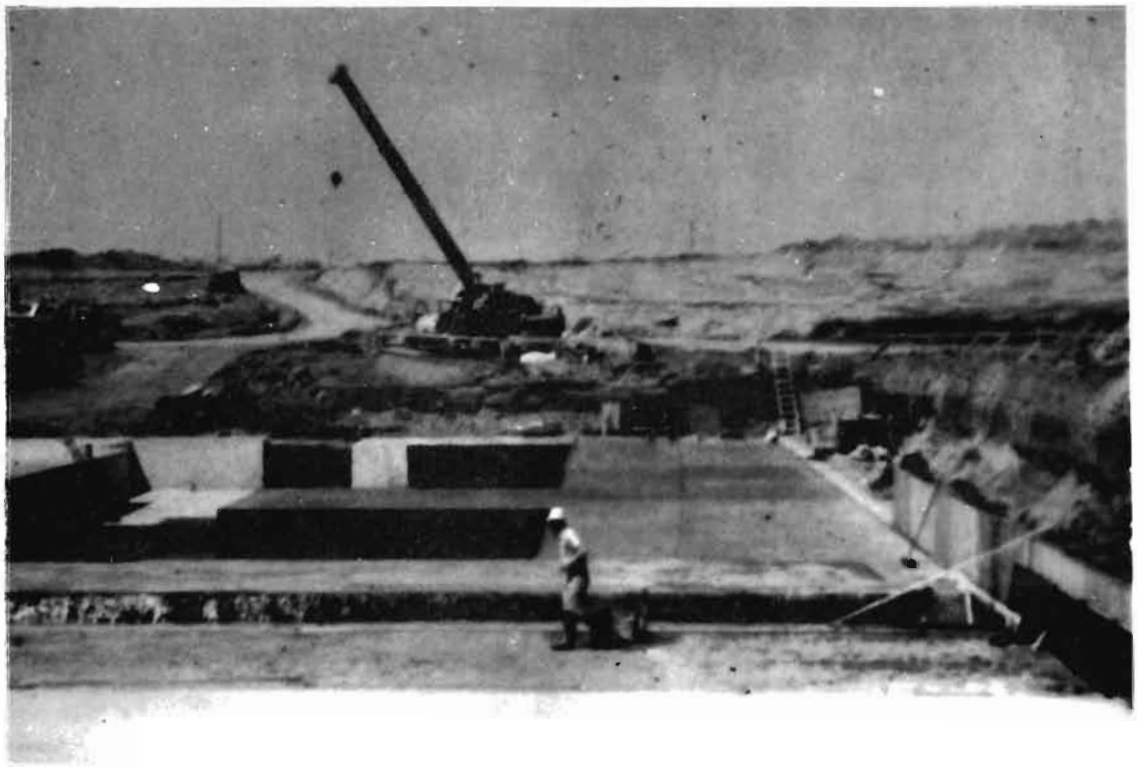
CHAPTER III

SAFEGUARD UNDER CONSTRUCTION

Construction of the first, and ultimately the only complete, SAFEGUARD ABM facilities at Grand Forks, North Dakota, commenced on Monday, 6 April 1970. The event was marked with a modest ground-breaking ceremony at the PAR site attended by William Gilfillan, Project Manager for Morrison-Knudsen & Associates; Lt. Col. Vern Davis, Assistant Area Engineer for the Corps of Engineers; State Senator Richard Forkner, R-Langdon; A.D."Doc" Poteat, M-KA's Project Superintendent on the job; and five mayors from nearby villages, A crowd of about 200 looked on while appropriate remarks were made from a bunting-draped platform, a few spadefuls of earth were turned by the dignitaries, and photographs were made. Then, without further fanfare, earthwork began in earnest.[1] By early afternoon soggy, half-frozen black North Dakota soil was being stripped away by rumbling earthmoving equipment excavating the foundations for the PAR Building and its powerplant. The same sights and sounds could be seen and heard twelve miles away as excavation got underway simultaneously for the MSR Building and its powerplant. On the next day, 7 April, Col. Roy Beatty arrived to assume his duties as Area Engineer at Grand Forks. He would supervise the project during its first three months but retired from active military service in June 1970. Col. Beatty's successor, Col. John L. Lillibridge, took over the job on 4 July and supervised its progress for more than four years. Maj. William D. Green became Area Engineer on 19 September 1974 and conducted "hand-over" operations until closure of the Area Office in June 1975.[2]

During April and May activities at both the PAR and MSR sites primarily centered about excavation and preparation of access roads. Despite the fact that a five-inch snowfall during the third week in April created a brief return of frozen ground conditions, excavation went forward quickly under ten-hour shifts working six days a week. By 1 May excavation at both the PAR and MSR sites was complete to within three feet of final grade, and final excavation proceeded during the next few days. At about the same time the first slab placements were made for the Area Engineer Office, and work was underway to assemble the first components of concrete batch plants essential for the main stages of construction.[3]

Grand Forks North Dakota SAFEGUARD construction start up 15 May 1970.



Construction underway at the Grand Forks PAR site (June 1970)

Ten days later, near the middle of May, foundation excavation and sealing for both the PAR and MSR nearly finished and forms were being placed for the first pourings of concrete subslab. At the MSR site, excavation of the deep SPARTAN missile silo holes was beginning. What at the time seemed to be a minor miracle was accomplished on 8 May when a sixty-ton crane--the smallest of three held at the Hensel siding because of road conditions--was successfully moved over the narrow, muddy, potholed county road to the PAR site. The other two machines, both of ninety-ton capacity, were not moved until 25 May. Meanwhile, erection of shops, office space, temporary utilities, and the concrete batch plants was going forward as yellow, red, blue wildflowers poked out in a brief full bloom of spring greenery.[4]

Amid these signs of initial progress and the promise of spring came disturbing rumors of a potential hiatus in the form of local participation in "International ABM Day," an anti-war, anti-ABM event planned to coincide with Armed Forces Day, 16 May. The Grand Forks SAFEGUARD sites were obvious protest targets, and the first tangible indication of demonstrations there appeared as a short article in the Fargo, North Dakota, **Forum** on Sunday, 19 April. The same announcement spread to the **Grand Forks Herald** on 21 April and reappeared in amplified detail in several area newspapers and in newscasts after 30 April.[5] By this time, spokesmen for two sponsoring groups, the "North Dakota Clergy and Laymen Concerned" and the newly formed "North Dakota Citizens for a Sane Nuclear Policy," were calling for mass demonstrations at Fargo, at the University of North Dakota campus at Grand Forks, and at the Nekoma MSR location over the weekend of 15-16-17 May. In early May, organizers announced that 2,000 persons were expected from a five state area, a crowd billed as what might become "the largest political protest ever staged in North Dakota."[6] Outside of declared visits and speeches by nationally known figures, rock music, and the planting of durum wheat seeds in a symbolic "Festival of Life and Love," the direction that the demonstrations might take remained an unanswered question to local authorities.

Because of this ambiguity, because of the social milieu then prevailing, and because dissident protests had a record of obstruction, violence, or destruction, the Corps of Engineers and M-KA viewed the forthcoming "Festival" with some apprehension. This unease was scarcely allayed by the presence of M-KA's huge, costly earthmoving equipment at Nekoma. Accordingly, as the North Dakota anti-ABM

activities took shape in early May, Colonel Beatty, representatives of M-KA, and security officers from Huntsville conferred on appropriate measures to limit obstruction or property damage on the MSR site. Policies directed from Huntsville to the Area Office advised that direct confrontations were to be avoided, including verbal exchanges or physical contact with persons participating in demonstrations at construction sites. Every effort was to be made to prevent the escalation of minor incidents into major civil disturbances or riots, while at the same time work on-site was to continue if possible.[8] Following these guidelines, the Corps chose what might be described as a cautious "carrot-without-a-stick" approach to eventualities. Local law enforcement officials were briefed and their assistance was solicited with the understanding that a bare minimum of visibility was to be maintained. On the site itself, a plot was staked off away from the yawning foundation hole for the use of demonstrators, and here portable outhouses, plastic sheeting, and even a flatbed trailer complete with electric power were provided for speakers and bands. Around the excavation itself M-KA placed simple barricades and "no trespassing" signs in hopes of passive deterrence. Finally, on Friday, 15 May, the day's shift was cancelled completely and all mobile equipment was moved off-site when it was learned that Governor William Guy would not authorized state resources for the protection of Federal property.[10]

Staring before noon on Saturday, demonstrators began to drift into the Nekoma site area. There was no rain for the first time in days, and except for a sea of mud, conditions looked good for the day's events. Early arrivals spread the Corps' polyethylene sheeting on the ground before the flatbed trailer, opened lunches, unreeled kites, and began to make themselves comfortable. By 11:30 AM, about 200 to 300 people were on the site, a figure that slowly rose to perhaps 500 by 12:30.[11] During the next two and a half to three hours the crowd milled about, flew kites or whirled Frisbees, ate and drank, sloshed in the mud, listened to rock music and danced. At least five small airplanes buzzed the site, and one youth complained that his kite had been struck by a lowflying aircraft. One of the planes dropped white envelopes containing small American flags into the crowd--the labels said, "From those who served." A local newspaper also reported that "One elderly man passed out dozens of paperback books identified on the cover as 'A Handbook for the Revolution.' It was the New Testament."[12]

Under these circumstances, the few unobtrusive Government observers found little to do except maintain a running six-hour telephone description direct to Huntsville. Most of the early afternoon was taken up with music occasionally punctuated with speeches. The entire afternoon passed quietly with no arrests or no violence.

The only vaguely tense moment came about 3:00 PM as the gathering seemed on the verge of breaking up. A female demonstator from Fargo passed out about 100 ash tree seedlings and told the group, "We're going to take these trees up to that hole and plant them where they want to plant the seeds of death." Several hundred demonstrators then marched down the road to the site to the tune of the "Battle Hymn of the Republic" played on about fifty buzzing kazoos sprinkled throughout the crowd. The marchers bypassed M-KA's barricades and "No Trespassing" signs, slipped and slid down into the muddy excavation, and planted their trees or scattered durum wheat seeds. Some then ripped up 2 x 4 lumber in place for the mud slab and laid it in the form of a peace sign, buried a tomahawk, and smoked a peace pipe while vocalizing their demands for peace. According to the **Washington Post** report, the demonstrators had originally intended to fill in the MSR hole, but nothing became of this, probably because of its size. Nekoma mayor William Verwey thought "The hole was so big they just figured it was hopeless."[14] These symbolic gestures at the excavation marked the conclusion of activities. By 3:30 the crowd began to break up a few at a time and drifted back to cars and out of the area. By 4:30 only some twenty persons remained in the bottom of the excavation debating what to do next, and by 5:40 PM the entire site was empty.[15]

Thus, the Nekoma "Festival of Life and Love" passed without incident. About the only damage done was the uprooting of forms in the bottom of the MSR excavation and the need to re-do some final grading disturbed by the passage of privately owned vehicles. Total losses were less than $1,000, not counting the day's time lost. For the protest movement, too, the "Festival" was anti-climactical since attendance was smaller than expected, no one was arrested and nothing spectacular happened to seize the nation's attention. A woman reporter from **Newsweek** perhaps summed it up best when she commented that the demonstration was a "flop" and should be considered so.[16]

Fizzle or not, the "Festival of Life and Love" in North Dakota was just one of hundreds of similar events across the U.S. during the spring of 1970, many of which were more consequential and more vociferous than that at Nekoma. Against this unhappy national backdrop, the Strategic Arms Limitation Talks, or SALT, resumed in Vienna on April 16. The

resumption of discussions did not, however, deter the Soviet Union from forging ahead with development and deployment of bigger, better missiles to achieve parity, and perhaps superiority, to the U.S. The heavy SS-9 missile in particular posed a significant and growing threat to the survival of the MINUTEMAN force, as Secretary of Defense Laird pointed out in early January. He predicted that a deployment of the SS-9 coupled with "three-part" warheads of accuracy might be able to destroy 95 percent of the American missile force in a surprise strike by 1974. Laird further estimated a current Soviet buildup of fifty to sixty such missiles a year, giving them a force of 420 in two to three years.[17] The Chinese, meanwhile, also continued to work at making their ICBM go. Even though they had not yet conducted a firing test by the spring of 1970, it seemed imminent.[18]

When inaugurating the SAFEGUARD program in March 1969, President Nixon had promised an annual review of ABM activities with an eye toward diplomatic, technological, and military developments. The first annual review during late 1969 and early 1970 indicated that the growth in both Soviet and Chinese ICBM capabilities as well as the SALT talks made continuance of the SAFEGUARD program imperative.[19] At the President's Foreign and Domestic News Conference of 31 January 1970, Nixon announced that "I have decided to go forward with both the first phase and the second phase of the ABM system, and Secretary Laird will announce the details of the program in about 30 days."[20] Within the next month, the Administration revealed a "Modified Phase II" SAFEGUARD program with a Fiscal Year 1971 budgetary request of $1.49 billion to cover continuation of Grand Forks and Malmstorm ABM sites, plus various increments of six more sites out of the original twelve in Plan 1-69. The FY 1971 request was to defend one more MINUTEMAN site at Whiteman AFB, Missouri; to commence advanced site preparation at a fourth MINUTEMAN installation at Warren AFB, Wyoming; and to do preliminary work at four additional sites, one of which was at Washington, D.C. Finally, SPRINTS amounting to two additional Remote Launch Sites (RLS) were to be added to each SAFEGUARD site to bring them up to a Phase II configuration. According to news release, the "Modified Phase II" would stretch out the SAFEGUARD program by about two more years. The result would be a stronger point defense against the Soviets plus a thin area defense against the Chinese threat, a deployment mode that clearly showed some return to the area defense thinking of early SENTINEL. An equal or more important underlying justification was the provision of "aces-in-hand" for use in bargaining at the impending SALT negotiations.[21]

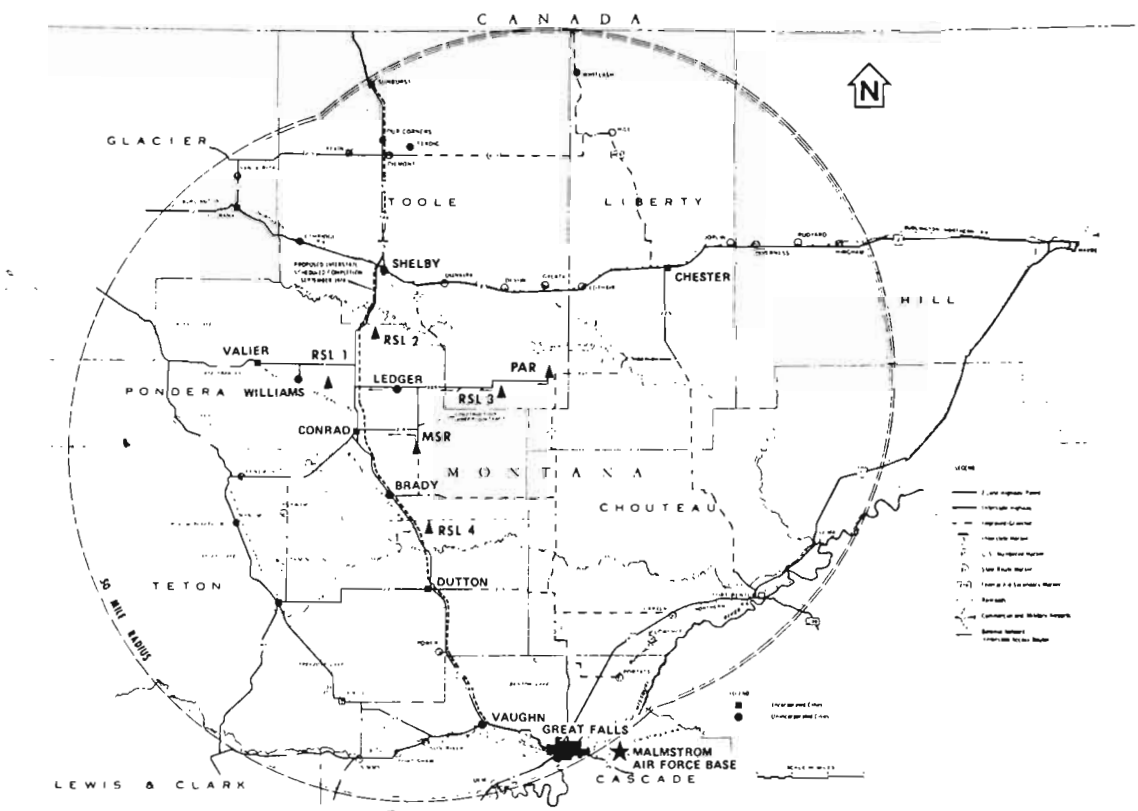
The Congressional debate of 1970 over these proposals was much less intense and public involvement much less than during the memorable summer of 1969. Nevertheless, as before, there were occasions of extended committee hearings in which all of the old ABM arguments were rehashed, and both House and Senate amendments were offered to shrink the Administration's requests. The House of Representatives passed all SAFEGUARD legislation without significant difficulty, but Senate passage was more controversial. Early in the summer, the Senate Armed Services Committee voted 11 to 6 to proceed with advanced construction at Grand Forks and Malmstorm, to begin full deployment at the third site, Whiteman AFB, and advanced site preparation at Warren AFB, but the committee cut $10 million for preliminary work at the four sites intended to provide a thin area defense against China. After three attempts to further amend this legislation on the floor of the Senate failed, the entire Congress approved the Senate Armed Services Committee's version. The compromise was adequate to sustain American credibility at SALT without going too far out on a limb of deployment that might be sawn off by some ultimate agreement on an arms limitation treaty.[22] Of the FY 1971 appropriations, Huntsville Division was authorized $271.6 million to continue SAFEGUARD facilities design and construction during the next year. A total of $12.7 million was for design and $258.9 million for construction. In addition, $6.1 million was received from other commands for reimbursable work.[23]

In practical terms, the "Modified Phase II" SAFEGUARD program authorized by Congress for FY 1971 was actually a progressive development of Phase I already underway, and while Congress debated the future of Phase II, several important milestones were passed in Phase I. In the sector of construction, a notable step was taken with the commencement of activities at Malmstrom AFB, Montana, the second SAFEGUARD site authorized in 1969. Though Malmstrom was continuously beset by various troubles which culminated in its cancellation after the SALT Agreement of 1972, its history is very much a part of the story of Huntsville Division's participation in SAFEGUARD.

Reconnaissance and site preparation for an ABM site at Malmstrom had not received much attention during the earlier SENTINEL program, and the Congressional debate of 1969 delayed the start of site

investigation and preparation even further. Once begun, however, activities were accelerated as much as possible. On 12 October 1969, Col. Lowell B. Dezarn was assigned as Malmstrom Area Engineer with his duty station temporarily at Seattle, Washington, and on 20 October the public announcement of a SAFEGUARD deployment at Malmstrom was made. The reaction in Conrad and Shelby, the two communities most affected by the news, was a mixture of quiet elation at impending opportunities tempered by trepidation at the prospect of adverse effects that might be generated by heavy construction in the vicinity. In this socially and politically conservative region there were no manifestations of protest, nor was there much extravagant enthusiasm for what some natives saw as an extension of previous MINUTEMAN construction around Great Falls into their immediate neighborhood. The first concerns that surfaced in the local press were normal ones centering mainly about the impact of incoming workers' children on the educational system or about the possible improvement of "Bootlegger Trail," a partially hardsurfaced route running north from Great Falls towards the Tiber Reservoir.[24]

MALMSTROM
MAP OF DEPLOYMENT AREA



SSC Form 46, 1 Aug 70, replaces SENSC Form 46 which is obsolete.

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As with other SAFEGUARD sites, the Malmstorm ABM facilities were strategically situated for defense of underground MINUTEMAN silos making up the Malmstrom AFB complex outside of Great Falls. The PAR and one RLS site were fifty miles away from the U.S. -Canadian border. A second RLS was also sited in Toole County, approximately twenty-eight miles west-northwest of the PAR by air and six miles south of Shelby, the county seat of Toole County. The Malmstrom MSR with attendant SPARTAN and SPRINT missile launching cells was located about seven miles southeast of Conrad, the county seat of Pondera County, putting it about sixty-two air miles south of the Canadian line. Later, after the "Modified Phase II" of SAFEGUARD was instituted, the Army planned two additional RLS sites for Malmstrom. One of these was to lie five miles northwest of Conrad, the other about ten miles due south of the MSR near U.S Hwy. 91.

The construction of these Malmstrom facilities was to proceed differently from Grand Forks. Because of pressing fiscal considerations, the SAFEGUARD System Manager determined that the Montana facilities would be built in two increments, the first and least expensive of which would largely be funded in FY 1970 and the second started with FY 1971 funds. Malmstrom Phase I consisted of site excavation and lower level construction of the two radar buildings and their associated power plants, generally including all the base slabs and the first floor level only of the PAR Building. Phase II consisted of completion of the major facilities.[25]

The geographical setting for the Malmstrom construction was remarkably similar in many ways to the situation at Grand Forks, North Dakota. The terrain around Conrad and Shelby was mostly flat or gently rolling high prairie with a cover of grass and small shrubs supporting cattle ranching or wheat farming. The climatological profile of the area was also quite similar to North Dakota, except that rainfall averaged only eight to sixteen inches per year. Summers tended to be warm and winters long and cold, with periodic interruptions brought by a warming Chinook wind blowing from the Pacific over ranges further west.

Human beings were few and far between in this isolated and sparsely populated region. The largest settlements near the construction sites were Conrad, with a population of 2,665, and Shelby, with 4,017 inhabitants. Great Falls, a city of 64,500, lay more than 60 miles to the southeast of Shelby. The only direct paved arteries crossing the site areas were U.S. 91, then only partially developed into Interstate 15, and U.S. 2 running east-west through Shelby. Fortunately, both the PAR and the MSR sites were served by nearby lines of the Burlington-Northern Railroad which ran through Conrad and Shelby.

The above conditions virtually dictated that as in North Dakota, the construction of SAFEGUARD facilities would require improved road links and a carefully engineered water supply. Improvement of the secondary road net went on through the months of March, April, and May 1970. On 17 April the Bureau of Public Roads awarded a $1.5 million contract for construction of sixteen miles of access road to the PAR, and on 15 May 1970, it followed this up with another $1.4 million contract for improvement of fifteen and two-tenths miles of county roads for other sites. The supply of water to the Malmstrom sites proved to be simpler than at Grand Forks, since a ready and fully adequate source lay nearby in the Tiber Reservoir. The Reservoir was quite some distance from the MSR, however, and in the early stages of planning it was hoped that the MSR could be tied into an expanded Conrad municipal system. The matter was broached to the town council late in April 1970, but on 15 June the council notified the Army that "we would be unable to finance such a project and also your requirements would be difficult for us to meet."[26] The Corps then decided that the best alternative would be to supply all facilities from the Tiber Reservoir via a twenty-six mile line running south to the PAR, thence west to the adjacent RLS No. 3, then southwest to the MSR. On 1 October 1970 the Corps signed an agreement with the U.S. Department of Interior, Bureau of Reclamation, for the purchase of water from Tiber Dam Reservoir. The agreement was valid for forty years and provided that the Army should pay $10 per acre-foot (325,972 gallons) of water drawn. Three weeks later a $3,177,600 contract for such a line was awarded to a joint venture of Red Samm Mining Venture, Venture Construction, Inc., and Shoreline Construction Company.[27]

The impact of SAFEGUARD on the human community in Montana also promised close parallels with the situation in North Dakota, and the Army's preliminary approach to dealing with the influx of labor and military personnel strongly resembled that taken at Grand Forks. As site investigation, mapping, and core drilling went on during November and December, five representatives of Omaha District fanned out over a fifty-mile radius around Conrad and Shelby to conduct a SAFEGUARD Community Impact Study for Huntsville Division and federal agencies such as HEW responsible for administering financial assistance.[28] Of particular interest to the

Impact Team was the effect that SAFEGUARD would have on local schools, medical facilities, utilities, and other community services. The results of the impact study were not available, however, until July, and in the meantime some residents expressed doubts that federal aid would offset the increased burden on their resources. In early spring concerned individuals and citizen's groups sought the assistance of Montana Governor Forrest Anderson and U.S. Senator Mike Mansfield in ameliorating the community impact problem. Governor Anderson visited the construction area in late July 1970, then travelled to Washington in company with North Dakota Governor William Guy to testify before the Senate's Subcommittee on Military Construction about the adverse effects of ABM on north-central Montana. Governor Anderson voiced some scathing criticisms of the Army's Malmstrom Impact Study, but many Montanans in Shelby and Conrad were at variance with his pessimistic assessment.[29] Regardless of whose opinions or estimates approached the truth in this controversy, the matters of community impact and adequate federal assistance became a moot question as the Malmstrom project became entangled in protracted labor troubles that greatly retarded the expected influx of new arrivals.

The labor troubles that dogged the Malmstrom project until its termination began to manifest themselves even before the first Phase I bids were awarded in May 1970. As at Grand Forks, Huntsville Division hoped to bring Great Falls area contractors and labor unions together in a mutual labor agreement that would stabilize costs, benefits, and conditions of work before the job actually got underway. From the beginning, however, efforts to obtain a project stabilization agreement in Montana encountered bumpy going; as time went on, the problem developed into one of the biggest, thorniest bugbears besetting SAFEGUARD's construction.[30] Eventually, the Malmstrom Phase II schedule would be delayed by about eleven months while unions, contractors, and the Government wrangled over labor issues.

Malmstrom labor difficulties first emerged at the inception of negotiations for a Phase I project agreement in April 1970. On 26-29 April Stephen V. Rohr, Huntsville's Labor Relations Officer, met with union officials, contractors, and representatives of potential SAFEGUARD bidders in Great Falls to discuss drafting a Malmstrom project agreement. In the course of these meetings, certain labor demands threatening excessive contract costs began to surface. The chief point of contention turned about local labor agreements already in force around Great Falls. These prevailing local agreements had been made in the spring and summer of 1968, after it became known that SENTINEL might be deployed at Malmstrom. In anticipation of extensive SENTINEL work lying ahead, local building trades unions negotiated local agreements calling for double time to be paid for all work over forty hours per week plus very high travel mileage rates and subsistence payments. Native contractors in the home building industry had few objections, since their jobs rarely called for much overtime or long commuting distances, but SENTINEL contractors would have been significantly affected had the program materialized.

Nearly two years later, after Malmstrom SAFEGUARD was announced and project agreements with Government ABM contractors became desirable, local Montana unions wished to insert pre-existing local contract provisions into the Malmstrom Project Agreement. At the 26-29 April meetings in Great Falls, five building trades unions proposed a tentative Malmstrom project agreement that called for double pay for overtime, together with a fixed subistence allowance running from $12 per man per day the first year to $14 per man per day the third year. As Stephen Rohr later wrote in his trip report for this April 1970 meeting, these terms would have "cost a contractor approximately $21.00, excluding salary, per day to get a common laborer to the PAR site."[31] The contractor's labor costs, of course, would be passed along to the Goverment and thence to the taxpayer. The union view was that the double pay for overtime would encourage the contractor to put more men on the job rather than pay overtime--a justification Rohr found dubious in light of the extremely small labor pool available locally. No argument except existing practice was advanced for the large subsistence payments asked. At the 27 April 1970 meeting, the attending contractors declined to accept the unions' proposals on the spot but professed that they would be bound by them if successful in bidding. Subsequent discussions came to nought, and a month later, after Phase I contracts were awarded, the two successful bidders did in fact sign a Phase I Project Agreement incorporating the status quo provisions in existing local agreements.[32]

Alarmed by the consequences of expensive labor for the costs of Malmstrom Phase II lying ahead, Division Engineer General Young wrote to the Chief of Engineers on 20 May to apprise him of the Montana labor situation. "If the [existing] union agreements prevail," General Young wrote, "we estimate that the contract costs for the technical facilities alone in Montana will increase [by] a minimum of $5,000,000

and perhaps as much as $10,000,000 if the present schedule is maintained." Furthermore, he added, "If the Phase I or Phase II contractors resist the union demands, it is our opinion that a work stoppage is probable."[33] The Division Engineer then recommended that the Federal Mediation and Conciliation Service be advised of the potentially uneconomical operation anticipated and solicited to obtain a non-inflationary agreement. The FMCS was the appropriate arbitration agency because after the October 1967 dissolution of the President's Missile Sites Labor Commission, Executive Order 11374 gave the FMCS the responsibility for resolution of potential or actual labor disputes at missile sites. In accordance with General Young's recommendations, Secretary of the Army Stanley R. Resor quickly asked the assistance of the FMCS. Resor's request was accepted by the FMCS on 1 July 1970, and discussions were pursued throughout the remainder of 1970 without achieving a satisfactory solution.

Meanwhile, construction of Phase I at Malmstrom went ahead as scheduled. On 4 May 1970 the Watson Construction Company of Minneapolis, Minnesota, was awarded a $3,369,850 contract for excavation of the MSR Building and its power plant and the construction of the first floor slab of these buildings.[34]

EXCAVATION UNDERWAY FOR THE MISSILE SITE RADAR BUILDING in July, 1970, as part of the Malstrom Montana SAFEGUARD ballistic missile defense system complex.

Two weeks later, on 19 May, a second Malmstrom contract was awarded to a joint venture of H.C. Smith Construction Company and Amelco Corporation for initial construction of the PAR facilities.[35] Smith-Amelco was to excavate the site and raise the reinforced concrete construction of the PAR Building through the completion of the second floor slab. The PAR power plant was to be completed through the first floor level. Both of the Malmstrom Phase I contracts were due for completion by 1 March 1971, and the respective contractors began work immediately in order to make the most of warm weather in the 1970 construction season.

In fact, warm, fair days were precious at both Malmstrom and Grand Forks. At both sites the priorities of the SAFEGUARD program dictated an extraordinarily rigorous construction schedule with the shortest possible time--roughly two and one-half years--allocated for completion of the building shells and installation of their tactical support equipment (air conditioning, electrical lines, cooling system, utilities, etc.). This terminal date, called the Beneficial Occupany Date (BOD), represented the Corps' major goal in the construction schedule. By the time the BOD

EXCAVATING FOR THE UNDERGROUND POWER PLANT of the Perimeter Acquisition Radar on July 10, 1970 at a site about 35 miles northeast of Conrad, Montana, as part of the Malmstrom Safeguard ballistic missile defense system complex. The work was under the supervision of the Malmstrom Area Engineer, Huntsville Division, US Army Corps of Engineers.

was reached, the weapon system contractor had to be admitted to begin installation of the radars and attendant components. Of course, in order to attain the BOD on time, it was mandatory that interim goals along the way also be met on time. Nowhere were intermediate deadlines more imperative than during the 1970 construction season at Grand Forks, where scheduling required roofing in of the first two levels of the PAR and MSR Buildings before the onset of severe cold made outside work impossible. If the PAR and MSR shells were promptly finished to this degree, work could continue on the interior during January and February 1971. If, on the other hand, the building shells were not enclosed, extreme cold and blowing snow would halt all work around the sites for at least two months during the middle of winter. This in turn would have a domino-like delaying effect on the 1971 objectives, which called for roofing in the remaining levels of the PAR and MSR, together with finishing the antenna face walls. The situation was not quite so pressing during Malmstrom Phase I, since it was never expected that progress during 1970 would be sufficient to permit interior work during the winter. With an early start on Phase II during the spring of 1971, it would be relatively easy to enclose most of the buildings during the 1971 season--or so it was hoped. As it turned out, sanguine hopes for a timely Malmstrom Phase II in 1971 foundered on persistent labor and funding troubles.

Disruption of the clockwork precision demanded in both projects might have come from several sources. A strike or other labor dispute at any point from supplier to site could have brought work to a grinding halt at any time, but the greatest threat, that of serious stoppages on the job, was reduced by Grand Forks and Malmstorm Phase I Project Agreements. Unfortunately, these pacts were not always honored, and if no major walk-offs resulted, several minor ones did. A more or less typical instance at the end of August 1970 was reported by the Division's Historian in this way:

> On 29 August, 110 carpenters walked off the day shift at the Grand Forks PAR site over a jurisdicial [sic] dispute with ironworkers concerning NEMP shielding installation. Thirty-eight did not report for the swing shift. All returned on 31 August. On 31 August, M-KA discharged the ironworker steward who instigated confrontation with carpenters causing 17 M-KA ironworkers to stop work. On 1 September, Napoleon Steel ironworkers walked off in sympathy. On 2 September, the International Ironworkers Representative met with M-KA and all ironworkers returned to work in the afternoon.[36]

Equally frustrating and less avoidable with the first example of technical facilities in the SAFEGUARD program was a constant flow of design changes in the buildings and their tactical support equipment. Some of these originated from changing needs of the weapons system contractors, some from revised requirements of SAFSCOM, some from the SAFEGUARD Evaluation Board, and some from deficiencies discovered in the field. The impact of change orders was particularly felt in the preparation of shop drawings which minutely detailed exactly how the contractor was going to execute the general plans and specifications. Such drawings also sometimes provided test results to show that specifications for materials and shelf items were actually being met--whether or not, for example, a batch of concrete had the desired quantities of correct ingredients and achieved stated strengths. The Corps was required to review shop drawing solutions and test results and to expeditiously approve or reject them so that the contractor might proceed without impediment to his schedule.

Facing a great number of design changes and a tough construction schedule to get the first levels of the PAR and MSR Buildings closed in before freezing weather hit North Dakota, M-KA requested in mid-summer that the Corps enlarge its engineering services at the Grand Forks sites to expedite the "turn around" handling of change orders and shop drawings paperwork. In response Huntsville Division formed a Field Engineering Action Team (FEAT) to temporarily augment the Grand Forks Area Office staff. Beginning in the first week of August, four Corps employees on TDY, together with ten engineers and draftsmen from the AE firms which designed the facilities, went to work in the Area Engineer Office. The FEAT operation grew in the ensuing weeks, taking in as many as twenty-five individuals before its dissolution at the end of October. The extent of the Team's efforts might be judged from a brief entry in the "History of the Grand Forks Office" for the period 5-11 September 1970: "During this week, 96 shop drawings were returned to the contractor, sent 183 shop drawings to Area Engineer Offices [sic] for review and answered 131 DDM's [Design Deficiency Memoranda]."[37]

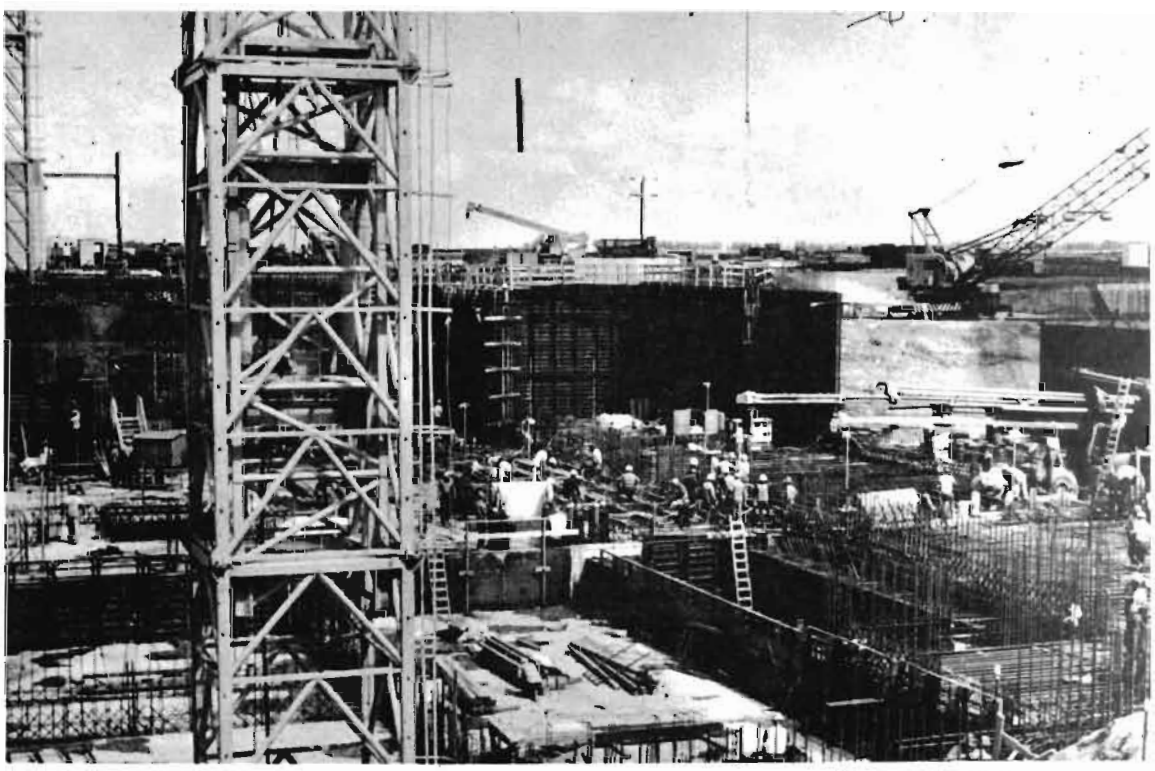
Perhaps the most aberrant, unpredictable influence on scheduling was the behavior of Mother Nature. Both Grand Forks and Malmstrom lay in zones of continental climate characterized by rather short summers with long, hot daylight hours and a lengthy,

severe winter season with days of short sunlit periods. Tempeature extremes ranged from +100° F to -40° F with frequent ground blizzards and drifting snow, and drastic drops of temperature could be experienced within a few hours' time. The transition out of winter introduced its own set of special problems, because when the ground thawed, highways became susceptible to damage from heavy loads hauled over them to construction sites. To minimize the danger, North Dakota imposed load restrictions on state highways for about sixty days during April and May, and this had to be considered in scheduling construction activity during the early spring months.

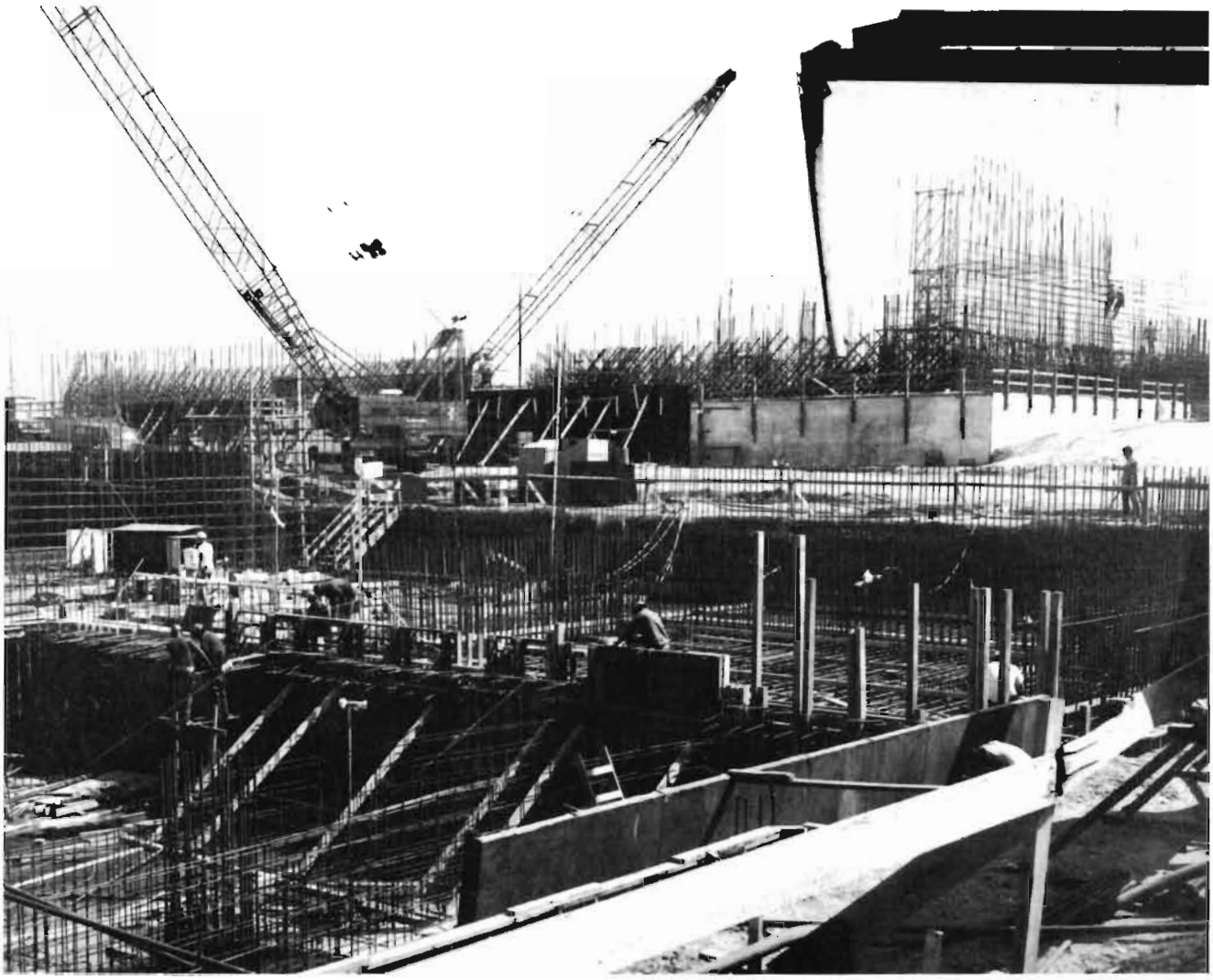
Even during the warm summer months of 1970, thoughts of winter's cold were never very far from the minds of the Grand Forks staff. Every effort, including sustained two shift operations, was made to maximize use of long, warm, dry days to drive steel and concrete placement forward as rapidly as possible. Work even went on in three eight-hour shifts under artificial lights in order to hasten the job, and M-KA's work force increased by a factor of five, from 340 men at the beginning of June to 1545 on the payroll around the first of August.

The overall results of this swift mobilization were clearly visible by the beginning of fall. The first pourings of structural concrete in both the PAR and MSR base slabs took place on 18 June 1970. By the end of that month, the PAR slab had received 2,166 yards of concrete and the MSR 750 cubic yards. At the same time, amid the pounding of carpenters and the sputter of welding torches, thick mazes of reinforcing steel were embedded for the exterior walls. By the third week of August, 12 percent of construction time had been used up in North Dakota, at which time the "Information Bulletin" could report that:

> The North Dakota sites are beehives of activity with 70% of the MSCB first floor slabs and 70% of the walls on the south and east side completed. The MSR power plant first floor slab is 60% complete and walls on the south and east side are 25% complete. Spartan cells excavation, shoring, guniting and slabs are 70% complete and installation of resteel, electrical items and exhaust duct liners initiated. The PAR building is 100% complete throughout the first floor slab. The PAR power plant forming and resteel placement for the first floor slab and northwest corner walls is 65% complete.[38]



FORMS AND RESTEEL AWAIT THE PLACEMENT OF CONCRETE at the MSCB at the Grand Forks SAFEGUARD BMD complex during summer 1970.



THE GRAND FORKS SAFEGUARD'S PAR CONSTRUCTION in mid summer 1970. Looking across the power plant which will be all underground when completed, the Perimeter Acquisition Radar buildings begins to take shape in the background.

By the second week in September first floor level slabs and walls were complete, and falsework and steel were being placed for the second floor slab in both the PAR and MSR buildings. Away from the major buildings, the onsite Area Engineer Office was occupied on 18 July; all thirty SPARTAN cells were completely prepared with blast deflectors in place by 1 September; and work was well underway on ancillary structures such as the Warhead Handling Building. The waterline from the Fordville Aquifer was also about one-third complete by this time.[39]

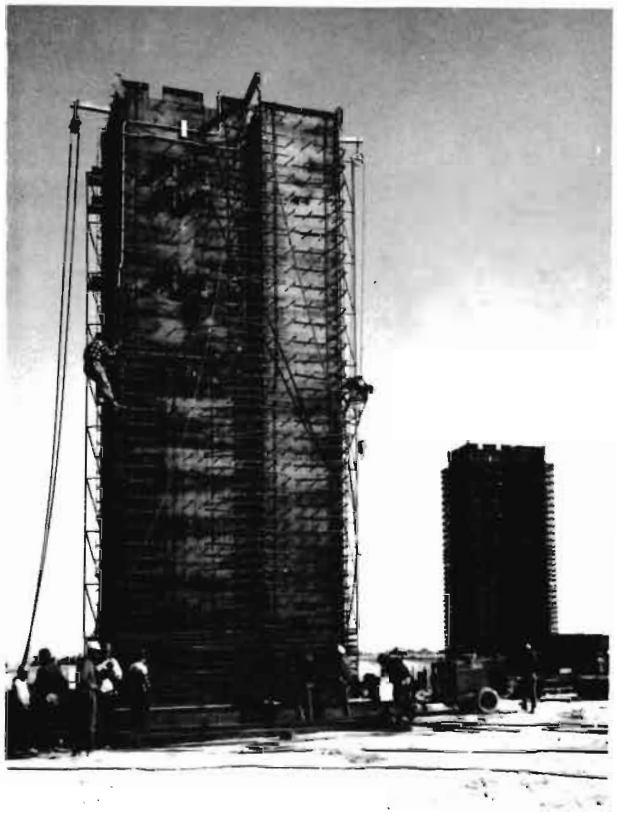
This degree of progress had consumed a total of 20,840 cubic yards of concrete in the MSR and MSR power plant and 26,070 cubic yards in the PAR buildings by mid-September. To feed the batch plants' yawning maws, M-KA received and transported forty-two rail car loads of aggregate and four car loads of cement each week during the summer.[40] These massive logistical needs were met, but not without overstressing the inadequate haul road from Hensel siding to the construction sites. Makeshift improvements in the spring of 1970 proved insufficient, and so did constant oiling and grading afterwards. By Mid-July the Area Office historian could write in direct fashion that "everyone is complaining" about the annoyance and hazards of dust clouds.[41] The mayor of Nekoma felt obliged to go beyond complaints: on 18 October he imposed a 12,500 lb. per axle limit on truck traffic through his hamlet. Inevitably, this created a supply bottleneck

near the MSR. Unable to obtain a retraction of the load limit, M-KA decided to literally bypass the problem by contructing a haul road around Nekoma. In February 1971 a more or less permanent solution to dust on the Hensel haul road came with the decision to asphalt the surface. Laying of the thirteen miles of pavement began on 17 June 1971 and was completed on 8 August.[42]

By the beginning of fall in North Dakota, significant progress had been made in starting up and accelerating the Grand Forks job. Unfortunately, however, despite initial successes a slippage of a few days found its way into the schedule. Part of this was caused by unforeseen incidents such as the loss of a day's work during the anti-ABM demonstration in May, and part was due to weather conditions such as a 1.76 inch rainfall recorded on 8 and 9 September. A tremendous number of change orders and a backlog of hundreds of Design Deficiency Memoranda also took their toll. In late Setpember, for example, the Area Office historian noted that "the FEAT Team, though diligent, still has a backlog of 1,054 DDM's."[43] Minor labor disputes and walk-offs introduced further delays of a few hours to a day or two, as did a serious shortage of carpenters. By the third week in August, M-KA estimated it needed about 100 carpenters, and when these were not forthcoming, it initiated a two weeks' on-the-job training program to train apprentices.[44]

The growing schedule slippage, together with the arrival of near-freezing temperatures around the first of October, served to crystallize a "major concern [in the Corps of Engineers]. . . that the four (4) main structures will not be completed through the second floor slabs by winter shutdown."[45] Accordingly, Huntsville Division initiated discussions over the terms of schedule adjustments necessary to bring enclosure before winter. On 10 October Col. Robert McBride, the Division's Contracting Officer, wrote to M-KA proposing that the joint venture should accelerate certain aspects of the work for a limited period to insure that the major buildings were closed before winter set in. The accelerated phase would continue until enclosure was achieved, until the prevailing situation made this impracticable, or until the Government directed that the additional effort should cease.[46] M-KA responded in the affirmative, and an accelerated effort at Grand Forks continued for about six weeks. During this time two ten-hour shifts were worked six days a week. The speed-up was terminated on 19 November when Colonel McBride wrote to M-KA stating that "the progress made to date is such that accomplishment of the Government's objectives in directing this acceleration is assured."[47]

In compensation for the increased effort and attendant inefficiency costs, M-KA was allowed an additional eighteen days to complete the MSR Building and twenty-two more days to complete the PAR Buidling, plus negotiated cost settlements of roughly $2,500,000.[48]



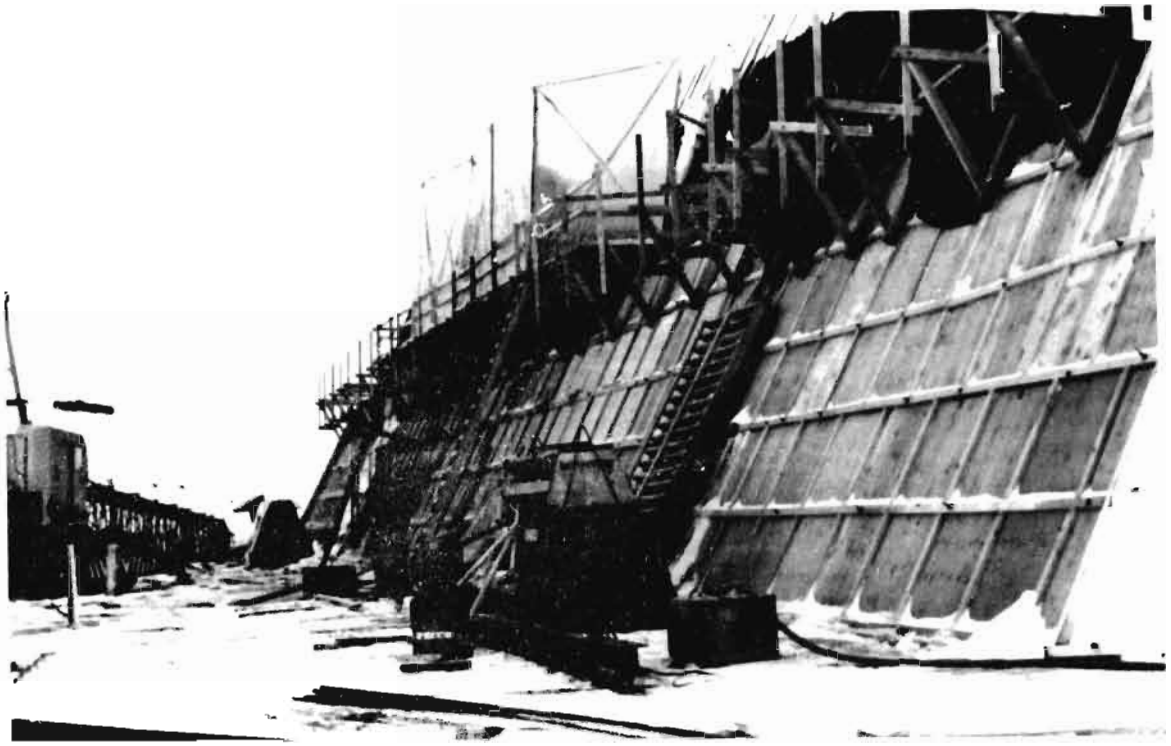
43 FEET HIGH MIDSECTION of the SPARTAN launch tube and exhause chamber being prepared for insertion into the SPARTAN launch cell at Grand Forks, MSR site during October 1970.

MSR SITE at Grand Forks, North Dakota with missile field in the foreground. Town of Nekoma is at upper right. (October 1970)

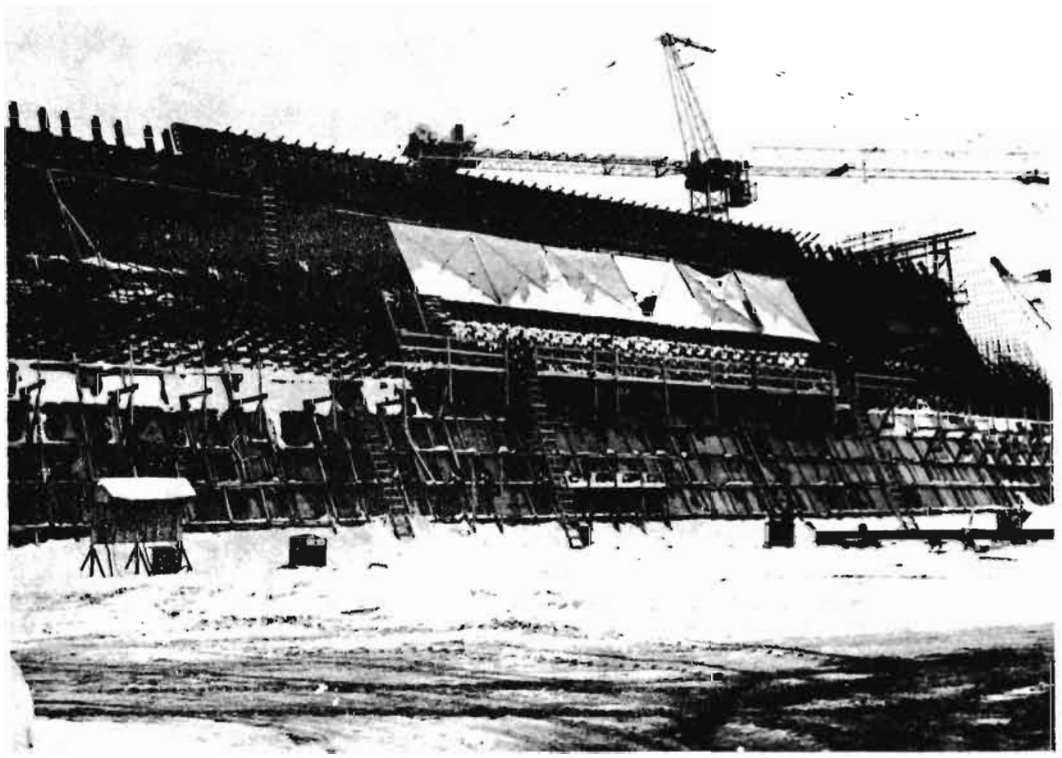
SQUARE HOLES FOR ROUND PEGS at the Spartan missile field of the Grand Forks SAFEGUARD BMD complex near Langdon, North Dakota, in October, 1970. The tall tower at the left rear of the field is a Spartan can surrounded by reinforcement steel. The unit will be lowered into one of the many square holes where it will receive concrete placement. The round Spartan missile will eventually be housed in the square reinforced concrete silo.

In the meanwhile, just as the accelertion began, the first traces of snow were recorded at Langdon on 13 October. On 29-30-31 October an inch of snow blanketed the ground, and plans for winterization began in earnest. Since concrete continued to be mixed and poured at the MSR until the second week in December and at the PAR site until 24 December, careful measures had to be taken to protect men and materials from North Dakota cold. The magnitude of the climatic problem can be judged from conditions prevailing when concrete pouring ceased in December. At that time eight inches of snow lay on the ground, and on the night of 20 December temperatures had dropped to -25° F. The **highest** low in December was 13° F above zero on 1 December, while on both the 20th and the 23rd temperatures had only risen to -7° F in the heat of the day. These still air temperatures could be and often were greatly multiplied by the chill factor of anything from prairie breezes to gale force blizzards.[49]

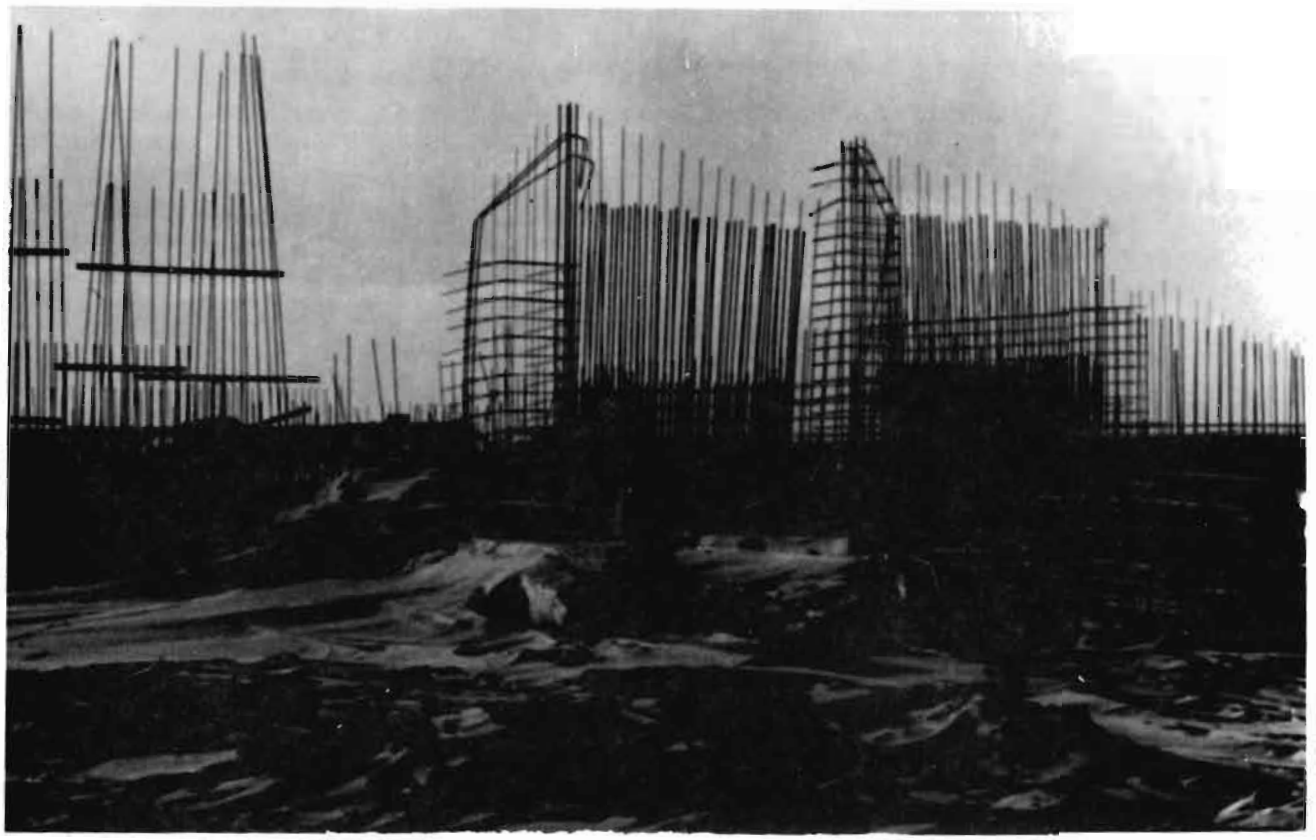
GRAND FORKS, NORTH DAKOTA MSCB closed for winter (Dec. 1970)



GRAND FORKS PARB "A" wall winterized in (Mar 1971)



NORTH WALL OR FACE OF THE GRAND FORKS PARB showing the radar penetration holes. The face slants back at a 25-degree angle and will rise over 125 feet in the air. (Mar 1971)



GRAND FORKS UNIVERSAL MISSILE BUILDING (Dec 1970)

For construction crews in North Dakota, the only choice was to learn to live with the demanding conditions. Cars had to be equipped with block heaters and anti-freeze and many acquired supplemental interior heaters. Studded snow tires, regular snow tires, chains, tow cables, booster cables, parkas, heavy woolen sweaters, "long john" underwear, mufflers, gloves, and mittens were all part and parcel of recent acquistions for some southern newcomers. Equipment and working places, too, had to be protected, and even raw materials such as aggregate stored outside had to be protected from freezing in order to be usable.

As mention above, the major step for winter work at Grand Forks was closure of the four major buildings. The last structural concrete placements in these was made on the second floor of the PAR Building on 23 December 1970. Closure of the first floors of the other three buildings had been reached previously. With the first floors enclosed in concrete, a sheltered base was established to allow inside work. But concrete alone provided little relief from the hostile tempertures of a North Dakota winter. There were still many openings left in the lower levels of the building shells, and the concrete itself had to be protected during the mixing, transport, pouring, and curing phases.

The first item on the winterization agenda was the preparation of concrete. The batch plants were protected with plywood and polyethylene sheeting, while water and aggregate also had to be kept from freezing. The trucks transporting the mixed concrete to the pumping and conveyor areas were all equipped with insulated drums, while the pumping stations and conveyors were also protected with external insulation. Once placed in forms, the freshly poured concrete had to be kept at approximately 50° for the required fourteen-day curing period. This was done by erecting temporary shelters of plywood, styrofoam, and polyethylene over the area to be poured. During the pour and fresh curing period of a day or so, propane space heaters with electric blowers were used to force warm air into the area. Huge blankets, tarpaulins, and hay bales were used to protect the concrete in the later curing stages. Once the concrete had set and cured, the shelters were stripped away, moved to the next placement area, and re-erected.

Next to be tackled were the interiors of buildings. If any effective inside work was to go on during the winter, workmen had to be provided some semblance of a comfortable environment and the materials they were using protected. To do this, gaping openings to the outside were sealed off with formed wood closures and bolts of polyethylene sheeting. Then M-KA personnel installed huge two million BTU gas-fired furnaces in each structure. The furnaces' electric blowers forced warm air through yards of ducts into most of the nooks and crannies of the maze-like interiors. Chilly corners and drafty working spaces were further warmed by numbers of portable bottled liquied propane heaters as needed. The result was a tolerable 55° F temperature inside, sufficiently warm to allow work to proceed under "gloves-off" conditions without bulky clothing or numbness of extremities. Even miscellaneous concrete pouring on the interior could be placed in warmth from portable mixers rolled about within the structures.[50]

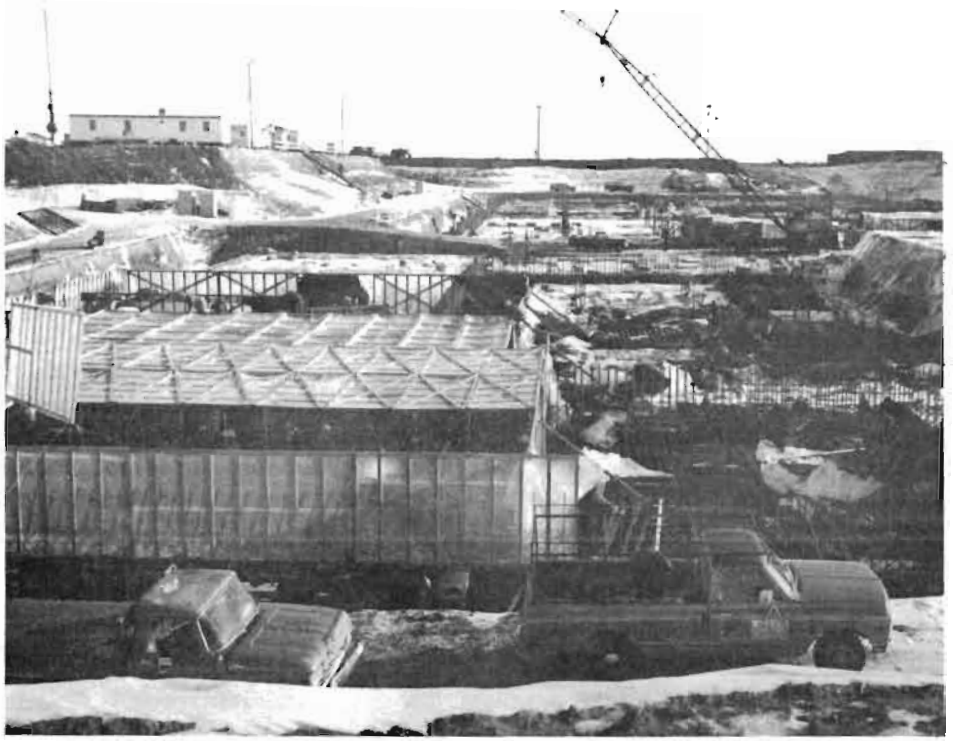
The successful implementation of winterization methods at Grand Forks during November and December could be measured in the smooth transition to in-house work of various kinds when outside conditions became intolerable. Fabrication, installation, and painting of conduit and heat sink cooling lines began in Mid-Novermber; about the sametime generator pedestals and their massive anchor bolts were emplaced in the MSR Power Plant floor. As early as October the meticulous job of cutting, placing, and welding liner plate for the NEMP shielding had begun in individual rooms of the MSR Building, and the activity took hold in the first level of the PAR Building during the last week of December. The installation and welding of the liner plates was followed almost immediately by painstaking magnaflux testing to insure that finished welds were without flaws, gaps, or cracks that could compromise the continuity of the shielding. Quite naturally, these types of indoor activities meant not only a reduced work force but also one that was different in composition. During the week of 1-7 January, 1971, for example, the average M-KA manpower on the job was 266 salaried and 497 craft employees, for a total of 763. Most of the craftsmen were ironworkers, electricians, or plumbers as contrasted with a preponderance of masons, carpenters, and laborers seen earlier in the year.[51]

As the 1970 construction season closed, it could be fairly said that most of the major goals for the first year at Grand Forks had been met. The four main structures had all been sufficiently advanced to permit interior work to continue without interruption. In so doing, over one million cubic yards of earth had been excavated and equally enormous amounts of construction materials hauled, prepared, emplaced, and finished . A statistical recapitulation published for Division employees in the 15 January 1971 "Information Bulletin" reported that

> the Grand Forks, North Dakota, facilities had a peak employment of over 2200 people who have place 24,749 cubic yards of concrete and 7.8 million pounds of steel in the PAR Building; 13,454 cubic yards of concrete and 5 million pounds of steel in the PAR Power Plant; 18,689 cubic yards of concrete and 6.3 million pounds of steel in the MSCB; and 14,404 cubic yards of concrete and 3.3 million pounds of steel in the MSR Power Plant.[52]

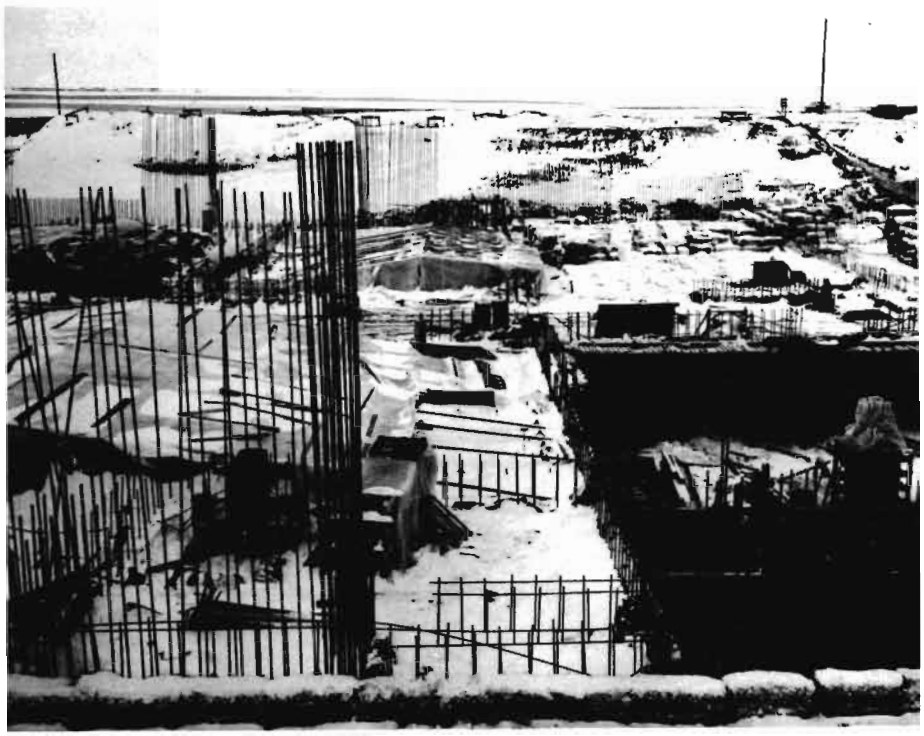
In addition, the "Bulletin" went on, over twenty miles of roadway had been built or improved, a rail siding installed, sixty-one miles of water pipeline laid as well as construction of contractor and Area Engineer Office facilities.

An end-of-the-year summary for Malmstrom AFB could also report significant progress with the completion of the Phase I contracts. The MSR site major concrete work under Watson Construction's contract was essentially finished on 12 January 1971 with completion of the preparatory features, foundations, and reinforced concrete in the first floor slabs of the MSR and MSR Power Plant and construction of a 20,000 square foot Area Engineer Building. On 26 February the final concrete pourings were made on the PAR Building's Phase I by Smith-Amelco. By that time, visitors to the Conrad-Shelby sites could see guant white concrete shells reaching from ground level up through the second floor slab of the PAR Building and its power plant, while out of the top surfaces rows of heavy reinforcing rods, piping, and other protrusions awaited the commencement of Phase II. Near the incomplete PAR a Resident Engineer Office stood empty but finished, complete with a large paved parking area. Despite outdoor work in temperatures that sank as low as -35° F during January, both Watson Construction and Smith-Amelco had met their required schedules, Smith-Amelco only being allowed a four day extension for change orders, weather, and other excusable delays. Neither contractor encountered difficulties in cleaning up the sites and carrying out other minor finishing operations before the BOD of 1 March.[53]



CANOPIES PROTECT WORKERS during subzero weather at the Malmstrom SAFEGUARD BMD system MSR complex being built in Montana. With portable heaters the temperature inside the work area rise to about 55 degrees while it is below zero outside.

THE MSR SITE being constructed near Conrad, Montana, as part of the Safeguard BMD system, as it appeared in March, 1972. In the center foreground is the straw covered base slab of the power plant with the base slab of the MSCB immediately above.



PERIMETER ACQUISITION RADAR POWER PLANT being constructed near Conrad, Montana, winter 1970. The canopied working areas and straw covered perimeter are part of the winterization plan to permit construction activities and concrete placement during the sub-zero winter weather of the Montana prairies

THE MALMSTROM PERIMETER ACQUISTION RADAR site as it appears looking from the southwest after completion of Phase I construction and clean-up. The control building is center with the straw covered base slab of the power plant on the right. In the background is the water reservior and tank.

Unfortunately, the timely completion of Phase I at Malmstrom became meaningless as Phase II became ensnarled first in unacceptable bid offers and then in complex labor troubles that disrupted what should have been a smooth transition out of Phase I. During preparations for the Phase II bidding process in late 1970, it became evident that SAFEGUARD construction costs were rising steeply and would probably continue to do so throughout the bidding period in early 1971. In part, this trend was caused by inflation throughout the nation's economy and in part, to factors peculiar to SAFEGUARD's advanced technology and isolated construction locations. One means of combatting the upward cost spiral was to encourage maximum bidding competition for Malmstrom Phase II by offering separate bidding opportunities for the PAR facilities and for the MSR group. Accordingly, a unique bidding arrangement was worked out for this job. Three Phase II bidding schedules were provided in the Invitation for Bids: Schedule I, PAR facilities alone; Schedule II, MSR facilities alone; Schedule III, PAR and MSR facilities together. The Government reserved the right to award two contracts under Schedule I or Schedule II or one comprehensive contract under Schedule III, accepting the bid or combination of bids most advantageous to the Government. The major disadvantage was to complicate contract administration in the eventuality that the two contract plan materialized.[54]

The more complex bidding schedule then for Grand Forks meant that the Malmstrom Phase II bid package outweighed the previous January 1970 record set for the North Dakota sites. When Invitations for Bids were mailed on 7 January 1971, the total Malmstrom bid package weighed 125 tons, including 1000 sets of half-size drawings weighing 201 pounds per set and 1200 sets of specifications weighing 39 pounds per set. Printing of this package was done by the Army Missile Command Printing Plant at Redstone Arsenal with compilation and distribution carried out within the Division.[55]

Bid opening for Phase II was conducted in Seattle, Washington, on 25 March 1971. Only two bids were recieved, the apparent low bid of $178,980,000 being submitted by a joint venture sponsored by Peter Kiewit Sons' Con. and Associates (PKS&A), of Omaha, Nebraska. Other members of the venture included Morrison-Knudsen, Inc. (contractors at Grand Forks), and Fischback and Moore, Inc., of Denver, Colorado. The second bid was from a joint venture sponsored by Mid-Valley, Inc., of Houston, Texas, in the amount of $202,832,000. Since the Government had estimated the iob could be done for $152,175,000, the low bid submitted by PKS&A exceeded expectations by more than 17 percent. Three weeks later, on 14 April 1971, Under secretary of the Army Thaddeus R. Beal rejected the low bid, ruling that it was "unreasonable in price." Under authority of 10 U.S.C. 2304 (a) (15), Huntsville Division then extended new solicitations to the only two interested bidders on 26 April. Actually, the former Invitations For Bids was converted into a Request For Proposals with a closing date of 17 May 1971.[56]

The two joint ventures and the Army, however, found it impossible to come to terms on a fixed-price contract for Malmstrom Phase II, and a delay of more than eight months ensued before a bargain was struck. The reasons for the delay were extremely complex, involving conflicting interests among several Government agencies, the construction contractors, and local and national unions. The differences among these parties actually stemmed from two interacting causes, inflation in an overheated national economy brought about largely by the Vietnam War and social expenditures, and the desire of labor to keep pace with, or even to better, its position in an era of rising prices. The strictures of a narrow Presidental economic policy further complicated settlement of issues after 3 April 1971 when Executive Order 11588 set ceilings on prices and wages in an attempt to stablize the economy. Later in the year, Executive Orders 11615 and 11627 effectively extended a "freeze" on economic adjustments amounting to more than about 6 percent per year.

The hiatus in Malmstrom Phase II began with the failure to achieve a Phase II project agreement before bids were offered in March 1971. This failure really dated back to Phase I. It will be recalled that the Phase I Project Agreement signed in May 1970 had incorporated very high wage and subsistence rates which alarmed the Army with ominous implications for Phase II. Throughout much of 1970 the FMCS had been trying to arrive at some compromise between earlier union demands accepted under Phase I and wage levels acceptable to the Government and its contractors. The FMCS had not been able to break the impasse during 1970, nor had any progress been made during initial contractor-union negotiations for a Phase II agreement in January and February 1971. At the time the issues remained fundamentally the same as under Phase I, as the Secretary of the Army reported to the FMCS on 1 March 1971:

> Prospective bidders and local unions began negotiating for a project agreement on January 26, 1971. No project agreement has yet been reached negotiations are scheduled

to resume on March 8, 1971. The prospective bidders have reported that the Montana unions are demanding as much as $2 per hour per year increases over their current wages, double time for overtime, subsistence of $20 per day, and 10¢ per mile travel allowance round trip.[57]

The Secretary then went on to elaborate the disastrous impact that these askings would have on the costs of Malmstrom Phase II and on SAFEGUARD as a whole:

> If these increased labor costs agreed upon for Malmstrom as discussed above were reflected in all future project agreements for SAFEGUARD construction contracts, the impact would be very substantial. The potential increase in the contract for the Malmstrom major technical facilities (the PAR, MSE, power plants, and collocated missile facilities) would approximate $25 to 30 million. If these rates were applied to all remaining construction contracts at Malmstrom (for non-technical support facilities, remote launch sites), the net increase in construction costs would be about $40 to $45 million. It is reasonable to assume that the already sizable potential increase in costs would be further multiplied if comparable wage rates and benefits were applied to construction at the Whiteman AFB, Missouri site and at any later sites, if authorized. Further, these potential increased costs could affect the adequacy of the availability of funds and impair the current deployment schedules.[58]

No further progress towards a satisfactory project agreement had been reached three weeks later when PKS&A and Mid-Valley, Inc., submitted their bids for Phase II with contingencies for anticipated cost increases over Phase I.

Efforts to formulate an agreement between the two prospective contractors and Great Falls labor union locals continued through April and May, and eventually an agreement was concluded with nine of the fourteen local building trades. Under the guidelines of prevailing Executive Order 11588, however, the watchdog Construction Industry Stabilization Committee, or CISC, had to review the wage and benefit package for potential inflationary effects violating the President's annual 6 percent parameters. When the Committee finally reached a decision on 29 July 1971, it found the proposed increases not acceptable.

There was now but one alternative remaining for the Army, to attempt to secure an agreement with national union representatives with the hope that the North Central Montana Building and Construction Trades Council would consider it binding in Montana. In August the Secretary of the Army requested the assistance of the Secretary of Labor to bring the parties together in Washington, D.C., and as a result, the Chairman of the CISC, together with the national presidents of the individual building trades union and the Brotherhood of Teamsters, entered into negotiations for an acceptable project agreement.

Throughout the summer and early fall, contract negotiations also continued between prospective contractors and the Corps of Engineers. On of the two prospective joint ventures, Mid-Valley, Inc., withdrew from consideration on a fixed-price basis in September. Subsequently, a general understanding on price was reached between PKS&A and the Huntsville Division with formal contract award contingent upon obtaining a satisfactory labor agreement.

During these negotiations, a general Malmstrom AFB Phase II Project Agreement was concluded during late October. The pact was signed by the President of the Building and Construction Trades Department, AFL-CIO; the prospective contractor, PKS&A; and the national presidents on the unions involved on 19 October 1971. The provisions included a maximum travel, subsistence, and related allowances of $9.00 per day to RLS No. 4 and the MSR site and $12.00 per day beyond the MSR, to the PAR site, and to RLS's Nos. 1, 2, and 3. Though above the 6 percent annual increased guideline laid down by President Nixon's economic policy, the document was approved by the CISC the next day. The question now became one of whether the local unions in Montana would honor an agreement negotiated on their behalf at national levels. Until this acquiesence was clearly forthcoming, PKS&A decline to enter a definitive fixed-price contract.[59]

As of the first of December 1971, the chain of events outlined above had generated a slippage of at least eleven months in the Equipment Readiness Date for the Malmstorm site. Further delay would have seriously jeopardized effective use of the 1972 construction season with concomitant additional slippage and increased costs. Thus, on 2 December a temporary Letter Contract (DACA87-72-C-0019) was drafted and issued to PKS&A. In effect, this was an authorization to begin work, with maximum expenditures on the part of the Government limited to $20 million, obligations limited to $50 million, and an understanding that a definitive fixed-price contract for

the entire job would be forthcoming within ninety days. Meanwhile, as the Letter Contract went into effect, PKS&A attempted to obtain compliance with the Project Agreement from local unions.[60]

By 18 February 1972, only four local unions had subscribed to formal arrangements with PKS&A; nevertheless, the venture felt secure enough to proceed into a final contract. On 24 February, PKS&A accepted modification PZ0004 to the Letter Contract of 2 December 1971, thereby contracting Malmstrom Phase II for a fixed-price of $160,927,932. This contract superseded the Grand Forks contract as the largest award made to that date by the Corps of Engineers. It had come almost exactly 11 months after the 25 March 1971 initial opening of bids for Phase II.[61]

The resumption of work in Malmstrom was to begin as soon as the weather permitted, with the first concrete placement scheduled for April. It was anticipated that during the 1972 season outside construction work on the PAR Building would be completed through the third level of the five-story building, with half of the fourth floor level walls in place. This would require a season's placement of 16,000 yards of concrete, a reasonable goal considering the 1970 performance at Grand Forks. The PAR Power Plant would be one-third roofed in with 10,000 yards of concrete placed. The MSR was to be completed through the second level slab, or up to the turret base, with 8,000 yards of concrete placed, and the power plant would be one-third roofed in, with 11,000 yards of concrete placed . Inside work was to continue throughout the year. There would be approximately 1,500 contractor and construction personnel on the sites during the summer of 1972. The Malmstrom facilities were to be completed by late 1974, and the complex was to become operational in

Contract signing on 24 February 1972 for a $160,927,932 Phase II Malmstrom Contract between Peter Kiewit Sons' Company and Associates (PKS&A). Government reprsentatives include Ben Porter, Project Coordinator (standing left), Colonel Lochlin W. Caffey Contracting Officer (seated) and Brigadier General Bates C. Burnell, Division Engineer, (standing right).

1976.[62]

With the breakthrough in awarding the main structures under Phase II, the remaining contracts pertaining to the site were let very quickly thereafter. The first two RLS sites, Nos. 2 and 3, were let on 10 April 1972, and on 20 April a contract for the Malmstrom Non-Technical Support Facilities was let to Chris Berg, Inc., Seattle, Washington, for $10,717,000. Finally, contract for RLSs 1 and 4 was awarded on 5 May. As events were to show, however, neither the major PKS&A contract nor the lesser ones following progressed very far before events in the international arena terminated them.[63]

Had the remainder of the SAFEGUARD program experienced the ill-luck encountered in Montana during 1971, it might well have capsized from Congressional criticism and public pressure. This was not the case, however, for outside of Malmstrom's problems, the SAFEGUARD program enjoyed a good year during 1971. Early in the year, President Nixon's staff conducted the second annual SAFEGUARD review in the light of contemporary Soviet and Chinese arms advances and pondered the ABM program's weight at the SALT talks. When the Administration's budgetary decisions for FY 1972 were publicly announced on 9 March they revealed an outlook of guarded optimism that an American-Soviet consensus would eventually be reached in strategic arms limitations. The Presidental budget proposed to the Congress included $1,278 billion for the SAFEGUARD program, a sum essentially intended to sustain ABM construction at FY 1971 levels. The previously authorized sites at Grand Forks, Malmstrom, and Whiteman AFB, Missouri, were to proceed as scheduled, and funds were to be provided for a fourth site, also authorized a year before. Depending on SALT trends, however, the President wished to hold open an option on placing the fourth site at Warren AFB, Wyoming, as previously planned, or constructing it outside the nation's capital. The Administration's proposals fared well in the Congress, which contented itself merely with trimming $161 million from SAFEGUARD and directing that the fourth site deployment should be at Warren AFB for reasons of economy.

Out of the FY 1972 Congressional ABM allocation, the Huntsville Division received $131.6 million to continue SAFEGUARD facilities design and construction. Of this amount, a total of $0.7 million was for design effort and $130.9 million for construction. In addition, $12.7 million was received from other commands for reimbursable ballistic missile defense work, while the Division's FY 1972 operating budget amounted to $10.7 million.[64]

Within the Division, the advancement of SAFEGUARD during 1970 and 1971 was marked by corresponding changes in personnel and organization. On 28 November 1970, Brig. Gen. Bates C. Burnell assumed the position of Division Engineer when General Young was transferred to Vietnam. The new Division Engineer had joined the Huntsville Division as Deputy Division Engineer on 9 March 1969 from a Vietnam assignment as Commander of an Engineer Construction Group. A 1945 graduate of West Point, General Burnell also held a M.S. in Civil Engineering from Massachusetts Institute of Technology.[65]

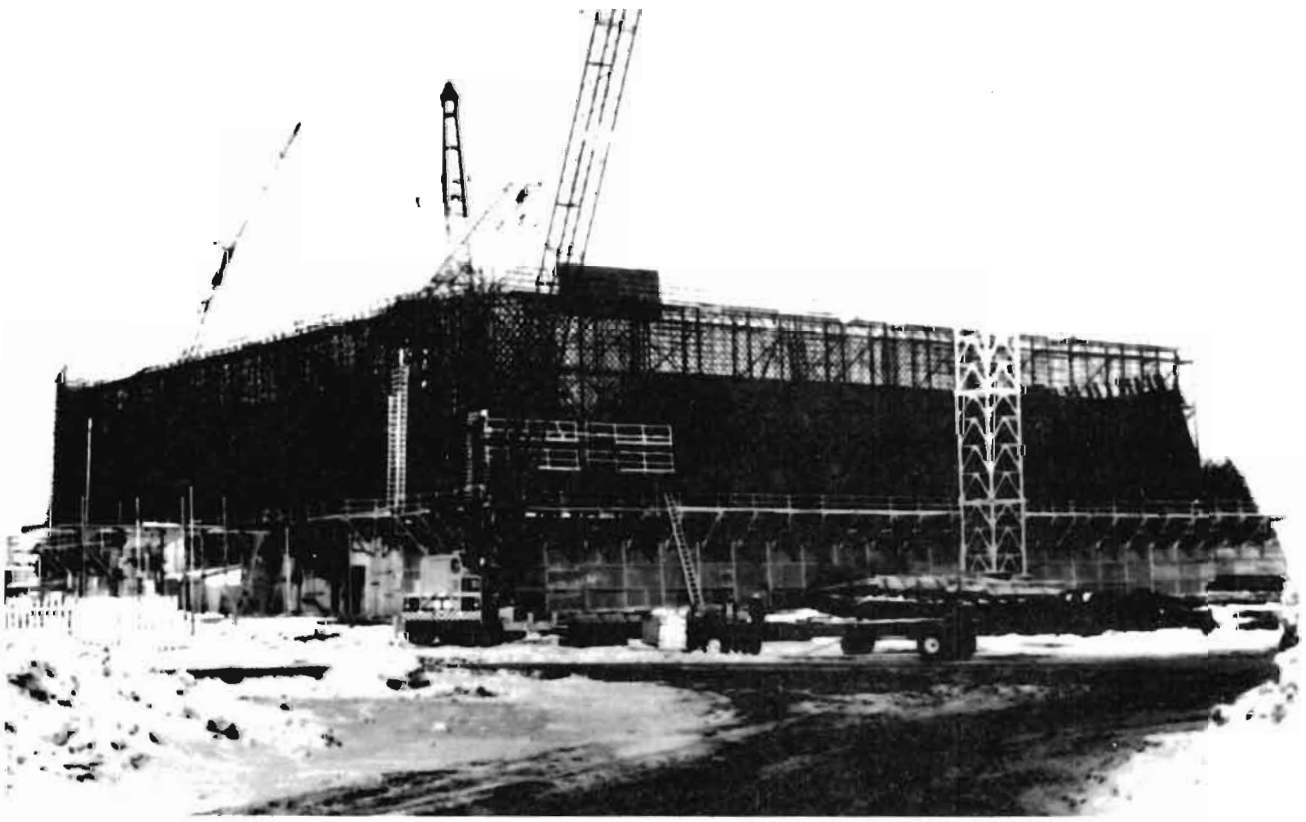
BRIGADIER GENERAL BATES C. BURNELL succeeded Major General R.P. Young as Huntsville Division Engineer effective 28 November 1970.

At the time, General Burnell assumed his new position, the unit was operating under "Modified Phase II" of SAFEGUARD announced earlier in 1970. The terms of "Modified Phase II" made ascertaining the future manpower needs of SAFEGUARD quite difficult, and the ups-and-downs experienced at Malmstrom further complicated formulation of accurate manpower estimates. Reference to actual on-board strengths, however, show that the Division continued to grow slowly after June 1970, rising from 376 civilians to 379 in September, to 402 in December, to 414 in March, and to 426 in June 1971. After mid-

1971 Division manpower stabilized at about 425 to 430 and remained at that level throughout FY 1972. The Division's Executive Office comprised twelve officers and two enlisted men in Febrauay 1971; the Executive Office at the time retained its organization as before, with Col. R.R. Wessels as Deputy Division Engineer; Col. R.W. McBride, Contracting Officer, Western Region; Col. L.W. Caffey, Contracting Officer, Eastern Region; and Col. H.K. Mattern as Contracting Officer for Procurement.[66]

Relative stability in civilian strength did not mean that the Division's organization remained static. The needs of the Division changed as the emphasis in SAFEGUARD shifted from design to construction, and this shift was reflected in the first major reorganization of the Division in June 1971. The most important change was the consolidation of the Systems Engineering Division and the Facilities Engineering Division into one Engineering Division under the direction of Lee S. Garrett, former Chief of Facilities Engineering. Additionally, an autonomous Planning and Analysis Office was established, and the Value Engineering Officer was appointed as a Special Assistant to the Division Engineer.[67]

The most spectacular testimony to the advancement of the SAFEGAURD program during 1971, however, was not to be found in budgetary or manpower figures nor in the halls and offices of Huntsville Division, but in the materialization of the Grand Forks facilities out of the North Dakota prairies. Here the 1971 construction season saw the MSR and PAR Buildings transformed from rather ugly half-finished shapes to recognizable, indeed, nearly complete, buildings enormously impressive not only for their immensity but also for their clean, simple, functional lines which now began to show through the clutter of scaffolding, scantlings, and wooden forms that still mantled them. Clustering about the main building, the auxiliary support structures also assumed clearly defined shapes as the year progressed. And viewers with a bird's eye perspective could also have seen large-scale digging and heaping of earth, evidence that subterranean structures such as the heat sinks, the water storage reserviors, and the waste stabilization ponds were taking shape. Finally, those who looked closely at the surrounding countryside at some distance would have detected the beginning of work on the four RLS sites.



GRAND FORKS WINTER CONSTRUCTION 1970-71 at the PAR site. Most work was performed inside with only essential work on the exterior.

The 1971 construction season at Grand Forks really began in earnest around mid-March as M-KA personnel began to tunnel out from under winter's snow and insulation material that had blanketed the main structures for months. The batch plants were inspected, repaired, and checked out in preparation for the resumption of concrete pours, and notices were sent out to the union halls representing the tradesmen needed for heavy structural work. Originally, concrete pouring was scheduled to begin on 15 March, but as late as 18 March snow continued to fall, accumulating in place into eight foot drifts. Under these conditions M-KA was not able to make the first concrete pour of 1971 until 30 March. After this date work accelerated rapidly at both sites, so that three weeks later, on 22 April, M-KA reported it had poured 1808 cubic yards at the MSR and 1395 at the PAR. At the time outside work resumed, M-KA had 1348 men on the job; a month later, on 29 April, this had increased to 2080.[68]

If mobilization went rapidly at Grand Forks during the spring, it did not do so without annoyances and hindrances. On 27 March, just as construction resumed, the State of North Dakota imposed its annual load limits on state highways to protect them during the thaw. State highways ND 1 and ND 5 to the MSR site were particularly affected, the contractor noting that the "restriction could reduce his 'pay load' as much as 50%."[69] The load limits were understandable and unavoidable, but a good many of the contemporary labor squabbles, disputes, and walk-offs that delayed the job were not. A homely description of one incident more severe and costly than most during the spring was recorded by the Area Office chronicler for the period 6 through 12 April. It is worth quoting at length, since the causes, course, and effects were typical of the dozens of such occurrences that popped up throughout the job.

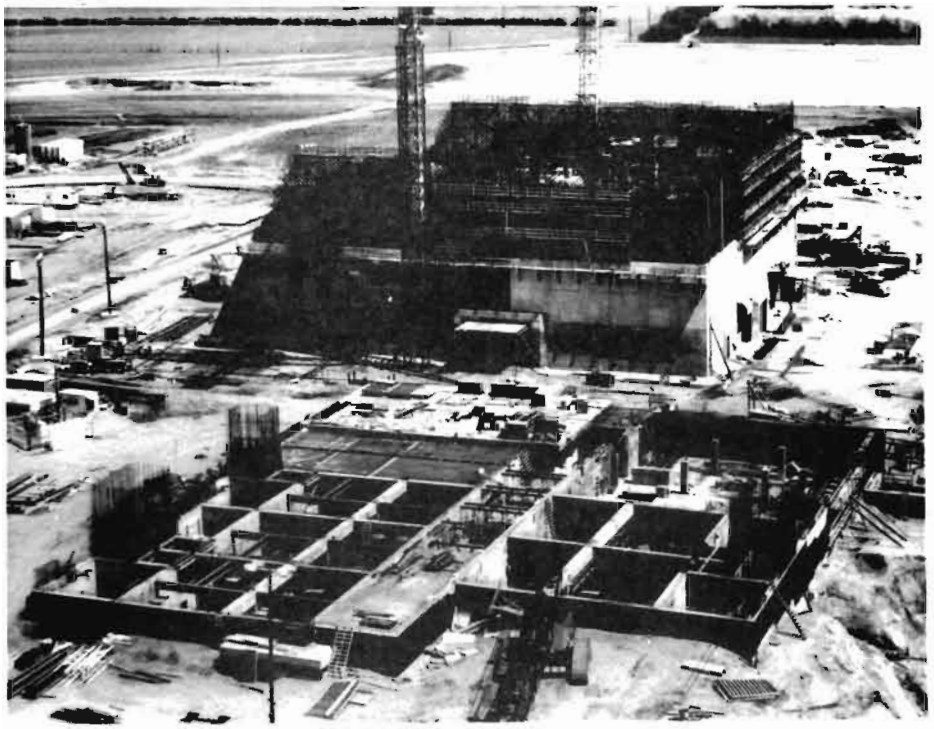
> **06 Apr 71:** MKA Ironworkers staged a brief work stoppage. Seems that three (3) of their number at PAR site left early before the lunch period, quitted the site, then returned late to their work, after lunch. Their late re-entry to the site was observed; they were questioned. Upon learning their story, MKA fired them as of 1230 hours.
>
> **07 Apr 71:** The remaining fifty-two (52) MKA iron workers reported for work at 0800 hours, but refused to commence [work] until the three (3) miscreants were re-hired. When MKA refused to yeild (sic), the former group still maintained they would not work. At 1030 hours, MKA discharged all **52** men.
>
> Concurrently, Napoleon Steel was also in difficulty with their Ironworkers; they had just fired a steward. Kent Larson, Napoleon's Project Manager, said the firm had wanted to fire this steward for some time. The Ironworkers International Representative and the Union's Local Business agent knew the steward was not performing his work properly, but asked Mr. Larson to retain him one (1) more week. If no improvement were noted at the end of that time, the steward was to be notified of such and discharged. Steward had not improved in the allotted time; he was notified and discharged at 1230 hours this day. Half of the ironworkers then went [out]; the remainder milled about the project - did no work.
>
> **08 Apr 71:** As a matter of record, MKA Ironworkers' strike was considered terminated at 1630 hours. Replacement Ironworkers had begun to appear on the job.
>
> As for Napoleon Ironworkers, the Project Manager reported about 0835 hours, to Corps Labor Relations Officer, that one of his workers had been kidnapped sometime during 07 Apr. He was threatened with bodily harm to himself and his family. The individual involved was so badly frightened that he asked not to be identified, nor would he reveal who threatened him. He was badly beaten before being released.
>
> Larson also told of one of his foremen being run off the road while the latter was in his car; his adversary threatened the foreman would be shot if the Union steward was not put back on the payroll. Larson reported both incidents to the Pembina County Sheriff.
>
> By 0930 hours, fifty-one (51) workers had returned to their work. Larson said that in order to get them there, he had to re-hire the fired steward. Until Monday, 12 Apr, at which time, the Union would have a replacement steward.
>
> It is estimated that about 45 man days were lost as a result of this strike.[70]

Finally, while spring temperatures were conducive to outdoor work, precipitation frequently was not. Rain fell on both sites throughout May, leaving the ground a quagmire of cold mud. Over an inch of rain fell during the first week in June, and on 11 June a mighty thunderstorm dumped four inches on the PAR site in less than two hours. The runoff casued flooding and severe erosion; personnel on the second shift had to limit their activity to pumping and cleaning up.[71]

The first major milestone of the 1971 season was the arrival and installation of the first diesel generator unit for Grand Forks. The Cooper-Bessemer unit departed the Oil City, Pennsylvania, factory by rail on 25 June. Since the complete item weighed 35 tons and had to be moved by truck from Hensel in part over State roads, an overload permit had to be secured from North Dakota regulatory agencies. At the Grand Forks sites, it became a matter of conjecture as to whether the State would grant such a permit until it was happy with the status of community impact and highway funds, and in fact the permission was not issued until 7 July. This eleventh hour decision fortuitously prevented any delay. The engine generator was unloaded at Hensel on 8 July, and it arrived at the PAR site on 12 July. During the last week in July, this unit was lowered through the roof of the incomplete power plant into Module 5, aligned, and anchored. The arrival of the first Cooper-Bessemer units raised the total value of GFP delivered to Grand Forks to $3,062,418.[72]

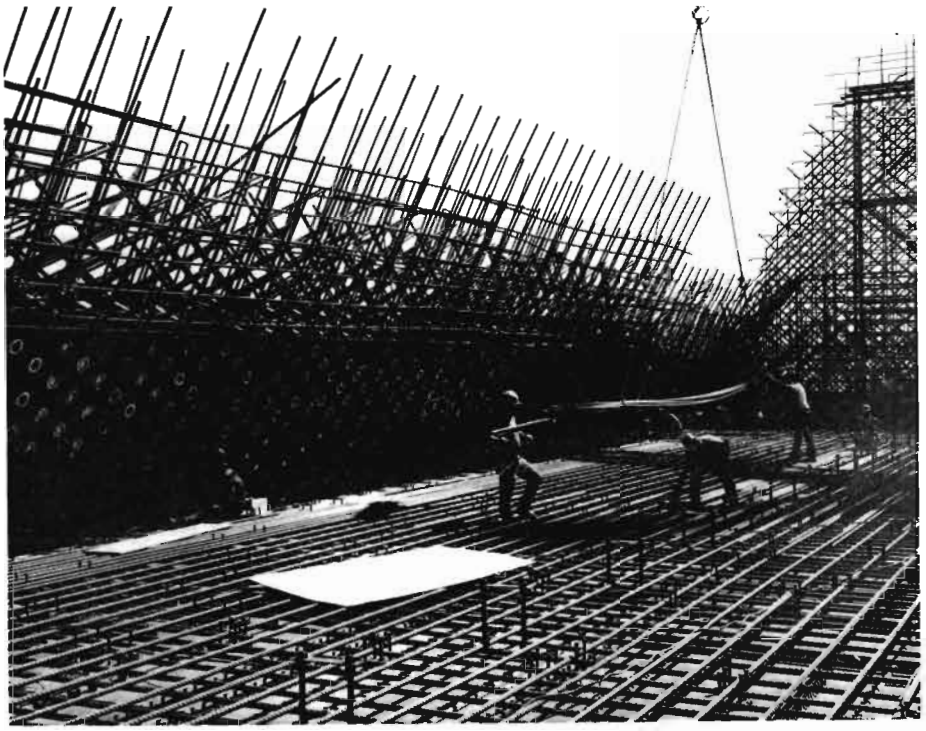
By 1 July MK-A's mobilization for the season was

THE FIRST OF THE DIESEL ENGINES AND AUXILIARIES SKID to arrive at the Grand Forks Perimeter Acquistion Radar (PAR) site from Cooper Bessemer Company, Grove City, Pennsylvania.

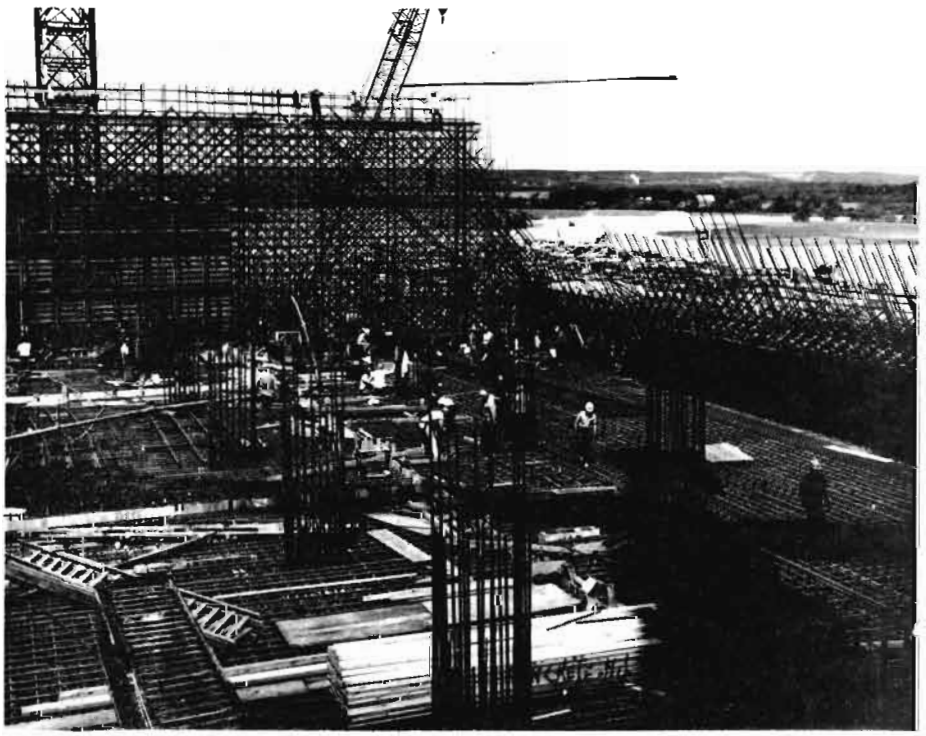


A VIEW OF THE GRAND FORKS PERIMETER ACQUISTION RADAR SITE during June 1971, looking across the top of the 14.3 megawatt power plant toward the west wall of the Perimeter Acquisition Radar Building.

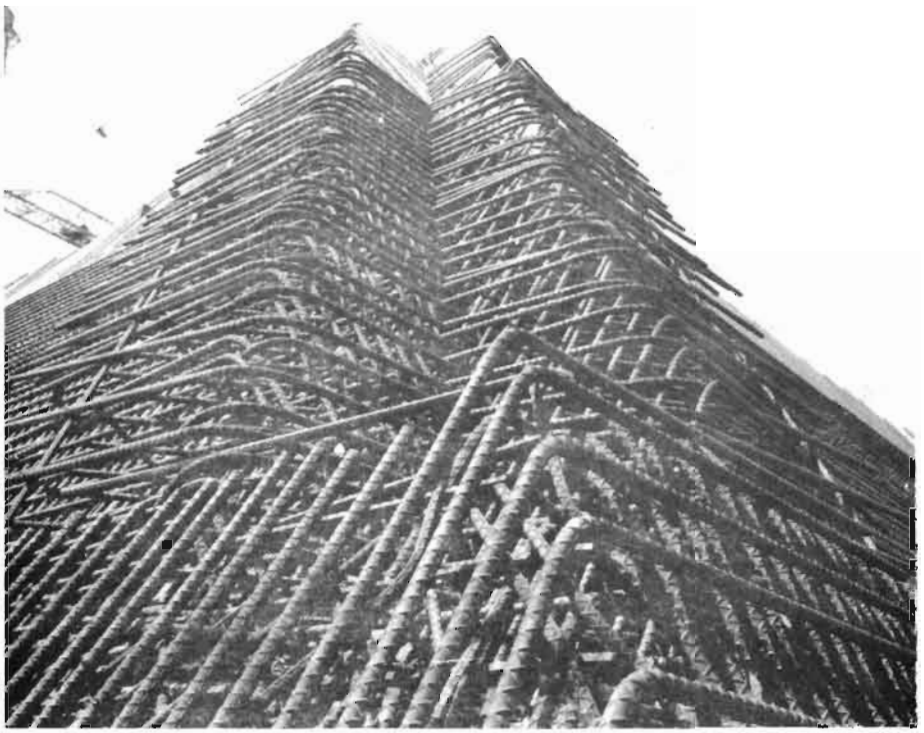
THE MISSILE SITE RADAR SITE in June 1971 during construction near Grand Forks. At left is the 7-1/2-million-gallon capacity heat sink which will be underground when completed. At right center is the 17.3 megawatt power plant with its roof being closed in. Directly behind the power plant is the Missile Site Control Building with the third floor structure being roofed in and the radar turret starting to be formed up.



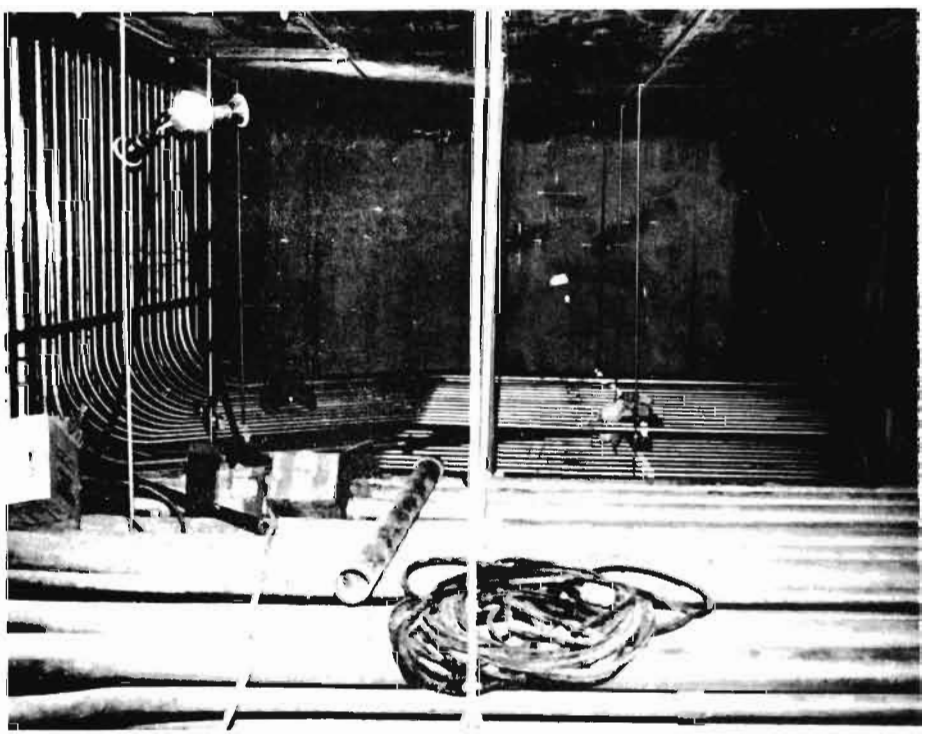
RADAR TUBE PENETRATIONS in the radar face of the PARB of the Grand Forks Safeguard complex under construction in June 1971, northeastern North Dakota.



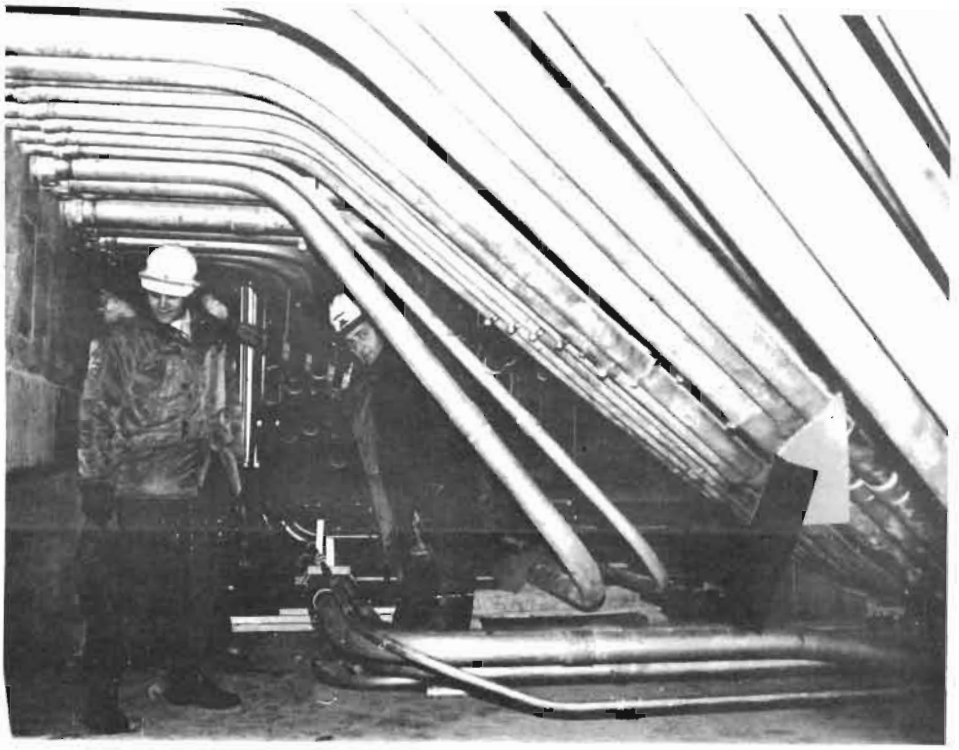
THE THIRD FLOOR NORTHWEST CORNER OF THE PARB of the Grand Forks Safeguard complex under construction in June 1971, in northeastern North Dakota.



AN INTRICATE MASS OF REBAR FOR THE TURRET WALL of the nation's first Safeguard ballistic missile defense system complex at Grand Forks, North Dakota (July 1971).



MILES OF CONDUIT being, installed at the Grand Forks Safeguard BMD complex in the Missile Site Radar Power Plant during the subzero weather in January 1971.



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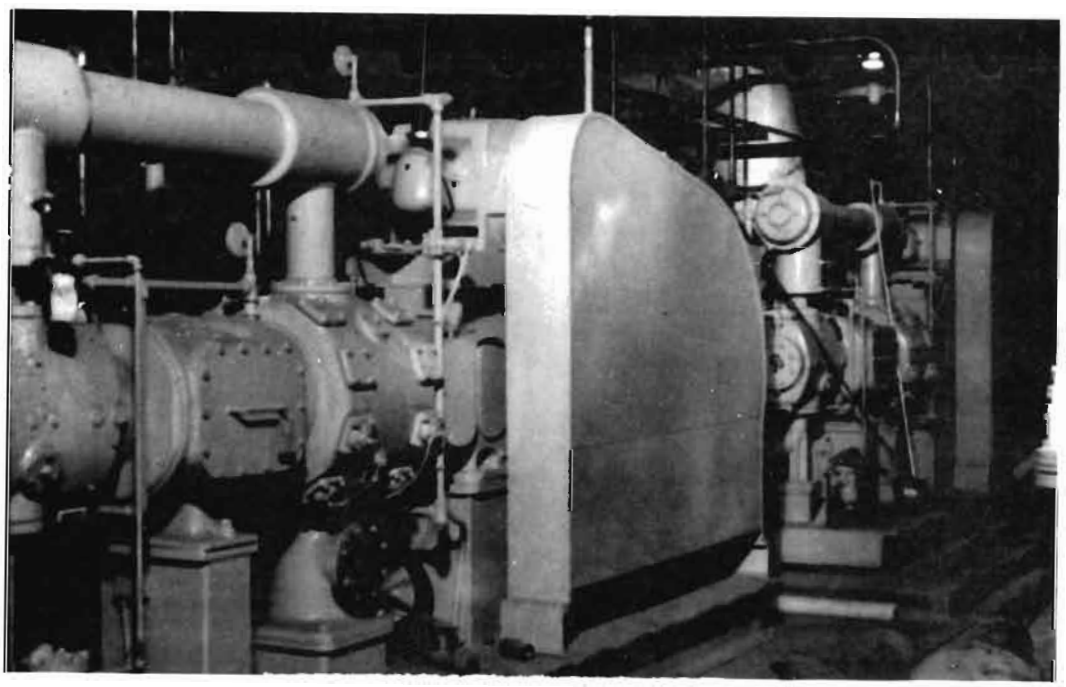

AIR HANDLING EQUIPMENT installed in the Grand Forks PARB.

GRAND FORKS PARB "A" wall showing penetration from the inside.

PERIMETER ACQUISTION RADAR SITE North Dakota Fall 1972

GRAND FORKS MISSILE SITE RADAR SITE North Dakota Fall 1972.

REMOTE SPRINT LAUNCH SITE #2 North Dakota Fall 1972.

complete, with 2,424 employees on the job. By contrast with the previous season, the workforce during 1971 was highly varied, since electricians, plumbers, sheetmetal workers, plasterers, and painters continued to work in the lower level interiors while heavy structural work went on above them. As in 1970, however, it sometimes proved difficult to recruit adequate numbers of these skilled craftsmen. The case of electricians may be cited as typical. All during the summer, M-KA had experienced a severe shortage of electricians that could not or would not be filled by local union halls. As a consequence, M-KA was permitted to implement a unique solution: Canadian craftsmen were invited to join the job and work visas were arranged for several dozen of them. Ironworkers and pipefitters were also needed, and to increase the latter's ranks, M-KA again resorted to an on-the-job training program as it had for carpenters the previous year.[73]

Whether American or Canadian, experienced or apprentice, the principal goal for all M-KA personnel during 1971 was identical: "top out" the main buildings so the installation of equipment and systems could continue through the winter months. Massive rebar and concrete placement during the summer months virtually insured that this goal would be met without the acceleration charcteristic of 1970. The MSR Building required less material in its upper portion than the PAR, and thus this building was the first radar building to be roofed in. The third level walls and fourth floor slab were in place by the third week in August, 12,883 yards of concrete having been poured since start-up. At about this stage, a potential setback developed in the guise of a delay in the shipment of the huge segmented antenna support rings which had to be placed in the turret walls before concrete pouring could be terminated. It was decided to go ahead without the rings by blocking out the spaces needed to accommodate them in the expectation that the fabrications would be delivered by mid-October at the latest. By the first week in September, the fourth level slab was complete, and the next three weeks saw the remaining walls formed and poured, complete with roof cap. In celebration of the event, a small, informal ceremony was conducted by Lt. Col. Vernon K. Davis, the Assistant Area Engineer, and a handful of M-KA personnel.[74] As a footnote, it might be added that the antenna rings expected in September arrived only the next May! The yawning round "windows" thus left gaping in the MSR turret walls were closed by temporary timber and plywood boxes during the winter months.

"Topping out" of the PAR Building followed the MSR by two weeks. The fourth floor slab and fourth level walls, with the exception of the "A-wall" face, had been poured by the first week of September, and the final placements of concrete, with exception of the parapet, were made late in October. A total of 26,824 cubic yards of concrete had been placed since start-up in March. The occasion was a momentous one for the SAFEGUARD program, and it was indicated in appropriate fashion by a "topping out" ceremony at the building conducted by Division Engineer General Burnell and officials from M-KA, including Project Manager William Gilfillan.[75] With the PAR Building roofed in, attention turned to fitting out the interior and installing tactical support equipment and systems. A full account of these activities would be tedious and unnecessary, but the reader can get a good idea of their variety and intricacy from part of a construction status report of 31 January:

> PAR Site-at the first level PARB door frames are being installed; corrugated metal wall partitions placed; deionized water, chilled water, and pump discharge lines are being installed; shock isolation platforms are being placed; and wire being pulled from the switchgear to the motor control panels and power panels. On the second level, corrugated metal wall partitions, panels, and liner plates are being installed; heating, and deionized water, and nitrogen lines laid; pull boxes, receptable switches and permanent lighting fixtures installed; RFI filters and conduit are being installed; and wire pulling continued. . . .On the fifth level, welding of ceiling liner plates accomplished; concrete columns finished; phase shifter steel supports erected; chilled water and waterlines installed; and welding of the front face liner plate to the penetration tubes accomplished.[76]

Roofing in of the power plants for both the PAR and MSR had been completed some days before the radar buildings. Work on the power plants had gone forward despite a 19 day strike that occurred at the Cooper-Bessemer plant in Pennsylvania after 31 August. At that time, one engine was undergoing assembly testing, one was ready for assembly tests, one was being factory tested, and one was ready for factory testing. Cooper-Bessemer employees returned to work on 20 September, and shipment of units resumed soon thereafter. By 30 September the PAR Power Plant had received three engine generators, and the last of the five required was on-site. At the same date, three

engine-generators were on the MSR site, one at Hensel, and one in transit from Cooper-Bessemer. All of these units were in place at the PAR Power Plant and four out of five at the MSR Power Plant by 1 December. Simultaneous with the installation of the engine-generators, the tunnels linking the power plants with the radar buildings were closed in and the intricate installation of miles of wire, conduit, pipe, and ducting for various systems went on during the winter.[77]

In addition to the advancement of the main structures at Grand Forks, 1971 also saw the award and initiation of construction for several smaller, but nonetheless essential, elements of the facilities. Under the "Modified Phase II", of SAFEGUARD, it had been decided to increase the number of RLS's at each site from two to four, each equipped with from twelve to sixteen SPRINT's and a small hardened Remote Launch Operations Building (RLOB). A contract for the construction of RSL's 2 and 3 at Grand Forks in the amount of $7,630,950. was awarded to a joint venture sponsored by Woerfel Corporation & Towne Realty, Inc., on 26 March 1971. By the end of the construction season, Woerfel & Towne had set all prefabricated steel SPRINT cells in place, completed the RLOB structures, and were fitting out the interior of the buildings during the winter months. RLS's Nos. 1 and 4 were about six months behind Nos. 2 and 3, a contract for their construction being awarded to Woerfel Corporation & Towne Realty, Inc., for $7,870,533.00 on 26 August 1971. Only the site grading, fencing, preliminary stripping, and other preparatory work under this contract had been completed by the close of the season in November.

Neither the PAR nor the MSR nor the RLS's could have been operated on a twenty-four hour, day-in and day-out basis without extensive facilities for the several hundred men who operated and kept up the radars and missiles. These military personnel required administrative office space, housing, food services, medical care, classroom and maintenance facilities, a chapel, and recreational opportunities; provision for most of these "Non-technical Support Facilities" was contained in a single contract that was awarded to Chris Berg, Inc.,on 6 April 1971. The contract was in the amount of $7,728,237.00, with completion due by December 1972. A separate $854,420.00 contract for a gymasium at the PAR was awarded to Chris Berg, Inc. gymasium at the PAR was awarded to Chris Berg, Inc., in May 1972. All of these structures were of conventional of "soft" construction expendable in case of attack, and neither their design nor their erection during 1971 offered any noteworthy features.[78]

As 1971 came to a close, the SAFEGUARD infrastructure as a whole could reflect on a successful start-up with the Grand Forks construction and its timely progress. If Malmstrom had been delayed, it was not because of deficiencies in its design or construction but rather to broad socio-economic forces at work everywhere. A solution to the Malmstrom difficulties seemed in hand by December, and the spring of 1972 promised that this site, too , could be developed with as much success as Grand Forks. But beyond the realm of construction, the passage of time was also showing that once completed, the SAFEGUARD facilities would, in fact, offer a workable ABM defense for the nation's deterrent forces. In a Pacific test on 23 December 1970, the SPRINT achieved successful interception of a "live" target fired from Vanderburg AFB, California, the SPARTAN having accomplished the same type intercept earlier in 1970. By this time, both SPARTAN and SPRINT were fully integrated with the prototype MSR computer and software on Meck Island, demonstrating that the system would function as a harmonious whole. No operational prototype of the PAR had been built or tested, but there was reason to believe that it, too, would perform as well as the other parts of the system. In summary, by the spring of 1972 the SAFEGUARD program was alive, well, and on schedule. But at the same time, far from Huntsville or North Dakota, the SALT talks were proceeding through crucial issues towards a final agreement limiting ABM systems. The effects of the conclusion of these talks in 1972 would be great, as will soon be seen.

CHAPTER III FOOTNOTES

[1]The ceremonies surrounding ground-breaking were deliberately kept on a low key to avoid attracting undue public attention to the SAFEGUARD program. See the report with pictures in the **Grand Forks Hearld**, 7 April 1970, p. 1.

[2]USAEDH-PAO, "Historical Summary FY 1970," I, Narrative, p.1, and "History Summary FY 1971," I, Narrative, pp. 19-20.

[3]USAEDH-PAO, "Historical Summary FY 1970," I, Narrative, pp. 28-32; USAEDH-GF "History of the Grand Forks Area Office," n.p., n.d., Pt.I, FY 1970, pp. 7-8. The "History of the Grand Forks Area Office" is a looseleaf typescript chronicle of approximately 452 pages (some odd pagination is evident) concerning the activities of the Grand Forks SAFEGUARD Area Office from its opening on 4 November 1969 to its closure on 27 June 1975. The history is organized in three parts: Part I, construction of the technical facilities by Morrison-Knudsen & Associates; Part II, construction of the Non-technical Support Facilities by Chris Berg, Inc.; Part III, construction of the Remote Launch Sites by Woerfel Corporation & Towne Realty, Inc. Within each part there are day-by-day entries for each day that the Area Office was open. These entries observe construction progress, milestones, labor problems, accidents, changes in personnel, managerial and administrative actions, and human interest notes, to mention but a few subjects. The manuscript was complied by Jean T. Bailey, Program Analyst, Networks and Reports Branch, Contract Management Division of the Grand Forks Area Office from official weekly progress reports, correspondence, newspaper articles, and in-house contact with the Area Office staff. Though sometimes informal and lacking synthesis or analysis, the "History of the Grand Forks Area Office" represents a veritable goldmine of information about the activities at the Grand Forks sites during their construction phase. The example used in compiling this history is held by the Executive Office, Huntsville Division.

[4]USAEDH-GF, "History of the Grand Forks Office," Pt. I, FY 1970, p. 8.

[5]See the Fargo, North Dakota, **Forum,** 19 April 1970, and the **Grand Forks Hearld**, 21 April 1970, p. 11, 2nd section.

[6]**Grand Forks Herald,** 3 May 1970.

[7]The "Chicago Seven" were David T. Dellinger, age 53; Rennard C. Davis, 28; Thomas C. Hayden, 29; Abbie Hoffman, 32; Jerry C. Rubin, 30; Lee Weinar, 29; and John R. Froines, 29. These idividuals were indicted on 20 March 1969 for various charges of conspiracy to incite acts of violence and other offenses in connection with disorders that occured at the 1968 Democratic Party national convention in Chicago, Illinois. The "Chicago Seven" were tried between 24 September 1969 and 14 February 1970. On 18 February 1970 all seven were acquitted of conspiracy to incite riot, but five were found guilty of crossing state lines with intent to incite a riot and giving inflammatory speeches to that end. Froines and Weinar were acquitted on both counts. The "Seven" appealed, and on 28 February 1970 they were released by the U.S. Federal Appeals Court on bail. There their case stood in April 1970.

[8]USAEDH-OC, "History of the Office of Counsel," Ex. 120. briefing for the Area Engineer, "Anti-ABM Day, 16 May," n.d.

[9]USAEDH-OC, "History of the Office of Counsel," Ex. 119, letter of Col. Bates C. Burnell, Deputy Division Engineer, to Col. Roy Beatty, Area Engineer, on 16 May 1970, concerning "Construction Site Security." Para. 4 of this letter summarizes the Government and Corps position nicely: "The guidance in this letter is based upon the concept that the Government and the contractor are pursuing a lawful and peaceful activity on Government owned or controlled property and that others, who may be exercising their lawful right to assemble and demonstrate, do not have the right to interfere or obstruct our activities. The objective is to continue construction operations as planned to the fullest extent possible. However, in pursuing this objective we would not use force and would take those actions which avoid verbal exchange or physical contact and which reduce the possibility of escalating incipient violence. We recognize that the local and state law enforcement agencies are responsible for maintaining order and we will cooperate with those agencies to the fullest extent."

[10]USAEDH—PAO, "Historical Summary FY 1970," I, Narrative, p. 35; USAEDH-GF, "History of the Grand Forks Office," Pt. I, FY 1970, pp. 8-9. In addition to the usual documents, I have been greatly assisted by the personal recollections of Geroge G. Stewart, Public Affairs Officer and Historian of the Huntsville Division, delivered in the course of several conversations during the spring of 1977.

[11]I have used the Corps of Engineers estimate of attendance recorded in the Division's "Historical Summary FY 1970," I, Narrative, pp. 35-36. The attendance figures reported for the demonstrations varied widely, reflecting both the usual human error and the hopes, fears, biases, or attitudes of those making the estimates. The figures recorded by the USAEDH-GF. "History of the Grand Forks Office," Pt. I, FY 1970, pp. 10-11, agree with the Corps estimate of 500 persons. The API news report in the **St. Paul Pioneer Press,** 17 May 1970, reported "nearly" 1,500" persons at the demonstration. The **Washington Post,** 17 May 1970, reported "from 900 to 1,200." The **Boston Globe** for Sunday, 17 May, had a special report by Chuck Haga which gave an estimated crowd of "More than 1000." Some of the accuracy of these figures may be judged by the fact that Haga also reported to the **Boston Globe** that the excavation of the MSR was a "60-foot deep hole," whereas in fact it was probaby no more than forty to fifty feet deep.

[12]**Grand Forks Herald,** 17 May 1970.

[13]API report in the **St. Paul Pioneer Press,** 17 May 1970.

[14]**Washington Post,** 17 May 1970.

[15]USAEDH-PAO, "Historical Summary FY 1970," I, Narrative, pp. 35-36; USAEDH-GF, "History of the Grand Forks Office," Pt. I, FY 1970, p.11.

[16]The estimate of $1,000 damage is from the "Historical Summary FY 1970," I, Narrative, p. 36. See also the similar remarks in USAEDH-GF, "History of the Grand Forks Office," Pt. I, FY 1970, p. 11. Neither **Time** nor **Newsweek** nor the **New York Times** took any notice of the Grand Forks demonstration.

[17]William Beecher, "Laird Says Soviet Speeds Up Threat," **New York Times,** 8 January 1970.

[18]Adams, **Ballistic Missile Defense,** p. 225.

[19]See William Beecher, "White House Debates Whether to Expand ABM in Budget Due in January," **New York Times,** 21 December 1969. Beecher indicated that the annual review was being made in the Defense Program Review Committee comprised of Henry Kissinger, David Packard, Eliot Richardson (Undersecretary of State), Robert P. Mayo (Director of Bureau of the Budget), Paul W. McCracken (Chairman of the Council of Economic Advisors), and General Earle G. Wheeler (Chief of Staff, Joint Chiefs of Staff).

[20]"Transcript of the President's News Conference on Foreign and Domestic Matters," **New York Times** 31 January 1970, p. 14.

[21]William Beecher, "Expansion of ABM to 3rd Missile Site is Sought By Laird," **New York Times,** Wednesday, 25 February 1970, p. 1; USAEDH-PAO, "Information Bulletin," III, No. 5 (13 Mar. 1970), pp. 1-3; Adams, **Ballistic Missile Defense,** pp. 224-225.

[22]Adams, **Ballistic Missile Defense,** pp. 226-230.

[23]USAEDH-PAO, "Historical Summary FY 1971," I, Narrative, p. 11.

[24]See, for example, the **Great Falls Tribune** for 22-30 October 1969.

[25]USADEH-PAO, "Information Bulletin," V, No. 10 (16 Oct. 1972), pp. 2-3.

[26]USAEDH-PAO, "Historical Summary FY 1970," II, Documents, p. 117; USAEDH-PAO, "Historical Summary FY 1970," I, Narrative, 31.

[27]USAEDH-PAO, "Historical Summary FY 1970," I, Narrative, p. 32; USAEDH-PAO, "Historical Summary FY 1970," II, Documents, pp. 89-91; USAEDH-PAO, "Information Bulletin," III, No. 22 (13 Nov. 1970), p. 2.

[28]U.S. Army Engr. Dist. OMAHA, "U.S. Army SAFEGUARD System Command Community Impact Report Malmstrom Deployment Area," July 1970.

[29]The transcript of Governor Anderson's testimony before the Senate is reproduced in full in the Conrad, Montana, **Independent-Observer,** 20 August 1970. The concern and controversy over the impact of SAFEGUARD in the locality can be followed in the **Great Fall Tribune** and the Conrad **Independent-Observer** after March 1970.

[30]A fact sheet prepared on 1 September 1971 by the Office of Counsel, USAEDH, is essential in tracing the intricate development of the labor problem in Montana. It includes a list of thirty-eight documents or correspondence at all levels between parties in the dispute. USAEDH -OC , "History of the Office of Counsel," Ex. 274, Fact Sheet: "Labor Problems Experienced by Huntsville Division, U.S. Army Corps of Engineers on the SAFEGUARD Project in Montana" 1 September 1971.

[31]USAEDH-OC, "History of the Office of Counsel," Ex. 171, Trip Report of Stephen V. Rohr on visit to Great Falls, Montana, 26-29 April 1970.

[32]Ibid.; USAEDH-OC, "History of the Office of Counsel," Ex. 171, Memorandum for Record, "SAFSO Query on Potential Labor Problems at the Malmstrom SAFEGUARD Sites," 28 May 1970.

[33]USAEDH-OC, "History of the Office of Counsel," Ex. 171, letter of Division Engineer General Young to Chief of Engineers, "Potential Labor Problems at the Malmstrom SAFEGUARD Sites," 20 May 1970.

[34]This was contract DACA87-70-C-0017. The bid opening was held at the Rainbow Hotel, Great Falls, Montana, at 11:00 AM on 30 April 1970, with seven bids being offered. USAEDH-PAO, "Historical Summary FY 1970," II, Documents, p. 35.

[35]This is contract DACA87-70-C-0020. The bid opening was conducted at the Rainbow Hotel, Great Falls, Montana, at 11:00 AM on 14 May 1970, with six bids being received. USAEDH-PAO, "Historical Summary FY 1970," II, Documents, p. 36.

[36]USAEDH-PAO, "Historical Summary FY 1971," I, Narrative, p. 34, at the date of 2 September 1970.

[37]USAEDH -GF , "History of the Grand Forks Office," Pt. I, FY 1971, pp. 20-21.

[38]USADEH-PAO, "Information Bulletin," III, No. 16 (21 Aug. 1970), p.1.

[39]USAEDH-PAO, "Historical Summary FY 1971," I, Narrative, pp. 42-44.

[40]USAEDH-GF, "History of the Grand Forks Office," Pt. I, FY 1970, p. 13.

[41]Ibid., 16.

[42]Ibid., pp. 42-43, 55; USAEDH-PAO, "Historical Summary FY 1971," I, Narrative, p. 79; USAEDH-PAO, "Historical Summary FY 1972," I, Narrative, p. 29.

[43]USAEDH-GF, "History of the Grand Forks Office," Pt. I, FY 1971, p. 23.

[44]Ibid., pp. 21-23.

[45]Ibid., p. 24.

[46]Ibid., pp. 27-28; The original of this letter is on file in the Office of Counsel under "Correspondence: Grand Forks."

[47]The accelerated phase actually ended on 27 November 1970. Memorandum for the Division Engineer from Col. Robert W. McBride, Assistant Division Engineer for the Western Region, dated 20 November 1970, on file in the Office of Counsel under "Correspondence: Grand Forks."

[48]Ibid.

[49]USAEDH-PAO, "Information Bulletin," IV, No. 2 (29 Jan 1971), p.4.

[50]Ibid., pp. 1-4.

[51]USAEDH-GF, "History of the Grand Forks Office," Pt. I, FY 1971, pp. 26-39; USAEDH-PAO, "Historical Summary FY 1971," I, Narrative, pp. 42-69.

[52]USAEDH-PAO, "Information Bulletin," IV, No. 1 (15 Jan. 1971), p.2.

[53]USAEDH-PAO, "Information Bulletin," IV, No. 5 (12 Mar. 1971), pp. 1-3; USAEDH-PAO, "Command Information Fact Sheet for Employees," CI-4 (Jan. 1971).

[54]USAEDH-OC, "History of the Office of Counsel," Ex. 115, legal opinion delivered to Assistant Division Engineer for Western Region Col. Robert McBride by Huntsville Division Counsel Emil Vuch entitled "Packaging of Malmstrom Construction," 20 April 1970; USAEDH-PAO, "Information Bulletin," III, No. 14 (24 July 1970), p. 1.

[55]USAEDH -PAO, "Information Bulletin," IV, No. 1 (15 Jan. 1971), p. 4.

[56]USAEDH-OC, "History of the Office of Counsel," Supp. 4 (Oct. 1970 - Oct. 1971), p. 34; USAEDH-PAO, "Information Bulletin," V, No. 19 (15 Dec. 1971), pp. 3-4.

[57]USAEDH-OC, "History of the Office of Counsel," Ex. 271, letter of Hon. Stanley R. Resor, Secretary of the Army, to Curtis Counts, Director of FMCS, 1 March 1971.

[58]Ibid.

[59]USAEDH-OC, "History of the Office of Counsel," Ex. 360, letter of Division Engineer General Bates C. Burnell to Headquarters, Department of the Army, "Project Stabilization Agreement for the Malmstrom SAFEGUARD Ballistic Missile Defense System (BMDS) Project, Conrad, Montana." 18 February 1972; USAEDH-PAO, "Information Bulletin," IV, No. 19 (15 Dec. 1971), pp. 3-4.

[60]USAEDH-PAO, "Information Bulletin," IV, No. 19 (15 Dec. 1971), pp. 3-4; USAEDH-PAO, "Historical Summary FY 1972," I, Narrative, pp. 89-90.

[61]USAEDH-PAO, "Historical Summary FY 1972," I, Narrative, p. 124.

[62]USAEDH-PAO, "Information Bulletin," VI, No. 2 (3 Mar. 1972), pp. 1-2.

[63]Malmstrom RLS's 2 and 3 were awarded under contract DACA87-72-C-0060 to a joint venture sponsored by H.C. Smith Construction Company, Compton, California, for $8,835,298.00. The Malmstrom Non-technical Support Facilities were awarded to Chris Berg, Inc., of Seattle, Washington, for $10,717,000 under contract DACA87-72-C-0066. Malmstrom RLS's 1 and 4 were awarded to a joint venture sponsored by H.C. Smith for $8,896,491.00 under contract DACA87-72-C-0072.

[64]USAEDH-PAO, "Historical Summary FY 1972," I, Narrative, p. 6.

[65]USAEDH-PAO, "Information Bulletin," III, No. 21 (30 Oct. 1970), p. 1, and III, No. 23 (4 Dec. 1970), p. 1.

[66]USAEDH-PAO, "Historical Summary FY 1971," I, Narrative, pp. 1-5, and "Historical Summary FY 1972," I, Narrative, pp. 1-2.

[67]USAEDH-PAO, "Historical Summary FY 1971," I, Narrative, p. 113; USAEDH-PAO, "Information Bulletin," IV, No. 12 (25 June 1971), p. 1.

[68]USAEDH-GF, "History of the Grand Forks Office," Pt. I, FY 1971, pp. 45-50.

[69]Ibid., p. 47.

[70]Ibid., pp. 48-49.

[71]Ibid., pp. 52, 55.

[72]Ibid., pp. 59, 63; USAEDH-PAO, "Historical Summary FY 1972," I, Narrative, p. 15.

[73]USAEDH-GF, "History of the Grand Forks Office," Pt. I, FY 1971, pp. 57, 65-73.

[74]Ibid., p. 74.

[75]Ibid., p. 76; USAEDH-PAO, "Information Bulletin," IV, No. 18 (19 Nov. 1971), pp. 1-2.

[76]USAEDH-PAO, "Historical Summary FY 1972," I, Narrative, pp. 110-111.

[77]Ibid., pp. 53-54, 80-81.

[78]The main contract for Non-technical Support Facilities at Grand Forks was DACA87-71-C-0054; the contract for a gymnasium was DACA87-72-C-0074.