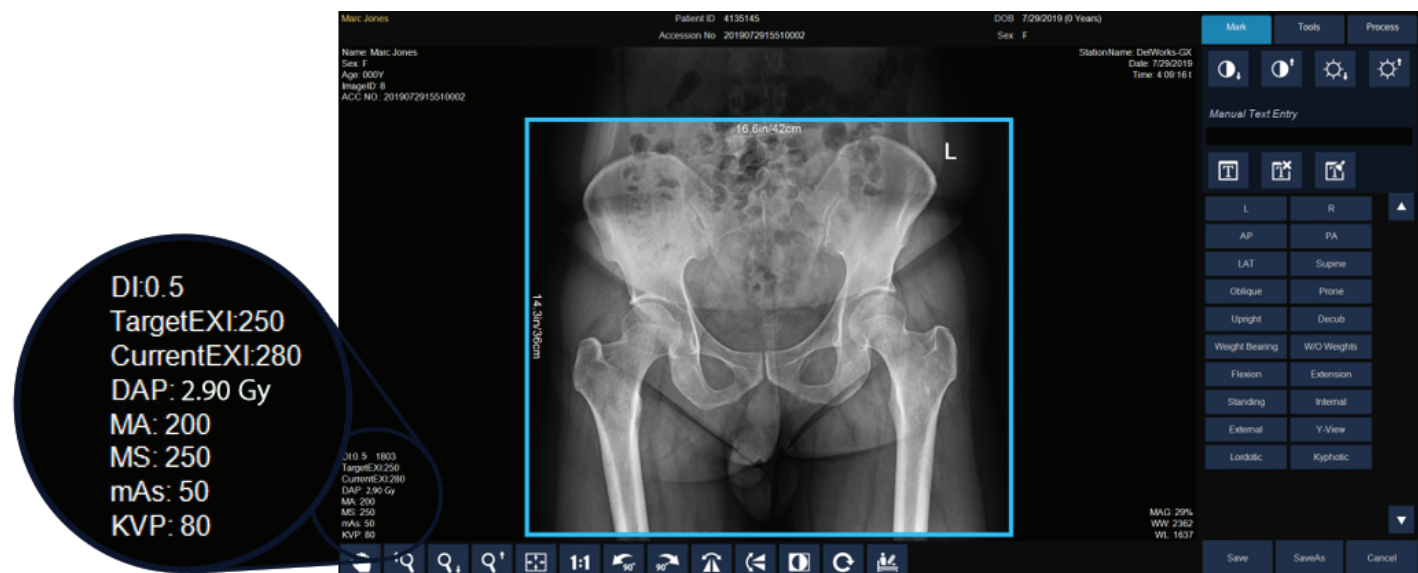


DELWORKS 3.0 Exposure Indicators

UMG/DEL MEDICAL supports efforts to reduce radiation exposure by utilizing highly sensitive flat panel detectors and advanced image processing algorithms included in DELWORKS 3.0 direct radiography systems. We encourage adherence to the principles of ALARA and recommend using exposure indicators such as **Deviation Index (DI)** and **Exposure Index (EXI)** when evaluating radiographs. Exposure indicators provide feedback to the technologist for each exposure, increasing awareness of how proper patient positioning, collimation, kVp, and mAs selection affect image quality.

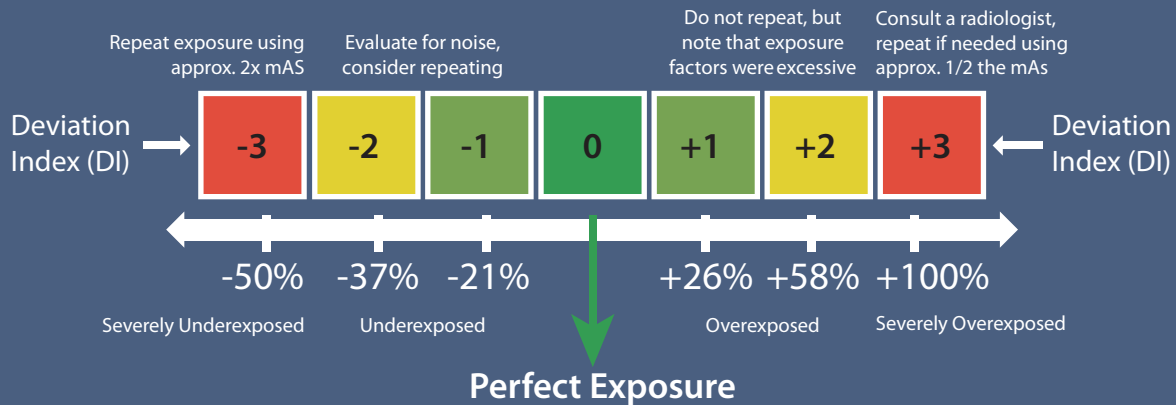
Advances in flat panel detector technology and image processing have increased image exposure latitude, which can lead to dose creep, as overexposed images may appear correctly exposed. In addition to visual image evaluation, exposure indicators provide a quantitative score for each image, representing underexposure, optimal exposure, or overexposure. Proprietary manufacturer methods for exposure indicators caused confusion for technologists working with multiple devices, all with differing values. The International Electrotechnical Commission (IEC) and the American Association of Physicists in Medicine (AAPM), along with numerous digital radiography system manufacturers, introduced **Deviation Index** as a standardized method to easily track and adjust future exposures without the need to remember all of the different types of exposure indicators such as EI, EXI, REX, IgM and others.



*This image indicates how DELWORKS displays the relevant exposure indicators

DELWORKS 3.0 calculates, displays, and transfers the **Deviation Index (DI)**, **Target Exposure Index (TargetEXI)**, and **Current Exposure Index (CurrentEXI)** values for each image.

Deviation Index (DI)



DELWORKS 3.0 assigns a **Target Exposure Index Value** for each body part, representing the recommended microgray [μGy] levels required in the relevant image region for an optimally exposed image. This value is directly proportional to the x-ray dose. Proper patient positioning, generator technique, and collimation all contribute to an optimal **Exposure Index (EXI)** value. With guidance from your Radiologist and or Physicist, the default Target Exposure Value defined in DELWORKS 3.0 can be adjusted for noise tolerance to reduce patient exposure further.

The **Deviation Index (DI)** is a value quantifying the difference between the **Target Exposure Index (Target EXI)** and the **Current Exposure Index (Current EXI)** for each image.

DELWORKS 3.0 follows the IEC Standard 62494 to calculate DI as:

$$DI = 10 * \log_{10}(EI / EI_t)$$

The goal is to produce images that achieve a **DI** value as close to 0 as possible, representing a correctly exposed image. A **DI** value higher than zero indicates that the body part received excessive x-ray dose, which could lead to loss of detail (as it approaches a value of +3 or more), requiring a repeat. A **DI** value lower than zero may exhibit excessive noise (as the **DI** value approaches -3), also requiring a repeat. Technologists should note the **DI** value of each image and adjust exposure values accordingly when performing subsequent studies on patients of similar size. Radiographs should always be evaluated visually before repeating the exposure, despite the **DI** value.