Step No.	Activity (WHAT)	Associated Requirements/ Hazards/ Impact	Process / tools / PPEs (HOW)	Responsibility (WHO)	Remarks / Reference
1	Read the previous shift instruction and record the flow meter reading.	**Quality –** i)Read the previous shift report	i)Read the shift Log Book and know the status of the whole operating system. If found any problem then report immediately.	Operator	DOC.NO. WI/OPRN/17
		ii)Record flow meter reading.	ii)Record the initial flow meter reading at the beginning of shift.	Operator	
		OH&S–Nil			
		Environment -Nil			
2.	Housekeeping of the inside premises	**Quality**– i)Store the material neatly.	i)Chemical bags or supplies and materials those used at the ETP plant should be stored in a neat and orderly manner.	Operator	DOC.NO. WI/OPRN/17
		OH&S– i)Fall due to any obstruction	i)Extraneous materials not in use shall be cleared from operational areas.	Operator	DOCNO. HIRA/MINING/17
		ii)Fall due to slippery condition	ii)Avoid the floors to be slippery due to water or aqueous solutions.	Operator	
		Environment - i)Air pollution(smoke) due to fire	i)Oil soaked cotton waste,papers and any other combustible materials shall be cleared from the premises.	Operator/mechanic	Aspect No.31

3	Pre-operational checking	**Quality–** i)See First Aid Box	i)Check the requisite materials in the First Aid Box and ensure the expiry period.	Operator/ Shift Incharge	DOC.NO. WI/OPRN/17
		ii)Check Fire Extinguisher	ii)Check the refilling time or expiry of fire extinguishers.	Operator/ Shift Incharge	
		iii)Visually check for any machine damage	iii)Check for any broken parts or damage and if found then inform to the supervisor immediately .	Operator	
		iv)Check chemical tank	iv)Check the solution level in the chemical tank.	Operator	
		v)Check water in the storage tank	v)Check water in the over head storage tank. If found shortage then call water tanker and fill it. **Always use fresh water for making solution.**	Operator	
		OH&S – i)Injury to hand	i)Check the moving parts with covers or guards in position.	Operator	DOCNO. HIRA/MINING/17
		ii)Fall injury	ii)Be careful while stepping to see the solution level in the Ferrous Sulphate tank.	Operator	
		iii)Unsafe condition due to poor Illumination	iii)Ensure that indoor areas, such as chemical mixing room, pump room and electrical control room, area around clarifloculator and ETP surroundings are properly lighted and safe to work.	Operator/ Electrical Engineer	
		Environment–Nil			

4	Dosing operation	**Quality–** i)Dosing Operation	1st step- Receive information from MMC - 5minutes before the u/g pump will start. 2nd step- On receiving the information – start dosing operation immediately. So before entry of inlet water dosing operation should start. Process- i-a)Start the dosing pump and agitator operation from the control panel. b)Ensure the dripping of chemical solution in to the flash mixer tank. c)Make time study to examine the recommended dosing rate. d)Check the agitator movement in the chemical tank, flash mixer tank etc. e)Start the bridge operation in the clarifloculator. If found any not in operation shall be reported immediately.	Operator/ u/g pump operator Operator	DOC.NO. WI/OPRN/17
		ii)When shut down is required for any installation or repairing-	ii)When any shut down is sought- Contact with u/g pump operator and inform him not to operate the pump until shut down is cleared.	Operator/ u/g pump operator	
		OH&S – i)Hitting	i)Do not touch the agitator while it is moving.	Operator	DOCNO. HIRA/MINING/17

		ii)Fall into the sump	ii)Carefully walk over the platform of clarifloculator.	Operator	
		Environment- i)Contamination of water body due to chemical leakage	i)If see any chemical leakage from the chemical tank or supply pipe line then make immediate arrangement for stopping and reporting the same.	Operator	Aspect No.27
5	Adding of chemical in the tank (when needed)	**Quality–** i)Adding of chemicals	i)Add fresh water to the chemical tank. ii)Take the chemical with a spoon and keep in a bucket. iii)Weigh the recommended quantity. iv)Add chemicals in the tank. v)Rinse the spoon and make it clean.	. Operator	DOC.NO. WI/OPRN/17
		OH&S – i)Contact with corrosives ii)Injury to the eyes iii)Injury to hand	andle chemicals wearing hand gloves. Use goggles while adding chemicals into the chemical tank. Stop agitator movement while pouring chemicals.	Operator Operator Operator	DOCNO. HIRA/MINING/17
		Environment- Nil			
6	Operation of pressure feed pump	**Quality–** i)Operation of pressure feed pump ii)Water supply to sprinkling tanker-	i)See the water level in the supernatant tank(clean water tank). If discharge needed, then either supply to the sprinkling water tanker or allow to discharge out side through 8” pipe line. ii)Water supply to sprinkling tanker- a)Close the outlet valve at MPSF tank. b)Open the delivery valve for water	Operator Operator	DOC.NO. WI/OPRN/17

			tanker filling. c)Operate the pressure feed pump. d)After filling of water tanker, close the delivery valve and then open the outlet discharge valve.		
		iii)Water discharge to outside-	iii)Water discharge to outside- a)Check the outlet valve open at MPSF tank. b)Check the delivery valve close at supply line for water filling. c)Allow water to discharge out side through 8" pipe line.	Operator	
		OH&S –Nil			
		Environment- i)Increase of TSS	i-a)Do not allow any accumulation of water near water tanker filling station. Ensure the proper drainage there. b)Take immediate step to stop the leakage at filling station.	Shift Incharge	Aspect No.27
7	Operation of 10HP pump near settling pond(magazine sump)	**Quality–** i)Operation of 10HP pump	i-a)Check water in the suction pipe, if OK then START. b)If there is no water in the suction end then prime the pump and after that START. c)If frequent tripping occurs during start-Do not try- report to an electrician. d)If found any operational difficulty then report to the supervisor.	Operator	DOC.NO. WI/OPRN/17
		OH&S – i)Bite by snake or insect ii)Injury to hand	i)Use gum boot and torch beyond day light hour. ii)Check the coupling guard in position.	Operator Operator	DOCNO. HIRA/MINING/17

		iii)Drowning in the water/sludge	iii)Incase of foot valve problem- While going down for checking the foot valve, use safety belt.	Operator	
		Environment-Nil			
8	Collection of samples for analysis	**Quality–** i)Collection of samples	i-a)Every day one inlet and one out let sample will be collected for analysis. b)Before taking samples, bottles will be cleaned in fresh water. c)Inlet and out let water will be collected while dosing is operative. d)Inlet water will be collected from inlet chamber and out let will be collected at final discharge point. e)Written information such as inlet or oulet and sample no. with date will be stickered to the sample bottles. f)Send the bottles to the chemical laboratory.	Operator	DOC.NO. WI/OPRN/17
		OH&S – i)Health issue	i)Sampling water bottle will be kept isolated and will not be mistakenly used as drinking water.	Operator	DOCNO. HIRA/MINING/17
		Environment-Nil			
9	Operation of sludge discharge valve	**Quality–** i)Operation of sludge discharge valve	The sludge which is settled in the clarifloculator is centered through the bridge movement. i)Open the sludge discharge valve. It allows the sludge to pass through the drain pipe and fall in the sludge tank. ii)Check that sludge are falling in the tank.	Operator	DOC.NO. WI/OPRN/17

			Sludge discharge valve will be kept open to release the sludge through out the shift. iii)At the shift end close the valve tightly so that no drip of water come out. If found any operational difficulty or after opening of valve, sludge is not coming out, then report immediately.		
		OH&S –Nil			
		Environment-Nil			
10	Operation of sludge pump	**Quality–** i)Operation of sludge pump ii)Know the stopping requirement of sludge pump.	Remember: As long as the sludge enters into the sludge chamber, operation of sludge pump shall be continued. i)Operation of sludge pump-- a)Check the water in suction head. b)If devoid of water then make priming. c)Check that suction is filled with water and then only operate the pump. d)Check for any leakage from gland. e)Do not run the pump dry. The sludge passes to Hydraulic Press Filter. Within hydraulic press filter sludge are pressed and water is drained out to clean water sump. ii)Remember: As long as water is coming out from drainage pipe of filter press, continue the operation of sludge pump. When water dripping is slowed down or stopped assume that press filter is ready	Operator Operator	DOC.NO. WI/OPRN/17

		iii)Stop the sludge pump operation.	for sludge(cake) removal. iii)Stop the sludge pump operation and go for release the pressure from hydraulic press filter.	Operator	
		OH&S –Nil			
		Environment-Nil			
11	Operation of hydraulic press filter	**Quality–** i)Operation of hydraulic press filter	Due to hydraulic press, the sludge are compressed in the compartments. Then filtered in the membrane and water is drained through pipe to the clean water tank. i-a)Release the pressure of filter press by hydraulic power pack. b)Open the individual segments. c)Drop down the accumulated sludge cake from the each segment of the press filter. d)Clean the segments and filter cloth. The sludge in the form of cakes will fall in the container. e)Close the segments manually. f)Press the segment by applying pressure upto 3000psi by power pack. g)Lock the pressed piston by check nut.	Operator	DOC.NO. WI/OPRN/17
		OH&S – i)Hazardous waste	i)Know that sludge are hazardous to health- Handle carefully. While handling, use hand gloves and gum boot.	Operator	DOCNO. HIRA/MINING/17

		Environment- i)Spillage	i)Ensure no leakage from press filter during sludge pump operation.	Operator	Aspect No.27
12	Loading & disposal of sludge	**Quality–** i)Disposal of sludge	i)The collected waste in container will be disposed off to authorised party.	Operator	DOC.NO. WI/OPRN/17
		OH&S –Nil			
		Environment- i)Hazardous waste	i-a)Do not allow to spill sludge out side. b)When in case of container has got filled and empty container is not reached at site, sludge removed may be stored in an impervious pit.	Operator	Aspect No.27
13	Storage of chemicals	**Quality–** i)Storage of chemicals	i)Store the chemical bags in a orderly manner. ii)Chemical spillage shall be cleaned properly. iii)Always store acids(FeSO4) separately from bases(NaOH). ii)Store chemicals in a wooden base or one that has a corrosion- resistant lining.	Operator	DOC.NO. WI/OPRN/17
		OH&S – i)Injury to eye	i)Never store corrosives above eye level. Store on a low shelf.	Operator	DOCNO. HIRA/MINING/17
		Environment- i)Air pollution due to fire	i)Flammable liquids such as diesel fuel shall not be stored in a chemical storage room.	Operator	Aspect No.31
14	Backwash of MPSF tank	**Quality–** i)Back wash procedure	i)Check the quality of discharge water, if not clean then go for back wash of MPSF tank. i)Operate pressure feed pump.	Operator	DOC.NO. WI/OPRN/17

			ii)Close the middle valve(waist level) ii)Open top valve. iii)Open bottom valve. When clean water is discharged, back wash is over. Then the opening and closing of three valves will be reversed.		
		OH&S –Nil			
		Environment-Nil			

15	Writing Report and Log Book	**Quality–** i)Writing of instruction book	At the end of the shift when inlet water is stopped, final flow meter reading will be taken. i)Write instruction book at the end of shift.	Operator	DOC.NO. WI/OPRN/17
		ii)Mention the problems	ii)Mention in the register if there is any leakages,malfunctioning,any B/D or absence of any safety devices in the equipment.	Operator	
		OH&S –Nil			
		Environment-Nil			

	Prepared by	Approved by
Name Designation Signature: Date:	M.K. Samal Mines Manager	S. Patni Sr. GM-SCM

NOTE :

SIX DIRECTIONAL HAZARD IDENTIFICATION DURING JOB :

In addition to the above SOP, a 6-directional hazard identification sheet shall be used before start of the job. While executing the job at site, any hazards from six directions (**NORTH, SOUTH, EAST, WEST, TOP, BUTTOM**) to be assessed based on physical observation, common sense & experience. Controls shall be taken for any hazards thus identified.

TRAINING RECORD OF SOP :

The Training on this SOP with six directional hazards is to be imparted to concerned employee and contract workers by Shift In-Charge / Deptt. Head as applicable. The Training Record to be maintained in a register with signature of the individual employees before starting of the job.