

The following notes accompany *Terex Information Bulletin: Operating on side slopes* issued 14 September 2007.

1. The principal employer at a mine site should maintain an awareness of the need for crane operators to routinely make use of the de-rating bulletin issued by Terex dated 14 September 2007. If a rated capacity manual has load deration charts, then these should be used.
Note: Terex advises that the load deration charts should be the same as those in the de-rating bulletin.
2. Where a particular model of crane does not have de-rating guidelines or deration charts, operators should request these from the manufacturer of their particular model of pick-and-carry crane. The manufacturers and suppliers of these cranes should carefully consider emulating Terex in issuing de-rating guidelines to cover variable terrain and side slopes above 1% gradient.
3. The crane Load Moment Indicator (LMI) computer cannot be relied upon in itself when assessing a lift, as pointed out in the Terex bulletin. Crane LMI computers typically do not incorporate de-rating for variable terrain, so de-rating is necessarily a **manual** procedure.
Note: Some later Terex models have dynamic rated capacity calculation to reduce the rated capacity when working on side slope integrated in the crane LMI computer, therefore no manual calculation procedure is required.
4. The maintenance and verification of proper computer function should be methodically conducted with due attention to the correct operation of all associated sensors and transducers. A failure of a sensor can lead to an unsafe load being displayed to the operator.
5. Load capacity de-rating according to the Terex bulletin must be practised as part of every lift study before a lift is attempted. For most pick and carry cranes, this is a manual process independent of the operation of the LMI computer's calculations, as pointed out in the Terex bulletin. De-rating must be practised wherever the gradient exceeds just 0.57 degrees, or 1% side slope.
6. Any tramping operation at a mine site is likely to result in the requirement to routinely de-rate according to the Terex bulletin, since 0.57 degrees is an almost undetectable side slope using normal inclinometers fitted to a crane. The latter is an opinion based on observation and analysis. Furthermore, mines typically have undulating terrain with variable surface compaction. Theoretically, an obstruction or dip in the ground of just 20 millimetres on one forward road wheel is enough to induce 1% side gradient.
7. As an alternative to de-rating procedures issued by Terex, the rated capacity can be reduced down to a requirement of:
 - a. If the boom angle used is **below** 45 degrees, reduce the rated capacity by 50% of the load chart value.
 - b. If the boom angle used is **above** 45 degrees, reduce the rated capacity by 60% of the load chart value.

This is a simple starting guideline for those operators challenged by the complexity of the arithmetical de-rating procedure when contemplating or planning any lift on sloping ground between 0.57 (1%) and 5 degrees (8.75%) gradient. This is particularly the case where a load is to be tramped on a mine site. The hazard is greatest with some level of articulation and is more prevalent at higher boom angles with somewhat extended boom.

8. The tyre type and the inflation pressures must be maintained according to the manufacturer's specifications at all times. It is not acceptable to allow any tyre to be at a low inflation pressure for any reason. All tyres fitted to a crane must be strictly to the manufacturer's specifications.
9. Tagline and spotter personnel should be trained to maintain their awareness of the potential for crush injuries if a crane topples sideways. Staying out of the footprint of a potential side topple is a prudent measure at all times and supervisors should carefully take this into account when planning lifts and conducting any job hazard analysis.