COM*check* Software Version 4.1.1.0

Mechanical Compliance Certificate

Project Information

Energy Code: 2018 IECC **Project Title: HAFB 591** Location: Ogden, Utah

Climate Zone: 5b Project Type: Alteration

Construction Site: Hill Air Force Base Building 591

Ogden, UT 84056

Owner/Agent: Hill Air Force Base Designer/Contractor: Mike Dallon Colvin Engineering 505 E. South Temple, Suite 100 Salt Lake City, UT 84102

Mechanical Systems List

Quantity System Type & Description

Single Zone AHU-4 (Single Zone): 1

Heating: 1 each - Central Furnace, Gas, Capacity = 166 kBtu/h

Proposed Efficiency = 80.00% Et, Required Efficiency: 80.00 % Et or 80% AFUE

Cooling: 1 each - Room AC With Louvered Sides, Capacity = 150 kBtu/h, Air-Cooled Condenser, Air Economizer

Proposed Efficiency = 12.10 CEER, Required Efficiency: 8.50 CEER

Fan System: AHU-4 Fan | Assembly Room -- Compliance (Motor nameplate HP method): Passes

FAN 1 Supply, Constant Volume, 5000 CFM, 3.0 motor nameplate hp, 80.0 fan efficiency grade

Ductless Air Conditioner DAC-1 (Single Zone):

Split System Heat Pump

Heating Mode: Capacity = 22 kBtu/h,

Proposed Efficiency = 10.20 HSPF, Required Efficiency = 8.20 HSPF

Cooling Mode: Capacity = 18 kBtu/h,

Proposed Efficiency = 21.50 SEER, Required Efficiency: 14.00 SEER

Fan System: DAC-1 Fan | Comm Room -- Compliance (Motor nameplate HP method): Passes

FAN 2 Supply, Constant Volume, 706 CFM, 0.7 motor nameplate hp, 0.8 fan efficiency grade

Electric Unit Heater EUH-1 (Single Zone):

Heating: 1 each - Unit Heater, Electric, Capacity = 7 kBtu/h

No minimum efficiency requirement applies

Fan System: None

Elec. Radiant Panel Heater ERP-1 (Single Zone):

Heating: 1 each - Radiant Heater, Electric, Capacity = 3 kBtu/h

No minimum efficiency requirement applies

Fan System: None

Elec. Water Heater EWH-1:

Electric Storage Water Heater, Capacity: 40 gallons w/ Circulation Pump

Proposed Efficiency: 0.98 SL, %/h (if > 12 kW), Required Efficiency: 0.98 SL, %/h (if > 12 kW)

Project Title: **HAFB 591** Report date: 04/28/20 1 of 15

Data filename: I:\PROJECTS\2019 Projects\2019-151.00 HAFB B591\Energy\Energy Code-COMCheck-Models\20 Page

151.00 HAFB 591.cck

Mechanical Compliance Statement

plans, specifications, and other calculations submitted with this permit application. The proposed mechanical systems have been designed to meet the 2018 IECC requirements in COM*check* Version 4.1.1.0 and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

Michael E Dallon, P.E.

Compliance Statement: The proposed mechanical alteration project represented in this document is consistent with the building

Michael E Dallon, P.E.	Michael & Dallos	4/30/20
Name - Title	Sign á ture /	Date

Project Title: HAFB 591 Report date: 04/28/20

Data filename: I:\PROJECTS\2019 Projects\2019-151.00 HAFB B591\Energy\Energy Code-COMCheck-Models\20 Page 2 of 15

151.00 HAFB 591.cck

COM*check* Software Version 4.1.1.0 **Inspection Checklist**

Energy Code: 2018 IECC

Requirements: 100.0% were addressed directly in the COMcheck software

Text in the "Comments/Assumptions" column is provided by the user in the COMcheck Requirements screen. For each requirement, the user certifies that a code requirement will be met and how that is documented, or that an exception is being claimed. Where compliance is itemized in a separate table, a reference to that table is provided.

Section # & Req.ID	Plan Review	Complies?	Comments/Assumptions
C103.2 [PR2] ¹	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the mechanical systems and equipment and document where exceptions to the standard are claimed. Load calculations per acceptable engineering standards and handbooks.	□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.
C103.2 [PR3] ¹	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the service water heating systems and equipment and document where exceptions to the standard are claimed. Hot water system sized per manufacturer's sizing guide.	□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.

Additional Comments/Assumptions:

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

Project Title: **HAFB 591** Report date: 04/28/20 Data filename: I:\PROJECTS\2019 Projects\2019-151.00 HAFB B591\Energy\Energy Code-COMCheck-Models\20 Page 3 of 15

151.00 HAFB 591.cck

Section # & Req.ID	Footing / Foundation Inspection	Complies?	Comments/Assumptions
,		□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

Section # & Req.ID	Plumbing Rough-In Inspection	Complies?	Comments/Assumptions
C404.5, C404.5.1, C404.5.2 [PL6] ³	Heated water supply piping conforms to pipe length and volume requirements. Refer to section details.	□Complies □Does Not □Not Observable □Not Applicable	Exception: Requirement does not apply.
C404.5, C404.5.1, C404.5.2 [PL6] ³	Heated water supply piping conforms to pipe length and volume requirements. Refer to section details.	□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.
C404.5, C404.5.1, C404.5.2 [PL6] ³	Heated water supply piping conforms to pipe length and volume requirements. Refer to section details.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Exception: Requirement does not apply.
C404.5, C404.5.1, C404.5.2 [PL6] ³	Heated water supply piping conforms to pipe length and volume requirements. Refer to section details.	□Complies □Does Not □Not Observable □Not Applicable	Exception: Requirement does not apply.
C404.5, C404.5.1, C404.5.2 [PL6] ³	Heated water supply piping conforms to pipe length and volume requirements. Refer to section details.	□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.
C404.6.1, C404.6.2 [PL3] ¹	Automatic time switches installed to automatically switch off the recirculating hot-water system or heat trace.	□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.
C404.6.3 [PL7] ³	Pumps that circulate water between a heater and storage tank have controls that limit operation from startup to <= 5 minutes after end of heating cycle.	□Complies □Does Not □Not Observable □Not Applicable	Exception: Requirement does not apply.
C404.6.3 [PL7] ³	Pumps that circulate water between a heater and storage tank have controls that limit operation from startup to <= 5 minutes after end of heating cycle.	□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.
C404.6.3 [PL7] ³		□Complies □Does Not □Not Observable □Not Applicable	Exception: Requirement does not apply.
C404.6.3 [PL7] ³	Pumps that circulate water between a	□Complies □Does Not □Not Observable □Not Applicable	Exception: Requirement does not apply.
C404.6.3 [PL7] ³	Pumps that circulate water between a heater and storage tank have controls that limit operation from startup to <= 5 minutes after end of heating cycle.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.

1 High Impact (Tier 1)	2	Medium Impact (Tier 2)	3	Low Impact (Tier 3)

Section # & Req.ID	Plumbing Rough-In Inspection	Complies?	Comments/Assumptions
C404.7 [PL8] ³	Demand recirculation water systems have controls that start the pump upon receiving a signal from the action of a user of a fixture or appliance and limits the temperature of the water entering the cold-water piping to 104°F.	□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.
C404.7 [PL8] ³	Demand recirculation water systems have controls that start the pump upon receiving a signal from the action of a user of a fixture or appliance and limits the temperature of the water entering the cold-water piping to 104°F.	□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.
C404.7 [PL8] ³	Demand recirculation water systems have controls that start the pump upon receiving a signal from the action of a user of a fixture or appliance and limits the temperature of the water entering the cold-water piping to 104°F.	□Complies □Does Not □Not Observable □Not Applicable	Exception: Requirement does not apply.
C404.7 [PL8] ³	Demand recirculation water systems have controls that start the pump upon receiving a signal from the action of a user of a fixture or appliance and limits the temperature of the water entering the cold-water piping to 104°F.	□Complies □Does Not □Not Observable □Not Applicable	Exception: Requirement does not apply.
C404.7 [PL8] ³	Demand recirculation water systems have controls that start the pump upon receiving a signal from the action of a user of a fixture or appliance and limits the temperature of the water entering the cold-water piping to 104°F.	□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

Section # & Req.ID	Mechanical Rough-In Inspection	Complies?	Comments/Assumptions
C402.2.6 [ME41] ³	Thermally ineffective panel surfaces of sensible heating panels have insulation >= R-3.5.	□Complies □Does Not	Requirement will be met.
		□Not Observable □Not Applicable	
C403.11.3 [ME61] ²		□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.
C403.11.3 [ME61] ²	HVAC piping insulation insulated in accordance with Table C403.11.3. Insulation exposed to weather is protected from damage and is provided with shielding from solar radiation.	□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.
C403.11.3 [ME61] ²		□Complies □Does Not □Not Observable □Not Applicable	Exception: Requirement does not apply.
C403.8.1 [ME65] ³	conditions do not exceed allowable fan system motor nameplate hp or fan system bhp.	□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met. See the Mechanical Systems list for values.
C403.8.1 [ME65] ³	conditions do not exceed allowable fan system motor nameplate hp or fan system bhp.	□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met. See the Mechanical Systems list for values.
C403.8.3 [ME117] ²	67. The total efficiency of the fan at the design point of operation <= 15% of maximum total efficiency of the	□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.
C403.8.3 [ME117] ²		□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.
C403.8.4 [ME142] ²	1/12 hp and less than 1 hp are electronically commutated motors or have a minimum motor efficiency of	□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.
C403.8.4 [ME142] ²	1/12 hp and less than 1 hp are electronically commutated motors or have a minimum motor efficiency of	□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.
C403.8.5 [ME143] ²	3 ,	□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.

1	High Impact (Tier 1)	2	Medium Impact (Tier 2)	3	Low Impact (Tier 3)

Section # & Req.ID	Mechanical Rough-In Inspection	Complies?	Comments/Assumptions
C403.8.5 [ME143] ²		□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.
C403.12.1 [ME71] ²	Systems that heat outside the building envelope are radiant heat systems controlled by an occupancy sensing device or timer switch.	□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.
C403.2.3 [ME55] ²		□Complies □Does Not □Not Observable □Not Applicable	See the Mechanical Systems list for values.
C403.5.5 [ME113] ²	installed with air-cooled unitary DX units having economizers.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C403.2.2 [ME59] ¹	Natural or mechanical ventilation is provided in accordance with International Mechanical Code Chapter 4. Mechanical ventilation has capability to reduce outdoor air supply to minimum per IMC Chapter 4.	□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.
C403.7.1 [ME59] ¹		□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.
C403.7.2 [ME115] ³	Enclosed parking garage ventilation has automatic contaminant detection and capacity to stage or modulate fans to 50% or less of design capacity.	□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.
C403.7.6 [ME141] ³	HVAC systems serving guestrooms in Group R-1 buildings with > 50 guestrooms: Each guestroom is provided with controls that automatically manage temperature setpoint and ventilation (see sections C403.7.6.1 and C403.7.6.2).	□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.
C403.7.4 [ME57] ¹	systems meeting Table C403.7.4(1) and C403.7.4(2).	□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.
C403.7.5 [ME116] ³	replacement air and conditioned supply air limitations, and satisfy hood rating requirements and maximum	□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.
,	accordance with C403.11.1 and constructed in accordance with C403.11.2, verification may need to	□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.

5 1 1 1 1 1 1 1 1 1	1	High Impact (Tier 1)	2	Medium Impact (Tier 2)	3	Low Impact (Tier 3)
---------------------------------------	---	----------------------	---	------------------------	---	---------------------

Section # & Req.ID	Mechanical Rough-In Inspection	Complies?	Comments/Assumptions
C403.5, C403.5.1, C403.5.2 [ME62] ¹		□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.
C403.5.3. 3 [ME124] ¹		□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.
C403.5.3. 4 [ME125] ¹	outdoor air during air economizer operation to prevent overpressurizing the building. The relief air outlet located to avoid recirculation into the building.	□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.
C403.5.3. 5 [ME126] ¹	dampers used in economizers have motorized dampers that automatically shut when not in use and meet	□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.
C403.4.3. 3.2 [ME121] ³	Closed-circuit cooling tower within heat pump loop have either automatic bypass valve or lower leakage positive closure dampers. Open-circuit tower within heat pump loop have automatic valve to bypass all heat pump water flow around the tower. Open- or closed-circuit cooling towers used in conjunction with a separate heat exchanger have heat loss by shutting down the circulation pump on the cooling tower loop. Open- or closed circuit cooling towers have a separate heat exchanger to isolate the cooling tower from the heat pump loop, and heat loss is controlled by shutting down the circulation pump on the cooling tower loop.	□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.
C403.4.1. 4 [ME63] ²	Heating for vestibules and air curtains with integral heating include automatic controls that shut off the heating system when outdoor air temperatures > 45F. Vestibule heating and cooling systems controlled by a thermostat in the vestibule with heating setpoint <= 60F and cooling setpoint >= 80F.	□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.
C408.2.2. 1 [ME53] ³	Air outlets and zone terminal devices have means for air balancing.	□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.

1	High Impact (Tier 1)	2	Medium Impact (Tier 2)	3	Low Impact (Tier 3)

Section # & Req.ID	Mechanical Rough-In Inspection	Complies?	Comments/Assumptions
C403.5, C403.5.1, C403.5.2 [ME123] ³	Refrigerated display cases, walk-in coolers or walk-in freezers served by remote compressors and remote condensers not located in a condensing unit, have fan-powered condensers that comply with Sections C403.5.1 and refrigeration compressor systems that comply with C403.5.2	□Does Not □Not Observable □Not Applicable	Requirement will be met.

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

Section # & Req.ID	Rough-In Electrical Inspection	Complies?	Comments/Assumptions
C405.6 [EL26] ²	Low-voltage dry-type distribution electric transformers meet the minimum efficiency requirements of Table C405.6.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C405.7 [EL27] ²	Electric motors meet the minimum efficiency requirements of Tables C405.7(1) through C405.7(4). Efficiency verified through certification under an approved certification program or the equipment efficiency ratings shall be provided by motor manufacturer (where certification programs do not exist).	□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.
	Escalators and moving walks comply with ASME A17.1/CSA B44 and have automatic controls configured to reduce speed to the minimum permitted speed in accordance with ASME A17.1/CSA B44 or applicable local code when not conveying passengers.	□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.
C405.9 [EL29] ²	Total voltage drop across the combination of feeders and branch circuits <= 5%.	□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

Section # & Req.ID	Final Inspection	Complies?	Comments/Assumptions
C303.3, C408.2.5. 3 [FI8] ³	Furnished O&M manuals for HVAC systems within 90 days of system acceptance.	□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.
C403.2.2 [FI27] ³	HVAC systems and equipment capacity does not exceed calculated loads.	□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.
C403.2.4. 1 [FI47] ³	Heating and cooling to each zone is controlled by a thermostat control. Minimum one humidity control device per installed humidification/dehumidification system.	□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.
C403.2.4. 1 [FI47] ³	Heating and cooling to each zone is controlled by a thermostat control. Minimum one humidity control device per installed humidification/dehumidification system.	□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.
C403.2.4. 1 [FI47] ³	Heating and cooling to each zone is controlled by a thermostat control. Minimum one humidity control device per installed humidification/dehumidification system.	□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.
C403.2.4. 1 [FI47] ³	Heating and cooling to each zone is controlled by a thermostat control. Minimum one humidity control device per installed humidification/dehumidification system.	□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.
C403.2.4. 1.1 [FI42] ³		□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.
C403.4.1. 2 [FI38] ³	Thermostatic controls have a 5 °F deadband.	□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.
C403.2.4. 1.3 [FI20] ³	Temperature controls have setpoint overlap restrictions.	□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.
C403.2.4. 2 [FI39] ³	programmable control system.	□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.
C403.2.4. 2.1, C403.2.4. 2.2 [FI40] ³		□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.

1	High Impact (Tier 1)	2	Medium Impact (Tier 2)	3	Low Impact (Tier 3)

Section # & Req.ID	Final Inspection	Complies?	Comments/Assumptions		
C403.2.4. 2.3	Systems include optimum start controls.	□Complies □Does Not	Requirement will be met.		
[FI41] ³		□Not Observable □Not Applicable			
C403.2.4. 2.3	Systems include optimum start controls.	□Complies □Does Not	Requirement will be met.		
[FI41] ³		□Not Observable □Not Applicable			
C404.3 [FI11] ³	Heat traps installed on supply and discharge piping of non-circulating	□Complies □Does Not	Requirement will be met.		
	systems.	□Not Observable □Not Applicable			
C404.4 [FI25] ²	All piping insulated in accordance with section details and Table C403.11.3.	□Complies □Does Not	Requirement will be met.		
		□Not Observable □Not Applicable			
C404.6.1 [FI12] ³	Controls are installed that limit the operation of a recirculation pump	□Complies □Does Not	Requirement will be met.		
	installed to maintain temperature of a storage tank. System return pipe is a dedicated return pipe or a cold water supply pipe.	□Not Observable □Not Applicable			
C408.1.1 [FI57] ¹	Building operations and maintenance documents will be provided to the owner. Documents will cover manufacturers' information, specifications, programming procedures and means of illustrating to owner how building, equipment and systems are intended to be installed, maintained, and operated.	□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.		
C408.2.1 [FI28] ¹	Commissioning plan developed by registered design professional or approved agency.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.		
C408.2.3. 1 [FI31] ¹	HVAC equipment has been tested to ensure proper operation.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.		
2	HVAC control systems have been tested to ensure proper operation,	☐Complies ☐Does Not	Requirement will be met.		
[FI10] ¹	calibration and adjustment of controls.	□Not Observable □Not Applicable			
C408.2.3. 3 [FI32] ¹	Economizers have been tested to ensure proper operation.	□Complies □Does Not □Not Observable	Requirement will be met.		
C408.2.4 Preliminary commissioning report		□Not Applicable □Complies	Requirement will be met.		
[FI29] ¹	completed and certified by registered design professional or approved agency.	□Does Not □Not Observable □Not Applicable			
C408.2.5.	Furnished HVAC as-built drawings submitted within 90 days of system	□Complies □Does Not	Requirement will be met.		
[FI7] ³ acceptance.		□Not Observable □Not Applicable			
Not Observable					

Section # & Req.ID	Final Inspection	Complies?	Comments/Assumptions
C408.2.5. 3 [FI43] ¹	An air and/or hydronic system balancing report is provided for HVAC systems.	\square Complies \square Does Not	Requirement will be met.
		□Not Observable □Not Applicable	
C408.2.5.	Final commissioning report due to building owner within 90 days of receipt of certificate of occupancy.	\square Complies \square Does Not	Requirement will be met.
[FI30] ¹		□Not Observable □Not Applicable	

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

Project Title: **HAFB 591** Report date: 04/28/20

Data filename: I:\PROJECTS\2019 Projects\2019-151.00 HAFB B591\Energy\Energy Code-COMCheck-Models\20 Page 15 of 15 151.00 HAFB 591.cck