

GENERAL INSTRUCTION MANUALG. I. Number **7.027** Approved

ISSUING ORG. *TRANSPORTATION & EQUIPMENT SERVICES DEPARTMENT

ISSUE DATE
07/03/2011REPLACES
07/15/2008SUBJECT CRANE SUSPENDED PERSONNEL PLATFORM (MANBASKET)
OPERATIONSAPPROVAL
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1 OF 9**1.0 PURPOSE**

This General Instruction (GI):

- 1.1 Specifies the methods, procedures, and responsibilities for all personnel involved in the use and operation of onshore crane suspended personnel platforms (manbaskets) for work or transportation.
- 1.2 Identifies when a crane suspended personnel platform (manbasket) shall be used.
- 1.3 Identifies procedures required for lifting personnel in crane suspended personnel platforms (manbaskets) attached to the hook block of cranes.
- 1.4 Identifies the USER responsibilities when making crane suspended personnel platform (manbasket) lifts.
- 1.5 Improves Saudi Aramco and contractor safety performance when lifting personnel in crane suspended personnel platforms (manbaskets).

NOTE #1: For the purposes of this GI, crane suspended personnel platforms (manbaskets) shall be referred to as "manbaskets".

NOTE #2: Personnel platforms (manbaskets) shall only be suspended from mobile cranes (See Paragraph 4.4 for CRANE [MOBILE] definition).

NOTE #3: Work from, or transport by, crane suspended personnel platforms (manbaskets) shall only be allowed when conventional means of performing the work or reaching the worksite (such as personnel hoist, ladder, stairway, aerial lift, elevating work platform, or scaffold) would be more hazardous, or is not practical, because of structural design or worksite conditions.

2.0 REFERENCES

It shall be the responsibility of Saudi Aramco USERS and contractors to be familiar with the current version of the publications referenced below.

ASME: American Society of Mechanical Engineers

CFR: Code of Federal Regulations, U.S.A.

STD DRWGS: (Saudi Aramco) Standard Drawings

- A) ASME B30.5 Mobile and Locomotive Cranes
- B) ASME B30.23 Personnel Lifting Systems
- C) 29 CFR, Subpart N – Cranes, Derricks, Hoists, Elevators, and Conveyors
Part 1926
- D) GI 2.100 Work Permit System
- E) GI 2.702 Moving Drilling Rigs, High Clearance Equipment/Loads, or Operating Cranes Under or Near Power-Lines
- F) GI 7.024 Marine and Offshore Crane, Hoist and Rigging Operations
- G) GI 7.025 Heavy Equipment Operator Testing and Certification
- H) GI 7.026 Cranes and Heavy Equipment Accident Reporting Procedures
- I) GI 7.028 Crane Lifts: Types and Procedures
- J) GI 7.029 Rigging Hardware Requirements
- K) GI 7.030 Inspection and Testing Requirements for Elevating/Lifting Equipment
- L) GI 8.001 Safety Requirements for Scaffolds

* CHANGE

** ADDITION

NEW INSTRUCTION ☐COMPLETE REVISION ☐

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- M) STD DRWGS Round Man Basket 500 kg Capacity Details (sheets 001 & 002)
#AA-036970
- N) STD DRWGS Square Man Basket 500 kg Capacity Details (sheets 001 & 002)
#AA-036971
- O) IPT's Crane and Rigging Handbook
- P) W.G. (Bill) Newberry's Handbook for Riggers

3.0 SCOPE

This GI covers crane suspended personnel platform (manbasket) operations used or operated onshore within Saudi Aramco facilities, on Saudi Aramco jobsites outside of operating facilities, off Saudi Aramco property under a Saudi Aramco contract, and in applicable Saudi Aramco domestic joint venture companies. It also covers all Saudi Aramco and contractor personnel.

4.0 DEFINITIONS

- 4.1 AIR TUGGER – An air-operated hoisting winch used extensively on a drilling rig floor for rigging, hoisting personnel into the derrick, etc.
- 4.2 CERTIFIED INSPECTOR – A person certified by the Saudi Aramco Inspection Department to perform inspections and certifications on elevating/lifting equipment (For additional information, refer to Inspection Department definition in GI 7.030).
- 4.3 CRANE (MOBILE) – A crane consisting of a rotating superstructure with a power plant, operating machinery, and boom, mounted on a base and equipped with crawler treads for travel or mounted on a crane carrier equipped with axles and rubber-tired wheels for travel.
- 4.4 CRANE OPERATOR – A person certified by Saudi Aramco as being qualified to operate a specific model and capacity of crane; may also receive additional certifications for crane attachments, tandem lifts, pick and carry operations, and manbaskets.
- 4.5 CRITICAL LIFT PLAN - A document (SA 9644) that identifies a specific load and the operating restrictions. Pertinent information includes all weights on hook blocks and attachments (Refer to GI 7.028 for additional information).
- 4.6 ORIGINATOR - The person who fills out the Critical Lift Plan form, prior to review and approval by a Rigger-I. Only a Rigger-I or Rigger-II can be the originator.
- 4.7 RIGGER – A person certified by Saudi Aramco to prepare a load for lifting. Saudi Aramco rigger categories are Rigger-I, II, and III (Refer to GI 7.028 for more information).
- 4.8 SUSPENDED PERSONNEL PLATFORM (MANBASKET) - A device designed and constructed to be attached to the hook block of a crane to lift personnel in a safe manner.
- 4.9 USER – The Saudi Aramco proponent department or other organization authorized to act on behalf of the Saudi Aramco proponent department.
- 4.10 USER SUPERVISOR – The person, representing the USER, with the responsibility for the operation.

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3 OF 9**5.0 RESPONSIBILITIES**

5.1 The manbasket shall be inspected and certified by a certified inspector (See Paragraph 4.2; also refer to GI 7.030), when dedicated rigging has changed, or as determined by the Inspection Department (Refer to GI 7.030). All rigging hardware shall be compatible to, or exceed, specifications in ASME B30.5 and ASME B30.23. Rejected manbaskets shall be tagged with a red "Rejected" sticker.

5.2 The USER shall perform a proof-load test of 200% of the rated capacity at each renewal of the inspection sticker. This shall be done by floating the crane suspended manbasket and test weight approximately 31 cm (12 inches) from the ground for five (5) minutes. A certified inspector shall witness the proof-load test and inspect the physical condition of the manbasket. After completion of a successful proof-load test and inspection, a certified inspector shall attach a safety inspection sticker to the manbasket.

* 5.3 Saudi Aramco USER departments, with no in-house capability to safely perform manbasket operations, shall contact the Transportation & Equipment Services Department (T&ESD) for assistance.

NOTE #4: T&ESD shall provide only technical clarification on issues related to manbaskets.

5.4 Saudi Aramco USER departments shall become familiar with the crane manufacturer's recommendations, operating instructions, and restrictions related to manbasket operations.

5.5 The Crane Suspended Personnel Platform (Manbasket) Permit (SA 9648) [See Attachment #1] shall be prepared by a Rigger-I or Rigger-II with the assistance of the crane operator. After completion, the crane operator and USER supervisor shall sign the Crane Suspended Personnel Platform (Manbasket) Permit before the Rigger-I gives final signature verification.

5.6 The Rigger-I or Rigger-II shall be physically present and in charge of the operation. He shall be responsible for explaining the duties of all involved personnel during the mandatory pre-lift safety meeting. The USER supervisor shall be available at the job site.

5.7 Prior to the actual lift, the Rigger-I or Rigger-II in charge of the lift shall make a trial lift to ensure the crane is positioned properly to avoid excessive up and down boom movement (and telescoping of intermediate boom sections with hydraulic cranes) and to verify proper rigging. The trial lift shall start at ground level, or at the location where employees will enter the manbasket, and proceed to each location where the manbasket is to be hoisted and positioned. The trial lift shall be performed immediately prior to placing personnel in the manbasket. Any repositioning of the crane shall require a new trial lift.

6.0 GENERAL

6.1 Manbaskets shall have a safe working capacity based on a minimum design safety factor of 5:1.

6.2 Factory manufactured manbaskets shall meet all applicable Saudi Aramco and/or ASME fabrication specifications/requirements. The USER may also be required to submit additional fabrication design information to the Consulting Services Department (CSD) for review and concurrence, prior to certification by a certified inspector (Refer to Saudi Aramco Standard Drawings for additional information). A proof-load test certificate shall be provided to a certified inspector at the time of the initial certification inspection.

6.3 In-house manufactured manbaskets shall meet Saudi Aramco fabrication specifications/requirements. The USER may also be required to submit additional fabrication design information to CSD for review and concurrence, prior to certification by a certified inspector. If fabrication specifications/requirements conform to Saudi Aramco standard drawings, additional CSD review/approval is not required (Refer to Saudi Aramco Standard Drawings for additional information.).

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At the time of the initial certification inspection, the USER shall provide a certified inspector with verification of compliance with Saudi Aramco approved standard drawings by providing the written proof-load test procedures and a proof-load test certificate completed, signed, and stamped by a Saudi Aramco approved third party testing agency.

- 6.4 In-house manufactured manbaskets, built **prior** to January 1, 2003, that received CSD approval, shall be limited to the weight restrictions of workers and materials for that manbasket design.

In-house manufactured manbaskets, built **after** January 1, 2003, in accordance with Saudi Aramco approved standard drawings, shall be limited to a maximum personnel capacity of four. Each worker's total weight, including work tools, shall not exceed 136 kgs (300 lbs) or the total capacity of the manbasket.

- 6.5 An identification plate shall be attached to the manbasket and display the following minimum information:

- 6.5.1 Identification Number (ID #)
- 6.5.2 Empty Weight
- 6.5.3 Rated Capacity
- 6.5.4 Maximum Number of Personnel Allowed
- 6.5.5 Date of Manufacture.

- 6.6 An approved Critical Lift Plan (SA 9644) shall be available on site, prior to any manbasket lift. (Refer to GI 7.028, Attachment #1, for a copy of the Saudi Aramco Critical Lift Plan form.)

- 6.7 A Pre-Lift Safety Meeting is mandatory, as required by the Critical Lift Plan form and the Crane Suspended Personnel Platform (Manbasket) Permit.

- 6.8 The crane capacity load chart shall be de-rated fifty percent (50%) when lifting a manbasket.

- 6.9 Each site setup for manbasket operations shall have an approved Crane Suspended Personnel Platform (Manbasket) Permit.

- 6.10 Manbasket lifts shall **not** be performed if:

- 6.10.1 The crane operator is not Saudi Aramco certified for manbasket crane lifts;
- 6.10.2 The crane operator, USER supervisor, and/or rigger does not consider the crane operator to be physically or emotionally fit to perform the operation;
- 6.10.3 The crane operator has been working for more than ten (10) continuous hours prior to the start of the lift or the lift will not be completed before the crane operator has been working for twelve (12) continuous hours;
- 6.10.4 Whenever the crane operator considers that the lift cannot be performed safely, or that the requirements to undertake the lift, as detailed in this GI, have not been followed;
- 6.10.5 The manbasket inspection sticker has expired or the manbasket has a red "Rejected" sticker;
- 6.10.6 Any crane Rated Capacity [load] Limiter (RCL) and anti-two-block device or two-block damage prevention feature for all points of two-blocking (i.e., jibs, extensions, etc.) is not working properly;
- 6.10.7 Any crane safety warning device is not working; and/or
- 6.10.8 The Crane Suspended Personnel Platform (Manbasket) Permit has not been properly completed and approved.

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- 6.11 The crane shall be leveled in accordance with manufacturer's specifications and shall be located on a properly compacted foundation prior to performing the manbasket lift. The USER shall be responsible for determining the soil classes and conducting all soil compaction and tests per Saudi Aramco compaction standards (Refer to GI 7.028 for other crane lift requirements).
- 6.12 All manbasket dedicated rigging hardware, for attachment to the crane hook, shall:
- 6.12.1 Have four (4) swaged (mechanically spliced) wire rope slings of equal length attached to a shackle or approved steel master link, which shall be attached to the crane hook on one end;
 - 6.12.2 Have each of the other ends of the four (4) slings attached to the top of manbasket eyelets with individual shackles and designed with thimbles in each eye;
 - 6.12.3 Have the length of the four (4) slings long enough to permit adequate head room for workmen, while maintaining a minimum sling angle of 45 degrees from the crane hook; and
 - 6.12.4 Have an approved, self-closing safety latch fitted on the crane hook.
- 6.13 Slings designated for manbasket use shall not be used for any other operation/lifting purpose.
- 6.14 Manbaskets shall not be used for any purpose other than lifting personnel and their work tools.
- 6.15 Hoisting of the manbasket shall be performed in a slow, controlled, cautious manner with no sudden movements of the crane or derrick, or the manbasket. Crane operators shall not lift or lower an occupied manbasket at a speed in excess of 30.5 meters/minute (0.5 meters/second - 100 feet/minute.)
- 6.16 Cranes shall not travel with a suspended manbasket occupied.
- 6.17 Free fall devices shall not be used on a friction or hydraulic type crane hoist during suspended manbasket operations.
- 6.18 The crane operator shall not leave the controls at any time while a manbasket is attached to the hook.
- 6.19 Workers shall **only** be permitted to work outside a suspended manbasket when all the following requirements are met:
- 6.19.1 Fall arrest procedures and equipment are approved by the USER and properly utilized;
 - 6.19.2 The manbasket is securely fastened to the structure to prevent movement;
 - 6.19.3 All workers are secured at all times to the manbasket and/or structure by the use of proper fall arrest equipment;
 - 6.19.4 A full-body harness with a double lanyard is used (A full-body harness is a harness which provides full-body support at the shoulders and pelvic girdle. Climbing or seat harnesses and safety belts are not acceptable equipment.);
 - 6.19.5 One (1) lanyard is attached at all times when transitioning from the manbasket to the working point and back;
 - 6.19.6 The second (2nd) lanyard is attached before the first (1st) lanyard is released when moving outside of the manbasket;

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6.19.7 A ground observer is in attendance at all times and a personnel lift (i.e. hydraulic/scissor/telescopic manlift), capable of reaching the height of work, is in the immediate vicinity when workers are working in this manner; and

6.19.8 A rescue plan has been developed and approved by the USER and is in effect prior to beginning the work, if structures limit the ability to place a personnel lift for rescue purposes (As outlined in Paragraph 6.19.7 above).

6.20 Load and boom hoist drum brakes, swing brakes, and locking devices shall be engaged when the occupied manbasket is in a stationary working position.

6.21 Manbaskets shall have overhead protection when there is an overhead hazard. Roofing may be constructed of expanded metal to allow visibility for the workers.

6.22 A designated signalman shall be used at all times during manbasket operations. Only one designated signalman shall give signals to the crane operator.

The type of communication to be used shall be determined prior to the lift by the USER supervisor. He shall also provide a full explanation of hand signals to be used, whether as primary or back-up communication. The designated signalman and crane operator shall verify that they are familiar with the same set of hand signals. The signalman shall wear a bright fluorescent vest for easy identification. Radio communication is preferred, especially in cases where signal relays are required.

If, at any time, the crane operator does not have direct eye contact with the designated signalman, he shall immediately stop the manbasket operation until such time that he can again see the signalman.

6.23 Each worker inside the suspended manbasket shall wear an approved full-body harness and approved safety lanyard attached to designated locations on the manbasket. Fall protection shall allow a maximum free fall of 1.8 meters (6 feet) in the event a manbasket support fails.

6.24 Workers shall keep all parts of the body inside the manbasket during hoisting and lowering operations.

6.25 Suitable knot-free and defect-free tag line(s) shall be attached to the manbasket and controlled at all times, except when their use may create a greater hazard.

6.26 When working less than 1-1/2 fully extended boom lengths from energized power-lines, a designated signalman shall ensure the following minimum distances are maintained:

Line Voltage	Absolute Limit of Approach
Up to 50,000 volts	3.0 meters/10 feet
50,000 to 250,000 volts	6.1 meters/20 feet
Over 250,000 volts	7.6 meters/25 feet

6.27 No work shall be allowed within the minimum distances mentioned in paragraph 6.26 above, unless the power-lines are de-energized and a Critical Lift Plan has been approved (Refer to GI 7.028). Local work permit procedures shall be followed when work is performed within the above-mentioned limits (Refer to GI 2.100). Power Distribution Department concurrence is mandatory on all Critical Lift Plans for work within these minimum distances (Refer to GI 2.702).

6.28 Manbasket crane lifts shall not be performed in wind speeds exceeding 25 km/h (15 mph – 13 knots – 7 meters/second) or manufacturer's specifications, whichever is less.

6.29 Crane hook suspended air tugger operations shall not be permitted onshore.

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- 6.30 The crane shall not be used for other purposes while handling a suspended manbasket.
- 6.31 Lift areas shall be barricaded and secured. Only authorized personnel shall be permitted inside the barricaded area.
- 6.32 When outriggers are used, they shall be extended or deployed according to the crane load rating chart specifications. The crane's tires shall be raised completely off the ground.
- 6.33 Proper grounding shall be performed prior to welding from the manbasket. Suitable electrode holders shall be used to protect workers from contact with any conducting component of the manbasket. The electrode shall be removed from the electrode holder when welding operations are discontinued for any period of time.
- 6.34 Manbasket operations, performed at night, shall require prior written approval from the Facility Manager (Refer to GI 7.028 for other restrictions for nighttime crane lifts).
- 6.35 When a manbasket is used over water and the crane is onshore, workers inside the manbasket shall wear approved life jackets supplied by the USER. The USER shall ensure that all manbasket occupants are trained in swimming survival techniques. Life buoys shall be available at the site of the manbasket lift.

7.0 ATTACHMENTS

Attachment #1 –Crane Suspended Personnel Platform (Manbasket) Permit (SA 9648)

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Recommended by: _____
Manager
Transportation & Equipment Services Department

Concurred by: _____
Manager
Inspection Department

Concurred by: _____
Manager
Loss Prevention Department

Concurred by: _____
Executive Director
Industrial Services

Approved by: _____
Senior Vice President
Operations Services

CRANE SUSPENDED PERSONNEL PLATFORM (MANBASKET) PERMIT

DATE OF PERSONNEL PLATFORM (MANBASKET) LIFT:		FROM (TIME):		TO (TIME):	
CRANE #:		MODEL #:		CRANE CAPACITY:	
TOTAL LOAD WEIGHT (PERSONNEL PLATFORM [MANBASKET], MEN, & TOOLS): lbs/kgs					
SPECIFIC LIFT LOCATION:					
JOB TO BE PERFORMED:					
IS THERE ANY SAFER METHOD OF PERFORMING THIS JOB? YES <input type="checkbox"/> NO <input type="checkbox"/>					
IF THE ANSWER IS "YES", DO NOT PERFORM THE PERSONNEL PLATFORM (MANBASKET) LIFT!!!					
IF THE ANSWER IS "NO", COMPLETE THE FOLLOWING CHECKLIST**:					

	YES	NO
1. Joint site inspection made by the USER supervisor, crane operator, and rigger?	<input type="checkbox"/>	<input type="checkbox"/>
2. Crane and personnel platform (manbasket) have valid inspection stickers?	<input type="checkbox"/>	<input type="checkbox"/>
3. Slings and shackles in good condition and properly marked with their safe working loads (SWLs)? Shackles safety wired or bolted and pinned? Crane hook safety latch working properly?	<input type="checkbox"/>	<input type="checkbox"/>
4. Worker safety lanyards and tag lines properly attached and in good condition?	<input type="checkbox"/>	<input type="checkbox"/>
5. Trial lift performed?	<input type="checkbox"/>	<input type="checkbox"/>
6. Wind speed within the 25 km/h (15 mph – 13 knots – 7 meters/second) mandatory limits or crane manufacturer's recommendations?	<input type="checkbox"/>	<input type="checkbox"/>
7. Anti-two block device or two-block damage prevention feature operational?	<input type="checkbox"/>	<input type="checkbox"/>
8. Crane operator Saudi Aramco certified for personnel platforms (manbaskets) lifts?	<input type="checkbox"/>	<input type="checkbox"/>
9. Methods of communication, including hand signals, have been established?	<input type="checkbox"/>	<input type="checkbox"/>
10. Mandatory Pre-Lift Safety Meeting conducted?	<input type="checkbox"/>	<input type="checkbox"/>
11. Approved Work Permit, if required, issued?	<input type="checkbox"/>	<input type="checkbox"/>
12. Approved Critical Lift Plan on site?	<input type="checkbox"/>	<input type="checkbox"/>
13. All hazards controlled (i.e. power-lines, wind, excavations, etc.)?	<input type="checkbox"/>	<input type="checkbox"/>

****Note: IF ANY "NO" ANSWER IN QUESTIONS 1 - 13 ABOVE, THEN THE PERSONNEL PLATFORM (MANBASKET) LIFT CANNOT PROCEED.**

CRANE OPERATOR	USER SUPERVISOR	RIGGER-I or RIGGER-II
Name _____	Name _____	Name _____
Signature _____	Signature _____	Signature _____
Saudi Aramco Badge # _____	Saudi Aramco Badge # _____	Saudi Aramco Badge # _____
Certificate # _____		Certificate # _____