MARS SPIRIT AND OPPORTUNITY

The function of the Wake-Up Music is as it would suggest, to 'wake-up' the mission team and get them focused on the days activities. As we will see the selection is often a little bit tongue-in-cheek. The music was originally played for the team around the time that the "sweep" was transmitted to the Rover shortly after it woke up. This sweeps the transmit frequency so the Rover's receiver can lock onto it. This occurs at around 8.45AM local time (at the landing site). However this meant the song was being played before many of the team members came-in, so the time was subsequently shifted to 10AM local time. By this time most of the crew are on station and ready to begin the Sol's activities. Sol is the term for a Martian 'Day'. One Martian Sol is 39.5 minutes longer than one Earth Day.

The song (sometimes songs) for each Sol are typically chosen by the Mission Managers, in the case of Spirit this is Dr. Mark Adler. The songs are chosen for a link they have with the planned activities for the day.

NASA Gets Into the Groove! From Above Top Secret News Network, February 21, 2004

theGroove!

The eclectic playlist is Mars rover Spirit mission manager Mark Adler's way of waking exhausted engineers and scientists who are working and sleeping on Mars time and dealing with a sometimes temperamental rover millions of miles away… Below is the Spirit playlist, along with some explanations by Adler for why the songs were chosen. A sol is a Martian day, slightly longer than a day on Earth at 24 hours, 37 minutes.

From: Mars Rocks! Eclectic Music Moves Rover Mission. By Robert Roy Britt February 26, 2004, Space.com and Jet Propulsion Laboratory Rover Daily Updates.

Spirit's playlist:

Sol 2: Good Morning, Good Morning, by the Beatles.

Sol 3: Oh What a Beautiful Mornin’, by Rodgers and Hammerstein.

Sol 4: Hail to the Chief, by the Mormon Tabernacle Choir. (Presidential phone call.)

Sol 5: Satisfaction, by the Rolling Stones. ("I can't get no ...", Air bags not cooperating.)

Sol 6: Get Up, Stand Up, by Bob Marley. (Lift mechanism actuated.)

Sol 7: Da Da Da, by Casaca. (Brazilian song suggested by investigator from Brazil, RRGTM student that week from Brazil.)

Sol 8: Soak Up the Sun, by Cheryl Crow. (Laid-back sol.)

Sol 9: I Can See Clearly Now, by Jimmy Cliff. (Picture taking sol.)

Sol 10: Unchained, by Van Halen; Hit the Road Jack, by Buster Poindexter; Turn, Turn, Turn, by the Byrds. (Cable-cutting, backup on landing deck. start turn on deck.)

Sol 11: I Get Around, by the Beach Boys; Round and Round, by Ratt; You Spin Me ‘Round, by Thalía. (Rest of turn on landing deck.)

Sol 12: Born to be Wild, by Steppenwolf; Rawhide, by Riders in the Sky; Who Let The Dogs Out?, by the Baha Men. (Egress.)

Sol 13: Reach Out, by the Four Tops. (First robotic arm activity.)

Sol 14: You’ve Got The Magic Touch, by the Platters. (Touching robotic arm down on Mars.)

Sol 15: If You Love Somebody Set Them Free, by Sting; Roam, by The B-52’s; Good Times Roll, by The Cars. (Last engineering activities, first drive on the surface.)

Sol 16: After Midnight, by Eric Clapton; Trash Day, by Weird Al Yankovic. (Crew starts Mars day after California midnight, part of the sol dedicated to deleting contents of flash.)

Sol 17: We Will Rock You, by Queen. (First arm activities and observations on a rock.)

Sol 18: Sledgehammer, by Peter Gabriel. (Intended first [Rock Abrasion Tool] RAT sol, though ran into problems later, to put it mildly.)

Sol 19: S.O.S., by Abba. (Objective was to regain contact with Spirit after a loss of communications. We did.)

Sol 20: Baby, Talk to Me, from the musical Bye Bye Birdie. (Objective was to get Spirit to send data. She did.)

Sol 21: Satellite, by The Hooters. (A rousing lullaby for when we were trying, and succeeded, to get the rover to go to sleep.)

Sol 22: We Can Work it Out, by The Beatles. (Beginning debugging activities to get Spirit back to normal.)

Sol 23: Start Me Up, by the Rolling Stones. (Booting in crippled mode.)

Sol 24: Flash, by Queen. (Clearly a flash problem, continuing to debug.)

Sol 25: (You're The) Devil In Disguise, by Elvis Presley, and With a Little Help From My Friends, by The Beatles. (Continuing debug, got picture!)

Sol 26: I Want a New Drug, by Huey Lewis & The News. (Trying yet another recipe for getting task trace, still didn't work.)

Sol 27: Anticipation, by Carly Simon. (Seeing if the file deletes will do the trick or not. They did.)

Sol 28: On the Road Again, by Willie Nelson. ("Can't wait to get back on ...", back to normal use of the flash file system, itching to get going.)

Sol 29: Here Comes the Sun, by The Beatles. (More normal operations, Mars Express coordinated overflight.)

Sol 30: Lean On Me, Club Nouveau. (Intended RAT brush sol, pressing RAT on rock, though activities did not complete.)

Sol 31: I Wanna Be Sedated, by the Ramones. (Very low activity sol to get the rover rested and ready for surgery on the following sol.)

Sol 32: Wipe Out, by The Surfaris, and We're Not Gonna Take It, by Twisted Sister. (File system reformat.)

Sol 33: Back In the Saddle Again, by Gene Autry, and The Star Spangled Banner, Beyoncé. (Back to normal operations, color flag picture on RAT.)

Sol 34: The Laundry Cycle: Pounded on a Rock, by The Bobs, and Bump N' Grind, by R. Kelly. (First RAT grinding.)

Sol 35: Up Around the Bend, by Credence Clearwater Revival. (Intended drive around lander to begin drive to crater. Didn't get anywhere though.)

Sol 36: Stuck On You, by Elvis Presley. (Drive didn't work yestersol -- we've been stuck here for weeks. Drive did work later that sol.)

Sol 37: Proud Mary, Tina Turner. ("And we're rolling, rolling, rolling on the river ...", first long drive, ended up being more than 20 meters.)

Sol 38: Runnin' With the Devil, by Van Halen. (HGA [High Gain Antenna] problem that sol, no activities, song played late in the sol.)

Sol 39: Hit the Road Jack, by Buster Poindexter. (Another long drive -- yes, this is a reuse of that song.)

Sol 40: What a Wonderful World, by Louis Armstrong. (Mars, that is.)

Sol 41: Open Road Song, by Eve 6. (Driving song, though only did several inches of driving to position in front of rock.)

Sol 42: Lift Up Every Stone, by John Hiatt. (Observations of the rock "Mimi".)

Sol 43: Livin' On a Prayer, by Bon Jovi. (Many sols tend to start with our fingers crossed.)

Sol 44: Way Over Yonder, by Carole King. (Heading for that crater.)

Sol 45: Touch Me in the Morning, by Diana Ross. (Touch and go sol.)

Sol 46: Wake Up Little Susie, by The Everly Brothers. (Generic wakeup song.)

Sol 47: Dig Down Deep, by Hot Soup. (Trenching sol.)

Sol 48: Working in the Coal Mine, by Devo. (Working in the trench.)

Sol 49: Coisinha Do Pai, by Beth Carvalho. (Brazilian song played on Mars Pathfinder, played again for Carnival weekend.)

Sol 50: Samba De Marte, by Beth Carvalho. (Brazilian song written by same artist inspired by use of previous song on MPF, this one is a "Mars Samba", also for Carnival weekend. Starts off "Hello NASA!".)

Sol 51: “Theme from ‘Chariots of Fire’ Vangelis . (Appropriate for slow-motion races.)

Sol 52: Cold as Ice by Foreigner.

Sol 53: Dust in the Wind by Kansas, with the anticipation of possibly capturing dust devils spinning across the Martian surface.

Sol 54: Big Rock in the Road by Pete Wernick as it made its final approach to the imposing rock called "Humphrey."

Sol 55: Brush Your Teeth by Cathy Fink and Marcy Marxer, and Knock Three Times by Tony Orlando and Dawn.

Sol 56: Walking On Sunshine Jump 5.

Sol 58: I Still Haven't Found What I'm Looking For U2 to pay homage to its twin rover's amazing findings of water evidence at Meridiani Planum.

Sol 59: One More Time by The Real McCoy.

Sol 60: Pictures to Prove It by the Mighty Mighty Bosstones.

Sol 61: Motor Away by Guided by Voices.

Sol 62: My First Trip to Mars, Atticus Fault.

Sol 66: Livin' on the Edge by Aerosmith since Spirit is at the edge of Bonneville crater.

Sol 67: On Top of the World by the Carpenters. The song was fitting, as yestersols’s drive put Spirit at the rim of "Bonneville" crater, but it took some additional maneuvering to get the rover perfectly placed for the 360-degree panoramic camera images it will take on upcoming sols.

Sol 69: Watching the Wheels by John Lennon.

Sol 77: "One Step Closer the Doobie Brothers, since the rover was to make its final approach to the rock target named "Mazatzal" today.

Sol 80: "Open the Door Otis Redding.

Sol 81: "Boy from New York City The Manhattan Transfer, in honor of the grind on the New York target.

Sol 98: "Where Is My Mind? The Pixies in honor of its software transplant.

Sol 109: "(Take me) Riding in my Car Woody Guthrie.

Opportunity's playlist:

Sol 2: So Happy Together, by the Turtles (First full sol with both rovers on Mars.)

Sol 3: The Spirit of Radio, by Rush (HGA release.)

Sol 4: n/a

Sol 5: Stand, by REM; I'm Still Standing, by Elton John (Standup.)

Sol 6: Lookin' Out My Back Door, by Creedence Clearwater (Revival.); Release Me, by Elvis Presley (Middle wheel release); Born to Run,

by Bruce Springsteen (Wake up.)

Sol 7: I'm Free, by The Who (Cable Cut #3); Going Mobile, by The Who (Egress.)

Sol 8: You Ain't Seen Nothing Yet, by Bachman-Turner Overdrive (First dual surface nominal rover operation.)

Sol 9: I'm Coiming Out, by Diana Ross (IDD release.)

Sol 10: Pictures of You, by The Cure (First MI image.)

Sol 11: Please Please Tell Me Know, by Depeche Mode (First MB data readout of soil.)

Sol 12: I'm Leaving Here, by Motorhead (First drive since egress.)

Sol 13: Little Honda (aka First Gear), by the Beach Boys (Jaunt away from lander.)

Sol 14: Should I Stay or Should I Go, The Clash (We went.)

Sol 15: The Flintstones Theme Song, end credits, Version 2 from 1962 (For the arrival at the "bedrock.")

Sol 16: Slip Slidin' Away, by Paul Simon (Large slips along drive up to the outcrop.)

Sol 17: Wake Me Up, by Wham (Touch and go.)

Sol 18: Running Down a Dream, by Tom Petty and the Heartbreakers (Drive along the outcrop.)

Sol 19: Here I Go Again, by Whitesnake (Repeat of sol 18 drive objective.)

Sol 20: I Like Dirt, by Red Hot Chili Peppers; The Pioneers of Mars, by Landa/Linsley (MI/MB and drive.)

Sol 21: Send Me On My Way, by Rusted Root; Desert Drive, by Tangerine Dream (Drive back to El Capitan.)

Sol 22: Invisible Touch, by Genesis (MI-MB placement.)

Sol 23: Spinning Wheel, by Blood, Sweat, and Tears (Right front trenching wheel.)

Sol 24: Trench Town Rock, by Bob Marley (Make use of the trench.)

Sol 25: Fascination, by Human League (Regarding the img return from the trench.)

Sol 26: Body Movin', by the Beastie Boys (Every rover part exercised.)

Sol 27: Touch and Go, by Emerson, Lake and Powell (Touch and go.)

Sol 28: I am a Rock, by Simon and Garfunkel (El Capitan target assessment.)

Sol 29: Riders on the Storm, by the Doors (Heavy weather at DSS-63 and DSS-14.)

Sol 30: Rock 'n Me, by Steve Miller Band (1st RAT on opportunity.)

Sol 31: Rock around the Clock, by Bill Haley and His Comets (APXS/MB.)

Sol 32: Let It Be, by the Beatles (Long MB integration -- no IDD or mobility.)

Sol 33: Blueberry Hill by Fats Domino, in honor of the hill in front of the rover.

Sol 34: Dig In by Lenny Kravitz.

Sol 35: I Can See Clearly Now by Jimmy Cliff.

Sol 36: Rock Steady by Sting.

Sol 37: Let's Go by the Cars.

Sol 38: Have You Ever Seen the Rain? by Creedence Clearwater Revival in honor of the confirmation that liquid water once flowed through the rocks at Meridiani Planum.

Sol 39: Bad Moon Rising Creedence Clearwater Revival in honor of the eclipse caused by the Martian moon Deimos.

Sol 41: On the Road Again by Willie Nelson.

Sol 43: ''You Can Look (But You Better Not Touch) Bruce Springsteen in recognition of the fact that the rock abrasion tool grind did not touch the surface of its rock target on sol 42.

Sol 44: "Try (Just a Little Bit Harder) Janis Joplin for the rock abrasion tool's second attempt at "Mojo 2," and "X-ray Eyes Kiss for the alpha particle X-ray spectrometer.

Sol 45: ''Eclipse Pink Floyd in recognition of the transit of the martian moon, Phobos. A second song, "Meet Me Halfway Kenny Loggins, was played because Opportunity is halfway through its primary 90-sol surface mission.

Sol 46: The wakeup songs were "Berry Nice News Raffi and "Huckling the Berries Country Cooking in honor of researching the mysterious "blueberries" with the instruments on the robotic arm.

Sol 47: “No Particular Place to Go Chuck Berry in recognition of the stay at "Berry Bowl."

Sol 48: Jaws: MainTitle and Fist Victim by John Williams.

Sol 50: The Dentist by Bill Cosby, in honor of the toothy targets in "Shark's Cage."

Sol 51: Song of the South by Alabama.

Sol 53: Ice Cream Man by John Brim woke Opportunity this sol to remind it of the possible sweet treats that await at targets referred to as "Chocolate Chip" and "Coconut" in the neighborhood dubbed "Mudpie."

Sol 54: I Feel The Earth Move Carole King.

Sol 56: Fly Like an Eagle by the Steve Miller Band.

Sol 57: "If You Don't Get it the First Time, Back Up and Try it Again the JBs and Fred Wesley.

Sol 58: "Come on Home Lambert, Hendricks and Ross beckoned Opportunity back toward its landing site crater to an area of bright material.

Sol 59: "59th Street Bridge Song (Feeling Groovy) Simon and Garfunkel.

Sol 60: “The Circle of Life Elton John in honor of the Lion King panorama.

Sol 64: "Stand REM.

Sol 65: "Back in the Saddle Aerosmith.

Sol 66: "Bounce Bon Jovi. Opportunity's rock abrasion tool ground into "Bounce" for just over two hours.

Sol 67: "Changes David Bowie.

Sol 68: "Got to Go Back Van Morrison.

Sol 69: "Little Maggie Tom Adams, chosen for the soil target named "Maggie."

Sol 70: "Truckin' The Greatful Dead.

Sol 72: "The Wanderer Dion and the Belmonts.

Sol 73: "Let the Good Times Roll B.B. King a nod to Spirit's successful primary mission of 91 sols and a call for more good times during the coming sols.

Sol 79: "Teenage Lobotomy Ramones. Opportunity began operating with new flight software.

Sol 82: "I Would Walk 500 Miles, Less Than Jake (originally by the Proclaimers).

Sol 85: "Take Me Out to the Ball Game! Jack Norworth in honor of all the baseball-related target names chosen this sol.

Sol 101-102: "Morning has Broken Cat Stevens; "Hallelujah Chorus" from George Frederic Handel's Messiah; and "Dazed and Confused Led Zeppelin.

SOURCES

Chien, Philip author of "Columbia Final Voyage; The Last Flight of NASA's First Space Shuttle".

(Philip Chien’s contributions to the Chronology are italicized and followed by “PC”.)

Ezell, Edward Clinton and Ezell, Linda Neuman, “The Partnership: A History of the Apollo-Soyuz Test Project”, 1978, SP-4209.

Mars Pathfinder Sojourner Rover Wake-up Song list:http://mpfwww.jpl.nasa.gov/MPF/rover/roversongs.html

MCC Status Reports

The Mission Transcript Collection: U.S. Human Spaceflight Missions from Mercury Redstone 3 to Apollo 17 (SP-2000-4602, 2001).

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NASA Headquarters Current News

NASA Headquarters Historical Reference Collection

NASA Johnson Space Center (JSC) Audio Control Room

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NASA Johnson Space Center (JSC) Space Shuttle Wakeup Calls Website: http://spaceflight.nasa.gov/gallery/index.html

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Skylab and Space Shuttle Air-to-Ground Transcripts and PAO Commentary