



RESPONSE TO FREEDOM OF INFORMATION ACT (FOIA) REQUEST

2017-0541

1

RESPONSE TYPE

INTERIM

FINAL

REQUESTER:

Julian Tarver

DATE:

05/24/2017

DESCRIPTION OF REQUESTED RECORDS:

All released records in FOIA 2015-0364.

PART I. -- INFORMATION RELEASED

You have the right to seek assistance from the NRC's FOIA Public Liaison. Contact information for the NRC's FOIA Public Liaison is available at <https://www.nrc.gov/reading-rm/foia/contact-foia.html>

- Agency records subject to the request are already available on the Public NRC Website, in Public ADAMS or on microfiche in the NRC Public Document Room.
- Agency records subject to the request are enclosed.
- Records subject to the request that contain information originated by or of interest to another Federal agency have been referred to that agency (see comments section) for a disclosure determination and direct response to you.
- We are continuing to process your request.
- See Comments.

PART I.A -- FEES

NO FEES

AMOUNT*

*See Comments for details

- You will be billed by NRC for the amount listed.
- You will receive a refund for the amount listed.
- Fees waived.

- Minimum fee threshold not met.
- Due to our delayed response, you will not be charged fees.

PART I.B -- INFORMATION NOT LOCATED OR WITHHELD FROM DISCLOSURE

- We did not locate any agency records responsive to your request. *Note:* Agencies may treat three discrete categories of law enforcement and national security records as not subject to the FOIA ("exclusions"). 5 U.S.C. 552(c). This is a standard notification given to all requesters; it should not be taken to mean that any excluded records do, or do not, exist.
- We have withheld certain information pursuant to the FOIA exemptions described, and for the reasons stated, in Part II.
- Because this is an interim response to your request, you may not appeal at this time. We will notify you of your right to appeal any of the responses we have issued in response to your request when we issue our final determination.
- You may appeal this final determination within 90 calendar days of the date of this response by sending a letter or e-mail to the FOIA Officer, at U.S. Nuclear Regulatory Commission, Washington, D.C. 20555-0001, or FOIA.Resource@nrc.gov. Please be sure to include on your letter or email that it is a "FOIA Appeal." You have the right to seek dispute resolution services from the NRC's Public Liaison, or the Office of Government Information Services (OGIS). Contact information for OGIS is available at <https://ogis.archives.gov/about-ogis/contact-information.htm>

PART I.C COMMENTS (Use attached Comments continuation page if required)


No records were provided to the requester in response to the above mentioned FOIA/PA request. However, because the records were available publicly, the requester was notified in the final response enclosed with this release. We are providing you with a copy of the document (as a courtesy), as it is mentioned in the comments section of the 464, addressed to Mr. Paul Blanch.

Signature - Freedom of Information Act Officer or Designee

Stephanie A. Blaney

Digitally signed by Stephanie A. Blaney
DN: cn=US, ou=U.S. Government, ou=U.S. Nuclear Regulatory Commission, ou=NRC-PIV, cn=Stephanie A. Blaney, o=92342.1920000 100.1.1-200001997
Date: 2017.05.24 13:23:52 -0400

mat

NRC FORM 464 Part I (10-2014) 	U.S. NUCLEAR REGULATORY COMMISSION RESPONSE TO FREEDOM OF INFORMATION ACT (FOIA) / PRIVACY ACT (PA) REQUEST	FOIA/PA 2015-0364	RESPONSE NUMBER 1
		RESPONSE TYPE <input checked="" type="checkbox"/> FINAL <input type="checkbox"/> PARTIAL	

REQUESTER Paul Blanch	DATE JUL 09 2015
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PART I -- INFORMATION RELEASED

No additional agency records subject to the request have been located.

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* See comments for details

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Certain information in the requested records is being withheld from disclosure pursuant to the exemptions described in and for the reasons stated in Part II.

This determination may be appealed within 30 days by writing to the FOIA/PA Officer, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001. Clearly state on the envelope and in the letter that it is a "FOIA/PA Appeal."

PART I.C COMMENTS (Use attached Comments continuation page if required)

On July 6, 2015, You requested a copy of the sensitivity analysis referenced in a letter addressed to you dated June 29, 2015. The requested records are available in Public ADAMS at accession number ML15138A024.

Records with an ML accession number are available in the NRC Library at www.nrc.gov/reading-rm/adams.html. For assistance in obtaining any public records, please contact the NRC's Public Document Room (PDR) at 1-800-397-4209 or by e-mail at PDR.Resource@nrc.gov

SIGNATURE - FREEDOM OF INFORMATION ACT AND PRIVACY ACT OFFICER Roger Andoh	DISTRIBUTION--FOIA/PA Subject, Action Officer, FOIA/PA Officer, Other (Specify)
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OFFICE	ACTION OFFICER	FOIA/PA OFFICER				<input checked="" type="checkbox"/> PUBLIC ADAMS
NAME	MWhorral <i>MW</i>	RAndoh <i>Rant</i>				<input type="checkbox"/> NON-PUBLIC ADAMS
DATE	07/09/2015	07/09/2015				

GROUP: A

RECORDS BEING RELEASED IN-PART

The following types of information are being withheld:

- Ex. 1: Records properly classified pursuant to Executive Order 13526
- Ex. 2: Records regarding personnel rules and/or human capital administration
- Ex. 3: Information about the design, manufacture, or utilization of nuclear weapons
 Information about the protection or security of reactors and nuclear materials
 Contractor proposals not incorporated into a final contract with the NRC
 Other
- Ex. 4: Proprietary information provided by a submitter to the NRC
 Other
- Ex. 5: Draft documents or other pre-decisional deliberative documents (D.P. Privilege)
 Records prepared by counsel in anticipation of litigation (A.W.P. Privilege)
 Privileged communications between counsel and a client (A.C. Privilege)
 Other
- Ex. 6: Agency employee PII, including SSN, contact information, birthdates, etc.
 Third party PII, including names, phone numbers, or other personal information
- Ex. 7(A): Copies of ongoing investigation case files, exhibits, notes, ROI's, etc.
 Records that reference or are related to a separate ongoing investigation(s)
- Ex. 7(C): Special Agent or other law enforcement PII
 PII of third parties referenced in records compiled for law enforcement purposes
- Ex. 7(D): Witnesses' and Allegers' PII in law enforcement records
 Confidential Informant or law enforcement information provided by other entity
- Ex. 7(E): Law Enforcement Technique/Procedure used for criminal investigations
 Technique or procedure used for security or prevention of criminal activity
- Ex. 7(F): Information that could aid a terrorist or compromise security

~~SENSITIVE - SECURITY RELATED INFORMATION~~

Safety Review and Confirmatory Analysis

Entergy's 10 CFR 50.59 Safety Evaluation

Algonquin Incremental Market (AIM)

Project Indian Point Energy Center (IPEC)

EXPLOSION

The ALOHA model was used for explosion scenario 1 of the original blast analysis report (ADAMS accession number ML14330A276) and used as a feeder to the Region I Inspecting Report (ADAMS accession number ML14314A052). The analysis conservatively assumed a pipe rupture [REDACTED] at a maximum operating pressure of 850 psig. The pipe rupture was assumed to occur at the far end of the pipeline where the pipe rises above ground level and includes the volume of gas within the 3 mile length of pipeline between the nearest isolation valves. The ALOHA calculation for this scenario resulted in a maximum sustained methane release rate of [REDACTED] and estimated the total release amount of [REDACTED]. The calculation assumed that the entire pipeline gas volume between the isolation valves is released. The calculation conservatively assumed the maximum release [REDACTED] and determined the TNT equivalent amount with a yield factor of [REDACTED]. In the equation below, the minimum safe distance (d) to 1 psi overpressure is calculated to be [REDACTED] by using Regulatory Guide 1.91 methodology as follows:

$$WTNT = (Mf \cdot DHC \cdot Y) / 4500$$

Where

WTNT = TNT equivalent Mass, kg

Mf = Mass of vapor, kg

DHC = Heat of combustion, kJ/kg (50030)

$$Y = [REDACTED]$$

$$d = 45 \cdot (w)^{1/3} \quad \text{where}$$

d = minimum safe distance (ft) to 1 psi overpressure

w = TNT equivalent mass in pounds

The calculated minimum safe distance of [REDACTED] is smaller than the actual distance of [REDACTED] between the Security Owner Control Area (SOCA) barrier and the pipeline at the far end above ground. Furthermore, the pipeline at the far end above ground is located [REDACTED] from the nearest safety-related structure, system, or component (SSC) within the SOCA. This is because the nearest safety-related SSC inside the SOCA is about [REDACTED] from the edge of the SOCA barrier. Therefore, a 1 psi overpressure is not expected to occur at any safety-related SSC inside the SOCA from a potential rupture and explosion at the far end of the pipeline located above ground. However, since the calculated minimum safe distance of [REDACTED] is larger than the distance to SSC important to safety (ITS) outside the SOCA barrier, they may experience greater than 1 psi overpressure. Therefore, SSC ITS would be impacted. Nevertheless, their impacts are bounded by the severe/beyond design basis accidents considered as part of low

~~SENSITIVE - SECURITY RELATED INFORMATION~~

- 2 -
~~SENSITIVE SECURITY RELATED INFORMATION~~

probability events such as natural phenomena that include seismic, hurricane and tornado events including Loss of Offsite Power and Station Black Out (SBO) considerations with design of redundant systems, engineering safeguards and mitigation measures in the plant UFSARs. A detailed discussion of the impact of SSC ITS, which was reviewed by NRC inspectors as part of their inspection report, is included in the licensee's submittal of their site hazards analysis submitted pursuant to 10 CFR 50.59 on August 21, 2014 (ADAMS accession number ML14253A339).

Due to concerns whether remote pipeline operators would be able to recognize that a pipeline ruptured occurred and then take timely actions to close the nearest pipeline isolation valves within 3 minutes, additional ALOHA modeling was performed to determine the sensitivity of valve closure times. The original scenario 1 modeling assumed (b)(7)(F) as a conservative/bounding condition in determining the minimum safe distance to 1 psi overpressure and the potential heat flux due to a jet fire at the SSC/SOCA. In the bounding infinite source scenario, the analysis assumes that the pipeline isolation valves do not close and gas continues to flow, as if there was an infinite source, for one hour. Since the maximum calculated release of natural gas determined by the ALOHA model for the infinite source scenario is only slightly varied, the calculated results are marginally changed. The distance to 1 psi overpressure changed from (b)(7)(F) which remains lower than the distance to the most limiting SSC inside the SOCA barrier of (b)(7)(F).

JET FIRE

Similar to the assumptions used for the ALOHA pipe explosion modeling, the ALOHA model for Jet Fire original Scenario 1 conservatively assumed a pipe (b)(7)(F) at a maximum operating pressure of 850 psig, the pipe rupture was assumed to occur at the far end of the pipeline where the pipe rises above ground level, and the modeling includes the volume of gas within the 3 mile length of pipeline between the nearest isolation valves. Methane is assumed to be released from the ruptured pipe as a flammable gas. The ALOHA model resulted in a maximum burn rate of (b)(7)(F) and an estimated total amount burned of (b)(7)(F). The calculation assumed that the entire pipeline gas volume between the isolation valves is released. The distances to thermal radiation levels of (b)(7)(F) 5.0 kW/m², and 2.0 kW/m² calculated by ALOHA are (b)(7)(F) respectively. In the infinite source scenario, this analysis is remodeled with the same conditions by imposing that the unbroken end of pipe (i.e., upstream) is assumed to be connected to an infinite source (with no valves closed) for an hour. The maximum calculated burn rate of natural gas determined by the ALOHA model is not changed. The calculated heat fluxes, which are marginally changed at the SOCA distance of 1580 ft from the enhanced pipeline from (b)(7)(F) due to the sustained burning for an extended period of time, remain much lower than the potential threshold heat flux rate of (b)(7)(F) that would potentially damage any digital equipment.

~~SENSITIVE SECURITY RELATED INFORMATION~~

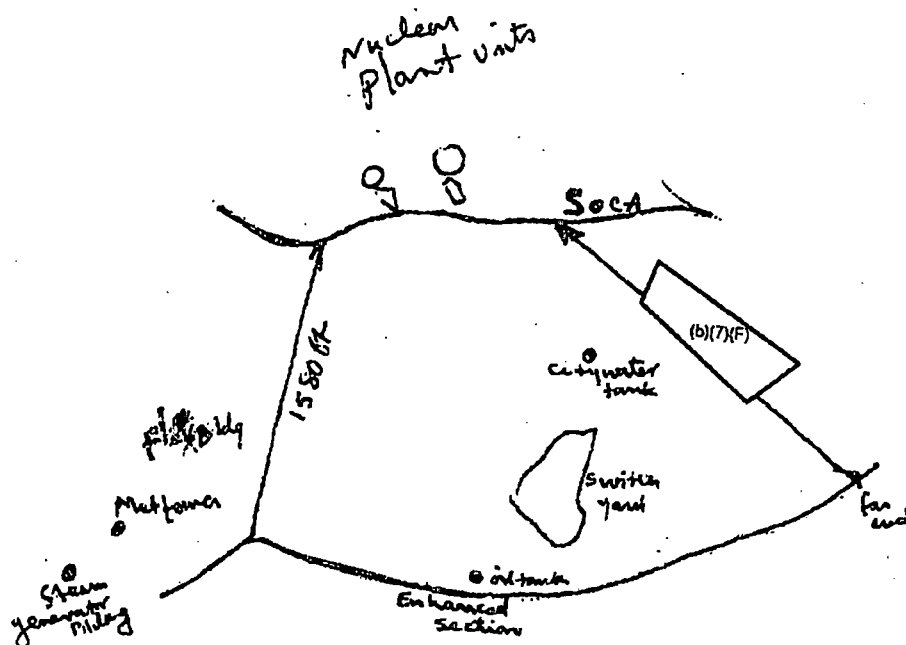
~~SENSITIVE - SECURITY RELATED INFORMATION~~

CONCLUSION

Due to concerns that Entergy's assumption that remote control room operators would be able to recognize a pipeline rupture and take actions to close the nearest pipeline isolation valves within 3 minutes may not be realistic, the NRC staff performed a bounding sensitivity analysis. The analysis assumed that following a complete pipeline rupture, the pipeline provides an infinite source of natural gas and the pipeline isolation valves do not close for an hour. Based on this analysis, the NRC staff has determined that there are only minimal changes to the peak overpressure calculation and the heat flux calculation. Therefore, the staff concludes that pipeline isolation valve closure times are inconsequential and the previous staff conclusions that the proposed 42-inch diameter natural gas pipeline at the Indian Point site does not represent an undue risk and that the plant could safely shut down following a postulated pipeline rupture remain valid.

It should be noted that if the valves are not closed for an extended period time, potential adverse impacts consisting of direct property damage, some injuries and possible fatalities may result due to the fire in the close proximity of the pipeline, which is outside the preview of the NRC's regulatory frame work, consideration and jurisdiction from safe operation/shutdown of the nearby IPEC nuclear plant's perspective.

~~SENSITIVE - SECURITY RELATED INFORMATION~~



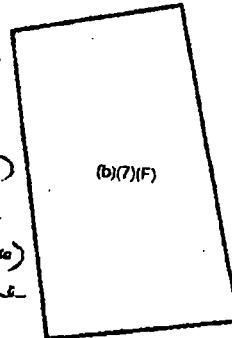
SOCA: Security owner controlled Area

distance to SOCA from enhanced section of pipeline = 1580 ft

distance to SSC from enhanced section of pipeline =

distance to SOCA from far end (surface) section of pipeline =

distance to SSC from far end (surface) section of pipeline =





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2017-0541

1

RESPONSE TYPE

INTERIM

FINAL

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Julian Tarver

DATE:

05/24/2017

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Stephanie A. Blaney

Digitally signed by Stephanie A. Blaney
DN: cn=US, ou=U.S. Government, o=U.S. Nuclear Regulatory Commission, ou=NRC-PIV, cn=Stephanie A. Blaney, o=9.2342, 19200300 100.1.1-200001997
Date: 2017.05.24 13:23:52 -0400

matt

NRC FORM 464 Part I (10-2014) 	U.S. NUCLEAR REGULATORY COMMISSION RESPONSE TO FREEDOM OF INFORMATION ACT (FOIA) / PRIVACY ACT (PA) REQUEST	FOIA/PA 2015-0364	RESPONSE NUMBER 1
	RESPONSE TYPE <input checked="" type="checkbox"/> FINAL <input type="checkbox"/> PARTIAL		

REQUESTER Paul Blanch	DATE JUL 09 2015
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SIGNATURE - FREEDOM OF INFORMATION ACT AND PRIVACY ACT OFFICER Roger Andoh	DISTRIBUTION-FOIA/PA Subject, Action Officer, FOIA/PA Officer, Other (Specify)
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OFFICE	ACTION OFFICER	FOIA/PA OFFICER				<input checked="" type="checkbox"/> PUBLIC ADAMS <input type="checkbox"/> NON-PUBLIC ADAMS
NAME	MWhorral <i>MW</i>	RAndoh <i>Rat</i>				
DATE	07/09/2015	07/09/2015				

GROUP: A

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IN-PART**

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 Other _____
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 Other _____
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$$Y = [REDACTED]$$

$$d = 45 \cdot (w)^{1/3} \quad \text{where}$$

d = minimum safe distance (ft) to 1 psi overpressure

w = TNT equivalent mass in pounds

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- 2 -
~~SENSITIVE SECURITY RELATED INFORMATION~~

probability events such as natural phenomena that include seismic, hurricane and tornado events including Loss of Offsite Power and Station Black Out (SBO) considerations with design of redundant systems, engineering safeguards and mitigation measures in the plant UFSARs. A detailed discussion of the impact of SSC ITS, which was reviewed by NRC inspectors as part of their inspection report, is included in the licensee's submittal of their site hazards analysis submitted pursuant to 10 CFR 50.59 on August 21, 2014 (ADAMS accession number ML14253A339).

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~~SENSITIVE SECURITY RELATED INFORMATION~~

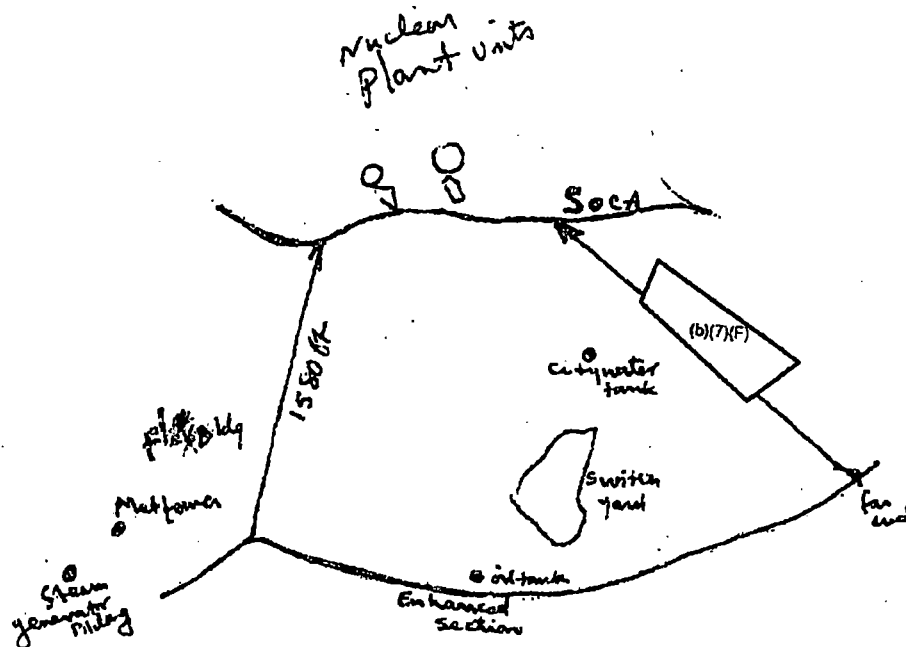
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CONCLUSION

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It should be noted that if the valves are not closed for an extended period time, potential adverse impacts consisting of direct property damage, some injuries and possible fatalities may result due to the fire in the close proximity of the pipeline, which is outside the preview of the NRC's regulatory frame work, consideration and jurisdiction from safe operation/shutdown of the nearby IPEC nuclear plant's perspective.

~~SENSITIVE - SECURITY RELATED INFORMATION~~



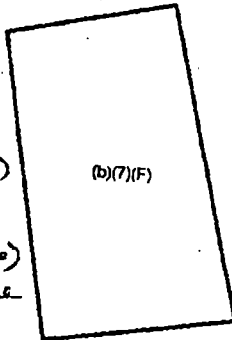
SOCA: Security owner controlled Area

distance to SOCA from enhanced section of pipeline = 1580 ft

distance to SSC from enhanced section of pipeline =

distance to SOCA from far end (surface) section of pipeline =

distance to SSC from far end (surface) section of pipeline =



SUMMARY OF RESULTS

SOCA: Security owner control Area
SSC: Structure, system and computer

<u>Scenario</u>	Minimum safe Distance to 1 PEI (Distance to SOCA) (Distance to SSC)	Heat flux kw/m ² at SOCA Distance of 1500ft
pipe burst with unbroken end closed (valve closed) RQ 1.9) (Direct explosion)	(b)(7)(F)	-
pipe burst with unbroken end connected to infinite source (valve open)	(b)(7)(F)	-
vapor plume explosion with no congestion	No explosion	-
pipe burst with unbroken end closed.	-	(b)(7)(F)
pipe burst with unbroken end of pipe connected to infinite source	-	(b)(7)(F)

**SITE DATA:**

Location: KINGSTON, NEW YORK
Building Air Exchanges Per Hour: 0.50 (enclosed office)
Time: June 21, 2013 1200 hours EDT (user specified)

CHEMICAL DATA:

Chemical Name: METHANE Molecular Weight: 16.04 g/mol
TEEL-1: 3000 ppm TEEL-2: 5000 ppm TEEL-3: 25000 ppm
LEL: 44000 ppm UEL: 165000 ppm
Ambient Boiling Point: -258.8° F
Vapor Pressure at Ambient Temperature: greater than 1 atm
Ambient Saturation Concentration: 1,000,000 ppm or 100.0%

ATMOSPHERIC DATA: (MANUAL INPUT OF DATA)

Wind: (b)(7)(F) from E at 3 meters
Ground Roughness: open country Cloud Cover: (b)(7)(F)
Air Temperature: (b)(7)(F)
Stability Class: (b)(7)(F) Relative Humidity: (b)(7)(F)
No Inversion Height

SOURCE STRENGTH:

Flammable gas escaping from pipe (not burning)
Pipe Diameter: 42 inches Pipe Length: (b)(7)(F)
Unbroken end of the pipe is closed off
Pipe Roughness: smooth Hole Area: (b)(7)(F)
Pipe Press: 850 psia Pipe Temperature: (b)(7)(F)
Release Duration: (b)(7)(F)
Max Average Sustained Release Rate: (b)(7)(F)
(averaged over a minute or more)
Total Amount Released: (b)(7)(F)

THREAT ZONE:

Threat Modeled: Overpressure (blast force) from vapor cloud explosion
Type of Ignition: ignited by spark or flame
Level of Congestion: uncongested
Model Run: Gaussian
Red : LOC was never exceeded --- (8.0 psi = destruction of buildings)
Orange: LOC was never exceeded --- (3.5 psi = serious injury likely)
Yellow: LOC was never exceeded --- (1.0 psi = shatters glass)

THREAT AT POINT:

Overpressure Estimate at the point:
Downwind: (b)(7)(F) Off Centerline: 0. feet
Overpressure: (b)(7)(F)

**SITE DATA:**

Location: KINGSTON, NEW YORK
Building Air Exchanges Per Hour: 0.50 (enclosed office)
Time: June 21, 2013 1200 hours EDT (user specified)

CHEMICAL DATA:

Chemical Name: METHANE Molecular Weight: 16.04 g/mol
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Ambient Boiling Point: -258.8° F
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ATMOSPHERIC DATA: (MANUAL INPUT OF DATA)

Wind: (b)(7)(F) from E at 3 meters
Ground Roughness: open country Cloud Cover: (b)(7)(F)
Air Temperature: (b)(7)(F)
Stability Class: (b)(7)(F)
No Inversion Height Relative Humidity: (b)(7)(F)

SOURCE STRENGTH:

Flammable gas escaping from pipe (not burning)
Pipe Diameter: 42 inches Pipe Length: (b)(7)(F)
Unbroken end of the pipe is connected to an infinite source
Pipe Roughness: smooth Hole Area: (b)(7)(F)
Pipe Press: 850 psia Pipe Temperature: (b)(7)(F)
Release Duration: ALOHA limited the duration to 1 hour
Max Average Sustained Release Rate: (b)(7)(F)
(averaged over a minute or more)
Total Amount Released: (b)(7)(F)

THREAT ZONE:

Threat Modeled: Overpressure (blast force) from vapor cloud explosion
Type of Ignition: ignited by spark or flame
Level of Congestion: uncongested
Model Run: Gaussian
Red : LOC was never exceeded --- (8.0 psi = destruction of buildings)
Orange: LOC was never exceeded --- (3.5 psi = serious injury likely)
Yellow: LOC was never exceeded --- (1.0 psi = shatters glass)

THREAT AT POINT:

Overpressure Estimate at the point:
Downwind: (b)(7)(F) Off Centerline: 0. feet
Overpressure: (b)(7)(F)