


Exhibit H

		XES 2.600_A02
Energy Supply Policy System		Revision: 5.1
TITLE:	Root Cause Investigation Report	Page 1 of 6

ENERGY SUPPLY Confidential Draft
Attorney-Client Privileged Communication/Attorney Work Product

ROOT CAUSE INVESTIGATION REPORT

- Fill out page 1 as soon as practical following an event.
- This form does not replace or eliminate any forms

necessary for Worker's Comp or doctor.


STEP 1: COLLECTION OF DATA					
EVENT OCCURRENCE					
Date/Time of Event:		June 2, 2020 at 1723 hours			
Location of Event:		Comanche Generating Station, Unit 3			
DATE REPORTED:		6/2/2020			
EVENT TYPE*					
<u>ENVIRONMENTAL</u>		<u>HEALTH AND SAFETY</u>		<u>NEAR MISS</u>	
<input type="checkbox"/> Hazardous Waste <input type="checkbox"/> Permit Deviation <input type="checkbox"/> Air <input type="checkbox"/> Water <input type="checkbox"/> Other: <input type="checkbox"/> Spill or Release <input type="checkbox"/> Other:		<input type="checkbox"/> Fatality <input type="checkbox"/> Injury or <input type="checkbox"/> Illness <input type="checkbox"/> Minor Injury <input type="checkbox"/> First Aid <input type="checkbox"/> Medical Treatment <input type="checkbox"/> Restricted Duty <input type="checkbox"/> Lost Time Injury Injury Type/Body Parts Affected:		<input type="checkbox"/> Incorrect Isolation <input type="checkbox"/> Personnel Working on Incorrect Equipment <input type="checkbox"/> Close Call on Personnel Safety or Equipment Damage <input type="checkbox"/> Other:	
				<u>PRODUCTION</u>	
				<input checked="" type="checkbox"/> Forced Outage (NERC/GADS Code: U1, U2, or U3) <input checked="" type="checkbox"/> Startup Failure (NERC/GADS Code: SF) <input checked="" type="checkbox"/> Equipment Damage <input checked="" type="checkbox"/> Fire or Explosion <input type="checkbox"/> Station Blackout <input type="checkbox"/> Other:	
				<u>VEHICLE</u>	
				<input type="checkbox"/> Struck by other Vehicle <input type="checkbox"/> Striking Other Vehicle <input type="checkbox"/> Striking Fixed Object <input type="checkbox"/> Backing Accident—Stationary Object <input type="checkbox"/> Backing Accident—Other Vehicle Pedestrian Vehicle No. Vehicle Type	
PERSON INVOLVED IN EVENT	Emp ID #	JOB CLASS	INJURED	JOB ASSIGNED WHEN INJURED/EXPOSED	LENGTH OF EXPERIENCE AT THIS TASK
Operator		PSA	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N		
			<input type="checkbox"/> Y <input type="checkbox"/> N		
			<input type="checkbox"/> Y <input type="checkbox"/> N		
			<input type="checkbox"/> Y <input type="checkbox"/> N		
			<input type="checkbox"/> Y <input type="checkbox"/> N		
PERSON IN CHARGE			DEPARTMENT NAME AND DEPARTMENT NUMBER		
PROCEDURE AND/OR WORK ORDER INVOLVED				EQUIPMENT NUMBER (from the tag), if appropriate.	
Unit 3 start-up: roll-up of turbine, preparing to synchronize					
WHAT HAPPENED (Describe the events prior to, and including the event)					
While rolling up to full speed, the turbine lube oil pressure went to zero as the turbine reached approximately 3000 rpm, bearings lost oil and overheated. Sparks were reported coming from some bearings and a flash fireball was reported coming from the top of the turbine lube oil tank. The events are described in more detail in Appendix A based upon interviews conducted with involved personnel.					

STEP 2: ANALYSIS

Definition: An accident is an unplanned, undesirable event that results in disruption of work, damage to property or equipment, illness or personal injury. The seriousness of an accident is often a matter of chance.

Purpose: The purpose of a root cause investigation is to identify and verify root cause(s) and develop and implement solutions that will prevent recurrence. This requires determining what to change and how it should be changed. This is accomplished through data collection, determining and verifying the root causes, identifying solutions, assigning responsibility for implementation of the action plan and communicating investigation results.

Investigation Committee: Management in the organization where the event occurred is responsible for assembling the investigation committee. This committee should include, at the very least, the persons involved, witness(es), victim(s) if any, and anyone else with knowledge about the event or situation. Subject matter experts may also be called upon to provide valuable information.

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	NAME OF INVESTIGATION COMMITTEE MEMBER	NAME OF INVESTIGATION COMMITTEE MEMBER
DATE OF INVESTIGATION 6/29/2020	██████████	██████████
CLAIM NO. (If Applicable)	N/A	

(A) Event type and undesirable result. (These items are choices for filling in the head of our Fishbone diagram.)

- Identify the type of event.
 - Injury: Describe
 - Stoppage of Work.
 - Damage to Property.
 - Damage to Equipment.
 - Other

(B) CONTRIBUTING FACTORS THESE ARE NOT ROOT CAUSES.

Method

- No Methods
- Developed But Not Followed
- Developed But Not Understood
- Developed But Not Accurate
- Supervisory/Managerial Methods
- No Training
- Training Not Understood
- Inadequate Training
- Inspections
- Housekeeping
- Worker Selection
- Planning/Scheduling
- Job Briefing
- Work Practices
- Other

Tools & Equipment

- Faulty
- Design
- Availability
- PPE
- Resource Allocation
- Labels, Signs, Displays, Etc.
- Corrosion/Wear
- Incorrect Use
- Unexpected Equipment Condition/Status
- Hidden System Response
- Equipment Out Of Service
- Confusing Displays/Controls
- Absence of Indication/ Instrumentation
- Other

Material

- Faulty
- Design
- Use
- Availability
- Identification

Other

Environment

- Weather
- Temperature
- Vibration
- Noise
- Light
- Working Space
- Chemical Exposure
- Atmospheric Condition
- Distractions/Interruptions
- Changes/Departure From Routine
- Task Monotony
- Simultaneous Multiple Tasks
- Other

People

- Not Qualified
- Fatigued/Long Hours
- Physical Abilities/Previous Injuries
- Hazard Not Recognized
- Hazard Recognized But Accepted
- Hazard Recognized Not Eliminated
- Hazard Recognized But Not Reported
- Communication --Planning/
Scheduling
- Communication -- Job Briefing
- Communication -- Labeling/Signs
- Communication -- Breakdown
- Ergonomics/Body Mechanics – Force
Related
- Ergonomics/Body Mechanics –
Overexertion
- Ergonomics/Body Mechanics –
Repetition
- Ergonomics/Body Mechanics – Body
Position

Ergonomics/Body Mechanics –
Weight Related

- Mindset – Time Pressure
- Mindset – Hurrying Shortcuts
- Mindset – Complacency/ Over
confidence
- Mindset – Assumptions
- Mindset – Personality Conflict
- Mindset – Habits
- Mindset – Upset/Angry
- Mindset – Stress
- Individual Capabilities
- Problem Solving Skills
- Lack of Proficiency (infrequent
performance of Activity)
- Limited Short-Term Memory

Notes:

The following is an explanation of the Fishbone Diagram Outline as shown below.

- Insert event type and undesirable result from Step 2A into the (Head) event Type box. Next, the contributing factors are shown from the bolded headings in Step 2B, as “Major Bones”. Working on one category at a time, create sub-bones off of the “major bone” using the contributing factors identified in the check boxes of Step 2B. Then for each of the contributing factors, ask why it exists. This is accomplished by asking “why” enough times to establish the root cause of that contributing factor. Once the sub-bones are identified the logic flow should be rechecked by asking if the lowest sub-bone caused the next sub-bone, which in turn caused the next sub-bone, which caused the major bone, which caused the undesirable result. Once you have identified the root causes for each major bone, go to Step 3.

(Head) Event Type: **Damage to Equipment**

(Major Bone) **Tools & Equipment**

(Sub-bone) Contributing Factor 1: **Design**

A. Stop pin design did not prevent the worm gear actuator from operating the valve beyond its designed travel limits.	B. Valve design did not have adequate indication of position.	C. The valve was a single point of failure, which isolated the emergency back up source of oil to the turbine.
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(Sub-bone) Contributing Factor 2: **Labels, Signs, Displays**

A. Valve did not have labels for every possible operating state (A, B, or A+B).
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(Sub-bone) Contributing Factor 3: **Absence of Indication/Instrumentation**

A. No local pressure or flow instrumentation to provide indication that oil was flowing in direction intended.

STEP 3: RESULTS, CORRECTIVE ACTIONS AND FOLLOW-UP				
For each Root Cause identified in the Fishbone diagram, assign corresponding corrective actions, responsible party(s), and target completion dates.				
WHAT WAS DONE CORRECTLY				
A. ROOT CAUSE – Valve did not have clear indication of position				
CORRECTIVE ACTION(S): Visual indication will be provided via permanent labels and a pointer. Tactile indication will be provided by addition of a stop plate to the underside of the gear. Feedback indication will be provided by installation of local oil pressure gauges.				
The single point failure will be corrected by modification of the emergency back up oil supply to bypass the oil coolers and filters and their associated 6-way transfer valves.				
RESPONSIBLE PARTY(S) Reliability Engineering with Plant Maintenance & Contractor Support (piping modifications)		TARGET DATE(S) 9/30/2020 for completion	COMPLETION DATE	
STEP 4: APPROVALS – REVIEW, CONCUR, AND APPROVE INVESTIGATION				
UNIT MANAGER SIGNATURE		DATE	NEXT LEVEL MANAGER SIGNATURE	
COMMENTS				
IF MOTOR VEHICLE ACCIDENT: DID NOT COMPLY <input type="checkbox"/> DID COMPLY <input type="checkbox"/>				
STEP 5: COMMUNICATION RESULTS				
DISTRIBUTION TO (Unit, Department, Division, Region, Corporation, Etc.)	METHOD (Phone, Memo, Corporate Publication, Etc.)	ASSIGNED TO	TARGET DATE	COMPLETION DATE
STEP 6: REVIEW				
ASSIGNED FOR REVIEW		DATE REVIEWED	REVIEWED BY	
FINDINGS				

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Root Cause Investigation Report – Appendix A

This Appendix A is a summary based on an internal assessment of the events occurring between 4:45 and 5:30 p.m. on June 2, 2020, during the Comanche 3 start-up. The start-up activities leading up to the event on June 2, 2020, and specifically the day before, were generally going well. Some issues were encountered during these start-up activities, but the unit was determined to be ready for synchronization to the grid. During this process, a high turbine lube oil (“TLO”) alarm triggered and a Control Specialist (“CS”) initiated a turbine trip.

A team of personnel—a Senior Operations Manager, Operations Manager, and two individuals serving as Plant Specialist As (“PSA”) (also referred to as the “team”)—responded by troubleshooting the TLO’s cooling water system. After arrival at the TLO skid, the Senior Operations Manager, Operations Manager, and PSA3 performed one operation to address oil cooling, while PSA2 worked on placing oil absorbents, investigating high TLO differential pressure, and swapping filters. Both TLO coolers were in service, which although allowable, was atypical. The team did not change the configuration. Rather, through investigation, they noted high TLO temperatures on the west oil cooler through physical touch. The Senior Operations Manager directed PSA3 to open the west cooler valve and oil temperatures significantly dropped. The change in system configuration was communicated back to the CS in the control room over the radio. At that time, the turbine was re-latched and the team proceeded with the unit startup.

PSA1 was not involved in addressing the high TLO temperature. While PSA1 was assigned to the turbine for the start-up, PSA1 had been directed by the CS to bubble ammonia to address a different issue associated with the start-up activities. PSA1 heard some radio communications regarding the actions taken by the other individuals. In addition, PSA1 had difficulty hearing due to loud noise around the turbine that exacerbated some level of hearing difficulty/loss by PSA1.

After the team addressed the high TLO temperatures, PSA1 communicated face-to-face with PSA2 (with the possible presence of PSA3) in a conference room near the control room (PSAs were not permitted to be in the control room due to COVID-19 precautions). PSA2 discussed the TLO water cooler system configuration with PSA1. PSA1 went to investigate the issue further as PSA1 was not satisfied with the information provided by PSA2. No specific discussions occurred regarding changing system configuration during this exchange.

Upon arrival at the TLO skid, PSA1 felt the pipe that transmitted oil and, in his opinion, it felt cooler than it should have. He also noted that the cooler configuration was abnormal. In response, he operated the six-way valve on the TLO system, attempting to change the configuration to one cooler. When PSA1 rotated the valve 180 degrees, it isolated oil flow to the turbine. This resulted in low turbine oil, a subsequent turbine trip, and damage to the turbine due to friction on the turbine bearings. The valve design should not have allowed oil flow isolation. However, the internal stop was broken/defective (sheared dowel pin that was discovered after the TLO was disassembled) which allowed the valve to isolate oil flow. PSA1 believed he was taking the correct action to realign oil flow based on the markings on the valve. He believed he could not isolate oil flow regardless of valve configuration due to the valve design and stop pin. After operating the six-way valve 180 degrees, he waited, listened, and heard what sounded like oil flowing. However, he

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Root Cause Investigation Report – Appendix A

isolated flow instead of realigning oil flow to the normal configuration (i.e., oil flow through one TLO cooler).

There was no communication from PSA1 to a CS prior to his inspection and troubleshooting of the TLO coolers. As discussed above, face-to-face communications did not occur between work groups (i.e., CSs and PSAs) due to preventative COVID-19 measures. Some personnel—including all three PSAs—reported feeling disconnected and isolated because they were not in the control room and communicating with the CS as they typically would during start-up.