AMERICAN SAMOA POWER AUTHORITY

POLE MOUNTED DISTRIBUTION TRANSFORMER BID SPECIFICATIONS

1. Site Conditions:

ASPA is a tropical island based electric, water, solid waste and sewer utility. Power lines are installed close to the sea front where they are exposed to salt spray from the sea. The average rainfall in American Samoa is 200 inches. Salt spray on the insulators and transformers is a major source of faults especially when there is light rain after a long spell of dry weather. Tracking from insulators onto cross arms and wooden poles have caused a lot of faults and power outages.

Salt air is very corrosive on metals. This is the reason why we resorted to buying totally stainless steel transformers. Condensation in transformer tanks is another source of problem if there is too much moisture mixed with the transformer insulation oil. Transformers must be fitted with breathers to eliminate as much of the condensation.

2. General Requirements:

Transformers shall be capable of operation satisfactory in an ambient temperature range of 75 to 95 degrees Fahrenheit, relative humidity of 90%, and humid coastal environment. The altitude range shall be from sea level to 3 feet above sea level.

The transformer design, construction and testing shall be in accordance with the latest accepted published ANSI, IEEE< and NEMA standards such as: ANSI C57.12.00, C57.12.22, C57.12.70, C57.12.90, and NEMA TR – 1 and TR –P9 – 1977, and REA U –5.

3. Voltage

The ASPA uses a 13.2 KV/7.62KV multi grounded system for its primary distribution feeders.

Transformers will be connected as single phase or connected as three phase banks for 240/480 V three phase loads.

4. Temperature Rise

At rated voltage and KVA, the temperature rises of the windings of the transformer shall not exceed 65 degrees C when measured by the resistance method. The hot spots temperature rise shall not exceed 80 degree C, in accordance with the latest Revision of ANSI C57.12.90

5. Transformer Tank, cover bottom and associated hardware and brackets shall be fabricated from Type 304L or type 304 low carbon (0.05%) stainless steel.

6. Paint to be used for the transformer tanks and cover, shall be #70 gray. If special corrosion Resistant paint or painting methods are available, describe their advantages and indicate a price addendum, if any.

7. Bushing shall be #70 gray with a minimum leakage of 17", 25 KV insulation class 150KV minimum BIL. There shall be a corona protected high voltage gasket to prevent tracking on transformer cover. (Each transformer shall have two primary bushings)

8. If manufactures have other features which will extend the life of their transformer in a corrosive sea coast environment, they should describe the feature(s) and indicate any price addendum for those features.

9. For each size transformer, bidder shall quote the guaranteed average No Load (N/L loss) and average Full Load (F/L loss) losses in watts. Bids will be evaluated in accordance to the following formula: **Evaluated Cost = Bid Price + N/L losses * $9.17 + F/L loss # $4.59**

10. The supplier of the transformers shall provide ASPA with certified test reports of the supplied transformers. If the average losses are higher of lower than quoted losses, the invoice will be adjusted accordingly. If the difference in losses is excessive, ASPA reserves the right to reject the transformer and require the manufacture to remanufacture new transformers in according with specification and quoted losses.

11. Transformers shall have two (2) primary bushings. Bushing insulation class is 30 KV BIL.

12. Transformers shall have four (4) 2.5% taps all below the rated voltage, to boost secondary voltages. Taps shall be set up as follows:

    Tap 1 – 100% or 7.62 KV
    Tap 2 – 97.5% or 7.42 KV
    Tap 3 – 95% or 7.23 KV
    Tap 4 – 92.5% or 7.04 KV
    Tap 5 – 90% or 6.85 KV

13. Transformers shall have one tank mounted MOV lighting arrestors with insulated bird guard and insulated jumper to the bushing.

14. Transformer oil shall comply with EPA regulations for non-PCB oil. Each transformer shall be clearly marked with a “NON-PCB” sign.

15. Transformer shall be conventional, not CSP transformers. Transformers shall be protected with outside mounted fuse cutouts.

16. Transformers shall be capable of being connected into three phase banks.

17. Each transformer shall be equipped with a non-resettable device which detects and provides external indication of internal transformer faults, and also incorporates pressure relief functionality. The approved device is manufactured by IFD Corporation or approved equal.