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LLNL Fire Protection Engineering Standard 5.8 Facility Survey Program

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Fire Protection Engineering Standard

Fire Protection Engineering Facility Survey Program		Policy 5.8/Rev.5
Issued By: Fire Marshal		Page 1 of 26
Approved By: EMD	**Effective**: April 2010	**Revised**: September 15, 2011

1.0 ADMINISTRATION

1.1 Scope: This standard describes the LLNL Fire Protection Facility Survey Program.

1.2 Purpose: The purpose of this standard is to describe the type of facility surveys required to fulfill the requirements of DOE Order 420.1B, *Facility Safety.*

1.3 Alternate Approaches: Nothing in this standard is intended to prevent the development of a FHA using alternative approaches.

1.3.1 Alternate approaches, including formatting, will be by exception only, and approved by the Fire Marshal/Fire Protection Engineering Subject Matter Expert in advance of their use.

2.0 REFERENCED PUBLICATIONS

2.1 U.S. Department of Energy Publications

- DOE 420.1B, *Facility Safety*
  U.S. Department of Energy

3.0 DEFINITIONS

3.1 Fire Hazards analyses are comprehensive evaluations of the fire protection and life safety aspects of nuclear facilities and significant new facilities.

3.2 Fire Protection Assessments are detailed evaluations of the fire protection and life safety aspects of significant facilities or facilities not qualifying for a Fire Hazards Assessment.

3.3 Life Safety Review Checklists are reviews of basic fire protection and life safety features of facilities that do not qualify for a Fire Hazards Assessment or Fire Protection Assessment.

3.4 Unique Hazards are those hazards not addressed by nationally recognized codes and standards or DOE requirements.

4.0 FIRE PROTECTION ASSESSMENTS

4.1* Fire Hazards Analysis

4.1.1 Fire Hazards Analyses (FHA) are to be completed on all nuclear facilities and two special facilities (B-368 & B-581).

4.1.2 FHAS are to be completed on a tri-annual basis and in accordance with LLNL Fire Protection Engineering Standards 5.3 and 5.3.1.

4.2 Fire Protection Assessments

4.2.1 Fire Protection Assessments (FPA) are to be completed on a tri-annual basis. Changes in facility activity or occupancy will required an updated FPA.

4.3 Life Safety Review Checklist

4.3.1 Life Safety Review Checklists are required for all facilities that have a gross area exceeding 1,000 ft^2, have a MPFL less than $25 million, and do not require a Fire Hazards analysis or Fire Protection Assessment.

4.3.2 Life Safety Review Checklists are required to be completed on a tri-annual basis.

4.4 Facilities Excluded from Fire Protection Surveys

4.4.1 The following facilities do not require a fire protection survey:

a. Facilities with a gross area less than 1, 000 ft^2
b. Facilities that have been declared or are firm targets for Cold and Dark status.

5.0 FACILITY SURVEY SCHEDULE

5.1 The survey schedule is posted on the FPE Server. Annex B contains a partial schedule.

6.0 SURVEY FORM INSTRUCTIONS

6.1 The FPA LRCL forms are generally self-explanatory; however, sample forms with highlighted instructions are contained in Annex C.

6.2 Deficiencies found during the performance of any Fire Protection Survey will be reported to the appropriate Directorate or PAD Assurance Manager.

Approvals:

John A. Sharry, Fire Marshal — September 15, 2011
Date

James D. Colson, Department Head
Emergency Management Department — September 15, 2011
Date

ANNEX A
Facilities Requiring an FPA

Building	Directorate
111	Directors Group
131	Engineering
140	Global Security
151	Science and Technology
191	Weapons and Complex Integration
231	Physical and Life Sciences
235	Physical and Life Sciences
298	NIF and Photon Science
361	Physical and Life Sciences
381	NIF and Photon Science
391	NIF and Photon Science
451	Computations
453	Computations
490	NIF and Photon Science
543	Operations and Business
132N	Physical and Life Sciences
132S	Physical and Life Sciences
321C	Physical and Life Sciences
551W	Operations and Business

ANNEX B
Partial Schedule of Fire Surveys

Fac ID#	Principal Directorate	Gross Sq Ft	1st Qtr 2011	2nd Qtr 2011	3rd Qtr 2011	4th Qtr 2011	Type of Insp.
41	Science and Technology	25,621					LSRC
71	Directors Group	4,166					LSRC
111	Directors Group	112,418					FPA
112	Operations and Business	45,814					LSRC
113	Global Security	41,671					LSRC
115	Science and Technology	16,952					LSRC
116	Global Security	7,555					LSRC
117	Science and Technology	11,087					LSRC
118	Operations and Business	1,504					LSRC
121	Science and Technology	91,145					LSRC
123	Directors Group	7,830	X				LSRC
125	Operations and Business	12,871					LSRC
131	Engineering	284,206					FPA
133	Science and Technology	5,631					LSRC
134	Global Security	1,284					LSRC
135	Global Security	1,338					LSRC
140	Global Security	66,660					FPA
141	Science and Technology	47,254					LSRC
142	Science and Technology	20,306					LSRC
151	Science and Technology	96,018					FPA
153	Engineering	25,976					FPA
154	Science and Technology	9,450					LSRC
155	Science and Technology	21,742					LSRC
161	Science and Technology	6,119					LSRC
162	NIF and Photon Science	19,042					LSRC
165	NIF and Photon Science	9,712					LSRC
166	Weapons and Complex Integration	13,226					LSRC
170	Operations and Business	43,760					LSRC
174	Science and Technology	19,360					LSRC
175	Operations and Business	16,183					LSRC
176	Science and Technology	3,958					LSRC
179	Science and Technology	2,720					LSRC
181	Science and Technology	13,453					LSRC
190	Science and Technology	10,086					LSRC

Fac ID#	Principal Directorate	Gross Sq Ft	1st Qtr 2011	2nd Qtr 2011	3rd Qtr 2011	4th Qtr 2011	Type of Insp.
191	Weapons and Complex Integration	121,028					FPA
194	Science and Technology	41,543					LSRC
197	Science and Technology	10,716					LSRC
211	Science and Technology	14,205					LSRC
214	Directors Group	4,922					LSRC
216	Directors Group	19,089					LSRC
217	Directors Group	18,100					LSRC
218	Operations and Business	18,065					LSRC
219	Operations and Business	18,429					LSRC
221	Operations and Business	1,764					LSRC
231	Science and Technology	142,403					FPA
233	Science and Technology	4,933					LSRC
234	Science and Technology	5,261					LSRC
235	Science and Technology	88,175					FPA
239	Weapons and Complex Integration	12,517			X		FHA
242	Science and Technology	20,328					LSRC
253	Directors Group	30,932	X				LSRC
254	Directors Group	2,488	X				LSRC
255	Directors Group	21,855	X				LSRC
256	Operations and Business	5,937	X				LSRC
262	Global Security	11,968	X				LSRC
264	Directors Group	20,461	X				LSRC
271	Directors Group	19,052	X				LSRC
272	Science and Technology	9,978	X				LSRC
274	Directors Group	21,436	X				LSRC
281	Science and Technology	18,505	X				LSRC
282	Science and Technology	2,160	X				LSRC
292	Science and Technology	20,811	X				LSRC
298	NIF and Photon Science	47,901	X				FPA
311	Directors Group	42,668	X				LSRC
312	Operations and Business	11,482	X				LSRC
313	Operations and Business	5,817	X				LSRC
314	Directors Group	13,401					LSRC
315	Directors Group	17,977					LSRC
316	Operations and Business	14,343	X				LSRC
317	Operations and Business	1,228	X				LSRC
318	Operations and Business	6,119	X				LSRC
319	Operations and Business	18,048	X				LSRC
322	Science and Technology	5,704					LSRC

Fac ID#	Principal Directorate	Gross Sq Ft	1st Qtr 2011	2nd Qtr 2011	3rd Qtr 2011	4th Qtr 2011	Type of Insp.
323	Operations and Business	18,555					LSRC
324	Operations and Business	11,290					LSRC
327	Science and Technology	19,116					LSRC
329	Science and Technology	5,150					LSRC
331	Weapons and Complex Integration	30,484					FHA
332	Weapons and Complex Integration	104,787					FHA
334	Weapons and Complex Integration	10,668				X	FHA
335	Weapons and Complex Integration	12,221					LSRC
343	Operations and Business	25,590					LSRC
361	Science and Technology	68,889					FPA
364	Science and Technology	10,952					LSRC
365	Global Security	8,871					LSRC
366	Science and Technology	2,631		X			LSRC
368	Global Security	1,590					FHA
373	Science and Technology	1,784					LSRC
376	Operations and Business	1,560					LSRC
378	Science and Technology	3,840					LSRC
379	Science and Technology	1,500					LSRC
381	NIF and Photon Science	95,421					FPA
383	NIF and Photon Science	7,054					LSRC
391	NIF and Photon Science	197,171					FPA
392	NIF and Photon Science	8,401					LSRC
404	Operations and Business	6,460					LSRC
405	Operations and Business	8,702					LSRC
411	Operations and Business	69,505					LSRC
415	Operations and Business	19,297					LSRC
418	Operations and Business	12,414		X			LSRC
423	Science and Technology	8,032		X			LSRC
431	Science and Technology	54,545		X			LSRC
432	Operations and Business	34,748		X			LSRC
433	Operations and Business	5,793		X			LSRC
436	Science and Technology	9,693		X			LSRC
438	Operations and Business	16,057		X			LSRC
439	Science and Technology	11,783		X			LSRC
442	Operations and Business	4,098		X			LSRC
451	Computations	51,398				X	FPA
453	Computations	240,598					FPA

Fac ID#	Principal Directorate	Gross Sq Ft	1st Qtr 2011	2nd Qtr 2011	3rd Qtr 2011	4th Qtr 2011	Type of Insp.
471	Operations and Business	16,086		X			LSRC
481	NIF and Photon Science	60,824		X			LSRC
482	NIF and Photon Science	107,941		X			LSRC
490	NIF and Photon Science	228,681				X	FPA
491	Operations and Business	13,259		X			LSRC
492	Operations and Business	9,550		X			LSRC
493	NIF and Photon Science	18,964		X			LSRC
494	NIF and Photon Science	30,876		X			LSRC
511	Operations and Business	77,078		X			LSRC
512	Operations and Business	5,896		X			LSRC
515	Operations and Business	8,409		X			LSRC
516	Operations and Business	6,333		X			LSRC
517	Operations and Business	6,090		X			LSRC
519	Operations and Business	10,006		X			LSRC
523	Operations and Business	3,507			X		LSRC
525	Operations and Business	1,080			X		LSRC
531	Operations and Business	12,537			X		LSRC
543	Operations and Business	78,261					FPA
571	Operations and Business	41,475			X		LSRC
581	NIF and Photon Science	693,172	X				FHA
582	NIF and Photon Science	2,933					LSRC
583	NIF and Photon Science	21,793					LSRC
591	Operations and Business	3,200			X		LSRC
610	Directors Group	4,314			X		LSRC
611	Operations and Business	14,790			X		LSRC
612	Weapons and Complex Integration	7,015					LSRC
614	Weapons and Complex Integration	1,221					LSRC
615	Operations and Business	3,421			X		LSRC
616	Operations and Business	2,216			X		LSRC
619	Operations and Business	2,047			X		LSRC
622	Operations and Business	1,039			X		LSRC
625	Weapons and Complex Integration	4,854				X	FHA
651	Directors Group	2,390			X		LSRC
663	Directors Group	24,786			X		LSRC
671	Operations and Business	41,476			X		LSRC
681	NIF and Photon Science	46,819					LSRC
691	Operations and Business	18,407			X		LSRC
693	Weapons and Complex	12,000					FHA

Fac ID#	Principal Directorate	Gross Sq Ft	1st Qtr 2011	2nd Qtr 2011	3rd Qtr 2011	4th Qtr 2011	Type of Insp.
	Integration						
694	Weapons and Complex Integration	10,590					LSRC
695	Weapons and Complex Integration	46,504		X			FPA
696	Weapons and Complex Integration	21,381					FHA
697	Weapons and Complex Integration	4,118					LSRC
803	Directors Group	1,719					LSRC
805	Science and Technology	6,830					LSRC
807	Science and Technology	1,575					LSRC
811	Operations and Business	1,081					LSRC
813	Science and Technology	2,870					LSRC
816	Science and Technology	1,223					LSRC
825	Science and Technology	1,370					LSRC
826	Science and Technology	1,638					LSRC
830	Science and Technology	1,764					LSRC
833	Operations and Business	1,892					LSRC
841	Operations and Business	1,786					LSRC
848	Science and Technology	1,300					LSRC
850	Science and Technology	5,095					LSRC
859	Weapons and Complex Integration	1,500					LSRC
865	Science and Technology	61,360					LSRC
867	Weapons and Complex Integration	4,342					LSRC
870	Science and Technology	4,000					LSRC
871	Weapons and Complex Integration	7,928					LSRC
872	Operations and Business	1,887					LSRC
873	Operations and Business	17,452					LSRC
874	Science and Technology	19,972					LSRC
875	Operations and Business	15,171					LSRC
876	Operations and Business	2,400					LSRC
877	Weapons and Complex Integration	3,352					LSRC
879	Operations and Business	2,879					LSRC
880	Science and Technology	2,839					LSRC
882	Directors Group	4,912					LSRC
889	Weapons and Complex Integration	2,719					LSRC
890	Operations and Business	6,863					LSRC

Fac ID#	Principal Directorate	Gross Sq Ft	1st Qtr 2011	2nd Qtr 2011	3rd Qtr 2011	4th Qtr 2011	Type of Insp.
1277	Weapons and Complex Integration	4,058					LSRC
1280	Operations and Business	5,644			X		LSRC
1602	Operations and Business	2,217			X		LSRC
1631	Weapons and Complex Integration	1,490					LSRC
1677	Operations and Business	28,789			X		LSRC
1678	Operations and Business	3,550					LSRC
1680	Operations and Business	5,697			X		LSRC
1726	Science and Technology	2,160				X	LSRC
1727	Science and Technology	1,837				X	LSRC
1730	Science and Technology	2,100				X	LSRC
1735	Science and Technology	3,261				X	LSRC
1736	Directors Group	4,526				X	LSRC
1739	Science and Technology	5,724				X	LSRC
1826	Operations and Business	3,590				X	LSRC
1879	Operations and Business	11,118				X	LSRC
1886	Operations and Business	3,643				X	LSRC
1887	Operations and Business	5,108				X	LSRC
1888	Operations and Business	11,520				X	LSRC
1889	Operations and Business	17,380				X	LSRC
1925	Science and Technology	2,176				X	LSRC
2180	Directors Group	1,643				X	LSRC
2580	Operations and Business	4,203				X	LSRC
2627	Directors Group	1,867				X	LSRC
2632	Directors Group	2,202				X	LSRC
2679	Directors Group	12,310				X	LSRC
2726	Directors Group	2,098				X	LSRC
2775	Directors Group	9,831					LSRC
2777	Directors Group	1,400					LSRC
2787	Directors Group	2,160					LSRC
2825	NIF and Photon Science	5,922					LSRC
2925	Science and Technology	4,909					LSRC
3180	Operations and Business	4,300					LSRC
3226	Operations and Business	3,077					LSRC
3340	Weapons and Complex Integration	2,160					LSRC
3427	Operations and Business	6,365					LSRC
3526	Directors Group	2,165					LSRC
3527	Directors Group	9,792					LSRC
3649	Science and Technology	4,800					LSRC

Fac ID#	Principal Directorate	Gross Sq Ft	1st Qtr 2011	2nd Qtr 2011	3rd Qtr 2011	4th Qtr 2011	Type of Insp.
3724	Science and Technology	19,810					LSRC
3725	NIF and Photon Science	19,867					LSRC
3726	NIF and Photon Science	19,824					LSRC
3925	NIF and Photon Science	1,081					LSRC
4302	Operations and Business	5,022					LSRC
4377	Operations and Business	4,920					LSRC
4378	Operations and Business	5,180					LSRC
4382	Science and Technology	3,600					LSRC
4525	Science and Technology	5,713					LSRC
4675	Operations and Business	11,287					LSRC
4725	Operations and Business	9,265					LSRC
4726	Operations and Business	9,362					LSRC
4727	Operations and Business	9,909					LSRC
4728	Operations and Business	6,710					LSRC
4729	Operations and Business	9,948					LSRC
5125	Operations and Business	2,912					LSRC
5198	Operations and Business	1,500					LSRC
5225	Operations and Business	1,952					LSRC
5226	Directors Group	2,548					LSRC
5399	NIF and Photon Science	1,858					LSRC
5475	Directors Group	32,368				X	LSRC
5626	Directors Group	4,372					LSRC
5627	Directors Group	8,415					LSRC
5675	Directors Group	4,259					LSRC
5997	NIF and Photon Science	1,000					LSRC
5998	NIF and Photon Science	3,069					LSRC
6178	Weapons and Complex Integration	1,040					LSRC
6197	Weapons and Complex Integration	5,148					FPA
6198	Weapons and Complex Integration	3,368					FPA
6325	Operations and Business	4,320					LSRC
6426	Operations and Business	2,100					LSRC
6526	Directors Group	2,801					LSRC
6527	Operations and Business	2,100					LSRC
6575	Directors Group	1,440					LSRC
6870	NIF and Photon Science	1,416					LSRC
6925	Science and Technology	5,893					LSRC
6926	Science and Technology	2,160					LSRC
6928	Science and Technology	1,886					LSRC

Fac ID#	Principal Directorate	Gross Sq Ft	1st Qtr 2011	2nd Qtr 2011	3rd Qtr 2011	4th Qtr 2011	Type of Insp.
6929	NIF and Photon Science	4,745					LSRC
6930	NIF and Photon Science	5,905					LSRC
6951	Weapons and Complex Integration	1,440					LSRC
004J	Operations and Business	7,110					LSRC
132N	Science and Technology	251,316			X		FPA
132S	Science and Technology	219,385					FPA
321A	Science and Technology	59,515				X	LSRC
321B	Science and Technology	7,511					LSRC
321C	Science and Technology	79,176					FPA
321D	Science and Technology	2,106					LSRC
321E	Science and Technology	2,581					LSRC
514A	Operations and Business	2,473					LSRC
551E	Operations and Business	41,068				X	LSRC
551W	Operations and Business	65,776	X				FPA
612A	Weapons and Complex Integration	4,283					FPA
6197B	Weapons and Complex Integration	4,662			X		FPA
801A	Weapons and Complex Integration	44,262					LSRC
801D	Weapons and Complex Integration	4,686					LSRC
802A	Science and Technology	3,264					LSRC
806A	Science and Technology	3,417					LSRC
806B	Science and Technology	4,088					LSRC
809A	Science and Technology	2,570					LSRC
810A	Science and Technology	3,365					LSRC
812A	Science and Technology	2,656					LSRC
823A	Science and Technology	1,089					LSRC
823B	Science and Technology	1,842					LSRC
827A	Science and Technology	4,539					LSRC
827C	Science and Technology	4,579					LSRC
827D	Science and Technology	4,579					LSRC
827E	Science and Technology	4,407					LSRC
832E	Science and Technology	1,581					LSRC
834A	Science and Technology	1,694					LSRC
834A	Weapons and Complex Integration	1,694					LSRC
836A	Weapons and Complex Integration	2,191					LSRC
836C	Weapons and Complex	2,900					LSRC

Fac ID#	Principal Directorate	Gross Sq Ft	1st Qtr 2011	2nd Qtr 2011	3rd Qtr 2011	4th Qtr 2011	Type of Insp.
	Integration						
836D	Weapons and Complex Integration	3,427					LSRC
851A	Weapons and Complex Integration	12,996					LSRC
854A	Science and Technology	2,458					LSRC
OS883	Weapons and Complex Integration	3,829					LSRC
OSM834M	Weapons and Complex Integration	1,690					LSRC
OSM854H	Science and Technology	3,205					LSRC

ANNEX C
Sample Survey Forms

Fire Protection Assessment Checklist

November 2009 – Revision 0

BUILDING INFORMATION

Building Number	*(Self explanatory)*	**Date of Assessment**	*(Self explanatory)*
Year Built	*Insert year or years built (see previous FHA or construction drawings)*	**Fire Protection Engineer**	*(Self explanatory)*
Program	*(Predominant tenant)*	**Last Fire Protection Document**	☐ FHA ☐ FPA ☐ LSRC Date:
General Comments	This checklist has been developed in accordance with applicable building codes and NFPA codes and standards, and incorporates a graded approach to compliance with Highly Protected Risk (HPR) per DOE O 420.1B requirements.		

REVISION LOG

Revision Number	Revision Date	Person Revising	Brief Description of Revision
1	*(Self explanatory)*	*(Self explanatory)*	*(Briefly describe the nature of the revisions)*
2			
3			
4			
5			
6			
7			
8			
9			
10			

FACILITY DESCRIPTION

Occupancy	
CBC (Chapter 3) *(Refer to California Building Code)*	**NFPA 101 (Chapter 6)** *(Refer to NFPA 101 Chapter 6)*
☐ Assembly: ☐A-1; ☐A-2; ☐A-3; ☐A-4; ☐A-5	☐ Assembly
☐ Business	☐ Business
☐ Educational	☐ Educational
☐ Factory and Industrial: ☐F-1 Moderate Hazard; ☐F-2 Low Haz.	☐ Industrial: ☐General Purpose; ☐Special Purpose; ☐High Hazard
☐ High Hazard: ☐H-1; ☐H-2; ☐H-3; ☐H-4; ☐H-5	
☐ Mercantile	☐ Mercantile
☐ Storage: ☐S-1 Moderate Hazard; ☐S-2 Low Hazard	☐ Storage: ☐Low Hazard; ☐ Ordinary Hazard; ☐High Hazard
☐ Utility and Miscellaneous	
☐ Other _____	☐ Other _____

Occupant Load Factor for Building Occupancy: ft² per person (CBC); ft² per person (NFPA) Building Area ft²

Building Occupant Load (not including Conference Rooms or Assembly Occupancies): occupants (CBC); occupants (NFPA)

Maximum Occupant Load in Conference Rooms (calculate for each Conference Room using 15 ft² per occupant); (a) occupants

(b) occupants

Maximum Occupant Load in Assembly Occupancies (greater than 50 occupants, calculate for each Assembly Occupancy using the most conservative Occupant Load Factor from CBC and NFPA): (a) occupants (b) occupants

Calculated Occupant Load (includes Building Occupant Load plus Conference Room Occupant Loads plus Assembly Occupant Loads): (CBC); (NFPA)

Comments: *(All sections above found in California Building Code Table 1004.1.1 or NFPA 101 Table 7.3.1.2 except for building area which can be found on Key Plans)*

Construction Type

Building Construction Classification, per CBC Chapter 6 *(Refer to California Building Code Chapter 6)*

Bldg. No., Section	Automatic Sprinkler Protection (ft²)		Type I		Type II		Type III		Type IV	Type V	
	YES	NO	A	B	A	B	A	B	HT	A	B
Total Area											

Building Construction Classification, per NFPA 220 *(Refer to NFPA 220 Chapter 4)*

Bldg. No., Section	Automatic Sprinkler Protection (ft²)		Type I		Type II			Type III		Type IV	Type V	
	YES	NO	442	332	222	111	000	211	200	2HH	111	000
Total Area												

Building Height: ft Total Floor Area: ft² Stories: *(Refer to construction drawings for Building height and Key Plans for Floor area and stories)*

Roof	Comments: *(Refer to previous FHA or to construction drawings)*
Exterior Walls	Comments: *(Refer to previous FHA or to construction drawings)*
Ceiling	Comments: *(Refer to previous FHA or to construction drawings)*
Floors	Comments: *(Refer to previous FHA or to construction drawings)*
Interior Walls	Comments: *(Refer to previous FHA or to construction drawings)*
Vertical Openings	Comments: *(Refer to previous FHA or to construction drawings)*
Interior Finish	Comments: *(Refer to previous FHA or to construction drawings)*
Utilities (where are they located)	Comments: *(List where electricity, natural gas, etc. feed into building)*

H.V.A.C. (where are the boiler, chiller rooms, etc.)	Comments: *(List where in building boiler(s) and chiller room(s) are located)*

Comments:

Exterior Exposures

Exposure Identification	Direction	Distance	Height	Construction	Hazard/Contents	Quantity	Protection
(Building No. of exposing structure)	*(Direction from building being assessed.*	*(List how far away)* ft	*(From ground level to top of roof)* ft	*(List objects outside construction ie. concrete walls with metal roof)*	*(List such as Ordinary hazard, Class III rack storage, less flammable oil in the case of transformer)*	*(Normally 1 unless object is something like transportainers or transformers)*	*(List protection features ie. sprinklered, exposure sprinklers, blank concrete wall, etc.)*
		~ ft	~ ft				
		~ ft	~ ft				
		~ ft	~ ft				
		~ ft	~ ft				
		~ ft	~ ft				
		~ ft	~ ft				

Comments:

Hazards

Building Specific (Compare NFPA 1 Table 60.1.26.1 with special instructions on Fire Department run cards)

Location	Brief Description (material, state, storage)	Present Quantity	Allowable Quantity
	(Refer to the runcard special information sheet for hazardous materials)		

Natural Phenomena Hazard Concerns

Wind	Tornado	Seismic	Flood	Wildland Fire	Comments
					(Refer to the LLNL Seismic Study on FPE server)

Lightning Hazard Concerns

Is this facility an approved explosive facility*? ☐ Yes ☐ No
*** If Yes to above, enter amount of NEW (Net Explosive Weight in grams) allowed in the building in the Hazards section.**
Does a Documented Safety Analysis or Safety Assessment take credit for a lightning protection system (LPS) that is a safety related system, structure or component (SSC) ☐ Yes ☐ No
Does this facility contain an accelerator? ☐ Yes ☐ No
Does this facility contain an "H" (CBC) or a "High Hazard" (NFPA) contents? ☐ Yes ☐ No
If any of the ☐ Yes boxes above are checked, then this facility requires a lightning protection system or other mitigating measures as per the Explosives Safety Manual.
Does this facility have a properly installed lightning protection system? ☐ Yes ☐ No
Is the maintenance on the lightning protection system current? ☐ Yes ☐ No

Comments: *(Self explanatory)*

Fire Protection Systems

Fire Alarm Control Panel (FACP) model: ☐ MXL; ☐ System 3; ☐Other
Type: ☐ Intelligent; ☐Conventional; ☐Hybrid (combination intelligent/conventional)
Location: *(Self explanatory)*

Detection

Type	☐Fire alarm pull stations; ☐Duct smoke detectors; ☐ Smoke detectors; ☐Heat detectors; ☐Tamper switches; ☐Pressure switches; ☐Flow switches; ☐ HSSD Air Sampling

Comments: *(Self explanatory)*

Notification

Type	☐Evacuation Page; ☐Evacuation Voice Alarm; ☐ Other

Comments: *(Self explanatory)*

Suppression

Sprinkler Type	Manufacturer	Model	Temperature Rating	Response	Orifice	K-Factor	Thread Size
Sprinkler System Data	Description: *(Self explanatory)*			☐ Pipe Schedule ☐ Hydraulically Designed		☐ Wet ☐ Dry ☐ Deluge ☐ Pre-action	

Area Protected	**Design Density**	**Design Area**	**Sprinkler Head Coverage**	**Total Water Demand Including Hose**	**Base of Riser Demand Pressure**	**Hose Demand**
	gpm/ft^2	ft^2	ft^2	gpm	psi	gpm
	gpm/ft^2	ft^2	ft^2	gpm	psi	gpm

Suppression (continued)

Base of Riser (B.O.R.)	Most Demanding Riser Number	Supply to B.O.R. gpm psi		Losses to B.O.R. psi	A.S. Demand at B.O.R. gpm psi		
Water Supply	Last Test Date *(Refer to hydrant test info on FPE server)*	Flow Hydrant Number and Location	Pressure Riser ID and Location	Residual: psi	Static: psi	Flow: gpm	☐ Adequate ☐ Inadequate ☐ N/A

Special Suppression System Description: *(Self explanatory)*

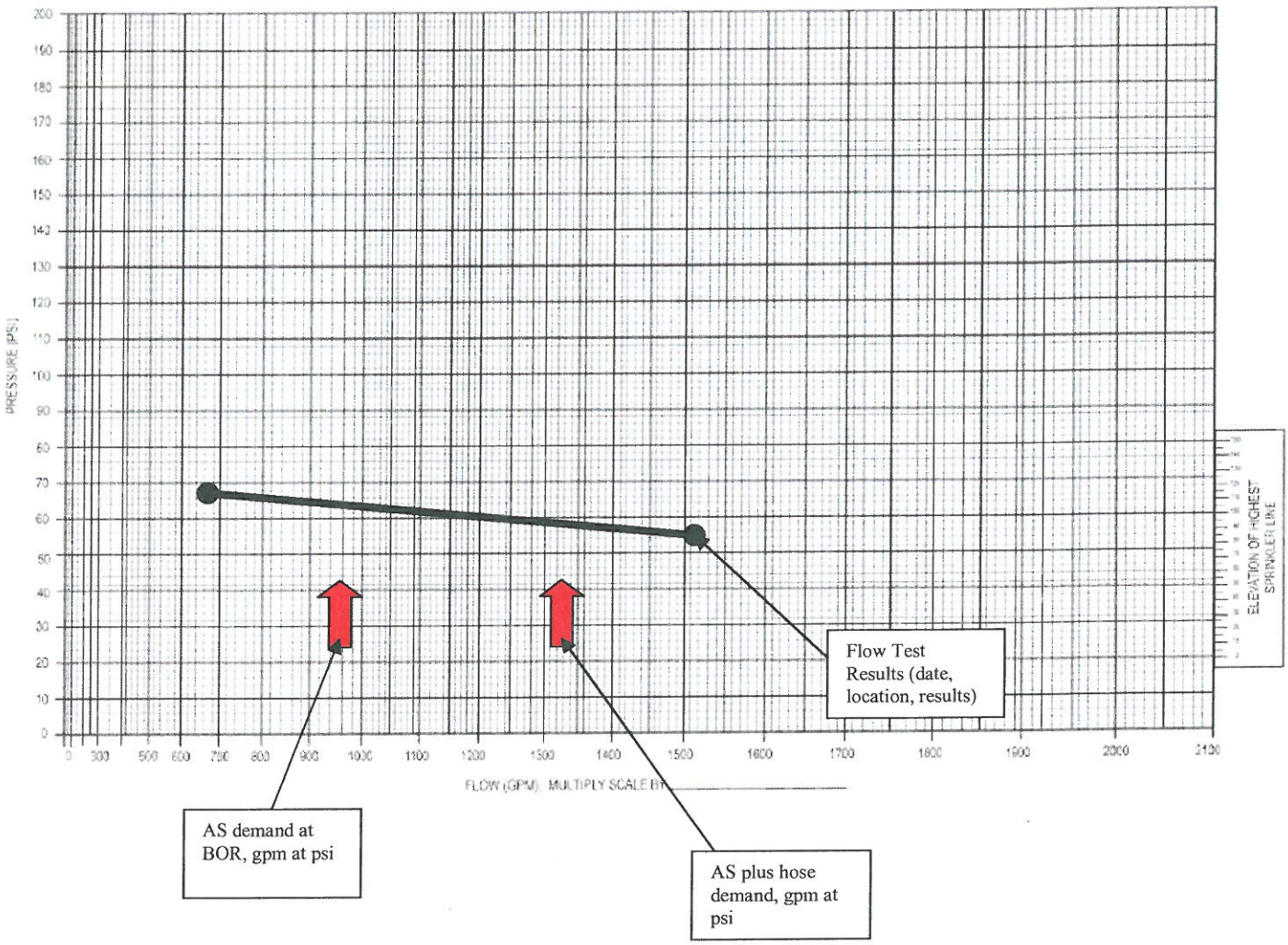
- ☐ Carbon Dioxide (CO_2)
- ☐ Clean Agent (INERGEN, for example)
- ☐ Dry Chemical
- ☐ Halon
- ☐ Wet Chemical
- ☐ Other _____

FDC location(s): *(Self explanatory)*
Hydrant location(s):
PIV location(s):

Comments:

Sample Water Supply Graph

(Use info collected on water supply section above to fill out the form below)



General Information and Analysis *(refer to previous FHA, construction drawings and site visit)*	
Building Operations	
☐ High Valued Property Equipment ☐ Vital Programs ☐ Critical Process Equipment ☐ Safety Class	
Construction	
Interior finish for exits and assembly areas are either noncombustible or have a flame-spread rating of 25 or less and smoke-developed rating of 50 or less.	☐ Yes ☐ No ☐ N/A ☐ See Comments
Vertical openings are enclosed	☐ Yes ☐ No ☐ N/A ☐ See Comments
Hazardous areas are separated from other areas	☐ Yes ☐ No ☐ N/A ☐ See Comments
Hazardous areas are separated from exit enclosures	☐ Yes ☐ No ☐ N/A ☐ See Comments
Fire doors have required fire rating	☐ Yes ☐ No ☐ N/A ☐ See Comments
Fire doors are functional	☐ Yes ☐ No ☐ N/A ☐ See Comments
All penetrations in fire walls, barriers, and partitions are protected with approved firestop systems (CBC 712)	☐ Yes ☐ No ☐ N/A ☐ See Comments
All duct penetrations of fire walls, barriers, and partitions are provided with fire dampers (CBC 712)	☐ Yes ☐ No ☐ N/A ☐ See Comments
Smoke control system	☐ Yes ☐ Operational? ☐ No ☐ N/A ☐ See Comments
Smoke control system in exit enclosures	☐ Yes ☐ Operational? ☐ No ☐ N/A ☐ See Comments
Building construction appropriate for occupancy	☐ Yes ☐ No ☐ N/A ☐ See Comments
Comments:	
Fire Protection Systems	
Fire detection system(s)	☐ Yes ☐ Partial ☐ No ☐ N/A ☐ See Comments Maintenance Date: Current
Fire notification devices	☐ Yes ☐ Partial ☐ No ☐ N/A ☐ See Comments Maintenance Date: Current
Fire suppression system(s)	☐ Yes ☐ Partial ☐ No ☐ N/A ☐ See Comments Maintenance Date: Current
Water run-off contained	☐ Yes ☐ No ☐ N/A ☐ See Comments
Fire protection system(s) impairments	☐ Yes ☐ No ☐ N/A ☐ See Comments
Fire protection riser has proper signage	☐ Yes ☐ No ☐ N/A ☐ See Comments
Fire apparatus access meets NFPA 1 – 18.2.4	☐ Yes ☐ No ☐ N/A ☐ See Comments
Fire lanes identified with red curbs and signage	☐ Yes ☐ No ☐ N/A ☐ See Comments
Elevator recall system	☐ Yes ☐ No ☐ N/A ☐ See Comments Floor(s):
Automatic shutdown of HVAC system with smoke detection	☐ Yes ☐ No ☐ N/A ☐ See Comments
Comments:	
Administrative	
Building modifications were reviewed by LLNL Building and Fire Safety	☐ Yes ☐ No ☐ N/A ☐ See Comments Modification Date:
General house keeping	☐ Excellent ☐ Good ☐ Adequate ☐ Poor ☐ Pitiful
Exemptions and/or equivalencies	☐ Yes ☐ No ☐ N/A ☐ See Comments Reference(s):
Comments:	

Egress	
Number of exits as required per NFPA 101 and CBC Chapter 10	Exits required: NFPA ; CBC Number of existing exits
Exit paths marked as per NFPA 101 and CBC Chapter 10	☐ Yes ☐ No ☐ N/A ☐ See Comments
Stairs have width, headroom, and handrail height as per NFPA 101 and CBC Chapter 10 for the building occupancy	☐ Yes ☐ No ☐ N/A ☐ See Comments
Stairwells pressurized	☐ Yes ☐ No ☐ N/A ☐ See Comments
Emergency lighting	☐ Yes ☐ No ☐ N/A ☐ See Comments Type:
Exits unlocked	☐ Yes ☐ No ☐ N/A ☐ See Comments
Exits unobstructed and available for instant use	☐ Yes ☐ No ☐ N/A ☐ See Comments

Panic hardware provided for the building occupancy	☐ Yes ☐ No ☐ N/A ☐ See Comments
Travel distances to the exits meet occupancy maximum as required per NFPA 101 and CBC Chapter 10	☐ Yes ☐ No ☐ N/A ☐ See Comments
Maximum allowed and actual dead-end distances and common paths of travel for occupancy per NFPA 101 and CBC Chapter 10	Maximum dead-end distance allowed: NFPA ft.; CBC ft. Maximum common path of travel allowed: NFPA ft.; CBC ft. Actual dead-end distance; ft. Actual common path of travel; ft. Are the dead-end distances and the common paths of travel compliant? ☐ Yes ☐ No ☐ See Comments
Does this building contain a Vault-type Room (VTR)? Contact Physical Security and Planning for VTR List.	☐ Yes (Room numbers) ☐ No ☐ N/A ☐ See Comments
Does the VTR means of egress meet the CBC and NFPA 101 Life Safety criteria? **If the VTR means of egress does not meet the CBC or NFPA 101, has a Fire Safety Evaluation (NFPA 101a) been completed?**	☐ Yes ☐ No ☐ N/A ☐ See Comments ☐ Yes ☐ No ☐ N/A ☐ See Comments Fire Safety Evaluation link; _____
Has an equivalency or an exemption been approved by DOE/SSO for the VTR?	☐ Yes ☐ No ☐ N/A ☐ See Comments Equivalency or exemption #_____
Comments:	

Loss Estimates

(refer to previous FHA, Facilities report on IFM website, sunflower report for building on website)

Replacement Value	
Building Value	https://ifm.llnl.gov/reports_site-stats.html#fac_rpts
Contents Value	https://property-int.llnl.gov/bldg_trlr.html
Total Value	*(self explanatory)*

Comments: No MCFL or MPFL calculations will be performed if Total Value < $50 M.

Maximum Credible Fire Loss (MCFL)
Note: The MCFL will only be estimated for buildings which have a Replacement Plant Value (RPV) of greater than $50M.

Fire Loss Scenario	
Summary of Events	
Estimated Costs for Fire Loss (1)	
Estimated Costs for Clean-up (2)	
MCFL Total (3)	

(1) Sunflower report of values in the room
(2) Cleanup cost per Engineering Standard 5.6, Table 4.1
(3) Fire loss plus clean-up costs.

Comments:

Maximum Possible Fire Loss (MPFL)
Note: The MPFL will only be estimated for buildings which have a Replacement Plant Value (RPV) of greater than $50M.

Fire Loss Scenario	
Summary of Events	
Estimated Costs for Fire Loss (1)	
Estimated Costs for Clean-up (2)	
MPFL Total (3)	

(1) Sunflower report values for contents and Facilities report on building replacement value.
(2) Cleanup cost per Engineering Standard 5.6, Table 4.1
(3) Fire loss plus clean-up costs plus rebuilding costs plus new design costs.

Comments:

Summary Report

X boxes to indicate additional comments/information attached at end *(self explanatory)*

☐ **Occupancy:**

☐ **Construction:**

☐ **Exterior Exposures:**

☐ **Hazards:**

☐ **Fire Protection Systems:**

☐ **General Information:**

☐ **Loss Estimates:**

Findings
(list of ITS items)

Lawrence Livermore National Laboratory
Emergency Management Department

November 2009-Rev 0 LIFE SAFETY REVIEW CHECKLIST (NFPA 1 2009)

Facility Contact : *(Check Roles & Responsibilities)*	Phone No: *(Self Explanatory)*	Inspection Date: *(Self Explanatory)*
Building Number: *(Self Explanatory)*	Inspected By: *(Self Explanatory)*	
Program: *(Major tenant)*		

INSPECTION ITEMS	Y	COMPLIANT NFPA 1	N	COMMENT(S)
A. EXTERIOR				
Fire apparatus access roads and fire lanes are clear and unobstructed		18.2.4		*(Refer to listed NFPA 1 sections for guidance for each inspection item listed)*
Building or facility numbers are visible		10.12.1		
36 inches of clear space is provided around hydrants and PIV'S		18.3.4		
The exterior is clear of vegetation and/or waste material		19.1.2		
B. EXITS				
Exit and exit ways are clear of combustible material		14.4.2		
All exit doors are unlocked during business hours		14.5.2.4		
All exit ways are unobstructed		14.4.1		
All exit doors and hardware operate properly		14.5		
All exit signs and emergency lighting is in service		14.13 & 14.14		
C. FIRE SAFETY & EVACUATION PLANS				
Occupant load signs posted in conference rooms and assembly areas		20.1.5.10.3		
D. HOUSEKEEPING				
All areas free from combustible waste		19.1		
All shop rags stored in self closing metal cans		16.2.2		
No storage within 18 inches of sprinkler heads		34.4.2		
Equipment rooms (boiler rooms, mechanical rooms, or electrical equipment rooms) free of combustible storage		10.19.5		
E. FEATURES OF FIRE PROTECTION				
Fire protection equipment is unobstructed (FACP, RISER, STANDPIPES)		13.1.3		
Fire extinguishers visually inspected monthly/tested annually NFPA 10		13.6.9.2		
Fire extinguishers available, visible, and unobstructed NFPA 10		13.6.8.1.3.3		
Self-closing fire doors function properly and are free of obstruction		12.4.6.3		
F. ELECTRICAL				
Heat-producing portable appliances UL/FM listed		11.5.3.3		
G. HAZARDOUS, FLAMMABLE and COMBUSTIBLE MATERIALS				
Visible hazard signs at entrances where hazardous materials are located		60.1.13.2		
All containers are UL/FM listed		66.9.4		
All compressed gas cylinders are secured		63.3.1.4.4		

List any items to be put on ITS form