr	1.05E-03	lbs/tmp	adjusted for capture	0.01	
3U-2 PCS TOTAL							0.27
3U-3-MH/SR							
Thermal Sand Reclaim- stack	18067	tons sand/yr	5.80E-02	lb/ton sand	Andritz Inc air permit emission rate	0.52	
3U-3-MH/SR TOTAL							0.52
3U-4 S/SB							
3U-4 S/SB TOTAL							0.00
3U-5 C/G							
3U-5 C/G TOTAL							0.00
3U-6 HOTWORK							
3U-6 HOTWORK TOTAL							0.00
3U-7 MOLD/CORE							
3U-7 MOLD/CORE TOTAL							0.00
3U-9 COATING							
3U-9 COATING TOTAL							0.00
3U-10 NG							
Facility-wide Natural Gas Usage	100	mmcf/yr	2.60E+00	lbs/mmcf	Oregon DEQ EF	0.13	0.13

Plant 3 Total	1.60
Plant 3 Stack	1.41
Plant 3 Fugitive	0.19

Total Facility SO2 Emissions		Current PSEL
Main Plant + Plant 3 Total + 1 tpy aggregate ins	4.64	39.00
Main Plant + Plant 3 Stack	3.35	
Main Plant + Plant 3 Fugitive + 1 tpy aggregate	1.29	

NOTES:
tmm = tons of metal melted, tmp = tons of metal poured
mmcf = million cubic feet of natural gas

1. Foundries Emission Calculation Fact Sheet 9841, Michigan DEQ, Rev. 11/2005, Factors for uncontrolled emissions
2. No sulfur present in MSDS for resin, catalyst or sand. SO2 from natural gas included in emission unit 3U-10 NG.

ESCO Corp: Main Plant and Plant 3 **Compliance Dates:**

VOC Emissions PSEL 03/24/2016 **TBD** **TBD**

Issue Date TBD

Emission Unit ID	Production Rate (yearly)		Emission Factors		Emission Factor Reference	Calculated Process Emissions (lbs/yr)	Calculated Process Emissions (tons/yr)	Emission Unit totals (tons/yr)
Main Plant								
MU - 1 MELT								
EAF-1 and EAF-2- stack	12341	tmm/yr	3.50E-01	lbs/tmm	Fact sheet No 9841	4319.26	2.16	
EAF-1 and EAF-2- fugitive	12341	tmm/yr	1.08E-02	lbs/tmm	adjusted for 97% capture	133.59	0.07	
AOD-8- stack	11107	tmp/yr	0.00E+00	lbs/tmp	process knowledge	0.00	0.00	
AOD-8- fugitive	11107	tmp/yr	0.00E+00	lbs/tmp	process knowledge	0.00	0.00	
MU - 1 MELT TOTAL								2.23
MU - 2 PCS								
Main Floor and Slinger Bay P/C- Fugitive	4728	tmp/yr	1.40E-01	lbs/tmp	Fact sheet No. 9841	661.88	0.33	
V-Bay P/C- vacuum pump exhaust- Stack	3966	tmp/yr	1.26E-01	lbs/tmp	Fact sheet No 9841, adjusted for capture	499.72	0.25	
V-Bay P/C- Fugitive	3966	tmp/yr	1.40E-02	lbs/tmp	Fact sheet No 9841, adjusted for capture	55.52	0.03	
Chain Floor P/C- Fugitive	562	tmp/yr	1.80E+00	lbs/tmp	Fact shee No. 9841 times 2 for binders in both molds and cores	1011.26	0.51	
Main Floor, Slinger, Chain Floor Shakeout-Stack	5290	tmp/yr	6.00E-01	lbs/tmp	Fact sheet No 9841, adjusted for capture	3173.73	1.59	
Main Floor, Slinger, Chain Floor Shakeout-Fugitive	5290	tmp/yr	6.00E-01	lbs/tmp	Fact sheet No 9841, adjusted for capture	3173.73	1.59	
V-Bay Shakeout- Stack	3966	tmp/yr	6.00E-01	lbs/tmp	Fact sheet No 9841, adjusted for capture	2379.60	1.19	
V-Bay Shakeout- Fugitive	3966	tmp/yr	6.00E-01	lbs/tmp	Fact sheet No 9841, adjusted for capture	2379.60	1.19	
MU - 2 PCS TOTAL								6.67
MU-3-MH/SR								
Sand reclaim and material handling-stack	9256	tmp/yr	1.40E-01	lb/tmp	Assumes same as main floor pouring	1295.78	0.65	
MU-3-MH/SR TOTAL								0.65
MU-4 S/SB								
Sand-Shot Blast- stacks	12341	tmm/yr		lbs/tmm		0.00	0.00	
MU-4 S/SB TOTAL								0.00
MU-5 C/G								
MU-5 C/G TOTAL								0.00
MU-6 HOTWORK								
MU-6 HOTWORK TOTAL								0.00
MU-7 MOLD/CORE								
Core making- cold box, oil core, no-bake	9256	tmp/yr	5.00E-01	lb/tmp	AFS/CISA, Ashland Chemical	4627.78	2.31	
Core & mold washes- upper room, lower room, slinger bay, main floor	9256	tmp/yr	1.04E+00	lb/tmp	Material balance*1.2	9662.80	4.83	
Chain floor core making- screw mixer- stack	562	tmp/yr	5.00E-01	lb/tmp	AFS/CISA, Ashland Chemical	280.91	0.14	
MU-7 MOLD/CORE TOTAL								7.29
MU-8 VOC								
Miscellaneous VOC (no MU-9 coatings and no MU-7 washes)	9256	tmp/yr	1.48E-01	lb/tmp	Material balance 2009 X 1.2	1366.12	0.68	0.68
MU-8 VOC TOTAL								
MU-9 COATING								
All dip painting	5102	gal/yr	3.57E+00	lbs/gal	Total paint and adjuster added multiplied by average lbs/gal	18232.41	9.12	9.12
MU-9 COATING TOTAL								
MU-10 NG								
Facility-wide Natural Gas Usage	250	mmcf/yr	5.5	lbs/mmcf	Oregon DEQ EF	1375.00	0.69	0.69

Main Plant Total	54628.69	27.31
Main Plant Stack	12028.22	6.01
Main Plant Fugitive	42600.48	21.30

ESCO Corp: Main Plant and Plant 3 **Compliance Dates:**

VOC Emissions PSEL 03/24/2016 **TBD** **TBD**

Issue Date TBD

Emission Unit ID	Production Rate (yearly)		Emission Factors		Emission Factor Reference	Calculated Process Emissions (lbs/yr)	Calculated Process Emissions (tons/yr)	Emission Unit totals (tons/yr)
Plant 3								
3U-1 MELT								
EAF-5- stack	29212	tmm/yr	3.50E-01	lbs/tmm	Fact sheet 9841	10224.16	5.11	
EAF-5- fugitive	29212	tmm/yr	1.84E-02	lbs/tmm	fact sheet, adjusted for 95% capture	538.11	0.27	
INDF-3- stack	500	tmm/yr	3.68E-01	lbs/tmm	EAF emission factor	184.21	0.09	
INDF-4- fugitive	0	tmm/yr	3.68E-01	lbs/tmm	EAF emission factor	0.00	0.00	
AOD-Res- stack	0	tmp/yr	3.68E-01	lbs/tmp	EAF emission factor	0.00	0.00	
Ladle dump back- fugitive (newly added, previously not included)	126	tmp/yr	1.84E-01	lbs/tmp	Assume 50% of AOD fugitives	23.21	0.01	
3U-1 MELT TOTAL								5.47
3U-2 PCS								
Pouring, Cooling and Shakeout-stack	25622	tmp/yr	1.10E+00	lbs/tmp	2001 ST x1.2	28194.69	14.10	
Pouring, Cooling and Shakeout-fugitive	25622	tmp/yr	5.79E-02	lbs/tmp	adjusted for 95% capture	1483.93	0.74	
3U-2 PCS TOTAL								14.84
3U-3-MH/SR								
Thermal Sand Reclaim- stack	18067	tons sand/yr	4.80E-02	lb/tons sand	Pacific Steel source test	867.21	0.43	
3U-3-MH/SR TOTAL								0.43
3U-4 S/SB								
3U-4 S/SB TOTAL								0.00
3U-5 C/G								
3U-5 C/G TOTAL								0.00
3U-6 HOTWORK								
3U-6 HOTWORK TOTAL								0.00
3U-7 MOLD/CORE								
Pug mill system- stack	705	ton resin/yr	5.93E+00	lb/ton resin	avg. Phenol + formaldehyde ST	4176.93	2.09	
Core and Mold Making- vent	705	ton resin/yr	1.51E+00	lb/ton resin	avg. Phenol + formaldehyde ST	1065.37	0.53	
Core and Mold Making- fugitive	705	ton resin/yr	1.68E-01	lb/ton resin	ST adjusted for capture	118.37	0.06	
3U-7 MOLD/CORE TOTAL								2.68
3U-8 VOC								
Miscellaneous VOC	29712	tmm/yr	7.20E-02	lb/tmm	Material Balance 2009 X 1.2	2139.26	1.07	
3U-8 VOC TOTAL								1.07
3U-9 COATING								
spray painting	8037	gal/yr	1.18E+00	lbs/gal		9483.66	4.74	4.74
3U-9 COATING TOTAL								
3U-10 NG								
Facility-wide Natural Gas Usage	100	mmcf/yr	5.50E+00	lbs/mmcf	Oregon DEQ EF	550.00	0.28	0.28

Plant 3 Total	59049.13	29.52
Plant 3 Stack	54746.24	27.37
Plant 3 Fugitive	4302.89	2.15

Total Facility VOC Emissions		Current PSEL
Main Plant + Plant 3 Total + 1 tpy aggregate insignificant	57.84	93.00
Main Plant + Plant 3 Stack	33.39	
Main Plant + Plant 3 Fugitive + 1 tpy aggregate insignificant	24.45	

NOTES:
tmm = tons of metal melted, tmp = tons of metal poured
mmcf = million cubic feet of natural gas

Foundries Emission Calculation Fact Sheet 9841, Michigan DEQ, Rev. 11/2005, Factors for uncontrolled emissions, quality of scrap unknown
Core washes, VOC chemicals, and paint VOCs estimated using material balance from 2009

ESCO Corp: Main Plant and Plant 3 **Compliance Dates:**

Lead Emissions PSEL 03/24/2016 **TBD** **TBD**

Issue Date TBD

Emission Unit ID	Production Rate (yearly)		Emission Factors		Emission Factor Reference	Calculated Process Emissions (lbs/yr)	Calculated Process Emissions (tons/yr)	Emission Unit totals (tons/yr)
Main Plant								
MU - 1 MELT								
EAF-1 and EAF-2- stack	12341	tmm/yr	1.34E-03	lbs/tmm	Average all source tests since 2005 rebagging	16.56	0.01	
EAF-1 and EAF-2- fugitive	12341	tmm/yr	1.05E-03	lbs/tmm	EAF factor, AP42 Table 12.13-2 adjusted for capture & metal content	12.98	0.01	
AOD-8- stack	11107	tmp/yr	1.30E-04	lbs/tmp	Average all source tests	1.44	0.00	
AOD-8- fugitive	11107	tmp/yr	5.63E-04	lbs/tmp	EAF factor, AP42 Table 12.13-2 adjusted for capture & metal content	6.26	0.00	
MU - 1 MELT TOTAL								0.02
MU - 2 PCS								
Main Floor and Slinger Bay P/C- Fugitive	4728	tmp/yr	7.89E-04	lbs/tmp	AP-42 Table 12.13-2, 1995 adjusted for metals content	3.73	0.00	
V-Bay P/C- vacuum pump exhaust- Stack	3966	tmp/yr	1.42E-04	lbs/tmp	AP-42 Table 12.13-2, 1995 adjusted for capture, control & metals content	0.56	0.00	
V-Bay P/C- Fugitive	3966	tmp/yr	7.89E-05	lbs/tmp	AP-42 Table 12.13-2, 1995 adjusted for capture & metals content	0.31	0.00	
Chain Floor P/C- Fugitive	562	tmp/yr	7.89E-04	lbs/tmp	AP-42 Table 12.13-2, 1995 adjusted for metals content	0.44	0.00	
Main Floor, Slinger, Chain Floor Shakeout-Stack	5290	tmp/yr	1.17E-06	lbs/tmp	Average all source tests adjusted for metals content	0.01	0.00	
Main Floor, Slinger, Chain Floor Shakeout-Fugitive	5290	tmp/yr	1.60E-04	lbs/tmp	AP42 Table 12.13-2 adjusted for capture & metals content	0.85	0.00	
V-Bay Shakeout- Stack	3966	tmp/yr	2.91E-06	lbs/tmp	Main floor ST adjusted for capture, control & metals content	0.01	0.00	
V-Bay Shakeout- Fugitive	3966	tmp/yr	1.60E-04	lbs/tmp	AP42 Table 12.13-2 adjusted for capture & metals content	0.63	0.00	
MU - 2 PCS TOTAL								0.00
MU-3-MH/SR								
Sand reclaim and material handling-stack	9256	tmp/yr	0.00E+00	lb/tmp	Process knowledge	0.00	0.00	
Ladle knockout- stack			0.00E+00		Process knowledge	0.00	0.00	
Scrap Handling- fugitive	12341	tmm/yr	0.00E+00	lb/tmp	Process knowledge	0.00	0.00	
Scrap burn booth-stack	1234	tmm/yr	0.00E+00	lbs/tm	Process knowledge	0.00	0.00	
Slag Handling- fugitive	12341	tmm/yr	0.00E+00	lb/tmm		0.00	0.00	
Sand Handling: Slinger bay, lower core room, upper core room, chain floor sand bins-stacks	5553	ton sand/yr	3.00E-04	lb/ton sand	Process knowledge	1.67	0.00	
Rail car unloading			0.00E+00		Enclosed, no emission	0.00	0.00	
Lime silo bin vent to baghouse- stack			0.00E+00		Process knowledge	0.00	0.00	
MU-3-MH/SR TOTAL								0.00
MU-4 S/SB								
Sand-Shot Blast- stacks	12341	tmm/yr	2.48E-06	lbs/tmm		0.03	0.00	
MU-4 S/SB TOTAL								0.00
MU-5 C/G								
Grinding- with control	11107	tmm/yr	0.00E+00	lbs/tmm		0.00	0.00	
Grinding- no control	1234	tmm/yr	0.00E+00	lbs/tmm		0.00	0.00	
Carpentry shop			0.00E+00					
MU-5 C/G TOTAL								0.00
MU-6 HOTWORK								
Chain table welding- fugitive	0	lb rod/yr	0.00E+00	lb/1000 lb	AP-42 Table 12.19-2	0.00	0.00	
Upper finishing- air arc & welding- stack	0	tmp/yr	6.48E-04	lbs/tm	assumed PM emission times metal content of EAF baghouse dust	0.00	0.00	
Upper finishing- burning- stack	0	tmp/yr	2.07E-04	lbs/tm	assumed PM emission times metal content of EAF baghouse dust	0.00	0.00	
Lower finishing- burning- stack - 95% production controlled at source @ 97% eff	8793	tmp/yr	2.59E-06	lbs/tm	assumed PM emission times metal content of EAF baghouse dust	0.02	0.00	
Lower finishing-air arc-uncontrolled- stack - 5%	463	tmp/yr	8.63E-05	lbs/tm	assumed PM emission times metal content of EAF baghouse dust	0.04	0.00	
Lower finishing-welding- stack	40817	lb rod/yr	0.00E+00	lb/1000 lb	AP-42 Table 12.19-2	0.00	0.00	
Shop Fabrication - 90% production controlled @ 98% eff	1080	lb rod/yr	9.92E-04	lb/1000 lb	assumed PM emission times metal content of EAF baghouse dust	0.00	0.00	

ESCO Corp: Main Plant and Plant 3 **Compliance Dates:**

Lead Emissions PSEL 03/24/2016 **TBD** **TBD**

Issue Date TBD

Emission Unit ID	Production Rate (yearly)		Emission Factors		Emission Factor Reference	Calculated Process Emissions (lbs/yr)	Calculated Process Emissions (tons/yr)	Emission Unit totals (tons/yr)
Shop Fabrication - uncontrolled	120	lb rod/yr	4.96E-02	lb/1000 lb	assumed PM emission times metal content of EAF baghouse dust	0.01	0.00	
MU-6 HOTWORK TOTAL								0.00
MU-7 MOLD/CORE								
MU-7 MOLD/CORE TOTAL								0.00
MU-10 NG								
Facility-wide Natural Gas Usage	250	mmcf/yr	0.0005	lbs/mmcf	EPA AP42 Section 1.4	0.13	0.00	0.00
					Main Plant Total	45.68	0.02	
					Main Plant Stack	20.47	0.01	
					Main Plant Fugitive	25.21	0.01	

Plant 3

3U-1 MELT								
EAF-5- stack	29212	tmm/yr	8.29E-05	lbs/tmm	Average all source tests since 2007 new baghouse	2.42	0.00	
EAF-5- fugitive	29212	tmm/yr	1.84E-03	lbs/tmm	AP42 Table 12.13-2 adjusted for capture & metal content	53.68	0.03	
INDF-3- stack	500	tmm/yr	2.54E-05	lbs/tmm	AP-42 Table 12.13-2 adjusted for 90% control & metal content	0.01	0.00	
INDF-4- fugitive	0	tmm/yr	2.54E-04	lbs/tmm	AP-42 Table 12.13-2 adjusted for metal content	0.00	0.00	
AOD-Res- stack	0	tmp/yr	1.92E-03	lbs/tmp	EAF emission factor	0.00	0.00	
Ladle dump back- fugitive (newly added, previously not included)	1461	tmm/yr	9.60E-04	lbs/tmm	Assume 50% of AOD fugitives	1.40	0.00	
3U-1 MELT TOTAL								0.03
3U-2 PCS								
Pouring, Cooling and Shakeout-stack	25622	tmp/yr	5.00E-05	lbs/tmp	Average all source tests	1.28	0.00	
Pouring, Cooling and Shakeout-fugitive	25622	tmp/yr	5.55E-05	lbs/tmp	AP42 Table 12.13-2 adjusted for capture & metal content	1.42	0.00	
3U-2 PCS TOTAL								0.00
3U-3-MH/SR								
Thermal Sand Reclaim- stack	18067	tons sand/yr	6.10E-05	lb/ton sand	Pacific Steel source test	1.10	0.00	
3U-3-MH/SR TOTAL								0.00
3U-4 S/SB								
Sand-Shot Blast- stacks	8914	tmm/yr	2.48E-06	lbs/tmm		0.02	0.00	
3U-4 S/SB TOTAL								0.00
3U-5 C/G								
Grinding- stack	8914	tmm/yr	0.00E+00	lbs/tmm		0.00	0.00	
3U-5 C/G TOTAL								0.00
3U-6 HOTWORK								
Welding- stack	2562	lb rod/yr	0.00E+00	lb/1000 lb	AP-42 Table 12.19-2	0.00	0.00	
3U-6 HOTWORK TOTAL								0.00
3U-7 MOLD/CORE								
3U-7 MOLD/CORE TOTAL								0.00
3U-9 COATING								
3U-9 COATING TOTAL								0.00
3U-10 NG								
Facility-wide Natural Gas Usage	100	mmcf/yr	0.0005	lbs/mmcf	EPA AP42 Section 1.4	0.05	0.00	0.00

Plant 3 Total	61.39	0.03
Plant 3 Stack	4.89	0.00
Plant 3 Fugitive	56.50	0.03

Total Facility Lead Emissions Current PSEL

Main Plant + Plant 3 Total	107.07	0.05	0.1
Main Plant + Plant 3 Stack	25.36	0.01	
Main Plant + Plant 3 Fugitive	81.72	0.04	

NOTES:
tmm = tons of metal melted, tmp = tons of metal poured

ESCO Corp: Main Plant and Plant 3

Lead Emissions PSEL 03/24/2016

Issue Date TBD

Compliance Dates:

TBD **TBD**

Emission Unit ID	Production Rate (yearly)	Emission Factors	Emission Factor Reference	Calculated Process Emissions (lbs/yr)	Calculated Process Emissions (tons/yr)	Emission Unit totals (tons/yr)

mmcf = million cubic feet of natural gas

Metals content calculated from metals in source tests divided by PM in source tests.

ESCO Corp: Main Plant and Plant 3 | **Compliance Dates:**

Manganese Emissions | PSEL 03/24/2016 | **TBD** | **TBD**

Issue Date | TBD

Emission Unit ID	Production Rate (yearly)		Emission Factors		Emission Factor Reference	Calculated Process Emissions (lbs/yr)	Calculated Process Emissions (tons/yr)	Emission Unit totals (tons/yr)
Main Plant								
MU - 1 MELT								
EAF-1 and EAF-2- stack	12341	tmm/yr	6.76E-03	lbs/tmm	Average all source tests since 2005 rebagging	83.42	0.04	
EAF-1 and EAF-2- fugitive	12341	tmm/yr	5.30E-03	lbs/tmm	EAF factor, AP42 Table 12.13-2 adjusted for capture & metal content	65.40	0.03	
AOD-8- stack	11107	tmp/yr	1.80E-03	lbs/tmp	Average all source tests	19.99	0.01	
AOD-8- fugitive	11107	tmp/yr	7.80E-03	lbs/tmp	EAF factor, AP42 Table 12.13-2 adjusted for capture & metal content	86.63	0.04	
MU - 1 MELT TOTAL								0.13
MU - 2 PCS								
Main Floor and Slinger Bay P/C- Fugitive	4728	tmp/yr	1.58E-03	lbs/tmp	AP-42 Table 12.13-2, 1995 adjusted for metals content	7.46	0.00	
V-Bay P/C- vacuum pump exhaust- Stack	3966	tmp/yr	2.84E-04	lbs/tmp	AP-42 Table 12.13-2, 1995 adjusted for capture, control & metals content	1.13	0.00	
V-Bay P/C- Fugitive	3966	tmp/yr	1.58E-04	lbs/tmp	AP-42 Table 12.13-2, 1995 adjusted for capture & metals content	0.63	0.00	
Chain Floor P/C- Fugitive	562	tmp/yr	1.58E-03	lbs/tmp	AP-42 Table 12.13-2, 1995 adjusted for metals content	0.89	0.00	
Main Floor, Slinger, Chain Floor Shakeout-Stack	5290	tmp/yr	2.33E-06	lbs/tmp	Average all source tests adjusted for metals content	0.01	0.00	
Main Floor, Slinger, Chain Floor Shakeout-Fugitive	5290	tmp/yr	3.20E-04	lbs/tmp	AP42 Table 12.13-2 adjusted for capture & metals content	1.69	0.00	
V-Bay Shakeout- Stack	3966	tmp/yr	5.83E-06	lbs/tmp	Main floor ST adjusted for capture, control & metals content	0.02	0.00	
V-Bay Shakeout- Fugitive	3966	tmp/yr	3.20E-04	lbs/tmp	AP42 Table 12.13-2 adjusted for capture & metals content	1.27	0.00	
MU - 2 PCS TOTAL								0.01
MU-3-MH/SR								
MU-3-MH/SR TOTAL								0.00
MU-4 S/SB								
Sand-Shot Blast- stacks	12341	tmm/yr	3.72E-04	lbs/tmm		4.59	0.00	
MU-4 S/SB TOTAL								0.00
MU-5 C/G								
Grinding- with control	11107	tmm/yr	2.34E-03	lbs/tmm		25.99	0.01	
Grinding- no control	1234	tmm/yr	2.34E-03	lbs/tmm		2.89	0.00	
Carpentry shop			0.00E+00					
MU-5 C/G TOTAL								0.01
MU-6 HOTWORK								
Chain table welding- fugitive	0	lb rod/yr	1.03E+00	lb/1000 lb	AP-42 Table 12.19-2	0.00	0.00	
Upper finishing- air arc & welding- stack	0	tmp/yr	3.26E-03	lbs/tm	assumed PM emission times metal content of EAF baghouse dust	0.00	0.00	
Upper finishing- burning- stack	0	tmp/yr	1.04E-03	lbs/tm	assumed PM emission times metal content of EAF baghouse dust	0.00	0.00	
Lower finishing- burning- stack - 95% production controlled at source @ 97% eff	8793	tmp/yr	1.30E-05	lbs/tm	assumed PM emission times metal content of EAF baghouse dust	0.11	0.00	
Lower finishing-air arc-uncontrolled- stack - 5%	463	tmp/yr	4.35E-04	lbs/tm	assumed PM emission times metal content of EAF baghouse dust	0.20	0.00	
Lower finishing-welding- stack	40817	lb rod/yr	5.15E-01	lb/1000 lb	AP-42 Table 12.19-2, 50% capture	21.02	0.01	
Shop Fabrication - 90% production controlled @ 98% eff	1080	lb rod/yr	5.00E-03	lb/1000 lb	assumed PM emission times metal content of EAF baghouse dust	0.01	0.00	
Shop Fabrication - uncontrolled	120	lb rod/yr	2.50E-01	lb/1000 lb	assumed PM emission times metal content of EAF baghouse dust	0.03	0.00	
MU-6 HOTWORK TOTAL								0.01
MU-7 MOLD/CORE								
MU-7 MOLD/CORE TOTAL								0.00
MU-10 NG								
Facility-wide Natural Gas Usage	250	mmcf/yr	0.0005	lbs/mmcf	EPA AP42 Section 1.4	0.13	0.00	0.00

Main Plant Total	323.51	0.16
Main Plant Stack	156.62	0.08
Main Plant Fugitive	166.89	0.08

Plant 3

ESCO Corp: Main Plant and Plant 3 **Compliance Dates:**

Manganese Emissions PSEL 03/24/2016 **TBD** **TBD**

Issue Date TBD

Emission Unit ID	Production Rate (yearly)		Emission Factors		Emission Factor Reference	Calculated Process Emissions (lbs/yr)	Calculated Process Emissions (tons/yr)	Emission Unit totals (tons/yr)
3U-1 MELT								
EAF-5- stack	29212	tmm/yr	3.21E-04	lbs/tmm	Average all source tests since 2007 new baghouse	9.37	0.00	
EAF-5- fugitive	29212	tmm/yr	4.21E-03	lbs/tmm	AP42 Table 12.13-2 adjusted for capture & metal content	122.98	0.06	
INDF-3- stack	500	tmm/yr	5.83E-05	lbs/tmm	AP-42 Table 12.13-2 adjusted for 90% control & metal content	0.03	0.00	
INDF-4- fugitive	0	tmm/yr	5.83E-04	lbs/tmm	AP-42 Table 12.13-2 adjusted for metal content	0.00	0.00	
AOD-Res- stack	0	tmp/yr	4.53E-03	lbs/tmp	EAF emission factor	0.00	0.00	
Ladle dump back- fugitive (newly added, previously not included)	1461	tmm/yr	2.27E-03	lbs/tmm	Assume 50% of AOD fugitives	3.31	0.00	
3U-1 MELT TOTAL								0.07
3U-2 PCS								
Pouring, Cooling and Shakeout-stack	25622	tmp/yr	1.00E-04	lbs/tmp	Average all source tests	2.56	0.00	
Pouring, Cooling and Shakeout-fugitive	25622	tmp/yr	4.44E-05	lbs/tmp	AP42 Table 12.13-2 adjusted for capture & metal content	1.14	0.00	
3U-2 PCS TOTAL								0.00
3U-3-MH/SR								
Thermal Sand Reclaim- stack	18067	tons sand/yr	5.15E-05	lb/ton sand	Pacific Steel source test	0.93	0.00	
3U-3-MH/SR TOTAL								0.00
3U-4 S/SB								
Sand-Shot Blast- stacks	8914	tmm/yr	4.03E-04	lbs/tmm		3.59	0.00	
3U-4 S/SB TOTAL								0.00
3U-5 C/G								
Grinding- stack	8914	tmm/yr	2.34E-03	lbs/tmm		20.86	0.01	
3U-5 C/G TOTAL								0.01
3U-6 HOTWORK								
Welding- stack	2562	lb rod/yr	1.03E+00	lb/1000 lb	AP-42 Table 12.19-2	2.64	0.00	
3U-6 HOTWORK TOTAL								0.00
3U-7 MOLD/CORE								
3U-7 MOLD/CORE TOTAL								0.00
3U-9 COATING								
3U-9 COATING TOTAL								0.00
3U-10 NG								
Facility-wide Natural Gas Usage	100	mmcf/yr	0.0005	lbs/mmcf	EPA AP42 Section 1.4	0.05	0.00	0.00

Plant 3 Total	167.46	0.08
Plant 3 Stack	40.03	0.02
Plant 3 Fugitive	127.42	0.06

Total Facility Mn Emissions

Main Plant + Plant 3 Total	490.96	0.25
Main Plant + Plant 3 Stack	196.65	0.10
Main Plant + Plant 3 Fugitive	294.31	0.15

NOTES:
tmm = tons of metal melted, tmp = tons of metal poured
mmcf = million cubic feet of natural gas
Metals content calculated from metals in source tests divided by PM in source tests.

ESCO Corp: Main Plant and Plant 3

Nickel Emissions PSEL 03/24/2016

Issue Date TBD

Compliance Dates:

TBD **TBD**

Emission Unit ID	Production Rate (yearly)		Emission Factors		Emission Factor Reference	Calculated Process Emissions (lbs/yr)	Calculated Process Emissions (tons/yr)	Emission Unit totals (tons/yr)
Main Plant								
MU - 1 MELT								
EAF-1 and EAF-2- stack	12341	tmm/yr	3.80E-04	lbs/tmm	Average all source tests since 2005 rebagging	4.69	0.00	
EAF-1 and EAF-2- fugitive	12341	tmm/yr	2.98E-04	lbs/tmm	EAF factor, AP42 Table 12.13-2 adjusted for capture & metal content	3.68	0.00	
AOD-8- stack	11107	tmp/yr	2.10E-04	lbs/tmp	Average all source tests	2.33	0.00	
AOD-8- fugitive	11107	tmp/yr	9.10E-04	lbs/tmp	EAF factor, AP42 Table 12.13-2 adjusted for capture & metal content	10.11	0.01	
MU - 1 MELT TOTAL								0.01
MU - 2 PCS								
Main Floor and Slinger Bay P/C- Fugitive	4728	tmp/yr	7.89E-04	lbs/tmp	AP-42 Table 12.13-2, 1995 adjusted for metals content	3.73	0.00	
V-Bay P/C- vacuum pump exhaust- Stack	3966	tmp/yr	1.42E-04	lbs/tmp	AP-42 Table 12.13-2, 1995 adjusted for capture, control & metals content	0.56	0.00	
V-Bay P/C- Fugitive	3966	tmp/yr	7.89E-05	lbs/tmp	AP-42 Table 12.13-2, 1995 adjusted for capture & metals content	0.31	0.00	
Chain Floor P/C- Fugitive	562	tmp/yr	7.89E-04	lbs/tmp	AP-42 Table 12.13-2, 1995 adjusted for metals content	0.44	0.00	
Main Floor, Slinger, Chain Floor Shakeout-Stack	5290	tmp/yr	1.17E-06	lbs/tmp	Average all source tests adjusted for metals content	0.01	0.00	
Main Floor, Slinger, Chain Floor Shakeout-Fugitive	5290	tmp/yr	1.60E-04	lbs/tmp	AP42 Table 12.13-2 adjusted for capture & metals content	0.85	0.00	
V-Bay Shakeout- Stack	3966	tmp/yr	1.50E-06	lbs/tmp	Main floor ST adjusted for capture, control & metals content	0.01	0.00	
V-Bay Shakeout- Fugitive	3966	tmp/yr	1.60E-04	lbs/tmp	AP42 Table 12.13-2 adjusted for capture & metals content	0.63	0.00	
MU - 2 PCS TOTAL								0.00
MU-3-MH/SR								
MU-3-MH/SR TOTAL								0.00
MU-4 S/SB								
Sand-Shot Blast- stacks	12341	tmm/yr	2.95E-04	lbs/tmm		3.63	0.00	
MU-4 S/SB TOTAL								0.00
MU-5 C/G								
Grinding- with control	11107	tmm/yr	4.84E-04	lbs/tmm		5.38	0.00	
Grinding- no control	1234	tmm/yr	4.84E-04	lbs/tmm		0.60	0.00	
Carpentry shop			0.00E+00					
MU-5 C/G TOTAL								0.00
MU-6 HOTWORK								
Chain table welding- fugitive	0	lb rod/yr	5.00E-03	lb/1000 lb	AP-42 Table 12.19-2	0.00	0.00	
Upper finishing- air arc & welding- stack	0	tmp/yr	1.44E-04	lbs/tm	assumed PM emission times metal content of EAF baghouse dust	0.00	0.00	
Upper finishing- burning- stack	0	tmp/yr	4.61E-05	lbs/tm	assumed PM emission times metal content of EAF baghouse dust	0.00	0.00	
Lower finishing- burning- stack - 95% production controlled at source @ 97% eff	8793	tmp/yr	7.33E-07	lbs/tm	assumed PM emission times metal content of EAF baghouse dust	0.01	0.00	
Lower finishing-air arc-uncontrolled- stack - 5%	463	tmp/yr	2.44E-05	lbs/tm	assumed PM emission times metal content of EAF baghouse dust	0.01	0.00	
Lower finishing-welding- stack	40817	lb rod/yr	2.50E-03	lb/1000 lb	AP-42 Table 12.19-2, 50% capture	0.10	0.00	
Shop Fabrication - 90% production controlled @ 98% eff	1080	lb rod/yr	2.81E-04	lb/1000 lb	assumed PM emission times metal content of EAF baghouse dust	0.00	0.00	
Shop Fabrication - uncontrolled	120	lb rod/yr	1.41E-02	lb/1000 lb	assumed PM emission times metal content of EAF baghouse dust	0.00	0.00	
MU-6 HOTWORK TOTAL								0.00
MU-7 MOLD/CORE								
MU-7 MOLD/CORE TOTAL								0.00
MU-10 NG								
Facility-wide Natural Gas Usage	250	mmcf/yr	0.00021	lbs/mmcf	EPA AP42 Section 1.4	0.05	0.00	0.00

Main Plant Total	37.13	0.02
Main Plant Stack	16.78	0.01
Main Plant Fugitive	20.35	0.01

Plant 3

3U-1 MELT								
EAF-5- stack	29212	tmm/yr	3.63E-04	lbs/tmm	Average all source tests since 2007 new baghouse	10.60	0.01	
EAF-5- fugitive	29212	tmm/yr	3.26E-03	lbs/tmm	AP42 Table 12.13-2 adjusted for capture & metal content	95.20	0.05	
INDF-3- stack	500	tmm/yr	4.51E-05	lbs/tmm	AP-42 Table 12.13-2 adjusted for 90% control & metal content	0.02	0.00	
INDF-4- fugitive	0	tmm/yr	4.51E-04	lbs/tmm	AP-42 Table 12.13-2 adjusted for metal content	0.00	0.00	
AOD-Res- stack	0	tmp/yr	3.62E-03	lbs/tmp	EAF emission factor	0.00	0.00	
Ladle dump back- fugitive (newly added, previously not included)	1461	tmm/yr	1.81E-03	lbs/tmm	Assume 50% of AOD fugitives	2.65	0.00	
3U-1 MELT TOTAL								0.05
3U-2 PCS								
Pouring, Cooling and Shakeout-stack	25622	tmp/yr	5.00E-05	lbs/tmp	Average all source tests	1.28	0.00	
Pouring, Cooling and Shakeout-fugitive	25622	tmp/yr	5.55E-05	lbs/tmp	AP42 Table 12.13-2 adjusted for capture & metal content	1.42	0.00	
3U-2 PCS TOTAL								0.00
3U-3-MH/SR								
Thermal Sand Reclaim- stack	18067	tons sand/yr	2.93E-05	lb/ton sand	Pacific Steel source test	0.53	0.00	
3U-3-MH/SR TOTAL								0.00
3U-4 S/SB								
Sand-Shot Blast- stacks	8914	tmm/yr	9.30E-05	lbs/tmm		0.83	0.00	
3U-4 S/SB TOTAL								0.00
3U-5 C/G								
Grinding- stack	8914	tmm/yr	4.84E-04	lbs/tmm		4.32	0.00	
3U-5 C/G TOTAL								0.00
3U-6 HOTWORK								
Welding- stack	2562	lb rod/yr	5.00E-03	lb/1000 lb	AP-42 Table 12.19-2	0.01	0.00	
3U-6 HOTWORK TOTAL								0.00
3U-7 MOLD/CORE								
3U-7 MOLD/CORE TOTAL								0.00
3U-9 COATING								
3U-9 COATING TOTAL								0.00
3U-10 NG								
Facility-wide Natural Gas Usage	100	mmcf/yr	0.00021	lbs/mmcf	EPA AP42 Section 1.4	0.02	0.00	0.00

Plant 3 Total	116.88	0.06
Plant 3 Stack	17.61	0.01
Plant 3 Fugitive	99.27	0.05

Total Facility Ni Emissions

Main Plant + Plant 3 Total	154.02	0.08
Main Plant + Plant 3 Stack	34.40	0.02
Main Plant + Plant 3 Fugitive	119.62	0.06

NOTES:
tmm = tons of metal melted, tmp = tons of metal poured
mmcf = million cubic feet of natural gas

Metals content calculated from metals in source tests divided by PM in source tests.

ESCO Corp: Main Plant and Plant 3 **Compliance Dates:**

Chromium Emissions PSEL 03/24/2016 **TBD** **TBD**

Issue Date TBD

Emission Unit ID	Production Rate (yearly)		Emission Factors		Emission Factor Reference	Calculated Process Emissions (lbs/yr)	Calculated Process Emissions (tons/yr)	Emission Unit totals (tons/yr)
Main Plant								
MU - 1 MELT								
EAF-1 and EAF-2- stack	12341	tmm/yr	5.27E-04	lbs/tmm	Average all source tests since 2005 rebagging	6.50	0.00	
EAF-1 and EAF-2- fugitive	12341	tmm/yr	4.13E-04	lbs/tmm	EAF factor, AP42 Table 12.13-2 adjusted for capture & metal content	5.10	0.00	
AOD-8- stack	11107	tmp/yr	9.50E-05	lbs/tmp	Average all source tests	1.06	0.00	
AOD-8- fugitive	11107	tmp/yr	4.12E-04	lbs/tmp	EAF factor, AP42 Table 12.13-2 adjusted for capture & metal content	4.57	0.00	
MU - 1 MELT TOTAL								0.01
MU - 2 PCS								
Main Floor and Slinger Bay P/C- Fugitive	4728	tmp/yr	4.74E-04	lbs/tmp	AP-42 Table 12.13-2, 1995 adjusted for metals content	2.24	0.00	
V-Bay P/C- vacuum pump exhaust- Stack	3966	tmp/yr	8.53E-05	lbs/tmp	AP-42 Table 12.13-2, 1995 adjusted for capture, control & metals content	0.34	0.00	
V-Bay P/C- Fugitive	3966	tmp/yr	4.74E-05	lbs/tmp	AP-42 Table 12.13-2, 1995 adjusted for capture & metals content	0.19	0.00	
Chain Floor P/C- Fugitive	562	tmp/yr	4.74E-04	lbs/tmp	AP-42 Table 12.13-2, 1995 adjusted for metals content	0.27	0.00	
Main Floor, Slinger, Chain Floor Shakeout-Stack	5290	tmp/yr	6.99E-07	lbs/tmp	Average all source tests adjusted for metals content	0.00	0.00	
Main Floor, Slinger, Chain Floor Shakeout-Fugitive	5290	tmp/yr	9.59E-05	lbs/tmp	AP42 Table 12.13-2 adjusted for capture & metals content	0.51	0.00	
V-Bay Shakeout- Stack	3966	tmp/yr	9.01E-07	lbs/tmp	Main floor ST adjusted for capture, control & metals content	0.00	0.00	
V-Bay Shakeout- Fugitive	3966	tmp/yr	9.59E-05	lbs/tmp	AP42 Table 12.13-2 adjusted for capture & metals content	0.38	0.00	
MU - 2 PCS TOTAL								0.00
MU-3-MH/SR								
MU-3-MH/SR TOTAL								0.00
MU-4 S/SB								
Sand-Shot Blast- stacks	12341	tmm/yr	3.10E-04	lbs/tmm		3.83	0.00	
MU-4 S/SB TOTAL								0.00
MU-5 C/G								
Grinding- with control	11107	tmm/yr	8.33E-04	lbs/tmm		9.25	0.00	
Grinding- no control	1234	tmm/yr	8.33E-04	lbs/tmm		1.03	0.00	
Carpentry shop			0.00E+00					
MU-5 C/G TOTAL								0.01
MU-6 HOTWORK								
Chain table welding- fugitive	0	lb rod/yr	6.00E-03	lb/1000 lb	AP-42 Table 12.19-2	0.00	0.00	
Upper finishing- air arc & welding- stack	0	tmp/yr	2.51E-04	lbs/tm	assumed PM emission times metal content of EAF baghouse dust	0.00	0.00	
Upper finishing- burning- stack	0	tmp/yr	8.03E-05	lbs/tm	assumed PM emission times metal content of EAF baghouse dust	0.00	0.00	
Lower finishing- burning- stack - 95% production controlled at source @ 9	8793	tmp/yr	1.02E-06	lbs/tm	assumed PM emission times metal content of EAF baghouse dust	0.01	0.00	
Lower finishing-air arc-uncontrolled- stack - 5%	463	tmp/yr	3.39E-05	lbs/tm	assumed PM emission times metal content of EAF baghouse dust	0.02	0.00	
Lower finishing-welding- stack	40817	lb rod/yr	3.00E-03	lb/1000 lb	AP-42 Table 12.19-2, 50% capture	0.12	0.00	
Shop Fabrication - 90% production controlled @ 98% eff	1080	lb rod/yr	3.90E-04	lb/1000 lb	assumed PM emission times metal content of EAF baghouse dust	0.00	0.00	
Shop Fabrication - uncontrolled	120	lb rod/yr	1.95E-02	lb/1000 lb	assumed PM emission times metal content of EAF baghouse dust	0.00	0.00	
MU-6 HOTWORK TOTAL								0.00
MU-7 MOLD/CORE								
MU-7 MOLD/CORE TOTAL								0.00
MU-10 NG								
Facility-wide Natural Gas Usage	250	mmcf/yr	0.0014	lbs/mmcf	EPA AP42 Section 1.4	0.35	0.00	0.00

Main Plant Total	35.75	0.02
Main Plant Stack	21.47	0.01
Main Plant Fugitive	14.28	0.01

Plant 3

3U-1 MELT								
EAF-5- stack	29212	tmm/yr	5.25E-05	lbs/tmm	Average all source tests since 2007 new baghouse	1.53	0.00	
EAF-5- fugitive	29212	tmm/yr	6.44E-04	lbs/tmm	AP42 Table 12.13-2 adjusted for capture & metal content	18.82	0.01	
INDF-3- stack	500	tmm/yr	8.92E-06	lbs/tmm	AP-42 Table 12.13-2 adjusted for 90% control & metal content	0.00	0.00	
INDF-4- fugitive	0	tmm/yr	8.92E-05	lbs/tmm	AP-42 Table 12.13-2 adjusted for metal content	0.00	0.00	
AOD-Res- stack	0	tmp/yr	6.97E-04	lbs/tmp	EAF emission factor	0.00	0.00	
Ladle dump back- fugitive (newly added, previously not included)	1461	tmm/yr	3.48E-04	lbs/tmm	Assume 50% of AOD fugitives	0.51	0.00	
3U-1 MELT TOTAL								0.01
3U-2 PCS								
Pouring, Cooling and Shakeout-stack	25622	tmp/yr	3.00E-05	lbs/tmp	Average all source tests	0.77	0.00	
Pouring, Cooling and Shakeout-fugitive	25622	tmp/yr	3.33E-05	lbs/tmp	AP42 Table 12.13-2 adjusted for capture & metal content	0.85	0.00	
3U-2 PCS TOTAL								0.00
3U-3-MH/SR								
Thermal Sand Reclaim- stack	18067	tons sand/yr	1.86E-05	lb/ton sand	Pacific Steel source test	0.34	0.00	
3U-3-MH/SR TOTAL								0.00
3U-4 S/SB								
Sand-Shot Blast- stacks	8914	tmm/yr	2.48E-04	lbs/tmm		2.21	0.00	
3U-4 S/SB TOTAL								0.00
3U-5 C/G								
Grinding- stack	8914	tmm/yr	8.33E-04	lbs/tmm		7.42	0.00	
3U-5 C/G TOTAL								0.00
3U-6 HOTWORK								
Welding- stack	2562	lb rod/yr	6.00E-03	lb/1000 lb	AP-42 Table 12.19-2	0.02	0.00	
3U-6 HOTWORK TOTAL								0.00
3U-7 MOLD/CORE								
3U-7 MOLD/CORE TOTAL								0.00
3U-9 COATING								
3U-9 COATING TOTAL								0.00
3U-10 NG								
Facility-wide Natural Gas Usage	100	mmcf/yr	1.40E-03	lbs/mmcf	EPA AP42 Section 1.4	0.14	0.00	0.00

Plant 3 Total	32.61	0.02
Plant 3 Stack	12.43	0.01
Plant 3 Fugitive	20.18	0.01

Total Facility Cr Emissions

Main Plant + Plant 3 Total	68.36	0.03
Main Plant + Plant 3 Stack	33.90	0.02
Main Plant + Plant 3 Fugitive	34.46	0.02

NOTES:
tmm = tons of metal melted, tmp = tons of metal poured
mmcf = million cubic feet of natural gas

Metals content calculated from metals in source tests divided by PM in source tests.

ESCO Corp: Main Plant and Plant 3
Mercury Emissions PSEL 03/24/2016
Issue Date TBD

Compliance Dates:
TBD **TBD**

Emission Unit ID	Production Rate (yearly)		Emission Factors		Emission Factor Reference	Calculated Process Emissions (lbs/yr)	Calculated Process Emissions (tons/yr)	Emission Unit totals (tons/yr)
Main Plant								
MU - 1 MELT								
EAF-1 and EAF-2- stack	12341	tmm/yr	1.37E-05	lbs/tmm	Average all source tests since 2005 rebagging	0.17	0.00	
EAF-1 and EAF-2- fugitive	12341	tmm/yr	1.07E-05	lbs/tmm	EAF factor, AP42 Table 12.13-2 adjusted for capture & metal content	0.13	0.00	
AOD-8- stack	11107	tmp/yr	1.50E-06	lbs/tmp	Average all source tests	0.02	0.00	
AOD-8- fugitive	11107	tmp/yr	6.50E-06	lbs/tmp	EAF factor, AP42 Table 12.13-2 adjusted for capture & metal content	0.07	0.00	
MU - 1 MELT TOTAL								0.00
MU - 2 PCS								
Main Floor and Slinger Bay P/C- Fugitive	4728	tmp/yr	0.00E+00	lbs/tmp	below detection level in EAF and AOD source tests	0.00	0.00	
V-Bay P/C- vacuum pump exhaust- Stack	3966	tmp/yr	0.00E+00	lbs/tmp	below detection level in EAF and AOD source tests	0.00	0.00	
V-Bay P/C- Fugitive	3966	tmp/yr	0.00E+00	lbs/tmp	below detection level in EAF and AOD source tests	0.00	0.00	
Chain Floor P/C- Fugitive	562	tmp/yr	0.00E+00	lbs/tmp	below detection level in EAF and AOD source tests	0.00	0.00	
Main Floor, Slinger, Chain Floor Shakeout-Stack	5290	tmp/yr	0.00E+00	lbs/tmp	below detection level in EAF and AOD source tests	0.00	0.00	
Main Floor, Slinger, Chain Floor Shakeout-Fugitive	5290	tmp/yr	0.00E+00	lbs/tmp	below detection level in EAF and AOD source tests	0.00	0.00	
V-Bay Shakeout- Stack	3966	tmp/yr	0.00E+00	lbs/tmp	below detection level in EAF and AOD source tests	0.00	0.00	
V-Bay Shakeout- Fugitive	3966	tmp/yr	0.00E+00	lbs/tmp	below detection level in EAF and AOD source tests	0.00	0.00	
MU - 2 PCS TOTAL								0.00
MU-3-MH/SR								
MU-3-MH/SR TOTAL								0.00
MU-4 S/SB								
Sand-Shot Blast- stacks	12341	tmm/yr	0.00E+00	lbs/tmm		0.00	0.00	
MU-4 S/SB TOTAL								0.00
MU-5 C/G								
Grinding- with control	11107	tmm/yr	0.00E+00	lbs/tmm		0.00	0.00	
Grinding- no control	1234	tmm/yr	0.00E+00	lbs/tmm		0.00	0.00	
Carpentry shop			0.00E+00					
MU-5 C/G TOTAL								0.00
MU-6 HOTWORK								
Chain table welding- fugitive	0	lb rod/yr	0.00E+00	lb/1000 lb	AP-42 Table 12.19-2	0.00	0.00	
Upper finishing- air arc & welding- stack	0	tmp/yr	0.00E+00	lbs/tm	Process knowledge	0.00	0.00	
Upper finishing- burning- stack	0	tmp/yr	0.00E+00	lbs/tm	Process knowledge	0.00	0.00	
Lower finishing- burning- stack - 95% production controlled at source @ 97% eff	8793	tmp/yr	0.00E+00	lbs/tm	Process knowledge	0.00	0.00	
Lower finishing-air arc-uncontrolled- stack - 5%	463	tmp/yr	0.00E+00	lbs/tm	Process knowledge	0.00	0.00	
Lower finishing-welding- stack	40817	lb rod/yr	0.00E+00	lb/1000 lb	AP-42 Table 12.19-2	0.00	0.00	
MU-6 HOTWORK TOTAL								0.00
MU-7 MOLD/CORE								
MU-7 MOLD/CORE TOTAL								0.00
MU-10 NG								
Facility-wide Natural Gas Usage	250	mmcf/yr	0.00026	lbs/mmcf	EPA AP42 Section 1.4	0.07	0.00	0.00

Main Plant Total	0.45	0.00
Main Plant Stack	0.25	0.00
Main Plant Fugitive	0.91	0.00

Plant 3

3U-1 MELT								
EAF-5- stack	29212	tmm/yr	8.32E-06	lbs/tmm	Average all source tests since 2007 new baghouse	0.24	0.00	
EAF-5- fugitive	29212	tmm/yr	9.17E-05	lbs/tmm	AP42 Table 12.13-2 adjusted for capture & metal content	2.68	0.00	
INDF-3- stack	500	tmm/yr	1.27E-06	lbs/tmm	AP-42 Table 12.13-2 adjusted for 90% control & metal content	0.00	0.00	
INDF-4- fugitive	0	tmm/yr	1.27E-05	lbs/tmm	AP-42 Table 12.13-2 adjusted for metal content	0.00	0.00	

AOD-Res- stack	0	tmp/yr	1.00E-04	lbs/tmp	EAF emission factor	0.00	0.00	
Ladle dump back- fugitive (newly added, previously not included)	1461	tmm/yr	5.00E-05	lbs/tmm	Assume 50% of AOD fugitives	0.07	0.00	
3U-1 MELT TOTAL								0.00
3U-2 PCS								
Pouring, Cooling and Shakeout-stack	25622	tmp/yr	0.00E+00	lbs/tmp	not detected in EAF source tests	0.00	0.00	
Pouring, Cooling and Shakeout-fugitive	25622	tmp/yr	0.00E+00	lbs/tmp	not detected in EAF source tests	0.00	0.00	
3U-2 PCS TOTAL								0.00
3U-3-MH/SR								
Thermal Sand Reclaim- stack	18067	tons sand/yr	0.00E+00	lb/ton sand	Pacific Steel source test	0.00	0.00	
3U-3-MH/SR TOTAL								0.00
3U-4 S/SB								
Sand-Shot Blast- stacks	8914	tmm/yr	0.00E+00	lbs/tmm	Process knowledge	0.00	0.00	
3U-4 S/SB TOTAL								0.00
3U-5 C/G								
Grinding- stack	8914	tmm/yr	0.00E+00	lbs/tmm	Process knowledge	0.00	0.00	
3U-5 C/G TOTAL								0.00
3U-6 HOTWORK								
Welding- stack	2562	lb rod/yr	0.00E+00	lb/1000 lb	AP-42 Table 12.19-2	0.00	0.00	
3U-6 HOTWORK TOTAL								0.00
3U-7 MOLD/CORE								
3U-7 MOLD/CORE TOTAL								0.00
3U-9 COATING								
3U-9 COATING TOTAL								0.00
3U-10 NG								
Facility-wide Natural Gas Usage	100	mmcf/yr	0.00026	lbs/mmcf	EPA AP42 Section 1.4	0.03	0.00	0.00

Plant 3 Total	3.02	0.00
Plant 3 Stack	0.27	0.00
Plant 3 Fugitive	2.75	0.00

Total Facility Hg Emissions

Main Plant + Plant 3 Total	3.48	0.00
Main Plant + Plant 3 Stack	0.52	0.00
Main Plant + Plant 3 Fugitive	3.66	0.00

NOTES:
tmm = tons of metal melted, tmp = tons of metal poured
mmcf = million cubic feet of natural gas

Metals content calculated from metals in source tests divided by PM in source tests.

ESCO Corp: Main Plant and Plant 3 **Compliance Dates:**

Cadmium Emissions PSEL 03/24/2016 **TBD** **TBD**

Issue Date TBD

Emission Unit ID	Production Rate (yearly)		Emission Factors		Emission Factor Reference	Calculated Process Emissions (lbs/yr)	Calculated Process Emissions (tons/yr)	Emission Unit totals (tons/yr)
Main Plant								
MU - 1 MELT								
EAF-1 and EAF-2- stack	12341	tmm/yr	2.34E-05	lbs/tmm	Average all source tests since 2005 rebagging	0.29	0.00	
EAF-1 and EAF-2- fugitive	12341	tmm/yr	1.83E-05	lbs/tmm	EAF factor, AP42 Table 12.13-2 adjusted for capture & metal content	0.23	0.00	
AOD-8- stack	11107	tmp/yr	1.00E-05	lbs/tmp	Average all source tests	0.11	0.00	
AOD-8- fugitive	11107	tmp/yr	4.33E-05	lbs/tmp	EAF factor, AP42 Table 12.13-2 adjusted for capture & metal content	0.48	0.00	
MU - 1 MELT TOTAL								0.00
MU - 2 PCS								
Main Floor and Slinger Bay P/C- Fugitive	4728	tmp/yr	1.58E-03	lbs/tmp	AP-42 Table 12.13-2, 1995 adjusted for metals content	7.46	0.00	
V-Bay P/C- vacuum pump exhaust- Stack	3966	tmp/yr	2.84E-04	lbs/tmp	AP-42 Table 12.13-2, 1995 adjusted for capture, control & metals content	1.13	0.00	
V-Bay P/C- Fugitive	3966	tmp/yr	1.58E-04	lbs/tmp	AP-42 Table 12.13-2, 1995 adjusted for capture & metals content	0.63	0.00	
Chain Floor P/C- Fugitive	562	tmp/yr	1.58E-03	lbs/tmp	AP-42 Table 12.13-2, 1995 adjusted for metals content	0.89	0.00	
Main Floor, Slinger, Chain Floor Shakeout-Stack	5290	tmp/yr	2.33E-06	lbs/tmp	Average all source tests adjusted for metals content	0.01	0.00	
Main Floor, Slinger, Chain Floor Shakeout-Fugitive	5290	tmp/yr	3.20E-04	lbs/tmp	AP42 Table 12.13-2 adjusted for capture & metals content	1.69	0.00	
V-Bay Shakeout- Stack	3966	tmp/yr	3.00E-06	lbs/tmp	Main floor ST adjusted for capture, control & metals content	0.01	0.00	
V-Bay Shakeout- Fugitive	3966	tmp/yr	3.20E-04	lbs/tmp	AP42 Table 12.13-2 adjusted for capture & metals content	1.27	0.00	
MU - 2 PCS TOTAL								0.01
MU-3-MH/SR								
MU-3-MH/SR TOTAL								0.00
MU-4 S/SB								
Sand-Shot Blast- stacks	12341	tmm/yr		lbs/tmm		0.00	0.00	
MU-4 S/SB TOTAL								0.00
MU-5 C/G								
Grinding- with control	11107	tmm/yr		lbs/tmm		0.00	0.00	
Grinding- no control	1234	tmm/yr		lbs/tmm		0.00	0.00	
Carpentry shop			0.00E+00					
MU-5 C/G TOTAL								0.00
MU-6 HOTWORK								
Chain table welding- fugitive	0	lb rod/yr	0.00E+00	lb/1000 lb	AP-42 Table 12.19-2	0.00	0.00	
Upper finishing- air arc & welding- stack	0	tmp/yr	8.00E-06	lbs/tm	assumed PM emission times metal content of EAF baghouse dust	0.00	0.00	
Upper finishing- burning- stack	0	tmp/yr	2.56E-06	lbs/tm	assumed PM emission times metal content of EAF baghouse dust	0.00	0.00	
Lower finishing- burning- stack - 95% production controlled at source @ 97% eff	8793	tmp/yr	4.51E-08	lbs/tm	assumed PM emission times metal content of EAF baghouse dust	0.00	0.00	
Lower finishing-air arc-uncontrolled- stack - 5%	463	tmp/yr	1.50E-06	lbs/tm	assumed PM emission times metal content of EAF baghouse dust	0.00	0.00	
Lower finishing-welding- stack	40817	lb rod/yr	0.00E+00	lb/1000 lb	AP-42 Table 12.19-2	0.00	0.00	
Shop Fabrication - 90% production controlled @ 98% eff	1080	lb rod/yr	1.73E-05	lb/1000 lb	assumed PM emission times metal content of EAF baghouse dust	0.00	0.00	
Shop Fabrication - uncontrolled	120	lb rod/yr	8.64E-04	lb/1000 lb	assumed PM emission times metal content of EAF baghouse dust	0.00	0.00	
MU-6 HOTWORK TOTAL								0.00
MU-7 MOLD/CORE								
MU-7 MOLD/CORE TOTAL								0.00
MU-10 NG								
Facility-wide Natural Gas Usage	250	mmcf/yr	0.0011	lbs/mmcf	EPA AP42 Section 1.4	0.28	0.00	0.00

Main Plant Total	14.47	0.01
Main Plant Stack	1.83	0.00
Main Plant Fugitive	12.64	0.01

Plant 3

3U-1 MELT								
EAF-5- stack	29212	tmm/yr	9.63E-06	lbs/tmm	Average all source tests since 2007 new baghouse	0.28	0.00	
EAF-5- fugitive	29212	tmm/yr	1.06E-04	lbs/tmm	AP42 Table 12.13-2 adjusted for capture & metal content	3.10	0.00	
INDF-3- stack	500	tmm/yr	1.47E-06	lbs/tmm	AP-42 Table 12.13-2 adjusted for 90% control & metal content	0.00	0.00	
INDF-4- fugitive	0	tmm/yr	1.47E-05	lbs/tmm	AP-42 Table 12.13-2 adjusted for metal content	0.00	0.00	
AOD-Res- stack	0	tmp/yr	1.16E-04	lbs/tmp	EAF emission factor	0.00	0.00	
Ladle dump back- fugitive (newly added, previously not included)	1461	tmm/yr	5.79E-05	lbs/tmm	Assume 50% of AOD fugitives	0.08	0.00	
3U-1 MELT TOTAL								0.00
3U-2 PCS								
Pouring, Cooling and Shakeout-stack	25622	tmp/yr	1.00E-04	lbs/tmp	Average all source tests	2.56	0.00	
Pouring, Cooling and Shakeout-fugitive	25622	tmp/yr	1.11E-04	lbs/tmp	AP42 Table 12.13-2 adjusted for capture & metal content	2.84	0.00	
3U-2 PCS TOTAL								0.00
3U-3-MH/SR								
Thermal Sand Reclaim- stack	18067	tons sand/yr	2.71E-06	lb/ton sand	Pacific Steel source test	0.05	0.00	
3U-3-MH/SR TOTAL								0.00
3U-4 S/SB								
Sand-Shot Blast- stacks	8914	tmm/yr		lbs/tmm		0.00	0.00	
3U-4 S/SB TOTAL								0.00
3U-5 C/G								
Grinding- stack	8914	tmm/yr		lbs/tmm		0.00	0.00	
3U-5 C/G TOTAL								0.00
3U-6 HOTWORK								
Welding- stack	2562	lb rod/yr	0.00E+00	lb/1000 lb	AP-42 Table 12.19-2	0.00	0.00	
3U-6 HOTWORK TOTAL								0.00
3U-7 MOLD/CORE								
3U-7 MOLD/CORE TOTAL								0.00
3U-9 COATING								
3U-9 COATING TOTAL								0.00
3U-10 NG								
Facility-wide Natural Gas Usage	100	mmcf/yr	0.0011	lbs/mmcf	EPA AP42 Section 1.4	0.11	0.00	0.00

Plant 3 Total	9.03	0.00
Plant 3 Stack	3.00	0.00
Plant 3 Fugitive	6.02	0.00

Total Facility Cd Emissions

Main Plant + Plant 3 Total	23.50	0.01
Main Plant + Plant 3 Stack	4.83	0.00
Main Plant + Plant 3 Fugitive	18.67	0.01

NOTES:
tmm = tons of metal melted, tmp = tons of metal poured
mmcf = million cubic feet of natural gas

Metals content calculated from metals in source tests divided by PM in source tests.

ESCO Corp: Main Plant and Plant 3 **Compliance Dates:**

Cobalt Emissions PSEL 03/24/2016 **TBD** **TBD**

Issue Date TBD

Emission Unit ID	Production Rate (yearly)		Emission Factors		Emission Factor Reference	Calculated Process Emissions (lbs/yr)	Calculated Process Emissions (tons/yr)	Emission Unit totals (tons/yr)
Main Plant								
MU - 1 MELT								
EAF-1 and EAF-2- stack	12341	tmm/yr	1.71E-05	lbs/tmm	Average all source tests since 2005 rebagging	0.21	0.00	
EAF-1 and EAF-2- fugitive	12341	tmm/yr	1.34E-05	lbs/tmm	EAF factor, AP42 Table 12.13-2 adjusted for capture & metal content	0.17	0.00	
AOD-8- stack	11107	tmp/yr	8.00E-06	lbs/tmp	Average all source tests	0.09	0.00	
AOD-8- fugitive	11107	tmp/yr	3.47E-05	lbs/tmp	EAF factor, AP42 Table 12.13-2 adjusted for capture & metal content	0.39	0.00	
MU - 1 MELT TOTAL								0.00
MU - 2 PCS								
Main Floor and Slinger Bay P/C- Fugitive	4728	tmp/yr	3.16E-04	lbs/tmp	AP-42 Table 12.13-2, 1995 adjusted for metals content	1.49	0.00	
V-Bay P/C- vacuum pump exhaust- Stack	3966	tmp/yr	5.68E-05	lbs/tmp	AP-42 Table 12.13-2, 1995 adjusted for capture, control & metals content	0.23	0.00	
V-Bay P/C- Fugitive	3966	tmp/yr	3.16E-05	lbs/tmp	AP-42 Table 12.13-2, 1995 adjusted for capture & metals content	0.13	0.00	
Chain Floor P/C- Fugitive	562	tmp/yr	3.16E-04	lbs/tmp	AP-42 Table 12.13-2, 1995 adjusted for metals content	0.18	0.00	
Main Floor, Slinger, Chain Floor Shakeout-Stack	5290	tmp/yr	4.66E-07	lbs/tmp	Average all source tests adjusted for metals content	0.00	0.00	
Main Floor, Slinger, Chain Floor Shakeout-Fugitive	5290	tmp/yr	6.39E-05	lbs/tmp	AP42 Table 12.13-2 adjusted for capture & metals content	0.34	0.00	
V-Bay Shakeout- Stack	3966	tmp/yr	1.17E-06	lbs/tmp	Main floor ST adjusted for capture, control & metals content	0.00	0.00	
V-Bay Shakeout- Fugitive	3966	tmp/yr	6.39E-05	lbs/tmp	AP42 Table 12.13-2 adjusted for capture & metals content	0.25	0.00	
MU - 2 PCS TOTAL								0.00
MU-3-MH/SR								
MU-3-MH/SR TOTAL								0.00
MU-4 S/SB								
Sand-Shot Blast- stacks	12341	tmm/yr		lbs/tmm		0.00	0.00	
MU-4 S/SB TOTAL								0.00
MU-5 C/G								
Grinding- with control	11107	tmm/yr		lbs/tmm		0.00	0.00	
Grinding- no control	1234	tmm/yr		lbs/tmm		0.00	0.00	
Carpentry shop			0.00E+00					
MU-5 C/G TOTAL								0.00
MU-6 HOTWORK								
Chain table welding- fugitive	0	lb rod/yr	1.00E-03	lb/1000 lb	AP-42 Table 12.19-2	0.00	0.00	
Upper finishing- air arc & welding- stack	0	tmp/yr	7.00E-06	lbs/tm	assumed PM emission times metal content of EAF baghouse dust	0.00	0.00	
Upper finishing- burning- stack	0	tmp/yr	2.24E-06	lbs/tm	assumed PM emission times metal content of EAF baghouse dust	0.00	0.00	
Lower finishing- burning- stack - 95% production controlled at source @ 97% eff	8793	tmp/yr	3.31E-08	lbs/tm	assumed PM emission times metal content of EAF baghouse dust	0.00	0.00	
Lower finishing-air arc-uncontrolled- stack - 5%	463	tmp/yr	1.10E-06	lbs/tm	assumed PM emission times metal content of EAF baghouse dust	0.00	0.00	
Lower finishing-welding- stack	40817	lb rod/yr	5.00E-04	lb/1000 lb	AP-42 Table 12.19-2, 50% capture	0.02	0.00	
Shop Fabrication - 90% production controlled @ 98% eff	1080	lb rod/yr	1.27E-05	lb/1000 lb	assumed PM emission times metal content of EAF baghouse dust	0.00	0.00	
Shop Fabrication - uncontrolled	120	lb rod/yr	6.34E-04	lb/1000 lb	assumed PM emission times metal content of EAF baghouse dust	0.00	0.00	
MU-6 HOTWORK TOTAL								0.00
MU-7 MOLD/CORE								
MU-7 MOLD/CORE TOTAL								0.00
MU-10 NG								
Facility-wide Natural Gas Usage	250	mmcf/yr	0.000084	lbs/mmcf	EPA AP42 Section 1.4	0.02	0.00	0.00

Main Plant Total	3.51	0.00
Main Plant Stack	0.58	0.00
Main Plant Fugitive	2.94	0.00

Plant 3

3U-1 MELT								
EAF-5- stack	29212	tmm/yr	6.26E-06	lbs/tmm	Average all source tests since 2007 new baghouse	0.18	0.00	
EAF-5- fugitive	29212	tmm/yr	6.89E-05	lbs/tmm	AP42 Table 12.13-2 adjusted for capture & metal content	2.01	0.00	
INDF-3- stack	500	tmm/yr	9.55E-07	lbs/tmm	AP-42 Table 12.13-2 adjusted for 90% control & metal content	0.00	0.00	
INDF-4- fugitive	0	tmm/yr	9.55E-06	lbs/tmm	AP-42 Table 12.13-2 adjusted for metal content	0.00	0.00	
AOD-Res- stack	0	tmp/yr	7.52E-05	lbs/tmp	EAF emission factor	0.00	0.00	
Ladle dump back- fugitive (newly added, previously not included)	1461	tmm/yr	3.76E-05	lbs/tmm	Assume 50% of AOD fugitives	0.05	0.00	
3U-1 MELT TOTAL								0.00
3U-2 PCS								
Pouring, Cooling and Shakeout-stack	25622	tmp/yr	2.00E-05	lbs/tmp	Average all source tests	0.51	0.00	
Pouring, Cooling and Shakeout-fugitive	25622	tmp/yr	2.22E-05	lbs/tmp	AP42 Table 12.13-2 adjusted for capture & metal content	0.57	0.00	
3U-2 PCS TOTAL								0.00
3U-3-MH/SR								
Thermal Sand Reclaim- stack	18067	tons sand/yr	0.00E+00	lb/ton sand	No data	0.00	0.00	
3U-3-MH/SR TOTAL								0.00
3U-4 S/SB								
Sand-Shot Blast- stacks	8914	tmm/yr		lbs/tmm		0.00	0.00	
3U-4 S/SB TOTAL								0.00
3U-5 C/G								
Grinding- stack	8914	tmm/yr		lbs/tmm		0.00	0.00	
3U-5 C/G TOTAL								0.00
3U-6 HOTWORK								
Welding- stack	2562	lb rod/yr	1.00E-03	lb/1000 lb	AP-42 Table 12.19-2	0.00	0.00	
3U-6 HOTWORK TOTAL								0.00
3U-7 MOLD/CORE								
3U-7 MOLD/CORE TOTAL								0.00
3U-9 COATING								
3U-9 COATING TOTAL								0.00
3U-10 NG								
Facility-wide Natural Gas Usage	100	mmcf/yr	0.000084	lbs/mmcf	EPA AP42 Section 1.4	0.01	0.00	0.00

Plant 3 Total	3.34	0.00
Plant 3 Stack	0.71	0.00
Plant 3 Fugitive	2.64	0.00

Total Facility Cobalt Emissions

Main Plant + Plant 3 Total	6.86	0.00
Main Plant + Plant 3 Stack	1.28	0.00
Main Plant + Plant 3 Fugitive	5.58	0.00

NOTES:
tmm = tons of metal melted, tmp = tons of metal poured
mmcf = million cubic feet of natural gas

Metals content calculated from metals in source tests divided by PM in source tests.

ESCO Corp: Main Plant and Plant 3

Arsenic Emissions PSEL 03/24/2016

Issue Date TBD

Compliance Dates:

TBD **TBD**

Emission Unit ID	Production Rate (yearly)		Emission Factors		Emission Factor Reference	Calculated Process Emissions (lbs/yr)	Calculated Process Emissions (tons/yr)	Emission Unit totals (tons/yr)
Main Plant								
MU - 1 MELT								
EAF-1 and EAF-2- stack	12341	tmm/yr	3.48E-05	lbs/tmm	Average all source tests since 2005 rebagging	0.43	0.00	
EAF-1 and EAF-2- fugitive	12341	tmm/yr	2.73E-05	lbs/tmm	EAF factor, AP42 Table 12.13-2 adjusted for capture & metal content	0.34	0.00	
AOD-8- stack	11107	tmp/yr	7.50E-06	lbs/tmp	Average all source tests	0.08	0.00	
AOD-8- fugitive	11107	tmp/yr	3.25E-05	lbs/tmp	EAF factor, AP42 Table 12.13-2 adjusted for capture & metal content	0.36	0.00	
MU - 1 MELT TOTAL								0.00
MU - 2 PCS								
Main Floor and Slinger Bay P/C- Fugitive	4728	tmp/yr	1.58E-04	lbs/tmp	AP-42 Table 12.13-2, 1995 adjusted for metals content	0.75	0.00	
V-Bay P/C- vacuum pump exhaust- Stack	3966	tmp/yr	2.84E-05	lbs/tmp	AP-42 Table 12.13-2, 1995 adjusted for capture, control & metals content	0.11	0.00	
V-Bay P/C- Fugitive	3966	tmp/yr	1.58E-05	lbs/tmp	AP-42 Table 12.13-2, 1995 adjusted for capture & metals content	0.06	0.00	
Chain Floor P/C- Fugitive	562	tmp/yr	1.58E-04	lbs/tmp	AP-42 Table 12.13-2, 1995 adjusted for metals content	0.09	0.00	
Main Floor, Slinger, Chain Floor Shakeout-Stack	5290	tmp/yr	2.33E-07	lbs/tmp	Average all source tests adjusted for metals content	0.00	0.00	
Main Floor, Slinger, Chain Floor Shakeout-Fugitive	5290	tmp/yr	3.20E-05	lbs/tmp	AP42 Table 12.13-2 adjusted for capture & metals content	0.17	0.00	
V-Bay Shakeout- Stack	3966	tmp/yr	5.83E-07	lbs/tmp	Main floor ST adjusted for capture, control & metals content	0.00	0.00	
V-Bay Shakeout- Fugitive	3966	tmp/yr	3.20E-05	lbs/tmp	AP42 Table 12.13-2 adjusted for capture & metals content	0.13	0.00	
MU - 2 PCS TOTAL								0.00
MU-3-MH/SR								
MU-3-MH/SR TOTAL								0.00
MU-4 S/SB								
Sand-Shot Blast- stacks	12341	tmm/yr		lbs/tmm		0.00	0.00	
MU-4 S/SB TOTAL								0.00
MU-5 C/G								
Grinding- with control	11107	tmm/yr		lbs/tmm		0.00	0.00	
Grinding- no control	1234	tmm/yr		lbs/tmm		0.00	0.00	
Carpentry shop			0.00E+00					
MU-5 C/G TOTAL								0.00
MU-6 HOTWORK								
Chain table welding- fugitive	0	lb rod/yr	0.00E+00	lb/1000 lb	AP-42 Table 12.19-2	0.00	0.00	
Upper finishing- air arc & welding- stack	0	tmp/yr	1.60E-05	lbs/tm	assumed PM emission times metal content of EAF baghouse dust	0.00	0.00	
Upper finishing- burning- stack	0	tmp/yr	5.12E-06	lbs/tm	assumed PM emission times metal content of EAF baghouse dust	0.00	0.00	
Lower finishing- burning- stack - 95% production controlled at source @ 97% eff	8793	tmp/yr	6.72E-08	lbs/tm	assumed PM emission times metal content of EAF baghouse dust	0.00	0.00	
Lower finishing-air arc-uncontrolled- stack - 5%	463	tmp/yr	2.24E-06	lbs/tm	assumed PM emission times metal content of EAF baghouse dust	0.00	0.00	
Lower finishing-welding- stack	40817	lb rod/yr	0.00E+00	lb/1000 lb	AP-42 Table 12.19-2	0.00	0.00	
Shop Fabrication - 90% production controlled @ 98% eff	1080	lb rod/yr	2.58E-05	lb/1000 lb	assumed PM emission times metal content of EAF baghouse dust	0.00	0.00	
Shop Fabrication - uncontrolled	120	lb rod/yr	1.29E-03	lb/1000 lb	assumed PM emission times metal content of EAF baghouse dust	0.00	0.00	
MU-6 HOTWORK TOTAL								0.00
MU-7 MOLD/CORE								
MU-7 MOLD/CORE TOTAL								0.00
MU-10 NG								
Facility-wide Natural Gas Usage	250	mmcf/yr	0.0002	lbs/mmcf	EPA AP42 Section 1.4	0.05	0.00	0.00

Main Plant Total	2.57	0.00
Main Plant Stack	0.68	0.00
Main Plant Fugitive	1.89	0.00

Plant 3

3U-1 MELT								
EAF-5- stack	29212	tmm/yr	1.31E-05	lbs/tmm	Average all source tests since 2007 new baghouse	0.38	0.00	
EAF-5- fugitive	29212	tmm/yr	1.44E-04	lbs/tmm	AP42 Table 12.13-2 adjusted for capture & metal content	4.21	0.00	
INDF-3- stack	500	tmm/yr	1.99E-06	lbs/tmm	AP-42 Table 12.13-2 adjusted for 90% control & metal content	0.00	0.00	
INDF-4- fugitive	0	tmm/yr	1.99E-05	lbs/tmm	AP-42 Table 12.13-2 adjusted for metal content	0.00	0.00	
AOD-Res- stack	0	tmp/yr	1.57E-04	lbs/tmp	EAF emission factor	0.00	0.00	
Ladle dump back- fugitive (newly added, previously not included)	1461	tmm/yr	7.86E-05	lbs/tmm	Assume 50% of AOD fugitives	0.11	0.00	
3U-1 MELT TOTAL								0.00
3U-2 PCS								
Pouring, Cooling and Shakeout-stack	25622	tmp/yr	1.00E-05	lbs/tmp	Average all source tests	0.26	0.00	
Pouring, Cooling and Shakeout-fugitive	25622	tmp/yr	1.11E-05	lbs/tmp	AP42 Table 12.13-2 adjusted for capture & metal content	0.28	0.00	
3U-2 PCS TOTAL								0.00
3U-3-MH/SR								
Thermal Sand Reclaim- stack	18067	tons sand/yr	0.00E+00	lb/ton sand	Pacific Steel source test	0.00	0.00	
3U-3-MH/SR TOTAL								0.00
3U-4 S/SB								
Sand-Shot Blast- stacks	8914	tmm/yr		lbs/tmm		0.00	0.00	
3U-4 S/SB TOTAL								0.00
3U-5 C/G								
Grinding- stack	8914	tmm/yr		lbs/tmm		0.00	0.00	
3U-5 C/G TOTAL								0.00
3U-6 HOTWORK								
Welding- stack	2562	lb rod/yr	0.00E+00	lb/1000 lb	AP-42 Table 12.19-2	0.00	0.00	
3U-6 HOTWORK TOTAL								0.00
3U-7 MOLD/CORE								
3U-7 MOLD/CORE TOTAL								0.00
3U-9 COATING								
3U-9 COATING TOTAL								0.00
3U-10 NG								
Facility-wide Natural Gas Usage	100	mmcf/yr	0.0002	lbs/mmcf	EPA AP42 Section 1.4	0.02	0.00	0.00

Plant 3 Total	5.27	0.00
Plant 3 Stack	0.66	0.00
Plant 3 Fugitive	4.61	0.00

Total Facility Arsenic Emissions

Main Plant + Plant 3 Total	7.84	0.00
Main Plant + Plant 3 Stack	1.34	0.00
Main Plant + Plant 3 Fugitive	6.50	0.00

NOTES:
tmm = tons of metal melted, tmp = tons of metal poured
mmcf = million cubic feet of natural gas

Metals content calculated from metals in source tests divided by PM in source tests.

ESCO Corp: Main Plant and Plant 3
Antimony Emissions PSEL 03/24/2016
Issue Date TBD

Compliance Dates:
TBD **TBD**

Emission Unit ID	Production Rate (yearly)		Emission Factors		Emission Factor Reference	Calculated Process Emissions (lbs/yr)	Calculated Process Emissions (tons/yr)	Emission Unit totals (tons/yr)
Main Plant								
MU - 1 MELT								
EAF-1 and EAF-2- stack	12341	tmm/yr	9.53E-06	lbs/tmm	Average all source tests since 2005 rebagging	0.12	0.00	
EAF-1 and EAF-2- fugitive	12341	tmm/yr	7.47E-06	lbs/tmm	EAF factor, AP42 Table 12.13-2 adjusted for capture & metal content	0.09	0.00	
AOD-8- stack	11107	tmp/yr	2.00E-06	lbs/tmp	Average all source tests	0.02	0.00	
AOD-8- fugitive	11107	tmp/yr	8.67E-06	lbs/tmp	EAF factor, AP42 Table 12.13-2 adjusted for capture & metal content	0.10	0.00	
MU - 1 MELT TOTAL								0.00
MU - 2 PCS								
Main Floor and Slinger Bay P/C- Fugitive	4728	tmp/yr	0.00E+00	lbs/tmp	below detection level in EAF and AOD source tests	0.00	0.00	
V-Bay P/C- vacuum pump exhaust- Stack	3966	tmp/yr	0.00E+00	lbs/tmp	below detection level in EAF and AOD source tests	0.00	0.00	
V-Bay P/C- Fugitive	3966	tmp/yr	0.00E+00	lbs/tmp	below detection level in EAF and AOD source tests	0.00	0.00	
Chain Floor P/C- Fugitive	562	tmp/yr	0.00E+00	lbs/tmp	below detection level in EAF and AOD source tests	0.00	0.00	
Main Floor, Slinger, Chain Floor Shakeout-Stack	5290	tmp/yr	0.00E+00	lbs/tmp	below detection level in EAF and AOD source tests	0.00	0.00	
Main Floor, Slinger, Chain Floor Shakeout-Fugitive	5290	tmp/yr	0.00E+00	lbs/tmp	below detection level in EAF and AOD source tests	0.00	0.00	
V-Bay Shakeout- Stack	3966	tmp/yr	0.00E+00	lbs/tmp	below detection level in EAF and AOD source tests	0.00	0.00	
V-Bay Shakeout- Fugitive	3966	tmp/yr	0.00E+00	lbs/tmp	below detection level in EAF and AOD source tests	0.00	0.00	
MU - 2 PCS TOTAL								0.00
MU-3-MH/SR								
MU-3-MH/SR TOTAL								0.00
MU-4 S/SB								
Sand-Shot Blast- stacks	12341	tmm/yr		lbs/tmm		0.00	0.00	
MU-4 S/SB TOTAL								0.00
MU-5 C/G								
Grinding- with control	11107	tmm/yr		lbs/tmm		0.00	0.00	
Grinding- no control	1234	tmm/yr		lbs/tmm		0.00	0.00	
Carpentry shop			0.00E+00					
MU-5 C/G TOTAL								0.00
MU-6 HOTWORK								
Chain table welding- fugitive	0	lb rod/yr	0.00E+00	lb/1000 lb	AP-42 Table 12.19-2	0.00	0.00	
Upper finishing- air arc & welding- stack	0	tmp/yr	4.00E-06	lbs/tm	assumed PM emission times metal content of EAF baghouse dust	0.00	0.00	
Upper finishing- burning- stack	0	tmp/yr	1.28E-06	lbs/tm	assumed PM emission times metal content of EAF baghouse dust	0.00	0.00	
Lower finishing- burning- stack - 95% production controlled at source @ 97% eff	8793	tmp/yr	1.84E-08	lbs/tm	assumed PM emission times metal content of EAF baghouse dust	0.00	0.00	
Lower finishing-air arc-uncontrolled- stack - 5%	463	tmp/yr	6.13E-07	lbs/tm	assumed PM emission times metal content of EAF baghouse dust	0.00	0.00	
Lower finishing-welding- stack	40817	lb rod/yr	0.00E+00	lb/1000 lb	AP-42 Table 12.19-2	0.00	0.00	
Shop Fabrication - 90% production controlled @ 98% eff	1080	lb rod/yr	7.05E-06	lb/1000 lb	assumed PM emission times metal content of EAF baghouse dust	0.00	0.00	
Shop Fabrication - uncontrolled	120	lb rod/yr	3.53E-04	lb/1000 lb	assumed PM emission times metal content of EAF baghouse dust	0.00	0.00	
MU-6 HOTWORK TOTAL								0.00
MU-7 MOLD/CORE								
MU-7 MOLD/CORE TOTAL								0.00
MU-10 NG								
Facility-wide Natural Gas Usage	250	mmcf/yr	0.00E+00	lbs/mmcf	EPA AP42 Section 1.4	0.00	0.00	0.00

Main Plant Total	0.33	0.00
Main Plant Stack	0.14	0.00
Main Plant Fugitive	0.19	0.00

Plant 3

3U-1 MELT								
EAF-5- stack	29212	tmm/yr	1.39E-06	lbs/tmm	Average all source tests since 2007 new baghouse	0.04	0.00	
EAF-5- fugitive	29212	tmm/yr	1.53E-05	lbs/tmm	AP42 Table 12.13-2 adjusted for capture & metal content	0.45	0.00	
INDF-3- stack	500	tmm/yr	2.12E-07	lbs/tmm	AP-42 Table 12.13-2 adjusted for 90% control & metal content	0.00	0.00	
INDF-4- fugitive	0	tmm/yr	2.12E-06	lbs/tmm	AP-42 Table 12.13-2 adjusted for metal content	0.00	0.00	
AOD-Res- stack	0	tmp/yr	1.67E-05	lbs/tmp	EAF emission factor	0.00	0.00	
Ladle dump back- fugitive (newly added, previously not included)	1461	tmm/yr	8.34E-06	lbs/tmm	Assume 50% of AOD fugitives	0.01	0.00	
3U-1 MELT TOTAL								0.00
3U-2 PCS								
Pouring, Cooling and Shakeout-stack	25622	tmp/yr	0.00E+00	lbs/tmp	below detection level in EAF source tests	0.00	0.00	
Pouring, Cooling and Shakeout-fugitive	25622	tmp/yr	0.00E+00	lbs/tmp	below detection level in EAF source tests	0.00	0.00	
3U-2 PCS TOTAL								0.00
3U-3-MH/SR								
Thermal Sand Reclaim- stack	18067	tons sand/yr	0.00E+00	lb/ton sand	No data	0.00	0.00	
3U-3-MH/SR TOTAL								0.00
3U-4 S/SB								
Sand-Shot Blast- stacks	8914	tmm/yr		lbs/tmm		0.00	0.00	
3U-4 S/SB TOTAL								0.00
3U-5 C/G								
Grinding- stack	8914	tmm/yr		lbs/tmm		0.00	0.00	
3U-5 C/G TOTAL								0.00
3U-6 HOTWORK								
Welding- stack	2562	lb rod/yr	0.00E+00	lb/1000 lb	AP-42 Table 12.19-2	0.00	0.00	
3U-6 HOTWORK TOTAL								0.00
3U-7 MOLD/CORE								
3U-7 MOLD/CORE TOTAL								0.00
3U-9 COATING								
3U-9 COATING TOTAL								0.00
3U-10 NG								
Facility-wide Natural Gas Usage	100	mmcf/yr	0	lbs/mmcf	EPA AP42 Section 1.4	0.00	0.00	0.00

Plant 3 Total	0.50	0.00
Plant 3 Stack	0.04	0.00
Plant 3 Fugitive	0.46	0.00

Total Facility Antimony Emissions

Main Plant + Plant 3 Total	0.83	0.00
Main Plant + Plant 3 Stack	0.18	0.00
Main Plant + Plant 3 Fugitive	0.65	0.00

NOTES:
tmm = tons of metal melted, tmp = tons of metal poured
mmcf = million cubic feet of natural gas

Metals content calculated from metals in source tests divided by PM in source tests.

ESCO Corp: Main Plant and Plant 3

Selenium Emissions PSEL 03/24/2016

Issue Date TBD

Compliance Dates:

TBD **TBD**

Emission Unit ID	Production Rate (yearly)		Emission Factors		Emission Factor Reference	Calculated Process Emissions (lbs/yr)	Calculated Process Emissions (tons/yr)	Emission Unit totals (tons/yr)
Main Plant								
MU - 1 MELT								
EAF-1 and EAF-2- stack	12341	tmm/yr	6.40E-05	lbs/tmm	Average all source tests since 2005 rebagging	0.79	0.00	
EAF-1 and EAF-2- fugitive	12341	tmm/yr	5.02E-05	lbs/tmm	EAF factor, AP42 Table 12.13-2 adjusted for capture & metal content	0.62	0.00	
AOD-8- stack	11107	tmp/yr	6.20E-05	lbs/tmp	Average all source tests	0.69	0.00	
AOD-8- fugitive	11107	tmp/yr	2.69E-04	lbs/tmp	EAF factor, AP42 Table 12.13-2 adjusted for capture & metal content	2.98	0.00	
MU - 1 MELT TOTAL								0.00
MU - 2 PCS								
Main Floor and Slinger Bay P/C- Fugitive	4728	tmp/yr	0.00E+00	lbs/tmp	below detection level in EAF and AOD source tests	0.00	0.00	
V-Bay P/C- vacuum pump exhaust- Stack	3966	tmp/yr	0.00E+00	lbs/tmp	below detection level in EAF and AOD source tests	0.00	0.00	
V-Bay P/C- Fugitive	3966	tmp/yr	0.00E+00	lbs/tmp	below detection level in EAF and AOD source tests	0.00	0.00	
Chain Floor P/C- Fugitive	562	tmp/yr	0.00E+00	lbs/tmp	below detection level in EAF and AOD source tests	0.00	0.00	
Main Floor, Slinger, Chain Floor Shakeout-Stack	5290	tmp/yr	0.00E+00	lbs/tmp	below detection level in EAF and AOD source tests	0.00	0.00	
Main Floor, Slinger, Chain Floor Shakeout-Fugitive	5290	tmp/yr	0.00E+00	lbs/tmp	below detection level in EAF and AOD source tests	0.00	0.00	
V-Bay Shakeout- Stack	3966	tmp/yr	0.00E+00	lbs/tmp	below detection level in EAF and AOD source tests	0.00	0.00	
V-Bay Shakeout- Fugitive	3966	tmp/yr	0.00E+00	lbs/tmp	below detection level in EAF and AOD source tests	0.00	0.00	
MU - 2 PCS TOTAL								0.00
MU-3-MH/SR								
MU-3-MH/SR TOTAL								0.00
MU-4 S/SB								
Sand-Shot Blast- stacks	12341	tmm/yr		lbs/tmm		0.00	0.00	
MU-4 S/SB TOTAL								0.00
MU-5 C/G								
Grinding- with control	11107	tmm/yr		lbs/tmm		0.00	0.00	
Grinding- no control	1234	tmm/yr		lbs/tmm		0.00	0.00	
Carpentry shop			0.00E+00					
MU-5 C/G TOTAL								0.00
MU-6 HOTWORK								
Chain table welding- fugitive	0	lb rod/yr	0.00E+00	lb/1000 lb	AP-42 Table 12.19-2	0.00	0.00	
Upper finishing- air arc & welding- stack	0	tmp/yr	3.60E-05	lbs/tm	assumed PM emission times metal content of EAF baghouse dust	0.00	0.00	
Upper finishing- burning- stack	0	tmp/yr	1.15E-05	lbs/tm	assumed PM emission times metal content of EAF baghouse dust	0.00	0.00	
Lower finishing- burning- stack - 95% production controlled at source @ 97% eff	8793	tmp/yr	1.23E-07	lbs/tm	assumed PM emission times metal content of EAF baghouse dust	0.00	0.00	
Lower finishing-air arc-uncontrolled- stack - 5%	463	tmp/yr	4.12E-06	lbs/tm	assumed PM emission times metal content of EAF baghouse dust	0.00	0.00	
Lower finishing-welding- stack	40817	lb rod/yr	0.00E+00	lb/1000 lb	AP-42 Table 12.19-2	0.00	0.00	
Shop Fabrication - 90% production controlled @ 98% eff	1080	lb rod/yr	4.73E-05	lb/1000 lb	assumed PM emission times metal content of EAF baghouse dust	0.00	0.00	
Shop Fabrication - uncontrolled	120	lb rod/yr	2.37E-03	lb/1000 lb	assumed PM emission times metal content of EAF baghouse dust	0.00	0.00	
MU-6 HOTWORK TOTAL								0.00
MU-7 MOLD/CORE								
MU-7 MOLD/CORE TOTAL								0.00
MU-10 NG								
Facility-wide Natural Gas Usage	250	mmcf/yr	0.00E+00	lbs/mmcf	EPA AP42 Section 1.4	0.00	0.00	0.00

Main Plant Total	5.08	0.00
Main Plant Stack	1.48	0.00
Main Plant Fugitive	3.60	0.00

Plant 3

3U-1 MELT								
EAF-5- stack	29212	tmm/yr	3.27E-05	lbs/tmm	Average all source tests since 2007 new baghouse	0.96	0.00	
EAF-5- fugitive	29212	tmm/yr	3.60E-04	lbs/tmm	AP42 Table 12.13-2 adjusted for capture & metal content	10.52	0.01	
INDF-3- stack	500	tmm/yr	4.99E-06	lbs/tmm	AP-42 Table 12.13-2 adjusted for 90% control & metal content	0.00	0.00	
INDF-4- fugitive	0	tmm/yr	4.99E-05	lbs/tmm	AP-42 Table 12.13-2 adjusted for metal content	0.00	0.00	
AOD-Res- stack	0	tmp/yr	3.93E-04	lbs/tmp	EAF emission factor	0.00	0.00	
Ladle dump back- fugitive (newly added, previously not included)	1461	tmm/yr	1.96E-04	lbs/tmm	Assume 50% of AOD fugitives	0.29	0.00	
3U-1 MELT TOTAL								0.01
3U-2 PCS								
Pouring, Cooling and Shakeout-stack	25622	tmp/yr	0.00E+00	lbs/tmp	below detection level in EAF source tests	0.00	0.00	
Pouring, Cooling and Shakeout-fugitive	25622	tmp/yr	0.00E+00	lbs/tmp	below detection level in EAF source tests	0.00	0.00	
3U-2 PCS TOTAL								0.00
3U-3-MH/SR								
Thermal Sand Reclaim- stack	18067	tons sand/yr	0.00E+00	lb/ton sand	No data	0.00	0.00	
3U-3-MH/SR TOTAL								0.00
3U-4 S/SB								
Sand-Shot Blast- stacks	8914	tmm/yr		lbs/tmm		0.00	0.00	
3U-4 S/SB TOTAL								0.00
3U-5 C/G								
Grinding- stack	8914	tmm/yr		lbs/tmm		0.00	0.00	
3U-5 C/G TOTAL								0.00
3U-6 HOTWORK								
Welding- stack	2562	lb rod/yr	0.00E+00	lb/1000 lb	AP-42 Table 12.19-2	0.00	0.00	
3U-6 HOTWORK TOTAL								0.00
3U-7 MOLD/CORE								
3U-7 MOLD/CORE TOTAL								0.00
3U-9 COATING								
3U-9 COATING TOTAL								0.00
3U-10 NG								
Facility-wide Natural Gas Usage	100	mmcf/yr	0.00E+00	lbs/mmcf	EPA AP42 Section 1.4	0.00	0.00	0.00

Plant 3 Total	11.77	0.01
Plant 3 Stack	0.96	0.00
Plant 3 Fugitive	10.81	0.01

Total Facility Se Emissions

Main Plant + Plant 3 Total	16.85	0.01
Main Plant + Plant 3 Stack	2.44	0.00
Main Plant + Plant 3 Fugitive	14.41	0.01

NOTES:
tmm = tons of metal melted, tmp = tons of metal poured
mmcf = million cubic feet of natural gas

Metals content calculated from metals in source tests divided by PM in source tests.

ESCO Corp: Main Plant and Plant 3

Phenol Emissions PSEL 03/24/2016

Issue Date TBD

Compliance Dates:

TBD **TBD**

Emission Unit ID	Production Rate (yearly)		Emission Factors		Emission Factor Reference	Calculated Process Emissions (lbs/yr)	Calculated Process Emissions (tons/yr)	Emission Unit totals (tons/yr)
Main Plant								
MU - 1 MELT								
MU - 1 MELT TOTAL								0.00
MU - 2 PCS								
Main Floor and Slinger Bay P/C- Fugitive	4728	tmp/yr	9.20E-02	lbs/tmp	sum of Griffin + Fuller	434.95	0.22	
V-Bay P/C- vacuum pump exhaust- Stack	3966	tmp/yr	8.28E-02	lbs/tmp	sum of Griffin + Fuller adjusted for capture	328.39	0.16	
V-Bay P/C- Fugitive	3966	tmp/yr	9.20E-03	lbs/tmp	sum of Griffin + Fuller adjusted for capture	36.49	0.02	
Chain Floor P/C- Fugitive	562	tmp/yr	3.68E-01	lbs/tmp	sum of Griffin + Fuller times 2 for binder in molds	206.75	0.10	
Main Floor, Slinger, Chain Floor Shakeout-Stack	5290	tmp/yr	1.80E-02	lbs/tmp	Assumed same as doghouse fuller source test adjusted for capture	95.21	0.05	
Main Floor, Slinger, Chain Floor Shakeout-Fugitive	5290	tmp/yr	1.80E-02	lbs/tmp	Assumed same as doghouse fuller source test adjusted for capture	95.21	0.05	
V-Bay Shakeout- Stack	3966	tmp/yr	1.80E-02	lbs/tmp	Assumed same as doghouse fuller source test adjusted for capture	71.39	0.04	
V-Bay Shakeout- Fugitive	3966	tmp/yr	1.80E-02	lbs/tmp	Assumed same as doghouse fuller source test adjusted for capture	71.39	0.04	
MU - 2 PCS TOTAL								0.67
MU-3-MH/SR								
MU-3-MH/SR TOTAL								0.00
MU-4 S/SB								
MU-4 S/SB TOTAL								0.00
MU-5 C/G								
MU-5 C/G TOTAL								0.00
MU-6 HOTWORK								
MU-6 HOTWORK TOTAL								0.00
MU-7 MOLD/CORE								
Core making- cold box, oil core, no-bake	9256	tmp/yr	0.00E+00	lb/tmp	Form R Reporting, AFS	0.00	0.00	
Core & mold washes- upper room, lower room, slinger bay, main floor	9256	tmp/yr	0.00E+00	lb/tmp	Form R Reporting, AFS	0.00	0.00	
Chain floor core making- screw mixer- stack	562	tmp/yr	0.00E+00	lb/tmp	Process knowledge	0.00	0.00	
MU-7 MOLD/CORE TOTAL								0.00
MU-8 VOC								
Miscellaneous VOC (no MU-9 coatings and no MU-7 washes)	12341	tmp/yr	0.00E+00	lb/tmp	Material balance	0.00	0.00	0.00
MU-8 VOC TOTAL								
MU-9 COATING								
MU-9 COATING TOTAL								
MU-10 NG								
Facility-wide Natural Gas Usage	250	mmcf/yr	0	lbs/mmcf		0.00	0.00	0.00

Main Plant Total	1339.77	0.67
Main Plant Stack	494.99	0.25
Main Plant Fugitive	844.79	0.42

Plant 3

3U-1 MELT								
3U-1 MELT TOTAL								0.00
3U-2 PCS								
Pouring, Cooling and Shakeout-stack	25622	tmp/yr	1.04E-01	lbs/tmp	2013 Source Test x 1.2	2674.96	1.34	
Pouring, Cooling and Shakeout-fugitive	25622	tmp/yr	5.49E-03	lbs/tmp	adjusted for 95% capture	140.79	0.07	
3U-2 PCS TOTAL								1.41
3U-3-MH/SR								
Thermal Sand Reclaim- stack	18067	tons sand/yr	3.30E-04	lb/ton sand	2015 Source Test	5.96	0.00	
3U-3-MH/SR TOTAL								0.00
3U-4 S/SB								
3U-4 S/SB TOTAL								0.00
3U-5 C/G								
3U-5 C/G TOTAL								0.00
3U-6 HOTWORK								
3U-6 HOTWORK TOTAL								0.00
3U-7 MOLD/CORE								
Pug mill system- stack	705	ton resin/yr	4.80E+00	lb/ton resin	2013 Source Test x 1.2	3382.13	1.69	
Core and Mold Making- vent	705	ton resin/yr	7.68E-01	lb/ton resin	2013 Source Test x 1.2	541.14	0.27	
Core and Mold Making- fugitive	705	ton resin/yr	8.53E-02	lb/ton resin	Source test adjusted for capture	60.13	0.03	

3U-7 MOLD/CORE TOTAL								1.99
3U-8 VOC								
Miscellaneous VOC	29712	tmm/yr	0.00E+00	lb/tmm	Material Balance	0.00	0.00	
3U-8 VOC TOTAL								0.00
3U-9 COATING								
3U-9 COATING TOTAL								0.00
3U-10 NG								
Facility-wide Natural Gas Usage	100	mmcf/yr	0.00E+00	lbs/mmcf		0.00	0.00	0.00

Plant 3 Total	6805.11	3.40
Plant 3 Stack	6604.20	3.30
Plant 3 Fugitive	200.91	0.10

Total Facility Phenol Emissions

Main Plant + Plant 3 Total	8144.88	4.07
Main Plant + Plant 3 Stack	7099.18	3.55
Main Plant + Plant 3 Fugitive	1045.70	0.52

NOTES:
tmm = tons of metal melted, tmp = tons of metal poured
mmcf = million cubic feet of natural gas

ESCO Corp: Main Plant and Plant 3

Formaldehyde Emissions PSEL 03/24/2016

Issue Date TBD

Compliance Dates:

TBD **TBD**

Emission Unit ID	Production Rate (yearly)		Emission Factors		Emission Factor Reference	Calculated Process Emissions (lbs/yr)	Calculated Process Emissions (tons/yr)	Emission Unit totals (tons/yr)
Main Plant								
MU - 1 MELT								
MU - 1 MELT TOTAL								0.00
MU - 2 PCS								
Main Floor and Slinger Bay P/C- Fugitive	4728	tmp/yr	6.89E-03	lbs/tmp	sum of Griffin + Fuller	32.56	0.02	
V-Bay P/C- vacuum pump exhaust- Stack	3966	tmp/yr	6.20E-03	lbs/tmp	sum of Griffin + Fuller adjusted for capture	24.58	0.01	
V-Bay P/C- Fugitive	3966	tmp/yr	6.89E-04	lbs/tmp	sum of Griffin + Fuller adjusted for capture	2.73	0.00	
Chain Floor P/C- Fugitive	562	tmp/yr	2.75E-02	lbs/tmp	sum of Griffin + Fuller times 2 for binder in molds	15.48	0.01	
Main Floor, Slinger, Chain Floor Shakeout-Stack	5290	tmp/yr	7.77E-04	lbs/tmp	Assumed same as doghouse fuller source test adjusted for capture	4.11	0.00	
Main Floor, Slinger, Chain Floor Shakeout-Fugitive	5290	tmp/yr	7.77E-04	lbs/tmp	Assumed same as doghouse fuller source test adjusted for capture	4.11	0.00	
V-Bay Shakeout- Stack	3966	tmp/yr	7.77E-04	lbs/tmp	Assumed same as doghouse fuller source test adjusted for capture	3.08	0.00	
V-Bay Shakeout- Fugitive	3966	tmp/yr	7.77E-04	lbs/tmp	Assumed same as doghouse fuller source test adjusted for capture	3.08	0.00	
MU - 2 PCS TOTAL								0.04
MU-3-MH/SR								
MU-3-MH/SR TOTAL								0.00
MU-4 S/SB								
MU-4 S/SB TOTAL								0.00
MU-5 C/G								
MU-5 C/G TOTAL								0.00
MU-6 HOTWORK								
MU-6 HOTWORK TOTAL								0.00
MU-7 MOLD/CORE								
Core making- cold box, oil core, no-bake	9256	tmp/yr	8.50E-04	lb/tmp	Form R Reporting, AFS	7.87	0.00	
Core & mold washes- upper room, lower room, slinger bay, main floor	9256	tmp/yr	8.50E-04	lb/tmp	Form R Reporting, AFS	7.87	0.00	
Chain floor core making- screw mixer- stack	562	tmp/yr	0.00E+00	lb/tmp	Process knowledge	0.00	0.00	
MU-7 MOLD/CORE TOTAL								0.01
MU-8 VOC								
Miscellaneous VOC (no MU-9 coatings and no MU-7 washes)	12341	tmp/yr	0.00E+00	lb/tmp	Material balance	0.00	0.00	0.00
MU-8 VOC TOTAL								
MU-9 COATING								
MU-9 COATING TOTAL								
MU-10 NG								
Facility-wide Natural Gas Usage	250	mmcf/yr	0.075	lbs/mmcf	EPA AP-42	18.75	0.01	0.01

Main Plant Total	124.21	0.06
Main Plant Stack	50.52	0.03
Main Plant Fugitive	73.69	0.04

Plant 3

3U-1 MELT								
3U-1 MELT TOTAL								0.00
3U-2 PCS								
Pouring, Cooling and Shakeout-stack	25622	tmp/yr	2.88E-03	lbs/tmp	2013 Source Test * 1.2	73.79	0.04	
Pouring, Cooling and Shakeout-fugitive	25622	tmp/yr	1.52E-04	lbs/tmp	adjusted for 95% capture	3.88	0.00	
3U-2 PCS TOTAL								0.04
3U-3-MH/SR								
Thermal Sand Reclaim- stack	18067	tons sand/yr	2.70E-03	lbs/ton sand	2015 Source Test	48.78	0.02	
3U-3-MH/SR TOTAL								0.02
3U-4 S/SB								
3U-4 S/SB TOTAL								0.00
3U-5 C/G								

3U-5 C/G TOTAL								0.00
3U-6 HOTWORK								
3U-6 HOTWORK TOTAL								0.00
3U-7 MOLD/CORE								
Pug mill system- stack	705	ton resin/yr	1.13E+00	lb/ton resin	2013 Source Test * 1.2	794.80	0.40	
Core and Mold Making- vent	705	ton resin/yr	7.44E-01	lb/ton resin	2013 Source Test * 1.2	524.23	0.26	
Core and Mold Making- fugitive	705	ton resin/yr	8.27E-02	lb/ton resin	Source test adjusted for capture	58.25	0.03	
3U-7 MOLD/CORE TOTAL								0.69
3U-8 VOC								
Miscellaneous VOC	29712	tmm/yr	3.00E-03	lb/tmm	Material Balance	89.14	0.04	
3U-8 VOC TOTAL								0.04
3U-9 COATING								
3U-9 COATING TOTAL								0.00
3U-10 NG								
Facility-wide Natural Gas Usage	100	mmcf/yr	7.50E-02	lbs/mmcf	EPA AP-42	7.50	0.00	0.00

Plant 3 Total	1600.37	0.80
Plant 3 Stack	1449.10	0.72
Plant 3 Fugitive	151.27	0.08

Total Facility Formaldehyde Emissions

Main Plant + Plant 3 Total	1724.58	0.86
Main Plant + Plant 3 Stack	1499.62	0.75
Main Plant + Plant 3 Fugitive	224.96	0.11

NOTES:
tmm = tons of metal melted, tmp = tons of metal poured
mmcf = million cubic feet of natural gas

ESCO Corp: Main Plant and Plant 3 **Compliance Dates:**

Benzene Emissions PSEL 03/24/2016 **TBD** **TBD**

Issue Date TBD

Emission Unit ID	Production Rate (yearly)		Emission Factors		Emission Factor Reference	Calculated Process Emissions (lbs/yr)	Calculated Process Emissions (tons/yr)	Emission Unit totals (tons/yr)
Main Plant								
MU - 1 MELT								
MU - 1 MELT TOTAL								0.00
MU - 2 PCS								
Main Floor and Slinger Bay P/C- Fugitive	4728	tmp/yr	5.33E-02	lbs/tmp	sum of Griffin + Fuller	252.15	0.13	
V-Bay P/C- vacuum pump exhaust- Stack	3966	tmp/yr	4.80E-02	lbs/tmp	sum of Griffin + Fuller adjusted for capture	190.37	0.10	
V-Bay P/C- Fugitive	3966	tmp/yr	5.33E-03	lbs/tmp	sum of Griffin + Fuller adjusted for capture	21.15	0.01	
Chain Floor P/C- Fugitive	562	tmp/yr	2.13E-01	lbs/tmp	sum of Griffin + Fuller times 2 for binder in molds	119.85	0.06	
Main Floor, Slinger, Chain Floor Shakeout-Stack	5290	tmp/yr	8.00E-03	lbs/tmp	Assumed same as doghouse fuller source test adjusted for capture	42.32	0.02	
Main Floor, Slinger, Chain Floor Shakeout-Fugitive	5290	tmp/yr	8.00E-03	lbs/tmp	Assumed same as doghouse fuller source test adjusted for capture	42.32	0.02	
V-Bay Shakeout- Stack	3966	tmp/yr	8.00E-03	lbs/tmp	Assumed same as doghouse fuller source test adjusted for capture	31.73	0.02	
V-Bay Shakeout- Fugitive	3966	tmp/yr	8.00E-03	lbs/tmp	Assumed same as doghouse fuller source test adjusted for capture	31.73	0.02	
MU - 2 PCS TOTAL								0.37
MU-3-MH/SR								
MU-3-MH/SR TOTAL								0.00
MU-4 S/SB								
MU-4 S/SB TOTAL								0.00
MU-5 C/G								
MU-5 C/G TOTAL								0.00
MU-6 HOTWORK								
MU-6 HOTWORK TOTAL								0.00
MU-7 MOLD/CORE								
Core making- cold box, oil core, no-bake	9256	tmp/yr	0.00E+00	lb/tmp	Form R Reporting, AFS	0.00	0.00	
Core & mold washes- upper room, lower room, slinger bay, main floor	9256	tmp/yr	0.00E+00	lb/tmp	Form R Reporting, AFS	0.00	0.00	
Chain floor core making- screw mixer- stack	562	tmp/yr	0.00E+00	lb/tmp	Process knowledge	0.00	0.00	
MU-7 MOLD/CORE TOTAL								0.00
MU-8 VOC								
Miscellaneous VOC (no MU-9 coatings and no MU-7 washes)	12341	tmp/yr	0.00E+00	lb/tmp	Material balance	0.00	0.00	0.00
MU-8 VOC TOTAL								
MU-9 COATING								
All dip painting	12341	tmm/yr	0.00E+00	lb/tmm	Material balance	0.00	0.00	0.00
MU-9 COATING TOTAL								
MU-10 NG								
Facility-wide Natural Gas Usage	250	mmcf/yr	0.0021	lbs/mmcf	EPA AP-42	0.53	0.00	0.00

Main Plant Total	732.13	0.37
Main Plant Stack	264.94	0.13
Main Plant Fugitive	467.20	0.23

Plant 3

3U-1 MELT								
3U-1 MELT TOTAL								0.00
3U-2 PCS								
Pouring, Cooling and Shakeout-stack	25622	tmp/yr	6.45E-02	lbs/tmp	Average all source tests	1652.63	0.83	
Pouring, Cooling and Shakeout-fugitive	25622	tmp/yr	3.39E-03	lbs/tmp	adjusted for 95% capture	86.98	0.04	
3U-2 PCS TOTAL								0.87
3U-3-MH/SR								
Thermal Sand Reclaim- stack	18067	tons sand/yr	1.60E-03	lbs/ton sand	2015 Source Test	28.91	0.01	
3U-3-MH/SR TOTAL								0.01
3U-4 S/SB								
3U-4 S/SB TOTAL								0.00
3U-5 C/G								
3U-5 C/G TOTAL								0.00
3U-6 HOTWORK								
3U-6 HOTWORK TOTAL								0.00
3U-7 MOLD/CORE								
Pug mill system- stack	705	ton resin/yr	3.10E-03	lb/ton resin	Pacific Steel source test	2.18	0.00	
Core and Mold Making- vent	705	ton resin/yr	2.50E-03	lb/ton resin	Pacific Steel source test	1.76	0.00	

Core and Mold Making- fugitive	705	ton resin/yr	6.20E-04	lb/ton resin	Pacific Steel source test	0.44	0.00	
3U-7 MOLD/CORE TOTAL								0.00
3U-8 VOC								
Miscellaneous VOC	29712	tmm/yr	0.00E+00	lb/tmm	Material Balance	0.00	0.00	
3U-8 VOC TOTAL								0.00
3U-9 COATING								
3U-9 COATING TOTAL								0.00
3U-10 NG								
Facility-wide Natural Gas Usage	100	mmcf/yr	2.10E-03	lbs/mmcf	EPA AP-42	0.21	0.00	0.00

Plant 3 Total	1773.11	0.89
Plant 3 Stack	1685.70	0.84
Plant 3 Fugitive	87.42	0.04

Total Facility Benzene Emissions

Main Plant + Plant 3 Total	2505.25	1.25
Main Plant + Plant 3 Stack	1950.63	0.98
Main Plant + Plant 3 Fugitive	554.61	0.28

NOTES:
tmm = tons of metal melted, tmp = tons of metal poured
mmcf = million cubic feet of natural gas

ESCO Corp: Main Plant and Plant 3 **Compliance Dates:**

Cresol Emissions PSEL 03/24/2016 **TBD** **TBD**

Issue Date TBD

Emission Unit ID	Production Rate (yearly)		Emission Factors		Emission Factor Reference	Calculated Process Emissions (lbs/yr)	Calculated Process Emissions (tons/yr)	Emission Unit totals (tons/yr)
Main Plant								
MU - 1 MELT								
MU - 1 MELT TOTAL								0.00
MU - 2 PCS								
Main Floor and Slinger Bay P/C- Fugitive	4728	tmp/yr	5.33E-02	lbs/tmp	sum of Griffin + Fuller	252.15	0.13	
V-Bay P/C- vacuum pump exhaust- Stack	3966	tmp/yr	4.80E-02	lbs/tmp	sum of Griffin + Fuller adjusted for capture	190.37	0.10	
V-Bay P/C- Fugitive	3966	tmp/yr	5.33E-03	lbs/tmp	sum of Griffin + Fuller adjusted for capture	21.15	0.01	
Chain Floor P/C- Fugitive	562	tmp/yr	2.13E-01	lbs/tmp	sum of Griffin + Fuller times 2 for binder in molds	119.85	0.06	
Main Floor, Slinger, Chain Floor Shakeout-Stack	5290	tmp/yr	9.33E-03	lbs/tmp	Assumed same as doghouse fuller source test adjusted for capture	49.37	0.02	
Main Floor, Slinger, Chain Floor Shakeout-Fugitive	5290	tmp/yr	9.33E-03	lbs/tmp	Assumed same as doghouse fuller source test adjusted for capture	49.37	0.02	
V-Bay Shakeout- Stack	3966	tmp/yr	9.33E-03	lbs/tmp	Assumed same as doghouse fuller source test adjusted for capture	37.02	0.02	
V-Bay Shakeout- Fugitive	3966	tmp/yr	9.33E-03	lbs/tmp	Assumed same as doghouse fuller source test adjusted for capture	37.02	0.02	
MU - 2 PCS TOTAL								0.38
MU-3-MH/SR								
MU-3-MH/SR TOTAL								0.00
MU-4 S/SB								
MU-4 S/SB TOTAL								0.00
MU-5 C/G								
MU-5 C/G TOTAL								0.00
MU-6 HOTWORK								
MU-6 HOTWORK TOTAL								0.00
MU-7 MOLD/CORE								
Core making- cold box, oil core, no-bake	9256	tmp/yr	0.00E+00	lb/tmp	Process knowledge	0.00	0.00	
Core & mold washes- upper room, lower room, slinger bay, main floor	9256	tmp/yr	0.00E+00	lb/tmp	Process knowledge	0.00	0.00	
Chain floor core making- screw mixer- stack	562	tmp/yr	0.00E+00	lb/tmp	Process knowledge	0.00	0.00	
MU-7 MOLD/CORE TOTAL								0.00
MU-8 VOC								
Miscellaneous VOC (no MU-9 coatings and no MU-7 washes)	12341	tmp/yr	0.00E+00	lb/tmp	Material balance	0.00	0.00	0.00
MU-8 VOC TOTAL								
MU-9 COATING								
MU-9 COATING TOTAL								
MU-10 NG								
Facility-wide Natural Gas Usage	250	mmcf/yr	0	lbs/mmcf	EPA AP-42	0.00	0.00	0.00

Main Plant Total	756.29	0.38
Main Plant Stack	276.75	0.14
Main Plant Fugitive	479.54	0.24

Plant 3

3U-1 MELT								
3U-1 MELT TOTAL								0.00
3U-2 PCS								
Pouring, Cooling and Shakeout-stack	25622	tmp/yr	1.08E-01	lbs/tmp	Average all source tests	2760.79	1.38	
Pouring, Cooling and Shakeout-fugitive	25622	tmp/yr	5.67E-03	lbs/tmp	adjusted for 95% capture	145.30	0.07	
3U-2 PCS TOTAL								1.45
3U-3-MH/SR								
Thermal Sand Reclaim- stack	18067	tons sand/yr	6.45E-04	lbs/ton sand	2015 Source Test	11.65	0.01	
3U-3-MH/SR TOTAL								0.01
3U-4 S/SB								
3U-4 S/SB TOTAL								0.00
3U-5 C/G								
3U-5 C/G TOTAL								0.00
3U-6 HOTWORK								
3U-6 HOTWORK TOTAL								0.00
3U-7 MOLD/CORE								
Pug mill system- stack	705	ton resin/yr	0.00E+00	lb/ton resin	Process knowledge	0.00	0.00	
Core and Mold Making- vent	705	ton resin/yr	0.00E+00	lb/ton resin	Process knowledge	0.00	0.00	
Core and Mold Making- fugitive	705	ton resin/yr	0.00E+00	lb/ton resin	Process knowledge	0.00	0.00	

3U-7 MOLD/CORE TOTAL								0.00
3U-8 VOC								
Miscellaneous VOC	29712	tmm/yr	0.00E+00	lb/tmm	Material Balance	0.00	0.00	
3U-8 VOC TOTAL								0.00
3U-9 COATING								
3U-9 COATING TOTAL								0.00
3U-10 NG								
Facility-wide Natural Gas Usage	100	mmcf/yr	0.00E+00	lbs/mmcf	EPA AP-42	0.00	0.00	0.00

Plant 3 Total	2917.75	1.46
Plant 3 Stack	2772.45	1.39
Plant 3 Fugitive	145.30	0.07

Total Facility Cresol Emissions

Main Plant + Plant 3 Total	3674.04	1.84
Main Plant + Plant 3 Stack	3049.20	1.52
Main Plant + Plant 3 Fugitive	624.84	0.31

NOTES:
tmm = tons of metal melted, tmp = tons of metal poured
mmcf = million cubic feet of natural gas

ESCO Corp: Main Plant and Plant 3 **Compliance Dates:**

Toluene Emissions PSEL 03/24/2016 **TBD** **TBD**

Issue Date TBD

Emission Unit ID	Production Rate (yearly)		Emission Factors		Emission Factor Reference	Calculated Process Emissions (lbs/yr)	Calculated Process Emissions (tons/yr)	Emission Unit totals (tons/yr)
Main Plant								
MU - 1 MELT								
MU - 1 MELT TOTAL								0.00
MU - 2 PCS								
Main Floor and Slinger Bay P/C- Fugitive	4728	tmp/yr	2.62E-02	lbs/tmp	sum of Griffin + Fuller	123.97	0.06	
V-Bay P/C- vacuum pump exhaust- Stack	3966	tmp/yr	2.36E-02	lbs/tmp	sum of Griffin + Fuller adjusted for capture	93.60	0.05	
V-Bay P/C- Fugitive	3966	tmp/yr	2.62E-03	lbs/tmp	sum of Griffin + Fuller adjusted for capture	10.40	0.01	
Chain Floor P/C- Fugitive	562	tmp/yr	1.05E-01	lbs/tmp	sum of Griffin + Fuller times 2 for binder in molds	58.93	0.03	
Main Floor, Slinger, Chain Floor Shakeout-Stack	5290	tmp/yr	3.56E-03	lbs/tmp	Assumed same as doghouse fuller source test adjusted for capture	18.81	0.01	
Main Floor, Slinger, Chain Floor Shakeout-Fugitive	5290	tmp/yr	3.56E-03	lbs/tmp	Assumed same as doghouse fuller source test adjusted for capture	18.81	0.01	
V-Bay Shakeout- Stack	3966	tmp/yr	3.56E-03	lbs/tmp	Assumed same as doghouse fuller source test adjusted for capture	14.10	0.01	
V-Bay Shakeout- Fugitive	3966	tmp/yr	3.56E-03	lbs/tmp	Assumed same as doghouse fuller source test adjusted for capture	14.10	0.01	
MU - 2 PCS TOTAL								0.18
MU-3-MH/SR								
MU-3-MH/SR TOTAL								0.00
MU-4 S/SB								
MU-4 S/SB TOTAL								0.00
MU-5 C/G								
MU-5 C/G TOTAL								0.00
MU-6 HOTWORK								
MU-6 HOTWORK TOTAL								0.00
MU-7 MOLD/CORE								
Core making- cold box, oil core, no-bake	9256	tmp/yr	0.00E+00	lb/tmp	Process knowledge	0.00	0.00	
Core & mold washes- upper room, lower room, slinger bay, main floor	9256	tmp/yr	0.00E+00	lb/tmp	Process knowledge	0.00	0.00	
Chain floor core making- screw mixer- stack	562	tmp/yr	0.00E+00	lb/tmp	Process knowledge	0.00	0.00	
MU-7 MOLD/CORE TOTAL								0.00
MU-8 VOC								
Miscellaneous VOC (no MU-9 coatings and no MU-7 washes)	12341	tmp/yr	8.95E-03	lb/tmp	Material balance	110.45	0.06	0.06
MU-8 VOC TOTAL								
MU-9 COATING								
MU-9 COATING TOTAL								
MU-10 NG								
Facility-wide Natural Gas Usage	250	mmcf/yr	3.40E-03	lbs/mmcf	EPA AP-42	0.85	0.00	0.00

Main Plant Total	464.01	0.23
Main Plant Stack	127.36	0.06
Main Plant Fugitive	336.66	0.17

Plant 3

3U-1 MELT								
3U-1 MELT TOTAL								0.00
3U-2 PCS								
Pouring, Cooling and Shakeout-stack	25622	tmp/yr	2.67E-02	lbs/tmp	Average all source tests	683.26	0.34	
Pouring, Cooling and Shakeout-fugitive	25622	tmp/yr	1.40E-03	lbs/tmp	adjusted for 95% capture	35.96	0.02	
3U-2 PCS TOTAL								0.36
3U-3-MH/SR								
Thermal Sand Reclaim- stack	18067	tons sand/yr	1.80E-04	lbs/ton sand	2015 Source Test	3.25	0.00	
3U-3-MH/SR TOTAL								0.00
3U-4 S/SB								
3U-4 S/SB TOTAL								0.00
3U-5 C/G								
3U-5 C/G TOTAL								0.00
3U-6 HOTWORK								
3U-6 HOTWORK TOTAL								0.00
3U-7 MOLD/CORE								
Pug mill system- stack	705	ton resin/yr	0.00E+00	lb/ton resin	Process knowledge	0.00	0.00	
Core and Mold Making- vent	705	ton resin/yr	0.00E+00	lb/ton resin	Process knowledge	0.00	0.00	

Core and Mold Making- fugitive	705	ton resin/yr	0.00E+00	lb/ton resin	Process knowledge	0.00	0.00	
3U-7 MOLD/CORE TOTAL								0.00
3U-8 VOC								
Miscellaneous VOC	29712	tmm/yr	2.40E-03	lb/tmm	Material Balance	71.31	0.04	
3U-8 VOC TOTAL								0.04
3U-9 COATING								
3U-9 COATING TOTAL								0.00
3U-10 NG								
Facility-wide Natural Gas Usage	100	mmcf/yr	3.40E-03	lbs/mmcf	EPA AP-42	0.34	0.00	0.00

Plant 3 Total	794.12	0.40
Plant 3 Stack	686.85	0.34
Plant 3 Fugitive	107.27	0.05

Total Facility Toluene Emissions

Main Plant + Plant 3 Total	1258.13	0.63
Main Plant + Plant 3 Stack	814.21	0.41
Main Plant + Plant 3 Fugitive	443.93	0.22

NOTES:
tmm = tons of metal melted, tmp = tons of metal poured
mmcf = million cubic feet of natural gas

ESCO Corp: Main Plant and Plant 3

Naphthalene Emissions PSEL 03/24/2016

Issue Date TBD

Compliance Dates:

TBD **TBD**

Emission Unit ID	Production Rate (yearly)		Emission Factors		Emission Factor Reference	Calculated Process Emissions (lbs/yr)	Calculated Process Emissions (tons/yr)	Emission Unit totals (tons/yr)
Main Plant								
MU - 1 MELT								
MU - 1 MELT TOTAL								0.00
MU - 2 PCS								
Main Floor and Slinger Bay P/C- Fugitive	4728	tmp/yr	3.82E-02	lbs/tmp	sum of Griffin + Fuller	180.70	0.09	
V-Bay P/C- vacuum pump exhaust- Stack	3966	tmp/yr	3.44E-02	lbs/tmp	sum of Griffin + Fuller adjusted for capture	136.43	0.07	
V-Bay P/C- Fugitive	3966	tmp/yr	3.82E-03	lbs/tmp	sum of Griffin + Fuller adjusted for capture	15.16	0.01	
Chain Floor P/C- Fugitive	562	tmp/yr	1.53E-01	lbs/tmp	sum of Griffin + Fuller times 2 for binder in molds	85.89	0.04	
Main Floor, Slinger, Chain Floor Shakeout-Stack	5290	tmp/yr	9.78E-03	lbs/tmp	Assumed same as doghouse fuller source test adjusted for capture	51.72	0.03	
Main Floor, Slinger, Chain Floor Shakeout-Fugitive	5290	tmp/yr	9.78E-03	lbs/tmp	Assumed same as doghouse fuller source test adjusted for capture	51.72	0.03	
V-Bay Shakeout- Stack	3966	tmp/yr	9.78E-03	lbs/tmp	Assumed same as doghouse fuller source test adjusted for capture	38.78	0.02	
V-Bay Shakeout- Fugitive	3966	tmp/yr	9.78E-03	lbs/tmp	Assumed same as doghouse fuller source test adjusted for capture	38.78	0.02	
MU - 2 PCS TOTAL								0.30
MU-3-MH/SR								
MU-3-MH/SR TOTAL								0.00
MU-4 S/SB								
MU-4 S/SB TOTAL								0.00
MU-5 C/G								
MU-5 C/G TOTAL								0.00
MU-6 HOTWORK								
MU-6 HOTWORK TOTAL								0.00
MU-7 MOLD/CORE								
Core making- cold box, oil core, no-bake	9256	tmp/yr	1.30E-02	lb/tmp	Form R Reporting, AFS	120.32	0.06	
Core & mold washes- upper room, lower room, slinger bay, main floor	9256	tmp/yr	0.00E+00	lb/tmp	Process knowledge	0.00	0.00	
Chain floor core making- screw mixer- stack	562	tmp/yr	0.00E+00	lb/tmp	Process knowledge	0.00	0.00	
MU-7 MOLD/CORE TOTAL								0.06
MU-8 VOC								
Miscellaneous VOC (no MU-9 coatings and no MU-7 washes)	12341	tmp/yr	0.00E+00	lb/tmp	Material balance	0.00	0.00	0.00
MU-8 VOC TOTAL								
MU-9 COATING								
MU-9 COATING TOTAL								
MU-10 NG								
Facility-wide Natural Gas Usage	250	mmcf/yr	6.10E-04	lbs/mmcf	EPA AP-42	0.15	0.00	0.00

Main Plant Total	719.66	0.36
Main Plant Stack	227.08	0.11
Main Plant Fugitive	492.58	0.25

Plant 3

3U-1 MELT								
3U-1 MELT TOTAL								0.00
3U-2 PCS								
Pouring, Cooling and Shakeout-stack	25622	tmp/yr	7.83E-03	lbs/tmp	Average all source tests	200.71	0.10	
Pouring, Cooling and Shakeout-fugitive	25622	tmp/yr	4.12E-04	lbs/tmp	adjusted for 95% capture	10.56	0.01	
3U-2 PCS TOTAL								0.11
3U-3-MH/SR								
Thermal Sand Reclaim- stack	18067	tons sand/yr	6.00E-05	lbs/ton sand	2015 Source Test	1.08	0.00	
3U-3-MH/SR TOTAL								0.00
3U-4 S/SB								
3U-4 S/SB TOTAL								0.00
3U-5 C/G								
3U-5 C/G TOTAL								0.00
3U-6 HOTWORK								
3U-6 HOTWORK TOTAL								0.00
3U-7 MOLD/CORE								
Pug mill system- stack	705	ton resin/yr	0.00E+00	lb/ton resin	Process knowledge	0.00	0.00	
Core and Mold Making- vent	705	tmp/yr	3.15E-03	lb/tmp	AFS Form R reporting	2.22	0.00	
Core and Mold Making- fugitive	705	tmp/yr	3.50E-04	lb/tmp	AFS Form R reporting	0.25	0.00	

3U-7 MOLD/CORE TOTAL								0.00
3U-8 VOC								
Miscellaneous VOC	29712	tmm/yr	0.00E+00	lb/tmm	Material Balance	0.00	0.00	
3U-8 VOC TOTAL								0.00
3U-9 COATING								
3U-9 COATING TOTAL								0.00
3U-10 NG								
Facility-wide Natural Gas Usage	100	mmcf/yr	6.10E-04	lbs/mmcf	EPA AP-42	0.06	0.00	0.00

Plant 3 Total	214.88	0.11
Plant 3 Stack	204.07	0.10
Plant 3 Fugitive	10.81	0.01

Total Facility Naphthalene Emissions

Main Plant + Plant 3 Total	934.54	0.47
Main Plant + Plant 3 Stack	431.15	0.22
Main Plant + Plant 3 Fugitive	503.39	0.25

NOTES:
tmm = tons of metal melted, tmp = tons of metal poured
mmcf = million cubic feet of natural gas

4. Form R Reporting of Binder Chemicals Used in Foundries; American Foundrymen's Society, Inc. and Casting Industry Suppliers Association, 2nd Ed., 1998.

ESCO Corp: Main Plant and Plant 3 PSEL 03/24/2016

Remaining HAP Emissions

Issue Date TBD

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		Production		Triethylamine			Diisocyanates			Trimethylbenzene			POMs (7)		
Main Plant	Notes		Units	Factor	Units	Emission	Factor	Units	Emission	Factor	Units	Emission	Factor	Units	Emission
Main Floor, Slinger Bay PCS	2	4728	tmp/yr	0	lb/tmp	0.0 lb/yr		lb/tmp	0.0 lb/yr		lb/tmp	0.0 lb/yr		lb/tmp	0.0 lb/yr
Chain Floor PCS	3	562	tmp/yr	0	lb/tmp	0.0 lb/yr		lb/tmp	0.0 lb/yr		lb/tmp	0.0 lb/yr		lb/tmp	0.0 lb/yr
V-Bay	2	3966	tmp/yr	0	lb/tmp	0.0 lb/yr		lb/tmp	0.0 lb/yr		lb/tmp	0.0 lb/yr		lb/tmp	0.0 lb/yr
Mold & Core Making	4	9256	tmp/yr	0.0116	lb/tmp	107.4 lb/yr	0.000571	lb/tmp	5.3 lb/yr	0.000354	lb/tmp	3.3 lb/yr	0	lb/tmp	0.0 lb/yr
Misc. Chemicals	4	9256	tmp/yr	0	lb/tmp	0.0 lb/yr	0	lb/tmp	0.0 lb/yr	1.82E-03	lb/tmp	16.8 lb/yr		lb/tmp	0.0 lb/yr
Natural Gas	5	250	mm cf/yr	0	lb/mm cf	0.0 lb/yr	0	lb/mm cf	0.0 lb/yr	0	lb/mm cf	0.0 lb/yr	5.18E-05	lb/mm cf	0.0130 lb/yr
MP total						107.4 lb/yr			5.3 lb/yr			20.1 lb/yr			0.0 lb/yr
Plant 3															
PCS	6	25622	tmp/yr	0	lb/tmp	0.0 lb/yr		lb/tmp	0.0 lb/yr		lb/tmp	0.0 lb/yr		lb/tmp	0.0 lb/yr
Thermal Sand Reclaimer	10	18067	tons/yr							0.000055	lbs/ton sand	0.7 lb/yr	0.000475	lbs/ton sanc	5.3 lb/yr
Misc. Chemicals	4	25622	tmp/yr	0	lb/tmp	0.0 lb/yr	0.00039	lb/tmp*	10.0 lb/yr	1.95E-03	lb/tmp	50.0 lb/yr		lb/tmp	0.0 lb/yr
Natural Gas	5	100	mm cf/yr	0	lb/mm cf	0.0 lb/yr	0	lb/mm cf	0.0 lb/yr	0	lb/mm cf	0.0 lb/yr	5.18E-05	lb/mm cf	0.0052 lb/yr
P3 Total						0.0 lb/yr			10.0 lb/yr			50.7 lb/yr			5.3 lb/yr
MP + P3 Total						107.4 lb/yr			15.3 lb/yr			70.8 lb/yr			5.29 lb/yr

MP + P3 Total Remaining HAPs	**5696.1 lb/yr**
	2.85 tons/yr

* R&D castings using PUNB binders

Notes

2. Emission factor is 1.9 times Fuller and Griffin source tests to account for the sum of stack and fugitive emissions.
3. Emission factor is 5.3 times Fuller and Griffin source tests to account for the sum of stack and fugitive emissions.
4. Emission factor based on 2009 material balance and/or AFS Form R guidance
5. Emission factor based on EPA AP-42, Section 1.4
6. Emission factor is 1.05 times P3 PCS source test to account for the sum of stack and fugitive emissions.
7. POM is the sum of fluoranthene, fluorene, phenanthrene, pyrene. Excludes naphthalene and methylnaphthalene.
8. Use P3 PCS source test for MP PCS
9. Use MP PCS source test for P3 PCS
10: Emission factors based on 2015 Source Test

General: cells highlighted in yellow use 1/2 MRL from source tests for values less than detection

ESCO Corp: Main Plant and Plant 3 PSEL 03/24/2016

Remaining HAP Emissions

Issue Date TBD

Compliance Dates: TBD TBD

		Production		Hexane			Dichlorobenzene			Acrolein			Ethylbenzene		
Main Plant	Notes		Units	Factor	Units	Emission	Factor	Units	Emission	Factor	Units	Emission	Factor	Units	Emission
Main Floor, Slinger Bay PCS	2	4728	tmp/yr	0.00285	lb/tmp	13.5 lb/yr		lb/tmp	0.0 lb/yr	0.00266	lb/tmp	12.6 lb/yr	0.00285	lb/tmp	13.5 lb/yr
Chain Floor PCS	3	562	tmp/yr	0.00795	lb/tmp	4.5 lb/yr		lb/tmp	0.0 lb/yr	0.00742	lb/tmp	4.2 lb/yr	0.00795	lb/tmp	4.5 lb/yr
V-Bay	2	3966	tmp/yr	0.00285	lb/tmp	11.3 lb/yr		lb/tmp	0.0 lb/yr	0.00266	lb/tmp	10.5 lb/yr	0.00285	lb/tmp	11.3 lb/yr
Mold & Core Making	4	9256	tmp/yr	0	lb/tmp	0.0 lb/yr	0	lb/tmp	0.0 lb/yr	0	lb/tmp	0.0 lb/yr	0	lb/tmp	0.0 lb/yr
Misc. Chemicals	4	9256	tmp/yr	7.63E-06	lb/tmp	0.1 lb/yr	0	lb/tmp	0.0 lb/yr	0	lb/tmp	0.0 lb/yr	1.82E-03	lb/tmp	16.8 lb/yr
Natural Gas	5	250	mm cf/yr	1.8	lb/mm cf	450.0 lb/yr	1.20E-03	lb/mm cf	0.3 lb/yr	0	lb/mm cf	0.0 lb/yr	0	lb/mm cf	0.0 lb/yr
MP total						479.3 lb/yr			0.3 lb/yr			27.3 lb/yr			46.1 lb/yr
Plant 3															
PCS	6	25622	tmp/yr	0.00105	lb/tmp	26.9 lb/yr		lb/tmp	0.0 lb/yr	0.00231	lb/tmp	59.2 lb/yr	0.0018375	lb/tmp	47.1 lb/yr
Thermal Sand Reclaimer	10	18067	tons/yr	0.000098	lbs/ton sanc	1.3 lb/yr	0.00007	lbs/ton sanc	0.9 lb/yr	0.00022	lbs/ton sanc	2.9 lb/yr	0.00005	lbs/ton sanc	0.7 lb/yr
Misc. Chemicals	4	25622	tmp/yr		lb/tmp	0.0 lb/yr	0	lb/tmp	0.0 lb/yr	0	lb/tmp	0.0 lb/yr	1.95E-03	lb/tmp	50.0 lb/yr
Natural Gas	5	100	mm cf/yr	1.8	lb/mm cf	180.0 lb/yr	1.20E-03	lb/mm cf	0.1 lb/yr	0	lb/mm cf	0.0 lb/yr	0	lb/mm cf	0.0 lb/yr
P3 Total						208.2 lb/yr			1.0 lb/yr			62.1 lb/yr			97.7 lb/yr
MP + P3 Total						687.5 lb/yr			1.3 lb/yr			89.4 lb/yr			143.8 lb/yr

MP + P3 Total Remaining HAPs	**5696.1 lb/yr**
	2.85 tons/yr

Notes

2. Emission factor is 1.9 times Fuller and Griffin source tests to account for the sum of st
3. Emission factor is 5.3 times Fuller and Griffin source tests to account for the sum of st
4. Emission factor based on 2009 material balance and/or AFS Form R guidance
5. Emission factor based on EPA AP-42, Section 1.4
6. Emission factor is 1.05 times P3 PCS source test to account for the sum of stack and fu
7. POM is the sum of fluoranthene, fluorene, phenanthrene, pyrene. Excludes naphthale
8. Use P3 PCS source test for MP PCS
9. Use MP PCS source test for P3 PCS
10: Emission factors based on 2015 Source Test

General: cells highlighted in yellow use 1/2 MRL from source tests for values less than d

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Remaining HAP Emissions

Issue Date TBD

Compliance Dates: TBD TBD

		Production		Xylenes			Styrene			Biphenyl			MIBK		
Main Plant	Notes		Units	Factor	Units	Emission	Factor	Units	Emission	Factor	Units	Emission	Factor	Units	Emission
Main Floor, Slinger Bay PCS	2	4728	tmp/yr	0.0133	lb/tmp	62.9 lb/yr	0.00855	lb/tmp	40.4 lb/yr	0.0152	lb/tmp	71.9 lb/yr	0.00475	lb/tmp	22.5 lb/yr
Chain Floor PCS	3	562	tmp/yr	0.0371	lb/tmp	20.8 lb/yr	0.02385	lb/tmp	13.4 lb/yr	0.0424	lb/tmp	23.8 lb/yr	0.01325	lb/tmp	7.4 lb/yr
V-Bay	2	3966	tmp/yr	0.0133	lb/tmp	52.7 lb/yr	0.00855	lb/tmp	33.9 lb/yr	0.0152	lb/tmp	60.3 lb/yr	0.00475	lb/tmp	18.8 lb/yr
Mold & Core Making	4	9256	tmp/yr	0	lb/tmp	0.0 lb/yr	0	lb/tmp	0.0 lb/yr	0	lb/tmp	0.0 lb/yr	0	lb/tmp	0.0 lb/yr
Misc. Chemicals	4	9256	tmp/yr	3.65E-03	lb/tmp	33.8 lb/yr	0	lb/tmp	0.0 lb/yr	0	lb/tmp	0.0 lb/yr	0	lb/tmp	0.0 lb/yr
Natural Gas	5	250	mm cf/yr	0	lb/mm cf	0.0 lb/yr	0	lb/mm cf	0.0 lb/yr	0	lb/mm cf	0.0 lb/yr		lb/mm cf	0.0 lb/yr
MP total						170.3 lb/yr			87.7 lb/yr			156.0 lb/yr			48.7 lb/yr
Plant 3															
PCS	6	25622	tmp/yr	0.01365	lb/tmp	349.7 lb/yr		lb/tmp	0.0 lb/yr		lb/tmp	0.0 lb/yr		lb/tmp	0.0 lb/yr
Thermal Sand Reclaimer	10	18067	tons/yr	0.00015	lbs/ton sanc	2.0 lb/yr				0.00255	lbs/ton sanc	33.6 lb/yr	0.0000495	lbs/ton sanc	0.7 lb/yr
Misc. Chemicals	4	25622	tmp/yr	3.90E-03	lb/tmp	99.9 lb/yr	0	lb/tmp	0.0 lb/yr	0	lb/tmp	0.0 lb/yr	0	lb/tmp	0.0 lb/yr
Natural Gas	5	100	mm cf/yr	0	lb/mm cf	0.0 lb/yr	0	lb/mm cf	0.0 lb/yr	0	lb/mm cf	0.0 lb/yr	0	lb/mm cf	0.0 lb/yr
P3 Total						451.7 lb/yr			0.0 lb/yr			33.6 lb/yr			0.7 lb/yr
MP + P3 Total						621.9 lb/yr			87.7 lb/yr			189.6 lb/yr			49.4 lb/yr

MP + P3 Total Remaining HAPs	**5696.1 lb/yr**
	2.85 tons/yr

Notes

2. Emission factor is 1.9 times Fuller and Griffin source tests to account for the sum of st
3. Emission factor is 5.3 times Fuller and Griffin source tests to account for the sum of st
4. Emission factor based on 2009 material balance and/or AFS Form R guidance
5. Emission factor based on EPA AP-42, Section 1.4
6. Emission factor is 1.05 times P3 PCS source test to account for the sum of stack and fu
7. POM is the sum of fluoranthene, fluorene, phenanthrene, pyrene. Excludes naphthale
8. Use P3 PCS source test for MP PCS
9. Use MP PCS source test for P3 PCS
10: Emission factors based on 2015 Source Test

General: cells highlighted in yellow use 1/2 MRL from source tests for values less than d

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Remaining HAP Emissions

Issue Date TBD

Compliance Dates: TBD TBD

		Production		Aniline			Acetaldehyde			Methylnaphthalene (8)			Propionaldehyde (8)		
Main Plant	Notes		Units	Factor	Units	Emission	Factor	Units	Emission	Factor	Units	Emission	Factor	Units	Emission
Main Floor, Slinger Bay PCS	2	4728	tmp/yr	0.0171	lb/tmp	80.8 lb/yr	0.0342	lb/tmp	161.7 lb/yr	0.0338625	lb/tmp	160.1 lb/yr	0.0007875	lb/tmp	3.7 lb/yr
Chain Floor PCS	3	562	tmp/yr	0.0477	lb/tmp	26.8 lb/yr	0.0954	lb/tmp	53.6 lb/yr	0.0338625	lb/tmp	19.0 lb/yr	0.0007875	lb/tmp	0.4 lb/yr
V-Bay	2	3966	tmp/yr	0.0171	lb/tmp	67.8 lb/yr	0.0342	lb/tmp	135.6 lb/yr	0.0338625	lb/tmp	134.3 lb/yr	0.0007875	lb/tmp	3.1 lb/yr
Mold & Core Making	4	9256	tmp/yr	0	lb/tmp	0.0 lb/yr	0	lb/tmp	0.0 lb/yr	0	lb/tmp	0.0 lb/yr	0	lb/tmp	0.0 lb/yr
Misc. Chemicals	4	9256	tmp/yr	0	lb/tmp	0.0 lb/yr	0	lb/tmp	0.0 lb/yr	0	lb/tmp	0.0 lb/yr	0	lb/tmp	0.0 lb/yr
Natural Gas	5	250	mm cf/yr	0	lb/mm cf	0.0 lb/yr	0	lb/mm cf	0.0 lb/yr	0	lb/mm cf	0.0 lb/yr	0	lb/mm cf	0.0 lb/yr
MP total						175.5 lb/yr			350.9 lb/yr			313.4 lb/yr			7.3 lb/yr
Plant 3															
PCS	6	25622	tmp/yr	0.0021	lb/tmp	53.8 lb/yr	0.002485	lb/tmp	63.7 lb/yr	0.0338625	lb/tmp	867.6 lb/yr	0.0007875	lb/tmp	20.2 lb/yr
Thermal Sand Reclaimer	10	18067	tons/yr				0.0024	lbs/ton sanc	31.6 lb/yr	0.000625	lbs/ton sanc	8.2 lb/yr	0.0014	lbs/ton sanc	18.5 lb/yr
Misc. Chemicals	4	25622	tmp/yr	0	lb/tmp	0.0 lb/yr	0	lb/tmp	0.0 lb/yr	0	lb/tmp	0.0 lb/yr	0	lb/tmp	0.0 lb/yr
Natural Gas	5	100	mm cf/yr	0	lb/mm cf	0.0 lb/yr	0	lb/mm cf	0.0 lb/yr	0	lb/mm cf	0.0 lb/yr	0	lb/mm cf	0.0 lb/yr
P3 Total						53.8 lb/yr			95.3 lb/yr			875.9 lb/yr			38.6 lb/yr
MP + P3 Total						229.3 lb/yr			446.2 lb/yr			1189.3 lb/yr			45.9 lb/yr

MP + P3 Total Remaining HAPs	**5696.1 lb/yr**
	2.85 tons/yr

Notes

2. Emission factor is 1.9 times Fuller and Griffin source tests to account for the sum of st
3. Emission factor is 5.3 times Fuller and Griffin source tests to account for the sum of st
4. Emission factor based on 2009 material balance and/or AFS Form R guidance
5. Emission factor based on EPA AP-42, Section 1.4
6. Emission factor is 1.05 times P3 PCS source test to account for the sum of stack and fu
7. POM is the sum of fluoranthene, fluorene, phenanthrene, pyrene. Excludes naphthale
8. Use P3 PCS source test for MP PCS
9. Use MP PCS source test for P3 PCS
10: Emission factors based on 2015 Source Test

General: cells highlighted in yellow use 1/2 MRL from source tests for values less than d

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Remaining HAP Emissions

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		Production		Cyanide Compounds			Dimethylaniline (8)			Cumene (9)			Tetrachloroethylene		
Main Plant	Notes		Units	Factor	Units	Emission	Factor	Units	Emission	Factor	Units	Emission	Factor	Units	Emission
Main Floor, Slinger Bay PCS	2	4728	tmp/yr	0	lb/tmp	0.0 lb/yr	0.00525	lb/tmp	24.8 lb/yr	0.00285	lb/tmp	13.5 lb/yr		lb/tmp	0.0 lb/yr
Chain Floor PCS	3	562	tmp/yr	0	lb/tmp	0.0 lb/yr	0.00525	lb/tmp	2.9 lb/yr	0.00795	lb/tmp	4.5 lb/yr		lb/tmp	0.0 lb/yr
V-Bay	2	3966	tmp/yr	0	lb/tmp	0.0 lb/yr	0.00525	lb/tmp	20.8 lb/yr	0.00285	lb/tmp	11.3 lb/yr		lb/tmp	0.0 lb/yr
Mold & Core Making	4	9256	tmp/yr	0	lb/tmp	0.0 lb/yr	0	lb/tmp	0.0 lb/yr	0	lb/tmp	0.0 lb/yr	0	lb/tmp	0.0 lb/yr
Misc. Chemicals	4	9256	tmp/yr	0	lb/tmp	0.0 lb/yr	0	lb/tmp	0.0 lb/yr	0	lb/tmp	0.0 lb/yr	0	lb/tmp	0.0 lb/yr
Natural Gas	5	250	mm cf/yr	0	lb/mm cf	0.0 lb/yr	0	lb/mm cf	0.0 lb/yr	0	lb/mm cf	0.0 lb/yr		lb/mm cf	0.0 lb/yr
MP total						0.0 lb/yr			48.6 lb/yr			29.2 lb/yr			0.0 lb/yr
Plant 3															
PCS	6	25622	tmp/yr	0.0336	lb/tmp	860.9 lb/yr	0.00525	lb/tmp	134.5 lb/yr	0.0015	lb/tmp	38.4 lb/yr		lb/tmp	0.0 lb/yr
Thermal Sand Reclaimer	10	18067	tons/yr							0.00039	lbs/ton sanc	5.1 lb/yr	0.00008	lbs/ton sanc	1.1 lb/yr
Misc. Chemicals	4	25622	tmp/yr	0	lb/tmp	0.0 lb/yr	0	lb/tmp	0.0 lb/yr	0	lb/tmp	0.0 lb/yr	2.03E-03	lb/tmp	52.0 lb/yr
Natural Gas	5	100	mm cf/yr	0	lb/mm cf	0.0 lb/yr	0	lb/mm cf	0.0 lb/yr	0	lb/mm cf	0.0 lb/yr		lb/mm cf	0.0 lb/yr
P3 Total						860.9 lb/yr			134.5 lb/yr			43.6 lb/yr			53.1 lb/yr
MP + P3 Total						860.9 lb/yr			183.1 lb/yr			72.8 lb/yr			53.1 lb/yr

MP + P3 Total Remaining HAPs	**5696.1 lb/yr**
	2.85 tons/yr

Notes

2. Emission factor is 1.9 times Fuller and Griffin source tests to account for the sum of st
3. Emission factor is 5.3 times Fuller and Griffin source tests to account for the sum of st
4. Emission factor based on 2009 material balance and/or AFS Form R guidance
5. Emission factor based on EPA AP-42, Section 1.4
6. Emission factor is 1.05 times P3 PCS source test to account for the sum of stack and fu
7. POM is the sum of fluoranthene, fluorene, phenanthrene, pyrene. Excludes naphthale
8. Use P3 PCS source test for MP PCS
9. Use MP PCS source test for P3 PCS
10: Emission factors based on 2015 Source Test

General: cells highlighted in yellow use 1/2 MRL from source tests for values less than d

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Remaining HAP Emissions

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		Production		Trichloroethylene			
Main Plant	Notes		Units	Factor	Units	Emission	
Main Floor, Slinger Bay PCS	2	4728	tmp/yr		lb/tmp	0.0	lb/yr
Chain Floor PCS	3	562	tmp/yr		lb/tmp	0.0	lb/yr
V-Bay	2	3966	tmp/yr		lb/tmp	0.0	lb/yr
Mold & Core Making	4	9256	tmp/yr	0	lb/tmp	0.0	lb/yr
Misc. Chemicals	4	9256	tmp/yr	2.79E-02	lb/tmp	258.2	lb/yr
Natural Gas	5	250	mm cf/yr		lb/mm cf	0.0	lb/yr
MP total						258.2	lb/yr
Plant 3							
PCS	6	25622	tmp/yr		lb/tmp	0.0	lb/yr
Thermal Sand Reclaimer	10	18067	tons/yr	0.000065	lbs/ton sanc	0.9	lb/yr
Misc. Chemicals	4	25622	tmp/yr	1.12E-02	lb/tmp	287.0	lb/yr
Natural Gas	5	100	mm cf/yr		lb/mm cf	0.0	lb/yr
P3 Total						287.8	lb/yr
MP + P3 Total						546.1	lb/yr

MP + P3 Total Remaining HAPs	**5696.1**	**lb/yr**
	2.85	**tons/yr**

Notes

2. Emission factor is 1.9 times Fuller and Griffin source tests to account for the sum of st
3. Emission factor is 5.3 times Fuller and Griffin source tests to account for the sum of st
4. Emission factor based on 2009 material balance and/or AFS Form R guidance
5. Emission factor based on EPA AP-42, Section 1.4
6. Emission factor is 1.05 times P3 PCS source test to account for the sum of stack and fu
7. POM is the sum of fluoranthene, fluorene, phenanthrene, pyrene. Excludes naphthale
8. Use P3 PCS source test for MP PCS
9. Use MP PCS source test for P3 PCS
10: Emission factors based on 2015 Source Test

General: cells highlighted in yellow use 1/2 MRL from source tests for values less than d

ESCO Corp: Main Plant and Plant 3 **Compliance Dates:**
Greenhouse Gas CO2e Emissions PSEL 03/24/2016 **TBD** **TBD**
Issue Date TBD

Emission Unit ID	Production Rate (yearly)		Emission Factors		Emission Factor Reference	Calculated Process Emissions (tons/yr)	Emission Unit totals (tons/yr)
Main Plant							
MU - 1 MELT							
EAF-1 and EAF-2	12340.741	tmm/yr	2.80E+02	lbs/tmm	CO2: NETL 2010, Appendix A, Table 6	1727.70	
EAF-1 and EAF-2	12340.741	tmm/yr	5.37E+01	lbs/tmm	N2O: assume 20% of NOx emission factor and 310 GWP	331.30	
AOD-8	11106.667	tmp/yr	2.80E+02	lbs/tmp	CO2: assume same as EAF	1554.93	
AOD-8	11106.667	tmp/yr	5.37E+01	lbs/tmp	N2O: assume 20% of NOx emission factor and 310 GWP	298.17	
MU - 1 MELT TOTAL							3912.11
MU - 2 PCS							
Main Floor and Slinger Bay P/C/S	1943.6667	tmp/yr	1.00E+01	lbs/tmp	CO2: AFS Paper 08-031(10), 2008, Table 1	9.72	
Main Floor and Slinger Bay P/C/S	1943.6667	tmp/yr	6.20E-01	lbs/tmp	N2O: assume 20% of NOx emission factor and 310 GWP	0.60	
V-Bay P/C/S	1388.3333	tmp/yr	1.00E+01	lbs/tmp	CO2: AFS Paper 08-031(10), 2008, Table 1	6.94	
V-Bay P/C/S	1388.3333	tmp/yr	6.20E-01	lbs/tmp	N2O: assume 20% of NOx emission factor and 310 GWP	0.43	
Chain Floor P/C/S	185.11111	tmp/yr	1.00E+01	lbs/tmp	CO2: AFS Paper 08-031(10), 2008, Table 1	0.93	
Chain Floor P/C/S	185.11111	tmp/yr	6.20E-01	lbs/tmp	N2O: assume 20% of NOx emission factor and 310 GWP	0.06	
MU - 2 PCS TOTAL							18.68
MU-3-MH/SR							
MU-3-MH/SR TOTAL							0.00
MU-4 S/SB							
MU-4 S/SB TOTAL							0.00
MU-5 C/G							
MU-5 C/G TOTAL							0.00
MU-6 HOTWORK							
MU-6 HOTWORK TOTAL							0.00
MU-7 MOLD/CORE							
MU-7 MOLD/CORE TOTAL							0.00
MU-10 NG							
Facility-wide Natural Gas Usage	250	mmcf/yr	1.20E+05	lb/mmcf	CO2 EPA factor: 117 lb/MM Btu and 1028 Btu/scf	15034.50	15034.50
Facility-wide Natural Gas Usage	250	mmcf/yr	7.03E+01	lb/mmcf	N20 EPA factor: 0.0002206 lb/MM Btu and GWP 310	8.79	8.79
Facility-wide Natural Gas Usage	250	mmcf/yr	4.76E+01	lbs/mmcf	CH4 EPA factor: 0.002206 lb/MM Btu and GWP 21	5.95	5.95

	tons	metric tonnes
Main Plant Total	18,980.0	17218.39

					Facility-Wide Natural Gas	15049.24	13652.45
Plant 3					Processes	3930.78	3565.95
3U-1 MELT							
EAF-5	29211.886	tmm/yr	2.80E+02	lbs/tmm	CO2: NETL 2010, Appendix A, Table 6	4089.66	
EAF-5	29211.886	tmm/yr	1.33E+02	lbs/tmm	N2O: assume 20% of NOx emission factor and 310 GWP	1937.92	
INDF-3&4	100	tmm/yr	2.80E+02	lbs/tmm	CO2: assume same as EAF	14.00	
INDF-3&4	100	tmm/yr	5.37E+01	lbs/tmm	N2O: assume 20% of NOx emission factor and 310 GWP	2.68	
AOD-Res	0	tmp/yr	2.80E+02	lbs/tmp	CO2: assume same as EAF	0.00	
AOD-Res	0	tmp/yr	5.37E+01	lbs/tmp	N2O: assume 20% of NOx emission factor and 310 GWP	0.00	
3U-1 MELT TOTAL							6044.27
3U-2 PCS							
Pouring, Cooling , Shakeout	25622.222	tmp/yr	7.00E+01	lbs/tmp	CO2: AFS Paper 08-031(10), 2008, Table 1	896.78	
Pouring, Cooling , Shakeout	25622.222	tmp/yr	6.20E-01	lbs/tmp	N2O: assume 20% of NOx emission factor and 310 GWP	7.94	
3U-2 PCS TOTAL							904.72
3U-3-MH/SR							
Thermal Sand Reclaim- stack	18,067	tons sand/yr	9.80E+00	lb/ton sand	CO2: assume 100 times CO factor	88.53	
Thermal Sand Reclaim- stack	18,067	tons sand/yr	2.14E+01	lb/ton sand	N2O: assume 20% of NOx emission factor and 310 GWP	193.23	
3U-3-MH/SR TOTAL							281.75
3U-4 S/SB							
3U-4 S/SB TOTAL							0.00
3U-5 C/G							
3U-5 C/G TOTAL							0.00
3U-6 HOTWORK							
3U-6 HOTWORK TOTAL							0.00
3U-7 MOLD/CORE							
3U-7 MOLD/CORE TOTAL							0.00
3U-9 COATING							
3U-9 COATING TOTAL							0.00
3U-10 NG							
Facility-wide Natural Gas Usage	100	mmcf/yr	1.20E+05	lb/mmcf	CO2 EPA factor: 117 lb/MM Btu and 1028 Btu/scf	6013.80	6013.80
Facility-wide Natural Gas Usage	100	mmcf/yr	7.03E+01	lb/mmcf	N20 EPA factor: 0.0002206 lb/MM Btu and GWP 310	3.52	3.52
Facility-wide Natural Gas Usage	100	mmcf/yr	4.76E+01	lbs/mmcf	CH4 EPA factor: 0.002206 lb/MM Btu and GWP 21	2.38	2.38

	tons	metric tonnes
Plant 3 Total	13,250.4	12020.60
Facility-Wide Natural Gas	6019.70	5460.98
Processes	7230.74	6559.62

Total Facility CO2e Emissions

Main Plant + Plant 3 Total	32,230