

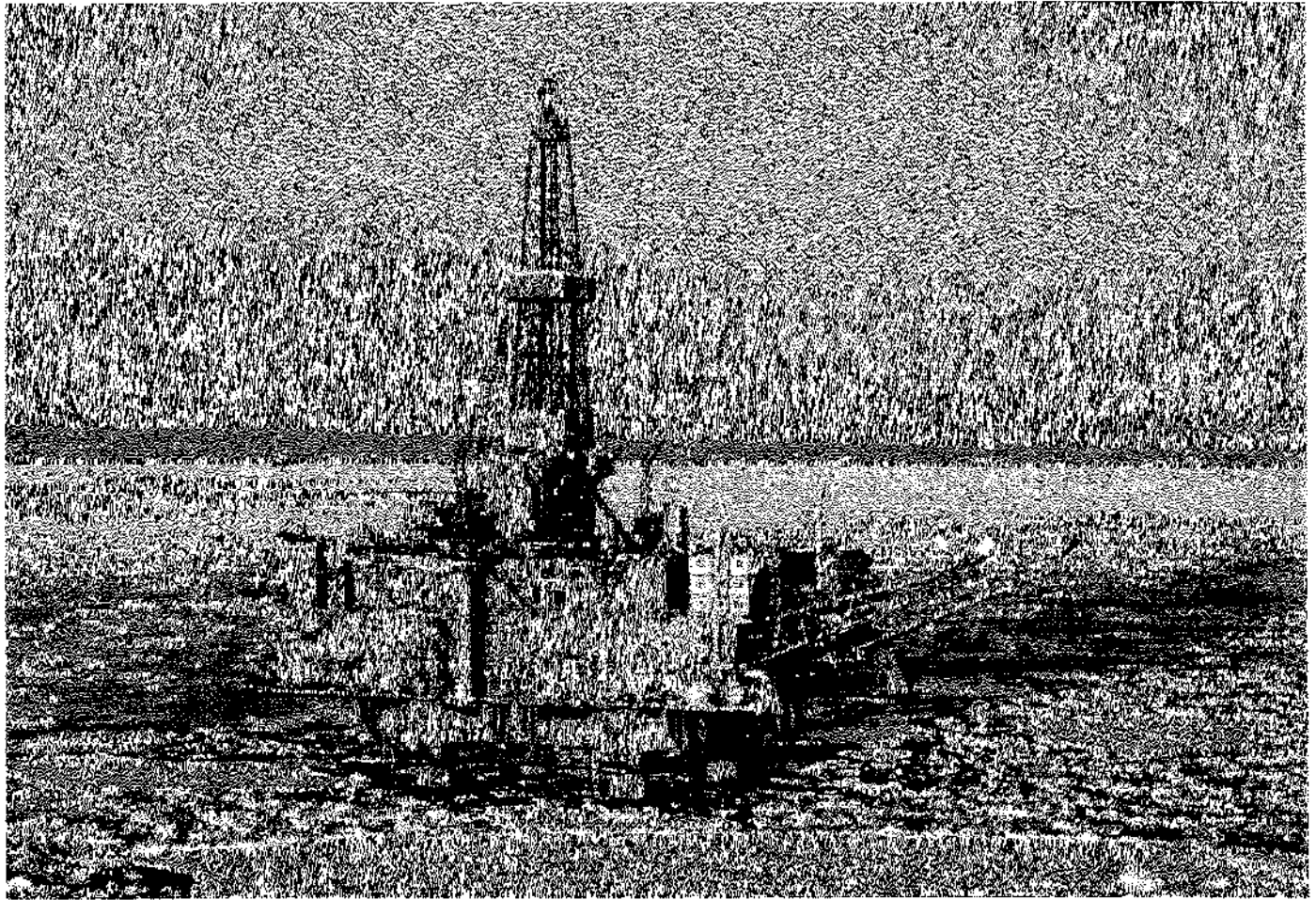
PLATFORM STEELHEAD

McARTHUR RIVER FIELD

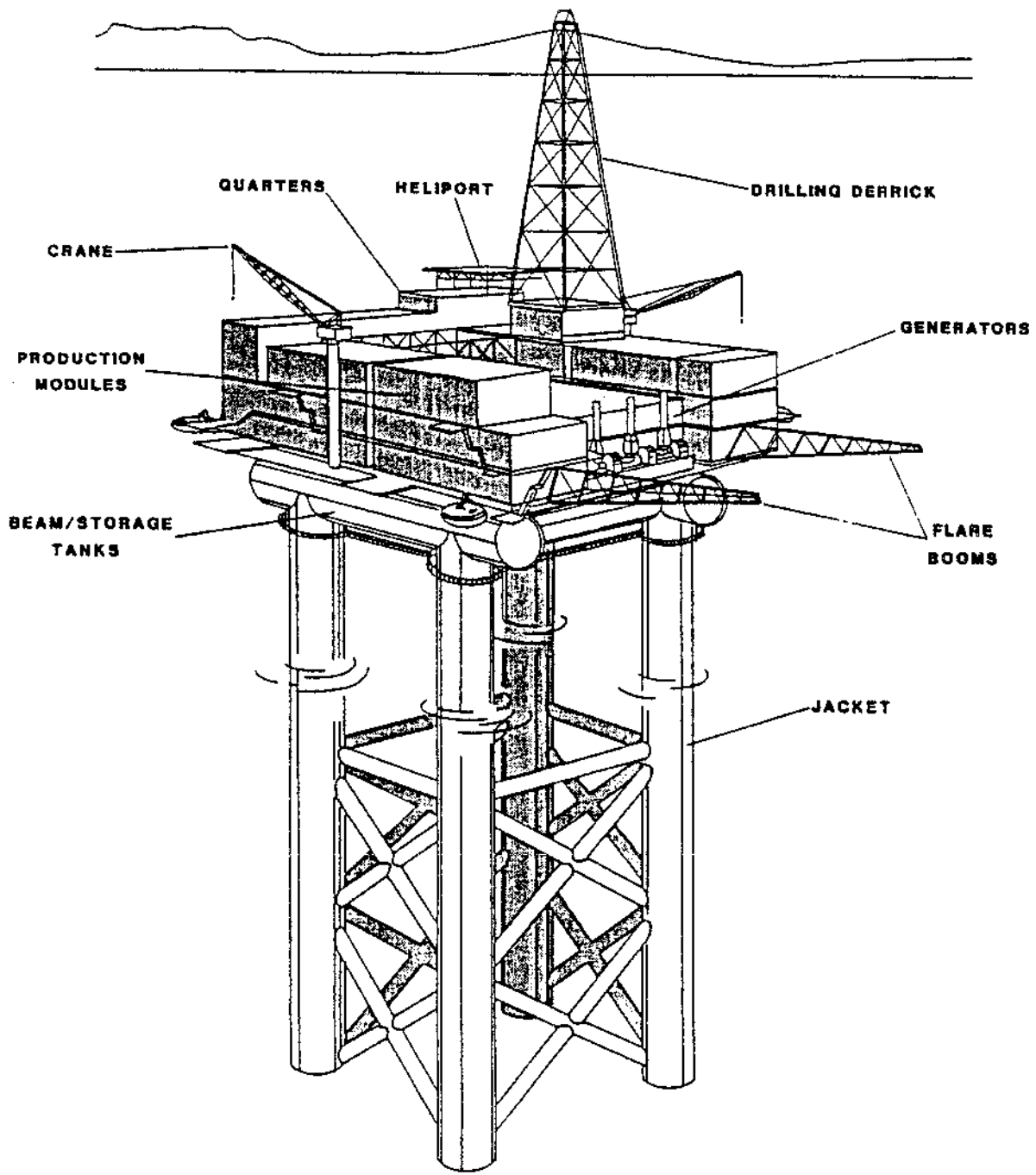
INSTALLED 1986

Platform Steelhead

1. *Field name:*.....McArthur River field
 2. *Platform operator:*.....Marathon
 3. *Platform owner(s):*.....Marathon & Unocal
 4. *Original operator:*.....Marathon
 5. *Structural design firm:*.....McDermott
 6. *Fabrication yard (structure):*.....NKK, Japan
 7. *Installation year and contractor:*.....1986; Brown & Root
 8. *Waterdepth (at MLLW):*.....183
 9. *Number and diameter of legs:*.....Four; 18 feet diameter
 10. *Number, size and penetration of piling:*.....Twelve per leg; 34 inch diameter; 135 feet penetration
 11. *Number, size and penetration of inner piling:*.....Ten 26 inch drilled inner piling installed to 650 feet in leg B1 following 1989 blowout
 12. *Method of installation (driven, drilled, combination):*.....24 driven, 24 combination with drilled pilot hole
 13. *Length of grouted interval in legs:*.....Annulus grouted from bottom to top of leg
 14. *Design codes used (UBC, AISC, API RP 2A, etc):*.....API RP 2A
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15. *Number of completed wells in each leg through piling:*.....Three oil wells, eight gas wells and two waterflood injection wells
 16. *Other completed wells in each leg:*.....None
 17. *Top girders used as storage tanks ?*.....Yes
 18. *If so, what type of liquid:*.....Water, diesel oil
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19. *Design criteria used:*
 - (1) *Ice thickness and strength:*.....50 inch thick; 300 psi
 - (2) *Wave height and period:*.....28 feet with 8.5 second period
 - (3) *Wind:*.....80 mph with 107 mph gusts
 - (4) *Earthquake:*.....Site specific, Ertec, C.B. Krause
 - (5) *Temperature:*.....Minus 20° F above water, plus 28.6° F below water
 - (6) *Current:*.....12.65 feet per second
 20. *Design considerations:*.....Twenty year design life
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21. *Unusual circumstances during installation ?*.....Yes, derrick barge crane collapse. No structural damage
 22. *Significant modification or additions to topsides:*.....Waterflood and gas transmission module added (part of original design)
 23. *Any significant structural damage incidents ?*.....Blowout under leg B1 in 1989; dumped 60,000 ton of gravel and added ten 26 inch diameter insert piling.
 24. *Has platform structural design been re-assessed ?*.....Yes
 25. *If so, by whom and for what reason:*.....By PMB following 1989 blowout
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26. *Type of steel used; above water and below water:*.....A-633-C
 27. *Steel corrosion allowance used:*.....½ inch
 28. *Type of cathodic protection:*.....Impressed current plus sacrificial anodes.
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29. *Dates and API RP 2A levels of underwater inspection:*.....Level II inspections in 1986 (boom collapse) and 1989 (blowout)



Platform Steelhead in the McArthur River field.



Isometric view of platform Steelhead