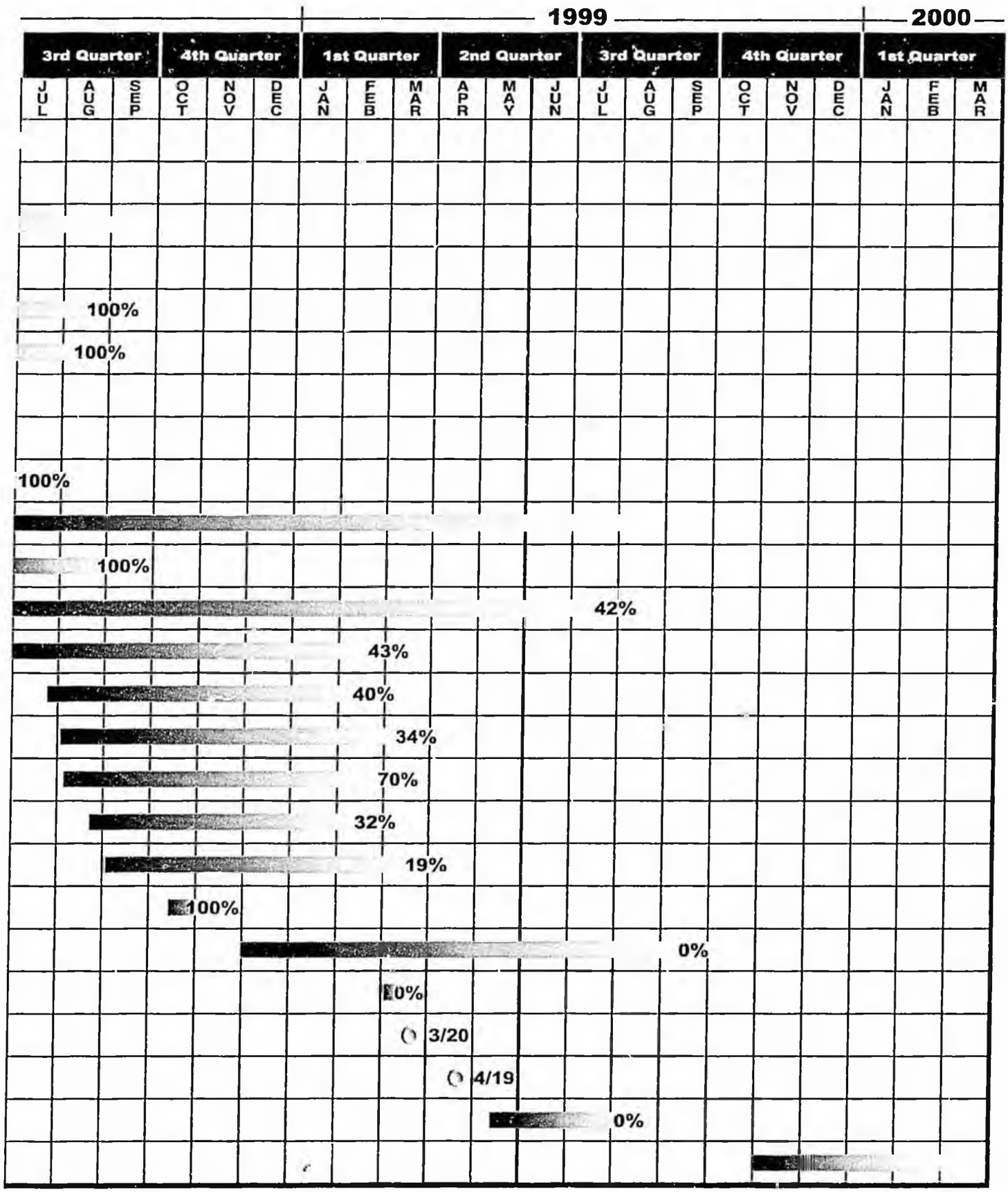
KLC Construction Schedule

1998

TASK	START	1st Quarter JAN	FEB	MAR	2nd Quarter APR	MAY	JUN
Phase 1 - Site Work	Mon 1/12/98						100%
Contract Award	Mon 1/12/98		1/12				
Site Work at the Launch Complex Center	Mon 1/12/98						
Site Work at the Integration & Processing Facility	Mon 1/12/98				100%		
Roadway Work	Sat 1/24/98						
Haul & Place at the IPF	Thu 2/26/98						
Phase 1 Punch List	Sun 3/01/98						
Change Orders	Sun 3/01/98						
Waterline Work	Mon 3/16/98						
Phase 2 Construction	Mon 5/25/98						
Mobilization to Site	Mon 5/25/98						
Roadway & Site Work	Tue 6/16/98						
Launch Control Center - LCC	Tue 6/30/98						
Spacecraft Assemblies Transfer Structure	Mon 7/27/98						
Payload Processing Facility	Tue 8/04/98						
150,000 Water Tank Farm	Sat 8/08/98						
Launch Pad 1/ Flame Trench	Mon 8/24/98						
Integration & Processing Facility	Tue 9/01/98						
Launch Campaign "ait"-1	Sat 10/17/98						
Phase 3 Service Structure	Tue 12/01/98						
Cleanup & Punch List	Fri 3/05/99						
Phase 2 Substantial Completion	Sat 3/20/99						
Phase 2 Final Completion	Mon 4/19/99						
"ait"-2 Launch Campaign	Sat 5/15/99						
LOCKHEED MARTIN ATHENA 2 LAUNCH PROGRAM	Mon 11/01/99						


1999
2000
3rd Quarter
4th Quarter
1st Quarter
2nd Quarter
3rd Quarter
4th Quarter
1st Quarter
JUL AUG SEP OCT NOV DEC JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC JAN FEB MAR
100%
100%
100%
100%
42%
43%
40%
34%
70%
32%
19%
100%
0%
0%
3/20
4/19
0%

level of service as well as to negotiate the most competitive price on a per launch basis. Optional services can either be provided by AADC or its contractors, or by the launch customer with approval from AADC.

The flight safety program for KLC launches will comply with FAA/AST launch licensing guidance. The following functions are typical of range safety vehicle flight support and will be adhered to at the KLC unless otherwise modified by federal directive or launch license specific requirement:

- Continually monitor the launch vehicle performance and determine whether the vehicle is behaving normally or failing.
- Track the vehicle and predict (in real-time) where the vehicle of pieces of the vehicle would fall in case of failure and if flight termination action is taken.
- Determine if there is a need to delay or abort the launch or destruct the vehicle base on a comparison of current vehicle status to predetermined criteria.
- If necessary to protect the public, send a command to terminate the flight by initiation of vehicle destruct.

Originally, AADC had entered into a preliminary agreement with NASA's Wallops Island Flight Facility for use of one of NASA's Mobile Range Safety Systems and trained personnel for launch operations at the KLC. The NASA mobile range system would have provided all requisite instrumentation: control, telemetry, tracking, radar and command destruct. AADC has secured an in-kind contribution for an on-site range safety system that will provide all of the requisite instrumentation for a permanent range safety system.

The basic package provides for a fixed level of facility usage and services to launch customers by AADC. AADC will provide assistance with other licenses, permits and exemptions that may be appropriate, including state and federal environmental permits and transportation matters.

- Facility usage – includes use of the Launch Control Center, Payload Processing Facility, Integration Processing Facility/Spacecraft Assemblies and Transfer Building, and Launch Pad/Service Structure for a designated period of time
- Site Equipment – use of handling equipment on site
- Inspection and testing of facilities and equipment, electrical generators, computers, HVAC facilities, communications and other equipment on a regular basis to ensure all systems are functioning properly prior to and during launch campaigns
- Telecommunications – the launch customer will be provided use of PBX, analog lines and access to the Central Office (3 trunk lines)
- Power – primary power and backup (generator), caretaker level
- Operational intercom system – as per current design
- Data Backbone – fiber and copper as per the current design and a basic assortment of data transceivers
- Janitorial and non-hazardous waste removal
- Medical
- Fire Protection
- Intrusion and Detection
- Facility Maintenance and routine site restoration
- Normal consumables used in operation and maintenance
- On-site Program Management and Engineering Support – Monday through Saturday, 8:00 am to 5:00 pm

The following types of services will be negotiated with individual customers and result in additional costs beyond that of the basic launch fee:

- KLC Facility Modification – any user-specific modifications to the facilities or changes in configuration of the communications backbone, operational intercom system, data backbone or other supporting infrastructure
- Power – charge for usage above average caretaker

level during launch campaign

- Hazardous waste removal, launch cleanup and site restoration
- Fire, security and medical during the launch
- Customer specific equipment not currently available at KLC
- Program -unique consumables to support payload and vehicle operations, special gases, etc.
- Engineering Support – additional engineering and technical support beyond stated hours in basic package
- Transportation – all transportation of personnel and equipment to Kodiak and to KLC site
- Range Safety, Telemetry and Frequency Coordination
- Meteorological Support
- Environmental Monitoring

Project Status: Developments and Phased Completion

Phase 1 Status

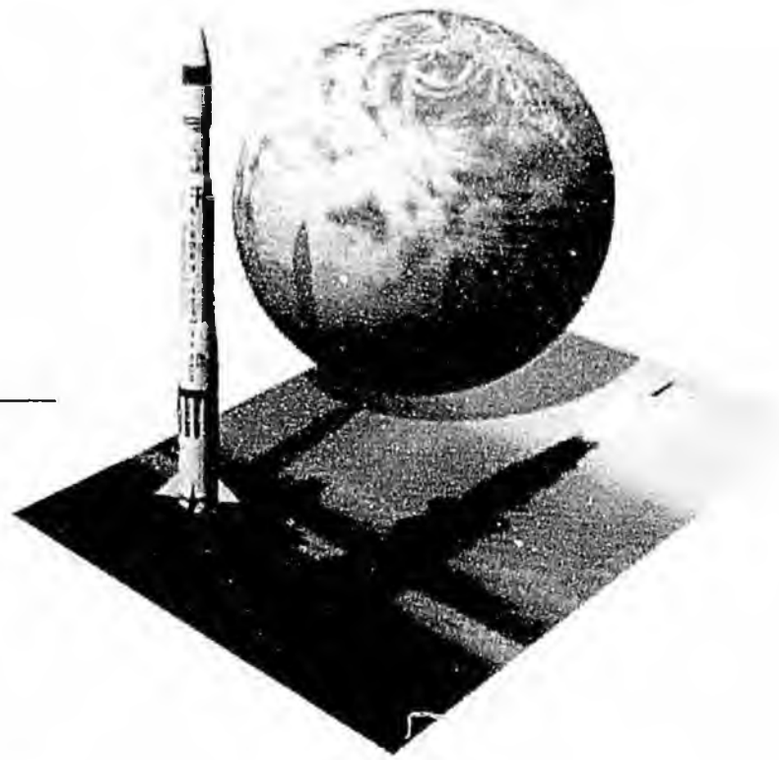
On November 12, 1997, A-K Construction Company of Kodiak Island submitted the successful low bid for Phase 1 (site preparation) at the Kodiak Launch Complex. Since January 13, 1998, A-K has been working continuously at the KLC engaging in site preparation, preparing the foundation work necessary for erection of the buildings. As of November 1998, the majority of all work for Phase 1 has been completed, save some minor final tasks for closing out Phase 1.

Phase 2 Status

On April 8, 1998, Red Samm Construction of Bellevue, Washington submitted the successful low bid for Phase 2, (rocket launch facilities construction) at the Kodiak Launch Complex. A contract was signed on April 20 and Red Samm began mobilizing on site the week of June 8th. As of December 1998, 40% of the construction for Phase 2 had been completed.

Phase 3 Status

In November 1998, Red Samm Construction of Bellevue, Washington submitted the successful low bid for Phase 3, (launch tower construction) at the Kodiak Launch Complex. A Notice to Proceed for the first task on that contract was issued in November. AADC expects completion of the pad in October/November 1999.



KLC market analysis

Overview

In designing the KLC, AADC has targeted a specific growth area of the launch market: payloads under 8,000 pounds requiring polar, high inclination LEO or Molniya orbits. The market for small payloads requiring polar LEO consists of telecommunication systems, remote sensing satellites and government, scientific and microgravity payloads.

As the FAA's commercial spaceport licensing authority and regulator of U.S. commercial space activity, the Office of the Associate Administrator for Commercial Space Transportation (AST) provides AADC with invaluable industry statistics and forecasts for yearly market activity in the United States. AST reports that commercial launch demand is increasingly driven by the telecommunications industry, which provides telephony, television broadcasting, and data communications worldwide. The commercial market will also continue for remote sensing satellites and government, scientific and microgravity payloads. AST defines the following as the commercial market sectors for LEO satellite systems:

"Big LEO" Telecommunications Systems

"Big LEO" systems furnish mobile telephone services to two major markets: international business travelers and rural fixed-site users. Iridium and Globalstar have begun deployment of their constellations and are expected to deploy follow-on systems in the near future. There have been proposals for 13 additional Big LEO systems. Today there are more than 100 million subscribers to analog and digital mobile telephone services. In developing countries, the demand for wireless telephone services has been growing at an annual rate of 11%. Long-term demand for mobile telephony is expected to remain very strong.

"Little LEO" Telecommunications Systems

"Little LEO" systems provide narrow band data services (e-mail, two-way paging, messaging, asset tracking) using frequencies below 1 GHz. The FCC has issued licenses for LEO One USA, FAISat and E-Sat. In 1998, ORBCOMM began full-scale deployment. The two major markets expected for Little LEO providers are automated meter reading and asset tracking which uses both positioning and messaging. Based on a study conducted by the International Telecommunications

Union (ITU), the market for satellite addressable messaging could grow to 43 million subscribers, with 18 million of those subscribers in North America.

"Broadband LEO" Systems
Broadband LEO systems provide high bandwidth data transmission for Internet access, video-teleconferencing and high-speed data transfer. In 1997, Teledesic was the only Broadband LEO system to receive licensing from the FCC. Today, a variety of companies have applied for FCC licenses. The market for broadband communication services is estimated to be $100 million by 2006.

Remote Sensing Systems
Remote Sensing systems collect data to enable the observation of earth from space. While the remote sensing market is not as large as the telecommunications market, the number of projected launches of commercial remote sensing aircraft does constitute a meaningful amount of potential business for spaceports launching in the low earth orbit range. Moreover, the remote sensing system market is currently viewed as underdeveloped and could expand as the market for commercial imagery grows.

Scientific Payloads
Foreign government and scientific payloads constitute another market segment for commercial launch services. Using commercially available small launch vehicles, foreign research organizations launch small spacecraft in order to conduct research in areas such as microgravity, life sciences and communications. Demand for scientific payload launches is expected to increase through 2010.

According to the AST, the market for U.S. commercial LEO satellite services should be analyzed in terms of two scenarios: baseline and robust. Baseline describes the current development plans by the LEO satellite providers and, thus, represents the "baseline" expected to unfold over the forecast period (1999 - 2010). Robust describes a more optimistic, though still reasonable, scenario illustrating greater than expected demand for LEO satellite services over the forecast period. The following statistics illustrate the demand for the LEO market based on both payloads and launches within the United States.

AADC also relies on the Teal Group Corporation's

Table 01 Baseline Scenario Payload and Launch Projections

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	TOTAL
Payloads														
Big LEO	85	21	17	18	13	9	9	70	78	13	9	9	10	361
Little LEO	18	8	10	32	38	14	4	26	38	34	8	14	16	260
Broadband LEO	0	0	0	64	168	138	17	17	17	17	22	22	22	504
Remote Sensing/Foreign Science	4	3	3	4	6	4	7	7	6	7	8	10	8	77
Total Payloads	107	32	30	118	225	165	37	120	139	71	47	55	56	1202
Launch Demand														
Medium to Heavy (>5,000 lb. LEO)	10	7	7	15	43	34	13	25	27	15	17	18	17	248
Small (<5,000 lb. LEO)	9	6	7	13	16	11	12	11	13	15	13	15	14	155
Total Launches	19	13	14	28	59	45	25	36	40	30	30	33	31	403

Table 02 Robust Scenario Payload and Launch Projections

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	TOTAL
Payloads														
Big LEO	85	21	17	30	13	39	41	90	89	16	28	24	50	543
Little LEO	18	8	28	32	38	14	4	26	50	40	8	14	16	296
Broadband LEO	0	0	0	64	186	172	33	20	20	20	25	25	59	624
Remote Sensing/Foreign Science	4	3	3	4	6	4	7	7	6	7	8	10	8	77
Total Payloads	107	32	48	130	243	229	85	143	165	83	69	73	133	1540
Launch Demand														
Medium to Heavy (>5,000 lb. LEO)	10	7	7	18	45	43	22	36	38	15	21	20	28	310
Small (<5,000 lb. LEO)	9	6	11	13	16	11	12	15	19	21	17	19	19	188
Total Launches	19	13	18	31	61	54	34	51	57	36	38	39	47	498

Source: 1998 LEO Commercial Market Projections, Associate Administrator for Commercial Space Transportation

Table 03 Estimated World Wide Satellite Delivery Schedule

(In payload unit)	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	Total
Commercial Communications Satellites											
Broadband Multimedia	2	26	188	213	197	57	9	7	2	4	705
Mobile	124	199	71	68	31	33	64	60	34	6	690
Telecommunications/Broadcast	44	21	16	3	2	1	3	-	-	-	90
Direct-to-Home Broadcast	26	21	7	4	-	2	1	-	1	-	62
Subtotal	*196*	*267*	*282*	*288*	*230*	*93*	*77*	*67*	*37*	*10*	*1,547*
Civil Satellites											
Scientific/Space Exploration	39	20	17	8	11	5	9	1	9	-	119
Earth Observation & Meteorological	12	10	11	5	7	2	1	3	1	3	55
Technology Development	16	14	-	4	-	2	-	-	-	-	36
Communications	15	5	2	1	-	2	-	-	-	-	25
Subtotal	*82*	*49*	*30*	*18*	*18*	*11*	*10*	*4*	*10*	*3*	*235*
Military Satellites											
Reconnaissance & Surveillance	-	3	8	11	8	8	11	8	-	-	57
Early-Warning	1	2	1	4	4	10	10	4	-	-	36
Navigation	8	4	5	1	2	2	3	3	3	3	34
Communications	11	2	-	2	2	2	1	3	2	2	27
Technology Development	18	4	2	-	1	-	-	-	-	-	25
Earth Observation & Meteorological	-	2	-	2	-	-	-	-	-	-	4
Subtotal	*38*	*17*	*16*	*20*	*17*	*22*	*25*	*18*	*5*	*5*	*183*
Other (Missions, Satellites, Capsules)											
Manned & Space Operations	22	19	18	20	9	-	1	-	-	-	89
Commercial Earth Imaging	14	16	8	8	1	-	2	1	1	1	52
Microgravity Experiments	6	3	1	-	-	-	-	-	-	-	10
Commercial Scientific/Technology	1	4	1	-	-	-	-	-	-	1	7
Subtotal	*43*	*42*	*28*	*28*	*10*	*0*	*3*	*1*	*1*	*2*	*158*
World Wide Total	**359**	**375**	**356**	**354**	**275**	**126**	**115**	**90**	**53**	**20**	**2,123**

Source: Teal Group Corporation, "World Space Systems Briefing", November 1998

Polar Orbit
The polar orbits allow maximum coverage of the earth's surface.

Geostationary Orbit
The Geostationary orbit is an orbit 22,400 miles above the Earth in which a satellite makes its journey around the Earth's equator in 24 hours.

Molniya Orbit
The Molniya orbit is a highly elliptical orbit used primarily for communications. This orbit allows a specific geographical region prolonged exposure to a satellite as it enters its apogee.

Table 04 Customer Regions

(In payload units, by %)	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
North America	43.5%	42.7%	64.3%	72.0%	76.0%	64.3%	84.3%	90.0%	98.1%	85.0%
CIS	24.0%	32.8%	19.9%	11.0%	4.0%	12.7%	0.9%	0.0%	0.0%	0.0%
Europe	12.5%	7.2%	5.3%	12.1%	15.6%	17.5%	7.8%	6.7%	0.0%	15.0%
Asia & Pacific Rim	13.6%	10.1%	8.1%	2.8%	3.6%	4.8%	6.1%	2.2%	1.9%	0.0%
Latin America & Caribbean	2.8%	4.0%	0.6%	0.3%	0.7%	0.8%	0.9%	1.1%	0.0%	0.0%
International	1.4%	2.1%	1.1%	0.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Africa & Middle East	2.2%	1.1%	0.6%	0.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Source: Teal Group Corporation, "World Space Systems Briefing", November 1998

industry analysis. The Teal Group, a respected and experienced organization of analysts and service professionals, researches and publishes timely, accurate information on the aerospace industry worldwide. In examining civil, military and commercial customers worldwide, the Teal Group breaks down payloads according to four types: Commercial Communications Satellites; Civil Satellites; Military Satellites; and Other (Missions, Satellites, Capsules). As shown on Table 03, the Teal Group breaks these categories down further into more specific types of payloads.

Over 50 countries have proposed developing and launching payloads over the next ten years. The Teal Group's projections (Table 04) show that nearly half to almost all of these launch customers will be in North America.

Out of the total available market shown in Table 05 the Teal Group has projected that from 1999 through 2008, the LEO market will capture between 44% and 75 % of the total available orbits market.

determined that approximately half of the Athena's projected launches would take place from North America. Table 06 shows the Teal Group's total number of projected Athena launches worldwide during its forecast period.

Additional market analysis was provided by Aries Analytics, Inc. Aries is an aerospace consulting firm in Arlington, Virginia and member of the Space Transportation Association (STA), an industry/government oriented association that represents the interests of organizations and people engaged in developing, building, operating, and using space transportation vehicles, systems, and services to provide reliable, economical, safe, and routine access to space for private users and government, civil, and military users. Aries recently reviewed manifests presented in current government and trade publications and estimated that the KLC could reasonably expect up to six launches per year in the near term (42 months) and ten launches per year in the future (60 months).

Table 05 LEO Market

Market	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Low Orbit	211	256	267	255	199	70	85	66	32	9
Total Orbits	359	375	356	345	275	126	115	90	53	20
Low Orbit as % of Total	58.8%	68.3%	75.0%	73.9%	72.4%	55.6%	73.9%	73.3%	60.4%	45.0%

Source: Teal Group Corporation, "World Space Systems Briefing", November 1998

In addition to analyzing the industry market projections, AADC also has examined launch forecast data specific to Lockheed Martin Corporation (LMC), one of the KLC's target customers. LMC has expressed serious interest in becoming one of the KLC's primary customers.

The Teal Group examined LMC's Athena rocket and

AADC KLC Launch Projections

Based upon AADC's market analysis, the KLC's location, cost and administrative efficiencies as described throughout this Business Plan, and AADC's ability to enter into long-term agreements and to respond quickly to market needs, AADC has developed the following launch projections (Table 07) that average roughly 3.3 launches per year. Considerable progress

Table 06 Launch Data for Lockheed Martin

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Athena	3	3	5	5	8	8	5	5	8	8

Source: Teal Group Corporation, "World Space Systems Briefing", November 1998

Table 07 KLC Launch Operations

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Projected Number	1	2	2	3	4	4	4	4	4	4	4

has been made in targeting potential commercial customers for the KLC. AADC has embarked on negotiations with various commercial customers, all of whom believe the KLC will be an opportune launch site. Based on market conditions and forecasts, commercial and government launch projections discussed in this section, and discussions with its customer base, AADC believes its launch projections remain conservative.

KLC Customer Base

AADC has targeted launch vehicle providers as its primary customer. According to the Teal Group, 2,123 payloads are expected to launch between 1999 and 2008. One quarter of these payloads are designated to the large launch vehicles Delta, Proton, and Ariane; however, 1,353 payloads do not have a designated launch vehicle. AADC believes that the KLC will be most successful in capturing launches by targeting the launch vehicle providers because all satellites need a launch vehicle to enter the appropriate orbit.

Competition

Along with an excellent geographic location for aerospace operations, Alaska is in the world's most active trading hemisphere and is positioned as the crown of the Pacific Rim. This strategic location combined with a fully developed transportation system allows for efficient logistics and worldwide distribution. Alaska has a long history of aerospace activity, and with the wealth of technical resources and skilled personnel in our state, is leading the way for an emerging commercial aerospace industry.

While there are numerous launch facilities located at various sites around the world, the KLC's particular market niche narrows competition to only a select few. For example, while Cape Canaveral is probably one of the most widely known spaceports, the KLC is not a direct competitor with Florida's spaceport because the two support mutually exclusive launches. The two spaceports, therefore, have developed a strategic working relationship aimed at strengthening both facilities.

When AADC first began developing its business plan in 1995, the Corporation identified potential domestic competitors in Alabama, Hawaii and California. Today, the spaceport effort in Hawaii has been put on an indefinite hold and the effort in Alabama never moved beyond the feasibility stage. Recently, the California Commercial Spaceport, Inc. (CCSI), long considered the KLC's most serious competitor, ceased its construction effort, and the future of California's commercial space industry is uncertain. Internationally, AADC had originally expected Akjuit Aerospace Inc. in Manitoba, Canada, to be a serious player in the LEO satellite market, especially considering its North American location and design for the US commercial market. Today, however, Spaceport Canada is considered defunct for orbital launch activity as Akjuit Aerospace has ceased operations. While proposals have been made for spaceports in Idaho, Nevada, New Mexico and Arizona, they each plan on launching reusable space vehicles, a technology still in early stages of development.

U.S. Competitors

<u>California</u>

In 1994, California Commercial Spaceport, Inc. (CCSI), the for-profit subsidiary of the Western Commercial Space Center (WCSC), and ITT Defense & Electronics formed the Spaceport Systems

International (SSI) limited partnership to build and operate a commercial spaceport at Vandenberg Air Force Base. In March 1995, the California Spaceport was formally established with SSI's groundbreaking at the southern most corner of the base. In 1996, the FAA granted SSI a commercial launch operator's license. Because of its location on a military range, launches will be subject to US Air Force regulations regarding safety, security, environmental and operating issues. The California Spaceport has received both federal and State support including grants and user sales tax exemption, and private money from ITT Corp.

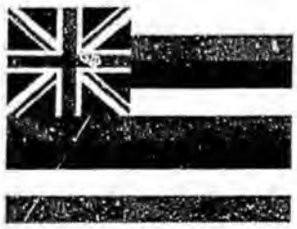
The California Spaceport, intended to support a range of polar orbit inclinations, will perform launch vehicle and payload processing, fairing processing and storage and payload encapsulation. SSI will compete for many of the same customers as the KLC, however, the KLC's location enables it reach more inclinations than the California Spaceport.

Although the California Spaceport was the first commercial space operator to be licensed by the FAA, SSI has encountered various problems including difficulties in securing customer contracts and the California legislature's removal of the WCSC as the state's official spaceport authority. While commercial customers may still contract directly with the Air Force for use of launch facilities at Vandenberg, the for-profit entity promoting commercial launches has not yet hosted a launch. In addition, the California Spaceport's ties with the US Air Force have led to speculation that defense launches will take priority over commercial launches, a serious drawback for commercial customers.

Boeing Sea Launch

The Boeing Sea Launch, a Boeing led joint venture composed of Russia's RSC-Energia, Ukraine's NPO-Yuzhnoye and Norway's Kvaerner Group, is located approximately 200 nautical miles off the coast of California. This facility will use a modified oil platform - mobile base for its launches. Before completing its first launch scheduled for March 1999, the Boeing Sea Launch must overcome some significant obstacles such as the transfer of a fully-integrated launch vehicle from the command ship to the launch platform.

Although capable of polar launches, the Sea Launch is focused primarily on the Geosynchronous equatorial market and is not a direct competitor of KLC. Also, because of the steep capital investment required, the cost of launching from the Boeing Sea Launch is expected to be higher then launching from the KLC.



Hawaii

In 1987, the Governor of Hawaii directed the Hawaii Department of Business and Economic Development to investigate the possibility of space activities in Hawaii. In 1988, the State of Hawaii selected two sites on the southeastern coast of the Island of Hawaii as potential commercial space launch sites. The Hawaii Office of Space Industry worked with AST, which conducted safety studies and approved an environmental impact statement (EIS) for the sites.

In 1992, due to the results of the state's environmental assessment and resident opposition, Hawaii abandoned its Spaceport development efforts. To date, no effort has been made to revive the state's development of the Hawaii Spaceport.

Virginia

With the creation of the Virginia Commercial Space Flight Authority in 1995, the effort began to convert NASA's Wallops Island Flight Facility into a spaceport. In 1997, the Authority and Virginia Governor Allen completed an agreement to permit commercial launches from the Spaceport. The Virginia Spaceport has received approximately $5 million from various sources including the State of Virginia, the Air Force and a Virginia-based private corporation. Upon receiving its FAA operator's license, the Authority began construction in 1998 and expects to begin commercial operations in 2000.

While the Virginia Spaceport will launch some of the same rockets as the KLC, its primary mision is to support equatorial launches. Thus, Virginia is not a direct competitor of the KLC.


WORLDWIDE LAUNCH FACILITIES
CANADA
Churchill Research Range
58.44°N Lat
VIRGINIA
Wallops Island, VA
37.85°N Lat
CALIFORNIA
Vandenberg, AFB
34.7°N Lat
BOEING SEA LAUNCH
Pacific Ocean
200NM off California
FRENCH GUIANA
Guiana Space Center, Kourou
5°N Lat
NORWAY
Andoya Rocket Range
69.17°N Lat
RUSSIA
Plesetsk
62.8°N Lat
CHINA
Taiyuan/Wuzhai
37°N Lat
JAPAN
Tanegashima Space Center
30°N Lat
INDIA
Shar Center
13.47°N Lat
AUSTRALIA
Woomera Rocket Range
31.5°S Lat

Foreign Competitors

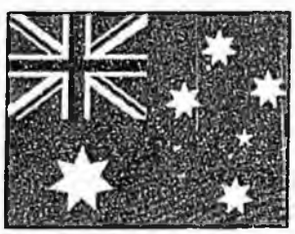
Canada

Akjuit Aerospace Inc.'s original goal was to convert the abandoned Churchill Rocket Range in Hudson Bay, Manitoba, into a commercial space launching facility. Spaceport Canada was envisioned as a privately owned launch site for suborbital and polar LEO satellites in the small to medium size range. The launches would be directed northbound over the Hudson Bay and the unpopulated areas of northern Canada.

Due to a funding shortfall of $72,000,000, and regulatory and communications problems, Akjuit Aerospace is currently closed and has ceased operations.

French Guiana

The Guiana Space Center (GSC), owned by the French space agency CNES, is made available to the European Space Agency/Ariancspace (ESA). Both equatorial and polar orbit launches are possible from the Center, and although its proximity to the equator provides a 17% payload advantage over Cape Canaveral for equatorial launches, greater energy is needed for polar launches. ESA is the predominant launch company in the world today, with the largest share of the world's commercial launch market. The GSC presently does not directly compete with the KLC since it is not designed to launch the size vehicle the KLC is targeting.

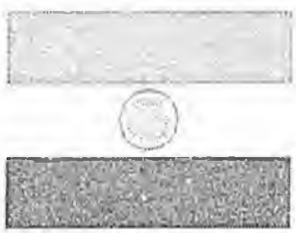


Australia

In the 1950's and 1960's, the Woomera rocket range was the second busiest launch and tracking facility in the Western world, launching ballistic missiles and sounding rockets. Only two satellites have been orbited from the facility: a small Wresat test satellite launched in 1967 and the U.K.'s Prospero launched in 1971. In its recent 1997 push to revamp the Woomera facility, the Australian government has stepped up its marketing efforts and has developed some international agreements with Germany, Russia and Japan. While the facility boasts a good location, its distance from U.S. launch providers and payloaders would be a strong disincentive for U.S. businesses.

China

Taiuaun, one of China's three orbital launch sites, is located southwest of Beijing. The primary purpose of this facility, initiated in September 1988 with the successful launch of a polar meteorological satellite, is to launch CZ-4 boosters into polar orbits for remote sensing, meteorological and reconnaissance missions. While no commercial activity has occurred yet at this site, there is growing commercial usage at its sister site Xichang. China is aggressively pricing launch services at 10 - 15% below market, and if a first launch is unsuccessful due to accident or technical problems, it will launch a second effort at no charge. China poses similar logistics problems as Australia for U.S. launch providers and payloaders, which is complicated by language barriers and a questionable business climate. In addition, national security concerns regarding technology transfer would be present in China but not at the KLC.



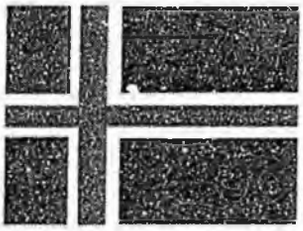
India

Located on the Bay of Bengal, the Shar Center, operated by the Indian Space Research Organization had its first successful launch in July of 1980. It can conduct both equatorial and polar launches, but safety issues restrict the azimuths available for polar launches. An alternative site for southern polar launches, the Balasore rocket launching station, is also available. Both sites may require "dog-legs" for certain launches, decreasing launch capacity. Although India has initiated ambitious government remote sensing and telecommunications programs that promise to keep its launch sites busy, and there has been no indication that India is seeking commercial

launch opportunities for these sites. As of 1998, the Indian Government is continuing to focus on its development of a diversified indigenous launch capability.

Japan

Japan has established two launch sites. Because of government agreements with fisherman who work nearby waters, Japan has historically been limited to only two flights per year from each of its two launch sites. As reported in the Teal Group's 1998 World Space Systems Briefing, the Japanese government and the fishermen unions have begun discussions on expanding the launch window, increasing the number of launch per year to 3. Despite this minor increase in launch ability, AADC expects that the KLC may be an attractive site for Japanese launches. Japan's close proximity to Alaska and well developed trade relationships may translate into a KLC business opportunity.

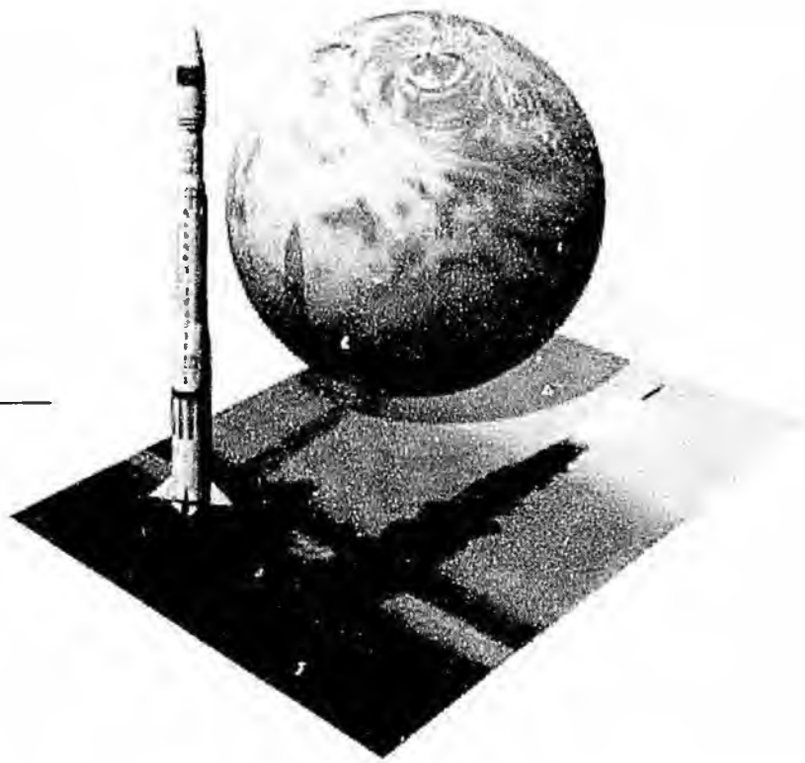


Norway

Now part of the Norwegian Space Center (NSC), the Andoya Rocket Range first launched a sounding rocket in 1962. Since 1972, the range has been supported by ESA members in return for facilities made available on a marginal cost basis. Other customers are charged on a no-profit basis. Launches have primarily been for investigating the upper atmosphere in the polar region and studying ionospheric and magnetospheric processes at high latitudes. A joint Norwegian-Swedish study is now underway on a commercial polar satellite service beginning in 1996. NSC studies show that it could capture three orbital launches annually, with a capacity for six, limited only by possible site access problems during the winter months. There is currently a pad under construction that will support small launch vehicle launches for polar orbit activities. Norway has also begun marketing the range as an ideal site for small satellite launches, and like the KLC, its proximity to the North Pole makes it particularly well-suited for polar orbit launches.

Russia

Plesetsk, Russia, once the world's busiest spaceport, has seen its activity decrease from 62 flights per year a decade ago to 13 flights in 1998. Situated in the northwestern corner of Russia, it can place communications and spy satellites in certain polar and highly elliptical orbits. The facility is efficiently organized and uses highly automated launch vehicles. If the political and business climate stabilizes, and this facility begins to aggressively market its services, it could become a competitor for the global polar launch market. However, Plesetsk is limited to certain inclinations and will pose considerable logistics difficulties to U.S. launchers and payloaders.



strategic planning

As AADC moves into the 21st century, the Corporation has targeted short term (1999) and long term (2000-2005) goals essential to ensuring the success of the KLC and maximizing all aerospace related possibilities for the state.

1999

GOAL: **Secure funding for LP 1 Tower**

ACTIONS: Legislative approval to receive and expend $7M in federal funds

Identify source of final $5M and receive legislative budget approval

GOAL: **Sign launch agreement with Lockheed Martin for three commercial launches**

ACTIONS: Sign contracts for NASA VCL, QuickBird and ICESat launched by LMC

GOAL: **Fund and install digital microwave communications link from KLC to Kodiak**

ACTIONS: Negotiate terms of agreement with PTI for permanent communication system for KLC

GOAL: **Refurbish C-band Radar**

ACTIONS: Determine cost of radar upgrade and installation

Establish timeline for integration of radar with KLC infrastructure

GOAL: **Field Range Safety System**

ACTIONS: With the commitment for an in-kind contribution for an on-site range safety system, the KLC needs to receive, install and test the system

GOAL: **Activation of KLC Foreign Trade Zone**

ACTIONS: Determine necessary level of effort and funding to activate site

GOAL: **KLC Users Manual**

ACTIONS: Develop a manual outlining policies and procedures for KLC customers

2000 - 20005

GOAL: **Develop and implement Strategic Marketing Plan for all aerospace related development for the State of Alaska**

ACTIONS: Identify additional KLC customer base

Define scope of marketing efforts for AADC

Identify effective marketing tools for AADC

Develop a public outreach program

Explore aerospace and/or ground station conference hosted by AADC

GOAL: **Develop Launch on Demand (LOD) Capability**

ACTIONS: Finalize partnership with commercial launch provider for presentation of LOD concept

Coordinate with AST in establishing LOD as the industry standard for satellite constellation deployment and replacement

GOAL: **Satellite Manufacturing**

ACTIONS: Promote satellite assembly, testing and distribution facilities in Anchorage

GOAL: **Expansion of Fairbanks satellite ground station industry**

ACTIONS: Increase community awareness of industry

Increase outreach effort to industry

Encourage local value-added processing, manipulation and distribution of data

Investigate possibility of AADC-owned or State-owned processing facility

Satellite Manufacturing

In the past, AADC has worked closely with Allied Signal to promote satellite manufacturing in Anchorage. Both AADC and AS believe that Anchorage has the potential to become a hub for satellite manufacturing given its' central and accessible location from all parts of the world and Alaska's growing reputation as a strategic location for aerospace development. AADC has continued to pursue this business line over the past several years with both the Municipality of Anchorage and the Anchorage Economic Development Corporation. In 1999, AADC would like to position the building blocks necessary to make satellite manufacturing a reality in Anchorage.

Commercial Launch On Demand

The KLC, in conjunction with Lockheed Martin, has the opportunity to capture the polar constellation's replacement and replenishment launch market by offering Launch on Demand (LOD) capability, a process defined as the capability of a spaceport and launch provider to place a payload into the proper orbit within hours or days after notification. With a certain amount of failure expected during satellite constellation deployment there is no current plausible LOD plan to insure replacements in a timely manner. Corporations presently must launch non-operational, non-revenue producing spares with their initial constellation deployment. This stop-gap solution is expensive because the on-orbit spares, which must be paid for up-front as if they were operational, produce no revenues and begin deteriorating on-orbit due to the harsh environment.

LOD has already been recognized by AST as a valid

alternative to launching on-orbit spares. AST is in the process of developing a study that identifies existing spaceports' ability to support LOD; this study includes the development of a commercial LOD market, identification of customers and projected demand of LOD.

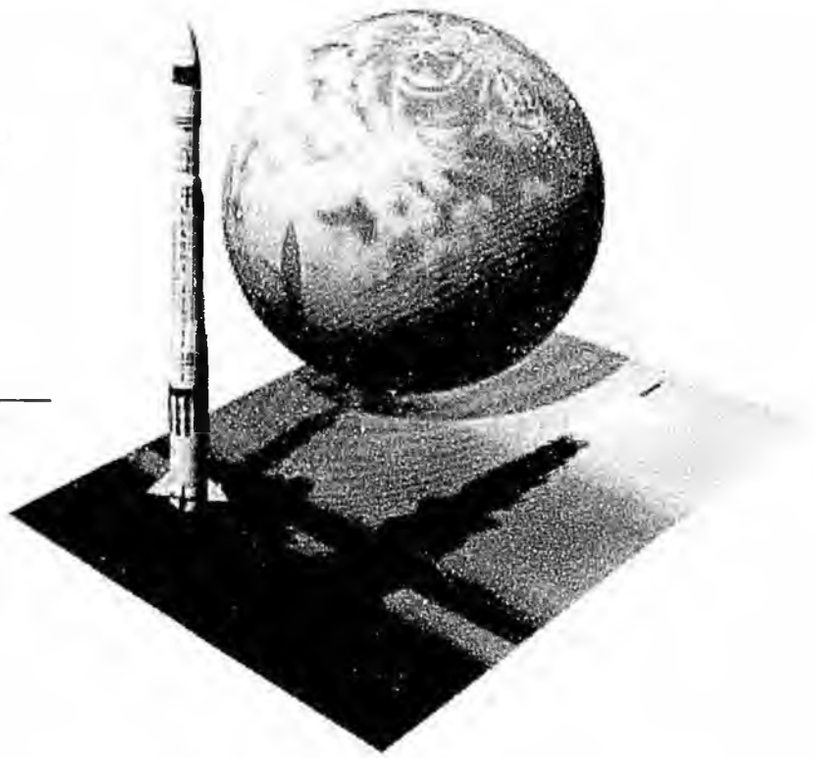
By constructing an additional launch pad to be dedicated to LOD within two years, the KLC can provide LOD capability to provide satellite constellations corporations the opportunity to defer large expenditures of funds. Placing a number of "ready-to-launch" payloads in environmental storage at the KLC would not require an additional payload processing facility.

AADC Bonding Capability

Pursuant to its enabling statute, AADC, with legislative approval, has the ability to issue bonds for aerospace related development. As such, AADC can complement its package of customer services by providing an alternate funding option for its customer base. For many customers, AADC's bonding capability will be an attractive capital alternative to standard up front payments or more traditional commercial loans. AADC will work with appropriate state agencies to explore structures wherein other agencies' bonding expertise and financial markets recognition complement the financial services AADC expects to provide its customers.

Foreign Trade Zone

The Kodiak Island Borough, with the assistance of AADC, has received approval from the federal government to designate the Kodiak Airport, Kodiak's dock facilities and the KLC site as a foreign trade zone. This will exempt foreign payloads and launch vehicles from customs duties otherwise imposed on those activities. As part of its ongoing strategic planning process, AADC is evaluating activation of the KLC's foreign trade zone site to enhance marketing efforts to international customers.



capital financial needs

Sources of Funds

As previously discussed, AADC has secured funds for the development of the KLC from numerous sources. The KLC project requires a total funding of $39,197,008. To date the project has received $27,809,958, which reflected the original project budget of $28 million.

The $28 million budget was developed by AADC using three independent cost estimates for facilities construction from its architectural-engineering firm, project management team, and an Anchorage cost-estimating firm. Due to a number of factors directly influenced by a delay in AADC's receipt of the $17.91 million in federal funds, bids received from potential construction contractors were above those anticipated by all of the independent cost estimates. Those factors include, but are not limited to, AADC's ability to initiate its procurement process and award a contract on schedule, escalation in the cost of construction materials during the period of delay, and premium charges associated with the accelerated construction schedule necessary to meet KLC launch commitments.

Due to these delay-induced cost escalations, the $28 million appropriated is not adequate to cover the cost of the complete facility, specifically, the launch tower and service structure. Construction of the KLC commenced, and AADC was able to secure it first government customer utilizing temporary launch pad facilities. Concurrently, AADC began seeking additional federal funding to complete construction of the permanent launch tower, which is essential to meet the needs of the commercial aerospace market.

As directed by its Board, AADC staff and management team completed an extensive review and cost to complete analysis of the construction of the KLC as well as cost to transition the facility into an operational mode. Based upon this analysis and a series of meetings, discussions and recommendations which followed, AADC developed an FY2000 Capital Budget request in the amount of $12 million. This budget request in addition to the original $28 million budget represents the total budget request for the KLC construction.

The budget request is comprised of up to $2 million in interest earnings on existing federal receipts and $5

FUNDING RECEIVED		AMOUNT
Alaska Science and Technology Foundation		$ 5,000,000
Federal (National Guard)		17,910,000
NASA Grant		4,899,958
	SUBTOTAL	*$ 27,809,958*
ADDITIONAL FUNDING SECURED		
Request, Federal		$ 4,800,000
Interest Earnings on National Guard Grant*		1,587,050
	SUBTOTAL	*$ 6,387,050*
FUNDING NEEDED		
FY 2000 State of Alaska Capital Budget Request**		$ 5,000,000
	SUBTOTAL	*$ 5,000,000*
	TOTAL	**$ 39,197,008**

* *Actual receipts may be less depending on whether or not granting agency retains funding for administration and the rate of return on investments for interest earnings. Future interest earnings projections are based on a conservative estimate of 4.75%.*

** *The FY2000 State of Alaska Capital Budget request provides a placeholder in the Administration's FY2000 Capital Budget and allows for multiple fund source opportunities to be considered.*

million in additional federal receipts which have been appropriated in the current federal budget. AADC is in the process of identifying the final $5 million funding component necessary for the completion of the construction effort.

In addition to the funding sources referred to above, AADC has also secured an in-kind contribution for an on-site range safety system estimated at $6.5 million.

AADC has prepared a Capital Budget Model, which anticipates the cash flow demand and timing requirements dictated by the on-going construction activity on the project. The discipline of managing encumbrances against funding sources reflects both the restricted nature of some funds to project components as well as the procurement discipline of having funds in-hand and legislative approval prior to commitment on contracts.

AADC will be seeking approval of the first $7 million identified in its $12 million capital request at the first scheduled meeting of the Legislative Budget and Audit Committee (LB&A) of the 1999 session. Approval by LB&A is critical in order for AADC to keep the launch tower construction effort on schedule. Upon receipt of approval by LB&A, AADC will reduce the capital budget request, accordingly, by $7 million and put forward the modified $5 million request for approval during the regular legislative session.

Uses of Funds

The following is a brief narrative on each of the budget categories utilized by the project team to both estimate the total capital budget and control the total capital budget.

Owner Administration: $865,247:
This budget category captures all past and future AADC organization administrative costs and expenses associated with overseeing the KLC capital program through June 2001.

Project Management: $1,070,102:
This budget category captures all past and future Rise Alaska labor and expenses associated with providing project management support services to AADC on the KLC project through December 1999.

Architect / Engineer Construction Administration: $1,645, 467:
This budget category captures all past and future BRPH labor and expenses associated with providing architecture and engineering construction administration services during the bidding and construction phase of KLC project through December 1999.

Construction: $28,993,654:
This budget category includes all general construction costs currently known for the completed KLC project including: Phase I Roads, Sitework and Utilities; Phase II Facilities; and Phase III Launch Tower.

Microwave Communications: $500,000:
This budget category includes all costs to build a Microwave Communications System to link the KLC to worldwide communications networks. A temporary communication system is currently being leased. Development and use of a permanent system will reduce ongoing monthly communications expenses to approximately 10% of the current cost. This one time project capital expense is scheduled for July 1999.

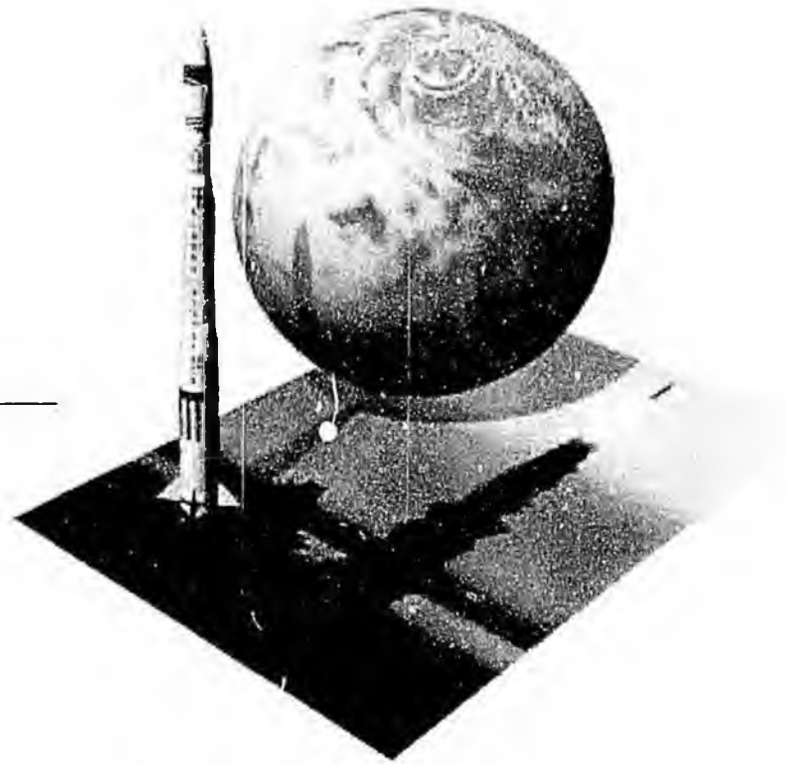
Project Infrastructure, FF&E: $1,644,555:
This budget category represents all furniture, fixtures and equipment, not contained within the general construction contracts, required for operation of the KLC. A significant portion of this total includes all fencing around each building as well as the costs associated with temporary communications until the microwave communications are established.

Operations Intercom System: $1,156,564:
This budget category captures all the past and future on-site operations intercom system (OIS) costs. The OIS allows for a fully integrated, multichannel, operations intercom system necessary to support a launch operation.

Working Capital: $1,000,000:
This budget category provides for a working line of capital to support the first few years of the operational start up of the KLC. As a start-up business consideration, working capital provides cash flow flexibility until the business line is firmly established and generating revenue to fully cover expenses.

Range Safety (in-kind) $6,500,000:
This budget category provides for an in-kind contribution of a permanent Range Safety System on-site. This project budget category is fully funded and managed external to the AADC project team, and does not require additional budget authority.

Program Contingency: $2,417,889:
This budget category provides for a contingency allocation of 9% against the unexpended balance of all project costs to complete as of January 1, 1999.



operational financial needs

Sources and Uses of Funds

AADC and its management team have prepared extensive economic analyses to assure the viability of the KLC. The KLC Provisional Operating Cost Model is proprietary in nature but available upon request and approval by AADC. Following is a summary of revenue and cost assumptions incorporated into the model:

Revenue and Expense Assumptions

Operating Revenues

The primary revenue source for AADC will be direct launch service fees charged to KLC customers as well as revenue generated by providing or managing secondary support services on per launch basis. The *KLC Facilities and Operations* section outlines the basic launch services package provided to KLC customers and a list of other optional services available. AADC also has traditionally received funding from interest earned by the Alaska Science and Technology Foundation as well as corporate receipts to support its annual operating budget. As a state agency, all revenue receipts and expenditures are subject to appropriation by the Alaska State Legislature.

Operating Expenses

The expense section of the operating model is comprised of AADC Administration, KLC Launch Operations, and Funded Reserves. Following is a brief narrative on each of the categories developed by the AADC management team.

AADC Administration

This category represents AADC's annual operating budget which includes all staffing, travel, contractual services, supplies and equipment costs associated with management and operation of AADC. AADC's operating budget submittal for the fiscal year 2000 has been approved by the Board of Directors at $823,400. This budget reflects an increase from the current budget which includes adding two new positions to the organization. These positions are necessary as AADC transitions from construction to operation of the KLC and includes the addition of the KLC Site Manager.

KLC Operations
This category represents all costs directly associated with providing launch services from and maintenance of the KLC facilities. Descriptions of the primary components of this category are provided below.

Facility Operations:
This component represents fixed costs that AADC will incur in maintaining the KLC when no launch operations are occurring, including security, intermittent checks of all systems, minor maintenance, groundskeeping and administrative tasks relating to the KLC's permits, licenses, funding, contracting and other matters.

These followings services initially will be provided by contractors to AADC and will include the following:

- Security - includes a single guard to be on site an average of half-time during peak launch operations and in addition to random site visits complemented by remote monitoring during non-peak operations.
- Maintenance Activities - includes minor repairs to facilities and equipment, painting, janitorial, groundskeeping and similar activities
- Insurance - includes insuring the KLC site and facilities
- Administrative Expenses - includes insurance and legal and accounting expenses for matters relating to maintaining the KLC
- Utility Expenses - includes electricity, fuel and communications expenses

Engineering Support:
AADC will require engineering and technical support to run and maintain the KLC. This subcontractor support is also necessary to complete user documentation and interface with potential customers by identifying specific service requirements, insuring mission/facility compatibility, and facilitating contract negotiation on a technical level. AADC plans to utilize subcontractor support to offer the maximum level of flexibility to support customers on a per launch basis and to adjust the level of year-round support as needed to accommodate the AADC launch schedule.

Launch Operations:
Launch Operations Costs are those costs incurred by AADC during launch operations which are not passed on to the customer. These variable costs depend on the number of launches performed each year.

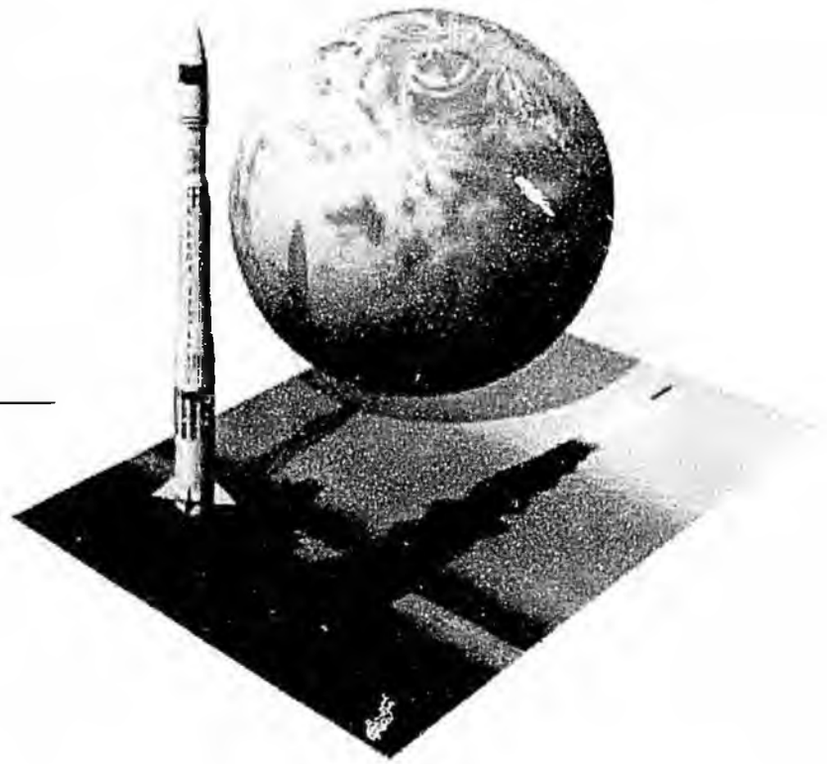
- Medical and Environmental Health - paramedic support
- Site Vehicles - cost of vehicle rental by AADC staff and contractors
- Site Restoration - includes painting, cleanup, and restoration of the launch pad and service structure
- Janitorial Services - includes waste disposal and cleanup
- Fire Protection
- Non-hazardous Waste Containment and Disposal
- Utilities – includes primary power and backup generators

AADC launch customers will also incur launch operation expenses for which they will be directly responsible. The optional services will be outside the scope of the basic services and support offered by AADC and will be negotiated in the launch services agreement.

Funded Reserves
AADC has built into its Provisional Operating Model three funded reserves to safeguard against any unforeseen revenue decreases or expense increases: (i) operating reserve; (ii) maintenance reserve; and (iii) capital reserve. There is a fourth reserve to provide capital for the potential cost of a future dismantling of the site in the event future launch technologies would no longer warrant use and further development of the KLC. Pursuant to the State of Alaska's 1994 Interagency Land Management Assignment to AADC, the Corporation must, at the end of its 30 year term, or later if term is renewed, return the land in an acceptable condition, which may include rehabilitation of the site, and/or removal of any improvements, equipment and materials. The site de-mobilization reserve will be funded by a percentage of launch fees once the KLC has maintained a positive net cash flow.

The Capital Model also provides a Working Capital Liquidity Fund to provide cash flow flexibility until the business line is firmly established and generating revenue to fully cover expenses. The Funded Reserves,

in conjunction with the Working Capital Liquidity Fund, provide AADC with an essential tool necessary to provide prudent and responsible capital management.



appendices

A. Abbreviations

B. Capital Funding Model

C. Support Documents

Appendix A — Abbreviations

AADC	Alaska Aerospace Development Corporation
AFB	Air Force Base
AIDEA	Alaska Industrial Development and Export Authority
ait	Atmospheric Interceptor Technology
AK DOT&PF	Alaska Department of Transportation & Public Facilities
AST	Office of the Associate Administrator for Commercial Space Transportation ASTF Alaska Science & Technology Foundation
BMDO	Ballistic Missile Defense Organization
B&R	Brown & Root Environmental
BRPH	BRPH Architects • Engineers, Inc.
CCSI	California Commercial Spaceport, Inc.
CNES	Centre National D'Etudes Spatiales (French Space Agency)
DCED	Alaska Department of Commerce and Economic Development
DoD	U.S. Department of Defense
EA	Environmental Assessment
EIS	Environmental Impact Statement
ESA	European Space Agency/Arianespace
ENRI	UA Anchorage Environment and Natural Resources Institute
EOSAT	Earth Observation Satellite Company
FAA	Federal Aviation Administration
FCC	Federal Communications Commission
FSS	Fixed Service Structure
GATT	General Agreement on Tariffs and Trade
GPS	Global Positioning System
GSC	Guiana Space Center
IPF	Integration and Processing Facility
ISER	Institute of Social and Economic Research
ITU	International Telecommunications
KLC	Kodiak Launch Complex
LB&A	Legislative, Budget & Audit
LCC	Launch Control and Management Center
LCS	Launch Control System
LEO	Low Earth Orbit
LMC	Lockheed Martin Corporation
LOD	Launch On Demand
LP	Launch Pad
MSS	Mobile Satellite Service
MSTI	Miniature Sensor Technology Integration
NASA	National Aeronautical and Space Administration
NEPA	National Environmental Policy Act
NMD	National Missile Defense
NOAA	National Oceanic and Atmospheric Administration
NSC	Norwegian Space Center
OIS	Operational Intercom System
PFRR	Poker Flat Research Range
PPF	Payload Processing Facility
PTI	PTI Communications
RSD	Rotation Service Door
RSLP	Rocket System Launch Program
RSS	Rotating Service Structure
RTI	Research Triangle Institute
SCAT	Spacecraft and Assemblies Transfer Facility
SDIO	Strategic Defense Initiative Organization
SSI	Spaceport Systems International
STA	Space Transportation Association
UA	University of Alaska
UAF	University of Alaska Fairbanks
UAH	University of Alabama in Huntsville
VAFB	Vandenberg Air Force Base
VCL	Vegetation Canopy Lidar
WCSC	Western Commercial Space Center
WFF	Wallops Flight Facility

Appendix B — Capital Funding Model

CAPITAL PROJECT CASH FLOWS

	Starting Balance	Actual Funding Feb-98	Mar-98	Apr-98	May-98	Jun-98	FY-98 TOTAL	Jul-98
Revenue								
ASTF Grant	$5,000,000.00						$5,000,000.00	
Federal Funding	$18,110,000.00						$18,110,000.00	
NASA PPF Grant	$4,899,958.00						$4,899,958.00	
Federal Funding for Tower	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
State Appropriation	$0.00						$0.00	
AADC Corp. Receipts (Bond Proceeds)	$0.00						$0.00	
AADC Corp. Receipts (Interest Earnings)	$0.00						$0.00	
Non-Cash/In-Kind Receipts	$0.00						$0.00	
Total CPCF Gross Revenue	$28,009,958.00	$0.00	$0.00	$0.00	$0.00	$0.00	$28,009,958.00	$0.00
EXPENDITURES								
Project Owner Admin		$91,453.00	$10,546.00	$8,037.00	$1,644.00	$6,331.00	$124,011.00	$63,305.55
Rise Alaska		$83,871.40	$29,336.20	$29,207.71	$56,392.86	$65,670.12	$264,478.29	$76,123.13
BRPH		$53,830.29	$0.00	$166,890.37	$167,318.86	$84,577.29	$472,616.81	$90,989.35
Project Infrastructure Support (FF&E)		$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
PTI Communications (Temporary)		$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Phase I AK Contract		$200,079.66	$313,790.76	$497,670.75	$222,649.88	$400,277.68	$1,640,468.73	$158,486.04
Phase II Red Sam Contract		$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$821,250.00
OIS Contract		$0.00	$0.00	$0.00	$0.00	$523,334.00	$523,334.00	$50,920.25
Total		$435,234.35	$359,672.96	$701,805.83	$448,005.60	$1,080,190.09	$3,024,908.83	$1,261,074.32
Contingency								
BRPH							$0.00	
Phase I AK Contract		$0.00	$0.00	$0.00	$0.00	$16,437.57	$16,437.57	$188,985.89
Phase II Red Sam Contract		$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Total Contingency		$0.00	$0.00	$0.00	$0.00	$16,437.57	$16,437.57	$188,985.89
PROJECTIONS								
Project Owner Administration							$0.00	
Project Infrastructure Support (FF&E)							$0.00	
RISE Contract							$0.00	
BRPH							$0.00	
PTI Communications (Temporary)							$0.00	
PTI Communications (Microwave)							$0.00	
Working Capital							$0.00	
Total AADC/RISE Projections	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
BRPH Projections								
Phase I AK Contract							$0.00	
Phase II Red Sam Contract							$0.00	
Phase III Tower Contract							$0.00	
OIS Contract							$0.00	
Total BRPH Projections	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Contingency Projections								
Phase I AK Contract								
Phase II Red Sam Contract								
Phase III Tower Contract								
OIS Contract								
Total Category G	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Non-Cash Expenditures								
Range Safety System (in-kind value)	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Total CPCF Expenses	$0.00	$435,234.35	$359,672.96	$701,805.83	$448,005.60	$1,126,627.66	$3,071,346.40	$1,450,060.21
9% Contingency on Remaining Exp.								
Net Capital Project Cash Flow	$28,009,958.00	-$435,234.35	-$359,672.96	-$701,805.83	-$448,005.60	-$1,126,627.66	-$3,071,346.40	-$1,450,060.21
Total Capital Project Cash Balance (Cum.)		$27,574,723.65	$27,215,050.69	$26,513,244.86	$26,065,239.26	$24,938,611.60		$23,488,551.39

Appendix B — Capital Funding Model

CAPITAL PROJECT CASH FLOWS

	Aug-98	Sep-98	Oct-98	Nov-98	Projected Capital Funding Dec-98	Jan-99	Feb-99	Mar-99	Apr-99
Revenue									
ASTF Grant									
Federal Funding									
NASA PPF Grant									
Federal Funding for Tower	$0.00	$0.00	$0.00	$0.00	$0.00	$4,800,000.00	$0.00	$0.00	$0.00
State Appropriation									
AADC Corp. Receipts (Bond Proceeds)									
AADC Corp. Receipts (Interest Earnings)						$1,155,045.43	$50,847.00	$50,885.00	$47,613.00
Non Cash/In-Kind Receipts									$6,500,000.00
Total CPCF Gross Revenue	$0.00	$0.00	$0.00	$0.00	$0.00	$5,955,045.43	$50,847.00	$50,885.00	$6,547,613.00
EXPENDITURES									
Project Owner Admin	$37.00	$12,261.18	$12,633.45	$9,303.26					
Riso Alaska	$49,364.78	$33,833.00	$24,173.00	$88,454.74					
BRPH	$0.00		$168,208.70	$92,989.35					
Project Infrastructure Support (FF&E)	$0.00	$0.00	$0.00	$0.00	$0.00				
PTI Communications (Temporary)	$0.00	$0.00	$0.00	$60,230.74					
Phase I AK Contract	$201,748.36		$194,950.31	$90,801.55					
Phase II Red Sam Contract	$0.00	$2,627,460.00	$2,185,570.00	$0.00			$0.00		
OIS Contract	$0.00	$0.00	$0.00	$0.00					
Total	$331,150.15	$2,673,554.18	$2,585,536.36	$370,869.64	$0.00	$0.00	$0.00	$0.00	$0.00
Contingency									
BRPH									
Phase I AK Contract	$214,878.95		$22,577.90	$15,284.30					
Phase II Red Sam Contract	$0.00						$0.00		
Total Contingency	$214,878.95	$0.00	$22,577.90	$15,284.30	$0.00	$0.00	$0.00	$0.00	$0.00
PROJECTIONS									
Project Owner Administration					$10,000.00	$29,348.00	$15,000.00	$5,000.00	$5,000.00
Project Infrastructure Support (FF&E)					$0.00	$0.00	$0.00	$0.00	$0.00
RISE Contract					$4,447.26	$46,451.00	$46,451.00	$46,451.00	$46,451.00
BRPH					$89,177.71	$82,989.35	$92,989.35	$82,989.35	$82,989.35
PTI Communications (Temporary)					$14,532.42	$14,532.42	$14,532.42	$14,532.42	$14,532.42
PTI Communications (Microwave)					$0.00	$0.00	$0.00	$0.00	$0.00
Working Capital					$0.00	$0.00	$0.00	$0.00	$0.00
Total AADC/RISE Projections	$0.00	$0.00	$0.00	$0.00	$118,157.39	$173,320.77	$158,972.77	$148,972.77	$148,972.77
BRPH Projections									
Phase I AK Contract					$106,025.70	$0.00	$0.00	$0.00	$0.00
Phase II Red Sam Contract					$4,978,577.00	$1,417,849.00	$1,230,649.00	$412,549.00	$303,649.00
Phase III Tower Contract					$335,000.00	$705,000.00	$750,000.00	$650,000.00	$700,000.00
OIS Contract					$0.00	$14,800.00	$88,435.00	$60,075.00	$369,000.00
Total BRPH Projections	$0.00	$0.00	$0.00	$0.00	$5,419,602.70	$2,137,649.00	$2,069,084.00	$1,122,624.00	$1,372,649.00
Contingency Projections									
Phase I AK Contract					$185,237.15	$0.00	$0.00	$0.00	$0.00
Phase II Red Sam Contract					$59,901.00	$23,636.00	$0.00	$0.00	$0.00
Phase III Tower Contract					$0.00	$0.00	$0.00	$0.00	$0.00
OIS Contract					$0.00	$0.00	$0.00	$0.00	$0.00
Total Category G	$0.00	$0.00	$0.00	$0.00	$245,141.15	$23,636.00	$0.00	$0.00	$0.00
Non-Cash Expenditures									
Range Safety System (in-kind value)	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$6,500,000.00
Total CPCF Expenses	$546,027.10	$2,673,554.18	$2,608,114.26	$386,153.94	$5,782,901.24	$2,364,605.77	$2,228,056.77	$1,271,596.77	$8,021,621.77
9% Contingency on Remaining Exp.						$212,814.52	$200,525.11	$114,443.71	$721,945.96
Net Capital Project Cash Flow	-$546,027.10	-$2,673,554.18	-$2,608,114.26	-$386,153.94	-$5,782,901.24	$3,377,625.14	-$2,371,734.88	-$1,335,155.48	-$2,195,954.73
Total Capital Project Cash Balance (Cum.)	$22,042,524.20	$20,268,970.11	$17,660,855.85	$17,274,701.91	$11,491,800.67	$14,869,425.81	$12,497,690.93	$11,162,535.45	$8,966,580.72

Appendix B — Capital Funding Model

CAPITAL PROJECT CASH FLOWS

	May-99	Jun-99	FY-99 TOTAL	Jul-99	Aug-99	Sep-99	Oct-99	Nov-99	Dec-99
Revenue									
ASTF Grant			$0.00						
Federal Funding			$0.00						
NASA PPF Grant			$0.00						
Federal Funding for Tower	$0.00	$0.00	$4,800,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
State Appropriation			$0.00						
AADC Corp. Receipts (Bond Proceeds)			$0.00						
AADC Corp. Receipts (Interest Earnings)	$43,654.00	$41,970.00	$1,396,014.43	$38,282.00	$33,261.00	$27,319.00	$22,774.00	$16,792.00	$14,108.00
Non-Cash/In-Kind Receipts			$6,500,000.00						
Total CPCF Gross Revenue	**$43,654.00**	**$41,970.00**	**$12,696,014.43**	**$38,282.00**	**$33,261.00**	**$27,319.00**	**$22,774.00**	**$16,792.00**	**$14,108.00**
EXPENDITURES									
Project Owner Admin			$97,540.44						
Riso Alaska			$271,949.56			$0.00	$0.00		
BRPH			$312,187.40						
Project Infrastructure Support (FF&E)			$0.00						
PTI Communications (Temporary)			$99,230.74						
Phase I AK Contract			$726,078.26						
Phase II Red Sam Contract	$0.00		$5,634,280.00						
OIS Contract			$50,920.25						
Total	**$0.00**	**$0.00**	**$7,222,184.65**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**
Contingency									
BRPH			$0.00						
Phase I AK Contract			$441,725.04						
Phase II Red Sam Contract	$0.00		$0.00						
Total Contingency	**$0.00**	**$0.00**	**$441,725.04**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**
PROJECTIONS									
Project Owner Administration	$5,000.00	$5,000.00	$74,348.00	$230,000.00	$5,000.00	$5,000.00	$5,000.00	$5,000.00	$5,000.00
Project Infrastructure Support (FF&E)	$0.00	$0.00	$0.00	$233,333.33	$233,333.33	$233,333.33	$233,333.33	$233,333.33	$233,333.33
RISE Contract	$46,451.00	$46,451.00	$283,153.26	$46,451.00	$46,451.00	$46,451.00	$40,000.00	$40,000.00	$39,168.56
BRPH	$82,989.35	$76,800.33	$580,930.79	$71,348.00	$71,348.00	$71,348.00	$35,688.00	$0.00	$0.00
PTI Communications (Temporary)	$14,532.42	$14,532.42	$101,726.94	$14,532.42	$14,532.42	$14,532.42	$0.00	$0.00	$0.00
PTI Communications (Microwave)	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$500,000.00	$0.00	$0.00
Working Capital	$0.00	$0.00	$0.00	$1,000,000.00	$0.00	$0.00	$0.00	$0.00	$0.00
Total AADC/RISE Projections	**$148,972.77**	**$142,789.75**	**$1,040,158.99**	**$1,595,664.75**	**$370,664.75**	**$370,664.75**	**$814,021.33**	**$278,333.33**	**$277,501.89**
BRPH Projections									
Phase I AK Contract	$0.00	$0.00	$100,025.70	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Phase II Red Sam Contract	$129,049.00	$783,700.00	$9,256,022.00	$1,141,900.00	$106,200.00	$51,598.00	$0.00	$0.00	$0.00
Phase III Tower Contract	$2,507,700.00	$800,000.00	$6,447,700.00	$500,000.00	$800,000.00	$800,000.00	$300,000.00	$100,000.00	$0.00
OIS Contract	$19,999.75	$0.00	$582,309.75	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Total BRPH Projections	**$2,656,748.75**	**$1,583,700.00**	**$16,392,057.45**	**$1,641,900.00**	**$906,200.00**	**$851,598.00**	**$300,000.00**	**$100,000.00**	**$0.00**
Contingency Projections									
Phase I AK Contract	$0.00	$0.00	$185,237.15	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Phase II Red Sam Contract	$0.00	$626,443.19	$709,983.19	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Phase III Tower Contract	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
OIS Contract	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Total Category G	**$0.00**	**$626,443.19**	**$895,220.34**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**
Non-Cash Expenditures									
Range Safety System (in-kind value)	$0.00	$0.00	$6,500,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Total CPCF Expenses	**$2,805,721.52**	**$2,352,932.94**	**$32,491,348.47**	**$3,237,564.75**	**$1,276,864.75**	**$1,222,262.75**	**$1,114,021.33**	**$378,333.33**	**$277,501.89**
9% Contingency on Remaining Exp.	**$252,514.94**	**$211,763.96**	**$1,714,006.20**	**$291,380.83**	**$114,917.83**	**$110,003.65**	**$100,261.92**	**$34,050.00**	**$24,975.17**
Net Capital Project Cash Flow	**$3,014,582.46**	**-$2,522,726.90**	**-$21,509,340.24**	**-$1,490,663.58**	**-$1,358,521.58**	**-$1,304,947.40**	**-$1,191,509.25**	**-$395,591.33**	**-$268,369.06**
Total Capital Project Cash Balance (Cum.)	**$5,051,998.27**	**$3,429,271.36**		**-$61,392.22**	**-$1,419,913.79**	**-$2,724,861.19**	**-$3,916,370.44**	**-$4,311,961.77**	**-$4,600,330.83**

Appendix B — Capital Funding Model

CAPITAL PROJECT CASH FLOWS

	Jan-00	Feb-00	Mar-00	Apr-00	May-00	Jun-00	FY-00 TOTAL	FY-01 TOTAL	FY-02 Total	Project Total
Revenue										
ASTF Grant							$0.00	$0.00	$0.00	95,531
Federal Funding							$0.00	$0.00	$0.00	19,110,000
NASA PPF Grant							$0.00	$0.00	$0.00	4,899,958
Federal Funding for Tower	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	4,800,000
State Appropriation							$0.00	$0.00	$0.00	0
AADC Corp. Receipts (Bond Proceeds)							$0.00	$0.00	$0.00	0
AADC Corp. Receipts (Interest Earnings)	$10,870.00	$10,783.00	$8,407.00	$8,440.00			$191,036.00	$0.00	$229,536.00	1,587,050
Non-Cash/In-Kind Receipts							$0.00	$0.00	$0.00	6,500,000
Total CPCF Gross Revenue	**$10,870.00**	**$10,783.00**	**$8,407.00**	**$8,440.00**	**$0.00**	**$0.00**	**$191,036.00**	**$0.00**	**$229,536.00**	**40,897,098**
EXPENDITURES										
Project Owner Admin							$0.00	$0.00	$0.00	221,551
Rise Alaska							$0.00	$0.00	$0.00	536,428
BRPH							$0.00	$0.00	$0.00	814,801
Project Infrastructure Support (FF&E)							$0.00	$0.00		0
PTI Communications (Temporary)							$0.00	$0.00		99,231
Phase I AK Contract							$0.00	$0.00	$0.00	2,366,545
Phase II Red Sam Contract							$0.00	$0.00	$0.00	5,631,280
OIS Contract							$0.00	$0.00	$0.00	574,254
Total	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**10,247,093**
Contingency										
BRPH							$0.00	$0.00		0
Phase I AK Contract							$0.00	$0.00	$0.00	488,163
Phase II Red Sam Contract							$0.00	$0.00	$0.00	0
Total Contingency	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**488,163**
PROJECTIONS										
Project Owner Administration	$5,000.00	$5,000.00	$5,000.00	$5,000.00	$5,000.00	$5,000.00	$285,000.00	$284,347.33	$0.00	643,695
Project Infrastructure Support (FF&E)	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$1,399,999.98	$0.00	$0.00	1,400,000
RISE Contract	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$258,521.56	$0.00	$0.00	541,675
BRPH	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$249,732.00	$0.00	$0.00	830,663
PTI Communications (Temporary)	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$43,597.26	$0.00	$0.00	145,324
PTI Communications (Microwave)	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$500,000.00	$0.00	$0.00	500,000
Working Capital	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$1,000,000.00	$0.00	$0.00	1,000,000
Total AADC/RISE Projections	**$5,000.00**	**$5,000.00**	**$5,000.00**	**$5,000.00**	**$5,000.00**	**$5,000.00**	**$3,736,850.80**	**$284,347.33**	**$0.00**	**5,061,357**
BRPH Projections										
Phase I AK Contract	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	106,028
Phase II Red Sam Contract	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$1,299,698.00	$0.00	$0.00	10,555,720
Phase III Tower Contract	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$2,500,000.00	$0.00	$0.00	8,947,700
OIS Contract	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	582,310
Total BRPH Projections	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$3,799,698.00**	**$0.00**	**$0.00**	**20,191,755**
Contingency Projections										
Phase I AK Contract	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	185,237
Phase II Red Sam Contract	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	709,983
Phase III Tower Contract	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	0
OIS Contract	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	0
Total Category G	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**895,220**
Non-Cash Expenditures										
Range Safety System (in-kind value)	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	6,500,000
Total CPCF Expenses	**$5,000.00**	**$5,000.00**	**$5,000.00**	**$5,000.00**	**$5,000.00**	**$5,000.00**	**$7,536,548.80**	**$284,347.33**	**$0.00**	**43,383,589**
9% Contingency on Remaining Exp.	**$450.00**	**$450.00**	**$450.00**	**$450.00**	**$450.00**	**$450.00**	**$678,289.39**	**$25,591.26**	**$0.00**	**2,417,889**
Net Capital Project Cash Flow	**$5,420.00**	**$5,333.00**	**$2,957.00**	**$2,990.00**	**-$5,450.00**	**-$5,450.00**	**-$8,023,602.19**	**-$309,938.59**	**$229,536.00**	
Total Capital Project Cash Balance (Cum.)	**-$4,994,910.83**	**-$4,589,577.83**	**-$4,586,620.83**	**-$4,583,630.83**	**-$4,589,080.83**	**-$4,594,530.83**		**-$4,904,469.42**	**-$4,904,469.42**	

Appendix C — Support Documents

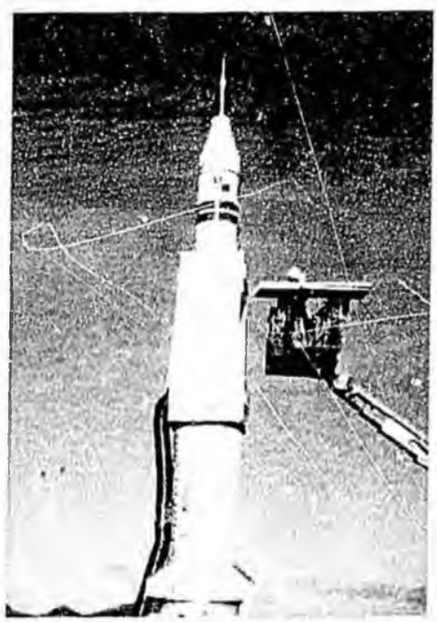
Permitting and Licensing Documentation

1. Department of Natural Resources Interagency Land Management Agreement
2. Division of Government Coordination Consistency Determination for KLC
3. US Army Corps of Engineers Wetlands Permit
4. Kodiak Island Borough Conditional Use Permit
5. Environmental Baseline of Narrow Cape, 1995
6. Environmental Baseline Supplemental Survey, 1998
7. Environmental Assessment of KLC, 1996
8. Biological Assessment, 1998
9. Environmental Assessment by US Air Force, 1998
10. Site Operator License Application, 1998
11. KLC Site Operator License, 1998
12. National Resources Management Plan, 1998
13. Memorandum of Agreement with the FAA, 1998
14. Memorandum of Agreement with the US Coast Guard, 1998

Separate Support Documents

1. 1995 AADC Business Plan
2. 1997 Business and Financial Summary
3. 1993 Annual Report (with audited financial statements)
4. 1994 Annual Report (with audited financial statements)
5. 1995 Annual Report (with audited financial statements)
6. 1996 Annual Report (with audited financial statements)
7. 1997 Annual Report (with audited financial statements)
8. 1998 Annual Report (with audited financial statements)

Documents available by request at the administrative offices of AADC or applicable agency.



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3/23/99

World Oil Prices

World Oil Price Outlook

U.S. Energy Information Administration

Douglas MacIntyre

March 23, 1999

Presentation to the

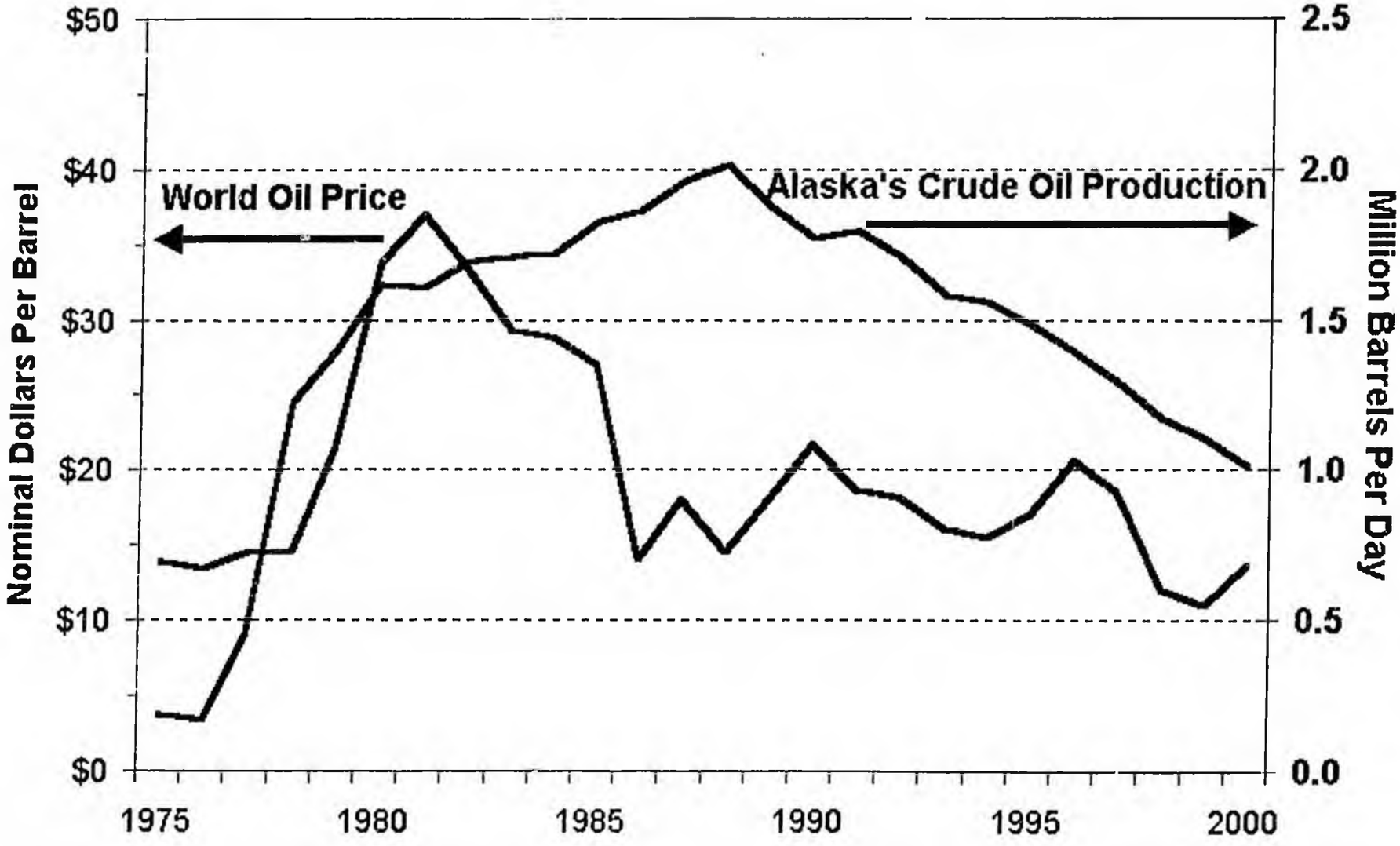
Alaska Finance Committees

Outlook for Alaskan Oil Revenues

- World oil prices in Dec. '98 - Feb. '99 are the **lowest since 1973**
- Alaskan oil production is declining
- World oil prices are expected to **increase from these historically low levels**
- Conclusion:

Alaskan oil revenues will remain low, but may increase in 2000

Oil Prices and Alaskan Oil Production



Energy Information Administration *March 23, 1999*

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Outlook for Alaskan Oil Revenues

- World oil prices in Dec. '98 - Feb. '99 are the lowest since 1973
- Alaskan oil production is declining
- **World oil prices are expected to increase from these historically low levels**
- Conclusion:

Alaskan oil revenues will remain low, but may increase in 2000

Why Are World Oil Prices So Low?

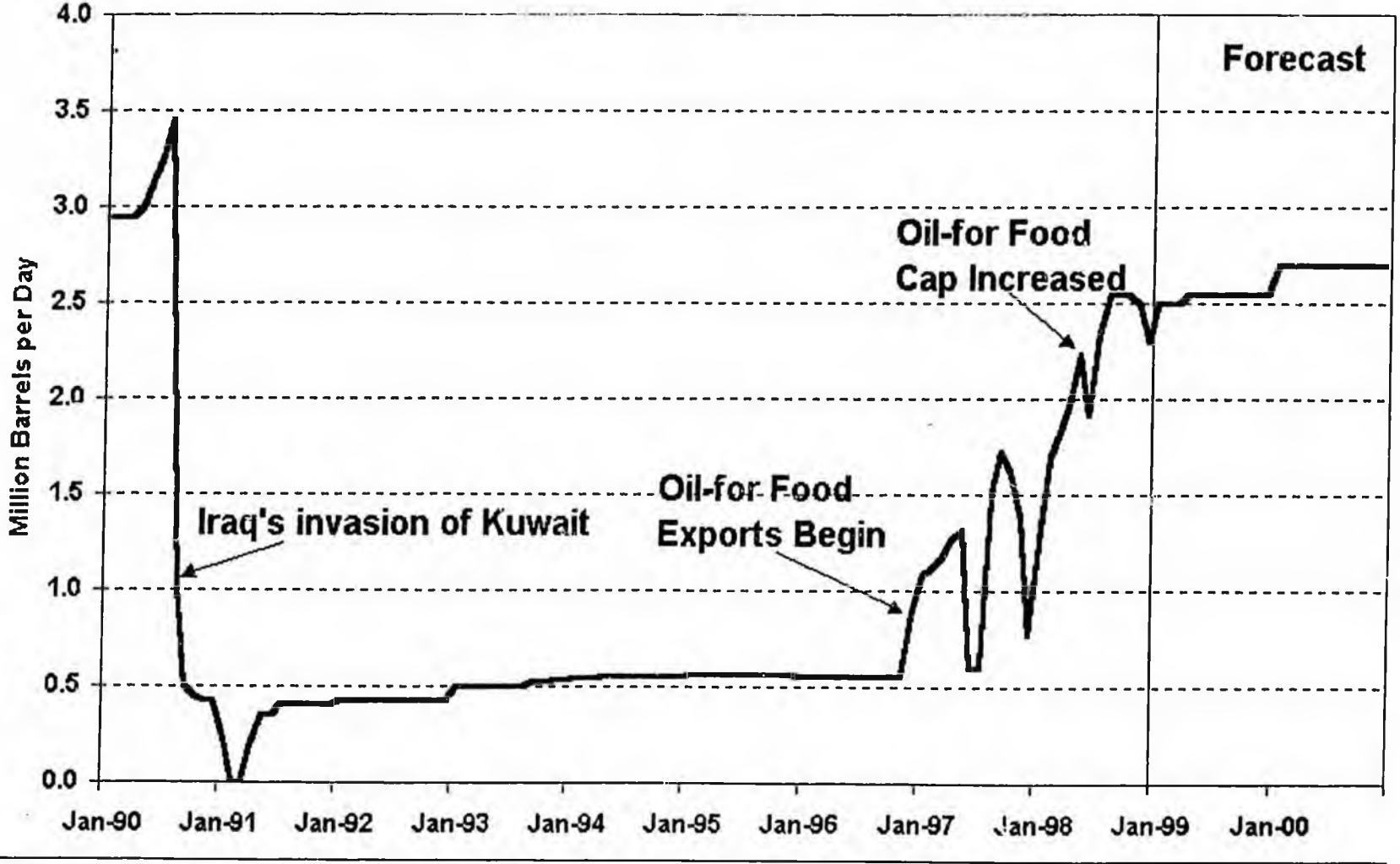
- Increases in oil production from Iraq
- Less Asian oil demand than expected due to the Asian economic crisis
- 2 (or maybe now 3?) significantly warmer than normal winters in a row
- Increases in oil supply, particularly in 1997, led to increases in inventories

Factors Influencing World Oil Market
Part 1 - Iraq

- Increased Iraqi oil exports in '97 , '98, and '99
  - Iraq resumed oil exports under UNSCR 986 in late Dec. 1996
  - Currently exporting about 2 MMBD
  - However, EIA sees limited growth for increases in Iraqi oil exports from current levels through 2000

Factors Influencing World Oil Market
Part 1 (continued)

Iraq's Crude Oil Production, 1990-2000



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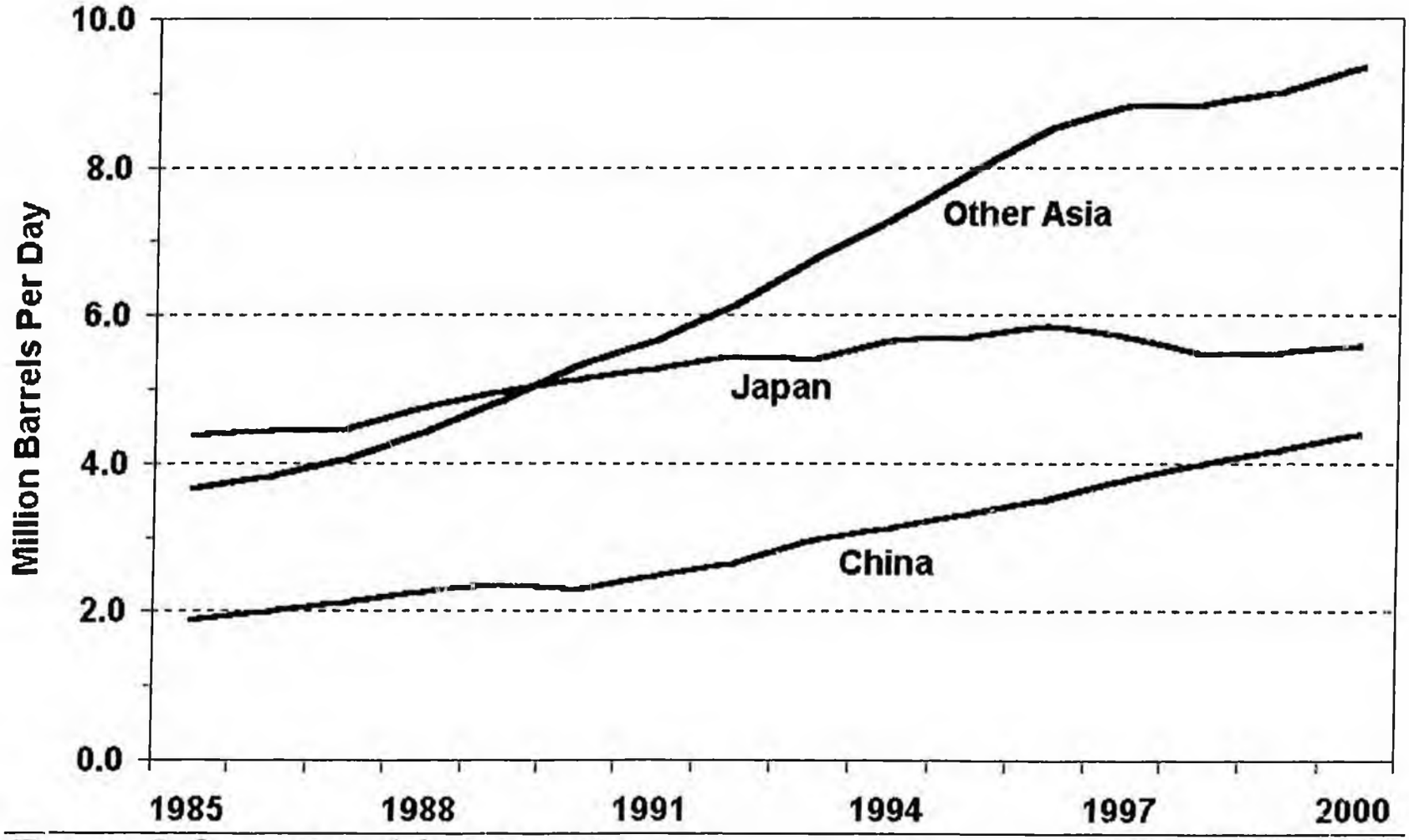
Factors Influencing World Oil Market
Part 2 - Asia

- Less demand growth expected from Asia
  - '91-'96 avg. oil demand increase: 0.85 MMBD
    - 1997 increase: 0.4 MMBD
    - 1998 increase: 0.0 MMBD
    - 1999 increase: 0.4 MMBD
    - 2000 increase: 0.65 MMBD
  - 4-year growth < 1.5 MMBD when 3.4 MMBD would have been expected

Factors Influencing World Oil Market
Part 2 (continued)

Asian Oil Demand, 1985-2000



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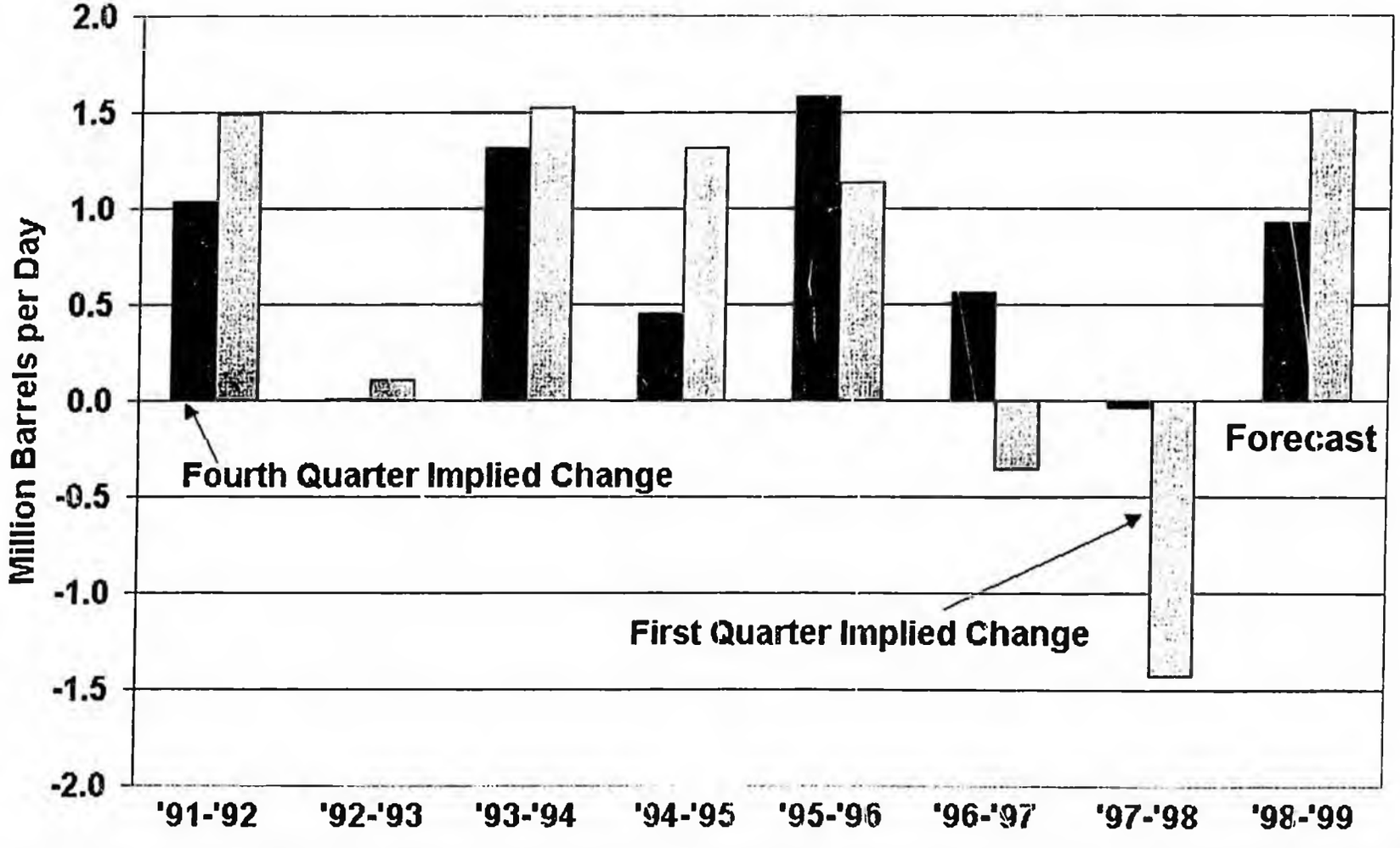
Factors Influencing World Oil Market
Part 3 - Warm Weather

- Warmer than normal in Northeast US and W. Europe for 2 (or 3?) consecutive winters
  - Regions where heating oil has a significant share of heating fuel market

Factors Influencing World Oil Market
Part 3 (continued)

Implied Global Stock Change During Winter Quarters



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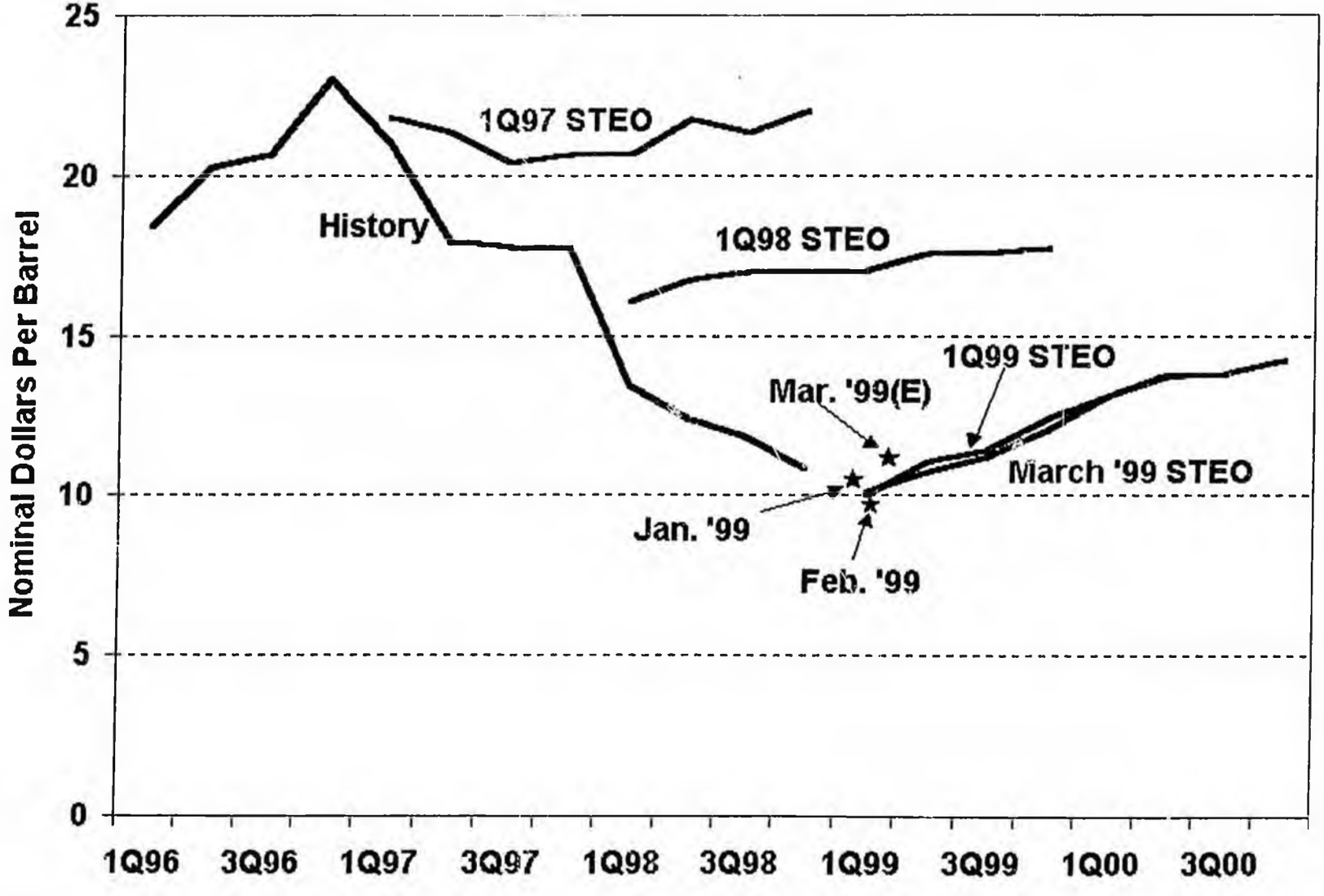
Factors Influencing World Oil Market
Part 4 - Other Supply Increases In 1997

- OPEC (ex. Iraq) '97 Increase: 977,000 b/d
  - PG OPEC: 546,000 b/d
    - Saudi Arabia: 370,000 b/d
    - Qatar: 139,000 b/d
  - Non-PG OPEC: 430,000 b/d
    - Venezuela: 227,000 b/d
    - Nigeria: 129,000 b/d
- Non-OPEC '97 Increase: 732,000 b/d
  - Americas: 516,000 b/d
  - North Sea: -83,000 b/d

Recent EIA World Oil Price Forecasts



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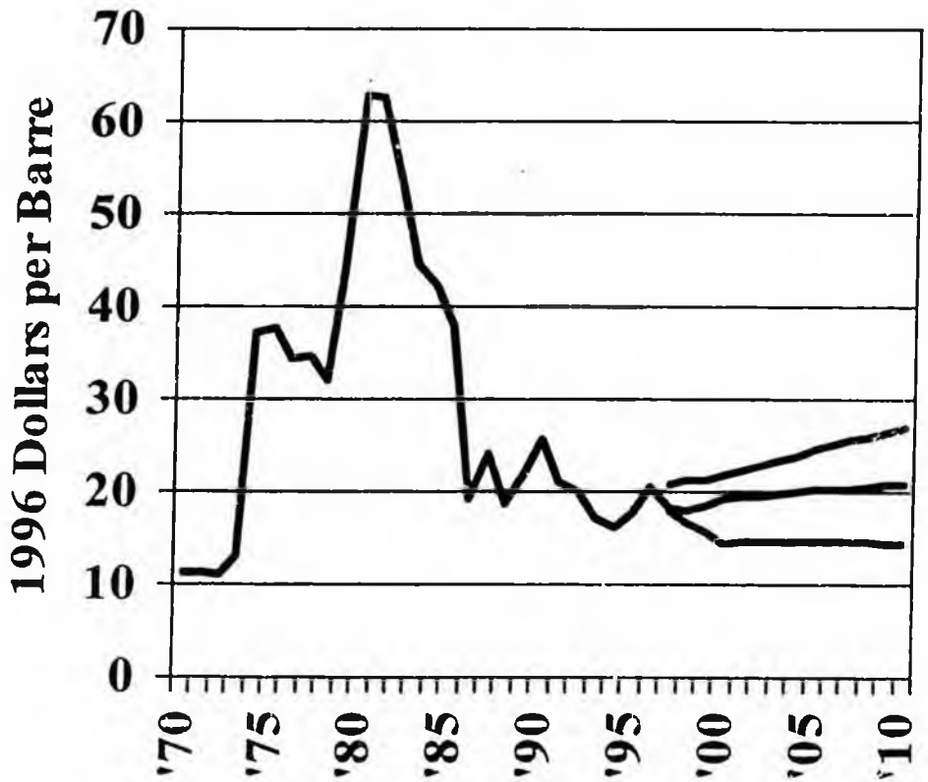
To Be Updated to AEO99

Long Term Outlook: No Improvement

World Oil Prices to 2010



- Long-Term Forecast
  - Less than 1% annual increase in world oil price
  - Prices could be lowest ever

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House and Senate Finance Committees

March 23, 1999

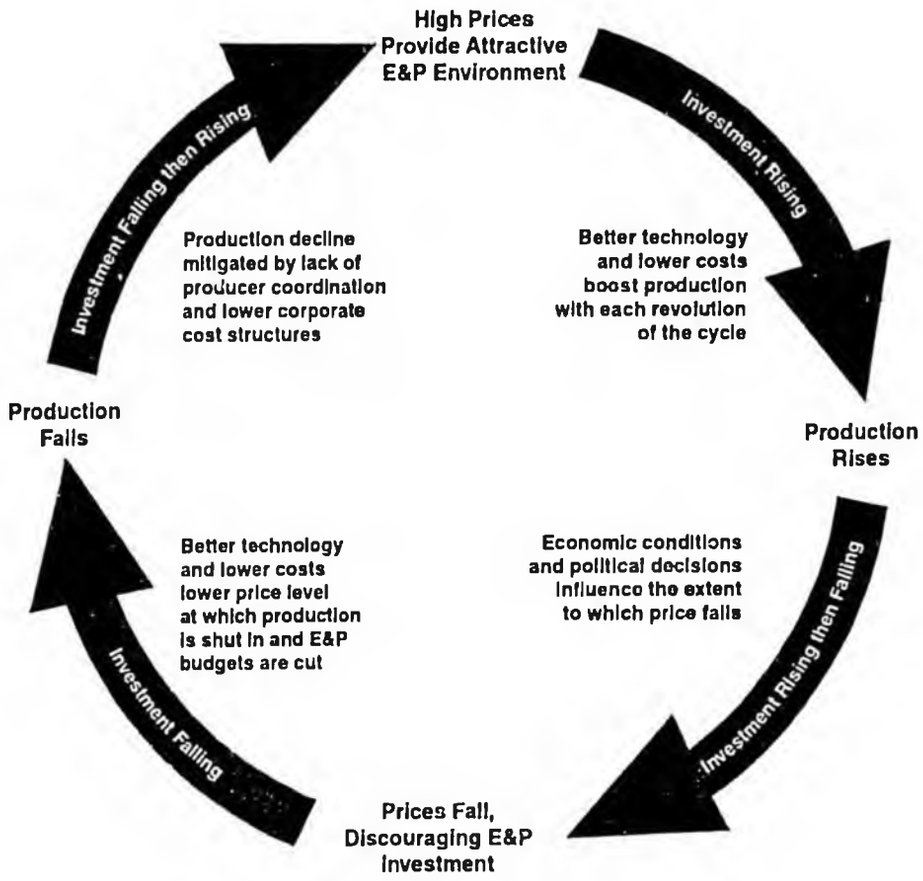
Juneau, Alaska

Cambridge Energy Research Associates, Inc.

2/22/99
ATT 1

Introduction: The New Challenges

The Oil Price and Production Cycle



The role of technology:
Reduce cycle times by lowering the price at which investment occurs

Source: Cambridge Energy Research Associates.

81124-H9

Tomorrow's World—The Challenges

The beginning of the end: Energy market restructuring

Growth

Environment

Security of Supply

Human rights

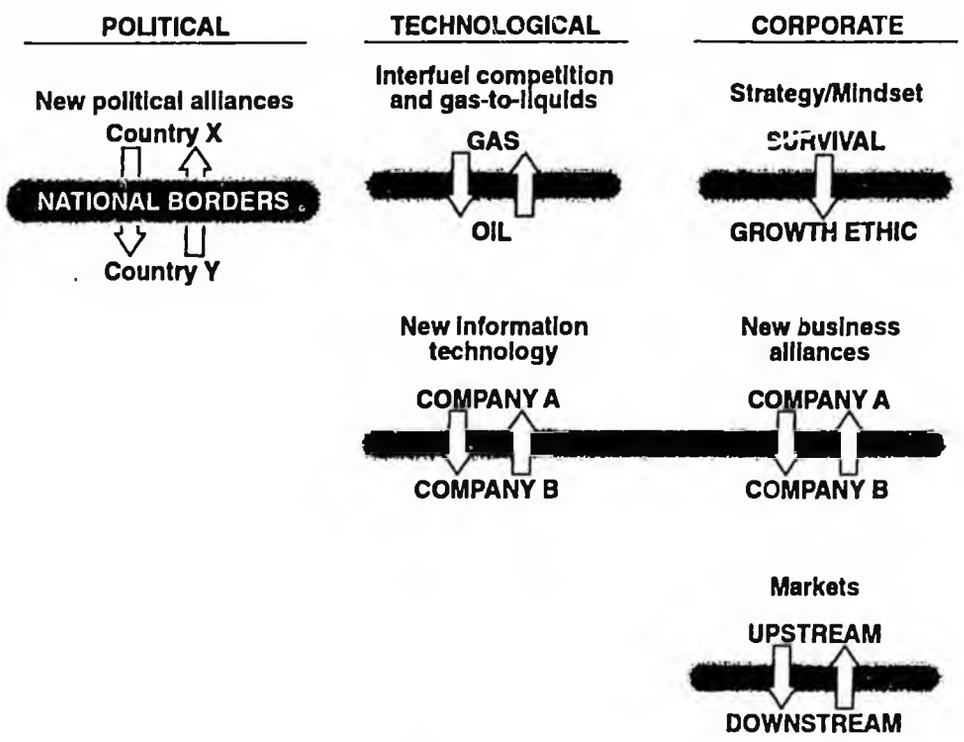
Local community responsibility

The stakeholders

Company role versus government role

Source: Cambridge Energy Research Associates.
80321-H10

The Blurring of the Boundaries



Source: Cambridge Energy Research Associates.

71003-3

The Triangle of Global Energy Supply and Demand Determination

Technology
Sets the supply and demand trend line

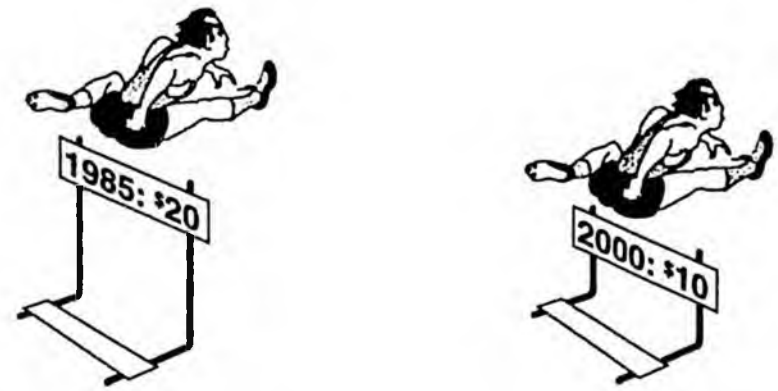
Economics
Limits or exaggerates price impact of external influences on supply and demand

Politics
Sets the tone of supply and demand availability through political decisions

Source: Cambridge Energy Research Associates.
81124-H1

Demand: The Risk and the Hope

The Falling Btu Barrier*

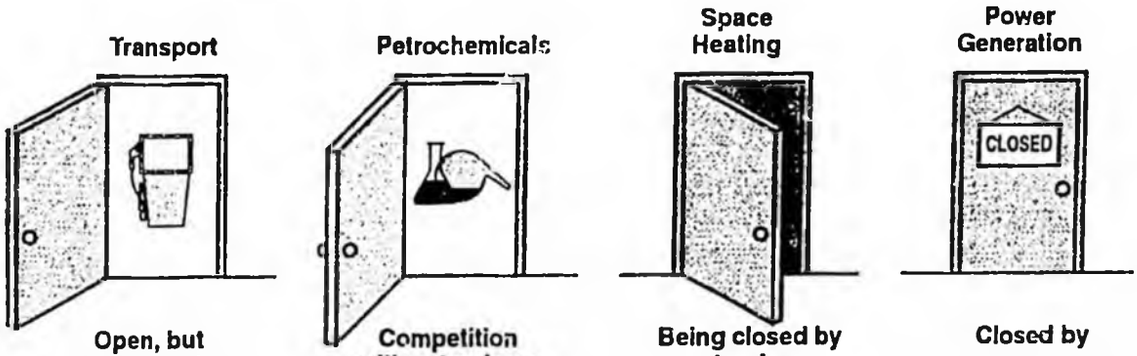


Technology has lowered the cost of all fuels, not just oil.

Source: Cambridge Energy Research Associates.

* Btu barrier: the oil price below which oil gains market share because alternatives become too expensive.

Choices for Oil Demand: The Field Narrows



Transport

Open, but challenges lay ahead

Petrochemicals

Competition with natural gas

Space Heating

Being closed by natural gas

Power Generation

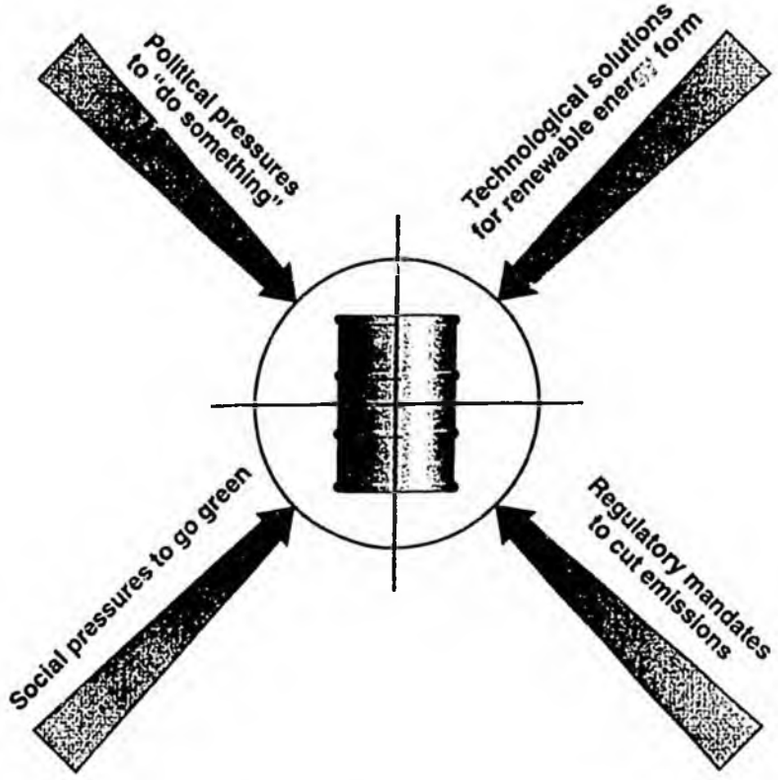
Closed by

- Combined cycle gas technologies
- Environmental regulations

Source: Cambridge Energy Research Associates.

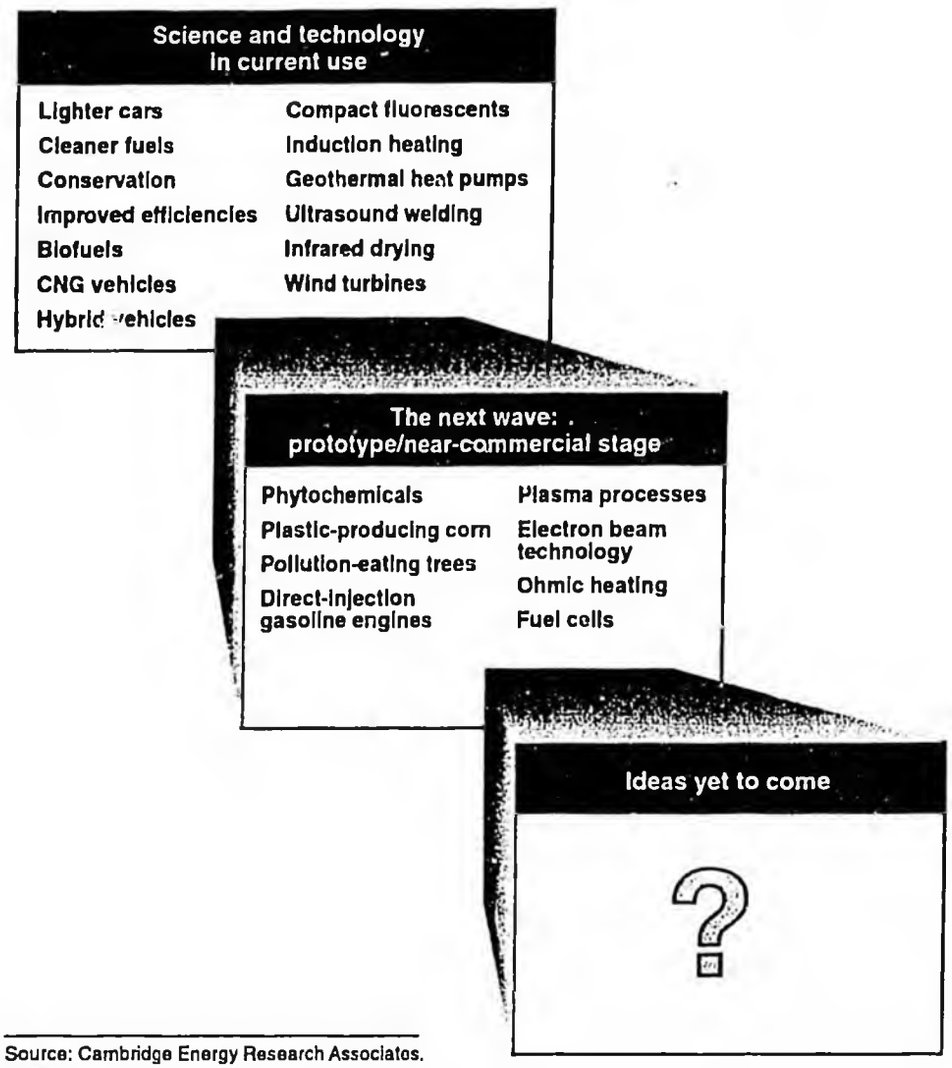
90320-4

Ground Zero:
The Challenges to Oil Demand at $0 per barrel



Source: Cambridge Energy Research Associates.
90320-5

Science and Technology: Putting the Brakes on Hydrocarbon-based Fuel Demand



Source: Cambridge Energy Research Associates.

80422-8

Table 1

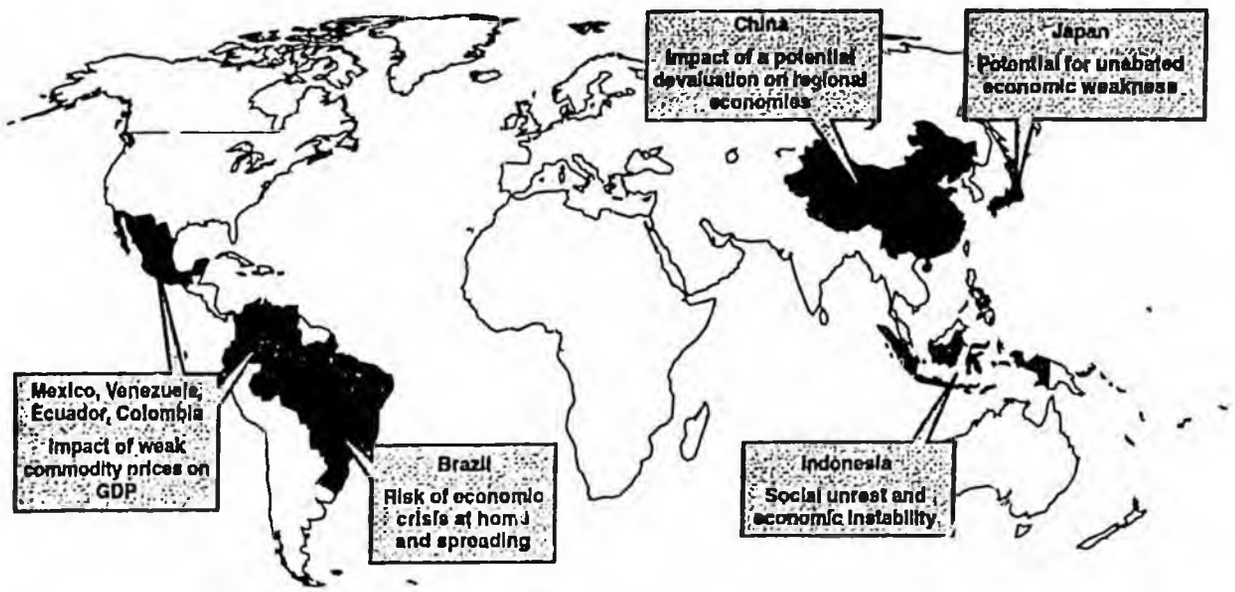
February 1999: Disappearing Demand Growth—
The Effect of the Economic Crisis on CERA's Asian Oil Demand Outlooks

Loss in Oil Demand Growth Between Precrisis and Current Demand Growth Projections
(million barrels per day)

	1997	1998	1999	2000
OECD Asia Pacific	(0.06)	(0.34)	(0.47)	(0.52)
Non-OECD Asia Pacific	0.01	(0.99)	(1.55)	(1.80)
China	0.18	0.05	(0.07)	(0.21)
Total Asia Pacific	**0.13**	**(1.28)**	**(2.09)**	**(2.52)**

Source: Cambridge Energy Research Associates.
Note: Non-OECD Asia Pacific excludes China.

Demand Side Risks in 1999

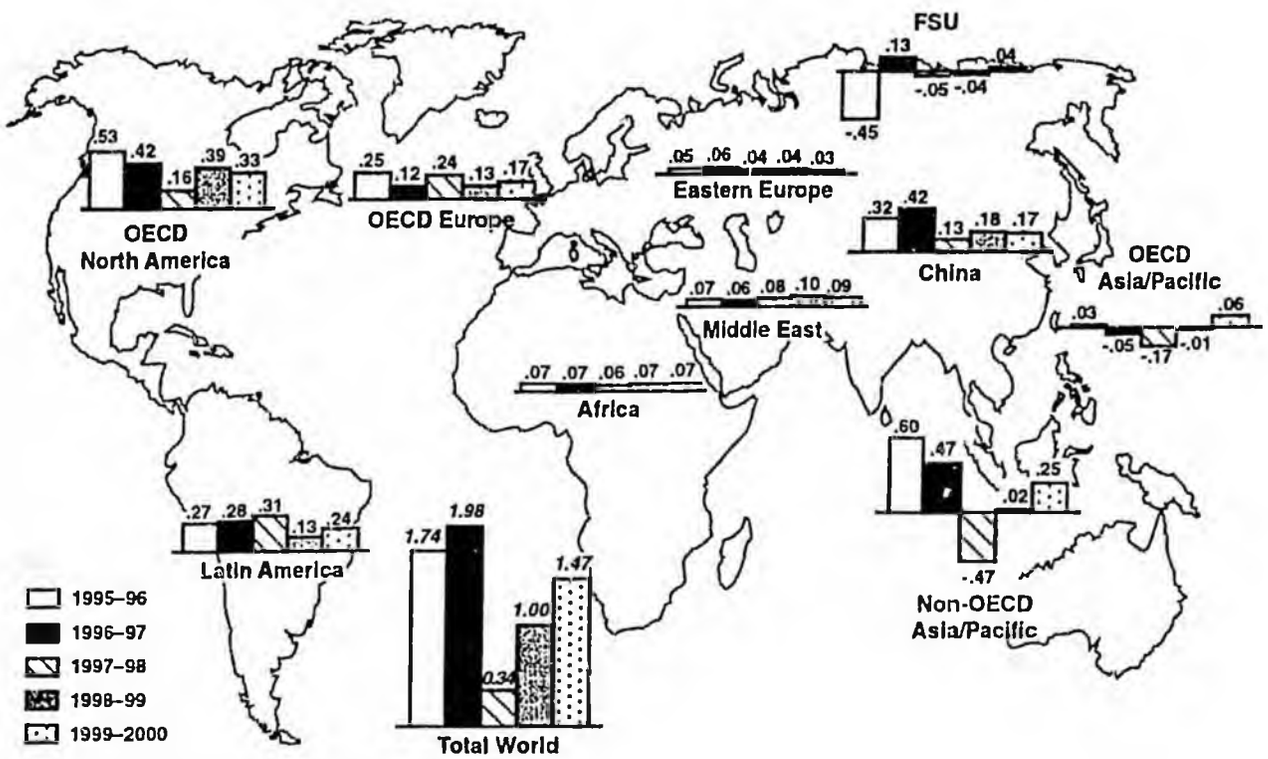


Source: Cambridge Energy Research Associates.

90320-2

Changes in Oil Demand by Region

(million barrels per day)

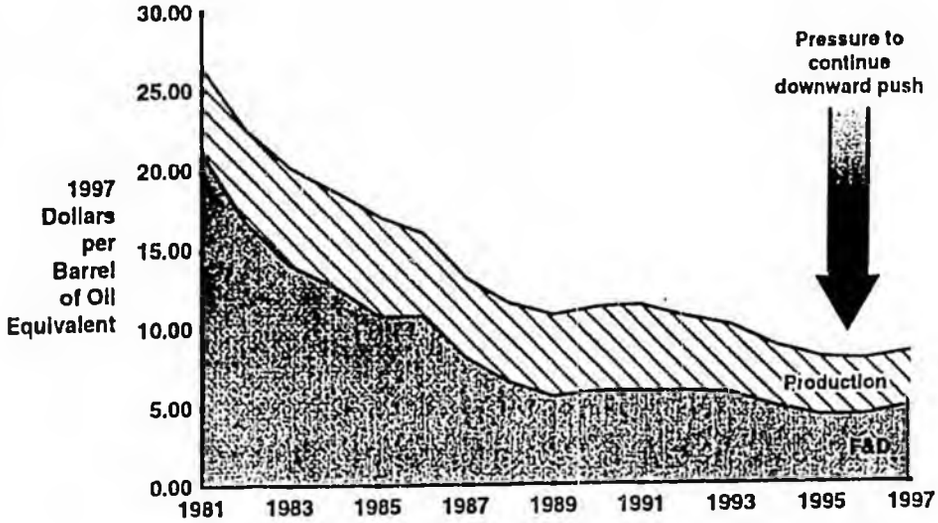


Source: Cambridge Energy Research Associates.

90323-21
0316

Supply: The Price Impact

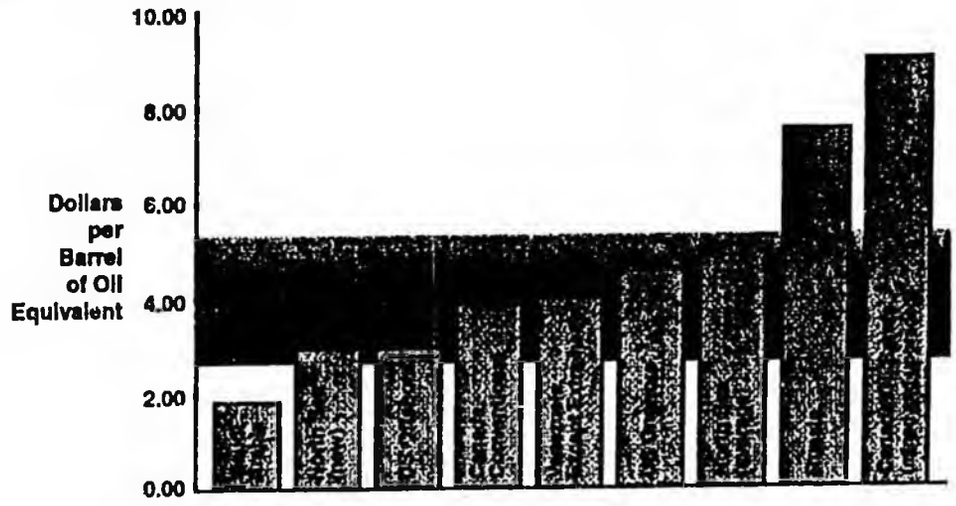
Worldwide Full-cycle Upstream Costs



Sources: Cambridge Energy Research Associates, DOE.

80323-H5

Estimated Operating Costs Around the World



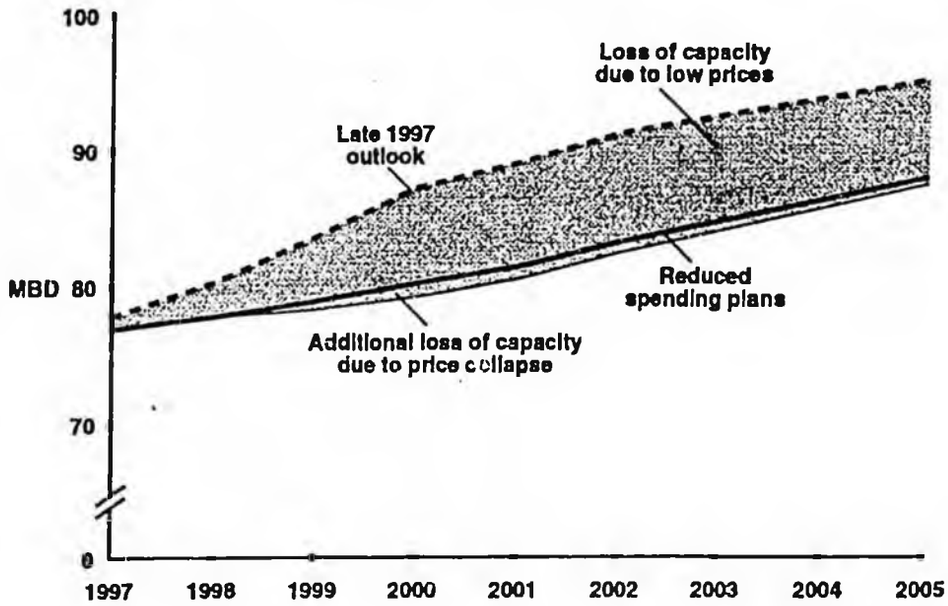
Source: Cambridge Energy Research Associates.

Note: Includes severance taxes, where applicable, ranging from $0.30 per barrel in Canada to $2.00 per barrel in Venezuela.

80129-H1
1208

World Liquid Productive Capacity Outlooks

(million barrels per day)

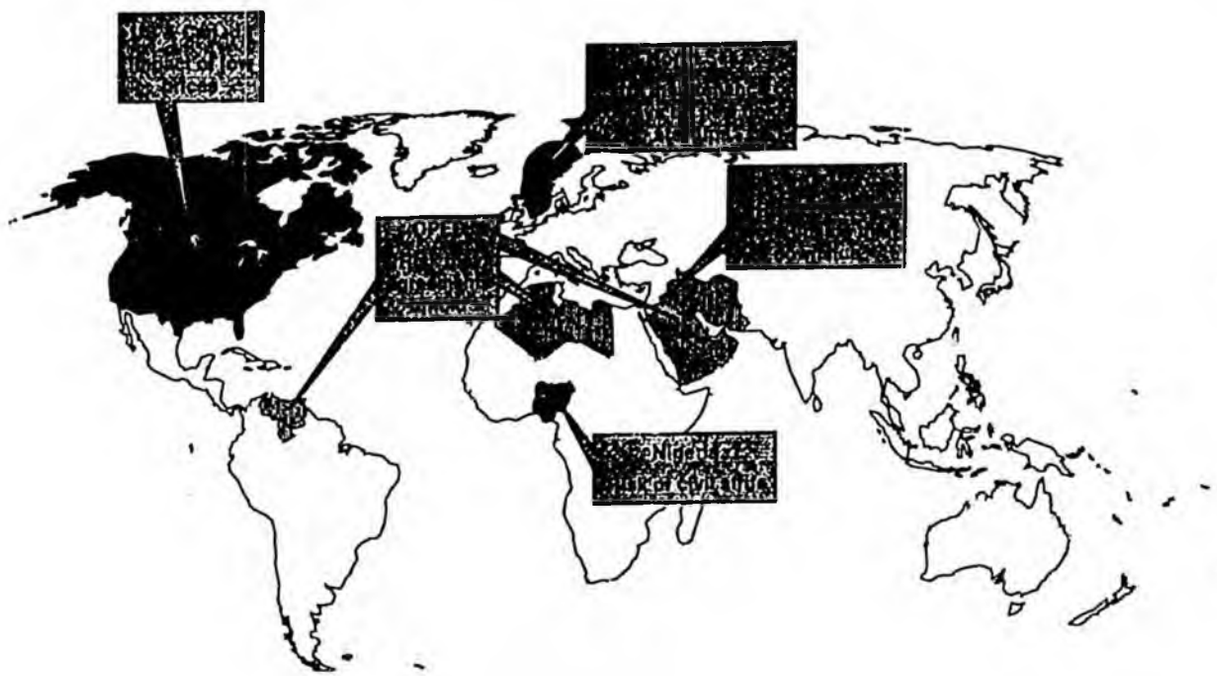


	1997	1998	1999	2000	2001	2002	2005
Late 1997 supply outlook	77.8	80.3	83.6	87.2	89.0	91.2	95.1
Reduced spending plans (1999-2000)	76.9	77.8	78.9	80.2	81.4	83.2	87.9
Change with lower spending	–0.9	–2.5	–4.7	–7.0	–7.6	–8.0	–7.2
MEMO: Demand outlook	73.8	74.1	75.1	76.6	77.9	79.5	84.3
Implied surplus	3.1	3.7	3.8	3.6	3.5	3.7	3.6

Source: Cambridge Energy Research Associates.
Updated March 1999

80332-58

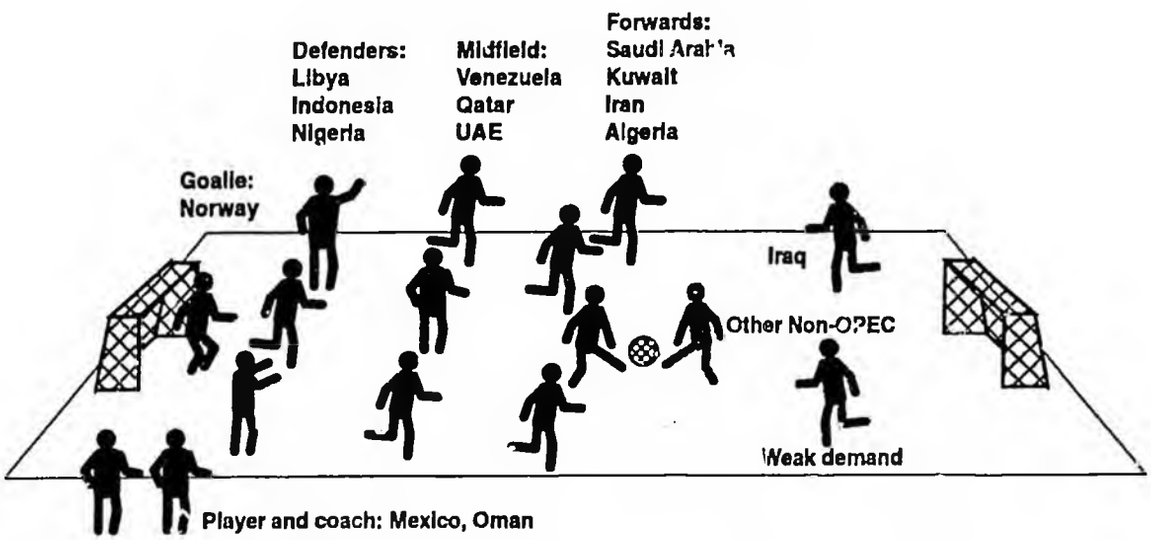
Supply Side Risks in 1999



Source: Cambridge Energy Research Associates.
80320-1

OPEC: The New Playing Field

Oil Market Regulation: The Playing Field



Posturing for the production restraint maneuver

Source: Cambridge Energy Research Associates.

90320-7

The Regulators Hold Back—For How Long?

Source: Cambridge Energy Research Associates.

Iraq's Oil Production and Export Capability

(estimates in million barrels per day)

Capacity	Current	Facilities Recovery Time			
		Volume	Months	Volume	Months
Production	2.3*	3.0	18	3.5	36
Export Outlets:					
Turkey (Ceyhan)	1.1	1.6	6	1.6	—
Gulf: Mina al-Bakr	1.0	1.6	12	1.6	—
Khor al-Amaya	0.0	0.8	18	0.8	—
Truck and Barge	0.2	0.2	—	0.2	—
Total Exports	2.3	4.2	—	4.2	—

Source: Cambridge Energy Research Associates.

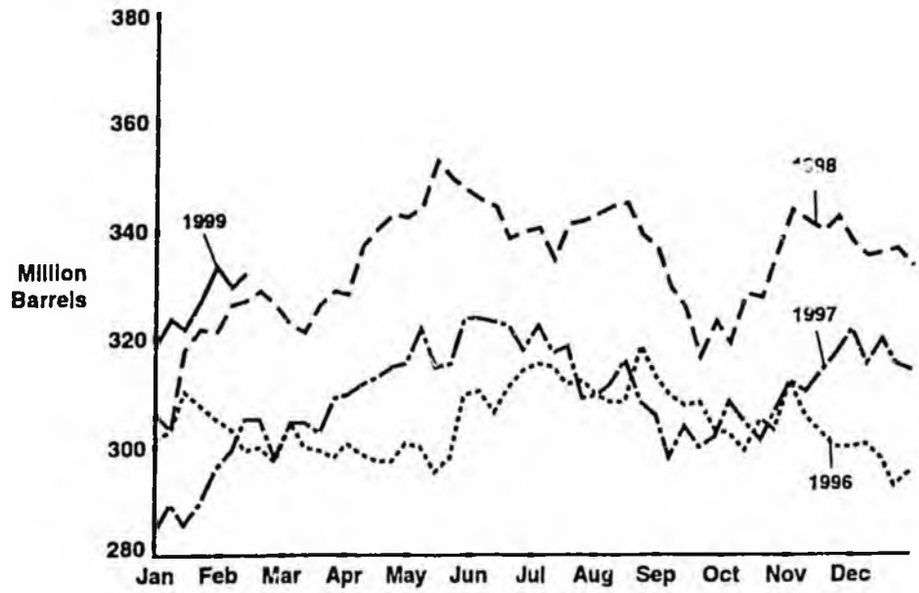
*Capacity is based upon application of good oil field practice. Since the fourth qaurter 1998, Iraq has violated good oil field practice to produce at monthly rates reaching 2.5 mbd.

Notes: These are estimates of maximum capacity and not of utilization rates.
The estimate of export potential assumes that the IPSA II pipeline across Saudi Arabia and the IPC line across Syria remained unavailable to Iraq.
The estimates of time needed to expand production and export capacity as shown assume that when work begins it proceeds without disruption.

Revised March 1999

Inventories: After the Peak

Total US Crude Stocks



Source: American Petroleum Institute.

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0318