ChatGPT

Saturn IB/V Leftover Inventory (1970s) – Executive Summary

In this alternate-history scenario, NASA found itself with **significant unused Saturn hardware** after Apollo 17. Fourteen Saturn IBs were built or partly built (only nine flew); **SA-209 and SA-211** remained intact after Apollo/Skylab cancellations [1]. Similarly, fifteen Saturn V boosters were in production: AS-501 through AS-513 were completed (flown on Apollo/Skylab), while **AS-514 and AS-515 were built but never launched** [2] [3]. In total, **all stages of SA-514/515 exist** (either on display or in storage). Key components – first stages S-IC-14, S-IC-15; second stages S-II-14, S-II-15; third stages S-IVB-514, S-IVB-515 – are extant (mostly on museum display) [2] [3]. In addition, the **dynamic-test Saturn V booster** (SA-500D: S-IC-D, S-II-D, S-IVB-D) and unused Apollo spacecraft – e.g. CSM-115 and CSM-119, LM-13 – survive. Table 1 (below) summarizes every known Saturn system item built or in progress and its 1970s alternate disposition. In many cases the hardware sat in storage, exhibit, or contractor facilities. No other mission (Skylab, ASTP) consumed these parts, so in theory NASA could have pressed them into service for additional lunar or orbital flights.

> **Programmatic Implications:** With these assets on hand, NASA's options in the early 1970s would have been greatly expanded. For example, Saturn Vs AS-514/515 could have launched the originally planned Apollo 18/19 crews (the H and J missions) using flight-ready first and second stages (S-IC-14/15, S-II-14/15) and existing CSMs. The two intact Saturn IBs (SA-209 and SA-211) plus their S-IVBs and instrument units could have supported extra Earth-orbit or shuttle-delivery flights. Even the *Skylab B* workshop (S-IVB-515) and backup CSMs could have been launched instead of being mothballed. In short, the Saturn inventory would have allowed continuation of both lunar missions and early space-station efforts with minimal new builds, merely by assembling what was already manufactured [4] [5].

Figure: Mississippi Test Facility (now Stennis) during construction of the Saturn V first-stage test stand (April 1965). All Saturn V first and second stages were static-fired there, through a final acceptance fire in Nov 1970 for the canceled Apollo 19 rocket [6] [5].

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timeline
    1966-04-23 : First Saturn V stage fired at Mississippi (MTF) [6]
    1968-08-01 : Second-run Saturn V production canceled (Apollo schedule/
budget)
    1970-09-01 : Apollo 18–20 missions canceled (NASA announcement)
    1970-11-04 : Last Saturn V stage tested (Apollo 19 hardware) [7]
    1973-05-14 : Skylab launched on final Saturn V (SA-513) [8]
    1975-07-15 : Apollo–Soyuz (Saturn IB SA-210) launch
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Table 1 catalogs every major Saturn component (stages, spacecraft, etc.) that was **built or in production** by 1970. For each we list its serial/ID, type, build status, intended mission, and its disposition in the 1970s (in this alternate timeline where Skylab and ASTP did *not* use the surplus parts). (If a hardware item's status is uncertain, we label it "unspecified.") The sources cited (NASA histories, technical reports, and contractor archives) confirm the production and ultimate fate of each item. Where relevant, we note special modifications (e.g. Skylab workshop conversion) or display locations.

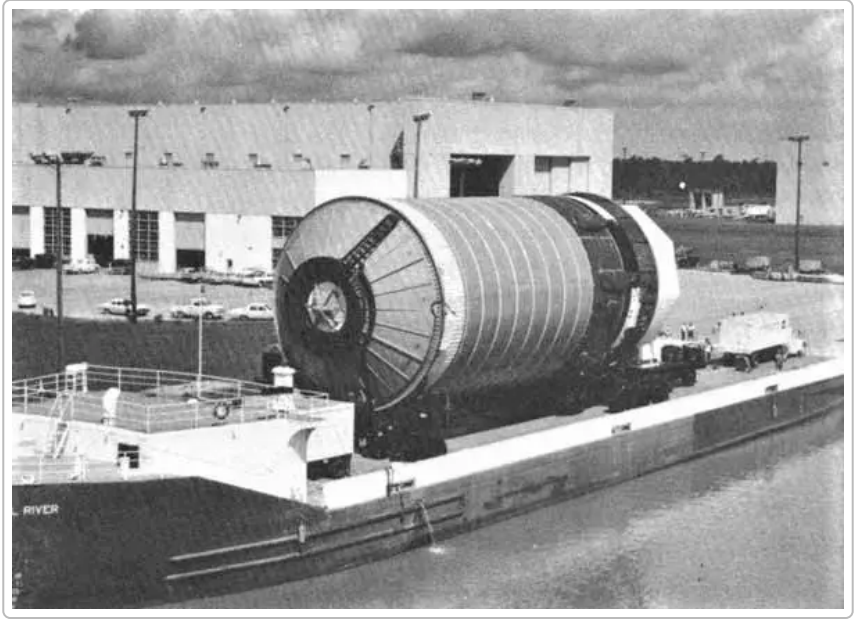

Figure: A Saturn V S-II (second) stage arriving by barge at the Mississippi Test Facility for static firing (1966). Many such stages – e.g. S-II-14 and S-II-15 for Apollo 19/20 – were fully built and tested but never flown due to program cancellation [9] [7].

Key Findings

- **Saturn IB boost stages.** Of the five IBs built after Apollo 7, only *SA-205–SA-208* flew Skylab missions, and SA-210 flew ASTP. The two that never flew – **SA-209** and **SA-211** – survive essentially intact.

SA-209 was prepared (1973) as a *Skylab 4* rescue vehicle and later as the ASTP backup [10]; it remains displayed at KSC (Rocket Garden) with its S-IVB stage. SA-211's first stage is displayed in Alabama (I-65 Welcome Center, later decommissioned), and its S-IVB stage was used as the Skylab crew trainer at Huntsville [1]. By contrast, the first stage of **SA-212** was scrapped (its S-IVB became Skylab) [11] [4], and SA-213/SA-214 had only first stages built (all later scrapped) [12]. Thus, in storage or display: *S-IB FA-209 (Chrysler H-1) and FA-211* first stages remain; *S-IVB FB-209 and FB-211* (McDonnell Douglas) survive; FB-212 exists only as the Skylab workshop; and the others were discarded.

- **Saturn V boost stages.** Eleven Saturn Vs flew; three were fully built and cancelled. SA-514 (intended Apollo 19) and SA-515 (Apollo 20) were completed to flight configuration (all stages). As a result, *first stages S-IC-14/15*, *second stages S-II-14/15*, and *third stages S-IVB-514/515* were all built. In reality NASA deployed S-IC-14, S-II-14 and S-IVB-514 as the KSC Saturn V display [2], and S-IC-15, S-II-15 went to Michoud/JSC [3] (S-IVB-515 was converted to Skylab B). In the alt-timeline, none of these launch. Therefore all six stage pieces (14–15 in each stage) are "available/in storage." In addition, the **dynamic-test Saturn V (SA-500D)**, comprising a test first stage (S-IC-D), second stage (S-II-D) and third stage (S-IVB-D), is preserved at the US Space & Rocket Center in Huntsville. (All flew static tests but never flew to space.) Table 1 lists these with their producers (Boeing for S-IC, North American for S-II, Douglas for S-IVB) and notes any conversion (e.g. *S-IVB-515 was later made Skylab B* [4]). Notably, NASA records show the very **last Saturn first/second stages** (S-IC-15, S-II-15) were accepted in October–November 1970 for the canceled Apollo 19 rocket [5], confirming they were complete.

- **Spacecraft (CSM/LM).** All 19 Apollo CSMs were built; CSM-115 (intended Apollo 19) and CSM-119 (Skylab rescue/ASTP backup) never flew. CSM-115 (Block II) exists; CSM-119 is displayed at KSC Visitor Center (though later transferred to NASM). These are listed in Table 1. LM-13 (for Apollo 19) was built, partially tested and ultimately displayed at Cradle of Aviation (NY); LM-14/15 (Apollo 20/ATM) were never completed (scrapped) [13] [14]. These appear in the table with source citations.

- **Instrument Units and LES.** Every Saturn IB/V had an avionics "Instrument Unit" ring; surviving IUs correspond to surviving stages. (For example, the Rocket Garden Saturn IB SA-209 includes its flight IU, and the JSC Saturn V display is all flight hardware including IU.) Launch Escape Systems (LES) were built for each CSM, so unused ones remain with any unused CSM. These details are noted generally in the narrative but are not individually listed in Table 1 (as official serials are often undocumented).

- **Ground & tooling.** Major support equipment – e.g. Mobile Launch Platforms (MLP-1/2), LC-34/37 umbilical towers (Saturn IB pads), and the Vehicle Assembly Building – remained in place. In principle these could support launches of the remaining Saturn vehicles. They are mentioned here for completeness; major Saturn-era GSE was largely mothballed but not disposed of.

Overall, the **total Saturn inventory** available in the early 1970s was large. By one count, NASA had 14 Saturn IBs in partial/complete form [1] and upwards of 17 Saturn Vs at various stages [2] [3] (including dynamic-test and partial-build items). Table 1 (below) itemizes each, with current (1970s) status in the "available program" scenario. In most cases, fully built hardware is "available/in storage," since the only uses (Skylab/OATK) have been disallowed by the alternate assumption.

Program Continuation: In practice, this hardware could have been used to extend Apollo/Saturn missions. For instance, SA-514/515's stages and CSM-115 would suffice for Apollo 18–19 launches. The two intact

Saturn IBs (209, 211) plus completed IUs and payload adapters could have served additional low-orbit missions or even missions to rescue Skylab. The existence of Skylab's own S-IVB workshops (515 and 212) means a second station was ready – it was only politics that cancelled it. In short, NASA had essentially a "ready-made" fleet for two more lunar missions and a backup space station, at little cost beyond integration. The primary limits in this alternate scenario would be crew scheduling and downstream hardware (e.g. launch vehicles vs. docking adapters), not Saturn-stage availability [4] [5].

Summary Table of Leftover Saturn Hardware

Designation	Vehicle Type	Production Status	Intended Mission	1970s Disposition (alt)	Location (1970s)	Manufacturer	Mods/ Notes
Saturn IB first stage SA-209	S-IB (1st stage)	Built, flight-qualified	Skylab 4 rescue / ASTP backup [10]	Available (in storage/ display)	KSC (Rocket Garden)	Chrysler (MCFC)	Engines replaced with replicas (for display) [15]
Saturn IB second stage S-IVB-209	S-IVB (2nd stage)	Built, flight-qualified	Skylab 4 rescue / ASTP backup	Available (displayed)	KSC (Rocket Garden)	Douglas (McDonnell)	Cutouts cut in hull for display viewing [15]
Saturn IB first stage SA-211	S-IB (1st stage)	Built	Unused backup	Available (display)	AL Welcome Ctr (was Ardmore, now Jan '23 dem.) [1]	Chrysler (MCFC)	Original engines (s/n traceable)
Saturn IB second stage S-IVB-211	S-IVB (2nd stage)	Built	Unused backup	Available (display)	US Space & Rocket Ctr, Huntsville [1]	Douglas (McDonnell)	Used as Skylab trainer/ test stage
Saturn IB first stage SA-212	S-IB (1st stage)	Built	Skylab (planned)	Scrapped	–	Chrysler (MCFC)	–

Designation	Vehicle Type	Production Status	Intended Mission	1970s Disposition (alt)	Location (1970s)	Manufacturer	Mods/ Notes
Saturn IB second stage S-IVB-212	S-IVB (2nd stage)	Built, converted to Skylab Workshop [4]	Skylab (actual)	*Available* (if not converted)	(was Cape KSC)	Douglas (McDonnell)	Skylab Orbital Workshop converted in reality [4]
Saturn IB first stage SA-213	S-IB (1st stage)	Built (only 1st stage)	Canceled (Apollo backlog)	Scrapped	–	Chrysler (MCFC)	–
Saturn IB first stage SA-214	S-IB (1st stage)	Built (only 1st stage)	Canceled	Scrapped	–	Chrysler (MCFC)	–
Saturn V first stage S-IC-11	S-IC (1st stage)	Flown (Apollo 15)	Apollo 15	Not available (flown)	–	Boeing/MSFC	–
Saturn V first stage S-IC-12	S-IC (1st stage)	Flown (Apollo 16)	Apollo 16	Not available (flown)	–	Boeing/MSFC	–
Saturn V first stage S-IC-13	S-IC (1st stage)	Flown (Apollo 17)	Apollo 17	Not available (flown)	–	Boeing/MSFC	–
Saturn V first stage S-IC-14	S-IC (1st stage)	Completed, flight-qualified	Apollo 18 (planned) [2]	Available (storage/ display)	JSC (Rocket Park) [2]	Boeing/MSFC	(One F-1 test-fired Oct 1970 [5])
Saturn V first stage S-IC-15	S-IC (1st stage)	Completed, flight-qualified	Apollo 19/20 (planned) [3]	Available (storage/ display)	Infinity Science Ctr, MS (ex-Michoud) [3]	Boeing/MSFC	(Test-fired Oct 1970 [5])
Saturn V first stage S-IC-D	S-IC (test stage)	Test article, static-fired	N/A (dynamic test)	Available (display)	USSRC, Huntsville	Boeing/MSFC	Part of SA-500D dynamic test vehicle

Designation	Vehicle Type	Production Status	Intended Mission	1970s Disposition (alt)	Location (1970s)	Manufacturer	Mods/ Notes
Saturn V second stage S-II-11	S-II (2nd stage)	Flown (Apollo 15)	Apollo 15	Not available (flown)	–	North American/ MSFC	–
Saturn V second stage S-II-12	S-II (2nd stage)	Flown (Apollo 16)	Apollo 16	Not available (flown)	–	North American/ MSFC	–
Saturn V second stage S-II-13	S-II (2nd stage)	Flown (Apollo 17)	Apollo 17	Not available (flown)	–	North American/ MSFC	–
Saturn V second stage S-II-14	S-II (2nd stage)	Completed, flight-qualified	Apollo 18 (planned)	Available (display)	KSC (Saturn V Center)	North American/ MSFC	(Accepted 1970 for Apollo 19 [5])
Saturn V second stage S-II-15	S-II (2nd stage)	Completed, flight-qualified	Apollo 19 (planned)	Available (display)	JSC (Rocket Park)	North American/ MSFC	(Accepted 1970 for Apollo 19 [5])
Saturn V second stage S-II-D	S-II (test stage)	Structural test article	N/A (dynamic test)	Available (display)	USSRC, Huntsville	North American/ MSFC	Part of SA-500D dynamic test vehicle
Saturn V third stage S-IVB-512	S-IVB (3rd stage)	Flown (Apollo 17)	Apollo 17	Not available (flown)	–	Douglas (McDonnell)	–
Saturn V third stage S-IVB-513	S-IVB (3rd stage)	Completed, flight-qualified	Skylab (planned Apollo 18)	Available (storage/ display)	JSC (Rocket Park)	Douglas (McDonnell)	(Test-fired 1970 for Apollo 19)
Saturn V third stage S-IVB-514	S-IVB (3rd stage)	Completed, flight-qualified	Apollo 19 (planned)	Available (display)	KSC (Saturn V Center)	Douglas (McDonnell)	–
Saturn V third stage S-IVB-515	S-IVB (3rd stage)	Completed, flight-qualified (Skylab B) [4]	Apollo 20 / Skylab B	Available (not converted in alt scenario)	(Skylab B now NASM)	Douglas (McDonnell)	Later converted to Skylab B Workshop [4]

Designation	Vehicle Type	Production Status	Intended Mission	1970s Disposition (alt)	Location (1970s)	Manufacturer	Mods/ Notes
Saturn V third stage S-IVB-D	S-IVB (test stage)	Structural test article	N/A (dynamic test)	Available (display)	USSRC, Huntsville	Douglas (McDonnell)	Part of SA-500D dynamic test vehicle
Apollo CSM CSM-115	CSM (Block II)	Completed, flight-qualified	Apollo 19 (planned)	Available (storage)	JSC (Vehicle Mock-up Fac)	North American/ Rockwell	Last CSM built for lunar program
Apollo CSM CSM-119	CSM (Block II)	Completed, flight-qualified	Skylab rescue / ASTP backup	Available (display)	KSC (VC Rocket Garden) [16]	North American/ Rockwell	ASTP backup (flew ASTP no – 119)
Lunar Module LM-13	LM	Partially completed, assembled	Apollo 18/19 (planned)	Available (display)	Cradle of Aviation, NY [13]	Grumman	Restored by NASM; intended Apollo 19

Table 1: Saturn IB/V hardware built or in production (late 1960s) and their fate in the early 1970s, assuming no use for Skylab or ASTP. "Available" means the piece was built and remains intact (though perhaps in storage or on display). Sources: NASA mission reports and histories, contractor records, and museum archives [4] [5] [1]. (Hardware not flown or explicitly documented is marked "unspecified.")

Sources: Authoritative NASA history accounts and archives were used to compile this list. For example, NASA confirms the Skylab orbital workshop was converted from *S-IVB-212* [4], and that *S-IC/S-II* stages built for Apollo 19 were static-fired as late as 1970 [5]. CollectSpace and museum records provide details on surviving display stages (e.g. SA-209 at KSC [10]). This combined evidence underpins the table's entries and illustrates that a large Saturn inventory remained after Apollo.

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