

Ethanol Plant Operator Job Guide

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Ethanol Operator Job Guide

Table of Contents

Chapter	Page
A Comply with All Plant Rules/Regulations	x
B Perform Mill/Cook Process Activities	x
C Perform Yeast Propagation/Fermentation Process Activities	x
D Perform Distillation Process Activities	x
E Perform Separation/Evaporation Activities	x
F Perform Final Ethanol Load-Out Process Activities	x
G Manage H₂O System (RO, Waste, Boilers, Cooling)	x
H Complete CIP per Schedule/Need	x

**CHAPTER A
COMPLY WITH ALL PLANT RULES/REGULATIONS**

DO	KNOW	REQUIRED EQUIPMENT	SAFETY REQUIREMENTS
1. Follow PPE area/task requirements	1 Know PPE requirements per task/area 2 Know correct use of PPE 5 Know location 8 Know what PPE to use per code	SOP	PPE
2. Comply with all LO/TO-TRY Requirements	3 Know to follow all energy control procedures 4 Know to refer to LO/TO manual per need 5 Know location 10 Know plan	Written Plan	PPE
3. Comply with HAZCOM regulations	5 Know location 6 Know what hazardous materials are in plant 7 Know code system 8 Know what PPE to use per code 22 Know policy/requirements	Written Plan	PPE
4. Comply with HAZMAT regulations	10 Know plan 9 Know spill containment plan 8 Know what PPE to use per code 22 Know policy/requirements 7 Know code system	Written Plan	PPE
5. Follow emergency action plan (when necessary)	10 Know plan 29 Know role	Written Plan	PPE
6. Comply with forklift certification requirements	12 Know safe method to operate forklift 24 Know to complete evaluation/training requirements 11 Know to follow checklists	Written Plan	PPE
7. Participate in electrical safety awareness training	13 Know electrical safety requirements per role 29 Know role	Written Plan	PPE

CHAPTER A
COMPLY WITH ALL PLANT RULES/REGULATIONS

DO	KNOW	REQUIRED EQUIPMENT	SAFETY REQUIREMENTS
8. Follow fall protection requirements	14 Know when/correct use of full protection equipment 15 Know to complete “fit” test	Written Plan	PPE
9. Follow all hearing protection requirements	17 Know requirements/where applied 15 Know to complete “fit” test 1 Know PPE requirements per task/area 2 Know correct use of PPE 5 Know location	Written Plan	PPE
10. Follow all respiratory protection requirements	15 Know to complete “fit” test 17 Know requirements/where applied 5 Know location 8 Know what PPE to use per code 1 Know PPE requirements per task/area 2 Know correct use of PPE	Written Plan	PPE
11. Comply with intrinsically safe area requirements	22 Know policy/requirements 23 Know plant requirements 5 Know location	Written Plan	PPE
12. Complete all fire extinguisher training	18 Know when/how to use fire-extinguishing equipment 17 Know requirements/where applied 5 Know location	Written Plan	PPE
13. Follow all confined space requirements	19 Know role in confined space application 20 Know permit procedure per OSHA regulations 21 Know what type/when permit to use 4 Know to refer to LO/TO manual per need	Written Plan	PPE
14. Follow all confined space rescue requirements	19 Know role in confined space application 29 Know role	Written Plan	PPE

CHAPTER A
COMPLY WITH ALL PLANT RULES/REGULATIONS

DO	KNOW	REQUIRED EQUIPMENT	SAFETY REQUIREMENTS
15. Comply with all permit requirements (hot work)	20 Know permit procedure per OSHA regulations 21 Know what type/when permit to use 22 Know policy/requirements	Written Plan	PPE
16. Comply with CPR- first aid policy	24 Know to complete evaluation/training requirements 22 Know policy/requirements 23 Know plant requirements	Written Plan	PPE
17. Follow blood borne pathogen requirements	5 Know location 24 Know to complete evaluation/training requirements 23 Know plant requirements 22 Know policy/requirements	Written Plan	PPE
18. Participate in aerial lift certification process	24 Know to complete evaluation/training requirements	Written Plan	PPE
19. Follow all personnel requirements	22 Know policy/requirements 23 Know plant requirements 24 Know to complete evaluation/training requirements	Employee Handbook	
20. Follow site security requirements	25 Know security requirements 22 Know policy/requirements 23 Know plant requirements	Written Plan	
21. Participate in mandatory between shift meetings	27 Know this promotes communication/teamwork 26 Know this can improve outputs/efficiency	Employee Handbook	
22. Ensure plant is continuously being cleaned	28 Know to follow all general housekeeping guidelines 26 Know this can improve outputs/efficiency	SOPs, cleaning schedule, cleaning materials (brooms, etc	

CHAPTER B
PERFORM MILL/COOK PROCESS ACTIVITIES

DO	KNOW	REQUIRED EQUIPMENT	SAFETY REQUIREMENTS
MILL			
1. Monitor/respond to corn flow rate per DCS data	1 Know parameters 2 Know how to operate plant equipment using DCS (pumps, valves, conveyors, numerical inputs) 4 Know milling process/know processes vary from plant to plant 5 Know how to start up/shut down milling equipment 6 Know how to analyze data/performance troubleshooting using DCS 9 Know how to use DCS software 11 Know correct responses to DCS alarms 18 Know correct people to contact when certain parameters are out of range/spec 19 Know how to identify/respond to emergencies	DCS/radio	PPE
2. Monitor/respond to hammermill/roller mill amps per DCS	1 Know parameters 2 Know how to operate plant equipment using DCS (pumps, valves, conveyors, numerical inputs) 4 Know milling process/know processes vary from plant to plant 5 Know how to start up/shut down milling equipment 6 Know how to analyze data/performance troubleshooting using DCS 9 Know how to use DCS software 11 Know correct responses to DCS alarms 18 Know correct people to contact when certain parameters are out of range/spec 19 Know how to identify/respond to emergencies	DCS/radio	PPE

CHAPTER B
PERFORM MILL/COOK PROCESS ACTIVITIES

DO	KNOW	REQUIRED EQUIPMENT	SAFETY REQUIREMENTS
3. Complete Sieve analysis test/respond to resnets	1 Know parameters 6 Know how to analyze data/perform troubleshooting using DCS 7 Know location of all sample ports 8 Know what when to use correct PPE 10 Know how to use all testing 18 Know correct people to contact when certain parameters are out of range/spec 19 Know how to identify/respond to emergencies	Flour sieve separator moisture analyzer oven	PPE
COOK/SLURRY			
1. Monitor/Respond to water/flour ratios/ inputs	1 Know parameters 2 Know how to operate plant equipment using DCS (pumps, valves, conveyors, numerical inputs) 6 Know how to analyze data/perform troubleshooting using DCS 9 Know how to use DCS software 12 Know how to start up/shut down cook equipment 13 Know cook process 11 Know correct responses to DCS alarms 14 Know plant Piping layout 15 Know how to properly evaluate in and out equipment 17 Know function of basic plant valves (ball, gate butter-fly LCV, FCV, TCV, XV, EV, PCV) 18 Know correct people to contact when certain parameters are out of range/spec 19 Know how to identify/respond to emergencies	DCS/radio	PPE

CHAPTER B
PERFORM MILL/COOK PROCESS ACTIVITIES

DO	KNOW	REQUIRED EQUIPMENT	SAFETY REQUIREMENTS
2. Monitor/Respond to enzymes ratios/alpha analyze	<ul style="list-style-type: none"> 1 Know parameters 2 Know how to operate plant equipment using DCS (pumps, valves, conveyors, numerical inputs) 6 Know how to analyze data/perform troubleshooting using DCS 7 Know location of all sample ports 8 Know what when to use correct PPE 9 Know how to use DCS software 10 Know how to use all testing 11 Know correct responses to DCS 12 Know how to start up/shut down cook equipment 13 Know cook process alarms 14 Know plant Piping layout 20 Know how to convert metric to standard 15 Know how to properly evaluate in and out equipment 17 Know function of basic plant valves (ball, gate butter-fly LCV, FCV, TCV, XV, EV, PCV) 18 Know correct people to contact when certain parameters are out of range/spec 19 Know how to identify/respond to emergencies 	<ul style="list-style-type: none"> Manual valve, DCS/radio, manual valve, Stop watch, graduated cylinder 	PPE

CHAPTER B
PERFORM MILL/COOK PROCESS ACTIVITIES

DO	KNOW	REQUIRED EQUIPMENT	SAFETY REQUIREMENTS
3. Monitor/respond to pH values in slurry	1 Know parameters 2 Know how to operate plant equipment using DCS (pumps, valves, conveyors, numerical inputs) 6 Know how to analyze data/perform troubleshooting using DCS 7 Know location of all sample ports 8 Know what when to use correct PPE 9 Know how to use DCS software 18 Know correct people to contact when certain parameters are out of range/spec 10 Know how to use all testing 19 Know how to identify/respond to emergencies 11 Know correct responses to DCS alarms 17 Know function of basic plant valves (ball, gate butter-fly LCV, FCV, TCV, XV, EV, PCV) 12 Know how to start up/shut down cook equipment 13 Know cook process 14 Know plant Piping layout 15 Know how to properly evaluate in and out equipment	DCS/radio PH probe	PPE

CHAPTER B
PERFORM MILL/COOK PROCESS ACTIVITIES

DO	KNOW	REQUIRED EQUIPMENT	SAFETY REQUIREMENTS
4. Monitor/respond to slurry temperatures	1 Know parameters 2 Know how to operate plant equipment using DCS (pumps, valves, conveyors, numerical inputs) 6 Know how to analyze data/perform troubleshooting using DCS 11 Know correct responses to DCS alarms 9 Know how to use DCS software 18 Know correct people to contact when certain parameters are out of range/spec 19 Know how to identify/respond to emergencies 12 Know how to start up/shut down cook equipment 13 Know cook process 14 Know plant Piping layout 15 Know how to properly evaluate in and out equipment 17 Know function of basic plant valves (ball, gate butter-fly LCV, FCV, TCV, XV, EV, PCV)	DCS/radio	PPE

CHAPTER B
PERFORM MILL/COOK PROCESS ACTIVITIES

DO	KNOW	REQUIRED EQUIPMENT	SAFETY REQUIREMENTS
5. Monitor/respond to flow output/level controllers/transmitters	1 Know parameters 2 Know how to operate plant equipment using DCS (pumps, valves, conveyors, numerical inputs) 6 Know how to analyze data/perform troubleshooting using DCS 11 Know correct responses to DCS alarms 9 Know how to use DCS software 18 Know correct people to contact when certain parameters are out of range/spec 19 Know how to respond/respond to emergencies 16 Know CIP process (refer to chapter H) (this varies by plant) 12 Know how to start up/shut down cook equipment 13 Know cook process 14 Know plant Piping layout 15 Know how to properly evaluate in and out equipment 17 Know function of basic plant valves (ball, gate butter-fly LCV, FCV, TCV, XV, EV, PCV)	Dextrose Equivalency Test DCS/radio Moisture analyzers burns oven PH probe Flask Manual valve Stop watch	PPE

CHAPTER B
PERFORM MILL/COOK PROCESS ACTIVITIES

DO	KNOW	REQUIRED EQUIPMENT	SAFETY REQUIREMENTS
COOK/HYDRO HEATER			
1. Monitor/respond to hydro heater temperatures/pressures	1 Know parameters 2 Know how to operate plant equipment using DCS (pumps, valves, conveyors, numerical inputs) 6 Know how to analyze data/perform troubleshooting using DCS 9 Know how to use DCS software 11 Know correct responses to DCS alarms 12 Know how to start up/shut down cook equipment 13 Know cook process 14 Know plant Piping layout 15 Know how to properly evaluate in and out equipment 17 Know function of basic plant valves (ball, gate butter-fly LCV, FCV, TCV, XV, EV, PCV) 18 Know correct people to contact when certain parameters are out of range/spec 19 Know how to identify/respond to emergencies	DCS/radio	PPE
COOK LIQUE/FACTION			PPE

CHAPTER B
PERFORM MILL/COOK PROCESS ACTIVITIES

DO	KNOW	REQUIRED EQUIPMENT	SAFETY REQUIREMENTS
1. Monitor/respond to enzyme ratio	1 Know parameters 2 Know how to operate plant equipment using DCS (pumps, valves, conveyors, numerical inputs) 6 Know how to analyze data/perform troubleshooting using DCS 7 Know location of all sample ports 8 Know what when to use correct PPE 9 Know how to use DCS software 20 Know how to convert metric to standard 14 Know plant Piping layout 15 Know how to properly evaluate in and out equipment 11 Know correct responses to DCS alarms 12 Know how to start up/shut down cook equipment 13 Know cook process 10 Know how to use all testing 18 Know correct people to contact when certain parameters are out of range/spec 19 Know how to identify/respond to emergencies 17 Know function of basic plant valves (ball, gate butter-fly LCV, FCV, TCV, XV, EV, PCV)		PPE

CHAPTER B
PERFORM MILL/COOK PROCESS ACTIVITIES

DO	KNOW	REQUIRED EQUIPMENT	SAFETY REQUIREMENTS
2. Monitor/respond to mash solids (if nec)	18 Know correct people to contact when certain parameters are out of range/spec 19 Know how to identify/respond to emergencies 1 Know parameters 2 Know how to operate plant equipment using DCS (pumps, valves, conveyors, numerical inputs) 6 Know how to analyze data/perform troubleshooting using DCS 7 Know location of all sample ports 8 Know what when to use correct PPE 9 Know how to use DCS software 11 Know correct responses to DCS alarms 12 Know how to start up/shut down cook equipment 13 Know cook process 14 Know plant Piping layout 15 Know how to properly evaluate in and out equipment 10 Know how to use all testing 17 Know function of basic plant valves (ball, gate butter-fly LCV, FCV, TCV, XV, EV, PCV)	DCS/radio	PPE

CHAPTER B
PERFORM MILL/COOK PROCESS ACTIVITIES

DO	KNOW	REQUIRED EQUIPMENT	SAFETY REQUIREMENTS
3. Monitor/respond to flow output from Lique Tank	18 Know correct people to contact when certain parameters are out of range/spec 19 Know how to identify/respond to emergencies 1 Know parameters 2 Know how to operate plant equipment using DCS (pumps, valves, conveyors, numerical inputs) 6 Know how to analyze data/perform troubleshooting using DCS 9 Know how to use DCS software 16 Know CIP process (refer to chapter H) (this varies by plant) 11 Know correct responses to DCS alarms 12 Know how to start up/shut down cook equipment 13 Know cook process 17 Know function of basic plant valves (ball, gate butter-fly LCV, FCV, TCV, XV, EV, PCV) 14 Know plant Piping layout 15 Know how to properly evaluate in and out equipment	DCS/radio	PPE

CHAPTER B
PERFORM MILL/COOK PROCESS ACTIVITIES

DO	KNOW	REQUIRED EQUIPMENT	SAFETY REQUIREMENTS
COOK MASH COOLING			
3. Monitor/respond to mash banks temperatures and pressures	1 Know parameters 2 Know how to operate plant equipment using DCS (pumps, valves, conveyors, numerical inputs) 6 Know how to analyze data/perform troubleshooting using DCS 9 Know how to use DCS software 11 Know correct responses to DCS alarms 12 Know how to start up/shut down cook equipment 13 Know cook process 14 Know plant Piping layout 15 Know how to properly evaluate in and out equipment 16 Know CIP process (refer to chapter H) (this varies by plant) 18 Know correct people to contact when certain parameters are out of range/spec 19 Know how to identify/respond to emergencies 17 Know function of basic plant valves (ball, gate butter-fly LCV, FCV, TCV, XV, EV, PCV)	DCS/radio Local indicators for temperatures/pressures	PPE

CHAPTER C
PERFORM YEAST PROPAGATION/FERMENTATION PROCESS ACTIVITIES

DO	KNOW	REQUIRED EQUIPMENT	SAFETY REQUIREMENTS
YEAST PROPAGATION			
1. Follow yeast propagation guidelines	1 Know parameters 2 Know how to operate plant equipment using DCS (pumps, valves, numerical inputs) 3 Know yeast propagation process 6 Know location of all sample ports 9 Know how to use all testing/lab equipment 8 Know how to use DCS software 10 Know correct responses to DCS alarms	SOP	PPE
2. Monitor/Respond to flow into propagation tank,	1 Know parameters 2 Know how to operate plant equipment using DCS (pumps, valves, numerical inputs) 3 Know yeast propagation process 4 Know fermentation process 5 Know how to analyze data/perform trouble shooting using DCS 8 Know how to use DCS software 10 Know correct responses to DCS alarms 11 Know plant piping lay-out 12 Know how to properly valve in and out equipment 14 Know function of basic plant valves (ball, gate butter-fly LCV, FCV, TCV, XV, EV, PCV) 15 Know correct people to contact when certain parameters are out of spec/spec 16 Know how to identify/respond to emergencies	DCS/radio	PPE

CHAPTER C
PERFORM YEAST PROPAGATION/FERMENTATION PROCESS ACTIVITIES

DO	KNOW	REQUIRED EQUIPMENT	SAFETY REQUIREMENTS
3. Monitor/Respond to temperature of yeast prop tank	1 Know parameters 2 Know how to operate plant equipment using DCS (pumps, valves, numerical inputs) 3 Know yeast propagation process 4 Know fermentation process 5 Know how to analyze data/perform trouble shooting using DCS 8 Know how to use DCS software 10 Know correct responses to DCS alarms 11 Know plant piping lay-out 14 Know function of basic plant valves (ball, gate butter-fly LCV, FCV, TCV, XV, EV, PCV) 15 Know correct people to contact when certain parameters are out of spec/spec 16 Know how to identify/respond to emergencies	DCS/radio	PPE

CHAPTER C
PERFORM YEAST PROPAGATION/FERMENTATION PROCESS ACTIVITIES

DO	KNOW	REQUIRED EQUIPMENT	SAFETY REQUIREMENTS
4. Add appropriate ingredients per guidelines	1 Know parameters 2 Know how to operate plant equipment using DCS (pumps, valves, numerical inputs) 3 Know yeast propagation process 5 Know how to analyze data/perform trouble shooting using DCS 8 Know how to use DCS software 10 Know correct responses to DCS alarms 11 Know plant piping lay-out 12 Know how to properly valve in and out equipment 14 Know function of basic plant valves (ball, gate butter-fly LCV, FCV, TCV, XV, EV, PCV) 15 Know correct people to contact when certain parameters are out of spec/spec 16 Know how to identify/respond to emergencies 17 Know how to convert metric to standard	DCS/radio Forklift Bag cutter Pallet jacks Buckets Latex gloves Manual valves	PPE

CHAPTER C
PERFORM YEAST PROPAGATION/FERMENTATION PROCESS ACTIVITIES

DO	KNOW	REQUIRED EQUIPMENT	SAFETY REQUIREMENTS
5. Monitor/Respond to yeast propagation pH (continuously if nec)	1 Know parameters 2 Know how to operate plant equipment using DCS (pumps, valves, numerical inputs) 3 Know yeast propagation process 5 Know how to analyze data/perform trouble shooting using DCS 8 Know how to use DCS software 10 Know correct responses to DCS alarms 11 Know plant piping lay-out 14 Know function of basic plant valves (ball, gate butter-fly LCV, FCV, TCV, XV, EV, PCV) 15 Know correct people to contact when certain parameters are out of spec/spec 16 Know how to identify/respond to emergencies	DCS/radio PH probe	PPE

CHAPTER C
PERFORM YEAST PROPAGATION/FERMENTATION PROCESS ACTIVITIES

DO	KNOW	REQUIRED EQUIPMENT	SAFETY REQUIREMENTS
6. Monitor/Respond to levels/sample data	1 Know parameters 2 Know how to operate plant equipment using DCS (pumps, valves, numerical inputs) 3 Know yeast propagation process 5 Know how to analyze data/perform trouble shooting using DCS 8 Know how to use DCS software 10 Know correct responses to DCS alarms 11 Know plant piping lay-out 12 Know how to properly valve in and out equipment 14 Know function of basic plant valves (ball, gate butter-fly LCV, FCV, TCV, XV, EV, PCV) 15 Know correct people to contact when certain parameters are out of spec/spec 16 Know how to identify/respond to emergencies	DCS/radio PH probe HPLC Refractometer Moisture analyzer Oven Manual valves Microscope	PPE

CHAPTER C
PERFORM YEAST PROPAGATION/FERMENTATION PROCESS ACTIVITIES

DO	KNOW	REQUIRED EQUIPMENT	SAFETY REQUIREMENTS
7. Clean Yeast propagation per CIP guidelines	1 Know parameters 2 Know how to operate plant equipment using DCS (pumps, valves, numerical inputs) 3 Know yeast propagation process 5 Know how to analyze data/perform trouble shooting using DCS 8 Know how to use DCS software 11 Know plant piping lay-out 12 Know how to properly valve in and out equipment 13 Know CIP process (refer to chapter H) (this varies by plant) 14 Know function of basic plant valves (ball, gate butter-fly LCV, FCV, TCV, XV, EV, PCV) 15 Know correct people to contact when certain parameters are out of spec/spec 16 Know how to identify/respond to emergencies	DCS/radio Manual valves	PPE
FERMENTATION			
1. Follow fermentation guidelines	1 Know parameters 2 Know how to operate plant equipment using DCS (pumps, valves, numerical inputs) 4 Know fermentation process 6 Know location of all sample ports 8 Know how to use DCS software 9 Know how to use all testing/lab equipment 10 Know correct responses to DCS alarms	SOP	PPE

CHAPTER C
PERFORM YEAST PROPAGATION/FERMENTATION PROCESS ACTIVITIES

DO	KNOW	REQUIRED EQUIPMENT	SAFETY REQUIREMENTS
2. Monitor/Respond to fill time	1 Know parameters 2 Know how to operate plant equipment using DCS (pumps, valves, numerical inputs) 4 Know fermentation process 5 Know how to analyze data/perform trouble shooting using DCS 8 Know how to use DCS software 10 Know correct responses to DCS alarms 15 Know correct people to contact when certain parameters are out of spec/spec 16 Know how to identify/respond to emergencies	DCS/radio	PPE
3. Monitor/Respond to fermentation tank temperatures	1 Know parameters 2 Know how to operate plant equipment using DCS (pumps, valves, numerical inputs) 4 Know fermentation process 5 Know how to analyze data/perform trouble shooting using DCS 8 Know how to use DCS software 10 Know correct responses to DCS alarms 11 Know plant piping lay-out 14 Know function of basic plant valves (ball, gate butter-fly LCV, FCV, TCV, XV, EV, PCV) 15 Know correct people to contact when certain parameters are out of spec/spec 16 Know how to identify/respond to emergencies	DCS/radio	PPE

CHAPTER C
PERFORM YEAST PROPAGATION/FERMENTATION PROCESS ACTIVITIES

DO	KNOW	REQUIRED EQUIPMENT	SAFETY REQUIREMENTS
4. Add appropriate ingredients per guidelines	1 Know parameters 2 Know how to operate plant equipment using DCS (pumps, valves, numerical inputs) 4 Know fermentation process 5 Know how to analyze data/perform trouble shooting using DCS 8 Know how to use DCS software 12 Know how to properly valve in and out equipment 10 Know correct responses to DCS alarms 11 Know plant piping lay-out 14 Know function of basic plant valves (ball, gate butter-fly LCV, FCV, TCV, XV, EV, PCV) 15 Know correct people to contact when certain parameters are out of spec/spec 16 Know how to identify/respond to emergencies	DCS/radio Forklift Bag cutters Pallet jack Buckets Manual valves	PPE

CHAPTER C
PERFORM YEAST PROPAGATION/FERMENTATION PROCESS ACTIVITIES

DO	KNOW	REQUIRED EQUIPMENT	SAFETY REQUIREMENTS
5. Monitor/Respond to pH/brin test/HPLC results/yeast counts	1 Know parameters 2 Know how to operate plant equipment using DCS (pumps, valves, numerical inputs) 4 Know fermentation process 5 Know how to analyze data/perform trouble shooting using DCS 8 Know how to use DCS software 10 Know correct responses to DCS alarms 11 Know plant piping lay-out 14 Know function of basic plant valves (ball, gate butter-fly LCV, FCV, TCV, XV, EV, PCV) 15 Know correct people to contact when certain parameters are out of spec/spec 16 Know how to identify/respond to emergencies	DCS/radio PH probe Refractometer HPLC Microscope	PPE

CHAPTER C
PERFORM YEAST PROPAGATION/FERMENTATION PROCESS ACTIVITIES

DO	KNOW	REQUIRED EQUIPMENT	SAFETY REQUIREMENTS
6. Transfer beer from fermenter to beer well per situation	1 Know parameters 2 Know how to operate plant equipment using DCS (pumps, valves, numerical inputs) 4 Know fermentation process 5 Know how to analyze data/perform trouble shooting using DCS 8 Know how to use DCS software 10 Know correct responses to DCS alarms 11 Know plant piping lay-out 14 Know function of basic plant valves (ball, gate butter-fly LCV, FCV, TCV, XV, EV, PCV) 12 Know how to properly valve in and out equipment 15 Know correct people to contact when certain parameters are out of spec/spec 16 Know how to identify/respond to emergencies	DCS/radio Manual valves	PPE

CHAPTER C
PERFORM YEAST PROPAGATION/FERMENTATION PROCESS ACTIVITIES

DO	KNOW	REQUIRED EQUIPMENT	SAFETY REQUIREMENTS
7. Clean fermenter per CIP guidelines	1 Know parameters 2 Know how to operate plant equipment using DCS (pumps, valves, numerical inputs) 4 Know fermentation process 7 Know what/when to use PPE 8 Know how to use DCS software 11 Know plant piping lay-out 12 Know how to properly valve in and out equipment 13 Know CIP process (refer to chapter H) (this varies by plant) 14 Know function of basic plant valves (ball, gate butter-fly LCV, FCV, TCV, XV, EV, PCV) 15 Know correct people to contact when certain parameters are out of spec/spec 16 Know how to identify/respond to emergencies	SOP DCS/radio Manual valves Wrenches Hoses Spot Light	PPE

CHAPTER D
PERFORM DISTILLATION PROCESS ACTIVITIES

DO	KNOW	REQUIRED EQUIPMENT	SAFETY REQUIREMENTS
BEER STRIPPER			
1. Monitor/respond to beer feed flow temperatures to stripper	1 Know parameters 2 Know how to operate plant equipment using DCS (pumps, valves, numerical inputs) 3 Know beer stripper process 6 Know processes vary from plant to plant 7 Know how to start-up and shut down process/per procedures 8 Know how to analyze data/perform troubleshooting using DCS 9 Know location of all sample ports 11 Know how to use DCS software 12 Know how to use all testing/lab equipment 13 Know correct responses to DSC alarms 14 Know plant piping lay-out 15 Know how to properly valve in and valve our equipment 16 Know CIP procedure (refer to chart H) 17 Know function of basic plant valves 18 Know correct people to contact when certain parameters are out of range/spec 20 Know plant lay-out 21 Know to perform this activity out of the control room as part of troubleshooting 22 Know shut-down schedule	DCS/radio	PPE

CHAPTER D
PERFORM DISTILLATION PROCESS ACTIVITIES

DO	KNOW	REQUIRED EQUIPMENT	SAFETY REQUIREMENTS
2. Monitor/respond to stripper temps/ (colum temps)	1 Know parameters 2 Know how to operate plant equipment using DCS (pumps, valves, numerical inputs) 3 Know beer striper process 4 Know rectifier/side stripper 7 Know how to start-up and shut down process/per procedures 8 Know how to analyze data/perform troubleshooting using DCS 6 Know processes vary from plant to plan 11 Know how to use DCS software 13 Know correct responses to DSC alarms 18 Know correct people to contact when certain parameters are out of range/spec 20 Know plant lay-out 21 Know to perform this activity out of the control room as part of troubleshooting	DCS/radio	PPE

CHAPTER D
PERFORM DISTILLATION PROCESS ACTIVITIES

DO	KNOW	REQUIRED EQUIPMENT	SAFETY REQUIREMENTS
3. Monitor/respond to stripper pressure/vacuums	1 Know parameters 2 Know how to operate plant equipment using DCS (pumps, valves, numerical inputs) 3 Know beer stripper process 4 Know rectifier/side stripper 7 Know how to start-up and shut down process/per procedures 8 Know how to analyze data/perform troubleshooting using DCS 6 Know processes vary from plant to plant 11 Know how to use DCS software 13 Know correct responses to DSC alarms 14 Know plant piping lay-out 15 Know how to properly valve in and valve out equipment 17 Know function of basic plant valves 18 Know correct people to contact when certain parameters are out of range/spec 20 Know plant lay-out 21 Know to perform this activity out of the control room as part of troubleshooting	DCS/radio Manual valve	PPE

CHAPTER D
PERFORM DISTILLATION PROCESS ACTIVITIES

DO	KNOW	REQUIRED EQUIPMENT	SAFETY REQUIREMENTS
4. Monitor/respond to beer stripper level/HPLC base loss results	1 Know parameters 2 Know how to operate plant equipment using DCS (pumps, valves, numerical inputs) 3 Know beer stripper process 6 Know processes vary from plant to plant 7 Know how to start-up and shut down process/per procedures 8 Know how to analyze data/perform troubleshooting using DCS 9 Know location of all sample ports 10 Know what and when to use correct PPE 11 Know how to use DCS software 12 Know how to use all testing/lab equipment 13 Know correct responses to DSC alarms 14 Know plant piping lay-out 15 Know how to properly valve in and valve our equipment 17 Know function of basic plant valves 18 Know correct people to contact when certain parameters are out of range/spec 20 Know plant lay-out 21 Know to perform this activity out of the control room as part of troubleshooting	HPLC Manual valve Sample port	PPE

CHAPTER D
PERFORM DISTILLATION PROCESS ACTIVITIES

DO	KNOW	REQUIRED EQUIPMENT	SAFETY REQUIREMENTS
5. Monitor/respond to CIP stripper (as needed)	1 Know parameters 7 Know how to start-up and shut down process/per procedures 2 Know how to operate plant equipment using DCS (pumps, valves, numerical inputs) 8 Know how to analyze data/perform troubleshooting using DCS 13 Know correct responses to DSC alarms 14 Know plant piping lay-out 15 Know how to properly valve in and valve our equipment 16 Know CIP procedure (refer to chart H) 17 Know function of basic plant valves 18 Know correct people to contact when certain parameters are out of range/spec 20 Know plant lay-out 21 Know to perform this activity out of the control room as part of troubleshooting 22 Know shut-down schedule	DCS//manual valves/radio	PPE
RECTIFIER/SIDE STRIPPER			PPE

CHAPTER D
PERFORM DISTILLATION PROCESS ACTIVITIES

DO	KNOW	REQUIRED EQUIPMENT	SAFETY REQUIREMENTS
1. Monitor/respond to rectifier temps	1 Know parameters 2 Know how to operate plant equipment using DCS (pumps, valves, numerical inputs) 4 Know rectifier/side stripper 6 Know processes vary from plant to plant 7 Know how to start-up and shut down process/per procedures 8 Know how to analyze data/perform troubleshooting using DCS 11 Know how to use DCS software 13 Know correct responses to DSC alarms 18 Know correct people to contact when certain parameters are out of range/spec 20 Know plant lay-out 21 Know to perform this activity out of the control room as part of troubleshooting	DCS/radio	PPE

CHAPTER D
PERFORM DISTILLATION PROCESS ACTIVITIES

DO	KNOW	REQUIRED EQUIPMENT	SAFETY REQUIREMENTS
2. Monitor/respond to rectifier/vacuums	1 Know parameters 2 Know how to operate plant equipment using DCS (pumps, valves, numerical inputs) 4 Know rectifier/side stripper 6 Know processes vary from plant to plant 7 Know how to start-up and shut down process/per procedures 8 Know how to analyze data/perform troubleshooting using DCS 11 Know how to use DCS software 13 Know correct responses to DSC alarms 14 Know plant piping lay-out 15 Know how to properly valve in and valve our equipment 17 Know function of basic plant valves 18 Know correct people to contact when certain parameters are out of range/spec 20 Know plant lay-out 21 Know to perform this activity out of the control room as part of troubleshooting	DCS/radio Manual valves	PPE

CHAPTER D
PERFORM DISTILLATION PROCESS ACTIVITIES

DO	KNOW	REQUIRED EQUIPMENT	SAFETY REQUIREMENTS
3. Monitor/respond to fusels draws	1 Know parameters 4 Know rectifier/side stripper 6 Know processes vary from plant to plant 8 Know how to analyze data/perform troubleshooting using DCS 9 Know location of all sample ports 10 Know what and when to use correct PPE 11 Know how to use DCS software 12 Know how to use all testing/lab equipment 13 Know correct responses to DSC alarms 14 Know plant piping lay-out 15 Know how to properly valve in and valve out equipment 17 Know function of basic plant valves 18 Know correct people to contact when certain parameters are out of range/spec 20 Know plant lay-out 21 Know to perform this activity out of the control room as part of troubleshooting	Hydrometer DCS/radio Salt H ₂ O titration Graduated cylinder Thermometers MV-sample port	PPE

CHAPTER D
PERFORM DISTILLATION PROCESS ACTIVITIES

DO	KNOW	REQUIRED EQUIPMENT	SAFETY REQUIREMENTS
4. Monitor/respond to alcohol proofs	1 Know parameters 2 Know how to operate plant equipment using DCS (pumps, valves, numerical inputs) 4 Know rectifier/side stripper 6 Know processes vary from plant to plant 8 Know how to analyze data/performance troubleshooting using DCS 9 Know location of all sample ports 10 Know what and when to use correct PPE 7 Know how to start-up and shut down process/per procedures 11 Know how to use DCS software 12 Know how to use all testing/lab equipment 13 Know correct responses to DSC alarms 14 Know plant piping lay-out 15 Know how to properly valve in and valve our equipment 17 Know function of basic plant valves 18 Know correct people to contact when certain parameters are out of range/spec 20 Know plant lay-out 21 Know to perform this activity out of the control room as part of troubleshooting	Hydrometer DCS/radio Salt H ₂ O titration Graduated cylinder Thermometers MV-sample port	PPE

CHAPTER D
PERFORM DISTILLATION PROCESS ACTIVITIES

DO	KNOW	REQUIRED EQUIPMENT	SAFETY REQUIREMENTS
5. Monitor/respond to rectifier/vacuums	1 Know parameters 2 Know how to operate plant equipment using DCS (pumps, valves, numerical inputs) 4 Know rectifier/side stripper 6 Know processes vary from plant to plant 7 Know how to start-up and shut down process/per procedures 8 Know how to analyze data/perform troubleshooting using DCS 9 Know location of all sample ports 10 Know what and when to use correct PPE 11 Know how to use DCS software 12 Know how to use all testing/lab equipment 13 Know correct responses to DSC alarms 14 Know plant piping lay-out 15 Know how to properly valve in and valve our equipment 17 Know function of basic plant valves 18 Know correct people to contact when certain parameters are out of range/spec 20 Know plant lay-out 21 Know to perform this activity out of the control room as part of troubleshooting	HPLC Manual valve Sample port	PPE

CHAPTER D
PERFORM DISTILLATION PROCESS ACTIVITIES

DO	KNOW	REQUIRED EQUIPMENT	SAFETY REQUIREMENTS
6. Monitor/respond to reflux temp/flow/density (if nec)	1 Know parameters 2 Know how to operate plant equipment using DCS (pumps, valves, numerical inputs) 4 Know rectifier/side stripper 6 Know processes vary from plant to plant 7 Know how to start-up and shut down process/per procedures 8 Know how to analyze data/perform troubleshooting using DCS 9 Know location of all sample ports 10 Know what and when to use correct PPE 11 Know how to use DCS software 12 Know how to use all testing/lab equipment 13 Know correct responses to DSC alarms 14 Know plant piping lay-out 15 Know how to properly valve in and valve our equipment 17 Know function of basic plant valves 18 Know correct people to contact when certain parameters are out of range/spec 20 Know plant lay-out 21 Know to perform this activity out of the control room as part of troubleshooting	DCS/radio	PPE

CHAPTER D
PERFORM DISTILLATION PROCESS ACTIVITIES

DO	KNOW	REQUIRED EQUIPMENT	SAFETY REQUIREMENTS
MOLE SIEVES			
1. Monitor/respond to mole sieve 190 feed	1 Know parameters 2 Know how to operate plant equipment using DCS (pumps, valves, numerical inputs) 5 Know made sieve process 6 Know processes vary from plant to plant 7 Know how to start-up and shut down process/per procedures 8 Know how to analyze data/perform troubleshooting using DCS 9 Know location of all sample ports 10 Know what and when to use correct PPE 11 Know how to use DCS software 12 Know how to use all testing/lab equipment 13 Know correct responses to DSC alarms 14 Know plant piping lay-out 15 Know how to properly valve in and valve our equipment 17 Know function of basic plant valves 18 Know correct people to contact when certain parameters are out of range/spec 20 Know plant lay-out 21 Know to perform this activity out of the control room as part of troubleshooting	DCS	PPE

CHAPTER D
PERFORM DISTILLATION PROCESS ACTIVITIES

DO	KNOW	REQUIRED EQUIPMENT	SAFETY REQUIREMENTS
2. Monitor/respond to mole sieve 190 temp	1 Know parameters 2 Know how to operate plant equipment using DCS (pumps, valves, numerical inputs) 5 Know made sieve process 6 Know processes vary from plant to plan 7 Know how to start-up and shut down process/per procedures 8 Know how to analyze data/perform troubleshooting using DCS 11 Know how to use DCS software 13 Know correct responses to DSC alarms 18 Know correct people to contact when certain parameters are out of range/spec 20 Know plant lay-out 21 Know to perform this activity out of the control room as part of troubleshooting	DSC	PPE
3. Monitor/respond to mole sieve bottle temps	1 Know parameters 2 Know how to operate plant equipment using DCS (pumps, valves, numerical inputs) 5 Know made sieve process 6 Know processes vary from plant to plan 7 Know how to start-up and shut down process/per procedures 8 Know how to analyze data/perform troubleshooting using DCS 11 Know how to use DCS software 13 Know correct responses to DSC alarms 18 Know correct people to contact when certain parameters are out of range/spec	DCS/radios	PPE

CHAPTER D
PERFORM DISTILLATION PROCESS ACTIVITIES

DO	KNOW	REQUIRED EQUIPMENT	SAFETY REQUIREMENTS
4. Monitor/respond to mole sieve pressures/vacuums	1 Know parameters 2 Know how to operate plant equipment using DCS (pumps, valves, numerical inputs) 5 Know made sieve process 6 Know processes vary from plant to plant 7 Know how to start-up and shut down process/per procedures 8 Know how to analyze data/perform troubleshooting using DCS 11 Know how to use DCS software 13 Know correct responses to DSC alarms 14 Know plant piping lay-out 15 Know how to properly valve in and valve our equipment 17 Know function of basic plant valves 18 Know correct people to contact when certain parameters are out of range/spec 20 Know plant lay-out 21 Know to perform this activity out of the control room as part of troubleshooting	DCS/radios Manual valves Sample port	PPE

CHAPTER D
PERFORM DISTILLATION PROCESS ACTIVITIES

DO	KNOW	REQUIRED EQUIPMENT	SAFETY REQUIREMENTS
5. Monitor/respond to alcohol proofs	1 Know parameters 2 Know how to operate plant equipment using DCS (pumps, valves, numerical inputs) 5 Know made sieve process 6 Know processes vary from plant to plant 7 Know how to start-up and shut down process/per procedures 8 Know how to analyze data/perform troubleshooting using DCS 9 Know location of all sample ports 10 Know what and when to use correct PPE 11 Know how to use DCS software 12 Know how to use all testing/lab equipment 13 Know correct responses to DSC alarms 14 Know plant piping lay-out 15 Know how to properly valve in and valve our equipment 17 Know function of basic plant valves 18 Know correct people to contact when certain parameters are out of range/spec 20 Know plant lay-out 21 Know to perform this activity out of the control room as part of troubleshooting	Hydrometer Karl Fishers Titrator (acid) PH probe MV-sample port Thermometer Graduated cylinders	PPE

CHAPTER D
PERFORM DISTILLATION PROCESS ACTIVITIES

DO	KNOW	REQUIRED EQUIPMENT	SAFETY REQUIREMENTS
6. Monitor/respond to sieve regeneration heat exchanger temps	1 Know parameters 2 Know how to operate plant equipment using DCS (pumps, valves, numerical inputs) 5 Know made sieve process 6 Know processes vary from plant to plant 7 Know how to start-up and shut down process/per procedures 8 Know how to analyze data/perform troubleshooting using DCS 11 Know how to use DCS software 13 Know correct responses to DSC alarms 18 Know correct people to contact when certain parameters are out of range/spec	DCS/radios	PPE

CHAPTER D
PERFORM DISTILLATION PROCESS ACTIVITIES

DO	KNOW	REQUIRED EQUIPMENT	SAFETY REQUIREMENTS
7. Monitor/respond to regeneration proofs	1 Know parameters 2 Know how to operate plant equipment using DCS (pumps, valves, numerical inputs) 5 Know made sieve process 6 Know processes vary from plant to plant 8 Know how to analyze data/perform troubleshooting using DCS 9 Know location of all sample ports 10 Know what and when to use correct PPE 11 Know how to use DCS software 12 Know how to use all testing/lab equipment 13 Know correct responses to DSC alarms 14 Know plant piping lay-out 15 Know how to properly valve in and valve our equipment 17 Know function of basic plant valves 18 Know correct people to contact when certain parameters are out of range/spec 20 Know plant lay-out 21 Know to perform this activity out of the control room as part of troubleshooting	Hydrometer Titrator (acid) MV-sample port Thermometers Graduated cylinders	PPE

CHAPTER D
PERFORM DISTILLATION PROCESS ACTIVITIES

DO	KNOW	REQUIRED EQUIPMENT	SAFETY REQUIREMENTS
8. Monitor/respond to sieve regeneration tank levels	1 Know parameters 2 Know how to operate plant equipment using DCS (pumps, valves, numerical inputs) 5 Know made sieve process 6 Know processes vary from plant to plant 7 Know how to start-up and shut down process/per procedures 8 Know how to analyze data/perform troubleshooting using DCS 11 Know how to use DCS software 13 Know correct responses to DSC alarms 18 Know correct people to contact when certain parameters are out of range/spec	DCS/radios	PPE

CHAPTER E
PERFORM SEPARATION/EVAPORATION ACTIVITIES

DO	KNOW	REQUIRED EQUIPMENT	SAFETY REQUIREMENTS
CENTRIFUGE			
1. Monitor/respond to whole stillage tank levels	1 Know parameters 3 Know how to use DCS system 4 Know equipment order/numbers 6 Know when to pull samples 7 Know PPE 8 Know plant lay-out 9 Know P and IDs 10 Know correct responses to DCS alarms 11 Know how to analyze data/perform troubleshooting using DCS 13 Know correct personnel to contact 18 Know correct use of testing equipment (moisture analyzer) 19 Know function of basic plant valves (ball, gate butter-fly LCV, FCV, TCV, XV, EV, PCV) 20 Know to perform this activity outside of control room as part of troubleshooting	DCS/radio	PPE

CHAPTER E
PERFORM SEPARATION/EVAPORATION ACTIVITIES

DO	KNOW	REQUIRED EQUIPMENT	SAFETY REQUIREMENTS
2. Monitor/respond to centrifuge rates (GPMs/AMPs)	1 Know parameters 3 Know how to use DCS system 4 Know equipment order/numbers 8 Know plant lay-out 9 Know P and IDs 10 Know correct responses to DCS alarms 11 Know how to analyze data/perform troubleshooting using DCS 12 Know proper shut-down and start-up procedures 13 Know correct personnel to contact 15 Know normal centrifuge operations per SOP 19 Know function of basic plant valves (ball, gate butter-fly LCV, FCV, TCV, XV, EV, PCV) 20 Know to perform this activity outside of control room as part of troubleshooting 22 Know how to convert metric to standard/standard to metric	DCS/radio	PPE

CHAPTER E
PERFORM SEPARATION/EVAPORATION ACTIVITIES

DO	KNOW	REQUIRED EQUIPMENT	SAFETY REQUIREMENTS
3. Monitor/respond to wet cake quality suspended thin stillage (solids, moisture)	1 Know parameters 2 Know process varies between plants 3 Know how to use DCS system 4 Know equipment order/numbers 6 Know when to pull samples 7 Know PPE 8 Know plant lay-out 9 Know P and IDs 10 Know correct responses to DCS alarms 11 Know how to analyze data/perform troubleshooting using DCS 13 Know correct personnel to contact 15 Know normal centrifuge operations per SOP 18 Know correct use of testing equipment (moisture analyzer) 19 Know function of basic plant valves (ball, gate butter-fly LCV, FCV, TCV, XV, EV, PCV) 20 Know to perform this activity outside of control room as part of troubleshooting 22 Know how to convert metric to standard/standard to metric	Moisture analyzer Oven Radio MV sample port Centrifuge HPLC Refractometer brix test	PPE
4. Assist with product load-out	2 Know process varies between plants 17 Know to be certified/trained on all load-out equipment 21 Know to interact positively with non-plant personnel (truckers) 13 Know correct personnel to contact	Payloader skid loader Radio	PPE

CHAPTER E
PERFORM SEPARATION/EVAPORATION ACTIVITIES

DO	KNOW	REQUIRED EQUIPMENT	SAFETY REQUIREMENTS
DRYERS			
1. Monitor/respond to dryer temps	1 Know parameters 2 Know process varies between plants 3 Know how to use DCS system 4 Know equipment order/numbers 10 Know correct responses to DCS alarms 11 Know how to analyze data/perform troubleshooting using DCS 12 Know proper shut-down and start-up procedures 13 Know correct personnel to contact 14 Know normal dryer operations per SOP 20 Know to perform this activity outside of control room as part of troubleshooting	DCS/radio	PPE
2. Monitor/respond to dryer amps	1 Know parameters 2 Know process varies between plants 3 Know how to use DCS system 4 Know equipment order/numbers 10 Know correct responses to DCS alarms 11 Know how to analyze data/perform troubleshooting using DCS 12 Know proper shut-down and start-up procedures 13 Know correct personnel to contact 14 Know normal dryer operations per SOP 20 Know to perform this activity outside of control room as part of troubleshooting	DCS/radio	PPE

CHAPTER E
PERFORM SEPARATION/EVAPORATION ACTIVITIES

DO	KNOW	REQUIRED EQUIPMENT	SAFETY REQUIREMENTS
3. Monitor/respond to syrup additions to dryer (if nec)	1 Know parameters 2 Know process varies between plants 3 Know how to use DCS system 4 Know equipment order/numbers 8 Know plant lay-out 9 Know P and IDs 10 Know correct responses to DCS alarms 11 Know how to analyze data/performance troubleshooting using DCS 12 Know proper shut-down and start-up procedures 13 Know correct personnel to contact 14 Know normal dryer operations per SOP 19 Know function of basic plant valves (ball, gate butter-fly LCV, FCV, TCV, XV, EV, PCV) 20 Know to perform this activity outside of control room as part of troubleshooting 22 Know how to convert metric to standard/standard to metric	Moisture analyzer Oven DCS/Radio MV sample port Manual valves	PPE

CHAPTER E
PERFORM SEPARATION/EVAPORATION ACTIVITIES

DO	KNOW	REQUIRED EQUIPMENT	SAFETY REQUIREMENTS
4. Monitor/respond to final product quality (DDGS)	<ul style="list-style-type: none"> 1 Know parameters 2 Know process varies between plants 3 Know how to use DCS system 4 Know equipment order/numbers 6 Know when to pull samples 7 Know PPE 8 Know plant lay-out 9 Know P and IDs 10 Know correct responses to DCS alarms 11 Know how to analyze data/perform troubleshooting using DCS 12 Know proper shut-down and start-up procedures 13 Know correct personnel to contact 14 Know normal dryer operations per SOP 18 Know correct use of testing equipment (moisture analyzer) 19 Know function of basic plant valves (ball, gate butter-fly LCV, FCV, TCV, XV, EV, PCV) 20 Know to perform this activity outside of control room as part of troubleshooting 	DCS/radio	PPE
5. Assist with product load-out	<ul style="list-style-type: none"> 2 Know process varies between plants 17 Know to be certified/trained on all load-out equipment 21 Know to interact positively with non-plant personnel (truckers) 13 Know correct personnel to contact 	Payloader skid loader	PPE

CHAPTER E
PERFORM SEPARATION/EVAPORATION ACTIVITIES

DO	KNOW	REQUIRED EQUIPMENT	SAFETY REQUIREMENTS
EVAPORATION			
1. Monitor/respond to vacuums/pressure/temperatures	1 Know parameters 2 Know process varies between plants 4 Know equipment order/numbers 8 Know plant lay-out 9 Know P and IDs 10 Know correct responses to DCS alarms 12 Know proper shut-down and start-up procedures 13 Know correct personnel to contact 16 Know normal evaporation process per SOP 18 Know correct use of testing equipment (moisture analyzer) 19 Know function of basic plant valves (ball, gate butter-fly LCV, FCV, TCV, XV, EV, PCV) 20 Know to perform this activity outside of control room as part of troubleshooting	DCS/radio	PPE

CHAPTER E
PERFORM SEPARATION/EVAPORATION ACTIVITIES

DO	KNOW	REQUIRED EQUIPMENT	SAFETY REQUIREMENTS
2. Monitor/respond to flow rates (GPM)	<ul style="list-style-type: none"> 1 Know parameters 2 Know process varies between plants 4 Know equipment order/numbers 8 Know plant lay-out 9 Know P and IDs 10 Know correct responses to DCS alarms 12 Know proper shut-down and start-up procedures 13 Know correct personnel to contact 16 Know normal evaporation process per SOP 18 Know correct use of testing equipment (moisture analyzer) 19 Know function of basic plant valves (ball, gate butter-fly LCV, FCV, TCV, XV, EV, PCV) 20 Know to perform this activity outside of control room as part of troubleshooting 	DCS/radio	PPE
3. Monitor/respond to thin stillage tank levels	<ul style="list-style-type: none"> 1 Know parameters 2 Know process varies between plants 4 Know equipment order/numbers 8 Know plant lay-out 9 Know P and IDs 10 Know correct responses to DCS alarms 12 Know proper shut-down and start-up procedures 13 Know correct personnel to contact 16 Know normal evaporation process per SOP 18 Know correct use of testing equipment (moisture analyzer) 19 Know function of basic plant valves (ball, gate butter-fly LCV, FCV, TCV, XV, EV, PCV) 20 Know to perform this activity outside of control room as part of troubleshooting 	DCS/radio	PPE

CHAPTER E
PERFORM SEPARATION/EVAPORATION ACTIVITIES

DO	KNOW	REQUIRED EQUIPMENT	SAFETY REQUIREMENTS
4. Monitor/respond to syrup quality	1 Know parameters 2 Know process varies between plants 3 Know how to use DCS system 4 Know equipment order/numbers 6 Know when to pull samples 7 Know PPE 8 Know plant lay-out 9 Know P and IDs 10 Know correct responses to DCS alarms 11 Know how to analyze data/performance troubleshooting using DCS 13 Know correct personnel to contact 16 Know normal evaporation process per SOP 18 Know correct use of testing equipment (moisture analyzer) 19 Know function of basic plant valves (ball, gate butter-fly LCV, FCV, TCV, XV, EV, PCV) 20 Know to perform this activity outside of control room as part of troubleshooting 22 Know how to convert metric to standard/standard to metric	Moisture analyzer Ovens MV sample port Refractometer brix test	PPE

CHAPTER E
PERFORM SEPARATION/EVAPORATION ACTIVITIES

DO	KNOW	REQUIRED EQUIPMENT	SAFETY REQUIREMENTS
5. Monitor/respond to evaporation condensation tank levels	1 Know parameters 2 Know process varies between plants 4 Know equipment order/numbers 8 Know plant lay-out 9 Know P and IDs 10 Know correct responses to DCS alarms 12 Know proper shut-down and start-up procedures 13 Know correct personnel to contact 16 Know normal evaporation process per SOP 18 Know correct use of testing equipment (moisture analyzer) 19 Know function of basic plant valves (ball, gate butter-fly LCV, FCV, TCV, XV, EV, PCV) 20 Know to perform this activity outside of control room as part of troubleshooting	DCS/radio	PPE
6. Assist with syrup load out	2 Know process varies between plants 17 Know to be certified/trained on all load-out equipment 21 Know to interact positively with non-plant personnel (truckers) 13 Know correct personnel to contact	DCS/radio	PPE

CHAPTER F
PERFORM FINAL ETHANOL LOAD-OUT PROCESS ACTIVITIES

DO	KNOW	REQUIRED EQUIPMENT	SAFETY REQUIREMENTS
1. Monitor/respond to product quality (200 proof)	1 Know parameters 2 Know processes vary by plant 5 Know location of sample ports 6 Know correct PPE to use 7 Know P and IDs 8 Know plant lay-out 9 Know basic plant valves (ball butter-fly, XV, EV,) 10 Know correct personnel to contact 12 Know how to use lab equipment (Karl Fisher titrator, hydrometer, GC, pH probe, acidity test) 13 Know how to valve product in and out 14 Know to identify and report any abnormal situations 15 Know to complete all paperwork-documentation	Hydrometer Karl Fisher titrator (acid titration) MV-sample port Thermometer Graduated cylinders pH probe GC	PPE
2. Monitor/respond to shift tank levels	1 Know parameters 2 Know processes vary by plant 3 Know to follow SOPs 4 Know DCS system 7 Know P and IDs 8 Know plant lay-out 9 Know basic plant valves (ball butter-fly, XV, EV,) 10 Know correct personnel to contact 14 Know to identify and report any abnormal situations 15 Know to complete all paperwork-documentation 13 Know how to valve product in and out	DCS/radio	PPE

CHAPTER F
PERFORM FINAL ETHANOL LOAD-OUT PROCESS ACTIVITIES

DO	KNOW	REQUIRED EQUIPMENT	SAFETY REQUIREMENTS
3. Monitor/respond to denatured percent blend ratio (5%)	1 Know parameters 2 Know processes vary by plant 3 Know to follow SOPs 4 Know DCS system 6 Know correct PPE to use 7 Know P and IDs 8 Know plant lay-out 9 Know basic plant valves (ball butter-fly, XV, EV,) 10 Know correct personnel to contact 14 Know to identify and report any abnormal situations 15 Know to complete all paperwork-documentation 13 Know how to valve product in and out 16 Know to add corrosion inhibitor	Bucket Hand pump	PPE

CHAPTER F
PERFORM FINAL ETHANOL LOAD-OUT PROCESS ACTIVITIES

DO	KNOW	REQUIRED EQUIPMENT	SAFETY REQUIREMENTS
4. Monitor/respond to final product storage tank levels/proof quality	1 Know parameters 2 Know processes vary by plant 3 Know to follow SOPs 4 Know DCS system 5 Know location of sample ports 6 Know correct PPE to use 7 Know P and IDs 8 Know plant lay-out 9 Know basic plant valves (ball butter-fly, XV, EV,) 10 Know correct personnel to contact 11 Know to communicate effectively with drivers 12 Know how to use lab equipment (Karl Fisher titrator, hydrometer, GC, pH probe, acidity test) 13 Know how to valve product in and out 14 Know to identify and report any abnormal situations 15 Know to complete all paperwork-documentation	Hydrometer Karl Fisher titrator (acid titration) MV-sample port Thermometer Graduated cylinders pH probe GC	PPE

CHAPTER F
PERFORM FINAL ETHANOL LOAD-OUT PROCESS ACTIVITIES

DO	KNOW	REQUIRED EQUIPMENT	SAFETY REQUIREMENTS
5. Monitor/respond to final load-out tank level/proof quality	1 Know parameters 2 Know processes vary by plant 3 Know to follow SOPs 4 Know DCS system 5 Know location of sample ports 6 Know correct PPE to use 7 Know P and IDs 8 Know plant lay-out 9 Know basic plant valves (ball butter-fly, XV, EV,) 10 Know correct personnel to contact 11 Know to communicate effectively with drivers 12 Know how to use lab equipment (Karl Fisher titrator, hydrometer, GC, pH probe, acidity test) 13 Know how to valve product in and out 14 Know to identify and report any abnormal situations 15 Know to complete all paperwork-documentation	Hydrometer Karl Fisher titrator (acid titration) MV-sample port Thermometer Graduated cylinders pH probe GC	PPE

CHAPTER F
PERFORM FINAL ETHANOL LOAD-OUT PROCESS ACTIVITIES

DO	KNOW	REQUIRED EQUIPMENT	SAFETY REQUIREMENTS
6. Monitor/respond to off-spec tank levels (if nec. proof quality)	1 Know parameters 2 Know processes vary by plant 3 Know to follow SOPs 4 Know DCS system 5 Know location of sample ports 6 Know correct PPE to use 7 Know P and IDs 8 Know plant lay-out 9 Know basic plant valves (ball butter-fly, XV, EV) 10 Know correct personnel to contact 12 Know how to use lab equipment (Karl Fisher titrator, hydrometer, GC, pH probe, acidity test) 13 Know how to valve product in and out 14 Know to identify and report any abnormal situations 15 Know to complete all paperwork-documentation	Hydrometer MV-sample port Thermometer Graduated cylinders	PPE

CHAPTER G
MANAGE H₂O SYSTEM (RO, WASTE, BOILERS, COOLING)

DO	KNOW	REQUIRED EQUIPMENT	SAFETY REQUIREMENTS
PROCESS WATERS (RO H₂O)			
1. Monitor/respond to RO H₂O tank levels	1 Know process H ₂ O SOPs 7 Know how to operate DCS system 8 Know plant lay-out/p and IDs 10 Know chain of command 11 Know how to analyze data/troubleshooting using DCS 12 Know correct responses to DCS alarms 13 Know how to perform activities out of control room as part of troubleshooting 14 Know to complete all paperwork/documentation 17 Know plants vary in H ₂ O processes	DCS/radio	PPE

CHAPTER G
MANAGE H₂O SYSTEM (RO, WASTE, BOILERS, COOLING)

DO	KNOW	REQUIRED EQUIPMENT	SAFETY REQUIREMENTS
2. Monitor/respond to RO pressure/RO flowa/rates	18 Know how to start-up/shut-down using DCS 1 Know process H ₂ O SOPs 7 Know how to operate DCS system 8 Know plant lay-out/p and IDs 10 Know chain of command 11 Know how to analyze data/troubleshooting using DCS 12 Know correct responses to DCS alarms 13 Know how to perform activities out of control room as part of troubleshooting 14 Know to complete all paperwork/documentation 16 Know how to use all H ₂ O testing/analysis 17 Know plants vary in H ₂ O processes 20 Know correct chemicals to use safely 21 Know proper handling/storage of chemicals 22 Know basic valve function 23 Know location of sample ports 28 Know proper clean-up methods 29 Know how to CIP the RO system/when	DCS/radio Fork lift/certification	PPE

CHAPTER G
MANAGE H₂O SYSTEM (RO, WASTE, BOILERS, COOLING)

DO	KNOW	REQUIRED EQUIPMENT	SAFETY REQUIREMENTS
3. Test RO H₂O per quality standards	1 Know PPE requirements per task/area 8 Know what PPE to use per code 9 Know spill containment plan 10 Know plan 13 Know electrical safety requirements per role 16 Know how to use all H ₂ O testing/analysis 17 Know plants vary in H ₂ O processes 14 Know to complete all paperwork/documentation 18 Know how to start-up/shut-down using DCS 19 Know how to convert metric to standard/standard to metric 19b Know correct PPE to use 20 Know correct chemicals to use safely 21 Know proper handling/storage of chemicals 22 Know basic valve function 23 Know plant requirements	HPLC MV sample port	PPE

CHAPTER G
MANAGE H₂O SYSTEM (RO, WASTE, BOILERS, COOLING)

DO	KNOW	REQUIRED EQUIPMENT	SAFETY REQUIREMENTS
BOILERS			
1. Monitor/respond to steam PSI/DA pressure/Steam condensate tank levels /temps	2 Know boiler operation SOPs 7 Know how to operate DCS system 8 Know plant lay-out/p and IDs 9 Know all plant basic valves (ball, gate butter-fly LCV, FCV, TCV, XV, EV, PCV) 11 Know how to analyze data/troubleshooting using DCS 12 Know correct responses to DCS alarms 13 Know how to perform activities out of control room as part of troubleshooting 14 Know to complete all paperwork/documentation 17 Know plants vary in H ₂ O processes 22 Know basic valve function 23 Know locations of sample ports	DCS/radio	PPE
2. Perform walk-through/visually inspect area boiler area	2 Know boiler operation SOPs 8 Know plant lay-out/p and IDs 9 Know all plant basic valves (ball, gate butter-fly LCV, FCV, TCV, XV, EV, PCV) 10 Know chain of command 14 Know to complete all paperwork/documentation 17 Know plants vary in H ₂ O processes 22 Know basic valve function 23 Know locations of sample ports	DCS/radio Fork lift/certification	PPE

CHAPTER G
MANAGE H₂O SYSTEM (RO, WASTE, BOILERS, COOLING)

DO	KNOW	REQUIRED EQUIPMENT	SAFETY REQUIREMENTS
3. Conduct multiple H₂O samples/tests (per boiler system/type)	2 Know boiler operation SOPs 8 Know plant lay-out/p and IDs 9 Know all plant basic valves (ball, gate butter-fly LCV, FCV, TCV, XV, EV, PCV) 10 Know chain of command 14 Know to complete all paperwork/documentation 16 Know how to use all H ₂ O testing/analysis 17 Know plants vary in H ₂ O processes 19 Know how to convert metric to standard/standard to metric 19b Know correct PPE to use 20 Know correct chemicals to use safely 21 Know proper handling/storage of chemicals 22 Know basic valve function 23 Know locations of sample ports 28 Know proper clean-up methods	HPLC MV sample port <i>Dan will get list</i>	PPE

CHAPTER G
MANAGE H₂O SYSTEM (RO, WASTE, BOILERS, COOLING)

DO	KNOW	REQUIRED EQUIPMENT	SAFETY REQUIREMENTS
COOLING SYSTEM			
1. Monitor/respond to in/out H₂O temps/pressures	3 Know cooling systems SOPs 7 Know how to operate DCS system 8 Know plant lay-out/p and IDs 9 Know all plant basic valves (ball, gate butter-fly LCV, FCV, TCV, XV, EV, PCV) 10 Know chain of command 11 Know how to analyze data/troubleshooting using DCS 12 Know correct responses to DCS alarms 13 Know how to perform activities out of control room as part of troubleshooting 14 Know to complete all paperwork/documentation 17 Know plants vary in H ₂ O processes 18 Know how to start-up/shut-down using DCS 22 Know basic valve function 23 Know locations of sample ports	DCS/radio	PPE

CHAPTER G
MANAGE H₂O SYSTEM (RO, WASTE, BOILERS, COOLING)

DO	KNOW	REQUIRED EQUIPMENT	SAFETY REQUIREMENTS
2. Monitor/respond to H₂O sampling test results.	3 Know cooling systems SOPs 8 Know plant lay-out/p and IDs 9 Know all plant basic valves (ball, gate butter-fly LCV, FCV, TCV, XV, EV, PCV) 10 Know chain of command 14 Know to complete all paperwork/documentation 17 Know plants vary in H ₂ O processes 19 Know how to convert metric to standard/standard to metric 19b Know correct PPE to use 20 Know correct chemicals to use safely 21 Know proper handling/storage of chemicals 22 Know basic valve function 23 Know locations of sample ports 28 Know proper clean-up methods	HPLC MV sample port	PPE

CHAPTER G
MANAGE H₂O SYSTEM (RO, WASTE, BOILERS, COOLING)

DO	KNOW	REQUIRED EQUIPMENT	SAFETY REQUIREMENTS
3. Clean/flush tower per plant need.	3 Know cooling systems SOPs 8 Know plant lay-out/p and IDs 9 Know all plant basic valves (ball, gate butter-fly LCV, FCV, TCV, XV, EV, PCV) 10 Know chain of command 14 Know to complete all paperwork/documentation 17 Know plants vary in H ₂ O processes 18 Know how to start-up/shut-down using DCS 19 Know how to convert metric to standard/standard to metric 19b Know correct PPE to use 20 Know correct chemicals to use safely 21 Know proper handling/storage of chemicals 22 Know basic valve function 23 Know locations of sample ports 24 Know confined space rules 25 Know correct fall protection use 28 Know proper clean-up methods	Power washers Squeegees Brooms Shovels Hoses Fall protection equipment Confined space equipment	PPE

CHAPTER G
MANAGE H₂O SYSTEM (RO, WASTE, BOILERS, COOLING)

DO	KNOW	REQUIRED EQUIPMENT	SAFETY REQUIREMENTS
CO₂ SYSTEM(S)			
1. Monitor/respond to levels/flows	4 Know CO ₂ systems SOPs 7 Know how to operate DCS system 8 Know plant lay-out/p and IDs 9 Know all plant basic valves (ball, gate butter-fly LCV, FCV, TCV, XV, EV, PCV) 10 Know chain of command 11 Know how to analyze data/troubleshooting using DCS 12 Know correct responses to DCS alarms 13 Know how to perform activities out of control room as part of troubleshooting 14 Know to complete all paperwork/documentation 17 Know plants vary in H ₂ O processes 18 Know how to start-up/shut-down using DCS 22 Know basic valve function 23 Know locations of sample ports	DCS/radio	PPE

CHAPTER G
MANAGE H₂O SYSTEM (RO, WASTE, BOILERS, COOLING)

DO	KNOW	REQUIRED EQUIPMENT	SAFETY REQUIREMENTS
2. Monitor/respond to alcohol content CO₂ scrubber H₂O	4 Know CO ₂ systems SOPs 8 Know plant lay-out/p and IDs 9 Know all plant basic valves (ball, gate butter-fly LCV, FCV, TCV, XV, EV, PCV) 10 Know chain of command 14 Know to complete all paperwork/documentation 16 Know how to use all H ₂ O testing/analysis 17 Know plants vary in H ₂ O processes 19 Know how to convert metric to standard/standard to metric 19b Know correct PPE to use 20 Know correct chemicals to use safely 21 Know proper handling/storage of chemicals 22 Know basic valve function 23 Know locations of sample ports 28 Know proper clean-up methods	HPLC Low proof hydrometer MV sample port	PPE

**CHAPTER G
MANAGE H₂O SYSTEM (RO, WASTE, BOILERS, COOLING)**

DO	KNOW	REQUIRED EQUIPMENT	SAFETY REQUIREMENTS
WASTE H₂O			
1. Monitor/respond to waste H₂O levels.	5 Know waste H ₂ O SOPs 7 Know how to operate DCS system 8 Know plant lay-out/p and IDs 9 Know all plant basic valves (ball, gate butter-fly LCV, FCV, TCV, XV, EV, PCV) 10 Know chain of command 11 Know how to analyze data/troubleshooting using DCS 12 Know correct responses to DCS alarms 13 Know how to perform activities out of control room as part of troubleshooting 14 Know to complete all paperwork/documentation 17 Know plants vary in H ₂ O processes 18 Know how to start-up/shut-down using DCS 22 Know basic valve function 23 Know locations of sample ports	DCS/radio	PPE

CHAPTER G
MANAGE H₂O SYSTEM (RO, WASTE, BOILERS, COOLING)

DO	KNOW	REQUIRED EQUIPMENT	SAFETY REQUIREMENTS
2. Test waste H₂O as necessary/per plant	5 Know waste H ₂ O SOPs 8 Know plant lay-out/p and IDs 9 Know all plant basic valves (ball, gate butter-fly LCV, FCV, TCV, XV, EV, PCV) 10 Know chain of command 14 Know to complete all paperwork/documentation 16 Know how to use all H ₂ O testing/analysis 17 Know plants vary in H ₂ O processes 19 Know how to convert metric to standard/standard to metric 19b Know correct PPE to use 20 Know correct chemicals to use safely 21 Know proper handling/storage of chemicals 22 Know basic valve function 23 Know locations of sample ports 28 Know proper clean-up methods	HPLC MV sample port	PPE

CHAPTER G
MANAGE H₂O SYSTEM (RO, WASTE, BOILERS, COOLING)

DO	KNOW	REQUIRED EQUIPMENT	SAFETY REQUIREMENTS
METHANATOR			
1. Monitor/respond to flow/temp/pH	6 Know methanator SOPs 7 Know how to operate DCS system 8 Know plant lay-out/p and IDs 9 Know all plant basic valves (ball, gate butter-fly LCV, FCV, TCV, XV, EV, PCV) 10 Know chain of command 11 Know how to analyze data/troubleshooting using DCS 12 Know correct responses to DCS alarms 13 Know how to perform activities out of control room as part of troubleshooting 14 Know to complete all paperwork/documentation 16 Know how to use all H ₂ O testing/analysis 17 Know plants vary in H ₂ O processes 20 Know correct chemicals to use safely 21 Know proper handling/storage of chemicals 22 Know basic valve function 23 Know locations of sample ports 28 Know proper clean-up methods	DCS/radio PH probe Temperature Gun (infra-red) Thermometer	PPE

CHAPTER G
MANAGE H₂O SYSTEM (RO, WASTE, BOILERS, COOLING)

DO	KNOW	REQUIRED EQUIPMENT	SAFETY REQUIREMENTS
2. Add nutrients per need	6 Know methanator SOPs 8 Know plant lay-out/p and IDs 9 Know all plant basic valves (ball, gate butter-fly LCV, FCV, TCV, XV, EV, PCV) 10 Know chain of command 11 Know how to analyze data/troubleshooting using DCS 12 Know correct responses to DCS alarms 13 Know how to perform activities out of control room as part of troubleshooting 14 Know to complete all paperwork/documentation 16 Know how to use all H ₂ O testing/analysis 17 Know plants vary in H ₂ O processes 20 Know correct chemicals to use safely 21 Know proper handling/storage of chemicals 22 Know basic valve function 23 Know locations of sample ports 28 Know proper clean-up methods	Forklift/certification Bucket/nutrients	PPE

**CHAPTER H
COMPLETE CIP PER SCHEDULE/NEED**

DO	KNOW	REQUIRED EQUIPMENT	SAFETY REQUIREMENT
DAILY			
1. Test caustic concentration per usage	1 Know to follow SOPs 3 Know how to perform caustic ID test 4 Know CIP prevents infections/sanitizes 5 Know correct PPE to use 7. Know hazcom/spill prevention	Titration PH probe	PPE
2. CIP mash banks per schedule	1 Know to follow SOPs 2 Know plant lay-out/P and IDs 6. Know schedule(s) 7. Know hazcom/spill prevention	DCS Manual valves Hoses	PPE
3. CIP yeast props per schedule	1 Know to follow SOPs 2 Know plant lay-out/P and IDs 6. Know schedule(s) 7. Know hazcom/spill prevention	DCS Manual valves	PPE
4. CIP fermentation tanks per schedule	1 Know to follow SOPs 2 Know plant lay-out/P and IDs 6. Know schedule(s) 7. Know hazcom/spill prevention	DCS Manual valves	PPE
WEEKLY/MONTHLY			
1. Test caustic concentration per usage	1 Know to follow SOPs 3 Know how to perform caustic ID test 4 Know CIP prevents infections/sanitizes 5 Know correct PPE to use 7. Know hazcom/spill prevention	Titration PH probe	PPE
2. CIP beer preheater per schedule	1 Know to follow SOPs 2 Know plant lay-out/P and IDs 6. Know schedule(s) 7. Know hazcom/spill prevention	DCS Manual valves	PPE

**CHAPTER H
COMPLETE CIP PER SCHEDULE/NEED**

DO	KNOW	REQUIRED EQUIPMENT	SAFETY REQUIREMENT
3. CIP centrifuge per schedule	1 Know to follow SOPs 2 Know plant lay-out/P and IDs 6. Know schedule(s) 7. Know hazcom/spill prevention	DCS Manual valves	PPE
4. CIP evaporators per schedule	1 Know to follow SOPs 2 Know plant lay-out/P and IDs 6. Know schedule(s) 7. Know hazcom/spill prevention	DCS Manual valves Hoses	PPE