



**NORMAN Y. MINETA-SAN JOSE INTERNATIONAL AIRPORT
RUNWAY INCURSION MITIGATION / AIRFIELD DESIGN STANDARDS
ANALYSIS**

**TECHNICAL MEMORANDUM:
ANALYSIS OF RUNWAY INCURSION AND
SURFACE INCIDENTS
2000 – TO PRESENT**

KIMLEY HORN TEAM

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Introduction

The San Jose Runway Incursion Mitigation (RIM) Study approaches the enhancement of the safety of ground movements on the airfield from two perspectives. The first perspective is assessing the existing airside facilities from the perspective of their conformity to both dimensional and design related criteria and standards. The second perspective is to focus in on areas of the airfield where actual events have taken place and identify the factors that contributed to the event so that specific remediation actions can be identified and assessed. In short, developing a realistic plan to mitigate surface incidents and runway incursions first requires an understanding of the events that have occurred and the identification of any patterns related to where on the airfield those events have taken place.

Establishing the understanding of past events and patterns is critical to focusing and prioritizing mitigation efforts and making the best use of limited financial resources available to make the necessary improvements to address the problems that contributed to the events. This technical memorandum presents an analysis of reported runway incursions and other surface incidents at SJC from the year 2000 to date. The noted time frame provides a sufficiently long and significant base of data to work from, and allows for a comparison of events occurring prior to and after the closure of Runway 11/29 in late 2009.

Data Sources

Five database sources were consulted to identify the history of surface incidents and runway incursions that have occurred on the airfield at SJC for the period of 2000 to the most current available month in 2016. Information from each database was queried to identify events that were applicable to this planning effort, which focuses on mitigating surface incidents and runway incursions. The reporting of incidents and incursions is guided by regulatory requirements in 49 Code of Federal Regulations Part 830, and responsibility for reporting is generally that of the aircraft operator. In other cases, an incident or incursion is reported by ATCT, while in the case of one of the databases reviewed (ASRS), the reporting party can be an observer of an event or an involved party. There is some overlap in incident and incursion reporting between the data sources resulting in an individual incident being cited in two or more databases. Where this occurred, it has been noted in the first column of the incident summary table later in this document and listed as a single incident.

Incident and incursion data is used as a key input, but not the sole factor in the identification and designation of airfield hotspots. SJC currently has two designated hotspots, both of which are located near the southern end of Taxiway W1 (former Runway 29 end). Hotspots are designated by Runway Safety Action Teams (RSAT) that are comprised of representatives of the FAA including air traffic, airport staff, tenants and airport users. A hotspot can be designated as a result of a history of incidents or based on an airfield geometric configuration that is determined to create the potential for incidents to occur. The SJC RSAT conducts periodic meetings to discuss possible airfield issues and recommend potential mitigation actions as appropriate and the Runway Safety Action Plan report developed by the SJC RSAT served as one of the data sources used in this effort. A total of 126 individual incidents and incursions were identified from the databases for the noted historic period used for this study and are summarized later in this document. The sources include:

- National Transportation Safety Board (NTSB), Aviation Accident Database (AAD);
- Federal Aviation Administration (FAA) Accident and Incident Database System (AID);

- National Aeronautics and Space Administration (NASA), Aviation Safety Reporting System (ASRS) Database;
- FAA Western Pacific Region Runway Safety Office incident data (RWS);
- San Jose Runway Safety Action Plan Report, May 31, 2016.

NTSB Aviation Accident Database:

The National Transportation Safety Board is an independent Federal agency charged by Congress with investigating every civil aviation accident in the United States and significant accidents in other modes of transportation. The NTSB aviation accident database contains information from 1962 and later about civil aviation accidents along with more limited data on selected incidents within the United States, its territories and possessions, and in international waters. Generally, a preliminary report is available online within a few days of an accident. When the investigation is completed, the preliminary report is replaced with a final description of the accident and its probable cause. The Aviation Accident Database was queried for the period 2000 to Present for the following categories of aviation activity in the searchable database. The search was done for Part 91 General Aviation, Part 121 Air Carrier, Part 125 20+ passengers/6000+ pounds, Part 135 Air Taxi and Commuter and Non-U.S. Commercial. Additionally, an “all categories” search was also done. None of the searches resulted in any recorded incidents being identified.

FAA Accident and Incident Data System

The FAA Accident and Incident Data system (AID) contains incident data records for all categories of civil aviation. Incidents are events that do not meet the aircraft damage or personal injury thresholds contained in the National Transportation Safety Board (NTSB) definition of an accident. There are twelve “Flight Conduct” categories in the AID data search system and of the twelve categories the following five categories comprise the aviation segments at SJC: Commercial/Air Carrier, Air Taxi/Commuter, General Operating Rules, Foreign Air Carriers and Part 125 operator categories. The following categories were not searched: Ultralight Vehicles, Agricultural, and Parachute Jumping and several others which do not include activities in evidence at SJC. Multiple searches cross-referencing the various Flight Conduct categories with Flight Phase categories were undertaken for the period 2000 to Present. For the Flight Phase element, the following elements were investigated: taxi operations, run up area, ground and ramp, final approach, landing approach, landing rollout, roll out fixed wing, and takeoff ground roll for the period 2000 to Present. From this search a total of four incidents were identified that were applicable to the RIM Study.

NASA Aviation Safety Reporting System

The Aviation Safety Reporting System (ASRS) database was established in 1976 through an agreement between the FAA and NASA. The ASRS collects voluntarily submitted aviation safety incident reports, with over 1,000,000 reports having been submitted to date. Pilots, air traffic controllers, flight attendants, ground personnel and others in the industry are encouraged to submit reports when they are involved in, or observe a situation in which aviation safety has been compromised. The program provides limited immunity from regulatory enforcement to those reporting as an incentive to facilitate reports as long as the incident is reported within ten days of its occurrence. The ASRS has become the largest single database of aviation incident reports and airfield safety related data, however it is still believed to represent only a portion of the total number of events that may or could be reported. ASRS data is

effective for identifying hazards, accident precursors and safety issues that require further analysis, which is how the data is being employed in the San Jose Runway Incursion Mitigation Planning effort. However, as the ASRS data provides a more thorough listing of events than other “formal” databases currently maintained by the NTSB, which focuses more on aircraft accidents or the data in the FAA AID database, the ASRS provided the largest majority of the historic data on surface incidents and incursions for the SJC study.

FAA Western Pacific Region Runway Safety Office Data (RSW)

The second largest number of incidents were identified from information provided by the FAA Western Pacific Region Runway Safety Office. The data provided covered a ten-year period from 2006 through September 2016 and included a total of 54 incidents and incursions during this timeframe. While this information is not available through a publicly available searchable database, FAA Western Pacific Region shared the information for the purposes of this planning effort. The information in the RSW includes a severity ranking of each event based on the FAA’s classification of events.

Runway Safety Action Plan Data

A final source of information on more recent incidents that have taken place at SJC involved data the SJC Air Traffic Control Tower (ATCT) collected on events and pilot deviations that, in some cases were reported in the ASRS, but in other instances were not. The ATCT data was included in the RSAT Runway Safety Action Plan report dated May 31, 2016. This document included a list of events for the period 2014 through March of 2016. These events noted in the plan were reviewed and incorporated, as appropriate, into the summary table list of surface incidents and runway incursions. Where overlap with another database occurred, the overlapping databases are noted in Column One of the summary table (Table 1).

Determination of Incidents and Incursions

The four data sources that provided information on actual incidents that occurred on the airfield at SJC consisted of the AID, ASRS, RWS and RSAP data files. The RSAP and RWS data was solely focused on events taking place on the ramps, taxiways and runways at SJC. The AID and ASRS databases are much broader in scope. These databases include events reported on the airfield along with events that occurred while on approach to the runways, as well as while flying through SJC airspace and events involving impacts from activities off the airport. In this last category, there were noted concerns regarding off airport lighting sources and instances of intentional shining of lasers into the cockpit of aircraft on approach. While all of the events contained within the AID and ASRS database relate to matters of aviation safety, the focus of this study is on mitigating airfield surface incidents and runway incursions along with addressing airfield geometric conditions that may contribute to incidents and incursions. As a result, the reports contained in the AID and ASRS database associated with SJC were reviewed and only those reported events that involved a ground related incident, event, or incursion were collected. Over the past 16 years a total of 126 surface incidents/runway incursions were identified as being relevant to this study and data was collected on each of these.

The ASRS database is comprised of 96 separate data elements including incident summaries, which in some cases are from multiple observers or involved parties. Not all of those elements are necessary or applicable to the focus of the incident and incursion mitigation effort. As a result, the first step in the process was to identify and collect the key data points for each incident report identified as being

applicable to the ground incident and runway incursion mitigation planning for SJC. The data points collected for the SJC planning effort consist of:

- Month and year of the event;
- Aircraft make and model;
- Location of the event on the airfield system;
- Visibility/weather conditions at the time of the incident;
- Time of day – daytime, dusk, nighttime;
- Component of aviation involved (general aviation, business/corporate, commercial passenger including cargo, air taxi/regional commuter);
- Contributing factors to the event (procedural, situational awareness, human factors, airfield factors);
- Event summary narratives from those involved;
- Severity Rating (RWS and RSAP data).

The distribution of events over the period 2000 to Present was review with incidents and incursions broken down into three time frames by the total number of events in each period as listed below:

- | | |
|---------------------|-------------------------|
| • 2000 thru 2003 | 33 incidents/incursions |
| • 2004 thru 2009 | 48 incidents/incursions |
| • 2010 thru Present | 45 incidents/incursions |

The 126 separate events at SJC between 2000 to the Present were reviewed to see if any specific segment of aviation activity at the airport is driving the number of incidents occurring. If this is the case, then engaging representatives from that sector to provide insight and potential recommendations to address the situation can be undertaken. In the case of SJC, the incidence of events is dominated by two primary sectors consisting of General Aviation/Personal and Air Carriers with Corporate/Business Aviation being of consequence. The remaining categories account for far fewer events. The incidence of events by aviation category are presented below.

- | | |
|-------------------------------|-----------|
| • General Aviation/Personal | 60 events |
| • Air Carrier | 32 events |
| • Corporate/Business Aviation | 15 events |
| • Vehicle/Pedestrian | 12 events |
| • Commuter Carrier | 5 events |
| • Procedural | 2 events |

The review of the incident and incursion events considered time of day (daylight, dusk, and night) and weather conditions (visual, mixed, rain, marginal, mixed rain) for events determined to be applicable to the study. The following visibility and weather characteristics were identified and are delineated below:

- Ninety-eight of the one hundred twenty-six events occurred during daylight hours with two at dusk and nineteen at night. The remaining seven did not note time of day in the reports;
- Of the ninety-eight daylight events ninety-two were during visual conditions while the remaining six did not specify visibility conditions;

- Nineteen events occurred at night and of these, eleven occurred under visual conditions, three during instrument, marginal or mixed rain and the remaining five were not specified;
- Two events occurred during dusk and both occurred under visual conditions.

As noted, the databases also identify contributing factors to the events (surface incidents or incursions) that have occurred. In some instances, there are multiple contributing factors to a single event which results in the number of contributing factors exceeding the number of events. Based on the information developed for the one hundred twenty-six surface incidents or incursions that have occurred during the sixteen-year period reviewed for the SJC study effort, the following incidence of each contributing factor was identified and are listed below:

• Human Factors	113 references
• Airport Layout	10 references
• Ambiguous/not clear/not noted	2 references
• Procedural	14 references
• Company Policy	1 reference
• ATC Building/facilities	1 reference
• Workload	1 reference
• Environmental-non-weather related	1 reference

Incidents and incursions identified for this effort have also been classified based on the severity of the event. The FAA has developed a set of criteria that they employ in their classification of incursions and these same criteria have been applied to the incident descriptions from the ASRS database to define the relative severity of incidents contained in this non-FAA database. The FAA classifies incursions into one of six classes that are referenced A through E and described below.

- Class A. A serious incident in which a collision was narrowly avoided;
- Class B. An incident in which separation decreases and there is a significant potential for collision, which may result in a time critical corrective or evasive response to avoid a collision;
- Class C. An incident characterized by ample time and/or distance to avoid a collision;
- Class D. Incident that meets the definition of runway incursion such as incorrect presence of a single vehicle/person/aircraft on the protected area of a surface designated for the takeoff and landing of aircraft but with no immediate safety consequences;
- Class E. An incident in which insufficient or conflicting evidence of the event precludes assigning another category.¹

The number of incidents by severity class are delineated below:

• Class A	3 events
• Class B	9 events
• Class C	23 events
• Class D	88 events
• Class E	2 events
• Accident	1 event

¹ FAA Order 7050.1B Runway Safety Program, Appendix B

Finally, to the extent that the description of each incident or incursion specified either a general or specific location on the airport, these events were identified and subsequently mapped to define whether there were concentrations of events in specific areas on airfield that might focus the subsequent analyses. Five primary concentrations of incident and incursion events were identified, with three concentration areas being located on the southern half of the airfield.

Focus Area 1 – The first concentration is evident at the far south end of Runways 12L/30R and 12R/30L and primarily concentrated around the intersections of these runways with Taxiway B. A total of nineteen events were identified in this general vicinity that included air carrier, corporate and general aviation operations as well as two ground vehicle incidents.

Focus Area 2 - The second concentration of events is along Taxiway C between Taxiway W, on the west and Taxiway Y on the east and includes the landing thresholds for both Runway 30L and 30R. In the immediate vicinity of the described area a total of twenty events were identified that involved air carrier, commuter, corporate and general aviation operations along with one ground vehicle incident.

Focus Area 3 – The third major concentration of events includes the two designated hotspots on the airport. This area extends along Taxiway D between Taxiway V on the west to Taxiway Y on the east. A total of forty-one events, mostly involving general aviation operations, and including a number of wrong runway landings have occurred in this area. The predominance of general aviation events is logical as Taxiway D was the means of accessing Runway 29 prior to its closure and the primary run-up ramp on the southwest side of the airfield is at the intersection of Taxiway W and Taxiway D.

Focus Area 4 – This area is located along the alignment of Taxiway J between Taxiway V and Taxiway Z. A total of twelve events were identified in this area that involved air carrier, general aviation, commuter and corporate operators.

Focus Area 5 – Focus Area five includes the northern section of the airport including Taxiway L and Taxiway M between Taxiway W and Taxiway Z and extending north to the alignment of Taxiway N on the north end of the airport. A total of thirteen incidents were identified in this area, eight of which are located along Taxiway L. Four of the noted incidents in this focus area involved ground vehicle movements.

The nature of incidents over the period reviewed are varied, and to date none of the noted incidents have resulted in an event where aircraft have incurred any significant damage, although there have been events where aircraft came relatively close to one another. The listing of incidents set forth in **Table 1** summarize the narrative descriptions of the events from the AID, RWS, ASRS database and the RSAP report on a case by case basis. Included in these are incidents of aircraft landing or departing from an incorrect runway, aircraft departure from a taxiway, aircraft entering onto, or crossing a runway without ATC authorization, pilots correctly reading back ATC instructions and then failing to follow the instructions, confusion over ATC instruction provided and, aircraft taxiing on a runway without ATC authorization or being authorized to taxi on a runway, but taxiing on a different runway.

Table 1 is a multi-page table that presents the summary of surface incident and incursion information on a year by year basis at SJC, that includes a period of time within which Runway 11/29 was open and operational and a similar period of time during which this runway has been non-operational. This point is

critical to understanding issues that could arise should it be determined that Runway 11/29 be recommissioned and returned to operational status. Additionally, this data helps to determine whether the cessation of operations on Runway 11/29 resulted in the easing of incidents at the airport or if conditions still exist that create adverse interaction between aircraft on areas adjacent to the alignment of Runway 11/29.

Following **Table 1** are three maps displaying the location of each incident identified in the table. **Figure 1** shows the location of all 126 incidents from 2000 to Present. **Figure 2** shows the location of incidents occurring from 2000 through late 2009 when Runway 11/29 was operational. **Figure 3** shows the location of incidents occurring from 2010 to the present, corresponding with the period when Runway 11/29 has been closed and more recently re-designated as interim Taxiway W-1, which is its current status.

Table 1 – AID, ASRS, RSAT, and RWS Summary of Incidents - 2000 To Present

Incident No. & Source	Date	FAA Severity Class	Condition	Aviation Category	Location	Description	Main Contributor	Noted Construction
1 ASRS	03-2000	D	Mixed Night	Air Carrier	Taxiway Z at Taxiway K	A B737-300 was given taxi instructions from Terminal C to RUNWAY 12R via TAXIWAY Z. Pilot and first officer were conducting taxi op along with other duties. Pilot was unfamiliar with airport and did not see end of hard surface on TAXIWAY Z and taxied past TAXIWAY K where he was supposed to turn although that movement was not noted in the taxi instructions. Jeppesen Approach Plate layout on airport diagram did not agree with actual configuration of Taxiway Z. Could not execute a 180 degree turn so called a tug to push aircraft back to access TAXIWAY K. Recommended hold short sign on TAXIWAY Z be bigger and brighter and placed further south to improve time to react and make a turn at TAXIWAY K.	Human Factors, Airfield Layout	Yes
2 ASRS	03-2000	D	VMC Daylight	Personal/General Aviation	Taxiway D at Runway 29	Pilot of a PA-28 received progressive instructions from Ground Control from east side of airport to Runway 29 run-up area (west side). Contacted ground after run-up and was instructed to “cross TAXIWAY V to RUNWAY 29, and contact tower.” Pilot was unsure whether instructed to stop prior to hold line to clear TAXIWAY or short of it. Hold short had not been part of instruction. Pilot stopped on hold line and contacted tower indicating ready for takeoff. Tower responded with “Hold short of RUNWAY 29” and shortly after noted that aircraft appeared to be in front of hold line and pilot instructed to taxi clear of runway and contact ATCT for Possible Dev. SJC Ground indicated that they did not “hold short” in their taxi instructions for RUNWAY 29.	Human Factors	Yes NOTAM 2000 – 01100, 01300, 01600 revised, 01700, 01800
3 ASRS	08-2000	C	VMC Daylight	Personal/General Aviation	Runway 29	Radio frequency was congested at time of incident. Aircraft taxied from RUNWAY 29 run-up area across TAXIWAY V to hold position for RUNWAY 29. While holding short, the instructor remembers several traffic callouts for all three runways, including one to subject aircraft indicating they would be held for traffic for about two more minutes. Next call monitored was believed by instructor and student to be for them to take off on RUNWAY 29 and to expedite. Student responded “Cessna XYZ cleared for takeoff, RUNWAY 29, Expediting” (Instructor assumed tower getting them out in a gap). Aircraft entered runway, began take-off when they	Human Factors	Yes NOTAM-2000-10200, 10000, 09900, 09800, 09700, 09600, 09500, 09400, 09300, 09200, 09100, 09000, 08900

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						heard a call to aircraft on final to go around and for them to stop. Tower indicated that Cessna XYZ had answered a clearance meant for an MD80 on the parallel. Reporter of incident question why ATCT did not question their read-back of takeoff clearance.		
4 ASRS & AID	09- 2000	A	VMC Daylight	Air Carrier	Terminal Apron	During pushback from gate using a contract crew from another airline, the aircraft was pushed back into start of taxi roll, initiated engine start and other checklist procedures and cleared the tug operator to disconnect the tow bar. Pilot thought he heard the tow bar disconnect and thought he saw tug begin backing away. Saw aircraft marshal walk away from aircraft and pilot flashed the taxi lights to signal his readiness to taxi. Waited for another aircraft to pass and began taxi movement when aircraft began to shudder and then stopped stemming from No. 1 engine hitting the tug.	Human Factors	Yes NOTAM- 2000-11800, 11600, 11500, 11400, 11300, 11200, 11100, 11000, 10900
5 ASRS	11- 2000	D	VMC Time of day not noted	Pedestrian	Terminal Apron	During a mechanical at the gate, passengers were left uncontrolled and unattended on the ramp between the aircraft and the gate in proximity to various pieces of ramp equipment that were operating in the immediate vicinity. Passengers were apparently confused as to whether they should enplane or go back into terminal and there was an absence of personnel to attend to the situation.	Human Factors	Yes NOTAM- 2000-12900
6 AID	12- 2000	A	Daytime	Air Carrier	Taxiway C	A Boeing 777, while being taxied under aircraft power struck a parked Gulfstream 4, located at ACM aviation. Airlines' ground marshal crew was directing the aircraft movement along TAXIWAY C into the US customs area at the time of incident. Minor damage was done to the lower outboard left wing of the B777-200 caused by the G-4's left horizontal stabilizer	Human Factors	Yes NOTAM- 2000-13600
7 ASRS	04- 2001	D	Night	Air Carrier	Taxiway W	Cleared to RUNWAY 30L via, an unusual route, via TAXIWAY Y, TAXIWAY C, CROSS RUNWAY 30L, TAXIWAY C to TAXIWAY W to TAXIWAY B to RUNWAY 30L. We checked the airport page for restrictions – and noted a 75000 LB weight restriction on TAXIWAY W between TAXIWAY C and TAXIWAY B. Advised ground control that we were unable to use TAXIWAY W and were informed that the weight restriction had been lifted, but not yet published. Based on this, continued taxi movement as cleared by ATCT on an uncomfortably narrow taxiway. On the west side of RUNWAY 30L the pilot discovered the page note prohibiting taxi on TAXIWAY W along RUNWAY 30L, south of TAXIWAY J.	Human Factors, Airfield Layout	Yes NOTAM- 2001-03901, 03601

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8 ASRS	05- 2001	C	Night	Air Carrier	Runway 30L at Taxiway C	Aircraft 1 taxied to RUNWAY 30L at TAXIWAY C intersection in response to flow control into LAX. There were three aircraft at the runway ahead of Aircraft 1 but Aircraft 1 was facing a time limit on his departure window. There was also a steady stream of arrivals to RUNWAY 30L at the time. One departure was being spaced between each arrival. Due to time of day (between sunset and sunrise taxi into position and hold could not be used. As an arrival was just touching down, Aircraft 1 was cleared for takeoff using anticipated separation. Pilot read back instructions but controller missed the addition of "position and hold" which was not part of the original clearance. Controller believes Aircraft 1 pilot did not expect takeoff clearance while landing aircraft was still turning off runway. Controller had moved on to two other traffic transmissions when the next arrival to RUNWAY 30L now on a 1-mile final asked if there was someone on the runway. Controller observed that Aircraft 1 had not departed and immediately re-cleared Aircraft 1 to depart and to expedite. Controller noted that since taxi into position and hold is not being used at intersections at night it removes the requirement to inform the arrival and departure of each other and this contributed to the potential incident noted.	Procedures and policy, human factors, airspace structure	No
9 ASRS	05- 2001	D	VMC Daylight	Air Carrier	Runway 30L departure end	B737-300 (Aircraft 1) cleared into position and hold on RUNWAY 30L with a CL65 rolling out and a B737 on final. The CL65 missed all turnouts and rolled to end of RUNWAY 30L. ATCT directed Aircraft 1 to exit the runway to allow the B737 on final to land and to expedite the movement. While exiting the RUNWAY 30L the crew noticed the line of aircraft waiting to depart blocked their exit. Construction activity in the vicinity was also a factor. ATCT asked if Aircraft 1 had enough room and first officer responded affirmatively as from his position that appeared to be the case. The aircraft was straddling the hold bar and before they could contact the tower the B737 had landed.	Human Factors/ Construction	No
10 ASRS	05- 2001	C	VMC Time of day not noted	Personal/ General Aviation	Taxiway F vicinity of Taxiway V	After landing on RUNWAY 29, pilot taxis off RUNWAY via TAXIWAY F and continues onto TAXIWAY V toward the threshold of RUNWAY 29 without stopping. After taxiing a few hundred feet, ATCT requests pilot to switch to ground frequency where pilot requests and receives a taxi clearance and a request to call the tower. Tower supervisor notes in call that a helicopter had departed TAXIWAY V and that the pilot had caused a "possible loss of	Human Factors	No

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						separation” Pilot did not see the helicopter not hear any communication with the helicopter. Pilot also noted that while on roll-out on runway ATCT did not state “turn left at TAXIWAY F and contact ground, which per the pilot is done “90%” of the time.		
11 ASRS	09- 2001	D	VMC Daylight	Air Carrier	Runway 30R	MD-80 cleared for takeoff while approaching the hold short position for RUNWAY 30R. Aircraft took the runway and started to spool up. Pilot heard ATCT clear an aircraft (Aircraft 2) that had just landed on RUNWAY 30L to cross RUNWAY 30R. MD-80 aborted takeoff roll while at about 5 to 10 knots. After aborting takeoff ATCT instructed Aircraft 2 to hold short of 30R. ATCT then re-cleared MD-80 for takeoff but pilot indicated they would exit runway and taxi back from TAXIWAY B intersection for full length departure.	Human Factors	Yes NOTAM- 2001-10301, 10201, 10101, 09601.
12 ASRS	10- 2001	D	VMC Daylight	Air Carrier	Taxiway Y at Taxiway B and Runway 30R	B737-300 instructed to taxi on TAXIWAY Y to RUNWAY 30R. Hawker Jet was conducting a run-up at the end of TAXIWAY Y resulting in the 737 needing to taxi around the corporate jet. Approaching the end of the runway, ATCT issues departure clearance for the 737. Given blockage, pilot of the 737 uses TAXIWAY B to access RUNWAY 30R and back taxis to TAXIWAY A at 30R end. 737 was not given clearance to conduct back-taxi.	Human Factors	Yes NOTAM- 2001-11401, 11301, 11201, 11101, 11001, 10901
13 ASRS	11- 2001	C	Daylight	Air Carrier	Runway 12L at Taxiway N	B737 (Aircraft 1) was holding short of RUNWAY 12L and was given clearance to take off. Finished checklist and checked final approach and taxied into position on RUNWAY 12L centerline for takeoff. Aircraft 1 pilot noticed a second B737 crossing RUNWAY 12L and queried ATCT about the crossing aircraft. ATCT responded that Aircraft 1 had been instructed taxi into position and hold. Aircraft 1 responded “roger position and hold”. Pilot of Aircraft 1 asked ATCT to check their tapes as he believed ATCT had given him clearance to depart and not to position and hold.	Human Factors	Yes NOTAM- 2001-11901, 11801, 11501
14 ASRS	01- 2002	A	VMC Daylight	Air Carrier	Ramp to Taxiway Y at J	Cleared to taxi to RUNWAY 30R via TAXIWAY B. Access to TAXIWAY B would involve use of TAXIWAY Z, (rarely done) which was blocked by an aircraft push back. Pilot assumed intent of ATCT was for aircraft to use TAXIWAY Y. Access to TAXIWAY Y being immediately in front of aircraft supported pilot’s assumption. In moving towards TAXIWAY Y, aircraft had to stop abruptly to avoid a fast-moving taxiing 737 which passed with a 15-20’ clearance. Unclear instructions from ground controller and pilot not requesting clarification	Human Factors	No

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15 ASRS	01- 2002	D	VMC Night	Corporate	Runway 30R in lieu of 30L vicinity of TXY D	Cleared to land RUNWAY 30L, landed on RUNWAY 30R, Co-pilot training dominated the other pilot's attention along with monitoring preceding traffic. Previously RUNWAY 30R had been closed to night operations which contributed. Complacency and familiarity on part of pilot led to incident. Wrong runway landing.	Human Factors/ previous Construction	Yes NOTAM- 2002-01002, 00902, 00802, 00702, 00602, 00502, 00402, 00202
16 ASRS	02- 2002	D	VMC Daylight	Personal/ General Aviation	Taxiway Y at Taxiway A	Ground instructed pilot to taxi via TAXIWAY Z to RUNWAY 30R and instructed to position and hold, RUNWAY 30R. Pilot taxied into position on TAXIWAY Y in error and ATCT cleared aircraft for takeoff and aircraft departed on Taxiway Y. Aircraft takeoff on TAXIWAY Y.	Human Factors	No
17 ASRS	02- 2002	D	VMC Night	Air Carrier	Runway 30R AT Taxiway A	Ground cleared aircraft to taxi from gate, make right on TAXIWAY H, cross TAXIWAY Y and back-taxi on RUNWAY 30R until advised. Captain complied and turned at TAXIWAY B. Captain was then advised to taxi on TAXIWAY B access TAXIWAY Y and hold short of RUNWAY 30R. Pilot believed he was cleared all the way to 30L and crossed 30R despite questioning by the first officer (FO).	Human Factors	No
18 ASRS	02- 2002	B	VMC Daylight	Air Carrier	Taxiway J at Runway 30R	Landed on RUNWAY 30L and exited at TAXIWAY J and were instructed to "hold short of RUNWAY 30R." but pilot only heard TAXIWAY J. FO called Hold Short and pilot stopped aircraft but crossed hold line for 30R with MD80 conducting a departure on RUNWAY 30R. Contributing factor could be timing of instruction occurring during high reverse thrust (difficulty hearing) or when just turning off RUNWAY.	Human Factors	No
19 ASRS	02- 2002	D	VMC Daylight	Personal/ General Aviation	Runway 30R	Aircraft 1 taxied into position behind Aircraft 2. ATCT instructed Aircraft 2 to taxi into position and hold. Aircraft 1 contacted ATCT with "ready for takeoff" and thought ATCT had cleared Aircraft 1 to takeoff on RUNWAY 30R. ATCT had not cleared Aircraft 1 which crossed hold bar and entered RUNWAY 30R. Pilot of Aircraft 1 was preoccupied and ATCT failed to catch wrong read-back.	Human Factors	Yes NOTAM- 2002- 02702, 02602, 02502, 02402, 02202, 02102, 02002, 01902, 01802, 01702, 01602, 01502, 01402, 01302, 01202, 01102
20 ASRS	03- 2002	D	Daylight	Corporate	Runway 30R	Lear 45 taxied from ramp following another aircraft onto RUNWAY 30R without clearance and without proper read-back of controller instructions, resulting in a runway incursion. RUNWAY 30R had	Human Factors/ previous Construction	No

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						previously been closed for an extended period and assumed it was still closed.		
21 ASRS	03- 2002	D	VMC Daylight	Corporate	Runway 30R	FAL 900 cleared to taxi to what pilot believed to be RUNWAY 30L as it was a common clearance from that part of airport, and RUNWAY 30R had been previously closed for repairs. Reached approach end of 30R checked for traffic and taxied across to hold short of RUNWAY 30L. Halfway across RUNWAY 30R ATC directed a 270 degree turn on RUNWAY 30R into position and hold. Entering RUNWAY 30R without clearance resulted in a runway incursion.	Human Factors/ previous Construction	No
22 ASRS	03- 2002	D	VMC Daylight	Air Taxi/ Commuter	Runway 30R at Taxiway J Runway 29	Landed on RUNWAY 30L instructed to turn on TAXIWAY J, cross RUNWAY 30R and contact ground on other side. ATCT did not indicate right or left onto TAXIWAY J. Pilot in command turned left when should have gone right, given their intended destination on airport. Second in Command was doing after landing checklist. Aircraft crossed RUNWAY 29 w/o authorization and ATCT did not identify the mistake.	Human Factors	No
23 ASRS	03- 2002	D	VMC Dusk	Air Taxi/ Commuter	Runway 30R	Pilot of a CL65 received taxi instructions while also receiving instructions from ground crew. RUNWAY 30R had been closed the night before and in the morning of this event. Both pilot and first office believed they were cleared to RUNWAY 30L. RUNWAY 30R was open for departures only, but no visual indication the runway was open. While crossing RUNWAY 30R aircraft called tower and were informed of incursion.	Human Factors	Yes NOTAM- 2002-04602, 04402, 04202, 03902, 03602, 03002
24 ASRS	04- 2002	B	VMC Daylight	Personal/ General Aviation	Runway 29	Ground instructed pilot to taxi to RUNWAY 29 and monitor ATCT. Pilot responded "going to TWR" and taxied onto RUNWAY 29 w/o clearance, other traffic executed go around. Factors included relief briefing distraction in tower, controller not getting appropriate read-back; aircraft not seen by ground control and pilot and combined situational awareness issues.	Human Factors	Yes NOTAM- 2002-06702, 05402, 05102, 05002, 04902, 04702
25 ASRS	06- 2002	C	Not Noted	Air Carrier	Runway 29	ATC cleared a B767-200 to takeoff on RUNWAY 30R with an aircraft inside a 4-mile final and a B737 still on landing roll out on same runway. 767 delayed departure until 737 exited runway, but then realized that a C152 on departure from RUNWAY 29 could be seriously impacted by having to fly through potential wake turbulence. Tower directed C152 to sidestep to the left due to proximity.	Human Factors	No

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26 ASRS	08- 2002	D	VMC Daylight	Personal/ General Aviation	Run-up Area at 29 end	RUNWAY 29 run-up area location requires aircraft to contact ground control prior to leaving run-up to taxi to RUNWAY 29 end. This requires ground control to be contact twice, once on the way to the run-up and then to leave the run-up area to taxi to airport. Pilot misunderstood clearance instructions to taxi and taxied into departure position on runway and held, rather than taxiing to the hold line. (Pilot noted very limited space between hold line and near edge of taxiway as contributor, Limited room means holding aircraft is partially blocking parallel taxiway). Controller did not catch inaccurate read-back and instructions from ATCT did not include "the usual hold short" instruction. No other traffic was impacted.	Human Factors	No
27 ASRS	12- 2002	B	VMC Night	Air Carrier	Taxiway H at Taxiway Y	SJC ground was very busy and appeared task saturated, was confusing aircraft flight numbers given multiple pushbacks and operations occurring at the time. Cleared the reporting aircraft to follow a company aircraft to RUNWAY 30R via TAXIWAY Z to H to TAXIWAY Y to 30R with no indication of other traffic. While on TAXIWAY H to Y had to conduct a hard stop while taxiing to avoid nearly interacting with a B757 that was not identified by ground control. Multiple updates of ATCT on aircraft position and actions went unacknowledged.	Human Factors, workload	Yes NOTAM- 2002-16202, 16002
28 ASRS	02- 2003	D	VMC Daylight	Corporate	Runway 30L vicinity of Taxiway D	RUNWAY 30R had been closed for extended period but reopened. Cleared to land RUNWAY 30R then sidestepped to RUNWAY 30L by controller. Pilot did not hear sidestep and landed on RUNWAY 30L. Wrong runway landing.	Human Factors Airfield Layout	No
29 ASRS	05- 2003	D	VMC Daylight	Personal/ General Aviation	Runway 29	PA28 taxied into the takeoff position and held on RUNWAY 29 without ATC clearance.	Human Factors	No
30 ASRS	09- 2003	D	VMC Daylight	Personal/ General Aviation	Runway 29 and Runway 30L	Aircraft instructed to cross midfield at or above 1,500 feet and enter downwind for RUNWAY 29. Pilot read-back correctly on several responses to progressive instructions and clearances and indicates he had clearly identified RUNWAY 29. While turning left base to final pilot noted position of other traffic, noted position of VASI (PAPI) on 30L and lost visual contact with RUNWAY 29. Pilot proceeds to land on 30L without clearance – Wrong runway landing	Human Factors	Yes NOTAM- 2003-10903, 10203, 09903, 09803,
31 AID	10- 2003	Accident	VMC Daylight	Air Taxi/ Commuter	Terminal Ramp	An EMB 120 aircraft had just landed and was on the AOA ramp under taxi to park at Gate 2c. While making a left turn into the gate parking, and under the direction of the ground marshal, the	Human Factors	No

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						aircraft's left wing tip struck the back end of a parked fuel truck. This fuel truck had just finished fueling the aircraft at the adjacent gate. The aircraft's left wing tip fairing and clear lens cover were damaged during the collision. The aircraft obtained a special flight permit to be flown back to its home station for repairs.		
32 ASRS	11- 2003	B	VMC Daylight	Corporate	Runway 30R south end of pavement	A Corporate aircraft contacted ATC 12 miles out noting their on-airport intended destination and that they were on visual for RUNWAY 30L, but could take RUNWAY 30R. ATCT cleared them for 30R. Airbus was landing on RUNWAY 30L and upon landing continued off the runway and was crossing RUNWAY 30R and pilot was concerned about whether the aircraft would be clear of runway by time they landed. Frequency congestion impeded both asking the question and receiving a response from ATC. Aircraft landed safely. Pilot told to contact the ATC and spoke to ATC Supervisor who indicated that aircraft had overflowed an aircraft on the displaced threshold. Pilot informed supervisor: ATC never informed pilot of aircraft taxiing into position, ATC never issued instructions to go-around. Appeared the controller got very busy and forgot he had cleared corporate jet to land after taxiing another aircraft into position.	Procedure	Yes NOTAM- 2003-12503, 12103, 12003
33 ASRS	12- 2003	E	Night	Procedural	Ramp	An FAA controller from SJC reports a concern about airport lighting that is very bright and greatly restricts and adversely impacts the ability of controllers to clearly see and differentiate between aircraft. This includes portable lights sometimes used at night for cargo operations. Specifically notes the location and intensity of lights on cargo ramps, Terminal A and parking lot lights. Controller was very concerned about lighting being a potential contributor to a serious incident in the future.	Airfield Layout	Yes NOTAM- 2003-14003, 13303,
34 ASRS	04- 2004	D	Not noted	Personal/ General Aviation	Runway 29 Run-up	SJC ATCT process for clearance of traffic from the RUNWAY 29 run-up area to RUNWAY 29 questioned as a contributor to surface incidents and incursions. Pilot of a PA46 taxied into position for departure on RUNWAY 29 at SJC rather than to the hold position without clearance. Taxiway and run-up area at approach end of RUNWAY 29 is described as confusing. Pilot also notes that the phraseology used by ground control did not trigger the usual "hold short" response from the pilot.	Airfield Layout Procedure	Yes NOTAM-2004 10604,
35 ASRS	05- 2004	D	Night	Air Carrier	Taxiway C at	A seven-hour delayed flight resulted in clearance to depart 20 minutes prior to ATCT closure. When pushback occurred ATCT had	Company policies,	Yes

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					Taxiway W	closed. During taxi-out on TAXIWAY Y pilot and FO were busy in cockpit with various tasks and as aircraft neared TAXIWAY C, to avoid construction on approach end to RUNWAY 30R, pilot elected to cross RUNWAY 30L and taxi down west side of runway on TAXIWAY W. Prior to entering TAXIWAY W flight crew became aware of wingtip restriction on TAXIWAY W and conducted a 180 degree turn on TAXIWAY C, back taxied on RUNWAY 30L and departed. Crew felt pressure due to next day flights that would be further delayed due to crew rest issue and wanted to minimize delay as much as possible.	Human factors/ Construction	NOTAM- 2004-12104, 11904, 11704, 11604, 11204
36 ASRS	07- 2004	D	VMC Daylight	Personal/ General Aviation	Runway 29 Run-up to Runway 29	Owner and new pilot of a TB 700 focuses on pre-flight checks in the RUNWAY 29 run-up area and appears to have misunderstood ATCT instructions. Pilot thought he was directed to "follow King Air into position and hold on RUNWAY 29 and contact tower." Pilot followed King Air and taxied into position on RUNWAY 29 and held. Experienced problems finding correct frequency to contact ATCT but once contacted pilot cleared for takeoff, but told to expect to be contacted about potential infraction. Pilot notes understanding that ground control cannot clear an aircraft onto an active runway. Recommends clearer instructions to avoid entering runway without proper clearance.	Human Factors	Yes NOTAM2004- 16504, 15004, 14904, 14104,
37 ASRS	09- 2004	B	VMC Daylight	Air Carrier	Taxiway Z at Taxiway F	MD80 facing south bound on TAXIWAY Z just north of TAXIWAY F. Ground instructed to taxi to RUNWAY 30R via TAXIWAY F and Y with no mention of other ground traffic. MD80 started to turn on TAXIWAY F and co-pilot emphatically told pilot to stop. Regional aircraft passed approximately 75 feet in front of MD80. Ground controller indicated he had failed to inform MD80 of other aircraft which pilot and FO could not see until beginning their turn.	Human Factors	Yes NOTAM- 2004-21404, 21004, 20004
38 ASRS	11- 2004	D	VMC Night	Air Carrier	Taxiway D exit in lieu of Taxiway C	Air carrier aircraft lands RUNWAY 12R, at approximately 50 knots and approaching TAXIWAY D, ATCT directs to aircraft to exit on TAXIWAY C, cross RUNWAY 12L and contact ground control. Pilot did not see sign indicating TAXIWAY D and assumed it was TAXIWAY C and exited onto TAXIWAY D by mistake. TAXIWAY D was closed at the time. Pilot observed red lights but did not associate these with a closed TAXIWAY. Aircraft stopped and was ultimately towed from TAXIWAY D to the gate. (NOTE: description in data base suggests aircraft may have struck barrier due to a reference to inspecting gear and a cut in tread of nose gear).	Human Factors/ Construction	Yes NOTAM- 2004-25204, 25104, 25004, 24804, 24704, 24604, 24504, 24404, 24204, 24104, 24004, 23904, 23704, 23304

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39 ASRS	12- 2004	B	Mixed Rain -Night	Air Carrier	Runway 12L at Taxiway F	B737-7 after landing RUNWAY 12R and exiting at TAXIWAY F was cleared to cross RUNWAY 12L and taxi via TAXIWAY Y to J to gate. Both pilot and FO confirmed ATCT instructions. While taxiing along Taxiway F, 737-7 pilot notices an aircraft on RUNWAY 12L beginning takeoff roll and performs an aggressive stop beyond the hold short line and roughly 30' short of actual runway edge. Note that visual conditions were not optimum. Takeoff aircraft was another air carrier and was airborne at about 200-300 feet when passing TAXIWAY F. Pilot did not hear any clearance given to departing aircraft nor was the 737-7 informed he was on the runway. Controller noted it was his error.	Human Factors	No
40 RWS	01- 2006	D	VMC Daytime	Personal/ General Aviation	Runway 29	A Cessna C560 was instructed to taxi to Runway 30L then was observed taxiing on Runway 29 without authorization. No conflicts reported.	Human Factors	Yes NOTAM- 2006-00706, 00606, 00306,
41 ASRS	02- 2006	C	Marginal Night	Air Carrier	Runway 12R	Air carrier aircraft arrived after ATCT closed due to flight delay and was vectored to final by NORCAL approach to intercept ILS for RUNWAY 12R and cleared for approach and handed off to CTAF. "No Tower" position reports made at 9 miles and 5 miles out with ceiling at 3,000. Good visibility below 3,000 where aircraft acquired airport and could see RUNWAY 12R lights only partially illuminated. Attempts to activate RUNWAY 12R lights unsuccessful and at 1,000 decision made to sidestep to RUNWAY 12L and land. Upon landing on RUNWAY 12L, pilot observed equipment and personnel about 2/3rds the way down RUNWAY 12R. No warning about runway closure was ever conveyed to aircraft.	Ambiguous/ Construction	Yes NOTAM- 2006-02406, 02306, 02206, 02006, 01906, 01206
42 RWS	05- 2006	D	VMC Daytime	Corporate	Runway 30L	A Bombardier GL5T, with current ATIS, was taxied to Runway 30L by Ground Control (GC). Local Control (LC) cleared the GL5T for takeoff Runway 30L and pilot read back 30L. The GL5T started turn to take off on Runway 30R instead of 30L as cleared. Runway 30R is configured as a taxiway due to construction. There were no vehicles or aircraft on 30R at the time. GC observed the GL5T and immediately advised LC who cancelled takeoff clearance. The GL5T pilot aborted and exited 30R approximately 500 feet down the runway.	Human Factors/ Procedural/ Construction	Yes NOTAM- 2006-06906, 06606, 06506, 06306, 06206
43 RWS	06- 2006	D	VMC Daytime	Personal/ General Aviation	Runway 29	A Piper PA28R correctly read back instructions to taxi to Runway 29. Subsequently Ground Control observed the PA28R taxi onto	Human Factors	Yes NOTAM- 2006-09706,

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						Runway 29 without authorization or contacting ATCT. No conflicts reported.		09106, 08906, 08806, 08706, 08506, 08406,
44 AID	07- 2006	B	VMC Daylight	Air Carrier	Taxiway E at Runway 30R	An Airbus A319 captain stated: "pushed tail north from gate C-12, called for taxi, given the following route. "taxi Zulu" to "Echo" down 30R for a 30L departure. No notice of another airline taxiing was passed along to us. On echo after clearing left then to right. in first officer's forward window, I saw the other aircraft taxiing at a high rate of speed. To avoid any situation, brakes were applied. the other aircraft never stopped, passing the nose of the A319 the other aircraft slowed to a normal taxi speed." The captain was notified that one flight attendant in the aft galley area was thrown to the floor due to the sudden braking, causing minor injury.	Not Noted	No
45 RWS	09- 2006	B	VMC Daytime	Vehicle/ Pedestrian	Runway 30L at Taxiway B to Taxiway C	An airport fire vehicle and 2 other emergency vehicles responding to an alert for Runway 29 were instructed to cross Runway 30L at Bravo. The lead fire vehicle driver read back "crossing Runway 30L at Bravo, be advised we're going to take Charlie down to our location". The fire vehicle proceeded onto 30L at Bravo and drove down 30L (1,500 feet) to Charlie without authorization. A Beech BE35, distress aircraft, was initially cleared to land Runway 29. Pilot stated they would land 30L and was cleared for 30L. Ground Control advised the fire vehicles to exit without delay due to aircraft landing behind them. The last vehicle with the lead fire vehicle exited at Charlie prior to the BE35 crossing 30L threshold. Closest proximity estimated was 1,900 feet horizontal, distance from threshold to Charlie.	Human Factors	No
46 RWS	09- 2006	D	VMC Daytime	Personal/ General Aviation	Taxiway J at Runway 11	A Beech BE35 was taxied to Runway 11 and was asked by Ground Control (GC) if pilot needed a run-up with reply being in the affirmative. The BE35 crossed Taxiway Victor without authorization, continued across the hold lines at approach end Runway 11 (Juliet) and conflicted with a Beech BE9L crossing landing threshold same runway. The BE9L was instructed to go around and passed abeam Juliet at an estimated 40-50 feet vertical and the BE35 stopped approximately 6-10 feet past hold line. Hold line to runway edge is 75 feet with closest horizontal proximity estimated as 90 feet.	Human Factors	No
47 RWS	09- 2006	D	VMC Daytime	Personal/ General Aviation	Runway 29	A Cessna C210 was issued taxi instructions to the Runway 29 run-up area but the aircraft mistakenly taxied to another ramp area.	Human Factors	No

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				General Aviation		Ground Control (GC) tried to correct the error but received no response. Later the C210 called ready to taxi and was issued instructions to Runway 29. The C210 then entered Runway 29 without authorization. Both GC and Local Control directed the C210 to exit the runway. No conflicts reported.		
48 RWS	09- 2006	C	VMC Daytime	Personal/ General Aviation	Runway 29	A Cessna C152 departed Runway 29 without a clearance. A Bombardier CL30 had been instructed to cross Runway 29 at Taxiway Juliet but was held short of the hold bars. No loss of separation or other conflicts reported.	Human Factors	Yes NOTAM- 2006-12706, 12606, 12406, 11906, 11706, 11506
49 RWS	11- 2006	D	VMC Daytime	Personal/ General Aviation	Taxiway V and Runway 29	A Cessna C182 entered Taxiway Victor and taxied to Runway 29 without authorization. The C182 held at the hold short lines and contacted ATCT. No conflicts reported.	Human Factors	Yes NOTAM- 2006-14306
50 AID	12- 2006	D	VMC Night	Air Carrier	Runway 30L at Taxiway L	B767-300 landed on RUNWAY 30L and was instructed to exit at TAXIWAY M. Pilot in command exited at TAXIWAY L which was closed at the time and marked with temporary barricades and taxied over one barricade and blew an additional six barricades over. The Pilot indicated he did not recall ATCT instructions to exit at TAXIWAY M, and had not noticed the barricades. ATIS current at the time indicated TAXIWAY L was closed between Runway 12R/30L and TAXIWAY Y. ATCT instructions to exit at TAXIWAY M were verified by ATCT staff and airport operations. No damage to the aircraft occurred	Human Factors	Yes Covered by previously noted NOTAMS
51 RWS	12- 2006	D	VMC Night	Personal/ General Aviation	Taxiway H and Runway 30L	Multiple taxiways are closed due to construction. Taxiway Hotel would normally be the first egress point off Runway 30L. Local Control (LC) instructed a Beech BE20 after landing Runway 30L to turn at Hotel and contact Ground Control (GC). LC then cleared a Boeing B737 for takeoff Runway 30L full length with a second Boeing B737 on a 4- mile final. LC then realized the BE20 had been turned onto a closed and barricaded taxiway. The BE20 cleared the runway but was unable to proceed forward and stopped prior to hold line and within runway safety area. LC cancelled takeoff clearance on the B737 but the aircraft had rolled approximately 2,000 feet down the runway. Closest horizontal separation was 4,000 feet when the B737 reached taxi speed.	Procedural/ Construction	Yes Covered by previously noted NOTAMS

52 RWS	12- 2006	D	VMC Daylight	Vehicle/ Pedestrian	Runway 12L at Taxiway N	Supervisor (SUPVR) was on Local Control 2 (LC2) when an airport vehicle called for a runway inspection on Runway 12L. A CANADAIR CRJ2 was holding short of Runway 12L at Taxiway November for flow time. SUPVR placed a visual aid placard on the pad. Vehicle was between Taxiway Foxtrot and Golf when driver advised he would "need a couple of seconds here to re-bag this sign". Controller in Charge (CIC) started working LC2, to allow the SUPVR to handle a call, and did not receive a briefing. CIC did not know the vehicle had advised he needed some time to re-bag a sign so when he noticed the vehicle off to the right side of the runway and the driver out of the vehicle, the RID was removed. CIC cleared the CRJ2 for take-off. The CRJ2 held on the runway, did not roll, and reported the vehicle on the runway. CIC then observed the vehicle on the runway but could not transmit due to CD reading a SIGMET. As soon as the frequency cleared, CIC advised the vehicle to clear the runway and re-cleared the CRJ2 for takeoff when vehicle reported clear. Closest horizontal proximity reported was 5,000 feet.	Procedural	No
53 ASRS	12- 2006	D	VMC Daylight	Air Carrier	Runway 30R at Taxiway K	B737-3 landed on RUNWAY 30L and exited at TAXIWAY K. Pilot and FO both understood their clearance was to land RUNWAY 30L exit TAXIWAY K and cleared across RUNWAY 30R with an aircraft that was cleared into position on 30R and holding. Pilot read-back instructions that aircraft was cleared to cross RUNWAY 30R as understood and to stay with the controller. Pilot and FO looked down RUNWAY 30R to keep holding traffic in sight and overhead ATCT instructing traffic holding on RUNWAY 30R to cancel their takeoff clearance. Next transmission was telling the taxiing B737-3 to hold short of RUNWAY 30R which was impossible as aircraft was halfway across RUNWAY 30R. Pilot continued across RUNWAY 30R and cleared runway and called ATCT reiterating that ATCT had cleared their aircraft to cross and that pilot had read-back instructions. ATCT indicated they had not heard read back and then cleared the aircraft to the gate.	Human Factors	Yes NOTAM- 2006-17806, 17406, 17206, 17106, 17006, 16906, 16806,
54 RWS	02- 2007	D	VMC Daylight	Air Carrier	Runway 30R at Taxiway J	A Boeing B737 landed Runway 30L. A McDonnell-Douglas MD83 was cleared for takeoff Runway 30R abeam Taxiway Alpha. Local Control 2 (LC-2) was distracted with coordination regarding a helicopter landing and instructed the B737 to cross Runway 30R via Taxiway Juliet. The MD83 pilot observed the B737 enter Runway	Procedural	No

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						30R and initiated his own abort after rolling approximately 1,500 feet (abeam Charlie). The MD83 was instructed to exit at Taxiway Echo, approximately 4,500 feet from Juliet.		
55 RWS	02- 2007	D	VMC Daylight	Personal/ General Aviation	Runway 11	A Beech BE10 was instructed to taxi to Runway 11. Upon leaving the ramp the BE10 continued straight ahead instead of making the turn onto the correct taxiway and crossed the hold line for Runway 11. Ground Control instructed the BE10 pilot to stop and make a 180 turn. No conflicts reported.	Human Factors	No
56 RWS	03- 2007	D	VMX Daylight	Air Carrier	Taxiway A1 at Runway 30R	A CANADAIR CL60 was holding on Taxiway Zulu short of Taxiway Bravo when instructed to continue on Zulu and hold short of Taxiway A1. Subsequently the CL60 was instructed to cross Taxiway Yankee and to hold short of Runway 30R. The CL60 read back hold short instructions then proceeded to cross Runway 30R. No conflicts reported.	Human Factors	Yes NOTAM- 2007-04507
57 RWS	04- 2007	D	VMC Daylight	Personal/ General Aviation	Runway 30R vicinity of Taxiway D	A Cessna C182 was cleared and read back clearance to land on Runway 29. The C182 then landed on Runway 30R without a clearance. Wrong runway landing. No conflicts reported.	Human Factors	No
58 ASRS	07- 2007	D	VMC Daylight	Air Taxi/ Commuter	Taxiway V at RWY 11 end	FO called SJC ground control for clearance to taxi from FBO and were cleared to taxi to RUNWAY 30L and advised to obtain an updated ATIS and advise the ATCT when this was done. FO and pilot both anticipated directions to turn left off ramp to taxi to RUNWAY 30L, but FBO marshaller "vigorously" directed the aircraft to turn right to exit the FBO ramp. At start of taxi, the FO switched to the ATIS frequency, but did not have ground control frequency programmed into radio. Pilot and FO were unaware that neither was monitoring ground control. Pilot taxied to what was thought to be TAXIWAY V, but was the alignment of RUNWAY 11/29 resulting in a pilot deviation. ATC directed aircraft to continue taxiing on RUNWAY 11/29 to the far end and then continue to RUNWAY 30L. San Jose Flight Service District Office inspector confirmed that there had been a number of similar incidents over the previous year.	Human Factors	No
59 RWS	07- 2007	D	VMX Daylight	Personal/ General Aviation	Runway 29	A Cessna C206 was instructed to taxi to Runway 29 and contact ATCT for crossing to the run-up area. The C206 began taxi and crossed the hold bars for Runway 29 without clearance and was	Human Factors	No

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						instructed by Ground Control to stop. No conflicts reported. Subsequently the C206 was taxied across the runway.		
60 RWS	10- 2007	D	VMC Daylight	Personal/ General Aviation	Runway 30L vicinity of Taxiway D	A Mooney M20P was cleared to land Runway 29. M20P pilot advised he was unfamiliar with the airport and Local Control (LC) informed the pilot that 29 was the short runway. LC then cleared a Beech BE40 for takeoff on Runway 30L with a Boeing B738, on 3-mile final 30L. The M20P then landed Runway 30L without clearance instead of 29. LC cancelled the BE40's takeoff clearance prior to the BE40 reaching the hold short line and sent the B738 around beyond 2-mile final. The BE40 stopped prior to the hold short lines. In addition, when the M20P exited 30L at H the pilot was instructed to cross Runway 29. The M20P instead turned onto Runway 29 rather than crossing. No conflicts reported for Runway 29. Wrong runway landing.	Human Factors	Yes NOTAM- 2007-12807, 10607
61 ASRS	11- 2007	D	VMC Daylight	Corporate	Runway 30R vicinity of Taxiway H	Rejected takeoff by pilot resulting from unspecific ATCT communication during takeoff roll. ATCT cleared aircraft to taxi into position and hold in the displaced threshold area of RUNWAY 30R. Almost immediately upon reaching position ATCT transmitted what the pilot and FO perceived as clearance to takeoff and the FO responded "aircraft XX cleared for takeoff. The pilot waited 4 to 5 seconds before commencing roll during which there was no negative response for ATCT. Pilot believes he was above 100 Knots and near V1 when aircraft received a transmission from the ATCT of "What are you doing" with no further details. Fearing that they (pilot and FO) may have mistakenly proceed, pilot executed a rejected takeoff and turned off runway after slowing down. Upon exiting the runway, pilot was asked if he wanted taxi clearance back to departure position and to contact tower when ready for takeoff. Pilot asked ATCT if there were any problems or ramifications that needed to be addressed and ground control responded that there were none.	Human Factors	Yes NOTAM- 2007-13707
62 ASRS	01- 2008	E	VMC Daylight	Procedural	Airport	Situational awareness, very difficult for ATC personnel to see approach end of either runway due to height of Tower. Tower design was/is not suited for 11000 ft. Runway.	ATC Equipment Nav. Fac. Buildings	No
63 ASRS	02- 2008	D	Not Noted	Personal/ General Aviation	Runway 30L at Taxiway D	Single engine Cessna cleared for RUNWAY 29 lands of RUNWAY 30L. Pilot deviation occurred but went unreported as such. Wrong runway landing.	Human Factors	No

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64 RWS	03- 2008	D	VMC Daylight	Personal/ General Aviation	Taxiway B and Runway 30R	A Cessna C150 was issued progressive taxi instructions from ACM FBO to Runway 30R via Taxiway Zulu to hold short of Taxiway Bravo. The C150 initially taxied wrong way on Zulu and was corrected by Ground Control (GC). GC monitored the C150's progress and when the C150 stopped short of Bravo, GC instructed the pilot to advise when ready for departure. The C150 then proceeded to enter Bravo and then crossed Yankee and the hold short lines for Runway 30R without clearance. GC instructed C150 pilot to stop. The C150 did not enter the runway. No conflicts reported.	Human Factors	No
65 RWS	03- 2008	D	VMC Daylight	Personal/ General Aviation	Runway 30L at Taxiway D	A Cirrus SR22 cleared to land Runway 29 instead landed Runway 30L without clearance. No conflicts reported. Wrong runway landing	Human Factors	No
66 ASRS	05- 2008	D	VMC Dusk	Corporate	Runway 30R	Pilot given detailed taxi instructions from FBO to RUNWAY 30R. NOTE: 30L had been closed for two weeks for lighting upgrades. Pilot of aircraft appeared confused either due to closure of RUNWAY 30L or detailed taxi instructions. Tower advised aircraft to Hold short of RUNWAY 30R and aircraft acknowledged "hold short instructions" and then proceeded onto RUNWAY 30R without clearance.	Human Factors/ Previous Construction	Yes
67 RWS	08- 2008	D	VMC Daylight	Corporate	Taxiway J at Runway 30R	A Cessna C550 landed Runway 30L and advised taxi to Signature ramp. The C550 was instructed to turn left at Taxiway Juliet, cross Runway 29, then was given directions to parking. The C550 replied "roger". The C550 turned right on Juliet instead and crossed Runway 30R without clearance. No conflicts reported.	Human Factors	No
68 RWS	09- 2008	D	VMC Daylight	Personal/ General Aviation	Runway 29	A Cessna C172 entered Runway 29 without clearance. No conflicts reported.	Human Factors	Yes NOTAM- 2008-09708, 09508, 19408, 19208
69 RWS	10- 2008	D	VMC Night	Personal/ General Aviation	Taxiway J at Runway 30R	A Beech BE40 was instructed to turn left at Taxiway Juliette, cross Runway 29, and contact ground. The BE40 read back only Taxiway Juliette then turned right and crossed Runway 30R without clearance. No conflicts reported.	Human Factors	No
70 RWS	11- 2008	C	VMC Daylight	Personal/ General Aviation	Runway 29 and Taxiway J	A Cessna C310, landed Runway 30L, turned off on Taxiway Juliet and was instructed to cross Runway 29 at Juliet (departure end) and contact Ground Control (GC) on the other side. Local Control (LC) had forgotten about a Beech BE36 on final for Runway 29. LC instructed the C310 to hold short of Runway 29 for landing traffic.	Procedural	No

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						The C310 pilot acknowledged but could not get stopped until past the hold short bars by approximately 5-10 feet. The BE36 landed, reached taxi speed approximately 700-800 feet from Taxiway Golf, and exited the runway at Golf. Closest proximity reported was 2,000 feet horizontal, distance from Golf to Juliet.		
71 RWS	12- 2008	D	VMC Daylight	Corporate	Runway 30L	A Hawker H25B entered and departed Runway 30L without clearance. No conflicts reported.	Human Factors	No
72 RWS	12- 2008	C	VMC Daylight	Air Carrier	Runway 30L at Taxiway K	A Boeing B733 was advised of runway change at push time from the gate and received new departure routing. The B733 was taxied to Runway 30R but turned wrong way on Taxiway Yankee towards Runway 12L. GC instructed the B733 to turn right on Zulu but pilot turned left towards runways at Lima. LC and GC coordinated a back taxi on Runway 30R for the B733 and GC instructed the pilot to contact tower passing Taxiway Charlie. The B733 started back taxi but turned right at Kilo. GC attempted to stop the aircraft but received no response and the B733 taxied past the hold short lines for Runway 30L at Taxiway Kilo without clearance and conflicted with a B737 touching down on 30L near Delta. The nose of the B733 stopped approximately 50 feet past the hold lines (B733 length is 110 feet) and did not enter the runway. Closest horizontal distance was approximately 120 feet based on hold line to runway edge distance of 170 feet. The landing B737 exited at Juliet (distance from Juliet to Kilo is 800 feet).	Human Factors	No
73 RWS	02- 2009	D	VMC Daylight	Personal/ General Aviation	Runway 12R at Taxiway L	Ground Control (GC) coordinated with Local Control to cross Runway 12L at Lima with a Cessna C750. GC instructed the C750 to cross Runway 12R at Lima instead of 12L as coordinated. No conflicts reported.	Procedural	No
74 ASRS	03- 2009	D	VMC Daylight	Personal/ General Aviation	Taxiway D at Runway 11/29	PA28A is issued VFR clearance and pilot was instructed to taxi to RUNWAY 29, which pilot reads back correctly. Pilot then stops short of the runway and on the active taxiway turns askew to conduct a run-up. Pilot informed of RUNWAY 29 run-up location across RUNWAY 29 and is told to hold short and contact Tower on 120.7, which was incorrect frequency for tower configuration. While local controller and ground controller are discussing frequency issue, pilot reads back the instructions incorrectly as "Taxi across RUNWAY 29 and contact tower", which was missed by ground controller. Controller noted the following: poorly placed	Human Factors Airfield layout	Yes NOTAM- 2009-03037

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						location of RUNWAY 29 run-up being the source of several pilot deviations as well as controller deviations.		
75 RWS	04- 2009	D	VMC Daylight	Personal/ General Aviation	Runway 30L and Taxiway C	A Globe GC1B was issued taxi instructions to Runway 30L at Charlie for departure. Subsequently the GC1B pilot entered and departed Runway 30L from abeam Taxiway Charlie without clearance. No conflicts reported.	Human Factors	Yes NOTAM- 2009-04057, 04056
76 ASRS	06- 2009	D	VMC Night	Air Taxi/ Commuter	Runway 30L prior to Taxiway F	ATC late night limited staff during period of numerous pushbacks, clearance requests and taxi instruction requests. A CRJ-900 landed on RUNWAY 30L with another aircraft on a 2-mile final. As main taxiways were blocked by pushback traffic, the CRJ-900 was instructed to back taxi on RUNWAY 30R to TAXIWAY F and taxi to ramp on controller's frequency, which the pilot read back correctly. Controller checked radar and looked up to observe the aircraft that was on a 2-mile final executing a missed approach. The CRJ-900 was mistakenly back taxiing up RUNWAY 30L rather than RUNWAY 30R as instructed. Pilot indicated he thought they were supposed to back-taxi along RUNWAY 30L to TAXIWAY F.	Human Factors	
77 RWS	06- 2009	D	VMC Daylight	Personal/ General Aviation	Runway 12R at Lima	A Cessna C172 was cleared for a touch and go operation on Runway 11. The C172 then executed a touch and go on Runway 12R without clearance. No conflicts reported. Wrong runway event.	Human Factors	Yes NOTAM- 2009-06088, 06057
78 RWS	07- 2009	D	VMC Daylight	Personal/ General Aviation	Runway 29 at Taxiway D	A Beech BE58 was issued taxi instructions to Runway 29 via Taxiway Victor for departure. The BE58 was taxiing back to FBO due to a mechanical issue when pilot stated they resolved it and requested to taxi back to Runway 29. GC instructed the BE58 to make a 180 on Victor and taxi to Runway 29. GC then observed the BE58 cross Runway 29 at Delta without clearance and proceeded to the run-up area. No conflicts reported.	Human Factors	Yes NOTAM- 2009-07071, 07070, 07010
79 RWS	09- 2009	D	VMC Daylight	Vehicle/ Pedestrian	Taxiway F between Runways 30R and 30L	Taxiway Foxtrot was NOTAMED closed between Runway 30R and 30L with low level barricades at the edge of Runway 30R. A painter was working on the hold markings for Runway 30R on Taxiway Foxtrot and thought he could proceed past the hold lines and crossed into the safety area towards the runway several times without authorization. No conflicts reported. There was no coordination advising that the individual would be in the safety area. Vehicle was radio equipped but individual was outside without a radio.	Human Factors Construction	Yes NOTAM- 2009-09023, 09022, 09020, 09019, 09016, 09005, 09003, 09002

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80 RWS	10- 2009	D	VMC Daylight	Personal/ General Aviation	Runway 30R vicinity of TXY D	A Beech BE76 inbound on an ILS for Runway 30L was cleared to land same runway. The BE76 then landed on Runway 30R without clearance. No conflicts reported. Wrong runway landing.	Human Factors	Yes NOTAM- 2009-10005, 10004, 10003
81 RWS	11- 2009	D	VMC Daylight	Personal/ General Aviation	Runway 30R vicinity of TXY D	A Cessna C172 acknowledged and read back clearance to land on Runway 30L. Subsequently the C172 landed on parallel Runway 30R without clearance. No conflicts reported. Wrong runway landing.	Human Factors	No
82 RWS	03- 2010	C	VMC Daylight	Vehicle/ Pedestrian	Taxiway B by Taxiway W	An airport mower pre-coordinated with ATCT to operate near the runways. FLM advised the operator to remain outside of the runway safety area (RSA) and offered to coordinate an escort by airport authority (MOD). The operator declined stating they had talked with MOD and knew he was to stay outside of the cones in that area. Subsequently the mower operator misidentified low level barricades at the edge of Runway 30L and crossed into the RSA beyond the tall orange cones near Taxiway Bravo (left side of runway between Bravo and Whiskey) thus conflicting with a DH8 on less than a mile final same runway. The DH8 was issued a go around at one half (.50) mile to avoid loss of separation.	Human Factors	Yes NOTAM- 2010-03038, 03037, 03036, 03035, 03009
83 RWS	07- 2010	C	VMC Daylight	Vehicle/ Pedestrian	Runway 12L at Taxiway D	Ground (GC) coordinated with Local (LC) for an airport NAVAID vehicle to cross Runway 12L at Taxiway Delta to the glideslope. LC was preparing for a position relief briefing and was coordinating with LICKE Sector on departures. LC cleared a Embraer E135 for takeoff on Runway 12L full length. GC advised LC the vehicle was not clear of Runway 12L and LC canceled the E135s takeoff clearance. The E135 aborted takeoff approximately 2,300 feet from departure point and exited the runway at Kilo. Distance from Kilo to Delta is 5,300 feet, the closest proximity reported.	Procedural	Yes NOTAM- 2010-07025, 07024,
84 RWS	09- 2010	D	VMC Daylight	Vehicle/ Pedestrian	Taxiway Victor at Taxiway D	An airline maintenance vehicle entered Taxiway Victor without authorization or contact with ATCT. The vehicle proceeded northwest bound from intersection of Victor and Delta. No hold lines or runways affected and no conflicts reported.	Human Factors	Yes NOTAM- 2010- 09020, 09013
85 RWS	12- 2010	D	VMC Daylight	Personal/ General Aviation	Taxiway D at Runway 30L	A Cessna C172 completed run-up on Taxiway Delta abeam Runway 30L then proceeded to pull ahead and crossed the hold short lines without clearance. The C172 reversed course prior to runway edge and while taxiing the pilot questioned runway assignment. ATCT instructed the pilot to continue moving away from runway edge and	Human Factors	Yes NOTAM-2010 12066, 12065, 12021, 12019, 12007, 12005, 12004

						the C172 stopped on the runway side of the hold bars facing away from Runway 30L. No conflicts reported.		
86 RWS	01- 2011	D	VMC Daylight	Personal/ General Aviation	Taxiway D at Taxiway W	A Beech BE9L had been cleared for takeoff on Runway 30L abeam Charlie when the pilot advised they needed to return to the ramp for maintenance. Local (LC) instructed the pilot to turn left at Delta and contact Ground (GC). LC observed an aircraft taxiing out and instructed the BE9L to hold short of Taxiway Whiskey which pilot read back correctly. GC was unable to contact the BE9L and the aircraft crossed Whiskey and Runway 11/29 (closed for construction for more than a year). No vehicles were on the runway at the time. The aircraft taxiing out heard GC and held position. No loss of separation reported.	Human Factors	Yes Covered under a previous NOTAM
87 ASRS	03- 2011	C	VMC Daylight	Personal/ General Aviation	Threshold Runway 30R vicinity of TXY D.	Small piston aircraft 5 miles from airport was instructed to follow a Gulfstream II on 2-mile final for RUNWAY 30L. Piston aircraft could not visually identify G-II. The piston aircraft landed inadvertently on RUNWAY 30R as the ATC was clearing an air carrier for departure on RUNWAY 30R at the same time. ATC quickly cancelled departure clearance for the air carrier. Pilot notes confusion between of taxiway for the alignment of RUNWAY 30R as main cause of error. Wrong runway landing.	Human Factors	No
88 RWS	06- 2011	D	VMC Daylight	Vehicle/ Pedestrian	Runway 30R and Taxiway L	An emergency response vehicle was in correct location on Taxiway Lima for Runway 30R due to an inbound aircraft emergency. The aircraft was cleared to land on Runway 30L. Ground (GC) asked the response vehicle operator if they wanted to remain at their location or go between the runways. The vehicle operator stated they wanted to hold short of Runway 30L. GC responded "ok thanks". GC needed to coordinate with Local (LC) on the crossing. The response vehicle then crossed Runway 30R at Lima without clearance. No conflicts reported.	Human Factors	No
89 RWS	06- 2011	D	VMC Daylight	Vehicle/ Pedestrian	Runway 30L at Taxiway M	An airport ops vehicle contacted Local (LC) requesting to enter Runway 30R at Taxiway Mike. LC had no other traffic and approved the vehicle onto Runway 30R. An inbound aircraft called on 7-mile final. LC scanned the runway and observed the vehicle on Runway 30L without clearance. LC advised the vehicle operator to exit the runway. The vehicle was on Mike for Runway 30L at the time of the initial request. No conflicts reported.	Human Factors	No

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90 ASRS	07- 2011	D	Daylight	Personal/ General Aviation	Runway 30L at Taxiway D and Runway 29 Run-up Area	Controller was working another position when they observed a C172 taxi past the hold bars at RUNWAY 30L and TAXIWAY D and turn their aircraft around with the tail of the aircraft facing RUNWAY 30L and perform what looked to be a run-up. Controller advised the Ground Controller that the Cessna appeared to be disoriented and overheard Ground Control tell the C172 that the run-up area was now ahead and to their left. The Cessna taxied back across RUNWAY 29 onto TAXIWAY V and the Ground Controller advised the C172 to turn back around cross RUNWAY 29 and taxi to the area which was 'black top'. This had been designated as the run-up area but not well marked. This issue had been noted with RSAT team. This issue has taken up a considerable amount of time and effort for the Ground Controller to orientate pilots who are not familiar with this layout. Additional signs were recommended to be placed at this location to better eliminate confusion and it was noted that the run-up should be noted in the airport directory and through pilot education. Controller believed that the area was to be designated as a 'hot spot' by RSAT.	Airfield Layout	No
91 RWS	08- 2011	D	VMC Daylight	Personal/ General Aviation	Runway 30L at Taxiway F	A Piper 46 advised Ground (GC) ready for takeoff. GC responded taxi Runway 30L via Delta. The pilot responded, Runway 30L cleared for takeoff via Delta. GC did not respond and at the time was alerting Local (LC) as to the location of the PA46 when they observed the aircraft taxiing onto Runway 30L at Delta. GC instructed the PA46 to contact LC. LC instructed the PA46 to exit the runway for a wake turbulence hold. No conflicts reported.	Human Factors	No
92 RWS	08- 2011	D	VMC Daylight	Vehicle/ Pedestrian	Runway 30R at Taxiway N	An airport vehicle requested to cross Runway 30L and 30R at Taxiway November. Ground (GC) needed to confirm location of the vehicle and asked to verify position. The vehicle operator seemed to be unsure of location based on transmission heard by GC. GC visually observed a vehicle holding short of Runway 30R at November and instructed the driver to hold short of 30R at November. The vehicle driver asked GC to repeat last transmission. GC repeated the hold short instructions for 30R which were read back correctly. GC coordinated with Local (LC) to cross both runways and went back to give crossing clearance when they observed the vehicle had entered Runway 30R at November without clearance. No conflicts reported.	Human Factors	Yes

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93 RWS	10- 2011	D	VMC Daylight	Air Carrier	Runway 30R at Taxiway H	A CANADAIR CRJ7 was issued taxi instructions by Ground (GC) to Runway 30R via Taxiways Hotel and Yankee. The CRJ7 then entered Runway 30R at Hotel without authorization and GC instructed the pilot to stop then to exit the runway. No conflicts reported.	Human Factors	No
94 ASRS	12- 2011	D	Night	Air Carrier	Runway 30R and NE Cargo apron	B737-7 First Officer describes bright temporary lights set up on the northeast side of the airport (cargo ramp) pointed/angled at the displaced threshold for RUNWAY 30R that was very bright and distracting. Appeared to be conducting a temporary sort operation. First officer notes that the light affected his vision for several minutes after takeoff.	Environment not weather related, human factors	Yes NOTAM 2011- 12064, 12063, 12062,
95 ASRS	03- 2012	D	VMC Night	Corporate	Taxiway V And Taxiway W (north end of 11/29)	After exiting RUNWAY 30L onto TAXIWAY J, a Lear 45 is cleared to taxi to the FBO via TAXIWAY V. The pilot was approaching the TAXIWAY V signage and turned left before reaching the sign and inadvertently turned on, what the pilot believes now, is TAXIWAY W1 which the NOS chart at the time showed as RUNWAY 11/29. This is now a new taxiway which parallels TAXIWAY V (W1). The chart needs to be updated. The yellow line turns left onto TAXIWAY W. The pilot was confused as he had apparently already passed the sign for TAXIWAY W when given the clearance and thought the first taxiway to the left would have been TAXIWAY V. Pilot subsequently realized that he should have passed the taxiway sign before turning. Pilot noted that painting the letter of each taxiway onto the pavement as a potential mitigation effort to the runway safety action team and noted that this action was deemed too expensive. Pilot believes this idea would have helped in this case at SJC where there are two parallel taxiways.	Human Factors	Yes NOTAM 2011- 12064, 12063, 12062,
96 ASRS	05- 2012	C	Not Noted	Personal/ General Aviation	Runway 30L at Taxiway D	A Cessna 340 was instructed to taxi to RUNWAY 30L via TAXIWAYS V, C and W and the pilot read back the clearance correctly and proceeded to turn onto TAXIWAY D and entered the engine run-up area at TAXIWAY D at W. After run-up, pilot was instructed to follow TAXIWAY W to RUNWAY 30L. The aircraft taxied straight ahead to RUNWAY 30L at the intersection with TAXIWAY D and crossed the hold line with a B737 over Runway 30L at TAXIWAY C at roughly 50 feet. B737 instructed to go around. The C340 pilot believed he was cleared to taxi into position on RUNWAY 30L while controller indicated he was cleared to taxiway to RUNWAY 30L.	Human Factors	No

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97 RWS	06- 2012	D	VMC Daylight	Air Carrier	Runway 12L	E135 received Line Up and Wait (LUAW) instructions for Runway 12. Read back was correct. E135 departed without a takeoff clearance and later queried LC as to whether they were cleared for takeoff or not. No loss of separation or conflicts with other aircraft.	Human Factors	No
98 RWS	06- 2012	D	VMC Daylight	Personal/ General Aviation	Taxiway V at Taxiway C	C177 received clearance from Clearance Delivery. Without contacting Ground Control (GC) C177 proceeded on Taxiway Victor to Taxiway Charlie. C177 did not respond to repeated calls on all operational SJC frequencies. Eventually, C177 established contact with GC. Pilot in command claimed he had been given taxi clearance from 118.0.	Human Factors/Proc edural	Yes NOTAM 2012- 06037, 06014
99 RWS	10- 2012	C	VMC Daylight	Air Carrier	End of Runway 30R	B737 was put in position by Local Control (LC) on Runway 30R at the full length (Taxiway Alpha 1). Second B737 was on a 4-mile final to land Runway 30R. After a corporate jet exited Runway 30R, the B737 in position was issued takeoff clearance with the arriving B737 now "just inside 2-mile final." Loss of runway separation resulted when LC allowed the landing B737 to cross the runway threshold as the departing B737 was airborne and an estimated 5000 feet (6000 feet required) from the runway threshold. In consideration of potential conflicting over flight traffic, LC did not issue go around instructions and allowed the B737 to land with less than minimum runway separation. Closest proximity was estimated at 5000 feet.	Procedural	Yes
100 RWS	11- 2012	D	VMC Daylight	Corporate	Runway 30L and Taxiway B	LJ55 was taxied from transit parking on the west side of the airport to Runway 30L for departure. Local Control (LC) initially instructed the LJ55 to hold short of Runway 30L for landing traffic, followed shortly thereafter by a clearance to Line Up and Wait (LUAW) Runway 30L. LJ55 read back the LUAW instruction correctly and taxied onto Runway 30L from Taxiway Bravo. LC was conducting a position relief briefing and did not observe the LJ55 departing until the aircraft was airborne. LJ55 departed without receiving a takeoff clearance and was instructed to maintain visual separation with traffic departing from Runway 30R. Visual separation was applied to prevent a loss of separation with the airborne parallel runway departure.	Human Factors	No
101 RWS	12- 2012	C	VMC Night	Personal/ General Aviation	Runway 30R at Taxiway C	SR22 landed Runway 30R and after exiting at Taxiway Hotel was instructed to taxi via Taxiway Yankee and hold short of Runway 30R at Taxiway Delta and remain on Local Control (LC2) frequency. Pilot read back both taxi and hold short instructions correctly. After pilot advised LC2 of destination parking, LC2 issued instructions to hold	Human Factors	No

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						short of Runway 30R at Taxiway Charlie which was read back correctly. At Taxiway Charlie, the SR22 turned right and crossed the Runway 30R hold bars without authorization with E135 on short final to Runway 30R. The SR22 did not cross the runway edge lines. Taxiway Charlie crosses the displaced portion of Runway 30R approximately 2300 feet north of the displaced approach end and 200 feet south of the displaced threshold. To ensure separation, go around instructions were issued to the E135 which did not overfly the SR22. Low Cost Ground Surveillance (LCGS) was cited by controllers in assisting in detecting this night time incursion.		
102 RWS	05- 2013	D	VMX Daylight	Personal/ General Aviation	Runway 30R at TXY D vicinity	C172 called from the north and was instructed to make right traffic Runway 30R. Read back was correct. Local Control (LC) issued subsequent landing clearance on Runway 30L with wake turbulence caution due to a prior B737 landing Runway 30L which the C172 reported in sight. Read back was correct. C172 landed on Runway 30R without authorization. Air Traffic Control (ATC) reports in scanning for the C172 and sighting the aircraft short final the pilot appeared to be aligned for Runway 30L and then at an estimated 100 feet began to veer right and landed Runway 30R. No conflicts. Wrong runway landing.	Human Factors	No
103 ASRS	07- 2013	C	VMC Night	Corporate	At 30R hold position and Taxiway A	Challenger 300 was cleared to taxi to RUNWAY 30L and at the hold short line was cleared by ATC to cross RUNWAY 30L, specifically, "cleared to cross 30L and sort of angle to the right across to hold short of RUNWAY 30R at TAXIWAY A". Pilot taxied per instruction but misidentified a TAXIWAY A sign on the far side of the runway and taxied across the hold short line for 30R by approximately one plane length. (The appropriate TAXIWAY A sign required a hard 90-degree right turn to see the sign and once past the RUNWAY 30L hold line the sign is not easily visible. Pilot notes limited distance between RUNWAY 30L and RUNWAY 30R hold lines and that ATC instruction was not standard. Pilot focused on looking for TAXIWAY A sign, and not on the location of hold lines.	Human Factors	Yes NOTAM-2013 07013, 07012
104 RWS	08- 2013	D	VMC Daylight	Personal/ General Aviation	Taxiway D and Runway 30R	DA42 was taxied to Runway 30R at Taxiway Charlie across Runway 30L. DA42 turned onto Taxiway Delta by mistake. Ground Control (GC) told DA42 to hold their position. GC then cleared the DA42 to cross Runway 30L at Taxiway Delta, hold short of Runway 30R at Taxiway Delta. Read back was correct. DA42 crossed Runway 30R at Taxiway Delta without authorization. Local Control had C525	Human Factors	Yes NOTAM-2013 08039, 08038, 08037, 08036, 08035,

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						waiting for departure on Runway 30R at Taxiway Charlie. DA42 crossed approximately 950 feet in front of the C525.		
105 RWS	01- 2014	D	VMC Daylight	Vehicle/ Pedestrian	Taxiway B and Runway 30R	Airport vehicle was on Taxiway Yankee and requested to cross Runways 30R and 30L to pick up FOD on Taxiway Bravo. Ground Control (GC) instructed the vehicle to cross Runways 30R and 30L on Taxiway Bravo. Vehicle proceeded across both runways and was observed driving on Taxiway Bravo, clear of Runway 30L, looking for the FOD. GC then observed the car proceed on Taxiway Bravo and cross Runways 30R and 30L without authorization. No conflicts.	Human Factors	No
106 RSAP & ASRS	05- 2014	C	VMC Daylight	Personal/ General Aviation	Taxiway Y at Taxiway B	PA32 requested clearance for departure on RUNWAY 30L at TAXIWAY B and was instructed to cross RUNWAY 30L and line up and wait. Read back by pilot was correct. After crossing RUNWAY 30L Local Control cleared aircraft to depart RUNWAY 30L at TAXIWAY B. Again, read back was correct. PA32 crossed RUNWAY 30R, turned onto TAXIWAY Y and initiated takeoff. MD83 southbound on TAXIWAY Y alerted Local Control and the PA32 departure clearance is immediately cancelled. PA32 to MD83 proximity was 4,200 feet. Aircraft takeoff from TAXIWAY Y	Human Factors	No
107 RSAP	06- 2014	D	VMC Daylight	Personal/ General Aviation	Taxiway V north of Taxiway D	C172 entered TAXIWAY V, north of TAXIWAY D without authorization from ATC. No conflict occurred as the aircraft did not cross the hold line or enter the runway.	Human Factors	No
108 RSAP	06- 2014	D	VMC Daylight	Personal/ General Aviation	Taxiway D at Runway 30L	PA32 in the run-up area at TAXIWAY D and TAXIWAY W requests taxi clearance to departure and Ground Control instructs the pilot to taxi to RUNWAY 30L at TAXIWAY D. Read back was clipped (partially interrupted) but included RUNWAY 30L at TAXIWAY D. The PA32 crossed RUNWAY 30L on TAXIWAY D without clearance. No conflicts occurred. Reference is made in the report of this event involving Hotspot 2.	Human Factors/ Airfield Layout	No
109 RSAP & ASRS	06- 2014	D	VMC Daylight	Personal/ General Aviation	Taxiway D at Runway 30L	C172 had been taxied to the run-up position at the intersection of TAXIWAY D and TAXIWAY W with Ground Control advising the C172 to remain on the frequency and notify ATC when run-up was completed. C172 acknowledged the instructions. C172 completed their run-up and taxied to RUNWAY 30L hold short marking at TAXIWAY D without clearance. No conflicts occurred. Hotspot 2 is referenced in the report.	Human Factors/ Airfield Layout	No
110 RSAP	06- 2014	D	VMC Daylight	Personal/ General Aviation	Taxiway D at	M20K had been taxied to the run-up area at TAXIWAY D and TAXIWAY W and told to contact Ground Control upon completion of run-up. M20K acknowledged the instructions but when the run-up	Human Factors/	No

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					Runway 30L	was completed taxied to RUNWAY 30L at TAXIWAY D and called Tower. No conflicts occurred and the aircraft did not cross the hold line. Hotspot 2 referenced as a contributing factor.	Airfield Layout	
111 RSAP	07- 2014	C	VMC Daylight	Personal/ General Aviation	Taxiway D at Runway 30L	P180 was instructed to taxi to RUNWAY 30L via TAXIWAY W and TAXIWAY D and to monitor Tower. Read-back was correct. P180 taxied onto RUNWAY 30L without contacting Local Control and without a clearance and with a CRJ 900 on a two-mile final. P180 was cleared for takeoff and no conflicts arose.	Human Factors	No
112 ASRS and RSAP	07- 2014	C	VMC Daylight	Air Carrier	Taxiway B at Runway 30R	A B737-800 was cleared to RUNWAY 30R via TAXIWAYS J and Y. Pilot read-back the instructions correctly. The aircraft taxied onto RUNWAY 30R at TAXIWAY B without clearance. No conflicts occurred.	Human Factors	Yes NOTAM- 2014-July 07001, 07015,
113 ASRS & RSAP	10- 2014	D	VMC Daylight	Personal/ General Aviation	Taxiway C at Taxiway W	BE33 was cleared for takeoff on RUNWAY 30L at TAXIWAY C by Local Control and the pilot read-back "rolling on RUNWAY 30." BE33 then turned left onto TAXIWAY W and took off from the taxiway. Local Control attempted to cancel clearance, but determined it was safer to allow aircraft to continue to depart. No conflicts occurred. Aircraft takeoff from TAXIWAY W.	Human Factors	Yes NOTAM- 2014-October 10006, 10012, 10013, 10016, 10017, 10019
114 RSAP	11- 2014	D	VMC Daylight	Personal/ General Aviation	Taxiway V	C172 contacted Ground Control for approval to taxi. Ground Control queried the pilot on what his intentions were and then instructed the pilot to contact Clearance Delivery. After receiving a VFR clearance without re-contacting Ground Control the C172 entered TAXIWAY V without clearance. No conflicts occurred.	Human Factors	No
115 ASRS	11- 2014	B	Daylight	Air Carrier	Not specific	B737 was cleared for takeoff and had accelerated to approximate taxi speed when they heard the tower clear another aircraft to cross the same runway. Takeoff was discontinued as the other aircraft had just begun to cross at the far end of the runway after landing on the parallel runway.	Procedure, Human Factors	No
116 ASRS & RSAP	12- 2014	C	Daylight	Corporate	Runway 12L at Taxiway L	C560 (maintenance taxi) was instructed by Local Control to cross RUNWAY 12R at TAXIWAY L and hold between the RUNWAY 12R and RUNWAY 12L to conduct run-up. Read back was correct. The C560 crossed the RUNWAY 12L hold bars with a B737 in position and cleared for takeoff on RUNWAY 12L. Takeoff clearance for the B737 was cancelled prior to start of takeoff roll.	Procedure, Human Factors	No
117 ASRS	01- 2015	D	VMC Daylight	Personal/ General Aviation	FBO Ramp to Runway 30L	A pilot did not comply with taxi instructions at SJ. He interpreted "Victor, Delta, Charley, and Bravo to 30L", as meaning "Pass Delta to Charley the way we always used to go." Ground Control called and asked why he did not follow his directions. Contributing factor	Human Factors	Yes NOTAM- 2015-01-

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						was that charts still showed RUNWAY 11/29 in existence at the time despite the runway being closed. Deviation from Tower taxi instructions.		January 01207
118 RWS	02- 2015	C	VMC Daylight	Personal/ General Aviation	Runway 30R vicinity of TXY D	SR22 was cleared to land Runway 30L. Read back was correct. SR22 landed Runway 30R. SWA383/B737 was within a mile final to Runway 30R was changed to Runway 30L and landed Runway 30L without incident. Wrong runway landing.	Human Factors	Yes NOTAM- 2015-02 February 02018
119 RSAP	08- 2015	D	VMC Daylight	Personal/ General Aviation	Taxiway B between Runway 30R and 30L	A BE36 was cleared for takeoff on RUNWAY 30L at TAXIWAY B, but then stated that they needed to exit the runway. The BE36 entered TAXIWAY B between RUNWAY 30L and RUNWAY 30R, which was closed for construction (TAXIWAY B). No conflicts occurred.	Human Factors	Yes NOTAM- 2015-08 August 08027, 08028
120 RSAP	10- 2015	D	VMC Daylight	Personal/ General Aviation	Taxiway D at Runway 30R	A C195 was instructed to taxi to RUNWAY 30R via TAXIWAY D and cross RUNWAY 30L. Instructions were read-back correctly. C195 crossed the RUNWAY 30R hold bars at TAXIWAY D with a B737 holding in position on RUNWAY 30R waiting for takeoff clearance. No conflict occurred.	Human Factors	Yes NOTAM- 2015-10 October 10001, 10002, 10077, 10084
121 RSAP	01- 2016	D	VMC Daylight	Vehicle/ Pedestrian	Taxiway V	An unauthorized pedestrian entered the movement area on TAXIWAY V abeam the Signature Ramp, while assisting a helicopter departing from the ramp. Rotor-wash from the helicopter departure blew debris onto TAXIWAY V and the pedestrian ran onto the taxiway to retrieve the debris. No conflict occurred.	Human Factors	Yes NOTAM- 2016-01 January 01008, 01014
122 ASRS	03- 2016	D	VMC Daylight	Personal/ General Aviation	Taxiway B at Runway 30L	A C206 called ATC indicating they were ready to depart at RUNWAY 30L. After a short delay for traffic, Local Control instructed the aircraft "RUNWAY 30L, intersection BRAVO, line up and wait." Pilot read-back was correct, however the C206 taxied onto RUNWAY 30L and departed without clearance. No conflicts occurred.	Human Factors	Yes NOTAM- 2016-03 March – 03049, 03071, 03074, 03086,
123 RWS	04- 2016	D	VMC Daylight	Corporate	Runway 30L at Taxiway B	Local Control instructed a LJ35 to line up and wait on Runway 30L at Taxiway Bravo. Read back was correct. LJ35 departed without a clearance. No conflicts.	Human Factors	Yes NOTAM- 2016-04 April 04031, 04032, 04033, 04034,

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								04038, 04044, 04055, 04068,
124 RWS	05- 2016	C	VMC Daylight	Air Carrier	Runway 30R and Taxiway J	A/C 1 a B737 landed Runway 30L and exited at the intersection of Juliet and crossed the Runway 30R hold bars before coming to a stop. A/C 2 a B738 was on departure roll on runway 30R. Local Control instructed the B738 to abort. Separation was lost when the B737 crossed the Runway 30R hold bars. Closest proximity approximately 4600 feet lateral. The B738 exited Runway 30R at intersection Hotel prior to Intersection Juliet.	Human Factors	Yes NOTAM- 2016-05 May 05012, 05027
125 RWS	09- 2016	D	VMC Daylight	Personal/ General Aviation	Runway 30L vicinity of TXY D	A/C 1 was cleared to land on Runway 30R. Pilot read back was correct. A/C 1 landed on runway 30L. No conflicts. Not a hot spot event. Wrong Runway Landing/Runway Confusion. Wrong runway landing.	Human Factors	No
126 ASRS	11- 2016	C		Personal/ General Aviation	Runway 30L vicinity of TXY D	A Beechcraft Bonanza as performing pattern work and was on a right base, when asked if he had a visual of a Citation departing Runway 30L, Bonanza acknowledged, Bonanza was then cleared to land Runway 30L and Bonanza read-back instructions correctly. United B767 was told to line up and wait Runway 30R and they read back their instructions correctly. As the B767 was turning north to line up in the middle of the runway, they stopped the aircraft as the Bonanza flew overhead the aircraft and United informed ATCT. While all markings were inspected, and found to be acceptable, the 30R numbers had rubber deposits which could use some cleaning to make them more prominent. Wrong Runway landing.	Human Factors	No

Sources: Accident and Incident Database, Federal Aviation Administration Airport Safety Reporting System Database, National Aeronautics and Space Administration, Local-Runway Safety Action Plan Report, May 31, 2016, Federal Aviation Administration, Runway Safety Office Runway Incursion Report (RWS), Federal Aviation Administration, Western Pacific Region

Preliminary Findings

The preceding information provides an overview of a set of incidents and occasional runway incursion events that cover the period from 2000 to present, including an extended period when Runway 11/29 was operational and the seven years that it has been closed. The incident and incursion data will be used as input for the safety risk assessment of baseline conditions and for the identification and prioritization of a range of potential actions to minimize or mitigate the factors that contributed to the events that have occurred. A number of considerations have been anecdotally identified from the incident data listed in **Table 1** and are noted below:

- Between 2000 and the present, the airport has experienced a total of one hundred and twenty-six reported surface incidents and runway incursions with the aviation segments having the greatest contribution to the number of incidents being: General Aviation/Personal, Air Carriers and Corporate Aviation segments.
- The majority of historic incidents have occurred in the southern third of the airfield and these are clustered into three individual concentrations all of which are located from Taxiway D and south. One of these focus areas encompasses both of the designated hotspots.
- Based on the distribution of historic incidents, three primary and two secondary focus areas should be considered for the subsequent analysis and development of potential mitigation actions.
- The results of the overview bear out the basis for designation of the two hotspots on the airport in the immediate vicinity of the former threshold of Runway 29.
- The level of incidents in the vicinity of the two hotspots did not show a significant reduction with the closure of Runway 11/29, which may, based on descriptions, be related to the location and configuration of the run-up apron at the intersection of Taxiway D and Taxiway W.
- Time of day and weather conditions do not appear (based on the data) to have a significant contributory factor to the number of incidents and incursions at SJC as most have occurred in daily hours and when visibility was good.
- The large majority of the noted incidents are attributed to human factors as the main contributor. Attaining a better understanding of the specific aspects of human factors through discussion with members of the TWG relative to cockpit activities during ground movements, and the ATCT relative to communication procedures and airfield utilization.
- A total of twelve pedestrian or vehicle incidents were contained in the available databases for the historic period identified.

- It needs to be remembered that not all incidents are reported and FAA reported data is anticipated to represent only a portion of the actual number of incidents that occur on an annual basis.

Figure 1



SJC Incursion Incident Map

2000 - Present

Figure 2



Figure 3



LEGEND

- Air Carrier
- Personal-General Aviation
- Corporate
- Air Taxi/Commuter
- Procedural
- Pedestrian/Vehicle

SJC Incursion Incident Map
2010 - Present