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Photovoltaic Quality Assurance Inspection Report

General Information

Table with 4 columns and 6 rows containing general information such as Customer Name (Jussila Installation), Site Address (Sebastopol, CA), Contractor Name (Synergy Solar), and Contractor Phone # ((707) 623-6003).

Inspector Information

Table with 2 columns and 4 rows containing inspector information: Name (Erik Schadler), Signature (ES), Date of Inspection (1/31/2013), and Inspection Status (Complete).

Main Electrical Service Information

Table with 2 columns and 10 rows containing main electrical service information: Make & Model number of main service panel (GE TSL420CFCU MOD 1), Primary service disconnect size (200 Amp), Buss bar rating of main service (200 Amp), Sub-panel model and buss rating (N/A), Sub-panel feeder breaker rating (N/A), Alternative method of interconnection (N/A), Other electrical sources (Backup Gas Generator installed), Electrical concerns & Code Violations (None at the time of inspection), and Other Article 230 Considerations (None at the time of inspection).

Roof Information

Table with 2 columns and 7 rows containing roof information: Type of Roofing (Composite Asphalt Shingles), If tile roof, confirm location of standoffs (N/A), Method of Sealing Roof Penetrations (OATEY flashing tucked under the shingles), Do DC conductors from PV Array run through the house? (Conductors are run in 3/4" EMT conduit), Roof Condition (The roof is in good condition), Roof Damage (No damage to the roof at the time of inspection), and Inspect roofing penetrations and stand-off installation (Roof penetrations are installed using approved methods).

Table with 2 columns and 1 row for Comments.



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Structural Attachment / Racking system

Confirm footings and support structure are properly secured	Array standoffs are securely mounted to roof structural support members.
Visually inspect and use "pull test" where appropriate to confirm lag bolts are properly installed and attach to rafter	"Pull Test" verified proper lag bolt installation.
If pull test and rooftop visual inspection yields less than satisfactory results, proceed to attic for lag embedment inspection in rafters	N/A
Confirm module attachment is properly secured (Check to make sure all panels are attached properly to their mounting brackets and nothing catches the eye as being abnormal or misaligned.)	Modules are securely mounted to the support rails with approved hardware.
Check that non-current carrying metal parts grounded properly. (Array frames, racks, metal boxes, etc.)	Support rails are bonded to the EGC with bolted lugs.
Type of lugs (with bare copper), or WEEBS	Bolted lugs and bare copper conductors.
Comments	

Photovoltaic Module / Array Information

Module Make & Model Number	Sharp NUU240F1
Total Number of modules in Array	Thirty-Three (33)
Number of modules in series (verify if possible)	Eleven (11)
Number of parallel source circuits ("strings")	Three (3)
Confirm modules are properly grounded with lugs on each module or equivalent grounding method	Modules are bonded to the WEEB clips with bolted lugs.
Plugs and connectors (Visually inspect and check plugs/connectors between modules to ensure they are fully engaged)	All connectors are fully engaged.
Wire Management (Check to see all wiring under array is neat and properly supported)	Conductors are secured above the roof surface.
Wire Clips/Zip Ties (black zip ties indicate UV resistance)	Black UV resistant wire ties are used.
Visually inspect array for cracked/Damaged modules	No damage to the modules at the time of inspection.
Stand-off height (0 to 3" avg, 3" to 6" avg, over 6" avg)	Greater than 6" average standoff height.
Confirm strings properly configured (i.e. all modules on a string are facing the same pitch and azimuth, etc.)	Pitch and azimuth is consistent for entire array.
Comments	

Inverter Information

Number of inverters installed	One (1)
Inverter Make & Model Number	SMA SB7000US
Inverter Installation (Confirm inverter is properly mounted)	Inverters are properly mounted to the interior wall.
Verify ground installation to inverter (Grounded to existing UFER, ground rod, or GEC)	The system is bonded to the ground terminals at the main service panel.
Confirm Input String Voltage within Operating Voltage (Use table 690.7 correction factors)	Input string voltage is within the inverter maximum.
Confirm NEC Compliant Disconnects (Physically-separable disconnect and wiring box from actual inverter unit)	N/A
Comments	



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Wiring and overcurrent protection

Wire type is 90°C wet rated (USE-2; THWN-2; 90°C only)	USE-2 conductors are used under the array transitioned to THWN-2 conductors in Soladeck.
Electrical boxes and conduit bodies on roof reasonably accessible?	No, under the array cannot access.
Electrical connections suitable for the environment?	MC connectors and junction box are suitable for outdoor exposure.
Confirm conductor ampacities are sufficient? (NEC correction factors, temperature and conduit fill derates, etc.)	8 AWG and 10 AWG conductor ampacities are sufficient.
Inspect combiner or junction boxes (Confirm if weep hole or other water drainage method)	Combiner panel is properly mounted next to the inverter.
Verify source circuit overcurrent protection is sufficient	Integrated fused protections on inverters are sufficient.
Verify overcurrent protection on inverter output circuit is sufficient	40 Amp backfeed breaker at the main service panel is sufficient
Verify point of connection meets provisions of NEC 690.64; 705.12 & Verify Article 230 has not been violated (6 handle rule or supply side tap)	Point of connection is NEC compliant.
Check that all cable and conduit is properly supported (conduit should not be directly on roof surface)	All conduits are properly supported.
Check that DC & AC conduit is grounded with bushings (or equivalent acceptable method)	Conduit carrying AC & DC circuits are bonded to ground with grounding bushings.
Verify complete system bonding to main UFER/Grounding Rod at location	The system is bonded to the ground terminals at the main service panel.
Comments	

Photovoltaic system signs and labeling

Do signs have sufficient durability to withstand the environment?	Yes
Sign identifying PV power source (At DC disconnect)	Yes
Sign Identifying AC point of connection	Yes
Sign at main electrical service disconnect	Yes

Performance / Site evaluation

Is the system in operation? (If no, turn system on and check for proper operation)	Yes
PV system metering device (Type, Installation, issues, etc)	None installed at the time of inspection.
Azimuth direction of array	246°
Tilt angle of array	22°
Watts output on inverter display (collect this measurement immediately after irradiance measurement)	System output at time of inspection; 4568W with a lifetime output of 24648KWh.
Verify shading conditions (Use suneye to collect shading data)	Site shade analysis was conducted with the Solmetric SunEye tool.
Look for any environmental variables that may affect system performance (Dusty conditions, trees, animals, etc)	No shade over the array.
Comments	



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Recommended Corrections

- 1.) System is installed utilizing industry best practices standards. No recommendations at this time.**