

Thursby, Kim

From: Bryan Jones <bjones@cleaneearthinc.com>
Sent: Wednesday, January 30, 2019 9:33 AM
To: Thursby, Kim
Cc: Baker, Bryan; Horlick, Susan; White, John; Kothur, Bheem
Subject: RE: AERC Asset Acquisition Corp (AERC); FLD 984 262 782; Partial Closure Report dated November 26, 2018 Email dated November 19, 2018

The letter was received. We will move forward with the risk analysis.

Bryan Jones
Area EH&S Manager

Clean Earth
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OUR VISION: TO CREATE A BETTER FUTURE FOR OUR PEOPLE, PARTNERS, AND PLANET.

From: Thursby, Kim <Kim.Thursby@dep.state.fl.us>
Sent: Tuesday, January 22, 2019 8:17 AM
To: Bryan Jones <bjones@cleaneearthinc.com>
Cc: Baker, Bryan <Bryan.Baker@dep.state.fl.us>; Walker, Kim (Waste) <Kim.Walker@FloridaDEP.gov>; McBride, Ashanti <Ashanti.McBride@dep.state.fl.us>; Echevarria, Edgar <Edgar.Echevarria@FloridaDEP.gov>; Horlick, Susan <Susan.Horlick@dep.state.fl.us>; White, John <John.White@dep.state.fl.us>; Eckoff, Michael <Michael.Eckoff@dep.state.fl.us>; 'zhe@hsweng.com' <zhe@hsweng.com>; 'jbalmat@hsweng.com' <jbalmat@hsweng.com>; 'dhuston@hsweng.com' <dhuston@hsweng.com>; Kothur, Bheem <Bheem.Kothur@FloridaDEP.gov>
Subject: AERC Asset Acquisition Corp (AERC); FLD 984 262 782; Partial Closure Report dated November 26, 2018 Email dated November 19, 2018

In an effort to provide a more efficient service, the Florida Department of Environmental Protection's Hazardous Waste Program and Permitting section is forwarding the attached document to you by electronic correspondence "e-correspondence" in lieu of a hard copy through the normal postal service.

We ask that you verify receipt of this document by sending a "reply" message to epost_hwrs@dep.state.fl.us. (An automatic "reply message" is not sufficient to verify receipt). If your email address has changed or you anticipate that it will change in the future, please advise accordingly in your reply. You may also update this information by contacting Kim Thursby at (850) 245-8792.

The attached document is in "pdf" format and will require Adobe Reader 6 or higher to open properly. You may download a free copy of this software at www.adobe.com/products/acrobat/readstep2.html.

Your cooperation in helping us affect this process by replying as requested is greatly appreciated. If you should have any questions about the attached document(s), please direct your questions to the contact person listed in the correspondence.

Bryan Baker, P.G.
Environmental Administrator
Hazardous Waste Program & Permitting





FLORIDA DEPARTMENT OF Environmental Protection

Bob Martinez Center
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Ron DeSantis
Governor

Jeanette Nuñez
Lt. Governor

Noah Valenstein
Secretary

January 22, 2019

Bryan Jones, Area EH&S Manager,
Clean Earth, Inc.
AERC.Com, Inc.
4317- J Fortune Place
West Melbourne, FL 32904
bjones@cleanearthinc.com

Re: **Partial Closure Report** dated November 26, 2018
Email dated November 19, 2018
AERC Asset Acquisition Corp (AERC); FLD 984 262 782
Permit Number: 0072959-006-HO

Dear Mr. Jones:

The Department has reviewed the above referenced document, that describes closure activities of the lamp processing unit (LSS1). AERC intends to continue as a permitted hazardous waste storage facility and 10-day hazardous waste transfer station.

Unit LSS1 was dismantled, as well as the associated air handler and duct work, and managed as hazardous waste. The area was inspected for cracks/gaps and wipe samples were collected from surface areas. All wipe samples were more than two orders of magnitude below the health-based screening level for office workers. The Department approves the partial closure report.

The Department has also reviewed the referenced email that discusses modification of the existing permit to allow for additional storage. We agree that additional storage capacity is technically feasible and that a substantial permit modification is necessary. However, a substantial modification will require AERC to demonstrate that it meets the Siting Criteria in 403.7211, F.S. AERC must perform a risk analysis which demonstrates that the proposed changes/increases will not increase the risk to the public or environment by the additional storage or additional waste codes. I am enclosing an example of a similar risk assessment that was provided by a different facility.

If you should have any questions, please contact Bheem Kothur at 850-245-8781 or via email at Bheem.kothurKothur@floridadep.gov.

Sincerely,

A handwritten signature in cursive script that reads "Bryan Baker".

Bryan Baker, P.G., Administrator
Hazardous Waste Program and Permitting

BB/bk

Enclosure – US Ecology 2016 RMP Modeling Final Report

cc:

Ashanti McBride, DEP OGC, ashanti.mcbride@floridadep.gov
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2016 RMP Modeling Final Report
Toxic Worst-Case Release Scenarios

EQ Florida Inc.

Prepared for
NOVA Engineering and Environmental, LLC

Tampa, Florida

April 8, 2016 – revised June 23, 2016

Prepared by:

Koogler & Associates
4014 N.W. 13th Street
Gainesville, FL 32609
www.kooglerassociates.com
Project No. 817_16_02



817_16_02
NOVA Engineering and Environmental, LLC
August 5, 2016

Certification

I certify that, based upon information and belief formed after reasonable inquiry, the statements and information in the attached documents are true, accurate and complete.



Signature

Max Lee, Ph.D., P.E.
President of Koogler & Associates Inc.

Name / Title



Signature

John B. Koogler, Ph.D., P.E.
Vice President/Founder of Koogler & Associates Inc.
State of Florida PE License No. 12925

Name / Title

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NOVA Engineering and Environmental, LLC
June 23, 2016

1. Offsite Consequence Analysis (OCA)
a. OCA Process Overview

NOVA Engineering and Environmental, LLC (NOVA) contracted Koogler and Associates, Inc. (Koogler) to conduct modeling for worst-case release OCA of potential chemical releases from the EQ Florida Inc. (EQ) Tampa, Florida facility (see Attachment 1, Building Layout). The modeling is provided for environmental permitting requirements and is conducted per the requirements of Environmental Protection Agency's (EPA) Risk Management Program (RMP) (40 CFR Part 68, Subpart G). EPA guidelines¹ for RMP OCA modeling provide descriptions of the modeling requirements for worst-case releases. The scenarios modeled in this project involve 'worst case' releases of the compounds listed in Table 1 from their respective storage containers. The location of the releases is shown in Attachment 1 at the southern side of the storage building (see Attachment 1, Building Layout, red highlighted area). The modeling was conducted in a two-step modeling sequence to first assess using the conservative modeling of RMPCOMP provided by EPA. For those compounds that RMPCOMP estimated over the distance of 1000 feet, a more accurate model, HGsystem was applied. A distance of 1250 ft. is the distance to the closest sensitive population, which is a prison. Therefore, RMP toxic endpoints at distances of less than 1250 ft. are considered for this modeling effort to be acceptable.

Table 1. Modeled toxic chemicals

Toxic Chemicals	Weight Fraction	Volume (gal)	Modeling	Toxic Endpoint (ft)
Ammonia (aqueous)	20%	55	RMPCOMP	528
Hydrofluoric acid	12%	55	HGSYSTEM	262
Hydrochloric acid	30%	275	HGSYSTEM	853
Nitric acid	30%	275	HGSYSTEM	1050

These chemicals were modeled to determine the distance to the RMP toxic endpoint for each chemical, after a "worst-case" release into the interior of the storage building.

b. RMPCOMP model

EPA offers an online version on its website for modeling of RMP chemicals by a simplistic model RMPCOMP. The model is based on the conservative assumptions described in RMP program modeling guidance.² The model makes a number of conservative assumptions, while not highly accurate, that provide a reasonable measure of conservatism to assure the modeling result includes the toxic endpoint for the above chemicals. Ammonia was modeled by RMPCOMP to have an end point of only 0.1 miles (RMPCOMP only provides results in increments of 0.1 miles) or 528 ft. which is conservative and does not extend to

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sensitive population areas in the vicinity to the facility. The input parameters included a total tank volume of 55 gallons, ammonia weight fraction of 20%, reservoir temperature of 97 °F and does not consider an interior release.

c. HGSYSTEM Model³

HGSYSTEM is short-range distance (less than 50 km) model developed specifically for accidental releases approved and recommended by EPA that can simulate a release of toxic liquid and then disperse the pollutant cloud into the atmosphere after the accidental release. The model contains a number of submodules that one uses in sequence for each step in the initial release to the final toxic endpoint determination.

The initial release was reduced to account for an interior release (see Section i.) based on EPA guidance. The release forms a pool and evaporates based on the chemical properties of the pollutant and the remaining mixture (water). The submodule LPOOL was used to model the pool and its evaporation. The results of the model (file ending in *.LPR) are provided in Attachment 2.

The dispersion modeling was determined using the submodule, HEGADAST. This module provides time interval dispersion of the plume and its concentration at downwind (centerline) concentrations from the evaporating pool. HEGADAST was set to provide results of the instantaneous cloud concentration data (in units of percent of volume) along the centerline of the cloud plume at 20-meter intervals away from the release. The cloud concentration data at 20-meter distance intervals is calculated for each 200-second time interval following the release. Given the high evaporation properties and the relatively smaller volumes of the modeled chemical releases, the dispersion cloud reaches a maximum distance as the chemicals, without containment, evaporate quickly such that the farthest hourly average toxic endpoint occurs within the first couple of hours.

After HGSYSTEM modeling produces these 200-second interval data, the data are used to calculate the hourly-average concentration of the cloud. Hourly-average concentration data are corrected for the fractional amount of the regulated toxic compound within the cloud at each time interval using data from the LPOOL submodule (file ending in .LPC Attachment 2). Hourly-average concentration data sheets are tabled and provided near the end of Attachment 2 and indicate the resulting farthest distance of the toxic endpoint over 200 second intervals. EPA guidance⁴ states:

"The averaging time is specified as 1 hour to make the model-predicted concentrations comparable to the ERPG (Emergency Response Planning Guideline) concentrations."

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The toxic endpoint distances were determined as the greatest distance that the toxic endpoint (concentration of chemical in units of $\mu\text{g}/\text{m}^3$) or greater was observed in the cloud plume.

d. EPA MODELING PARAMETERS

Certain specified input parameters are provided in EPA RMP modeling guidance for worst-case scenarios as required input for RMP modeling. Some modeling input parameters not specified by EPA have been obtained through literature review, calculated through literature review, or chosen by engineering judgment. These are provided in Attachment 2.

Atmospheric conditions required for modeling are determined using EPA guidance. For example, the worst-case release ambient temperature and humidity applied to the model are determined as highest daily maximum temperature (36 °C (97 °F)) and average humidity (70 percent) for the site (Tampa, FL) during the past three years, per 40 CFR 68.22(c). This same temperature was conservatively applied to the containers of liquid tank. Wind speed is set at 1.5 m/s and atmospheric stability at F class. Surface roughness was determined to be "obstructed terrain" (urban). It is stated in 40 CFR 68.22(e):

"The owner or operator shall use either urban or rural topography, as appropriate. Urban means that there are many obstacles in the immediate area; obstacles include buildings or trees. Rural means there are no buildings in the immediate area and the terrain is generally flat and unobstructed."

i. Interior Building Release

These releases occur inside the EQ facility building as shown in the Attachment 1 figure. The release of a toxic liquid and the subsequent dispersion plume are impeded by the building for which EPA specifically addresses in guidance.⁵ For this modeling, the EPA factor for building mitigation of 0.1 is applied to the release amount. Note that EPA describes the impact of interior releases as more restrictive and therefore use of this factor is considered a conservatively high value resulting in a farther endpoint than suggested by EPA.

2. Conclusion

The results of RMP worst-case release modeling for the EQ facility demonstrate that the toxic endpoint of any potential release of an RMP chemical, as defined by EPA RMP Program, does not extend beyond a maximum distance of 1050 feet from the location of a chemical release at the facility hazardous waste storage area. This maximum distance

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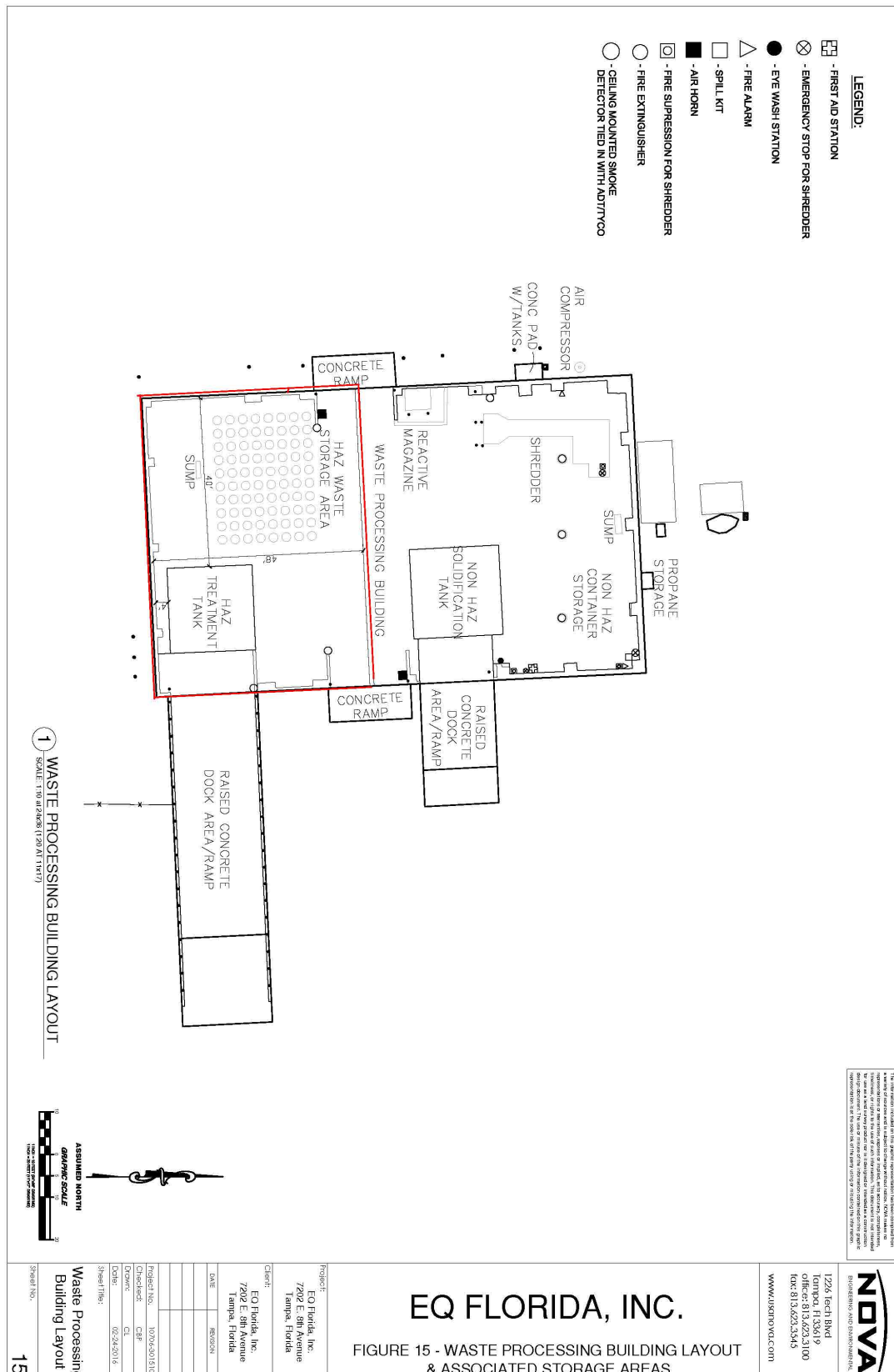
does not reach sensitive populations in the vicinity of the facility. Additional refinement of the modeling parameters would likely reduce toxic endpoints.

References

1. "Risk Management Program Guide for Offsite Consequence Analysis," EPA Doc. No. EPA-550-B-99-009.
2. <https://www.epa.gov/rmp/guidance-facilities-risk-management-programs-rmp>
3. "HGSYSTEM User Manual," Shell Internationale Research Maatschappij BV. The Hague, TNER.94.058, 1994.
4. EPA Doc. No EPA-454/R-93-002, section 5.8.16.
5. <https://www.epa.gov/sites/production/files/2013-11/documents/oca-apds.pdf>, Section 3.2.3

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ATTACHMENT 1: BUILDING LAYOUT



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ATTACHMENT 2: MODELING RESULTS

KOOGLER AND ASSOC.

4/8/2016

Endpoints

2016-EQ, RMP Modeling
Koogler Project: 817_16_02
RISK MANAGEMENT PLANNING, OFF-SITE CONSEQUENCE ANALYSIS

SUMMARY OF WORST-CASE RELEASE SCENARIO MODELING

AMOUNT RELEASE		endpoint	
gallons	kg	meters	feet
55	225	80	262

filename: 8171602F

RELEASE		endpoint	
gallons	kg	meters	feet
275	1227	260	853

filename: 8171602C

RELEASE		endpoint	
gallons	kg	meters	feet
275	1165	320	1050

filename: 8171602B

Chemical	KG/M3	G/M3 =		MOL. WT.	GMOLE/M3	PPM	%VOL
		MG/L					
HF	1.60E-05	0.016	20.01	0.000800	19.550	1.955E-03	
HCl	3.00E-05	0.03	36.46	0.000823	20.118	2.012E-03	
HNO3	2.60E-05	0.026	63.01	0.000413	10.089	1.009E-03	

817_16_02_WST_EQ-input file

4/8/2016

ATTACHMENT 2

2016-EQ, RMP Modeling
Koogler Project: 817_16_02
RISK MANAGEMENT PLANNING, OFF-SITE CONSEQUENCE ANALYSIS

CHEMICAL PARAMETERS

HYDROFLUORIC ACID (AQUEOUS)

model file surname: 8171602F

HF, balance of water

Release amount				
mixture	density	weight	volume	
gal/ons	lb/gal	lb	kg	m3
55	9.02	496.1	225.0	0.2

containment	building
surf area	mitigation
ft2	factor
NA	0.1

spill
w/ mitigation
over 60 sec
m3/s
0.000347

largest tank	
mixture	
weight	
lb	kg
496.1	225.0

HF				
wt.	weight	mol wt.	amount	
%	kg	kg/kgmol	mol	
12.0	27	20.01	1.3	

water	water	water	L.Pool molar fraction	
weight	mol wt.	amount	comp.	water
kg	kg/kgmol	mol		
198	18.0	11.0	0.109	0.891

HYDROCHLORIC ACID (AQUEOUS)

model file surname: 8171602C

HCl, balance of water

Release amount				
mixture	density	weight	volume	
gal/ons	lb/gal	lb	kg	m3
275	9.94	2706.3	1227.4	1.0

containment	building
surf area	mitigation
ft2	factor
NA	0.1

spill
w/ mitigation
over 60 sec
m3/s
0.001735

largest tank	
mixture	
weight	
lb	kg
2706.3	1227.4

HCl				
wt.	weight	mol wt.	amount	
%	kg	kg/kgmol	mol	
30.0	368	36.46	10.1	

remaining	water	water	L.Pool molar fraction	
weight	mol wt.	amount	comp.	water
kg	kg/kgmol	mol		
859	18.0	47.7	0.175	0.825

NITRIC ACID (AQUEOUS) (ASSUME NO2 RELEASED)

model file surname: 8171602B

HNO3, balance of water

Release amount				
mixture	density	weight	volume	
gal/ons	lb/gal	lb	kg	m3
275	9.34	2568.7	1165.0	1.0

containment	building
surf area	mitigation
ft2	factor
NA	0.1

spill
w/ mitigation
over 60 sec
m3/s
0.001735

largest tank	
mixture	
weight	
lb	kg
2568.7	1165.0

HNO3				
wt.	weight	mol wt.	amount	
%	kg	kg/kgmol	mol	
30.0	349	63.08	5.5	

remaining	water	water	L.Pool molar fraction	
weight	mol wt.	amount	comp.	water
kg	kg/kgmol	mol		
815	18.0	45.3	0.109	0.891

**2016-EQ, RMP Modeling
Koogler Project: 817_16_02**

RISK MANAGEMENT PLANNING, OFF-SITE CONSEQUENCE ANALYSIS

HG system compound input values

	HCL		HF		HNO3		
specific heat of vapour	29.2	1	29.1	2	53.0	3	J/mole-K
specific heat of liquid	90	1	50.2	2	109.6	4	J/mole-K
heat of vaporization	16334	1	25777	2	39000	1	J/mole
critical temperature	325	3	461.1	2	431	1	K
critical pressure	83	3	64	2	101	1	atm
vapor B1	-6.156		-6.156	2	-6.156		
vapor B2	-4.348		-4.348	2	-4.348		
vapor B3	13.13		13.13	2	13.13		
vapor B4	-33.14		-33.14	2	-33.14		
molar mass	36.46	1	20.01	2	63.08	1	kg/kmole
liquid density	1193	1	977.7	2	1510	1	kg/m3
amt boil pt	188	1	293	2	356	1	K
vapour viscosity	1.34E-05	1	0.000108	2	1.3E-10	1	kg/m/s

1 <http://encyclopedia.airliquide.com/> (use NO2 for nitric acid gas)

2 provided by Hgssystem

3 <http://webbook.nist.gov/> (for nitric acid at 298 K)

4 use heat of vaporization at 298 K

ATTACHMENT 2

2016-EQ, RMP Modeling
Koogler Project: 817_16_02
RISK MANAGEMENT PLANNING, OFF-SITE CONSEQUENCE ANALYSIS

Compound Thermochemical Properties

TOXIC COMPOUND VAPOR PRESSURE - estimator

VAPOR PRESSURE - WAGNER EQUATION										Atm. Pressure @ 298 K	
	B1	B2	B3	B4	T	Tc	Tr	Q	Pc	atm	mm Hg
HF	-6.156	-4.348	13.130	-33.140	309	461.1	0.670	0.330	64	1.7	1303
HCL	-6.156	-4.348	13.130	-33.140	309	325	0.951	0.049	45	31.2	23693
HNO3	-6.156	-4.348	13.130	-33.140	309	431	0.717	0.283	101	5.27	4008

use trend of HF basis for other gases. Trend line similar other than Tc and Pc