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WORK CHECK LIST FOR

ALKYLATION PLANT
Standard List

SHU

CHARGE NUMBER	JOB NO.	ORIGIN		PRIORITY	Equip No.	WORK DESCRIPTION	ASSIGNED TO	OK'D	
		OPR	ENGR					OPR	ENGR
71-G- 020-8045						C - COLUMNS			
						Column No.			
						C-601 Deisobutanizer Tower			
						C-602 Debutanizer Tower			
						C-603 Depropanizer Tower			
						C-604 Reflux Tower			
						C-605 Caustic Scrubber Deprop. v' lds.			
						Install & remove blinds on the following columns. See Operator's Blind List.			
						C-601			
						C-602			
						C-603			
						C-604			
						C-605			
	2					Hot bolt, open and head up all external manways on the following columns except as noted. See Operator's Blind List.			
						C-601			
						C-602			
						C-603 (open top manway only, Inspect for)			
						C-604 cleanliness.			
						C-605			
						Open and head up tray and baffle manways on the following columns:			
						C-601			
						C-602			
						C-603			
						C-604			
						C-605			
						Clean the following columns:			
						C-601			
						C-602			
						C-603			
						C-604			
						C-605			

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CHARGE NUMBER	JOB NO.	ORIGIN			PRIORITY	EQUIP NO	WORK DESCRIPTION	ASSIGNED TO	OK'D	
		OPR	INS	ENGR					OPR	ENGR
71-060- 030-8045							D - DRUMS			
							Drum No. Service			
							E-601 Compressor Dry Drum			
							D-602 Isobutane Recycle Flash Drum			
							D-603 Spent Acid Flash Drum			
							D-604A Caustic Neutralizer			
							D-604B Water Jacket			
							D-605 Deisobut. Reflux Drum			
							D-606 Debut. Reflux Drum			
							D-607A Acid Storage Drum			
							D-607B Acid Storage Drum			
							D-607C Acid Storage Drum			
							D-607D Acid Storage Drum			
							D-609 Caustic & Water Degassing Drum			
							D-610 Depropenizer Reflux Drum			
							D-611 Alkylation Reactor			
							D-612 Isobutane Recycle Condenser			
							D-613 Fresh Feed Condenser			
							D-614 Wash Water Drum			
							D-615 Fresh Butane Feed Condenser			
							D-616 Compressor Condensate Drum			
							D-617 Rarun Tower Reflux Drum			
							D-618 Propene Caustic Knock Out Drum			
							D-620 Steam Condensate Drum			
							D-621 Acid Catch Leg			
							Install & remove blinds on the following vessels & drums. See Operator's Blind List.			
							D-601			
							D-602			
							D-603			
							D-604A			
							D-604B			
							D-605			
							D-606			
							D-607A			
							D-607B			
							D-607C			
							D-607D			
							D-609			
							D-610			
							D-611			
						D-612				
						D-613				
						D-614				
						D-615				
						D-616				
						D-617				
						D-618				

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WORK CHECK LIST FOR

ALKYLATION PLANT
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CHARGE NUMBER	JOB NO	ORIGIN			PRIORITY	EQUIP NO	WORK DESCRIPTION	ASSIGNED TO	O.K'D	
		OPR	INSP	ENGR					OPR	ENGR
71-060- 030 - 8045	2						D - DRUMS (Cont'd)			
							D-601 D-602 Hot bolt, open and head up external manways on the following drums, except as noted: D-601 D-602 D-603 D-604A D-604B D-605 D-606 D-607A D-607B D-607C D-607D D-609 D-610 D-611 D-612 D-613 D-614 D-615 D-616 D-617 D-618 D-619 D-621 Clean the following drums as noted: D-601 D-602 D-603 D-604A D-604B D-605 D-606 D-607A D-607B D-607C D-607D D-609 D-610 D-611 D-612 D-613 D-614 D-615 D-616			
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WORK CHECK LIST FOR

ALKYLATION PLANT
STANDARD LIST

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CHARGE NUMBER	JOB NO.	ORIGIN		PRIORITY	EQUIP No.	WORK DESCRIPTION	ASSIGNED TO	OK'D	
		OPR	ENGR					OPR	ENGR
71-060- 040-8045						E - EXCHANGERS			
						Exchanger No. Service			
						E-601 Butane Condenser			
						E-601A Butane Condenser			
						E-602 Fresh Feed-Reactor Effluent Exchangers			
						E-603 Isobut. Recycle-Reactor Effluent Exchanger			
						E-604 Deisobut. Feed Preheater			
						E-605 Deisobut. Reflux Condenser			
						E-606 Deisobut. Recycle Cooler			
						E-606B			
						E-606C			
						E-606D			
						E-607 Deisobut. Reboiler			
						E-608 Deisobut. Reflux Condenser			
						E-609 A & B Butane Product Cooler			
						E-610 Deisobut. Reboiler			
						E-611 Deisobut. Recycle Preheater			
						E-611F			
						E-612 Deprop. Bottoms Cooler			
						E-613 Deprop. Bottoms-Feed Exchanger			
						E-614 A, B & C Deprop. Feed Heater			
						E-615 Deprop. Reflux Condenser			
						E-616 Deprop. Reboiler			
						E-617 Propane Cooler			
						E-618 Propane Condenser			
						E-618B			
						E-619 Propane Column Reboiler			
						E-620A			
						E-620 A, B, C, D			
						E-621 A, B, C, D Propane Bottoms Coolers			
					E-621 A, B, C, D Light Alkylate Coolers				
					E-622 Deisobut. A & B Columns Bottoms Cooler				
					E-623 A, B, C, D Reactor Refrig. Recycle Cooler				
					E-624 Propane Column Feed Heater				
					E-625 Compressor Lube Oil Cooler				

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WORK CHECK LIST FOR

ALKYLATION PLANT
STANDARD LIST

SHU

CHARGE NUMBER	JOB NO.	ORIGIN		PRIORITY	EQUIP No.	WORK DESCRIPTION	ASSIGNED TO	OK'D	
		OPR	ENGR					OPR	ENGR
71-060- 040- 8045	1					E - EXCHANGERS			
						Install and remove blinds on the following exchangers. See Operator's Blind List:			
						E-601			
						E-601A			
						E-602			
						E-603			
						E-604			
						E-605			
						E-606A			
						E-606B			
						E-606C			
						E-606D			
						E-607			
						E-608			
						E-609A			
						E-609B			
						E-610			
						E-611A			
						E-611B			
						E-612			
						E-613			
						E-614A			
						E-614B			
						E-614C			
						E-615			
						E-616			
						E-617			
						E-618A			
						E-618B			
						E-619			
						E-619A			
						E-620A, B, C, D, E			
						E-621 A, B, C, D			
						E-622			
						E-623 A, B, C, D			
						E-624			
						E-625			
	2					Remove and reinstall channel covers, channels, bucket heads, and floating heads on the following exchangers except as noted. *Believed leaking; test before un-heading.			
						E-601*			
						E-601A*			
						E-602			
						E-603			
						E-604			
						E-605*			
						E-606*			
						E-607*			
						E-608*			
						E-609*			
						E-610*			
						E-611*			
						E-612*			
						E-613*			
						E-614*			
						E-615*			
						E-616*			
						E-617*			
						E-618*			
						E-619*			
						E-620*			
						E-621*			
						E-622*			
						E-623*			
						E-624*			
						E-625*			

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Work CHECK LIST For

ALKYLATION PLANT
Standard List

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CHARGE NUMBER	JOB No	ORIGIN			PRIORITY	Equip No.	WORK DESCRIPTION	Assigned To	OK'd	
		OPR	INSP	ENGR					OPR	ENGR
71-060- 040- 8045							E - EXCHANGERS (Cont'd)			
							E-610			
							E-611A			
							E-611B			
							E-612			
							E-613			
							E-615 *			
							E-616			
							E-618A			
							E-618B			
							E-618			
							E-610A			
							E-622			
							E-624			
	3						Pull and reinstall the following bundles. *Send to shop. Others to be field inspected and sent to shop per instruction from E.D. Division Foremen.			
							E-601			
							E-601A			
							E-602			
							E-603			
							E-604			
							E-605			
							E-607			
							E-608			
							E-610			
							E-611A (unc)			
							E-611B			
							E-612			
							E-613			
							E-615			
							E-616			
							E-610A			
							E-618B			
							E-619			
							E-610A			
							E-622			
							E-624			
	4						Clean the following exchanger bundles and shells except as noted:			
							E-601			
							E-601A			
							E-602			
							E-603			
							E-604			
							E-605			

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WORK CHECK LIST FOR

ALKYLATION PLANT

SHUT

CHARGE NUMBER	JOB NO.	ORIGIN			Priority	Equip No.	WORK DESCRIPTION	ASSIGNED TO	OK'd	
		OPR	INSP	ENGR					OPR	ENGR
71-060- 040- 8045	8						E - EXCHANGERS			
			X				Replace and seal weld the two 3/4" nipples on shell of Deprop. Reboiler, E-616.			
			X				Repair corr. dsl gasket seating surface on floating tubsheet of E-616 Deprop. Reboiler.			
			X				Build up corroded 6" outlet nozzle off E-604 (shell side)			
	9		X				Build up corroded bottom shell cover of E-607.			
			X				Replace the existing 3/4" probe valve on outlet of E-615 with new 1 1/2" I.V. valve at storehouse on EST-34255.			

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ALKYLATION PLANT
Standard List

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SHUT

CHARGE NUMBER	JOB NO	ORIGIN			PRIORITY	EQUIP NO	WORK DESCRIPTION	ASSIGNED TO	Ox'D	
		OPR	INSR	ENGR					OPR	ENGR
71-060- 0600- 8045	2			X			G - PUMPS & DRIVERS			
							Change TG-607A which is now on G-603A to its original location on pump G-607A & Install TG-603A on Pump G-603A.			
	3			X			Remove G-601A, B & C From Reactor. Take to shop for complete inspection and overhaul.			

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WORK CHECK LIST FOR

ALKYLATION PLANT

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CHARGE NUMBER	JOB NO	ORIGIN			PRIORITY	EQUIP NO	WORK DESCRIPTION	ASSIGNED TO	OK'D	
		OPR	INSP	ENGR					OPR	ENGR
71-060- 080- 80451							K - COMPRESSOR, K-601			
				X			Remove and reinstall top half of K-601 compressor			
				X			Inspect internal & external bearings. Check clearance with plastic gage. Note conditions of bearings, and shaft journals. (Bearing clearance should be .003" to .006".)			
				X			Check thrust collar and thrust shoes. Record axial end play with dial indicator. (Should be .008" to .012").			
				X			Check clearance and condition of oil labyrinth.			
				X			Remove rotating element and wash with water thoroughly.			
				X			Wash top and bottom halves of cage with water. (Once washing operation has begun continue until no water and acid sludge remains in cage.)			
	2			X			Check condition of Internal Oil Pump.			
	3			X			Check condition of oil pump driving gear (back lash should be .008" to .012".)			
				X			Check condition of mechanical seal and repair any worn parts. Be sure that rotating element is replaced in correct lateral position (See DWG. 101-351-379 in carrier compressor book).			
4			X			Install new balanced coupling				
5			X			Clean oil cooler				
6			X			Clean Cuno Filter.				
	X									

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WORK CHECK LIST FOR

ALKYLATION PLANT

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CHARGE NUMBER	JOB NO.	ORIGIN			PRIORITY	EQUIP No.	WORK DESCRIPTION	ASSIGNED TO	OK'D	
		OPR	INSR	ENGR					OPR	ENGR
74-060- 080- 8045						TK-601 - COMPRESSOR TURBINE-DRIVER				
	7		x			Remove top half of turbine case.				
	8		x			Check bearing journals.				
	9		x			Check clearance on bearings (new bearings have .004" clearance.				
	10		x			Check condition of carbon seals and glands and replace if required.				
	11		x			Balance turbine rotor.				
	12		x			Install new balanced coupling.				
	13		x			Install new oil pump and check back lash of driving gears.				
	14		x			Install new suction line to oil pump.				
	15		x			Check governor linkage and rebush or replace worn parts.				
	16		x			Clean out oil reservoir and replace oil.				
	17		x			Open governor valve and check for worn parts. Be sure that resetting mechanism operates satisfactorily.				
	18		x			Align turbine cold so that it is in alignment laterally; but .008" lower than the Compressor.				
	19		x			Check automatic shutdowns and alarms.				
	20		x			Check relief valve on oil line.				
	21		x			Clean oil cooler.				
	22		x			Renew in and out thermometers in oil cooler.				

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CHARGE NUMBER	JOB NO.	ORIGIN			EQUIP No	WORK DESCRIPTION	ASSIGNED TO	OK'd	
		OPR	INSP	ENGR				OPR	ENGR
71-060- 090-8046	1					<u>L-Lines</u>			
	2					Install & remove blinds per Operator's Blind List. Do not blind under safety valves unless directed so.			
	3					Repack, repair, or replace valves as indicated on Operator's Valve Repair List.			
	4					Connect & disconnect steam & water Hoses.			
	5					Pop & reset safety valves indicated on "Safety Valve Check List." Refer to Engr. & Maint. Instr. SP-814, 815, & 2019. Div. Foreman (Shops)-have Mechanic Foreman (Machine Shop) initial snap blue lines after shutdown & send them to Inspection Section. a. Check if safety valves are identified; then send to shop; install boilermakers. b. Pop, repair, & reset as required & return safeties to field. c. Remove boilermakers & install safeties. Strip & reinstall insulating from lines per inspector's Work Lists. Salvage materials where possible for reuse. This should be completed at least two days before the plant is shut down.			

WORK CHECK LIST FOR

ALKYLATION PLANT

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CHARGE NUMBER	JOB NO	ORIGIN			PRIORITY	EQUIP No.	WORK DESCRIPTION	ASSIGNED TO	OK'D	
		OPR	INSP	ENGR					OPR	ENGR
							L - LINES			
71-060- 090-8045	6	x					Repair leaking 3" flange on 100" steam to TBC 603.			
20-060- 090- 2576	7	x					Install 2" - 150# RF WN Flanges and check valve in 2" caustic charge line to Propane Scrubber, C-605. Locate valve in line just north of reactor cell A, refer to Engineering for location. DRWG NO. GA-6035-16 ATTACHED FOR LOCATION. Pick up 2" CHECK VALVE PRECHARGED AT S.H.			
20-060- 090- 2527			x				Install 8" - 150# RF WN Flanges and orifice plate made up on work requisition T11586 issued on 12/27/60 and marked for Alky Plant S.D. Install flanges in 10" steam to E-607 in horizontal run. REFER TO DRWG. FOR LOCATION.			
71-060- 090- 8045			x				Seal weld the two 3/4" ball plugs on 4" nozzle on bottom of Deisobut. Reboiler, E-607.			
	8	x					Relocate acid sample draws to suction side of C-611 and C-612.			
20-060- 090- 2575			x				Install water wash facilities on E-611 A & B pan. DRWG. PE-06-12215-0 ATTACHED FOR LOCATION.			
71-060- 090- 8045	9						Seal weld repair leaking union on steam out of TBC 601 off Deprop. Reboiler, E-616.			
71-13- 090-	10						Tie in Tank 87 suction Line to G-1336 & G-1339 as shown on DRWG. TE-13-831-0. Hydraulic test Line @ 350 PSI.			

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WORK CHECK LIST FOR

ALKYLATION PLANT

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		OPR	INSP	ENGR					OPR	ENGR
71-060- 090- 8045	14						L - LINES			
							Strip insulation from the following locations for inspection.			
							1. 6" Isobutane Recycle line from D-601 to D-611 (for audigaging).			
							2. 6" & 8" Reactor flash piping from A & B cones of Reactor D-601 to West End (for audigaging).			
							3. 12" O.D. Compressor Suction piping (for audigaging).			
							4. 3" Olefin feed line at Control manifold PRC-A - 601 under Reactor (for hammering).			
							5. 2" Olefin feed line at olefin feed condenser G-613 (for hammering).			
							6. 2" Fresh Caustic line from Acid House north to Caustic Pumps G-614 (for hammering).			
							NOTE:			
							The above piping will be marked for removal of insulation by Inspector prior to Shutdown.			
							Sold weld the 1" covered branch line between G-615 and water accumulator.			
							Replace the 2" treated water line to G-616 with plastic line per the work requisition issued on 5/2/69 (See attached to work requisition).			
							Install 3/4" hose on G-613 water leg per instruction from Engineering for high level switch.			
	12						Disconnect Suction & Discharge piping on the following pumps for inspection:			
							G-612 G-611A			
							G-613 G-612			
							G-611 G-616			

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