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OPTIONAL FORM NO. 10
MAY 1962 EDITION
GSA FPMR (41 CFR) 101-11.6

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(This page unclassified.)

UNITED STATES GOVERNMENT

Memorandum

BY AUTHORITY OF EO 11652 3/8/72
BY NP
DATE 9/1/72

TO : Distribution

DATE: Mar

FROM : Apollo Program Manager, AP

Group 4
Downgraded at 3 year intervals;
Declassified at 12 years.

SUBJECT: KSC Apollo Program Directive 4C (Draft)

1. The attached is a draft of KSC Apollo Program Directive 4C (KSC Apollo Program Schedule and Hardware Planning Guidelines and Requirements). This Directive, when issued, will represent the KSC plan for implementing the requirements of Apollo Program Directive 4I, issued by the Apollo Program Director.

2. It is our intention that this directive will contain clear and concise information on:

a. KSC Apollo Program objectives.

b. The necessary over-all planning that must be undertaken to achieve these objectives.

c. Guidance to KSC Directorates to enable them to develop internal plans, in a timely fashion, to meet their responsibilities for achieving the program objectives.

d. Milestones which will provide a common planning base and allow for the measurement of our progress against scheduled objectives.

3. Your review and comments on this directive is requested to insure that all essential elements have been accurately included and that there are no items that have been overlooked. Early issuance of this document is desired in order that KSC planning can proceed from a common base. On this basis, it is requested that your comments be returned to this office by June 14, 1968. Your cooperation in this joint effort to make this directive a viable document is appreciated.

Unclassified when separated from classified enclosures.

R.O. Middleton
R.O. Middleton
Rear Admiral, U.S. Navy

Attachment:
Draft KSC Directive

(This page unclassified.)
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5010-108

Buy U.S. Savings Bonds Regularly on the Payroll Savings Plan

[redacted]

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Distribution:

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[11-20-67]

Kennedy Space Center
APOLLO PROGRAM DIRECTIVE

Date:

KSC APOLLO PROGRAM DIRECTIVE NO. 4C
(DRAFT)

TO : Distribution

FROM: _____
Apollo Program Manager

SUBJECT : KSC APOLLO PROGRAM SCHEDULES, CONTROLLED MILESTONES AND HARDWARE ASSIGNMENTS

ACTION : All KSC Organizations are to implement the requirements of this Directive effective with the issuance date and on a continuing basis

REFERENCE: A. OMSF Apollo Program Directive No. 4H, dated November 3, 1967

B. KSC Apollo Program Directive No. 4B (Interim), dated May 3, 1967

I. PURPOSE

This Directive defines the KSC Apollo/Saturn Program schedules that have been developed to meet the approved NASA Headquarters Apollo Program Schedules and controlled milestones. This revision supersedes KSC Apollo Program Directive No. 4B (Interim), dated May 3, 1967.

II. SCOPE

Attachment A provides Apollo Program schedules, hardware and launch complex assignments and mission assignments.

Attachment B provides the work week and shifts planning guidelines to accomplish the KSC Apollo Program controlled schedule milestones.

Attachment C provides KSC Apollo Program controlled schedule milestones and represent those significant events which must be accomplished in order to meet program objectives.

Changes to Attachment C for Site Activation, complex modifications and Launch Operations controlled milestones will require prior approval of the Apollo Program Manager.

Attachment D provides the integrated KSC controlled milestone schedules which must be accomplished in order to meet established program objectives.

DOWNGRADED AT 3-YEAR INTERVALS; GROUP 4
DECLASSIFIED AFTER 12 YEARS

[redacted]
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[redacted]

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III. RESPONSIBILITIES

Each KSC organization is responsible for the immediate implementation of the requirements of this Directive and for requesting changes to the controlled milestones under their management system, if required.

[redacted]

BY USA KSC

SUBJECT TO GENERAL DECLASSIFICATION
EXECUTIVE ORDER 11652 AUTOMATIC
AT TWO YEAR INTERVALS AND DECLASSIFIED
1973

[redacted]

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MISSION SUPPORT AND OPERATIONS PLANNING

The flight hardware assignments and associated flight schedules shown in this attachment form the basis for mission support and operations planning through the Apollo Program including the alternate planning which provides the capability for an overlap period between the uprated Saturn I and the Saturn V flight schedules. In all cases, KSC Divisions should adjust their planning and that of their contractors to develop and maintain the capability to checkout and launch in accordance with schedules and program alternatives as outlined herein.

These assignments are based on flight hardware delivery to KSC and launch schedules provided by OMSF and are consistent with the revised Apollo mainline or "basic" programming and the major alternate mission planning discussed below.

1. The revised Apollo programming is based on an unchanged basic plan to transfer manned flights from the uprated Saturn I to the Saturn V vehicle as soon as the Saturn V vehicle is ready for manning. The earliest transfer point is planned following the first manned uprated Saturn I mission AS 205/CSM 101. OMSF has revised the mainline or "basic" Apollo schedule to develop a broader planning base for the Apollo Program by unmanned LM development mission (AS 206/LM2) and an unmanned LV Development mission AS 503. The "basic" Apollo launch schedule is shown in Figure 1.

2. The mainline Apollo launch schedule has three major alternate schedules which are dependent on the degree of success achieved with the flights of Apollo 4, 5, and 6. The Apollo Launch Schedule- Alternate #1, shown in Figure 2, will be followed if Apollo 4, 5, and 6 are successful and the AS-206/LM2 and AS-503 unmanned missions are not required. This is the most successful alternate and allows the first manned mission (AS-205) and the first Saturn V manned mission (AS-503) to be two months earlier than in the mainline scheduled.

3. The Apollo Launch Schedule - Alternate #2, shown in Figure 3, assumes that AS-503/BP-30 will not be required if the Apollo 4 and 6 missions achieve their objectives sufficiently to man rate the Saturn V launch vehicle and qualify the heat shield for lunar return velocities. In this case the schedule has been adjusted to accommodate the AS-206/LM2 mission which essentially results in a delay of one month compared with alternate #1 for launches AS-205 and subsequent.

4. The Apollo Launch Schedule - Alternate #3, shown in Figure 4, assumes that AS-206/LM-2 is not required if the Apollo 5 mission achieves its objectives sufficiently to validate the LM for manned flight.

5. In the basic and three alternate plans discussed above, the alternate Apollo launches for spacecraft test flight (Dual Launches) on the uprated Saturn I in support of the Lunar Landing Program will only be flown in the event that transfer of manned flights from the uprated Saturn I program is delayed because the Saturn V vehicle cannot be manned as early as planned. Vehicles AS-206 through AS-212 are assigned for the alternate dual missions, however AS-206 is first assigned to the second unmanned LM development mission and will be reassigned to the first alternate dual mission only if the LM-2 development mission is not required. The Apollo Launch Schedule Alternate #1 and 3 discussed above represent the earliest requirement for an uprated Saturn I CSM-LM operations dual launch capability. A dual uprated Saturn I mission, AS-206 or 208/LM-3 and AS-207/CSM 103 is planned as an alternate mission to AS-503 or 504/LM-3 - CSM 103. If the LM-3 - CSM 103 mission is flown on AS-503 or 504, the 206 or 208 and 207 launch vehicles can be made available to follow-on programs. In any case, a dual uprated Saturn I and a manned Saturn V will not be flown in the same time frame.

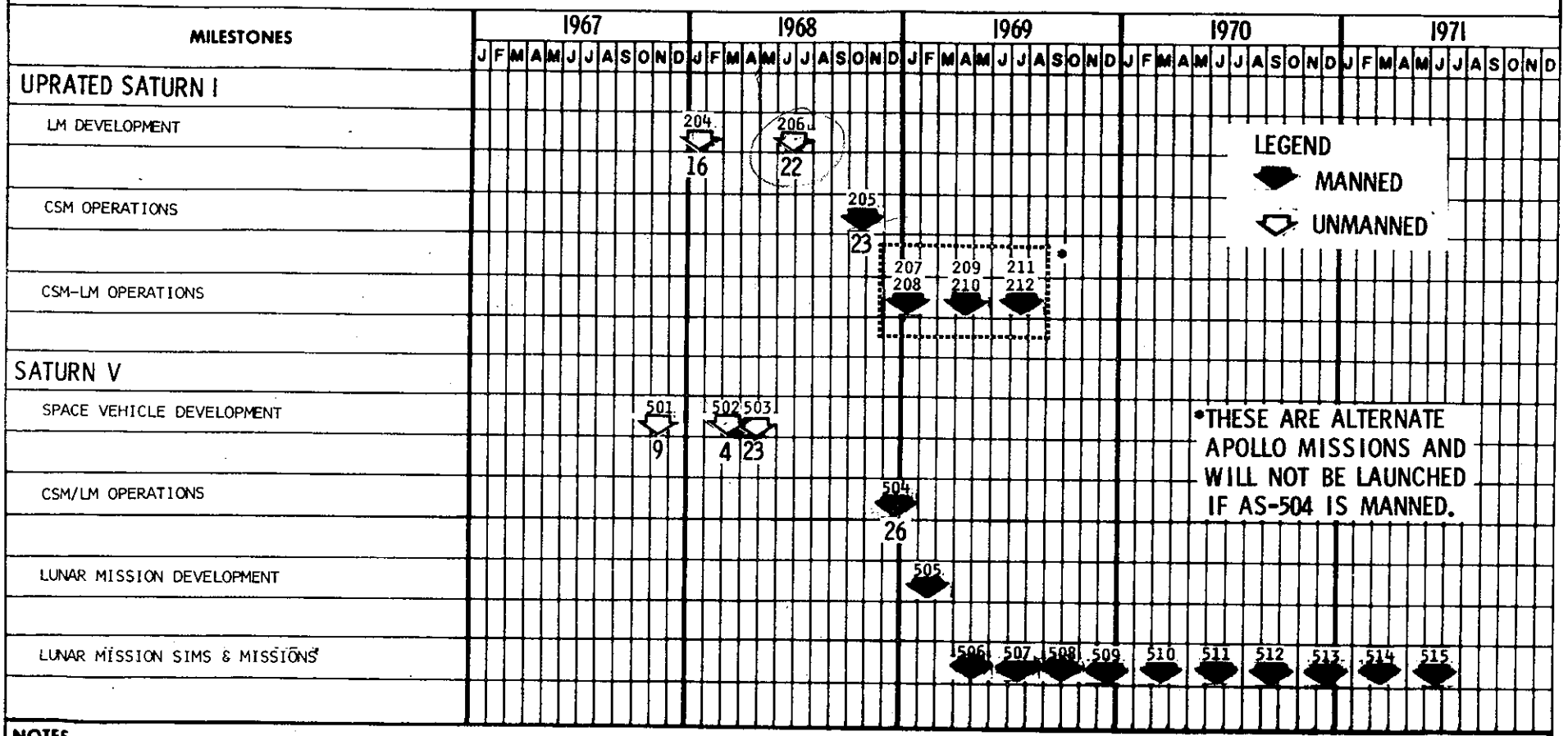
All KSC Divisions must adjust their planning and schedules for individual tasks concerned with Operational capabilities, Complex refurbishment, Modifications and Activation requirements for each Apollo mission to achieve operational readiness to meet the earliest requirement as reflected in the Apollo Launch Schedule Basic plan or any one of the three alternate launch schedules. KSC Divisions must continually assess their planning and schedules for such tasks as described above to prevent excessive use of resources as Launch Schedules and mission assignments are further defined and approved by the Apollo Program Manager.

Launch Complex 37B - Block II CSM capability is not required. All effort directed towards implementing this capability will be cancelled.

The requirement to checkout LC-39 Pad "B" with the 500-F vehicle is deleted. All effort directed toward this effort will be cancelled.

CO[redacted]AL

APOLLO LAUNCH SCHEDULE-BASIC



NOTES

ATTACHMENT A

FIGURE 1

CO[redacted]

DATE 20 NOVEMBER 1967

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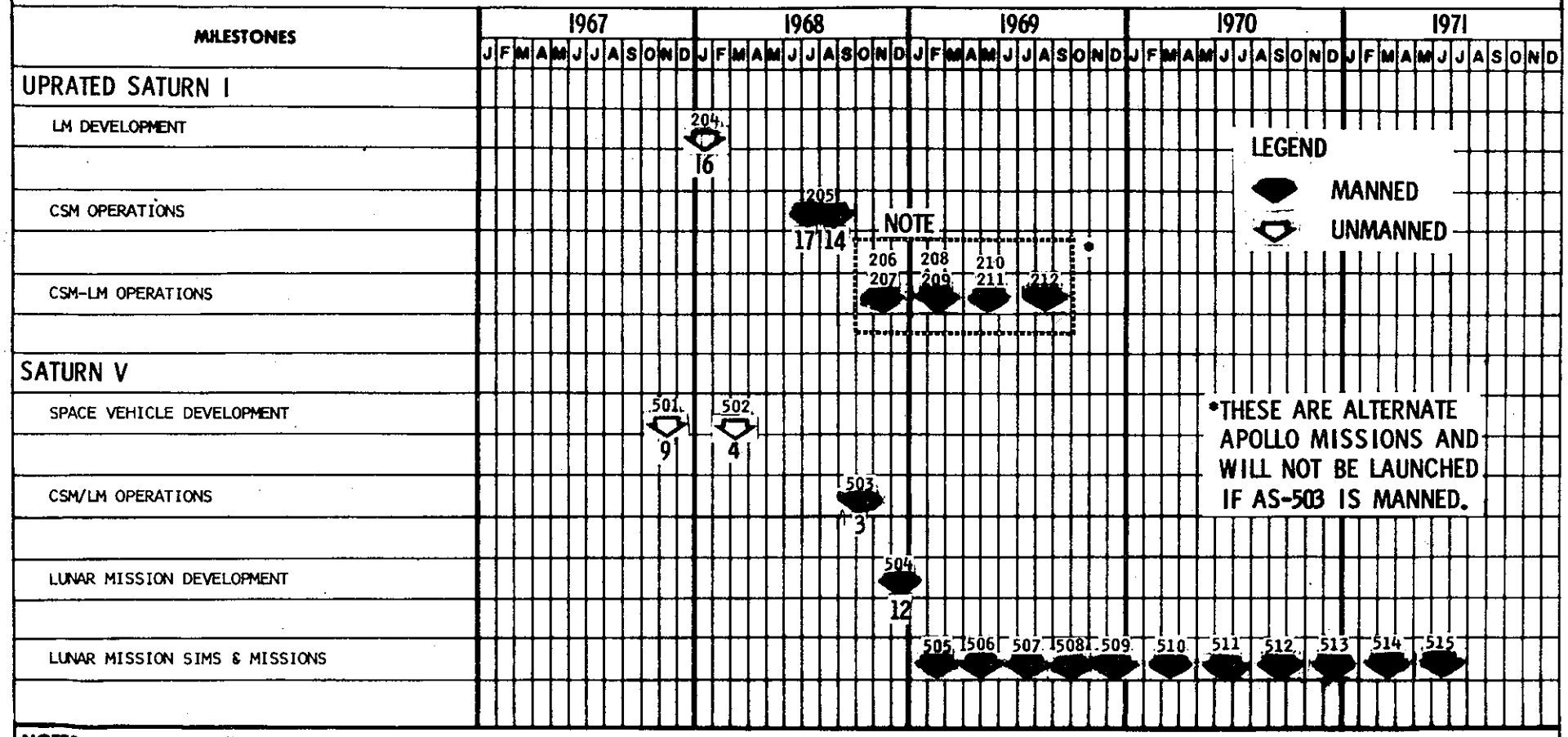
APOLLO LAUNCH SCHEDULE-ALT NO.1

AS-206 AND AS-503 UNMANNED NOT REQUIRED



NOTES LAUNCH IS 17 JULY 1968 IF SM-101 STATIC FIRING IS NOT REQUIRED.

LAUNCH IS 14 AUGUST 1968 IF SM-101 STATIC FIRING IS REQUIRED

ATTACHMENT A

FIGURE 2

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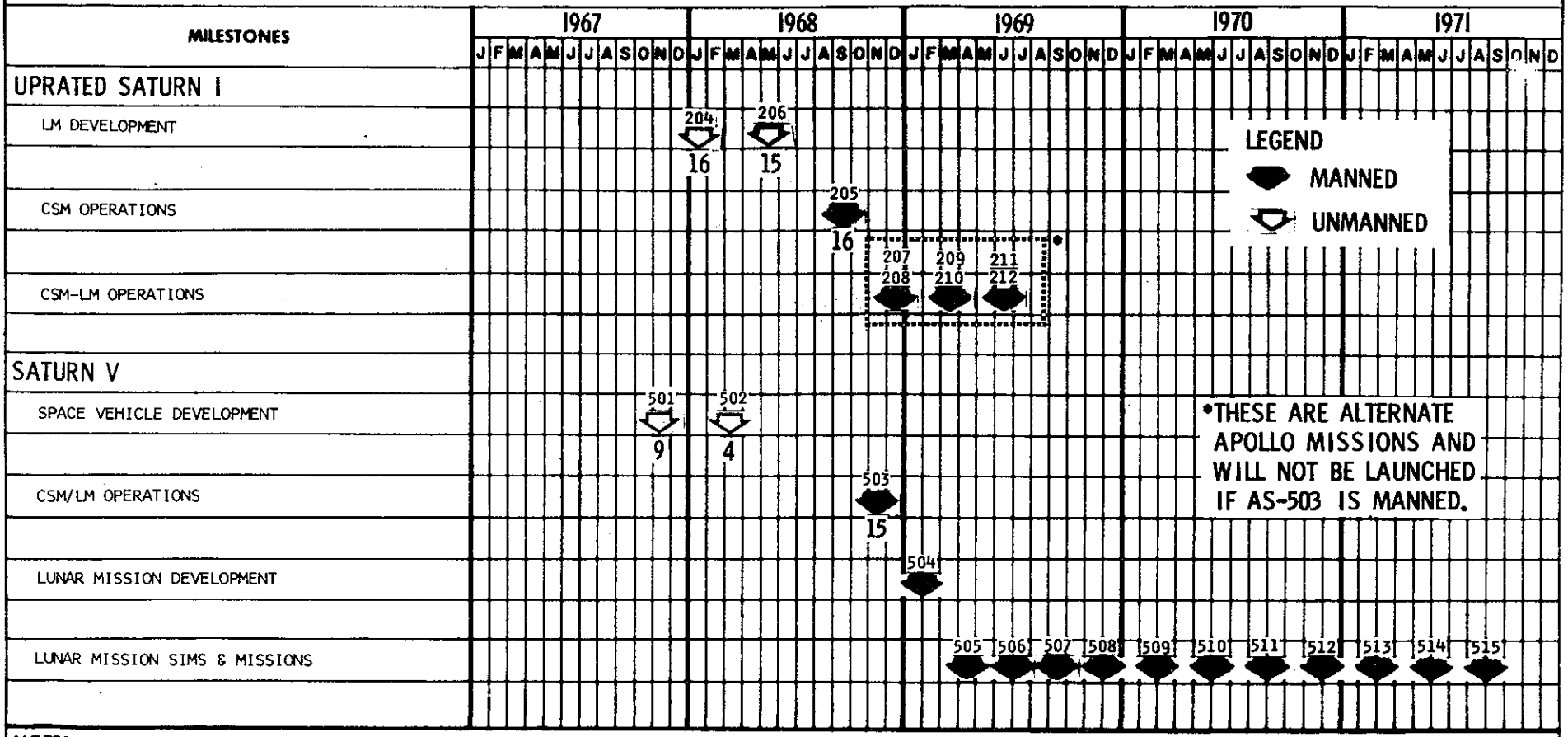
DATE 20 NOVEMBER 1967

APOLLO LAUNCH SCHEDULE-ALT NO. 2

AS-503 UNMANNED NOT REQUIRED



NOTES

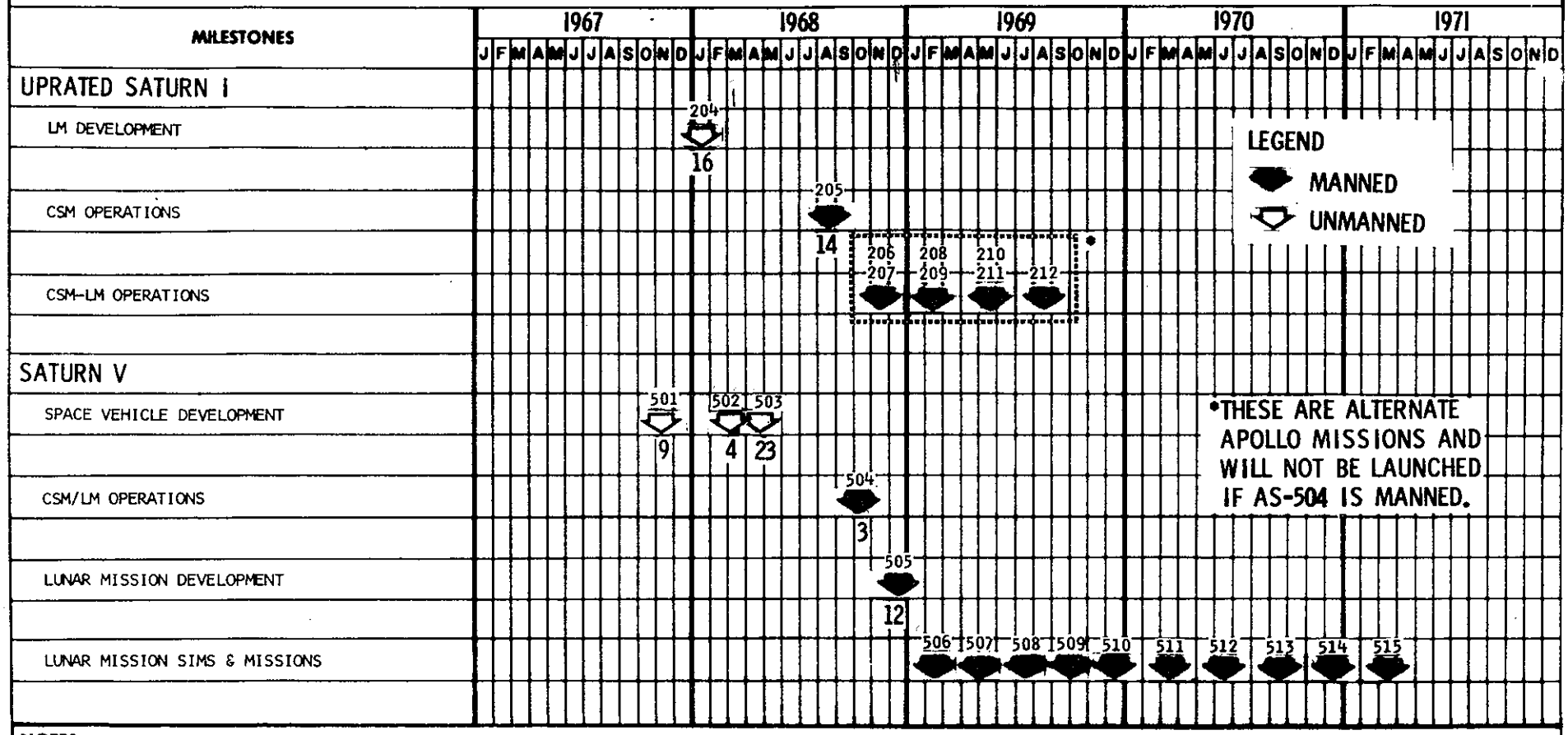
ATTACHMENT A

FIGURE 3

DATE 20 NOVEMBER 1967

APOLLO LAUNCH SCHEDULE-ALT NO. 3

AS-206 NOT REQUIRED



NOTES

ATTACHMENT A

FIGURE 4

HARDWARE AND LAUNCH COMPLEX ASSIGNMENT SUMMARY
SATURN V

Apollo Launch Schedule Reference	LV	CSM	LM	Launch Complex LC-39			
				ML	FR	HB	Pad
All	501	017	LTA10R	1	1	1	A
All	502	020	LTA2R	2	2	3	A
Basic & Alt #3	503	BP30	LTA B	1	1	1	A B Alt
Alt #1 &2	503	103	3	1	1	1	A
Basic & Alt #3	504	103	3	2	2	3	A
Alt #1 & 2	504	104	4	2	2	3	B
Basic & Alt #3	505	104	4	1	1	1	B
Alt #1 & 2	505	106	5	3	3	2	A
Basic & Alt #3	506	106	5	3	3	2	A
Alt #1 & 2	506	107	6	1	1	1	B
Basic & Alt #3	507	107	6	2	2	3	B
Alt #1 & 2	507	108	7	2	2	3	A
*	508	Yes	Yes				
*	509	Yes	Yes				
*	510	Yes	Yes				
*	511	Yes	Yes				
*	512	Yes	Yes				
*	513	Yes	Yes				
*	514	Yes	Yes				
*	515	Yes	Yes				

Notes: (1) The alternate Apollo spacecraft and launch complex facility assignments are shown above based on the "Basic" and the three alternate Apollo Launch Schedules.

(2) All LM and Block II CSM will be capable of flight missions on either the uprated Saturn I of Saturn V Vehicles so that, if alternate Apollo uprated Saturn I missions are required, the spacecraft can be reassigned to these missions as required.

* Firm assignments are not made due to the number of assignment alternatives which exist based on mission progress to that time. These assignments will be made as mission progress dictates.

HARDWARE AND LAUNCH COMPLEX ASSIGNMENT SUMMARY

UPRATED SATURN I

LV	CSM	LM	LAUNCH COMPLEX	
SA 201	009	None	34	
SA 202	011	None	34	
SA 203	NC 203	None	37B	
SA 204	NC 204	1	37B	
SA 206 (a)	NC 206	2	37B	
SA 205	101	None	34	
SA 207 (b)	(103)	None	34	
SA 208 (b)	Nosecone 208	(3)	37B	Dual
SA 209 (c)	Yes	None	34	
SA 210 (c)	Nosecone	Yes	37B	Dual
SA 211 (c)	Yes	None	34	
SA 212 (c)	Nosecone	Yes	37B	Dual

(a) If Apollo 5 is successful this mission will not be flown. SA-206 LV will be reassigned and LM-2 recycled into LM production for later assignment.

(b) Alternate Apollo Mission Hardware assignments are shown. Primary assignment of CSM 103 and LM-3 is to AS-504 or AS-503 if it is a manned mission.

(c) Since all LM and Block II CSM will be capable for flight missions on either the Uprated Saturn I or Saturn V vehicles, specific spacecraft assignments are not made for AS-209 through AS-212 due to the number of assignment alternatives which exist based on mission progress to that time. These assignments will be made as mission progress dictates.

UPRATED SATURN I WORK WEEK AND SHIFTS PLANNING

WORK WEEK PLANNING

SA 204, SA 206, SA 205, SA 207 and SA 208 launch vehicle stage operations from start of stage checkout through the first space vehicle integrated test will be planned on a five (5) day work week with limited overtime.

SA 204/LM-1, SA 206/LM-2 and SA 205/CSM 101 launch vehicle stage operations from first space vehicle integrated test through launch will be planned on a six (6) day work week. However, on SA 204 and SA 206 scheduling constraints may necessitate rescheduling and/or rerunning major tests on the weekend.

SA 207/CSM 103 launch vehicle operations from first space vehicle integrated test through launch will be planned on a six (6) day work week.

SA 208/LM-3 launch vehicle operations from first space vehicle integrated test through launch will be planned on a five (5) day work week.

SA 209 through SA 212 launch vehicle operations from start of stage checkout through launch will be planned on a five (5) day work week.

SA 204/LM-1 and SA 206/LM-2 spacecraft operations from spacecraft mechanical mate with launch vehicle through the first space vehicle integrated test will be planned on a seven (7) day work week. Spacecraft operations from first space vehicle integrated test through launch will be planned on an alternating six (6) and seven (7) day work week.

SA 205/CSM 101 and SA 207/CSM 103 spacecraft operations from spacecraft mechanical mate with launch vehicle through launch will be planned on a six (6) day work week.

SA 209 through SA 212 CSM and LM spacecraft operations from spacecraft mechanical mate with launch vehicle through launch will be planned on a five (5) day work week.

Activation and launch operations will be planned as specified above. Activation and launch operations activities critical to achieving schedule objectives, that can be accomplished by a small crew, in comparison to the contractor's total activation/launch crew, will be planned on an around-the-clock basis including weekends as required. Examples of such type activities are:

a. Vehicle Erection
b. Stage Propulsion Checks
c. Hypergolic Tanking
d. Ordnance Installations
e. Certain Refurbishments
f. RP-1 Tanking
g. GSE Modifications
h. Any individual stage contractor work prior to launch vehicle electrical mate

Operational planning should be based on not scheduling major integrated tests to be performed on two launch vehicles on the same day.

WORK SHIFTS PLANNING

Major tests will be initiated on first shift. (A work shift is to be considered as eight (8) working hours.) Examples of major tests are: Plugs In Test, Plugs Out Test, Simulated Flight Test, Countdown Demonstration Test, Flight Readiness Test.

Specifically, a major test may be defined as a test involving at least two or more stages and multiple systems. Overrun of major test into the next shift will be accomplished by overtime for those personnel required to maintain test continuity with remaining support being provided by normal second shift personnel.

Major tests will not normally be conducted on weekends; however, real time scheduling constraints may necessitate rescheduling and/or rerunning a major test on the weekend. Minor tests, test set-ups, maintenance and test evaluation will normally be planned for second shift. Specifically, a minor test may be defined as independent stage checks and other tests that may involve two or more stage contractors but are limited to small portions of the stage contractors' test crew.

Third shift work will normally be limited to power off modifications, minor trouble-shooting and maintenance.

APOLLO SATURN V WORK WEEK AND SHIFTS PLANNING

WORK WEEK PLANNING

AS 502 and AS 504 through AS 515 launch vehicle stage operations from start of stage checkout through the first space vehicle integrated test will be planned on a five (5) day work week.

AS 503 launch vehicle stage operations from start of stage checkout through launch will be planned on a six (6) day work week.

AS 502 and AS 504 through AS 509 launch vehicle stage operations from first space vehicle integrated test through launch will be planned on a six (6) day work week.

AS 510 through AS 515 launch vehicle stage operations from first space vehicle integrated test through launch will be planned on a five (5) day work week.

AS 502/CMS 020-LTA spacecraft operations from spacecraft erection through launch will be planned on a six (6) day work week for CSM and fice (5) day work week for LTA.

AS 503/BP-30/LTA spacecraft operations from spacecraft erection through launch will be planned on a five (5) day work week.

AS 503 or AS 504/CSM 103-LM 3 and AS 504 or AS 505/CSM 104-LM 4 spacecraft operations from spacecraft erection through launch will be planned on an alternating six (6) and seven (7) day work week.

AS 505 or 506/CSM 106-LM 5 through AS 509/CSM and LM spacecraft operations from spacecraft erection through launch will be planned on a six (6) day work week.

AS 510 through AS 515 CSM and LM spacecraft operations from spacecraft erection through launch will be planned on a five (5) day work week.

Activation and launch operations activities critical to achieving schedule objectives, that can be accomplished by a small crew, in comparison to the contractors' total activation/launch crew, will be planned on an around-the-clock basis including weekends as required. Examples of such type activities are:

a. Vehicle Erection
b. Stage Propulsion Checks
c. Hypergolic Tanking
d. Ordnance Installations
e. Certain Refurbishments
f. RP-1 Tanking
g. GSE Modifications
h. Any individual stage contractor work prior to launch vehicle electrical mate

Operational planning should be based on not scheduling major integrated tests to be performed on two launch vehicles on the same day.

WORK SHIFTS PLANNING

Major tests will be initiated on first shift. (A work shift is to be considered as eight (8) working hours.) Examples of major tests are: Plugs In Test, Plugs Out Test, Simulated Flight Test, Countdown Demonstration Test, Flight Readiness Test.

Specifically, a major test may be defined as a test involving at least two or more stages and multiple systems. Overrun of major test into the next shift will be accomplished by overtime for personnel required to maintain test continuity with remaining support being provided by normal second shift personnel.

Major tests will not normally be conducted on weekends; however, real time scheduling constraints may necessitate rescheduling and/or rerunning a major test on the weekend.

Minor test, test set-ups, maintenance and test evaluation will normally be planned for second shift. Specifically, a minor test may be defined as independent stage checks and other tests that may involve two or more stage contractors but are limited to small portions of the stage contractors test crew.

Third shift work will normally be limited to power off modifications, minor trouble-shooting and maintenance.

KSC CONTROLLED MILESTONES

The controlled milestones shown in this attachment represent specific events or groups of tasks that must be accomplished by the responsible KSC Director, in order that KSC may meet the Apollo Launch Schedules and complex/facility activation operational ready dates as specified by OMSF. The controlled milestone dates shown herein represent the earliest requirement and may be rescheduled as mission, vehicle and facility assignments are further defined.

KSC Directors are responsible for meeting the controlled milestone schedules that are within their management responsibility. Changes to schedules of controlled milestones will require approval of the Apollo Program Manager prior to implementation of the change. Approval for changes to controlled milestone schedules may be obtained from the Apollo Program Manager, by submitting sufficient information for evaluation by the Apollo Program Manager. The requested change must indicate the proposed schedule, the reason for the proposed change and the estimated program impact.

KSC Directors are responsible for developing and maintaining detailed schedules which include all activities that must be accomplished (to satisfy the intent of the controlled milestone), prior to completion and closeout of the controlled milestone. The controlled milestones shown in this attachment that are concerned with complex modifications, activation, and refurbishment activities shall be defined as the scheduled completion date for the last work element in a possible series of work tasks that must all be completed prior to satisfying the intent of the controlled milestone. Required completion dates for specific ECP modifications, complex activation projects, and refurbishment work tasks, shall be in accordance with the DLO modification and refurbishment tracking and control system. Required completion dates for specific LC-39 Site Activation Projects (systems and subsystems), shall be in accordance with the requirements as established by the Site Activation Board.

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KSC CONTROLLED MILESTONES

LUNAR TEST ARTICLE/LUNAR MODULE PROCESSING

THROUGH KSC INDUSTRIAL AREA

MILESTONES / SPACECRAFT	READY TO RECEIVE AT KSC	MOVE TO ALT. CHAMBER	COMPLETE COMB. SUB. SYS. TEST	COMPLETE UNMANNED ALT. RUN #1	COMPLETE CM-LM MECH. DOCKING TEST	READY TO MATE WITH LV
LTA-2						12-8-67
LTA-B	12-30-67					1-6-67
LM-2	1-30-68	(COMPLETE MISSION SIMULATION - PLUGS IN BY 3-1-68)				3-19-68
LM-3	4-6-68	4-22-68	5-10-68	5-31-68	6-6-68	7-9-68
LM-4	6-6-68	6-22-68	7-10-68	7-30-68	8-12-68	9-13-68
LM-5	8-12-68	8-30-68		9-24-68	10-8-68	11-15-68
LM-6	11-1-68	11-20-68		12-13-68	12-27-68	2-4-69
LM-7	1-17-69	2-5-69		2-28-69	3-14-69	4-22-69
LM-9	4-4-69	4-23-69		5-16-69	5-30-69	7-8-69
LM-10	6-20-69	7-9-69		8-1-69	8-15-69	9-23-69
LM-11	9-8-69	9-26-69		10-20-69	11-3-69	12-11-69
LM-12	12-18-69	1-6-70		1-29-70	2-12-70	3-24-70
LM-13	3-19-70	4-7-70		4-30-70	5-14-70	6-22-70
LM-14	6-18-70	7-7-70		7-30-70	8-13-70	9-21-70
LM-15	10-1-70	10-20-70		11-12-70	11-26-70	1-4-71

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ATTACHMENT "C"

KSC CONTROLLED MILESTONES

COMMAND SERVICE MODULE PROCESSING

THROUGH KSC INDUSTRIAL AREA

MILESTONES / SPACECRAFT	READY TO RECEIVE AT KSC	COMP. CM-LM/AS MECH. DKG TEST	COMP. UNMANNED ALT. RUN	COMP. MANNED ALT. RUN #1	READY TO MATE WITH LV
CSM-020	11-22-67				12-8-67
BP-30	12-30-67				1-6-68
CSM-101	3-15-68		4-29-68		5-24-68
CSM-103	5-22-68	6-6-68		6-19-68	7-9-68
CSM-104	7-28-68	8-12-68		8-23-68	9-13-68
CSM-106	9-24-68	10-8-68		10-23-68	11-15-68
CSM-107	12-13-68	12-27-68		1-11-69	2-4-69
CSM-108	2-1-69	3-14-69		3-29-69	4-22-69
CSM-110	5-16-69	5-30-69		6-14-69	7-8-69
CSM-111	8-1-69	8-15-69		8-30-69	9-23-69
CSM-112	10-20-69	11-3-69		11-18-69	12-11-69
CSM-113	1-29-70	2-12-70		2-28-70	3-24-70
CSM-114	4-30-70	5-14-70		5-29-70	6-22-70
CSM-115A	7-30-70	8-13-70		8-28-70	9-21-70
CSM-116	11-12-70	11-26-70		12-11-70	1-4-71
SM-102	12-1-67	(COMPLETE STATIC FIRING - JANUARY 15, 1968; DATA EVALUATION COMPLETE - FEBRUARY 1, 1968)			

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KSC CONTROLLED MILESTONES

LAUNCH VEHICLE & SPACE VEHICLE PROCESSING

LC-39

MILESTONES / LV & SC	RECEIVE LV STAGES	LV ELECT. MATE	LV OAT-1	ERECT S/C	SV ELECT. MATE	MOVE TO PAD	SC POWER ON	SV FRT	START CDDT	LAUNCH
AS 502/CSM 020/LTA	COMPLETE	COMPLETE	12-14-67	12-9-67	1-4-68	1-24-68	2-5-68	2-15-68	2-26-68	3-4-68
AS 503/BP-30/LTA	12-30-67	1-30-68	2-23-68	1-7-68		3-19-68		4-3-68	4-12-68	4-23-68
*AS 503/CSM 103-LM 3	12-30-67	1-30-68	2-23-68	7-10-68	7-24-68	8-14-68	8-22-68	9-13-68	9-25-68	10-3-68
AS 504/CSM 103-LM 3	4-15-68	5-17-68	6-12-68	7-10-68	7-24-68	8-14-68	8-22-68	9-13-68	9-25-68	10-3-68
AS 505/CSM 104-LM 4	6-30-68	7-30-68	8-19-68	9-18-68	10-2-68	10-23-68	10-31-68	11-22-68	12-4-68	12-12-68
AS 506/CSM 106-LM 5	9-30-68	11-1-68	11-27-68	11-18-68	12-2-68	12-23-68	1-2-69	1-24-69	2-5-69	2-14-69
AS 507/CSM 107-LM 6	11-30-68	1-3-69	1-24-69	2-5-69	2-19-69	3-12-69	3-20-69	4-11-69	4-23-69	5-1-69
AS 508/CSM & LM	1-31-69	3-14-69	4-9-69	4-23-69	5-7-69	5-28-69	6-5-69	6-27-69	7-9-69	7-16-69
AS 509/CSM & LM	3-31-69	5-2-69	5-28-69	7-9-69	7-23-69	8-13-69	8-21-69	9-12-69	9-24-69	10-1-69
AS 510/CSM & LM	5-31-69	7-7-69	7-31-69	9-24-69	10-8-69	10-29-69	11-6-69	11-28-69	12-10-69	12-17-69
AS 511/CSM & LM	7-31-69	9-11-69	10-7-69	12-12-69	12-30-69	1-21-70	1-29-70	2-20-70	3-4-70	3-11-70
AS 512/CSM & LM	11-30-69	1-12-70	2-5-70	3-25-70	4-8-70	4-29-70	5-7-70	5-29-70	6-10-70	6-17-70
AS 513/CSM & LM	3-31-70	5-12-70	6-5-70	6-23-70	7-8-70	7-29-70	8-6-70	8-28-70	9-9-70	9-16-70
AS 514/CSM & LM	7-31-70	9-7-70	10-1-70	9-22-70	10-6-70	10-27-70	11-4-70	11-27-70	12-9-70	12-16-70
AS 515/CSM & LM	12-1-70	12-23-70	1-15-71	1-5-71	1-19-71	2-4-71	2-9-71	2-26-71	3-10-71	3-17-71

*ALTERNATE SCHEDULE IF AS-503 UNMANNED IS NOT REQUIRED.

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ATTACHMENT "C"

KSC CONTROLLED MILESTONES
LAUNCH VEHICLE AND SPACE VEHICLE PROCESSING
LC-34/37

		RECEIVE LV STAGES	LV ELECT MATE	LV OAT-1	ERECT S/C	SV ELECT. MATE	SV FRT	START CDDT	LAUNCH
	AS-204/LM-1				11-19-67	12-5-67	12-21-67	1-10-68	1-16-68
	*AS-206/LM-2	1-30-68	3-14-68	4-4-68	3-19-68	4-8-68	4-29-68	4-22-68	5-15-68
	**AS-205/CSM101	3-15-68	4-5-68	5-24-68	5-24-68	6-12-68	7-5-68	6-24-68	7-17-68
*** DUAL	AS-207/CSM103	7-31-68	8-21-68	9-25-68	9-17-68	10-3-68	10-15-68	10-27-68	11-1-68
	AS-208/LM-3	6-29-68	7-22-68	8-26-68	9-13-68	9-30-68	10-8-68	10-23-68	11-2-68
*** DUAL	AS-209/CSM	10-31-68	12-2-68	1-8-69	12-26-68	1-14-69	1-27-69	2-8-69	2-14-69
	AS-210/LM	10-31-68	12-4-68	1-10-69	1-3-69	1-20-69	1-28-69	2-9-69	2-15-69
*** DUAL	AS-211/CSM	1-31-69	3-12-69	4-14-69	4-2-69	4-16-69	4-28-69	5-10-69	5-15-69
	AS-212/LM	1-31-69	3-14-69	4-18-69	4-4-69	4-21-69	4-29-69	5-11-69	5-16-69

* IF APOLLO 5 (AS-204/LM-1) IS SUCCESSFUL THIS MISSION WILL NOT BE FLOWN.

** IF THE AS-206/LM-2 MISSION IS REQUIRED, THE CONTROLLED MILESTONES FOR AS-205/CSM101 WILL BE RESCHEDULED APPROXIMATELY 2 MONTHS LATER.

*** THE DUAL MISSIONS ARE ALTERNATE APOLLO MISSIONS AND WILL NOT BE LAUNCHED IF AS503 OR AS504 IS MANNED. IF THE AS-206/LM-2 MISSION IS REQUIRED, THE CONTROL MILESTONES FOR THE DUAL MISSIONS WILL BE RESCHEDULED APPROXIMATELY 1 1/2 MONTH'S LATER.

KSC CONTROLLED MILESTONES
REFURBISHMENT/FUNCTIONAL MODIFICATIONS COMPLETE MILESTONES
LC 39

MILESTONE DESCRIPTION	RESP.	AS503 LUT 1/PAD A	AS504 LUT 2/PAD A	AS505 LUT 1/PAD B
LUT:		BP30/LTA-B	CSM 103/LM3	CSM104/LM4
- ECS REFURB & FUNCT MODIFS COMPL.	LO/DE	1-2-68	4-17-68	6-29-68
- FIREX REFURB & FUNCT MODIFS COMPL.	TS	1-2-68	4-17-68	6-29-68
- HDA'S REFURB & FUNCT MODIFS COMPL.	LO/DE	No can do. 1-2-68 ×	4-17-68	6-29-68
- TSM'S REFURB & FUNCT MODIFS COMPL.	LO/DE	" 1-2-68 ×	4-17-68	6-29-68
- SA'S REFURB & FUNCT MODIFS COMPL.	LO/DE	" 1-2-68 ×	4-17-68	6-29-68
- HYD./PNEU. REFURB & FUNCT MODIFS COMPL.	TS/LO/DE	1-2-68	4-17-68	6-29-68
S-IC GSE/ESE REFURB & FUNCT MODIFS COMPL.	LO	1-10-68	4-25-68	7-6-68
S-IVB/IU GSE/ESE REFURB & FUNCT MODIFS COMPL.	LO	1-15-68	4-30-68	7-11-68
- DAMPER REFURB & FUNCT MODIFS COMPL.	LO/DE	1-15-68	4-30-68	7-11-68
S-II GSE/ESE REFURB & FUNCT MODIFS COMPL.	LO	1-10-68	5-10-68	7-22-68
SC GSE/ESE REFURB & FUNCT MODIFS COMPL.	LO	1-21-68	7-9-68	9-17-68
- LUT PROP. SYS. REFURB & FUNCT MODIFS COMPL.	LO/DE	2-19-68	7-15-68	9-21-68

KSC CONTROLLED MILESTONES
REFURBISHMENT/FUNCTIONAL MODIFICATIONS COMPLETE MILESTONES
LC 39

MILESTONE DESCRIPTION	RESP.	AS503 LUT1 PAD A	AS504 LUT 2 PAD A	AS505 LUT 1 PAD B
PAD:		BP 30/LTA-B	CSM 103/LM3	CSM 104/LM4
- ECS REFURB/FUNCT MODIFS COMPL.	LO/DE	3-18-68	8-14-68	10-23-68
- IND WATER SYS REFURB/FUNCT MODIFS COMPL.	LO/DE	3-18-68	8-14-68	10-23-68
- PNEU. REFURB/FUNCT MODIFS COMPL.	TS/DE	3-18-68	8-14-68	10-23-68
- PROP SYS REFURB/FUNCT MODIFS COMPL.	LO/DE	3-15-68	7-15-68	9-23-68
MSS FUNCT MODIFS COMPL.	LO/TS	3-22-68	8-16-68	10-26-68
MSS SC GSE FUNCT MODIFS COMPL.	TS	3-22-68	8-16-68	10-26-68

ATTACHMENT C

KSC CONTROLLED MILESTONES
SITE ACTIVATION
FLOW THREE FACILITY
LC 39

THE LC 39 FLOW THREE FACILITY (PAD B) IS REQUIRED TO SUPPORT, AS A BACKUP PAD, THE AS503 UNMANNED MISSION. PAD B IS ALSO REQUIRED TO SUPPORT THE SECOND MANNED SATURN V MISSION. THE MANNED MISSION COULD BE AS EARLY AS AS504/CSM4/LM4 TO MEET APOLLO LAUNCH SCHEDULE - ALTERNATE NO. 1. THE FLOW THREE FACILITY IS REQUIRED TO BE OPERATIONAL READY ON MARCH 15, 1968 TO SUPPORT LAUNCH VEHICLE PROCESSING AND OPERATIONAL READY ON SEPTEMBER 30, 1968 TO SUPPORT BLOCK II CSM & LM PROCESSING.

PAD B

MILESTONE	RESPONSIBILITY	DATE
PNEUMATIC DISTRIBUTION SYSTEM TURNED OVER TO USER	DE	12-26-67
PNEUMATIC DISTRIBUTION SYSTEM OPERATIONAL (SUPPORT LUT 3)	TS	1-2-68
PROPELLANT SYSTEMS TURNED OVER TO USER	DE	1-2-68
PROPELLANT SYSTEMS OPERATIONAL	LO	3-15-68
ECS TURNED OVER TO USER	DE	1-2-68
ECS SYSTEM OPERATIONAL	LO	3-15-68
PAD/LUT INDUSTRIAL WATER TURNED OVER TO USER	DE	3-4-68
PAD/LUT INDUSTRIAL WATER OPERATIONAL	LO	3-15-68
ALL LAUNCH VEHICLE AND SUPPORT SYSTEMS REQUIRED OPERATIONAL	DE/LO	3-15-68
SC ELECTRICAL INTERFACES TURNED OVER TO USER	DE	1-25-68

PAD B (CONT'D)

MILESTONE	RESPONSIBILITY	DATE
PAD SC SYSTEMS REQUIRED OPERATIONAL (SUPPORT AS503 BP-30)	LO/TS	4-5-68
START SC SYSTEMS GSE FUNCTIONAL TESTS	LO	8-15-68
ALL SPACE VEHICLE AND SUPPORT SYSTEMS REQUIRED OPERATIONAL	LO/TS	9-30-68

KSC CONTROLLED MILESTONES
SITE ACTIVATION
LC 39

LC 39 MSS/PAD A BLOCK II CSM AND LM ACTIVATION IS REQUIRED TO SUPPORT THE FIRST SATURN V MANNED MISSION. THIS MISSION CAN BE AS EARLY AS AS503/CSM 103/LM 3 TO MEET THE APOLLO LAUNCH SCHEDULE - ALTERNATE NO. 1. THE MSS AND PAD A MUST BE OPERATIONALLY READY ON JULY 31, 1968 TO SUPPORT BLOCK II CSM AND LM PROCESSING.

MSS/PAD A BLOCK II CSM & LM ACTIVATION (ALTERNATE 1 - CSM 103/LM 3 AS503)

MILESTONE	RESPONSIBILITY	DATE
COMPLETE FACILITY MODS	DE/LO	5-7-68
COMPLETE SIGNAL VERIFICATION	LO	5-7-68
COMPLETE HYPERGOLIC FLOWS	LO	7-17-68
COMPLETE BLOCK II CSM & LM ACTIVATION	LO	7-31-68

LC 39 LUT 1/HB 1 BLOCK II CSM AND LM ACTIVATION IS REQUIRED TO SUPPORT THE FIRST SATURN V MANNED MISSION. THIS MISSION CAN BE AS EARLY AS AS503/CSM103/LM 3 TO MEET THE APOLLO LAUNCH SCHEDULE - ALTERNATE NO. 1. LUT 1 AND HB 1 MUST BE OPERATIONALLY READY ON JUNE 30, 1968 TO SUPPORT BLOCK II CSM AND LM PROCESSING.

LUT 1/HB 1 BLOCK II CSM & LM ACTIVATION (ALTERNATE 1 - CSM 103/LM 3 AS503)

COMPLETE FACILITY MODS	DE/LO	4-1-68
COMPLETE ELECTRICAL REVALIDATION	LO	4-15-68
COMPLETE BLOCK II CSM & LM ACTIVATION	LO	6-30-68

IF AS503 IS AN UNMANNED MISSION, LC 39 LUT 2/HB 3 BLOCK II CSM AND LM ACTIVATION IS REQUIRED TO SUPPORT THE FIRST SATURN V MANNED MISSION. THIS MISSION CAN BE AS EARLY AS AS504/CSM 103/LM 3 TO MEET THE APOLLO LAUNCH SCHEDULE - ALTERNATE 3. LUT 2 AND HB 3 MUST BE OPERATIONALLY READY ON AUGUST 1, 1968 TO SUPPORT BLOCK II CSM AND LM PROCESSING.

LUT 2/HB 3 BLOCK II CSM & LM ACTIVATION (ALTERNATE 3 - CSM 103/LM 3 AS504)

COMPLETE FACILITY MODS	DE/LO	5-15-68
COMPLETE ELECTRICAL REVALIDATION	LO	7-1-68
COMPLETE BLOCK II CSM & LM ACTIVATION	LO	8-1-68

KSC CONTROLLED MILESTONES
SITE ACTIVATION
THIRD LINE FACILITIES
LC 39

THE LC 39 THIRD LINE FACILITIES (ML-3, FR-3, AND VAB HIGH BAY 2) ARE REQUIRED TO SUPPORT THE THIRD SATURN V MANNED MISSION. THIS MISSION CAN BE AS EARLY AS AS505/CSM 106/LM 5 TO MEET THE APOLLO LAUNCH SCHEDULE - ALTERNATE NO. 1. ALL THIRD LINE FACILITIES ARE REQUIRED TO BE OPERATIONAL READY ON JUNE 30, 1968, TO SUPPORT LAUNCH VEHICLE PROCESSING AND OPERATIONAL READY ON SEPTEMBER 30, 1968, TO SUPPORT BLOCK II CSM AND LM PROCESSING.

LUT 3	RESPONSIBILITY	DATE
– PNEUMATIC DISTRIBUTION SYSTEM TURNED OVER TO USER	DE	2-19-68
PNEUMATIC DISTRIBUTION SYSTEM OPERATIONAL	LO	4-1-68
– PROPELLANT SYSTEMS TURNED OVER TO USER	DE	2-19-68
PROPELLANT SYSTEMS OPERATIONAL	LO	4-1-68
– SERVICE ARMS TURNED OVER TO USER (MODIFY ARMS AFTER DELIVERY)	DE	2-5-68
– SERVICE ARMS TURNED OVER TO USER (MODIFY ARMS BEFORE DELIVERY)	DE	4-1-68
SERVICE ARMS OPERATIONAL (PARTIAL VALIDATION)	LO	6-30-68
– COMPLETE DELIVERY OF MODIFICATION INSTRUCTION PACKAGES (ENGINEERING) TO INSTALLATION AGENCY	DE	4-1-68
ESE PANELS AND ASSOCIATED CABLES INSTALLED	LO	4-1-68
– ELECTRICAL AND POWER SUPPLY DISTRIBUTION SYSTEMS TURNED OVER TO USER	DE	4-1-68

LUT 3 (CONT'D)	RESPONSIBILITY	DATE
- OIS TURNED OVER TO USER	DE	4-1-68
- OTV SYSTEM TURNED OVER TO USER	DE	4-1-68
- STAGE GSE AND ASSOCIATED PNEUMATIC AND FLUID LINES TURNED OVER TO USER	DE	4-1-68
STAGE GSE OPERATIONAL	LO	6-30-68
COMPUTER, DDAS AND COUNTCLOCK OPERATIONAL	LO	4-22-68
- TURN OVER ALL SYSTEMS TO O & M CONTRACTORS	DE	6-10-68
ALL LAUNCH VEHICLE AND SUPPORT SYSTEMS REQUIRED OPERATIONAL	LO/TS	6-30-68
- ACE SYSTEM INTERFACES TURNED OVER TO USER	DE	5-15-68
WATER GLYCOL TURNED OVER TO USER	DE/LO	6-15-68
START SC SYSTEMS GSE FUNCTIONAL TESTS	LO	8-26-68
ALL SPACE VEHICLE AND SUPPORT SYSTEMS REQUIRED OPERATIONAL	LO/TS	9-30-68

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KSC CONTROLLED MILESTONES
SITE ACTIVATION
THIRD LINE FACILITIES
LC 39

FIRING ROOM 3

MILESTONE		RESPONSIBILITY	DATE
PROPELLANT ESE TURNED OVER TO USER		DE	2-15-68
PROPELLANT SYSTEM OPERATIONAL	Work Around Due to meters may be Reqd.	LO	4-1-68
DC POWER SUPPLY TURNED OVER TO USER		DE	3-20-68
DC POWER SUPPLY OPERATIONAL		LO	4-1-68
STAGE ESE PANELS AND INTERCONNECT INSTALLED		DE/LO	4-1-68
OTS TURNED OVER TO USER (OPERATIONAL)	Acceleration Reqd - 50K	DE	4-1-68
OTV SYSTEM TURNED OVER TO USER	Acceleration Reqd. 50K	DE	4-1-68
MEASURING STATION TURNED OVER TO USER	Acceleration Reqd - 25K	DE	4-3-68
MEASURING STATION OPERATIONAL		LO	4-23-68
COMPUTER, DDAS AND COUNTCLOCK OPERATIONAL		LO	4-22-68
START STAGE ESE GETS		LO	5-1-68
ALL LAUNCH VEHICLE AND SUPPORT SYSTEMS REQUIRED OPERATIONAL		LO	6-30-68

ATTACHMENT C

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KSC CONTROLLED MILESTONES
SITE ACTIVATION
THIRD LINE FACILITIES
LC 39

HIGH BAY 2

MILESTONE	RESPONSIBILITY	DATE
HB2. CABLING TO LUT INTERFACES REQUIRED AVAILABLE	DE	4-1-68
OIS TURNED OVER TO USER	DE	4-1-68
ACCESS CRAWLERWAY MODIFICATIONS COMPLETE	DE	4-15-68
BASIC CONSTRUCTION AND OUTFITTING COMPLETE	DE	4-15-68
PNEUMATIC DISTRIBUTION SYSTEM INTERFACES AVAILABLE TO USER	DE	4-1-68
PNEUMATIC DISTRIBUTION SYSTEM OPERATIONAL	TS	4-15-68
HB READY TO RECEIVE LUT	DE/TS	4-15-68
SYSTEMS REQUIRED TO SUPPORT FR 3/LUT 3 GETS	LO	4-30-68
ALL LAUNCH VEHICLE AND SUPPORT SYSTEMS REQUIRED OPERATIONAL	LO/TS	6-30-68
√ CABLING TO SC SYSTEMS REQUIRED AVAILABLE	DE	5-15-68
WATER GLYCOL TURNED OVER TO USER	DE	6-15-68
START SC SYSTEMS GSE FUNCTIONAL TESTS	LO	8-26-68
ALL SPACE VEHICLE AND SUPPORT SYSTEMS REQUIRED OPERATIONAL	LO/TS	9-30-68

KSC CONTROLLED MILESTONES
COMPLEX 34/37 MODIFICATION AND SITE ACTIVATION

COMPLEX 34

MILESTONES	RESPONSIBILITY	VEHICLE EFFECTIVITY & SCHEDULED DATE		
		AS-205/CSM 101	AS-207/CSM 103	AS-209/CSM
COMPLETE LC-34 ELECT. CABLE REHABILITATION (LCC only)	DE/LO/TS	JAN 15,1968		
COMPLETE ALL FACILITY MODS FOR LV AND SUPPORT SYSTEMS	DE/TS	FEB 15,1968	JULY 24,1968	NOV 7,1968
COMPLETE STAGE GSE/ESE MODS AND FUNCTIONAL TESTING	LO	MAR 7,1968	AUG 1,1968	NOV 15,1968
COMPLETE APOLLO ACCESS ARM AND ENVIRONMENTAL CHAMBER MODS, INSTALLATION AND TURN OVER TO USER	DE	FEB 15,1968		
COMPLETE FUNCTIONAL TESTING AND VALIDATION OF APOLLO ACCESS ARM	LO	MAR 15,1968		
COMPLETE ALL FACILITY MODS FOR SC GSE AND SUPPORT SYSTEMS	DE/TS	FEB 1,1968	SEPT 1,1968	DEC 1,1968
COMPLETE INSTALLATION OF LC-34 SLIDEWIRE	DE	MAR 15,1968		
BLOCK II, CSM GSE OPERATIONAL	LO	APR 1,1968	SEPT 7,1968	DEC 15,1968

[redacted]

KSC CONTROLLED MILESTONES
COMPLEX 34/37 MODIFICATION AND SITE ACTIVATION

COMPLEX 37

MILESTONE	RESPONSIBILITY	VEHICLE EFFECTIVITY AND SCHEDULED DATE			
		AS204/LM-1	AS206/LM-2	AS208/LM3	AS210/LM-4
COMPLETE ALL FACILITY MODS FOR LV AND SUPPORT SYSTEMS	DE/TS	DEC 13, 1968	FEB 15,1968	JUL 1,1968	NOV 15,1968
COMPLETE ALL STAGE GSE/ESE MODS AND FUNCTIONAL TESTING	LO	DEC 15,1968	MAR 1,1968	JUL 15,1968	DEC 1,1968
COMPLETE ALL FACILITY MODS. FOR SC GSE AND SUPPORT SYSTEMS	DE/TS		MAR 1,1968	AUG 15,1968	DEC1,1968
LM GSE OPERATIONAL TO SUPPORT A LM DEVELOPMENT OR OPERATIONS MISSION	LO	NOV 20,1968	MAR 18,1968	SEPT 1,1968	DEC 15,1968

ATTACHMENT C

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KSC Controlled Milestones
Site Activation and Modifications
Spacecraft Checkout Facilities
KSC Industrial Area

Milestone	Responsibility	Schedule Date
Integrated Test Area Operational Ready to support CSM 101	DE/LO	February 1, 1968
CSM Chamber (East) Operational Ready to support CSM 101	DE/LO	February 15, 1968
High Gain Antenna Operational Ready to support CSM 101	DE/LO	February 1, 1968
LM Altitude Chamber Operational Ready to support LM-3	DE/LO	February 15, 1968
All Industrial Area Facilities Operational Ready to support LM-2	DE/LO	February 1, 1968
Complex 16 Operational Ready to support SM 102 Static Firing Tests	DE/LO	November 30, 1967
Complex 16 Acoustic Modification Complete	DE	December 15, 1967
Industrial Area and LC-34/37 OIS 2-wire to 4-wire conversion complete and operational	DE/TS	March 15, 1968

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(This page unclassified.)

KSC APOLLO PROGRAM DIRECTIVE NUMBER 4C

DRAFT

KSC Apollo Program
Scheduling Planning Guidelines and Requirements

dated

31 May 1968

Group 4
Downgraded at 3 year intervals;
Declassified at 12 years.

~~CONFIDENTIAL~~
(This page unclassified.)

Kennedy Space Center Date:
APOLLO PROGRAM DIRECTIVE

KSC APOLLO PROGRAM DIRECTIVE NO. 4C

FROM: _____
Apollo Program Manager

TO: Distribution

SUBJECT: KSC APOLLO PROGRAM SCHEDULE, PLANNING GUIDELINES AND REQUIREMENTS

ACTION: All KSC organizations are to implement the requirements of this Directive effective with the issuance date and on a continuing basis.

REFERENCE:

A. OMSF Apollo Program Directive No. 4I dated May 20, 1968.

B. KSC Apollo Program Directive No. 4B (Interim), dated May 3, 1967.

C. Apollo Flight Mission Assignment Document (latest issue).

I. PURPOSE

This Directive defines: 1) Official KSC Apollo/Saturn Program Schedule Planning Guidelines and 2) Those interface requirements that have been identified as constraints to the implementation by KSC of OMSF Apollo Program Directive Schedules. This revision supersedes KSC Apollo Program Directive No. 4B (Interim), dated May 3, 1967.

II. GUIDELINES

This Directive is based on: 1) The processing of Saturn V Launch vehicles at Launch Complex 39 will establish the earliest KSC

facilities use dates; 2) The manned AS-503 flight (KSC basic plan); 3) The use of dual launches to continue Apollo testing (KSC Contingency plan) in the event that the Saturn V cannot be man rated as scheduled.

Each Directorate will be responsible for programming its "in house" activities to support an accelerated launch schedule if it is determined that AS-503 cannot be man rated. Therefore, wherever possible, KSC designed Ground Support Equipment Modification planning should be predicated on user need dates accelerated up to 30 days in advance of the launch schedule outlined in Attachment C.

III. SCOPE

Attachments A-1 through A-5 provide narrative summaries and master schedules for a basic and contingency plan to achieve KSC objectives as defined by reference A.

Attachments B-1 through B-3 provide summary flow plans for the AS-205 (M), AS-503 (M), and AS-504 (M) missions as defined above. These plans are approved KSC Apollo Program Manager Mission Schedules that define KSC planning milestones and space vehicle processing requirements. The KSC Apollo Program Manager will release revised summary flow plans if major changes

occur.

Attachment C is a matrix of the major or key program events at KSC which have been designated KSC Schedule Milestones or OMSF Apollo Program Controlled Milestones.

- The OMSF Controlled Milestones (hardware on dock dates and launch dates) have been adjusted by KSC as required to coincide with the KSC capability to receive, process and launch hardware, i.e. the LV on dock dates have been adjusted by KSC to accommodate Launch Vehicle "on dock" and erection on a refurbished LUT.

- The facility assignments have been made by KSC and reflect the current KSC plan to use LC-39B for one planned launch while continuing to use Pad A as the main launch facility. Pad B will be used to revalidate the MSS and be maintained in a condition of readiness to support further launches if Pad A suffers damage sufficient to impact the present launch schedule. LUT's, Hi-Bays and Firing Rooms will be utilized in a "round-robin" fashion after the Third Line is activated.

- The mission assignments of CSM and LM after AS-509 have not been made due to the number of assignment alternatives. All assignments will be made by the Apollo Program Director

as mission progress dictates at a later date.

Attachment D-1 through D-7 provides a summary matrix of KSC Operational Ready Dates and KSC schedule milestones required to support the AS-205 (M), AS-503 (M), AS-504 (M) and AS-505 (M) missions.

Attachment E provides an integrated schedule of KSC space vehicle operations for the AS-205 (M), AS-503 (M), AS-504 (M) and AS-505 (M) missions with specific facility activation milestones assigned to missions as applicable.

Attachment F-1, F-2 and F-3 is a planning guideline for the work week and shift planning of the KSC Apollo/Saturn Program.

IV. RESPONSIBILITIES

Each KSC (Director) organization is responsible for the implementation of this Directive. Each Directorate will: 1) Notify the Apollo Program Manager immediately whenever a situation exists that will potentially impact established planning milestones, and 2) Request changes to those milestones encompassed within their management responsibilities as indicated by their internal schedule position.

Each KSC (Directorate) organization is responsible for the imple-

mentation of such specific lower tier schedules as required to demonstrate the capability to achieve these planning milestones. In the event that a planning milestone is not met, the responsible Directorate will provide the Apollo Program Manager with a revised lower tier schedule from the affected planning milestone through launch.

V. FREQUENCY

This document will be updated monthly or more frequently if major changes occur.

Attachments:

A. KSC Planning

B. Vehicle Summary Flow Plans

C. KSC Operations Planning

D. KSC Site Activation Summary

E. KSC Activation and Operations Schedule

F. Apollo/Saturn Work Week and Shift Planning

KSC PLANNING

KSC will activate and maintain the following facilities as required to insure the continuation of the Apollo Saturn Program.

- Spacecraft Industrial Area - MILA

  The Spacecraft Industrial Area will have a capability to check out Apollo Spacecraft as required to meet program schedules.

- LC-34

  Launch Complex 34 Block 1 CSM and Saturn 1B requirements have been completed; Block II CSM capability will be required to support the first manned launch (CSM 101).

- LC-37

  Launch Complex 37 will require a LM and Saturn 1B capability to support either a dual launch in the event that the Saturn V cannot be manrated and/or AAP follow on.

- LC-39

  Launch Complex 39 requires a Block II CSM, LM and Saturn V capability. The following specific facilities at LC-39 will be required to insure LC-39 capability to process the Apollo Saturn vehicles in accordance with program requirements.

LAUNCH COMPLEX 39 HARDWARE ASSIGNMENT

HARDWARE DESCRIPTION	QUANTITY	REMARKS
High Bays	4	(1) Not Equipped
Low Bay		
S-II Cells	4	(2) Not Equipped
S-IVB Cells	4	(2) Not Equipped
Firing Rooms	4	(1) Not Equipped
Crawlers	2	
LUTs	3	
MSS	1	
Pads	2	

KSC Apollo Program Directive No. 4C is based on the basic plan to transfer manned flight from Saturn 1B to Saturn V as soon as the Saturn V is ready for manned missions. The earliest transfer point is following the Apollo 7 (AS-205/CSM 101) mission

The successful Apollo 5 (SA-204/LM-1) mission provided a basis for cancelling the second unmanned LM mission (SA-206/LM-2). The successful Apollo 4 mission and the assessment of the Apollo 6 anomalies have resulted in a decision to prepare for a manned AS-503 mission while protecting the option to fly an unmanned AS-503 if testing and analysis during the next several weeks relative to the Apollo 6 anomalies should

indicate that an unmanned mission is required. Program changes resulting from the Apollo 6 mission evaluation are to be implemented as approved.

KSC Apollo Program Directive No. 4C presents a basic and contingency plan for accomplishing KSC Apollo Saturn program objectives. The basic plan assumes continued success of the Apollo Saturn program while the contingency plan provides for dual launch capability to continue the Apollo Program if the man rating of the Saturn V is delayed.

KSC BASIC PLAN

The KSC baseline plan provides for an AS-503 manned flight. Accordingly, the following schedule guidelines are established:

1. AS-205/CSM-101, the final Saturn 1B, will be launched from LC-34 in mid September, 1968.
2. AS-503/CSM-103/LM-3 will be launched from LC-39A in late November, 1968.
3. AS-504/CSM-104/LM-4 will be launched from LC-39B in late January, 1969. AS-504 will be the earliest planned launch off LC-39B.
4. Subsequent Saturn V missions will be launched at 2.5 month intervals through AS-509 and at 3 month intervals thereafter.

KSC CONTINGENCY PLAN

Dual Saturn 1B launches (AS-206 through AS-212) will be flown only in the event the transfer of manned flights from Saturn 1B is delayed because the Saturn V cannot be man rated as planned. Planning, hardware, and software development must be accomplished to support the earliest working launch schedule of early January, 1969. Operational Ready Dates for LC-34 and LC-37B to support a manned Saturn 1B/CSM/LM dual mission will be established and sufficient fixed equipment will be provided to maintain the LC-34 and LC-37 operational capabilities. This capability will be retained as required by Apollo and thereafter by the AAP Program.

To provide for this eventuality, KSC will maintain Launch Complexes 34 and 37B in readiness to support CSM/LM Mission Operations in accordance with the following ground rules:

1. Earliest potential dual launch will be January, 1969.
2. Any program actions or work not yet underway but required prior to June 4, 1968 to meet this January, 1969 launch date will be submitted immediately to the Apollo Program Director for a "go-ahead" decision.
3. The June 4, 1968 MSF review is planned to result in firm detailed guidelines regarding future Apollo planning for dual Saturn 1B launches.

4. The capability for dual launches will be maintained until after the successful AS-504 launch.

5. The next Saturn V launch will be three months after the dual launch.

4 YEARS

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KSC BASIC PLAN

MILESTONES	1968	1969	1970	1971
	J F M A M J J A S O N D	J F M A M J J A S O N D	J F M A M J J A S O N D	J F M A M J J A S O N D
SATURN 1B				
• CSM OPS	205 (M)			
SATURN V				
• CSM/LM OPS	503 (M)			
• LUNAR MISSION DEVELOPMENT		504 (M)		
• LUNAR MISSION SIMS & MISSIONS		505 (M), 506 (M), 507 (M), 508 (M)	509 (M), 510 (M), 511 (M), 512 (M)	513 (M), 514 (M), 515 (M)

NOTES:

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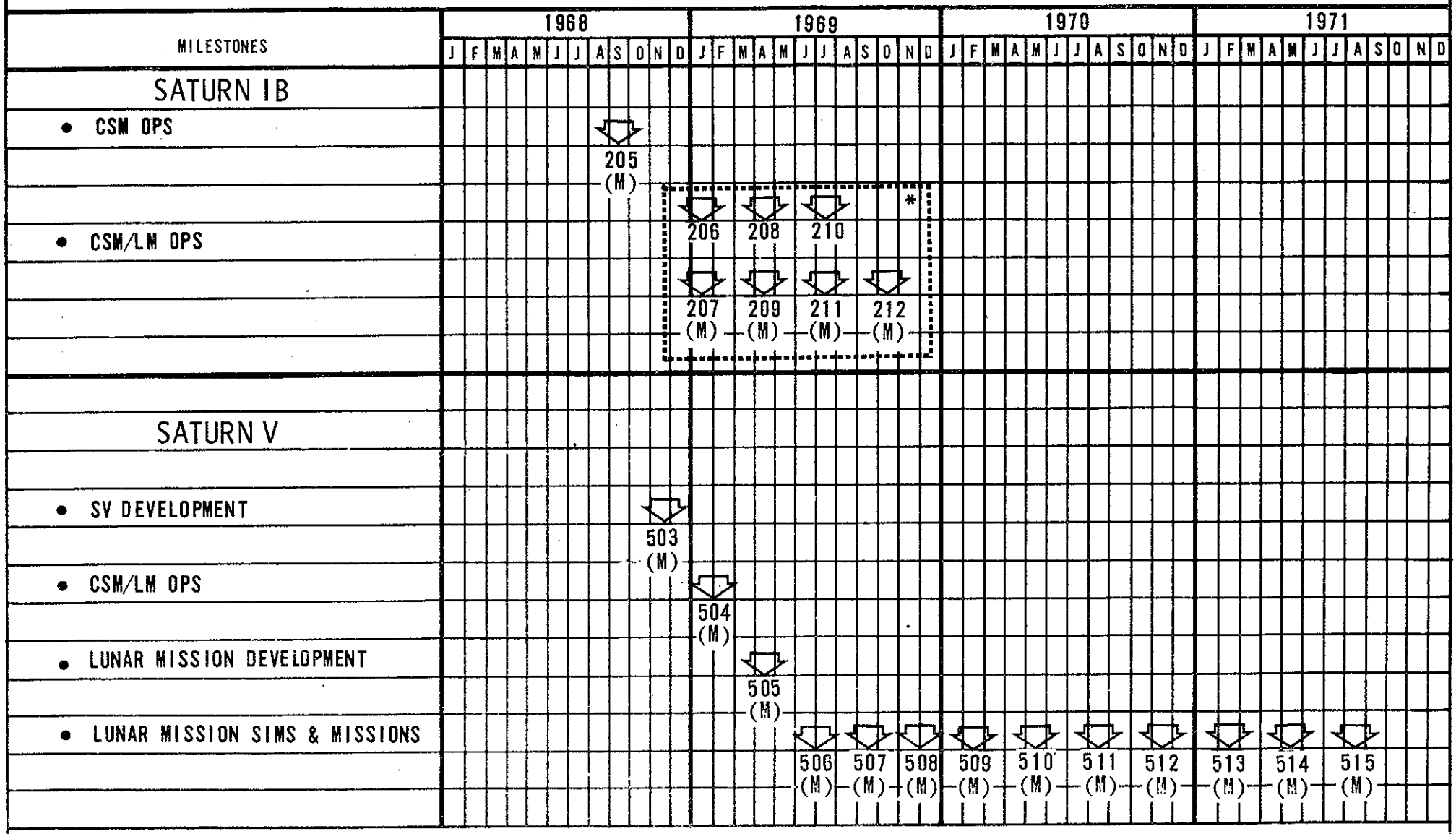
KSC CONTINGENCY PLAN



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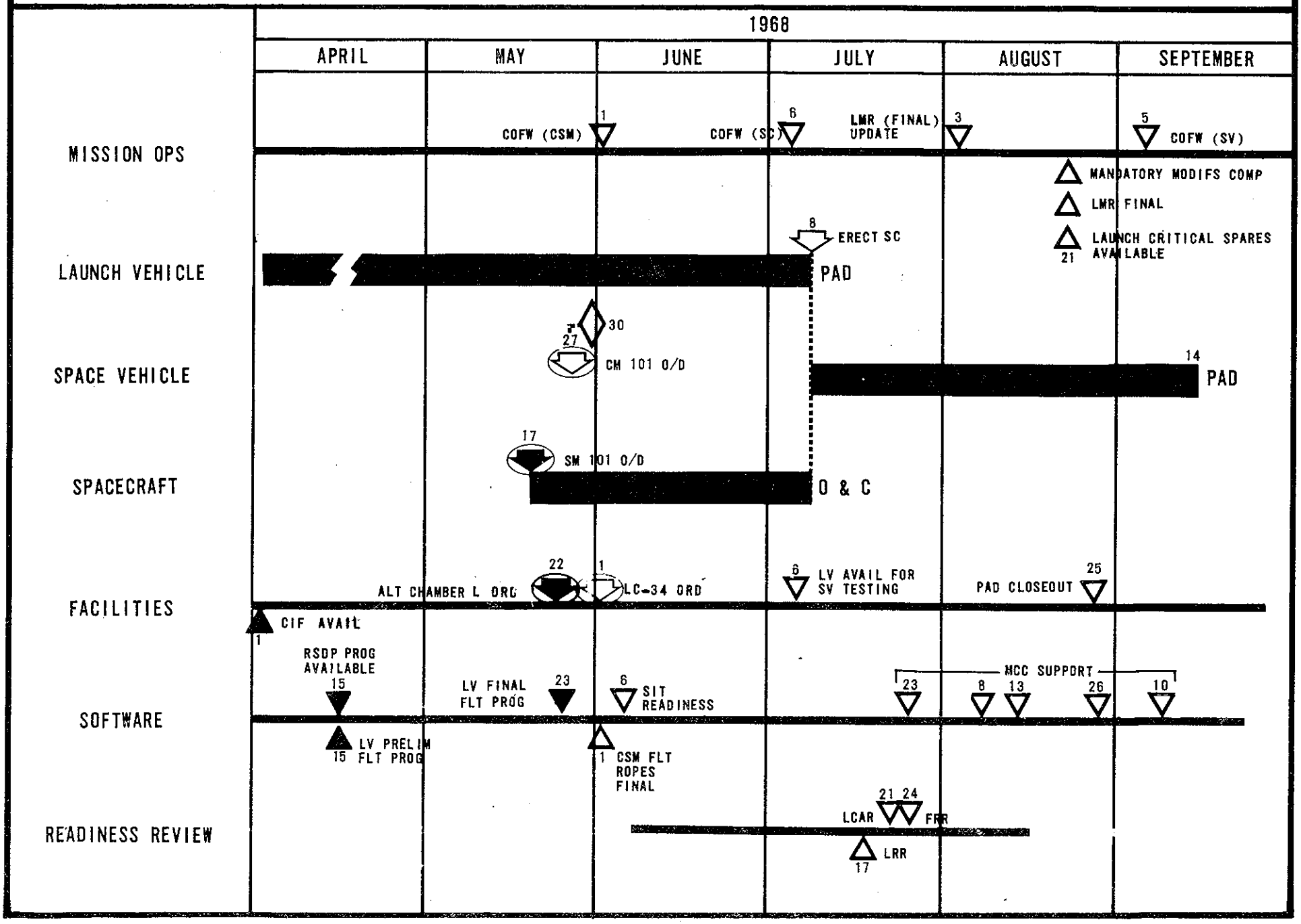
AS 205/CSM 101 SUMMARY SCHEDULE



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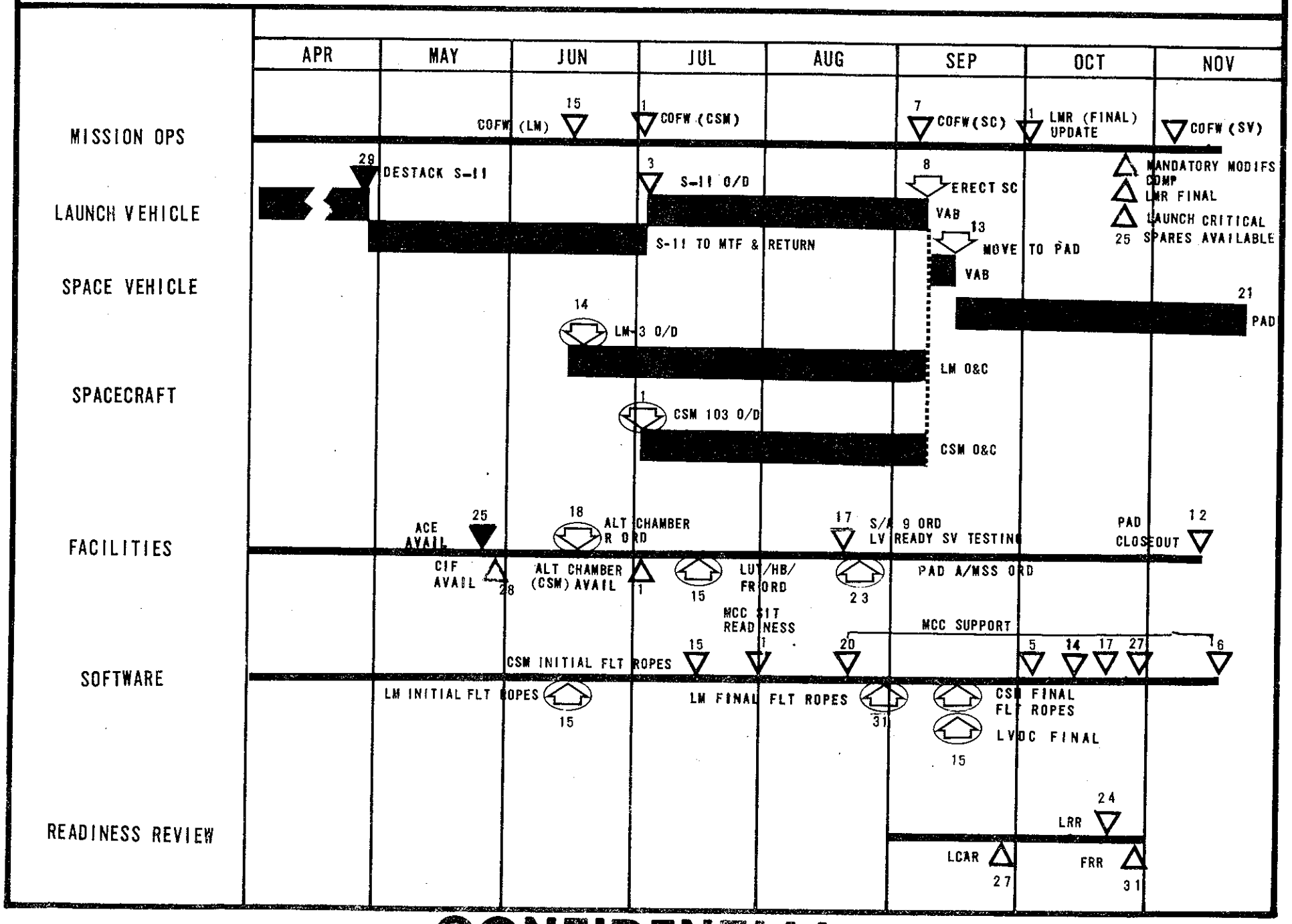
ATTACHMENT B PAGE 1 OF 3

AS 503/CSM 103/LM 3 SUMMARY SCHEDULE



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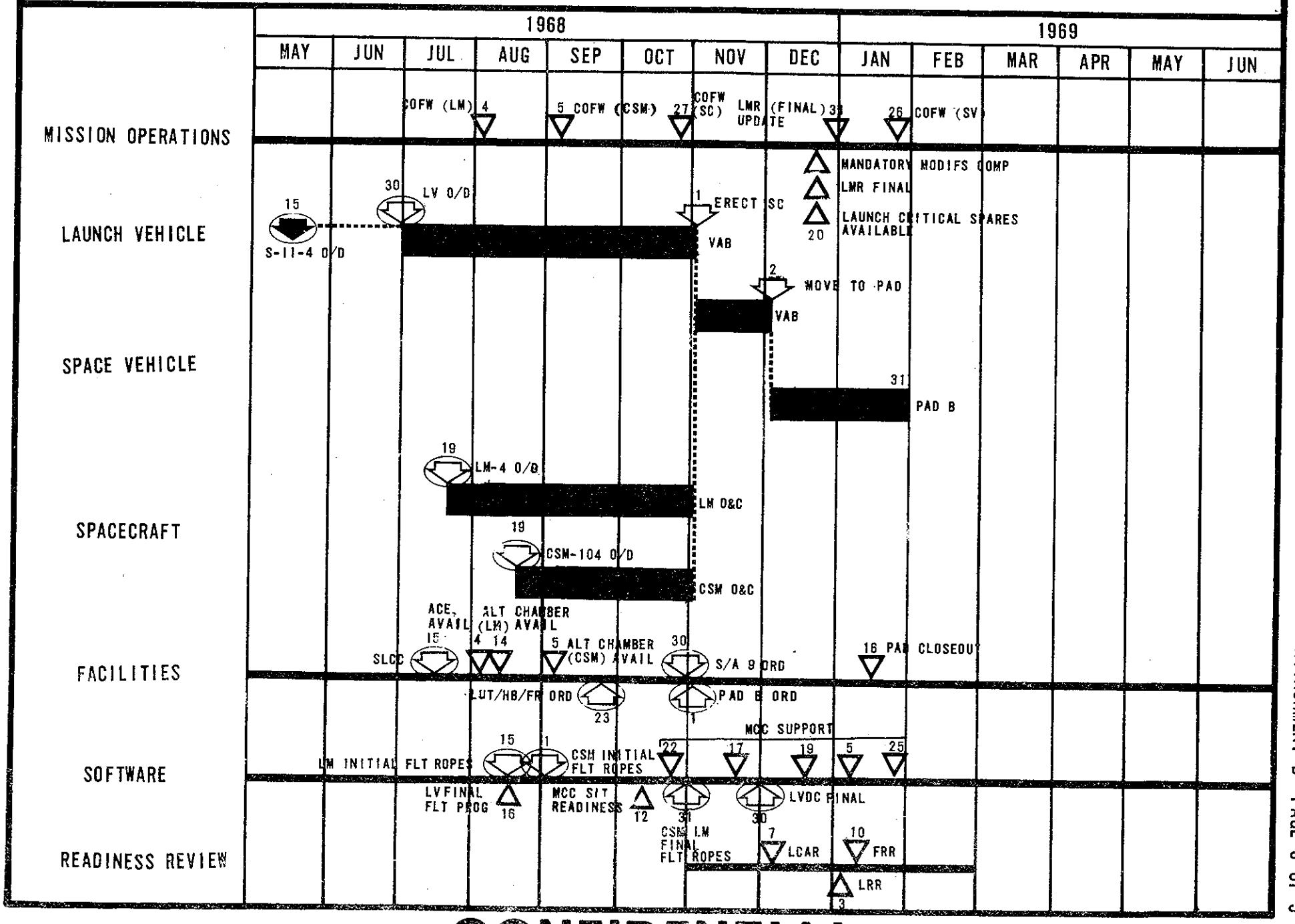
AS 504/CSM 104/[illegible] SUMMARY SCHEDULE



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ATTACHMENT B PAGE 3 OF 3

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KSC OPERATIONS PLANNING

MILESTONES	205 M	503 M	504 M	505 M	506 M	507 M	508 M	509 M	510 M	511 M	512 M	513 M	514 M	515 M
1 LM O/D		3	4	5	6	7	8	9	*10	*11	*12	*13	*14	*15
		6/14/8	7/19/8	9/27/8	11/30/8	1/31/9	3/31/9	5/31/9	7/31/9	9/30/9	11/29/9	1/31/0	3/31/0	5/29/0
1 CSM O/D	101	103	104	106	107	108	109	110	*111	*112	*102	*113	*114	*115
	A5/28/8	7/1/8	8/19/8	10/27/8	1/6/9	3/6/9	5/7/9	7/8/9	9/8/9	11/8/0	1/8/0	3/18/0	5/8/0	7/8/1
1 LV O/D	3/28/8 (A)	12/30/7 (A)	8/30/8**	9/30/8	12/30/8	3/15/9	5/30/9	8/15/9	10/30/9	1/15/0	4/1/0	7/1/0	10/1/0	1/1/0
2 ERECT SPACECRAFT	7/7/8	9/8/8	11/1/8											
2 MOVE TO PAD		9/13/8	12/2/8											
1 LAUNCH	9/14/8	11/21/8	1/31/9	4/15/9	7/1/9	9/15/9	12/1/9	2/15/0	5/15/0	8/15/0	11/15/0	2/15/1	5/15/1	8/15/1
2 FACILITIES ASSIGNMENTS	205 M	503 M	504 M	505 M	506 M	507 M	508 M	509 M	510 M	511 M	512 M	513 M	514 M	515 M
LUT		1	2	3	1	2	3	1	2	3	1	2	3	1
FR		1	2	3	1	2	3	1	2	3	1	2	3	1
HB		1	3	2	1	3	2	1	3	2	1	3	2	1
PAD	LC-34	39A	39B	39A	39A	39A	39A	39A	39A	39A	39A	39A	39A	39A

1 OMSF CONTROLLED MILESTONE 2 KSC SCHEDULE MILESTONES
*MISSION ASSIGNMENTS UNDER REVIEW **APPLIES TO S-IC & S-IVB ONLY

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ATTACHMENT C PAGE 1 OF 1

KSC SITE ACTIVATION SUMMARY

CONTROLLED MILESTONE	MISSION ASSIGNMENT	OPERATIONAL READY DATE (OMSF)	SCHEDULE MILESTONE (KSC)
O&C BULIDING			
ALTITUDE CHAMBER "L" (CSM)	AS-205/CSM 101	(A) 5-22-68	
Modification & C/O of the CSM Altitude Chamber was completed in support of SM 101 installation in the chamber			
ALTITUDE CHAMBER "R" (LM)	AS-503/CSM 103/LM 3	6-18-68	
Modification & C/O of the LM altitude chamber is required to support LM 3 processing			
ACE STATION #5 (13)	NO SPECIFIC ASSIGNMENT	10-31-68	
ACE STATION #6 (14)	NO SPECIFIC ASSIGNMENT	12-31-68	
Installation & C/O of ACE stations 5 & 6 (13 & 14 in the USA) is required to provide backup support to Apollo Saturn processing			
LC-34			
BLK II CSM (MANNED MISSION)	AS-205/CSM 101	6-1-68	
Complete BLK II CSM GSE validation, modification & C/O in support of CSM 101 erection on the AS-205 launch vehicle			
LC-37			
Any program actions or work not yet underway, but required prior to June 4, 1968 to meet a January 1969 launch date will be submitted immediately to the Apollo Program Director for a "go-ahead" decision	NOT ASSIGNED		

KSC SITE ACTION SUMMARY

CONTROLLED MILESTONE	MISSION ASSIGNMENT	OPERATIONAL READY DATE (OMSF)	SCHEDULE MILESTONE (KSC)
LC-39			
FIRST MANNED MISSION			
● LUT 1/HB 1 BLK II CSM & LM	AS-503/CSM 103/LM 3	7-15-68	
Modification & C/O of LUT 1/HB 1 is required to support CSM 103/LM 3 erection on the AS-503 Launch Vehicle			
● LUT 1/SLIDEWIRE SYSTEM INSTALLATION	AS-503/CSM 103/LM 3		9-1-68
● LUT 1/SA 9 ON DOCK KSC	AS-503/CSM 103/LM 3		8-3-68
● LUT 1/SA 9 C/O COMPLETE	AS-503/CSM 103/LM 3	8-17-68	
Installation & C/O of SA 9 & the slidewire system on LUT 1 is required to support AS-503 C/O at PAD A			
● PAD A/MSS BLK II CSM & LM	AS-503/CSM 103/LM 3	8-23-68	
Modification & C/O of PAD A & the MSS is required to support the AS-503 move to pad			
● PAD A/SLIDEWIRE SYSTEM INSTALLATION	AS-503/CSM 103/LM 3		9-1-68
Installation & C/O of the slidewire system is required to support AS-503 move to pad			
● PAD A LAND IMPROVEMENT COMPLETE	AS-503/CSM 103/LM 3		10-18-68
● DESIGN COMPLETE FOR LAND IMPROVEMENT	AS-503/CSM 103/LM 3		6-10-68
● START LAND IMPROVEMENT	AS-503/CSM 103/LM 3		7-16-68
Improvement of 85% of the landing terrain around PAD A for CSM 103 if the AS-503 mission is aborted within 40 seconds of liftoff			
● PAD A SLIDEWIRE C/O COMPLETE	AS-503/CSM 103/LM 3	9-18-68	
The slidewire is required to provide an emergency egress method for astronaut safety during C/O & launch of AS-503			

KSC SITE ACTIVATION SUMMARY

CONTROLLED MILESTONE	MISSION ASSIGNMENT	OPERATIONAL READY DATE (OMSF)	SCHEDULE MILESTONE (KSC)
LC-39			
SECOND MANNED MISSION			
● LUT 2/HB 3 BLK II CSM & LM	AS-504/CSM 104/LM 4	9-23-68	
Modification & C/O of LUT 2/HB 3 is required to support CSM 104/LM 4 erection on the AS-504 Launch Vehicle			
● LUT 2/SLIDEWIRE SYSTEM INSTALLATION	AS-504/CSM 104/LM 4		9-1-68
● LUT 2/SA 9 ON DOCK KSC	AS-504/CSM 104/LM 4		10-15-68
● LUT 2/SA 9 C/O COMPLETE	AS-504/CSM 104/LM 4	10-30-68	
Installation & C/O of the slidewire system & SA 9 on LUT 2 is required to support AS-504 C/O at PAD B			
● PAD B/BLK II CSM & LM	AS-504/CSM 104/LM 4	11-1-68	
Modification & C/O of PAD B is required to support the AS-504 move to pad			
●*ALL PAD B SYSTEMS TURNED OVER TO O&M CONTRACTOR (INCLUDING CSM & LM)	AS-504/CSM 104/LM 4		*10-15-68
●*SC SYSTEM VALIDATION USING MSS	AS-504/CSM 104/LM 4		*11-30-68
Modification & C/O of PAD B systems required to support AS-504 move to pad			
● PAD B LAND IMPROVEMENT COMPLETE	AS-504/CSM 104/LM 4		1-15-69
Improvement of 85% of the landing terrain around PAD B for CSM 104 if the AS-504 mission is aborted within 40 seconds of liftoff			

KSC SITE ACTIVATION SUMMARY

* THE LAST SYSTEM TURN OVER WITHIN THE CATEGORIES SHOWN MUST BE TURNED OVER BY THE DATE SHOWN. AP-SAO WILL CONTROL TURN OVER AND COMPLETION DATES OF THE ABOVE INDIVIDUAL SUBSYSTEMS.

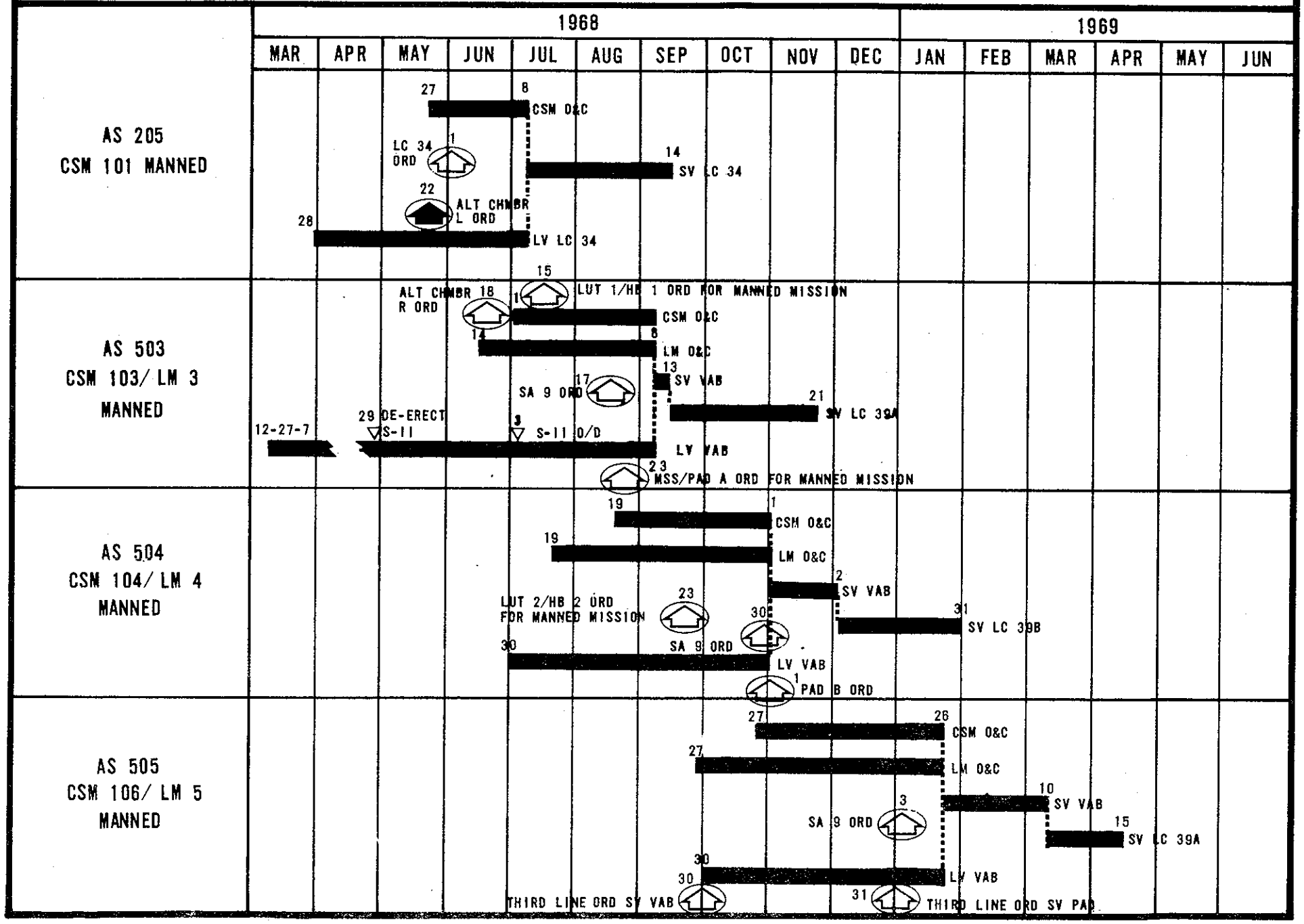
CONTROLLED MILESTONE	MISSION ASSIGNMENT	OPERATIONAL READY DATE (OMSF)	SCHEDULE MILESTONE (KSC)
LC-39			
THIRD LINE			
LUT 3/HB 2 LAUNCH VEHICLE	AS-505/CSM 106/LM 5	9-30-68	
Installation & C/O of LUT 3/HB 2 systems required to support the erection of the AS-505 Launch Vehicle			
LUT 3/HB 2 BLK II CSM & LM (MANNED MISSION)	AS-505/CSM 106/LM 5	12-15-68	
Installation & C/O of LUT 3/HB 2 SC systems is required to support the CSM 106/LM 5 erection on the AS-505 Launch Vehicle			
LUT 3/SA 9 ON DOCK KSC	AS-505/CSM 106/LM 5		12-15-68
LUT 3/SA 9 C/O COMPLETE	AS-505/CSM 106/LM 5	1-3-68	
Installation & C/O of LUT 3/SA 9 is required to support the AS-505 move to PAD A			
*ALL HB 2 SYSTEMS REQUIRED TO SUPPORT LUT 3 ACTIVATION	AS-505/CSM 106/LM 5		*5-27-68
START STAGE & LSS GETS	AS-505/CSM 106/LM 5		6-3-68
*STAGE & MECH GSE SYSTEMS REQUIRED FOR LV/VAB PROCESSING TURNED OVER TO THE O&M CONTRACTOR (LESS SERVICE ARMS)	AS-505/CSM 106/LM 5		*7-1-68
LUT 3/TSM'S & SERVICE ARMS 1-8 TURNED OVER TO THE O&M CONTRACTOR	AS-505/CSM 106/LM 5		8-28-68

KSC SITE ACTIVATION SUMMARY

* THE LAST SYSTEM TURN OVER WITHIN THE CATEGORIES SHOWN MUST BE TURNED OVER BY THE DATE SHOWN. AP-SAO WILL CONTROL TURN OVER AND COMPLETION DATES OF THE ABOVE INDIVIDUAL SUBSYSTEMS.

CONTROLLED MILESTONE	MISSION ASSIGNMENT	OPERATIONAL READY DATE (OMSF)	SCHEDULE MILESTONE (KSC)
●*SC SUPPORT SYSTEMS TURNED OVER TO THE O&M CONTRACTOR	AS-505/CSM 106/LM 5		*9-1-68
● PAD A/SPACE VEHICLE	AS-505/CSM 106/LM 5	12-31-68	
●*SYSTEMS REQUIRED TURNED OVER TO THE O&M CONTRACTOR	AS-505/CSM 106/LM 5		*8-1-68

KSC ACTIVATION & OPERATIONS SCHEDULE



APOLLO/SATURN WORK WEEK AND SHIFT PLANNING

Work Week Planning

A. Launch Vehicle Operations from start of stage checkout to the first space vehicle integrated test will be planned on a five (5) day work week with limited overtime. During the time from the first space vehicle integrated test through launch, launch vehicle operation activities which are on the critical path will be planned on a six (6) day work week.

B. Spacecraft Operations will be planned on a six (6) day work week from start of spacecraft checkout to launch.

C. Site Activation will be planned on five (5) day work week.

D. Activation and checkout and launch operations critical to achieving schedule objectives and that which can be accomplished by a small crew, in comparison to the contractor's total activation/launch crew may be conducted on an around-the-clock basis including weekends and holidays as required. Examples of such type activities are:

1. Vehicle Erection
2. Stage propulsion checks
3. Hypergolic Tanking
4. Ordnance Installation
5. Certain refurbishments
6. RP-1 tanking

7. GSE modifications.

8. Any individual stage contractor work prior to launch vehicle electrical mate.

E. Operation planning should be based on not scheduling major integrated tests to be performed on two vehicles on the same day.

Work Shift Planning

Normally, major integrated tests will be conducted on first shift. (A work shift is to be considered as eight (8) working hours.) Examples of major tests are: Plugs In Test (OAT), Plugs Out Test (OAT), Countdown Demonstration Test, Flight Readiness Test, MCC Interface Test, Service Arm Overall Test, Integrated G&C Checks, and Countdown.

Specifically, a major test may be defined as a test involving at least two or more stages and multiple systems. Overrun of major test into the next shift will be accomplished by overtime for key test personnel with remaining support being provided by normal second shift personnel. Key test personnel are defined as those required to maintain test continuity. Major tests will not normally be conducted on weekends, however, real time scheduling constraints may necessitate rescheduling and/or re-running a major test on the weekend.

Minor tests, test set-ups, maintenance and test evaluation will normally be planned for second shift. Specifically, a minor test may be defined as independent stage checks and other tests may involve two or more

stage contractors but are limited to small portions of the stage contractors test crew.

Third shift work will normally be limited to power off modifications, minor trouble-shooting and maintenance.

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17 July 1968

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Kennedy Space Center
PROGRAM DIRECTIVE

Date:

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REGRADED BY AUTHORITY EO 11652

BY

ON 3/8/72

KSC PROGRAM DIRECTIVE NO. 4C

FROM: Apollo Program Manager

TO: Distribution

SUBJECT: KSC APOLLO PROGRAM SCHEDULE, PLANNING GUIDELINES AND REQUIREMENTS (U)

ACTION: All KSC organizations are to implement the requirements of this Directive effective with the issuance date and on a continuing basis.

REFERENCE:

A. OMSF Apollo Program Directive No. 4I dated May 20, 1968.

B. KSC Apollo Program Directive No. 4B (Interim), dated May 3, 1967.

C. Apollo Flight Mission Assignment Document (latest issue).

I. PURPOSE

This Directive defines: A) Official KSC Apollo Program Schedule Planning Guidelines, and B) Those MSC/MSFC program interface requirements that have been identified as constraints in implementation of OMSF Apollo Program Directive Schedules. This revision supersedes KSC Apollo Program Directive No. 4B (Interim), dated May 3, 1967, Reference B above.

"This material contains information affecting the national defense of the United States within the meaning of the espionage laws, Title 18, U.S.C. Section 793 and 794, the transmission or revelation of which in any manner to an unauthorized person is prohibited by law."

GROUP 4
DOWNGRADED AT 3 YEAR INTERVALS; DECLASSIFIED AFTER 12 YEARS.
DOD DIR 5200.10

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II. GUIDELINES

This Directive which deviates from APD-4I (Reference A above) is based on:

A. APO assessed spacecraft delivery dates

B. Spacecraft deliveries in accordance with defined and agreed to open work

C. Maintaining 10 week launch centers for AS-503 and on

D. The use of three spacecraft power on test teams

E. The availability of O&C facilities for spacecraft processing

F. Launch vehicle delivery requirements established by the availability of refurbished facilities following the previous launch

G. KSC capability to process Apollo/Saturn hardware per LO planning schedules

H. No serial impact to hardware processing flow times due to modification incorporation

I. The capability to fly AS-503 and on as manned missions (KSC Basic Plan)

J. The use of Saturn 1B dual launches to continue CSM/LM operations in the event the Saturn V cannot be manrated as scheduled (KSC Contingency Plan)

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III. SCOPE

Attachment A, pages 1 through 6, provides narrative summaries and master schedules for a Basic and Contingency Plan to achieve KSC objectives.

Attachment B, pages 1 through 3, provides summary schedules for the AS-205 (M), AS-503 (M), and AS-504 (M) missions. These plans are KSC Apollo Program Summary Schedules that define KSC planning milestones and space vehicle processing requirements.

Attachment C is a matrix of the major or key program events at KSC which have been designated KSC Schedule Milestones or OMSF Apollo Program Controlled Milestones. Each OMSF controlled milestone reflects the schedule requirements of APD-4I and the corresponding revised KPD-4C planning date.

A. Spacecraft and launch vehicle on dock dates, operational ready dates and launch dates as defined in APD-4I (Reference A) have been adjusted by KSC as required to coincide with assessed spacecraft deliveries and the KSC capability to process and launch hardware.

B. The facility assignments have been made by KSC and reflect the current KSC plan to use LC-39B for one launch while continuing to use Pad A as the main launch facility. Pad B will be used to revalidate the MSS and be maintained in

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a condition of readiness to support further launches if Pad A suffers damage sufficient to impact the present launch schedule. LUT's, High-Bays and Firing Rooms will be utilized in a "round-robin" fashion after the Third Line is activated.

C. Spacecraft assignments after AS-509 have not been made due to the number of assignment alternatives. LM-10 and CSM-111 and on assignments have been made for planning purposes.

Attachment D provides a summary matrix of KSC Operational Ready Dates and KSC schedule milestones required to support the AS-205 (M), AS-503 (M), AS-504 (M) and AS-505 (M) missions. Operational ready dates and KSC schedule milestones have been adjusted from APD-4I (Reference A) to reflect earliest required date.

Attachment E provides an integrated schedule of KSC space vehicle operations for the AS-205 (M), AS-503 (M), AS-504 (M) and AS-505 (M) missions with specific facility activation milestones assigned to missions as applicable.

Attachment F is a planning guideline for the work week and shift planning of the KSC Apollo Program.

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IV. RESPONSIBILITIES

Each KSC (Director) organization is responsible for the implementation of this Directive. Each Directorate will: A) Notify the Apollo Program Manager immediately whenever a situation exists that will potentially impact established planning milestones, and B) Request changes to those milestones as indicated by their internal schedule requirements.

Each KSC (Directorate) organization is responsible for the implementation of such specific lower tier schedules as required to demonstrate the capability to achieve these planning milestones. In the event that a planning milestone is not met, the responsible Directorate will provide the Apollo Program Manager with a revised lower tier schedule from the affected planning milestone through launch.

The KSC Apollo Program Manager will release revised Summary Schedules as major changes occur.

V. FREQUENCY

This document will be updated monthly or more frequently if major changes occur.

Attachments:

A. KSC Planning

B. Space Vehicle Summary Schedules

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C. KSC Operations Planning

D. KSC Site Activation Summary

E. KSC Activation and Operations Schedule

F. Apollo/Saturn Work Week and Shift Planning

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KSC PLANNING

This Directive is based on the transfer of manned flight from Saturn 1B to Saturn V as soon as the Saturn V is ready for manned missions. The earliest transfer point is following the Apollo 7 (AS-205/CSM-101) mission.

The successful Apollo 5 (SA-205/LM-1) mission provided a basis for cancelling the second unmanned LM mission (SA-206/LM-2). The successful Apollo 4 mission and the assessment of the Apollo 6 anomalies have resulted in a decision to prepare for a manned AS-503 mission while protecting the option to fly an unmanned AS-503 if testing and analysis relative to the Apollo 6 anomalies should indicate that an unmanned mission is required. Program changes resulting from the Apollo 6 mission evaluation are to be implemented as approved.

KSC Program Directive Number 4C presents a Basic and Contingency Plan for accomplishing KSC Apollo Program objectives. The Basic Plan assumes continued success of the Apollo Program while the Contingency Plan provides for Saturn 1B dual launch capability to continue the Apollo Program if manrating of the Saturn V is delayed.

KSC BASIC PLAN

The KSC Basic Plan (see Attachment A, page 5) provides for an AS-503 manned flight. Accordingly, the following schedule guidelines are established:

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1. AS-205/CSM-101 will be launched from LC-34 in early October, 1968.
2. AS-503/CSM-103/LM-3 will be launched from LC-39A in early January, 1969.
3. AS-504/CSM-104/LM-4 will be launched from LC-39B in late March, 1969. AS-504 will be the only planned launch off LC-39B.
4. Subsequent Saturn V missions will be launched at ten week intervals.

KSC CONTINGENCY PLAN

Dual Saturn 1B launches will be flown only in the event the transfer of manned flights from Saturn 1B is delayed because the Saturn V cannot be manrated as planned (see Attachment A, page 5). Planning, hardware, and software development must be accomplished to support the earliest working dual launch schedule of mid March, 1969. Operational Ready Dates for LC-34 and LC-37B to support a manned Saturn 1B/CSM/LM dual mission will be established and sufficient fixed equipment will be provided to maintain the LC-34 and LC-37 operational capabilities. Accordingly, the following scheduling guidelines are established:

1. Earliest potential dual launch will be mid March, 1969.
2. The launch schedule as shown on Attachment A, page 6 will be adjusted based upon the requirement for Saturn 1B dual launches.

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3. Any program actions or work not yet underway but required to meet this mid March, 1969 launch date will be submitted immediately to the Apollo Program Director for a "go-ahead" decision.

4. The capability for dual launches will be maintained until after the successful AS-504 launch.

5. The next Saturn V launch will be no sooner than three months after the Saturn 1B dual launch.

In support of the Basic and Contingency Plans defined above, KSC will activate and maintain the following facilities:

- Spacecraft Industrial Area - MILA

  The Spacecraft Industrial Area will have a capability to check out Apollo Spacecraft as required to meet program schedules.

- LC-34

  Launch Complex 34 Block I and Block II CSM and Saturn 1B requirements have been completed to support the first manned launch (CSM-101).

- LC-37

  Launch Complex 37 requires a manned LM capability to support either a Saturn 1B dual launch in the event that the Saturn V cannot be manrated and/or Apollo Applications Program follow on.

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LC-39

Launch Complex 39 requires Block II CSM, LM and Saturn V capability.

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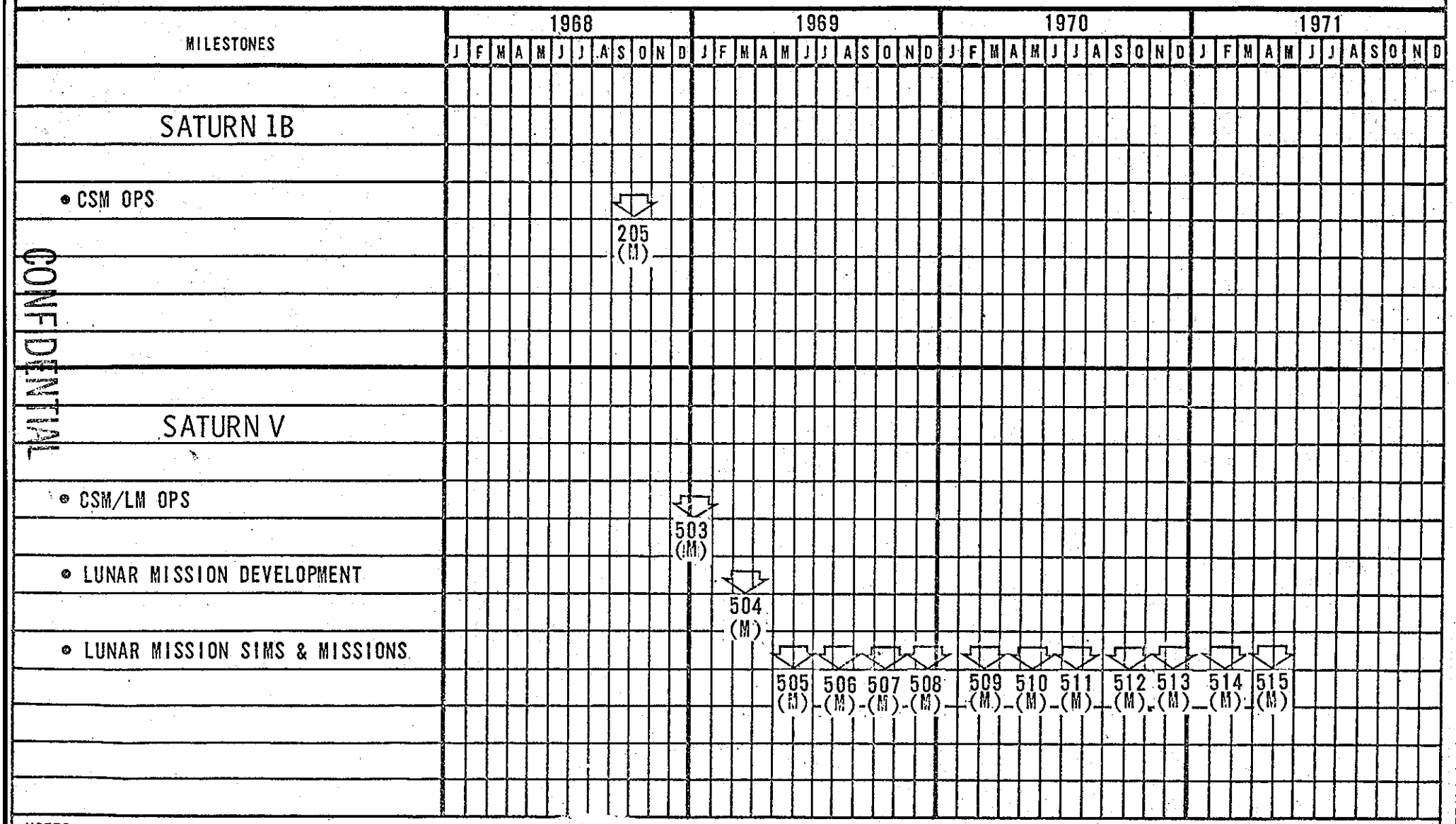
YEARS

KSC BASIC PLAN



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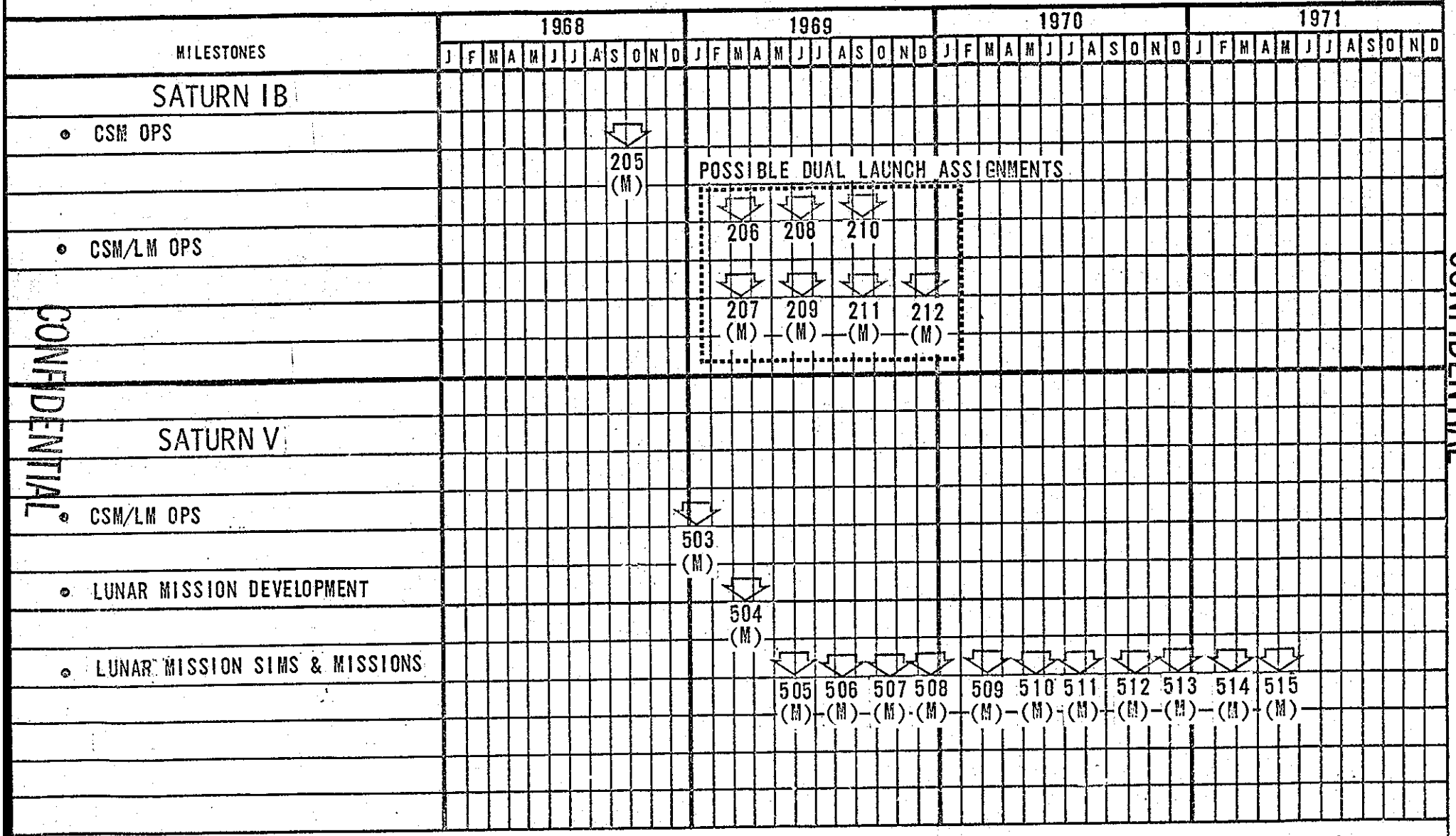
YEARS

KSC CONTINGENCY PLAN



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ATTACHMENT A PAGE 6 OF 6

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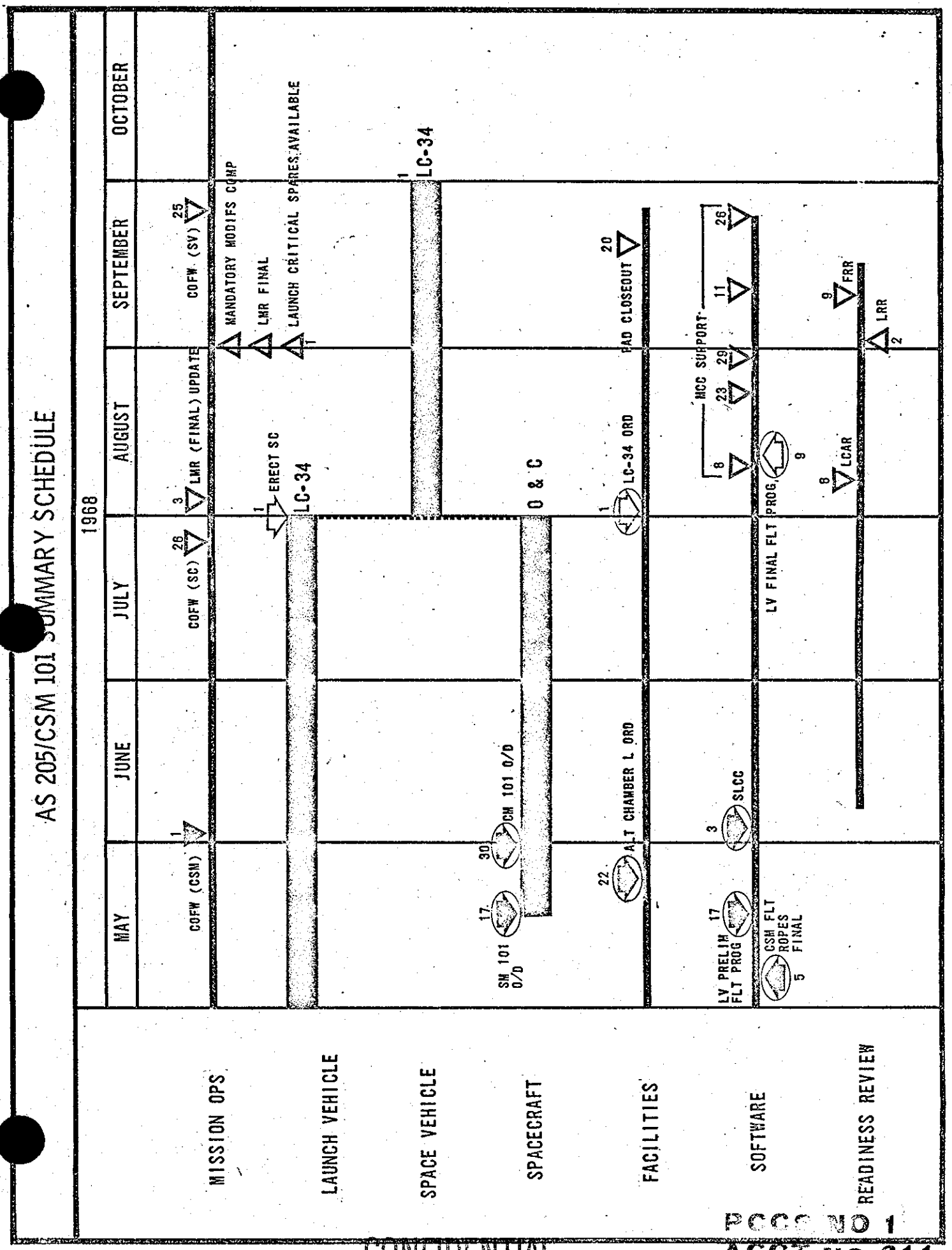
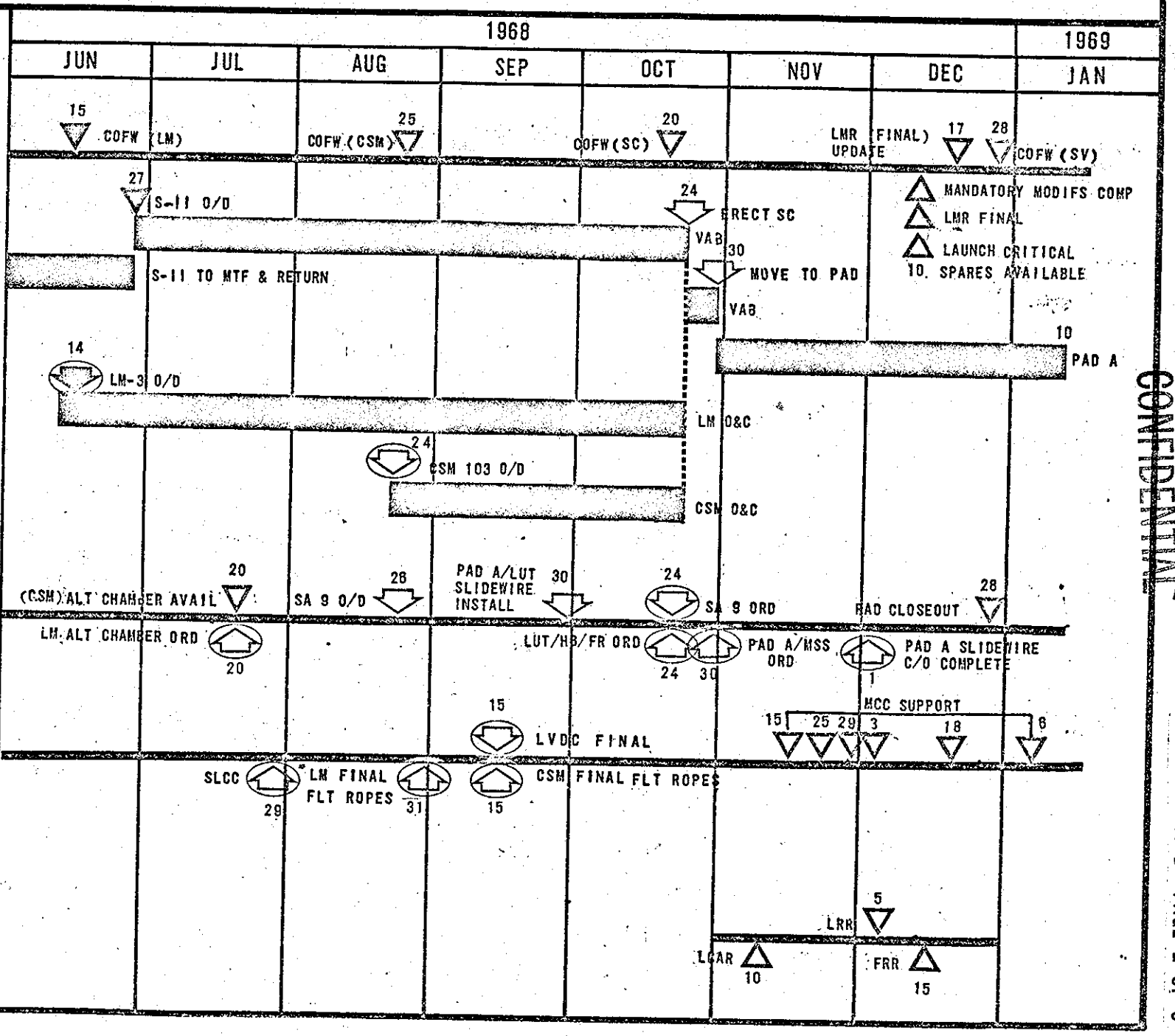

AS 205/CSM 101 SUMMARY SCHEDULE
1968
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER
MISSION OPS
LAUNCH VEHICLE
SPACE VEHICLE
SPACECRAFT
FACILITIES
SOFTWARE
READINESS REVIEW
COFW (CSM)
COFW (SC)
LMR (FINAL) UPDATE
COFW (SV)
MANDATORY MODIFS COMP
LMR FINAL
LAUNCH CRITICAL SPARES AVAILABLE
ERECT SC
LC-34
LC-34
SM 101 O/D
CM 101 O/D
O & C
LC-34 ORD
PAD CLOSEOUT
ALT CHAMBER L ORD
MCC SUPPORT
SLCC
LV PRELIM FLT PROG
LV FINAL FLT PROG
CSM FLT ROPES FINAL
LCAR
LRR
FRR

AS 503/CSM 103/LM 5[illegible] UMMARY SCHEDULE



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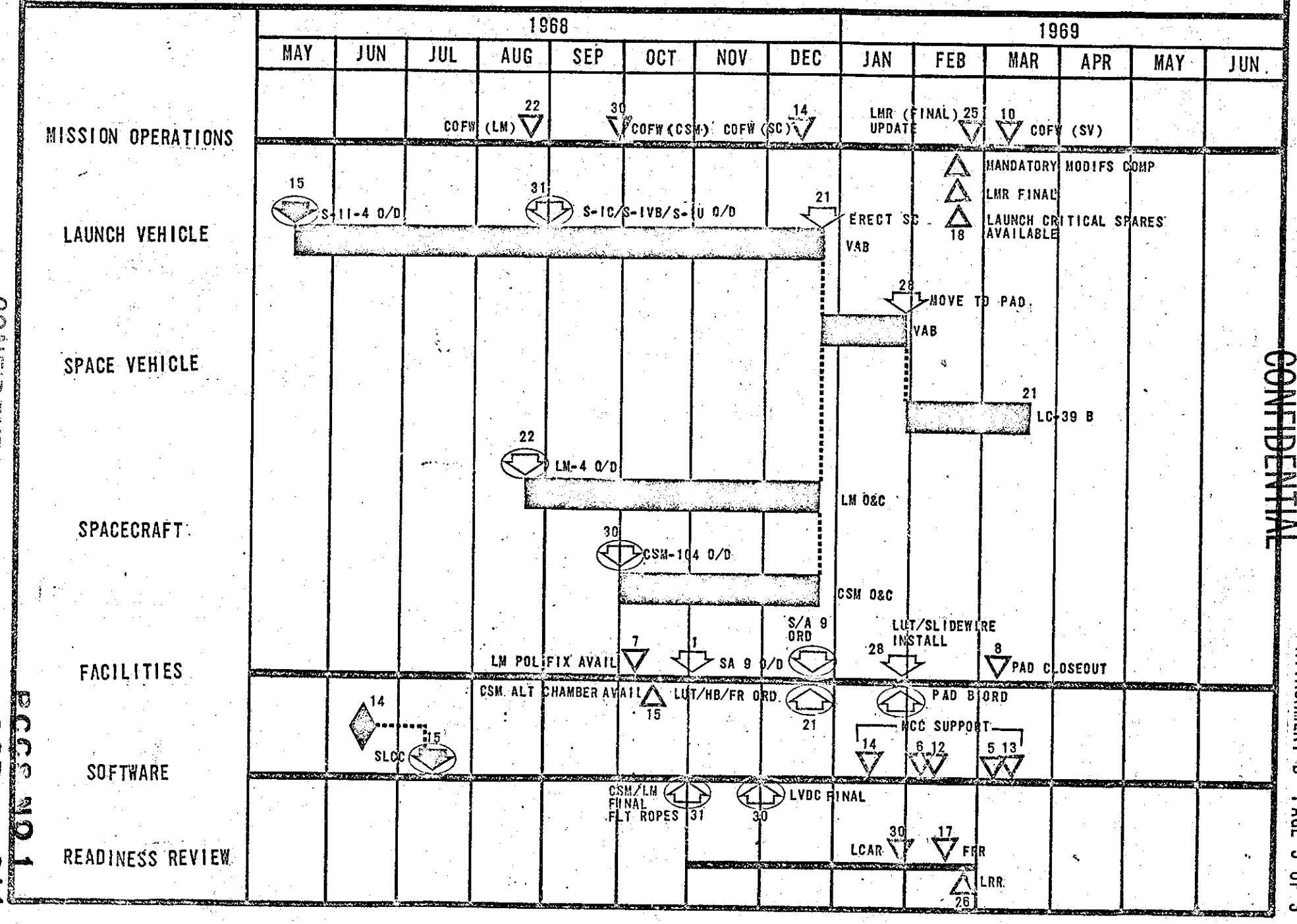
AS 504/CSM 104/LM 4 SUMMARY SCHEDULE



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KSC OPERATIONS PLANNING

MILESTONES	205 M	503 M	504 M	505 M	506 M	507 M	508 M	509 M	510 M	511 M	512 M	513 M	514 M	515 M
LM O/D		3	4	5	6	7	8	9	*10	*11	*12	*13	*14	*15
APD-41		A6/14/8	8/9/8	10/5/8	11/27/8	1/15/9	3/15/9	5/15/9	7/15/9	9/15/9	11/15/9	1/15/0	3/15/0	5/15/0
A KPD-4C			8/22/8	10/15/8	11/27/8	1/15/9	3/15/9	5/15/9	7/15/9	9/15/9	11/15/9	1/15/0	3/15/0	5/15/0
CSM O/D	101	103	104	106	107	108	109	110	*111	*112	*102	*113	*114	*115
APD-41	A5/28/8	7/28/8	8/19/8	10/27/8	1/6/9	3/6/9	5/7/9	7/8/9	9/8/9	11/8/9	1/8/0	3/8/0	5/8/0	7/8/0
A KPD-4C		8/24/8	9/30/8	11/30/8	1/31/9	3/31/9	5/31/9	7/31/9	9/30/9	11/30/9	1/31/0	3/31/0	5/31/0	7/31/0
LV O/D APD-41	A3/28/8	A12/30/7	8/31/8**	10/31/8	12/15/8	2/15/9	4/15/9	6/15/9	8/15/9	10/15/9	12/15/9	3/31/0	7/31/0	12/31/0
A KPD-4C			8/31/8	10/31/8	2/21/9	5/2/9	7/11/9	9/20/9	11/28/9	2/6/0	4/17/0	6/26/0	9/4/0	11/13/0
B ERECT SPACECRAFT	8/1/8	10/24/8	12/21/8	2/21/9	4/24/9	6/26/9	9/4/9	11/6/9	1/8/0	3/12/0	5/14/0	7/16/0	9/17/0	11/19/0
B MOVE TO PAD		10/30/8	1/28/9	4/14/9	6/21/9	8/30/9	11/9/9	1/18/0	3/29/0	6/7/0	8/16/0	10/25/0	1/3/1	3/14/1
LAUNCH APD-41	9/10/8	11/10/8	1/10/9	3/21/9	5/30/9	8/8/9	10/17/9	1/5/0	4/1/0	6/15/0	9/1/0	11/30/0	3/1/1	6/1/1
A KPD-4C	10/1/8	1/10/9	3/21/9	5/30/9	8/8/9	10/17/9	12/26/9	3/6/0	5/15/0	7/24/0	10/2/0	12/11/0	2/19/1	4/30/1

B FACILITIES ASSIGNMENTS*	205 M	503 M	504 M	505 M	506 M	507 M	508 M	509 M	510 M	511 M	512 M	513 M	514 M	515 M
LUT		1	2	3	1	2	3	1	2	3	1	2	3	1
FR		1	2	3	1	2	3	1	2	3	1	2	3	1
HB		1	3	2	1	3	2	1	3	2	1	3	2	1
PAD	LC-34	39A	39B	39A	39A	39A	39A	39A	39A	39A	39A	39A	39A	39A

A - OMSF CONTROLLED MILESTONE

B - KSC SCHEDULE MILESTONES

* - SPACECRAFT ASSIGNMENTS UNDER REVIEW

** - APPLIES TO S-IC & S-IVB ONLY

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CONTROLLED MILESTONE	MISSION ASSIGNMENT	OPERATIONAL READY DATE (OMSF)	SCHEDULE MILESTONE (KSC)
O & C BUILDING			
ALTITUDE CHAMBER "L" (CSM)	AS-205/CSM 101	(A) 5-22-68	
Modification & C/O of the CSM Altitude Chamber was completed in support of SM 101 installation in the chamber			
ALTITUDE CHAMBER "R" (LM)	AS-503/CSM 103/LM-3	7-20-68	
Modification & C/O of the LM altitude chamber is required to support LM-3 processing			
ACE STATION #5 (13 in APD-4I)	NO SPECIFIC ASSIGNMENT	10-1-68	
ACE STATION #6 (14 in APD-4I)	NO SPECIFIC ASSIGNMENT	12-1-68	
Installation & C/O of ACE stations 5 & 6 (13 & 14 in APD-4I) is required to provide sufficient CSM/LM testing capability to support three power on test teams			
LC-34			
BLK II CSM (MANNED MISSION)	AS-205/CSM 101	8-1-68	
Complete BLK II CSM GSE validation, modification & C/O in support of CSM 101 erection on the AS-205 launch vehicle			
LC-37			
MANNED MISSION SUPPORT	NOT ASSIGNED		
Any program actions or work not yet underway, but required to meet a march 1969 launch date will be submitted immediately to the Apollo Program Director for a "go-ahead" decision			

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KSC SITE ACTIVATION SUMMARY

CONTROLLED MILESTONE	MISSION ASSIGNMENT	OPERATIONAL READY DATE (OMSF)	SCHEDULE MILESTONE (KSC)
LC-39 FIRST MANNED MISSION			
LUT 1/HB 1 BLK II CSM & LM	AS-503/CSM 103/LM-3	10-24-68	
Modification & C/O of LUT 1/HB 1 is required to support CSM 103/LM-3 erection on the AS-503 Launch Vehicle			
LUT 1/SLIDEWIRE SYSTEM INSTALLATION	AS-503/CSM 103/LM-3		10-30-68
Installation & C/O, the slidewire system on LUT 1 is required to support AS-503 hazardous operations at PAD A			
LUT 1/SA 9 ON DOCK KSC	AS-503/CSM 103/LM-3		8-26-68
LUT 1/SA 9 C/O COMPLETE	AS-503/CSM 103/LM-3	10-24-68	
Installation & C/O of SA 9 is req'd to support CSM 103 operations in the VAB & at PAD A			
PAD A/MSS BLK II CSM & LM	AS-503/CSM 103/LM-3	10-30-68	
Modification & C/O of PAD A & the MSS is required to support the AS-503 move to pad			
PAD A/SLIDEWIRE SYSTEM INSTALLATION	AS-503/CSM 103/LM-3		10-30-68
Installation & C/O of the slidewire system is required to support AS-503 hazardous operations at PAD A			
PAD A LAND IMPROVEMENT COMPLETE	AS-503/CSM 103/LM-3		11-1-68
DESIGN COMPLETE FOR LAND IMPROVEMENT	AS-503/CSM 103/LM-3		(A) 6-23-68
START LAND IMPROVEMENT	AS-503/CSM 103/LM-3		7-30-68
Improvement of 85% of the landing terrain around PAD A for CSM 103 if the AS-503 mission is aborted within 40 seconds of liftoff			
PAD A SLIDEWIRE C/O COMPLETE	AS-503/CSM 103/LM-3	12-1-68	
The slidewire is required to provide an emergency egress method for astronaut safety during C/O & launch of AS-503			

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KSC SITE ACTIVATION SUMMARY

* THE LAST SYSTEM TURN OVER WITHIN THE CATEGORIES SHOWN MUST BE TURNED OVER BY THE DATE SHOWN. AP-SAO WILL CONTROL TURN OVER AND COMPLETION DATES OF THE INDIVIDUAL SUBSYSTEMS

CONTROLLED MILESTONE	MISSION ASSIGNMENT	OPERATIONAL READY DATE (OMSF)	SCHEDULE MILESTONE (KSC)
LC-39			
SECOND MANNED MISSION			
LUT 2/HB 3 BLK II CSM & LM	AS-504/CSM 104/LM-4	12-21-68	
Modification & C/O of LUT 2/HB 3 is required to support CSM 104/LM-4 erection on the AS-504 Launch Vehicle			
LUT 2/SLIDEWIRE SYSTEM INSTALLATION	AS-504/CSM 104/LM-4		1-28-69
Installation & C/O of the slidewire system on LUT 2 is required to support AS-504 hazardous operations at PAD B			
LUT 2/SA 9 ON DOCK KSC	AS-504/CSM 104/LM-4		11-1-68
LUT 2/SA 9 C/O COMPLETE	AS-504/CSM 104/LM-4	12-21-68	
Installation & C/O of SA 9 is req'd to support CSM 104 operations in the VAB & at PAD B			
PAD B/BLK II CSM & LM	AS-504/CSM 104/LM-4	1-28-69	
Modification & C/O of PAD B is required to support the AS-504 move to pad			
*ALL PAD B SYSTEMS TURNED OVER TO O&M CONTRACTOR (INCLUDING CSM & LM)	AS-504/CSM 104/LM-4		11-1-68
*SC SYSTEM VALIDATION USING MSS	AS-504/CSM 104/LM-4		1-28-69
Modification & C/O of PAD B systems required to support AS-504 move to pad			
PAD B LAND IMPROVEMENT COMPLETE	AS-504/CSM 104/LM-4		1-15-69
Improvement of 85% of the landing terrain around PAD B for CSM 104 if the AS-504 mission is aborted within 40 seconds of liftoff			

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KSC SITE ACTIVATION SUMMARY

* THE LAST SYSTEM TURN OVER WITHIN THE CATEGORIES SHOWN MUST BE TURNED OVER BY THE DATE SHOWN. AP-SAO WILL CONTROL TURN OVER AND COMPLETION DATES OF THE INDIVIDUAL SUBSYSTEMS

CONTROLLED MILESTONE	MISSION ASSIGNMENT	OPERATIONAL READY DATE (OMSF)	SCHEDULE MILESTONE (KSC)
LC-39			
THIRD LINE			
LUT3/HB 2 LAUNCH VEHICLE	AS-505/CSM 106/LM-5	10-31-68	
Installation & C/O of LUT 3/HB 2 systems required to support the erection of the AS-505 Launch Vehicle			
LUT 3/HB 2 BLK II CSM & LM	AS-505/CSM 106/LM-5	2-21-69	
Installation & C/O of LUT 3/HB 2 SC systems is required to support the CSM 106/LM-5 erection on the AS-505 Launch Vehicle			
LUT 3/SA 9 ON DOCK KSC	AS-505/CSM 106/LM 5		1-10-69
LUT 3/SA 9 C/O COMPLETE	AS-505/CSM 106/LM-5	2-21-69	
Installation & C/O of LUT 3/SA 9 is required to support the AS-505 move to PAD A			
LUT 3/TSM'S & SERVICE ARMS 1-8 TURNED OVER TO THE O&M CONTRACTOR	AS-505/CSM 106/LM-5		9-3-68
LUT 3/TSM's & service arms 1-8 required to support LV erection & C/O in the VAB			

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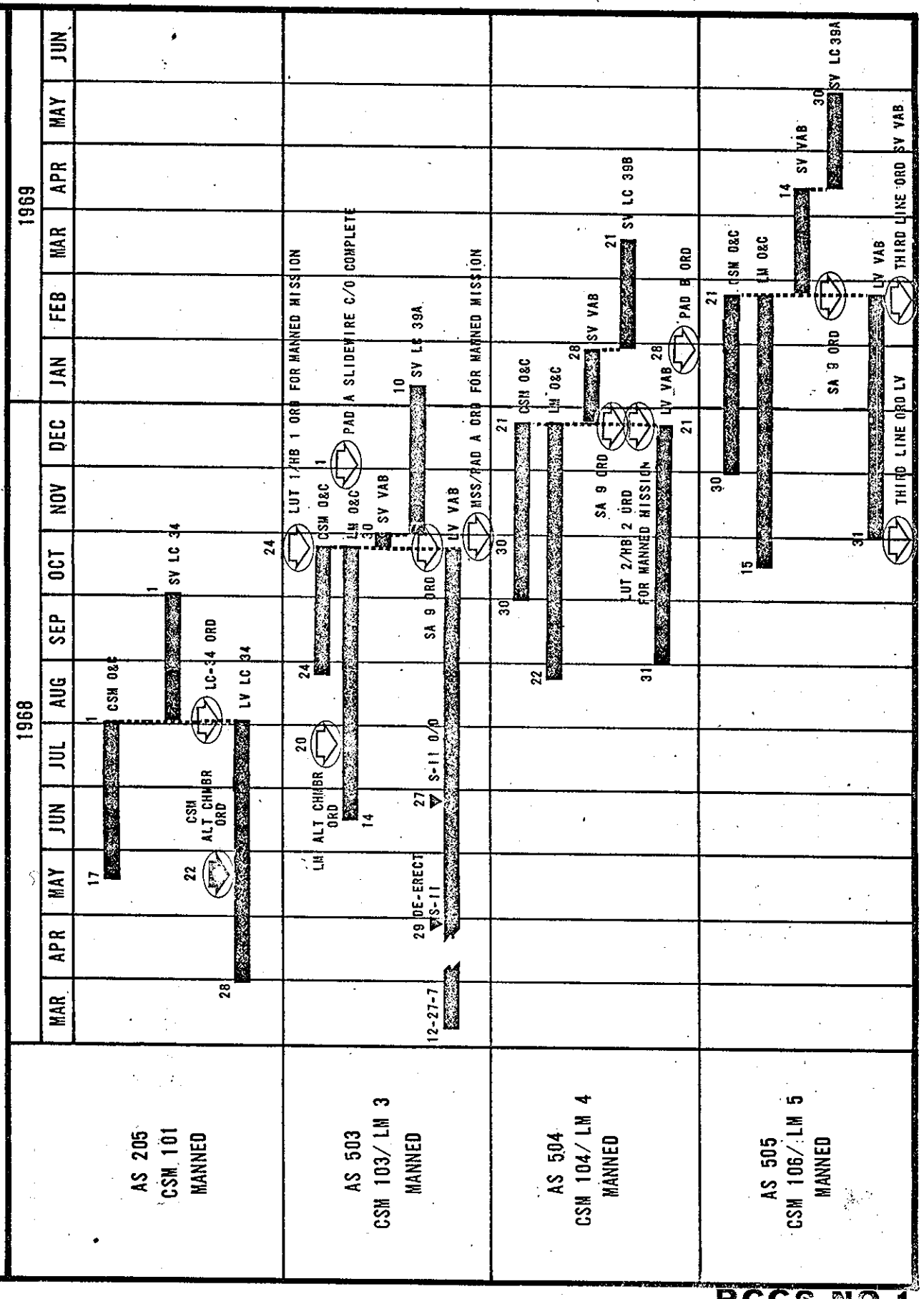
KSC ACTIVATION & OPERATIONS SCHEDULE



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APOLLO/SATURN WORK WEEK AND SHIFT PLANNING

Work Week Planning

A. Launch Vehicle Operations from start of stage checkout to the first space vehicle integrated test will be planned on a five (5) day work week with limited overtime. During the time from the first space vehicle integrated test through launch, launch vehicle operation activities which are on the critical path will be planned on a six (6) day work week.

B. Spacecraft Operations will be planned on a six (6) day work week from start of spacecraft checkout to launch.

C. Site Activation will be planned on five (5) day work week.

D. Activation and checkout and launch operations critical to achieving schedule objectives and that which can be accomplished by a small crew, in comparison to the contractor's total activation/launch crew may be conducted on an around-the-clock basis including weekends and holidays as required. Examples of such type activities are:

1. Vehicle Erection
2. Stage propulsion checks
3. Hypergolic Tanking
4. Ordnance Installation
5. Certain refurbishments
6. RP-1 tanking

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7. GSE modifications.

8. Any individual stage contractor work prior to launch vehicle electrical mate.

E. Operation planning should be based on not scheduling major integrated tests to be performed on two vehicles on the same day.

Work Shift Planning

Normally, major integrated tests will be conducted on first shift. (A work shift is to be considered as eight (8) working hours.) Examples of major tests are: Plugs In Test (OAT), Plugs Out Test (OAT), Countdown Demonstration Test, Flight Readiness Test, MCC Interface Test, Service Arm Overall Test, Integrated G&C Checks, and Countdown.

Specifically, a major test may be defined as a test involving at least two or more stages and multiple systems. Overrun of major test into the next shift will be accomplished by overtime for key test personnel with remaining support being provided by normal second shift personnel. Key test personnel are defined as those required to maintain test continuity. Major tests will not normally be conducted on weekends, however, real time scheduling constraints may necessitate rescheduling and/or re-running a major test on the weekend.

Minor tests, test set-ups, maintenance and test evaluation will normally be planned for second shift. Specifically, a minor test may be defined as independent stage checks and other tests may involve two or more

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stage contractors but are limited to small portions of the stage contractors test crew.

Third shift work will normally be limited to power off modifications, minor trouble-shooting and maintenance.

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