

Node: 1 I-PENTANE MAKEUP TO D-2004 Parameter: Flow Intention: 0 - 20 GPM					
GUIDEWORD	DEVIATION	POSSIBLE CAUSES	CONSEQUENCES	RECOMMENDATIONS	BY
No	No Flow	VALVE CLOSED DRY HEADER PUMP DOWN FALSE D-2004 LEVEL INDICATION MANUAL VALVE CLOSED LINE PLUGGED	RUN PUMPS DRY HOT REACTOR NO OVERHEAD SPRAYS NO PUMP FLUSH	DUAL LEVELS . AUTO START ON SPARE DRY HEADER PUMP ENSURE MANUAL VALVE ON START-UP CHECKLIST	* * RF
More	More Flow	VALVE FAILS OPEN LEVEL MEASURE FAILURE CONTROLLER TUNING ERROR 2 PUMPS ON LINE FCV BYPASS OPEN	REACTION DIES OVERFILL D-2004 -> COMPRESSOR WRECK LOSS OF dP CELL PURGES LOWER DRY HEADER PRESSURE	REMOVE BYPASS CONSIDER LEVEL DEVIATION ALARM	GC *
Reverse	Reverse Flow	BOTH HEADER PUMPS DOWN HEADER RUPTURES HEADER PRESSURE REDUCED	C2H4 SATURATED SOLVENT INTO HEADER	CHECK VALVE	GC

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Process: POLY-B

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rameter: Composition			Intention: 95%I-P, 5% HEX		
GUIDEWORD	DEVIATION	POSSIBLE CAUSES	CONSEQUENCES	RECOMMENDATIONS	BY
More	More Comp HEXANE	T-206 FEED COMPOSITION T-206 TEMP PROB T-206 PRESS UPSET T-205 GC PROB	REACTOR COOLING REDUCTION MORE HEXANE TO DRIER SYSTEM MORE ENVIRONMENTAL EMISSIONS	HAZOP VEHICLE RECOVERY AREA INSTALL GC ON T-206 FEED T-206 TEMP, PRESS ALARMS	TH GC *

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Parameter: Contamination			Intention: NO WATER!		
GUIDEWORD	DEVIATION	POSSIBLE CAUSES	CONSEQUENCES	RECOMMENDATIONS	BY
More	More Cont WATER	T-206 UPSET EXCHANGER FAILURE VALVING ERROR REFLUX WATER REMOVAL MALFUNCTION	REACTION KILLED CATALYST KILLED	T-206 T, P ALARMS ELIMINATE ALL BUT ONE CROSS TIE AND INSTRUMENT	* RF
	BUTENE	T-205 UPSET ANALYZER FAILURE	REACTION IN CATALYST VESSELS CHANGE PRODUCT PROPERTIES INFLUENCE TRAIN 1 PRODUCT -> CPE FEEDS PLUG LINES	EVALUATE BUTENE REMOVAL SYSTEM FOR CATALYST AREA	BB

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rameter: Temperature			Intention: 40C OR LESS		
GUIDEWORD	DEVIATION	POSSIBLE CAUSES	CONSEQUENCES	RECOMMENDATIONS	BY
More	Higher Temp	E-700 OR CROSS EXCHANGER PROBLEMS	CAVITATE HEADER AND D-2004 PUMPS FLASHING ACROSS FCV -> LEVEL CONTROL PROBLEMS FLASH ACROSS FLOWMETERS SPRAYS IN DEMISTER POOR FUNCTION SEAL FLUSH PROBLEMS SEALLESS PUMP SHUTDOWN ON TEMP	ALARM HEADER TEMP	GC