

# THE PRACTITIONER

A monthly newsletter of the Energy Facility Contractors Group's  
Project Delivery Working Group



Issue 62

September 2024

## Planning and Scheduling DOE G 413.3-24 – Current Version

**G**reetings Practitioners! Cooler weather and a new fiscal year are on the horizon. This month's edition provides a high level overview refresher of the guidance to DOE's Planning and Scheduling expectations. Like the entire 413.3 suite of guides *this guide assists project teams by outlining project scheduling principles and best practices in planning and executing capital asset projects to meet the requirements of DOE Order (O) 413.3B*, Program and Project Management for the Acquisition of Capital Assets. This guide provides non-mandatory information for fulfilling requirements contained in rules, regulatory standards, and DOE directives. Guides are not requirement documents and are not to be construed as requirements in any audit or appraisal for compliance. Send citations of errors, omission, ambiguities, and contradictions found in this guide to [PMpolicy@hq.doe.gov](mailto:PMpolicy@hq.doe.gov).

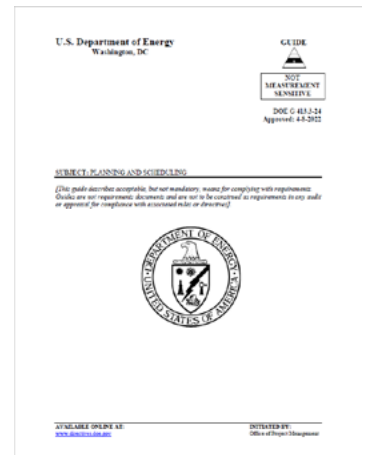
With that said, let's explore how the planning and scheduling guide can help with management or your project

*This guide outlines effective principles for developing and maturing project schedules at a level of detail corresponding to the critical decision process* outlined in Department of Energy (DOE) Order 413.3B. It also guides assessments of project schedules for the same purpose. The principles addressed within this guidance pertain to acquisition of capital assets governed by DOE O 413.3B. The guide does not address strategic, program, site, operations, or sustainment planning.

*413.3B requires projects to develop, maintain, and document an integrated master schedule (IMS) in a manner consistent with the methods and best practices identified in the National Defense Industrial Association (NDIA) Planning and Scheduling Excellence Guide (PASEG) and the Government Accountability Office Schedule Assessment Guide, GAO 16-89G (GAO)*. This guide reconciles these two references within the DOE acquisition management system for capital asset projects. Note: access the guide directly to view and understand the clarification and applicability of the PASEG to DOE.

Integrated planning is the process where a project translates its requirements into its scope, breaks its scope into products, identifies the activities needed to accomplish its products, and assigns sufficient resources to the activities to complete them. *GAO best practice expectations are for projects to have a scope statement, a work breakdown structure (WBS), and an integrated master plan (IMP) or similar event-based, top-level plan.*

The IMP contains the project's approach for integrating and elaborating on the contents of the project's scope statement, project execution plan (PEP), and WBS as shown below. It is recommended that the elements of the IMP or similar plan be included within or referenced in the PEP. *The IMP outlines a hierarchy of project events, including critical milestones, each supported by specific accomplishments, and each accomplishment has prerequisites, completion criteria, or both.* The IMS then extends the IMP by detailing activities, each with a duration and resource needs, which can result in the accomplishments listed in the IMP. The IMP and IMS also have linkage to the EVMS, risk management, and internal and external status reviews.



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# Planning and Scheduling

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*A performance measurement baseline (PMB) includes an integrated, networked schedule that establishes progress goals and documents accomplishments indicative of execution of the scope of work.* The schedule communicates what work remains, which resources perform the work, and by when the work would need to occur for the project to finish by the approved CD-4 date.

*Projects integrate their schedules horizontally as evidenced by networks with critical and near-critical paths and vertically as evidenced by the inclusion of all work regardless of the performing entity.* A schedule achieves horizontal traceability when the logic connecting predecessors and successors creates a logical and realistic whole. Logic includes the relationships for the sequencing of the events for a logical forward and backwards reasonable plan of execution. A schedule achieves vertical traceability when its information rolls up logically and consistently. *Horizontal and vertical traceability demonstrates realism in the schedule.*

An IMS accounts for all project scope contained in planning packages (PP) and work packages (WP) included in the project IMP and WBS. The IMS sequences all project milestones and activities contained in PP and WP, regardless of the performing entity, in a logically linked, horizontally and vertically traceable network, spanning project start to project completion.

Network logic relationships include any constraints, leads, or lags that control the start or finish of each milestone or activity. *The logically networked and resource-loaded schedule supports the calculation of the project's critical path, near critical paths, and free and total float values to enable the analysis of the schedule's completeness, realism, and achievability.* The project critical path does not include activities designated as level of effort (LOE).

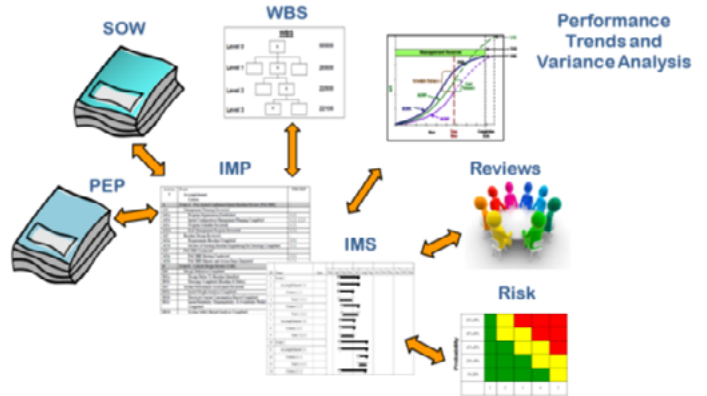
PP and WP activity durations, based on the allocation and availability of resources and materials, roll up vertically to establish the overall duration required to complete each accomplishment. *Resource load schedule activities after finalizing the project estimate.* Resources include hours, by major functional organizations, and dollars, by element of cost (EOC), aligned to the WBS, Control Account (CA), WP, and WP activities through the schedule coding structure. Loading dollars provides the basis for the budgeted cost of work scheduled (BCWS) required in an EVMS.

*The baseline IMS reflects the most current resource-loaded, time-phased plan for accomplishing all scope in the PMB, including LOE.* Integrate the baseline IMS with a cost processor through the WBS to provide the BCWS. A project earns value (EV), or its budgeted cost of work performed (BCWP), as it completes work against BCWS. For this reason, the actual date of completion for each activity is recorded each month in an updated and adjusted forecast IMS (mirroring the activities in the baseline IMS) enabling project management to see how actual performance impacts the following work yet to be finished.

## Roles and Responsibilities - Contractor Control Account Managers (CAMS) and Project Control Staff

- ✓ *Develop and maintain*, through change control, a resource-loaded IMS, including all activities, linked to WBS elements, needed to execute the contract requirements with a critical path, composed of discrete activities, that for

Relationship between the IMPs, IMS, and other project deliverables



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**THE PRACTITIONER**

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# Planning and Scheduling

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cost reimbursable contracts contains labor, material, and equipment unit prices and quantities, as appropriate.

- ✓ Include in addition to project activities *all significant external milestones, regulatory commitments, and dependencies*.
- ✓ Update the forecast schedule with actual start and finish dates and revised activity durations and relationships necessary to realistically complete the project.
- ✓ *Update resources* required to complete the work so that Estimate to Complete (ETC) can be kept up to date
- ✓ Upload baseline and forecast schedule data into PARS in accordance with project performance upload requirements.
- ✓ *Provide to the Federal Project Director (FPD) requested project information* to support:
  - o Budget planning, execution, and reporting;
  - o Project planning and execution;
  - o Audit and evaluation; and,
  - o Other performance assessment and information needs.
- ✓ Submit requests for an over target schedule (OTS) to the contracting officer when indicated by project performance.
- ✓ *Identify, quantify, and mitigate schedule risks throughout the life of the project.*

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Schedule of Deliverables - Actions or Deliverables

PRE			POST	
Action or Deliverable	Basis	CD	Action or Deliverable	Basis
• CD-4 date range	O 413.3B	0	—	—
• CD-4 date range • High-Level Master Schedule in Acquisition Strategy	O 413.3B	1	• Include EVMS clause, with subcontractor flow down, in contract • Initiate IMS development with inclusion of master schedule in acquisition strategy	O 413.3B
• Update IMS generated CD-4 date in the PB • IMS contains the applicable construction schedule	O 413.3B	2	• IMS updates • PARS data uploads	O 413.3B
• IMS updates • PARS data uploads	O 413.3B	3	• IMS updates • PARS data uploads	O 413.3B
• IMS updates • PARS data uploads	O 413.3B	4	• Project closeout (document final IMS status)	O 413.3B

Planning for an Integrated Master Schedule

Integrated Master Schedule	
Source: DOE Order 413.3B, Appendix C, Section 16	Applies to:
"The IMS shall be developed, maintained, and documented in a manner consistent with methods and the best practices identified in the Planning and Scheduling Excellence Guide, published by the National Defense Industrial Association, and the GAO's Schedule Assessment Guide."	<ul style="list-style-type: none"> <li>• Post-CD-1</li> <li>• Pre-CD-2</li> </ul>

## Is your data and info

**C**urrent, **A**ccurate,

**C**omplete, **R**epeatable,

**A**uditable and

**C**ompliant<sup>®</sup>?

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# Planning and Scheduling

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An IMP, while not a specific deliverable identified in O 413.3B, is a proven successful method and best practice identified by GAO and PASEG for developing the IMS. An IMP or similar is an event-driven plan that documents significant accomplishments necessary to complete the work. It defines how the project will be organized. IMP and IMS are not equivalent; however, together they provide a systematic approach to planning, scheduling, and managing.

The IMP or similar plan does not contain dates but rather project events, significant accomplishments, and success criteria that serve as the foundation for the content of the IMS as shown below. The project team produces the IMP or similar plan.

Project Events identify major assessment points corresponding to primary project goals. This would be the DOE O 413.3 CD gate maturity points, CD1-CD4.

Significant Accomplishments List desired results realized at the completion of each event indicative of the project's progress. Label these accomplishments. For example, for an event like "approve start of execution," then provide "final design review approval," "external independent review (EIR) completed," and "EVMS certification" as associated accomplishments. Include, at a minimum, requirements and activities identified in the request for proposal, contract, or project scope statement.

Success Criteria identify one or more measurable or objective and qualitative or quantitative success criteria that indicate acceptable completion of each accomplishment or preparedness for a future accomplishment. Examples appear in the Table below.

Criteria Examples

Success Criteria	Type of Success Criteria	Significant Accomplishment
Mission need statement approval	Prerequisite	Pre-conceptual Analysis
EVMS system description approval	Prerequisite	EVMS certification
Final design approval	Acceptable completion	Final design

- ✓ Use an integrated coding system, combined with a disciplined approach to labeling planning elements, suitable for management.
- ✓ Phrase IMP element titles in the past tense because the IMP assumes the project will complete each event, accomplishment, and criteria.
- ✓ Phrase IMS milestones and activities in the imperative.

Maturation of an Integrated Master Schedule

Integrated Master Schedule	
Source: DOE Order 413.3B, Appendix C, Section 16	Applies to:
"Projects shall develop and maintain an Integrated Master Schedule (IMS)."	<ul style="list-style-type: none"> <li>• Post -CD-1 through CD-4</li> </ul>

and IMS activities to determine the work and status for any IMP element.

## General Expectations

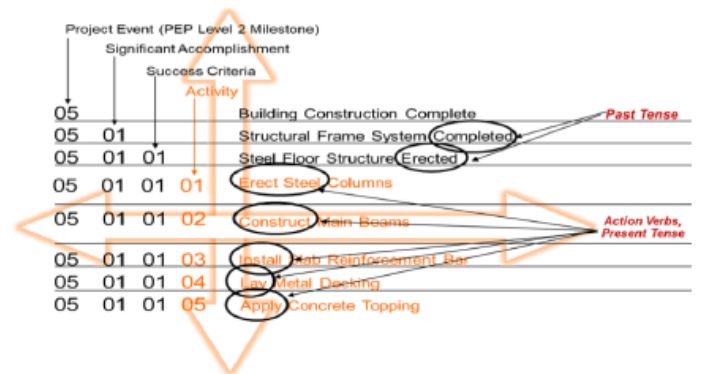
The 10 best practices for project schedules of the GAO Schedule Assessment Guide appear in the table on the next page. The terms "limited" and "full" refer to the level of applicability of the GAO best practice in that phase of a project.

IMP Levels



## Integration:

- ✓ Structure the IMP in accordance with the figure below, which illustrates how the IMS integrates the IMP's project events, significant accomplishments, and success criteria, listed sequentially (i.e., vertically) in the figure.



- ✓ Transfer the coding structure in the IMP to the IMS. Ensure the IMS includes all IMP elements.
- ✓ Roll up the work and status of IMP sub-elements

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# Planning and Scheduling

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The guidance published by GAO and NDIA in its PASEG apply to projects for which a PMB has been established.

*The 10 best practices have no or limited applicability until prior to CD-2.*

This guide addresses four schedule evolutions:

- ✓ Prior to CD-1, a high-level Master Schedule
- ✓ Post CD-1, IMS for the selected alternative
- ✓ Prior to CD-2, baseline/forecast IMS
- ✓ Post CD-2, baseline/forecast IMS with the construction plan of execution

Stay tuned next month as we continue our exploration of DOE's "Planning and Scheduling" Guide DOE G 413.3-24. In the interim, please visit the [Energy Facility Contractors Group \(EFCOG\) Project Delivery Working Group \(PDWG\) webpage](#) for training material developed and provided for you and your staff's use, compliments of Washington River Protection Solutions (WRPS).

GAO Best Practice (GAO 16-89G)	Prior to CD-1	Post CD-1	Prior to CD-2	Post CD-2
1—Capturing All Activities	Limited	Limited	Full	Full
2—Sequencing All Activities	Limited	Full	Full	Full
3—Assigning Resources to All Activities	Limited	Limited	Full	Full
4—Establishing the Duration of All Activities	Limited	Full	Full	Full
5—Verifying That the Schedule Can Be Traced Horizontally and Vertically	Limited	Full	Full	Full
6—Confirming That the Critical Path is Valid	Limited	Full	Full	Full
7—Ensuring Reasonable Total Float	Not applicable	Full	Full	Full
8—Conducting a Schedule Risk Analysis	Limited	Limited	Full	Full
9—Updating the Schedule Using Actual Progress and Logic	Not applicable	Limited	Full	Full
10—Maintaining a Baseline Schedule	Not applicable	Limited	Full	Full

# It Is Not One World Project Dashboard

Routinely the "Practitioner" looks outward for "It's Not One World" articles. In this issue we look inward to our own "Project Dashboard". At a glance we see a good showing of "Green", ample opportunity to improve our overall stop light chart by doubling-down and committing to turning "Red" to "Yellow" and Yellow to "Green". This can only be accomplished with well thought out strategic plans and risk management/mitigation.

Rigorous and disciplined application of the 413.3 process presents the greatest opportunity to improve our collective dashboard metrics. The Energy Facility Contractors Group (EFCOG) Project Delivery Working Group (PDWG) Annual Work Plan (AWP) is a great place to tag initiatives that support the improvement of our dashboard metrics. One initiative that DOE has requested of the EFCOG PDWG is through Project Peer Reviews of schedules prior to site visits by DOE PM-30. A schedule of upcoming reviews will be provided by PM-30 soon.



Office of Project Management

Project Dashboard - August 2024  
POST CD-2 Active Projects

Program	Contractor	DOE Project Number	Project Name	Original Project Budget	Project Budget	Monthly Overall Assessment
CR	FFPO	18-E-001-01-01	SPR-LE2-Big Hill	\$457,000,000	\$607,000,000	Yellow
CR	FFPO	18-E-001-01-02	SPR-LE2-Bryan Mound	\$315,000,000	\$348,000,000	Yellow
CR	FFPO	18-E-001-01-03	SPR-LE2-Bayou Choctaw	\$355,000,000	\$369,000,000	Green
EM	BNI	01-D-416	Waste Treatment and Immobilization Plant (WTP)	\$5,781,000,000	\$18,524,000,000	Red
EM	UCOR2	14-D-403	Outfall 200 Mercury Treatment Facility	\$224,000,000	\$224,000,000	Red
EM	SIMCO	15-D-411	Safety Significant Confinement Ventilation System (WIPP)	\$288,000,000	\$494,000,000	Yellow
EM	SIMCO	15-D-412	Utility Shaft, WIPP	\$196,985,000	\$288,000,000	Green
EM	SRNS	19-D-701	K Area Argus	\$79,400,000	\$79,400,000	Red
EM	SIRMC	20-D-401	Saltstone Disposal Unit #10, 11, 12	\$496,000,000	\$496,000,000	Green
EM	North Wind Construction Services	20-D-402	Advanced Manufacturing Collaborative Facility (AMC)	\$75,127,000	\$75,127,000	Green
EM	Fluor-BB&W Portsmouth LLC	20-U-401	On-Site Waste Disposal Facility - Infrastructure Construction	\$373,000,000	\$373,000,000	Green
EM	CH2M Hill - B&W West Valley	OH-WV-0040.C2.2	Main Plant Process Building	\$206,000,000	\$206,000,000	Yellow
EM	UCOR2	OR-0041.C3.1	Early Site Preparation	\$41,000,000	\$41,000,000	Green
EM	UCOR2	OR-0041.C3.2	Ground Water Field Demonstration	\$80,000,000	\$80,000,000	Green
NA	Triad		ECSE Advanced Sources and Detectors MIE	\$1,800,000,000	\$1,800,000,000	Yellow
NA	CNS	06-D-141-04	UPF Main Process Building Subproject	\$4,731,800,000	\$4,731,800,000	Red
NA	CNS	06-D-141-08	UPF Process Support Facilities	\$140,000,000	\$140,000,000	Green
NA	CNS	06-D-141-09	UPF Salvage and Accountability Building Subproject	\$1,180,000,000	\$1,180,000,000	Red
NA	Triad	07-D-220-04	Transuranic Liquid Waste Facility	\$215,300,000	\$215,300,000	Yellow
NA	CNS	15-D-301	HE Science & Engineering Facility	\$228,000,000	\$300,000,000	Green
NA	Triad	15-D-302	Technical Area-S5 Reinvestment Project, Phase III	\$236,029,885	\$236,029,885	Red
NA	MSTS	17-D-640-020	ECSE Laboratory and Support Infrastructure	\$560,000,000	\$560,000,000	Red
NA	CNS	17-D-710	West End Protected Area Reduction Project	\$159,850,000	\$265,000,000	Green
NA	SRNS	18-D-650-01	Site Preparation & Warehouse Construction	\$37,300,000	\$37,300,000	Green
NA	SRNS	21-D-511-03	SRPPF Administrative Building (ADMIN)	\$93,200,000	\$93,200,000	Yellow

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# Project Dashboard

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Office of Project Management

## Project Dashboard - August 2024

POST CD-2 Active Projects

Program	Contractor	DOE Project Number	Project Name	Original Project Budget	Project Budget	Monthly Overall Assessment
NA	Triad	21-D-512-01	Los Alamos Plutonium Pit Production Project (LAP-4) Decontamination and Demolition (D&D) Subproject	\$529,000,000	\$529,000,000	Red
NA	Triad	21-D-512-02	Los Alamos Plutonium Pit Production Project (LAP-4) 30 Base Equipment Installation (30B) Subproject	\$1,864,126,000	\$1,864,126,000	Red
NA	LLNS	22-D-514	Digital Infrastructure Capability Expansion	\$80,700,000	\$80,700,000	Green
NA	MSTS	24-D-513	NDSE Mining and Critical Procurements (ZTBF1-010)	\$46,600,000	\$46,600,000	Yellow
NA	CNS	MIE-AMD-03	Electrorefining Project	\$101,000,000	\$139,000,000	Green
NA	CNS	MIE-AMD-04	Calciner Project	\$107,800,000	\$149,500,000	Red
NE	BEA	16-E-200	Sample Preparation Laboratory (SPL)	\$166,000,000	\$166,000,000	Green
OE	Battelle	20-OE-100	Grid Storage Launchpad	\$77,000,000	\$78,800,000	Green
SC	UT-Battelle		Material Plasma Exposure eXperiment (MPEX)	\$201,000,000	\$201,000,000	Green
SC	BSA		NSLS-II Experimental Tools-II (NEXT-II)	\$94,500,000	\$94,500,000	Green
SC	UC-LBNL		Gamma-Ray Energy Tracking Array (GRETA)	\$58,303,000	\$58,303,000	Green
SC	FRA	11-SC-40	Far Site Conventional Facilities - Excavation	\$644,000,000	\$644,000,000	Green
SC	FRA	11-SC-40	Far Site Conventional Facilities - Building and Site Infrastructure	\$211,000,000	\$211,000,000	Green
SC	FRA	11-SC-41	Muon to Electron Conversion Experiment (MuZE)	\$273,677,000	\$315,700,000	Green
SC	UChicago Argonne	18-SC-10	Advanced Photon Source Upgrade (APS-U)	\$815,000,000	\$815,000,000	Green
SC	UT-Battelle	18-SC-11	Spallation Neutron Source Proton Power Upgrade (PPU)	\$271,567,000	\$271,567,000	Green
SC	UC-LBNL	18-SC-12	Advanced Light Source Upgrade (ALS-U)	\$590,000,000	\$590,000,000	Yellow
SC	FRA	18-SC-42	Proton Improvement Plan-II (PIP-II)	\$978,000,000	\$978,000,000	Green
SC	BSA	19-SC-71	Science User Support Center (SUSC)	\$86,200,000	\$86,200,000	Green
SC	UT-Battelle	19-SC-73	Translational Research Capability (TRC)	\$95,000,000	\$95,000,000	Yellow
SC	UC-LBNL	19-SC-74	Biological and Environmental Program Integration Center (BioEPIC)	\$167,200,000	\$167,200,000	Green
SC	BSA	20-SC-11	Nanoscale Science Research Centers Recapitalization (NSRC Recap)	\$80,000,000	\$80,000,000	Green
SC	UT-Battelle	20-SC-51	Conventional Facility and Electromagnetic Isotope Separator	\$231,500,000	\$231,500,000	Green



Office of Project Management

## Project Dashboard - August 2024

POST CD-2 Active Projects

Program	Contractor	DOE Project Number	Project Name	Original Project Budget	Project Budget	Monthly Overall Assessment
SC	BSA	20-SC-71	Critical Utilities Rehabilitation Project (CURP)	\$92,800,000	\$92,800,000	Green
SC	UC-LBNL	20-SC-72	Seismic and Safety Modernization (SSM)	\$145,000,000	\$145,000,000	Green

Monthly Overall Assessment	Legend
Green	Project is expected to meet its performance baseline cost, schedule, or scope.
Yellow	Project is at risk of breaching its performance baseline cost, schedule, or scope.
Red	Project is expected to breach its performance baseline cost, schedule, and scope.

## Project Management — What "They" Say:

**“One of the true tests of leadership is the ability to recognize a problem before it becomes an emergency.”**

— Arnold H. Glasow, businessman, author and humorist

# Just for Fun: September's Notable Events and Famous Birthdays

## Notable Events

- 1 — World War II started when Germany invaded Poland (1939), and the Soviet Union shot down a South Korean airliner, killing all 269 aboard (1983).
- 2 — World War II ended as Japan officially surrendered to the Allies (1945), and the first ATM opened (1969).
- 3 — The American Revolution officially ended with the Treaty of Paris (1783), and a siege in a Russian school ended with more than 300 people dead (2004).
- 4 — Apache chief Geronimo became the last Indian warrior to surrender to U.S. troops (1886), swimmer Mark Spitz won a then-record 7th Olympic gold medal (1972), Google became incorporated (1998), and Kelly Clarkson won the first *American Idol* (2002).
- 5 — The first Continental Congress convened (1774), 18 people died when terrorists attacked Israeli athletes at the Olympics (1972), President Gerald Ford survived an assassination attempt (1975), and Katie Couric debuted as the first solo female network news anchor (2005).
- 6 — Ferdinand Magellan completed the first circumnavigation of the globe (1522), President William McKinley was shot (1901), the first military tank was built (1915), and Cal Ripken played in his record 2,131st consecutive baseball game (1995).
- 7 — The first Miss America pageant was held (1921).
- 8 — Italy surrendered to the Allies (1943), American troops occupied southern Korea (1945), President Gerald Ford pardoned former president Richard Nixon (1974), **the Oprah Winfrey Show was first televised nationally** (1986), and Mark McGwire hit a major league record 62nd home run of the season (1998).
- 9 — The "United States of America" was named by Congress (1776), California became the 31st U.S. state (1850), and a Japanese pilot conducted the only air attack on the U.S. mainland at Mt. Emily in Oregon (1942).
- 10 — The first-ever DUI arrest was made in London (1897), the guillotine was used for the last time (1977), and the grunge era began as Nirvana's "Smells Like Teen Spirit" was released (1991).
- 11 — Pete Rose collected his major league record 4,192nd career hit (1985), and "Never Forget" (2001).
- 12 — Mae Jemison became the first Black woman in space (1992), and the Harlem Globetrotters finally lost after 8,829 consecutive wins (1995).
- 13 — "The Star-Spangled Banner" was written (1814), a four-day riot at New York's Attica Prison ended with 39 deaths (1971), and rapper Tupac Shakur died after being shot six days earlier (1996).
- 14 — Theodore Roosevelt became president after William McKinley died (1901), the Soviet Union sent the first man-made object to the moon (1959), and pitcher Denny McLain became the last 30-game winner in the major leagues (1968).
- 15 — Four black girls were killed in a bomb blast at Birmingham, Ala. church (1963), and Muhammad Ali became the first three-time world heavyweight champ (1978).
- 16 — The *Mayflower* departed England for the New World (1620), the Mexican War of Independence began (1810), General Motors was incorporated (1908), the Selective Service and Training Act was signed (1940), and a gunman killed 12 people at the Navy Yard in Washington, D.C. (2013).
- 17 — The U.S. Constitution was signed (1787), the Civil War Battle of Antietam was fought, resulting in nearly 23,000 casualties (1862), NASA unveiled its first space shuttle (1976), and **a peace agreement between Israel and Egypt was signed** (1978).
- 18 — The U.S. Air Force was established (1947).
- 19 — President James A. Garfield died two months after being shot (1881), New Zealand became the first country to allow women to vote (1893), and the first underground nuclear explosion was conducted in Nevada (1957).
- 20 — Chester Arthur became U.S. president following the death of President Garfield (1881).
- 21 — France's monarchy was abolished and the First Republic established (1792).
- 22 — President Lincoln delivered the Emancipation Proclamation (1862), the Peace Corps was established (1961), President Ford survived a second assassination attempt (1975), the first Farm Aid concert was held (1985), and the sitcom *Friends* made its debut (1994).
- 23 — Neptune was discovered (1846).
- 24 — The Supreme Court was established (1789), and the Honda Motor Company was incorporated (1948).
- 25 — The Bill of Rights was approved by Congress (1789), and Sandra Day O'Connor became the first female Supreme Court justice (1981).
- 26 — *West Side Story* opened on Broadway (1957), the first televised presidential debate was held between JFK and Nixon (1960), and the Baltimore Orioles became the last major league team with four 20-game winners (1971).
- 27 — The Axis powers were formed (1940).
- 28 — **Ted Williams became the last major league player to hit .400** (1941) and **hit a home run in his last career at-bat** (1960).
- 29 — Willie Mays made his famous over-the-shoulder catch in the World Series (1954), and Stacy Allison became the first American woman to summit Mt. Everest (1988).
- 30 — Babe Ruth hit a major league record 60th home run of the season (1927), the USS *Nautilus* was commissioned as the first nuclear submarine (1954), and the first large-scale antiwar demonstration in the U.S. was held (1964).



## Birthdays

- 1 — Hall of fame boxer Rocky Marciano (1923), singer Conway Twitty (1933), actress/comedian Lily Tomlin (1939), and TV host Dr. Phil (1950).
- 2 — Football hall of famer/sportscaster Terry Bradshaw (1948), actor Mark Harmon (1951), tennis champ Jimmy Connors (1952), actor Keanu Reeves (1964), and actress Selma Hayek (1968).
- 3 — Actor Charlie Sheen (1965).
- 4 — Radio personality Paul Harvey (1918), golfer Tom Watson (1949), actor/comedian Damon Wayans (1960), and **singer Beyonce** (1981).
- 5 — Outlaw Jesse James (1847), comedian/actor Bob Newhart (1929), actor William Devane (1939), model/actress Raquel Welch (1940), actor Michael Keaton (1951), and musician Dweezil Zappa (1969).
- 6 — Actress Jane Curtin (1947) and comedian Jeff Foxworthy (1958).
- 7 — Musician Buddy Holly (1936), singer Gloria Gaynor (1949), and actor Corbin Bernsen (1954).
- 8 — Composer Antonin Dvorak (1841), actor Peter Sellers (1925), country singer Patsy Cline (1932), and **politician Bernie Sanders** (1941).
- 9 — KFC founder Colonel Sanders (1890), singer Otis Redding (1941), quarterback/sportscaster Joe Theismann (1949), and actor Adam Sandler (1966).
- 10 — Golfer Arnold Palmer (1929), TV journalist Charles Kuralt (1934), singer Jose Feliciano (1945), and actor Ryan Phillippe (1975).
- 11 — Football coaching legends Bear Bryant (1913) and Tom Landry (1924), and actor/singer Harry Connick Jr. (1967).
- 12 — **Olympic track champion Jesse Owens** (1913), singer Barry White (1944), and actress Rachel Ward (1957).
- 13 — Physician Walter Reed (1851), World War I general John J. Pershing (1860), author Roald Dahl (1916), singers Mel Torme (1925) and Peter Cetera (1944), and actor Ben Savage (1980).
- 14 — Rapper Nas and actor Andrew Lincoln (1973), singer Amy Winehouse (1983), and basketball player Jimmy Butler (1989).
- 15 — 27th U.S. President William Taft (1857), author Agatha Christie (1890), baseball hall of famer Gaylord Perry (1938), football hall of famer/sportscaster/actor Merlin Olson (1940), actor Tommy Lee Jones and director Oliver Stone (1946), football hall of famer Dan Marino (1961), and **Britain's Prince Harry** (1984).
- 16 — Blues musician B. B. King (1924), actor Peter Falk (1927), magician David Copperfield (1956), baseball hall of famer Orel Hershiser (1958), and actresses Molly Shannon (1964) and Amy Poehler (1971).
- 17 — Actor Roddy McDowall (1928), hall of fame basketball coach Phil Jackson (1945), and actor John Ritter (1948).
- 18 — Singer Frankie Avalon (1939) and cycling champion Lance Armstrong (1971).
- 19 — Actor Adam West (1929) and TV host Jimmy Fallon (1974).
- 20 — Author Upton Sinclair (1878), **actress Sophia Loren** (1934) and hockey star Guy Lafleur (1951).
- 21 — Authors H.G. Wells (1866) and Stephen King (1947), actor Bill Murray (1950), and singer Faith Hill (1967).
- 22 — Baseball hall of famer Tommy Lasorda (1957), singer Joan Jett (1960), and actors Scott Baio (1961) and Bonnie Hunt (1964).
- 23 — Actor Mickey Rooney (1920), singers Ray Charles (1930) and Bruce Springsteen (1949), and actor Jason Alexander (1959).
- 24 — Writer F. Scott Fitzgerald (1896), sportscaster Jim McKay (1921), "Muppets" creator Jim Henson (1936), and actor Phil Hartman (1948).
- 25 — **Journalist Barbara Walters** (1931), actor Michael Douglas (1944), model Cheryl Tiegs (1947), and actors Mark Hamill (1951), Christopher Reeve (1952), Heather Locklear (1961), Will Smith (1968), and Catherine Zeta-Jones (1969).
- 26 — Poet T.S. Eliot (1888), composer George Gershwin (1898), singer/actress Olivia Newton-John (1947), and tennis star Serena Williams (1981).
- 27 — Founding father Samuel Adams (1722), singers Meat Loaf (1947) and Shaun Cassidy (1959), and singer/actress Gwyneth Paltrow (1973).
- 28 — Painter Michelangelo (1573), TV host Ed Sullivan (1901), and actress Brigitte Bardot (1934).
- 29 — **Nuclear physicist Enrico Fermi** (1901), and singers Gene Autry (1907) and Jerry Lee Lewis (1935).
- 30 — Drummer Buddy Rich (1917), author Truman Capote (1921), singer Johnny Mathis (1935), and actresses Fran Drescher (1957), Crystal Bernard (1964) and Jenna Elfman (1971).

