

**NORTH CAROLINA DIVISION OF  
AIR QUALITY**

**Air Permit Review**

Permit Issue Date: **date, 2009**

**Region:** Washington Regional Office  
**County:** Dare  
**NC Facility ID:** 2800020  
**Inspector's Name:** Bernie Pittman  
**Date of Last Inspection:** 07/13/2009  
**Compliance Code:** 3 / Compliance - inspection

<b>Facility Data</b>	<b>Permit Applicability (this application only)</b>
<p><b>Applicant (Facility's Name):</b> Kitty Hawk Combustion Turbine Station</p> <p><b>Facility Address:</b>            Kitty Hawk Combustion Turbine Station            3912 Shelby Avenue            Kitty Hawk, NC 27949</p> <p><b>SIC:</b> 4911 / Electric Services  <b>NAICS:</b> 221112 / Fossil Fuel Electric Power Generation</p> <p><b>Facility Classification: Before:</b> Title V    <b>After:</b> Title V  <b>Fee Classification: Before:</b> Title V    <b>After:</b> Title V</p>	<p><b>SIP:</b>  <b>NSPS:</b>  <b>NESHAP:</b>  <b>PSD:</b>  <b>PSD Avoidance:</b>  <b>NC Toxics:</b>  <b>112(r):</b>  <b>Other:</b></p>

<b>Contact Data</b>			<b>Application Data</b>
<b>Facility Contact</b>	<b>Authorized Contact</b>	<b>Technical Contact</b>	<p><b>Application Number:</b> 2800020.07A  <b>Date Received:</b> 08/29/2007  <b>Application Type:</b> Renewal  <b>Application Schedule:</b> TV-Renewal  <b>Existing Permit Data</b>  <b>Existing Permit Number:</b> 02593/T06  <b>Existing Permit Issue Date:</b> 07/18/2003  <b>Existing Permit Expiration Date:</b> 06/30/2008</p>
Scott Morelen Facility Manager (757) 485-6785 3912 Shelby Avenue Kitty Hawk, NC 27949	Dave Snoddy Station Director (757) 485-6800 5000 Dominion Blvd. Glen Allen, VA 23060	Philip Knause Environmental Consultant (804) 273-2946 5000 Dominion Boulevard Glen Allen, VA 23060	

<p><b>Review Engineer:</b> Mark Cuilla</p> <p><b>Review Engineer's Signature:</b>  <b>Date:</b> <b>date, 2009</b></p>	<p style="text-align: center;"><b>Comments / Recommendations:</b></p> <p><b>Issue</b> 02593/T07  <b>Permit Issue Date:</b> <b>date, 2009</b>  <b>Permit Expiration Date:</b> <b>date, 2014</b></p>
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**I. Purpose of Application**

This permitting action is a renewal of an existing Title V permit pursuant to 2Q .0513. The existing Title V permit (**02593T06**) was issued on **July 18, 2003**, and expired on **June 30, 2008**. However, the renewal application was received on **August 29, 2007**, at least nine months prior to the original expiration date. Therefore, the existing permit will not expire until the renewal permit has been issued or denied. All terms and conditions of the existing permit remain in effect until this renewal permit has been issued or denied.

**II. Facility Description**

The facility is a power generation facility used primarily for contingencies and system peak load generation. Since the installation of the units, the total hours of operation have been approximately 87 hours. The facility is Title V in potential only (PM<sub>10</sub>, sulfur dioxide, nitrogen oxides, and carbon monoxide from No. 2 fuel oil combustion). The units are started twice a year for testing and inspected monthly. Per the inspection report, "the facility is not utilized as intended when it was designed and installed."

### III. History/Background/Application Chronology

**July 18, 2003** – Permit **02593T06** was issued as an initial Title V permit (application submitted **June 13, 1996** and deemed complete **August 12, 1996**).

**August 29, 2007** – Permit application **2800020.07A** received for renewal of the current Title V air permit. Application was deemed complete for processing and assigned to Gautam Patnaik for processing.

**July 13, 2000** – Mr. Bernie Pittman and Mr. Rudy Whitehurst of the WARO completed a compliance inspection of the facility.

**October 20, 2009** – Permit application **2800020.07A** was reassigned to Mark Cuilla for processing.

**October 23, 2009** – DRAFT permit sent to Permittee and WARO for comment prior to public notice and EPA review periods. Comments on the draft permit were received from the Permittee on

**November 19, 2009** via email. They requested the following modifications to the permit:

1. Please change the station address to 3912 Shelby Avenue Kitty Hawk, Dare County, NC 27949. *Agree, change has been made (note that IBEAM already was correct).*
2. Please change the authorized contact from Preston Sloane to Dave Snoddy. *Agree, change has been made (note an email request for a new AA form with facility address and facility contacts was requested).*
3. The turbine lube oil systems identified in the permit as IES-2 and IES-3 are 5500 gallons total each, please change these descriptions to reflect this. *Agree, change has been made (note ESM has been modified to also reflect these changes).*
4. Please change the mailing address to 5000 Dominion Blvd., Glen Allen, VA 23060. *Agree, change has been made (note an email request for a new AA form with facility address and facility contacts was requested).*

**date, 2009** – DRAFT permit sent to 30-day public notice and 45-day EPA review.

### IV. Permit Modifications/Changes and ESM Discussion

The following table describes the modifications to the current permit as part of the renewal process.

Page	Section	Description of Change
Attachment	Insignificant activities	-amended list to match current ESM listing
Cover	-	-amended permit revision numbers and all dates
TOC	-	-removed references to Part II
All	Header	-amended permit revision number
3	Equipment table 2.1 A (table) 2.1 A.1.a	-grouped equipment with like descriptions -removed reference to 40 CFR 52, Subpart II -added ID numbers
4	2.1 A.1.b 2.1 A.1.c 2.1 A.2.b 2.1 A.2.c 2.1 A.3	-corrected testing rule cross reference -updated shell language and added ID numbers -corrected testing rule cross reference -updated shell language and added ID numbers -removed reference to 40 CFR 52, Subpart II
5-15	General conditions	-updated shell conditions (v2.22.1)

Note. The Emission Source Module (ESM) was checked for accuracy with the renewed permit. No modifications/additions/deletions other than noted above in background timeline were necessary as part of this permit renewal.

## V. Regulatory Review

The facility is currently subject to the following regulations:

15A NCAC 2D .0516, Sulfur Dioxide Emissions from Combustion Sources  
15A NCAC 2D .0521, Control of Visible Emissions

A regulatory review for the existing sources will not be included in this document. However, it is important to keep track of the regulations that do not apply and as described in the initial Title V Air Permit Application Review Document (Susan McCarthy – **280020A5.A**). That Document notes:

*“This facility commenced operation **March 17, 1971** and operates two simple combustion turbines fired on No. 2 fuel oil and rated at 368 million Btu per hour each and capable of generating 22 megawatts of electricity each. Following are the regulations that the facility is not subject to and the reasons why:*

- 1. the facility is not subject to the Acid Rain rule because the turbines are 22 megawatts (i.e., less than the 25 megawatt cutoff) and are simple cycle combustion turbines;*
- 2. the section of the New Source Performance Standards that would apply to combustion turbines is 40 CFR 60, Subpart GG. However, GG only applies to turbines constructed or modified after October 3, 1977. As noted in the application, both turbines were installed in 1971;*
- 3. 15A NCAC 2D .0503, Particulates from Fuel Burning Indirect Heat Exchangers, does not apply to these turbines as the turbines are not indirect heat exchangers but are internal combustion engines. This means that no particulate standard other than the ambient standard applies to these units;*
- 4. 15A NCAC 2D .0519, Control of Nitrogen Dioxide and Nitrogen Oxides Emissions, does not apply since these are simple combustion turbines and not the combined cycle systems;*
- 5. 15A NCAC 2D, Excess Emissions Reporting and Malfunction, requirement for a malfunction abatement plan does not apply to the turbines. Only electric utility boiler units are required to have a malfunction abatement plan; and*
- 6. the newly approved rule 15A NCAC 2D .1417, Emissions Allocations for Large Combustion Sources, does not apply (as well as any of the .1400 regulations), because under the exemptions, the 25 megawatt exemption is the applicability cutoff of electricity generating units (EGUs). The 250 million Btu per hour cutoff referred to in the 2D .1417 regulation applies to industrial turbines (not EGU’s). Since these turbines are rated at 22 megawatts, they meet the exemption.*

Each of these determinations is still in effect. No change is required as part of this permit renewal. Note that 15A NCAC 2D .1417 has been repealed. The components of this rule were moved to Section 15A NCAC 2D .2400, Clean Air Interstate Rules.

## VI. NSPS, NESHAPS/MACT, PSD, 112(r), CAM

**NSPS** – As noted above, the Permittee is not subject to 40 CFR 60, Subpart GG “New Source Performance Standards for Stationary Gas Turbines” because the units were installed prior to the **October 3, 1977** cutoff date in the Subpart. This exemption still applies.

In addition to this Subpart, EPA promulgated additional New Source Performance Standards for Stationary Combustion Turbines (40 CFR 60, Subpart KKKK) on **July 6, 2006**. This Subpart applies to those units greater than 10 million Btu per hour that commenced construction, modification, or reconstruction after **February 18, 2005**. Again, the existing units were installed prior to this cutoff date; therefore KKKK does not apply.

**NESHAPS/MACT** – The Permittee is not currently subject to any National Emission Source of Hazardous Air Pollutant requirements.

In order to determine whether this facility is classified as a Title III major facility (in potential), estimates of HAP emissions are discussed in Section 3.1.3.5 of AP-42. That Section states:

*“Available data indicates that emission levels of HAP are lower for gas turbines than for other combustion sources. This is due to the high combustion temperatures reached during normal operation. The emissions data also indicate that formaldehyde is the most significant HAP emitted from combustion turbines....For No. 2 distillate oil-fired turbines, small amount of metallic HAP are present in the turbine’s exhaust in addition to the gaseous HAP identified under gas fired turbines [formaldehyde, polycyclic aromatic hydrocarbons (PAH), benzene, toluene, and xylenes]. These metallic HAP are carried over from the fuel constituents. The formation of carbon monoxide during the combustion process is a good indication of the expected levels of HAP emissions. Similar to CO emissions, HAP emissions increase with reduced operating loads. Typically, combustion turbines operate under full loads for greater fuel efficiency, thereby minimizing the amount of CO and HAP emissions.”*

Tables 3.1-4 and 3.1-5 list the emission factors for HAP and metallic HAP from distillate oil-fired stationary gas turbines, respectively. Those factors are:

<b>Pollutant</b>	<b>Emission Factor (lbs/MMBtu)</b>	<b>Potential Emissions* (tpy)</b>
1,3-butadiene	<1.6 E-05	0.06
Benzene	5.5 E-05	0.176
Formaldehyde	2.8 E-04	0.9
Naphthalene	3.5 E-05	0.112
PAH	4.0 E-05	0.13
Arsenic	<1.1 E-05	0.04
Beryllium	<3.1 E-07	0.001
Cadmium	4.8 E-06	0.0154
Chromium	1.1 E-05	0.0354
Lead	1.4 E-05	0.046
Manganese	7.9 E-04	2.54
Mercury	1.2 E-06	0.004
Nickel	<4.6 E-06	0.014
Selenium	<2.5 E-05	0.08
<b>Total</b>		<b>4.1538</b>

\* Both turbines at 368.34 million Btu per hour each and 8760 hours per year

As shown above, the facility's potential is estimated at below the major source thresholds for Title III major status. As such, MACT Subpart YYYYY, National Emission Standards for Hazardous Air Pollutants for Stationary Combustion Turbines, does not apply. The facility was also compared to the applicability statements of all current area source GACTs. None are applicable at this time.

**PSD** – The Permittee is not subject to any Prevention of Significant Deterioration requirements. This permit renewal does not affect this status.

**112(r)** – The facility is not subject to Section 112(r) of the Clean Air Act requirements because it does not store any of the regulated substances in quantities above the thresholds in the Rule. This permit renewal does not affect this status.

**CAM** – 40 CFR 64 requires that a continuous compliance assurance monitoring plan be developed for all equipment located at a major facility, that have pre-controlled emissions above the major source threshold, and use a control device to meet an applicable standard. There are no permitted control devices at the facility; therefore CAM does not apply.

## VII. Facility Wide Air Toxics

The Permittee is not subject to any NC Air Toxics requirements. This permit renewal does not affect this status.

## VIII. Facility Emissions Review

There is no change in emissions for this renewal.

The following table represents the latest years' emission inventories from the facility as compared to the potential emissions for the same pollutant:

Pollutant(s)	2006 Actual Emissions (tpy)	2007 Actual Emissions (tpy)
CO	0.01	NA
NO <sub>x</sub>	3.75	0.46
PM <sub>10</sub>	0.05	0.01
SO <sub>2</sub>	0.86	0.10
VOC	NA	NA
Total HAPs/TAPs	0.005	0.005

## IX. Stipulation Review

As noted above, the facility was last inspected on **July 13, 2009**. The inspectors noted “the facility appeared to be in compliance with all applicable regulations and permit conditions at the time of inspection.”

**X. Public Notice/EPA and Affected State(s) Review**

Pursuant to 15A NCAC 2Q .0521, a notice of the DRAFT Title V Permit shall be placed in a newspaper of general circulation in the area where the facility is located. The notice will provide for a 30-day comment period, with an opportunity for a public hearing. Copies of the public notice shall be sent to persons on the Title V mailing list and EPA. Pursuant to 15A NCAC 2Q .0522, a copy of each permit application, each proposed permit and each final permit shall be provided to EPA. Also pursuant to 2Q .0522, a notice of the DRAFT Title V Permit shall be provided to each affected State at or before the time notice provided to the public under 2Q .0521 above. Virginia is an affected State within 50 miles of this facility.

**XI. Conclusions, Comments, and Recommendations**

A professional engineer's seal was not required for this renewal.

A consistency determination was not required for this renewal.

WaRO recommends issuance of the permit and was presented with a DRAFT permit prior to notice and issuance.

RCO concurs with WaRO's recommendation to issue the renewed air permit.