

NORTH CAROLINA DIVISION OF AIR QUALITY Air Permit Review – Significant Modification (1-step process) Permit Issue Date: XXXX, 2007		Region: Washington Regional Office County: Craven NC Facility ID: 2500159 Inspector's Name: Robert Bright Date of Last Inspection: 02/14 & 02/23/2006 Compliance Code: C/In Compliance With Procedural Reqr	
Facility Data Applicant (Facility's Name): Fleet Readiness Center East (formerly known as the Naval Air Depot) Facility Address: Fleet Readiness Center East PSC Box 8021 Cherry Point, NC 28533 SIC: 9711 / National Security NAICS: 92811 / National Security Facility Classification: Before: Title V After: Title V Fee Classification: Before: Title V After: Title V		Permit Applicability (this application only) SIP: 15A NCAC 2D .1100, 2Q .0501 (c)(1) NSPS: N/A NESHAP: 40 CFR Part 63, Subpart GG PSD: N/A PSD Avoidance: N/A NC Toxics: Nickel Metal, Soluble Nickel 112(r): N/A Other: N/A	
Contact Data			
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		Application Data Application Number: 2500159.06B Date Received: 12/11/2006 Application Type: Modification Application Schedule:TV-Sign-501(c)(1)	
		Existing Permit Data Existing Permit Number: 05506/T35 Existing Permit Issue Date: 06/30/2006 Existing Permit Expiration Date: 06/30/2009	
Review Engineer: Booker Pullen Regional Engineer: Robert Bright Review Engineer's Signature:		Comments / Recommendations: Issue: 05506T36 Permit Issue Date: XXXXXXXXXXXXXXX, 2007 Permit Expiration Date: 06/30/2009	
		Begin Date: February 27, 2007	

I. Introduction:

Fleet Readiness Center East (formerly known as Naval Air Depot) is located in Cherry Point, Craven County, North Carolina at the Marine Corps Air Station. This facility is requesting a "Significant" modification {processed under the 15A NCAC 2Q .0501 (c)(1)} in this application. Application 2500159.06B was received by the Division of Air Quality (DAQ) on December 11, 2006, along with the application fee (\$834.00). The application was considered complete on that date. The consistency determination was received by the DAQ on January 4, 2007.

This application was originally considered a Significant Modification under the 2-step process. However, the applicant requested that we follow the 1-step process which requires that this permit modification **will** go through a 30 day public notice and a 45 day EPA review period prior to issuance of the permit.

II. Description of Facility:

The Fleet Readiness Center East (formerly known as the Naval Air Depot) is a tenant command aboard the Marine Corps Air Station (MCAS) at Cherry Point. MCAS Cherry Point is located in Craven County. This is the largest Marine Corps Air Base in the world. The NADEP sits on 150 acres of land and occupies over 100 building and structures, with approximately 1.5 million square feet under roof. The Fleet Readiness Center East is charged with providing depot-level maintenance, engineering and logistics support for Marine Corps and Navy aircraft and nine primary aircraft engines. The Depot currently performs rework and repair on the AV-8V Harrier attack aircraft, C-130 Hercules cargo plane, two cargo helicopters; the CH-46 Sea Knight and CH-53 Super Stallion, and the (soon arriving) V-22 Osprey, a joint services tilt-rotor transport aircraft. In addition, the Depot provides repair services on more than 7,000 components, including avionics and ground support equipment. Support services such as calibration and engineering are also provided. The three maintenance program areas at the depot are the repair and maintenance of engines, components, and airframes.

III. Statement of Compliance:

The DAQ has reviewed the compliance status of this facility. On its latest inspection, performed on February 14 and February 23, 2007, by Mr. Robert Bright of the Washington Regional Office, the facility appeared to be in compliance with all applicable requirements. The applicant has certified that the facility will be in compliance with all applicable requirements at the time of permit issuance and will continue to comply with these requirements. The applicant has also certified that the facility will be in compliance with any applicable requirements taking effect during the term of the permit and will meet such requirements on a timely basis.

IV. Purpose of This Modification:

- A. Change the name of the Naval Air Depot to the Fleet Readiness Center East. The mailing address and the points of contact, etc. will remain the same.
- B. Remove grinding machine (ID No. D0121) located in Building 83 from the insignificant activities list because the machine has been removed from the site.
- C. Update the following sources on the insignificant activities list.
 - Change Building No. from 4224 to 4032 for Oven (ID No. IB0053)
 - Change Building No. from 4224 to 4032 for Oven (ID No. IB0054)
 - Change Building No. from 4224 to 4032 for Parts Washer (ID No. IB0057)
 - Change Building No. from 4224 to 4032 for Paint Spray Gun Cleaning System (ID No. IC0121)
 - Change Building No. from 133 to 4224 for Oven (ID No. IA0034)
 - Change Building No. from 133 to 4224 for Oven (ID No. IB0089)
- D. Add parts washer (ID No. IP0014), located in Building No. 4035, to the **insignificant** activities list.
- E. Add Heat Treat & Quench System (ID No. IC0142), located in Building No. 137, to the **insignificant** activities list.
- F. Add Storage Tank (1000 gallons, ID No. IB0143), located in Building No. 4533, to the **insignificant** activities list.
- G. Existing plating, and stripping tanks (ID Nos. T0191, T0195, and T0201) will undergo process changes. The existing nickel stripping process in tank T0191 will be relocated to tank T0201 (which is currently empty). As both tanks are identical in size, and no process modifications are being made, emissions will remain the same. Hard sulfamate nickel plating processes will be added to T0191 and T0195. Tanks T0195 is also currently empty.
- H. Replace the existing Hydrogen Fluoride Ion Cleaning furnace (ID No. E0088). The existing HF furnace is old and is in need of replacement. The existing system will be replaced by a comparable system with no emissions increase.
- I. The Fleet Readiness Center East's current Title V permit lists only the stationary spray gun cleaning machines. The following language will be added to each spray booth "and associated spray gun cleaning operations" because all of the guns and the booths are subject to MACT, Subpart GG. Specific regulations for cleaning are listed in this subpart according to the type of cleaning method used for the spray guns. These sources emit very small amounts of VOCs, regardless of the type of cleaning method used. Therefore, the spray gun cleaning operations will be associated with each paint booth and no longer listed as individual sources. Emissions will continue to be included in the annual emissions inventory for each building.
- J. Remove the following sources from the permit because they are no longer onsite.
 - Paint booth – A0051 located in building 4032 and associated conditions
 - Grinding booth (insignificant activity) - B0055 located in building 4224
 - Paint booth – B0056 located in building 4224 and associated conditions
 - Chemical tank (insignificant activity) - B0100 located in building 4224
 - Chemical tank (insignificant activity) - B0111 located in building 4224
- K. Remove the startup notification (condition 2.2 A. 2. e. ii. C. in the permit) for paint booth A0179. This notification has been completed by the facility.

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- L. Add the following differential pressure range (set by the local equipment engineers) to tables in the permit.

	<u>Minimum (wg)</u>	<u>Maximum (wg)</u>	<u>Page Nos.</u>
CD-A0179	0.07 inches	2.98 inches	49
CD-D0185 (cartridge)	0.4 inches	5.0 inches	30 and 68
CD-D0185 (HEPA)	0.2 inches	2.0 inches	30 and 68
CD-C0005	0.38 inches	0.64 inches	49
CD-C0056	0.1 inches	0.5 inches	49

- M. Remove the startup notification (condition 2.1 Building 3766.A.2.c.ii. in the permit) for glass bead recovery unit D0185. This notification has been completed by the facility.
- N. In the last revision, T35, the monitoring requirements for scrubber A-OH-4 were removed by mistake. Update items d. and f. (table) to include the following (page 65):
 d. iii. Vertical packed-bed tower wet scrubber (ID No. A-OH-4)
 f. A-OH-4 0.4 (minimum wg) 2.7 (maximum wg)
- O. Remove condition 2.2 A. 2. c. vii. (should not be in this section of the permit)
- P. Correct typos in condition c. ii. on page 69 to read "...plastic media recovery unit 1 (ID No. D0183) shall be controlled by a two-stage filter system (ID No. CD-D0183A/B)..."; and

 Correct typos in condition d. iii. on page 69 to read "...plastic media recovery unit 2 (ID No. D0205) shall be controlled by a two-stage filter system..."
- Q. The paint spray gun cleaning machine ID No. C0121 has been relocated to Building 4032 (pages 2-5).

 Reword condition g. ii. on pg.49 to match the citation from the Aerospace NESHAP 40 CFR 63.745(g)(3):

 "If the pressure drop across a dry particulate filter bank is below the minimum or above the maximum pressure drop values (DP wg) *specified by the filter manufacturer or in locally prepared operating procedures*, shut down the operation immediately and take corrective action. The operation shall not be resumed until the pressure drop is returned to within the specified limits. *For convenience, these values are contained in the following table, excluding any ongoing administrative amendments.*"
- R. Added "and associated spray gun cleaning operation" to the description of each of the 21 paint booths (ID Nos. D0069, D0066, A0019, A0032, C0005, C0056, C0062, D0008, D0009, D0033, D0036, D0131, D0061, D0106, D0052, D0129, D0056, A0179, D0007, B0101, and E0160).

IV. Changes to existing Title V Permit No. 005506T35 per application (2500159.06B):

Old Page No.	New Page No.	Condition No.	Changes
Page 1	Page 1	Cover letter	Changed issue date, revised permit number, added "Significant Modification" language to cover page, added current cover letter language, changed facility name to Fleet Readiness Center East
Page 2	Page 2	Cover letter	Changed date on letter, changed effective date of permit, changed authorized signature person for permit to Don van der Vaart, revised "c" to remove EPA Region IV from the receipt of a part 1 of a two step significant modification
Insignificant Activities List			
Page 1 of 8	Page 1 of 9	Insignificant Activities List	Removed ID No. ID0121 (grinding machine in Building No. 83) from list, machine was removed from the site Removed gear box shop ovens, ID Nos. IA0034 and IB0089 from Building 133

IV. Changes to existing Title V Permit No. 005506T35 per application (2500159.06B):

Old Page No.	New Page No.	Condition No.	Changes
Page 2 of 8	Page 2 of 9	Insignificant Activities List	Added heat treatment quench system (ID No. IC0142) to Building 137
Page 5 of 8	Page 5 of 9	Insignificant Activities List	Added parts washer, ID No. IB0057 to Building 4032 Added paint spray gun cleaning system (ID No. IC0121) to Building No. 4032, Added landing gear shop ovens, ID Nos. IB0053, and IB0054 to Building 4032 Added Parts washer, ID No. IP0014 to Building 4035
Page 6 of 8	Page 7 of 9	Insignificant Activities List	Added gear box shop ovens, ID Nos. IA0034 and IB0089 to Building 4224 Removed landing gear shop ovens IB0053 and IB0054 from Building 4224 Removed parts washer (ID No. IB0057) from Building 4224
Page 6 of 8	Page 7 of 9	Insignificant Activities List	Removed parts washer (ID No. IB0057), grinding booth (ID No. IB0055), and open top chemical tanks (ID Nos. IB0100 and IB0111) from Building 4224
Page 8 of 8	Page 9 of 9	Insignificant Activities List	Add Building No. 4533 to list and add storage tank (ID No. IB0143) located in this Building
Body of the permit			
Page 1	Page 1	Cover Page	Revised permit number, changed effective date, change facility name to Fleet Readiness Center East, changed application number, removed renewal date reminder, changed permit issued date, changed authorized signature,
Page 2	Page 2	Table of Contents	Added Part II to Permit
Page 3	Page 3	Part I	Changed introduction language of Permit Removed spray gun cleaner (ID No. C0086) from table of permitted sources
Page 4	Page 4	Table of Permitted Sources	Removed spray gun cleaners (ID Nos. C0082 and C0083) from table of permitted sources
Page 5 & 6	Page 5	Table of Permitted Sources	Removed paint booth (ID No. A0051) from list Removed spray gun cleaners (ID Nos. C0084 and C0085) from table of permitted sources
Page 6	Page 6	Table of Permitted Sources	Changed process description in tank T0191 to "hard sulfamate nickel plating process" Add tanks T0195 and T0201 to permit Removed spray gun cleaner (ID No. C0120) from table of permitted sources
Page 7	Page 7	Table of Permitted Sources	Removed spray gun cleaner (ID No. C0121) from table of permitted sources

IV. Changes to existing Title V Permit No. 005506T35 per application (2500159.06B):

Old Page No.	New Page No.	Condition No.	Changes
Page 9	Page 9	Specific Limitations and Conditions	Added “and associated spray gun cleaning operation” to paint booth description for D0069.
Page 10	Page 10		Added “and associated spray gun cleaning operation” to paint booth description for D0066.
Page 10	Page 11		Added “and associated spray gun cleaning operation” to paint booth descriptions for A0019 and A0032.
Page 15	Page 15		Removed spray gun cleaner (ID No. C0086) from Specific Limitation and Conditions
Page 16	Page 16		Added “and associated spray gun cleaning operation” to paint booth descriptions for C0005, C0056, C0062, D0008, D0009, D0033, D0036, and D0131. Removed spray gun cleaners (ID Nos. C0082 and C0083) from Specific Limitations and Conditions
Page 22 & 23	Page 23		Added “and associated spray gun cleaning operation” to paint booth description for D0061. Added “and associated spray gun cleaning operation” to paint hangar descriptions for D0106 and D0129.
Page 24	Page 25		Added “and associated spray gun cleaning operation” to paint booth description for D0052. Removed spray gun cleaners (ID Nos. C0084, C0085, and C0119) from Specific Limitations and Conditions
Page 30	Page 30		Added “and associated spray gun cleaning operation” to paint booth description for D0056.
Page 31	Page 31		Added “and associated spray gun cleaning operation” to paint booth descriptions for A0179 and D0007. Removed spray gun cleaner (ID No. C0120) from Specific Limitations and Conditions
Page 33	Page 34	Specific Limitations and Conditions	Add tanks T0195 and T0201 to permit Changed process description in tank T0191 to “hard sulfamate nickel plating process”
Page 39	Page 40	Specific Limitations and Conditions	Added “and associated spray gun cleaning operation” to paint booth description for B0101. Removed paint spray booth (ID No. B0056) from the permit
Page 40	Page 41 & 42	Specific Limitations and Conditions	Added “and associated spray gun cleaning operation” to paint booth description for E0160. Removed spray gun cleaner (ID Nos. C0121) from Specific Limitations and Conditions
N/A	Page 83 & 84	Part II Section	Added Part II section of permit and associated regulations

V. Summary Of The Emission Sources For Which This Significant Modification is Being Issued

Emission Source ID	Emission Source Description	Control Device ID No.	Control Device Description
T0191	Hard sulfamate nickel plating tank	None	None
T0195	Sulfamate Nickel plating tank	A-OH-4	Vertical packed bed scrubber
E0088	Hydrogen fluoride ion cleaning furnace	CD-E088A CD-E088B CD-E088C CD-E088D	Four venturi/packed tower scrubbers using water/sodium hydroxide scrubbing solution in parallel

VII. Source-by Source Evaluation

A. Tanks and Furnace:

- Hard Sulfamate Nickel Plating tank (460 gallon capacity, ID No. T0191) located in Building 4035 with associated vertical packed bed scrubber. Metal parts will be nickel plated in this process tank. The current specifications are for use in an existing tank (3 feet wide, by 4 feet long, by 6 feet high). This tank will hold 460 gallons of solution.
 - Nickel strip tank (ID No. T0201) located in Building 4035. This is an existing tank, that is currently empty. The tank is 3 feet wide, by 4 feet long, by 6 feet high. It will hold 460 gallons of solution. (There will not be an emissions increase at the facility, because this process will be the same size as before, but located in a different tank.)
 - Sulfamate Nickel Plating Tank ID No. T0195) located in Building 4035. Metal parts will be nickel plated in this process tank. The current specifications are for use in an existing tank (3 feet wide, by 4 feet long, by 6 feet high). This tank will hold 460 gallons of solution.
 - Hydrogen Fluoride Ion Cleaning Furnace (ID No. E0088) located in Building 4225 with associated venturi/packed tower scrubber:
1. **Description:** Tanks (ID Nos. T0191 and T0195) are existing tanks. The Hydrogen fluoride cleaning furnace will replace an existing system at the facility.
 2. **Applicable Regulatory Requirements:** NSPS does not apply to any of the tanks.

The following provides a summary of limits and/or standards for the emission source(s) described above.

Regulated Pollutant	Limits/Standards	Applicable Regulation
Toxic air pollutants (Nickel metal, and soluble nickel)	Annual Emissions Rates for Toxic Air Pollutants Determined Pursuant to Acceptable Ambient Concentration Limits	15A NCAC 2D .1100

The Fleet Readiness Center East (FRC East) performs electroplating and anodizing operations on a variety of base metal substrates to produce a metallic coating deposit with specific physical characteristics. Base metal parts are typically prepared for electroplating by a variety of pretreatment procedures including alkaline cleaning, acid dipping, anodic cleaning, and etching. These processes remove smut and oxides from the part to improve surface adhesion. Although there is some variation between processes, the basic electroplating operation consists of passing an electric current from an anode to a cathode through an electrolytic bath containing dissolved salts of the plating metal. The anode is generally lead (or the metal being deposited) and the cathode is the part being plated. Anodizing plating/anodizing process is supplied by an external power supply rectifier).

Mist generation is the principal source of air emissions from electroplating operations. The extent of misting is a function of the electrode efficiency for the plating bath. The efficiency is a measure of the portion of current at the electrode which is devoted to metal deposition. The remaining current is consumed by the dissociation of water and the subsequent evolution of hydrogen gas at the cathode and oxygen gas at the anode. These gas bubbles rise through the bath, entraining liquid and releasing it as a mist as the bubbles burst at the tank surface.

Emissions due to mist generation are associated primarily with chromium electroplating processes due to their low electrode efficiencies (10% to 20%). Sulfuric acid anodizing processes, as well as nickel and cadmium plating processes also result in mist generation.

Emissions Estimation Approach:

Nickel and Cadmium Emissions From Electroplating Processes – Nickel emissions from hard nickel plating and nickel striking are in the form of nickel sulfamate and nickel chloride.

The EPA’s AP-42 emission factor for nickel from nickel plating and striking is

Ni (emission factor) = 9.00E-05 lb/amp-hr (uncontrolled)

Ni (emission factor) = 9.57E-08 lb/amp-hr (controlled)

Table 1

Source ID	Building	Shop #	Description	Contents	Components	Specific gravity	Concentration
T0191	4035	93563	Hard Sulfamate Nickel Plating tank	Hard Sulfamate Nickel Plating Solution	Boric acid Magnesium Chloride Nickel Sulfamate	1.52 2.33 1.5	0.40 lbs/gallon 0.04 lbs/gallon 2.5 lbs/gallon
T0195	4035	93563	Sulfamate Nickel Plating Tank	Sulfamate Nickel Plating Solution	Boric acid Magnesium Chloride Nickel Sulfamate	1.52 2.325 1.5	0.40 lbs/gallon 0.04 lbs/gallon 2.5 lbs/gallon

Table 2

Source	Description	Capacity	Operating Temp.	Size	Surface Area	Free Board	Heated/mixed	Max. Current (amps)	Control Device
T0191	Hard Sulfamate Nickel Plating tk	93563	80 – 120 °F	4 ft. x 3 ft.	12 ft ²	1.0 ft.	Yes	1,800	None
T0195	Sulfamate Nickel Plating Tank	93563	120 – 140 °F	4 ft. x 3 ft.	12 ft ²	1.0 ft	Yes	1,800	95% (A-OH-4)

The tank parameters given in Table 2 were used in conjunction with the nickel plating emission factors to calculate the emission rates. Maximum emissions reflect a realistic worse-case operating scenario of the source, considering any emissions reduction associated with air pollution capture and control equipment.

- VIII. A Professional Engineers Seal **is not** required for this Significant modification.
- IX. A consistency determination **is required** for this modification, and was included in the application received on December 11, 2006. MCAS is not governed by the zoning of Craven County, but are under the jurisdiction of the Facilities Development Department at MCAS Cherry Point. According to Mr. C. A. Conklin, by direction of the Commanding Officer, the proposed new construction at this facility will be accomplished in the appropriate land use areas of the MCAS Cherry Point property boundaries, and are consistent with the Master Development Plan and local zoning ordinance. This is in accordance with 15A NCAC 2Q .0304, and North Carolina General statue 143-215.108.
- X. An application fee of \$834.00 **is required** and was received by the DAQ Central Office on December 11, 2006.
- XI. The appropriate number of copies of the application were received by the DAQ on December 11, 2006.
- XIII. The application was signed by an authorized official as defined by 15A NCAC 2Q .0304(j).
- XIV. **Air toxics:**
Mr. Charles Buckler, Meteorologist for the DAQ, Air Quality Analysis Branch reviewed the facility’s modeling analysis for this proposed modification. The analysis shows that the facility will demonstrate compliance on a source-by-source basis for nickel metal, and soluble nickel. The ISCST3 model was employed for several point sources at the facility and evaluated for simple terrain. SCREEN3 was used to evaluate cavity impacts.

The 1991 Wilmington surface and Charleston, South Carolina upper-air meteorological data was used to determine the location and extent of the highest concentration. As part of the Good Engineering Practice (GEP) analysis, several facility structures are assessed for wake and cavity impacts. Modeling receptors were spaced along the property boundary at less than 100 meters and extended outwards at 100 meter spacing to 1000 meters. Additional receptors were placed at 500-meter intervals, from 1000 to 2000 meters and at 1000-meter intervals from 2000 to 5000 meters. Finally, sensitive receptor locations such as area churches and schools also were assessed.

The maximum modeled impact (Table 1 below) was determined to be at the health department and civilian personnel buildings with cavity impacts being less than these impacts.

Table 1 Maximum Modeled Impacts

Pollutant	Averaging Period	Impact	AAL (ug/m3)	% of AAL
Nickel Metal	24-hour	0.0000979	0.00600	0.85
Soluble Nickel	24-hour	0.00000114	0.00060	0.19

XV. Public Notice

A thirty-day public notice **is required** for this one-step Significant Modification in accordance with 15A NCAC 2Q .0501 (c) (1). Public notice: from _____ to _____.

A 45 day EPA review **is required** for this one-step Significant Modification in accordance with 15A NCAC 2Q .0501(c) (1). EPA review period: from _____ to _____.

XVI. NonAttainment:

Craven County **has not been** designated nonattainment for the eight-hour ozone standard.

XVII. Prevention of Significant Deterioration (PSD)

This facility is major for PSD. However, the potential uncontrolled PM, PM-10, and VOC emissions from the plating and stripping tanks in this application are below the PSD significant increase threshold amounts.

XVIII. This facility is not subject to 15A NCAC 2Q .0508(g) "Prevention of Accidental Releases" because the facility stores chemicals that are below the thresholds for applicability.

XIX. Recommendations

This modification issued under section 15A NCAC 2Q .0501(c)(2) for the Fleet Readiness Center East, located in Cherry Point, Craven County, North Carolina, has been reviewed by the DAQ to determine compliance with all procedures and requirements. The DAQ has determined that this facility is complying or will achieve compliance as specified in the permit with all applicable requirements. The Washington Regional Office did not comment on the application, however, they did comment on the engineering review and draft permit. The WaRO concurs with the final issuance of this permit.

This permit contains a Part II Section.

Issue permit No. 05506T36