WORKFORCE DEVELOPMENT INITIATIVE

SAN FRANCISCO PUBLIC UTILITIES COMMISSION

West Coast Water Utilities Workshop
On Workforce Development
San Jose, CA
May 30, 2008

PROCESS	TOOL
WORKFORCE DEVELOPMENT PLANNING	NEEDS ASSESSMENT INTERVIEW FORM
STAFF TRAINING	ANALYSIS OF COMPETENCIES NEEDED AND AT RISK
KNOWLEDGE RETENTION	WATER/WASTEWATER ENTERPRISE INFORMATION SYSTEM

WATER ENTERPRISE NEEDS ASSESSMENT

- 14 interviews with 23 staff members from 6 Divisions of the Water Enterprise
- Structured interview with a combination of multiple choice and open-ended questions
- A more detailed version of the research package used for today's workshop

35 MISSION-CRITICAL CLASSIFICATIONS IN 11 CATEGORIES AT RISK IN QUANTITY AND/OR PREPAREDNESS

MISSION-CRITICAL FUNCTIONS AT RISK

Civil Service Classification	OPERATIONAL FUNCTION AT RISK: Hydropower	Water Supply Quantity	Water Delivery Reliability	Water Quality	Environmental Stewardship	Customer Service	Safety, Security, and Emergency Response
7488 Power Generation Supervisor	X						
7484 Senior Power Generation Technician	X						
7482 Power Generation Technician II	X						
7480 Power Generation Technician I	X						
5212 Principal Engineer	X	X	X	X	X	X	X
5211 Senior Engineer	X	X	X	X	X	X	X
5241 Engineer	X	X	X	X	X	X	X
5207 Associate Engineer	X	X	X	X	X	X	X
5203 Assistant Process Engineer		X	X	X	X	X	X
5201 Junior Engineer	X	X	X	X	X	X	X
7329 EMT Assistant Supervisor			X	X			
7318 Electronic Maintenance Technician	X	X	X	X	X	X	X
7345 Electrician			X	X		X	X
7284 Utility Plumber Supervisor II		X	X	X	X	X	X
7250 Utility Plumber Supervisor I		X	X	X	X	X	X
7388 Utility Plumber		X	X	X	X	X	X
7343 Sr. Water Treatment Operator			X	X	X		X
7341 Water Treatment Operator			X	X	X		X
7332 Maintenance Machinist			X	X		X	X
7381 Automotive Mechanic			X	X		X	X
2489 Laboratory Services Manager			X	X			X
2488 Supervising Chemist		X	X	X			X
2487 Chemist III		X	X	X			X
2482 Water Quality Technician III				X	X		X
2481 Water Quality Technician I/II				X	X		X
9920 Apprentice				X			
2485 Supervising Biologist			X	X	X		
2484 Biologist III			X	X	X		
2483 Biologist I/II				X	X	X	
7270 Watershed Keeper Supervisor				X	X	X	X
7470 Watershed Keeper				X	X	X	X
0922 Area Land Manager				X	X	X	X
5486 Watershed Forester				X	X	X	X
5602 Utility Specialist		X					
5148 Water Operations Analyst		X	X	X	X	X	X
TOTAL	10	14	22	30	22	19	25

CATEGORY OF WORK	Number of Classifications
Power Generation Operations	4
Engineers	6
Electricians/Electronic Maintenance	3
Plumbers	3
Automotive Mechanic	1
Machinist	1
Water Quality Technicians/Chemists	6
Biologists	3
Watershed Natural Resources/Security	4
Utility and Water Operations Analysts	2
Water Treatment Operators	2

THE CORE BUSINESS FUNCTION AT HIGHEST RISK WAS WATER QUALITY

	FREQUENCY
WATER QUALITY	**30**
Safety, Security, and Emergency Response	**25**
Water Delivery Reliability	**22**
Environmental Stewardship	**22**
Customer Service	**19**
Water Supply	**14**
Hydropower	**10**

RISKS TO ADEQUACY OF EMPLOYEE KNOWLEDGE AND SKILL

	NUMBER OF ASSESSMENTS DESIGNATING FACTOR AS HIGH-RISK
CHANGING REGULATORY REQUIREMENTS	**6**
NEW FACILITIES, PROCESSES, PROCEDURES, TECHNOLOGIES, AND EQUIPMENT	**6**
Retirement	**5**
Inadequate documentation on facilities, processes, procedures, technologies, and equipment	**5**
Other turnover	**3**

KNOWLEDGE RETENTION IDENTIFIED AS PROCESS POSING HIGHEST LEVEL OF RISK FOR MISSION-CRITICAL POSITIONS

	NUMBER OF TIMES PROCESS IDENTIFIED AS A CHALLENGE
Classification	**25**
Recruitment/Selection	**25**
Staff Training	**22**
KNOWLEDGE RETENTION	**35**

RECRUITMENT/SELECTION PROCESS IDENTIFIED AS HIGHEST RISK TO ABILITY TO FILL MISSION-CRITICAL POSITIONS WITH QUALIFIED APPLICANTS

	HIGH	*MEDIUM*	*LOW*
Lack of adequate labor pool with appropriate qualifications	**5**	**1**	**2**
Lack of appropriate classifications for skills needed	**5**		**4**
Uncompetitive pay/fringe benefits	**4**	**1**	**4**
RECRUITMENT/SELECTION PROCESS	**6**	**1**	

SOME CHALLENGES ARE POSITION-SPECIFIC (e.g., Water Treatment Operators) AND CALL FOR A POSITION-SPECIFIC STRATEGY

SOME ARE ENTERPRISE-WIDE

- Planning, design, and implementation of technical training
- Recruitment/Selection process
- Inadequate documentation and knowledge retention

STAFF TRAINING CHALLENGE

HOW TO DESIGN TRAINING AROUND BUSINESS NEEDS

THE QUESTIONS

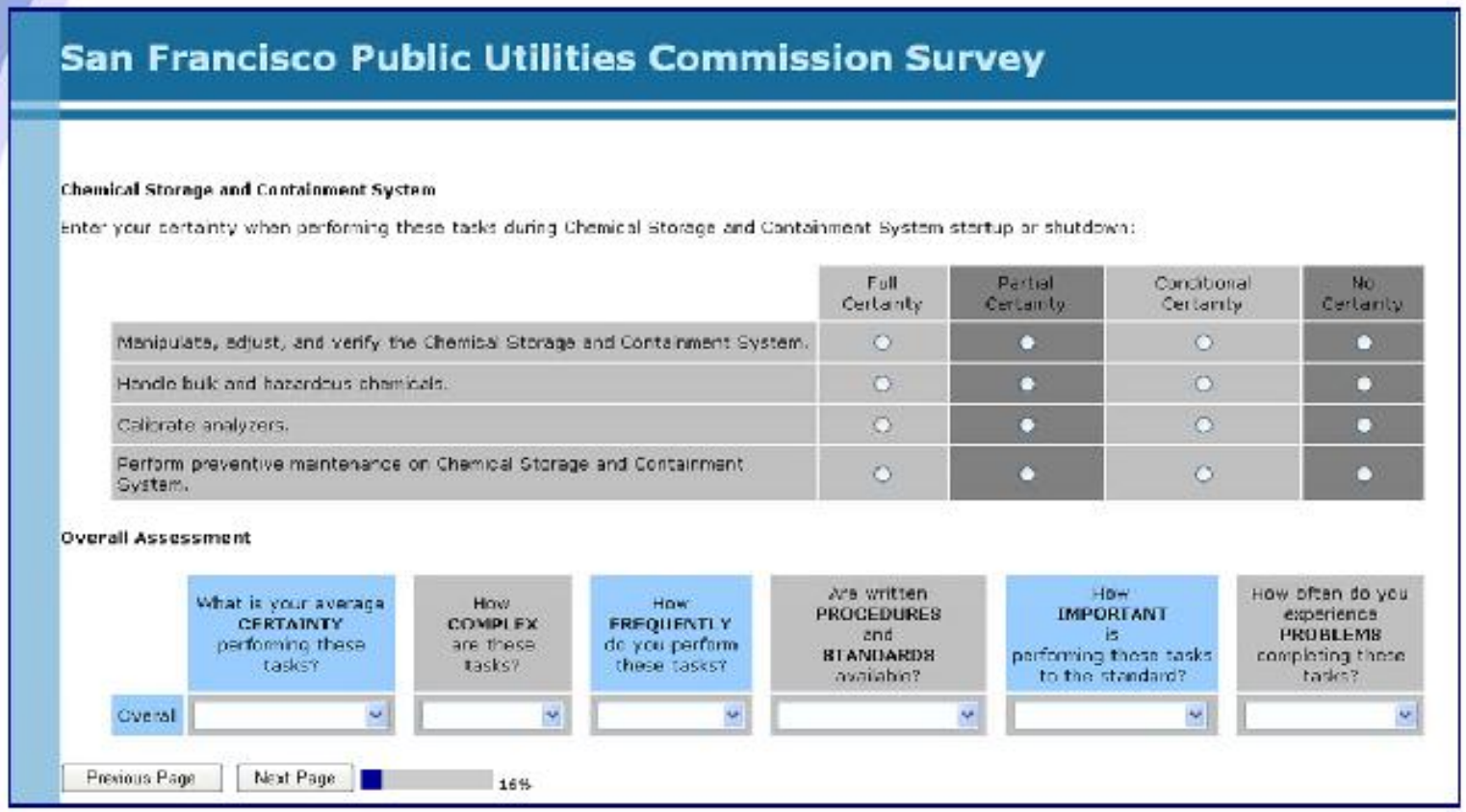
- What do our water treatment operators need to know?
- How complete is their knowledge, and how close are the knowledgeable ones to retirement?
- What procedures need to be documented?
- What process problems need to be addressed before the process is documented?
- Where is additional training needed?

THE PROCESS

A. Task identification by water treatment managers

B. Confidential online surveys to determine staff preparedness, retirement risk, and process problems

On-line Survey



San Francisco Public Utilities Commission Survey

Chemical Storage and Containment System

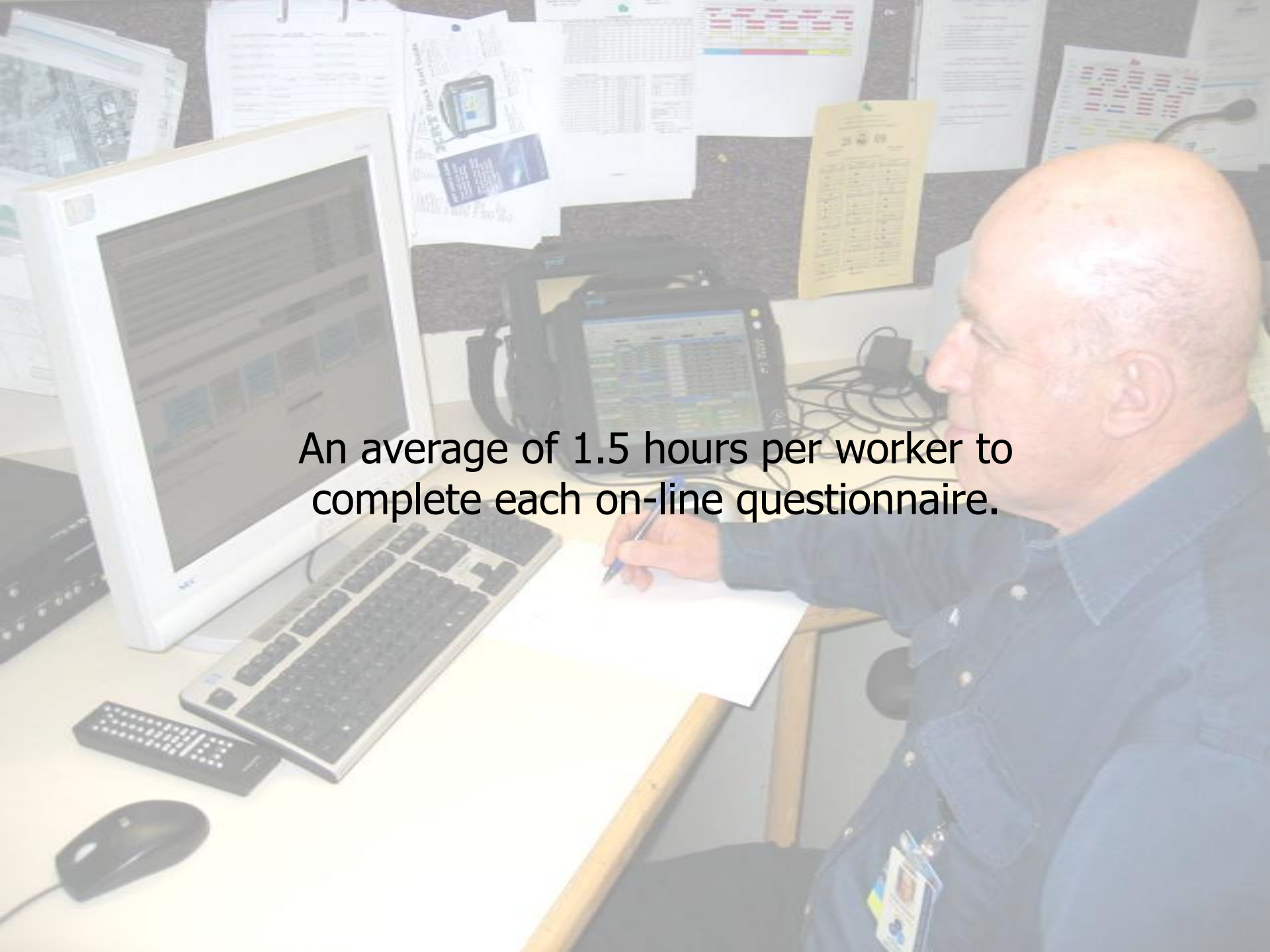
Enter your certainty when performing these tasks during Chemical Storage and Containment System startup or shutdown:

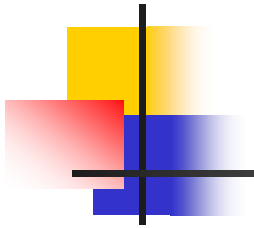
	Full Certainty	Partial Certainty	Conditional Certainty	No Certainty
Manipulate, adjust, and verify the Chemical Storage and Containment System.	○	●	○	●
Handle bulk and hazardous chemicals.	○	●	○	●
Calibrate analyzers.	○	●	○	●
Perform preventive maintenance on Chemical Storage and Containment System.	○	●	○	●

Overall Assessment

	What is your average **CERTAINTY** performing these tasks?	How **COMPLEX** are these tasks?	How **FREQUENTLY** do you perform these tasks?	Are written **PROCEDURES** and **STANDARDS** available?	How **IMPORTANT** is performing these tasks to the standard?	How often do you experience **PROBLEMS** completing these tasks?
Overall						

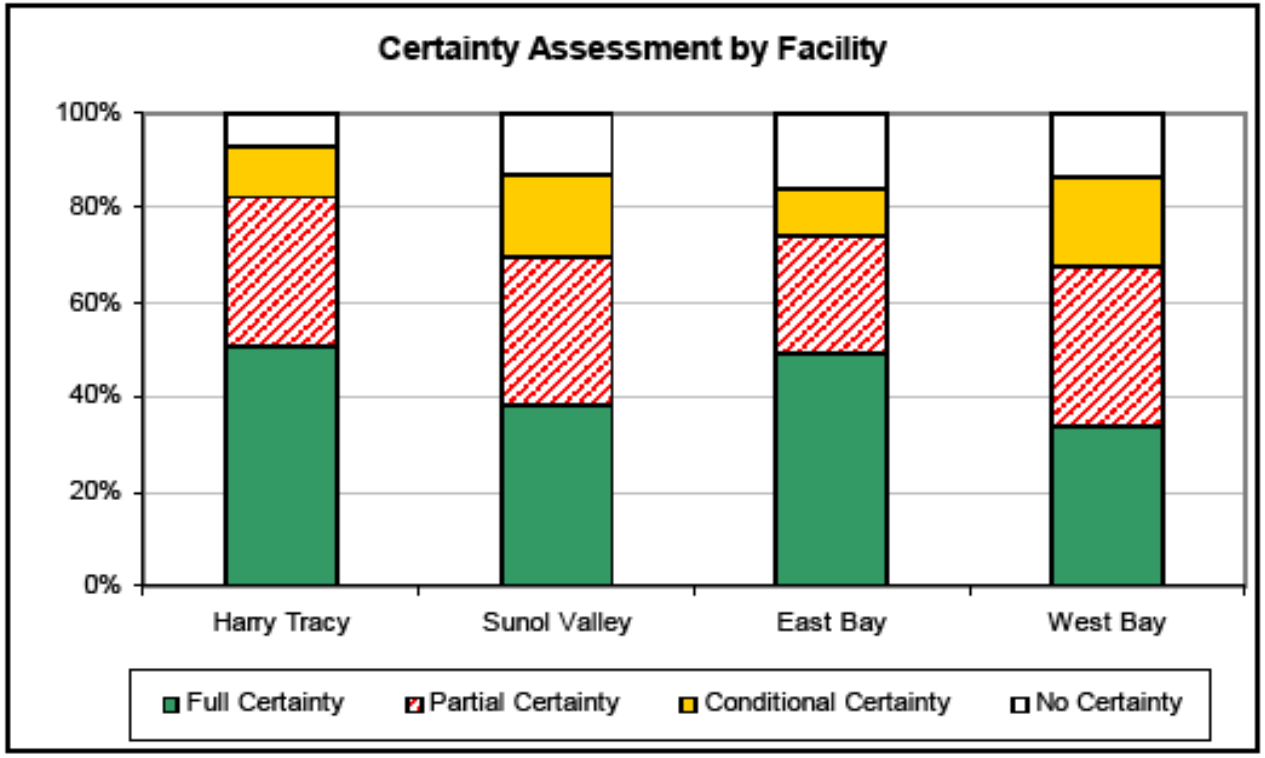
Previous Page | Next Page | 16%


An average of 1.5 hours per worker to
complete each on-line questionnaire.



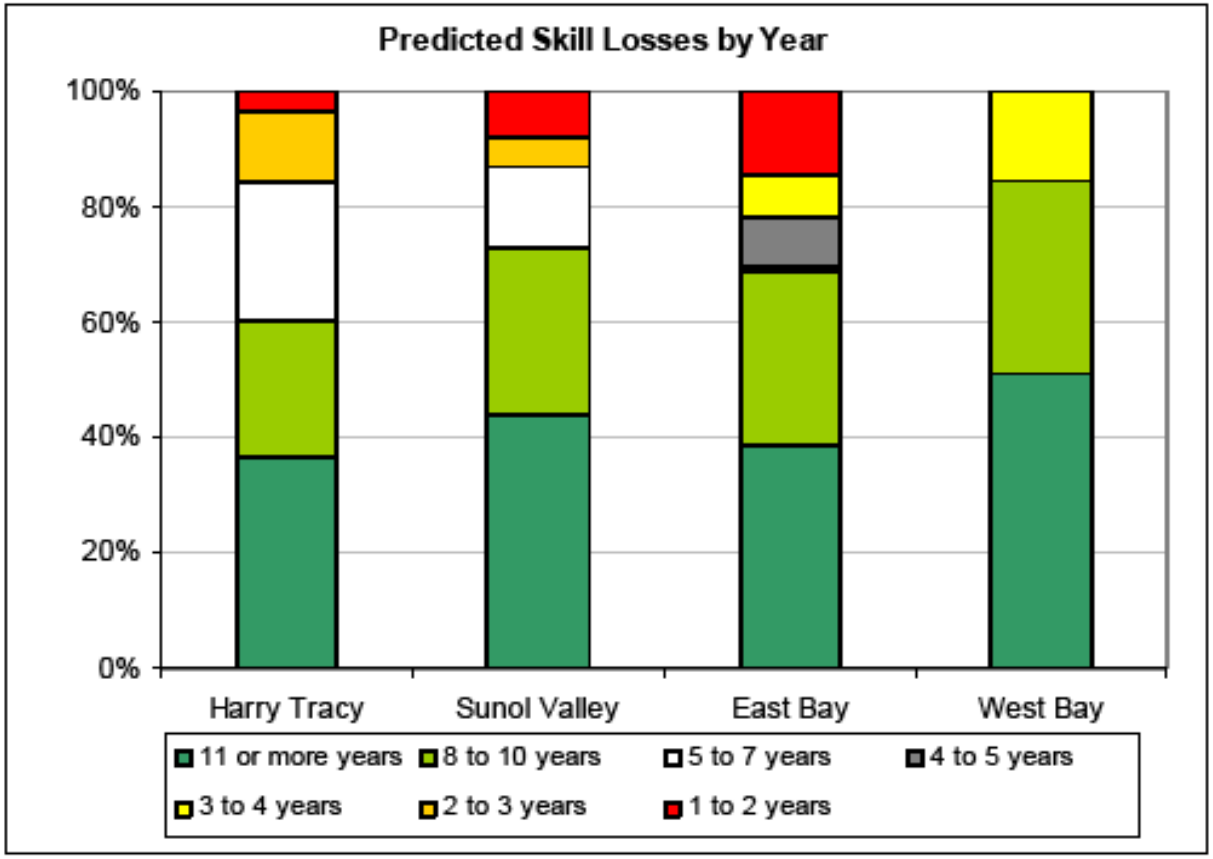
FINDINGS OF INTERLIANCE COMPETENCY ANALYSIS

Present Capability



- Overall, respondents averaged full certainty for 44% of the equipment in their area of responsibility

Key Concern - Skill Risk from Retirement



- Within three years, these facilities will lose 13 percent of their skills.

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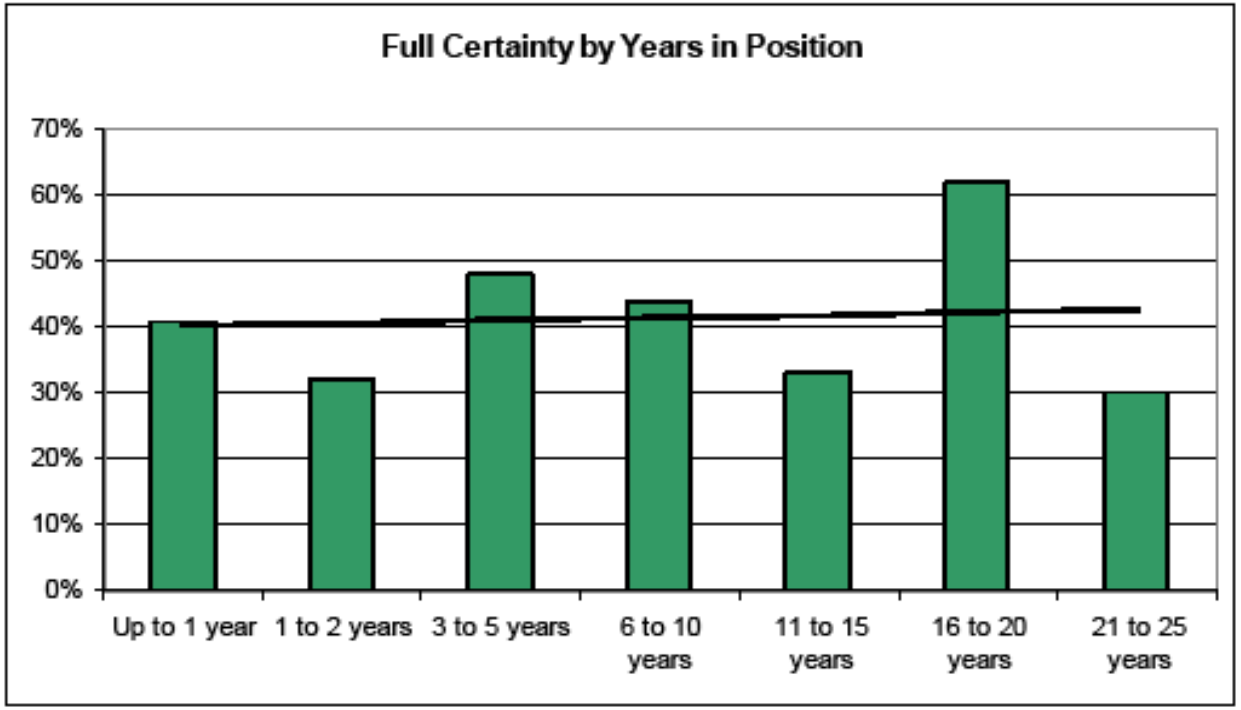
Learning Rate of the Organization



- Years in position is not a strong indicator of the level of full certainty.
- Unless a proactive approach is taken to skill development, the natural learning rate may not be sufficient to replace lost skills.

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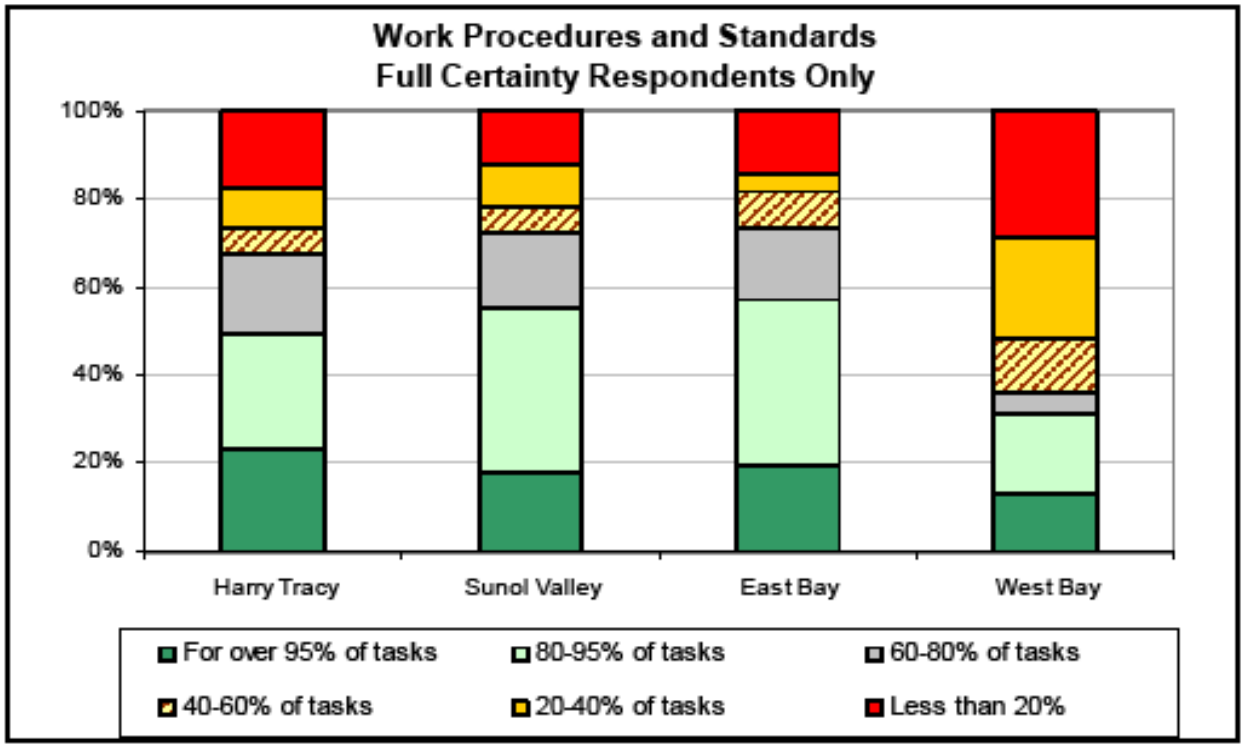
Lack of Work Procedures and Standards

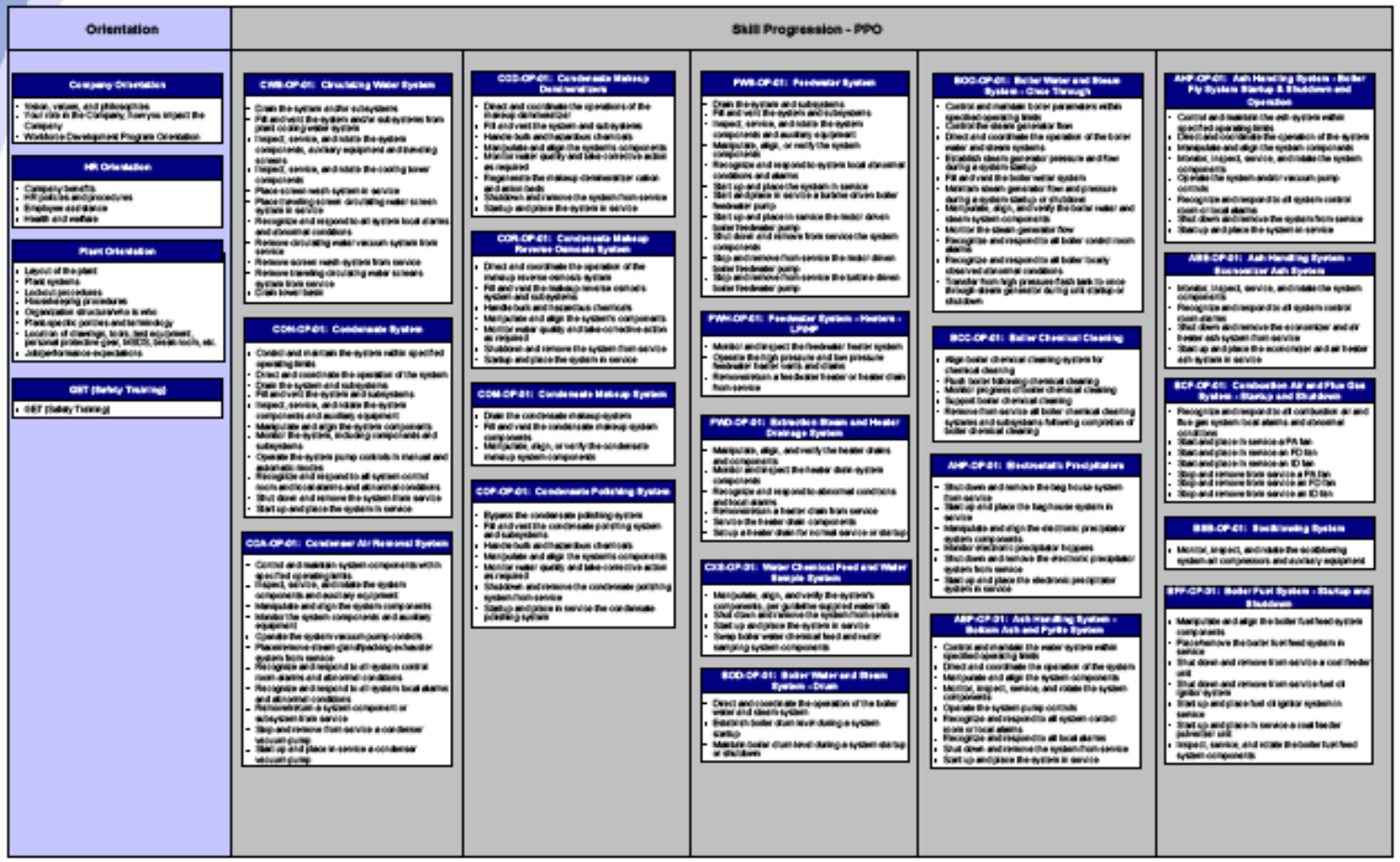


- Benchmark data shows that error rates double when performing tasks without complete documentation.
- The highest error rates occur when people have incomplete documentation and partial or conditional certainty.

THE RECOMMENDATIONS

- Investigate processes with high problem rates
- Develop documentation where it is missing
- Develop a training plan based on identified needs

Formalize Training
Sample Map of Training Modules



KNOWLEDGE RETENTION – WHERE WE ARE NOW:

- Inadequate access to existing information
- Inadequate documentation on facilities, processes, procedures, technologies, and equipment
- Lack of decision support tools to help staff plan and implement complex processes
- Unreliable cataloguing and storage of valuable reports and documents
- No system that clarifies to staff what information they need to know to do their work, or how to find it

WHERE WE ARE GOING:

WATER/WASTEWATER INFORMATION SYSTEM THAT WILL HELP STAFF FIND THE INFORMATION THEY NEED TO PERFORM THEIR WORK

KICK-OFF MEETING

Representatives from Water, Wastewater, Information Technology Services, and East Bay Municipal Utility District

PROCESS

Identify:

- Information needed by staff to perform their work
- Information available
  - Processes
  - Procedures
  - Permits
  - Maps and Graphics
  - Manuals
  - Training Materials
  - Videos
- Documentation missing
- Areas where training will be needed to supplement documentation

DATA COLLECTION FORM

DRAFT
WWEIS SURVEY ON INFORMATION NEEDED

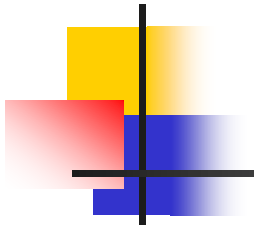
Name: _____ Date: _____

Division: _____ Section: _____ Workgroup: _____

Please list information that workers in your workgroup should have easy access to in order to perform their work reliably (e.g., policies, procedures, operations and maintenance manuals, permits, regulations, maps, training materials, and decision support tools).

Information	Where it is stored	How it is stored	Who owns/maintains data?	Attribute or type of information	Facility	Additional documentation needed? Does it exist?	Further training for staff needed?			

Other people in your group or section you would like us to interview? _____



Website will be:

- Designed to access data from multiple sources
- Organized by organizational hierarchy
- Capable of searches by key words (e.g., name of facility)