

Facility Information and Design Notes

Facility Name:	Example Foods, Inc.
Street:	1414 Production Drive
City, State:	Anywhere, ON
Zip Code:	00000
Country:	Canada

Machinery Room Name:	Refrigeration Compressor Room
Refrigerant Evaluated:	Ammonia
Date of Evaluation:	16-Oct-10

Year of Installation or Modification:	2010
Code or Standard in effect in the Year listed:	CSA B52 (1999-Present)

Prepared by:	Joseph Engineer
Title:	Manager, Refrigeration Engineering
Company Name:	Best Refrigeration Engineering Company

[Click here if you are unsure what code applies to your location.](#)

Design Basis and Evaluation Summary:

The CSA B52-1999 Mechanical Refrigeration code is the current code in force at this location and the last significant change to this refrigeration system and/or the machinery room was 2010. Therefore the CSA B52-1999 code was chosen to evaluate the design basis of this machinery room ventilation system.

The Ventilation Evaluation worksheet summarizes the findings of the Refrigeration Compressor Room. The evaluation indicates that the Intermittent Temperature Control and Emergency ventilation scfm rates are adequate. However, the Continuous Ventilation is undersized by 936 scfm. An evaluation should be undertaken to determine the best way to remediate this shortfall per the CSA B52-1999 code.

The CSA B52-1999 code doesn't list any discharge velocity or non-sparking construction requirements. Therefore these requirements are for the most part marked N/A. While it's not required by the selected code, all except the Continuous EF's are primarily of aluminum construction, which is generally accepted to be a non-sparking material. Therefore, these exhaust fans have been listed as Non-Sparking Construction.

In the data/analysis worksheets that follow, the following color scheme is used to differentiate user-input data cells from calculated output data cells.

Input data	Output data
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Machinery Room Installation and Weather Data

Facility Name: **Example Foods, Inc.**

Date: **October 16, 2010**

Room Name:	Refrigeration Compressor Room	CSA B52 (1999-Present)			
Machinery Room Information:	Refrigerant Evaluated: Ammonia				
Physical Dimensions:					
Specify input method for machinery room physical information Wall lengths					
Note: Cells with formatting are cells not used when certain selections are made throughout the spreadsheet.					
Input Data	North wall =	72.83	ft	22.20	m
	East wall =	43.00	ft	13.11	m
	South wall =	72.83	ft	22.20	m
	West wall =	43.00	ft	13.11	m
	Floor Area =	3,516.00	ft ²	327	m ²
	Wall height =	16.50	ft	5.03	m
	Area =	3,132	ft ²	291	m ²
Volume =	51,673	ft ³	1,463	m ³	
Detector Information:					
Detector installed that activates Ventilation & supervised alarm?	Yes				
Maximum detector setpoint allowed by code and/or standard =	300	ppm	300	ppm	
Detector setpoint activating Ventilation & supervised alarm =	150	ppm	150	ppm	
MR Location and Occupancy Information:					
Is Machinery Room in a basement?	No				
Design Occupancy =	10	persons	10	persons	
Refrigeration System Charge =					
	20,897	lb	9,477	kg	
Roof	Is this surface sunlit?	Yes			
	Sunlit roof width =	43.00	ft	13	m
	Sunlit roof length =	72.83	ft	22	m
	Roof area sunlit =	3,132	ft ²	291	m ²
	Roof U Factor =	0.40	Btu/hr-ft ² -°F	2	W _T /m ² -°C
	Roof color =	Medium		Medium	
	Roof solar effects =	15	°F	8	°C
Roof transmission load =	0	Btu/hr	0	W _T	
North	Is this surface sunlit?	No			
	North wall solar effects =	0	°F	0	°C
	North wall transmission load =	0	Btu/hr	0	W _T

Machinery Room Installation and Weather Data

Facility Name: **Example Foods, Inc.**

Date: **October 16, 2010**

Room Name:	Refrigeration Compressor Room	CSA B52 (1999-Present)	
Machinery Room Information:		Refrigerant Evaluated:	Ammonia
East	Is this surface sunlit?	No	
	Sunlit east wall length =	20.00	6
	Sunlit east wall height =	20.00	6
	East wall area sunlit =	400	37
	East wall U Factor =	0.40	2
	East wall color =	Dark	Dark
	East wall solar effects =	8	4
	East wall transmission load =	0	0
South	Is this surface sunlit?	Yes	
	Sunlit south wall length =	72.83	22
	Sunlit south wall height =	16.50	5
	South wall area sunlit =	1,202	112
	South Wall U Factor =	0.40	2
	South Wall Color =	Light	Light
	South Wall Solar Effects =	2	1
	South Wall Transmission Load =	0	0
West	Is this surface sunlit?	Yes	
	Sunlit west wall length =	40.0	12
	Sunlit west wall height =	20.0	6
	West wall area sunlit =	800	74
	West Wall U Factor =	0.38	2
	West Wall Color =	Dark	Dark
	West Wall Solar Effects =	8	4
	West Wall Transmission Load =	0	0
Room Envelope Heat Load =		0	0
Design Heat Load =		215,402	63
Weather Information:			
Design Outside Air: Toa,db		81.9	28
Design Supply Air Temp.: Tsa,db		81.9	28
Max Machinery Room Design Air Temp.: Tmr,db		100	38

Note - IJAR 2A requires the 1% design weather condition be used. The 1% condition is the dry bulb temperature exceeded 1% of the year (88 hrs). Design weather data is available in the ASHRAE Handbook of Fundamentals. The Handbook also includes 0.4% and 2% design conditions.

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Machinery Room Electric Motors Installation

Facility Name: Example Foods, Inc.

Date: October 16, 2010

Room Name: Refrigeration Compressor Room		CSA B52 (1999-Present)					
		Refrigerant Evaluated:		Ammonia			
Equipment #	Equipment #	Operating (HP)	Operating η (%)	Motor Load (Btu/hr)	Standby (HP)	Standby η (%)	Motor Load (Btu/hr)
1	Compressor 1	200	95.0%	25,450			-
2	Compressor 2			-	125	94.1%	18,769
3	Compressor 3	900	96.0%	91,620			-
4	Compressor 4	250	94.5%	34,994			-
5	Compressor 7	200	95.0%	25,450			-
6	Compressor 8			-	700	95.0%	89,075
7	Compressor 1's Oil Pump	5	86.0%	1,782			-
8	Compressor 2's Oil Pump			-	3	87.5%	954
9	Compressor 4's Oil Pump	5	86.0%	1,782			-
10	Compressor 7's Oil Pump	3	87.5%	954			-
11	Compressor 8's Oil Pump			-	5	89.5%	1,336
12	Condenser Pump 1	25	93.0%	4,454			-
13	Condenser Pump 2	25	93.0%	4,454			-
14	Condenser Pump 3			-	25	93.0%	4,454
15	Chilled Water 1	10	85.5%	3,690			-
16	Chilled Water 2	10	89.5%	2,672			-
17	Chilled Water 3	7.5	87.5%	2,386			-
18	Chilled Water 4	5	93.0%	891			-
19	Chilled Water 5	40	93.0%	7,126			-
20	Hot Water Pump 1	20	88.5%	5,854			-
21	Hot Water Pump 2			-	20	88.5%	5,854
22	Under Floor Glycol Pump	5	85.5%	1,845			-
23				-			-
24				-			-
25				-			-
26				-			-
27				-			-
28				-			-
29				-			-
30				-			-
31				-			-
32				-			-
33				-			-
34				-			-
35				-			-
36				-			-
37				-			-
38				-			-
39				-			-
40				-			-
41				-			-
42				-			-
43				-			-
44				-			-
45				-			-
46				-			-
47				-			-
48				-			-
49				-			-
50				-			-

Machinery Room Electric Motors Installation

Facility Name: **Example Foods, Inc.**

Date: **October 16, 2010**

Room Name: Refrigeration Compressor Room		CSA B52 (1999-Present)					
		Refrigerant Evaluated:		Ammonia			
	Equipment #	Operating (HP)	Operating η (%)	Motor Load (Btu/hr)	Standby (HP)	Standby η (%)	Motor Load (Btu/hr)
51				-			-
52				-			-
53				-			-
54				-			-
55				-			-
56				-			-
57				-			-
58				-			-
59				-			-
60				-			-
61				-			-
62				-			-
63				-			-
64				-			-
65				-			-
66				-			-
67				-			-
68				-			-
69				-			-
70				-			-
71				-			-
72				-			-
73				-			-
74				-			-
75				-			-
76				-			-
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80				-			-
81				-			-
82				-			-
83				-			-
84				-			-
85				-			-
86				-			-
87				-			-
88				-			-
89				-			-
90				-			-
91				-			-
92				-			-
93				-			-
94				-			-
95				-			-
TOTAL MOTORS		1,711		215,402	878		120,442

Prepared By: Joseph Engineer

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Machinery Room Exhaust Fans Installation

Facility Name: Example Foods, Inc.

Date: 16-Oct-10

Room Name: Refrigeration Compressor Room	Refrigerant Evaluated: Ammonia	CSA B52 (1999-Present)
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<i>Fan Information</i>			<i>List the CFM for each fan available for each mode of operation</i>								
			<i>Intermittent Ventilation Operation</i>			<i>Minimum Continuous Ventilation</i>			<i>Emergency Ventilation Operation</i>		
#	Exhaust Fan	Type	Non-Sparking Construction?	Intermittent CFM	Discharge Velocity > 2500 FPM?	Non-Sparking Construction?	Continuous CFM	Discharge Velocity > 2500 FPM?	Non-Sparking Construction?	Emergency CFM	Discharge Velocity > 2500 FPM?
1	Emergency Ex Fan East	Fixed speed	-		-	-	0	-	Yes	19,620	N/A
2	Emergency Ex Fan West	Fixed speed	-		-	-	0	-	Yes	19,620	N/A
3	Exhaust Fan # 8	Fixed speed	Yes	12,000	N/A	-	0	-	-		-
4	Continuous Ex Fan	Fixed speed	N/A	630	N/A	N/A	630	N/A	-		-
5			-		-	-		-	-		-
6			-		-	-		-	-		-
7			-		-	-		-	-		-
8			-		-	-		-	-		-
9			-		-	-		-	-		-
10			-		-	-		-	-		-
Total Fan Operation			N/A	12,630	N/A	N/A	630	N/A	Yes	39,240	N/A

Prepared By: Joseph Engineer

Version: 2.22

Machinery Room Ventilation Codes and Standards Summary

Facility Name: **Example Foods, Inc.**

Date: **October 16, 2010**

Refrigerant Evaluated: **Ammonia**

CSA B52 (1999-Present)

Machinery Room Design and Installation Summary

For Room Name: Refrigeration Compressor Room

Machinery Room Area =	3,132	<i>ft²</i>	291	<i>m²</i>
Machinery Room volume =	51,673	<i>ft³</i>	1,463	<i>m³</i>
Detector installed that activates Ventilation & supervised alarm?	Yes		Yes	
Maximum detector setpoint allowed by code and/or standard =	300	<i>ppm</i>	300	<i>ppm</i>
Detector setpoint activating Ventilation & supervised alarm =	150	<i>ppm</i>	150	<i>ppm</i>
Is Machinery Room in a basement?	No		No	
Design Occupancy =	10	<i>persons</i>	10	<i>persons</i>
Installed Refrigerant system charge (largest system) =	20,897	<i>lb</i>	9,477	<i>kg</i>
Installed total machinery room motor HP =	1,711	<i>HP</i>	1,276	<i>kW</i>
Installed machinery room motor heat load =	215,402	<i>Btu/hr</i>	63	<i>kW</i>
Installed machinery room envelope heat load =	0	<i>Btu/hr</i>	0.00	<i>kW</i>
Total Installed machinery room design heat load =	215,402	<i>Btu/hr</i>	63	<i>kW</i>

Installed Total Ventilation Summary:

Installed total non-emergency intermittent CFM =	12,630	<i>ft³ / min</i>	5,960	<i>l/s</i>
Installed total continuous CFM =	630	<i>ft³ / min</i>	297	<i>l/s</i>
Installed total emergency CFM =	39,240	<i>ft³ / min</i>	18,517	<i>l/s</i>

Codes and Standards Ventilation Rate Requirements

IIAR 2 (1992-1998)

Normal (Temperature Control) Ventilation:

Normal Intermittent Ventilation:	(18°F temp rise)	11,080	<i>ft³ / min</i>	5,229	<i>l/s</i>
Design Basis Intermittent:	(18°F temp rise)	11,080	<i>ft³ / min</i>	5,229	<i>l/s</i>

Continuous Ventilation Requirement:

(NO detector and/or setpoint > max)	0	<i>ft³ / min</i>	0	<i>l/s</i>	
Continuously Operating Ventilation:	(Machinery Room in a Basement)	0	<i>ft³ / min</i>	0	<i>l/s</i>
	(0.5 CFM/ft ²)	1,566	<i>ft³ / min</i>	739	<i>l/s</i>
Design Basis Continuous:	(0.5 CFM/ft²)	1,566	<i>ft³ / min</i>	739	<i>l/s</i>

Emergency Ventilation Requirement:

Emergency Ventilation:	(Refrigerant quantity)	14,456			
Design Basis Emergency:	(Refrigerant quantity)	14,456	<i>ft³ / min</i>	6,822	<i>l/s</i>

Machinery Room Ventilation Codes and Standards Summary

Facility Name: **Example Foods, Inc.**

Date: **October 16, 2010**

IIAR 2 (1999-2009)					
Normal (Temperature Control) Ventilation:					
Normal Ventilation:	(18°F temp rise)	11,080	ft ³ / min	5,229	l/s
Design Basis Intermittent:	(18°F temp rise)	11,080	ft ³ / min	5,229	l/s
Continuous Ventilation Requirement:					
(NO detector and/or setpoint > max)					
		0	ft ³ / min	0	l/s
Continuously Operating Ventilation:	(Machinery Room in a Basement)	0	ft ³ / min	0	l/s
	(0.5 CFM/ft ²)	1,566	ft ³ / min	739	l/s
Design Basis Continuous:	(0.5 CFM/ft²)	1,566	ft ³ / min	739	l/s
Emergency Ventilation Requirement (larger of):					
(Refrigerant quantity)					
Emergency Ventilation:		14,456	ft ³ / min	6,822	l/s
	-or-				
	(Room volume * 0.2)	10,335	ft ³ / min	4,877	l/s
Design Basis Emergency:	(Refrigerant quantity)	14,456	ft ³ / min	6,822	l/s
IIAR 2-2008 Addendum A (2010-Present)					
Normal (Temperature Control) Ventilation (larger of):					
(104°F max temp)					
Normal Ventilation:		9,025	ft ³ / min	4,259	l/s
	-or-				
	(20 ACH)	17,224	ft ³ / min	8,128	l/s
Design Basis Intermittent:	(20 ACH)	17,224	ft ³ / min	8,128	l/s
Continuous Ventilation Requirement:					
N/A					
Continuously Operating Ventilation:		0	ft ³ / min	0	l/s
	(NO detector and/or setpoint > max)	0	ft ³ / min	0	l/s
Design Basis Continuous:	N/A	0	ft ³ / min	0	l/s
Emergency Ventilation Requirement:					
(1 Fan Failure & 20 ACH)					
Design Basis Emergency:		17,224	ft ³ / min	8,128	l/s
	(30 ACH)	25,836	ft ³ / min	12,192	l/s

Machinery Room Ventilation Codes and Standards Summary

Facility Name: Example Foods, Inc.

Date: October 16, 2010

IMC (2000-2011)				
Normal (Temperature Control) Ventilation:				
Normal Ventilation:	(Max 18°F temp rise when occupied)	11,080	ft ³ / min	5,229 l/s
Design Basis Intermittent:	(Max 18°F temp rise when occupied)	11,080	ft ³ / min	5,229 l/s
Normal Continuous Ventilation Requirement (larger of):				
	(NO detector and/or setpoint > max)	0	ft ³ / min	0 l/s
Continuously Operating Ventilation:	(20 CFM/person when occupied)	200	ft ³ / min	94 l/s
	- or -			
	(0.5 CFM/ft ² when occupied)	1,566	ft ³ / min	739 l/s
Design Basis Continuous:	(0.5 CFM/ft² when occupied)	1,566	ft ³ / min	739 l/s
Emergency Ventilation Requirement:				
Emergency Ventilation:	(Refrigerant quantity)	14,456		
Design Basis Emergency:	(Refrigerant quantity)	14,456	ft ³ / min	6,822 l/s
IMC (2012-Present)				
Normal (Temperature Control) Ventilation:				
Normal Ventilation:	(Max 18°F temp rise when occupied)	11,080	ft ³ / min	5,229 l/s
Design Basis Intermittent:	(Max 18°F temp rise when occupied)	11,080	ft ³ / min	5,229 l/s
Normal Continuous Ventilation Requirement (larger of):				
	(NO detector and/or setpoint > max)	0	ft ³ / min	0 l/s
Continuously Operating Ventilation:	(20 CFM/person when occupied)	200	ft ³ / min	94 l/s
	- or -			
	(0.5 CFM/ft ² when occupied)	1,566	ft ³ / min	739 l/s
Design Basis Continuous:	(0.5 CFM/ft² when occupied)	1,566	ft ³ / min	739 l/s
Emergency Ventilation Requirement:				
Emergency Ventilation:	(Non-ammonia refrigerant qty)	14,456	ft ³ / min	6,822 l/s
	(Ammonia 30 ACH)	25,836	ft ³ / min	12,192 l/s
Design Basis Emergency:	(Ammonia 30 ACH)	25,836	ft ³ / min	12,192 l/s

Machinery Room Ventilation Codes and Standards Summary

Facility Name: Example Foods, Inc.

Date: October 16, 2010

ASHRAE 15 (1992-2000)				
Intermittent Temperature Control Ventilation :				
Intermittent Operating Ventilation:	(Max 18°F temp rise when occupied)	11,080	ft ³ / min	5,229 l/s
Design Basis Intermittent:	(Max 18°F temp rise when occupied)	11,080	ft ³ / min	5,229 l/s
Continuous Ventilation Requirement:				
Continuously Operating Ventilation:	(NO detector and/or setpoint > max)	0	ft ³ / min	0 l/s
	- or -			
	(20 CFM/person when occupied)	200	ft ³ / min	94 l/s
	- or -			
	(0.5 CFM/ft ² when occupied)	1,566	ft ³ / min	739 l/s
Design Basis Continuous:	(0.5 CFM/ft2 when occupied)	1,566	ft ³ / min	739 l/s
Emergency Ventilation Requirement:				
Emergency Ventilation:	(Refrigerant quantity)	14,456		
Design Basis Emergency:	(Refrigerant quantity)	14,456	ft ³ / min	6,822 l/s
ASHRAE 15 (2001-Present)				
Temperature Control Ventilation :				
Intermittent Operating Ventilation:	(Max 18°F temp rise when occupied)	11,080	ft ³ / min	5,229 l/s
	- or -			
	(122°F max)	4,974	ft ³ / min	2,347 l/s
Design Basis Intermittent:	(122°F max)	4,974	ft ³ / min	2,347 l/s
Continuous Ventilation Requirement:				
Continuously Operating Ventilation:	(NO detector and/or setpoint > max)	0	ft ³ / min	0 l/s
	- or -			
	(20 CFM/person when occupied)	200	ft ³ / min	94 l/s
	- or -			
	(0.5 CFM/ft ² when occupied)	1,566	ft ³ / min	739 l/s
Design Basis Continuous:	(0.5 CFM/ft2 when occupied)	1,566	ft ³ / min	739 l/s
Emergency Ventilation Requirement:				
Emergency Ventilation:	(Refrigerant quantity)	14,456		
Design Basis Emergency:	(Refrigerant quantity)	14,456	ft ³ / min	6,822 l/s
UMC (1991-?)				
Emergency Ventilation Requirement:				
Emergency Ventilation:	(12 ACH)	10,335	ft ³ / min	4,877 l/s
Design Basis Emergency:	(12 ACH)	10,335	ft ³ / min	4,877 l/s

Machinery Room Ventilation Codes and Standards Summary

Facility Name: **Example Foods, Inc.**

Date: **October 16, 2010**

UMC (1997-Present), CMC (2001-Present)				
Temperature Control Ventilation:				
Non-emergency intermittent:	(104°F max temp)	9,025	ft ³ / min	4,259 l/s
Design Basis Intermittent:	(104°F max temp)	9,025	ft ³ / min	4,259 l/s
Continuous Ventilation Requirement:				
	(NO detector and/or setpoint > max)	0	ft ³ / min	0 l/s
	- or -			
Continuously Operating Ventilation:	(0.5 CFM/ft ²)	1,566	ft ³ / min	739 l/s
	- or -			
	(Maintaining negative 0.05" H2O)	3,145		
Design Basis Continuous:	(Maintaining negative 0.05" H2O)	3,145	ft ³ / min	1,484 l/s
Emergency Ventilation Requirement:				
Emergency Ventilation:	(Refrigerant quantity)	14,456		
Design Basis Emergency:	(Refrigerant quantity)	14,456	ft ³ / min	6,822 l/s
CSA B52 (1995-1998)				
Temperature Control Ventilation :				
Intermittent Operating Ventilation:	(18°F Temp rise in operation/occupied)	11,080	ft ³ / min	5,229 l/s
Design Basis Intermittent:	(18°F Temp rise in operation/occupied)	11,080	ft ³ / min	5,229 l/s
Continuous Ventilation Requirement:				
	(NO detector and/or setpoint > max)	0	ft ³ / min	0 l/s
	- or -			
Continuously Operating Ventilation:	(Machinery Room in a Basement)	0	ft ³ / min	0 l/s
	- or -			
	(0.5 CFM/ft ² in operation/occupied)	1,566	ft ³ / min	739 l/s
Design Basis Continuous:	(0.5 CFM/ft2 in operation/occupied)	1,566	ft ³ / min	739 l/s
Emergency Ventilation Requirement:				
	(Refrigerant Qty <= 15,400 lbs)	14,456	ft ³ / min	6,822 l/s
	- or -			
Emergency Ventilation:	(Refrigerant Qty > 15,400 lbs)	15,174	ft ³ / min	7,160 l/s
Design Basis Emergency:	(Refrigerant Qty > 15,400 lbs)	15,174	ft ³ / min	7,160 l/s

Machinery Room Ventilation Codes and Standards Summary

Facility Name: Example Foods, Inc.

Date: October 16, 2010

CSA B52 (1999-Present)				
Temperature Control Ventilation :				
Intermittent Operating Ventilation:	(18°F Temp rise in operation/occupied)	11,080	<i>ft³ / min</i>	5,229 <i>l/s</i>
Design Basis Intermittent:	(18°F Temp rise in operation/occupied)	11,080	<i>ft³ / min</i>	5,229 <i>l/s</i>
Continuous Ventilation Requirement:				
Continuously Operating Ventilation:	(NO detector and/or setpoint > max)	0	<i>ft³ / min</i>	0 <i>l/s</i>
	- or -			
	(Machinery Room in a Basement)	0	<i>ft³ / min</i>	0 <i>l/s</i>
	- or -			
	(0.5 CFM/ft ² in operation/occupied)	1,566	<i>ft³ / min</i>	739 <i>l/s</i>
Design Basis Continuous:	(0.5 CFM/ft² in operation/occupied)	1,566	<i>ft³ / min</i>	739 <i>l/s</i>
Emergency Ventilation Requirement:				
Emergency Ventilation:	(Refrigerant Qty <= 15,400 lbs)	14,456	<i>ft³ / min</i>	6,822 <i>l/s</i>
	- or -			
	(Refrigerant Qty > 15,400 lbs)	15,174	<i>ft³ / min</i>	7,160 <i>l/s</i>
Design Basis Emergency:	(Refrigerant Qty > 15,400 lbs)	15,174	<i>ft³ / min</i>	7,160 <i>l/s</i>

Prepared By: Joseph Engineer

Version: 2.22

Ventilation System Comparative Evaluation

Facility Name: Example Foods, Inc.

Date: October 16, 2010

The Code or Standard selected for Ventilation Installed vs. Design Basis Comparison:		CSA B52 (1999-Present)			
Room Name: Refrigeration Compressor Room		Refrigerant Evaluated:		Ammonia	
Intermittent Ventilation: (Temperature Control)	Do all Exhaust Fans have Discharge Velocity of 2500 FPM?	<u>N/A</u>		Are all Exhaust Fans Non-sparking construction?	<u>N/A</u>
	Installed Intermittent Ventilation (temperature control)	12,630	ft ³ / min	5,960	l/s
	Design Basis Intermittent: (18°F Temp rise in operation/occupied)	11,080	ft ³ / min	5,229	l/s
	Intermittent Ventilation Exceeds Minimum by:	1,550	ft ³ / min	731	l/s
Minimum Continuous Ventilation:	Do all Exhaust Fans have Discharge Velocity of 2500 FPM?	<u>N/A</u>		Are all Exhaust Fans Non-sparking construction?	<u>N/A</u>
	Installed Minimum Continuous CFM	630	ft ³ / min	297	l/s
	Design Basis Continuous: (0.5 CFM/ft ² in operation/occupied)	1,566	ft ³ / min	739	l/s
	Continuous Ventilation is Undersized by:	-936	ft ³ / min	-442	l/s
Emergency Ventilation:	Do all Exhaust Fans have Discharge Velocity of 2500 FPM?	<u>N/A</u>		Are all Exhaust Fans Non-sparking construction?	<u>Yes</u>
	Installed Emergency CFM	39,240	ft ³ / min	18,517	l/s
	Design Basis Emergency:	N/A	0	0	l/s
	(Refrigerant Qty > 15,400 lbs)	15,174	ft ³ / min	7,160	l/s
	Emergency Ventilation Exceeds Minimum by:	24,066	ft ³ / min	11,357	l/s

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Version: 2.22