



Figure 1. Six-County ABM Impact Area.

The Impact of The ABM Development On the Langdon Area

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Extensive coal development in western North Dakota could confront a number of communities with the socioeconomic impacts associated with rapid growth. In attempting to assess the probable effect of coal-energy developments, the recent experience of northeastern North Dakota in coping with the Antibalistic Missile (ABM) System construction project may provide some insights. The experience of the ABM communities may provide guidelines for western North Dakota communities expecting substantial population growth resulting from coal development.

Langdon, North Dakota, is the county seat of Cavalier county situated in northeastern North Dakota. During the period 1969 through 1974, Langdon and the surrounding area were affected by a large-scale federal defense construction project. The Antibalistic Missile (ABM) Complex consists of two major sites and four smaller sites (Figure 1). The major construction sites were for the Missile Site Radar (MSR) near Nekoma (11 miles south of Langdon) and the Perimeter Acquisition Radar (PAR) near Concrete (approximately 23 miles east of Langdon). Four smaller Sprint missile sites are located near the larger sites.

The ABM defense project was an immense undertaking with up to 4,000 workers during the peak construction period and a total project cost of \$468 million.¹ A number of socioeconomic problems arose as a result of large influxes of people into the area's small towns and villages. The towns and villages, although advised in advance of what the impacts might be, were not completely equipped to handle the increased demand for public services (for example, educational institutions, water and sewerage, medical services and hospitals), housing, and private services. The problems experienced by the ABM communities offer some insights into the various types of problems that

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¹ This figure includes total cost of construction (\$293 million), installation and testing (\$153 million), and contractual maintenance and service (\$22 million) through October 1, 1974 (1).

may accompany large-scale coal-energy development in western North Dakota.

The general objective of this study was to provide information on the impacts that the ABM construction imposed on the communities surrounding the ABM sites. The specific objectives were to describe the local economic situation before, during and after the construction project, and to evaluate the impacts of the ABM site construction on public services, governmental units and the way of life in the communities involved.

The Sample

The primary emphasis of the study was directed toward the immediate Langdon area. A sample of the general populace, community leaders and public service officials was surveyed by personal interview. The survey, conducted during June, 1974, was designed to accomplish two tasks: (1) secure information concerning the effects of the ABM project on the local population, and (2) obtain supplemental information by directing specific questions to community leaders and persons with specific knowledge concerning the ABM project and the community.

One hundred forty-two questionnaires were completed by personal interviews with randomly selected residents of Langdon and the surrounding area. The sample was stratified, with over 77 per cent of the people interviewed being from Langdon, including the ABM employees living in trailer courts located north and west of Langdon. This amounted to about three per cent of the Langdon population. Almost 10 per cent of the sample were rural farmers. An almost equal number of males and females were interviewed (46 per cent male and 54 per cent female). The respondents varied from high school students to retired citizens, with a mean age of 41.5 years.

The respondents were asked how long they had lived in the Langdon area. Thirty-nine (39) per cent of the respondents were life-long residents of the area (Table 1). Those who had moved into the Langdon community came from a variety of places. About 14 per cent of the respondents moved from a farm or village within Cavalier county to Langdon. Another 13 per cent of the interviewees moved to Langdon from a different North Dakota county, and 28 per cent came from out-of-state. About 60 per cent of those moving from out-of-state came from Florida, Minnesota and New Jersey. Slightly more than two per cent had moved to Langdon from a foreign country.

The majority of respondents (52 per cent) were heads of households, 44 per cent were spouses

Table 1. Length of Time Respondents Had Lived in Community and Percentage of Total in Each Group.

| Length of Time | Number of Respondents | Per Cent |
|--|-----------------------|----------|
| Less than 1 year | 14 | 9.9 |
| 1-3 years | 26 | 18.3 |
| 3-5 years | 17 | 12.0 |
| 5-10 years | 9 | 6.3 |
| More than 10 years, but not entire life | 20 | 14.1 |
| Entire life | 56 | 39.4 |
| Total | 142 | 100.0 |

of household heads and 5 per cent were dependent children. The most numerous occupations of the interviewees were ABM employees (20 per cent), farmers (16 per cent), business proprietors (12 per cent) and government employees (11 per cent).

Impact on Housing

An acute housing shortage occurred in Langdon as the population nearly doubled from 2,182 in 1969 to 3,957 in September, 1973 (2). More than 70 per cent of the respondents did not believe the area was adequately prepared to meet the housing requirements of the ABM work force. Many thought the community tried to prepare adequate housing for the ABM workers, but the influx of people was beyond expectations. The housing shortage was most severe in the early stages of the project, catching up with the housing demands during the later stages of the construction project.

Table 2. "In Your Opinion, Do You Feel Rent for Housing in Your Area Was Affected by the ABM Project," by Length of Residence*

| Length of Residence | Response | | | | Total |
|---|----------|----------|--------|----------|-------|
| | Yes | | No | | |
| | Number | Per Cent | Number | Per Cent | |
| Less than three years | 28 | 87.5 | 4 | 12.5 | 32 |
| 3-5 years | 15 | 100.0 | 0 | 0.0 | 15 |
| 5-10 years | 8 | 88.9 | 1 | 11.1 | 9 |
| More than 10 years, but not entire life | 20 | 100.0 | 0 | 0.0 | 20 |
| Entire life | 47 | 87.0 | 7 | 13.0 | 54 |
| Column total | 118 | 90.8 | 12 | 9.2 | 130 |

* The "no answers" and "do not know" responses were excluded from cross tabulations.

Rental rates for housing were affected in Langdon. Almost 91 per cent of the people interviewed felt the ABM impact had caused rents to increase. A relatively high percentage of the interviewees commented that the rents greatly increased, doubling in some cases. Approximately 87 per cent of both the life-time residents and newcomers (residents of the area less than three years)

agreed that rents had been affected (Table 2).

The most common living accommodations for the ABM workers were trailer houses, apartments and company housing. In addition, vacant farmhouses and houses and sleeping rooms in Langdon were utilized to the extent available. Almost any building or room that could be rented out was utilized. The ABM workers were faced, in many cases, with overcrowded and substandard housing because of the lack of adequate facilities, not lack of money. Some local renters found that their rental payments increased substantially as the result of competition with ABM workers for housing. Persons living on fixed incomes were particularly disadvantaged by the increase in rental rates.

Impact on Utilities

Langdon utilities were affected greatly by the impact of the ABM project. Utilities affected the most were water and sewer, garbage, telephone and electricity. Utilities in Langdon were adequate for a community of 2,000 people, but were grossly insufficient when the town grew to nearly 4,000 almost overnight. Of the people interviewed, 65 per cent said that the community did not have time to prepare for the impact, whereas 21 per cent felt there was enough time and 14 per cent did not know if Langdon officials had adequate time to prepare for the influx of people. The most frequent comment was that the increase in population was too rapid, followed by the comment that the community had no advance warning, and thirdly, that the water and sewer facilities were not adequate to handle the increased population.

Excessive demand placed on the water and sewer systems was a major problem resulting from the ABM project. Water mains had to be extended and replaced and a new water tower had to be constructed. There were more than 100 water main breaks during the first winter of the ABM project (1971-72). Most of the problems occurred in the old water lines in the original part of town, because of increased pressure resulting from the increased volume of water needed to supply the larger population. Prior to the ABM project, the city had been working on improving its water system. The cost of upgrading the water system was \$1.3 million, of which \$465,000 was assessed to the people of Langdon (3). A loan was

secured from the Farmers Home Administration (FHA) to cover the city's portion of the cost, and federal ABM impact funds financed the remainder of the cost.

The sewer systems did not create as many problems as the water system. Lagoon capacity had been increased in anticipation of the ABM impact. The remodeled lagoon was enlarged to exceed normal population requirements, thereby circumventing sewerage problems. Of the total lagoon costs of \$98,000, federal grants provided \$20,564. Langdon also had the problem of disposing of solid wastes during the initial phases of the ABM project. Langdon had an open dump until 1969, when the city was forced to establish a sanitary landfill disposal system for solid wastes. This project was financed solely by the city of Langdon with no federal assistance.

The telephone and electric companies also had some difficulty as a result of the ABM project. The number of phone installations in Langdon increased from 4,164 in 1968 to 5,934 in 1974 (4). The telephone company experienced problems in meeting the rapid increase in demand for telephones, requiring the company to expand their equipment and plant size. All investment costs as a result of the ABM project were borne initially by the telephone company. A large proportion of these costs were transferred to the local people through increased service rates. Telephone bill collection became a major concern to the telephone company manager when the ABM project began.

The local electrical company was somewhat prepared for the ABM work force and was not affected severely. The company had no major problem supplying electricity, although the manager doubted that his company could handle this kind of an increase now or again because of today's fuel shortage. In general, the service utilities did not benefit from the ABM project. Profits failed to increase because of increased costs and required employee overtime.

Impact on Medical Facilities

Although the ABM project did not result in expanded physical facilities of the Langdon clinic, it did result in an addition to the hospital built with federal impact funds. This addition increased the capacity of the hospital from 28 to 38 beds. An additional doctor was added to the staff, bringing the total medical staff to three, although the State Health Department recommended a minimum of five doctors for the area. Several nurses and technicians also were added to the staff. While the medical facilities and staff at the Langdon medical

Table 3. Response to Question: "Do You Feel the Medical Facilities in Your Community Are Better or Worse Off as a Result of the ABM Impact," by Length of Residence*

| Length of Residence | Better | | No Difference | | Worse | | Total |
|--|--------|----------|---------------|----------|--------|----------|-------|
| | Number | Per Cent | Number | Per Cent | Number | Per Cent | |
| Less than three years | 22 | 62.8 | 7 | 20.0 | 6 | 17.2 | 35 |
| 3 - 5 years | 12 | 80.0 | 1 | 6.7 | 2 | 13.3 | 15 |
| 5 - 10 years | 5 | 62.5 | 2 | 25.0 | 1 | 12.5 | 8 |
| More than 10 years, but not entire life | 13 | 68.4 | 1 | 5.3 | 5 | 26.3 | 19 |
| Entire life | 22 | 40.7 | 17 | 31.5 | 15 | 27.8 | 54 |
| Column total | 74 | 56.5 | 28 | 21.4 | 29 | 22.1 | 131 |

* The "no answers" and "do not know" responses were excluded from cross tabulations.

center were expanded substantially, they were required to serve a greatly increased number of patients.

The ABM project strained the medical facilities of Langdon, although 78 per cent of interviewees thought the medical facilities were better, or at least no worse, as a result of the ABM project. On the other hand, 22 per cent of the respondents thought the medical facilities were worse as a result of the ABM project. Respondents generally felt facilities were better because of the new hospital addition and because another doctor was added to the staff. Those who thought the medical facilities were worse believed that with the addition of so many people the doctor shortage worsened despite one new doctor in the community. Many also complained about the long waits to get an appointment to see a doctor. A higher proportion of the people who had lived in Langdon 10 years or more thought the quality of the medical facilities had declined than was the case for residents who had lived there a shorter period of time (Table 3).

Impact on Schools

A large number of new students were added to the Langdon school system as the result of the ABM project. The total post-impact enrollment of about 1,500 was composed of about one-third ABM workers' children. In the last two years (1972-74 school years), 16 new teachers have been added to the faculty at Langdon. New school equipment was necessary, much of which was purchased with federal impact funds. Financial problems were experienced by the school district because the school levy in Langdon was very low prior to and during the initial phases of the development. The mill levy in Langdon was 34 mills in 1969 compared to an average of 54 mills for North Dakota in 1969.

Interviewees were asked if they felt the schools were better or worse as a result of the ABM project. Almost 57 per cent of the respondents felt the educational system was better, 28 per cent said the school system was worse, and 15 per cent thought the school system was about the same. Most of the people felt the school system was better because of new school facilities. Those who felt the school system was worse as a result of the ABM project cited overcrowding of classrooms and lack of individual instructor attention.

The seven high school students who were interviewed indicated extracurricular activities were greatly improved as a result of the ABM project. New extracurricular activities were added to the school system and student participation was greatly increased. Athletics was cited as the extracurricular activity most affected. Students felt the school's emphasis shifted toward the college preparatory curriculum, giving the Langdon students a better background for college as a result of the ABM project. Students cited shortages of books, desks, equipment and room as the major problems resulting from the rapid increase in enrollment. The new students provided increased competition in the classroom for the local students, and four of the five top honor students in the 1974 graduating class were from ABM families. Most of the students from ABM families planned to continue their education at colleges and universities outside of North Dakota. Overall, the high school students believed more strongly than the adults that the school system had benefited from the ABM project.

Impact on Crime

The ABM project created a need for additional law enforcement personnel and facilities in the Langdon area. The county law enforcement staff prior to the project consisted of one sheriff and one secretary. During the early stages of project

development, the staff consisted of one sheriff, one secretary and one contracted security person at the base. Later, the staff grew to one sheriff, one secretary, three deputies, and 20 special deputies. The city police force of one full-time and one part-time employee in 1968 increased to six full-time and one-part-time employee in 1972. Federal funding was responsible for much of the increase in the law enforcement staff in Langdon following the ABM project. Residents were questioned as to whether they thought more crime resulted from the ABM development. Sixty-four per cent indicated there was no difference, while 29 per cent said they felt the project had caused crime to increase. A majority of respondents indicated there was no difference in the rate of crime during the ABM project, with the increase in crime being proportional to the increase in population. The transient construction workers were viewed as a rough and tough crew with which the local residents avoided personal contact, if possible. Drug problems started to occur in Langdon about the same time that the ABM project began, but few respondents thought that people associated with the ABM project were the underlying cause of the problem. Most people indicated that the arrival of drugs and the ABM project was coincidental. Interviewees generally believed no specific group, locals or ABM workers, was responsible for a greater proportion of crimes.

Impact on Economy

The ABM project had a significant effect on the community's economy and was viewed with mixed emotions. Many believed it caused the cost of living to increase greatly, while others felt it saved their community from economic decline and many business places from closing.

Job opportunities increased and local business establishments thrived with the coming of the ABM work force. Increases in the demand for

goods and services resulted in price increases in Langdon. Although the ABM impact occurred at a time of spiraling inflation, two-thirds of the respondents felt prices increased beyond the rate of inflation. Grocery prices and rental rates were the two items most respondents believed increased beyond the average rate of inflation. However, many indicated all items, not just food and rent, went up beyond normal inflationary increases. When questioned as to why competition failed to prevent excessive price increases, the most frequent responses were that few new firms entered the area because of the belief that the increased population would be only temporary. Another frequent response was that businessmen were trying to make as much money as they could while they had the chance. Since the ABM project began, 27 new businesses have been formed, 18 have been expanded, rebuilt or relocated, and 18 have changed hands in Langdon (5).

The local businessmen were faced with the problem of losing their help to the higher-paying ABM jobs. Wages for employees had to be raised to keep competent help. The farm labor market was also affected by the ABM project. This added to the already prevalent shortage of farm labor in the Langdon area. Service stations and local construction companies were among those influenced most by the higher paying ABM jobs which prompted many workers to change employment.

Impact on the Local Community

In general, the ABM project had a beneficial influence on the impacted communities. Residents of the impacted communities were asked, "In general, do you feel the ABM sites have been good or bad for this area?" Over 87 per cent of the respondents indicated the ABM impact was either good or had no effect on their community (Table 4). Ninety-five (95) per cent of the respondents who had lived in the area more than 10 years, but not

Table 4. Response to Question: "In General, Do You Feel the Development of the ABM Site Has Been Good or Bad for This Area," by Length of Residence in the Community*

| Length of Residence | Good | | No Effect | | Bad | | Total |
|--|--------|----------|-----------|----------|--------|----------|-------|
| | Number | Per Cent | Number | Per Cent | Number | Per Cent | |
| Less than three years | 30 | 83.3 | 1 | 2.8 | 5 | 13.9 | 36 |
| 3 - 5 years | 15 | 93.8 | 1 | 6.3 | 0 | 0.0 | 16 |
| 5 - 10 years | 7 | 77.8 | 0 | 0.0 | 2 | 22.2 | 9 |
| More than 10 years, but not entire life | 19 | 95.0 | 0 | 0.0 | 1 | 5.0 | 20 |
| Entire life | 38 | 74.5 | 4 | 7.8 | 9 | 17.6 | 51 |
| Column total | 109 | 82.6 | 6 | 4.6 | 17 | 12.9 | 132 |

* The "no answers" and "do not know" responses were excluded from cross tabulations.

Table 5. Response to Question: "Do You Feel You are Personally Better or Worse Off as a Result of the ABM Impact," by Occupation*

| Occupation | Better | | Same | | Worse | | Total |
|-------------------------------|--------|----------|--------|----------|--------|----------|-------|
| | Number | Per Cent | Number | Per Cent | Number | Per Cent | |
| ABM employed | 22 | 81.5 | 4 | 14.8 | 1 | 3.7 | 27 |
| Farmer | 9 | 37.5 | 11 | 45.8 | 4 | 16.7 | 24 |
| Government related employment | 9 | 50.0 | 4 | 22.2 | 5 | 27.8 | 18 |
| Manager or owner | 10 | 58.8 | 5 | 29.4 | 2 | 11.8 | 17 |
| Social and service workers | 12 | 70.6 | 4 | 23.5 | 1 | 5.9 | 17 |
| Other | 13 | 42.0 | 9 | 29.0 | 9 | 29.0 | 31 |
| Column total | 75 | 56.0 | 37 | 27.6 | 22 | 16.4 | 134 |

* The "no answers" and "do not know" responses were excluded from cross tabulations.

their entire lives, felt the ABM project was good for their community.

The respondents also were asked, "Do you feel you are personally better or worse off as a result of the ABM impact?" Over 83 per cent of the respondents stated the ABM development was either good or had no influence on them personally (Table 5).

Another area of interest was how well the local residents accepted the ABM workers and how well the workers fit into the Langdon community. Almost 84 per cent of the respondents said the workers were well accepted.

The ABM people who came to Langdon as permanent residents seemed to adjust and fit in well with the local communities. The construction workers, who were for the most part geographical bachelors on a temporary job, were not extremely interested in becoming a part of the community. The more permanent workers wanted to become a part of the local community and did so, thus benefiting both the local residents and ABM workers through intermingling of talents and skills which resulted in new clubs, organizations and facilities.

Implications of the Study

The impact of the ABM system resulted in a variety of benefits and problems for Langdon and surrounding communities. Increased sales volumes benefited local merchants and may even have saved some "mainstreet" businesses, as well as adding new businesses. Federal impact funding improved the quantity and quality of some public services, such as streets, water and sewer systems, with additions to a hospital, a school and law enforcement. New parks were built and old parks were improved. New religious denominations were formed and new churches were built as a

result of the ABM project. Employment opportunities slowed the out-migration from the rural ABM impact area and no doubt reduced existing underemployment levels. Perhaps the greatest benefit of the ABM project was the cultural benefit the rural community received from the influx of new people. The ABM personnel brought new ideas and a spirit of change to this community.

The ABM project also created problems for the Langdon community and surrounding area. Had it not been for the ABM development, the water and sewer systems would not have had to be rebuilt to the extent they were. The residents of Langdon frequently were without water for long periods of time during the construction of the new water system. The streets probably would not have needed to be replaced or upgraded so soon if the ABM project had not taken place. Further additions to the hospital in Langdon might not have been necessary.

Some citizens of Langdon and surrounding communities may have been made worse off financially as a result of the ABM project. Some residents felt higher taxes resulted from the improvements in the water systems and streets, even though federal funding was provided. Such improvements, they felt, would not have been necessary in the absence of the ABM project. The ABM system caused an increase in the cost of living for the residents of Langdon. This was especially reflected in rent and housing costs. The increase in the cost of living had an adverse effect on those residents with fixed incomes.

Comparison of the ABM Impact to Possible Coal Development Impacts

Extensive coal development in western North Dakota could result in impacts on individual communities similar to those the ABM project devel-

opment had on Langdon and surrounding communities. The construction work force peaked at nearly 4,000 workers during the ABM development, and has resulted in a permanent or operating work force of 2,000 (600 of which are military personnel). By July 1, 1975, the operating work force is expected to be 1,200 to 1,400 workers (of which 700 to 800 will be military). The construction work force for a 250 million cubic foot per day coal gasification plant would peak at nearly 3,000 workers, and result in almost 1,000 permanent employees in the plant and mine. Construction of a 1,250 megawatt electric generating plant complex would result in a peak construction work force of 1,700 workers and an operating work force of 260 workers (6). The socioeconomic impact on an individual community depends on the settlement pattern and characteristics of the construction and operating work force, as well as on existing excess capacity within the local infrastructure.

The experience Langdon and surrounding communities had during the ABM project provides insights for other communities facing similar socioeconomic impacts resulting from coal-energy development. The following steps should be taken by communities that are expecting large population increases:

1. Inventory the increased needs for labor, for capital and credit, and for natural resources resulting from the new development.
2. Examine the existing infrastructure to determine where the existing capacity would not be sufficient to satisfy the demand imposed by the projected increase in population.
3. Plan and design in advance of the projected needs. For example, a comprehensive land-use plan with its accompanying zoning and subdivision regulations can help the potential impacted communities to control their own destiny. A continuing program of monitoring and growth management during the period of rapid growth will be needed also.

The ABM development resulted in federal impact aid to Langdon and surrounding communities to assist in meeting the needs of the expanding population. Communities subject to population increases resulting from expanded coal development may not be eligible for federal impact aid, given the present institutional arrangements. However, local government will be able to tax the plants, mines and related business and residential structures. The ABM sites could not be taxed because they were federal property.

It is quite likely a shortage of funds will occur when expanding public services during the construction of coal-related plants and mines, as the plants and mines would not be subject to local property tax during the construction phase (7). Alternate means of alleviating capital shortages during the construction period could be provided by new legislation. The transfer of funds from the state general fund or a special state impact fund to the affected communities during the construction period presents one avenue for financial assistance. These funds could be repaid later when local revenues exceed local costs, which should occur in the operation phase of the plants and mines.

The benefits and problems of a large and rapid population increase are many. The effects of an influx of people will vary with the type of project, the area involved and the rapidity of the influx. Problems exist for both the work force and the local community, but the local people are the ones who must prepare for the impact and face the consequences of it. The problems in Langdon arose mainly from the great numbers of people and the speed with which they arrived in the small farming community. The problems of Langdon may be summarized by a quote from one of the residents asked how the impact affected Langdon, "The impact on Langdon can be compared to the problems a 180-pound person would have if he woke up one morning weighing 250 pounds."

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