APPENDIX F

RUNWAY SAFETY ACTION PLAN
Appendix F – Runway Safety Action Plan

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Charles M. Schulz/Sonoma County Airport
Runway Safety Action Plan
March 24, 2010

On March 24, 2010, the FAA Runway Safety Field Operations Group, Western-Pacific Region (AJS-4WP), visited Charles M. Schulz/Sonoma County Airport (STS) in Santa Rosa, California. During the visit, the team met with airport management, airfield operations, air traffic management, and airport users for the purpose of updating the existing Runway Safety Action Plan (RSAP) for the airport. Initially, the Runway Safety Action Team (RSAT) conducted an evening pilot meeting and gathered local pilot observations and recommendations concerning airport surface safety. On the following day, the RSAT team toured the airport to view the airfield (NACO airport diagram appended to end of document). STS has over 300 based general aviation aircraft including jets, helicopters, and gliders. The airport handles in excess of 3,000 air carrier operations per year, and is estimated to handle about 109,833 total operations annually, with an FAA Air Traffic Control Tower in operation daily from 0700 to 2000 PST. The airport’s overall safety design planning group goals (Airport Design Code (ARC)) are noted in current planning documents such as the Airport Layout Diagram (ALP) as C-II/C-III respectively for two runways, both slightly longer than 5000 feet each.

The previous RSAT visit was conducted on March 22 and 23, 2005. The following is a breakdown of the Runway Incursions/Surface Incidents that occurred during the time period following the last RSAT and leading up to the present one (3/24/2005 through 3/23/2010).

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<th>Runway Incursion/Surface Incident Breakdown by Type Category</th>
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<th>Runway Incursion Breakdown by Severity Category</th>
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Total estimated operations for the time period 3/24/2005 through 3/23/2010 are 549,164, or an average of approximately 109,833 per year. The Runway Incursion Rate for this period is 0.91 per 100,000 operations. (An operation is defined as an aircraft taking off or landing.)
The following individuals were among those in attendance at the meetings:

Dave Kurner, FAA Runway Safety, Regional Program Manager
Patrick McFarland, FAA Runway Safety, Pilot Analyst
Jon Stout, Sonoma County, Airport Manager
Steve Lange, Sonoma County, Assistant Airport Manager
Elliot Brann, FAA, Air Traffic Representative
Art Hayssen, FAASTeam, Lead Representative Oakland
Garry Brown, FAA Western Service Center, Quality Control/RSAT Specialist
Lucy Lorenzen, FAA Western Service Center, QC Safety Specialist
David Dietz, Mead & Hunt, Senior Airport Planner
Bill Gin, FAA San Francisco ADO, Program Manager
Stephen Miller, STS Air Traffic Control, Front Line Manager
Allie Metcalf, STS Air Traffic Control, Air Traffic Manager
Jana Pitre, STS Air Traffic Control, NATCA Representative
Michael Smith, California DOT, Aviation Safety Officer
Kurt Haukohl, FAA Runway Safety, Airport Operations Analyst

The following safety concerns were noted:

1) Non-standard markings and lack of black outlining on light-colored pavements
2) Non-standard and incorrectly placed signs, some of which are in poor condition
3) Confusion concerning the location of movement areas on the airfield
4) Incorrect Airport Master Record (5010) data
5) Inaccuracies on the NACO and Jeppesen airport diagrams
6) Increased runway occupancy time due to the necessity to back-taxi on runways
7) Elevated risk for wrong runway departures due to co-located runway thresholds
8) Agricultural operations and excessive growth of vegetation that have led to tower line-of-sight issues as well as obscuration of airfield signs
9) Noted hot spot areas

The following is a list of new action items developed by the Regional Runway Safety Action Team in cooperation with airport and air traffic management, in an effort to mitigate these nine identified safety concerns.

**Action Item No:** STS-2010-001
**Estimated Completion Date (ECD):** 10/30/2010
**Status:** Open

**Observation:** It was noted that many surface painted markings on the airfield are non-standard, have become faded or discolored, and are inconsistently sized and highlighted. The RSAT Team also noted inconsistencies concerning marking placements such as Hold Position Lines, with some perpendicular to the taxiway while others are parallel with the associated protected runway. Airfield marking discrepancies contribute to pilot confusion, and increase the risk potential for a runway incursion to occur.
Action Item: Recommend the airport develop a consistent and comprehensive airfield marking plan, as is required as part of the Airport Certification Manual (ACM) and Airport Certification under FAA Part 139. Additionally, surface markings associated with signs should be re-evaluated throughout the Airport Operating Area (AOA) to determine the correct location for the marking, moving signage as necessary to coordinate with those markings. The RSAT Team also recommends that the airport evaluate the consistency of marking placements such as Hold Position Line markings perpendicular to the taxiway or parallel with the associated protected runway. Additionally, it was noted that enhanced taxiway surface painted lead-in lines have not been completed throughout the airport. Please refer to FAA Advisory Circular (AC) 150-5340-1J, entitled “Standards for Airport Markings,” for details, dimensions, and specifications on each type of airfield marking. Additionally, requirements of the ACM may be found in Title 14, Code of Federal Regulations (CFR), Part 139 and “Certification of Airports.”

Remarks: The ECD above is the deadline by which a plan of action should be determined by the airport.

Responsible Local Entity
STS Airport Manager
Jon Stout

Responsible FAA Regional Entity
FAA Airports Division Program Manager
Bill Gin
FAA Airport Certification Safety Inspector
Tony Garcia

Action Item No: STS-2010-002
Estimated Completion Date: 10/30/2010
Status: Open

Observation: It was noted that many airport signs, both aboveground and surfaced painted, are non-standard, incorrectly placed, or in poor condition. The RSAT Team also noted inconsistencies regarding sign placements, such as the Mandatory Runway Holding Position Signs, with some having been positioned perpendicular to the taxiway while others have been positioned parallel with the associated protected runway. Airfield signage discrepancies and sign orientations may contribute to pilot confusion, and increase the risk potential for a runway incursion to occur.

Action Item: Recommend the airport develop a complete and consistent airfield sign plan, as is required as part of the ACM and Airport Certification under FAA Part 139. A comprehensive sign plan may include retro-reflective (reflector) systems where the expense or utilization of a fully electrified sign is not justified or required. Additionally, it has been noted that in many locations, a variety of sign types, sizes, and formats were provided, but were incomplete and inconsistently positioned. Please refer to FAA Advisory Circular (AC) 150-5340-18E, entitled “Standards for Airport Sign Systems,” for details, dimensions, and specifications on each type of airfield sign. Additional requirements within the AOA for a sign plan for the ACM and the airport may be found in Title 14, CFR, Part 139, and “Certification of Airports.” Details on
FAA signage may be found in “Specifications for Taxiway and Runway Sign,” FAA AC 150-5345-44H. The following are specific signage recommendations noted by the RSAT Team:

1) Taxiway Z, while marked, is not identified by aboveground signage and may benefit from either aboveground or surface painted signs. Alternatively, parallel ramp Taxiway Z may be eliminated completely west of Taxiway Y (see STS-2010-003 below).

2) Suggest the installation of Runway 14 and Runway 19 destination signs, to be installed on Taxiway Y and just south of the intersection of Taxiway A, visible to pilots taxiing north on Taxiway Y, as well as on Taxiway A, just east of the intersection of Taxiway Y, visible to pilots taxiing west on Taxiway A.

3) Recommend that Taxiway Y be more clearly identified with aboveground signage. The RSAT Team noted the fronts and the backs of four “VSTR” signs along Taxiway Y that could be utilized to provide location or directional information (see pictures below). Taxiway Y is predominantly marked by exit signs that are typically difficult for pilots to read.

4) A combination of direction and location signs, elevated and surface painted, should be installed to guide pilots operating on Taxiways C, Y, and Z, near the intersection of those taxiways, since no signage is currently available in this area. Additionally, taxilane identifiers on the hangar rows near this area may assist pilots and ATC when giving location or destination information.

5) Taxiway X on the western side of the Airport Layout Plan and Airport Diagram should be given a new designation, since “X” refers to closed pavement and is not a standard taxiway designator.

6) Mandatory white on red surface painted signs are incomplete throughout the remainder of the airport taxiway-runway intersections and are required by December 2010. Additionally, the mandatory surface painted sign on Taxiway Y leading to Runway 19 and Runway 14 should indicate both runways.

7) A black on yellow direction sign at the apex of Runway 14 and Runway 19 (photo below) may be inappropriate or non-standard due to its location in the Runway Safety Area (RSA), with the absence of any mandatory sign for Runway 1/19. Recommend the airport review the sign type, placement, and location with its Certification Safety Inspector. The RSAT Team recommends that the airport request to have its sign plan reviewed and approved for its ACM, with the photo
below (left) providing an example of standard signage for this area. Please note the runway location signs, which the RSAT Team feels are crucial for the prevention of wrong-runway departures.

Excerpts: AC 5340-18E

8) An area in the AOA marked with a white-on-red “No entry” sign appears to be permanently closed on Taxiway W. Entry from the west side of Runway 1/19 is blocked via orange cones (see pictures below). However, this abandoned area has a Mandatory Runway Holding Position Sign and associated Hold Position Line marking. The markings and signage may partially imply that the area is taxiway available for aircraft use. The airport should consult its Certification Safety Inspector for appropriate signage and marking of this area to prevent any confusion about its availability for normal aircraft use. This may include removing the Runway Holding Position Sign and hold bar markings.

9) Taxiway E and F do not appear on the Airport Diagrams published by NACO or Jeppesen. The RSAT Team suggests the airport take action to ensure these taxiways are included on the next cycle of publication for NACO and Jeppesen airport diagrams.
Remarks: The ECD above is a date by which a plan for completion should be determined by the airport. This action item replaces items previously reported as complete in STS-2005-002 and STS-2005-003.

Action Item: Recommend the airport meet with the FAA project manager, air traffic manager, and Airports Certification Safety Inspector to discuss those areas of the airport that can be clearly seen and controlled from the tower, and where separation should normally be provided by ATC. The RSAT Team specifically recommends that Taxiway(s) B, D, and A west of Runway 14/32
become movement area to the maximum extent possible. Areas that cannot be clearly observed from the tower should be appropriately marked and signed as non-movement or non-visibility areas, as determined by the Local RSAT (LRSAT). All of Taxiway B, for example, is visible from the tower and is a frequent route of travel for aircraft from runway to runway. However, the portion of the taxiway between Runway 1/19 and 14/32 has been designated as non-movement area, and no non-movement area boundary markings were applied to the taxiway surface to clarify this fact. Additionally, the airport should consider designating the section of Taxiway Z that is east of Taxiway Y as non-movement area. Reference AC 150/5340-1J, Standards for Airport Markings (Note that a Letter of Agreement [LOA] is normally developed to clarify understanding between the tower and the airport sponsors as to the actual physical location of the movement area.)

Responsibility Local Entity
STS Airport Manager Jon Stout

Responsibility FAA Regional Entity
FAA Airports Division Program Manager Bill Gin
FAA Airport Certification Safety Inspector Tony Garcia

Action Item No: STS-2010-004
Estimated Completion Date: 10/30/2010
Status: Open

Observation: It was noted that the Hold Position Line Markings on Taxiways A and Y east of Runway 14/32 are white (see picture below). Non-standard or discolored hold position line markings may lead to pilot confusion over what might be the associated surface painted markings’ true purpose, and may lead to an increased potential for runway incursions.

Taxiway Y hold position line marking should be yellow
Action Item: Recommend the airport paint the hold position line markings on Taxiways A and Y east of Runway 14/32 yellow, with reflective beads, in accordance with FAA AC 150/5340-1J, Standards for Airport Markings. Enhanced markings using black highlighting where contrast can be improved is also recommended.

Remarks: The ECD above is a date by which a plan for completion should be determined by the airport. This action item replaces items previously reported as complete in STS-2005-004.

Responsible Local Entity
STS Airport Manager
Jon Stout

Responsible FAA Regional Entity
FAA Airports Division Program Manager
Bill Gin
FAA Airport Certification Safety Inspector
Tony Garcia

Action Item No: STS-2010-005
Estimated Completion Date: 10/30/2010
Status: Open

Observation: It was noted that the airport FAA Airport Master Record (5010) incorrectly reports Declared Distances for Runway 1/19, and that 5010-61 reports the Take Off Distance Available (TODA) as 5202 feet for Runway 19. The RSAT Team noted there was insufficient pavement available to produce a physical takeoff distance of 5202 feet, and later verified this was a data entry error. Pilots calculating aircraft performance and required distance for takeoff may be misled into thinking that there is more room available for takeoff than physically exists. This may present a risk of overshooting or excursion from the runway surface. Additional risks resulting from this situation include pilots selecting STS as a destination and having insufficient actual space to depart the airport.

Action Item: Recommend the airport verify the accuracy of all reported 5010 data, correcting as necessary. The RSAT Team is assisting the airport with this item, and has shared its findings of inaccuracy with the airport’s Part 139 Certification Safety Inspector, the airport consultant, airport management, and the Washington DC data branch of the FAA, for correction.

Responsible Local Entity
STS Airport Manager
Jon Stout

Responsible FAA Regional Entity
FAA Airports Division Program Manager
Bill Gin
FAA Airport Certification Safety Inspector
Tony Garcia

Action Item No: STS-2010-006
Estimated Completion Date: 10/30/2010
Status: Open
Observation: The RSAT Team noted several discrepancies between NACO and Jeppesen airport diagrams. Pilot awareness and safety during taxi operations is greatly increased through the use of accurate airport diagrams.

Action Item: Recommend STS airport provide AJS-4WP Office of Runway Safety, in electronic form, a current and up-to-date copy of the airport diagram, preferably in PDF or AutoCad format. AJS-4WP will assist by providing accurate data to the National Flight Data Center (NFDC). The RSAT Team noted the following items for possible clarification or correction on the airport’s diagrams:

1) Suggest the airport confirm that Taxiway X will be re-designated or removed.
2) Closed portions of Taxiway W, B, and D should be depicted as closed.
3) Non-visibility areas of the airport diagrams should be suitably marked for pilots.
4) Hold position line markings are not normally depicted on airport diagrams and may clutter or confuse pilots who may consider these as the only mandatory holding points on Runway 14/32. The RSAT Team recommends that these markings be removed from the airport’s diagrams.

Remarks: The ECD above is a date by which a plan for completion should be determined by the airport. This action item replaces items previously reported as complete in STS-2005-007.

Responsible Local Entity
STS Airport Manager     Jon Stout

Responsible FAA Regional Entity
Runway Safety Assistant Program Manager     Chris Diggons

Action Item No:           STS-2010-007
Estimated Completion Date:    10/30/2010
Status:                   Open

Observation: The RSAT Team observed, and ATC affirmed, that frequent back-taxiing on Runway 1/19, often including full-length back-taxiing, is required by aircraft selecting a Runway 1 departure or landing on Runway 19. Back-taxi operations on runways increase the risk of losing separation between both landing and departing aircraft, especially when the tower is closed. The risk of runway excursions while aircraft turn around, as well as head-on collision conflicts, increases dramatically when airport runways must be utilized as taxiways.

Action Item: Recommend the airport evaluate and consider projects to reduce or eliminate runway back-taxiing and runway crossings. Alternatives outlined in the Airport Layout Plan include connection of Taxiway D to the Runway 1 threshold, and the completion of an extension to Taxiway Y to cross Runway 14/32. The RSAT Team supports projects that reduce or eliminate non-essential back-taxiing and direct 90° taxiway entrances to runway thresholds.
Please refer to FAA Engineering Brief No. 75, “Incorporation of Runway Incursion Prevention into Taxiway and Apron Design.”

### Observation:
The Runway Safety Team discussed the current airport configuration, which consists of co-located thresholds at the Runway 1/19 and Runway 14/32 intersection. A high frequency of pilot confusion involving departures on the wrong runway has occurred in the past, and remains an ongoing, identified airport risk. Additionally, the AOA area surrounding Taxiway A, Y and the co-located thresholds has proven to be a high workload area for ATC. Wrong-runway takeoffs represent an unacceptably risky situation for runway incursions, including head-on aircraft collisions as well as conflicts with landing aircraft.

### Action Item:
Recommend STS pursue and implement alternative runway configuration(s) projects with the FAA Airports District Office (ADO) Program Manager and Engineering to eliminate the present condition of co-located Runway 14/32 and Runway 1/19 thresholds. The RSAT Team encourages projects to extend or shorten one or both runways with their associated connections. The primary goal is an overall airport objective to reduce or eliminate potential pilot runway confusion, and to present preferable safe mechanical configurations to the present threshold overlap. The RSAT Team also recommends projects to provide immediate mitigation(s) of the present risk, including surface painted signage, aboveground signage, markings, in-pavement lighting, in-pavement lead-in lighting, runway guard lights, and enhanced markings. Large-sized format signs may also be utilized in locations such as the Taxiway Y entrance to the runway apex so that, for example, pilots may more easily read where the departure point for Runway 19 is located when crossing both thresholds. The RSAT Team encourages STS to work with its Part 139 Certification Safety Inspector to approve appropriate signage, markings, locations, and plans. Please refer to FAA Minimum Design Safety Standards and FAA AC 150-5300-13, FAA Advisory Circular (AC) 150-5340-18E, entitled “Standards for Airport Sign Systems” for details, dimensions, and specifications on each type of airfield sign. Additional requirements within the AOA for a sign plan for the ACM and the airport may be found in Title 14, CFR, Part 139 and “Certification of Airports.” Details on FAA signage may be found in “Specifications for Taxiway and Runway Signs,” FAA AC 150-5345-44H.
Responsible FAA Regional Entity Contact
FAA Airports Division Program Manager Bill Gin
FAA Airport Certification Safety Inspector Tony Garcia

Action Item No: STS-2010-009
Estimated Completion Date: 10/30/2010
Status: Open

Observation: The RSAT Team noted tall brush, including small trees, and agricultural operations that may interfere with both visibility of signs and line-of-sight to the tower. Pilots may completely miss seeing parts or all of important signs or markings, and ATC may lose sight of aircraft that are taxiing on the airport, increasing the potential risk for a runway incursion or surface incident.

Action Item: Recommend STS increase its frequency of trimming around signs and lights, as well as removal of shrubs, trees, and brush blocking pilot visibility of signs and markings and the tower’s visibility of the movement area. Additionally, the RSAT Team recommends that the airport clearly identify any areas of agricultural activity, ensuring that they do not conflict with the movement of aircraft or airport operations, or become habitat for wildlife. Please refer to FAA AC 150-5300-13, “Airport Design,” Appendix A17-1, “Minimum Distances Between Certain Airport Features and On-Airport Agriculture Crops.”

Responsible Local Entity Contact
STS Airport Manager Jon Stout

Responsible FAA Regional Entity Contact
FAA Airports Division Program Manager Bill Gin
FAA Airport Certification Safety Inspector Tony Garcia

Action Item No: STS-2010-010
Estimated Completion Date: 10/30/2010
Status: Open

Observation: It was noted that a lighted and marked heliport on the airport apron near the intersection of Taxiway Z and Taxiway B is not listed in the Airport Master Record (5010) and has been marked with a white FATO (see picture below). Also noted adjacent to the heliport were several improved helicopter parking pads. The RSAT Team was unable to locate a record or finding related to an airspace determination or established traffic pattern, including approach and departure paths associated with this facility. In this instance, heliport incursions and/or surface incidents may occur where fixed-wing or rotor aircraft simply pass through the white marked area without ATC clearance. The risk to helicopter pilots at night, when the tower is closed, is that they may incorrectly assume that adequate protection from incursions is provided by virtue of the facility’s layout alone.
Action Item: The RSAT Team recommends that the airport file FAA Form 7480-1 to formally establish the aeronautical facility (heliport) located near the intersection of Taxiway Z and Taxiway B. The heliport should also be included in the Airport Facility Directory and 5010. Heliports provide at a minimum clear 8:1 approach and departure surfaces, with those imaginary surfaces normally depicted on the ALP. Additionally, the RSAT Team recommends that heliports on airports be located in non-movement areas so the normal ingress and egress of passengers may occur without escort. Finally, properly establishing this new aeronautical facility may require both NEPA and CEQA. Alternatively, the airport may choose to establish a helicopter parking area in place of the current heliport. Helicopter parking facilities are normally marked with yellow perimeters and do not require airspace or approach/departure surfaces. In addition, while heliport lighting is amber, helicopter parking areas have their perimeters delineated with blue lights.

**Responsible Local Entity**
STS Airport Manager
Jon Stout

**Responsible FAA Regional Entity**
FAA Airports Division Program Manager
Bill Gin
FAA Airport Certification Safety Inspector
Tony Garcia

Action Item No: STS-2010-011
Estimated Completion Date: 10/30/2010
Status: Open

Observation: It was noted that the area around Taxiway A, Y, and the runway intersections of 1/19 and 14/32 has been a location for confusion among pilots. Pilots have also pointed out that ground traffic exiting the T-hangar/shade hangar area near Taxiway C and Taxiway Z presents a potential collision risk and is within a non-visibility area for the tower. Air traffic has identified these areas as hot spots on the airport. Published hot spot charts alert pilots about areas of
The only remaining open action item from previous visits, STS-2005-005, was noted as still on course, with the current estimated completion date of 06/30/2012 remaining the same.

The following action items from previous visits are complete:

   STS-2005-001       STS-2005-006

The following action items from previous visits have been closed and rolled into new action items:


   [See airport diagram on following page]