REPORT ON BREAKDOWN OF MOTORISED WINCH IN DAP TR.B AT THE TIME OF POWER RESUME ON DATED 27.04.2014

IFFCO Paradeep Unit

A committee comprising of following members was nominated by competent authority to investigate the malfunctioning/breakdown of Motorized Winch installed at Granulator floor in DAP Tr.B. at the time of power resume after power failure on 27th April'2014.

1. Mr.Mukesh Kulshrestha — Jt.General Manager (Elect.)
2. Mr.Pramod Kumar — Ch.Manager (Mech.)
3. Mr.S.K.Mohapatra — Dy.Manager(GE)

Committee visited site on 29.04.2014 to get the first hand information & status of the equipment to

- Investigate the reasons of malfunctioning / breakdown of motorized winch in DAP Tr.B.
- Explore & recommend suitable measures to avoid re-occurrence of such failure/incident in future.

1.0 Equipment Details

Capacity : 5 T
Make : Not visible
Motor details : 15 KW, 935 RPM, Frame size 160L
Break Type : Thruster

2.0 Detail of Incidence

Power failed in DAP due to tripping of Boiler followed by load shedding of DAP at 5.55 PM on dated 27th April'2014.The time power resumed in DAP, it was reported that the motorized winch kept/installed at granulation floor in DAP Tr.B got started automatically & due to non availability any winch operator near the local control station the lifting hook moved in upward direction till it got stucked up with the pulley mounted at the top floor's support beam from which rope was hanging followed by uprooting of the guide pulley situated on granulation floor & rope drum from base of the winch.

3.0 Observation of Committee at site

The constituted committee members visited site on dated 29th April & 1st May2014 to identify the root cause of the malfunctioning of the winch & subsequent breakdown of equipments. Following points were observed.

- The winch was normally used for shifting cylinders machines, motors etc to various floors in DAP plant trains. All the trains are having identical Winches of 5 Ton capacity procured long back in OFCL time.
- In DAP Train A & C winch is placed on screen floor where as in DAP train B winch is kept in Granulator floor.
- That day machine was last used by Mechanical Maintenance own staff for shifting empty gas cylinders to ground floor.
- The LCS is fixed near the Winch M/C on one of the support column in granulation floor with two flush head type push buttons for upward & downward movement of rope and one stay put type mushroom head emergency stop pushbutton.
- One "NO" element of push button found damaged due to deposit of DAP dust followed by short circuit of the contact point.
- Emergency stop push button found in released condition.
- Further it is also noted that this LCS is the single point controlling station to operate the winch during lifting/lowering any material to/from different floors.
- No marking on LCS for identification of pushbuttons for Lifting & Lowering.
- No provision of safety limit switches are found on the rope drum.
- Thruster brake motor found disconnected & on enquiring it was found, the manual modified brake mechanism is in use. It was told due to excessive dust deposition operation of Thruster break remain non functional.

4.0 Possible Reasons of malfunctioning

From the observations found at site, malfunctioning/breakdown of winch may be occurred due to following reasons.

a) Damage/short circuit of "NO" element for hoisting.
b) Emergency push buttons left in released condition.

c) Missing of limit switches which could have cut off the control circuit before reaching of lifting hook at top pulley.

d) Also while during power failure when winch could not be started .Start Push button was locked using pin/nail etc.

5.0 Recommendation by Committee-

The installed winch is not safe & suitable to use in existing condition of DAP plant. It is recommended to replace/ modified the winch with having following facilities.

a) As being having dusty atmosphere all around ,Dust & water proof Pendents/LCS preferably in IP-65 double door enclosure with proper sealing may be used.

b) Moisture is available in atmosphere hence Rubber diaphragm type or spring return type push buttons for Hoisting /Lifting (with proper marking)may be used.

c) For authorized use of Hoist Key -Locking arrangements for stay put type Emergency push button should be used.

d) To take care Safety of rope tearing (Rope gravity Limit switches provision seems difficult as pulley is hanging at height having no approach. Hence a chain operated crank type limit switch may be installed with winch & should be in line always.

e) For effective breaking system Thruster type Braking system must be taken in line. To make the thruster break operative, entire winch system must be clean every week.

f) As Winch should be operated by only an authorized person, hence only trained person may be allowed and register may be kept for issuing Key of Winch in control room.

g) Awareness should be developed to lock the Emergency switch always whenever winch is in idle condition. Indication for Power off/ on may be provided on LCS to ensure the after use power is switched off.

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h) For effective vigilance and control, a separate control pendants may be provided in different floors of maximum use to improve controlling of winch during lifting of material to other floors except granulation floor.

i) In all the three DAP train it is better to kept the winch in granulator floor instead of Screen floor.

- Mr.Mukesh Kulshrestha
  Jt.General Manager (Elect.)

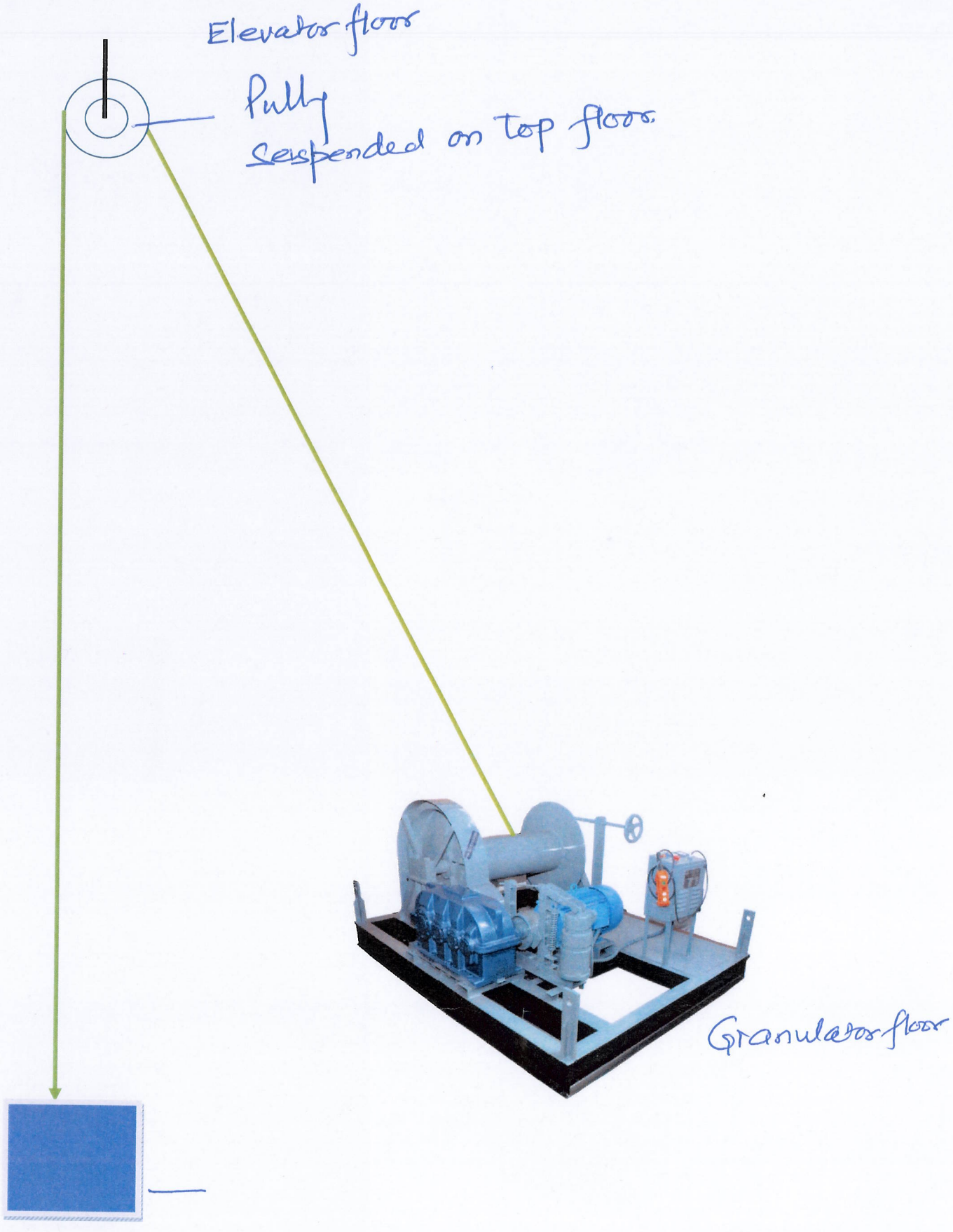
1/5/14

- Mr.Pramod Kumar
  Ch.Manager (Mech.)

- Mr.S.K.Mohapatra
  Dy.Manager(GE)

2/5/14

Submitted for kind consideration & necessary action to ED (Office)


Elevator floor
Pully
Suspended on top floor.
Granulator floor