

**INVITATION TO BID**  
**CITY OF SPRINGFIELD**  
BID # 1061

The City of Springfield Parks & Recreation Department will be accepting sealed bids to **repair the Sanyo Heating and Cooling ECO-i System at The Center**. Specifications may be downloaded at [www.springfield-tn.org](http://www.springfield-tn.org). Questions may be directed to Terry Martin, Director of Parks and Recreation Department at 615-382-1655. Sealed bids must be received in the Office of the City Recorder, 405 North Main Street, Springfield, TN 37172 by 2:00 PM, local time, on Tuesday, May 1, 2018. The City of Springfield reserves the right to reject any and all bids.  
Lisa H. Crockett  
City Recorder

City of Springfield

Bid #1061 Summary

Sanyo Heating and Cooling ECO-i Systems

Trouble Shooting and Repair Specifications

- I. Bids MUST include either A) Certificate of Completion for a factory certified Variable Refrigerant Flow (VRF) installation and service course or B) Recent Proof of successful, local VRF installation experience that can be independently verified.
- II. Bid must also include pricing for leak check on all systems including outdoor and indoor equipment, as well as linesets connecting said equipment.
- III. Bid must include Iran Divestment Act Compliance
- IV. Repair Specifications-For additional information, see report attached
  - (1) Two inverter compressors and one fixed speed compressor have insulation damaged and leaking electricity to ground and cannot be run. These three compressors need to be replaced.
  - (2) The sub unit of refrigerant circuit 1, and the main unit of refrigerant circuit 2, are having SCV2 valve stuck in the position of cooling mode. The SCV2 valve needs replacing for these two units. Temporarily, these heat exchangers are disabled by removing the DCV2 coil from the valve stem. So, after replacing the SCV2 valve, please put back the coils of DCV2 on the valve stem, too.
  - (3) Both refrigerant circuits are running with low refrigerant, and as a result, compressors are running with high temperature, which might shorten the lifetime of the compressors, so please correct the charge amount.
  - (4) The refrigerant circuit 1 is short on oil, too. Please add PVE oil with viscosity of ISO68, like Nu-Calgon's FVC68D.
- V. **Insurance** A certificate of Liability Insurance shall be provided by the successful bidder with a minimum of 1,000,000 Liability insurance, which shall indicate personal injury, property damage and include Workman's Compensation per the State of Tennessee.
- VI. **Vendor** shall possess a State of Tennessee Business License
- VII. **Optional** Vendor may inspect systems by appointment Monday through Friday, 7:30 AM-4:00 PM. Contact Terry Martin, Director, 615-382-1655, 401 N. Main St., Springfield, TN 37172, [tmartin@springfield-tn.org](mailto:tmartin@springfield-tn.org).
- VIII. **Warranty** Successful bidder shall provide a minimum of one (1) year warranty on all parts and labor.

**NOTICE to Vendors:**

**Disregard the final paragraph on page 5 that describes preventive maintenance procedures. Springfield Parks and Recreation Maintenance Crew will be responsible for the preventive maintenance procedures.**

**Respectfully submitted:**

**By** \_\_\_\_\_

**(Signature-Owner or Corporate Officer)**

\_\_\_\_\_

**(Title)**

\_\_\_\_\_

**(Date)**

\_\_\_\_\_

**(Company)**

\_\_\_\_\_

**(Telephone)**

\_\_\_\_\_

**(Address)**

\_\_\_\_\_

**(Email)**

**Sanyo Heating and Cooling ECO-i Systems**

**Repairs**

**Bid # 1061**

**BASE BID:**

**Repair, trouble shoot all leak issues inside and outside building,**

**Replace parts per specifications**

**LUMP SUM \_\_\_\_\_**

The City of Springfield has the right to reject any and all bids.

# IRAN DIVESTMENT ACT NOTICE

Tenn. Code Ann. § 12-12-106 requires the chief procurement officer to publish, using credible information freely available to the public, a list of persons it determines engage in investment activities in Iran, as described in § 12-12-105. For these purposes, the State intends to use the attached list of “Entities Ineligible to Contract with the State of South Carolina or any Political Subdivision of the State per the Iran Divestment Act of 2014, S.C. Code Ann §§ 11-57-10, et. Seq.” While inclusion on the list would make a person ineligible to contract with the state of Tennessee, if a person ceases its engagement in investment activities in Iran, it may be removed from the list. If you feel as though you have been erroneously included on this list, please contact the Central Procurement Office at [CPO.Website@tn.gov](mailto:CPO.Website@tn.gov).

HENRY MCMASTER, CHAIR  
COMMISSIONER

CURTIS M. LOFFIS, JR.  
MEMBER

RICHARD ECKSTROM, CPA  
COMMISSIONER



THE DIVISION OF PROCUREMENT SERVICES

HUGH K. LEATHERMAN, SR.  
COMMISSIONER (NATURAL RESOURCES)

W. BRIAN WHITE  
COMMISSIONER (WATERWAYS AND MARINE CONSULTING)

GRANT GILLESPIE  
EXECUTIVE DIRECTOR

List Date: December 20, 2017

Inquiries/Questions: [irandivestment@mmo.sc.gov](mailto:irandivestment@mmo.sc.gov)

**Entities Ineligible to Contract with the State of South Carolina or any Political Subdivision of the State per the Iran Divestment Act of 2014, S.C. Code Ann. §§ 11-87-10, et seq.**

1. Abadan Petrochemical Co.
2. Aban Offshore Ltd.
3. Anton Oilfield Services Group
4. Arak Petrochemical
5. Arvandan Oil & Gas
6. Behran Oil Co.
7. Bharat Petroleum Corporation Ltd.
8. BP plc
9. China International United Petroleum & Chemical So., Ltd. (Unipet)
10. China National Offshore Oil Corp.
11. China National Petroleum Corp. (CNPC)
12. China National United Oil Corp.
13. China Petroleum & Chemical Corp
14. Cosmo Energy Holdings Company Limited
15. Daewoo Industrial
16. Daewoo Engineering & Construction
17. Eni Spa
18. Eni Spa
19. Esfahan Oil Refining Co.
20. Essar Oil Ltd.
21. Farsaran Petrochemical Co
22. Farabi Petrochemical Co.
23. Formosa Petrochemical Corp.
24. Gazprom OAO
25. Gubre Fabrikalari T.A.S.
26. Hellenic Petroleum S.A.
27. Hindustan Petroleum Corporation Ltd.
28. Hyundai Engineering
29. Hyundai Heavy Industries
30. Idemitsu Kosan Co.Ltd
31. Indian Oil Corporation Ltd.
32. Inpex Corporation
33. Iran Power Plant Projects Managements Co.(MAPNA)
34. Japan Drilling Co., Ltd.
35. Japan Petroleum Exploration Co.,Ltd.
36. JXTC Holdings Inc
37. Khark Petrochemical Co
38. Koc Holding A.S.
39. Korea Gas Corporation
40. Linde AG
41. Maire Tecnimont S.p.A.
42. Mangalore Refinery & Petrochemicals Ltd.
43. Marubeni Corporation
44. Mitsubishi Materials Corporation
45. Mitsui & Co. Ltd
46. Nafiran Intrade Company
47. National Iranian Oil Co.
48. National Iranian South Oil Co.
49. National Iranian Tanker Co.
50. National Shipping Co Of Saudi Arabia
51. North Drilling
52. Oil & Natural Gas Corporation Ltd.
53. Oil India Ltd
54. Oil Industry Investment Co.
55. ONGC Videsh Ltd (OVL)
56. Oriental Energy Co., Ltd.
57. Pardis Petrochemical Co.
58. Pars Oil Co.
59. Parsian Oil and Gas Development Co.
60. Petrochemical Industries Investment Co.
61. Petrochemical Transport Co.
62. PetroChina Co. Ltd.
63. PJSC Lukoil
64. Polskie Gornictwo Naftowe i Gazownictwo SA
65. Royal Dutch Shell Plc
66. Sadid Pipe & Equipments Co.
67. Saras Raffinerie Sarde SPA
68. Sepehr Energy
69. Shiraz Petrochemical Co.
70. Showa Shell Sekiyu KK
71. Sinopec Group
72. Sk Holdings Co. Ltd
73. SK Innovation
74. Tabriz Oil Refining Company
75. Total S.A.
76. Toyo Engineering Corporation
77. Turkiye Petrol Rafinerileri AS
78. Vitol SA
79. Zhuhai Zhenrong Company

# IRAN DIVESTMENT ACT

“By the submission of this bid, each bidder and each person signing on behalf of any bidder certifies, and in the case of a joint bid each of a joint bid each party thereto certifies, and in the case of a joint bid each party thereto certifies as to its own organization, under penalty of perjury, that to the best of its knowledge and belief that each bidder is not a person included within the list created pursuant to § 12-12-106.”

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

Title: \_\_\_\_\_

3/14/2018

Panasonic Corporation of North America

Hiroaki Tanaka

## Report of operation monitoring of ECO i systems at The Center

### Abstract

At this visit, we have monitored operation of both refrigerant circuits to evaluate the operation state and find problem. Summary of findings is as below.

- (1) Two inverter compressors and one fixed speed compressor have insulation damaged and leaking electricity to ground, and can not be run. These three compressors need to be replaced.
- (2) The sub unit of refrigerant circuit 1, and the main unit of refrigerant circuit 2, are having SCV2 valve stuck in the position of cooling mode. The SCV2 valve needs replacing for these two units. Temporarily, these heat exchangers are disabled by removing the DCV2 coil from the valve stem. So, after replacing the SCV2 valve, please put back the coils of DCV2 on the valve stem, too.
- (3) Both refrigerant circuits are running with low refrigerant, and as a result, compressors are running with high temperature, which might shorten the lifetime of the compressors, so please correct the charge amount.
- (4) The refrigerant circuit 1 is short on oil, too. Please add PVE oil with viscosity of ISO68, like Nu-Calgon's FVC68D .

### Detail

With help from Ian with TASGroup, all the refrigerant circuits were monitored with monitoring software to check the state of operation.

We also flashed latest version of embedded software on all the outdoor units, which might help elongating the longevity by slowing down changeover process in defrost.

The systems checked are listed in Fig. 1, below, and issues to be solved are listed in Table. 1, below, followed by detail for each refrigerant circuit.

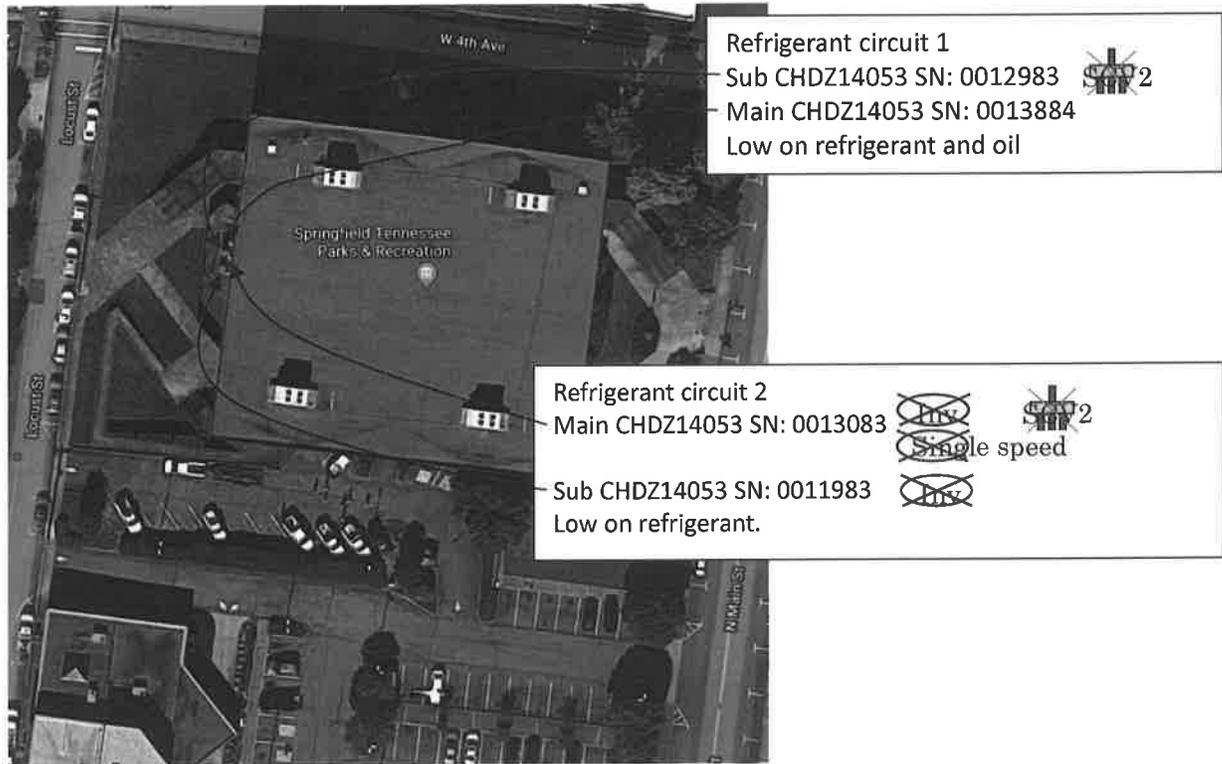


Fig. 1 Location of each systems around the building

Circuit	Indoor	Issues found		Evaluation of impact
1	22 units	12 ton Sub	SCV2 is stuck in cooling mode position, and needs replacing.	Capacity loss about 40%.
		Low on refrigerant and oil		
2	26 units	12 ton Main	Inverter compressor and 3rd. compressor are leaking electricity to ground and need replacing.	Capacity loss about 60%.
			SCV2 is stuck in cooling mode position, and needs replacing.	
		12 ton Sub	Inverter compressor is leaking electricity to ground and needs replacing.	
		A little low on refrigerant		

Table. 1 Summary of issues to be solved

Refrigerant circuit address 1 with 22 indoor units

LINE CHECKER 2/3/2018 16:30:36															
FILE SELECT SCREEN ALARM MANUAL CONTROL PREFERENCES HELP INSPECTION TABLE															
O/D TYPE:CHDZ14053 ROM Ver:120															
RECORD DATA(FILE NAME:006Center RC1 -.067) INTERVAL 10SEC. <span style="float:right">FORCIBLE SET</span>															
NO. OF INDOOR UNIT:22															
ID No.	Capa	Model Type	OPR	Mode	Load LEV	DIF (degF)	SUC (degF)	DIS (degF)	E1 (degF)	E2 (degF)	E3 (degF)	FM	MOV STEP	DSBE	ALAR
1	12	MF	ON	HEAT	31	21.6	* 75.2	92.3	82.4	-	142.7	--HH	--109	--1000	
2	12	U/Y	ON	HEAT	31	21.6	* 79.7	90.5	89.6	-	128.3	--HH	--93	--1000	
3	25	U/Y	ON	HEAT	31	21.6	* 80.6	93.2	90.5	-	159.8	--HH	--109	--1000	
4	12	U/Y	ON	HEAT	31	21.6	* 79.7	90.5	87.8	-	127.4	--HH	--106	--1000	
7	36	U/Y	ON	HEAT	31	21.6	* 79.7	91.4	89.6	-	140.0	--HH	--109	--1000	
14	12	U/Y	ON	HEAT	31	21.6	* 78.8	89.6	88.7	-	114.8	--HH	--96	--1000	
17	12	U/Y	ON	HEAT	31	21.6	* 80.6	91.4	90.5	-	137.3	--HH	--80	--1000	
19	12	U/Y	ON	HEAT	31	21.6	* 79.7	90.5	89.6	-	133.7	--HH	--90	--1000	
21	12	U/Y	ON	HEAT	31	21.6	* 79.7	90.5	88.7	-	132.8	--HH	--95	--1000	
22	12	U/Y	ON	HEAT	31	21.6	* 77.9	89.6	88.7	-	125.6	--HH	--103	--1000	
27	12	U/Y	ON	HEAT	31	21.6	* 79.7	90.5	90.5	-	135.5	--HH	--85	--1000	
29	12	U/Y	ON	HEAT	31	21.6	* 82.4	91.4	90.5	-	132.8	--HH	--83	--1000	
30	12	U/Y	ON	HEAT	31	21.6	* 78.8	90.5	89.6	-	134.6	--HH	--91	--1000	
33	25	U/Y	ON	HEAT	31	21.6	* 77.9	92.3	90.5	-	140.0	--HH	--116	--1000	
36	12	U/Y	ON	HEAT	31	21.6	* 79.7	91.4	88.7	-	135.5	--HH	--108	--1000	
39	12	U/Y	ON	HEAT	31	21.6	* 79.7	91.4	90.5	-	151.7	--HH	--81	--1000	
40	12	U/Y	ON	HEAT	31	21.6	* 77.9	88.7	88.7	-	93.2	--HH	--91	--1000	
41	36	U/Y	ON	HEAT	31	21.6	* 79.7	93.2	91.4	-	157.1	--HH	--100	--1000	
43	12	U/Y	ON	HEAT	31	21.6	* 81.5	90.5	88.7	-	136.4	--HH	--92	--1000	
45	12	MF	ON	HEAT	31	21.6	* 73.4	93.2	86.0	-	147.2	--HH	--105	--1000	
46	12	U/Y	ON	HEAT	31	21.6	82.4	89.6	89.6	-	113.0	--HH	--94	--1000	
47	12	U/Y	ON	HEAT	31	21.6	* 77.0	89.6	88.7	-	103.1	--HH	--92	--1000	

RECORD DATE / TIME IN DISPLAY  
27/02/2018 11:32:18

O/D ADD	1	2	3	4
DC1	193	163		
DC2	191	165		
DC3	203	205		
OUT TEMP	64	64		
H/P TEMP	88	89		
L/P TEMP	-6	-6		
SC TEMP	60	50		
H/E GAS 1	57	48		
H/E LIQ 1	17	26		
H/E GAS 2	62	63		
H/E LIQ 2	13	62		
H/E GAS 3	60	60		
H/E LIQ 3	30	10		
OIL 1 TEMP	151	148		
OIL 2 TEMP	86	69		
OIL 3 TEMP	135	79		
COMP1 AMPA	10	9		
COMP1 AMPB	11	11		
COMP2 AMP	11	12		
COMP3 AMP	10	13		
TRG HP	274			
TRG H/E T	0	0		
HIGH P	273	278		
LOW P	47	47		
---				
OIL LEVEL 1	2	1		
OIL LEVEL 2	1	1		
OIL LEVEL 3	1	0		
ALARM	OK	OK		
INFO	OK	OK		

O/D TYPE	X16	Y16
--INV HZ	57	47
--COMP 2	ON	ON
--COMP 3	ON	ON
--SAVE	OFF	OFF
--DCV1	ON	ON
--DCV2	ON	ON
--DCV3	ON	ON
--SCV1	ON	ON
--SCV2	ON	ON
--SCV3	ON	ON
--PBV1	ON	ON
--PBV2	ON	ON
--PBV3	ON	ON
--RCV	OFF	ON
--RBV	OFF	OFF
--ORVR	OFF	ON
--BPV	OFF	OFF
--PDV	OFF	OFF
--FAN	WD	WC
--EC VAL 1	421	363
--EC VAL 2	466	279
--EC VAL 3	412	480
--EC VAL 4	480	480

All the indoor units are flowing in the right direction.

All the compressors are running.

Compressor temperature is high due to low on refrigerant.

SCV2 valve is stuck in cooling mode position. It needs replacing. Temporarily, the coil of DCV2 is removed from the stem to disable the heat exchanger, so after replacing the SCV2, please put back the coil on the DCV2.

Oil is also low, probably by about 1 gallon. Please add PVE oil with viscosity of ISO68, like Nucalgon's FVC68D .

Refrigerant circuit address 2 with 26 indoor units

ID No.	Capa	Model Type	OPR	Mode	Load LEV	DIF (degF)	SUC (degF)	DIS (degF)	E1 (degF)	E2 (degF)	E3 (degF)	FM	MOV STEP	DSBE	ALAR
1	12	U/Y	ON	HEAT	31	21.6	* 82.4	93.2	92.3	-	95.0	--HH	--171	--1000	
4	25	U/Y	ON	HEAT	31	21.6	* 81.5	95.0	93.2	-	115.7	--HH	--195	--1000	
5	12	U/Y	ON	HEAT	31	21.6	* 81.5	94.1	94.1	-	122.0	--HH	--160	--1000	
6	12	U/Y	ON	HEAT	31	21.6	* 83.3	94.1	95.0	-	122.9	--HH	--132	--1000	
8	12	U/Y	ON	HEAT	31	21.6	* 80.6	93.2	94.1	-	115.7	--HH	--165	--1000	
10	12	U/Y	ON	HEAT	31	21.6	* 83.3	93.2	93.2	-	108.5	--HH	--172	--1000	
11	18	U/Y	ON	HEAT	31	21.6	* 81.5	93.2	93.2	-	110.3	--HH	--180	--1000	
12	12	U/Y	OFF	HEAT	0	21.6	* 78.8	79.7	81.5	-	99.5	--HH	--20	--0010	
13	25	U/Y	ON	HEAT	31	21.6	* 78.8	95.0	94.1	-	129.2	--HH	--183	--1000	
15	36	U/Y	ON	HEAT	31	21.6	* 83.3	95.0	95.0	-	119.3	--HH	--152	--1000	
16	18	U/Y	ON	HEAT	31	21.6	* 78.8	93.2	93.2	-	122.9	--HH	--179	--1000	
18	12	U/Y	ON	HEAT	31	21.6	* 82.4	95.0	94.1	-	125.6	--HH	--153	--1000	
20	12	U/Y	ON	HEAT	31	21.6	* 83.3	95.0	94.1	-	127.4	--HH	--152	--1000	
23	18	U/Y	ON	HEAT	31	21.6	* 79.7	93.2	93.2	-	118.4	--HH	--181	--1000	
24	18	U/Y	ON	HEAT	31	21.6	* 78.8	91.4	101.3	-	117.5	--HH	--82	--1000	
25	12	U/Y	ON	HEAT	31	21.6	* 83.3	94.1	94.1	-	116.6	--HH	--157	--1000	
26	12	U/Y	ON	HEAT	31	21.6	* 84.2	94.1	94.1	-	115.7	--HH	--169	--1000	
28	12	U/Y	ON	HEAT	31	21.6	* 82.4	93.2	92.3	-	102.2	--HH	--173	--1000	
31	36	U/Y	ON	HEAT	31	21.6	* 78.8	95.0	95.0	-	128.3	--HH	--169	--1000	
32	12	U/Y	ON	HEAT	31	21.6	* 82.4	94.1	92.3	-	99.5	--HH	--173	--1000	
34	36	U/Y	ON	HEAT	31	21.6	* 76.1	95.9	95.9	-	134.6	--HH	--147	--1000	
35	12	U/Y	ON	HEAT	31	21.6	* 83.3	95.0	80.6	-	124.7	--HH	--304	--1000	
37	12	U/Y	ON	HEAT	31	21.6	* 82.4	94.1	92.3	-	104.9	--HH	--168	--1000	
38	12	U/Y	ON	HEAT	31	21.6	81.5	94.1	92.3	-	106.7	--HH	--168	--1000	
42	12	MF	ON	HEAT	31	21.6	* 74.3	92.3	81.5	-	100.4	--HH	--328	--1000	
44	12	U/Y	ON	HEAT	31	21.6	* 84.2	94.1	93.2	-	110.3	--HH	--168	--1000	

RECORD DATE / TIME IN DISPLAY  
27/02/2018 11:10:14

O/D ADD	1	2	3	4
DC1	76	73		
DC2	147	150		
DC3	72	150		
OUT TEMP	58	59		
H/P TEMP	95	96		
L/P TEMP	31	32		
SC TEMP	51	48		
H/E GAS 1	49	44		
H/E LIQ 1	38	41		
H/E GAS 2	61	49		
H/E LIQ 2	57	39		
H/E GAS 3	52	51		
H/E LIQ 3	34	35		
OIL 1 TEMP	64	63		
OIL 2 TEMP	117	105		
OIL 3 TEMP	63	115		
COMP1 AMPA	3	6		
COMP1 AMPB	0	0		
COMP2 AMP	13	14		
COMP3 AMP	0	13		
TRG HP	320			
TRG H/E T	0	0		
HIGH P	307	310		
LOW P	101	102		
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OIL LEVEL 1	1	1		
OIL LEVEL 2	2	1		
OIL LEVEL 3	1	1		
ALARM	OK	OK		
INFO	OK	OK		

O/D TYPE	X16	X16
--INV HZ	0	0
--COMP 2	ON	ON
--COMP 3	OFF	ON
--SAVE	OFF	OFF
--DCV1	ON	ON
--DCV2	ON	ON
--DCV3	ON	ON
--SCV1	ON	ON
--SCV2	ON	ON
--SCV3	ON	ON
--PBV1	ON	ON
--PBV2	ON	ON
--PBV3	ON	ON
--RCV	OFF	OFF
--RBV	OFF	OFF
--BALV	ON	OFF
--ORVR	OFF	ON
--BPV	OFF	OFF
--PDV	OFF	OFF
--PAN	WE	WE
--EC VAL 1	188	187
--EC VAL 2	214	210
--EC VAL 3	249	288
--EC VAL 4	0	0

All the indoor units are flowing in the right direction.

These three compressors are leaking electricity to ground and needs replacing.

SCV2 valve is stuck in cooling mode position. It needs replacing.

Temporarily, the coil of DCV2 is removed from the stem to disable the heat exchanger, so after replacing the SCV2, please put back the coil on the DCV2.

The system is a little low on refrigerant, too.

When we arrived, the refrigerant circuit 2 could not run on heating mode. This was due to temperature sensor error on one indoor unit. The system was interpreting the irregular high temperature reading as a sign of high pressure at that point and was stopping operation in heating mode. We have replaced that temperature sensor (E1 sensor of 1ton mini-4way cassette in the locker room), and now the system can run both in cooling/heating mode.

We have removed plastic net around the heat exchangers, too. This plastic net is intended to protect human skin from cutting when in touch with aluminum fin, but at this building the outdoor units are kept in the place away from occupants, so it is safe to remove, and if the net was left as it was, it would have caught snow and ice and caused more frequent defrost cycle.

The SCV2 that needs to be replaced looks like the picture below, and the service parts number is 623 309 4885 Reversing Valve STF-0248G.



SCV2  
623 309 4885  
Reversing Valve  
STF-0248G

For maintaining the good condition please do the following.

- (1) Please don't forget to periodically clean the washable filters on ceiling cassette unit and replace the air filter of the ducted indoor units.
- (2) Once or twice a year, please clean the outdoor heat exchanger, because cotton tree's cotton or spider webs stick on the heat exchanger.