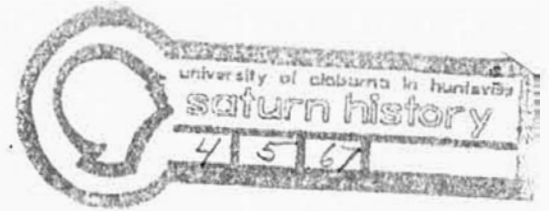




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SATURN HISTORY DOCUMENT
University of Alabama Research Institute
History of Science & Technology Group
Date ----- Doc. No. -----



SATURN HISTORY DOCUMENT
University of Alabama Research Institute
History of Science & Technology Group
Date ----- Doc. No. -----

LIST of SATURN-APOLLO SUPPLIERS of CRITICAL HARDWARE

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April 5, 1967

Dr. Preston T. Farish
Mr. Morris Dyer
I-RM-F AC 205-876-2985



SATURN - APOLLO CRITICAL SUPPLIER LEGEND

1. CRITICALITY RATING

1. Critical, Failure results in loss of life.
2. Major, Failure results in abort of mission.
3. Minor, Failure does not result in either of above.
- X. Criticality unknown.

2. DEFINITIONS & ABBREVIATIONS

- a. DAC - Douglas Aircraft Company
- b. IBM - International Business Machine
- c. GE - General Electric Co.
- d. CCSD - Chrysler Corp. Space Division
- e. R'DYNE - Rocketdyne
- f. HM STD - Hamilton Standard - Division of United Aircraft Corporation
- g. MSFC - Marshall Space Flight Center
- h. S&ID - North American Aviation Space & Information Division
- i. A.C. EL - A.C. Electronics

SATURN - APOLLO CRITICAL SUPPLIER LEGEND

2. DEFINITIONS & ABBREVIATIONS (Cont.)

- j. CM - Command Module
- k. LEM - Lunar Excursion Module
- l. G.P. - Guidance Package (A.C. Electronics)
- m. ACE - Automatic Checkout Equipment
- n. PLSS - Portable Life Support System
- o. GP - Guidance Platform (Bendix)
- p. GFE - Government Furnished Equipment
- q. L - Lead Contractor
- r. ENG - ENGINES

SATURN - APOLLO CRITICAL SUPPLIER TOTALS

	Boeing S-IC	S&ID S-II	DAC S-IVB	IBM IU	CCSD S-IB	R'dyne ENG.	Bendix GP	MSFC GFE	S&ID CM	Gruman LEM	AC EJ. GP	G.E. ACE	Ham-Std PLSS	TOTAL
Atlanta	0	1	2	5	4	1	1	3	1	2	0	2	0	22
Boston	6	5	2	3	8	1	1	2	2	10	1	1	1	43
Cleveland	0	4	2	1	3	1	0	0	2	1	0	1	0	15
Chicago	3	0	1	0	4	3	0	0	3	2	0	3	1	20
Detroit	0	1	1	0	2	2	0	0	0	2	0	0	0	8
Dallas	0	0	0	1	2	1	1	0	0	0	0	0	0	5
St. Louis	2	0	1	1	3	2	0	0	7	3	0	5	1	25
Philadelphia	2	0	2	0	3	1	2	1	3	2	0	1	0	17
New York	4	2	3	4	8	0	4	2	4	9	1	3	1	45
San Francisco	1	4	1	1	0	0	0	0	2	0	0	1	0	10
Army, Navy	0	1	1	0	1	0	0	0	6	1	0	0	0	10
Air Force														
Los Angeles	21	31	27	7	17	43	1	2	19	17	0	1	1	187
TOTAL	39	49	43	23	55	55	10	10	49	49	2	18	5	407

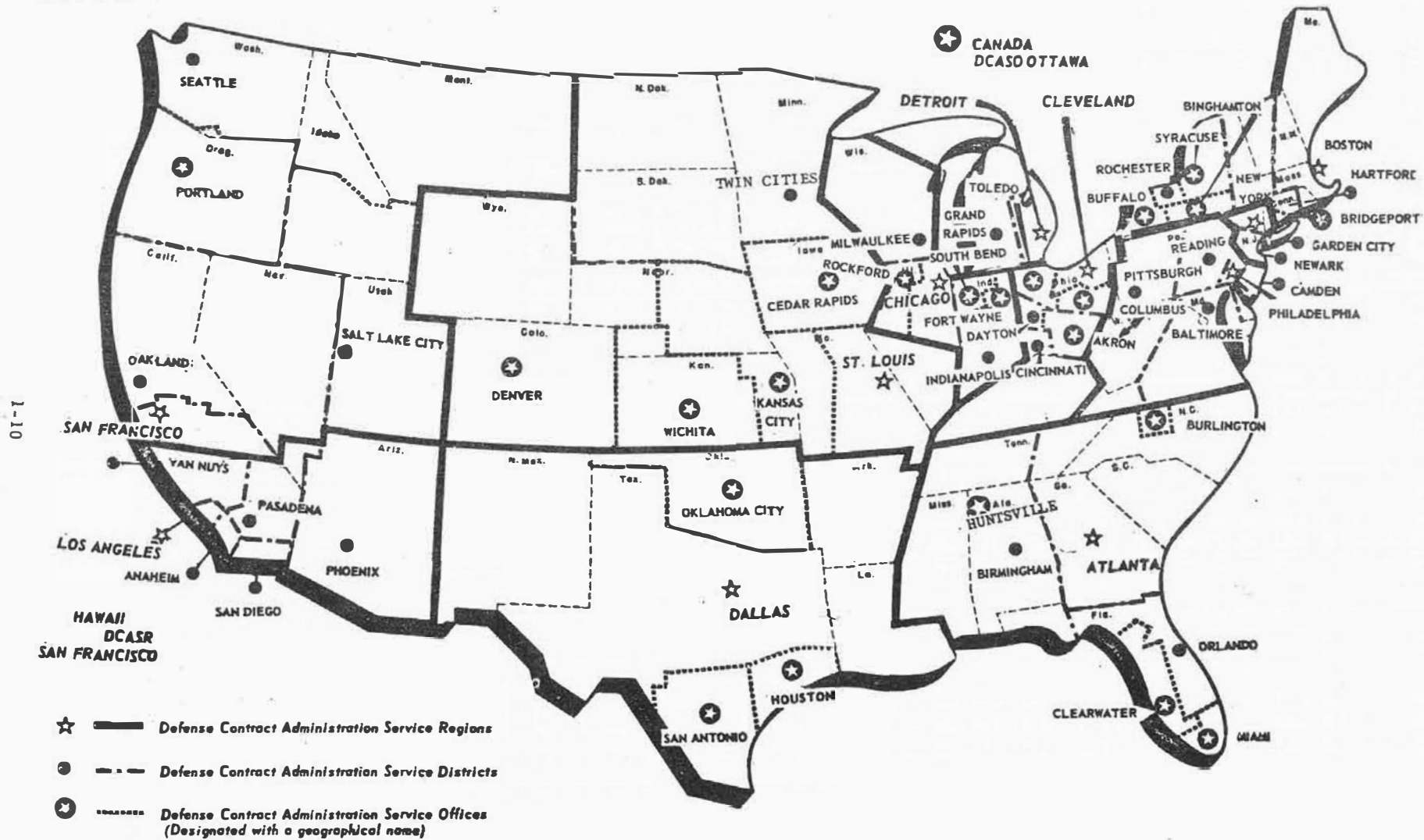
SATURN-APOLLO CRITICAL SUPPLIER LISTING

DCASR'S	SATURN-APOLLO CRITICAL SUPPLIERS			SATURN CRITICAL SUPPLIERS - MSFC		
	COMMON	BALANCE	TOTAL	COMMON	BALANCE	TOTAL
Atlanta	1	19	20	0	13	13
Boston	5	31	36	3	20	23
Cleveland	4	7	11	3	5	8
Chicago	2	16	18	2	7	9
Detroit	0	8	8	0	6	6
Dallas	1	3	4	1	3	4
St. Louis	5	10	15	2	3	5
Philadelphia	2	12	14	1	9	10
New York	6	30	36	5	14	19
San Francisco	1	8	9	1	5	6
Los Angeles	34	102	136	25	90	115
Army - Air Force Navy	1	8	9	1	1	2
TOTALS	62	254	316	44	176	220

ALASKA
DCASR
SAN FRANCISCO

DCASR GEOGRAPHICAL BOUNDARIES AND COMPONENTS

★ CANADA
DCASO OTTAWA



HAWAII
DCASR
SAN FRANCISCO

SATURN APOLLO CRITICAL SUPPLIER LISTING

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SUMMARY - SUPPLIERS OF CRITICAL HARDWARE
TO MORE THAN ONE MSFC CONTRACTOR

L - Lead requested by contractor
(R) L - Requested By MSFC To Be Lead Contractor

	BOEING S-IC	S&ID S-II	DAC S-IVB	IBM IU	CCSD S-IB	R'DYNE ENG.	BENDIX G. P.	MSFC GFE	DCAS REGION	SUPPLIER
		X L			X				Cleveland DCASR	Lord Mfg. Co. Erie, Pa.
		X	X L						"	Pesco Products Bedford, Ohio
			X L	X					"	TRW-Cleveland Cleveland, Ohio
	X L				X				Chicago DCASR	Flexonics Bartlett, Illinois
			X L		X				"	Potter & Brumfield Princeton, Ind.
					X		X (R) L		Dallas DCASR	Texas Instruments Dallas, Texas
	X L				X				St. Louis DCASR	Bendix Corp. Davenport, Iowa
	X L		X L	X L	X				"	Eagle Picher Ind. Joplin, Mo.
		X L			X L				Army-Air Force-Navy	Douglas A/C Co. Huntington Beach, Calif.
			X L	X					San Francisco DCASR	United Control Corp. Redmond, Washington
	X L		X L						Philadelphia DCASR	Thiokol Chemical Corp. Elkton, Maryland
			X (R) L		X				New York DCASR	Aircraft Porous Media Glen Cove, New York
	X L			X					"	Flodyne Controls Inc. Murray Hill, New Jersey
	X L			X	X				"	Morotta Valve Co. Boonton, New Jersey

SUMMARY - SUPPLIERS OF CRITICAL HARDWARE
TO MORE THAN ONE MSFC CONTRACTOR

L - Lead Requested By Contractor
(R) L - Requested By MSFC To Be Lead Contractor

	BOEING S-IC	S&ID S-II	DAC S-IVB	IBM IU	CCSD S-IB	R'DYNE ENG.	BENDIX G. P.	MSFC GFE	DCAS REGION	SUPPLIER
	X L	X	X L						Los Angeles	Sterer Eng. & Mfg. Co. Los Angeles, California
			X L		X				"	TRW Semiconductors Los Angeles, California
	X L		X						Anaheim	Babcock Electron Costa Mesa, California
		X (R) L	X						"	Royal Ind., Inc. Santa Ana, California
X		X (R) L	X						Pasadena	Frebank Co. Glendale, California
	X L			X					"	Vacco Industries S. Elmonte, California
		X	X (R) L						"	Wallace O. Leonard Pasadena, California
			X L		X				"	Clary Corporation San Gabriel, California
X	X L		X L						Van Nuys	Hydra-Electric, Inc. Burbank, California
	X L		X	X					"	Purolator Products Newbury Pk., California
	X L	X							"	Stainless Steel Prod. Burbank, California
		X (R) L			X				Boston DCASR	Insign-Bickford Simsburg, Conn.
	X L	X	X L		X					Moog, Inc. East Aurora, New York
	X L				X					Wagner Electric Co. North Adams, Mass.

SUMMARY - SUPPLIERS OF CRITICAL HARDWARE
TO MORE THAN ONE MSFC CONTRACTOR

L - Lead Requested By Contractor
(R) L - Requested by MSFC To Be Lead Contractor

	BOEING S-IC	S&ID S-II	DAC S-IVB	IBM IU	CCSD S-IB	R'DYNE ENG.	BENDIX G. P.	MSFC GFE	DCAS REGION	SUPPLIER
	X L						X		Los Angeles Phoenix	Dickerson Electron Scottsdale, Arizona
					X			X	"	Motorola, Inc. Scottsdale, Arizona
X	X L		X L						San Diego	Kenetics Corporation Solana Beach, California
	X L	X		X	X	X L			"	Solar San Diego, California
X		X				X L			"	Fairchild Ca. & Inst. Co. El-Cajon, California
/		X (R) L			X				Los Angeles	Acoustica Ass. Inc. Los Angeles, California
		X	X L	X					"	Airtex Div., Inc. Compton, California
		X	X L						"	Calmec Mfg. Corp. Los Angeles, California
		X	X L						"	Consolidated Control El Segundo, California
		X (R) L		X	X				"	Engineered Magnetics Hawthorn, California
		X	X L		X				"	Fairchild - Hiller Manhattan Beach, California
	X L	X							"	Futurecraft Corp. City of Ind., California
	X L	X	X		X				"	Parker A/C Los Angeles, California
		X L		X					"	Statham Inst. Inc. Los Angeles, California

SATURN-APOLLO CRITICAL SUPPLIER LISTING

ATLANTA DCASR

CCSD S-IB	ROCKETDYNE ENGINES	BENDIX GP	MSFC GFE
			Decoder Range Safety X
			Sat V Discrete Control Systems X
Structures 2			
Power Supply 3			

SATURN-APOLLO CRITICAL SUPPLIER LISTING

ATLANTA DCASR

BOEING S-IC	S & ID S-II	DAC S-IVB	IBM IU	PRIMES SUPPLIER
			Regulator Orifice 2	Astro-Space Huntsville, Alabama
				Avco, Inc. Huntsville, Alabama
				Brown Engineering Co., Inc. Huntsville, Alabama
				Hayes International Birmingham, Alabama
			Structures X (L)	Hayes International Huntsville, Alabama
				SpaceCraft, Inc. Huntsville, Alabama

SATURN-APOLLO CRITICAL SUPPLIER LISTING
ATLANTA DCASR

S & ID CM	GRUMAN LEM	A.C. EL G.P.	G.E. ACE	HM STD PLSS
			FM Subcarrier Discriminators Multiplexers Signal Mixer Ref. Oscillator 1	

SATURN-APOLLO CRITICAL SUPPLIER LISTING

ATLANTA DCASR

CCSD S-IB	ROCKETDYNE ENGINES	BENDIX GP	MSFC GFE
			IU Comparator Panel IU Indicator Panel X
		Resistors 2	
Relay 2			

SATURN-APOLLO CRITICAL SUPPLIER LISTING

ATLANTA DCASR

BOEING S-IC	S & ID S-II	DAC S-IVB	IBM IU	PRIMES SUPPLIER
				Sperry Rand Corporation Huntsville, Alabama
				Dearborn Elect. Orlando, Florida
			Flight Control Computer 2 (L)	Elect. Com. St. Petersburg, Florida
				Electro Mech. Res. Sarasota, Florida
				Electro-Tec., Inc. Ormond Beach, Florida
		Resistor, Variable Multi- Turn Wirewound X		I.R.C., Inc. St. Petersburg, Florida

SATURN-APOLLO CRITICAL SUPPLIER LISTING

ATLANTA DCASR

S & ID CM	GRUMAN LEM	A.C. EL G.P.	G.E. ACE	HM STD PLSS
Single-Channel Decommun- rator and Time Accumu- lator Display (CM) and Data Processing System X	PCM Telemetry Recorder Signal Con. Elec. Assy Test Sta. X		Logic Modules Decom Computer 1	

SATURN-APOLLO CRITICAL SUPPLIER LISTING

ATLANTA DCASR

CCSD S-IB	ROCKETDYNE ENGINES	BENDIX GP	MSFC GFE
Hydraulic Fittings 1			

SATURN-APOLLO CRITICAL SUPPLIER LISTING

ATLANTA DCASR

BOEING S-IC	S & ID S-II	DAC S-IVB	IBM IU	PRIMES SUPPLIER
				Linair Engineering Div. Dania, Florida
			Control Signal Processor 1 (L)	Martin Company Orlando, Florida
				Radiation, Inc. Melbourne, Florida
		Pump, Engine Driven X (L)		Vickers, Inc. Jackson, Mississippi
	Silver Zinc Primary Bat- teries 1			Elect. Storage Company Raleigh, North Carolina
			Mounting & Thermal Conditioning Panels 2 (L)	Avco Nashville, Tennessee

SATURN-APOLLO CRITICAL SUPPLIER LISTING

ATLANTA DCASR

CCSD S-IB	ROCKETDYNE ENGINES	BENDIX GP	MSFC GFE
	Fuel Ball Seal 1 (L)		

SATURN-APOLLO CRITICAL SUPPLIER LISTING
 ATLANTA DCASR

BOEING S-IC	S & ID S-II	DAC S-IVB	IBM IU	PRIMES SUPPLIER
				Robert Shaw Con. Knoxville, Tennessee
				G.E. Daytona Beach, Fla.

SATURN-APOLLO CRITICAL SUPPLIER LISTING

Boston DCASR

CCSD S-IB	ROCKETDYNE ENGINES	BENDIX GP	MSFC GFE
Diodes 2			
Explosive Cord and Charges 2			
		Prism (L) 1	

SATURN-APOLLO CRITICAL SUPPLIER LISTING

Boston DCASR

BOEING S-IC	S & ID S-II	DAC S-IVB	IBM IU	PRIMES SUPPLIER
				Bradley Semiconductor Corp. Hamden, Connecticut
Pressure Switches 1				Consolidated Control Corp. Bethel, Connecticut
	Fuse, Detonating 1			Ensign-Bickford Simsbury, Connecticut
			Water Accumulator and Sublimator 2	Hamilton Standard Windsor Locks, Connecticut
				Perkin-Elmer Corp. Norwalk, Connecticut
				Singer Metrics Bridgeport, Connecticut

SATURN-APOLLO CRITICAL SUPPLIER LISTING

Boston DCASR

CCSD S-IB	ROCKETDYNE ENGINES	BENDIX GP	MSFC GFE
Shock Mounts 3			
Connector 1			
Valve Bellows 1			

SATURN-APOLLO CRITICAL SUPPLIER LISTING

Boston DCASR

BOEING S-IC	S & ID S-II	DAC S-IVB	IBM IU	PRIMES SUPPLIER
	Rate Gyro Package, 3 Axis 3			U.S. Time Corp. Waterbury, Connecticut
				Barry Controls Watertown, Mass
				Gremar Manufacturing Co. Wakefield, Massachusetts
			Wire for Network (L) 1	ITT Wire and Cable Clinton, Massachusetts
	Transducers 3			Lion Research Corp. Newton, Massachusetts
				Metal Bellows Corp. Sharon, Massachusetts

SATURN-APOLLO CRITICAL SUPPLIER LISTING

Boston DCASR

CCSD S-IB	ROCKETDYNE ENGINES	BENDIX GP	MSFC GFE
Capacitors 1			
	F-1, J-2 Forging 3 (L)		
			Sat V Operational Display System X

SATURN-APOLLO CRITICAL SUPPLIER LISTING

Boston DCASR

BOEING S-IC	S & ID S-II	DAC S-IVB	IBM IU	PRIMES SUPPLIER
			EDS Rate Gyro Package 1 (L)	Northrop Nortronics Norwood, Massachusetts ⑤
				Raytheon Waltham, Massachusetts ④
Stage Timer Distributor X				Sprague Electric Company North Adams, Massachusetts ⑤
				Wyman-Grodan Company Worcester, Massachusetts ④
	Transducers 1			RDF Corporation Hudson, New Hampshire ①
				Sanders Association Nashua, New Hampshire ②

SATURN-APOLLO CRITICAL SUPPLIER LISTING

Boston DCASR

S & ID CM	GRUMAN LEM	A.C. EL G.P.	G.E. ACE	HM STD PLSS
Positive Expulsion Propellant Tanks X				
	Environment Controls ECS Test Benches X			
				Emergency Oxygen Sys. X

SATURN-APOLLO CRITICAL SUPPLIER LISTING

Boston DCASR

CCSD S-IB	ROCKETDYNE ENGINES	BENDIX GP	MSFC GFE
			EBW Firing Units X

SATURN-APOLLO CRITICAL SUPPLIER LISTING

Boston DCASR

BOEING S-IC	S & ID S-II	DAC S-IVB	IBM IU	PRIMES SUPPLIER
		Tank Assembly, APS Bladder Expulsion X (L)		Bell Aerospace System Buffalo, New York ①
Stage X				Bendix Corporation Scintilla, New York 2
Stage Silicon Control Rectifier X				G.E. Auburn, New York 3
Stage Transistor Diodes X				G. E. Syracuse, New York 4
				Carlton Controls Corporation Buffalo, New York
				General Laboratory Association Norwich, New York 5

SATURN-APOLLO CRITICAL SUPPLIER LISTING

Boston DCASR

S & ID CM	GRUMAN LEM	A.C. EL G.P.	G.E. ACE	HM STD PLSS
Propellant Quantity Indicating and Mixture Control System x				
	Propellant Quality Gaging x			
	Toggle Switches x			
	General Purpose Inverter x			

SATURN-APOLLO CRITICAL SUPPLIER LISTING

Boston DCASR

CCSD S-IB	ROCKETDYNE ENGINES	BENDIX GP	MSFC GFE
Actuator 2			
Connectors 1			

SATURN-APOLLO CRITICAL SUPPLIER LISTING

Boston DCASR

BOEING S-IC	S & ID S-II	DAC S-IVB	IBM IU	PRIMES SUPPLIER
Servoactuator 1	Servoactuator, Mechanical Feedback 2	Actuator Assembly, Hydraulic (L) X		Moog Servo Controls East Aurora, New York 6
				Scintilla Magneto Division Sioney, New York
				Simmonds Precision Products Vergennes, Vermont
				Trans-Onics Burlington, Mass.
				Texas Instruments Attleboro, Mass.
				Ham-Std. Broad Brook, Conn.

SATURN-APOLLO CRITICAL SUPPLIER LISTING

BOSTON DCASR

S & ID CM	GRUMAN LEM	A.C. EL G.P.	G.E. ACE	HM STD PLSS
	Mission Clocks X			
	Fuel Cells X			
	Lem Mission Simulator X			
	Windows X			
	Att. & Trans. Controller Descent Eng. Controller Rend. Rador/trans. & Ldg Radar System Engineering - General communications test equipment - communic- ations			
	Test equipment for LEM Radars X			

SATURN-APOLLO CRITICAL SUPPLIER LISTING

BOSTON - DCASR

BOEING S-IC	S & ID S-II	DAC S-IVB	IBM IU	PRIMES SUPPLIER
				Sylvania Needham Height, Mass.
				Pratt & Whitney East Hartford, Conn.
				Link Binghamton, N.Y.
				Corning Glass Corning, N.J.
				RCA Burlington, Mass.

SATURN-APOLLO CRITICAL SUPPLIER LISTING

BOSTON - DCASR

S & ID CM	GRUMAN LEM	A.C. EL G.P.	G.E. ACE	HM STD PLSS
	Acent Engine X			

SATURN-APOLLO CRITICAL SUPPLIER LISTING

CLEVELAND DCASR

S & ID CM	GRUMAN LEM	A.C. EL G.P.	G.E. ACE	HM STD PLSS
Stainless Steel Honey- comb Panels X				
			Recorders (Analog & Event) Modification Kits Filters 1	

SATURN-APOLLO CRITICAL SUPPLIER LISTING

CLEVELAND DCASR

CCSD S-IB	ROCKETDYNE ENGINES	BENDIX GP	MSFC GFE
Heat Shield Assembly 2			
Valves 2			
	J-2 Turbine Disk 3 (L)		

SATURN-APOLLO CRITICAL SUPPLIER LISTING

CLEVELAND DCASR

BOEING S-IC	S & ID S-II	DAC S-IVB	IBM IU	PRIMES SUPPLIER
				Aeronca Mfg. Company Middleton, Ohio
				Bush Instruments Cleveland, Ohio
				Fluid Reg. Corporation Pamsville, Ohio
	LH ₂ Pump, Auxiliary Motor Driven Chilldown 2	Pump LH ₂ & Pump LO ₂ X (L)		PESCO Products Beford, Ohio
				Steel Improvement & Forge Co. Cleveland, Ohio
		Engine Aux. Prop. Attitude Control 150 Lb. (L) X	ECS Coolant Pump 2	TRW Accesories Division- Cleveland Cleveland, Ohio

SATURN-APOLLO CRITICAL SUPPLIER LISTING

CLEVELAND DCASR

S & ID CM	GRUMAN LEM	A.C. EL G.P.	G.E. ACE	HM STD PLSS
Static Inverter X				
	Digital Command X			

SATURN-APOLLO CRITICAL SUPPLIER LISTING

CLEVELAND DCASR

CCSD S-IB	ROCKETDYNE ENGINES	BENDIX GP	MSFC GFE
Shock Mounts 1			

SATURN-APOLLO CRITICAL SUPPLIER LISTING

CLEVELAND DCASR

BOEING S-IC	S & ID S-II	DAC S-IVB	IBM IU	PRIMES SUPPLIER
	Hydraulic Bleeder Valve 2			U/AC Products, Inc. Dayton, Ohio
				Westinghouse Electronics Lima, Ohio
	Vibration Mount Switch Selector 1			Lord Manufacturing Co. Erie, Pennsylvania
	Helium Disconnect 2			Snap-Tite, Inc. Union City, Pennsylvania
				AVCO Cincinnati, Ohio

SATURN-APOLLO CRITICAL SUPPLIER LISTING

CHICAGO - DCASR

S & ID CM	GRUMAN LEM	A.C. EL G.P.	G.E. ACE	HM STD PLSS
			Cabinets Enclosures Channels & Parts 1	
			Connectors 1	
Central Timing Equipment X				
			Contact Plate Ass'y Wire Wrap Plates Logic Plates 1	

SATURN-APOLLO CRITICAL SUPPLIER LISTING
 CHICAGO - DCASR

CCSD S-IB	ROCKETDYNE ENGINES	BENDIX GP	MSFC GFE
Relay 1			
Flex Lines 2			

SATURN - APOLLO CRITICAL SUPPLIER LISTING

CHICAGO - DCASR

BOEING S-IC	S & ID S-II	DAC S-IVB	IBM IU	PRIMES SUPPLIER
				Amco Engineering Chicago, Illinois
				Amphenol Con. Division Chicago, Illinois
				C.P. Clare & Co. Chicago, Illinois
Duct Lox X				Flexonics Bartlett, Illinois
				General Time Corporation Rolling Meadows, Illinois
				Malco Mfg. Chicago, Illinois

SATURN-APOLLO CRITICAL SUPPLIER LISTING

CHICAGO - DCASR

S & ID CM	GRUMAN LEM	A.C. EL G.P.	G.E. ACE	HM STD PLSS
Design, fabrication & installation of WCLD fixtures for Apollo; Heavy duty positioners and cooling fixtures x				
				Space Suit Communicatio X

SATURN-APOLLO CRITICAL SUPPLIER LISTING

CHICAGO - DCASR

CCSD S-IB	ROCKETDYNE ENGINES	BENDIX GP	MSFC GFE
	Oxidizer Impaller Spline Sleeve (F-1) 1 (L)		
	Oxidizer Ball Assembly 1 (L)		
Relays 1			

SATURN-APOLLO CRITICAL SUPPLIER LISTING
CHICAGO - DCASR

BOEING S-IC	S & ID S-II	DAC S-IVB	IBM IU	PRIMES SUPPLIER
Stage X				Method Electronics Chicago, Illinois
				Sciaky Brothers, Inc. Chicago, Illinois
				Hubb Aviation Corp. Chicago, Illinois
				Indiana Gear Works Indianapolis, Indiana
				IT&T Ft. Wayne, Indiana
		Relay General Purpose X		Potter & Brumfield Princeton, Indiana

SATURN-APOLLO CRITICAL SUPPLIER LISTING
CHICAGO - DCASR

S & ID CM	GRUMAN LEM	A.C. EL G.P.	G.E. ACE	HM STD PLSS
Mechanical timers & clocks X				
	Heat Exchanger X			
	Descent Tanks X			

SATURN-APOLLO CRITICAL SUPPLIER LISTING

CHICAGO - DCASR

CCSD S-IB	ROCKETDYNE ENGINES	BENDIX GP	MSFC GFE
	F-1, J-2 H-1 Blades 3 (L)		
Relays 2			

SATURN-APOLLO CRITICAL SUPPLIER LISTING

CHICAGO - DCASR

BOEING S-IC	S & ID S-II	DAC S-IVB	IBM IU	PRIMES SUPPLIER
Stage X				Triad Huntington, Indiana
				Union Carbide Kokomo, Indiana
				Cutler-Hammer, Inc. Milwaukee, Wisc.
				Hammond Organ Co. Jανεville, Wisc.
				Stewart - Warner Indianapolis, Indiana
				Allison Indianapolis, Ind.

SATURN-APOLLO CRITICAL SUPPLIER LISTING

DALLAS DCASR

CCSD S-IB	ROCKETDYNE ENGINES	BENDIX GP	MSFC GFE
	F-1 Dome J-2 Injector X		
Tanks, LOX & Fuel 2			
Semiconductors 3		Thermal Resistor Diode Transistors 2	

SATURN-APOLLO CRITICAL SUPPLIER LISTING

DALLAS DCASR

BOEING S-IC	S & ID S-II	DAC S-IVB	IBM IU	PRIMES SUPPLIER
			Instrument Unit Structural Subassembly X (L)	North American Aviation Tulsa, Oklahoma
				Cameron Iron Works, Inc. Houston, Texas
				L.T.V. - Astronautics Division Dallas, Texas
				Texas Instruments Dallas, Texas

SATURN-APOLLO CRITICAL SUPPLIER LISTING

DETROIT DCASR

CCSD S-IB	ROCKETDYNE ENGINES	BENDIX GP	MSFC GFE
Valves 2			
Hydraulic Package 2			
	F-1 Inlet 3 (L)		
	Oxidizer T/P Accessory 2 (L)		

SATURN-APOLLO CRITICAL SUPPLIER LISTING

DETROIT DCASR

BOEING S-IC	S & ID S-II	DAC S-IVB	IBM IU	PRIMES SUPPLIER
	Hydraulic Disconnect Valves 2			Aeroquip Corporation Jackson, Michigan
				Benton Corporation Ferndale, Michigan
				Cadillac Gage Warren, Michigan
		Pump, Hydraulic, Auxiliary, Motor Driven (1) X		Vickers, Inc. Detroit, Michigan
				Wellman Dynamics Corporation Bay City, Michigan
				Wenco Corporation Detroit, Michigan

SATURN-APOLLO CRITICAL SUPPLIER LISTING

DETROIT - DCASR

S & ID CM	GRUMAN LEM	A.C. EL G.P.	G.E. ACE	HM STD PLSS
	Attitude Indicator & GASTA X			
	Circuit Breakers X			

SATURN-APOLLO CRITICAL SUPPLIER LISTING

DETROIT - DCASR

BOEING S-IC	S & ID S-II	DAC S-IVB	IBM IU	PRIMES SUPPLIER
				Lear-Siegler Grand Rapids, Mich.
				Mech. Prods. Inc. Jackson, Mich.

SATURN-APOLLO CRITICAL SUPPLIER LISTING
LOS ANGELES DCASR

S & ID CM	GRUMAN LEM	A.C. EL G.P.	G.E. ACE	HM STD PLSS
Helium Transfer Unit Valves & Assembly X				
	Helium Storage Tanks X			

SATURN-APOLLO CRITICAL SUPPLIER LISTING

LOS ANGELES DCASR

CCSD S-IB	ROCKETDYNE ENGINES	BENDIX GP	MSFC GFE
LOX & Fuel Sensors 2			
Titanium Sphere 2			

SATURN-APOLLO CRITICAL SUPPLIER LISTING

LOS ANGELES DCASR

BOEING S-IC	S & ID S-II	DAC S-IVB	IBM IU	PRIMES SUPPLIER
	Transducer & Controller 3			Acoustica Asso., Inc. Los Angeles, California
	Thermo-couple 3			Aeromarine Elct., Inc. San Diego, California
Fuel and Oxidizer Check Valves GSE X				Accessory Products Co. Whittier, California
Fuel Prevalve, Vent & Relief 1				Airesearch Mfg. Co. Pheonix, Arizona
				Airite Div. Elect. Corporation El Segundo, California
	Helium Receiver 2	Tank Compressed Gas Control Helium Sphere Storage Helium Tank Storage Helium Propellant Tank Repress X (L)	GN ₂ Cu. Ft. Storage Sphere 2	Airtex Dynamics, Inc. Compton, California

SATURN-APOLLO CRITICAL SUPPLIER LISTING

LOS ANGELES DCASR

CCSD S-IB	ROCKETDYNE ENGINES	BENDIX GP	MSFC GFE
	F-1 Impeller 2 (L)		
Hydraulic Pump 2			
	F-1 Fuel Inducer 3 (L)		

SATURN - APOLLO CRITICAL SUPPLIER LISTING

LOS ANGELES DCASR

BOEING S-IC	S & ID S-II	DAC S-IVB	IBM IU	PRIMES SUPPLIER
				Adept Mfg., Inc. Costa Mesa, California
				American Brake Shoe Co. Oxnard, California
		Motor Transmission Servo Bridge X		American Elect., Inc. Fullerton, California
				Arcturus Manufacturing Venice, California
	Hydraulic Pump Aux. Motor Pump 2			Apex Corporation Oxnard, California
Outboard & Inboard LOX PVC Outboard & Inboard, Fuel, PVC Outboard & Inboard, LOX Suction Outboard & Inboard, Fuel Suction 1				Arrowhead Products Los Alamitos, California

SATURN-APOLLO CRITICAL SUPPLIER LISTING

LOS ANGELES DCASR

CCSD S-IB	ROCKETDYNE ENGINES	BENDIX GP	MSFC GFE
Tubes & Lines 2			

SATURN-APOLLO CRITICAL SUPPLIER LISTING
 LOS ANGELES DCASR

S & ID CM	GRUMAN LEM	A.C. EL G.P.	G.E. ACE	HM STD PLSS
Data Acquisition Sys- tem & Water Condition- ing Monitor X	Data Acquisition I X			
Helium Pressure Relief Valves X				
Integrated Computer Complex X	Data Acquisition II (Signal Cond.) Data Reduction Station X		Generators Timing Package Console Indicators Wall Time Displays Count Down Clock 1	

SATURN-APOLLO CRITICAL SUPPLIER LISTING

LOS ANGELES DCASR

BOEING S-IC	S & ID S-II	DAC S-IVB	IBM IU	PRIMES SUPPLIER
Stage Main Power Distributor, S-IC 1-5; X		Relay, Gen. Purpose Relay, 2 PDT Mag. Latch X		Babcock Electronics Costa Mesa, California
	Vibration Damping Mount 2			Barry Wright Corporation Glendale, California
				Beckman Instruments, Inc. Fullerton, California
	Vent Valve 2	Valve Module Control Disconnect X (L)		Calmec Mfg. Corporation Los Angeles, California
				Astrodata, Inc. Anaheim, California
		Valve Check X (L)		Carter Co., J.C. Costa Mesa, California

SATURN-APOLLO CRITICAL SUPPLIER LISTING

LOS ANGELES DCASR

S & ID CM	GRUMAN LEM	A.C. EL G.P.	G.E. ACE	HM STD PLSS
Liquid Hydrogen Liquid Oxygen Ground Support Equip. X				

SATURN-APOLLO CRITICAL SUPPLIER LISTING

LOS ANGELES DCASR

CCSD S-IB	ROCKETDYNE ENGINES	BENDIX GP	MSFC GFE
Press. Regulator Valves 2			
	F-1 4-Way Hys Manifold 3 (L)		
		Diodes 2	

SATURN-APOLLO CRITICAL SUPPLIER LISTING
 LOS ANGELES DCASR

BOEING S-IC	S & ID S-II	DAC S-IVB	IBM IU	PRIMES SUPPLIER
				Cosmodyne Corporation Torrance, California
		Valve Shutoff Module Act. Control Valve Pneumatic (L) X		Clary Corporation San Gabriel, California
	Helium Disconnect Coupling 3	Switch Pressure High (L) X		Consolidated Controls El Segundo, California
				Bergman Mfg. Co. San Rafael, California
Stage Diodes X				Dickson Electron Scottsdale, Arizona
	Transmitter 2			Electro Development Canoga Park, California

SATURN-APOLLO CRITICAL SUPPLIER LISTING

LOS ANGELES DCASR

BOEING S-IC	S & ID S-II	DAC S-IVB	IBM IU	PRIMES SUPPLIER
	Filter & Hybrid Junction 3			Electronics Spec. Company Los Angeles, California
	Acoustic Pick-Up 3			Endevco Corporation Pasadena, California

SATURN-APOLLO CRITICAL SUPPLIER LISTING

Los Angeles DCASR

S & ID CM	GRUMAN LEM	A.C. EL G.P.	G.E. ACE	HM STD PLSS
Temperature and Press. Transducer, Signal Computers Electronic Control Units X	ECS-Water Quantity Measuring Device X			
Environment Control System X				

SATURN-APOLLO CRITICAL SUPPLIER LISTING

Los Angeles DCASR

CCSD S-IB	ROCKETDYNE ENGINES	BENDIX GP	MSFC GFE
Voltage Supply 3			
	Helium Return Duct 3 (L)		
Valve 2			
Filter 2			

SATURN-APOLLO CRITICAL SUPPLIER LISTING

Los Angeles DCASR

BOEING S-IC	S & ID S-II	DAC S-IVB	IBM IU	PRIMES SUPPLIER
	Static Inverter 2		5 Volt Power Supply 2	Engineered Magnetics Division Hawthorne, California
	Bellows, Lines, Hose, and Joints 1			Fairchild Camera and Instrument Company El Cajon, California
	Helium Check Valve 2	Valve, Module, and Regulator (L) X		Fairchild-Hiller Manhattan Beach, California
				Electro-Optical System, Inc. Pasadena, California
				Garrett Corporation Los Angeles, California
				Fairchild Precision Metal Products El Cajon, California

SATURN-APOLLO CRITICAL SUPPLIER LISTING

LOS ANGELES DCASR

S & ID CM	GRUMAN LEM	A.C. EL G.P.	G.E. ACE	HM STD PLSS
Pressure Helium regulator unit and hydrogen tank vent disconnects X				

SATURN-APOLLO CRITICAL SUPPLIER LISTING

LOS ANGELES DCASR

CCSD S-IB	ROCKETDYNE ENGINES	BENDIX GP	MSFC GFE
Frequency Divider 3			

SATURN-APOLLO CRITICAL SUPPLIER LISTING

Los Angeles DCASR

BOEING S-IC	S & ID S-II	DAC S-IVB	IBM IU	PRIMES SUPPLIER
				Foxboro Company Van Nuys, California
	Pressure Switch 3	Switch, Pressure x		Frebank Company Glendale, California
				B.H. Hudley Company Pomona, California
Stage Vibration & Pressure Trans- ducer X				Consolidated Electrodynamics Monrovia, California
GSE Solenoid Valves X	Solenoid Valve 3			Futurecraft Corporation City of Ind., California
	Transducer 3			G.L. Collins Corporation Long Beach, California

SATURN-APOLLO CRITICAL SUPPLIER LISTING

LOS ANGELES DCASR

BOEING S-IC	S & ID S-II	DAC S-IVB	IBM IU	PRIMES SUPPLIER
	Diaphragm, Engine Compartment Conditioning System Protective Cover 3			Goodyear Aero. Corporation Litchfield Park, Arizona
	Power Supply 3			Hamilton Standard Los Angeles, California

SATURN-APOLLO CRITICAL SUPPLIER LISTING

LOS ANGELES DCASR

CCSD S-IB	ROCKETDYNE ENGINES	BENDIX GP	MSFC GFE
	F-1 T/C Ring 3 (L)		
Valves 2			

SATURN-APOLLO CRITICAL SUPPLIER LISTING

LOS ANGELES DCASR

S & ID CM	GRUMAN LEM	A.C. EL G.P.	G.E. ACE	HM STD PLSS
Power Transfer & Motor Driven Switches X				
Flight Qualification Recorder X	Data Storage X			
Launch Escape Motor Pitch Control Motor X				

SATURN-APOLLO CRITICAL SUPPLIER LISTING

LOS ANGELES DCASR

CCSD S-IB	ROCKETDYNE ENGINES	BENDIX GP	MSFC GFE
	Oxidizer Turbo Pump Impeller Outlet Seal 1 (L)		

SATURN-APOLLO CRITICAL SUPPLIER LISTING

LOS ANGELES DCASR

BOEING S-IC	S & ID S-II	DAC S-IVB	IBM IU	PRIMES SUPPLIER
Power Transfer Switch 1		Switch X (L)		Kenetics Corporation Solana Beach, California
				Hollydale Machine South Gate, California
				Leach Corporation Azusa, California
		LH ₂ Bridge Transformer LOX Bridge Transformer X		Magnetika, Inc. Venice, California
				Lockheed Propulsion Co. Redlands, California
		Switch Starter Hydraulic Power Unit X		Mason Elect. Division Los Angeles, California

SATURN-APOLLO CRITICAL SUPPLIER LISTING

LOS ANGELES DCASR

S & ID CM	GRUMAN LEM	A.C. EL G.P.	G.E. ACE	HM STD PLSS
SM RCS & Tanks Assy. X	Reaction Controls X			
Stress Measurement System X				

SATURN-APOLLO CRITICAL SUPPLIER LISTING
 LOS ANGELES DCASR

BOEING S-IC	S & ID S-II	DAC S-IVB	IBM IU	PRIMES SUPPLIER
				Marquardt Corporation Van Nuys, California
		Sphere & Tank X (L)		Menasco Mfg. Co. Burbank, California
Relief Valves GSE X				Ladewig Valve Co. Los Angeles, California
	R.F. Coupler 3			Micro-Radionics, Inc. Van Nuys, California
				Microdot, Inc. South Pasadena, California

SATURN-APOLLO CRITICAL SUPPLIER LISTING

LOS ANGELES - DCASR

S & ID CM	GRUMAN LEM	A.C. EL G.P.	G.E. ACE	HM STD PLSS
Link Digital System Spare parts for up-dated link equip- ment X	Universal Counter & Register X			
Earth Landing system subsystem & associated GSE X				
Cryogenic Valve Modules X	High Pressure Oxygen System Valve Propellant Solenoid Operated X			

SATURN-APOLLO CRITICAL SUPPLIER LISTING

LOS ANGELES - DCASR

CCSD S-IB	ROCKETDYNE ENGINES	BENDIX GP	MSFC GFE
Transponder 3			S-Band Transponders X
Valves 2			
	F-1 Nozzle Ring J-2 (L) 3		

SATURN-APOLLO CRITICAL SUPPLIER LISTING
 LOS ANGELES - DCASR

BOEING S-IC	S & ID S-II	DAC S-IVB	IBM IU	PRIMES SUPPLIER
				Motorola, Inc. Scottsdale, Arizona
Seal Naflex 1				Navan Products El Segundo, Calif.
				Northrop Corp. Newberry Park, Calif.
Valve, LOX 1	Arma 1 & 2 Press. Reg. Valve 2	Valve X		Parker A/C Los Angeles, Calif.
Seal Gasko 1				Parker Seal Co. Culver City, Calif.
				Reisner Metals South Gate, California

SATURN-APOLLO CRITICAL SUPPLIER LISTING

LOS ANGELES - DCASR

S & ID CM	GRUMAN LEM	A.C. EL G.P.	G.E. ACE	HM STD PLSS
Rocket Engine Test Set X				
	UHF - Duplexers & Multiplexers X			

SATURN-APOLLO CRITICAL SUPPLIER LISTING

LOS ANGELES - DCASR

CCSD S-IB	ROCKETDYNE ENGINES	BENDIX GP	MSFC GFE
			110A/Computers X
Coupler 3			

SATURN-APOLLO CRITICAL SUPPLIER LISTING
LOS ANGELES - DCASR

BOEING S-IC	S & ID S-II	DAC S-IVB	IBM IU	PRIMES SUPPLIER
				Remanco, Inc. Santa Monica, Calif. ✓
	Power Transfer Switch 1			Planautics Corp. Solona Bch., California ✓
		Valve Relief X		Pneudraulics, Inc. Montclair, Calif.
GSE Quick Disconnects & Filters X		Disconnect Helium Control X	Quick Disconnect Coupling 2	Purolator Prod., Inc. Newbury Park, Calif.
				R.C.A. Van Nuys, Calif.
				Rantec Corp. Calabasas, Calif.

SATURN-APOLLO CRITICAL SUPPLIER LISTING

LOS ANGELES DCASR

S & ID CM	GRUMAN LEM	A.C. EL G.P.	G.E. ACE	HM STD PLSS
Real-Time Simulator Sys. X				

SATURN-APOLLO CRITICAL SUPPLIER LISTING

LOS ANGELES DCASR

CCSD S-IB	ROCKETDYNE ENGINES	BENDIX GP	MSFC GFE
Manifold 1			
Ducts 2	F-1 Heat Exchanger Assy. 2 (L)		

SATURN-APOLLO CRITICAL SUPPLIER LISTING

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LOS ANGELES DCASR

BOEING S-IC	S & ID S-II	DAC S-IVB	IBM IU	PRIMES SUPPLIER
			ECS Switch 2	Tavco, Inc. Santa Monica, California
				Sargent Fletcher Huntington Beach, California
Helium Manifold Duct 1	LOX & LH ₂ Engine Feed Lines 1		Heat Exchanger ECS Manifold Sup. Return Water/Methanol Accumulator 2	Solar, Div. Int. Harv. San Diego, California
		Oven X		Signet Scientific Co. Div. Transdyn. Burbank, California
				Scientific Data Systems Santa Monica, California
Pressure Switch 1				Southwest Ind. Burbank, California

SATURN-APOLLO CRITICAL SUPPLIER LISTING

LOS ANGELES DCASR

CCSD S-IB	ROCKETDYNE ENGINES	BENDIX GP	MSFC GFE
Pressure Switch 2			

SATURN-APOLLO CRITICAL SUPPLIER LISTING

LOS ANGELES DCASR

BOEING S-IC	S & ID S-II	DAC S-IVB	IBM IU	PRIMES SUPPLIER
				Southwestern, Ind. Los Angeles, California ✓
Duct, Assy. 1	LOX Fill & Drain Line Assy. LOX Vacuum Jacketed Assy. LOX Tank Press Supply Line Assembly 1			Stainless Steel Products Los Angeles, California
	Steady State Accelerometer 3		Control Accelerometer 2	Statham Inst., Inc. Los Angeles, California
Regulator Assembly Check Valve 2	Valves 2	Module X (L)		Sterer Engr. & Mfg. Co. Los Angeles, California
	GOX & GH ₂ Manifold Assembly 2			Straza Ind. El Cajon, California

SATURN - APOLLO CRITICAL SUPPLIER LISTING

LOS ANGELES - DCASR

S & ID CM	GRUMAN LEM	A.C. EL G.P.	G.E. ACE	HM STD PLSS
Telemetry Antenna Sys. (R&D) X				
	Abort Guidness Test Equipment & Systems X			
				Water Pump X

SATURN-APOLLO CRITICAL SUPPLIER LISTING

LOS ANGELES - DCASR

CCSD S-IB	ROCKETDYNE ENGINES	BENDIX GF	MSFC GFE
Diodes 1			

SATURN-APOLLO CRITICAL SUPPLIER LISTING

LOS ANGELES - DCASR

BOEING S-IC	S & ID S-II	DAC S-IVB	IBM IU	PRIMES SUPPLIER
		Potentiometer Bridge Propellant Utilization X		Technology Instrument New Berry Park, Calif.
	Power Divider 3			Transco Products Venice, Calif.
		Semiconductor Device - Diode General Purpose X		TRW Semiconductors Lawndale, Calif.
	Liquid Oxygen Tank Destruct Assy. 1			Unidynamics Goodyear, Arizona
				Whittaker Corp. Los Angeles, Calif.
GSE High Pressure Filters & Regulators X			20 Micron Filter ECS 2	Vacco Industries S. Elmonte, Calif.

SATURN-APOLLO CRITICAL SUPPLIER LISTING
LOS ANGELES - DCASR

CCSD S-IB	ROCKETDYNE ENGINES	BENDIX GP	MSFC GFE

SATURN-APOLLO CRITICAL SUPPLIER LISTING

LOS ANGELES - DCASR

BOEING S-IC	S & ID S-II	DAC S-IVB	IBM IU	PRIMES SUPPLIER
		Module Helium Fill APS Module Low Press. He.APS Module Pneu. Power Control Valve Relief He. Control Mod. control fuel tank Press.		Vinson-Adel Ind. Burbank, Calif.
		(L) X		
	Regulator 2	Module Propellant Control Valve Relief Oxidizer Tank Valve Relief fuel tank Valve reg. & shut off LH ₂ Prop Vent Module		Wallace O. Leonard Pasadena, Calif.
		Control continuous vent (L) X		
		Filter Inline He N ₂ O ₂ & MMH 25 Micron X		Western Filter Co. Gardena, Calif.
Lox Prevalve Lox Vent & Relief Valve 1				Whittaker Corp. Chattsworth, Calif.

SATURN-APOLLO CRITICAL SUPPLIER LISTING

LOS ANGELES - DCASR

CCSD S-IB	ROCKETDYNE ENGINES	BENDIX GP	MSFC GFE
Disconnects 2			

SATURN-APOLLO CRITICAL SUPPLIER LISTING
 LOS ANGELES DCASR

CCSD S-IB	ROCKETDYNE ENGINES	BENDIX GP	MSFC GFE
	F-1 Impeller 3 (L)		
	Miss. J-2 Welded & Braided Assemblies 3 (L)		
	J-2 Gimbal Assembly 3 (L)		
	F-1 LOX Pump Mount X		
	F-1 Ignitor Line Injector END 3 (L)		
	F-1 Nut X		

SATURN-APOLLO CRITICAL SUPPLIER LISTING

LOS ANGELES DCASR

BOEING S-IC	S & ID S-II	DAC S-IVB	IBM IU	PRIMES SUPPLIER
				A & M Castings Boutingata, California
				ACE Industries Santa Fe Springs, California
				Allied Pacific Mfg. Co. Compton, California
				Alcoa Vernon, California
				Anaconda Metal Hose Division Los Angeles, California
				Aremac Associates Pasadena, California

SATURN-APOLLO CRITICAL SUPPLIER LISTING

LOS ANGELES DCASR

CCSD S-IB	ROCKETDYNE ENGINES	BENDIX GP	MSFC GFE
	F-1 Seal X		
	Oxidizer Turbine Bypass Vv Shift 2 (L)		
	H-1 Aspirator 3 (L)		
	F-1 Tap Manifold X		
	F-1 & J-2 Blade Supports X		
	Fuel T/P Aft Supporting Fittings (J-2) X		

SATURN-APOLLO CRITICAL SUPPLIER LISTING

LOS ANGELES DCASR

BOEING S-IC	S & ID S-II	DAC S-IVB	IBM IU	PRIMES SUPPLIER
				Arrowsmith Tool & Mfg. Los Angeles, California
				Beta Eng. Corporation Los Angeles, California
				Calcor Space Facility Whittier, California
				California Drop Forge Co. Los Angeles, California
				Carlton Forge Works Paramount, California
				Centineg, Inc. Gardenia, California

SATURN-APOLLO CRITICAL SUPPLIER LISTING
LOS ANGELES DCASR

CCSD S-IB	ROCKETDYNE ENGINES	BENDIX GP	MSFC GFE
	H-1 Blades X		
	P.U. Valve Gate Assy. (J-2) 3 (L)		
	F-1 T/P Seal 2 (L)		
	P.U. Valve Housing Assy. (J-2) 3 (L)		
	Main Oxidizer Housing Assembly (F-1) 3 (L)		
	Prime Flt. Inst. Package X		

SATURN-APOLLO CRITICAL SUPPLIER LISTING

LOS ANGELES DCASR

none

BOEING S-IC	S & ID S-II	DAC S-IVB	IBM IU	PRIMES SUPPLIER
				Flowform Mfg. Co. Chatsworth, California
				Fortner Eng. & Mfg. Co. Glendale, California
				Gamma Precision Van Nuys, California
				Hoefner Corporation S. El Monta, California
				J.P. Ross Mfg. Co. Ontario, California
				Jet Air Engineering Corporation El Cajon, California

SATURN-APOLLO CRITICAL SUPPLIER LISTING

LOS ANGELES DCASR

CCSD S-IB	ROCKETDYNE ENGINES	BENDIX GP	MSFC GFE
	Fuel T/P Inlet Elbow (F-1) 3 (L)		
	H-1 Oxidizer Joint Flange X		
	Cimbal Assy (J-2) 3 (L)		
	J-2 Support X		
	Oxidizer Turbine Bypass Vv. Shaft (J-2) 2 (L)		
	F-1 & J-2 Tubes X		

SATURN-APOLLO CRITICAL SUPPLIER LISTING

LOS ANGELES DCASR

BOEING S-IC	S & ID S-II	DAC S-IVB	IBM IU	PRIMES SUPPLIER
				Keystone Engineering Co. Los Angeles, California
				Ladish Pacific Division Los Angeles, California
				Langley Corporation San Diego, California
				Paragon Tool Die & Eng. Co. Pacoima, California
				Precision Machine Northridge, California
				Precision Sheet Metal, Inc. Los Angeles, California

SATURN-APOLLO CRITICAL SUPPLIER LISTING
LOS ANGELES DCASR

CCSD S-IB	ROCKETDYNE ENGINES	BENDIX GP	MSFC GFE
	F-1 Tubes X		
	F-1 Ring Seal Assy. X		
	Oxidizer Vv. Cylinder Assy. (F-1) 3 (L)		
	Oxidizer Inducer Retainer (F-1) 1 (L)		
	Upstream Flow Straightner (J-2) X		
	F-1 T/P Gear 3 (L)		

SATURN-APOLLO CRITICAL SUPPLIER LISTING

LOS ANGELES DCASR

BOEING S-IC	S & ID S-II	DAC S-IVB	IBM IU	PRIMES SUPPLIER
				Precision Tube Bending Santa Fe Springs, California
				Raybestos Manhattan, Inc. Paramount, California
				Sho-Fel Machine San Gabriel, California
				Standard Press Steel Santa Ana, California
				Stellar Engineering Fullerton, California
				Superior Gear Company Gardena, California

SATURN-APOLLO CRITICAL SUPPLIER LISTING

LOS ANGELES DCASR

CCSD S-IB	ROCKETDYNE ENGINES	BENDIX GP	MSFC GFE
	Checkout Wv Ball Assy (F-1) X		
	F-1 Segments 3 (L)		
	F-1 Valves 3 (L)		
	F-1 Oxd. H/P Line Flange X		
	J-2 Heat Exchanger Assy. 2 (L)		

SATURN-APOLLO CRITICAL SUPPLIER LISTING

LOS ANGELES DCASR

BOEING S-IC	S & ID S-II	DAC S-IVB	IBM IU	PRIMES SUPPLIER
				Todeco, Inc. Inglewood, California
				Turbocast Div. National Banner Los Angeles, California
				V & W Aircraft Castings Ball Gardens, California
				Weber Metals & Supply Company Paramount, California
				Western Way Van Nuys, California

SATURN-APOLLO CRITICAL SUPPLIER LISTING
 LOS ANGELES DCASR

S & ID CM	GRUMAN LEM	A.C. EL G.P.	G.E. ACE	HM STD PLSS
	Absolute Pressure Transducer X			
	Cryogenic Tankage Super Critical Helium Tank Gaseous Oxygen Supply Unit X			
	Electrical Circuit Connector X			
	Desent Engines X			
	Ascent Tanks X			
	RCS Quantity Gaging X			

SATURN-APOLLO CRITICAL SUPPLIER LISTING

LOS ANGELES DCASR

CCSD S-IB	ROCKETDYNE ENGINES	BENDIX GP	MSFC - GFE

SATURN-APOLLO CRITICAL SUPPLIER LISTING

LOS ANGELES DCASR

BOEING S-IC	S & ID S-II	DAC S-IVB	IBM IU	PRIMES SUPPLIER
				Am. Wiancko Los Angeles, California
				Airesearch Los Angeles, California
				Deutsch Banning, California
				TRW Rendondo Beach, California
				Aerojet General Downy, California
				Giannini Duarte, California

SATURN-APOLLO CRITICAL SUPPLIER LISTING

NEW YORK - DCASR

S & ID CM	GRUMAN LEM	A.C. EL G.P.	G.E. ACE	HM STD PLSS
			Power Supplies OV Modules 1	
Mission Simulator training Control sequence Heat flux sensor X				
		Optical Subsystem for LM & CM 3		

SATURN-APOLLO CRITICAL SUPPLIER LISTING

NEW YORK - DCASR

CCSD S-IB	ROCKETDYNE ENGINES	BENDIX GP	MSFC GFE
		Middle Gimbal Frame Trunnion (Middle) Trunnion (Frame) 1	
Relays 1			
Power Supply 3			

SATURN-APOLLO CRITICAL SUPPLIER LISTING

NEW YORK - DCASR

BOEING S-IC	S & ID S-II	DAC S-IVB	IBM IU	PRIMES SUPPLIER
				B&G Instrument Co. Woodbury, New York
				Con Avionics Long Island, N.Y.
Stage X	Relay Types I & II AMP Non Latching 1			Filtors Inc. Long Island, N.Y.
				General Precision White Plains, N.Y.
				Interelectronics Corp. Congers, N.Y.
				Kollsman Instrument Co. Syossett, Long Island, N.Y.

SATURN-APOLLO CRITICAL SUPPLIER LISTING
 NEW YORK - DCASR

CCSD S-IB	ROCKETDYNE ENGINES	BENDIX GP	MSFC GFE
		Cover 1 (L)	
Filters 2			
			Lox for MTF X
		Inner Gimbal Outer Gimbal Trunnion (outer) Trunnion (Inner) 1	

SATURN-APOLLO CRITICAL SUPPLIER LISTING
NEW YORK - DCASR

BOEING S-IC	S & ID S-II	DAC S-IVB	IBM IU	PRIMES SUPPLIER
			Gas Bearing Pressure Regulators 2	Aerodyne Controls Corp. Farmingdale, N.Y.
				Aero Trades Mfg. Co. Mineola, N.Y.
		Filter Element Main System Filter Cold Helium X		Aircraft Porous Media Glen Cove, N.Y.
				Air Reduction New York, N.Y.
	Coaxial Switch 3			Automatic Metal Products Brooklyn, N.Y.
				Barden Leemath Woodbury, N.Y.

SATURN-APOLLO CRITICAL SUPPLIER LISTING

NEW YORK - DCASR

S & ID CM	GRUMAN LEM	A.C. EL G.P.	G.E. ACE	HM STD PLSS
			Power Supplies OV Modules 1	
			Variable Phase Shifters 1	

SATURN-APOLLO CRITICAL SUPPLIER LISTING

NEW YORK - DCASR

CCSD S-1B	ROCKETDYNE ENGINES	BENDIX GP	MSFC GFE
Transmitter 3			

SATURN-APOLLO CRITICAL SUPPLIER LISTING

NEW YORK - DCASR

BOEING S-IC	S & ID S-II	DAC S-IVB	IBM IU	PRIMES SUPPLIER
				Lambda Electronics Long Island, N.Y.
		Potentiometer Bridge Propellant Utilization (L) X		Litton Precision Products Mount Vernon, N.Y.
				Reeves Instrument Long Island, N.Y.
				Telement Co. Long Island, N.Y.

SATURN-APOLLO CRITICAL SUPPLIER LISTING

NEW YORK - DCASR

S & ID CM	GRUMAN LEM	A.C. EL. G.P.	G.E. ACE	HM STD PLSS
Pulse - Code Modulation Sys. X				
				Primary Oxygen Bottle X
	Range Ind. Display X			

SATURN-APOLLO CRITICAL SUPPLIER LISTING

NEW YORK - DCASR

CCSD S-IB	ROCKETDYNE ENGINES	BENDIX GP	MSFC CFE
			S-V/ST-124M Platform
			X
		Chassis Box End Box Cover (L)	
		1	

SATURN-APOLLO CRITICAL SUPPLIER LISTING

NEW YORK - DCASR

BOEING S-IC	S & ID S-II	DAC S-IVB	IBM IU	PRIMES SUPPLIER
				Applied Elec. Corporation Metuchen, New Jersey
				ARDE - Portland Paramus, New Jersey
		Semiconductor Device Diode Power Rect. Hi-Rel.x X		Bendix Corp. Holmel, N.J.
				Bendix Corp. Teterboro, New Jersey
				Bronner MFG. Co. Hanover, New Jersey
GSE Ball Valve X			Ball Shut off valve 2	Flodyne Controls, Inc. Murray Hill, New Jersey

SATURN-APOLLO CRITICAL SUPPLIER LISTING
 NEW YORK - DCASR

S & ID CM	GRUMAN LEM	A.C. EI. G.P.	G.E. ACE	HM STD PLSS
Rotary Switches X				
Electrical Indicating Meters X				

SATURN-APOLLO CRITICAL SUPPLIER LISTING

NEW YORK - DCASR

CCSD S-1B	ROCKETDYNE ENGINES	BENDIX GP	MSFC GFE
Diodes 2			
Valves 2			
Resistors 2			
Flex Hose 2			

SATURN-APOLLO CRITICAL SUPPLIER LISTING

NEW YORK - DCASR

BOEING S-IC	S & ID S-II	DAC S-IVB	IBM IU	PRIMES SUPPLIER
				General Instrument Corp. Newark, New Jersey
GSE Solenoid Valve X			Water Accumulator Shut off Valve 2	Marotta Valve Co. Boonton, New Jersey
				McGraw Edison Livingston, New Jersey
				Precision Resistor Co. Hillside, New Jersey
Duct Assy's 1			Flexible Hose Assy. 2	Resistoflex Corporation Roseland, New Jersey
				Weston Instr. Inc. Newark, New Jersey

SATURN-APOLLO CRITICAL SUPPLIER LISTING

NEW YORK DCASR

S & ID CM	GRUMAN LEM	A.C. EL G.P.	G.E. ACE	HM STD PLSS
	Caution & Warning Sys. Signal Con. Elec. Assy S & C Panel Assembly X			
	RCS Tankage X			
	SCS Program Reader X			
	Command Control Selec- tion Test Station X			
	Rate Gyros Helium Tem/Press. Ind. Display X			
	External Visual Dis- play X			

SATURN-APOLLO CRITICAL SUPPLIER LISTING

NEW YORK DCASR

BOEING S-IC	S & ID S-II	DAC S-IVB	IBM IU	PRIMES SUPPLIER
				Arma Garden City, New York
				Bell Niagara Falls, New York
				Fairchild Syosset, New York
				General Instrument Hicksville, New York
				Kearfott Little Falls, New York
				Farrand Bronx, New York

SATURN-APOLLO CRITICAL SUPPLIER LISTING

NEW YORK DCASR

S & ID CM	GRUMAN LEM	A.C. EL G.P.	G.E. ACE	HM STD PLSS
	Rotor Switches X			
	Lighting Control Assy X			

SATURN-APOLLO CRITICAL SUPPLIER LISTING

Philadelphia DCASR

S & ID CM	GRUMAN LEM	A.C. EL G.P.	G.E. ACE	HM STD PLSS
C-band and S-band Antennas X				
Tower Jettison Motor X				
Television Equipment X				

SATURN-APOLLO CRITICAL SUPPLIER LISTING

Philadelphia DCASR

CCSD S-IB	ROCKETDYNE ENGINES	BENDIX GP	MSFC FE
		Resistor 2 (L)	
Explosive Switch 2			
			Government Requirements for LH ₂ East Coast X

SATURN-APOLLO CRITICAL SUPPLIER LISTING

Philadelphia DCASR

BOEING S-IC	S & ID S-II	DAC S-IVB	IBM IU	PRIMES SUPPLIER
				Amecon Division College-Park, Maryland
Retro Rocket 1		Motor, Retro-Rocket x (L)		Thiokol Chemical Elkton, Maryland
				Mepco, Inc. Morristown, New Jersey
				R.C.A Princeton, New Jersey
				Aerospace Component Division Valley Forge Industrial Park, Pa.
				Air Products Allentown, Pennsylvania

SATURN-APOLLO CRITICAL SUPPLIER LISTING
Philadelphia DCASR

S & ID CM	GRUMAN LEM	A.C. EL G.P.	G.E. ACE	HM STP PLSS
			Tone Equipment 1	
	Electrical Con. Assy. Ascent & Descent Stage X			

SATURN-APOLLO CRITICAL SUPPLIER LISTING

Philadelphia DCASR

CCSD S-IB	ROCKETDYNE ENGINES	BENDIX GP	MSFC GFE
		Slip Rings 2	
Connectors 1			
Relays 2			

SATURN-APOLLO CRITICAL SUPPLIER LISTING
Philadelphia DCASR

BOEING S-IC	S & ID S-II	DAC S-IVB	IBM IU	PRIMES SUPPLIER
				Poly Scientific Blacksburg, Pennsylvania
				Amp, Inc. Harrisburg, Pennsylvania
				Union Switch and Signal Pittsburgh, Pennsylvania
Stage Relays X				Union Switch Swissvale, Pennsylvania
				Communications Products Lynchburg, Virginia
		Relays X		General Electric Waynesboro, Virginia

SATURN-APOLLO CRITICAL SUPPLIER LISTING

Philadelphia DCASR

CCSD S-IB	ROCKETDYNE ENGINES	BENDIX GP	MSFC GFE
	H-1 and J-2 Blades 3 (L)		

SATURN-APOLLO CRITICAL SUPPLIER LISTING

Philadelphia DCASR

BOEING S-IC	S & ID S-II	DAC S-IVB	IBM IU	PRIMES SUPPLIER
				Austenal Dover, New Jersey
				Bethlehem Bethlehem, Pennsylvania

SATURN-APOLLO CRITICAL SUPPLIER LISTING
SAN FRANCISCO - DCASR

S & ID CM	GRUMAN LEM	A.C. EL G.P.	G.E. ACE	HM STD PLSS
			Magnetic Tape Recorders/Reproducers Demodulators 1	
High-gain Antenna X				
Nuclear Particle Detection System X				

SATURN-APOLLO CRITICAL SUPPLIER LISTING

SAN FRANCISCO - DCASR

BOEING S-IC	S & ID S-II	DAC S-IVB	IBM IU	PRIMES SUPPLIER
				Ampex Corporation Redwood City, California
				Dalmo Victor Belmont, California
	Confine Detonating Manifold Destruct Tee Linear Shaped Charge Tank Destruct 1			Explosive Tech, Inc. Fairfield, California
	Pyrogen Initiator Confined Detonating Fuse 2			Link Ord. Division Sunnyvale, California
				Philco Corporation Palo Alto, California
Stage Transistor - Silicon X				Raytheon Mountain View, California

SATURN-APOLLO CRITICAL SUPPLIER LISTING

SAN FRANCISCO - DCASR

BOEING S-IC	S & ID S-II	DAC S-IVB	IBM IU	PRIMES SUPPLIER
	Longitudinal Accelerometer 3			Systron-Donner Corporation Concord, California
	D.C. Amplifiers Signal Conditioners 3			Electro-Dev. Corporation Seattle, Washington
		Switch Thermal Hydraulic System Temp. Control (L) X	Temperature Control Ass'y 2	United Cont. Corp. Redmond, Washington

SATURN-APOLLO CRITICAL SUPPLIER LISTING
ST. LOUIS - DCASR

S & ID CM	GRUMAN LEM	A.C. EL G.P.	G.E. ACE	HM STD PLSS
Cryogenic Gas Storage System X	Super-critical helium Con. Unit. Helium Dewars X			
			Electronic Counter Oscilloscope PIPA Scope 1	
			Oscillograph Recorders 1	
Instrumentation X				
Communications & data subsystems X				
				Cannister Reservoir Assembly X

SATURN-APOLLO CRITICAL SUPPLIER LISTING

ST. LOUIS - DCASR

CCSD S-IB	ROCKETDYNE ENGINES	BENDIX GP	MSFC GFE
LOX & Fuel Level Probes 3			

SATURN-APOLLO CRITICAL SUPPLIER LISTING

ST. LOUIS - DCASR

BOEING S-IC	S & ID S-II	DAC S-IVB	IBM IU	PRIMES SUPPLIER
				Beech Aircraft Corp. Boulder, Colorado
				Hewlett Packard Colorado Springs, Colorado
				Honeywell Denver, Colorado
Engine Cutoff Sensor 2 (L)				Bendix Corporation Davenport, Iowa
				Collins Radio Co. Cedar Rapids, Iowa
				Benson Mfg. Co. Kansas City, Mo.

SATURN-APOLLO CRITICAL SUPPLIER LISTING

ST. LOUIS - DCASR

S & ID CM	GRUMAN LEM	A.C. EL G.P.	G.E. ACE	HM STD PLSS
Post-entry & storage batteries X	Primary Storage Batteries X			
Digital test system spare command parts X			Attenuators, DTVC, DCCU 1	
			alphanumeric display PC Boards, Preamplifier 1	
Stabilization & Control system X	SCS Att. Con. Assy. Flag Indicator Push Button Switches Display meters X			

SATURN-APOLLO CRITICAL SUPPLIER LISTING

ST. LOUIS - DCASR

CCSD S-1B	ROCKETDYNE ENGINES	BENDIX GP	MSFC GFE
Battery 1			
	J-2 Bipod X		
	J-2 Ring X		

SATURN-APOLLO CRITICAL SUPPLIER LISTING

ST. LOUIS - DCASR

BOEING S-IC	S & ID S-II	DAC S-IVB	IBM IU	PRIMES SUPPLIER
Silver Zinc Battery 1 (L)		Batteries, Wet X (L)	Batteries 1 (L)	Eagle Picher, Ind. Joplin, Mo.
				Twin City Tool Grandview, Mo.
				Control Data Corp (GE & CM) Minneapolis, Minn.
				Creston Tool & Mfg. Co. Minneapolis, Minn.
				Data Display Div. St. Paul, Minn.
				Honeywell, Inc. Minneapolis, Minn.

SATURN-APOLLO CRITICAL SUPPLIER LISTING

ST. LOUIS - DCASR

S & ID CM	GRUMAN LEM	A.C. EL G.P.	G.E. ACE	HM STD PLSS
			Contact Plate Assy's wire wrap plates 1	
Transducer & mass flowmeter X				

SATURN-APOLLO CRITICAL SUPPLIER LISTING

ST. LOUIS - DCASR

CCSD S-IB	ROCKETDYNE ENGINES	BENDIX GP	MSFC GFE
Resistors 2			

SATURN-APOLLO CRITICAL SUPPLIER LISTING
 ST. LOUIS - DCASR

BOEING S-IC	S & ID S-II	DAC S-IVB	IBM IU	PRIMES SUPPLIER
				National Connectors Minneapolis, Minn.
				Rosemount Engineering Co. Minneapolis, Minn.
				Dale Products Columbus, Neb.

SATURN-APOLLO CRITICAL SUPPLIER LISTING

ARMY - AIR FORCE - NAVY

S & ID CM	GRUMAN LEM	A.C. EL G.P.	G.E. ACE	HM STD PLSS
SPS Engine X				
Parachute Subsystem Testing X				
Fuel Cell Power Plant X				
Fuel & Oxidizer Tanks X				

SATURN-APOLLO CRITICAL SUPPLIER LISTING
ARMY - AIR FORCE - NAVY

CCSD S-IB	ROCKETDYNE ENGINES	BENDIX GP	MSFC GFE
Safe Arming Device 2			

SATURN-APOLLO CRITICAL SUPPLIER LISTING

ARMY - AIR FORCE - NAVY

BOEING S-IC	S & ID S-II	DAC S-IVB	IBM IU	PRIMES SUPPLIER
		Motor, Ullage Rocket X (L)		Thiokol Chemical Corporation Huntsville, Alabama (Army)
				Aerojet General Corporation Sacramento, California (Air Force)
	P.U. Computer & Safe/Arming Device 1			Douglas Aircraft Company Huntington Beach, California (Air Force)
				Douglas Aircraft Company Long Beach, California (Navy)
				United Aircraft Hartford, Connecticut (Navy)
				General Mtr. Corp. Indianapolis, Indiana (Air Force)

SATURN-APOLLO CRITICAL SUPPLIER LISTING

ARMY - AIR FORCE - NAVY

S & ID CM	GRUMAN LEM	A.C. EL G.P.	G. E. ACE	HM STD PLSS
CM Ablative Heat Shield X				
Selective Stragnation Indicator Testing X				
	Descent Eng. X			

SATURN-APOLLO CRITICAL SUPPLIER LISTING

ARMY - AIR FORCE - NAVY

BOEING S-IC	S & ID S-II	DAC S-IVB	IBM IU	PRIMES SUPPLIER
				Avco Corporation Wilmington, Massachusetts (Air Force)
				Ling Tempco Vought Dallas, Texas (Navy)
				Rocketdyne Van Nuys, California (Air Force)