OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION

MEMORANDUM **April 7, 2003**

TO: Dawson F. Lasseter, Chief Engineer, Air Quality Division

THROUGH: Phillip Fielder, P. E., Engineering Section

THROUGH: Eric Milligan, P.E., Engineering Section

THROUGH: Peer Review

FROM: David Schutz, P. E., New Source Permits Section

SUBJECT: Evaluation of Permit Application No. **99-344-C (M-3) (PSD)**
EJIW-Ardmore Foundry, Inc. (Formerly "East Jordan Iron Works")
Gray & Ductile Iron Foundry
Ardmore, Carter County, Oklahoma
Sec. 7 – T 3S – R 3E
From I-35, East on SH-53 to Ardmore Airpark, North ½ Mile

SECTION I. INTRODUCTION

EJIW-Ardmore Foundry has applied for a modified construction permit for a new "greenfield" gray and ductile iron foundry near Ardmore (SIC Code 3321). The modified permit will authorize construction of a scrap crusher, two new gas-fired heaters (rated at 3.5 and 5 MMBTUH, respectively), and revise VOC and toxic emission limitations for core binders to allow for added operational flexibility.

The application seeks authorization for emissions of 79.02 TPY PM_{10}, 378.90 TPY CO, 155.34 TPY VOC, and 29.5 TPY of Title III hazardous air pollutants (HAPs). The project, as described, will be subject to PSD requirements and also subject to the requirements of 112(g), Case-by-Case MACT.

The changes, as described, affect the BACT analysis for VOC and PM_{10} and affect toxic air pollutant modeling, but do not affect the BACT for other pollutants, the PSD ambient impacts analysis, nor the case-by-case MACT previously conducted.

SECTION II. PROCESS DESCRIPTION

The foundry will include charge handling, melting, inoculation, pouring, cooling, shake-out, mold and core making, sand handling and storing, finishing, and coating operations. Maximum melting rates are anticipated at 28.1 tons per hour and 137,143 tons per year with a daily maximum of 560 tons. The facility anticipates handling 15 tons of sand per ton of iron poured, or a total circulation of 2.06 million tons of sand per year. A small portion of that sand will be formed into cores. The foundry will include a “green sand” mold line and two core-making processes, one using shell sand and the other using a phenolic urethane cold box (PUCB) binder system.

The facility will include three electric induction furnaces for iron melting and facilities for mold making and casting processing. A detailed description of each area in the foundry follows.

A) Charge Handling/Melting/Inoculation

Scrap steel, scrap cast iron, foundry returns, and pig iron are loaded into storage bins from trucks and railroad cars. The charge composition can change with material price consideration and/or availability. The charge is weighed on scale feeders and is transferred to a melt furnace.

Initial metal melting will be done in three electric induction furnaces (EIF). The electric induction furnaces melt solid metals into a molten stage and alloys may be added. The composition of the charge depends upon the specific metal characteristics required. Addition of alloys is done to improve properties of the castings. Alloying generally consists of graphite, silicon carbide, ferrosilicon, and ferro manganese. Molten metal is tapped by tilting the furnace and pouring through a spout of the furnace to a transfer ladle. The transfer ladle is used to transport metal either to an automatic pouring device or holding furnace. The holding furnace maintains the temperature and the chemical consistency of the molten metal. Slag removal is performed as part of normal operations on both the melt furnaces and the holding furnace.

When ductile iron is being made, the metal is tapped into a transfer ladle containing magnesium ferrosilicon. The introduction of magnesium into the iron improves its crystalline properties and facilitates the transition from gray to ductile iron. The metal is transferred to the automatic pouring device and ferrosilicon is added for further refining. Both the transfer and pouring ladles are preheated by natural gas-fired heaters. The heaters (torches) are used to preheat the ladles and are not used for direct heating of metal. These torches are additionally used to cure the refractory.

A direct evacuation control (DEC) system vents emissions from the EIFs and holding furnace to a baghouse while scrap is being melted. Capture efficiency is 99%. When charging, the EIF and holding furnace roof is temporarily open until the charge feeder advances to engage the hood, allowing emissions from the furnace to escape. Particulate matter is primarily iron oxide (Fe_2O_3), a compound which is 69.9% by weight iron. The particulate also includes small amounts of manganese and metallic compounds, based on analyses of material collected from the baghouses. The collection efficiency for all control systems was based on experience with iron foundry ventilation system design. The stated efficiency for all baghouses associated with the facility will be 0.0045 grains/DSCF.

B) Coremaking Operations

Cores are molded sand shapes used to make an opening or a cavity in a casting. The Core Room at the foundry will use two different coremaking processes: shell and phenolic urethane cold box (PUCB). Some of the cores are given a protective wash. This is accomplished by spraying or dipping the cores into a graphite refractory water-based slurry. A natural gas-fired oven will be used to dry and cure the cores. Core mud may be used to repair damaged portions of a core. Core wash prevents metal from penetrating the core. The cores from the two processes are transferred to molding lines for insertion into the mold.

The shell process utilizes sand coated with phenolic resin and hexamethylenetetramine. A release agent is used to allow separation of the core from the core box. The sand is fed into the shell machines and heat is applied to the core box from combustion of natural gas. The resin coating thermosets when the heat is applied, thus curing the core. The shell cores are then sent to the mold lines for placement into the molds.

The PUCB process utilizes a phenolic cold box binding system. With this system, sand is mixed with the three stages of organic binders. The first part is the phenolic resin, the second part is an isocyanate, and the third is the catalyst, gaseous triethylamine (TEA). The sand is mixed with the phenolic and isocyanate resins in a mixer. The mixed sand is then put into core boxes that are gassed with the catalyst, causing the resins to bind the sand and make the core. TEA emissions are controlled by an acid/caustic scrubber with a 98.5% control efficiency that uses caustic soda and sulfuric acid to neutralize the TEA emissions. A release agent is applied to the core boxes to allow removal of the core from the core box after the core is made. Cores are sent to the mold lines for insertion into the mold. Particulate matter emissions from the mixers and the sand storage are captured by a baghouse that has an emission guarantee of 0.0045 grains/DSCF.

C) Green Sand Molding, Pouring, Cooling, and Shake-out

This process uses return sand from the shake-outs, new sand, bentonite clay, sea coal, and water to make molds used to shape the exterior of the casting. After mixing in the muller, the sand mixture is transferred to the molding machines and molded on the pattern. Patterns are coated with a heavy oil "release agent." The patterns are withdrawn to leave an impression of the shape on the casting. Cores are then set to produce the internal shape of the casting. A conveyor transports the mold to the pouring area where the mold is closed and molten metal is poured into the molds.

As the molten metal solidifies in the molds, the molds are routed through a set of cooling tunnels. The castings are separated from the sand via an initial shake-out process. The castings then pass through another set of cooling tunnels to the final shake-out process. The Shake-out process emissions are included from the initial shake-out to the final shake-out processes. Sand separated by the shake-outs is processed through screens, cooled, and is recycled to the muller. Castings are routed to the finishing and cleaning area. Particulate matter emissions from the screens, sand mullers, pouring, cooling tunnels, and shake-out are controlled by baghouse dust collection systems. The baghouse manufacturers guarantee 0.0045 gr/DSCF.

D) Finishing

The metal finishing process removes sand, prepares the casting surface, and includes quality inspection. Despuring, shotblasting, and grinding are all performed in this area. Despuring removes spurs, gates, and risers with casting handling manipulators. Particulate matter is controlled with a dry collection system that has a manufacturer's emission guarantee of 0.0045 grains/DSCF.

E) Coating

Finished castings are coated based on product requirements. Castings are sent to an asphaltic dip coating system. The asphaltic dip contains 0.6 pounds VOC per gallon.

SECTION III. SCOPE OF REVIEW

East Jordan seeks permit authorization to add emissions of up to 79.02 tons per year (TPY) of PM_{10}, 36.74 TPY of NOx, 378.90 TPY of CO, 155.34 TPY of VOC, 1.78 TPY of SO_2, and 0.01 TPY of lead (Pb). The East Jordan facility requests approval to operate 8,760 hours per year. The proposed facility will be a major source under Prevention of Significant Deterioration (PSD) criteria.

The greenfield project is subject to PSD because the potential emissions of carbon monoxide (CO) and volatile organic compounds (VOC) are greater than 100 tons per year for a facility classified as a PSD named source category. Full PSD review is required for those pollutants whose significance level is exceeded as shown in the following table. Full PSD review of emissions consists of the following: a determination of best available control technology (BACT); an evaluation of existing air quality and determination of monitoring requirements; an evaluation of PSD increment consumption; an analysis of compliance with National Ambient Air Quality Standards (NAAQS); an evaluation of source-related impacts on growth, soils, vegetation, visibility; and a Class I area impact evaluation. Pollutants added in minor quantities were evaluated for all pollutant-specific rules, regulations and guidelines.

The following table presents the proposed project's emissions increases compared to PSD levels of significance. References used in determining the emission rates for each emission unit are also tabulated.

EMISSIONS INCREASES COMPARED TO PSD LEVELS OF SIGNIFICANCE

Pollutant	Total Emissions, TPY	PSD Levels of Significance, TPY	PSD Review Required?
PM_{10}	79.02	15	Yes
CO	378.90	100	Yes
VOC	155.34	40	Yes
NOx	38.72	40	No
SO_2	1.78	40	No
Pb	0.01	0.6	No

EMISSION FACTOR REFERENCES

Emission Unit	Pollutant	Emission Factor Source
Charge Handling	PM_{10}	Ohio RACM Guide
EIF Melting	PM_{10}, SO_2, NOx	FIRE: 6.01, SCC 3-04-003-15
	CO, VOC	Stack testing at foundry in Tennessee
EIF Melting HAPs	HAPs	"Foundry Process Emission Factors: Baseline Emissions from Automotive Foundries in Mexico" (CERP data)
Holding Furnace	PM_{10}, Pb	Manufacturer Guarantee, AP-42, Table 12.5-1
Inoculation	PM_{10}, VOC	FIRE: 6.01, SCC 3-04-003-15
Ladle Preheating Torches	All	AP-42 (9/98), Table 1.4-3 & 4

EMISSION FACTOR REFERENCES
Continued

Emission Unit	Pollutant	Emission Factor Source
Pouring & Cooling	PM_{10}	Manufacturer guarantee
	SO_2	FIRE: 6.01, SCC 3-04-003-15
	VOC	Stack testing at foundry in Tennessee
	NOx	FIRE: 6.01, SCC 3-04-003-15
	CO	Permit limit for Michigan GM plant
	Pb	CERP data
Pouring HAPs	HAPs	CERP data
Cooling HAPs	HAPs	CERP data
Shake-out	PM_{10}	FIRE: 6.01, SCC 3-04-003-15 and baghouse manufacturer guarantee
	VOC	FIRE: 6.01, SCC 3-04-003-15
	CO	Permit limit for Indiana foundry
	Pb	CERP data
Shake-out HAPs	HAPs	CERP data and Manufacturer Guarantee
Shotblast	PM_{10}	FIRE: 6.01, SCC 3-04-003-60 and baghouse manufacturer guarantee
Grinding	PM_{10}	FIRE: 6.01, SCC 3-04-003-60 and baghouse manufacturer guarantee
Sand Handling and Storage	PM_{10}	FIRE: 6.01, SCC 3-04-003-50 and baghouse manufacturer guarantee
Mold Making	PM_{10}	Ohio RACM Guide
Shell Coremaking	PM_{10}	Ohio RACM Guide
	VOC, HAPs	Mass Balances
Shell Core NG Emissions	All	AP-42 (9/98), Table 1.4-1
PUCB Coremaking	PM_{10}	Ohio RACM Guide
	VOC/HAPs	Mass Balances
Pattern & Maintenance Shop	PM_{10}	"Inventory of Iron Foundry Emissions", Modern Castings, 1971, Gutow, Bernard S.
Mold and Core Chemicals	VOC	Mass Balances
Coating	VOC	Mass Balances
Building and Ducting Heaters	All	AP-42 (9/98), Table 1.4-1
Core Oven	All	AP-42 (9/98), Table 1.4-1
Road Dust	PM_{10}	AP-42 (10/97), Section 13.2.1
Emergency generators	All	AP-42 (10/96), Section 3.3
Scrap Dryer	All	AP-42 (9/98), Table 1.4-1
Coating Pre-heater	All	AP-42 (9/98), Table 1.4-1
Scrap Crusher	PM_{10}	"Inventory of Iron Foundry Emissions", Modern Castings, 1971, Gutow, Bernard S.

SECTION IV. EQUIPMENT

EUG "MS"

EU ID#	Point ID#	EU Name/Model	Construction Date
CH-1	MS01, MS02	Charge handling	2000 / 2001
CH-1	CH1, CH2, CH3, CH4	Charge handling fugitives	2000 / 2001
EIF-1 EIF-2 EIF-3	MS01, MS02, R13, R14	Electric induction melt furnace Electric induction melt furnace Electric induction melt furnace	2000 / 2001 2000 / 2001 2000 / 2001
EIF-1 EIF-2 EIF-3	EF-16B, R13, R14	Electric induction furnace fugitives	2000 / 2001
HF-1	SS01	Electric induction holding furnace	2000 / 2001
HF-1	EF-16B, R13, R14	Electric induction holding furnace fugitives	2000 / 2001
I-1	EF-16B, R13, R14	Inoculation ladle	2000 / 2001
I-1	MS01, MS02	Ladle repair	*

* refractory mixing and re-application will be an ongoing operation.

EUG "NG"

EU ID#	Point ID#	EU Name/Model	Construction Date
T-1	R13, R14, EF-16B	Preheater torches for inoculation and transfer ladles – 10 MMBTUH	2000 / 2001
SHELLHE	SHELLHE, R1, R2	Core machines – two 0.5 MMBTUH units	2000 / 2001
CO-1	SHELLHE, R1, R2	2.5 MMBTUH oven	2000 / 2001
MUA	MUA1	Building air & miscellaneous units (50 MMBTUH total)	2000 / 2001
	MUA2	Building air & miscellaneous units	2000 / 2001
	MUA3	Building air & miscellaneous units	2000 / 2001
	MUA4	Building air & miscellaneous units	2000 / 2001
	MUA5	Building air & miscellaneous units	2000 / 2001
	MUA6	Building air & miscellaneous units	2000 / 2001
	MUA7	Building air & miscellaneous units	2000 / 2001
	MUA8	Building air & miscellaneous units	2000 / 2001
	MUA9	Building air & miscellaneous units	2000 / 2001
	MUA10	Building air & miscellaneous units	2000 / 2001
	SD-1	Scrap Dryer	2003
	DIP-1	Coating Pre-heater	2003

EUG "P"			
EU ID#	**Point ID#**	**EU Name/Model**	**Construction Date**
PM-2	MS01, MS02, SS01	Pouring & mold cooling	2000 / 2001
PM-2	R1, R2, R3, R4, R5, R6, R7	Pouring & mold cooling fugitives	2000 / 2001
SO-1	SS01, SS03, R1, R2, R3, R4, R5, R6, R7	Shake-out – Punchout	2000 / 2001
SO-2		Shake-out – Mold Dump Conveyor	2000 / 2001
SO-3		Shake-out – Primary Shake-out	2000 / 2001
SO-4		Shake-out – Cooling Conveyor	2000 / 2001
SO-5		Shake-out – Secondary Shake-out	2000 / 2001

EUG "F"			
EU ID#	**Point ID#**	**EU Name/Model**	**Construction Date**
CC-1	SS01, SS03	Casting Cooling	2000 / 2001
SB-1	GS01	Shotblasting – Continuous Shotblast Cabinet	2000 / 2001
SB-1	R8, R9, R10, R11, R12, EF-13	Shotblasting Fugitives	2000 / 2001
GR-1	GS01	Grinding – Autogrinder 1	2000 / 2001
GR-2		Grinding – Autogrinder 2	2000 / 2001
GR-3		Grinding – Manual Grinder 1	2000 / 2001
GR-4		Grinding – Manual Grinder 2	2000 / 2001
GR-5		Grinding – Manual Grinder 3	2000 / 2001
GR-6		Grinding – Manual Grinder 4	2000 / 2001
GR-7		Grinding – Manual Grinder 5	2000 / 2001
GR-8		Grinding – Manual Grinder 6	2000 / 2001
GR-9		Grinding – Manual Grinder 7	2000 / 2001
GR-10		Grinding – Manual Grinder 8	2000 / 2001
GR-1 to GR-6	R4, R5, R6, R7	Grinding Fugitives	2000 / 2001

EUG "C"			
EU ID#	**Point ID#**	**EU Name/Model**	**Construction Date**
SHELL1	R1, R2	Shell core machine #1	2000 / 2001
SHELL2	R1, R2	Shell core machine #2	2000 / 2001
PUCB1	COREBH, R1, R2	PUCB core machine #1	2000 / 2001
PUCB2	COREBH, R1, R2	PUCB core machine #2	2000 / 2001

EUG "SS"			
EU ID#	**Point ID#**	**EU Name/Model**	**Construction Date**
MOLD1	SS01, SS02, SS03, SS04, MS01, MS02	HWS Mold Making Machine - 300 Ton/hr Sand	2000 / 2001
SAND1		Sand Handling & Storage – Return Sand Conveyor	2000 / 2001
SAND2		Sand Handling & Storage – Overbelt Magnet	2000 / 2001
SAND3		Sand Handling & Storage – Metallics Conveyor	2000 / 2001
SAND4		Sand Handling & Storage – Crusher Sand Conveyor	2000 / 2001
SAND5		Sand Handling & Storage – Return Sand Conveyor	2000 / 2001
SAND6		Sand Handling & Storage – Return Sand Belt	2000 / 2001
SAND7		Sand Handling & Storage –Transfer Conveyor	2000 / 2001
SAND8		Sand Handling & Storage – Screen Inlet Belt	2000 / 2001
SAND9		Sand Handling & Storage – Screen	2000 / 2001
SAND10		Sand Handling & Storage – 275 Ton Surge Bin	2000 / 2001
SAND11		Sand Handling & Storage – Cooler Inlet Conveyor	2000 / 2001
SAND12		Sand Handling & Storage – 150 Ton New Sand Bin	2000 / 2001
SAND13		Sand Handling & Storage – Cooler	2000 / 2001
SAND14		Sand Handling & Storage – Bucket Elevator	2000 / 2001
SAND15		Sand Handling & Storage – Plow Belt	2000 / 2001
SAND16		Sand Handling & Storage – 300 Ton Sand Bin #1	2000 / 2001
SAND17		Sand Handling & Storage – 300 Ton Sand Bin #2	2000 / 2001
SAND18		Sand Handling & Storage – Mullor Weight Feeder #1	2000 / 2001
SAND19		Sand Handling & Storage - Mullor Weight Feeder #1	2000 / 2001
SAND20		Sand Handling & Storage – Mullor #1	2000 / 2001
SAND21		Sand Handling & Storage – Mullor #2	2000 / 2001
SAND22		Sand Handling & Storage – Mold Machine Hopper	2000 / 2001
SAND23		Sand Handling & Storage – Bad Batch Surge Hopper	2000 / 2001
	R1, R2, R3, R4, R5, R6, R7, R16	Sand Handling & Molding fugitives	2000 / 2001

EUG "MCRC"			
EU ID#	**Point ID#**	**EU Name/Model**	**Construction Date**
CHEM1	R1, R2	Mold and core room chemicals	2000 / 2001

EUG "D"			
EU ID#	**Point ID#**	**EU Name/Model**	**Construction Date**
DIP1	EF-34	Asphaltic dip coating	2000 / 2001

EUG "HR"			
EU ID#	**Point ID#**	**EU Name/Model**	**Construction Date**
ROAD1	fugitive	Haul roads	2000 / 2001

EUG "S"			
EU ID#	**Point ID#**	**EU Name/Model**	**Construction Date**
SHOP1	R1, R2 EF-21	Pattern & Maintenance shops	2000

EUG "EG"			
EU ID#	**Point ID#**	**EU Name/Model**	**Construction Date**
EG-1	G-1	250 kW (350 HP) emergency generator	2000 / 2001
EG-2	G-2	400 kW (550 HP) emergency generator	2000 / 2001

EUG "SC"			
EU ID#	**Point ID#**	**EU Name/Model**	**Construction Date**
SD-1	SD-1	Scrap crusher	2003

EUG "Facility"			
EU ID#	**Point ID#**	**EU Name/Model**	**Construction Date**
None	None	Facility	2000 / 2001

SECTION V. EMISSIONS

EUG "MS"

Point ID	Emission Unit	PM_{10}		SO_2		NO_x		VOC		CO	
		lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
MS01 MS02	Charge handling	0.540	1.971	--	--	--	--	--	--	--	--
CH1 CH2 CH3 CH4	Charge handling fugitives	0.818	1.996	--	--	--	--	--	--	--	--
MS01 MS02	EIF melting	1.512	5.519	--	--	--	--	0.835	2.037	3.895	9.504
EF-16B R13 R14	EIF melting fugitives	0.126	0.309	--	--	--	--	0.008	0.021	0.039	0.096
SS01	Holding furnace	0.116	0.422	--	--	--	--	--	--	--	--
EF-16B R13 R14	Holding furnace fugitives	0.008	0.019	--	--	--	--	--	--	--	--
EF-16B R13 R14	Inoculation (all fugitive)	0.843	2.057	--	--	--	--	0.141	0.343	--	--
MS01 MS02	Ladle repair	0.235	0.845	--	--	--	--	--	--	--	--
	TOTALS	4.198	13.138	0	0	0	0	0.984	2.401	3.934	9.600

EUG "NG"

Point ID	Emission Unit	PM_{10}		SO_2		NOx		VOC		CO	
		lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
R13 R14 EF-16B	I & T Ladle torches – 10 MMBTUH	0.08	0.28	0.006	0.022	1.000	3.650	0.06	0.20	0.84	3.07
SHELLHE R1, R2	two shell core machines – 0.5 MMBTUH apiece	0.01	0.028	0.001	0.002	0.100	0.365	0.01	0.02	0.08	0.307
SHELLHE R1, R2	core oven – 2.5 MMBTUH	0.02	0.069	0.002	0.006	0.250	0.913	0.01	0.05	0.21	0.767
MUA1-MUA10	miscellaneous heaters – total 50 MMBTUH	0.38	1.66	0.03	0.13	5.000	21.90	0.28	1.20	4.20	18.40
SD-1	Scrap dryer – 5 MMBTUH	0.04	0.17	0.003	0.013	0.500	2.190	0.03	0.12	0.42	1.84
DIP-2	Coating pre-heater – 3.5 MMBTUH	0.03	0.12	0.002	0.009	0.350	1.533	0.02	0.08	0.29	1.29
	TOTALS	0.56	2.327	0.044	0.182	7.200	30.551	0.41	1.67	6.04	25.674

EUG "P"

Point ID	Emission Unit	PM_{10}		SO_2		NOx		VOC		CO	
		lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
MS01 MS02 SS01	Pouring & mold cooling	2.931	10.700	0.546	1.333	1.863	4.547	26.847	65.513	119.207	290.897
R1 R2 R3 R4 R5 R6 R7	Pouring & mold cooling fugitives	0.161	0.394	0.016	0.038	0.054	0.131	0.604	1.474	3.371	8.226
SS01 SS03	Shake-out	1.929	7.039	--	--	--	--	11.765	28.709	17.647	43.063
R1 R2 R3 R4 R5 R6 R7	Shake-out fugitives	0.315	0.768	--	--	--	--	0.119	0.290	0.178	0.435
	TOTALS	5.336	18.901	0.562	1.371	1.917	4.678	39.335	95.986	140.403	342.621

EUG "F"

Point ID	Emission Unit	PM_{10}		SO_2		NOx		VOC		CO	
		lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
SS01 SS03	Casting cooling	1.311	4.787	--	--	--	--	--	--	--	--
GS01	Shotblasting	1.234	4.505	--	--	--	--	--	--	--	--
R8 R9 R10 R11 R12 EF-13	Shotblasting fugitives	0.119	0.291	--	--	--	--	--	--	--	--
GS01	Grinding	2.816	10.277	--	--	--	--	--	--	--	--
R4 R5 R6 R7	Grinding fugitives	0.003	0.008	--	--	--	--	--	--	--	--
	TOTALS	5.483	19.868	--	--	--	--	--	--	--	--

EUG "SS"

Point ID	Emission Unit	PM_{10}		SO_2		NOx		VOC		CO	
		lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
SS01 SS02 SS03 SS04 MS01 MS02	Sand handling & molding	5.477	19.992	--	--	--	--	--	--	--	--
R1 R2 R3 R4 R5 R6 R7 R16	Sand handling & molding fugitives	0.405	1.478	--	--	--	--	--	--	--	--
	TOTALS	5.882	21.470	--	--	--	--	--	--	--	--

EUG "C"

Point ID	Emission Unit	PM_{10}		SO_2		NOx		VOC		CO	
		lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
R1 R2	Shell core machine #1 Shell core machine #2	0.084	0.131	--	--	--	--	1.82	2.85	--	--
COREBH	PUCB core machine #1 PUCB core machine #2	0.164	0.064	--	--	--	--	8.684	3.40	--	--
R1 R2	PUCB core machine fugitives	0.042	0.016	--	--	--	--	--	--	--	--
	TOTALS	0.290	0.211	--	--	--	--	10.504	6.25	--	--

EUG "MCRC"

Point ID	Emission Unit	PM_{10}		SO_2		NOx		VOC		CO	
		lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
R1 R2	Mold and core room chemicals	--	--	--	--	--	--	8.96	32.71	--	--

EUG "D"

Point ID	Emission Unit	PM_{10}		SO_2		NOx		VOC		CO	
		lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
EF-34	Asphaltic dip coating	--	--	--	--	--	--	9.08	15.51	--	--

EUG "S"

Point ID	Emission Unit	PM_{10}		SO_2		NOx		VOC		CO	
		lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
R1, R2 EF-21	Pattern & maintenance shop fugitives	0.130	0.473	--	--	--	--	--	--	--	--

EUG "HR"

Point ID	Emission Unit	PM_{10}		SO_2		NOx		VOC		CO	
		lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
fugitive	Haul roads	0.001	0.005	--	--	--	--	--	--	--	--

EUG "EG"

Point ID	Emission Unit	PM_{10}		SO_2		NOx		VOC		CO	
		lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
EG-1	350 HP Generator	0.770	0.096	0.718	0.090	10.850	1.356	0.865	0.108	2.338	0.292
EG-2	550 HP Generator	1.210	0.151	1.128	0.141	17.050	2.131	1.359	0.17	3.674	0.459
	TOTALS	1.980	0.247	1.846	0.231	27.900	3.487	2.224	0.278	6.012	0.751

EUG "SC"

Point ID	Emission Unit	PM_{10}		SO_2		NOx		VOC		CO	
		lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
SC-1	Scrap crusher	1.967	2.400	--	--	--	--	--	--	--	--

TOXIC AIR POLLUTANTS

Toxic Air Pollutant	CAS No.	Toxicity Category	Emissions		De Minimis Levels		MAAC $\mu g/m^3$
			lb/hr	TPY	lb/hr	TPY	
INORGANIC MATERIALS							
Aluminum	1344281	C	0.130	0.488	5.6	6.0	1000
Antimony*	7440360	B	0.001	0.001	1.1	1.2	10
Arsenic*	7440382	A	0.001	0.001	0.57	0.6	0.02
Barium	744393	B	0.001	0.001	1.1	1.2	10
Beryllium*	7440417	A	0.001	0.001	0.57	0.6	0.02
Cadmium*	7440439	A	0.001	0.001	0.57	0.6	0.5
Carbon	74404440	B	0.068	0.241	1.1	1.2	0.08
Chromium (III)*	7440473	A	0.007	0.024	0.57	0.6	0.25
Cobalt *	7440484	A	0.022	0.153	0.57	0.6	0.5
Copper	7440508	B	0.005	0.018	1.1	1.2	4
Iron Oxide	1309371	C	2.41	8.49	5.6	6	500
Magnesium	7439954	C	0.001	0.004	5.6	6	1000
Manganese*	7439965b	C	0.024	0.113	5.6	6	100
Mercury*	7439976	A	0.001	0.001	0.57	0.6	0.5
Molybdenum	7439987	C	0.004	0.013	5.6	6	1000
Nickel*	7440020	A	0.005	0.023	0.57	0.6	0.15
Phosphorus	7723140	A	0.002	0.008	0.57	0.6	1
Quartz*	14808607	A	0.346	1.232	0.57	0.6	1
Selenium*	7782492	C	0.001	0.001	5.6	6	20
Silicon	7440213	C	0.041	0.147	5.6	6	1000
Silver	7440224	B	0.001	0.001	1.1	1.2	2
Sulfur	7704349	C	0.002	0.006	5.6	6	NE
Tin	7704315	C	0.001	0.001	5.6	6	200
Vanadium	7440622	A	0.001	0.001	0.57	0.6	0.5
Zinc	7440666	C	0.161	0.673	5.6	6	500

Toxic Air Pollutant	CAS No.	Toxicity Category	Emissions		De Minimis Levels		MAAC
			lb/hr	TPY	lb/hr	TPY	ug/m^3
ORGANIC MATERIALS							
1,2,4-Trimethyl benzene	95636	C	0.310	0.400	5.6	6	12301
POM/1,4-Dimethyl naphthalene	571584	C	0.015	0.036	5.6	6	NE
POM/1-Methyl naphthalene	90120	C	0.157	0.383	5.6	6	NE
POM/2-Methyl naphthalene	91576	C	0.216	0.526	5.6	6	1000
2,3-Dimethyl phenol	526750	B	0.054	0.132	1.1	1.2	9994
2,5-Dimethyl phenol	95874	B	0.035	0.086	1.1	1.2	9994
2,6-Dimethyl phenol	576261	B	0.027	0.066	1.1	1.2	9994
3,4-Dimethyl phenol	95658	C	0.003	0.008	5.6	6	10
3,5-Dimethyl phenol	108689	C	0.036	0.088	5.6	6	10
POM/Acenaphthene *	83329	A	0.006	0.015	0.57	0.6	1
POM/Acenaphthylene *	203968	A	0.001	0.001	0.57	0.6	NE
Acetaldehyde *	75070	B	1.760	4.290	1.1	1.2	3600
Acetone	67641	NS	0.147	0.358	NS	NS	NS
Acetophenone *	98862	C	0.044	0.108	5.6	6	4914
Aliphatic hydrocarbons	8052413	C	0.054	0.198	5.6	6	35000
Ammonia	7664417	C	0.864	1.350	5.6	6	1742
POM/Anthracene*	120127	A	0.001	0.001	0.57	0.6	1
Aromatic naphtha	64742945	B	9.38	22.83	1.1	1.2	7000
Bis (2-ethylhexyl) adipate	103231	B	0.710	0.280	1.1	1.2	200
Benzaldehyde	100527	B	0.017	0.041	1.1	1.2	NE
POM/Benz(a)anthracene *	56553	A	0.001	0.001	0.57	0.6	NE
Benzene *	71422	A	2.124	5.183	0.57	0.6	32
Benzene, propyl	103651	NS	0.001	0.002	NS	NS	NS
POM/Benzo(a)pyrene *	205992	A	0.001	0.001	0.57	0.6	NE
POM/Benzo(b)fluoranthene*	205992	A	0.001	0.001	0.57	0.6	NE
POM/Benzo(g,h,i)perylene*	191242	B	0.001	0.001	1.1	1.2	NE
POM/Benzo(k)fluoranthene*	205823	A	0.001	0.001	0.57	0.6	NE
Butyl benzene	104518	A	0.025	0.060	0.57	0.6	NE
POM/Chrysene *	218019	A	0.001	0.001	0.57	0.6	1
Cumene *	98828	C	0.017	0.040	5.6	6	24582
Decane	124185	B	0.112	0.273	1.1	1.2	NE
POM/Dibenzo(a,h) anthracene *	53703	A	0.001	0.001	0.57	0.6	NE
POM/Dibenzofurans *	132649	A	0.011	0.027	0.57	0.6	NE
Dimethyl glutarate	1119400	C	1.80	0.71	5.6	6	6550
Dimethyl adipate	627930	C	3.61	1.413	5.6	6	6000
Dimethyl succinate	106650	C	1.800	0.711	5.6	6	6000
Dodecane	112403	B	0.142	0.346	1.1	1.2	NE
Ethyl benzene *	100414	C	0.151	0.369	5.6	6	43427
POM/Fluoranthene *	206440	C	0.001	0.001	5.6	6	NE
POM/Fluorene *	86737	A	0.001	0.001	0.57	0.6	1
Formaldehyde *	50000	A	1.000	2.290	0.57	0.6	12
Heptane	124825	NS	0.156	0.380	NS	NS	NS
Hexanal	66251	C	0.003	0.007	5.6	6	NE

Toxic Air Pollutant	CAS No.	Toxicity Category	Emissions		De Minimis Levels		MAAC
			lb/hr	TPY	lb/hr	TPY	ug/m^3
POM/H-indene	95136	C	0.044	0.108	5.6	6	NE
POM/Indeno-(1,2,3,c,d) pyrene*	193395	A	0.001	0.001	0.57	0.6	NE
Isopropanol	67630	C	2.805	6.826	5.6	6	98339
Kerosene	8008206	B	0.821	0.323	1.1	1.2	2000
m,p-Xylenes*	108383	C	0.637	1.554	5.6	6	43427
Mesitylene	108678	C	0.073	0.179	5.6	6	12291
Napthalene *	91203	B	0.500	0.92	1.1	1.2	1000
Nitrobenzene *	98953	B	0.001	0.001	1.1	1.2	100
Nonane	111842	C	0.100	0.243	5.6	6	104940
o-Cresol *	95487	B	0.436	1.064	1.1	1.2	203
o-Ethyl toluene	611143	C	0.033	0.081	5.6	6	NE
o-Xylenes*	95476	C	0.296	0.721	5.6	6	43427
Octane	111659	C	0.111	0.272	5.6	6	35049
p-Ethyl toluene	622968	C	0.065	0.158	5.6	6	NE
Petroleum distillate **	64742467	B	9.38	22.83	1.1	1.2	10000
POM/Phenanthrene *	85018	A	0.001	0.001	0.57	0.6	1
Phenol *	108952	B	1.81	3.74	1.1	1.2	384
Phenolic resin	9003354	A	3.53	1.38	0.57	0.6	NE
Polymeric diphenylmethane diisocyanate	9016879	NS	1.459	0.571	NS	NS	NS
POMs *	--	A	0.890	2.170	0.57	0.6	NE
Propanol	71238	C	0.160	0.391	5.6	6	50000
Propionaldehyde	123386	C	0.002	0.004	5.6	6	NE
POM/Pyrene *	129000	A	0.001	0.001	0.57	0.6	1
Styrene *	100425	B	0.161	0.392	1.1	1.2	4260
Toluene*	108883	C	1.350	3.293	5.6	6	37668
Tridecane	629505	B	0.066	0.161	1.1	1.2	NE
Triethylamine (TEA)*	121448	B	0.593	0.230	1.1	1.2	800
Undecane	1120214	C	0.246	0.600	5.6	6	NE
Valeraldehyde	110623	C	0.006	0.014	5.6	6	NE

* Listed in Title III of the Federal Clean Air Act Amendments of 1990.
** There are seven possible naphthas. The one with the most stringent MAAC is listed.

NOTE: Nine of the toxic air pollutants listed above exceed the related de minimis threshold: iron, quartz, acetaldehyde, benzene, formaldehyde, isopropanol, petroleum distillate, phenol, and polycyclic organic material (POM).

SUMMARY OF CRITERIA EMISSIONS BY UNIT

Emission Unit	PM_{10}		SO_2		NOx		VOC		CO	
	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
Charge handling	0.540	1.971	--	--	--	--	--	--	--	--
Charge handling fugitives	0.818	1.996	--	--	--	--	--	--	--	--
EIF melting	1.512	5.519	--	--	--	--	0.835	2.037	3.895	9.504
EIF melting fugitives	0.126	0.309	--	--	--	--	0.008	0.021	0.039	0.096
Holding furnace	0.116	0.422	--	--	--	--	--	--	--	--
Holding furnace fugitives	0.008	0.019	--	--	--	--	--	--	--	--
Inoculation (all fugitive)	0.843	2.057	--	--	--	--	0.141	0.343	--	--
I & T Ladle torches – 10 MMBTUH	0.080	0.280	0.006	0.022	1.00	3.65	0.06	0.20	0.84	3.07
Ladle repair	0.231	0.845	--	--	--	--	--	--	--	--
Two shell core machine – 0.5 MMBTUH apiece	0.010	0.028	0.001	0.002	0.10	0.365	0.01	0.020	0.08	0.307
Core oven – 2.5 MMBTUH	0.02	0.069	0.002	0.006	0.25	0.912	0.01	0.050	0.21	0.767
Miscellaneous heaters – total 50 MMBTUH	0.380	1.660	0.03	0.13	5.00	21.90	0.28	1.20	4.20	18.40
Pouring & mold cooling	2.931	10.700	0.546	1.333	1.863	4.547	26.847	65.513	119.207	290.897
Pouring & mold cooling fugitives	0.161	0.394	0.016	0.038	0.054	0.131	0.609	1.474	3.371	8.226
Shake-out	1.929	7.039	--	--	--	--	11.765	28.709	17.647	43.063
Shake-out fugitives	0.315	0.768	--	--	--	--	0.337	0.823	0.281	0.686
Casting cooling	1.311	4.787	--	--	--	--	--	--	--	--

SUMMARY OF CRITERIA EMISSIONS BY UNIT - Continued

Emission Unit	PM_{10}		SO_2		NOx		VOC		CO	
	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
Shotblasting	1.234	4.505	--	--	--	--	--	--	--	--
Shotblasting fugitives	0.119	0.291	--	--	--	--	--	--	--	--
Grinding	2.816	10.277	--	--	--	--	--	--	--	--
Grinding fugitives	0.003	0.008	--	--	--	--	--	--	--	--
Sand handling & molding	5.477	19.992	--	--	--	--	--	--	--	--
Sand handling & molding fugitives	0.405	1.478	--	--	--	--	--	--	--	--
Shell core machine #1 Shell core machine #2	0.084	0.131	--	--	--	--	1.82	2.85	--	--
PUCB core machine #1 PUCB core machine #2	0.164	0.064	--	--	--	--	8.684	3.40	--	--
PUCB core machine fugitives	0.042	0.016	--	--	--	--	--	--	--	--
Mold and core room chemicals	--	--	--	--	--	--	8.96	32.71	--	--
Asphaltic dip coating	--	--	--	--	--	--	9.08	15.51	--	--
Pattern & maintenance shop fugitives	0.130	0.473	--	--	--	--	--	--	--	--
Haul roads	0.001	0.005	--	--	--	--	--	--	--	--
350 HP Generator	0.770	0.096	0.718	0.090	10.850	1.356	0.865	0.108	2.338	0.292
550 HP Generator	1.210	0.151	1.128	0.141	17.050	2.131	1.359	0.17	3.674	0.459
Coating Pre-heater	0.027	0.117	0.002	0.009	0.350	1.533	0.019	0.084	0.294	1.288
Scrap Dryer	0.038	0.166	0.003	0.013	0.500	2.190	0.028	0.120	0.420	1.840
Scrap Crusher	1.967	2.400	--	--	--	--	--	--	--	--
TOTALS	25.818	79.033	2.452	1.784	37.017	38.72	71.717	155.34	156.50	378.90

SUMMARY OF EMISSIONS BY DISCHARGE POINT

Emission Unit	PM_{10}		SO_2		NOx		VOC		CO	
	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
SSO1	3.124	11.404	0.182	0.444	0.621	1.516	14.123	34.464	39.880	97.319
SSO2	2.469	9.010	--	--	--	--	--	--	--	--
SSO3	2.353	8.588	--	--	--	--	4.000	9.761	6.000	14.642
SSO4	1.543	5.631	--	--	--	--	--	--	--	--
MSO1	2.280	8.320	0.182	0.444	0.621	1.516	10.661	26.017	47.434	115.752
MSO2	2.280	8.320	0.182	0.444	0.621	1.516	10.661	26.017	47.434	115.762
GSO1	4.050	14.783	--	--	--	--	--	--	--	--
R1	0.238	0.631	0.003	0.009	0.183	0.657	5.506	18.066	0.654	1.774
R2	0.238	0.631	0.003	0.009	0.183	0.657	5.506	18.066	0.654	1.774
R3	0.119	0.353	0.002	0.005	0.008	0.019	0.103	0.252	0.482	1.237
R4	0.119	0.353	0.002	0.005	0.008	0.019	0.103	0.252	0.482	1.237
R5	0.119	0.353	0.002	0.005	0.008	0.019	0.103	0.252	0.482	1.237
R6	0.119	0.353	0.002	0.005	0.008	0.019	0.103	0.252	0.482	1.237
R7	0.119	0.353	0.002	0.005	0.008	0.019	0.103	0.252	0.482	1.237
R8	0.020	0.049	--	--	--	--	--	--	--	--
R9	0.020	0.049	--	--	--	--	--	--	--	--
R10	0.020	0.049	--	--	--	--	--	--	--	--
R11	0.020	0.049	--	--	--	--	--	--	--	--
R12	0.020	0.049	--	--	--	--	--	--	--	--
EF-13	0.020	0.049	--	--	--	--	--	--	--	--
R13	0.349	0.883	0.002	0.007	0.333	1.217	0.068	0.188	0.293	1.054
R14	0.349	0.883	0.002	0.007	0.333	1.217	0.068	0.188	0.293	1.054
EF-16B	0.349	0.883	0.002	0.007	0.333	1.217	0.068	0.188	0.293	1.054
R16	0.051	0.185	--	--	--	--	--	--	--	--
EF-21	0.043	0.158	--	--	--	--	--	--	--	--
COREBH	0.164	0.064	--	--	--	--	8.684	3.400	--	--
MUA1 – 10	0.380	1.664	0.030	0.131	5.000	21.900	0.275	1.205	4.200	18.396
CH1	0.184	0.449	--	--	--	--	--	--	--	--
CH2	0.184	0.449	--	--	--	--	--	--	--	--
CH3	0.184	0.449	--	--	--	--	--	--	--	--
CH4	0.184	0.449	--	--	--	--	--	--	--	--
CHF	0.082	0.200	--	--	--	--	--	--	--	--
ROAD	0.020	0.005	--	--	--	--	--	--	--	--
COATING	--	--	--	--	--	--	9.079	15.509	--	--
G-1	0.770	0.096	0.718	0.090	10.850	1.356	0.865	0.108	2.338	0.292
G-2	1.210	0.151	1.128	0.141	17.050	2.131	1.359	0.170	3.674	0.459
DIP-2	0.027	0.117	0.002	0.009	0.350	1.533	0.019	0.084	0.294	1.288
SD-1	0.038	0.166	0.003	0.013	0.500	2.190	0.028	0.120	0.420	1.840
SC-1	1.967	2.400	--	--	--	--	--	--	--	--
TOTAL	25.825	79.029								

STACK PARAMETERS

Stack ID	Process	Height, Feet	Diameter, Inches	Flowrate, ACFM	Temperature, ºF
CH1	Charge handling	70	95	80,000	70
CH2	Charge handling	70	95	80,000	70
CH3	Charge handling	70	95	80,000	70
CH4	Charge handling	70	95	80,000	70
COREBH	PUCB coremaking	65	11	2,000	70
GS01	shotblasting grinding	126	70	105,000	70
MS01	charge handling EIF melting holding furnace pouring & mold cooling sand handling & molding ladle repair	85	58	59,100	96
MS02	charge handling EIF melting holding furnace pouring & mold cooling sand handling & molding ladle repair	85	58	59,000	93
SS01	holding furnace pouring & mold cooling shake-out casting cooling mold making	85	68	81,000	110
SS02	sand handling & molding	126	55	64,000	92
SS03	pouring & mold cooling shake-out casting cooling mold making	126	59	61,000	101
SS04	sand handling & molding	126	44	40,000	110
R1	pouring & mold cooling fugitives shake-out fugitives mold making fugitives shell coremaking sand handling & molding fugitives PUCB coremaking fugitives mold & core room chemicals pattern & maintenance shop fugitives	57	36	10,000	80

STACK PARAMETERS - Continued

Stack ID	Process	Height, Feet	Diameter, Inches	Flowrate, ACFM	Temperature, ºF
R2	pouring & mold cooling fugitives shake-out fugitives mold making fugitives sand handling & molding fugitives shell coremaking PUCB coremaking fugitives mold & core room chemicals pattern & maintenance shop fugitives	57	36	10,000	80
R3	pouring & mold cooling fugitives shake-out fugitives mold making fugitives sand handling & molding fugitives	57	36	10,000	80
R4	pouring & mold cooling fugitives shake-out fugitives sand handling & molding fugitives mold making fugitives grinding fugitives	57	36	10,000	80
R5	pouring & mold cooling fugitives shake-out fugitives sand handling & molding fugitives mold making fugitives grinding fugitives	57	36	10,000	80
R6	pouring & mold cooling fugitives shake-out fugitives sand handling & molding fugitives mold making fugitives grinding fugitives	57	36	10,000	80
R7	pouring & mold cooling fugitives shake-out fugitives sand handling & molding fugitives grinding fugitives	57	68	45,000	80
R8	shotblast fugitives grinding fugitives	54	68	45,000	150
R9	shotblast fugitives grinding fugitives	54	68	45,000	150
R10	shotblast fugitives grinding fugitives	52	68	45,000	150
R11	shotblast fugitives grinding fugitives	54	68	45,000	150
R12	shotblast fugitives grinding fugitives	54	68	45,000	150

STACK PARAMETERS - Continued

Stack ID	Process	Height, Feet	Diameter, Inches	Flowrate, ACFM	Temperature, ºF
R13	EIF melting fugitives holding furnace fugitives Inoculation I & T ladle torches	71	36	10,000	80
R14	EIF melting fugitives holding furnace fugitives Inoculation I & T ladle torches	71	36	10,000	80
R16	sand handling & molding fugitives	105	36	10,000	80
SHELLHE	core oven	46	15	3,000	170
EF-13	shotblast fugitives	52	68	45,000	150
EF-16B	EIF melting EIF holding inoculation	71	36	10,000	80
EF-21	pattern & maintenance shops	18	44	13,000	80
EF-34	dip coating	36	56	20,000	80

SECTION VI. INSIGNIFICANT ACTIVITIES

Insignificant activities are listed in OAC 252:100-8, Appendix I. Insignificant activities identified and justified in the application are listed below.

- * Stationary reciprocating engines burning natural gas, gasoline, air craft fuels, or diesel fuel which are either used exclusively for emergency power generation or for peaking power service not exceeding 500 hours/year. The facility will include two diesel-engine powered emergency generators rated at 400 kW and a 250 kW, respectively.

- Space heaters, boilers, process heaters and emergency flares less than or equal to 5 MMBTU/hr heat input (commercial natural gas). The facility includes numerous gas-fired heaters which are smaller than 5 MMBTUH.

- * Storage tanks with less than or equal to 10,000 gallons capacity that store volatile organic liquids with a true vapor pressure less than or equal to 1.0 psia at maximum storage temperature. The facility includes two small diesel storage tanks for the emergency generators.

- Gasoline, diesel fuel, aircraft fuel, and fuel oil handling facilities, equipment, and storage tanks except those subject to New Source Performance Standards and standards in OAC 252:100-37-15, 39-30, 39-41, and 39-48, or with a capacity greater than 400 gallons. This category repeats the diesel storage tanks.

- * Emissions from storage tanks constructed with a capacity less than 39,894 gallons which store VOC with a vapor pressure less than 1.5 psia at maximum storage temperature . This category repeats the diesel storage storage tank.

- Cold degreasing operations utilizing solvents that are denser than air. However, degreasing is conducted as a part of routine maintenance and is considered a trivial activity and recordkeeping will not be required in the Specific Conditions.

- Welding and soldering operations utilizing less than 100 pounds of solder and 53 tons per year of electrodes. However, welding is conducted as a part of routine maintenance and is considered a trivial activity and recordkeeping will not be required in the Specific Conditions.

- Hazardous waste and hazardous materials drum staging areas. The facility includes a hazardous waste staging area for drummed waste.

- Sanitary sewage collection and treatment facilities other than incinerators and Publicly Owned Treatment Works (POTW). Stacks or vents for sanitary sewer plumbing traps are also included (i.e., lift station)

- * Activities having the potential to emit no more than 5 TPY of any criteria pollutant. None additional listed but may be used in the future.

SECTION VII. BEST AVAILABLE CONTROL TECHNOLOGY

BACT was analyzed using the "top-down" approach. In those cases where a control strategy was deemed technologically infeasible or sufficient justification was provided for rejection by energy or environmental impacts, economic costs were not calculated. Control economics were evaluated using equipment lifespan, contingency costs, indirect costs, a discount interest rate, an interest rate on capital, utilities, and labor costs (including benefits, overhead, etc.).

CO

The BACT proposal was reviewed using the EPA bulletin board RBLC (RACT/BACT/LAER Clearinghouse). Two emission units are responsible for 89% of CO emissions: the pouring/cooling emissions and the shake-out emissions. Other CO will be emitted from natural gas combustion units.

CO emissions result primarily from contacting organic materials with molten metal. Organic binders in molds are burned without sufficient residence time at an elevated temperature and sufficient oxygen resulting in incomplete combustion. The applicant expects large amounts of residual CO trapped in molds and an ongoing partial oxidation of organic binders during the shake-out process. The pouring operation will have a stack flow of 142,000 ACFM with 82.34 lb/hr CO, and the shake-out operation will have a stack flow of 118,200 ACFM with 26.70 lb/hr CO.

The only practical means of CO emission control is secondary combustion, either thermal or catalytic. Catalytic oxidation methods, recuperative and regenerative, were not considered demonstrated technology for foundry operations and an economic analysis was performed. Control vendors indicated that operation of catalytic systems would be unreliable due to particulate matter potentially fouling the catalyst, rendering the system inert. Based on this potential occurrence, an additional one-time cost associated with installation of a secondary filter system was included in case of primary baghouse failure. The large amount of PM also makes regenerative thermal oxidation questionable, since the operating temperatures would be sufficient to "glaze" the heat retention beds, plugging them off. This leaves flaring or single-pass thermal oxidation. The following table presents the BACT selections for CO from foundries.

BACT SELECTION FOR CO FROM FOUNDRIES

Alternative Analyzed	Control Cost ($/ton)	Technological Feasibility	Selection/Rejection
Regenerative Thermal Oxidation	5,008	Possible	too expensive, increases combustion emissions
Regenerative Catalytic Oxidation	11,182	Possible	too expensive, increases combustion emissions

For this unit, no add-on control for CO is acceptable as BACT.

The BACT selection was reviewed in comparison to other CO BACT determinations nationally for CO emissions from foundry operations. Upon review of the RBLC, it was determined that there are no CO BACT determinations for the types of operations conducted by the proposed facility.

VOC

The majority of VOC emissions are anticipated from a few units: shake-out, mold and core chemicals, coating, and pouring/cooling. This accounts for 94% of the proposed annual VOC emissions.

VOC emissions controls fall into two categories: process changes and discharge controls. The former category relies on reducing VOC content in raw materials and most efficient usage of those raw materials. Outlet VOC control is accomplished by recovery or by combustion. Recovery methods include condensation and adsorption. Combustion may be conducted in a unit designed only to provide combustion (incinerator, etc.), in process equipment (e.g., a lime kiln), or utilizing microorganisms to achieve the oxidation. Although biofiltration is technically feasible, it is not a proven technology.

The processes at the proposed foundry may have VOCs controlled by limiting VOCs in raw materials, enhancing efficiency of usage, or discharge controls. The asphaltic coating process to be used has a VOC content of 0.6 pound per gallon (lb/gal) and will be applied by a dipping system that does not atomize or spray the coating material. The coating operation will meet BACT requirements with the use of the dipping system and limiting VOC content.

The mold and core chemical operations will meet BACT by limiting the VOC content in the various types of chemicals.

Only discharge controls are technically feasible for the shake-out and pouring/cooling operations. Given that VOC emissions occur subsequent to being contacted with molten metal, there is little chance that reduced VOC binders would have any appreciable effect. Additionally, emissions from these operations include PM controlled by baghouses. When a baghouse fails, the additional PM vented to an add-on VOC control device can lead to malfunction and destruction of the add-on VOC control device, thus lowering the technical feasibility of any incineration method.

BACT SELECTION FOR VOC FROM FOUNDRIES

Alternative Analyzed	Control Cost ($/ton)	Technological Feasibility	Selection/Rejection
Regenerative Thermal Oxidation	12,373	Possible	too expensive, increases combustion emissions, not a proven technology for operations performed at the proposed facility
Recuperative Thermal Oxidation	28,414	Possible	too expensive, increases combustion emissions, not a proven technology for operations performed at the proposed facility
VOC Concentrator with Recuperative Thermal Oxidation	13,985	Possible	too expensive, increases combustion emissions, not a proven technology for operations performed at the proposed facility
Biofiltration	10,663	Possible	too expensive, increases combustion emissions, considered experimental, not a proven technology for operations performed at the proposed facility

None of these control options are demonstrated technology for the source category. For this facility, no add-on VOC control is acceptable as BACT.

RECENT BACT DETERMINATIONS FOR VOC FROM FOUNDRIES

Source	Location	Date	BACT
Core Room Operation	Waupaca, IN	1999	Scrubber on PUCB Catalyst
Core Wash Operation	Badger, MN	1999	Water-based Core Dip

The BACT determination for the Core Room Operation specified that the scrubber for the PUCB catalyst must have a VOC control efficiency of at least 95%. The facility is proposing that a scrubber with an efficiency of at least 98.5% be used to control the VOC emissions from the PUCB catalyst, therefore, the VOC control associated with this operation is BACT.

PM_{10}

East Jordan Iron proposed baghouses as BACT for the following processes: EIF melting, holding furnace, pouring, mold cooling, shake-out, shotblast, grinding, sand handling and storage, and mold making. The controlled emissions from these operations account for 74% of facility-wide PM_{10} emissions. No add-on controls are proposed for the new scrap crusher for which the feasibility of a capture system is questionable.

The most efficient PM_{10} controls are electrostatic precipitators (ESPs) and fabric filters; these two control devices are considered equivalent. Baghouses (fabric filters) normally achieve a grain loading less than 0.01 grains per dry standard cubic foot of air. Since the most effective air pollution control is planned, no further top-down analysis is necessary.

A check of the RBLC Clearinghouse showed several recent PM_{10} BACT determinations for similar foundry operations presented in the following table. Most of these determinations showed PM_{10} limits based on BACT, which, theoretically, is more stringent than NSPS for foundry furnaces.

BACT DETERMINATIONS FOR PM_{10} FROM FOUNDRIES WITH EIF MELTING OPERATIONS

Source	Location	Date	BACT
Non-Melt Areas	Waupaca, WI	1999	0.005 gr/dscf
Melt Area	Waupaca, WI	1999	0.01 gr/dscf

This BACT evaluation did not compare the proposed Electric Induction Furnace (EIF) melt operations to the BACT determinations for the listed Electric Arc Furnace (EAF) operations because of the difference in operations. The EAF BACT determinations in the RBLC were based on PM emissions, not PM_{10} emissions.

PM_{10} BACT for the proposed processes is baghouses that have a grain loading equal to 0.0045 grains per dry standard cubic foot of air. BACT for combustion units is acceptable as using natural gas fuel with no add-on controls.

For the new scrap crusher, the raw material is non-brittle, therefore minimal PM will be generated from its operation. The unit will be designed similarly to a large rock crusher, and similarly a capture system does not appear feasible. Wetting the material to make it less brittle will not achieve any emission reduction since the scrap is steel. It is concluded that there are no feasible add-on controls for the proposed scrap crusher.

SECTION VIII. AIR QUALITY IMPACTS

For an area which is affected by emissions from a new major source or modification, an analysis of the existing air quality is required for those pollutants which are emitted in significant quantities. The facility must demonstrate that each project does not cause nor contribute to a violation of the National Ambient Air Quality Standards nor violate the increments of PSD.

The facility is located in the northern part of Ardmore at an elevation of 711 feet above sea level in an area characterized by hilly terrain. Some stack heights are less than Good Engineering Practice (GEP) heights, thus building downwash effects will cause ambient impacts to be higher and to occur close to the stacks. Modeling was conducted using the ISCST3 model. Regulatory default options for the model were used in all cases.

The modeling analysis is organized into two major sections for each applicable pollutant based on U.S. EPA modeling guidance: a NAAQS analysis and a PSD Increment analysis. The techniques used in the air dispersion modeling analysis are consistent with current AQD and U.S. EPA modeling procedures.

VOC is not limited directly by NAAQS. Rather, it is regulated as an ozone precursor. EPA developed a method for predicting ozone concentrations based on VOC and NOx concentrations in an area. The ambient impacts analysis utilized these tables from "VOC/NOx Point Source Screening Tables" (Richard Sheffe, OAQPS, September, 1988). The Scheffe tables utilize increases in NOx and VOC emissions to predict increases in ozone concentrations.

Modeling utilized five years (1986-1991 excluding 1990) of preprocessed meteorological data based on surface observations taken from Oklahoma City, Oklahoma, (National Weather Service [NWS] station number 13967) and upper air measurements from Norman, Oklahoma (NWS station number 03946). Receptors were placed from the property boundaries to 4 km distance in all directions with receptor elevations taken from USGS digitized elevation maps. Receptor spacing varied from 25 meters to 100 meters. An additional set of receptors was placed at the nearest Class I area, the Wichita Mountains Wildlife Refuge.

The radius of impact is defined as the distance to the farthest receptor from the foundry sources whose modeled concentration exceeds the ambient significance levels. For pollutants with multiple averaging periods, the largest radius of impact among all averaging periods is the radius of impact set for that pollutant. By assuming a conservative radius of impact, more distant contributing sources were evaluated in the NAAQS analyses. The radius of impacts determined for each pollutant are discussed separately.

Once the radius of impact for each pollutant considered was determined, East Jordan Iron obtained an inventory of sources from the AQD. The total radius, 54 km, lies completely within Oklahoma. All nearby sources that have the potential to contribute significantly within the radius of impact were considered for inclusion in the NAAQS analysis. This included all sources located within 50 km of the impact areas for each pollutant in addition to other large sources that, despite being located greater than 50 km from the impact area, may significantly contribute to the impact area.

Once a list of sources to consider was compiled from the inventories provided by the AQD and TNRCC, the U.S. EPA approved "20D" rule was applied to determine the subset of sources to be included in the actual air dispersion modeling analysis. Following this rule, a source located outside the impact area (defined by the radius of impact) was screened out if its entire facility-wide emissions were less than 20 times the distance to the impact area. All sources located within the radius of impact area itself were screened, regardless of their emission rates.

The NAAQS are maximum concentration ceilings measured in terms of the total concentration of a pollutant in the atmosphere. Primary NAAQS define the "levels of air quality which the U.S. EPA judges are necessary, with an adequate margin of safety, to protect the public health. Secondary NAAQS define the levels that "protect the public welfare from any known or anticipated adverse effects of a pollutant." To complete the NAAQS analysis, the maximum potential emission rates for all emission units are calculated. The emissions modeled are those based on existing federally enforceable limitations. The facility-wide emissions are then combined with the maximum potential emissions of all nearby sources screened into the analysis and are modeled. The resulting maximum impacts are compared with the applicable NAAQS to demonstrate compliance.

Several items must be borne in mind in interpreting the modeling analyses. Radii of impact were determined based on the highest impacts for each averaging period from each individual project only; total impacts are not additive since the maximum impacts from each project do not necessarily occur at the same location. A separate set of runs was conducted accounting for all increment consumers, both at the Ardmore foundry and those remote to it.

The major source baseline dates for SO_2 and NO_2 are defined in OAC 252:100-7-30 (January 6, 1975, for SO_2 and February 8, 1988, for NO_2). The minor source baseline date is defined as the time the first complete PSD permit application affecting an area (typically a county) is submitted and determined to be complete. The minor source baseline date for NO_2 for Carter County is triggered by this application.

As prescribed in OAC 252:100-1-3, only increment-consuming emissions from nearby sources that are located within the baseline areas established for each pollutant are included.

A Class I Area analysis is performed to determine the ambient air quality impacts in the vicinity of the nearest Class I Area (Wichita Mountains National Wildlife Refuge), which is located approximately 121 km to the west-northwest. The U.S. EPA has established special PSD Increment values for Class I Areas for SO_2 and NO_2. Prior to completing a PSD Increment analysis, however, impacts due to increased emissions from the foundry are assessed against a modeling significance level of 1.0 $\mu g/m^3$, 24-hour average concentration, for all pollutants for any facility constructed within 6 miles of a Class I area.

The following tables show maximum modeled impacts from the project compared to the ambient levels of significance for each pollutant for which PSD specifies an ambient level of significance or which has an ambient standard. As shown through the tables, ambient impacts are below NAAQS and increment standards. Thus, it has been demonstrated that the plant does not cause nor contribute to an air quality standards violation.

NAAQS COMPLIANCE

Pollutant	2ND Highest Modeled Impacts, ug/m^3	Background Concentration, ug/m^3	Total Impacts, ug/m^3	NAAQS, ug/m^3
PM_{10}	27.5 (24-hrs)	48	75.5	150
	6.3 (annual)	27	33.3	50
CO	1,820 (1-hr)	2,555	4,375	40,000
	616 (8-hr)	2,000	2,616	10,000
Ozone	12	202	214	235

INCREMENT COMPLIANCE

Pollutant	2ND Highest Modeled Incremental Impacts, ug/m^3	Ambient Levels of Significance, ug/m^3	Radius Of Impact, km	PSD Increments, ug/m^3
PM_{10}	27.5 (24-hrs)	5	3.5	30
	6.3 (annual)	1	2.9	17
CO	1,820 (1-hr)	2,000	NA	NA
	616 (8-hr)	500	NA	NA

NA = Not Applicable

COMPARISON OF IMPACTS TO AMBIENT MONITORING LEVELS OF SIGNIFICANCE

Pollutant	2nd Highest Modeled Incremental Impacts, ug/m^3	Monitoring Levels of Significance, ug/m^3	Post-Construction Monitoring Required?
PM_{10}	27.5 (24-hrs)	10	yes
CO	616 (8-hr)	575	no
Ozone	154.09 TPY VOC	100 TPY VOC	yes

Post-construction monitoring of ozone and PM_{10} impacts was required. (Although CO impacts exceed the level at which monitoring may be required, there is no danger of exceeding any ambient air quality limit, therefore, no post-construction monitoring will be required.) The maximum recorded ozone impacts in the period between April 15 and October 15, 2002, were 0.0956 ppm (1-hour) and 0.0857 ppm (8-hours). These impacts are in compliance with the current ambient air quality standards.

Emissions of nine toxic air pollutants exceeded de minimis levels. The following table compares maximum modeled impacts with the Maximum Acceptable Ambient Concentration (MAAC) for each toxic air pollutant. Modeled impacts for each toxic are in compliance with ambient standards.

COMPLIANCE WITH MAXIMUM ACCEPTABLE AMBIENT CONCENTRATIONS OF SUBCHAPTER 41

Toxic Air Pollutant	C A S Number	Toxicity Category	MAAC, ug/m^3	Maximum 24-Hour Average Impacts, ug/m^3
Acetaldehyde	75070	B	3,600	2.6
Aromatic naphtha	64742945	B	7,000	33.2
Benzene	71432	A	32	4.3
Formaldehyde	50000	A	12	3.1
Iron oxide (as Fe)	1309371	C	500	2.9
Isopropanol	67630	C	98,339	29.0
Petroleum distillate	64742467	B	2,000	97.0
Petroleum distillate	64741862	C	7,000	97.0
Petroleum distillate	64741851	C	7,000	97.0
Petroleum distillate	8002059	C	35,000	97.0
Petroleum distillate	64742489	C	35,000	97.0
Petroleum distillate	64742898	C	40,000	97.0
Petroleum distillate	80032324	C	135,000	97.0
Petroleum distillate	64741884	B	100	97.0
Phenol	108952	B	384	36.3
POM	--	A	NE	1.4
Quartz	14808607	A	1	0.45

SECTION IX. OTHER PSD ANALYSES

Growth Impacts

No significant industrial or commercial secondary growth will occur as a result of the project. Only a nominal number of new jobs will be created at the new facility and these will be filled by the local work force in the immediate area. No significant population growth will occur. Only a minimal air quality impact is expected as a result of associated secondary growth.

Soils, Vegetation, and Visibility

There are two portions to a visibility analysis: impacts near the facility and impacts on Class I areas. The applicant has conducted a visibility impact analysis in accordance with guidelines in the Workbook for Estimating Visibility Impairment (EPA-450/ 4-80-031) using EPA's software VISCREEN. A Level 1 screening analysis was performed for the facility's impact on the nearest Class I area, the Wichita Mountains Wildlife Refuge, 121 km (75 miles) away. The analysis used a 160 km visual range as requested by the U.S. Department of the Interior. Since contrast parameters were all computed to be less than the specified level where additional analysis would be required, the Level 1 analysis indicated that it is highly unlikely that the source would cause any adverse visibility impairment in the nearest Class I area. There are no scenic vistas near the vicinity of the project. There will be minimal impairment of visibility resulting from the facility's emissions.

Operation of the facility is not expected to produce any perceptible visibility impacts in the vicinity of the plant. The applicant has attempted to utilize EPA computer software for visibility impacts analyses. The software was intended to predict distant impacts. Attempts to utilize the EPA methods for close-in impacts have resulted in the program prematurely terminating operation. Given the limitation of 20% opacity of discharges, and a reasonable expectation that normal operation will result in 0% opacity, no local visibility impairment is anticipated.

CO has not been found to produce detrimental effects on plants at concentrations below 100 ppm for exposures of one to three weeks. Since the ambient standards have been established at 35 ppm (40 mg/m^3) and 9 ppm (10 mg/m^3) for the l-hour and 8-hour averages, respectively, there is no threat to plant life from CO emissions at the site. Any effect of VOC emissions on soils and vegetation at the facility should be minimal in view of the limited potential for alteration of ozone levels at the modest emission rate projected.

No effect on soils is anticipated from the facility. The application correctly pointed out that the particulate matter is primarily silicon dioxide and iron oxide. These are already among the primary constituents of the local soils.

Impact On Class I Areas

The nearest Class I area is the Wichita Mountains Wildlife Refuge, about 121 km (75 miles) from the facility at nearly a 70^o angle to the prevailing winds. The two important tests for impaction on a Class I area are visibility impairment and ambient air quality effect. A visibility analysis in the previous section indicated no impairment of visibility for this area. A significant air quality impact is defined as an ambient concentration increase of 1 ug/m^3, 24 hour average. A receptor was modeled at the Wichita Mountains Wildlife Refuge showing an impact of 0.017 ug/m^3, which is less than the Class I area level of significance. The extended transport distance to the nearest Class I area precludes any significant air quality impact from the facility.

SECTION X. CASE-BY-CASE MACT

40 CFR 63 Subpart B requires a case-by-case MACT for new major sources of HAPs if no MACT has yet been published. Subpart EEEEE was proposed on December 23, 2002, but has not been promulgated.

The Case-by-Case MACT requirement, as stated in 40 CFR 63.41, is "the emission limitation which is not less stringent than the emission limitation achieved in practice by the best controlled similar source, and which reflects the maximum degree of reduction in emissions that the permitting authority, taking into consideration the cost of achieving such emission reduction, and any non-air quality health and environmental impacts and energy requirements, determines is achievable by the constructed or reconstructed major source." This determination necessarily relies on the foundry industry as it currently exists and is reflected in BACT determinations over the past 10 years. Those determinations show the emissions limitations achieved in practice.

There are several requirements to establishing a case-by-case MACT:

1. the name and address of the major source
2. a brief description of the major source and identification of source categories
3. expected commencement date for construction
4. expected completion date for construction
5. anticipated start-up date
6. estimated emission rate of each HAP
7. any federally-enforceable emission limitation applicable to the source
8. maximum and expected utilization capacity of the source and associated uncontrolled emission rates to the extent needed by the permitting authority
9. controlled emission rates
10. a recommended emission limitation
11. selected control technology to meet the recommended MACT
12. supporting documentation identifying alternative control technologies, and an analysis of cost and non-air quality health environmental impacts or energy requirements for the selected control technology

Required information was incorporated into the permit application.

HAPs emitted from the facility fall primarily into two categories: solids and volatile organic materials (VOHAPs). Mercury, a volatile inorganic material, is emitted in quantities which are insignificant to this determination.

Solids

The Case-by-Case MACT analysis for solid materials relied on the EPA "RACT/BACT/ LAER Information System" (RBLC). This EPA database listed determinations of control technologies required for new sources in this industry; these are shown in the "Best Available Control Technology" section. Baghouses which achieve 0.0045 gr/dscf are equal to the most stringent controls required for facilities over the past 10 years. Based on this EPA-supplied information, it is concurred that baghouses constitute MACT for those operations whose emissions are primarily solid HAPs: melting, pouring, mold cooling, shake-out, and sand handling operations.

Volatile Organic Materials

The analysis for control of emissions of organic HAPs is somewhat more complicated as there are so many operations which emit VOC. 91% of potential VOHAP emissions come from pouring, mold cooling, and shake-out operations. With one exception (discussed following), the MACT analysis relies on the BACT analysis for VOC.

Initially, some operations may be excluded from the analysis since they do not emit HAPs. The aromatic naphtha used in core washes is not among the 188 hazardous air pollutants regulated, nor are any of the naphthas used in asphaltic coating application.

Control of organic emissions is achieved either by add-on "tailpipe" controls or by process controls. This latter category includes both efficient operation (waste minimization, or "pollution prevention") and low-emitting raw materials. Add-on controls include condensers, absorbers, biofiltration, and oxidative controls (thermal oxidation systems, including concentration/oxidation systems).

As shown in the BACT analysis, none of the add-on control systems have been demonstrated for this industry. Condensers and absorbers have a low probably of any effectiveness for the VOC emitted from the primary operations. The materials used are intended to polymerize and form a binding to sand grains. The same polymerization reactions would occur in an absorber or concentrator. The low concentrations of organics in the exhaust streams and the high temperature of those streams preclude cooling them to condense the organic materials. None of these add-on control systems are shown in RBLC as being demonstrated technologies for these operations. For the melting, cooling, and pouring operations, MACT is acceptable as no add-on controls.

For mold preparation operations, the only feasible control technology is in limiting the HAP content of the binders. (RBLC did not show any operation which used any control method, including limitations on HAP content.) The permit will specify limitations on binder usage and HAP content.

The exception to these analyses is in the application of triethylamine catalyst to PUCB cores. A single determination was available for catalyst application, made by the State of Indiana. The required control was a 95% efficient scrubber on triethylamine application to PUCB cores. An equivalent scrubber is proposed as the case-by-case MACT for the proposed Ardmore facility. The acidic wet scrubber will retain the triethylamine (a caustic material) in solution more effectively than would a neutral pH liquor. Contact with scrubber liquor will also condense and capture other organic materials.

For a stack flow of 2,000 ACFM at 70°F, triethylamine emissions of 0.153 lb/hr and total VOC emissions of 8.684 lb/hr, equivalent concentrations are 5 ppm triethylamine and 625 ppm total VOC expressed as propane.

Summary

Emissions controls proposed for melting, pouring, cooling, and sand handling operations are as stringent as the most stringent control technology determinations listed on EPA's RBLC. They are acceptable as the case-by-case MACTs for those operations.

The only controls on mold-making operations listed on RBLC are for triethylamine application to PUCB cores. The proposed controls are equivalent to the one determination. There are no controls listed on RBLC for other other operations with significant VOHAP emissions. This permit will establish limitations on HAP content of binders used on those operations, and require use of a caustic wet scrubber for triethylamine emissions. These two will establish the case-by-case MACT for these operations.

SECTION XI. OKLAHOMA AIR POLLUTION CONTROL RULES

OAC 252:100-1 (General Provisions) [Applicable]
Subchapter 1 includes definitions but there are no regulatory requirements.

OAC 252:100-3 (Air Quality Standards and Increments) [Applicable]
Subchapter 3 enumerates the primary and secondary ambient air quality standards and the significant deterioration increments. At this time, all of Oklahoma is in attainment of these standards. The "Air Quality Impacts" section includes a demonstration of compliance with these standards.

OAC 252:100-4 (New Source Performance Standards) [Not Applicable]
Federal regulations in 40 CFR Part 60 are incorporated by reference as they exist on July 1, 2001, except for the following: Subpart A (Sections 60.4, 60.9, 60.10, and 60.16), Subpart B, Subpart C, Subpart Ca, Subpart Cb, Subpart Cc, Subpart Cd, Subpart Ce, Subpart AAA, and Appendix G. NSPS regulations are addressed in the "Federal Regulations" section.

OAC 252:100-5 (Registration, Emissions Inventory, and Annual Fees) [Applicable]
The owner or operator of any facility that is a source of air emissions shall submit a complete emission inventory annually on forms obtained from the Air Quality Division.

OAC 252:100-7 (Permits for Minor Sources) [Not Applicable]
The facility will be a Part 70 source, therefore requirements of Subchapter 8 are applicable instead of Subchapter 7.

OAC 252:100-8 (Permits for Part 70 Sources) [Applicable]
Part 5 includes the general administrative requirements for Part 70 permits. Any planned changes in the operation of the facility which result in emissions not authorized in the permit and which exceed the "Insignificant Activities" or "Trivial Activities" thresholds require prior notification to AQD and may require a permit modification. Insignificant activities mean individual emission units that either are on the list in Appendix I (OAC 252:100) or whose actual calendar year emissions do not exceed the following limits:

- 5 TPY of any one criteria pollutant
- 2 TPY of any one hazardous air pollutant (HAP) or 5 TPY of multiple HAPs or 20% of any threshold less than 10 TPY for a HAP that the EPA may establish by rule
- 0.6 TPY of any one Category A toxic substance
- 1.2 TPY of any one Category B toxic substance
- 6.0 TPY of any one Category C toxic substance

The applicant has fulfilled all applicable requirements relative to the construction permit application provisions. Post-construction ambient monitoring of PM_{10} and ozone will be required in accordance with the authority in OAC 252:100-8-35(d)(5). Pre-construction ambient monitoring requirements will be waived in accordance with OAC 252:100-8-35(d)(2) since there was an AQD monitoring site located at Ardmore until 1997, the site from which PM_{10} data were collected.

OAC 252:100-9 (Excess Emission Reporting Requirements) [Applicable]
In the event of any release which results in excess emissions, the owner or operator of such facility shall notify the Air Quality Division as soon as the owner or operator of the facility has knowledge of such emissions, but no later than 4:30 p.m. the next working day. Within ten (10) working days after the immediate notice is given, the owner or operator shall submit a written report describing the extent of the excess emissions and response actions taken by the facility. Part 70/Title V sources must report any exceedance that poses an imminent and substantial danger to public health, safety, or the environment as soon as is practicable. Under no circumstances shall notification be more than 24 hours after the exceedance.

OAC 252:100-13 (Prohibition of Open Burning) [Applicable]
Open burning of refuse and other combustible material is prohibited except as authorized in the specific examples and under the conditions listed in this subchapter.

OAC 252:100-19 (Particulate Matter) [Applicable]
This subchapter is applicable to the torches and ovens. This subchapter limits emissions of particulate matter from processes other than fuel-burning equipment based on their process weight rate. The following table compares the emissions rates of PM with the allowable PM emissions under Subchapter 19, showing that the facility is in compliance.

COMPLIANCE WITH SUBCHAPTER 19

Operation	Process Weight Rate, TPH	Allowable PM Emissions per Subchap. 19, lb/hr	Permitted PM Emissions, lb/hr
Charge Handling	28.1	38.2	1.36
EIF Melting	28.1	38.2	1.64
Holding Furnace	28.1	38.2	0.12
Inoculation	28.1	38.2	0.84
Pouring & Cooling	28.1	38.2	1.54
Shake-out	28.1	38.2	2.24
Shotblast	28.1	38.2	1.35
Grinding	28.1	38.2	2.82
Sand Handling	300	63.0	5.88
Shell Coremaking	0.48	2.51	0.08
PUCB Coremaking	0.48	2.51	0.19
Scrap crusher	28.1	38.2	1.97

Subchapter 19 specifies PM emissions limitations based on heat input capacity. The following table lists applicable standards by unit and anticipated PM emissions. For most of the combustion devices, applicable permit limitations are more stringent than Subchapter 19.

COMPARISON OF PM EMISSIONS TO LIMITATIONS OF OAC 252:100-19

Unit	Heat Input Capacity, MMBTUH	PM Emission Limitation of OAC 252:100-19, lb/MMBTU	Anticipated PM Emission Rate, lb/MMBTU, AP-42 (7/98), Section 1.4
Ladle Preheat Torches	10	0.60	0.0076
Shell Core Ovens	1	0.60	0.0076
Core Oven	2.5	0.60	0.0076
Coating Pre-Heater	3.5	0.60	0.0076
Scrap Dryer	5.0	0.60	0.0076

OAC 252:100-25 (Visible Emissions and Particulates) [Applicable]
No discharge of greater than 20% opacity is allowed except for short-term occurrences which consist of not more than one six-minute period in any consecutive 60 minutes, not to exceed three such periods in any consecutive 24 hours. In no case shall the average of any six-minute period exceed 60% opacity. The facility will utilize baghouses on various melting, casting, and sand handling operations to achieve compliance with Subchapter 25, and will monitor the pressure differentials across the baghouses to ensure compliance is maintained on a continuous basis.

OAC 252:100-29 (Fugitive Dust) [Applicable]
Subchapter 29 prohibits the handling, transportation, or disposition of any substance likely to become airborne or windborne without taking "reasonable precautions" to minimize emissions of fugitive dust. No person shall cause or permit the discharge of any visible fugitive dust emissions beyond the property line on which the emissions originate in such a manner as to damage or to interfere with the use of adjacent properties, or cause air quality standards to be exceeded, or to interfere with the maintenance of air quality standards.

Charge handling fugitive dust is controlled by utilizing covered operations where possible. Roadway fugitive dust is controlled by weekly sweeping of paved roadways.

OAC 252:100-31 (Sulfur Compounds) [Applicable]
Part 5 limits sulfur dioxide emissions from new equipment (constructed after July 1, 1972). For gaseous fuels the limit is 0.2 lbs/MMBTU heat input. This is equivalent to approximately 0.2 weight percent sulfur in the fuel gas which is equivalent to 2,000 ppm sulfur. Thus, a limitation of 4 ppm sulfur in a fuel gas supply will be in compliance. The permit requires the use of commercial-grade natural gas.

OAC 252:100-33 (Nitrogen Oxides) [Not Applicable]
Subchapter 33 limits NOx emissions from new fuel-burning equipment with a rated heat input greater than or equal to 50 MMBTUH. None of the emisions units exceed the 50 MMBTUH threshold and are not applicable to this subchapter.

OAC 252:100-35 (Carbon Monoxide) [Not Applicable]
None of the following affected processes are part of this project: gray iron cupola, blast furnace, basic oxygen furnace, petroleum catalytic cracking unit or catalytic reforming unit.

OAC 252:100-37 (Volatile Organic Compounds) [Applicable]
Part 3 requires new (constructed after December 28, 1974) storage tanks with a capacity between 400 and 40,000 gallons holding an organic liquid with a true vapor pressure greater than 1.5 psia to be operated with a submerged fill pipe. This requirement does not affect the 300 gallon portable vessels which are smaller than the 400 gallon threshold.
Part 5 limits the VOC content of paints and coatings. Organic materials used as PUCB chemicals, shell coremaking chemicals, and pattern and core chemicals are not regulated by Subchapter 37.
Part 7 requires fuel-burning equipment to be operated and maintained so as to minimize emissions. Temperature and available air must be sufficient to provide essentially complete combustion. The permit will require compliance.

OAC 252:100-41 (Hazardous and Toxic Air Contaminants) [Applicable]
Part 3 addresses hazardous air contaminants. NESHAP, as found in 40 CFR Part 61, are adopted by reference as they exist on July 1, 2001, with the exception of Subparts B, H, I, K, Q, R, T, W and Appendices D and E, all of which address radionuclides. In addition, General Provisions as found in 40 CFR Part 63, Subpart A, and the Maximum Achievable Control Technology (MACT) standards as found in 40 CFR Part 63, Subparts F, G, H, I, L, M, N, O, Q, R, S, T, U, W, X, Y, CC, DD, EE, GG, HH, II, JJ, KK, LL, MM, OO, PP, QQ, RR, SS, TT, UU, VV, WW, YY, CCC, DDD, EEE, GGG, HHH, III, JJJ, LLL, MMM, NNN, OOO, PPP, RRR, TTT, VVV, XXX, CCCC, and GGGG are hereby adopted by reference as they exist on July 1, 2001. These standards apply to both existing and new sources of HAPs. These requirements are addressed in the "Federal Regulations" section.
Part 5 is a state-only requirement governing toxic air contaminants. New sources (constructed after March 9, 1987) emitting any category "A" pollutant above de minimis levels must perform a BACT analysis. All sources are required to demonstrate that emissions of any toxic air contaminant which exceeds the de minimis level do not cause or contribute to a violation of the MAAC. This demonstration was conducted in the "Air Quality Impacts" section. All toxic air pollutants which exceeded the de minimis levels were also either PM or VOC, therefore, the PSD BACT analysis is sufficient to demonstrate BACT as required under this subchapter.

SECTION XII: FEDERAL REGULATIONS

PSD, 40 CFR Part 52 [Applicable]
Total potential emissions for CO and VOCs are greater than the level of significance of 100 TPY. This permit incorporates the requirements of PSD: a BACT analysis, an analysis showing compliance with NAAQS, an analysis showing compliance with increment consumption, an analysis of effects on population growth, soils, vegetation, visibility, and Class I area impacts.

NSPS, 40 CFR Part 60 [Not Applicable]
Subpart N (Basic Oxygen Process Furnaces): This subpart regulates basic oxygen furnaces, which are used in primary steelmaking (smelting of iron ores). This foundry is a secondary operation which has no basic oxygen furnaces.
Subpart Na (Basic Oxygen Process Furnaces): This subpart also regulates basic oxygen furnaces. This foundry is a secondary operation with no basic oxygen furnaces.
Subpart AA (Electric Arc Furnaces): Subpart AA affects electric arc furnaces, which also are used in primary steelmaking. This foundry is a secondary operation which has no electric arc furnaces.
Subpart AAa (Electric Arc Furnaces and Argon-Oxygen Decarburization Vessels): Subpart AAa affects electric arc furnaces, which also are used in primary steelmaking. This foundry is a secondary operation which has no electric arc furnaces.
Subpart Z (Ferroalloy Production Facilities): Subpart Z affects ferrosilicon alloy production in submerged electric arc furnaces. “Submerged electric arc furnace” is defined as a furnace where an electric current is passed through the melt. The induction furnace proposed is not the type of furnace regulated by this subpart.

NESHAP, 40 CFR Part 61 [Not Applicable]
Although small amounts of arsenic and mercury are emitted, the facility is not subject to any of the 40 CFR Part 61 Subparts. Arsenic standards in 40 CFR Part 61 Subparts N, O, and P govern glass manufacturing, copper smelting, and arsenic manufacturing facilities, respectively. None of these three applies to the East Jordan facility. Mercury standards in 40 CFR Part 61 Subpart E apply to the processing of mercury ore, production of chlorine or metal hydroxide, or to the treatment of wastewater sludge. None of these applies to this foundry.

NESHAP, 40 CFR Part 63 [Applicable]
The facility is subject to “Case-by-Case MACT” requirements of 40 CFR Part 63 Subpart B. Compliance with these requirements is discussed in Section X: “Case-by-Case MACT.”

Subpart EEEEE, “Iron Foundries,” was scheduled to be promulgated by May 2002. Air Quality reserves the right to reopen this permit if any new standards become applicable.

Compliance Assurance Monitoring, 40 CFR Part 64 [Applicable]
Compliance Assurance Monitoring, as published in the Federal Register on October 22, 1997, applies to any pollutant specific emission unit at a major source, that is required to obtain a Title V permit, if it meets all the following criteria:

- It is subject to an emission limit or standard for an applicable regulated air pollutant.
- It uses a control device to achieve compliance with the applicable emission limit or standard.
- It has potential emissions, prior to the control device, of the applicable regulated air pollutant of 100 TPY.

The baghouses and wet scrubber will be subject to this part. Compliance specifications have been incorporated into the permit.

Chemical Accident Prevention Provisions, 40 CFR Part 68 [Not Applicable]
This facility does not store any regulated substance above the applicable threshold limits. More information on this federal program is available at the web site: http://www.epa.gov/ceppo/.

Stratospheric Ozone Protection, 40 CFR Part 82 [Applicable]
This facility does not produce, consume, recycle, import, or export any controlled substances or controlled products as defined in this part, nor does the facility perform service on motor (fleet) vehicles which involves ozone-depleting substances. Therefore, as currently operated, this facility is not subject to these requirements. To the extent that the facility has air-conditioning units that apply, the permit requires compliance with Part 82.

SECTION XIII: PERFORMANCE TESTING

On March 5-8 and October 2, 2002, performance tests were conducted at the Ardmore Foundry facility. Testing was to determine compliance with emissions limitations of Permit No. 99-344-C (M-1)(PSD) for the new foundry. Results of the testing are shown following. All test results are in compliance with proposed limitations for the facility.

Stack ID	Operations Served	Pollutant	Emissions Limits	Testing Results
MS01	EIF Melting, Cooling, Sand H & S	PM	2.280 lb/hr	0.64 lb/hr
			0.0045 gr/DSCF	0.0014 gr/DSCF
			20% opacity	0% opacity
		NOx	0.621 lb/hr	0.086 lb/hr
		VOC	10.661 lb/hr	1.47 lb/hr
		CO	47.434 lb/hr	32.90 lb/hr
MS02	EIF Melting, Cooling, Sand H & S	PM	2.280 lb/hr	0.59 lb/hr
			0.0045 gr/DSCF	0.0014 gr/DSCF
			20% opacity	0% opacity
		NOx	0.621 lb/hr	0.086 lb/hr
		VOC	10.661 lb/hr	2.78 lb/hr
		CO	47.434 lb/hr	26.69 lb/hr
SS01	Cooling, Shakeout, Sand H & S	PM	3.124 lb/hr	1.63 lb/hr
			0.0045 gr/DSCF	0.0027 gr/DSCF
			20% opacity	0% opacity
		NOx	0.621 lb/hr	0.221 lb/hr
		VOC	14.123 lb/hr	6.76 lb/hr
		CO	39.880 lb/hr	12.24 lb/hr
SS02	Sand H & S	PM	2.469 lb/hr	1.31 lb/hr
			0.0045 gr/DSCF	0.0031 gr/DSCF
			20% opacity	0% opacity
SS03	Shakeout, Sand H & S	PM	2.353 lb/hr	0.72 lb/hr
			0.0045 gr/DSCF	0.0015 gr/DSCF
			20% opacity	0% opacity
		VOC	4.00 lb/hr	0.57 lb/hr
		CO	6.00 lb/hr	2.39 lb/hr
SS04	Sand H & S	PM	1.543 lb/hr	0.33 lb/hr
			0.0045 gr/DSCF	0.0013 gr/DSCF
			20% opacity	0% opacity
GS01	Finishing/Grinding	PM	4.05 lb/hr	2.64 lb/hr
			0.0045 gr/DSCF	0.0041 gr/DSCF
			20% opacity	0% opacity

SECTION XIV. TIER CLASSIFICATION AND PUBLIC REVIEW

This application has been determined to be a **Tier II** based on the request for a significant modification to a PSD construction permit for a major new facility. The applicant published the "Notice of Filing a Tier II Application" in the *Daily Ardmorite* on December 6, 2002, 2002, a daily newspaper of general circulation in Carter County. The notice said that the application was available for public review at the Ardmore Public Library or at the AQD office in Oklahoma City. A draft of this permit was also made available for public review for a period of thirty days as was stated in another published announcement in the *Daily Ardmorite* on January 16, 2003. The facility is located within 50 miles of the Oklahoma border with Texas; the state of Texas was notified of the draft permit. No comments were received from the public, the state of Texas, or EPA Region VI. Information on all permit actions is available for review by the public in the Air Quality section of the DEQ Web page:*http://www.deq.state.ok.us.*

The applicant has submitted an affidavit that they are not seeking a permit for land use or for any operation upon land owned by others without their knowledge. The affidavit certifies that the applicant owns the real property.

Fees Paid

Part 70 construction permit significant modification fee of $1,500.

SECTION XV. SUMMARY

The applicant has demonstrated the ability to achieve compliance with all applicable Air Quality Rules and Regulations. Ambient air quality standards are not threatened at this site. There are no active Air Quality compliance or enforcement issues. Issuance of the construction permit is recommended.

PERMIT TO CONSTRUCT
AIR POLLUTION CONTROL FACILITY
SPECIFIC CONDITIONS

EJIW-Ardmore Foundry, Inc. **Permit No. 99-344-C (M-3) (PSD)**
New Gray Iron Foundry

The permittee is authorized to construct in conformity with the specifications submitted to Air Quality Division on December 8, 1999, with supplemental information received March 9 and March 17, 2000; July 11, 2001; and March 10, November 25 and December 19, 2002. The Evaluation Memorandum dated April 7, 2003, explains the derivation of applicable permit requirements and estimates of emissions; however, it does not contain operating limitations or permit requirements. Commencing construction or operations under this permit constitutes acceptance of, and consent to, the conditions contained herein.

1. Points of emissions and emission limitations for each point: [OAC 252:100-8-6(a)]

A. Emissions limitations by process:

EUG "MS"

Point ID	Emission Unit	PM_{10}		SO_2		NO_x		VOC		CO	
		lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
MS01 MS02	Charge handling	0.540	1.971	--	--	--	--	--	--	--	--
CH1 CH2 CH3 CH4	Charge handling fugitives	0.818	1.996	--	--	--	--	--	--	--	--
MS01 MS02	EIF melting	1.512	5.519	--	--	--	--	0.835	2.037	3.895	9.504
EF-16B R13 R14	EIF melting fugitives	0.126	0.309	--	--	--	--	0.008	0.021	0.039	0.096
SS01	Holding furnace	0.116	0.422	--	--	--	--	--	--	--	--
EF-16B R13 R14	Holding furnace fugitives	0.008	0.019	--	--	--	--	--	--	--	--
EF-16B R13 R14	Inoculation (all fugitive)	0.843	2.057	--	--	--	--	0.141	0.343	--	--
MS01 MS02	Ladle repair	0.231	0.845	--	--	--	--	--	--	--	--

EUG "NG"

Point ID	Emission Unit	PM_{10}		SO_2		NOx		VOC		CO	
		lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
R13 R14 EF-16B	I & T Ladle torches – 10 MMBTUH	0.08	0.28	0.006	0.022	1.000	3.650	0.06	0.20	0.84	3.07
SHELLHE R1, R2	two shell core machines – 0.5 MMBTUH apiece	0.01	0.028	0.001	0.002	0.100	0.365	0.01	0.020	0.08	0.307
SHELLHE R1, R2	core oven – 2.5 MMBTUH	0.02	0.069	0.002	0.006	0.250	0.913	0.01	0.050	0.21	0.767
MUA1-MUA10	miscellaneous heaters – total 50 MMBTUH	0.38	1.66	0.03	0.13	5.000	21.90	0.28	1.20	4.20	18.40
SD-1	Scrap Dryer – 5 MMBTUH	0.04	0.17	0.003	0.013	0.500	2.190	0.03	0.12	0.42	1.84
DIP-2	Coating pre-heater – 3.5 MMBTUH	0.03	0.12	0.002	0.009	0.350	1.53	0.02	0.08	0.29	1.29

EUG "P"

Point ID	Emission Unit	PM_{10}		SO_2		NOx		VOC		CO	
		lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
MS01 MS02 SS01	Pouring & mold cooling	2.931	10.700	0.546	1.333	1.863	4.547	26.847	65.513	119.207	290.897
R1 R2 R3 R4 R5 R6 R7	Pouring & mold cooling fugitives	0.161	0.394	0.016	0.038	0.054	0.131	0.604	1.474	3.371	8.226
SS01 SS03	Shake-out	1.929	7.039	--	--	--	--	11.765	28.709	17.647	43.063
R1 R2 R3 R4 R5 R6 R7	Shake-out fugitives	0.315	0.768	--	--	--	--	0.119	0.290	0.178	0.435

EUG "F"

Point ID	Emission Unit	PM_{10}		SO_2		NOx		VOC		CO	
		lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
SS01 SS03	Casting cooling	1.311	4.787	--	--	--	--	--	--	--	--
GS01	Shotblasting	1.234	4.505	--	--	--	--	--	--	--	--
R8 R9 R10 R11 R12 EF-13	Shotblasting fugitives	0.119	0.291	--	--	--	--	--	--	--	--
GS01	Grinding	2.816	10.277	--	--	--	--	--	--	--	--
R4 R5 R6 R7	Grinding fugitives	0.003	0.008	--	--	--	--	--	--	--	--

EUG "SS"

Point ID	Emission Unit	PM_{10}		SO_2		NOx		VOC		CO	
		lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
SS01 SS02 SS03 SS04 MS01 MS02	Sand handling & molding	5.477	19.992	--	--	--	--	--	--	--	--
R1 R2 R3 R4 R5 R6 R7 R16	Sand handling & molding fugitives	0.405	1.478	--	--	--	--	--	--	--	--

EUG "C"

Point ID	Emission Unit	PM_{10}		SO_2		NOx		VOC		CO	
		lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
R1 R2	Shell core machine #1 Shell core machine #2	0.084	0.131	--	--	--	--	1.82	2.85	--	--
COREBH	PUCB core machine #1 PUCB core machine #2	0.164	0.064	--	--	--	--	8.684	3.40	--	--
R1 R2	PUCB core machine fugitives	0.042	0.016	--	--	--	--			--	--

EUG "MCRC"

Point ID	Emission Unit	PM_{10}		SO_2		NOx		VOC		CO	
		lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
R1 R2	Mold and core room chemicals	--	--	--	--	--	--	8.96	32.71	--	--

EUG "D"

Point ID	Emission Unit	PM_{10}		SO_2		NOx		VOC		CO	
		lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
EF-34	Asphaltic dip coating	--	--	--	--	--	--	9.08	15.51	--	--

EUG "HR"

Point ID	Emission Unit	PM_{10}		SO_2		NOx		VOC		CO	
		lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
fugitive	haul roads	0.001	0.005	--	--	--	--	--	--	--	--

EUG "EG": The following emissions units are considered insignificant since emissions are less than 5 TPY of any criteria pollutant.

EU ID#	Point ID#	EU Name/Model	Construction Date
EG-1	EG-2	250 kW (333 HP) emergency generator	2000 / 2001
EG-2	EG-2	250 kW (333 HP) emergency generator	2000 / 2001

EUG "S": The following emissions units are considered insignificant since emissions are less than 5 TPY of any criteria pollutant.

EU ID#	Point ID#	EU Name/Model	Construction Date
SHOP1	R1, R2 EF-21	Pattern & Maintenance shops	2000

EUG "SC": The following emissions units are considered insignificant since emissions are less than 5 TPY of any criteria pollutant.

EU ID#	Point ID#	EU Name/Model	Construction Date
SC-1	SC-1	Scrap crusher	2003

B. Emissions limitations by discharge point

Emission Unit	PM_{10}		SO_2		NOx		VOC		CO	
	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
SSO1	3.124	11.404	0.182	0.444	0.621	1.516	14.123	34.464	39.880	97.319
SSO2	2.469	9.010	--	--	--	--	--	--	--	--
SSO3	2.353	8.588	--	--	--	--	4.000	9.761	6.000	14.642
SSO4	1.543	5.631	--	--	--	--	--	--	--	--
MSO1	2.280	8.320	0.182	0.444	0.621	1.516	10.661	26.017	47.434	115.752
MSO2	2.280	8.320	0.182	0.444	0.621	1.516	10.661	26.017	47.434	115.762
GSO1	4.050	14.783	--	--	--	--	--	--	--	--
R1	0.238	0.631	0.003	0.009	0.183	0.657	5.506	18.066	0.654	1.774
R2	0.238	0.631	0.003	0.009	0.183	0.657	5.506	18.066	0.654	1.774
R3	0.119	0.353	0.002	0.005	0.008	0.019	0.103	0.252	0.482	1.237
R4	0.119	0.353	0.002	0.005	0.008	0.019	0.103	0.252	0.482	1.237
R5	0.119	0.353	0.002	0.005	0.008	0.019	0.103	0.252	0.482	1.237
R6	0.119	0.353	0.002	0.005	0.008	0.019	0.103	0.252	0.482	1.237
R7	0.119	0.353	0.002	0.005	0.008	0.019	0.103	0.252	0.482	1.237
R8	0.020	0.049	--	--	--	--	--	--	--	--
R9	0.020	0.049	--	--	--	--	--	--	--	--
R10	0.020	0.049	--	--	--	--	--	--	--	--
R11	0.020	0.049	--	--	--	--	--	--	--	--
R12	0.020	0.049	--	--	--	--	--	--	--	--
EF-13	0.020	0.049	--	--	--	--	--	--	--	--
R13	0.349	0.883	0.002	0.007	0.333	1.217	0.068	0.188	0.293	1.054
R14	0.349	0.883	0.002	0.007	0.333	1.217	0.068	0.188	0.293	1.054
EF-16B	0.349	0.883	0.002	0.007	0.333	1.217	0.068	0.188	0.293	1.054
R16	0.051	0.185	--	--	--	--	--	--	--	--
EF-21	0.043	0.158	--	--	--	--	--	--	--	--
COREBH	0.164	0.064	--	--	--	--	8.684	3.400	--	--
MUA1 – 10	0.380	1.664	0.030	0.131	5.000	21.900	0.275	1.205	4.200	18.396
CH1	0.184	0.449	--	--	--	--	--	--	--	--
CH2	0.184	0.449	--	--	--	--	--	--	--	--
CH3	0.184	0.449	--	--	--	--	--	--	--	--

Emission Unit	PM_{10}		SO_2		NOx		VOC		CO	
	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
CH4	0.184	0.449	--	--	--	--	--	--	--	--
CHF	0.082	0.200	--	--	--	--	--	--	--	--
ROAD	0.001	0.005	--	--	--	--	--	--	--	--
COATING	--	--	--	--	--	--	9.079	15.509	--	--
G-1	0.770	0.096	0.718	0.090	10.850	1.356	0.865	0.108	2.338	0.292
G-2	1.210	0.151	1.128	0.141	17.050	2.131	1.359	0.170	3.674	0.459
DIP-2	0.027	0.117	0.002	0.009	0.350	1.533	0.019	0.084	0.294	1.288
SD-1	0.038	0.166	0.003	0.013	0.500	2.190	0.028	0.120	0.420	1.840
SC-1	1.967	2.400	--	--	--	--	--	--	--	--

2. Upon issuance of an operating permit, the facility shall be authorized to operate 24 hours per day, every day of the year up to the following raw material usage rates: [OAC 252:100-8-6(a)]

Raw Material	Limitation	Specifications
Scrap Metals	560 tons per day 137,143 tons per year	--
Coating	51,700 gallons per year	0.6 lb/gal or less VOC
Shell Core Materials	1,500 tons per year	0.19% by wt. VOC
PUCB binder catalyst	4 tons per year	100% VOC by weight
Core Wash Material 1	200,000 lbs per year	5% by wt VOC
Mold and Core Release Materials	91,303 lbs per year	54% by wt VOC
Core Release Material 1	1,064 gallons per year	5.58 lb/gal or less VOC
Core Release Material 2	245 gallons per year	0.43 lb/gal or less VOC
Core Release Material 3	135 gallons per year	0.57 lb/gal or less VOC
PUCB binder chemicals	140 tons per year	55% VOC by weight

3. The following raw materials are authorized to be used with concentrations of organic materials not to exceed the following specifications:

Raw Material	Component	CAS Number	Concentration Limitation
Asphaltic coating	Petroleum distillate	64741862	0.6 ppg
	Petroleum distillate	64741851	
	Petroleum distillate	8002059	
	Petroleum distillate	64742489	
	Petroleum distillate	64742898	
	Petroleum distillate	80032324	
	Petroleum distillate	64741884	
Shell core binder	formaldehyde	50000	0.02%
	phenol	108952	0.08%
PUCB catalyst	triethylamine	121448	100%
Core wash	aromatic naphtha	64741884	5%
Mold & core release	Petroleum distillate	64742467	50%
PUCB binder	1,2,4-trimethyl benzene	95636	3%
	Aromatic naphtha	64742945	20%
	Bis-2-ethylhexyl adipate	103231	10%
	Dimethyl adipate	627930	10%
	Dimethyl glutarate	1119400	8%
	Dimethyl succinate	106650	5.5%
	Formaldehyde	50000	0.07%
	Kerosene	8008206	7.5%
	Naphthalene	91203	1.6%
	Petroleum distillate	64742956	8%
	Phenol	108952	6.6%
	Tall oil fatty acid esters	67762634	7.5%
	Vegetable oil	67745081	3%

4. Air emissions from the PUCB catalyst application operation (Stack "COREBH") shall be processed by an acidic wet scrubber or equivalent (at least 98.5%) efficient control for emissions of triethylamine. The scrubber liquor shall be maintained at a pH of 5.5 or less, and a minimum pressure differential of 1 inch WC shall be maintained when gaseous triethylamine is being applied to cores. Total VOC discharge concentrations shall not exceed 625 ppm (8-hour average).
[OAC 252:100-8-6]

5. Asphaltic coating shall be applied by a dipping system or equivalent with negligible PM emissions. [OAC 252:100-8-6]

6. Air exhausts from the following operations shall be processed by a baghouse or equivalent PM emissions control device that achieves PM_{10} emissions of 0.0045 gr/DSCF or less. Each baghouse shall be monitored for pressure differential at least once daily when operating. If pressure differential range is not within the following specification, the permittee shall comply with the provisions of OAC 252:100-9. [OAC 252:100-8-6]

Discharge Point IDs	Minimum Pressure Differential, inches WC
SS-01	2
SS-02	2
SS-03	2
SS-04	2
MS-01	2
MS-02	2
GS-01	2

7. Natural gas usage shall not exceed 539 million cubic feet per year (12-month rolling totals).

8. The following records shall be maintained on-site. All such records shall be made available to regulatory personnel. These records shall be maintained for a period of at least five years after the time they are made. [OAC 252:100-45]

a. Production of iron (monthly and 12-month rolling totals).

b. Usage of shell sand and VOC content (monthly and 12-month rolling totals). Chemical usage shall be reported as the difference between amounts used in any month and the amounts recovered from the binding operations for disposal.

c. Usage of PUCB chemicals and VOC content (monthly and 12-month rolling totals). Chemical usage may be reported as the difference between amounts used in any month and the amounts recovered from the PUCB operations for disposal.

d. Coating usage and VOC content (monthly and 12-month rolling totals). Chemical usage may be reported as the difference between amounts used in any month and the amounts recovered from the coating operations for disposal.

e. Pattern/Core chemical usage and VOC content (monthly and 12-month rolling totals). Chemical usage may be reported as the difference between amounts used in any month and the amounts recovered from the pattern/core operations for disposal.

f. Pressure differentials of each baghouse (daily, when operating).

g. Records of maintenance and proper operation of the PUCB catalyst scrubber (monthly and 12-month rolling totals).

h. Natural gas usage (monthly and 12-month rolling totals).

9. The permittee shall conduct post-construction ambient air monitoring of PM_{10}. A minimum of one year PM_{10} monitoring shall be conducted. [OAC 252:100-8-35(d)(5)]

10. Within 60 days of achieving maximum PUCB core production, not to exceed 180 days from initial start-up, and at other such times as directed by AQD, the permittee shall conduct performance testing of the PUCB catalyst (triethylamine) application operation (Stack "COREBH") and furnish a written report to AQ documenting compliance with emissions limitations. Performance testing by the permittee shall use the following test methods specified in 40 CFR 60. The testing is required to confirm compliance with the emission limitations of Specific Condition No. 1. [OAC 252:100-43]

Method 1: Sample and Velocity Traverses for Stationary Sources.

Method 2: Determination of Stack Gas Velocity and Volumetric Flow Rate.

Method 3: Gas Analysis for Carbon Dioxide, Excess Air, and Dry Molecular Weight.

Method 4: Determination of Moisture in Stack Gases.

Method 5: Determination of Particulate Matter Emissions from Stationary Sources.

Method 9: Visual Determination of Opacity

Method 18: Measurement of Gaseous Organic Compounds Emissions by Gas Chromatography

Opacity testing shall be conducted for a minimum of 30 six-minute averages. Performance testing shall be conducted while the new units are operating within 10% of the rates at which operating permit authorization will be sought.

An equivalent method (e.g., NIOSH sampling method) for triethylamine may be utilized upon receipt of justification for the alternative to Method 18 and written approval by AQD.

11. No later than 30 days after each anniversary date of the issuance of an operating permit for this facility, the permittee shall submit to Air Quality Division of DEQ, with a copy to the US EPA, Region 6, a certification of compliance with the terms and conditions of this permit. The following specific information is required to be included: [OAC 252:100-8-6 (c)(5)(a)&(d)]

a. Usage of each raw material listed in Specific Condition No. 2.

b. VOC content of each raw material listed in Specific Condition No. 2 for which a VOC limitation is specified.

c. Pressure differential for each baghouse.

d. Pressure differential and scrubber liquor pH for the PUBC catalyst wet scrubber (Stack No. COREBH).

e. Natural gas usage.

f. Ambient air monitoring data for ozone and PM_{10} (first operating year only)

12. Upon issuance of this permit, all previous Air Quality permits will become null and void.

PART 70 PERMIT

AIR QUALITY DIVISION
STATE OF OKLAHOMA
DEPARTMENT OF ENVIRONMENTAL QUALITY
707 N. ROBINSON STREET, SUITE 4100
P.O. BOX 1677
OKLAHOMA CITY, OKLAHOMA 73101-1677

Issuance Date: ________________________ Permit Number: 99-344-C (M-3)(PSD)

EJIW – Ardmore Foundry, Inc., having complied with the requirements of the law, is hereby granted permission to to construct a gray iron foundry located in Sec. 7 – T 3S – R 3W near Ardmore, Carter County, Oklahoma.

subject to the following conditions, attached:

[X] Standard Conditions dated October 17, 2001

[X] Specific Conditions

In the absence of construction commencement, this permit shall expire 18 months from the issuance date, except as authorized under Section VIII of the Standard Conditions.

____Director, Air Quality Division

DEQ Form #100-890 Revised 12/6/02

East Jordan Iron Works
Attn: Mr. Tracy Malpass
301 Spring Street
East Jordan, MI 49727-0439

SUBJECT: Permit Application No. **99-344-C (M-3) (PSD)**
Ardmore Foundry
Sec. 7 – T 3S – 3E
Ardmore, Carter County, Oklahoma

Dear Mr. Malpass:

Enclosed is the permit authorizing construction of the referenced operation. Please note that this permit is issued subject to certain standards and specific conditions, which are attached.

Thank you for your cooperation in this matter. If we may be of further service, please contact our office at (405)702-4198.

Sincerely,

David S. Schutz, P.E.
AIR QUALITY DIVISION
Enclosures