

7. INDEX

-A-

Abbreviations, xxi

Accident

- cleanup costs, 4-68, 4-69, 4-70
- consequences of, vii, 1-3, 2-62, 2-63, 2-68, 2-69, 4-53, 4-57, 4-58, 4-93
- decontamination, 4-66, 4-67, 4-68, 4-70, 4-72
- environment, 2-19, 2-63, 4-32, 4-33, 4-34
- general, 2-12, 4-30, 4-32
- global impacts, 2-62
- impact of, ii, 2-59, 2-60, 2-61, 2-62, 4-29, 4-31, 4-65, 4-73, 4-87, 4-88, 4-93
- launch, ii, vii, 2-17, 4-29, 4-32, 4-48
- mitigation, 4-56, 4-65, 4-66, 4-68
- monitoring, 4-66, 4-68, 4-69
- probabilities, 4-41, 4-43, 4-89, 4-90, B-2
- RTGS, ii, vii, 2-17, 2-19, 2-25, 2-59, 2-62, 4-32, 4-34
- scenarios, ii, vii, 2-62, 2-63, 2-69, 4-34, 4-43, 4-47, 4-48, 4-90, 4-92, 4-94, 4-98, 4-99
- Shuttle, 2-62, 2-69, 4-84, 4-90, 4-91, 4-92, 4-93, 4-94, 4-96, 4-97
- swingby, viii, 2-50, 4-40, 4-41, 4-42, B-1
- Titan IV, 2-62, 4-41

Acronyms, xxi

Aeroshell, 2-14, 2-16, 2-17, 2-19

Affected Environment, 3-1

Agencies and Individuals Consulted, 6-1

Air Quality, ii, 2-60, 2-62, 2-68, 3-11, 3-13, 3-14, 4-6, 4-8, 4-103

Alkali Metal Thermoelectric Converter (AMTEC), 2-52

Alternatives

- comparison of, 2-4, 2-40, 2-59
- to proposed action, i, vi, 1-1, 2-1, 2-2, 2-4, 2-5, 2-40, 2-59, 2-72, 2-75

Aquatic preserves, 3-1 6, 3-1 7, 3-28

Aquatic resources, 4-21, 4-26

Archaeological resources, 2-61, 3-39, 4-29

Ariane-5, 2-45, 2-46

-B-

Background ionizing radiation, 4-61

Benefits of mission, 1-8, 1-9, 2-40, 4-105

Biological Resources, 2-61, 3-25, 4-23

Birds, 3-28, 3-35, 4-28

-C-

Cape Canaveral Air Station (CCAS), 1-3, 2-2, 2-59, 3-1, 3-3, 3-4, 3-5

Cassini mission description, i, 1-1, 1-2, 1-4, 1-5, 1-6, 1-8, 2-1, 2-3, 2-24

Cassini spacecraft, i, 1-3, 1-4, 2-1, 2-2, 2-10, 2-11, 2-20, 3-40
Centaur, 1-1, 2-1, 2-24, 2-25, 2-26, 2-28
Centaur Tank Failure/Collapse accident scenario, 4-38, 4-48
Charging effects, 2-31
Clean Air Act (CAA), 3-9, 3-13, 4-2, 4-9
Clean Water Act (CWA), 3-16
Cleanup of contaminated areas, 4-56, 4-70, 4-72
Climate
 regional, 3-1 1
 worldwide, 3-40, 3-44
Collective dose, 4-54, 4-57, 4-94
Command Shutdown and Destruct (CSD), 2-28, 2-63, 4-35, 4-48
Comet Rendezvous and Asteroid Flyby (CRAF) mission, 1-2
Consultations with Agencies and Individuals, 6-1
Contributors to the DEIS, 5-1
Core vehicle, 2-22, 2-23
Council on Environmental Quality Regulations, v, 1-2
Critical habitat, 3-32, 3-36, 4-27
Cumulative impacts, 4-10, 4-1 9, 4-21, 4-22, 4-28

-D-

De minimis, 2-64, 4-57
Department of Energy (DOE), i, 1-3, 2-1 2, 2-1 7, 2-1 9, 2-20, 2-62, 4-33
4-40, 4-84, 5-1

-E-

Eagles, 3-35, 4-28
Economic impacts, 4-68, 4-96
Electrical power for the spacecraft, v, 2-1, 2-1 0, 2-1 2, 2-1 4, 2-35, 2-5 1, 2-52, 2-53
Electromagnetic radiation, 1-7, 2-29, 2-30, 2-32
EMERGE model, 4-53
Emergency response planning, 4-82, 4-101
Emergency services, 3-38, 4-82, 4-101
Endangered species, 3-1 5, 3-32, 3-34, 3-35, 3-36, 4-27, 4-87
Energia, 2-45, 2-47, 4-1 5
Environmental consequences, 2-62, 2-68, 4-1, 4-53, 4-93
Environmental impacts, vii, 1-1, 2-1, 2-50, 2-59, 2-62, 2-64, 2-69, 2-70, 2-71, 3-9, 4-1,
4-53, 4-87, 4-93
European Space Agency (ESA), i, iii, v, 1-1, 2-50, 2-71, 2-74
External Tank, 2-35, 2-68

-F-

Federal Radiological Emergency Response Plan, 4-82, 4-101
Final Safety Analysis Report (FSAR), 2-20, 4-34
Fine weave, pierced fabric (FWPF), 2-1 7, 2-20

Floodplain, 2-61, 4-23
U.S. Fish and Wildlife Service (FWS), 3-1 9, 3-32, 3-34, 3-36, 4-27
Fuel Cell, 2-51, 2-58
Fueled Clad, 2-14, 2-17, 2-19

-G-

Galileo mission, 1-2, 2-1 2, 2-44, 2-49, 2-62, 2-68
General Purpose Heat Source (GPHS), 2-14, 2-1 5, 2-1 6, 2-1 7, 2-1 9, 2-20, 2-52, 2-62 2-69,
4-49, 4-51, B-16
Geology, 2-60, 3-13, 4-19
Global environment, 3-1, 3-39
Global warming, 3-9, 4-11, 4-13
Glossary, A-1
Graphite impact shell (GIS), 2-14, 2-18, 2-19
Gravity-Assist (Swingby)
 Earth-Gravity-Assist trajectory, i, ii, vi, 1-1, 2-1, 2-2, 2-32, 2-41, 2-49, 4-39, B-1
 Non-Earth-Gravity-Assist trajectory, 2-1, 2-2, 2-38, 2-50, 2-69, 2-70, 2-75, 4-102

-H-

Health effects, viii, 4-55, 4-57, 4-94
HIPAR model, 4-53
Historical resources, 2-61, 3-4, 3-39, 4-29
Huygens Probe, v, 1-1, 1-5, 1-8, 2-3, 2-10, 2-32, 2-33, 2-62, 4-2
Hydrazine monopropellant, 2-10, 2-22
Hydrology, 2-60, 3-15, 4-20

-I-

Inadvertent Reentry from Earth Orbit accident scenario, 4-38, 4-48
Incomplete or unavailable information, 4-103
Inertial Upper Stage (IUS), 2-42, 2-43
Interagency Nuclear Safety Review Panel (INSRP), 4-33
Iridium, 2-14, 2-19, 4-106
Italian Space Agency (ASI), 1, v, 1-1, 2-70

-J-

Jet Propulsion Laboratory (JPL), 1-3
Jupiter, 1-1, 1-2, 1-4, 1-8, 2-1, 2-3, 2-47, 2-49, 2-50

-K-

Kennedy Space Center (KSC), 2-2, 2-75, 3-1, 3-7, 3-8, 3-9

-L-

Land use, 2-60, 3-1, 3-4, 3-5, 3-8, 4-4
LASEP models, 4-35
Launch Complexes 40 and 41, 2-2, 3-4, 3-6, 3-7, 3-15, 3-22, 3-25, 3-28, 3-35, 3-38
Launch Pads 39A and 39B, 3-7, 3-9, 3-10, 3-15, 3-22, 3-28, 3-31, 3-39
Launch phases, 2-24, 2-27, 2-36, 2-63, 2-67
Launch Vehicle(s)
 evaluated, 2-1, 2-36, 2-40, 2-42, 2-43, 2-44, 2-45, 2-46
 external tank, 2-35
 foreign, 2-44
 Shuttle (STS), i, ii, vi, 2-33, 2-34, 2-35, 2-36, 2-37, 2-42, 2-63, 3-9, 4-87
 solid rocket booster, 2-35
 solid rocket motor upgrade (SRMU), 1-1, 1-3, 1-5, 2-1, 4-5
 Titan IV, 1-1, 1-3, 2-1, 2-22, 2-32, 2-37, 4-5
Lightning, 1-6, 2-29, 2-30, 2-31
Long-term inadvertent reentry, 2-63, 2-70, 4-40, 4-45, 4-52, 4-65, 4-104, B-11, B-13
LOPAR model, 4-53

-M-

Manatee, 3-15, 3-32, 3-34, 3-35, 4-28
Maximum individual dose, 4-57, 4-82, 4-97, 4-100
Mariner Mark 11, 1-2
Meteorology, 3-11, 3-12
Mission alternative
 1999 mission alternative, 2-2, 2-4, 2-9, 2-33, 2-64, 2-69, 2-70, 2-76, 4-84
 2001 mission alternative, 2-2, 2-4, 2-37, 2-38, 2-39, 2-40, 2-50, 2-70, 2-76, 4-102
Mission components considered, 2-14
Mission objectives, 1-4, 1-5, 1-6, 2-1, 2-7, 2-70, 2-72
Monomethylhydrazine, 2-10

-N-

National Aeronautics and Space Administration (NASA), i, v, 1-1, 1-2, 2-1, 3-1, 3-7, 3-9, 3-16, 3-39
National Ambient Air Quality Standards (NAAQS), 3-9, 3-11, 3-13, 3-14, 4-9
National Environmental Policy Act (NEPA), v, 1-1, 1-2
Nitrogen tetroxide, 2-10, 3-7, 4-3, 4-31
No-Action alternative, 2-2, 2-4, 2-39, 2-71, 4-102
Noise, 2-60, 3-4, 3-13, 4-18, 4-25
Nuclear reactor, 2-52

-O-

Outer Solar System Exploration program, 1-2
Outstanding Florida Waters, 3-16, 3-18
Ozone, 2-60, 3-9, 3-11, 3-13, 3-14, 4-11, 4-14, 4-17

-P-

Particulates, 2-60, 3-11, 4-9
Payload fairing, 2-22, 2-23, 2-24, 2-25, 3-7
Payload Assist Module Special (PAM-S), 2-42, 2-44
Photovoltaic cells, 2-54, 2-55
Pioneer spacecraft, 1-4, 2-12, 2-13
Plutonium
 environmental effects of, C-1
 general, 4-106, C-1
 worldwide levels, 3-1, 3-40, 3-41, 3-45
Plutonium dioxide, ii, vii, 1-4, 2-1 2, 2-14, 2-1 8, 4-56, 4-110, C-1
Population, 3-1, 3-36, 3-37, 3-40, 3-42, 3-43
Power System
 evaluated, 2-51, 2-52
 performance criteria, 2-1 2
Prelaunch activities, 4-2, 4-85
Proposed Action
 alternatives to, i, ii, vi, 2-1, 2-2, 2-4, 2-32, 2-37, 2-39, 2-72
 description of, i, ii, vi, 1-1, 1-3, 2-1, 2-2, 2-3, 2-5, 2-74
 environmental consequences of, 2-59, 2-62, 3-1, 4-1
 purpose of, v, 1-4
Propulsion module subsystem, 2-20, 2-35
Proton, 2-44, 2-46, 2-47

-R-

Radioisotope Heater Unit (RHU), ii, v, 1-4, 2-10, 2-20, 2-21, 4-2
Radioisotope Thermoelectric Generator (RTG), ii, v, 1-4, 2-10, 2-12, 2-14, 2-15, 2-16,
 3-40, 3-44, 4-2, 4-36
Range safety, 2-28, 2-37
References, 8-1
Regional environment, 3-1, 3-2
Rhenium engine, vi, 2-2, 2-39
Risk
 Average individual risk, 2-63, 2-64, 2-65, 2-66, 4-77, 4-79, 4-100
 general, 4-73, 4-81, 4-97
 Health effects mission risk, viii, 2-63, 2-64, 2-65, 2-66, 2-67, 2-71, 4-74, 4-16,
 4-77, 4-97, 4-98, 4-100, B-27, B-28, B-29
 Maximum individual risk, 4-82, 4-83, 4-100
RTG safety design, 2-17

-S-

Safety

- RTG design, 2-17
- Range, 2-28, 2-37
- Saturn, i, v, 1-1, 1-3, 1-4, 1-5, 1-6, 1-7, 1-8
- Saturn orbit insertion, 2-3, 2-6, B-1
- Shellfish, 3-16, 3-32, 3-33
- Short-term inadvertent reentry, 2-63, 2-67, 4-39, 4-44, 4-49, 4-59, 4-60, 4-65, 4-66, 4-91, B-6, B-7, B-9, B-14, B-16
- Shuttle, i, ii, vi, 2-33, 2-34, 2-35, 2-36, 2-37, 2-42, 2-63, 3-9, 4-87
- SNAP satellites, 2-12, 2-13, 3-44, 3-45
- Socioeconomics, 2-61, 3-36, 4-28
- Soils, 2-60, 3-13, 3-15, 3-22, 3-40, 4-19
- Solar array, 2-53, 2-54, 2-55, 2-57
- Solar System Exploration Committee, 1-2
- Solid rocket booster, 2-36
- Solid rocket motor (SRM), i, vi, 1-1, 2-1, 2-6, 2-22, 2-23, 4-5, 4-7, 4-41
- Solid rocket motor upgrade (SRMU), i, ii, vi, 1-1, 2-1, 2-3, 2-22, 2-23, 3-4, 3-7, 4-5, 4-7, 4-12, 4-13
- Sonic boom, 2-60, 4-18
- Source term, 2-63, 2-64, 2-65, 2-66, 4-46, 4-50, 4-52, 4-58, 4-91, 4-92, 4-95, B-16, B-25, B-27
- Space Vehicle Destruct System (SVDS), 2-29
- Spacecraft propulsion module subsystem (PMS), 2-20, 2-35
- Strontium, 2-10, 2-51
- Swingby (see Gravity-Assist)

-T-

- Terrestrial resources, 2-60, 2-61, 3-27, 3-29, 3-30, 4-23
- Threatened and endangered species, 2-61, 3-15, 3-32, 3-34, 3-35, 3-36, 4-27, 4-87
- Titan IV, i, 1-1, 2-1, 2-22, 2-23, 3-4, 3-7, 4-5
- Titan IV (SRMU) Fail-to-Ignite accident scenario, 4-37, 4-48
- Trajectories
 - evaluated, 1-3, 2-48, 2-75
- Transportation, 3-38

-U-

- Ulysses mission, 2-12, 2-13, 3-1
- Upper atmospheric impacts, 4-11
 - troposphere, 4-12
 - stratosphere, 4-14
- Upper stage, vi, 2-24, 2-25, 2-33

-V-

Vegetative communities, 2-61, 3-28, 3-29

Venus, 1-1, 2-3

Viking spacecraft, 2-1 2, 2-1 3

Voyager spacecraft, 1-4, 1-5, 1-7, 1-8, 2-1 2, 2-1 3

-W-

Water

currents, 3-25, 3-27

depths, 3-1 5, 3-25, 3-26, 3-31

groundwater, 2-60, 3-1 9, 3-21, 3-22, 3-23, 3-24, 4-21, 4-87

outstanding Florida waters, 3-16, 3-18

quality, 3-1 5, 3-1 6, 3-1 7, 3-1 9, 3-20, 3-22, 3-23, 3-24, 4-20

surface, 2-60, 3-1 5, 3-1 6, 3-1 7, 3-1 8, 3-1 9, 3-25, 4-20, 4-87

Wetlands, 2-61, 3-25, 3-28, 3-32, 4-23

Executive Summary

Chapter 1

Appendix A

Chapter 2

Appendix B

Chapter 3

Appendix C

Chapter 4

Appendix D

Chapter 5

Appendix E

Chapter 6

Chapter 7

Chapter 8