

Common Causal Factors - What was not done that would have prevented the incident or made it less severe?

Causal Factors are NOT root causes – they are the RCA starting point!!

Incident Type	Common Causal Factors (Error or Defect)
General	<ul style="list-style-type: none"> Did not wear personal protective equipment – specify type of PPE Failed to detect defect or hazard prior to use –be specific Work was not stopped when hazard was identified Did not take action to avoid hazard – specify action and hazard type Hazard or defect was not kept out of work system
Vehicular Incidents	<ul style="list-style-type: none"> Driver did not keep car on road Safe driving distance was not maintained Driver did not keep eyes on road or other vehicles Speed was not reduced for icy and slick conditions
Slip, Trip, or Fall	<ul style="list-style-type: none"> Did not maintain balance Did not maintain three point contact Eyes were not on path Did not use hand rail / did not break fall
Environmental Release	<ul style="list-style-type: none"> Equipment failure that initiated the release – also analyze failure Release was not detected promptly – describe ‘how late’ Release was not responded to on time – describe ‘how late’ Release was not remediated correctly - describe
Fall Protection Usage	<ul style="list-style-type: none"> Did not tie off / did not tie off to approved tie off Fall protection failed – describe type of failure Fall protection was not worn correctly – describe what was wrong Proper lanyard type was not used – wrong length, type, etc.
Struck By / Caught Between	<ul style="list-style-type: none"> Did not stay out of the line of fire Did not keep hand out of pinch point
LOTO-Related	<ul style="list-style-type: none"> Did not isolate device / isolated wrong device – specify Did not de-energize system prior to beginning work
Confined Space / Open Hole	<ul style="list-style-type: none"> Access to open hole was not prevented Action was not taken to avoid open hole Confined space was not sniffed prior to entry
Strains and Sprains	<ul style="list-style-type: none"> Center of body was not aligned with work being done Load was not kept close to body during lift Weight of load was not tested prior to lift Two people were not used to lift 100 pound bags

NOTE #1: This list DOES NOT include all possible causal factors, either in general or specific to a given incident type.

NOTE #2: Equipment failures can be either incidents or causal factors – you have to decide which analysis option works the best. It is recommended that equipment failures be analyzed as incidents so that the causal factors of such failures, and their root causes, can be identified and remedied.

NOTE #3: Near root causes or root causes on the back of the TapRoot® root cause analysis tree are not causal factors. For example, ‘Did not follow procedure’ or ‘Did not follow JSA’ are NOT causal factors – they are on the back of the tree!

Key Questions to Ask When Analyzing Human Errors (HPD Causal Factors)

These questions should be answered for EACH causal factor prior to performing root cause analysis on that causal factor.

Procedures (Checklist in Hand)

- Was a checklist being used to perform the job?
- If YES, has a copy of the checklist been retained for 'design quality' analysis?
- If NO, would the use of a well-written checklist while doing this work have prevented the incident?

Training

- Can the person currently describe the correct way to do the job?
- Was the person performing the work considered qualified by the company to do it?
- If YES, describe the qualification process and collect related documentation
- If NO, describe the factors that led to an unqualified person being assigned to perform a job

Quality Control (Third party check of work)

- Was a 'stop and hold for third party check' process being used when the error occurred?
- If YES, describe the existing 'stop and hold' process, highlighting the steps that failed in this case
- If NO, would the use of a 'stop and hold for third party check' process have prevented the error?

Communications

- What type of verbal communication was involved with error that was made, if any?
- Was formal work turnover related to the error that was made, and have these records been collected?
- Were any standard communication practices, such as repeat back or acronyms, being used?

Management Systems

- What written policies or other standard practices are related to the work being performed? (collect copies)
- Was a policy violated, and if so, how often does this type of violation occur?
- Have corrective actions for this problem been tried in the past, and if so, why did they fail?

Human Engineering

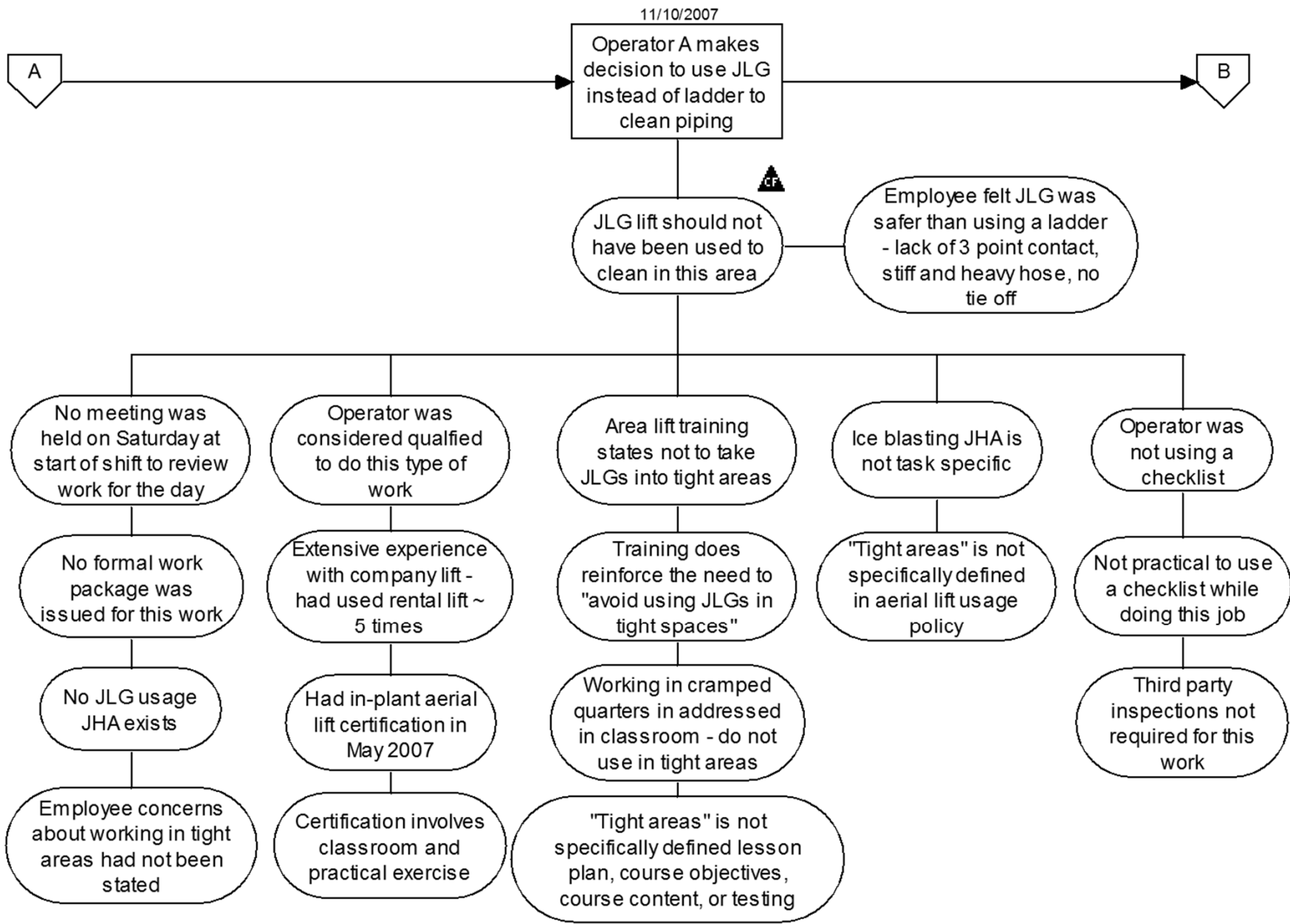
- Was the error that was made related to using a machine interface, such as a display or controls?
- How was the person positioned relative to the work being performed when the error occurred?
- How might the work environment have contributed to the error being made?

Work Direction

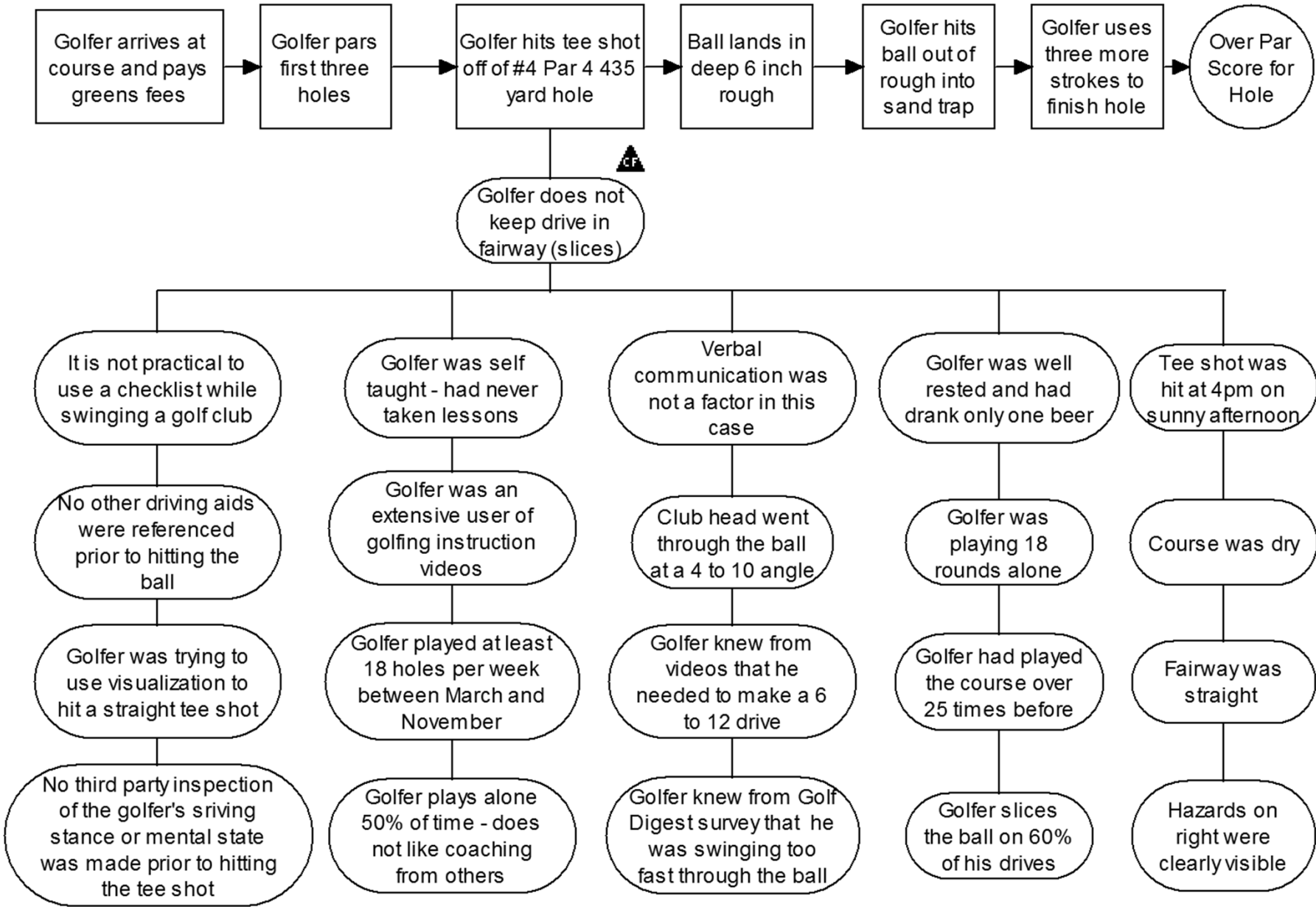
- What type of preparation took place prior to work that shift?
- What type of work package was provided to guide work that day?
- What work schedules were being followed leading up to the day when the error occurred?

NOTE #1: This list does not include all key investigative questions that should be asked to better understand human error, and they may not provide enough information on their own to allow for root cause determination.

NOTE #2: Equipment difficulty causal factors have their own set of questions that need to be asked. Typically, it is recommended that equipment failures be analyzed as incidents on their own unless they contributed to a larger problem (and even then, analyzing the failure from both perspectives is often helpful. Also, equipment failure analysis normally involves more extensive data collection, such as shift reports, performance contracts, PM schedules and results, and previous failure histories and trends.



Example Causal Factor SnapCharT #2





Investigation Process Excellence Survey

Measuring Investigation Effectiveness

- Our investigations are performed in a timely manner
- We follow a formal investigation process
- We create investigation plans prior to beginning data collection
- We collect information from several sources
- We do a good job of asking effective interview questions
- We ask our interview questions in an effective manner
- We support our interview facts with good data analysis
- We consistently develop SMARTER corrective actions
- Our investigation teams work well together

LOW	-----				HIGH
1	2	3	4	5	
1	2	3	4	5	
1	2	3	4	5	
1	2	3	4	5	
1	2	3	4	5	
1	2	3	4	5	
1	2	3	4	5	
1	2	3	4	5	
1	2	3	4	5	
1	2	3	4	5	

Total Investigation Effectiveness Score

Measuring SnapCharT® Effectiveness

- Each of our events consistently contain only one action item
- We identify both "Who" or "What", and "Does What", for each event
- We consistently use job titles or functions instead of names
- We consistently use dates and times on our events as appropriate
- Action items are only shown in events (not in conditions)
- We do a good job of using conditions to amplify events
- We use our conditions to identify what was not done
- We clearly identify and address our assumptions
- We consistently create different seasons of our SnapCharT®

LOW	-----				HIGH
1	2	3	4	5	
1	2	3	4	5	
1	2	3	4	5	
1	2	3	4	5	
1	2	3	4	5	
1	2	3	4	5	
1	2	3	4	5	
1	2	3	4	5	
1	2	3	4	5	
1	2	3	4	5	

Total SnapCharT® Effectiveness Score

Measuring Root Cause Analysis Effectiveness

- Each causal factor can pass the "Who did what wrong?" or "What equipment failed?" test
- Each causal factor can pass the "Direct incident impact" test
- We do a consistent job of using the dictionary
- Conditions are consistently used to answer the selected dictionary question(s)
- We can validate each root cause selected with one or more conditions
- We use notations / comments to document root cause selections
- We consistently identify generic causes for our root causes

LOW	-----				HIGH
1	2	3	4	5	
1	2	3	4	5	
1	2	3	4	5	
1	2	3	4	5	
1	2	3	4	5	
1	2	3	4	5	
1	2	3	4	5	
1	2	3	4	5	

Total RCA Effectiveness Score

Measuring Corrective Action Effectiveness

- Each of our corrective actions are specific
- Each of our corrective actions are measurable
- We define accountability for each corrective action
- We calculate a return on investment for our corrective actions
- Timeliness factors are considered as corrective actions are developed
- We identify a means of verifying the effectiveness of our corrective actions
- We consistently try to anticipate unintended consequences
- We consistently address all applicable root causes

LOW	-----				HIGH
1	2	3	4	5	
1	2	3	4	5	
1	2	3	4	5	
1	2	3	4	5	
1	2	3	4	5	
1	2	3	4	5	
1	2	3	4	5	
1	2	3	4	5	
1	2	3	4	5	

Total Corrective Action Effectiveness Score

Figure 1 - Example Cross-Functional Incident Reporting and Investigation Process Flow Diagram

