

ISS EVA PLAN

(Based on Feb. 22, 1999 Assembly Sequence)

March 2, 1999

Flight Number	EVA Date	Task Description	Priority Data	Crew	Airlock d=deferred	Suit	Task Type	Time Est.	EVA #
1A/R (FGB)	November 1998	No nominal FGB EVA until SM/Soyuz or Orbiter present							
		Recurring FGB Maint/Science Tasks <ul style="list-style-type: none"> Remove/replace Komplast material contamination sample plates (9 total) Remove/replace thermal system pumps and regulators (4 panels on aft zenith) 							
2A (Node 1, PMA1, PMA2)	December 1998	<ul style="list-style-type: none"> Install slidewire. Connect PMA2-Node and PMA1-FGB cables. Remove MDM thermal covers 	<ul style="list-style-type: none"> Aids translation FGB power cables to Node mandatory Cover removal mandatory 	STS	Shuttle	EMU	Assy	6:15	U1
	December 1998	<ul style="list-style-type: none"> Install handrails, PFR sockets and handrail gap spanners. Install early communication antennas (on node 1) and cables (2 on FGB). Install 1 Orlan coax comm connector on FGB. Release node CBM and hatch restraints. Install trunnion covers and MDM sunshade 	<ul style="list-style-type: none"> Aids translation Early comm reqd before ISS-1 Orlan coax reqd before DC1 CBM/Hatch restraints for 3A Covers/shades 2A mandatory 	STS	Shuttle	EMU	Assy	6:15	U2
	December 1998	<ul style="list-style-type: none"> Transfer 96 bolt tools to exterior of PMA1. Disc and stow PMA1 APAS cables at PMA2. Prep tethers and APFRs for 2A.1/3A. Install handrail on FGB aft end. Do photo survey 	<ul style="list-style-type: none"> Logistics PMA APAS cables for 3A Handrail aids 2A inspect and 2A.1 SM cable work FGB photos before SM dock 	STS	Shuttle	EMU	Assy	5:00	U3
			<u>Actual FGB/Node/PMA Contingency Tasks</u> <ul style="list-style-type: none"> Backup release of FGB TORU antennas on Plane I and Plane III Manually secure Komplast panel <u>Recurring FGB/Node/PMA Maintenance Tasks</u> <ul style="list-style-type: none"> Maintain rendezvous moding indicator light bulbs (recurring) Remove and replace MDM's on PMA1 (recurring) Remove and replace CBM jumpers/controllers on PMA's (recurring) 		STS	Shuttle	EMU	Cont	
2A.1 (logistics)	May 1999	<ul style="list-style-type: none"> Transfer and install U.S. external logistics (UF1 U.S. crane, 2 Interoperable APFRs, handrails, common tools/restraints, P6 mast canister handle and Y bypass jumper) Transfer Russian Strela operator post and FGB EFGF adapter 		STS	Shuttle	EMU	Assy	6:00	U4
	May 1999	2A.1 Unshed/Cont/Maint Tasks <ul style="list-style-type: none"> Backup release of US Crane and tool box 		STS	Shuttle	EMU	Cont		1

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1R (SM)	September 1999	No SM EVA until Soyuz or Orbiter present							
	September 1999	SM Docking Contingency Tasks <ul style="list-style-type: none"> • Manually release launch restraints on 4AO-BKA and 2AP-BKA/AP-BKA Kurs antennas on fwd docking port • Manual release of 8 launch restraints of both failed SM solar arrays 	<ul style="list-style-type: none"> • Fwd Kurs antennas required for SM docking to FGB • If both SM solar arrays do not deploy, Soyuz crew must repair 	TBD Soyuz Crew	SM	Orlan	Cont		
2A.2 (logistics)	October 1999	<ul style="list-style-type: none"> • Transfer/install Strela on FGB EFGF and extend boom • Transfer/install FGB-SM cables (4 power, 2 TV, 1 Orlan comm) 	<ul style="list-style-type: none"> • Strela functionality desired for FGB-SM cable installation • FGB-SM power cables before 4A, TV cables for internal video and Orlan comm before DC1 	STS	Shuttle	EMU	Assy		R1
	October 1999	<ul style="list-style-type: none"> • Transfer/install SM Magnetometer pole and foot restraint. • Perform SM external inspection and photo survey 	<ul style="list-style-type: none"> • Magnetometer for prop savings • Inspect SM and document condition of exterior 	STS	Shuttle	EMU	Assy		R2
	October 1999	2A.2 Unshed/Cont/Maint Tasks <ul style="list-style-type: none"> • Manual release of 8 launch restraints of one Service Module (SM) solar array • Manually release launch restraints on 4AO-BKA Kurs antenna on aft docking port • Manual release of SM Ona antenna launch restraints • Manual rotation of Ona antenna base gimbal (recurring maintenance) • Manual switching from prime to backup electronics (recurring maintenance) • Manually remove FGB aft Kurs antenna if not auto-retracted during SM docking • Manually release launch restraints on 1 aft and 2 fwd SM TV targets • Manually release launch restraints on 4AO-BKA and 2AP-BKA/AP-BKA Kurs antennas on nadir docking port • Manually release launch restraints on 2 aft Regul-OS antennas 	<ul style="list-style-type: none"> • If 2 arrays failed, SM cannot dock to FGB • Aft Kurs antenna required for Progress docking to SM • Ona deploy required for Progress #1 docking • Initial rotation required for Progress #1 docking • Backup Ona electronics restore receive/transmit (highly desirable for 2A.2?) • FGB Kurs antenna removal required for DC1 docking • Targets required for DC1 docking • Nadir Kurs antennas for DC1 docking to SM • Regul-OS antennas not mandatory for 2A.2 	STS	Shuttle	EMU	Cont		
3A (Z1, PMA3)	December 1999	<ul style="list-style-type: none"> • Install S1 S-band antenna. • Install Z1 thermal shrouds. • Install Z1 DDCUs. • Install Ku antenna on Z1 boom. • Connect Z1-Node1 cables. 		STS A	Shuttle	EMU	Assy	5:45	U5
	December 1999	<ul style="list-style-type: none"> • Free PMA3 from pallet. 		STS B	Shuttle	EMU	Assy	6:00	U6

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	December 1999	<ul style="list-style-type: none"> • Connect Node1-PMA3 cables. • Deploy Ku antenna/boom. • Relocate tool boxes to Z1. • Remove Z1/P6 launch locks. • Reconfigure power and Z1 cables. • Conduct photo survey 		STS A	Shuttle	EMU	Assy	5:30	U7
	December 1999	<ul style="list-style-type: none"> • Deploy Z1 utility tray. • Relocate Z1 keel and FRGF. • Prep Z1 umbilicals. • Prep 4A tools. • Conduct photo survey 		STS B	Shuttle	EMU	Assy	4:15	U8
	December 1999	3A Unsched/Cont/MaintTasks <ul style="list-style-type: none"> • Manual release of STS RMS from Z1 and PMA3 FRGF's • Release shuttle retention latches • Maintain TCS reflectors on PMA3 (recurring) • Remove/replace Y bypass jumper (recurring) 		STS	Shuttle	EMU	Cont		
4A (P6)	February 2000	<ul style="list-style-type: none"> • Attach P6-Z1 truss and cables. • Release P6 solar array and radiator restraints. • Stow keel. 		STS	Shuttle	EMU	Assy	6:00	U9
	February 2000	<ul style="list-style-type: none"> • Reconfig Z1 elec panels. • Remove Z1 thermal shrouds. • Install Sband antenna on P6. • Release solar array radiator restraints. • Conduct photo survey. • Connect P6-Z1 thermal QDs. • Stow PMA2-Node1 cables. • Prep 5A foot restraints. 	<ul style="list-style-type: none"> • Deferrable to ISS-1 crew • Deferrable to ISS-1 crew • Deferrable to ISS-1 crew • Radiator restraints prep for 5A • (Deferrable to ISS-1 crew) • Deferrable to ISS-1 crew • Deferrable to ISS-1 crew • Deferrable to ISS-1 crew • Deferrable to ISS-1 crew 	STS	Shuttle	EMU	Assy	6:00	U10
	February 2000	4A Unsched/Cont/MaintTasks <ul style="list-style-type: none"> • Manually release STS RMS from P6 FRGF • Release shuttle retention latches • Manually unlatch, deploy and tension the P6 solar arrays • Manually unlatch the P6 beta gimbal antirotation latch • Manually deploy the P6 radiators • Manually override the P6-to-Z1 capture latch • Manually relocate a P6 battery/BCDU set • Manually jettison a P6 solar array • Disconnect the electrical cable between a failed BDCU and the IEA 		STS	Shuttle	EMU	Cont		

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2R /1-Sz ISS1 up	February 2000	4A-5A U.S. Contingencies • Backup EVA to feather, retract or jettison P6 solar array (recurring) • Complete critical unfinished 4A assembly • TBD USOS Maintenance	• Orbiter docking may damage solar arrays • Changeout failed USOS critical spare	ISS1	SM (d)	Orlan	Cont		
5A (U.S. Lab)	March 2000	• Secure PMA2 to Z1. • Remove Lab Passive CBM contamination cover. • Disconnect Lab heater cables from Orbiter. • Release P6 aft and starboard radiator winches and starboard radiator cinches. • Connect Lab-Node1 heaters cables.	• Cover and Heater cables 5A mandatory • Deferrable to ISS-1 crew	STS	Shuttle	EMU	Assy	6:00	U11
	March 2000	• Install 4 circuit interrupt devices. • Connect Z1-Lab port and starboard power/data and ammonia umbilicals. • Vent ammonia from Z1 utility jumpers (2). • Install Lab trunnion thermal covers. • Install Lab non-propulsive vent. • Install Lab PDGF/VSC. • Install Lab window shutter and gear box. • Remove Lab window cover	• Deferrable to ISS-1 crew • Deferrable to ISS-1 crew • Deferrable to ISS-1 crew • Deferrable to ISS-1 crew • Deferrable to ISS-1 crew	STS	Shuttle	EMU	Assy	6:20	U12
	March 2000	• Disconnect PMA2 from Z1 CBM. • Remove Lab Active CBM thermal cover and fwd hatch restraint. • Install Lab foot restraint sockets, gap spanner and slidewire. • Connect Lab-PMA2 umbilicals. • Transfer Critical Spare S-Band Antenna	• Deferrable to ISS-1 crew • Lab-PMA2 cables mandatory before 5A.1	STS	Shuttle	EMU	Assy	6:00	U13
	March 2000	5A Unshed/Cont/MaintTasks • Manually release STS RMS from PMA2 and Lab FRGF's • Release shuttle retention latches • Manually deploy P6 radiators • Manually remove Node 1 CBM MMOD shroud to assist berthing of US Lab • Remove/replace failed S- Band Antenna		STS	Shuttle	EMU	Cont		
	March 2000	5A-5A.1 U.S. Contingencies • Complete critical unfinished 5A assembly. • TBD USOS Maintenance	• Changeout failed USOS critical spare	ISS1	SM (d)	Orlan	Cont		
5A.1 (MPLM)	April 2000	• Disconnect PMA3-Node1 Umbilicals. • Remove/stow Node 1 early comm port antenna. • Install Lab Cradle Assembly and connect cables (TBR16)	• Disconnect PMA3 cables and remove port antenna for MPLM. • Cradle/cables for 6A SLP denlv	STS	Shuttle	EMU	Assy	6:00	U14

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	April 2000	<ul style="list-style-type: none"> • Activate Circuit Interrupt Device. • Remove KuBand Antenna gimbal locks. • Transfer/Install Early Ammonia Servicer and PFCS critical spare and connect umbilicals (TBR16). 	<ul style="list-style-type: none"> • CID activation allows safe power up of Lab DDCUs. • Activate Ku-Band system downlink capability (Deferrable to ISS-1 crew). • Servicer for ISS risk mitigation. 	STS	Shuttle	EMU	Assy	3:15	U15
	April 2000	5A.1 Unsched/Cont/Maint Tasks <ul style="list-style-type: none"> • Manually release STS RMS from PMA3 and MPLM FRGF's • Release shuttle retention latches • Remove/replace failed critical spare • Service ISS ammonia loops(TBR16). 		STS	Shuttle	EMU	Cont		
	April 2000	5A.1-6A U.S. Contingencies <ul style="list-style-type: none"> • Complete critical unfinished 5A.1 assembly. • TBD USOS Maintenance 	<ul style="list-style-type: none"> • Changeout failed USOS critical spare 	ISS1	SM (d)	Orlan	Cont		
5A.x (ICM)		ICM Unsched/Cont/MaintTasks <ul style="list-style-type: none"> • Manual release of STS RMS from ICM and canister FRGF's • Manual mating of ODS and ICM APAS capture latches (using straps) • Manual release of ICM canister extract strut • ICM/Canister tiedown and jettison • On-orbit refueling (TBD months after deply) 		STS	Shuttle	EMU	Cont		
	MayFebruary 2000	<ul style="list-style-type: none"> • Transfer docking cone inside SM to nadir for docking compartment #1. • Install SM thruster deflectors (8) • Perform SM external inspection (fwd end) • Install Platan-M science equipment (TBR 18) 	<ul style="list-style-type: none"> • Docking cone for DC1 • Deflectors protect vehicle from contamination • SM external inspection for general condition of exterior • Re-flight of Mir experiment 	ISS1	SM (d) Before Soyuz move to FGB Nadir if possible	Orlan	Assy		R3
	May 2000	<ul style="list-style-type: none"> • Remove/Replace Komplast panel from FGB (TBD location) • Perform SM external inspection on SM aft end • Install 4 sets of Hamm radio and TV antennas on SM aft end • Install bio-degradation experiment on SM exterior (TBR 18) • Install science pallet with exposed samples on SM exterior (TBR 18) 	<ul style="list-style-type: none"> • Komplast panel for FGB external degraation analysis • SM external inspection for general condition of exterior • Hamm radio for enhanced communications • Measures radiation gradient across shell of SM • Materials survivability and orbital debris capture 	ISS1	SM (d)	Orlan	Maint		RM-1 (UM-1)

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	May 2000	Service Module Cont/Maint Tasks <ul style="list-style-type: none"> • Manually remove FGB aft Kurs antenna if not auto-retracted during SM docking • Manual rotation of Ona antenna base gimbal (recurring maintenance) • Manual switching from prime to backup electronics (recurring maintenance) • Replacement of Ona Antenna electronics box (recurring maintenance) • Manually release launch restraints on 1 aft and 2 fwd SM TV targets • Manually release launch restraints on 4AO-BKA and 2AP-BKA/AP-BKA Kurs antennas on nadir docking port • Manually release launch restraints on 4AO-BKA Kurs antenna on aft docking port • Manually release launch restraints of 2 aft Regul-OS antennas • Manually open/close 3 small window covers on transfer compartment, 1 large on nadir and 1 small on nadir 	<ul style="list-style-type: none"> • FGB Kurs antenna removal required for DC1 docking • Rotation to correct Ona antenna pointing • Backup Ona electronics restore receive/transmit • Replace Ona electronics if prime and backup failed • Targets required for DC1 docking • Nadir Kurs antennas required for DC1 docking to SM • Aft Kurs antenna required for Progress docking to SM 	ISS1	SM (d)	Orlan	Cont		
6A (SSRMS) ISS1 dn ISS2 up	July 2000	<ul style="list-style-type: none"> • Connect Flight Support Equipment Grapple Fixture to Lab. • Deploy SSRMS. • Install UHF antenna on Lab. 	<ul style="list-style-type: none"> • Cables for 6A SSRMS keep alive power • Unfold SSRMS booms for walk off of Space Lab Pallet • UHF ant prep for Joint Airlock 	STS	Shuttle	EMU	Assy	5:15	U16
	July 2000	<ul style="list-style-type: none"> • Reconfigure Rigid Umbilical cables to power Lab PDGF. • Disconnect and stow FSEGF cables on Space Lab Pallet. • EVA UHF comm check. • Remove/stow early comm stbd antenna. • Remove VSC from SLP FSE. 	<ul style="list-style-type: none"> • Lab PDGF cables required to operate SSRMS from Lab . • SSRMS used to transfer SLP to Orbiter. • Stbd antenna removed for 7A Joint Airlock installation • UHF comm check to evaluate coverage • VSC is spare until UF-2 	STS	Shuttle	EMU	Assy	5:00	U17
	July 2000	6A Unshed/Cont/MaintTasks <ul style="list-style-type: none"> • Manually release STS RMS from SLP and MPLM FRGF's • Open/close shuttle retention latches • Remove/replace SSRMS ORU's (VSC) • Manually release SSRMS from SLP FSEGF 		STS	Shuttle	EMU	Cont		
	August 2000	6A-7A US/Russian contingencies <ul style="list-style-type: none"> • Complete unfinished 6A assembly (e.g. remove sthd early comm antenna) 		ISS2	SM (d)	Orlan	Cont		6

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7A (Joint A/L)	August 2000	<ul style="list-style-type: none"> • Install WIF sockets • Remove airlock Passive CBM cover. • Remove vent cap. • Disconnect airlock heater cable from Shuttle. • Connect airlock heater cable to node 1 	<ul style="list-style-type: none"> • Cover and cables 7A mandatory • Vent cap before a/l EV use 	STS	Shuttle	EMU	Assy	6:00	U18
	August 2000	<ul style="list-style-type: none"> • Release from Shuttle and install 2 O2 tanks on airlock and connect umbilicals. • Install trunnion pin and keel pin covers 	<ul style="list-style-type: none"> • O2 tanks 7A mandatory • Covers for thermal/pwr effic 	STS	Shuttle	EMU	Assy	6:00	U19
	August 2000	U.S. maintenance (EPS DCSU)		ISS2	Joint	EMU	Maint		UM-1
	August 2000	<ul style="list-style-type: none"> • Install grapple fixture cover and WIF sockets. • Release from Shuttle and install 2 N2 tanks on airlock and connect umbilicals 	<ul style="list-style-type: none"> • N2 tanks 7A mandatory • Cover for thermal/pwr effic • Vent for prop efficiency 	STS	Joint	EMU	Assy	6:00	U20
	August 2000	7A Unshed/Cont/MaintTasks <ul style="list-style-type: none"> • Manually release SSRMS from A/L and O2/N2 tank FRGF's • Release shuttle retention latches • • Contingency reinstallation of the O2/N2 tank(s) on to the SLP. • Contingency removal of the O2/N2 tank(s) from the SLP. 		STS	Joint	EMU	Cont		
	September 2000	<ul style="list-style-type: none"> • Connect Russian Orlan UHF cable on the Joint Airlock. • Disconnect Joint Airlock heater cables from Node 1 and reconnect US Lab heater cables to Node 1 • Release torque on the IEA MMOD shield (TBR17) Merge with day of maint EVA (TBD)	<ul style="list-style-type: none"> • Orlan coax reqd before DC1 • Restoring lab heater cable after mating airlock interior cables is highly desirable for redundancy, but not mandatory • The IEA MMOD shield bolts must be released within 1 year of 4A to allow for thermal cycling 	ISS2	Joint (d)	EMU	Assy	TBD	U21
	September 2000	7A-7A.1 U.S. Contingencies <ul style="list-style-type: none"> • Complete unfinished 7A assembly/maint 		ISS2	Joint (d)	EMU	Cont		
4R (DC1)	August 2000	Docking Compartment 1 EVA deferred until after 7A.1							
7A.1 (Logistics)	September 2000	Transfer/install U.S. crane and two foot restraints		STS	Joint	EMU	Assy	TBD	U22
ISS2 dn ISS3 up	September 2000	TBD U.S. Maintenance		STS/ ISS2	Joint	EMU	Maint		UM-2
	September 2000	TBD U.S. Maintenance		STS/ ISS2	Joint	EMU	Maint		UM-3
	September 2000	7A.1 Unshed/Cont/MaintTasks (TBD)		STS	Joint	EMU	Cont		
	September 2000	7A.1-UF1 U.S. Contingencies <ul style="list-style-type: none"> • Complete unfinished 7A.1 assembly/maint 		ISS3	Joint (d)	Orlan	Cont		

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4R (cont)	September 2000	<ul style="list-style-type: none"> Transfer docking cone from SM Nadir to SM Zenith inside SM Transfer Compartment to receive SPP. Connect eight DC-SM cables (7 Kurs, 1 Transit). Install EVA translation aids, Strela cargo boom and 2 hatch blankets on exterior of docking compartment. Verify DC1 airlock systems 	<ul style="list-style-type: none"> Docking cone for 9A.1/SPP Cables before Soyuz-3 	ISS3	SM & DC1 (d) Soyuz on FGB Nadir (long umbilical - hardline?)	Orlan	Assy		R4
	September 2000	<ul style="list-style-type: none"> Deploy 1 target. Deploy 2 antennas. Remove 1 SM Kurs antenna. 	<ul style="list-style-type: none"> Deploys required as prep for Soyuz 3 since DC launch shroud prevents preintegration. SM Kurs may impede DC1 docking 	ISS3	DC1 (d)	Orlan	Assy		R5
	September 2000	TBD Russian Maintenance		ISS3	DC1 (d)	Orlan	Maint		RM-2
UF1 (Spares)	November 2000	Assemble U.S. maintenance warehouse with ammonia servicer (may move to 5A.1)		STS	Joint	EMU	Assy	TBD	U23
	November 2000	TBD U.S. Maintenance		STS/ ISS3U	Joint	EMU	Maint		UM-4
	November 2000	TBD U.S. Maintenance		STS/ ISS3U	Joint	EMU	Maint		UM-5
	November 2000	UF1 Unsched/Cont/MaintTasks (TBD)		STS	Joint	EMU	Cont		
	November 2000	UF1-8A U.S. Contingencies • Complete unfinished UF1 assembly/maint		ISS3	Joint (d)	Orlan	Cont		
8A (S0) ISS3 dn ISS4 up	January 2001	<ul style="list-style-type: none"> Install Forward MTS Struts. Install Lab Starboard Avionics Tray and connect umbilicals. Install Lab Port Avionics Tray and connect umbilicals. Deploy SO-to-Lab Aft Tray and connect umbilicals 	• 8A mandatory	STS	Joint	EMU	Assy	6:00	U24
	January 2001	<ul style="list-style-type: none"> Install Aft MTS Struts. Relieve Loads on the LCA Guide Cones. Connect TUS 2 Nadir Cable to the MT. 	• Cables critical to prevent S0 freezing	ISS4	Joint	EMU	Assy	TBD	U25
	January 2001	<ul style="list-style-type: none"> Connect TUS 1 Zenith Cable to the MT. Install SO Circuit Interrupt Devices. Release MT Launch Bolts. Install Airlock Spur. Deploy the EV-CPDS 		STS	Joint	EMU	Assy	6:00	U26
	January 2001	8A Unsched/Cont/MaintTasks <ul style="list-style-type: none"> Manually release SSRMS from S0 FRGF Release shuttle retention latches Manually close S0-Lab latch 		STS	Joint	EMU	Cont		

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	January 2001	<ul style="list-style-type: none"> • Install 5 handrails. • Remove and stow Port and Starboard Keel Pins/Drag Links. • Install Starboard CETA-to-MT Energy Absorber. • Deploy SO-to-Node 1 Tray and connect umbilicals. 		ISS4	Joint (d)	EMU	Assy	6:00	U27
	January 2001	<ul style="list-style-type: none"> • Remove four MT-MBS debris covers. • Install Port CETA-MT energy absorber. • Connect S0-Lab PDGF umbilicals. • Reconfigure umbilicals (string 2) at the Lab PDGF Connector Panel. • Install 1 handrail. 		ISS4	Joint (d)	EMU	Assy	TBD	U28
	January 2001	<ul style="list-style-type: none"> • Install Node1 Port CETA Light. • Install Lab CETA light. • Reconfigure umbilicals (string 1) at the Lab PDGF Connector Panel. 		ISS4	Joint (d)	EMU	Assy	4:15	U29
	January 2001	8A-UF2 U.S. Contingencies <ul style="list-style-type: none"> • Manually open S0-Lab latch • Complete unfinished 8A assembly 		ISS4	Joint (d)	EMU	Cont		
UF2 (MBS)		<ul style="list-style-type: none"> • Install PDGF, VSC, stand and cables on FGB port side. • Remove MBS blanket. 	• PDGF/VSC before 9A.1/SPP	STS	Joint	EMU	Assy	6:00	U29
		<ul style="list-style-type: none"> • Deploy POA. • Install/secure MBS to MT. • Connect MBS cables. • Deploy MBS camera. • Route and connect FGB PDGF to S0 video cable. • Transfer PWP to MBS. 	• SSRMS required for PDGF video cable routing to S0	STS	Joint	EMU	Assy	4:00	U30
		TBD U.S. Maintenance		STS/ ISS4	Joint	EMU	Maint		UM-6
		UF2 Unsched/Cont/MaintTasks <ul style="list-style-type: none"> • Manually release STS RMS from MPLM and MBS FRGF • Manually release SSRMS from PMA3 • Open/close shuttle retention latches 		STS	Joint	EMU	Cont		
		UF2-9A U.S. Contingencies <ul style="list-style-type: none"> • Complete unfinished UF2 assembly/maint 		ISS4	Joint (d)	EMU	Cont		
9A (S1)		Install lab camera. Connect S0-S1 umbilicals. Release radiator joint restraints. Connect ammonia tank umbilicals. Deploy MT stop. Deploy Sband antenna. Release radiator beam launch restraints.		STS	Joint	EMU	Assy	5:50	U31

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		Install S1 camera. Deploy CETA cart and connect to MT. Reconfigure radiator pyros. Release radiator beam launch restraints. Transfer foot restraint and stanchion to CETA		STS	Joint	EMU	Assy	6:05	U32
		Deploy light stanchion. Stow S1 keels. Install OTD & tool box on CETA. S1/S3 cable clamps		STS	Joint	EMU	Assy	6:00	U33
		9A Unsched/Cont/MaintTasks <ul style="list-style-type: none"> • Manually release STS RMS from S1 FRGF • Release shuttle retention latches • Manually close/open S1-S0 latch 		STS	Joint	EMU	Cont		
		9A-4 Soyuz U.S. Contingencies <ul style="list-style-type: none"> • Complete unfinished 9A assembly 		ISS4	Joint (d)	EMU	Cont		
		TBD Russian Maintenance		ISS4	Joint (d)	EMU	Maint		RM-3
		TBD Russian Maintenance		ISS4	Joint (d)	EMU	Maint		RM-4
4 Soyuz ISS4 dn ISS5 up		4 Soyuz-11A U.S. Contingencies		ISS5	DC1 (d)	Orlan	Cont		
9A.1 (SPP)		Manually fold the FGB solar arrays. TBR 5	If auto retraction fails to allow best viewing for SSRMS berthing of SPP.	ISS5	DC1	Orlan	Cont		
		Provide backup EVA assistance for SPP-SM mating.	If SPP docking probe fails to deploy or if SSRMS unable to soft-dock.	ISS5	SM Soyuz on FGB Nadir	Orlan	Cont		
		TBD U.S. Maintenance		STS	Joint	EMU	Maint		UM-7
		Connect SPP-SM and SPP-FGB cables. Rotate radiator 90 degrees. Assemble and deploy Strela cargo boom on SPP. TBR6	<ul style="list-style-type: none"> • One week of IVA work reqd before nominal EVA tasks • Cables/Strela before SA ops 	ISS5	DC1 (d)	Orlan	Assy		R6
		Extend SPP truss. Connect cables.	<ul style="list-style-type: none"> • Truss and cables before SA ops 	ISS5	DC1 (d)	Orlan	Assy		R7
		Assemble SPP solar array drives and cables.	<ul style="list-style-type: none"> • SPP drives/cables for SA ops 	ISS5	DC1 (d)	Orlan	Assy		R8
11A (P1)		Connect P1-S0 and ammonia tank umbilicals. Deploy CETA cart and MT stop. Relocate CETA cart. Release radiator restraints		STS	Joint	EMU	Assy	6:00	U34
		Deploy P1 cameras. Reconfigure radiator pyros. Release radiator restraints. Install OTD and tool box on CETA cart		STS	Joint	EMU	Assy	5:25	U35
		Release radiator restraints. Deploy UHF antenna. Stow P1 keels. Transfer PFR and tool stanchion to CETA cart. P1/P3 cable clamps		STS	Joint	EMU	Assy	5:40	U36
		11A Unsched/Cont/MaintTasks <ul style="list-style-type: none"> • Manually release STS RMS from P1 FRGF 		STS	Joint	EMU	Cont		

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Flight Number	EVA Date	Task Description	Priority Data	Crew	Airlock d=deferred	Suit	Task Type	Time Est.	EVA #
		11A-5 Soyuz U.S. Contingencies • Complete unfinished 11A assembly		ISS5	DC1 (d)	Orlan	Cont		
		Assemble SPP solar array truss beams and cables.	• Truss/cables before SA ops	ISS5	DC1 (d)	Orlan	Assy		R9
		Initialize ERA manipulator and 2 base sites.	• ERA prep for SA ops	ISS5	DC1 (d)	Orlan	Assy		R10
		Transfer/install SPP solar array 1. Install one SPP thruster shield	• Shield protects vehicle per Mir lessons	ISS5	DC1 (d)	Orlan	Assy		R11
		Transfer/install SPP solar array 2. Install one SPP thruster shield	• Shield protects vehicle per Mir lessons	ISS5	DC1 (d)	Orlan	Assy		R12
		Transfer/install SPP solar array 3		ISS5	DC1 (d)	Orlan	Assy		R13
		Assist radiator deploy outside SPP. Retrieve SPP PDGF for Node 2		ISS5	DC1 (d)	Orlan	Assy		R14
5 Soyuz ISS5 dn ISS6 up		Relocate DC1 Strela cargo boom. Detach DC1-SM cables for DC1 jettison and relocate the docking cone from SM Zenith port to SM nadir port to receive UDM.	• DC1 preps before UDM	ISS6	SM & DC1 (d) Soyuz on FGB Nadir	Orlan	Assy		R15
3R (UDM)		UDM EVA deferred until after 5R (DC2) docking.							
12A (P3/4)		Connect P3-P1 umbilicals. Deploy MT stop. Rotate keel pin. Release P4 solar array and radiator restraints.		STS A	Joint	EMU	Assy	5:20	U37
		Connect P3-P1 umbilicals. Release P4 solar array restraints. Relocate CETA cart to stbd side. Stow P3 keel. Install P3 & P4 solar array joint braces and engage drive locks	• CETA moved for 12A work	STS B	Joint	EMU	Assy	6:00	U38
		Install P3 & P4 solar array joint braces. Release CETA and P4 solar array restraints		STS A	Joint	EMU	Assy	6:00	U39
		12A Unsched/Cont/MaintTasks • Manually release robots from P3/P4 FRGF • Release shuttle retention latches • Manually close/open P3/4-P1 latch • Manually deploy SA's and radiators		STS B	Joint	EMU	Cont		
		12A-12A.1 Contingencies • Complete unfinished 12A assembly		ISS6	Joint (d)	Orlan	Cont		
5R (DC2)		DC2 EVA deferred until after SPP solar array #4 installed.							
		Transfer/install SPP solar array 4	• 4 SPP arrays reqd before 12A.1 for overall ISS balance	ISS6	Joint (d)	Orlan	Assy		R16
		Connect UDM-SM cables & fluid lines. Relocate SM docking cone to UDM for RM1		ISS6	SM & UDM (d) Soyuz on FGB Nadir	Orlan	Assy		R17

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Flight Number	EVA Date	Task Description	Priority Data	Crew	Airlock d=deferred	Suit	Task Type	Time Est.	EVA #
		Connect DC2-UDM cables (Tranzit). Install EVA translation aids, Srela cargo boom and 2 hatch blankets on exterior of DC2. Verify DC2 airlock functions		ISS6	UDM & DC2 (d)	Orlan	Assy		R18
12A.1 (P5) ISS6 dn ISS7 up		Secure P5 to P4 and connect cables	• 12A.1 mandatory	STS	Joint (low pwr)	EMU	Assy	3:00	U40
		Connect Lab DDCU, MBSU,SPDA jumpers. Reconfig Z1 panel. Remove P3, S1-DDCU and S0-DDCU covers.		ISS7	Joint (low pwr)	EMU	Assy	5:35	U41
		Connect Lab DDCU, MBSU,SPDA jumpers. Reconfig Z1 panel. Remove P1 and S0-DDCU covers. Install Node 1 light. Relocate CETA cart		STS	Joint (low pwr)	EMU	Assy	5:35	U42
		Connect Lab thermal umbilicals. Deploy P3 logistics carriers. Install P3 solar array joint braces. Relocate CETA cart to port side	• CETA moved for 13A work	ISS7	Joint (low pwr)	EMU	Assy	4:00	U43
		Connect Lab thermal umbilicals. Stow radiators. Transfer and install radiator grapple fixture OSE. Install grapple fixture on P6 radiator		STS	Joint (low pwr)	EMU	Assy	4:15	U44
		12A.1 Unshed/Cont/MaintTasks • Manually release robots from P5 and MPLM FRGF's • Open/close shuttle retention latches • Manually close/open P5-P4 latch • Manual lock/unlock of port SA joint • Manually retract P6 solar array and radiator		STS	Joint (low pwr)	EMU	Cont		
		TBD U.S. Maintenance TBR8		ISS7 TBR9	Joint (d)	EMU	Maint		UM-8
		12A.1-13A U.S. Contingencies • Backup EVA to stow both FGB solar arrays • Deploy P1 and S1 radiators • Complete unfinished 12A.1 assembly		ISS7	Joint (d)	EMU	Cont		
13A (S3/4)		Connect S3-S1 cables. Rotate keel pin. Release S4 solar array restraints. Install S4 solar array joint braces. Deploy MT stop.		STS A	Joint	EMU	Assy	5:00	U45
		Relocate P6 radiator to S4. Install grapple fixture on P6 radiator. Release S4 radiator restraints		STS B	Joint	EMU	Assy	6:00	U46
		Release solar array joint restraints		STS A	Joint	EMU	Assy	6:00	U47

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Flight Number	EVA Date	Task Description	Priority Data	Crew	Airlock d=deferred	Suit	Task Type	Time Est.	EVA #
		13A Unsched/Cont/MaintTasks • Manually release robots from S3/S4 FRGF • Release shuttle retention latches • Manually close/open S3/4-S1 latch • Manual deploy SA's and radiators		STS	Joint	EMU	Cont		
		Relocate CETA carts to stbd side and deploy payload structures.	• CETA moved as prep for 1J/A	ISS7	Joint (d)	EMU	Assy	4:40	U49
		Relocate S-band antenna from P6 to P1. Stow P6 radiator.	• P6 relocate before adding new UDM power loads	ISS7	Joint (d)	EMU	Assy	2:50	U50
		Disconnect P6-Z1 cables and truss. Connect P6-P5 truss and cables.	• P6 relocate before adding new UDM power loads	ISS7	Joint (d)	EMU	Assy	6:00	U51
		Unstow P6 radiators	• Finish P6 redeploy for SA use	ISS7	Joint (d)	EMU	Assy	2:00	U52
		13A-10A U.S. Contingencies • Complete unfinished 13A assembly		ISS7	Joint (d)	EMU	Cont		
10A (Node 2)		Remove Node2 CBM cover. Disc node 2 heater cables from Shuttle. Mate PMA3-Node1 cables		STS	Joint	EMU	Assy	4:15	U53
		Remove and temp stow old nitrogen tank. Install new NTA from Shuttle. Stow old NTA in Shuttle		STS	Joint	EMU	Assy	4:40	U54
		Install Node2 PDGF from SPP. Install Node2 trunnion/keel covers. Remove Node 2 CBM and hatch restraints.		STS	Joint	EMU	Assy	4:55	U55
		10A Unsched/Cont/MaintTasks • Manually release SSRMS from Node2 FRGF • Release shuttle retention latches		STS	Joint	EMU	Cont		
		Disconnect PMA2-Lab umbilical. Remove Node2 CBM cover and hatch restraints.		ISS7	Joint (d)	EMU	Assy	3:25	U56
		Purge heat exchanger nitrogen. Connect S0-Node2 umbilicals.		ISS7	Joint (d)	EMU	Assy	4:25	U57
		Remove Node2 CBM and hatch restraints. Relocate S1 camera. Connect PMA2-Node2 umbilicals		ISS7	Joint (d)	EMU	Assy	4:25	U58
		10A-1J/A U.S. Contingencies • Manually release SSRMS from PMA2 and Node2 FRGF • Complete unfinished 10A assembly		ISS7	Joint (d)	EMU	Cont		
1J/A (JEM PS, SM debris shields, SPP solar		Release JEM ELM-PS thermal/seal cover. Assist in temporary stowage of pallet with 4 boxes of SM MMOD conformal shields, 2 SPP solar arrays and 2 SA beams.		STS	Joint	EMU	Assy	3:40	R19
		Install ELM-PS trunnion/keel covers. Aid		STS	Joint	EMU	Assy	6:00	U59

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Flight Number	EVA Date	Task Description	Priority Data	Crew	Airlock d=deferred	Suit	Task Type	Time Est.	EVA #
		1J/A Unsched/Cont/MaintTasks • Manually release robots from SPP pallet and JEM ELM-PS FRGF • Release shuttle retention latches		STS	Joint	EMU	Cont		
6 Soyuz ISS7 dn ISS8 up		1J/A-1J U.S. Contingencies • Complete unfinished 1J/A assembly		ISS8	Joint (d)	Orlan	Cont		
		Connect SPP-SM-UDM cables & fluid lines. Install UDM-SPP handrail on SM node		ISS8	DC2 (d)	Orlan	Assy		R20
		Connect SPP-SM-UDM cables & fluid lines		ISS8	DC2 (d)	Orlan	Assy		R21
		Connect SPP-SM-UDM cables & fluid lines TBR10		ISS8	DC2 (d)	Orlan	Assy		R22
		Connect SPP-SM-UDM cables & fluid lines TBR10		ISS8	DC2 (d)	Orlan	Assy		R23
		Install 2 Kurs-MM antennas/cables on FGB nadir docking port (for Soyuz/DSM)	• Complete by late 2001	ISS8	DC2 (d)	Orlan	Assy		R24
		TBD Russian Maintenance TBR10		ISS8	DC2 (d)	Orlan	Maint		RM-5
		TBD Russian Maintenance TBR10		ISS8	DC2 (d)	Orlan	Maint		RM-6
		Assemble SPP Regal antenna. Deploy SPP TV cameras on truss for ERA operations.	• Antenna is redundancy • Cameras for ERA/EVA ops	ISS8	DC2 (d)	Orlan	Assy		R25
		Remove covers on 6 SM aft reflectors as prep for ESA ATV. Add 2 Kurs MM antennas to SM aft docking port	• Complete by late 2001	ISS8	DC2 (d)	Orlan	Assy		R26
		Assemble SPP solar array 5 & 6 truss beams and cables	• Clear pallet before 14A	ISS8	DC2 (d)	Orlan	Assy		R27
		Transfer/install SPP solar array 5	• Clear pallet before 14A. Install SPP array 5 before RM1 arrives and SM MMOD shields	ISS8	DC2 (d)	Orlan	Assy		R28
	Transfer/install SPP solar array 6	• Clear pallet before 14A. Install SPP array 6 before RM1 arrives and SM MMOD shields	ISS8	DC2 (d)	Orlan	Assy		R29	
1J (JEM PM)		Remove JEM PM CBM contamination cover		STS	Joint	EMU	Assy	1:40	U60
		Install JEM slidewire. Remove JEM RMS covers/locks and JEM PM CBM cover restraints. Install JEM cameras/lights		STS	Joint	EMU	Assy	5:55	U61
		1J Unsched/Cont/MaintTasks • Manually release robots from JEM PM PDGF • Release shuttle retention latches • Backup support for JEM robot deployment		STS	Joint	EMU	Cont		
		Install JEM PM handrails, PFR sockets, trunnion covers, keel covers and window shutters		ISS8	Joint (d)	Orlan	Assy	5:25	U62

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Flight Number	EVA Date	Task Description	Priority Data	Crew	Airlock d=deferred	Suit	Task Type	Time Est.	EVA #
		1J - UF3 U.S. Contingencies (TBD) • Manually release SSRMS from JEM ELM-PS • Complete unfinished 1J assembly		ISS8	Joint (d)	Orlan	Cont		
9R (DSM)		DSM EVA deferred until after UF-3							
UF-3 ISS8 dn ISS9 up		TBD U.S. Maintenance		STS	Joint	EMU	Maint		UM-9
		UF3 Unsched/Cont/MaintTasks • Manually release robots from MPLM and Express pallets FRGF • Open/close shuttle retention latches • Backup mech/elec mating for Express pallet		STS	Joint	EMU	Cont		
		UF3-UF4 U.S. Contingencies • Complete unfinished UF3 maintenance		ISS9	Joint (d)	Orlan	Cont		
		Connect DSM - FGB cables		ISS9	DC2 (d)	Orlan	Assy		R30
		Assemble SM MMOD shields	• Clear pallet before 14A	ISS9	DC2 (d)	Orlan	Assy		R31
		Assemble SM MMOD shields	• Clear pallet before 14A	ISS9	DC2 (d)	Orlan	Assy		R32
		TBD Russian Maintenance		ISS9	DC2 (d)	Orlan	Maint		RM-7
7 Soyuz ISS9 dn ISS10 up									
		TBD Russian Maintenance		ISS10	Joint (d)	EMU	Maint		RM-8
UF-4 (SPDM)		Release SPDM locks. Assemble SPDM	Activate 2J/A P4/S4 ORU's	STS	Joint	EMU	Assy	6:00	U63
		Remove and temp stow old ammonia tank. Install new ammonia tank from Shuttle. Grapple bar ops		STS	Joint	EMU	Assy	6:00	U64
		Stow old ammonia tank on Shuttle. Replace grapple bar on new tank		STS	Joint	EMU	Assy	3:25	U65
		TBD U.S. Maintenance. Aid exchange of delivered spares between ISS truss, warehouse and Shuttle pallet to allow pallet return		ISS10	Joint	EMU	Maint	6:00	UM-10
		UF4 Unsched/Cont/MaintTasks • Manually release robots from SLP, AMS and Express pallet FRGF's • Open/close shuttle retention latches • Backup mech/elec mating for SLP, AMS and Express pallet • SPDM maintenance ORU's		STS	Joint	EMU	Cont		
		UF4-2J/A U.S. Contingencies • Complete unfinished UF4 assembly/maint		ISS10	Joint (d)	EMU	Cont		
2J/A (JEM EF)		Remove JEM and EF berthing mech covers		STS	Joint	EMU	Assy	3:00	U66
		TBD U.S. Maintenance		ISS10	Joint	EMU	Maint		UM-11

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Flight Number	EVA Date	Task Description	Priority Data	Crew	Airlock d=deferred	Suit	Task Type	Time Est.	EVA #
ISS10 dn ISS11 up		Install JEM EF cameras/lights. Relocate P1 camera to S1. Relocate CETA carts to port side	• CETA move for S4 2J/A work	STS	Joint	EMU	Assy	5:40	U67
		Relocate CETA carts to stbd side. Retrieve JEM RMS SFA from ELM-ES	• CETA move for 14A rail work	STS	Joint	EMU	Assy	5:50	U68
		2J/A Unsched/Cont/MaintTasks • Manually release robots from JEM-EF, JEM ELM-PS and SLP FRGF's • Open/close shuttle retention latches • Backup installation of P4 and S4 ORUs • Backup support for JEM airlock		STS	Joint	EMU	Cont		
		2J/A-14A U.S. Contingencies • Complete unfinished 2J/A assembly		ISS11	Joint (d)	EMU	Cont		
14A (Port MT/CETA Rails, SM wings, SPP solar arrays)		Detach cupola from Spacelab pallet. Monitor cupola install. Release cupola window shutter restraints		STS A	Joint	EMU	Assy	4:30	U69
		Assist in removal of empty pallet from SPP for Shuttle return. Assist in attachment of new pallet with 4 SM MMOD wings, 2 SPP solar arrays and 2 SA beams (while docked).		STS B	Joint	EMU	Assy	TBD	R33
		TBD U.S. Maintenance. Transfer spares from pallet to ISS to allow pallet return.		STS A	Joint	EMU	Assy	TBD	UM-12
		Install P4/P5/P6 MT/CETA rails	• Rails only for outboard maint	STS B	Joint	EMU	Assy	6:00	U70
		Install P4/P5/P6 MT/CETA rails TBR13	• Rails only for outboard maint	STS A	Joint	EMU	Assy	6:00	U71
		14A Unsched/Cont/MaintTasks • Manually release SSRMS from Cupola, Lab, FGB, ULC/rails and SPP pallet FRGF's • Release shuttle retention latches • Backup latch closure for ULC/rails		STS B	Joint	EMU	Cont		
		14A-UF5 U.S. Contingencies • Complete unfinished 14A assembly		ISS11	Joint (d)	EMU	Cont		
	Assemble SPP solar array truss beams and cables	• Clear pallet before 1E. Install SPP array 7 before RM2 arrives	ISS11	Joint (d)	EMU	Assy		R34	
	Transfer/install SPP solar array 7	• Clear pallet before 1E. Install SPP array 8 before RM2 arrives	ISS11	Joint (d)	EMU	Assy		R35	
8R (Research Module 1)		Transfer/install SPP solar array 8. Retrieve SPP PDGF	• Clear pallet before 1E • Retrieve PDGF for 20A Node3	ISS11	Joint (d)	EMU	Assy		R36
UF5		TBD U.S. Maintenance		STS	Joint	EMU	Maint		UM-13

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Flight Number	EVA Date	Task Description	Priority Data	Crew	Airlock d=deferred	Suit	Task Type	Time Est.	EVA #
		UF5 Unsched/Cont/MaintTasks • Manually release SSRMS from MPLM and Express pallets FRGF • Open/close shuttle retention latches • Backup mech/elec mating for Express pallet		STS	Joint	EMU	Cont		
		UF5-20A U.S. Contingencies • Complete unfinished UF5 assembly/maint		ISS11	Joint (d)	EMU	Cont		
8 Soyuz ISS11 dn ISS12 up		Connect UDM-RM1 cables. Transfer docking cone inside UDM for Research Module 2		ISS12	DC2 & UDM (d)	Orlan	Assy		R37
		Attach/deploy 2 wings of SM MMOD	• Clear pallet before 1E	ISS12	DC2 (d)	Orlan	Assy		R38
		Attach/deploy 2 wings of SM MMOD	• Clear pallet before 1E	ISS12	DC2 (d)	Orlan	Assy		R39
20A (Node 3)		Disconnect PMA3 cables. Remove Node 3 CBM cover. Disc Node 3 heater cables from Shuttle		STS	Joint	EMU	Assy	TBD	U72
		Install Node 3 trunnion/keel covers. Remove Node3 CBM cover and hatch restraints. Connect Node 3 - Node 1 cables. Install Node 3 PDGF		STS	Joint	EMU	Assy	4:45	U73
		Connect SO-Node 3 utilities		STS	Joint	EMU	Assy		U74
		TBD U.S. Maintenance		ISS 12	Joint (d)	Orlan	Maint		UM-14
		20A Unsched/Cont/MaintTasks • Manually release SSRMS from PMA3 and Node3 FRGF's • Release shuttle retention latches		STS	Joint	EMU	Cont		
		20A-17A U.S. Contingencies • Complete unfinished 20A assembly/maint		ISS 12	Joint (d)	Orlan	Cont		
10R (Research Module 2)		Connect UDM-RM2 cables.		ISS 12	UDM (d)	Orlan	Assy		R40
17A ISS12 dn ISS13 up		TBD U.S. Maintenance		STS	Joint	EMU	Maint		UM-15
		17A Unsched/Cont/MaintTasks • Manually release SSRMS from MPLM FRGF • Open/close shuttle retention latches		STS	Joint	EMU	Cont		
		17A-1E U.S. Contingencies • Complete unfinished 17A assembly/maint		ISS 13	Joint (d)	EMU	Cont		
HTV1		No EVA for IVA racks							
1E		Remove Columbus APM CBM covers. Connect cables?? Install EVA aids??		STS	Joint	EMU	Assy		U75
		Assist in removal of empty pallet from SPP for Shuttle return		STS	Joint	EMU	Maint		R41
		1E Unsched/Cont/MaintTasks • Manually release SSRMS from COE PDGF		STS	Joint	EMU	Cont		

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Flight Number	EVA Date	Task Description	Priority Data	Crew	Airlock d=deferred	Suit	Task Type	Time Est.	EVA #
		1E-18A U.S. Contingencies • Complete unfinished 1E assembly		ISS 14	Joint (d)	Orlan	Cont		
9 Soyuz		TBD Russian Maintenance		ISS 14	DC2 (d)	Orlan	Maint		RM-9
ISS13 dn		TBD Russian Maintenance		ISS 14	DC2 (d)	Orlan	Maint		RM-10
ISS14 up									
18A (CRV)		No CRV/X-38 assembly.							
		18A Unsched/Cont/MaintTasks • Manually release robots from CRV and adapter FRGF • Release shuttle retention latches		STS	Joint	EMU	Cont		
		18A-19A U.S. Contingencies (TBD)		ISS 14	Joint (d)	EMU	Cont		
19A (S5)		Attach S5-S3/S4 and connect umbilicals		STS	Joint	EMU	Assy	3:10	U76
6 ISS Crew		19A Unsched/Cont/MaintTasks • Manually release robots from S5 and MPLM FRGF's • Open/close shuttle retention latches • Manually close/open S5-POA & S4 latches • Manual lock/unlock of stbd SA joint		STS	Joint	EMU	Cont		
		19A-15A U.S. Contingencies • Complete unfinished 19A assembly		ISS/U	Joint (d)	EMU	Cont		
15A (S6, Stbd MT/CETA Rails)		Attach S6-S5. Connect S5-S4 umbilicals. Release S6 solar array restraints. Stow S6 keel		STS	Joint	EMU	Assy	5:00	U77
		Install S4/S5/S6 MT rails. TBR14		ISSU	Joint	EMU	Assy	5:00	U78
		Install S4/S5/S6 MT rails. TBR14 Deploy MT stop. Relocate 1 CETA cart to stbd side.		STS	Joint	EMU	Assy	6:00	U79
		Relocate 1 CETA cart to stbd side. Remove P6 radiator and stow on POA. Install P6 rail ends. Relocate 2 CETA carts to port side		ISSU	Joint	EMU	Assy	6:00	U80
		Transfer P6 solar array radiator to S6. Remove radiator grapple fixture and restraints. Relocate 1 CETA cart to stbd side		ISSU	Joint (d)	EMU	Assy	5:50	U81
		15A Unsched/Cont/MaintTasks • Manually release robots from S6 FRGF • Release shuttle retention latches • Manually close/open S6-POA & S5 latches		STS	Joint	EMU	Cont		
		15A-UF6 U.S. Contingencies • Complete unfinished 15A assembly		ISSU	Joint (d)	EMU	Cont		
		TBD U.S. Maintenance		ISSU	Joint (d)	EMU	Maint		UM-16
HTV2		No EVA for JEM exterior maint (robotics only)							
		TBD Russian Science/Maintenance		ISSR	DC2 (d)	Orlan	Maint		RM-11
		TBD Russian Science/Maintenance		ISSR	DC2 (d)	Orlan	Maint		RM-12

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10 Soyuz ISS/R Rotation UF6 ISS/U Rotation		TBD Russian Science/Maintenance		ISSR	DC2 (d)	Orlan	Maint		RM-13
		Transfer spares from pallet to ISS to allow pallet return. TBD U.S. Maintenance		STS	Joint	EMU	Maint		UM-17
		UF6 Unsched/Cont/MaintTasks • Manually release robots from MPLM and SLP FRGF's • Open/close shuttle retention latches		STS	Joint	EMU	Cont		
		UF6-UF7 U.S. Contingencies • Complete unfinished UF6 assembly/maint		ISSU	Joint (d)	EMU	Cont		
		TBD Russian Science/Maintenance		ISSR	DC2 (d)	Orlan	Maint		RM-14
		TBD Russian Science/Maintenance		ISSR	DC2 (d)	Orlan	Maint		RM-15
UF7 (Centrif)		TBD Russian Science/Maintenance		ISSR	DC2 (d)	Orlan	Maint		RM-16
		Remove centrifuge CBM covers		STS	Joint	EMU	Assy	3:00	U82
		Connect centrifuge umbilicals		STS	Joint	EMU	Assy		U83
		UF7 Unsched/Cont/MaintTasks • Manually release SSRMS from centrifuge FRGF • Release shuttle retention latches		STS	Joint	EMU	Cont		
	UF7-16A U.S. Contingencies • Complete unfinished UF7 assembly		ISSU	Joint (d)	EMU	Cont			
HTV3		No EVA for IVA racks							
16A (Hab) ISS/U Rotation		Deploy Hab-S0 utility tray. Remove Hab CBM cover. Disc hab heaters		STS	Joint	EMU	Assy	3:30	U84
		Connect Hab-S0 umbilicals. Install ammonia jumpers		ISSU	Joint	EMU	Assy	4:25	U85
		Install Hab window shutter mechanisms. Install handrails and slidewire. Remove Hab CBM cover.		STS	Joint	EMU	Assy	5:10	U86
		Remove JEM PDGF and install on Hab. Connect PMA3-Hab umbilicals		ISSU	Joint (d)	EMU	Assy	4:40	U87
		16A Unsched/Cont/MaintTasks • Manually release SSRMS from hab FRGF • Release shuttle retention latches		STS	Joint	EMU	Cont		
	post16A U.S. Contingencies • Complete unfinished 16A assembly		ISSU	Joint (d)	EMU	Cont			

2A and subsequent	FGB	• Remove/replace thermal system pumps and regulators (4 panels on aft zenith)	• Launch on need • Komplast change out schedule?
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