



Summer/Winter Maintenance Plan

Red Deer Regional Airport
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Original: 2016-08

Amendment 7: 2025-07-31

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2.0 PHONE LIST

Administration.....	403-886-4388
Director, Airport Operations.....	403-318-7842

3.0 INTRODUCTION

The following standards and procedures were used, in conjunction with historic experience at Red Deer Regional Airport to develop this plan.

- TP312: Aerodrome Standards and Recommended Practices, Versions 4 and 5

The above will be referred to in the Airport Operations Manual (AOM).

Red Deer Regional Airport is owned and operated by Red Deer Regional Airport Authority and is located nine kilometers southwest of Red Deer. The airport has two runways, six active aprons and six taxiways.

Red Deer Regional Airport Authority, as an airport operator, has an obligation to keep the airport safe and operational to the maximum extent practical and to preserve its capital investment with effective maintenance given resources.

4.0 SUMMER MAINTENANCE

Summer priorities include the following.

A. Airside

- Crack sealing
- Line painting
- Grass cutting
- Tree trimming
- Storm water management

B. Groundside

- Street sweeping
- Crack sealing
- Line painting
- Grass cutting

5.0 ACTIVITIES

5.1 Pre-Event/Season Actions

Prior to the winter season the Canadian NOTAM Procedures Manual is reviewed. Any significant change constitutes a meeting between Air Traffic Control (ATC) and Airport Operations to discuss changes and procedures. All members of the Red Deer Regional Airport will be encouraged to provide feedback to airport management before, during or following each snow event.

5.2 Training

All Operations staff shall receive annual training in the equipment and procedures required to complete their assigned duties and tasks, including the contents of this Maintenance Plan.

Any staff assigned supervisory duties shall also receive annual training in the equipment and procedures required, including the contents of this Maintenance Plan.

All training will include both theory and practical components. A competency assessment will be completed, with records being maintained in Vortex as per the Records Management Policy.

5.3 Post-Event/Season

Toobox meetings will include a review of any snow season issues and recommendations for changes. The same topics as pre-season should be reviewed.

6.0 IMPLEMENTATION

6.1 Purpose

This plan is established for snow and ice removal procedures and is designed to maintain operational capabilities and provide a higher level of safety for the traveling public and tenants at the Red Deer Regional Airport during winter conditions.

6.2 Conditions for Execution

This plan will be executed whenever the potential or accumulation of snow/ice impacts the Airport's operational capabilities or the safety of the traveling public and its tenants.

7.0 DECLARED DISTANCES

The following is a chart of Declared Distances. These are the distances available for an airplane's takeoff run, takeoff distance, accelerate-stop distance, and landing distance requirements. These distances may be used in conjunction with aircraft design limits and operating manuals of airline companies and pilots to compute takeoff and stopping distances of aircraft at Red Deer Airport.

Runways at Red Deer Airport

Runway	
12/30	3,454 ft. x 100 ft. (1,053 m x 30 m) – paved – lighted
17/35	7,500 ft. X 150 ft. (2,286m x 46m) – paved – lighted

Declared Runway Distances

Runway	TORA	TODA	ASDA	LDA
17	7500' (2286m)	8484' (2585m)	7500' (2286m)	7500' (2286m)
35	7500' (2286m)	8484' (2585m)	7500' (2286m)	7500' (2286m)
12	3454' (1053m)	3897' (1188m)	3454' (1053m)	3454' (1053m)
30	3454' (1053m)	3454' (1053m)	3454' (1053m)	3454' (1053m)

8.0 CLIMATE STATISTICS

Red Deer enjoys a moderate climate with warm summers and blue-sky winters.

Warmest Month: July has an average high of 23°C and an average low of 10°C.	July
Coldest Month: January has an average high of -5°C and average low of -15°C.	January
Average Annual Precipitation - 2015:	449.05 mm
Average Annual Precipitation - 2021:	277.9 mm
Number of Days with Snow:	80
Number of Days with Rain:	96
Average Wind Speed:	13.8 km/hour
Sunshine Average Per Day:	16.7 hours

9.0 LIGHTING, MARKINGS, SIGNAGE, AND NAVAIDS

Keeping signs, markings, and lighting clear is critical for safe operations at an airport. TP312 standards state that all lights must be clear of snow. Lights should be kept free of ice as well or they may freeze solid. NAVAIDs and light couplings must be checked after plowing to ensure that they were not damaged and are operating correctly. The windsock is another important tool for pilots. Its condition should therefore be checked frequently by airport maintenance staff. The airport operator must take overall responsibility for the windsock condition and ensure that it is lighted. As per Transport Canada standards, an airport with three burned-out runway or taxiway lights in a row must issue a NOTAM; for Red Deer Regional Airport, two (2) edge lights in a row being unserviceable will trigger a NOTAM being issued.

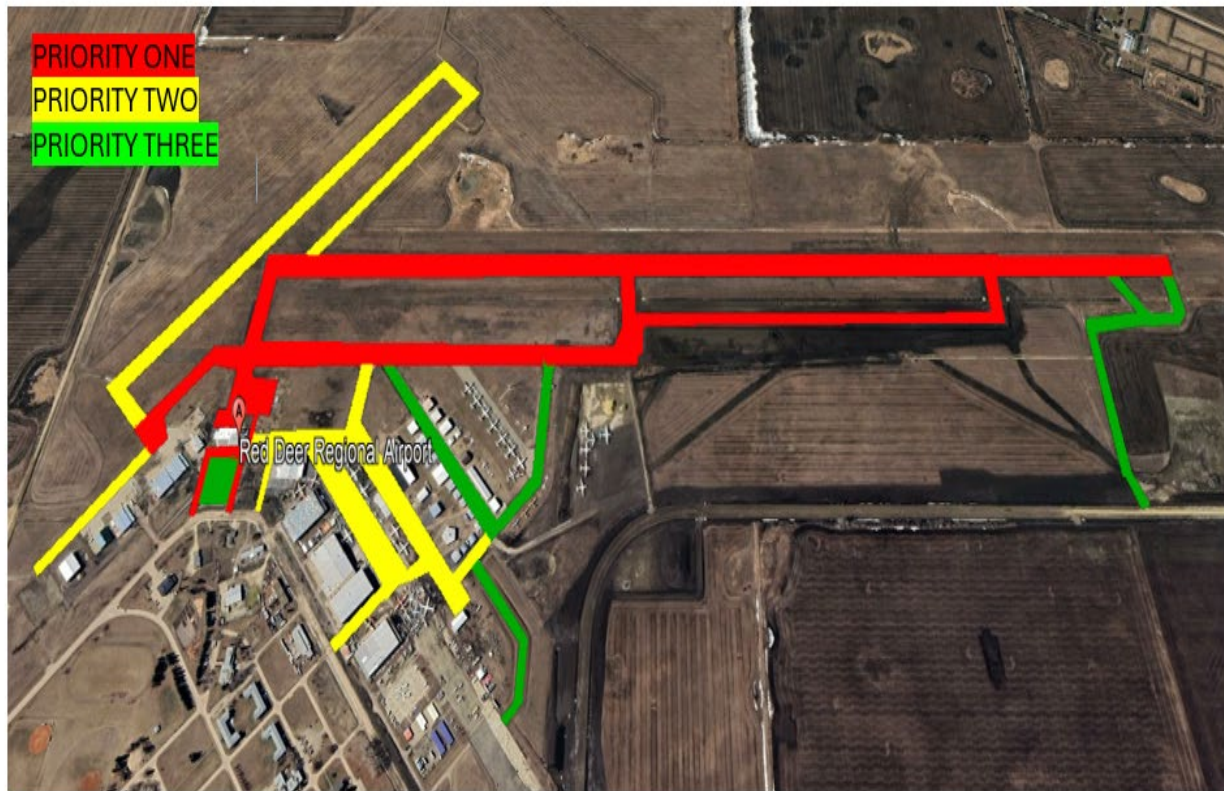
10.0 WINTER MAINTENANCE PRIORITIES

Priorities may be adjusted based on airport activity at the time. All maintenance to coincide with operational hours unless prior approval received.

AIRSIDE - PRIORITY 1	GROUND SIDE - PRIORITY 1
Runway 17/35 (cleared and removal of any windrows) Taxiway Bravo and Charlie (cleared and removal of any windrows) 100% of Apron I Airside sidewalks and doorways	Main access roads Entrances and exits to parking areas
AIRSIDE - PRIORITY 2	GROUND SIDE - PRIORITY 2
Taxiway Golf, Kilo, Delta, and Alpha (cleared and removal of any windrows) Aprons and hold bays Secondary Runway 12/30 (cleared and removal of any windrows) Taxiway Delta (cleared and removal of any windrows) All other areas to be determined by the Director, Airport Operations	Remaining access roads Water hydrants Airport Administration building sidewalk and parking lot
AIRSIDE - PRIORITY 3	GROUND SIDE - PRIORITY 3
All remaining taxiways and aprons Catch basins during a quick thaw GA Aircraft parking areas Private aprons on a cost recovery basis	All other roads and parking areas Catch basins during a quick thaw Private business areas on a cost recovery basis
AIRSIDE - PRIORITY 4	GROUND SIDE - PRIORITY 4
Pre-threshold areas Navigational aid sites as required Air side service roads Edge lights, remainder of taxiway, apron areas	Any area where excessive snow must be removed to another location

Typically plow truck 88/sweeper 188 plows and sweeps all maneuvering areas while loader 77 plows all aprons. Apron I, II, and VIII will be swept afterwards by plow truck 88/sweeper 188. Everything else airside and groundside is cleaned with loader 77 and skid steer 153.

11.0 SNOW REMOVAL PRIORITY MAP



12.0 AIRPORT TENANT RESPONSIBILITIES

It is the responsibility of all tenants at the airport to maintain and care for their occupancy as prescribed in their lease and adhere to all Canadian Aviation Regulations (CARs) airside.

NOTE: If snow removal is necessary and is not a priority, charges will apply.

Fee	Rate
After Hour Call-Out (snow removal)	Actual Costs
Snow Removal During Operating Hours (Non-Priority)	Call for costs. Different equipment has different per hour costs. – time permitting

Snow removal will be done on a Priority Area Basis unless prior arrangements have been made with Red Deer Regional Airport Authority.

13.0 AIRPORT OPERATIONS RESPONSIBILITIES

The Director, Airport Operations or his designated representative is responsible for the following.

- Determining when snow removal operations shall begin based upon evaluation of present and forecast weather conditions.
- Notifying ATC prior to commencing snow removal operations.
- During snow and/or ice storms, maintaining a continual check of runway conditions for depth of snow, ice, slush, and braking conditions.
- Disseminating airport information by informing ATC and issuing a NOTAM which is then distributed on AFTN.
- Updated NOTAMs published should include runway surface conditions to alert pilots that the runway conditions may have changed since the last report.
- NOTAMs are automatically cancelled with a new report, 24 hours after the last report, or outside of published hours.

14.0 WINTER MAINTENANCE STANDARDS

14.1 Air Side

Runways, taxiways, and aprons must be cleared so that aircraft can land, taxi and park safely. This means that the pavement is cleared of lumps of snow, chunks of ice and other foreign objects. The airside must also be kept free of high windrows, with all slopes maintained at the appropriate angles. Airport maintenance personnel will strive to keep paved areas to bare and dry surface condition.

The allowable snow accumulation for airside priority areas are as follows:

- PRIORITY 1 areas: 2.50 cm. (1 in.)
- PRIORITY 2 areas: 5.00 cm. (2 in.)
- PRIORITY 3 areas: snowstorm accumulation

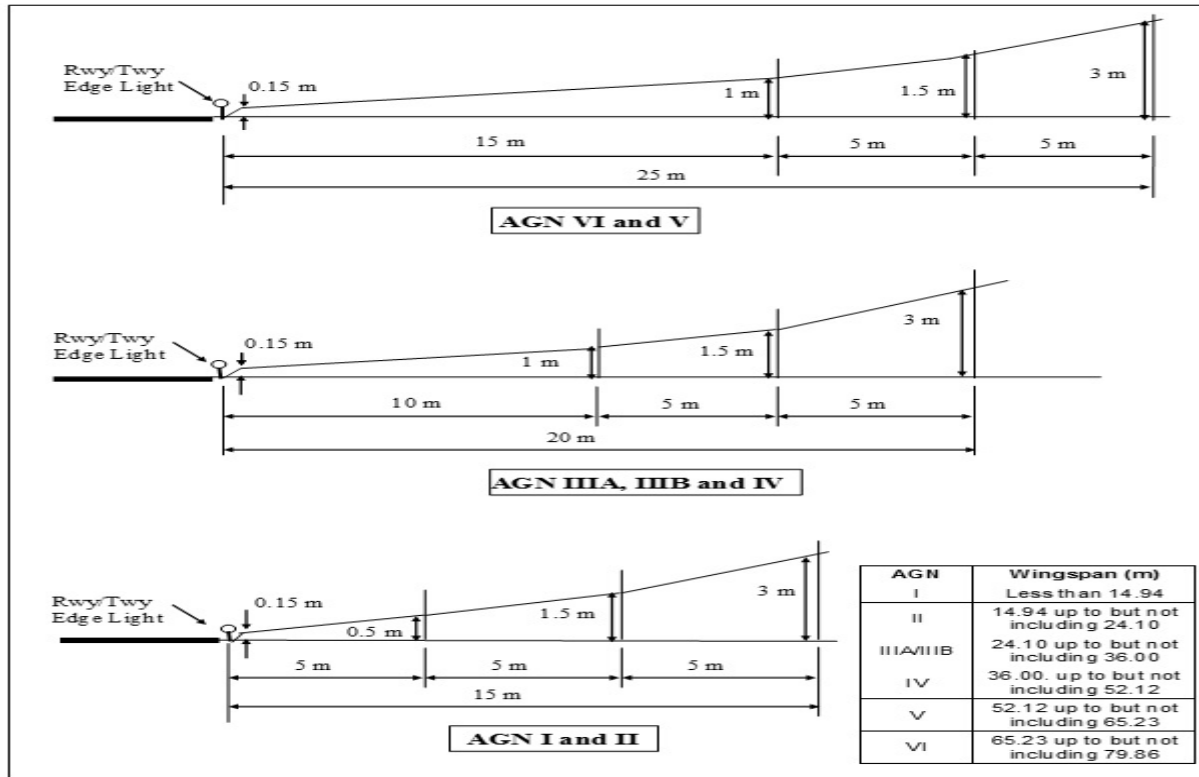
Note: Priorities may be adjusted based on airport activity at the time.

Snow should be removed from behind the runway and taxiway edge lights when it accumulates to the bottom of the light lens to ensure adequate clearance for aircraft operation.

- MINIMUM WIDTH: 7.5 m. (25 ft.) - 0% slope
: In excess of 7.5 m. - 10% slope

The minimum clearance maintained is approximately 1 pass with the plow truck and 1 pass with the blower to remove the windrow.

Snow should be removed from the pre threshold areas at the end of the runways. This is done when snow is cleared behind the edge lights. The permissible slope of snow accumulation is 1.25%.



14.2 Ground Side

The allowable snow accumulation for groundside priority areas are as follows:

- PRIORITY 1 areas: 5 cm. (2 in.)
- PRIORITY 2 areas: 5 cm. (2 in.)
- PRIORITY 3 areas: 10 cm. (4 in.)
- PRIORITY 4 areas: 10 cm. (4 in.)
- Sidewalks and doorways are clear of snow and ice

Note: Priorities may be adjusted based on airport activity at the time. All maintenance to coincide with operational hours unless prior approval received.

15.0 WINTER MAINTENANCE OPERATIONS TIPS

1. When back cutting edge lights, do not cut so close that the light could be struck from tire sliding or minor mistakes. If you damage any lights make sure you report it on Vortex and fix it personally or have someone else schedule to fix it as soon as possible.
2. When plowing a windrow for the snow blower, maintain a minimum distance of three feet from the runway edge on the paved surface.
3. When blowing windrows on airside or groundside make sure to avoid damaging signs, trees, buildings, and other structures.
4. When clearing snow from non-paved surfaces keep your blade a few inches off the ground to avoid turf damage. As the winter goes on a hard packed snow base will form.
5. Always check your wind direction before beginning snow removal to determine what method or direction you will utilize.
6. When called out on weekends for snow removal ONLY PRIORITY 1 areas are to be maintained to the desired surface condition. Priority 2, 3 and groundside areas will be maintained on a request-by-carrier basis only.
7. All windrows MUST be removed from runways and taxiways before departing at night.
8. All vehicles must be inspected daily before operating and MUST be refueled at the end of your shift or when operation is complete. Do not leave a piece of equipment for someone else to fuel up. If there is any damage or equipment problems, especially when on night shift, make sure it is written on the board. This is very important to note a vehicle at is unserviceable.
9. Windrows by PAPIs will be blown with caution. The snow blower chute will be at maximum height to dissipate the snow and blow it past the end PAPI. Anything that falls on the PAPIs will be minimal.

16.0 AIRCRAFT MOVEMENT SURFACE CONDITION REPORTING

Airport operators providing winter maintenance at their sites are responsible for the provision of timely and accurate runway condition reports. This requires staff to be trained in the use of equipment, the procedures to take observations, and the process used for the dissemination of information.

16.1 Background

Occurrences associated with runway condition reporting and concerns expressed by some aerodrome operators prompted a review of the existing Aircraft Movement Surface Condition Report (AMSCR) program which has identified a lack of understanding concerning the program reporting elements. That review concluded there is a need to consolidate the availability of related information through the provision of an Aerodrome Safety Information Circular to provide one collective reference.

During the winter season, the aircraft movement surfaces are to be inspected and an aircraft movement surface condition report provided with a minimum frequency as follows:

- every time there is a significant change in runway surface conditions,
- at least once every eight-hour shift, during published hours,
- every time the runway is swept following anti-icing, de-icing, or sanding,
- every time the runway is cleared of snow,
- following every aircraft incident or accident on a runway,
- when the runway is not cleared to full width.

The use of friction measuring instruments to provide a CRFI is restricted to the following surface conditions.

- Ice on runway
- Wet ice on runway surface (ice covered with water)
- Compacted snow on runway surface
- Slush on ice
- Loose snow on runway surface, not exceeding 2.5cm (1") in depth
- Anti-icing solution on ice

No friction readings with decelerometer are to be included in the Aircraft Movement Surface Condition report when the following conditions exist.

- Wet runway surface (water)
- Slush or wet snow on runway surface
- Loose snow on runway exceeding 2.5cm (1") in depth

Staff 25 is equipped with the TES Mk. 3 ED friction-measuring device and TRACR program, Staff 23 can be equipped with the back-up friction-measuring device for manual CRFI entries into the TRACR program.

16.2 References

- Aerodrome Standards TP 312 (5th Edition)
- Canadian NOTAMJ Procedures Manual
- CAR 302 Division IV
- ATC MANOPS
- A.I.M. TP14371

17.0 ICE CONTROL MATERIALS

Winter conditions often leave pavement surfaces icy. The intent is to keep Priority One Airside surfaces cleaned to a bare and dry pavement. Several different airport-safe-products are used as anti-icing and de-icing agents on aircraft movement surfaces because they do not corrode aircraft parts. Winter materials are spread by a hopper mounted in the box of a gravel truck, or a tow-behind spreader propelling the material from the rear of the machine.

17.1 Liquid De-icer

Transport Canada approved liquid potassium acetate, applied with an agricultural sprayer, sprayed at 20 ft. spray pattern.

17.2 Sodium Formate Solid Runway De-icer

Airside solid de-icer that meets or exceeds the strict requirements of AMS 1431E.

17.3 Freezing Rain

Anti-icer is to be applied, when necessary, before a freezing rainstorm. If the freezing rain has already covered the pavement, anti-icers will be applied unless the weather will clear up the ice before any traffic. The centre 60 feet is the critical area of concern. When using solid de-icer, driving over it with a vehicle tires and plow blade will speed up the reaction time of the product. If aircraft are arriving before the solid de-icer has had time to work, sand may have to be applied to increase friction. Ensure you are aware of the temperature before applying any ice control materials. If temperature is too low, prepare windrows along runway edge and prior to rain beginning use the blower to blow snow onto runway. Refer to Airport Operations Training Module(s) on Winter Ice Control Materials for further information.

18.0 OTHER PRECAUTIONS AND GENERAL INFORMATION

- All equipment to be operated at a safe speed, in accordance with the Manufacturer's Operating Manual. The recommended truck/sweeper speed is 30 kph.
- Record all ice control materials used.
- A runway surface condition report **MUST** be filed at the beginning of each day.
- Aircraft always have the right of way over maintenance vehicles.

19.0 CALL OUT CRITERIA AND PROCEDURES

During weekends and on designated holidays airfield maintenance is covered by a standby schedule. The operators on standby will respond to work when notified by the Director, Airport Operations.

Due to Red Deer Regional Airport being a medium sized site, it may be required in severe storm situations to have all airport staff involved in snow removal to help keep the site in a safe operating condition.

Any facility failures that require immediate emergency attention will be reported to the Director, Airport Operations or Standby Designate.

20.0 EQUIPMENT LIST

Definition: “Airport Equipment List” - is specialized equipment used at Red Deer Regional Airport to remove contaminants such as snow, slush and ice in order to maintain runways, aprons, taxiways and parking lots in a safe operating condition for all airport users.

STAFF 21 PICK-UP TRUCK (RAM 2500)

STAFF 22 SUV (Dodge Durango) –This unit is used for various jobs on groundside and airside.

STAFF 23 PICK-UP TRUCK (RAM 1500) – Back-up runway friction measuring vehicle. Also used to tow liquid spreader.

STAFF 24 PICK-UP TRUCK (Sierra 1500) – This unit is used for various jobs on groundside and airside.

STAFF 25 PICK-UP TRUCK (Ram 1500) – Primary runway inspection vehicle and mobile command vehicle.

LOADER 77 Front End Loader (Volvo L110) – This vehicle is used for snow removal purposes in many areas such as aprons, taxiways, parking lots, gate entrances, close to buildings and in an emergency can be used to tow a runway sweeper. It is equipped with a quick change on the front of the machine and can be used with a variety of attachments, including a front mount back-up runway sweeper. This vehicle is parked inside the maintenance garage during the winter.

TRUCK 84 Rough Terrain Vehicle (Kubota RTV 900) – Off road utility vehicle.

TRUCK 85 Utility Truck (Ram 4500) - This vehicle is used to tow various pieces of equipment such as the urea/sand spreader and back-up front mount plow.

TRUCK 88 PLOW TRUCK (IHC Work Star) - This vehicle is a primary plow truck with a front attachment of a 19-foot plow and rear attachment of a towed runway sweeper. Its main purpose is snow removal from the runways and taxiways. It is parked inside the maintenance garage during the winter with a load of gravel in the truck box for traction.

SWEEPER 188 TOWED RUNWAY SWEEPER (MB Broom) - This unit is the primary runway sweeper and is towed behind a plow truck to remove snow, frost, sand or water from paved runways and taxiways. The broom pattern should be set at 2 to 4 inches to achieve maximum life of the bristles. It is parked inside the maintenance garage during the winter.

BLOWER 128 SNOWBLOWER (Larue T45) - This vehicle is the primary snow blower and is used in removing windrows from runways, taxiways and outside the runway lights. It is to be used on paved surfaces ONLY except outside the runway edge lights and on the approaches. It is parked inside the maintenance garage in the winter.

TRACTOR 151 (New Holland) – This unit is primarily used for cutting grass.

TRACTOR 153 (JD Skid Steer) - This vehicle is used for snow removal purposes in many areas such as parking lots, gate entrances, close to buildings. It is equipped with a quick change on the front of the machine and can be used with a variety of attachments. This vehicle is parked inside the maintenance garage during the winter.

UREA/SAND SPREADER (Salt Dog) - This unit is a spreader used to apply granular products or sand to the runway surface in the event of freezing rain. This unit is mounted on Truck 85 and stored in the maintenance garage.

LIQUID SPREADER (AES Product) - This unit is used in the application of liquid de-icer to remove compacted snow, ice and frost from paved runways and taxiways. It can be towed behind various pieces of equipment and is parked inside the maintenance garage during the winter.

21.0 AIRCRAFT DE-ICING AND ANTI-ICING

There are strict regulations in Canada governing the removal of ice, frost, and snow (de-icing) and preventing their accumulation on aircraft (anti-icing) prior to take-off. The Canadian Aviation Regulations prohibit persons from conducting or attempting to conduct a take-off of an aircraft that has frost, ice or snow adhering to any of its critical surfaces such as wings and propellers. De-icing and anti-icing is done by a third party; contact Tucana at 403-596-6320.

22.0 SUMMARY

This manual is only a brief outline of the more important factors regarding snow removal at the airport. If you as an operator are unsure of your duties, or the procedure required, ask your supervisor. Do not proceed unless you are sure of what to do.