

Facility: FARLEY		Date of Exam: OCTOBER 2014														
Tier	Group	RO K/A Category Points												SRO-Only Points		
		K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G *	Total	A2	G*	Total
1. Emergency & Abnormal Plant Evolutions	1	3	3	3				3	3			3	18	3	3	6
	2	1	1	2				2	1			2	9	2	2	4
	Tier Totals	4	4	5				5	4			5	27	5	5	10
2. Plant Systems	1	3	2	3	3	2	2	3	2	2	3	3	28	3	2	5
	2	1	1	1	1	1	1	1	1	1	1	0	10	0	2	3
	Tier Totals	4	3	4	4	3	3	4	3	3	4	3	38	5	3	8
3. Generic Knowledge and Abilities Categories					1	2	3	4	10	1	2	3	4	7		
					2	2	3	3	1	2	2	2				

Note:

- Ensure that at least two topics from every applicable K/A category are sampled within each tier of the RO and SRO-only outlines (i.e., except for one category in Tier 3 of the SRO-only outline, the "Tier Totals" in each K/A category shall not be less than two).
- The point total for each group and tier in the proposed outline must match that specified in the table. The final point total for each group and tier may deviate by  $\pm 1$  from that specified in the table based on NRC revisions. The final RO exam must total 75 points and the SRO-only exam must total 25 points.
- Systems/evolutions within each group are identified on the associated outline; systems or evolutions that do not apply at the facility should be deleted and justified; operationally important, site-specific systems/evolutions that are not included on the outline should be added. Refer to Section D.1.b of ES-401 for guidance regarding the elimination of inappropriate K/A statements.
- Select topics from as many systems and evolutions as possible; sample every system or evolution in the group before selecting a second topic for any system or evolution.
- Absent a plant-specific priority, only those K/As having an importance rating (IR) of 2.5 or higher shall be selected. Use the RO and SRO ratings for the RO and SRO-only portions, respectively.
- Select SRO topics for Tiers 1 and 2 from the shaded systems and K/A categories.
- \* The generic (G) K/As in Tiers 1 and 2 shall be selected from Section 2 of the K/A Catalog, but the topics must be relevant to the applicable evolution or system. Refer to Section D.1.b of ES-401 for the applicable K/As.
- On the following pages, enter the K/A numbers, a brief description of each topic, the topics' importance ratings (IRs) for the applicable license level, and the point totals (#) for each system and category. Enter the group and tier totals for each category in the table above; if fuel handling equipment is sampled in other than Category A2 or G\* on the SRO-only exam, enter it on the left side of Column A2 for Tier 2, Group 2 (Note #1 does not apply). Use duplicate pages for RO and SRO-only exams.
- For Tier 3, select topics from Section 2 of the K/A catalog, and enter the K/A numbers, descriptions, IRs, and point totals (#) on Form ES-401-3. Limit SRO selections to K/As that are linked to 10 CFR 55.43.

KA

NAME / SAFETY FUNCTION:

IR

K1 K2 K3 K4 K5 K6 A1 A2 A3 A4 G

TOPIC:

RO SRO

007EK2.02	Reactor Trip - Stabilization - Recovery / 1	2.6	2.8	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Breakers, relays and disconnects
008AK2.01	Pressurizer Vapor Space Accident / 3	2.7	2.7	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Valves
015AK1.01	RCP Malfunctions / 4	4.4	4.6	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Natural circulation in a nuclear reactor power plant
025AK3.01	Loss of RH/R System / 4	3.1	3.4	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Shift to alternate flowpath
026AA1.07	Loss of Component Cooling Water / 8	2.9	3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Flow rates to the components and systems that are serviced by the CCWS; interactions among the components
027AK1.02	Pressurizer Pressure Control System Malfunction / 3	2.8	3.1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Expansion of liquids as temperature increases
038EG2.4.11	Steam Gen. Tube Rupture / 3	4.0	4.2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge of abnormal condition procedures.
054AA2.03	Loss of Main Feedwater / 4	4.1	4.2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Conditions and reasons for AFW pump startup
055EA2.01	Station Blackout / 6	3.4	3.7	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Existing valve positioning on a loss of instrument air system
056AG2.2.39	Loss of Off-site Power / 6	3.9	4.5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge of less than one hour technical specification action statements for systems.
057AA1.05	Loss of Vital AC Inst. Bus / 6	3.2	3.4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Backup instrument indications

KA	NAME / SAFETY FUNCTION:	IR	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
		RO SRO												
068AK3.02	Loss of DC Power / 6	4	4.2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Actions contained in EOP for loss of dc power
062AA2.03	Loss of Nuclear Svc Water / 4	2.6	2.9	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	The valve lineups necessary to restart the SWS while bypassing the portion of the system causing the abnormal condition
065AK3.04	Loss of Instrument Air / 8	3	3.2	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Cross-over to backup air supplies
077AG2.42 <del>2.4.3</del>	Generator Voltage and Electric Grid Disturbances / 6	<del>2.7</del> 2.8 4.2 4.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<i>Ability to identify post-accident instrumentation, knowledge of annunciator alarms, indications or response procedures.</i>
WE04EK2.2	LOCA Outside Containment / 3	3.8	4.0	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Facility's heat removal systems, including primary coolant, emergency coolant, the decay heat removal systems and relations between the proper operation of these systems to the operation of the facility.
WE05EK1.1	Inadequate Heat Transfer - Loss of Secondary Heat Sink / 4	3.8	4.1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Components, capacity, and function of emergency systems.
WE11EA1.1	Loss of Emergency Coolant Recirc. / 4	3.9	4.0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Components and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes and automatic and manual features.

KA	NAME / SAFETY FUNCTION:	IR	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
RO SRO														
001AG2.4.6	Continuous Rod Withdrawal / 1	3.7	4.7	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge symptom based EOP mitigation strategies.
036AA1.02	Fuel Handling Accident / 8	3.1	3.5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ARM system
037AA2.07	Steam Generator Tube Leak / 3	3.1	3.6	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Flowpath for dilution of ejector exhaust air
051AK3.01	Loss of Condenser Vacuum / 4	2.8	3.1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Loss of steam dump capability upon loss of condenser vacuum
068AK3.18	Control Room Evac. / 8	4.2	4.5	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Actions contained in EOP for control room evacuation emergency task
WE03EK2.2	LOCA Cooledown - Depress. / 4	3.7	4.0	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Facility's heat removal systems, including primary coolant, emergency coolant, the decay heat removal systems and relations between the proper operation of these systems to the operation of the facility.
WE06EG2.1.20	Degraded Core Cooling / 4	4.6	4.6	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Ability to execute procedure steps.
WE08EA1.1	RCS Overcooling - PTS / 4	3.8	3.8	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Components and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes and automatic and manual features.
WE15EK1.2	Containment Flooding / 5	2.7	2.9	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Normal, abnormal and emergency operating procedures associated with (Containment Flooding).

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NAME / SAFETY FUNCTION:

IR

K1 K2 K3 K4 K5 K6 A1 A2 A3 A4 G

TOPIC:

RO SRO

003K6.02	Reactor Coolant Pump	2.7	3.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	RCP seals and seal water supply
004A1.07	Chemical and Volume Control	2.7	3.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Maximum specified letdown flow
004K1.06	Chemical and Volume Control	3.1	3.1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Makeup system to VCT
005K5.02	Residual Heat Removal	3.4	3.5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Need for adequate subcooling
006A4.01	Emergency Core Cooling	4.1	3.9	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Pumps
007K4.01	Pressurizer Relief/Quench Tank	2.6	2.9	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Quench tank cooling
007K5.02	Pressurizer Relief/Quench Tank	3.1	3.4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Method of forming a steam bubble in the PZR
008K3.03	Component Cooling Water	4.1	4.2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	RCP
010A4.03	Pressurizer Pressure Control	4.0	3.8	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	PORV and block valves
010K6.01	Pressurizer Pressure Control	2.7	3.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Pressure detection systems
012A2.03	Reactor Protection	3.4	3.7	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Incorrect channel bypassing

KA

NAME / SAFETY FUNCTION:

IR

K1 K2 K3 K4 K5 K6 A1 A2 A3 A4 G

TOPIC:

RO SRO

013K2.01	Engineered Safety Features Actuation	3.6	3.8	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ESFAS/safeguards equipment control
022A2.01	Containment Cooling	2.5	2.7	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Fan motor over-current
026K1.01	Containment Spray	4.2	4.2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ECCS
026K3.02	Containment Spray	4.2	4.3	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Recirculation spray system
039K4.02	Main and Reheat Steam	3.1	3.2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Utilization of T-ave. program control when steam dumping through atmospheric relief/dump valves, including T-ave. limits
059A4.08	Main Feedwater	3.0	2.9	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Feed regulating valve controller
059K3.03	Main Feedwater	3.5	3.7.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	S/GS
061A1.02	Auxiliary/Emergency Feedwater	3.3	3.6	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	S/G pressure
061G2.1.23	Auxiliary/Emergency Feedwater	4.3	4.4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Ability to perform specific system and integrated plant procedures during all modes of plant operation.
062A1.03	AC Electrical Distribution	2.5	2.8	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Effect on instrumentation and controls of switching power supplies
063A3.01	DC Electrical Distribution	2.7	3.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Meters, annunciators, dials, recorders and indicating lights

KA

NAME / SAFETY FUNCTION:

IR

K1

K2

K3

K4

K5

A1

A2

A3

A4

G

TOPIC:

RO SRO

063G2.4.1 DC Electrical Distribution

2.1.35

3.8 4.0

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Knowledge of EOP entry conditions and immediate action steps of knowledge of local auxiliary operator tasks during an emergency resultant operational effects

2.1.45

4.1 4.3

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073K4.01 Process Radiation Monitoring

4.0 4.3

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Knowledge of EOP entry conditions and immediate action steps of knowledge of local auxiliary operator tasks during an emergency resultant operational effects

076K2.08 Service Water

3.1 3.3

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ESF-actuated MOVs

078K1.04 Instrument Air

2.6 2.9

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Cooling water to compressor

103A3.01 Containment

3.9 4.2

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Containment Isolation





KA

NAME / SAFETY FUNCTION:

IR

K1 K2 K3 K4 K5 K6 A1 A2 A3 A4 G

TOPIC:

RO SRO

G2.1.18	Conduct of operations	3.6	3.8	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Ability to make accurate, clear and concise logs, records, status boards and reports.
G2.1.5	Conduct of operations	2.9	3.9	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Ability to locate and use procedures related to shift staffing, such as minimum crew complement, overtime limitations, etc.
G2.2.42	Equipment Control	3.9	4.6	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Ability to recognize system parameters that are entry-level conditions for Technical Specifications
G2.2.44	Equipment Control	4.2	4.4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Ability to interpret control room indications to verify the status and operation of a system, and understand how operator actions and directives affect plant and system conditions
G2.3.11	Radiation Control	3.8	4.3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Ability to control radiation releases.
G2.3.12	Radiation Control	3.2	3.7	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge of radiological safety principles pertaining to licensed operator duties
G2.3.5	Radiation Control	2.9	2.9	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Ability to use radiation monitoring systems
G2.4.37	Emergency Procedures/Plans	3.0	4.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge of the lines of authority during implementation of an emergency plan.
G2.4.49	Emergency Procedures/Plans	4.6	4.4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Ability to perform without reference to procedures those actions that require immediate operation of system components and controls.
G2.4.9	Emergency Procedures/Plans	3.8	4.2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge of low power / shutdown implications in accident (e.g. LOCA or loss of RHR) mitigation strategies.

KA

NAME / SAFETY FUNCTION:

IR

K1 K2 K3 K4 K5 K6 A1 A2 A3 A4 G

TOPIC:

RO SRO

007EG2.4.18 Reactor Trip - Stabilization - Recovery / 1

3.3 4.0

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Knowledge of the specific bases for EOPs.

009EG2.2.4 Small Break LOCA / 3

3.6 3.6

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(multi-unit) Ability to explain the variations in control board layouts, systems, instrumentation and procedural actions between units at a facility.

027AG2.2.25 Pressurizer Pressure Control System Malfunction / 3

3.2 4.2

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Knowledge of the bases in Technical Specifications for limiting conditions for operations and safety limits.

029EA2.05 ATWS / 1

3.4 3.4

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System component valve position indications

057AA2.16 Loss of Vital AC Inst. Bus / 6

3 3.1

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Normal and abnormal PZR level for various modes of plant operation

062AA2.01 Loss of Nuclear Svc Water / 4

2.9 3.5

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Location of a leak in the SWS

ES-401, REV 9

SRO T1G2 PWR EXAMINATION OUTLINE

FORM ES-401-2

KA NAME / SAFETY FUNCTION: IR K1 K2 K3 K4 K5 K6 A1 A2 A3 A4 G TOPIC:

RO SRO

008AG2.2.22 Dropped Control Rod / 1 4.0 4.7 ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☒ Knowledge of limiting conditions for operations and safety limits.

028AG2.1.32 Pressurizer Level Malfunction / 2 3.8 4.0 ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☒ Ability to explain and apply all system limits and precautions.

068AA2.08 Control Room Evac. / 8 3.9 4.1 ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☒ ☐ ☐ ☐ S/G pressure

WE10EA2.2 Natural Circ. With Seam Void / 4 3.4 3.9 ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☒ ☐ ☐ ☐ Adherence to appropriate procedures and operation within the limitations in the facility's license and amendments.

KA	NAME / SAFETY FUNCTION:	IR	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
		RO SRO												
003G2.4.2	Reactor Coolant Pump	4.5 4.6	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge of system set points, interlocks and automatic actions associated with EOP entry conditions.
006A2.13	Emergency Core Cooling	3.9 4.2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Inadvertent SIS actuation
008G2.4.50	Component Cooling Water	4.2 4.0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Ability to verify system alarm setpoints and operate controls identified in the alarm response manual.
012A2.05	Reactor Protection	3.1 3.2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Faulty or erratic operation of detectors and function generators
073A2.02	Process Radiation Monitoring	2.7 3.2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Detector failure

KA NAME / SAFETY FUNCTION: IR K1 K2 K3 K4 K5 K6 A1 A2 A3 A4 G

TOPIC:

RO SRO

034G2.4.30 Fuel Handling Equipment

2.7

4.1

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Knowledge of events related to system operations/status that must be reported to internal organizations or outside agencies.

072A2.03 Area Radiation Monitoring

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079A2.01

Station Air

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079A2.01 Station Air

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NAME / SAFETY FUNCTION:

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K1 K2 K3 K4 K5 K6 A1 A2 A3 A4 G

TOPIC:

RO SRO

G2.1.41	Conduct of operations	2.8	3.7	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge of the refueling processes
G2.2.38	Equipment Control	3.6	4.5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge of conditions and limitations in the facility license.
G2.2.41	Equipment Control	3.5	3.9	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Ability to obtain and interpret station electrical and mechanical drawings
G2.3.14	Radiation Control	3.4	3.8	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge of radiation or contamination hazards that may arise during normal, abnormal, or emergency conditions or activities
G2.3.6	Radiation Control	2.0	3.8	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Ability to approve release permits
G2.4.26	Emergency Procedures/Plans	3.1	3.6	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge of facility protection requirements including fire brigade and portable fire fighting equipment usage.
G2.4.32	Emergency Procedures/Plans	3.6	4.0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge of operator response to loss of all annunciators.

Facility: <u>Farley Nuclear Plant</u>		Date of Examination: <u>October 6, 2014</u>
Examination Level: <b>RO X</b>		Operating Test Number: <u>FA2014-301</u>
Administrative Topic (see Note)	Type Code*	Describe activity to be performed
a. A.1.a Conduct of Operations <b>RO ONLY</b>	R, N	<b>Title: Determine load limitations with a 500 kV transmission line out of service.</b>  <b>G2.1.20 – 4.6 / 4.6</b> <b>G2.1.25 – 3.9 / 4.2</b>
b. A.1.b Conduct of Operation <b>SRO &amp; RO</b>	R, M	<b>Title: Perform a Shutdown Margin Calculation in modes 1 &amp; 2 (STP-29.5).</b>  <b>G2.1.20 – 4.6 / 4.6</b> <b>G2.1.23 – 4.3 / 4.4</b>
c. A.2 Equipment Control <b>RO ONLY</b>	R, M	<b>Title: Complete selected sections of completed STP-1.0, Operations Daily and Shift Surveillance Requirements.</b>  <b>G2.2.12 - 3.7 / 4.1</b> <b>G2.2.42 - 3.9 / 4.6</b>
d. A.3 Radiation Control <b>SRO &amp; RO</b>	R, M	<b>Title: Calculate the Maximum Permissible Stay Time within Dose Limits.</b>  <b>G2.3.4 - 3.2 / 3.7</b>
e. A.4 Emergency Procedures/Plan	N/A	<b>NONE SELECTED</b>
NOTE: All items (5 total) are required for SROs. RO applicants require only 4 items unless they are retaking only the administrative topics, when all 5 are required.		
* Type Codes & Criteria: <div style="display: flex; justify-content: flex-end;"> <div style="text-align: right;"> (C)ontrol room, (S)imulator, or Class(R)oom  (D)irect from bank (≤ 3 for ROs; ≤ 4 for SROs &amp; RO retakes)  (N)ew or (M)odified from bank (≥ 1)  (P)revious 2 exams (≤ 1; randomly selected) </div> <div style="text-align: right;"> <b>4</b>  <b>0</b>  <b>4</b>  <b>0</b> </div> </div>		

Facility: <u>Farley Nuclear Plant</u>		Date of Examination: <u>October 6, 2014</u>
Examination Level: <u>SRO X</u>		Operating Test Number: <u>FA2014-301</u>
Administrative Topic (see Note)	Type Code*	Describe activity to be performed
a. A.1.a Conduct of Operations <b>SRO ONLY</b>	R, N	<b>Title: Determine DG fuel level.</b>  <b>G2.1.25 – 3.9 / 4.2</b>
b. A.1.b Conduct of Operation <b>SRO &amp; RO</b>	R, M	<b>Title: Perform a Shutdown Margin Calculation in modes 1 &amp; 2 (STP-29.5).</b>  <b>G2.1.20 – 4.6 / 4.6</b> <b>G2.1.23 – 4.3 / 4.4</b>
c. A.2 Equipment Control <b>SRO ONLY</b>	R, D	<b>Title: Review selected sections of STP-1.0, Operations Daily and Shift Surveillance Requirements and identify any required actions.</b>  <b>G2.2.40 – 3.4 / 4.7</b> <b>G2.2.42 – 3.9 / 4.6</b>
d. A.3 Radiation Control <b>SRO &amp; RO</b>	R, M	<b>Title: Calculate the Maximum Permissible Stay Time within Dose Limits.</b>  <b>G2.3.4 - 3.2 / 3.7</b>
e. A.4 Emergency Procedures/Plan <b>SRO ONLY</b>	R, M	<b>Title: Determine Protective Action Recommendations.</b>  <b>G2.4.44 – 2.4 / 4.4</b>
NOTE: All items (5 total) are required for SROs. RO applicants require only 4 items unless they are retaking only the administrative topics, when all 5 are required.		
* Type Codes & Criteria:		
(C)ontrol room, (S)imulator, or Class(R)oom		<b>5</b>
(D)irect from bank ( $\leq 3$ for ROs; $\leq 4$ for SROs & RO retakes)		<b>1</b>
(N)ew or (M)odified from bank ( $\geq 1$ )		<b>4</b>
(P)revious 2 exams ( $\leq 1$ ; randomly selected)		<b>0</b>



Facility: <u>Farley Nuclear Plant</u>		Date of Examination: <u>October 6, 2014</u>
Exam Level: RO <input checked="" type="checkbox"/> SRO-I <input checked="" type="checkbox"/> SRO-U- <input checked="" type="checkbox"/>		Operating Test No.: <u>FA2014 301</u>
Control Room Systems <sup>@</sup> (8 for RO); (7 for SRO-I); (2 or 3 for SRO-U, including 1 ESF)		
System / JPM Title	Type Code*	Safety Function
<b>a. CRO-065B: Inadvertent cooldown requires boration per AOP-27, Emergency Boration.</b>  <b>024AA2.05 3.3/3.9</b>	A, L, M, S	1
<b>b. CRO-NEW: Establish HHSI flow for Bleed and Feed during FRP-H.1.</b>  <b>013A4.01 - 4.5 / 4.8</b> <b>013A4.02 - 4.3 / 4.4</b> <b>013A4.03 - 4.5 / 4.7</b>	A, EN, L, N, S	(SRO-U) 2
<b>c. CRO-076: Raise the 'A' Accumulator Pressure.</b>  <b>006A1.13 - 3.5 / 3.7</b> <b>006A4.02 - 4.0 / 3.8</b>	D, S	3
<b>d. CRO-336B: Check Feedwater status in response to a Reactor trip and Safety Injection.</b>  <b>059A3.04 - 2.5 / 2.6</b> <b>059A3.06 - 3.2 / 3.3</b> <b>059A4.08 - 3.0 / 2.9</b> <b>061A3.01 - 4.2 / 4.2</b>	A, D, L, S	(SRO-U) 4S
<b>e. CRO-066D: Borate the RHR System to prepare for RCS Cooldown.</b>  <b>005K1.04 2.9/3.1</b>	D, L, S	4P
<b>f. CRO-MOD: Perform actions of ESP-0.1. (Step 1.6 of Attachment 2).</b>  <b>062A2.04 - 3.1 / 3.4</b> <b>062A4.01 - 3.3 / 3.1</b> <b>056AA1.31 – 3.3/3.3</b> <b>056AA1.37 – 3.4/3.5</b>	A, M, S	6

g.	<b>CRO-127A - Perform actions of AOP-100 for a NI-42 failure.</b>  <b>015A2.01 - 3.5 / 3.9</b> <b>015A3.02 - 3.7 / 3.9</b> <b>015A4.03 - 3.8 / 3.9</b>	D, P, S	(RO ONLY) 7
h.	<b>CRO-346: Align the Containment Spray (CS) system for the post-accident recirculation phase of operation.</b>  <b>026A4.01 4.5/4.3</b>	A, M, L, S	(SRO-U) 5
In-Plant Systems <sup>@</sup> (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U)			
i.	<b>SO-351A (modified): Start 2C DG from DGLCP in Mode 4.</b>  <b>064A4.01      4.0/4.3</b> <b>064A4.02      3.3/3.4</b> <b>064A4.06      3.9/3.9</b>	E, L, M	(SRO-U) 6
j.	<b>SO-Fire Pump: Start a Motor Driven Fire Pump (MDFP) and Diesel Driven Fire Pump (DDFP) locally.</b>  <b>086A4.01 – 3.3 / 3.3</b>	D, E, P	8
k.	<b>SO-95B, Align the Recycle Holdup Tank (RHT) to Drain to Waste Holdup Tank U2.</b>  <b>068K1.07 - 2.7 / 2.9</b>	D, R	(SRO-U) 9
@	All RO and SRO-I control room (and in-plant) systems must be different and serve different safety functions; all 5 SRO-U systems must serve different safety functions; in-plant systems and functions may overlap those tested in the control room.		
* Type Codes		Criteria for RO / SRO-I / SRO-U	
(A)lternate path (C)ontrol room (D)irect from bank (E)mergency or abnormal in-plant (EN)gineered safety feature (L)ow-Power / Shutdown (N)ew or (M)odified from bank including 1(A) (P)revious 2 exams (R)CA (S)imulator		4-6 / 4-6 / 2-3 ≤ 9 / ≤ 8 / ≤ 4 ≥ 1 / ≥ 1 / ≥ 1 - / - / ≥ 1 (control room system) ≥ 1 / ≥ 1 / ≥ 1 ≥ 2 / ≥ 2 / ≥ 1 ≤ 3 / ≤ 3 / ≤ 2 (randomly selected) ≥ 1 / ≥ 1 / ≥ 1	
<b>(5/5/3)</b> <b>(0)</b> <b>(6/5/2)</b> <b>(2/2/1)</b> <b>(-/1)</b> <b>(6/6/4)</b> <b>(5/5/3)</b> <b>(2/1/0)</b> <b>(1/1/1)</b> <b>(8/7/3)</b>			