

ARMED SERVICES BOARD OF CONTRACT APPEALS

Appeals of --)
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Craft Cooling, Inc.) ASBCA Nos. 52494 and 54127
)
Under Contract No. DAKF10-93-C-0066)

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OPINION BY ADMINISTRATIVE JUDGE VAN BROEKHOVEN

Appellant timely appealed the contracting officer's final decision denying its claims for equitable adjustments under the subject contract. In ASBCA No. 52494, appellant claimed \$236,438.67 for alleged work performed by appellant after it had completed installation of the refrigeration equipment/cold storage in Building 1009 at Ft. Stewart, Georgia. While it is unclear from both the claim and the complaint, the claim is largely for cost of Freon due to the loss of Freon through leaks and the cost of labor, materials, and miscellaneous expenses involved in recharging the refrigeration system due to Freon loss. Appellant contends that the loss of Freon was due to defective design and defective specifications. According to the government, the loss of Freon was due to appellant's poor workmanship. In ASBCA No. 54127, appellant claimed \$12,042.12, plus interest for contract payments allegedly wrongly withheld. Only entitlement is before the Board for decision.

FINDINGS OF FACT

1. The government awarded the subject contract to the Small Business Administration, with appellant designated as the 8(a) subcontractor, for the replacement of the refrigeration equipment at the cold storage facility, Building 1009, Ft. Stewart, Georgia. (R4, tab 3) For the firm, fixed-price of \$329,377.00, appellant was required to furnish all plant, labor, and materials, and perform all operations required in connection with replacing the existing Freon R-12 refrigeration system with a new Freon R-22

refrigeration system. The work included, but was not limited to, replacement of the room coolers, valves, and accessories, condensers, refrigerant lines, insulation on refrigerant lines, drain lines and heater cables, and charging the new system with Freon 22 refrigerant. The General Technical Provisions of the Specifications provided that the work was to be performed in a phased sequence in which appellant was to outline the proposed method of work and order of staging the work, the duration of outages, and the relocation of stored items. Existing valves were to be used to perform the work in stages, thereby allowing the facility to remain in operation during the performance of the work. Further, appellant was required to sequence the work to avoid mixing of refrigerants.

2. Section 15652 of the Specifications, Part 3, Execution, provided in pertinent part as follows:

3.1 INSTALLATION

Materials and equipment shall be installed and prepared for service as indicated and as recommended by the manufacturer. Where applicable, work shall be performed in accordance with ASHRAE 15. Access panels shall be provided for all concealed valves, vent controls, and control devices and any item requiring periodic operation, inspection, or maintenance. Access panels shall be of sufficient size and so located that concealed items may be serviced and maintained or completely removed and replaced.

....

3.1.2.2 Installation

Piping shall be installed straight and true to building lines with required pitch and without sag or off-sets in horizontal piping and without obstruction of other construction. Piping shall be erected without forcing or springing. Long radius fittings or bends shall be used for change of direction. Bending of pipe 4 inches and smaller will be permitted provided a pipe bender is used to produce bends without malformation and with centerline radius not less than 6 pipe diameters. Branch connections shall be made with tee fittings or forged steel branch outlet fittings.

....

3.1.2.12 Pressure Piping Welding

Pressure piping welding shall be performed in accordance with the ASME-17 and ASME B31.1. Brazing shall be performed in accordance with AWS-01. Soldering is permitted only for instrument compressed air systems, in sizes through 1 inch, and otherwise brazing shall be used for joining. Soldering work shall be performed in accordance with AWS-02. Brazed, copper joints shall utilize filler metal conforming to AWS A5.8 BCUP 5. All brazing and welding of refrigerant piping systems shall be done with a pressure regulated inert gas purge of pipe and tube bore with a gas as recommended by the filler metal manufacturer. Inert gas atmosphere shall be maintained when work is discontinued. Steel piping butt weld joints shall be made with consumable insert rings in lieu of chill rings.

Multipoint torches shall be used to make all joints in copper systems sized 2 inches and larger.

....

3.1.9 Refrigerant Charge

The Contractor shall provide a complete system refrigerant charge with refrigerant recommended by the manufacturer, and during the guarantee-warranty period, shall make up any loss caused by defective workmanship, materials, or equipment.

....

3.7 SYSTEMS OPERATION DEMONSTRATION

Upon completion and prior to acceptance of the work, the Contractor shall perform preoperational checkout, calibration and adjustment of all system components to ensure stable, accurately, reproducible, energy efficient operation and optimum performance, and shall demonstrate such.

Demonstration shall be under the direction of a registered professional engineer who will attest to installed systems and

equipment compliance with the requirements of the contract documents. Demonstration shall include operation of systems equipment and controls through normal ranges and sequences and simulation of abnormal conditions. Every device shall be caused to function manually and automatically in accordance with its purpose. Systems shall be operated for 48 hours after all major corrections have been made. If tests do not demonstrate satisfactory system performance, deficiencies shall be corrected and system shall be retested. The Government will provide electric and water utilities and the Contractor shall provide all other means to properly conduct tests.

(R4, tab 3 at C-42 - C-52)

3. The contract contained the clauses normally included in firm, fixed-price construction contracts, including the FAR 52.243-0004 CHANGES (AUG 1987), FAR 52.243-0005 CHANGES AND CHANGED CONDITIONS (Apr 1984), FAR 52.246-0021 WARRANTY OF CONSTRUCTION (APR 1984), and FAR 52.246-0012 INSPECTION OF CONSTRUCTION (JUL 1986) clauses. The INSPECTION OF CONSTRUCTION clause provided, in pertinent part:

(b) The Contractor shall maintain an adequate inspection system and perform such inspections as will ensure that the work performed under the contract conforms to contract requirements. The Contractor shall maintain complete inspection records and make them available to the Government. All work shall be conducted under the general direction of the Contracting Officer and is subject to Government inspection and test at all places and at all reasonable times before acceptance to ensure strict compliance with the terms of the contract.

(c) Government inspections and tests are for the sole benefit of the Government and do not –

(1) Relieve the Contractor of responsibility for providing adequate quality control measures;

....

(f) The Contractor shall, without charge, replace or correct work found by the Government not to conform to contract requirements, unless in the public interest the Government consents to accept the work with an appropriate adjustment in contract price. The Contractor shall promptly segregate and remove rejected material from the premises.

(g) If the Contractor does not promptly replace or correct rejected work, the Government may (1) by contract or otherwise, replace or correct the work and charge the cost to the Contractor or (2) terminate for default the Contractor's right to proceed.

(R4, tab 3 at E-1 - E-2) The contract also contained a COMMENCEMENT, PROSECUTION, AND COMPLETION OF WORK (SPECIAL) clause which provided that:

The Contractor shall be required to (a) commence work under this contract within ten (10) calendar days after the date the Contractor receives the notice to proceed; however, on-site work shall not commence until 1 October 1993, (b) prosecute the work diligently, and (c) complete the entire work ready for use within one hundred twenty (120) calendar days after commencement of on-site work. The time stated for completion shall include final cleanup of the premises.

(R4, tab 2) The LIQUIDATED DAMAGES – CONSTRUCTION (APR 1984) clause provided:

(a) If the Contractor fails to complete the work within the time specified in the contract, or any extension, the Contractor shall pay to the Government as liquidated damages, the sum of \$75.64 for each day of delay.

(b) If the Government terminates the Contractor's right to proceed, the resulting damage will consist of liquidated damages until such reasonable time as may be required for final completion of the work together with any increased costs occasioned the Government in completing the work.

(c) If the Government does not terminate the Contractor's right to proceed, the resulting damage will consist of liquidated damages until the work is completed or accepted.

(R4, tab 3 at I-4)

4. The government issued the notice to proceed on 6 December 1993, and appellant received it on 6 December 1993 (R4, tab 5). By unilateral Modification No. P00002, dated 9 February 1994, effective 7 February 1994, the government changed the pipe sizes and added the following paragraph to the specifications, Section C, TECHNICAL PROVISIONS, GENERAL, page C-3:

3.7 The Contractor shall remove existing and install new refrigerant valves, refrigerant line filter dryers, and all piping components associated with the new refrigerant lines to be replaced. The materials, installation, and testing shall be as specified in SECTION 15652, COLD STORAGE REFRIGERATION SYSTEMS.

(R4, tab 6) The new pipes were larger than the existing pipes. The drawings that accompanied this change provided the same layout as the original layout for the pipes. There was also no need to place or install additional valves or place them in different locations along the system than originally specified. (Tr. 1/48-51, 57-58) This modification provided that any increase or decrease in cost or time required to perform this work shall be set forth in a contract modification. However, this modification provided only a time extension from 6 April 1994 to 1 May 1994. The government issued unilateral Modification No. P00006, dated 10 June 1994, providing for partial compensation for the cost of changing the pipe sizes and changes to the specifications required under contract Modification No. P00002. This modification increased the contract price by \$55,414.00, from \$366,694.15 to \$422,108.15 (R4, tab 10).

5. Both prior to the award, and shortly thereafter, appellant became concerned with the conditions of the compressors, wiring, freezers, and coolers (tr. 1/28-32, 3/10-11, 32-33). As initially awarded, the contract required appellant to change out the evaporators as a part of the conversion of the refrigeration system from R-12 to R-22 Freon. Shortly after appellant began its contract performance, it met with the contracting officer and representatives of Carlyle Compressors to discuss its concerns about the compressors, particularly with respect to whether they were compatible with the R-22 Freon conversion, and the possibility of replacing the compressors. (Tr. 1/32, 3/32-33) The government decided to replace the existing compressors with rebuilt compressors provided by Carlyle Compressors and issued contract Modification No. P00003 dated 7 April 1994 following appellant's submission of proposals for the compressors (R4, tab 3, drawing sheet 2 of 2, tab 7; tr. 1/32-34, 47-48, 149-53, 2/166-68, 3/32-33, 166-68). This modification added paragraph 2.17 to Section C of the specifications, Section 15652, Cold Storage Refrigeration Systems, providing in pertinent part:

2.17 COMPRESSOR AND RECEIVER UNITS

a. Compressors

Units shall be factory fabricated or remanufactured, assembled and tested, packaged, ready for full capacity operation after terminal point connection and field charging with operating fluids. . . . All modifications to refrigerant piping and accessories to separate the system into medium and low temperature applications shall be as recommended by the refrigeration equipment manufacturers. The Contractor shall provide a full charge of lubricating oil prior to acceptance of system. Lubricating oil shall be of a type and grade recommended by the manufacturer for each compressor. If tests required by this specification do not demonstrate satisfactory performance, deficiencies shall be corrected at no additional cost to the Government, and the system shall be retested.

(R4, tab 7) Contract Modification No. P00003 further required appellant to replace wall insulation in specified cold storage rooms, receivers, piping, and accessories in the mechanical room, and provided for revisions to the drawings to incorporate these changes.

6. The government issued unilateral contract Modification No. P00004 on 2 June 1994 providing for partial compensation for the material cost of nine remanufactured compressors and related equipment provided by appellant under contract Modification No. P00003 (R4, tabs 8-9). The total amount of the contract was increased by \$37,317.15 from \$329,377.00 to \$366,694.15, with “final costs for this action [to be] settled pending completion of negotiation.”

7. There were further contract modifications, making changes to the insulation panels system, electrical and assorted changes under previous modifications, and settling the pricing changes effected by earlier modifications (R4, tabs 11-16). As a result of these modifications, the contract price was increased to \$848,322.23. The contract completion date was periodically extended in accordance with several of the contract modifications and ultimately extended to 28 June 1995. Appellant had submitted proposals for all these changes, which were reviewed by government engineers, who then provided the drawings based on what appellant had proposed (tr. 1/63-64). Bilateral contract Modification No. P00012, effective 25 May 1995, contained a release of claims that provided:

In consideration of this modification agreed to herein as complete equitable adjustment for the above changes, the Contractor hereby releases the Government from any and all liability under this contract for further equitable adjustments attributable to such facts or circumstance giving rise to the aforesaid changes without exception.

(R4, tab 16) This modification addressed the “differing site conditions” giving rise to the replacement and upgrading of the existing electrical wiring and related components discovered during Phase II of the contract. Thus, it involved revision No. 6 to the contract Drawing No. FS-1980, sheet 2 of 2, and the installation of time clocks, contactors, control wiring for evaporators, control enclosures, and wiring for single phasing protection.

8. Each of the pertinent modifications changing some aspect of the performance, such as, the piping, replacing deteriorated ceilings and walls, electrical systems, and compressors, was reflected in changes to the contract drawings (R4, tab 3). The drawings depicted the condensers, with the notes requiring that the contractor shall remove and replace existing condensers with new units, stating that the new refrigerant lines shall be routed to the evaporators and compressors following the existing pipe supports. The compressor rack demolition detail, provided that the contractor was to remove and replace compressors, receivers, and accessories with “equipment and components that are compatible with R-22 and sized for the building cooling load.” (R4, tab 3, Drawing Sheet 2 of 2)

9. Sometime in early 1995, appellant began to experience two major problems: the apparent loss of Freon and the migration of oil. Appellant had Burch Corporation perform a 1400 micron vacuum test in January 1995. There were no Freon leaks reported at this time, and the system then was charged and passed the seven day test (app. supp. R4, tab 135; tr. 1/87-89, 3/21-24). Shortly thereafter, Heatcraft Refrigeration Products (Heatcraft), in response to a government request, performed an inspection to make sure that the installation was done in accordance with the manufacturer’s recommendations (app. supp. R4, tab 126; tr. 3/17-19). Heatcraft was the manufacturer of the refrigeration system appellant installed in Building 1009 at Ft. Stewart. In its report, Heatcraft stated that Burch Corporation had done its final adjustments of superheat and that the job had been operating approximately seven days and showed no signs of poor operation on the evaporator portion. In summary, Heatcraft concluded that the job was done in a satisfactory manner with the exception of the fan cycling package which needed “to be added to the condensers to give a more uniform head pressure and to prevent future leaks.” However, appellant notified the contracting officer on 5 May 1995 that there had been Freon leaks and requested compensation for the additional Freon appellant used to

charge the system. (R4, tab 19) By letter dated 26 June 1995, the contracting officer responded to appellant's request for compensation:

Your second letter dated May 5, 1995 addresses freon [sic] leaks for which you request compensation. Your request for additional freon [sic] contains no merit. The new valve that you installed under this contract failed and allowed the nitrogen to mix with the freon [sic]. This was not a government valve; and, the Government is not responsible for costs associated with the valve failure.

(R4, tab 19)

10. Indeed, both the loss of Freon and the migration of oil resulted in shutting the system down (tr. 1/195-96). Bid Item 0002 provided that an estimated 3500 pounds of Freon R-22 would be required (R4, tab 3). According to the Contract Progress Reports for this period, appellant's overall actual completion was recorded as 92 percent as of 31 March 1995. (App. supp. R4, tab 195A) The scheduled completion date was indicated as 6 April 1994 with 100 percent scheduled completion indicated. The record is unclear just when the loss of Freon was noticed. However, as early as May and June 1995, the parties, in an exchange of correspondence, referenced the problem of Freon leaks (R4, tabs 18-20). On 12 June 1995, appellant wrote the contracting officer that there had been an alarm system failure over the Memorial Day weekend, the third time this had occurred during the contract period (R4, tab 18). Whenever the temperature in the freezers or coolers rose, an alarm would alert the government engineers, and the government would call appellant's president to go to Ft. Stewart to correct the problem (tr. 1/66-68). At the time of this particular failure, appellant had almost completed the contract work, but remained on site to correct a number of punch list items, and because there continued to be a problem with the migration of oil and the loss of Freon. In a letter, dated 30 August 1995, the contracting officer wrote appellant concerning its request for reimbursement for the lost Freon, asserting that the loss was due to a defective valve it had installed (R4, tab 24). The parties continued to address the loss of Freon and appellant's apparent inability to find and repair the leaks (R4, tabs 25-26, 28, 30-32, 34-38, 52-53, 58). Indeed, according to appellant's president, he "couldn't tell you where it [the Freon] was coming from, how it was lost. I don't have a clue. The system had been checked a number of times by different people, myself and we never came up with an answer This thing about the valves leaking is a mystery to me." (Tr. 1/171, 173) Appellant continued to put Freon into the system, "but the freon [sic] was just disappearing." (Tr. 3/68)

11. There is no dispute regarding the significant loss of Freon during the period following appellant's commencement of contract performance. (Gov't supp. R4, tab 185;

tr. 1/66-68, 79-80, 86-87, 92-94, 170-71, 184-92, 3/24-26, 74-75, 83, 89-90, 108-12, 117-19, 123-27, 127-28, 132-34, 138-40) Ultimately, the loss of Freon led to the complete failure of the refrigeration system, and the government was required to remove the food products from the freezers and coolers and store them in leased reefer trucks (tr. 3/89-90, 108, 141-42). The evidence establishes that appellant purchased approximately 6,215 pounds of Freon during the period of October 1995 to December 1996 (ex. G-3). It is unclear, however, from the record whether the refrigeration system was charged with all this Freon or whether some of it remained in storage at the job site.

12. According to the design of the system, the compressors were set approximately 40 feet below the evaporators. (Ex. A-1; tr. 1/69-72) The Freon was to travel from the compressors in the basement, up across the roof and back down to the condenser. According to appellant's president, Freon R-22 traveling this distance caused the oil to leave the compressors. The oil was required to provide lubrication to the cylinders. Appellant's president testified that the oil migrated to any place where it was trapped, bleeding out with the Freon and traveling the route of the Freon. This was allegedly due to the fact that it took more velocity to move the Freon R-22 than it did to move the Freon R-12. As the oil migrated from the compressor, the oil switch on the compressor opened, and the compressor shut down. When this occurred, the alarm in the Engineering Office on Ft. Stewart was activated. Appellant, therefore, had to pump down the compressor forcing it to suck the oil back into the compressor.

13. Appellant was also experiencing problems with icing of the compressors and excessive liquid slugging. (Tr. 1/82-85, 2/48-49, 54-57) The compressors were required to run 24 hours a day, seven days a week. They went into defrost cycles on a time clock and stopped running until the defrost cycle was completed. During the times of defrost, the compressors were flooded with liquid Freon. As the solenoids were opening and closing, there was a liquid hammer that was causing movement of the piping and concerns about the fan cycling. The pipes were 70-100 feet long, and the slugging and hammering resulting in pipe movement caused hairline cracks in the pipes, valves, and elbows (tr. 2/48-49). The eight condensers were supposed to cycle so that the pressure went up slowly and down slowly. However, when the fans cycled all at once, there were large surges in the pressure that could also cause leaks in the condenser. Moreover, the rapid recycling of the compressors caused the motors to overheat and to have eventually burned out (tr. 2/111-113, 118-20).

14. According to the contracting officer's letter of 19 October 1995 to appellant, appellant had, in two separate letters dated 10 October 1995 and 18 October 1995, requested a pre-final inspection (R4, tab 28). The record does not contain these two letters from appellant. The contracting officer stated that there were a number of issues that must be resolved prior to any pre-final inspection. These included: the chronic icing condition of the compressors; the lack of sealing of interior electrical conduits used to

extend light fixtures in Phase I, that was resulting in the free flow of air from the unconditioned attic area above the insulated panels to the refrigerated areas of the coolers and freezers thereby causing condensation to form in the conduit and to flow down into the light fixtures in violation of paragraph C.3.10 of the specifications, incorporated through Modification No. P00007; and the lack of sealing of interior electrical conduits passing from the unconditioned areas to refrigerated areas in Phase I and Phase II. The contracting officer also addressed a problem with the solenoid valves on suction lines closing when units went into the defrost cycles, but where the equalization process allowed the refrigerant to continue to pass through the coils of the evaporators producing a situation in which the coils were being heated and cooled at the same time greatly diminishing the effectiveness of the defrost procedure. Appellant was requested to respond to each of these items, indicating its agreement or disagreement prior to the scheduling of any pre-final inspection. The parties have not identified, nor have we found in the record any response by appellant to the contracting officer's letter of 19 October 1995, nor have we found any evidence of the requested pre-final inspection.

15. The contracting officer, again on 13 November 1995, wrote appellant requesting information regarding the continuing problems with the system, stating (gov't supp. R4, tab 183):

- a. As of this date, four compressors have failed and either have been or will be replaced. I need a damage report from the manufacturer detailing the damages on each failed compressor. Please forward this information as soon as possible.
- b. Please provide a list of your employees currently working on the job site and their qualifications.
- c. Please provide a record of events beginning on November 1, 1995.
- d. The numerous adjustments to the system and the replacement of major system components (compressors) has nullified the seven day test performed on the system. After the seven day test, the system should have been fully operational without further adjustments or repairs. Since both adjustments and replacements have been effected since the test was conducted, another seven day test is required.

16. The government inspector had reported in his Inspector's Report of Daily Operations on 7 November 1995 that a compressor had failed and that this was the

fourth compressor to fail (gov't supp. R4, tab 185) The contracting officer further stated that, according to Section 15652, Cold Storage Refrigeration Systems specification, page C-48, paragraph 3.1.9 Refrigerant Charge,

“The Contractor shall provide a complete system refrigerant charge with refrigerant recommended by the manufacturer, and during the guarantee-warranty period, shall make up any loss caused by defective workmanship, materials or equipment.” In accordance with the terms and conditions of the contract, you will not be reimbursed for Freon loss resulting from defective workmanship, materials or equipment. [Italics in original]

(Gov't supp. R4, tab 183) There is no evidence in the record that the government had inspected and accepted the contract work and system as of this date and that the appellant was providing Freon at this time under some “guarantee-warranty period.”

17. As a result of the compressor failures, the compressor manufacturer's representative visited Ft. Stewart to review the operation of the Carlyle compressors in a low temperature refrigeration application with R-22 Freon (gov't supp. R4, tab 181). According to Carlyle Compressor Company,

Because of the multiple compressor failures which have occurred, the compressors are being operated outside of their recommended range for some period of time. You may be experiencing overheating, loss of lubrication, or compressor valve problems. . . . All current and future failures at this installation should be inspected. Finally, all aspects of the system design should be reviewed by appropriate refrigeration system designers to evaluate what is causing these failures.

18. The appeal file does not contain an adequate record of appellant's performance following the issuance of the notice to proceed on 6 December 1993 and extending to early 1995. As found above, there were a number of unilateral and bilateral modifications to the contract issued between 7 February 1994 and 4 November 1994 which, together extended the completion date from 6 April 1994 to 30 November 1994 (findings 4-7; R4, tabs 6-15). Nevertheless, it was clear by early May 1995 that appellant was having problems with Freon leaks, defective and cracked valves, inadequate pipe support, and other alleged quality issues (R4, tabs 19-22, 24-26, 28). It is also clear that these problems persisted into 1996 (R4, tabs 31-32, 34-39, 41-57). Contract

Modification No. P00012, effective 25 May 1995 extended the contract completion date from 30 November 1994 to 28 June 1995 (R4, tab 16).

19. In late January 1996, appellant's president inquired of the government as to the status of the closeout of the contract (R4, tab 34). Appellant noted that two evaporators in Phase II have clogged water lines, and both drain pans have ice accumulation. He further noted that he had charged the system with an additional 300 pounds of Freon, which according to him was caused by Freon shrinkage during the winter, and requested information as to how to bill for the additional Freon. By letter dated 14 February 1996, the contracting officer requested detailed information regarding the Freon leaks and the 300 pounds of Freon for which appellant sought reimbursement:

You state that no leak was located during your review of the system on December 13 and 14, 1995; and, the system was fully charged between December 10 and 15, 1995. On January 29, 1996, you advised Mrs. Powell that 300 pounds of additional Freon were loaded into the system during the previous week.

It is apparent that there must be a leak somewhere in the system. If this is true, it would be a serious matter since you would be in violation of Environmental Protection Agency (EPA) regulations governing the release of Freon into the atmosphere. Freon loss must be documented and corrective measures taken. If you have not located the leak, you must do so immediately.

(R4, tab 35) The contracting officer concluded, saying that the government would not reimburse appellant for the additional Freon required because of the leaks.

20. Almost from the outset of contract performance, appellant's use of short radius elbows became a major point of conflict between the government and appellant. The contracting officer repeatedly directed appellant to replace the short radius elbows with long radius elbows as required by the contract and the manufacturer's recommendations, and appellant continued to insist that there was nothing improper about the use of short radius elbows and declined to make the change (R4, tabs 37, 38, 41-43, 48, 50-51; tr. 3/127-32, 135-38, 4/156-58). However, during inspections conducted on 30 January 1996 and 12 February 1996 by a representative of Erickson Associates, Inc., at the request of the government, the inspector found that there were short radius elbows that were contrary to the manufacturer's recommendations, that this resulted in improperly sized and installed suction traps, and that he did not use short radius elbows on refrigeration jobs because they always seemed to break and crack (app.

supp. R4, tab 131; tr. 2/113-18). Short radius elbows have points of excessive stress concentration and are subject to breakage at those points (tr. 2/75, 120-23). The contract drawings, Sheet 2 of 2, General Note 6, provided that “all work shall be performed as recommended by the manufacturer of the new and existing refrigeration equipment.” (R4, tab 3) The Heatcraft Refrigeration System Installation and Maintenance Guide, provided at page 22, Refrigerant Piping Support:

Do not use short radius ells. Short radius elbows have points of excessive stress concentration and are subject to breakage at these points.

(Gov’t supp. R4, tabs 148 and 158) These instructions came from the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) (tr. 2/74-75).

21. There was a constant loss of refrigerant and problem with compressors icing up experienced after appellant’s completion of Phase I some time in 1994 or early 1995 (tr. 3/83-86, 4/158). Liquid lines were not properly supported, and during defrost cycles, the lines rattled and elbows broke resulting in Freon leaks. During a meeting in September 1996, the parties, including the representative from Heatcraft, discussed appellant’s usage of short radius elbows instead of long radius elbows. According to the report of this meeting:

Another issue in question was the usage of short radius elbows instead of long radius elbows. Good refrigeration practice calls for the use of long radius elbows to reduce any additional pressure drop to the piping, but when the liquid lines are sized adequately and short radius elbows are used there should not be enough additional pressure drop to be detrimental to system performance. In the case of this facility, if the short radius elbows were used with too small of liquid line size, it would definitely show up by nonperformance of the evaporators, which is not the case here.

(Gov’t supp. R4, tab 166)

22. It is clear that by the end of June 1996, the level of frustration between the parties with respect to the continuing problems had risen to a breaking point. In a 27 June 1996 memorandum from the contracting officer’s representative (COR) to the contracting officer, the COR made reference to a meeting on the jobsite between appellant’s president and the representative of the COR, during which time appellant requested a walk-through inspection of the facility (gov’t. supp. R4, tab 155). The

government representative explained that the government would not conduct a pre-final inspection until all the obvious deficiencies were identified by appellant and corrected. These included, but were not limited to, the required installation of rubber grommets around the piping at the evaporator, installation of saddles at hangers for the pipes, and installation of cushioning and insulation material between where copper comes in contact with other dissimilar materials. The government representative also addressed items previously discussed in telephone calls and correspondence which had not been corrected, or to which appellant had not responded, including the fact that the rearmost evaporator in Phase II had not been running during random site visits, and the foremost evaporator on the right end of the Phase I freezer had a burned out pan defrost element. The COR further stated:

Action must be initiated by the Contracting Officer to get this contractor off of dead-center. If he does not know what to look for he should hire someone to provide the service. The time for playing letter and word games has to stop.

If the only way to get this contractor to correct the deficiencies is for my office to do the contractors [sic] job, we will. However, I think that the contractor should be penalized for his non-response. Once deficiencies are identified, he will merely send another letter stating that “it’s not part of my job”. [sic] I don’t believe that the contractor knows what and what isn’t part of his job.

Id.

23. In mid-August 1996, the government conducted a courtesy walk-through inspection of the cold storage facility (R4, tab 48; gov’t supp. R4, tab 159; tr. 4/159-63). The government inspectors observed what they characterized as defective workmanship issues and noted 39 deficiencies requiring appellant’s correction. Although some of the deficiencies appeared to be minor, there were numerous instances of inadequate pipe support for various pipe lines, support not anchored to the wall, the absence of high density inserts that are used to eliminate compression of the saddle stirrup against the piping insulation, breaks in insulation, some of which were caused by inadequate sealing of the valves, liquid slugging resulting in pipe movement when the compressors start and shut down, leaks on piping to suction gauges, and the use of short radius elbows contrary to what was specified in the contract and the manufacturer’s (Heatcraft’s) installation recommendations. With respect to the inadequate pipe support, there was violent movement of the pipes, almost a foot to a foot and a half in the mechanical room, whenever the solenoid valves would go on and off, which the inspector discussed with

appellant and the contracting officer. There were a number of compressor failures caused by inadequate oil return back to the system, which together with lack of maintenance resulted in a contaminated system. Although there had been a continuing debate concerning appellant's installation of short elbows, the contractor had not corrected this matter as of the date of the courtesy walk-through inspection.

24. The government's mechanical engineer discussed the problems of pipe vibration and leaks in the cold storage refrigeration system on 26 August 1996 with a representative of Heatcraft who had inspected the installed system on 1 February 1996. (Gov't supp. R4, tab 158). The Heatcraft representative provided the Heatcraft installation instructions and the Pipe Hangers and Supports – Selection and Application Standards (MSS SP-69) to the government and stated that Heatcraft's refrigerant pipe installation instructions required pipe supports every five feet for 3/8 inch and 7/8 inch piping, every seven feet for 1-1/8 inch and 1-3/8 inch piping, and nine to 10 feet for 1-5/8 inch and 2-1/8 inch piping. According to the contract drawings, the piping sizes varied from 1-1/8 inch to 2-1/8 for suction lines and 5/8 inch for liquid lines (R4, tab 3, Piping Diagrams). The contract specifications, Section 15652, paragraphs 2.10 and 3.1.5.1, required that the supporting elements conform to MSS SP-69 and that steel pipe and copper tubing be supported by minimum hanger rod sizes and maximum allowable spans in accordance with MSS SP-69 (R4, tab 3). Moreover, according to paragraph 3.1.5.1 of Section 15652 of the specifications, "[r]efrigeration piping shall be supported at points with spans not in excess of 8 feet, except where greater spans are indicated" (R4, tab 3 at C-47). The Heatcraft instructions further specifically stated: "Do not use short radius ells" and "Thoroughly inspect all piping after the equipment is in operation and add supports wherever line vibration is significantly greater than most of the other piping. Extra supports are relatively inexpensive as compared to refrigerant loss." (Gov't supp. R4, tab 158)

25. Except with respect to the government's courtesy walk-through inspection in mid-August 1996 and memorandum detailing 39 deficiencies (finding 23), there is no evidence in the record of any further inspections or of the government's formal acceptance of appellant's contract work. Nevertheless, the contracting officer's letter of 28 August 1996 represents the continuing saga regarding the unresolved issues of the short radius elbows, the lack of rubber grommets around the piping at the evaporator, and the failure to identify and correct the other deficiencies previously noted. (R4, tab 51) However, what is particularly puzzling in this letter is the following statement regarding appellant's responsibility for the contract work:

Regarding your responsibility for the contract, please note the requirements of the contract clause, I.64 52.246-0021 WARRANTY OF CONSTRUCTION (APR 1984). The period of warranty is one year from the date when the

Government takes possession of the work; in this case, the Government took possession once the entire system was brought on line. Government inspection reports indicated that the seven day test for Phase II commenced on September 22, 1995; temperatures in both phases were documented within acceptable range of the design temperatures on October 6, 1995. Therefore, the warranty period for the entire system commenced on October 6, 1995, and will end on October 6, 1996. However, please note that any repairs/corrections to the equipment revise the warranty period for that piece of equipment to one year from the date that the repair/correction was accomplished, i.e. the warranty for the replaced compressors will be one year from the date of replacement.

Although the contracting officer referred to the WARRANTY OF CONSTRUCTION clause in this letter, she testified that the government did not accept the work at that time because of the deficiencies (tr. 3/137, 196). Indeed, there is no evidence that the government took possession of the work other than what was permitted under paragraph 3.3 of the Technical Provisions, General, Section C of the contract which provided that the building would be occupied during the period of the contract (R4, tab 3 at C-2).

26. By letter dated 3 September 1996, the purpose of which was “to document your [appellant’s] responsibilities under the subject contract and to direct your immediate adherence to those responsibilities,” the contracting officer again directed appellant to address the “escalating” problem of Freon leaks, which also violated EPA regulations regarding the release of ozone depleting material into the atmosphere, to locate and repair all Freon leaks, to provide adequate supports for piping and to alleviate the pipe movement resulting from the slugging, and to test and recharge the system to insure that the problem of Freon leaks has been corrected (R4, tab 52). According to the contracting officer, appellant was asserting that the vibrations and movement of the pipes were causing the Freon to migrate and leak out of the system (tr. 3/138).

27. Appellant disputed the contracting officer’s direction regarding the need for more pipe supports, claiming in its letter of 4 September 1996 that the existing hangers were properly spaced according to the pipe sizes and asserted that there appeared to be a conflict between what Heatcraft recommended for inserts for pipe hangers, rubber gaskets material, and what was recommended in the MSS manual (R4, tab 43). Appellant further requested the government to shut down the Phase II system and remove the food products so appellant could perform the “requested repairs.”

28. These disputes regarding the loss of Freon, loss of temperature, the icing up of compressors, liquid slugging, inadequate pipe supports, the lack of documentation supporting the charging of the system, and other alleged deficiencies in the system continued through the fall and into January 1997 (R4, tabs 55-58, 61-67; tr. 3/139-141). On or about 19 February 1997, the entire system failed with both Phase I and Phase II shutting down, and appellant did not know how to get the system up and running again (R4, tab 69; tr. 2/163, 3/89-90, 141-42, 4/169-70, 179). By this time, it had been impossible to keep sufficient Freon in the system to keep it operational, and it was not possible to keep the Freon from leaking for long enough to keep the food from spoiling (tr. 3/89-90, 4/169-70). As a result, the government lost food and was required to lease reefer or refrigerated vans in which to store the remaining food products (tr. 3/141-42, 4/169-70). On 20 February 1997, the COR informed the contracting officer of some of the most obvious contract requirements with which appellant failed to comply and which remained uncorrected (app. supp. R4, tab 142). These included, *inter alia*, the issue regarding short radius elbows, piping traps at the evaporators that were not installed in accordance with the equipment manufacturer's recommendations, the lack of liquid level indicators throughout the system as required by the contract specifications, the failure to repair the system to prevent Freon leaks and lack of documentation regarding the leaks and required charging of the system, improper pipe hanging and support, the lack of flexible connectors for the piping at all equipment, and the failure to provide a properly operating system certified by a registered professional engineer that observed or supervised the testing as required by paragraph 3.7 of Section 15652 of the contract specifications.

29. Therefore, by letter dated 24 February 1997, the contracting officer confirmed her telephone conversation with appellant on 20 February 1997, directing appellant to cease all performance under the subject contract, effective 20 February 1997, and to coordinate the removal of all of its tools and equipment from the facility (R4, tab 69; tr. 3/141-42). Appellant requested, and the contracting officer denied, on 14 March 1997, that it participate in an independent analysis of the system (R4, tab 74). The contracting officer told appellant that the government would obtain an independent analysis of the system and would determine, on the basis of that analysis, what action was to be taken with respect to appellant's contract (R4, tab 72). The contracting officer said the government would obtain its own independent analysis from a qualified company.

30. The government issued a contract on 4 April 1997 to White Electric, Inc. for an engineering study and evaluation report on the cold storage facility building 1009, Ft. Stewart, Georgia and for the correction of the refrigeration system deficiencies (R4, tabs 73, 81). White Electric retained the services of a consultant professional engineer to evaluate the system installed by appellant (tr. 4/80). The consultant engineer made two site visits during May 1997 to evaluate the system and prepared reports on those visits. During the first visit, he observed a system that was not operational at the time because it

did not have refrigerant. (Gov't supp. R4, tabs 134, 139; app. supp. R4, tab 160; tr. 4/81-91, 94) The configuration of the system, with common piping, was such if valves were opened incorrectly, there could be contamination of the good system from the other system. An oil sample taken at that time reflected black soiled oil, rather than clear oil, indicating that there had been some motor burnouts and that the system was contaminated. Suction line piping did not have the recommended slope with the possible result in oil leaving the compressor system and stored outside the system. There was marginal temperature control of the system due to the placement of the sensor bulbs used for sensing temperature of the compressor lines. The liquid line piping typically had excessive valving. The problem with this is that each valve represents additional hardware that can potentially leak and create a pressure drop in the system. The liquid injection systems on the compressor racks used to control temperature were installed approximately two feet from the compressor rather than at least two elbows away from the compressor to insure complete vaporization of liquid refrigerant before entry into the compressor motor cavity, thus with potential result of liquid slugging. Vibration isolators on compressor discharge lines are not positioned for maximum isolation, although this could have been acceptable for this application. He felt that compressor configuration would likely produce short cycling during periods of little load. Short cycling is the rapid starting and stopping of cycling with the potential for premature motor burnouts. Most of the elbows in the system were short radius rather than long radius elbows which was the normal design in refrigeration systems such as the subject system.

31. When White Electric tested the system, it found a significant number of leaks at the valves (gov't supp. R4, tab 142; ex. G-8; tr. 4/95-96, 5/7-10, 13). White Electric found that there were 73 valves leaking at the shaft seals. Because there were so many valves leaking, the likelihood was that the leaks were from poor workmanship and installation technique that would not have protected the valves to prevent damage to the seals. This also indicated to the consulting engineer evaluating the system that there was seal damage due to either dirt in the system or heat during the installation of the valve (tr. 4/96-98).

32. White Electric also found that the thermostatic expansion valves were improperly installed, many of the sensor valves were improperly installed and not properly insulated, the installation of large traps that trapped the oil and prevented it from returning to the compressors causing compressor failures, and suction lines with sags and sloping in the wrong direction, also causing loss of lubrication to the compressors and possible slugging (ex. G-8; tr. 5/14-20). White Electric's inspector found pinholes in many of the welds on the elbows and could hear the hissing of Freon leaking. There was one elbow that had no solder on the bottom of it with clear Freon leaking from that hole. The consultant engineer concurred with the White Electric determination that there were workmanship problems with the installed system, including the use of short radius elbows, the use of four elbows to make traps instead of street elbows in which a trap

could be made of four joints instead of eight joints, the arrangement of suction line controls in the areas of the EPR valves wherever there was trapping of oil, primarily in the direction of the oil return, and the improper slopes of the lines (tr. 4/99). In a letter dated 27 October 1999, White Electric, in response to a government request regarding whether the existing system could lose 2650 pounds of Freon, stated:

Yes, it is very much possible the system could have lost 2650 lbs. of freon over the period of time it was on line before being shut down. It was obvious from the appearance of workmanship that the two systems were installed by different mechanics. Phase II was considered worse in appearance with a far greater percentage of leaks than Phase I.

We have in our possession a box full of valves that were taken out of the system. It is our opinion that these valves had gotten too hot during installation and damaged seals, allowing the leakage.

The amount of leaks on valves and joints found would easily allow the freon to escape the system.

(Gov't supp. R4, tab 103)

33. The government subsequently issued a modification to the White Electric contract to provide a new system replacing the system installed by appellant (app. supp. R4, tabs 154-155, 159, 167-77, 181, 183, 185; tr. 3/143-46, 200-03, 4/45, 5/7-10). Although the record does not contain a copy of the executed modification providing for the repair and replacement of the system installed by appellant, there is no dispute that this contract was different than the contract under which appellant attempted to perform the work. Moreover, since appellant's claim is for compensation for the recharging of the system with Freon as a result of the acknowledged loss of Freon, the scope and substance of the White contract is not before this Board.

34. While there is no dispute that the government directed appellant to cease performance and vacate the job site in February 1997 at the time there was a complete operational failure of the system, there has been no clear resolution as to the nature of the termination, if any, of the contract, or the expiration of its term. There were repeated requests by both appellant and its surety for a determination or communication with regard to the nature of the termination, if any (R4, tabs 68, 70-72, 78, 82-83, 85, 91, 93). However, the contracting officer never issued a decision terminating the contract for default or for the convenience of the government. The parties have stipulated that the nature of the termination is not before the Board in either of these appeals (tr. 1/19-23).

35. By letter dated 26 August 1997, the contracting officer stated:

This correspondence is provided to advise you of my determination regarding the status of the subject contract. In my previous letter dated March 4, 1997, you were advised that a determination regarding the type of termination would be made as soon as practicable. At that time, it was assumed that an independent analysis would provide information which would lead to a determination of full responsibility for the system problems. However, the information provided has lead to the determination some of the system problems are not your responsibility. A termination for convenience is not in the best interest of the Government. Therefore, neither a termination for default nor a termination for convenience is appropriate in this instance.

In accordance with contract clause E.3 Federal Acquisition Regulation (FAR) 52.246-12 INSPECTION OF CONSTRUCTION, a qualified acceptance of the contract is hereby acknowledged. Acceptance is not acknowledged for those deficiencies that were identified by the Government but were not corrected, specifically short radius elbows and Freon leaks. . . . You did not locate the leaks and substantial Freon loss resulted. Since these items were identified and not corrected, the actual cost for replacement of the Freon and short radius elbows will be deducted from the balance of the contract.

(R4, tab 85) The contracting officer did not identify the system problems which she asserted were not appellant's responsibility.

36. On 9 July 1999, appellant submitted a properly certified claim in the total amount of \$236,438.67 (R4, tab 94). Appellant submitted a revised certified claim in the same amount on 20 July 1999 (R4, tab 95). The amount claimed was for all costs appellant asserted to have incurred between 10 October 1995, the date appellant asserted that it had completed the work, and 26 August 1997, the date of the contracting officer's qualified acceptance of the contract work. The contacting officer responded to the claim and revised claim stating that due to the evacuations in connection with Hurricane Floyd, the contracting officer could not issue a final decision within the time requested. By letter, dated 15 October 1999, the contracting officer issued a final decision denying the claim in its entirety.

37. On or about 15 November 2002, appellant submitted to the contracting officer a claim for payment of all sums remaining on the contract. (ASBCA No. 54127, Complaint) The amount of the claim was \$12,042.12 plus interest for the unpaid balance. The contracting officer issued a final decision on this claim on 30 December 2002, denying the claim in its entirety (complaint, ex. A). The alleged basis for the denial was that there were no funds remaining on the contract as a result of unilateral Modification No. P00021, in which the contracting officer accepted the \$12,042.12, the unpaid balance on the contract, as an equitable adjustment for the deficiencies that appellant did not correct. Appellant timely appealed this denial, and the appeal was docketed as ASBCA No. 54127. The appeal record does not contain either the claim nor the contracting officer's final decision, except as that decision was included as an exhibit to the complaint. Modification No. P00021, dated 15 September 1998, reduced the contract price by \$12,042.12, the unpaid balance on the contract, for the deduction of costs for correction of deficiencies identified by the government and not corrected by the contractor (R4, tab 92). Although this modification constituted the unilateral decision of the contracting officer to reduce the contract price for the alleged deficiencies not corrected by appellant, there was no language in the modification setting forth any possible appeal rights appellant might have in connection with the price reduction reflected in the contract modification. There was considerable evidence presented concerning the alleged deficiencies and workmanship issues. However, there was no further evidence on this claim presented either prior to, or during the hearing. Neither party addressed this claim in its brief.

38. Appellant provided a number of possible explanations for the loss of Freon. First, underlying much of appellant's claim arising out of the loss of Freon is appellant's assertion that the specifications were performance specifications, initially requiring replacement only of the evaporators, solenoid valves, and switch boxes, and ultimately requiring major replacement of the existing parts of the refrigeration system, a contract project for which appellant was not qualified to provide design services (tr. 1/43-45, 48-51, 73-75, 107-09, 139-40, 184, 2/160-61). According to appellant, although some of the specification requirements may have been performance type, the design of the system as set forth in the changes to the specifications and in the drawings was prescribed by the government, and, therefore, whatever were the causes of Freon leaks, the government is responsible. In other words, the government designed the system, which design appellant was required to follow in installing the system, which resulted in the system failures that led to the Freon leaks (tr. 1/32-34, 46-50, 107-08, 2/133-42, 3/15-16, 4/45-46). There is no dispute that the system appellant ultimately installed was significantly different than what the contract as initially awarded required. There has been, however, no evidence that persuasively provides a nexus between the design of the system and the loss of Freon.

39. Second, appellant has asserted that the liquid slugging was causing the loss of Freon (*see* finding 26, *supra*; tr. 1/82-85, 2/20-30). Appellant attributed this problem to the configuration of the system and the placement of the compressors and the long pipe runs. According to appellant, liquid Freon collected in the compressors when they were in the off mode, and when restarted, would be slugging against the system, fracturing or rupturing pipes, thereby contributing to the loss of Freon (tr. 2/48-49). However, appellant did not know whether there had, in fact, been actual damage to the piping as a result of the pipe movement caused by the slugging (tr. 2/21). Although the record does establish that there was considerable liquid slugging resulting in violent movement of pipes, the preponderance of the evidence attributes this problem to the lack of adequate pipe supports, appellant's installation of short radius elbows instead of the specified long radius elbows, not the design of the system (*see* findings 20, 22-23; tr. 2/75-78). Although the contract required, and the manufacturer's instruction specified the use of long radius elbows, it is questionable whether appellant's installation of short radius elbows, if properly sized, had a deleterious effect on the system in this regard (tr. 2/66, 4/90-91). Moreover, although it is possible that the violent movement of pipes due to the liquid slugging could cause cracks, ruptures, and fractures in pipes and valves leading to loss of Freon, the preponderance of evidence established that there was excessive valving and that the loss of Freon at the valves was due primarily to improper valve installation and the excessive valving since each valve presented the potential leaking of Freon (*see* findings 28-30). We are, further, unable to make any findings that the configuration of the system was the primary cause, or a significant contributing cause for the liquid slugging and any possible resultant loss of Freon.

40. In essence, what appellant asserts in these two explanations for the loss of Freon is that the specifications were defective (gov't supp. R4, tab 147; tr. 1/69-72, 82-85, 111-13, 2/48-49, 166, 2/32-33, 46-50). The government's engineer that prepared the original plans and specification for the project testified that he had intended to issue a performance type specification in response to which the contractor would propose a system which it would install in accordance with the manufacturer's recommendations (tr. 2/144, 166, 169-74). The government's expert witness testified that he was surprised by the configuration of the system and that he would not have designed it that way (tr. 4/81, 86). Specifically, he was referring to the large traps in several places in the return headers that could retain varying amounts of refrigerant oil, depending on the system operating load, and the excessive valving in the liquid line piping. He could not understand why the system was changed in the manner it had been changed because the state of the art at the time was such that factory fabricated racks with multiple compressors, receivers, all the controls necessary to the proper function of the system were packaged neatly into a system ready to install by hooking the system up to the existing lines (tr. 4/99-100). We understand from the context of this testimony that the variances from what might be expected in a proper operating system were due to appellant's installation of a system rather than to detailed design prescribed by the

government for this project. Accordingly, we are unable to make any findings as to whether the specifications and drawings were defective in these respects.

41. Third, appellant asserted that the loss of Freon was due to the migration and possible shrinkage of Freon (R4, tab 34; gov't supp. R4, tabs 147, 165; tr. 2/6-8, 34-37, 45-46, 123-24). However, assuming there was such shrinkage as asserted by appellant, appellant's president believed that this was only a problem in the winter. Notwithstanding this, there was no evidence that Freon shrinks. Indeed, the evidence indicates that Freon does not shrink, and although Freon in its gaseous state does migrate from hot places to cold places, this would not result in any loss of Freon or the need to add more Freon to the system (tr. 2/123-24). Should there be any shrinkage, which would be very rare, the volume of Freon might change based on changes in temperature and pressure (tr. 3/104-05). However, it would be unreasonable and almost impossible to change the temperature and pressure sufficiently to require recharging the system with the quantities of Freon required here. While it may be possible for some migration of Freon, it would only occur if a valve were to be manually closed and the Freon condensed within the evaporators (tr. 4/105-06). There are only certain places where liquid refrigerant can hide – in the condenser, in the receiver, and in the liquid lines between the receiver and the evaporators. Once the refrigerant passes through the evaporator, it is a gas on the way back to the compressor suction.

42. Fourth, appellant asserted that someone may have stolen Freon out of the system (tr. 1/171, 3/24-26, 58-56). However, to do so, the theft would require the use of a receiving refrigerant tank, hoses, and a compressor that could work off the suction side of the system and pump the refrigerant into the receiver tank (tr. 3/38-56, 4/107-08). While this might provide a reason for the loss of Freon, it was not a plausible reason since it would take a fair amount of effort on somebody's part to take the amount of Freon out of the system as was lost. Appellant's project manager never saw anyone stealing Freon, nor did he ever see a refrigerant tank in the area (tr. 3/58-56). There simply is no evidence in the record that there was any theft of Freon from the system after it was charged.

43. Fifth, since appellant never saw any of the valves leaking, had repeatedly checked valves for possible Freon leaks, and could not find any leaks, except minor leaks, the possibility of Freon leaks from the valves was "a mystery" to him (tr. 1/86-89, 171, 173, 174). According to appellant, aside from a leak he found in a fitting in one of the coolers, he never found any other leaks. However, in the case of one leak which was reported in the inspector's daily report of 26 January 1996, Freon leaks were found at the valves and fittings in the mechanical room, and appellant had put 300 pounds of Freon into the system. (Gov't supp. R4, tab 185; tr. 1/173-75) Appellant did not consider this to be a minor leak.

DECISION

Appellant, in asserting its entitlement to recovery for the costs associated with the loss of Freon, relies principally on its contention that the specifications in the instant contract are design specifications, rather than performance specifications, and that since they were defective, the government bears the risk for the loss of Freon. While appellant admits that there is disagreement between the parties that there was an excessive loss of Freon from the operation of the system, it contends the dispute is over the cause of such loss. Appellant contends that since it could never find the cause of the loss, and denies that it was caused by defective valves, the government should be held liable for the extra costs incurred by appellant in attempting to replace the lost Freon.

The government, on the other hand, contends that appellant failed to meet its burden of proof and argues that the government properly rejected the refrigeration system due to appellant's defective workmanship. The government further argues that appellant was not in compliance with the contract specifications and with the recommendations of the manufacturer when it installed short radius elbows and continued to refuse to replace the short radius elbows with long radius elbows, as required by the contract and directed by the contracting officer.

Appellant seems to suggest that the outcome of this appeal turns on its characterization of the specifications as being "design" rather than "performance." While appellant's citation of *Monitor Plastics Co.*, ASBCA No. 14447, 72-2 BCA ¶ 9626, sets forth a generally useful description, as quoted by appellant, of the difference between "design" and "performance" specifications, appellant's redacted discussion of design and performance specifications and the result in *Monitor Plastics* are inapposite to appellant's argument here. As stated in *Monitor Plastics*, specification problems become more complex when the specification is a composite of the two types. Although not clearly argued by appellant, implicit in its argument is that when the government furnishes specifications, it is held to impliedly warrant that the specifications are adequate for their intended purposes, that is, they will satisfactorily produce the contract item. *United States v. Spearin*, 248 U.S. 132 (1918); *Hollingshead Corporation v. United States*, 124 Ct. Cl. 681 (1953).

The problem with appellant's argument is that the distinction between design and performance specifications is not absolute and cannot dictate the resolution in this case. *Blake Construction Company, Inc. v. United States*, 987 F.2d 743 (Fed. Cir. 1993). Contracts may have both design and performance characteristics, and,

"On occasion the labels 'design specification' and 'performance specification' have been used to connote the degree to which the government has prescribed certain details

of performance on which the contractor could rely. However, those labels do not independently create, limit, or remove a contractor's obligations." *Zinger Constr. Co. v. United States*, 807 F.2d 979, 981 (Fed. Cir. 1986) (citations omitted). These labels merely help the court discuss the discretionary elements of a contract. It is the obligations imposed by the specification which determine the extent to which it is "performance" or "design," not the other way around.

Blake Construction Company, Inc. v. United States, 987 F.2d at 746

According to appellant, the government dictated the method of performance in five major areas that proved disastrous because the specifications were defective in these respects: the contract drawings required the condensers to be placed below the receivers causing a backflow of refrigerant; appellant was required to follow the piping diagram and existing position of the piping, which relieved it of any responsibility for the placement of piping; the government required replacement of compressors with rebuilt compressors rather than factory built compressors allegedly resulting in liquid slugging and motor burnout; the government refused to include in the contract funds for appellant to retain the services of a competent refrigeration specialist to coordinate the design of the system; and the government dictated the sizing of the replacement piping. While we might disagree with some of appellant's factual and legal assertions in this line of argument, what is missing, assuming the factual contentions are correct, which we do not, is how they are related to the loss of Freon, which is the basis for appellant's claim. Moreover, appellant's arguments regarding performance vs. design specifications, operation of the receivers, short radius elbows appear to have nothing to do with the loss of Freon. Indeed, as stated above, we were unable to make any findings that the configuration of the system was the primary cause or a significant contributing cause for any possible loss of Freon.

In order to prevail, appellant has the burden of proving the fundamental facts of liability and damages, that is, the necessary elements of liability, causation, and resultant injury. *Wilner v. United States*, 24 F.3d 1397, 1401 (Fed. Cir. 1994) (*en banc*). In this appeal, appellant must prove, by the preponderance of the evidence, that the specifications were defective, that appellant had substantially complied with the plans and specifications, that unsatisfactory performance resulted therefrom, and that appellant suffered injury or damages as a result of its compliance with the defective specifications. *M. A. Mortenson Company*, ASBCA Nos. 53062 *et al.*, 01-2 BCA ¶ 31,573 at 155,906. There is no question that the contract, as modified, required far more of appellant than the original contract as awarded. The amount of additional work, replacement of components, the added complexity to the performance requirements of insuring that the entire system with new parts and components functioned as a system, and the increased

price all suggest a more complex and difficult contract to perform. However, that does not establish that the contract specifications and drawings, as modified, were defective. Notwithstanding the foregoing, as we set forth in our findings, the loss of Freon was due to workmanship problems, including defective and cracked valves, seal damage at the valve, excessive valving, cracked and broken elbows caused, in part, by the liquid slugging, and pinholes in many of the welds on the elbows, not defective specifications and drawings.

According to appellant, the excessive leaking of Freon could be explained by the government's defective design of the system, the liquid slugging due to the configuration of the system as a result of the placement of the compressors and long pipe runs, the possible migration and shrinkage of Freon, and the possible theft of Freon by some unknown agent or person. Such generalized conclusory, unsupported opinion type statements do not demand weight when they are little more than self-serving conclusions. *Atherton Construction, Inc.*, ASBCA Nos. 44293 *et al.*, 02-2 BCA ¶ 31,918 at 157,711. Appellant admits that it has no other explanation for the leaks and was never able to find any Freon leaks except a few minor ones. As we found above, there was no persuasive evidence or plausible support for any of these explanations.

Appellant contends that the government's principal evidence in support of its theory that Freon loss was occurring through the valves during the operation of the system was through an employee of White Electric who testified concerning the investigation and testing of all the leaks and found most of them to be defective. Appellant questions the credibility of this witness because White Electric was in line to receive a large contract to replace the system installed by appellant, this inspection and testing was performed without independent observers, and his characterization of the cause of the damage to the valves as having occurred during their installation was inconsistent with appellant's repeated testing during which it was unable to find any defective valves. Our findings, while based in part on the testimony of this witness, were not based entirely on that testimony. Indeed, the evidence in the record is consistent with this witness' testimony and supports our findings concerning the Freon leaks. There was no evidence, nor has appellant pointed our attention to anything in the record, to suggest that White Electric was in line to receive a large contract to replace the system at the time its employee, under a separate contract to evaluate the system, conducted his inspection. In light of the foregoing and our evaluation of this witness during his testimony, we hold that his testimony was credible.

Appellant merely states in its brief, that "If the freon did not escape through damaged valves, where did it go. That is a question that may never be answered." (App. br. at 27) This is hardly carrying its burden of proving the fundamental facts of liability, *i.e.*, that the specifications and drawings were defective, that appellant substantially complied with the specifications and drawings, that an unsatisfactory performance

resulted therefrom, and that appellant suffered damages as a result of its substantial compliance with the defective specifications and drawings. Indeed, quite the opposite. We hold that there is no basis for finding that the specifications were defective and that appellant complied with the specifications, including the recommendations of the equipment manufacturers, in its performance of the contract. Based on our findings, we hold that the Freon leaks were a direct result of deficiencies in appellant's workmanship in installing the system.

Although appellant submitted a claim for \$12,042.12 plus interest for the alleged unpaid balance on the contract and filed an appeal from the contracting officer's final decision, it did not raise this matter during the hearing, presented no evidence on it, and did not address it in its brief. The contracting officer denied the claim on the grounds that the contract price had been reduced in contract Modification No. P00021. As a result, there were no further funds in the contract for the payment of this claim. The price reduction was stated in the modification to compensate the government for the cost of repairs of the deficiencies not corrected by appellant.

As our findings strongly indicate, appellant experienced considerable workmanship problems in its performance of the contract. That it was unable to find where Freon was leaking and unable to repair the deficiencies that led to the Freon leaks, further indicate its inability to provide the government with a working system as required by the contract. Its continued refusal to replace the short radius elbows with the specified long radius elbows and its failure to provide adequate pipe supports as directed by the contracting officer, tend to confirm either its inability or unwillingness to take corrective action to solve problems of the leaks and liquid slugging, for example. We have made findings concerning these workmanship and performance problems because they provide the context in which to evaluate appellant's work as it related to the excessive loss of Freon and because they demonstrate the implausibility of appellant's speculative explanations for the loss of Freon.

Since neither party addressed appellant's appeal in ASBCA No. 54127, either through the presentation of evidence or by argument in post hearing briefs, we hold that appellant has abandoned its appeal.

Accordingly, we deny the appeals.

Dated: 11 April 2006

ROLLIN A. VAN BROEKHOVEN

Administrative Judge
Armed Services Board
of Contract Appeals

(Signatures continued)

I concur

I concur

MARK N. STEMLER
Administrative Judge
Acting Chairman
Armed Services Board
of Contract Appeals

EUNICE W. THOMAS
Administrative Judge
Vice Chairman
Armed Services Board
of Contract Appeals

I certify that the foregoing is a true copy of the Opinion and Decision of the Armed Services Board of Contract Appeals in ASBCA Nos. 52494 and 54127, Appeals of Craft Cooling, Inc., rendered in conformance with the Board's Charter.

Dated:

CATHERINE A. STANTON
Recorder, Armed Services
Board of Contract Appeals