

PERMIT TO CONSTRUCT EVALUATION
Lithographic Printing Press, Heat Set (modification)

Applicant's Name: RR Donnelley & Sons Co.
Company ID No.: 3585
Mailing Address: 19681 Pacific Gateway Dr., Torrance, CA 90502
Equipment Address: 19681 Pacific Gateway Dr., Torrance, CA 90502

EQUIPMENT DESCRIPTION:

Equipment	ID No.	Connected To	Source Type/ Monitoring Unit	Emissions	Conditions
Process 1: PRINTING PROCESS					F2.1, F9.1
PRINTING PRESS, LITHOGRAPHIC, NO. 86, HARRIS, MODEL NO. M1000B, WEB FED, 38 IN. WIDE, 9 COLOR STATIONS WITH AN AQUEOUS COATER A/N 472423 (MODIFICATION TO A/N 174066)	D3			VOC: (9) [RULE 1130, 10-8-1999; RULE 1171, 11-7-2003; RULE 1171, 7-14-2006]	B27.5, B59.1, H23.1, K67.1
OVEN, DRYING, NO. 86, TCE, MODEL NO. 2-C-2-30-40 WITH FOUR 50 HP CIRCULATING AIR BLOWERS, NATURAL GAS, TWO 10 HP COMBUSTION AIR BLOWERS, AND ONE 40 HP EXHAUST BLOWER, 2.75 MMBTU/HR A/N 472423 (MODIFICATION TO A/N 174066)	D4	C16 C49 C50	NOx: PROCESS UNIT	CO: 2000 PPMV (5) [RULE 407, 4-2-1982]; PM: 0.1 GRAINS/SCF (5) [RULE 409, 8-7- 1981]	D12.5

Application 472424:
 TITLE V/RECLAIM REVISION

HISTORY:

The company submitted Application Nos. 472423-4 on 8/3/07 for a modification to a lithographic printing press (D3) and Title V/RECLAIM revision application. The facility is requesting to add an aqueous coater unit to the printing press. The facility is in the Title V Permit program and is a NOx Cycle 2 facility. The facility has no recent history of enforcement action. The location is in a completely industrial area with the

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ENGINEERING AND COMPLIANCE
Coating, Printing and Aerospace Operations Team
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Reviewed by Hamed Mandilawi
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closest sensitive receptor being a residence located 800 meters to the north. No complaints have been filed against this facility in the past three years.

PROCESS DESCRIPTION:

The facility is a large lithographic printing business that uses this press to print magazines. The company operates five lithographic printing presses equipped with drying ovens, which are vented to two regenerative oxidizers and one recuperative oxidizer. This project will involve the addition of an aqueous coater to a web fed printing press (D3). The coater will be used to apply a gloss water based coating to magazine covers. After the inks and coating are applied to the product, the product is dried using a 2.75 MMBTU/hr natural gas fired drying oven. The VOC emissions from the oven are vented to the air pollution control system. Neither the oven nor the air pollution control system will be modified. The inks are all oil based which are heat set and the presses are all equipped with natural gas fired dryers. The facility will continue to use the same inks, fountain solution and blanket and roller washes. The facility currently operates under a facility VOC limit of 622 lb VOC/day. All of the ink and coating emissions are assumed to be collected by the dryer, and the RTOs have a minimum destruction efficiency of 95%. The equipment will be operated for 52 wks/yr, 7 days/week, 24 hr/day. This is the first revision of the Title V renewal permit.

EMISSION CALCULATIONS:

The facility currently operates under facility wide limits for VOC. The VOC limit is 622 lb VOC per day. The company expects the coater to result in additional 60 to 92 lbs VOC/day uncontrolled. Based on 95% overall efficiency, this will result in an emission of 4.6 lb VOC/day. The previous permit is not allocated any emissions due to the facility VOC bubble. Default AQMD emission factors will be used to calculate the CO, NO_x, PM10 and SO_x emissions from the combustion of natural gas in the dryer.

Total VOC emissions

R1, VOC = Ink Usage + Blanket Wash + Roller Wash + Fountain Soln + Aqueous Coating

$$\begin{aligned} \text{R1, VOC} &= 180 \text{ gal/day (3.197 lb VOC/gal)} + 2.2 \text{ gal/day (3.27 lb VOC/gal)} + 0.6 \text{ gal/day (2.2 lb VOC/gal)} + \\ & 5 \text{ gal/day (1.62 lb VOC/day)} + 100 \text{ gal/day (0.92 lb VOC/day)} = 684.074 \text{ lb VOC/day} \\ & = 28.5 \text{ lb VOC/hr} \end{aligned}$$

$$\begin{aligned} \text{R2, VOC} &= (667.46 (1-0.95)) + 16.614 = 49.987 \text{ lb VOC/day} \\ & = 2.08 \text{ lb VOC/hr} \end{aligned}$$

30-Day NSR VOC emissions = 0 lb/day (due to facility wide VOC limit)

Increase due from new Aqueous Coating

$$\begin{aligned} \text{R1, VOC, aqcoat} &= 100 \text{ gal/day (0.92 lb VOC/day)} = 92 \text{ lb VOC/day} \\ & = 3.83 \text{ lb VOC/hr} \end{aligned}$$

$$\begin{aligned} \text{R2, VOC, aq coat} &= 92 \text{ lb VOC/day (1-0.95)} = 4.6 \text{ lb VOC/day} \\ & = 0.23 \text{ lb VOC/hr} \end{aligned}$$

Dryer emissions

$$2.75 \text{ MMBTU/hr} / 1050 \text{ BTU/ft}^3 = 0.00262 \text{ mmscf/hr}$$

NO_x

$$\text{R1} = \text{R2} = 130 \text{ lb NO}_x/\text{mmscf} \times 0.00262 \text{ mmscf/hr} = 0.3406 \text{ lb NO}_x/\text{hr}$$

CO

$$\text{R1} = \text{R2} = 35 \text{ lb CO/mmscf} \times 0.00262 \text{ mmscf/hr} = 0.0917 \text{ lb NO}_x/\text{hr}$$

PM₁₀

$$R1 = R2 = 7 \text{ lb PM}_{10}/\text{mmscf} \times 0.00262 \text{ mmscf/hr} = 0.018 \text{ lb NO}_x \text{ /hr}$$

SO_x

$$R1 = R2 = 0.83 \text{ lb SO}_x/\text{mmscf} \times 0.00262 \text{ mmscf/hr} = 0.002 \text{ lb NO}_x \text{ /hr}$$

RULES/REGULATION EVALUATION:

RULE 212, PUBLIC NOTIFICATION

PARAGRAPH 212(c)(1):

This paragraph requires a public notice for all new or modified permit units that may emit air contaminants located within 1,000 feet from the outer boundary of a school. According to the LA County Assessor Map and Google Maps, there is no school within the 1,000 feet of the permit unit. Therefore, a public notice will not be required by this paragraph.

PARAGRAPH 212(c)(2):

This section requires a public notice for all new or modified sources, which undergo construction or modifications resulting an emission increase exceeding any of the daily maximum specified in the table below. There will be no increases for the facility due to this modification, because the VOC emissions will continue to be limited by the same facility bubble. There will be no other increases of criteria pollutants. The emissions from this project are not above the daily maximum limits specified by Rule 212(g). Therefore, a public notice will not be required under this section of the rule.

PARAGRAPH 212(c)(3):

The printing press will result in a MICR of less than one in a million and a HIA and HIC less than one (see Rule 1401 evaluation section). Therefore, a public notice will not be required under this section.

PARAGRAPH 212(g):

The addition of the coater to the printing press will result in an increase 5 lb VOC/day after control. There will be no increase of PM₁₀, CO, NO_x or SO_x, because the operation of the oven will remain the same as the previous permit. All increase in criteria pollutant emissions will remain below the limits specified in Rule 212(g). Therefore, there will be no public notice required under this section. The emissions for the new press are summarized below:

Pollutant	Emission Increases (lb/day)	Max. 212(g) Daily Emission Increase (lb/day)
CO	0	220
NO _x	0	40
PM ₁₀	0	30
ROG	5	30
SO _x	0	60

RULE 401, VISIBLE EMISSIONS

With the proper use and operation of the printing presses and RTOs, no visible emissions are expected.

RULE 402, NUISANCE

With the proper operation of the printing press, oven and RTO, no nuisance problems are expected at this facility. The facility is located within an industrial area. There are no adjacent residences to the facility. There has been no recent complaints filed against the facility within the past 3 years. Compliance with this rule is expected.

RULE 404, PARTICULATE MATTER - CONCENTRATION

The operation of the oven will continue to be the same as the previous permit. The equipment is expected to continue to comply with this rule.

RULE 1130, GRAPHIC ARTS

The company will use an ink that has a VOC content of 3.197 lb VOC/gal (384 g VOC/L). This rule requires inks to have a VOC content less than 300 g VOC/L unless they have an approved emission control system. The facility is permitted for RTOs that meet the requirements of this rule. The new aqueous coating will have a VOC content of 0.92 lb VOC/gal, which complies with the rule limit of 2.5 lb VOC/gal

The fountain solution will be mixed in a ratio of 25 parts etch to one part of water. After mixing, the VOC content of the fountain solution is 0.54 lb/gal. The applicable VOC limit for the fountain solution is 0.67 lb VOC/gal. Compliance with this rule is expected.

RULE 1171, SOLVENT CLEANING OPERATIONS

RR Donnelley is using 7750 Envirowash for a blanket and Mercury Ecolowash 450 as a roller wash. The blanket wash that has a material VOC content of 2.2 lb VOC/gal (264 g VOC per liter), and the roller wash has a material VOC content of 3.27 lb VOC/gal (392 g VOC/L). These VOC contents will comply with the VOC limit of 500 g/L in this rule. Compliance with this rule is expected.

REGULATION XIII

RULE 1303(a), BEST AVAILABLE CONTROL TECHNOLOGY (BACT)

Device D3 will experience an increase in VOC emission greater than one pound per day of VOC emissions, therefore BACT is applicable. The present BACT guidelines require that the lithographic printing press operations use of low-VOC fountain solution (<8% by volume VOC), washes with low vapor pressure (<10 mmHg). The fountain solution according to the MSDS will consist of 6% VOC. The blanket wash has a vapor pressure of 0.25 mm Hg and the roller wash has a vapor pressure of 0.5 mmHg. The drying oven will also be vented to an RTO which qualifies as BACT. The facility is a RECLAIM facility and therefore Regulation XIII does not apply to NOx emissions. Compliance with this rule is expected.

RULE 1303(b)(1), MODELING

There are presently no modeling requirements for VOC emissions. The modification will not affect any other criteria pollutant emissions other than VOC, and the facility is a RECLAIM facility and therefore Regulation XIII does not apply to NOx emissions. Compliance with this rule is expected.

RULE 1303(b)(2), OFFSETS

The facility operates under a facility VOC limit of 622 lb VOC/day. The operation of the equipment is bubbled under this limit; therefore, there will be no increases of VOC emissions at this facility. The modification will not affect any other criteria pollutant emissions, and the facility is a RECLAIM facility and therefore Regulation XIII does not apply to NOx emissions.

RULE 1401, NEW SOURCE REVIEW OF TOXIC AIR CONTAMINANTS

According to the Material Safety Data Sheets (MSDS) that were submitted with this application, RR Donnelly will be using some materials that contain toxic air contaminants (TAC) identified in Table 1 of Rule 1401, with an effective date of March 4, 2005 or earlier. Since the aqueous coater will result in the emission of some additional toxic compounds from the equipment, a health risk assessment must be performed. According to subsection (f)(3) of this rule, since the permit unit is being modified, only the emissions increase from the modified permit unit shall be used to determine MICR and Hazard Index values to determine compliance with this rule. Since the remainder of the press and the oven are not being modified, the TAC emissions from them will not be calculated. The new coating will contain Propylene Glycol Methyl Ether, isopropanol and Ethylene Glycol Monobutyl Ether, which are all toxic compounds. VOC emissions from ink and coating emissions are assumed to be carried into the dryer and vented to the RTO.

Coating

PGME

$100 \text{ gal/day} \times (8.98 \text{ lb/gal}) \times (0.071 \text{ lb PGME/lb coating}) \times (1-0.95) = 3.19 \text{ lb /day} = 0.13 \text{ lb/hr}$

IPA

$100 \text{ gal/day} \times (8.98 \text{ lb/gal}) \times (0.023 \text{ lb IPA/lb coating}) \times (1-0.95) = 1.03 \text{ lb /day} = 0.04 \text{ lb/hr}$

EGME

$100 \text{ gal/day} \times (8.98 \text{ lb/gal}) \times (0.0023 \text{ lb EGME/lb coating}) \times (1-0.95) = 0.10 \text{ lb /day} = 0.0043 \text{ lb/hr}$

The maximum emissions were then used to complete a Tier I health risk assessment. The results of the assessment show that the maximum operation of the modification will not result in a MICR, HIA or HIC that exceeds the limits of this rule. The printing press line and oven previously did not have a Rule 1401 condition limiting the usage of toxic compounds. Therefore, when the condition is added for this modification, it will also have to allow an exception for toxic compounds in materials used in the parts of the process that are not modified. The Fountain Solution will contain ethylene glycol and ethylene glycol monobutyl ether. The inks, blanket wash and roller wash will not contain any toxic compounds. There will be a permit condition disallowing the use of materials that contain toxic air contaminants identified in Rule 1401, with an effective date of March 4, 2005 or earlier, except for ethylene glycol (CAS No. 107-21-1), ethylene glycol monobutyl ether (CAS No. 111-76-2 and isopropanol (CAS No. 91-20-3), and propylene glycol monomethyl ether (CAS No. 107-98-2). Compliance with this rule is expected.

REGULATION XX: REGIONAL CLEAN AIR INCENTIVE MARKET (RECLAIM)

RR Donnelley is a NO_x RECLAIM facility. However, the modification to the permit will not affect NO_x emissions from the oven and RTO. There will only be an increase of VOC emissions.

RULE 2005(c)(2) – MODIFICATION TO RECLAIM FACILITIES

The facility is exempt from applying BACT to the oven portion of the press because the modification will not affect the emission of any RECLAIM pollutants. The facility is exempt under section 2005(k)(2)

REGULATION XXX: TITLE V PERMITS

This facility is in the RECLAIM program. The proposed project is considered as a “de minimis significant permit revision” for non-RECLAIM pollutants or hazardous air pollutants (HAPs), and a “minor permit revision” for RECLAIM pollutants to the RECLAIM/Title V permit for this facility.

Non-RECLAIM Pollutants or HAPs

Rule 3000(b)(6) defines a “de minimis significant permit revision” as any Title V permit revision where the cumulative emission increases of non-RECLAIM pollutants or HAPs from these permit revisions during the term of the permit are not greater than any of the following emission threshold levels:

Air Contaminant	Daily Maximum (lbs/day)
HAP	30
VOC	30
NO _x *	40
PM ₁₀	30
SO _x *	60
CO	220

* Not applicable if this is a RECLAIM pollutant

To determine if a project is considered as a “de minimis significant permit revision” for non-RECLAIM pollutants or HAPs, emission increases for non-RECLAIM pollutants or HAPs resulting from all permit revisions that are made after the issuance of the **Title V renewal permit** shall be accumulated and compared to the above threshold levels. This proposed project is the **1st** permit revision to the **Title V renewal permit** issued to this facility on **May 9, 2005**. The following table summarizes the cumulative emission increases resulting from all permit revisions since the **Title V renewal permit** was issued:

Revision	HAP	VOC	NO _x *	PM ₁₀	SO _x	CO
1st Permit Revision: Modification to printing press D3	0	0	0	0	0	0
Cumulative Total	0	0	0	0	0	0
Maximum Daily	30	30	40	30	60	220

* RECLAIM pollutant, not subject to emission accumulation requirements

Since the cumulative emission increases resulting from all permit revisions are not greater than any of the emission threshold levels, this proposed project is considered as a “de minimis significant permit revision” for non-RECLAIM pollutants or HAPs.

RECLAIM Pollutants

Rule 3000(b)(12)(A)(v) defines a “minor permit revision” as any Title V permit revision that does not result in an emission increase of RECLAIM pollutants over the facility starting Allocation plus nontradeable Allocations, or higher Allocation amount which has previously undergone a significant permit revision process.

Since NOx is a RECLAIM pollutant for this facility, a separate analysis shall be made to determine if the proposed permit revision is considered a “minor permit revision” for RECLAIM pollutants. The proposed project is expected to result in no increase of NOx emissions from this permit revision. As a result, this proposed project is considered as a “minor permit revision” for RECLAIM pollutants.

RECOMMENDATION

The proposed project is expected to comply with all applicable District Rules and Regulations. Since the proposed project is considered as a “de minimis significant permit revision” for non-RECLAIM pollutants or hazardous air pollutants (HAPs), and a “minor permit revision” for RECLAIM pollutants, it is exempt from the public participation requirements under Rule 3006(b). A proposed permit incorporating this permit revision will be submitted to EPA for a 45-day review pursuant to Rule 3003(j). If EPA does not have any objections within the review period, a revised Title V/RECLAIM permit will be issued to this facility.

PERMIT CONDITIONS:

The equipment will be subject to the permit conditions listed below:

Facility Conditions

F2.1

THE OPERATOR SHALL LIMIT EMISSIONS FROM THIS FACILITY AS FOLLOWS:

CONTAMINANT	EMISSIONS LIMIT
VOC	LESS THAN OR EQUAL TO 622 LBS IN ANY ONE DAY

The operator shall calculate the VOC emissions using 95 percent overall control efficiency for inks and coatings used in printing press systems which are vented to air pollution control equipment.

The control efficiency of the air pollution control equipment shall not be applied to the calculation of the VOC emissions from the usage of fountain solution, blanket and roller washes and any other cleaning solvents.

The operator shall maintain records in a manner approved by the District, to demonstrate compliance with this condition.

Printing Press

B27.3

THE OPERATOR SHALL NOT USE MATERIALS, EXCEPT FOR ISOPROPANOL (CAS NO. 67-63-0), ETHYLENE GLYCOL (CAS NO. 107-21-1), ETHYLENE GLYCOL MONOBUTYL ETHER (CAS NO. 111-76-2), AND PROPYLENE GLYCOL METHYL ETHER (CAS NO. 107-98-2), CONTAINING ANY TOXIC AIR CONTAMINANTS (TACS) IDENTIFIED IN THE SCAQMD RULE 1401, AS AMENDED 03/04/2005.

B59.1

THE OPERATOR SHALL NOT USE THE FOLLOWING MATERIAL(S) IN THIS DEVICE:

Fountain solution with a VOC content greater than 8 percent by volume_

Clean-up solvents (roller and blanket washes) with a VOC composite partial pressure greater than 10 mm Hg at 68 degrees Fahrenheit

H23.1

THIS EQUIPMENT IS SUBJECT TO THE APPLICABLE REQUIREMENTS OF THE FOLLOWING RULES OR REGULATIONS:

**SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
ENGINEERING AND COMPLIANCE**

Coating, Printing and Aerospace Operations Team

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| CONTAMINANT | RULE | RULE/SUBPART |

| VOC | DISTRICT RULE | 109 |

K67.1

THE OPERATOR SHALL KEEP RECORDS, IN A MANNER APPROVED BY THE DISTRICT, FOR THE FOLLOWING PARAMETER(S) OR ITEM(S):

Usage of inks, fountain solution including water, roller wash, blanket wash, and any other material containing volatile organic compounds, in gallons/day of each material

Density of inks, in pounds/gallon, and percentage by weight of lithographic oils in ink

Emissions in pounds of VOC per day

Ink absorption factor as specified by current SCAQMD guidelines

Oven

D12.5

THE OPERATOR SHALL INSTALL AND MAINTAIN A(N) STACK FLOW MONITOR TO ACCURATELY INDICATE THE FLUE GAS FLOW FROM THE OXIDIZER STACK TO PROVIDE CONTINUOUS AND CUMULATIVE ACTUAL FLOW RATE FROM THE AFTERBURNERS AND OVENS. SUCH FLOW MONITOR SHALL BE MAINTAINED AND CALIBRATED IN ACCORDANCE WITH THE SYSTEM MAINTENANCE PROCEDURES AND SCHEDULES SPECIFIED ON THE LATEST FLOW MONITOR'S QA/QC PLAN THAT IS APPROVED BY THE DISTRICT.

NOx emissions from each afterburner shall be calculated using respective NOx RECLAIM concentration limit in this permit and the stack flow rate at stack conditions (no correction for oxygen) by using Rule 2012 Appendix A, Chapter 4, equation 28c.

The total NOx emissions calculated for the three afterburners under Device Nos. C16, C 49, & C50 have already included the NOx emissions from the ovens under Device Nos. D4, D8, D10, D12, D14, & D48. The operator is not required to calculate the individual NOx emissions from each oven.

When valid exhaust flow rate for an afterburner is not obtained from the stack flow monitor, substituted data for the exhaust flow rate for such an afterburner shall be determined by using procedures in the certification letter for the continuous exhaust flow monitor and the missing data procedures applicable to flow as set forth in Rule 2012 Appendix A, Chapter 3, Section K (2).

TIER 1 SCREENING RISK ASSESSMENT

Receptor Distance (actual)	30
Receptor Distance (for X/Q lookup)	25

Tier 1 Results	
Cancer/Chronic ASI	Acute ASI
6.42E-03	2.56E-02
passed	passed

APPLICATION SCREENING INDEX CALCULATION								
Code	Compound	Average		Cancer / Chronic Pollutant Level (lbs/yr)	Acute Pollutant Screening Level (lbs/hr)	Cancer / Chronic		
		Annual Emission Rate (lbs/yr)	Max Hourly Emission Rate (lbs/hr)			Pollutant Screening Index (PSI)	Acute Pollutant Screening Index (PSI)	
g5	Ethylene glycol monobutyl ether	3.76E+01	4.30E-03	N/A	7.00E+00	N/A		6.14E-04
i2	Isopropyl alcohol	3.49E+02	4.00E-02	2.31E+05	1.60E+00	1.51E-03		2.50E-02
p79	Propylene glycol monomethyl ether	1.14E+03	1.30E-01	2.31E+05	N/A	4.91E-03	N/A	
TOTAL (APPLICATION SCREENING INDEX)						6.42E-03	2.56E-02	