The purpose of the Saturn V Interface Management System is to establish and maintain interface design compatibility between interfacing items under the design responsibility of different agencies. It provides the management tools for effective change control over the design of designated systems and equipment that have critical interface design requirements. Interface management is accomplished through four distinct phases:

- o Identification

- o Documentation

- o Implementation

- o Control
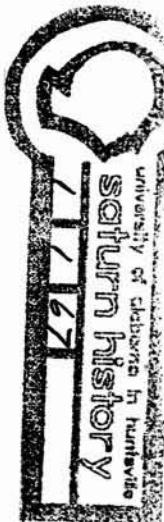
INTRA-CENTER

THOSE INTERFACES THAT AFFECT OR ARE THE
RESPONSIBILITY OF DESIGN AGENCIES WITHIN
ONE NASA CENTER

S-II STAGE
(MSFC)

S-IC STAGE
(MSFC)
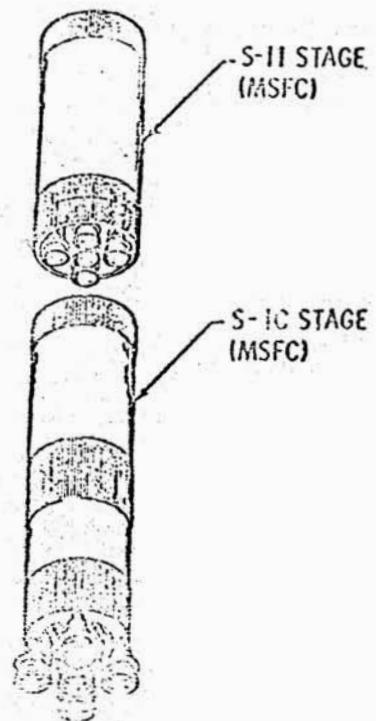
INTER-CENTER

THOSE INTERFACES THAT AFFECT OR ARE THE
RESPONSIBILITY OF MORE THAN ONE NASA CENTER

MOBILE LAUNCHER
(KSC)
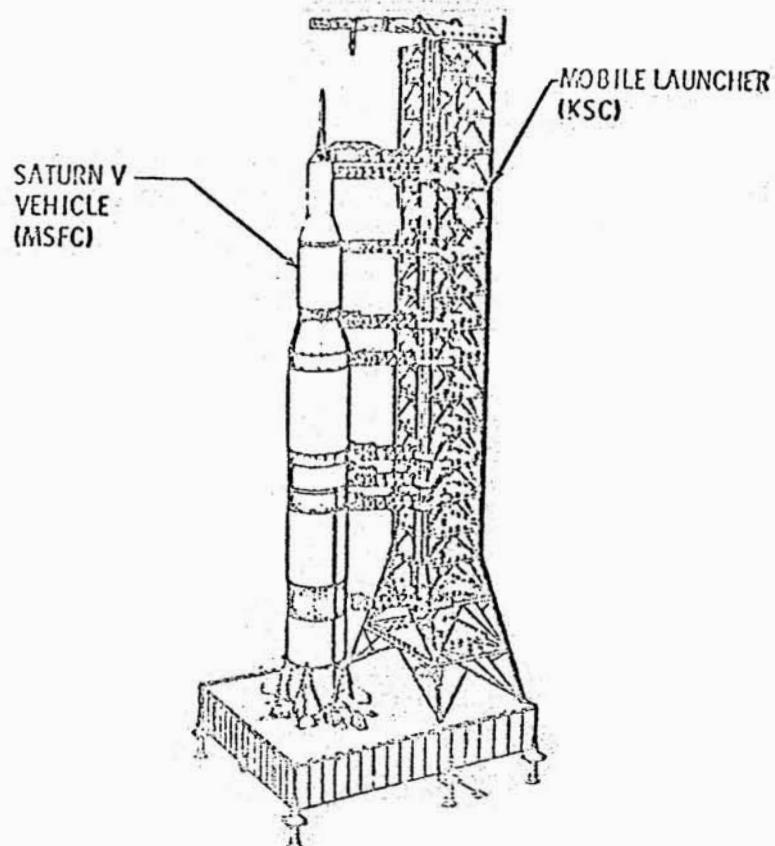
SATURN V
VEHICLE
(MSFC)

SATURN V PROGRAM

INTERFACE MANAGEMENT

The Identification Phase of Saturn Interface Management consists of:

o Identifying Saturn Launch Vehicle Systems interface relationships

o Selecting interface areas to be controlled

o Scheduling of interface control documents preparation and baselining

	SATURN V PROGRAM	
	INTERFACE MANAGEMENT	

An interface identification chart is maintained for Saturn V that identifies the:

o   ICD Number

o   Title

o   Contractors that the ICD should be placed on

o   Individual at MSFC that prepared the ICD

o   schedule ICD will be complete

#	ICD	STATUS	TITLE	S-IC	V7-1-6 S-II	2000... S-IVB	SIVB IU	F-1 J-2 ENGINE	LVGSE MGSE	ESE	GFE	APOLLO MSC	KSC
1	13M50100A	V R 08-27-65	S-IC/S-II Stage Physical Requirements R-P&VE-VSL (R. E. Dotson)	XX	XX								
2	13M50101A	V R 08-27-65	S-II/S-IVB Stage Physical Requirements R-P&VE-VSL (R. E. Dotson)		XX	XX							
3	13M50102A	V R 08-27-65	S-IVB/IU Physical Requirements R-P&VE-VSL (R. E. Dotson)			XX	XX						
4	13M50103A	A R 04-15-66	IU/Spacecraft Physical Requirements R-P&VE-VSL (R. E. Dotson)				XX					X	
5	13M501C4	V R 09-17-65	F-1 Engine/S-IC Stage Physical Requirements R-P&VE-VSL (R. E. Dotson)	XX				F-1/ R-1420DS					
6	13M50105	V R 04-22-66	J-2 Engine/S-II Stage Physical Requirements R-P&VE-VSL (R. E. Dotson)		XX			J-2/ R-2158BS					
7	13M50106B	V R 08-27-65	J-2 Engine/S-IVB Stage Physical Requirements R-P&VE-VSL (R. E. Dotson)			XX		J-2/ R-2158BS					
8	13M50112	A R 04-15-66	Spacecraft to Q-Ball Physical Requirements R-P&VE-VSL (R. E. Dotson)								R-ASTR 50M60338	X	
9	13M63011	A R 04-11-..	Launch Vehicle to Spacecraft 01? Instrumentation and ... ... (O. .....)		XX	XX	XX					X	
10	40M.....	V R 04-22-6.	Definition of Saturn SA-501 Flight Sequence Program R-ASTR-EA (W. Shields)	XX	XX	XX	XX						

IDENTIFICATION

TYPICAL INTERFACE IDENTIFICATION MATRIX

S-II STAGE

TO

EFFECTIVITY
SA-501

INTERFACE CATEGORIES / DESCRIPTION CONTRACT END ITEMS OR EQUIV. DESIGN RESP.	MAJOR CEI'S							RANGE SAFETY SYSTEM ELECTRICAL & CONTROL			
	F-1 ENGINES R-1420DG NAA ROCKET DYNE	S-IC STAGE CP02S0000-1101 BOEING	J-2 ENGINES FOR S-II STAGE NAA-ROCKET DYNE	J-2 ENGINES FOR S-IVB STAGE NAA-RKDYN	S-IVB STAGE CP207005A DOUGLAS	INSTR. UNIT IBM	APOLLO MSC	RECEIVER UHF 50M10697 R-ASTR	PLUG NO SAFING R-ASTR	CONTROL-LER RANGE SAFETY R-ASTR	DECODER RANGE SAFETY COMMAND R-ASTR
PHYSICAL — MECHANICAL	NONE	13M50100	13M50105	NONE	13M50101	NONE	NONE	NONE	✕	✕	NONE
SPACE RELATIONSHIP	NONE	✕	13M50132	✕	✕	NONE	NONE	NONE	✕	✕	NONE
FUNCTIONAL REQUIREMENTS — STRUCTURAL	NONE	13M07000	13M07005	NONE			NONE	NONE	✕	✕	NONE
ELECTRICAL	NONE	40M30595	13M07005	NONE			NONE	NONE	NONE	NONE	NONE
ENVIRONMENTAL	NONE	13M07000	13M07005					NONE	NONE	NONE	NONE
CREW SAFETY	NONE	NONE	NONE		13M07005		NONE	NONE	NONE	NONE	NONE
HYDRAULIC FLUID	NONE	NONE	13M07005					NONE	NONE	NONE	NONE
PNEUMATIC	NONE	NONE	13M07005	NONE	13M07005		NONE	NONE	NONE	NONE	NONE
PROCEDURAL REQUIREMENTS — HUMAN FACTORS	NONE	13M03000	13M03005	NONE			NONE	NONE	✕	✕	NONE
ASSEMBLY/DISASSEMBLY	NONE	13M03000	13M03005	NONE			NONE	NONE	✕	✕	NONE
MAINTENANCE	NONE	13M03000	13M03005	NONE		NONE		NONE	✕	✕	NONE
SERVICE	NONE	13M03000	13M03005	NONE	13M03001	NONE	NONE	NONE	✕	✕	NONE

INTERFACE CONTROL DOCUMENTATION CONTRACTUAL INDEX AND STATUS REPORT

STAGE LVGSE *INFORMATION ONLY N/A NOT APPLICABLE

(A) MAXIMUM 14 DAYS PROCESS TIME FROM ICD DATE TO LEVEL II CCBD DATE.

(B) MAXIMUM 7 DAYS TIME FROM CCBD DATE TO CONTRACTING OFFICER'S LETTER DATE.

(C) MAXIMUM 15 DAYS TIME FROM CONTRACTING OFFICER'S LETTER DATE TO CONTRACTOR'S RESPONSE DATE.

(D) MAXIMUM 14 DAYS TIME FROM NOTIFICATION OF INCOMPATIBILITY DATE TO DATE OF RESOLUTION.

ICD NO.	TITLE	SPECIFICATION	INTERFACE AREA	LEVEL	TYPE	INTERFACE REVISION NOTICE	VEHICLE EFFECTIVITY	DATE ICD IS AVAILABLE TO IO WITH R&DO TECHNICAL APPROVAL	(A) PROGRAM CCBD NO. 501-(1) AND DATE APPROVED (2)	(B) CONTRACTING OFFICER'S LETTER OR CHANGE ORDER NO. (1) AND DATE ISSUED (2)	(C) DATE OF CONTRACTOR'S RESPONSE TO CONTRACT OFFICER'S LETTER	YES/NO CONTRACTOR'S CONCURRENCE TO ICO	(D) DATE IVP, IVE & R&DO ARE NOTIFIED OF INCOMPATIBILITY (1) DATE OF RESOLUTION (2)	RESPONSIBLE MSFC LABORATORY	PIRN NUMBER	REMARKS
40M11706	LV ESE/Ground DDAS	SS10A40M00328	GE/IU	B			501	S 4-11-66 / A 4-22-66	1 66-0172 / 2 4-29-66	1 C/O 55 / 2 12-23-65	S 1-7-66 / A 1-1-66	X	1 N/A / 2 N/A	R-ASTR-ESA	N/A	
		SS10A40M00328			R-3 -5	501		S N/A / A 3-1-66	1 66-0429 / 2 3-8-66	1 I-CO-IG / 2 8-26-66	S 9-10-66 / A		1 / 2			
								S / A	1 / 2	1 / 2	S / A		1 / 2			
								S / A	1 / 2	1 / 2	S / A		1 / 2			
								S / A	1 / 2	1 / 2	S / A		1 / 2			
								S / A	1 / 2	1 / 2	S / A		1 / 2			
								S / A	1 / 2	1 / 2	S / A		1 / 2			
40M11709	IU Checkout ESE to Ground Computer	SS10A40M00328	IU/GE	B			501	S 4-11-66 / A 4-4-66	1 66-0077 / 2 4-11-66	1 C/O 55 / 2 1-5-66	S 1-20-66 / A 2-15-66	X	1 N/A / 2 N/A	R-ASTR-ESA	N/A	
		SS10A40M00328			R1, 2,3	501		S 4-11-66 / A 1-28-66	1 66-0196 / 2 5-5-6	1 C/O 55 / 2 4-7-66	S 4-22-66 / A 5-1-66		1 / 2			
		SS10A40M00328			R-11	501- SUBS	S N/A / A 7-6-66	1 66-0433 / 2 7-13-66	1 C/O 317 / 2 9-9-66	S 9-24-66 / A		1 / 2			
		SS10A40M00328			R-4 5	501- SUBS	S N/A / A 3-25-66	1 66-485 / 2 9-1-66	1 / 2	S / A		1 / 2			
		SS10A40M00328			R-10	502- SUBS	S N/A / A 9-12-66	1 66-570 / 2 9-19-66	1 / 2	S / A		1 / 2			
								S / A	1 / 2	1 / 2	S / A		1 / 2			
								S / A	1 / 2	1 / 2	S / A		1 / 2			
40M11710	IU Checkout ESE to RACS Cont. Display & Power	SS10A40M00328	IU/GE	B			501- SUBS	S 4-29-66 / A 4-22-66	1 66-0169 / 2 4-29-66	1 C/O 55 / 2 1-3-66	S 1-13-66 / A 2-15-66	X	1 N/A / 2 N/A	R-ASTR-ESA	N/A	
		SS10A40M00328			R-1	501- SUBS	S N/A / A 3-25-66	1 66-483 / 2 9-1-66	1 / 2	S / A		1 / 2			
								S / A	1 / 2	1 / 2	S / A		1 / 2			
								S / A	1 / 2	1 / 2	S / A		1 / 2			
								S / A	1 / 2	1 / 2	S / A		1 / 2			
(40M11711)	IU ESE to Navigation System Position	SS10A40M00328	IU/GE	B	R1	501- SUBS	S 4-4-66 / A 3-28-66	1 66-0054 / 2 4-1-66	1 C/O 55 / 2 3-31-66	S 4-13 / A 5-1-66		1 N/A / 2 N/A	R-ASTR-ESA	N/A	
								S / A	1 / 2	1 / 2	S / A					

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SATURN V PROGRAM

INTERFACE MANAGEMENT

The Documentation Phase of Saturn Interface Management consists of:

o   Preparation of all ICDs which shall include documentation
    of all detail interface items within the interface areas
    selected for control.

o   Technical coordination between affected NASA organizations
    and contractors. The technical coordination consists of the
    exchange of technical data to support the documentation of
    detail interfaces, and includes coordination required to
    evaluate and resolve interface design incompatibilities
    detected during the ICD preparation.

o   Technical approval of the ICD by participating MSFC
    organizations.

The Implementation Phase of Saturn Interface Management consists of:

o Saturn Program Level II CCB baselining of the ICD.

o Release to Repository and distribution.

o Contractual implementation of the ICD.

SATURN / ... BALI

INTERFACE MANAGEMENT

Saturn Program Level II CCB baselining of the ICD requires that:

o The Program Manager or his designated alternate chair the
   CCB and sign the Configuration Control Board Directive (CCBD).

o The CCBD number must be referenced on the ICD or the
   Repository will not accept the ICD.

SATURN V PROGRAM

INTERFACE MANAGEMENT

Release to Repository and distribution

o The Repository is a controlled data bank and no one is
   allowed to remove an ICD. The ICD can be changed only
   with an interface revision notice (IRN) with the approval
   of the CCB and a CCBD number must be referenced on the
   IRN.

o Distribution is made direct from the Repository to all
   affected contractors and government agencies.

Contractual Implementation of the ICD:

o The Interface Control Document and its status is included
   in the Interface Control Document Index and Status Report.

o The Interface Control Document Index and Status Report is
   referenced in all applicable Contract End Item Specifications.

o Specifications are maintained by updating the ICD Contractual
   Index and Status Report monthly.

o Contractors are required to establish an internal control
   system to insure that their internal drawings, procedures and
   hardware comply with the ICDs.

The Control Phase of Saturn Interface Management requires that:

o   Configuration Management Manual and Procedures be released

o   Specifications and Interface Control Documents be identified
    and placed on contract

o   Configuration management requirements be placed on contract

o   Configuration Control Boards must be operational

o   Change Tracking and Accounting System must be operational

o   Hardware/Ground Support Equipment/Software Change Integration System
    must be operational
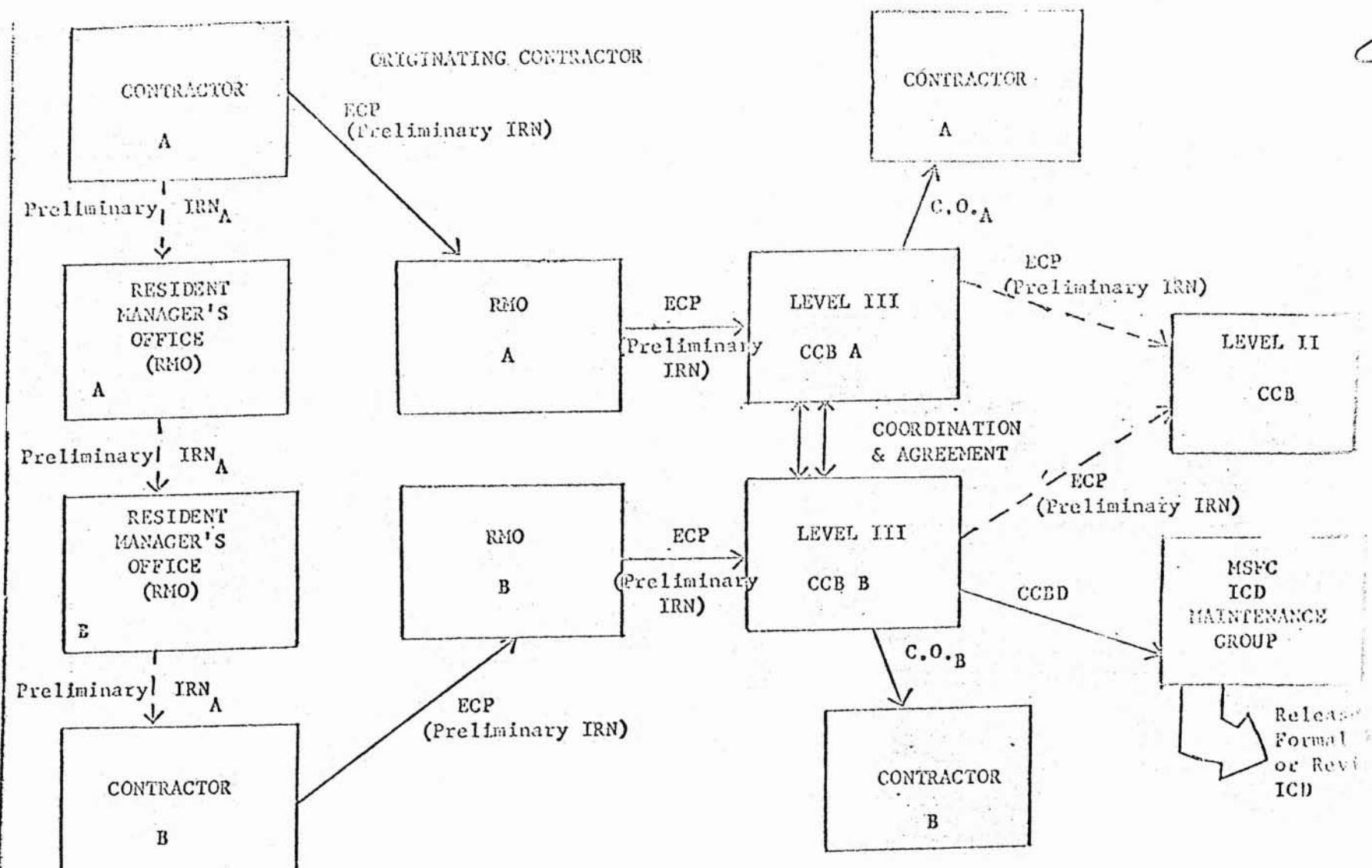
ORIGINATING CONTRACTOR

CONTRACTOR A

CONTRACTOR A

ECP (Preliminary IRN)

Preliminary IRN$_A$

RESIDENT MANAGER'S OFFICE (RMO) A

Preliminary IRN$_A$

RESIDENT MANAGER'S OFFICE (RMO) B

Preliminary IRN$_A$

CONTRACTOR B

RMO A

ECP (Preliminary IRN)

RMO B

ECP (Preliminary IRN)

ECP (Preliminary IRN)

LEVEL III CCB A

C.O.$_A$

ECP (Preliminary IRN)

LEVEL II CCB

COORDINATION & AGREEMENT

LEVEL III CCB B

ECP (Preliminary IRN)

CCBD

C.O.$_B$

CONTRACTOR B

MSFC ICD MAINTENANCE GROUP

Release Format or Revi ICD

I-V-P 856 Bondin Nov. 30, 1965

There are five levels of Configuration Control Boards in the NASA change control system.

- o Level I   Apollo Program Director

- o Level II   Saturn V Program Director

- o Level III   Project Manager (S-IC Stage of Example)

- o Level IV   Contractor plant NASA Resident Manager

- o Level V   Contractor

Program Control Number (PCN) is assigned to every change package. If an interface is affected, the PCN is prefixed with a (V). If no interface is affected, the prefix is the affected Project Office (i.e. S-IC, S-II)

The Saturn V Change Integration System assures that:

o All actions required by MSFC to process an engineering change are identified and tracked.

o Contractors that have interfacing ECP's are authorized to proceed concurrently.

SATURN V PROGRAM ENGINEERING CHANGE MASTER INDEX

COMMON TO ALL CARDS 1-6

	PCN	ASSIGNED	RELEASED	MAN. CLOSE	P	LEAD ENGINEER	EFFECTIVITY	PKG. CLOSED	LAST REV	R-O	APP
V-	3328	08187	08307	09207	U	FRAME	02+SU	09237	09227		

CARD CODE

TITLE 9-80	A	ADD PROVISION TO REMOTELY VENT TRAPPED PRESSURES IN VALVE ACTUATI
	B	ON CONTROL PRESSURE LINES

C O D E 9	PCN PROJECT	P	F E C	C R R	E C R P	E C P N	S C N	EFFECTIVITY REFERENCE NUMBER 20	S / A 31	DATE	PIRN/IRN ICD 36	R E V	L V L	L A B	S / A 49	DATE	CCBD NUMBER 54	A C T	S / A 62	DATE	CHANGE ORDER NUMBER 67	A C T	S / A 76	DATE
C	1-V-S				X		TBC-288	S								H500-6	S	09017	HCL-1-M	S	09157	
D	-1C							A	08317							7-B89	C	A09057	ICH-0B	A	09117	
E																		09167	U			
F																						
G										B0288-1/2				S	09197	H500-6	S	09017	HCL-1-M	S	09157	
H										5				A	09257	7-B89	A	A09057	ICH-0B	A	09117	
I										40M30694	D	B	A						09167	U		
J																						
K																						
L	1-V-G				X		GE-10-1505	S								H500-6	S	09017	HCO-MSF	S	09157	
M									A	09017						7-B89	C	A09057	C-638	U	A09207	
N																						
O																						
P										B0288-1/2				S	09197	H500-6	S	09017	HCO-MSF	S	09157	
Q										5				A	09257	7-B89	A	A09057	C-638	U	A09207	
R										40M30694	D	B	A									
S																						
T																						
U																						
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7																						
8																						
9																						

REMARKS 9-71	/C= THIS CHANGE IS A RESULT OF THE SAT Ⅴ SAFTEY REVIEW ON	PCN
	•C= 17 AUG AND WAS DIRECTED BY THE SAT Ⅴ PROGRAM MANAGER	V-3328

CSC FORM NO. PU-89-67