Condition Monitoring Questions 2

Ten Further Scoping & Discussion Questions

1. **Have the utility ever experienced any assets failing catastrophically?**
    a. Any costs of the/similar asset(s) failing?
    b. Any collateral damages?
    c. Any cost of outage?
    d. Any cost of non-supplied energy?
    e. Any insurance costs?
    f. Any estimates for cost of Periodic or Condition based maintenance?
2. **How much does your asset cost to replace in case of failure?**
    a. Collateral damages in case of failure
    b. Cost of tear down of failed asset
    c. Suitability, availability and cost of new replacement asset(s)
    d. Installation and commissioning costs
    e. How much is covered by insurance?
3. **How long time will it take to replace your asset in case of failure?**
    a. Damaged equipment in the surroundings
    b. Cost of no supplied energy
    c. Down time – lost profit
    d. Insurance coverage
4. **How big is the probability for a failure to be caused by an insulation issue?**
    a. Monitoring systems cannot predict nature or manmade root causes
    b. Historical data from maintenance and similar equipment
    c. Location and importance in grid
    d. Load characteristics light or heavy loaded
5. **How much can be avoided or saved by installing monitoring?**
    a. If a transformer bushing failure costing in total USD 250,000.- is prevented by an investment of USD 20,000.- into a DoblePrime IDD: What could the utility do with those USD 230,000.- saved?
    b. How much insurance costs can be cut and spent elsewhere?
6. **How easy must a monitoring system be to fit to the asset?**
    a. Most DoblePrime sensors are fitted without any outage. (Except Bushing Tap Adaptors (BTAs), coupling capacitors and DGA(?))
    b. Easy settings of alarm levels based on historical data.
    c. Easy web-browser interface. No dedicated computers or proprietary software needed.
7. **How much are you willing to spend on installing a monitoring system to prevent failures in the insulation system?**
    a. There must be a reasonable ratio between eventual cost in 1&2 compared to the investment.
    b. Doble experts are available for Doble monitoring systems. Knowing both assets and instruments in details.

   c. Will monitoring reduce insurance cost?

8. **How much time are you willing to spend on maintenance of the monitoring system?**
   a. Doble systems are durable and maintenance free for 5-10 years after installation
   b. Monitoring systems from Doble are easy to interface and operate. Communications allow remote access for data download.
   c. Doble offers data interpretation as a service
   d. Doble systems are designed based on years of experience and developed to eliminate false positives and reduce the number of alarms causing unnecessary actions and lost confidence.
   e. DoblePrime requires no external or special software applications as all interface are through web browsers.
9. **Would it be feasible to start with a smaller system for monitoring rather monitoring everything?**
   a. DoblePrime is developed as modular building blocks. The system is easy to expand to cover from one parameter of an asset to completely cover the whole asset, the bay, the substation and through DobleARMS the whole enterprise.
   b. Will system communication via local SCADA or IEC61850 offer any problems or challenges?
   c. Doble Prime offers any standard communication protocol
10. **Importance of support from supplier?**
   a. Doble has been around since 1920 doing what we do, assisting power generating companies, transmission companies, utility industry and end-users on high voltage assets. We'll probably be here another 100 years at least.
   b. Monitoring systems from Doble are easy to interface and operate. Communications allow remote access for data download.
   c. 24/7 support world wide
   d. Team of client service engineers and technical application engineers worldwide.
   e. We provide solutions to the challenges in the industry.